2006 HBMP
Comprehensive Summary Report
Tables

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Chapter 2* – Summaries of Recent HBMP Reports and Primary Conclusions

Chapter 3 – Status and Trends in Regional Rainfall and Flows, and Facility Withdrawals

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Chapter 5 – Influences of Increasing Conductivity in the Lower Peace River Watershed

Chapter 6 – Salinity/Flow/Withdrawal Relationships at Continuous Recorders

Chapter 7* – Evaluation of Existing Withdrawal Schedule and Assessment of Effectiveness in Limiting Potential Impacts

Chapter 8* – Analyses of Updated Morphometery

Chapter 9* – Evaluation of the Presence or Absence of Adverse Impacts and Appropriate Indicators

Chapter 10* –Proposed Monitoring Design Modifications to the Existing Long-term HBMP Elements

*** Denotes chapters without additional tables**

Table 3.7 (continued)
Summary of Time Series Graphics for Period of Record for each Gage

USGS ID	Gage Identification	Time Period of Data		P75	P90	P100 (Maximum)	Mean
Peace River Watershed							
2294650	Peace River at Bartow	10/01/39	12/31/06	Figure 3.108	Figure 3.121	Figure 3.134	Figure 3.147
2294898	Peace River at Fort Meade	06/01/74	12/31/06	Figure 3.109	Figure 3.122	Figure 3.135	Figure 3.148
2295420	Payne Creek near Bowling Green	10/01/63	12/31/06	Figure 3.110	Figure 3.123	Figure 3.136	Figure 3.149
2295637	Peace River at Zolfo Springs	09/01/33	12/31/06	Figure 3.111	Figure 3.124	Figure 3.137	Figure 3.150
2296500	Charlie Creek near Gardner	05/01/50	12/31/06	Figure 3.112	Figure 3.125	Figure 3.138	Figure 3.151
2296750	Peace River at Arcadia	04/01/31	12/31/06	Figure 3.113	Figure 3.126	Figure 3.139	Figure 3.152
2297100	Joshua Creek at Nocatee	05/01/50	12/31/06	Figure 3.114	Figure 3.127	Figure 3.140	Figure 3.153
2297310	Horse Creek near Arcadia	05/01/50	12/31/06	Figure 3.115	Figure 3.128	Figure 3.141	Figure 3.154
	Total Gaged Flow at Facility	05/01/50	12/31/06	Figure 3.116	Figure 3.129	Figure 3.142	Figure 3.155
2298123	Prairie Creek near Fort Ogden	10/01/63	12/31/06	Figure 3.117	Figure 3.130	Figure 3.143	Figure 3.156
2298202	Shell Creek near Punta Gorda	01/01/65	12/31/06	Figure 3.118	Figure 3.131	Figure 3.144	Figure 3.157
	Total Gaged Flow to Harbor	01/01/65	12/31/06	Figure 3.119	Figure 3.132	Figure 3.145	Figure 3.158
Reference Watershed							
2298830	Myakka River near Sarasota	9/1/1936	12/31/06	Figure 3.120	Figure 3.133	Figure 3.146	Figure 3.159

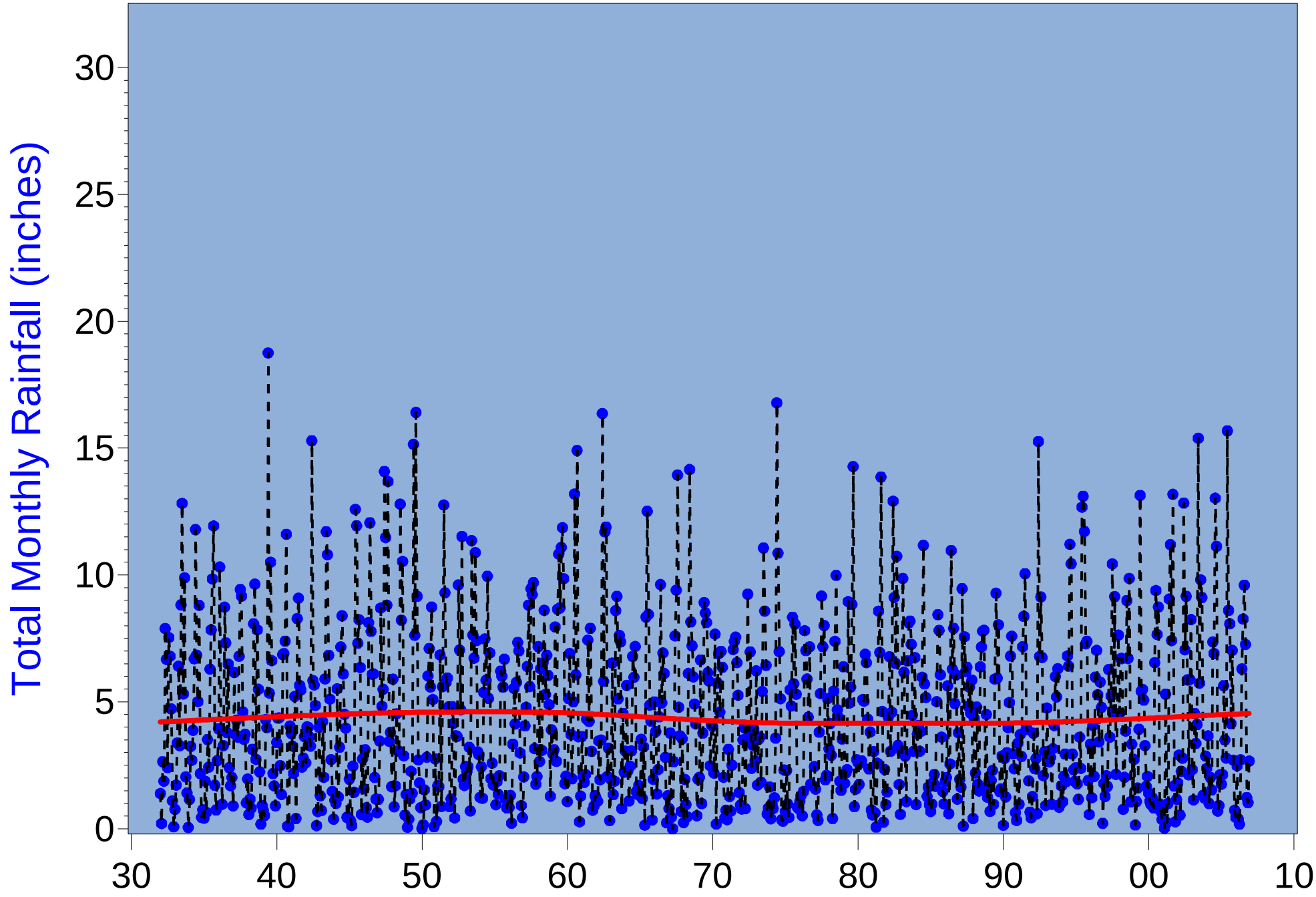


Figure 3.9 Monthly rainfall for the average of the three Peace River watershed basin gages, 1932-2006

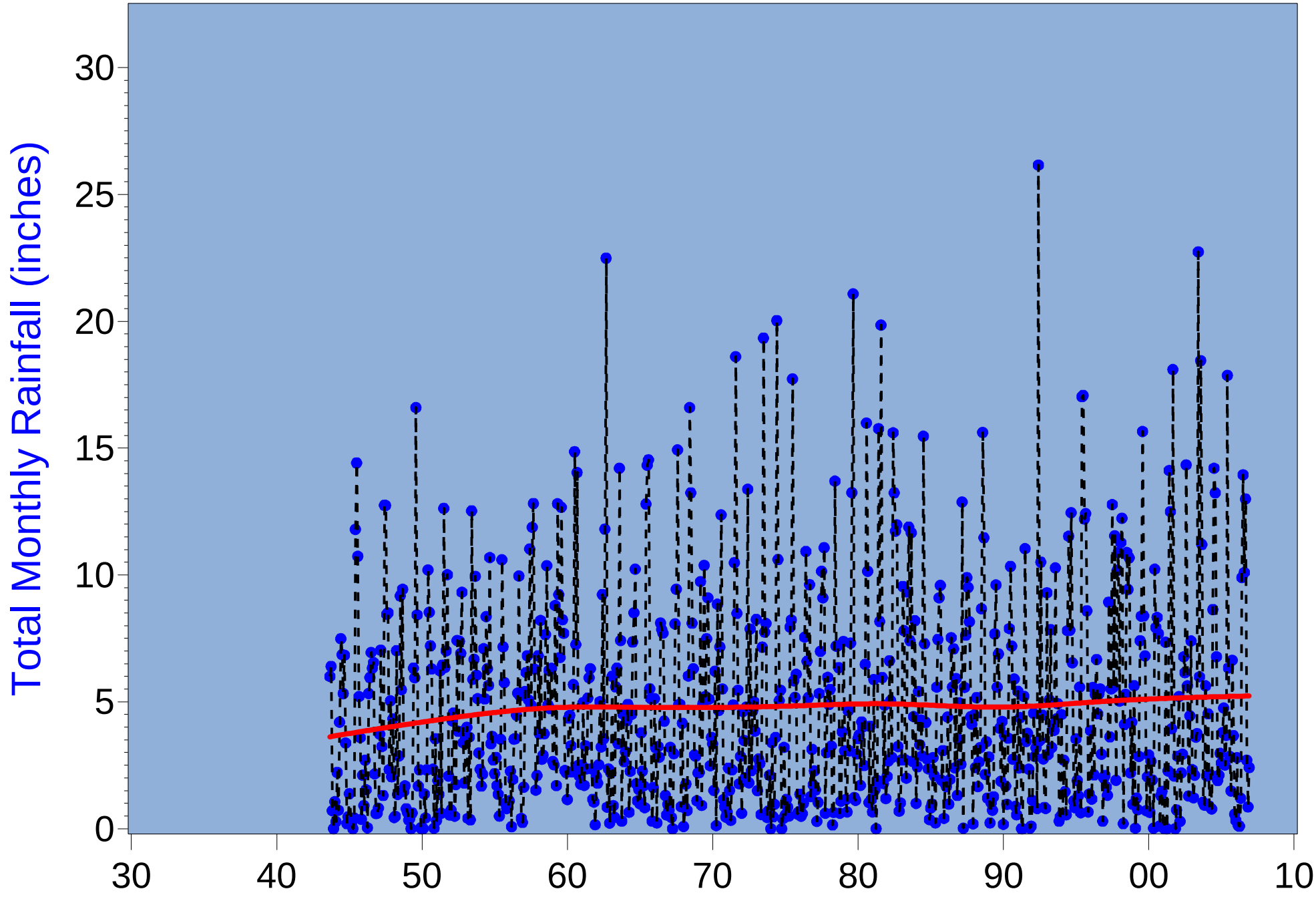


Figure 3.10 Monthly rainfall at long-term Myakka NOAA gage (District R336), 1943-2006

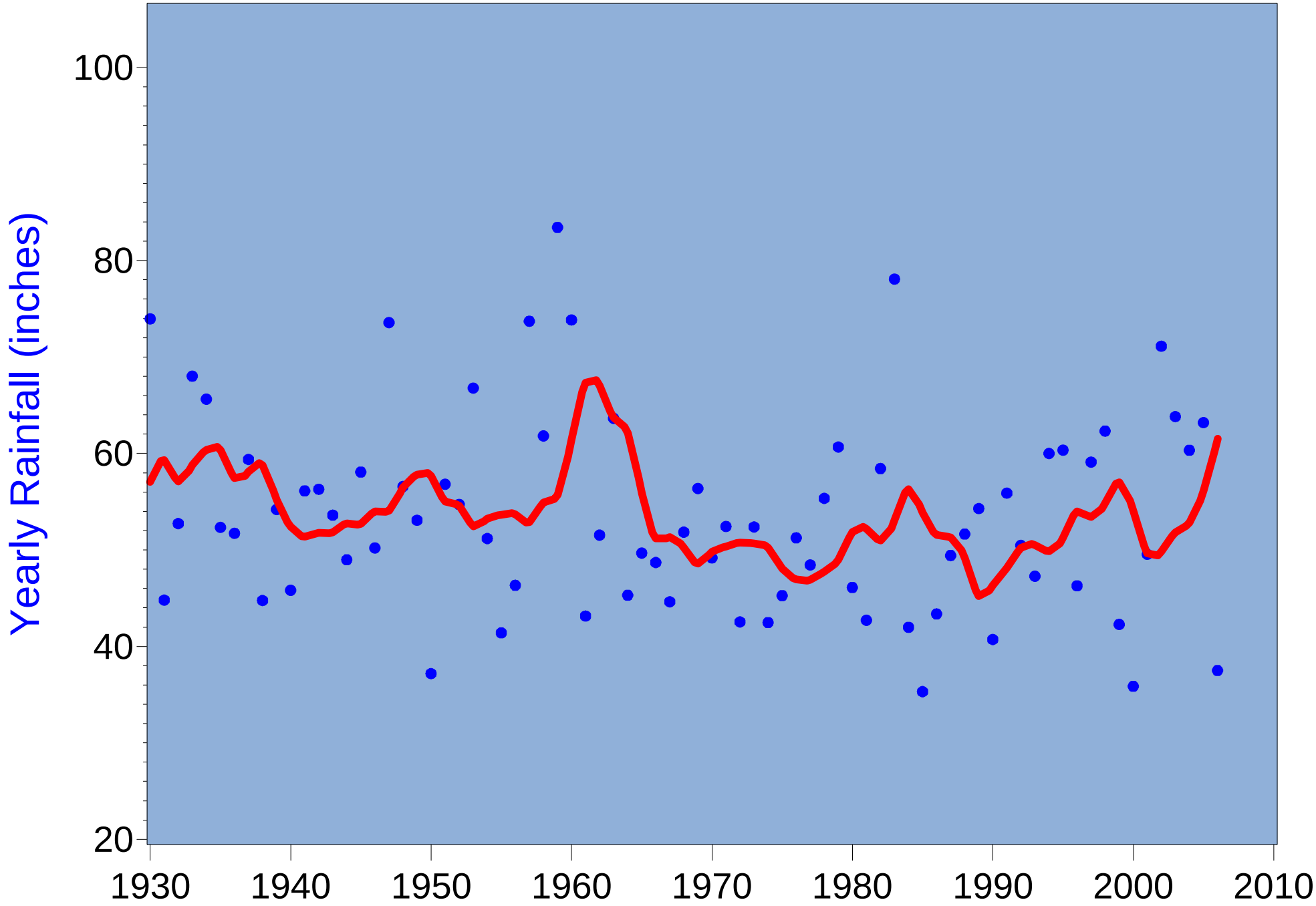


Figure 3.11 Yearly total and 5-year moving average rainfall at long-term Bartow NOAA gage (District R142), 1932-2006

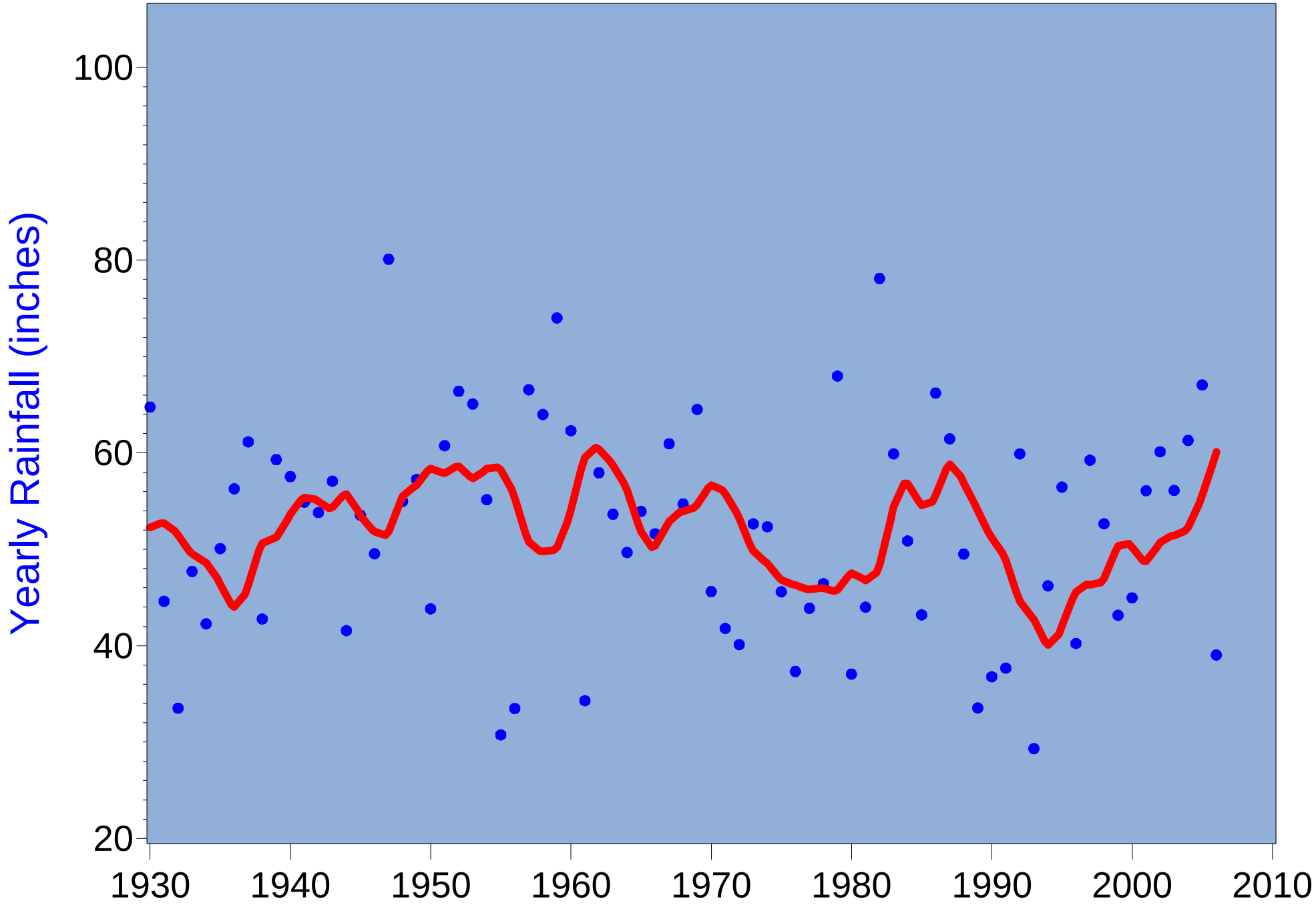


Figure 3.12 Yearly total and 5-year moving average rainfall at long-term Arcadia NOAA gage (District R148), 1932-2006

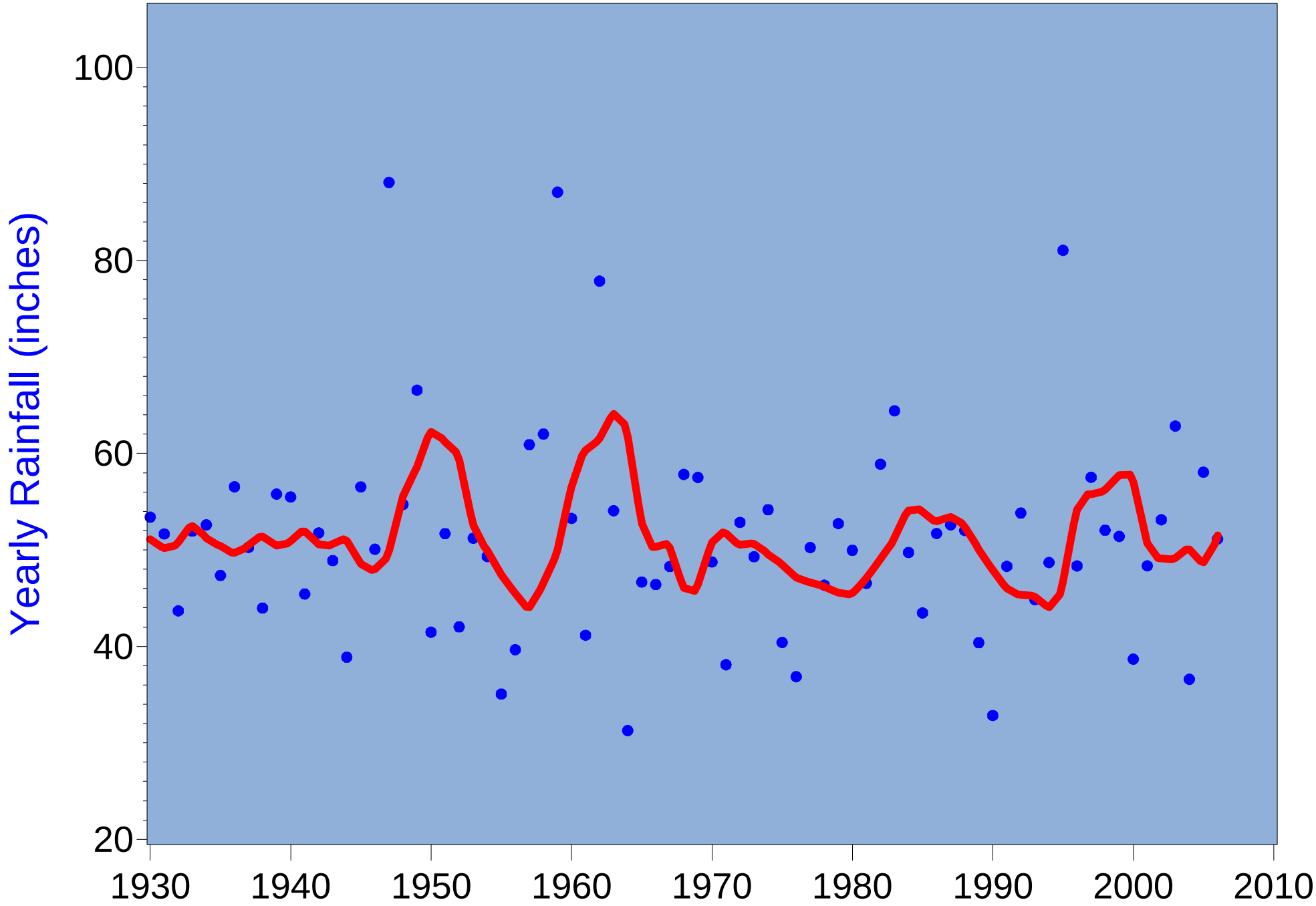


Figure 3.13 Yearly total and 5-year moving average rainfall at long-term Punta Gorda NOAA gage (District R255), 1932-2006

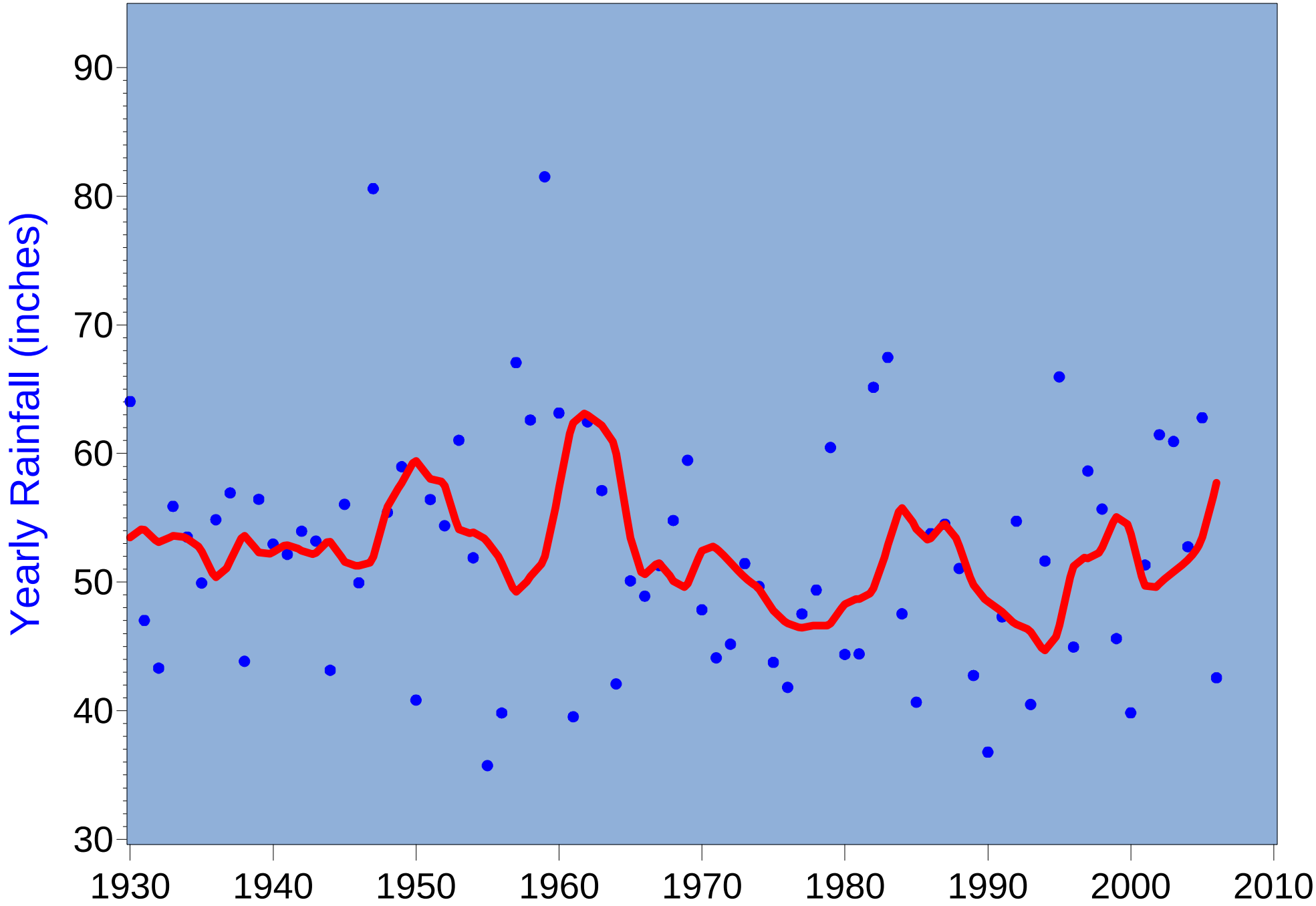


Figure 3.14 Yearly total and 5-year moving average rainfall for the average of the three Peace River watershed basin gages, 1932-2006

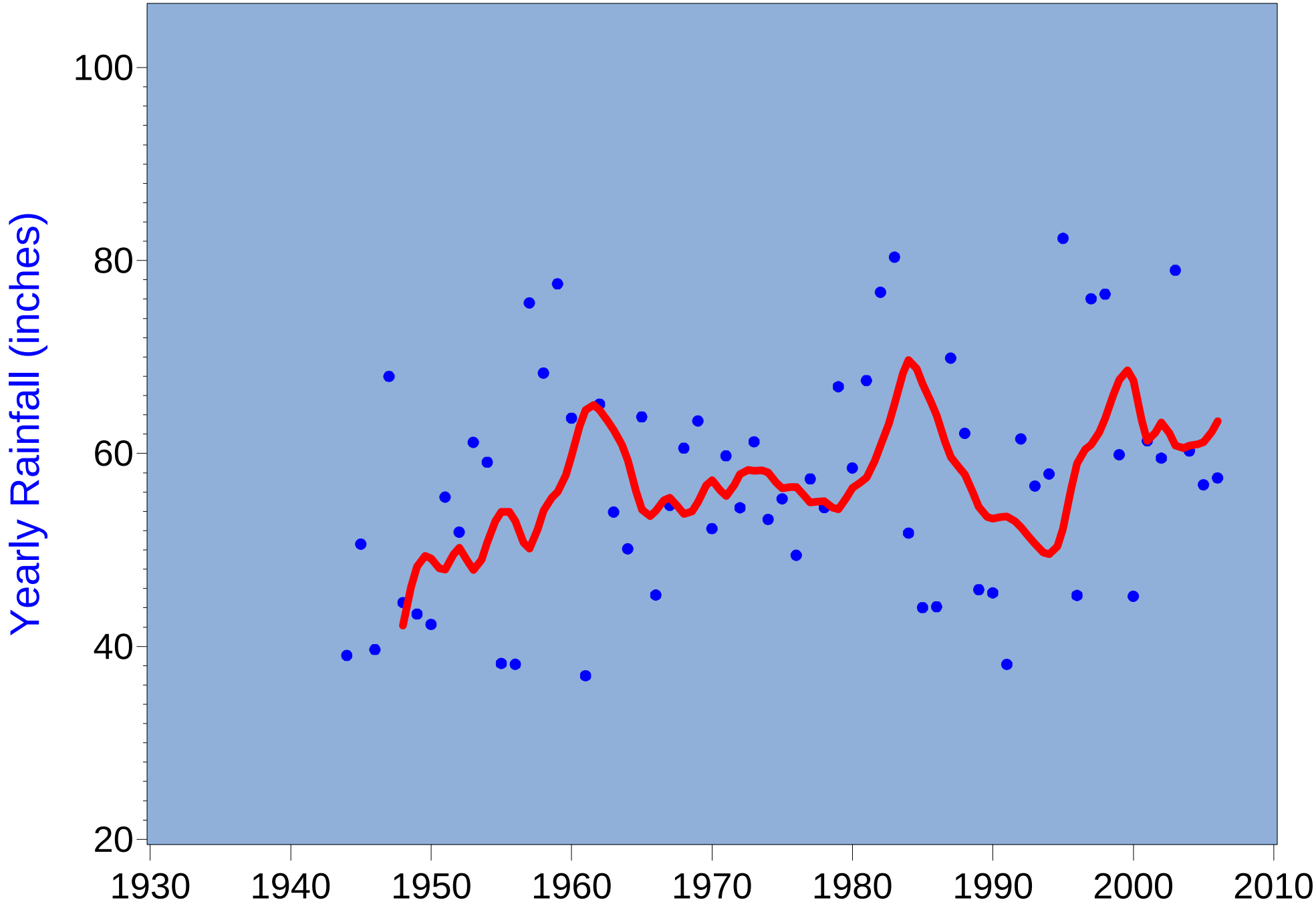


Figure 3.15 Yearly total and 5-year moving average rainfall at long-term Myakka NOAA gage (District R336), 1943-2004

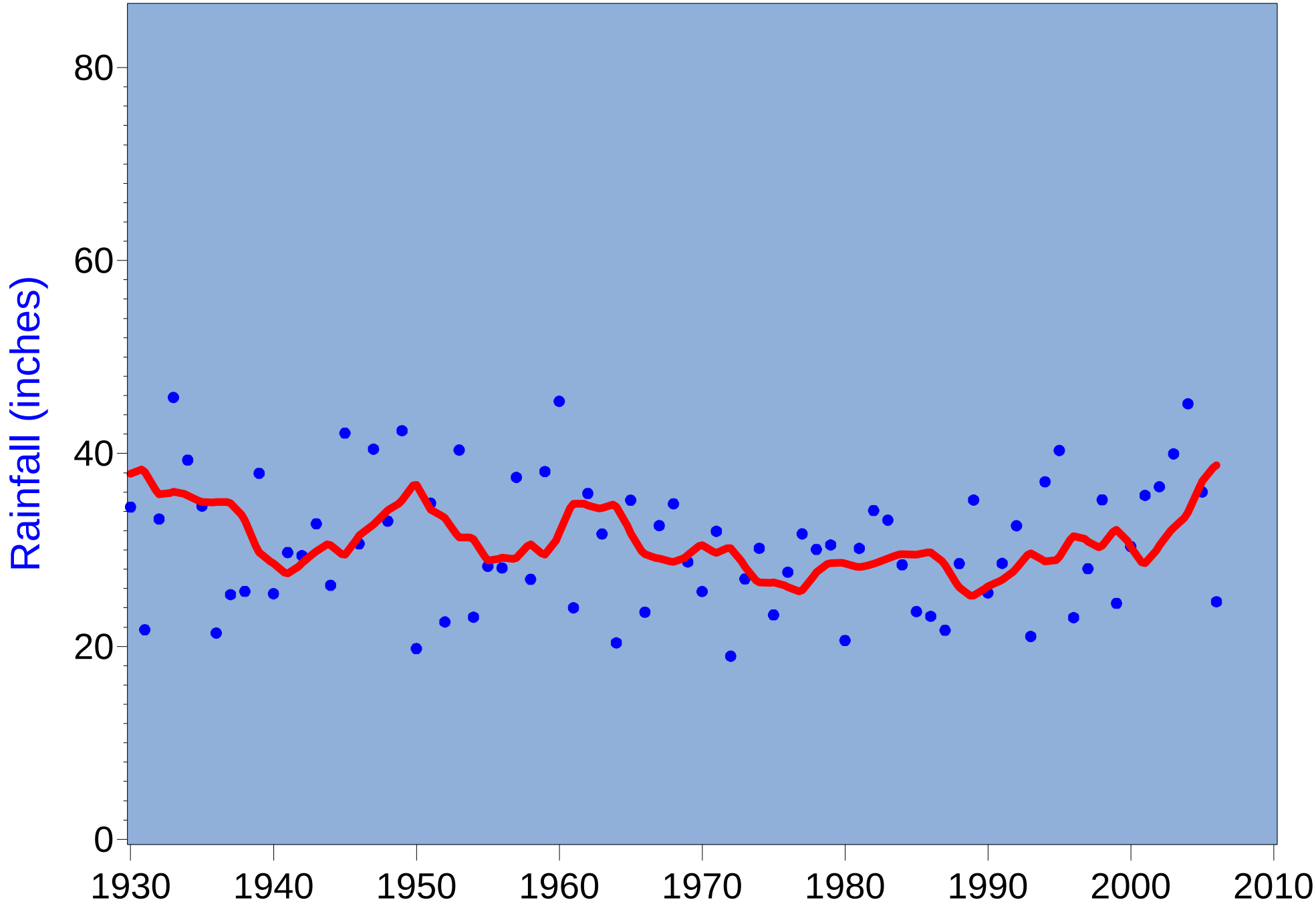


Figure 3.16 Yearly wet-season and 5-year moving average rainfall at long-term Bartow NOAA gage (District R142), 1932-2006

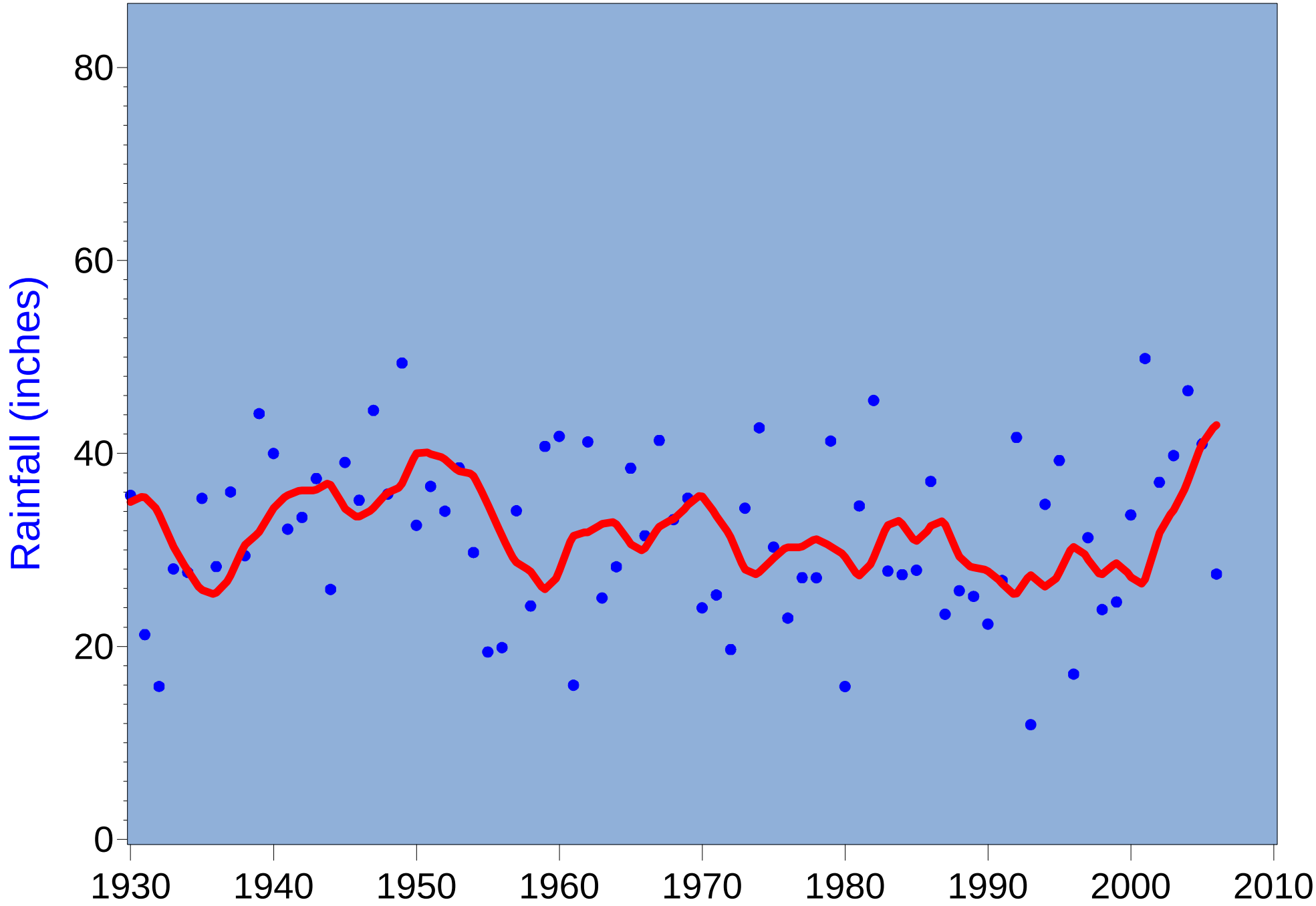


Figure 3.17 Yearly wet-season and 5-year moving average rainfall at long-term Arcadia NOAA gage (District R148), 1932-2006

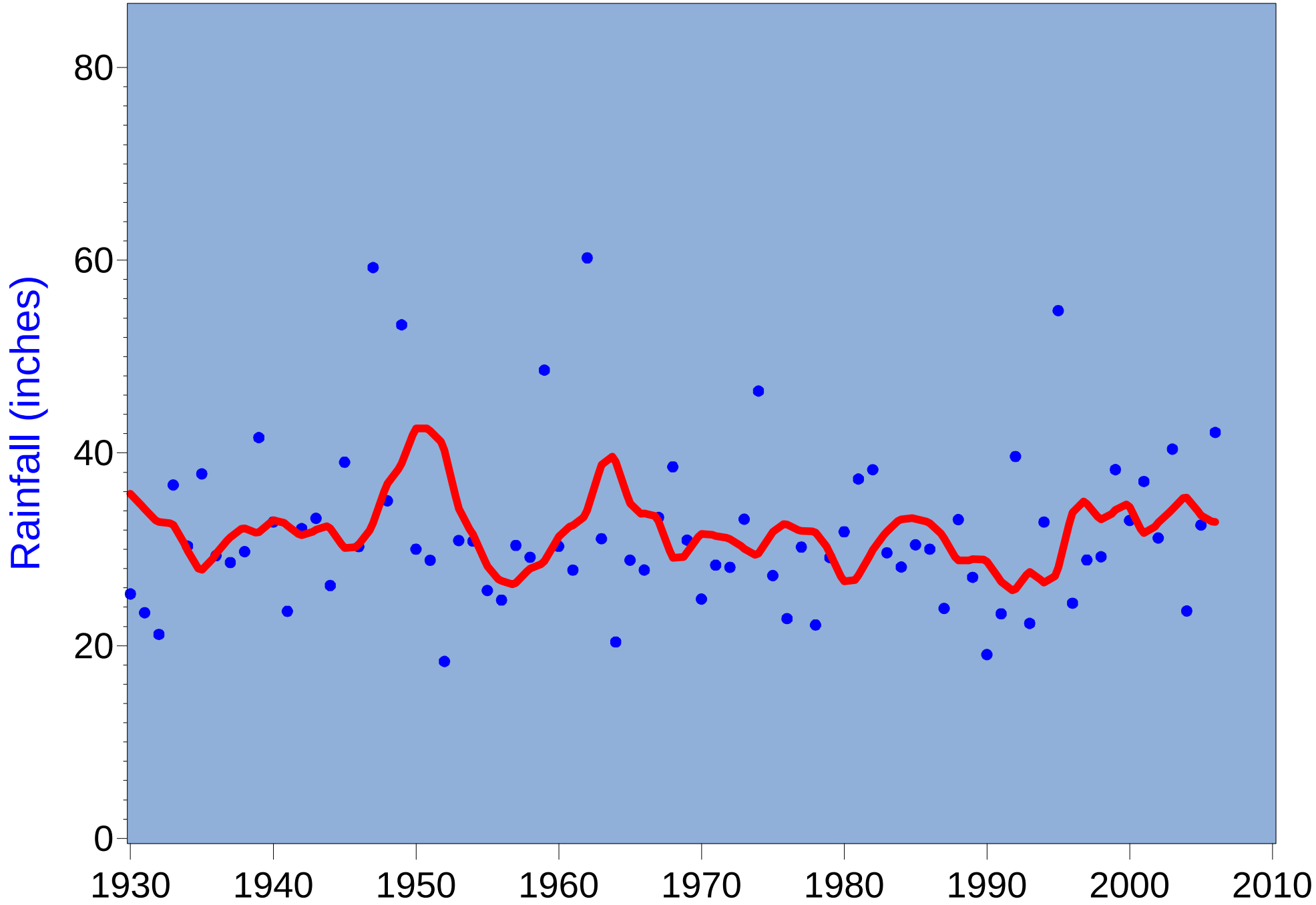


Figure 3.18 Yearly wet-season and 5-year moving average rainfall at long-term Punta Gorda NOAA gage (District R255), 1932-2006

Table 3.8
Summary of Time Series Graphics for 1976-2006 Period for each Gage

USGS ID	Gage Identification	Time Period of Data		P0 (Minimum)	P10	P25	P50 (Median)
Peace River Watershed							
2294650	Peace River at Bartow	11/01/76	12/31/06	Figure 3.160	Figure 3.173	Figure 3.186	Figure 3.199
2294898	Peace River at Fort Meade	11/01/76	12/31/06	Figure 3.161	Figure 3.174	Figure 3.187	Figure 3.200
2295420	Payne Creek near Bowling Green	11/01/76	12/31/06	Figure 3.162	Figure 3.175	Figure 3.188	Figure 3.201
2295637	Peace River at Zolfo Springs	11/01/76	12/31/06	Figure 3.163	Figure 3.176	Figure 3.189	Figure 3.202
2296500	Charlie Creek near Gardner	11/01/76	12/31/06	Figure 3.164	Figure 3.177	Figure 3.190	Figure 3.203
2296750	Peace River at Arcadia	11/01/76	12/31/06	Figure 3.165	Figure 3.178	Figure 3.191	Figure 3.204
2297100	Joshua Creek at Nocatee	11/01/76	12/31/06	Figure 3.166	Figure 3.179	Figure 3.192	Figure 3.205
2297310	Horse Creek near Arcadia	11/01/76	12/31/06	Figure 3.167	Figure 3.180	Figure 3.193	Figure 3.206
	Total Gaged Flow at Facility	11/01/76	12/31/06	Figure 3.168	Figure 3.181	Figure 3.194	Figure 3.207
2298123	Prairie Creek near Fort Ogden	11/01/76	12/31/06	Figure 3.169	Figure 3.182	Figure 3.195	Figure 3.208
2298202	Shell Creek near Punta Gorda	11/01/76	12/31/06	Figure 3.170	Figure 3.183	Figure 3.196	Figure 3.209
	Total Gaged Flow to Harbor	11/01/76	12/31/06	Figure 3.171	Figure 3.184	Figure 3.197	Figure 3.210
Reference Watershed							
2298830	Myakka River near Sarasota	11/01/76	12/31/06	Figure 3.172	Figure 3.185	Figure 3.198	Figure 3.211

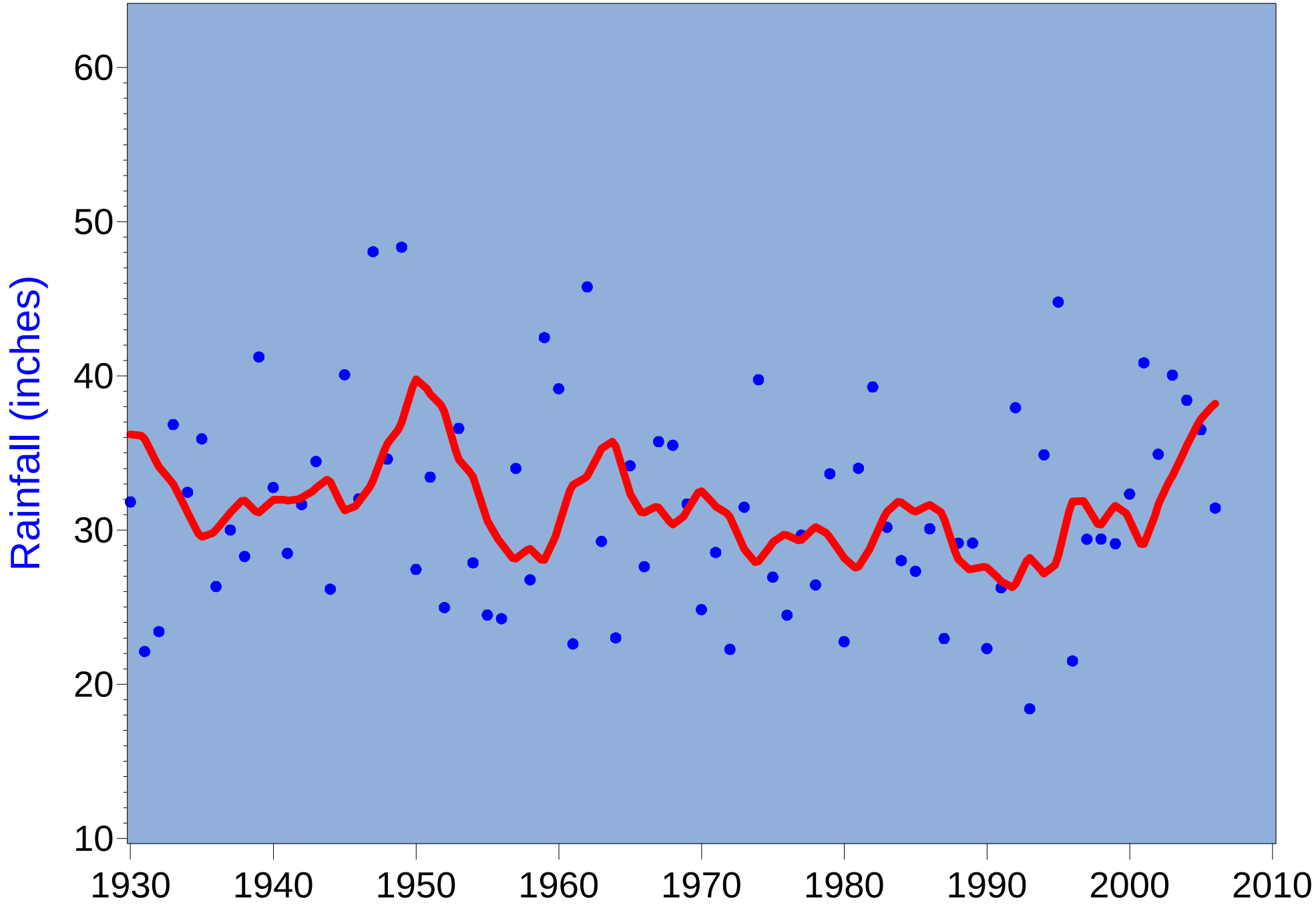


Figure 3.19 Yearly wet-season and 5-year moving average rainfall for the average of the three Peace River watershed basin gages, 1932-2006

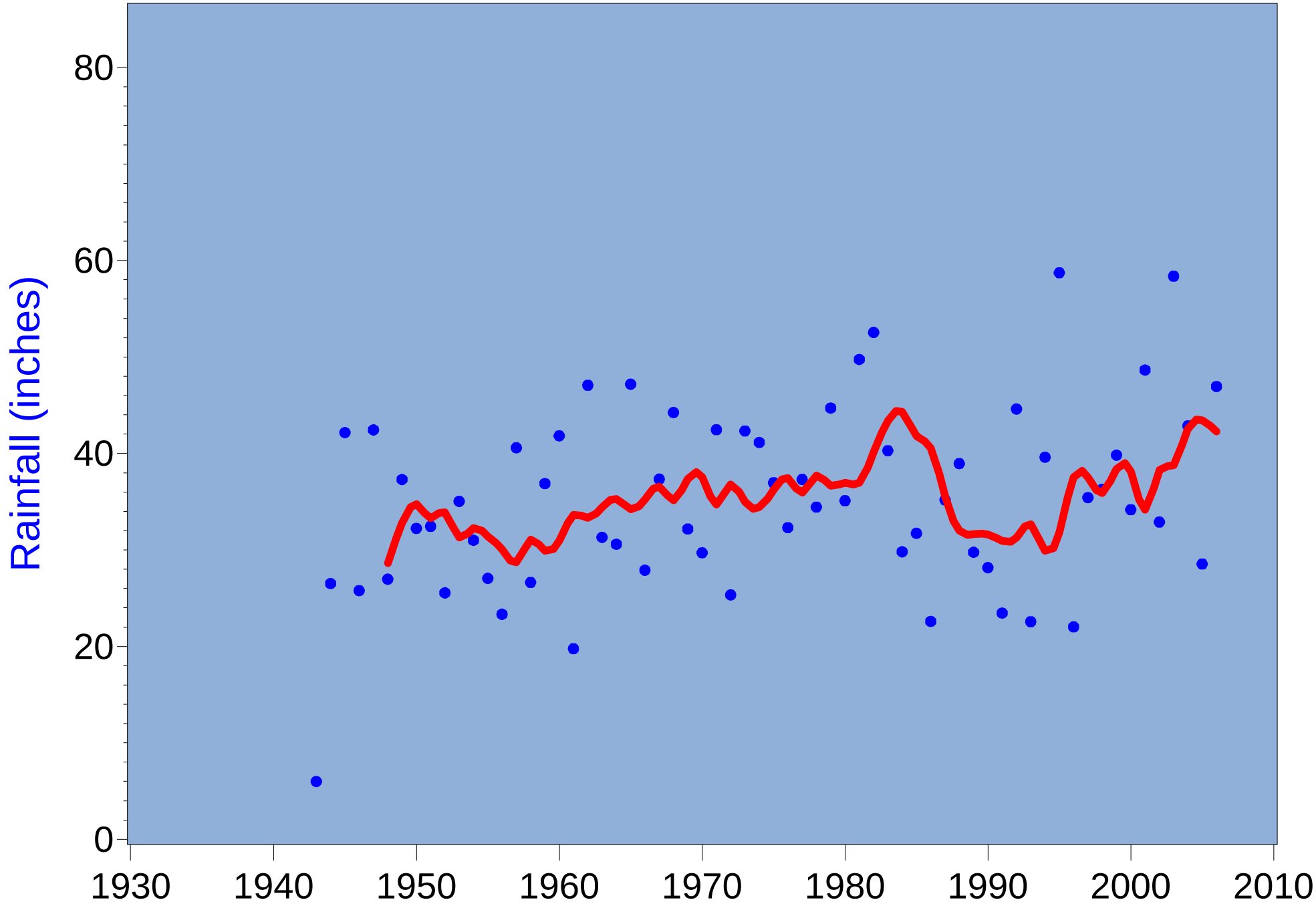


Figure 3.20 Yearly wet-season and 5-year moving average rainfall at long-term Myakka NOAA gage (District R336), 1943-2006

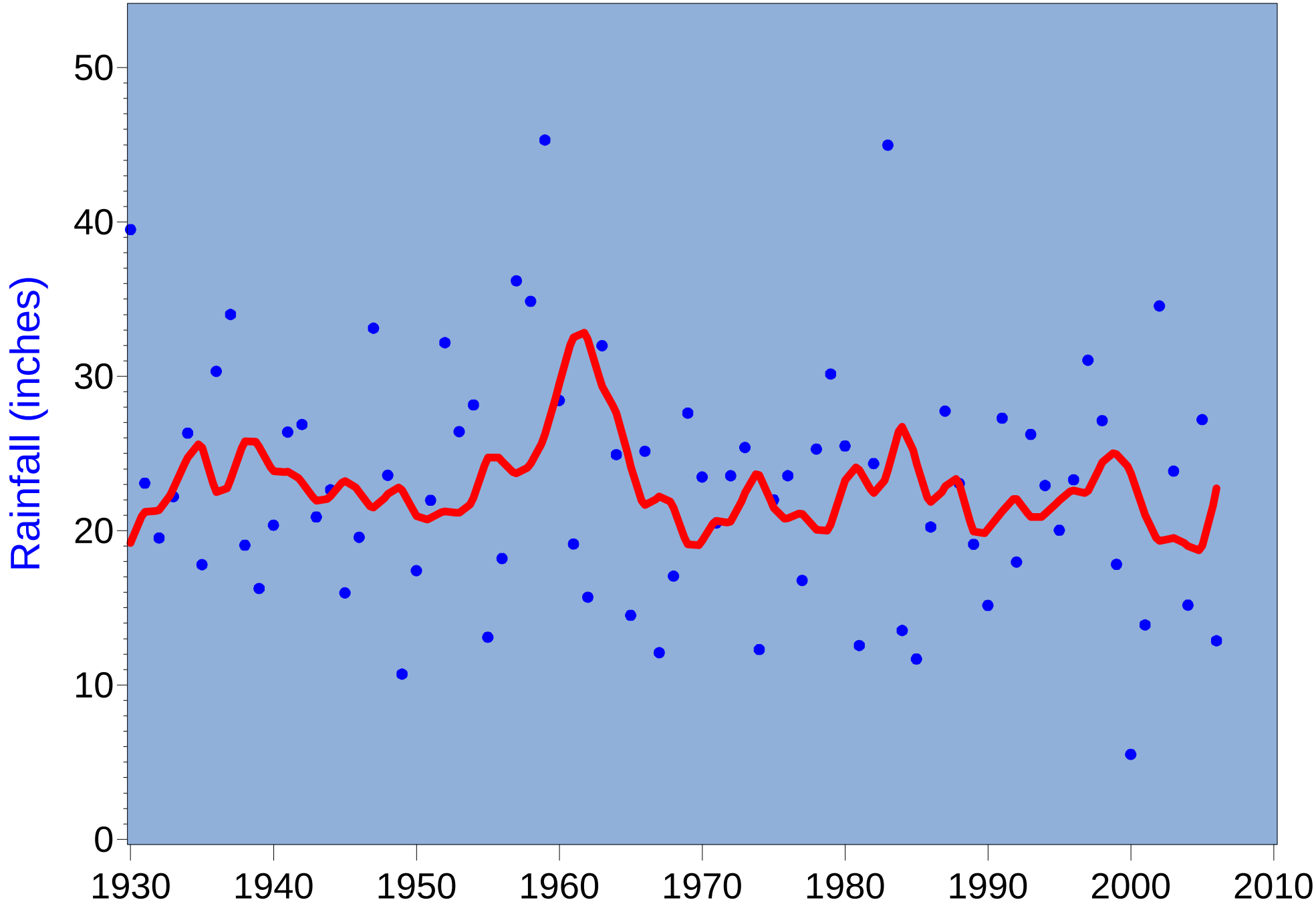


Figure 3.21 Yearly dry-season and 5-year moving average rainfall at long-term Bartow NOAA gage (District R142), 1932-2006

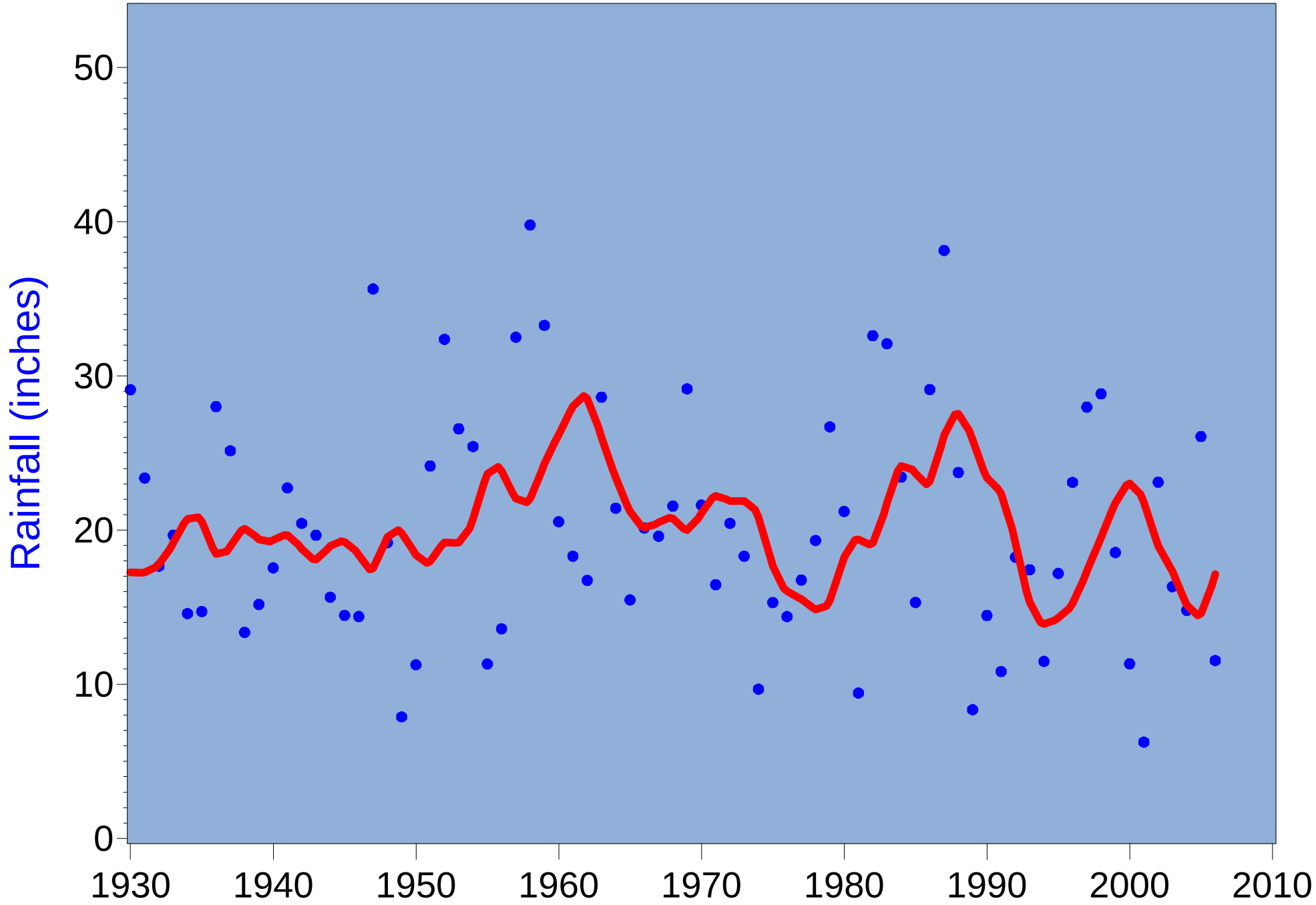


Figure 3.22 Yearly dry-season and 5-year moving average rainfall at long-term Arcadia NOAA gage (District R148), 1932-2006

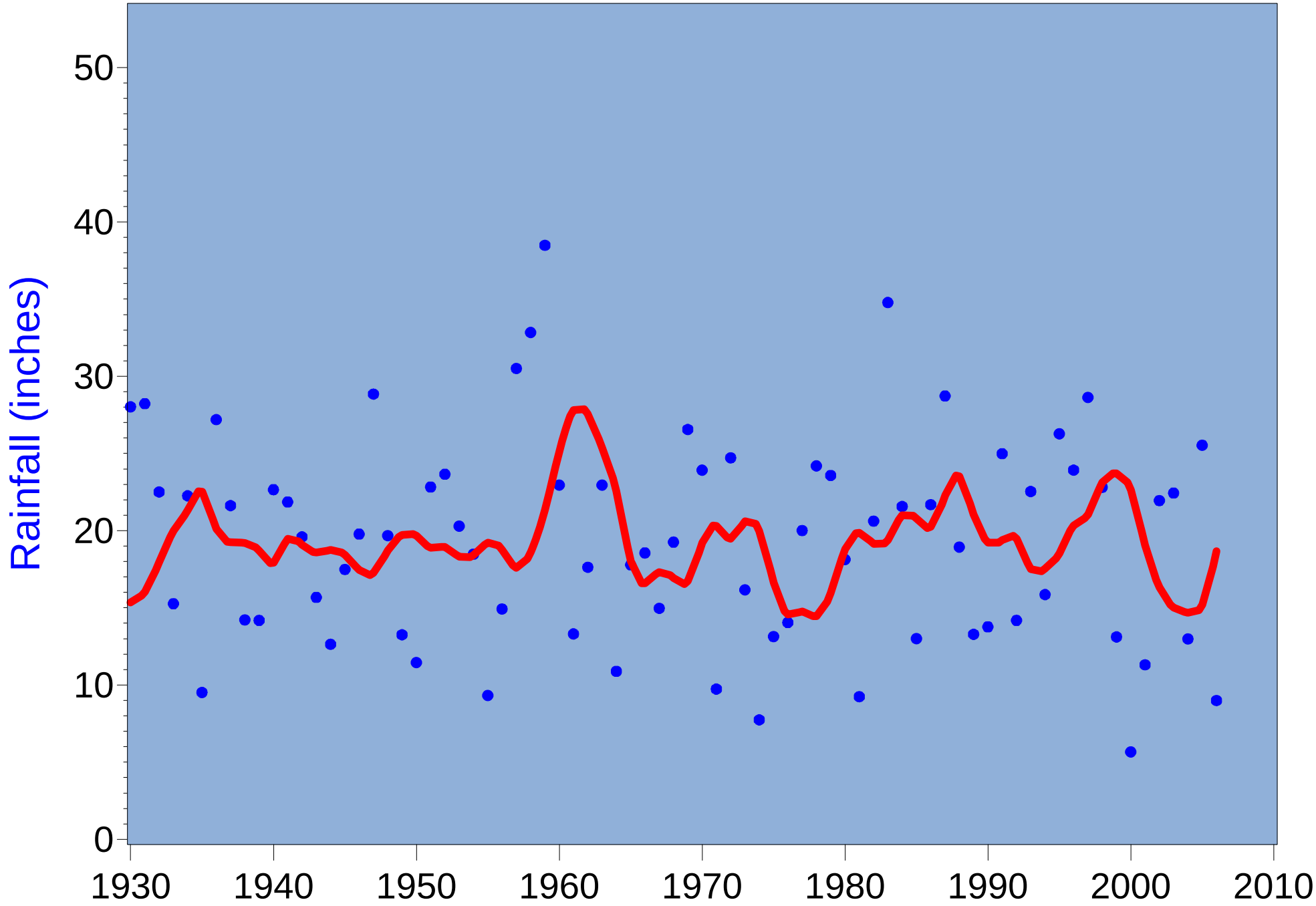


Figure 3.23 Yearly dry-season and 5-year moving average rainfall at long-term Punta Gorda NOAA gage (District R255), 1932-2006)

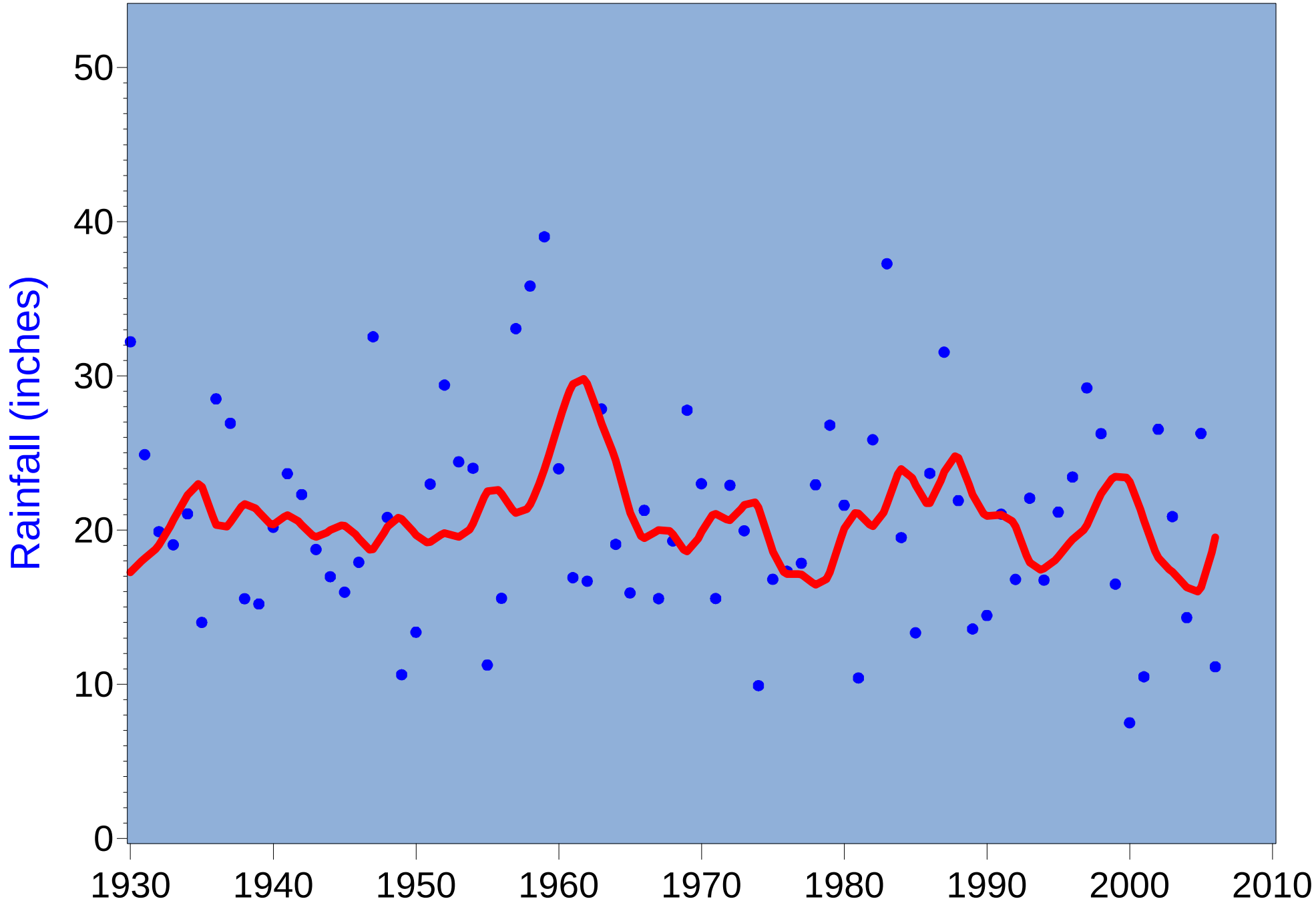


Figure 3.24 Yearly dry-season and 5-year moving average rainfall for the average of the three Peace River watershed basin gages, 1943-2006

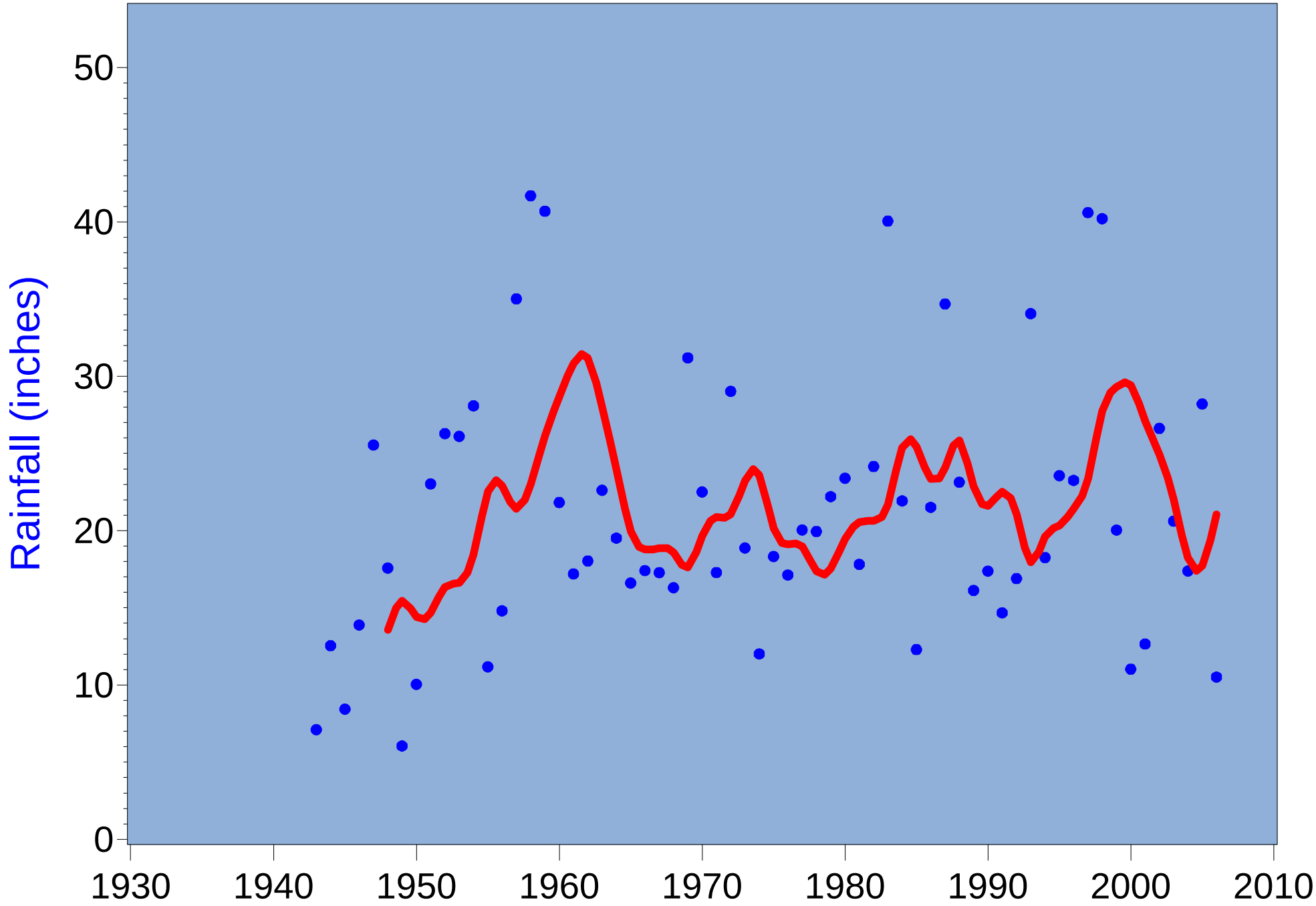


Figure 3.25 Yearly dry-season and 5-year moving average rainfall at long-term Myakka NOAA gage (District R336), 1943-2006

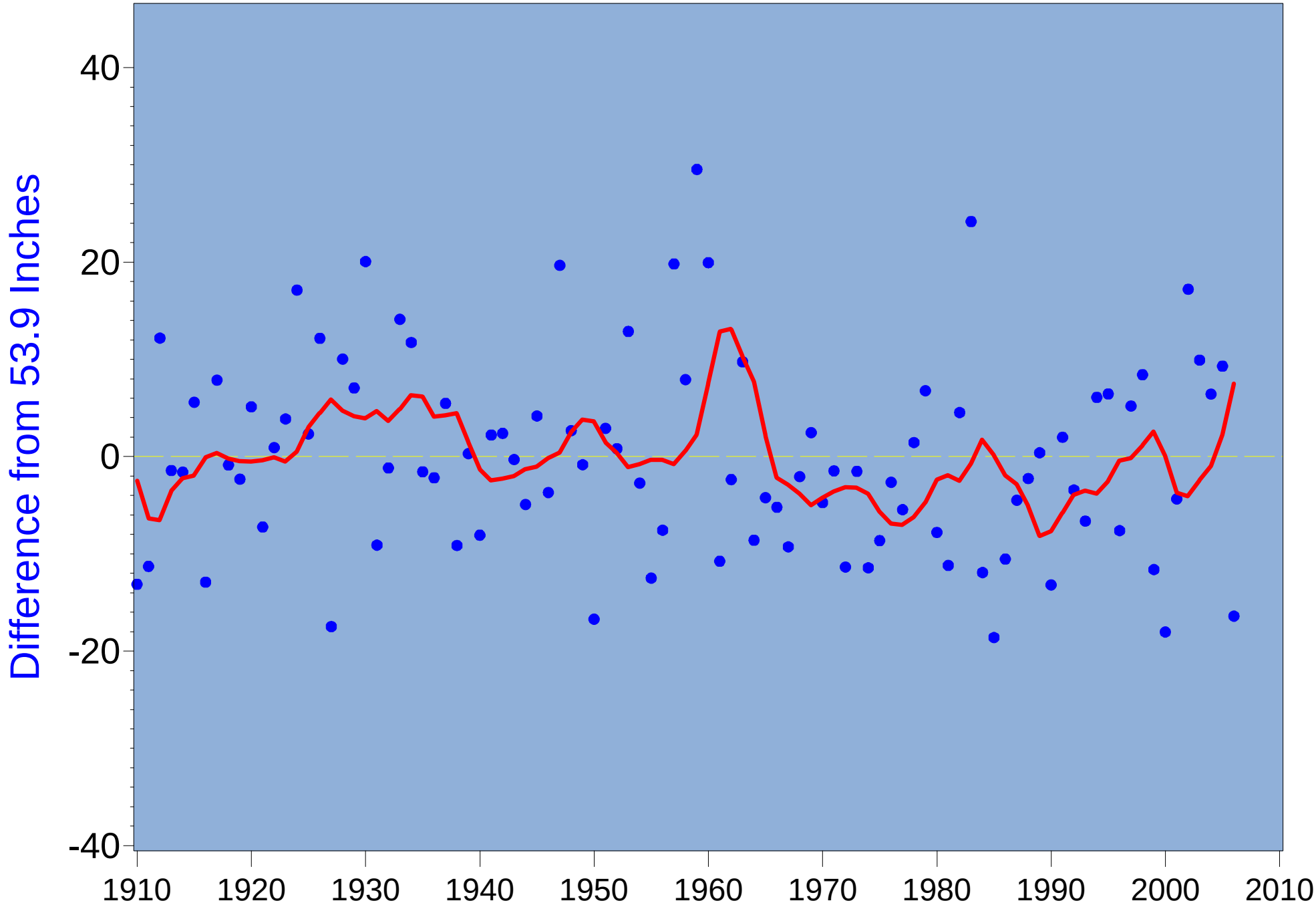


Figure 3.26 Yearly and 5-year moving average annual rainfall at long-term Bartow NOAA gage (District R142) 1915-2006)

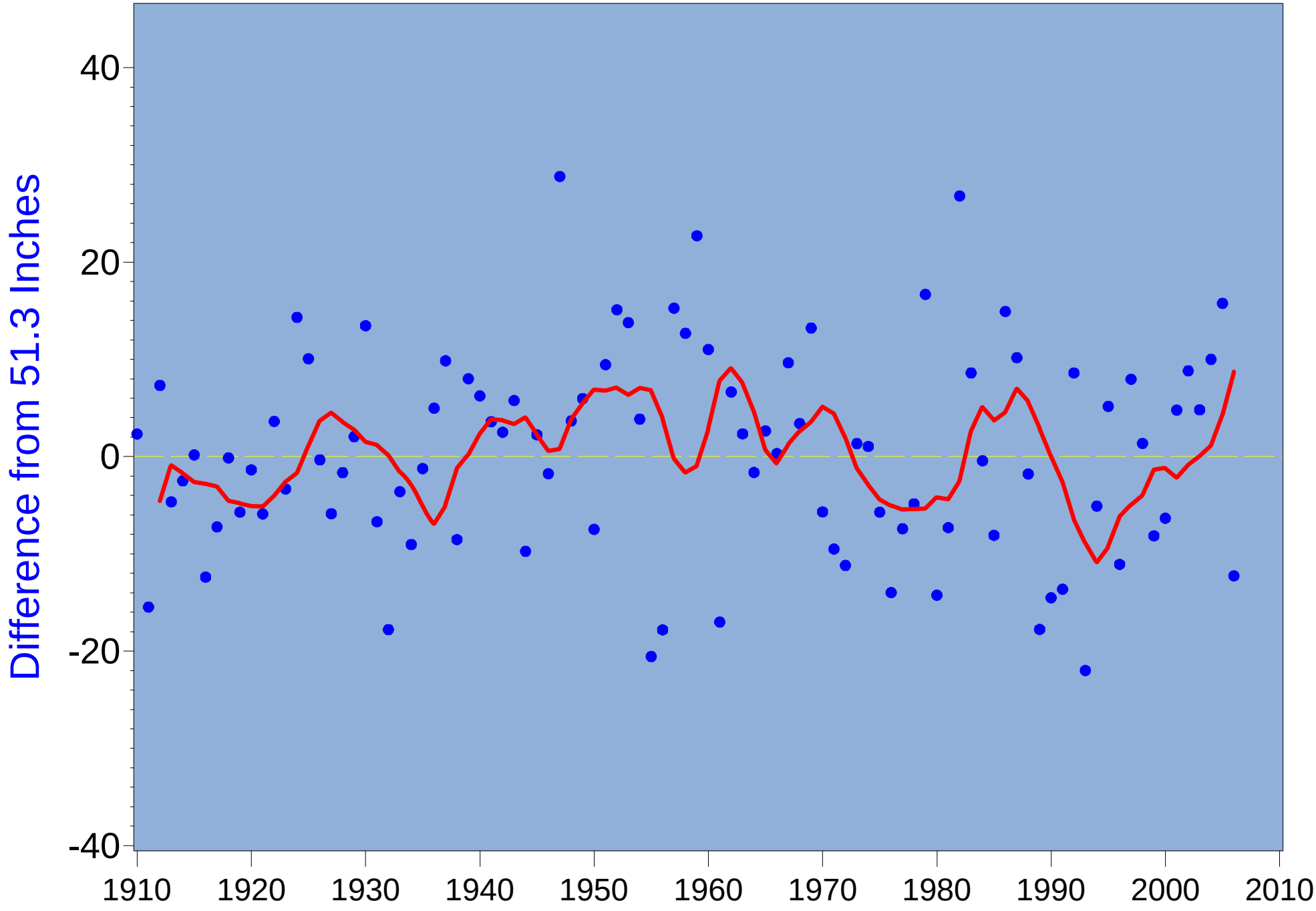


Figure 3.27 Yearly and 5-year moving average annual rainfall at long-term Arcadia NOAA gage (District R148) 1915-2006)

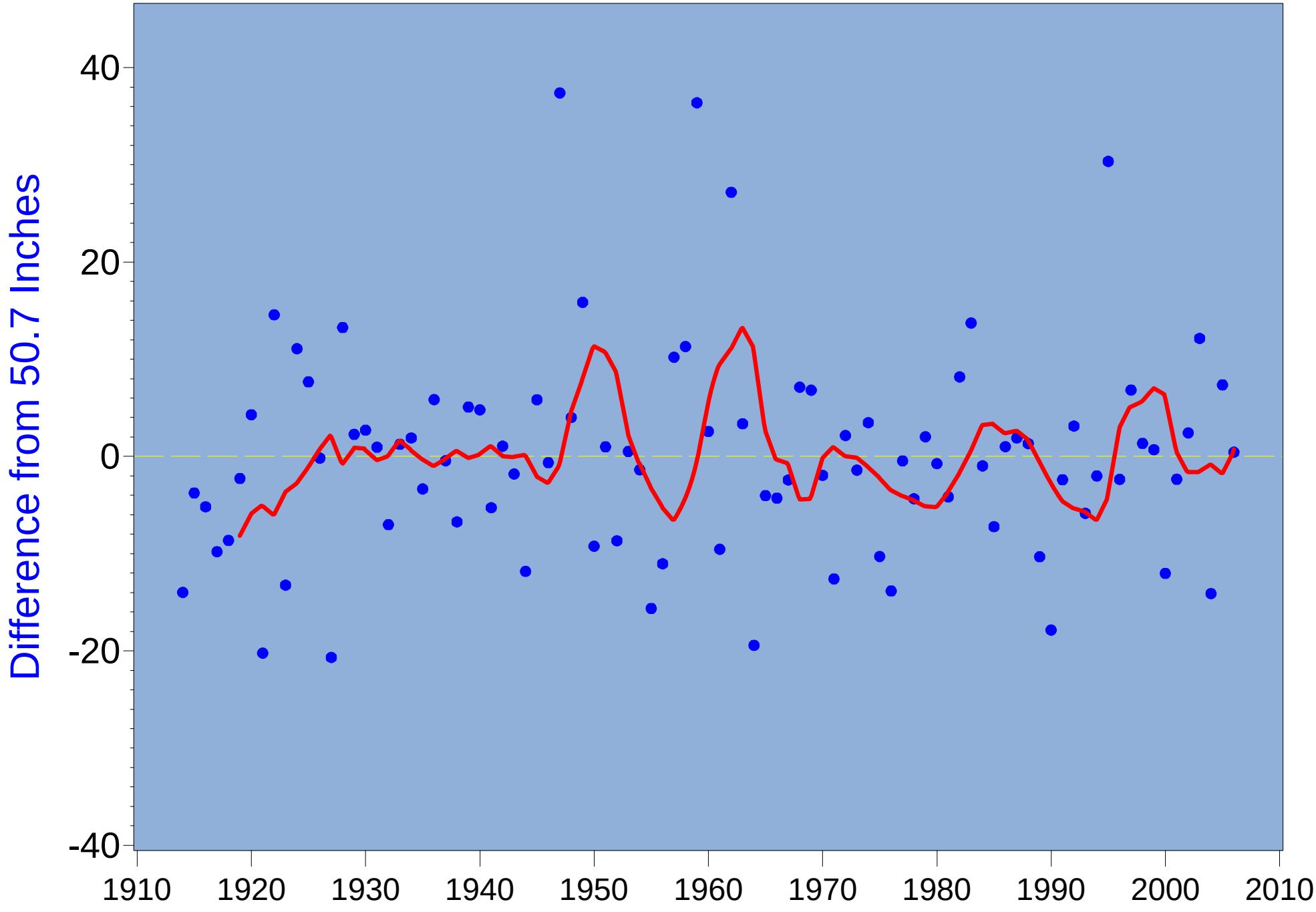


Figure 3.28 Yearly and 5-year moving average annual rainfall at long-term Punta Gorda NOAA gage (District R255) 1915-2006)

Table 3.8 (continued)
Summary of Time Series Graphics for 1976-2006 for each Gage

USGS ID	Gage Identification	Time Period of Data		P75	P90	P100 (Maximum)	Mean
Peace River Watershed							
2294650	Peace River at Bartow	11/01/76	12/31/06	Figure 3.212	Figure 3.225	Figure 3.238	Figure 3.251
2294898	Peace River at Fort Meade	11/01/76	12/31/06	Figure 3.213	Figure 3.226	Figure 3.239	Figure 3.252
2295420	Payne Creek near Bowling Green	11/01/76	12/31/06	Figure 3.214	Figure 3.227	Figure 3.240	Figure 3.253
2295637	Peace River at Zolfo Springs	11/01/76	12/31/06	Figure 3.215	Figure 3.228	Figure 3.241	Figure 3.254
2296500	Charlie Creek near Gardner	11/01/76	12/31/06	Figure 3.216	Figure 3.229	Figure 3.242	Figure 3.255
2296750	Peace River at Arcadia	11/01/76	12/31/06	Figure 3.217	Figure 3.230	Figure 3.243	Figure 3.256
2297100	Joshua Creek at Nocatee	11/01/76	12/31/06	Figure 3.218	Figure 3.231	Figure 3.244	Figure 3.257
2297310	Horse Creek near Arcadia	11/01/76	12/31/06	Figure 3.219	Figure 3.232	Figure 3.245	Figure 3.258
	Total Gaged Flow at Facility	11/01/76	12/31/06	Figure 3.220	Figure 3.233	Figure 3.246	Figure 3.259
2298123	Prairie Creek near Fort Ogden	11/01/76	12/31/06	Figure 3.221	Figure 3.234	Figure 3.247	Figure 3.260
2298202	Shell Creek near Punta Gorda	11/01/76	12/31/06	Figure 3.222	Figure 3.235	Figure 3.248	Figure 3.261
	Total Gaged Flow to Harbor	11/01/76	12/31/06	Figure 3.223	Figure 3.236	Figure 3.249	Figure 3.262
Reference Watershed							
2298830	Myakka River near Sarasota	11/01/76	12/31/06	Figure 3.224	Figure 3.237	Figure 3.250	Figure 3.263

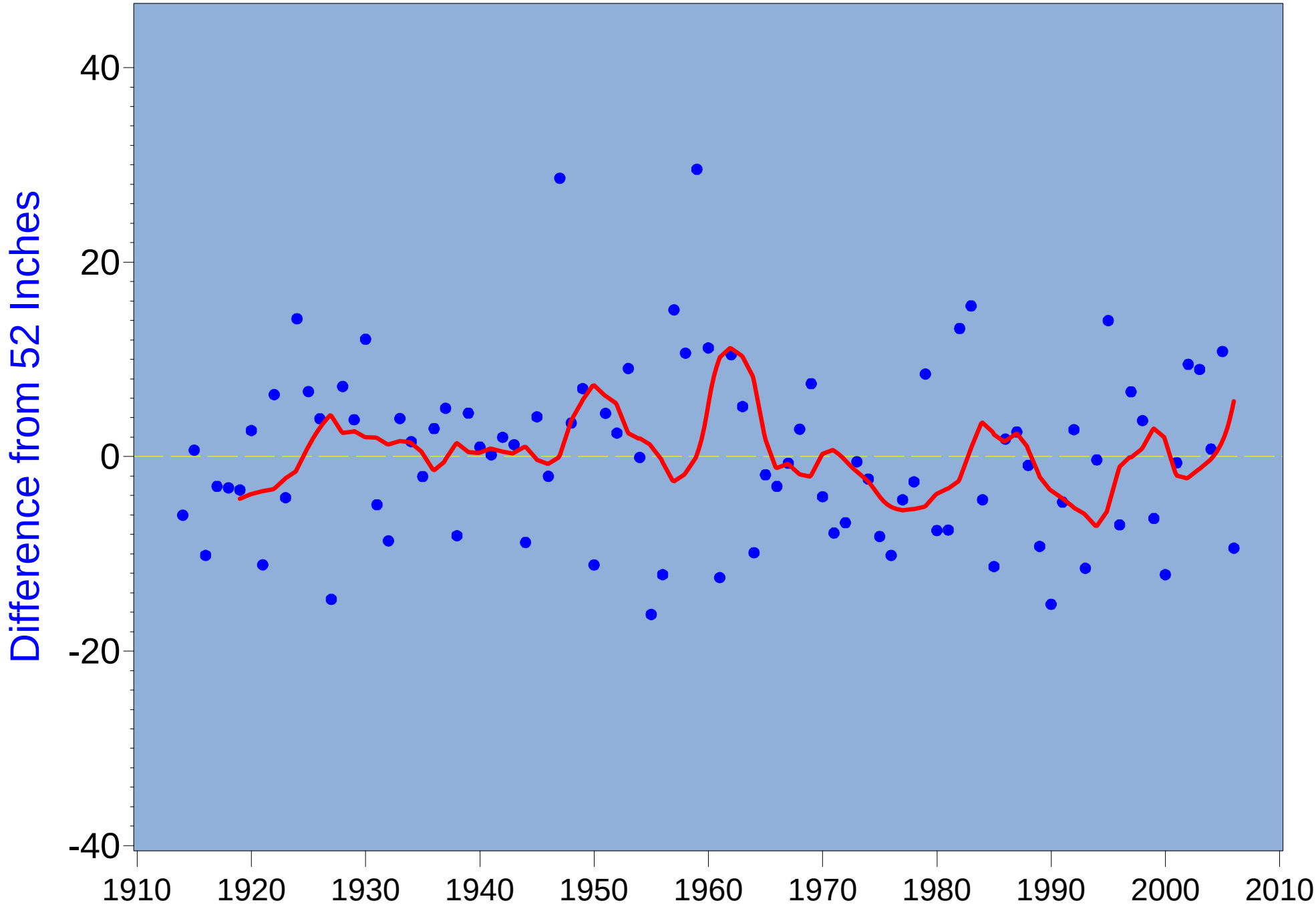


Figure 3.29 Yearly and 5-year moving average of Bartow, Arcadia and Punta Gorda average anual rainfall (1915-2006)

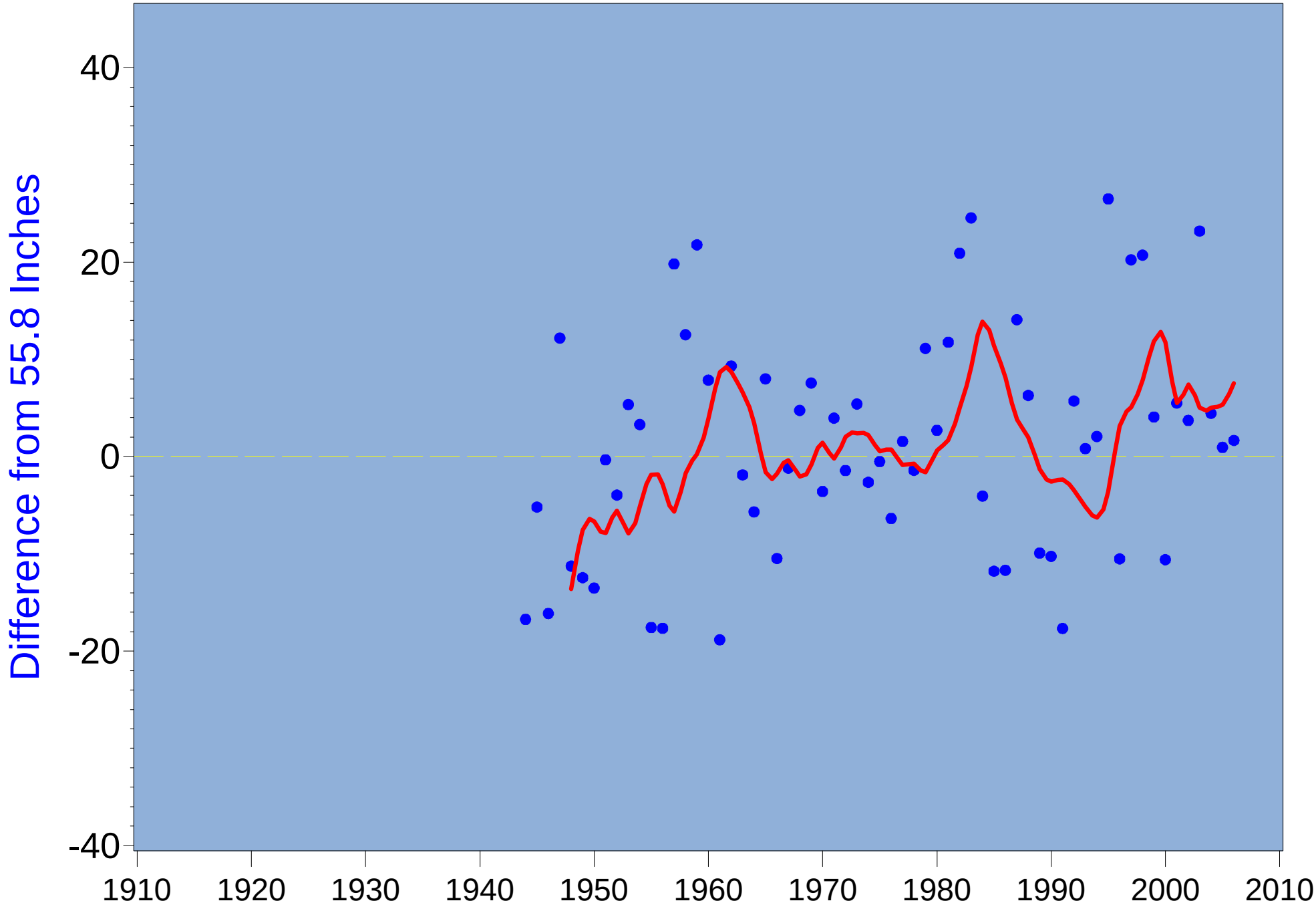


Figure 3.30 Yearly and 5-year moving average annual rainfall at long-term Myakka NOAA gage (District R336) 1943-2006)

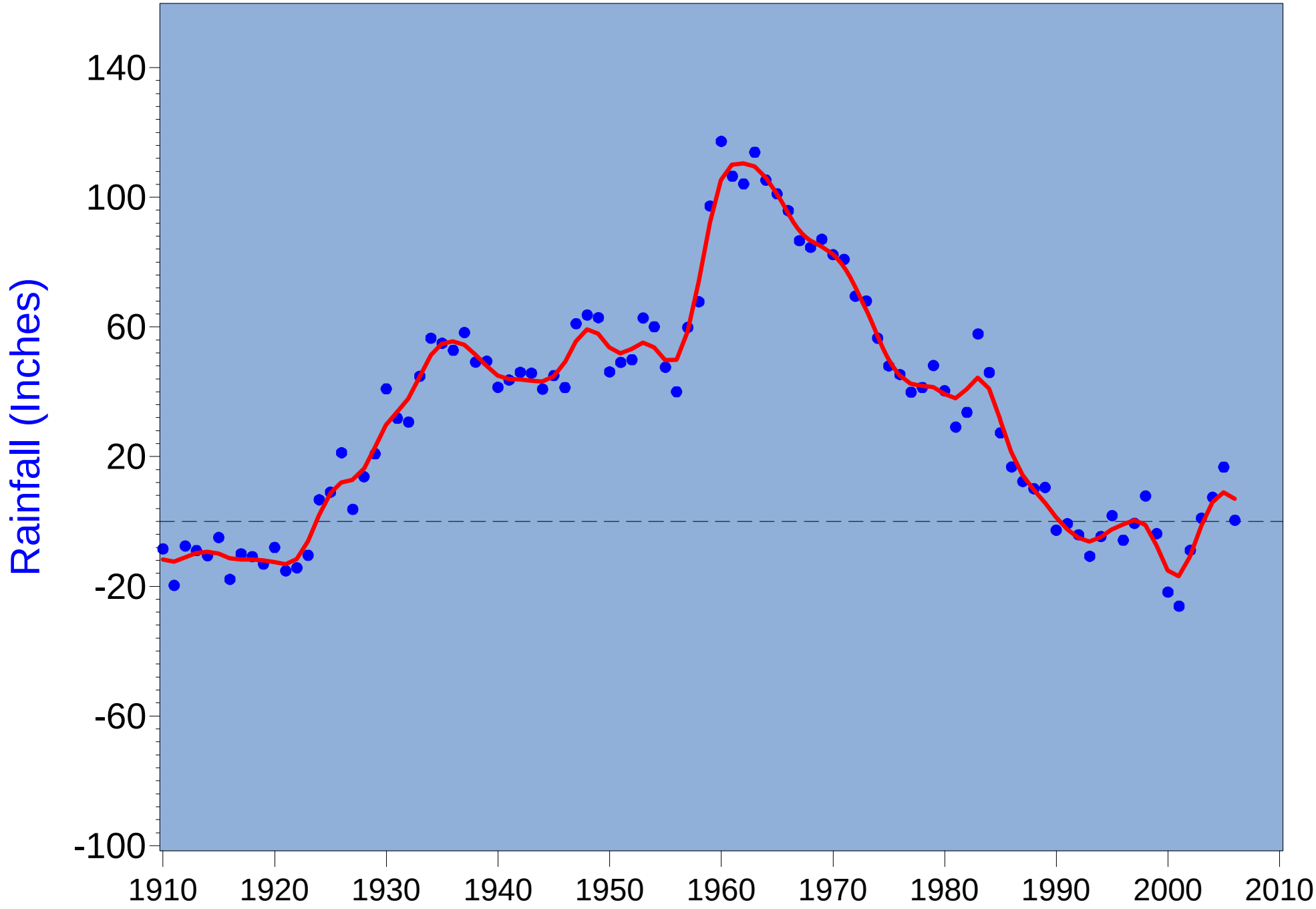


Figure 3.31 Long-term cumulative annual rainfall above 53.9 inches at Bartow NOAA gage (District R142) 1915-2006

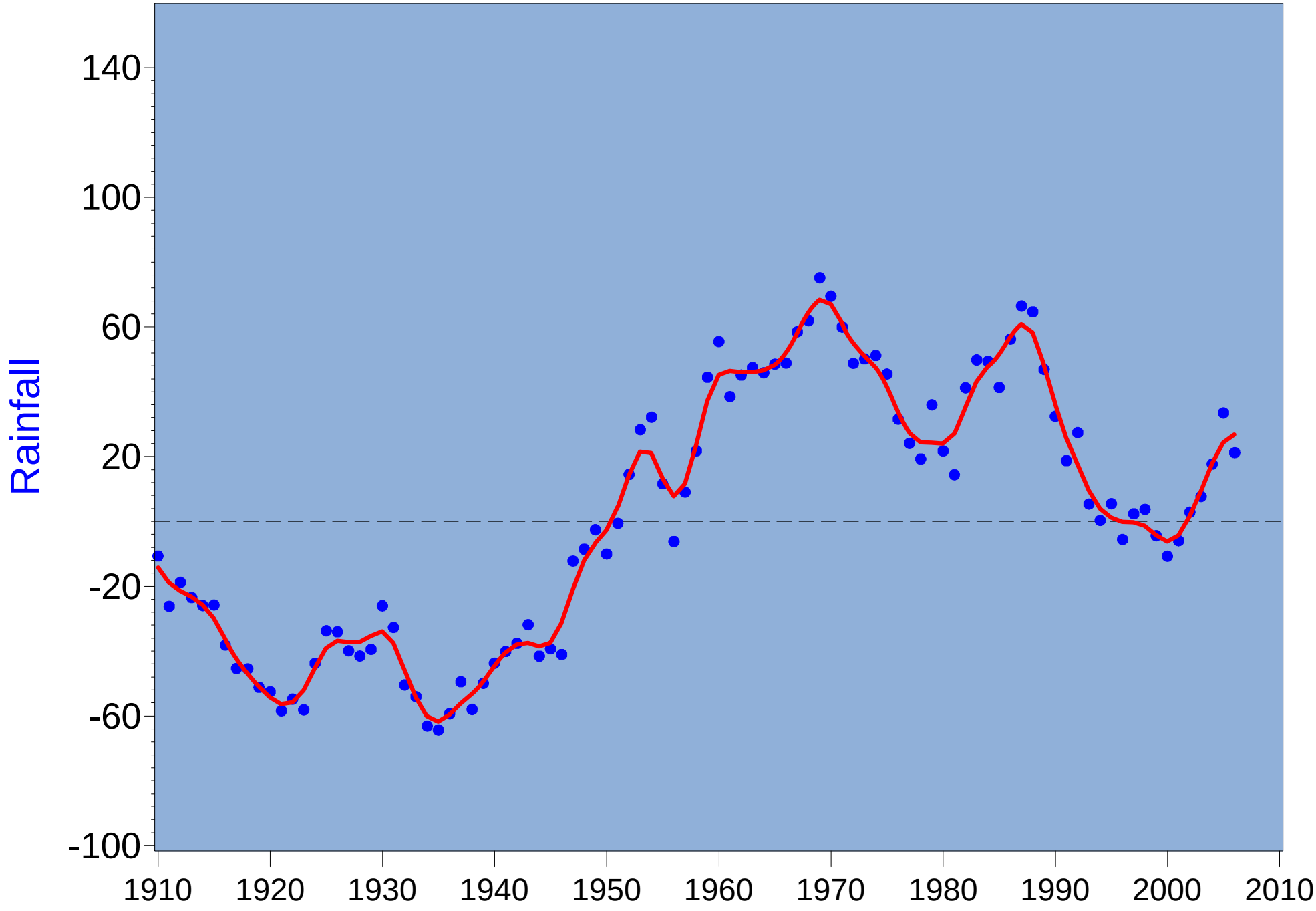


Figure 3.32 Long-term cumulative annual rainfall above 51.3 inches at long-term Arcadia NOAA gage (District R148) 1915-2006

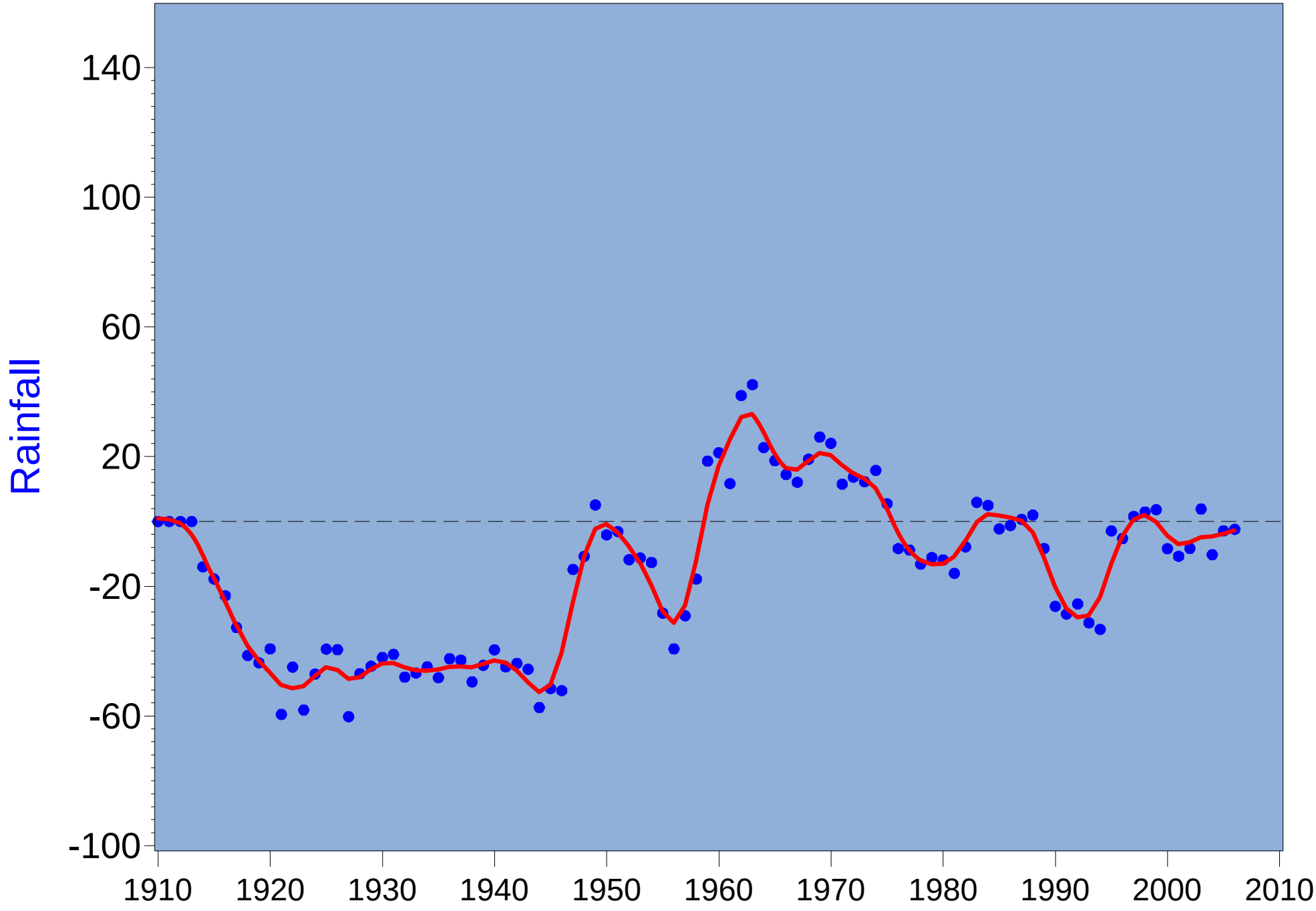


Figure 3.33 Long-term cumulative annual rainfall above 50.7 inches at long-term Punta Gorda NOAA gage (District R255) 1915-2006

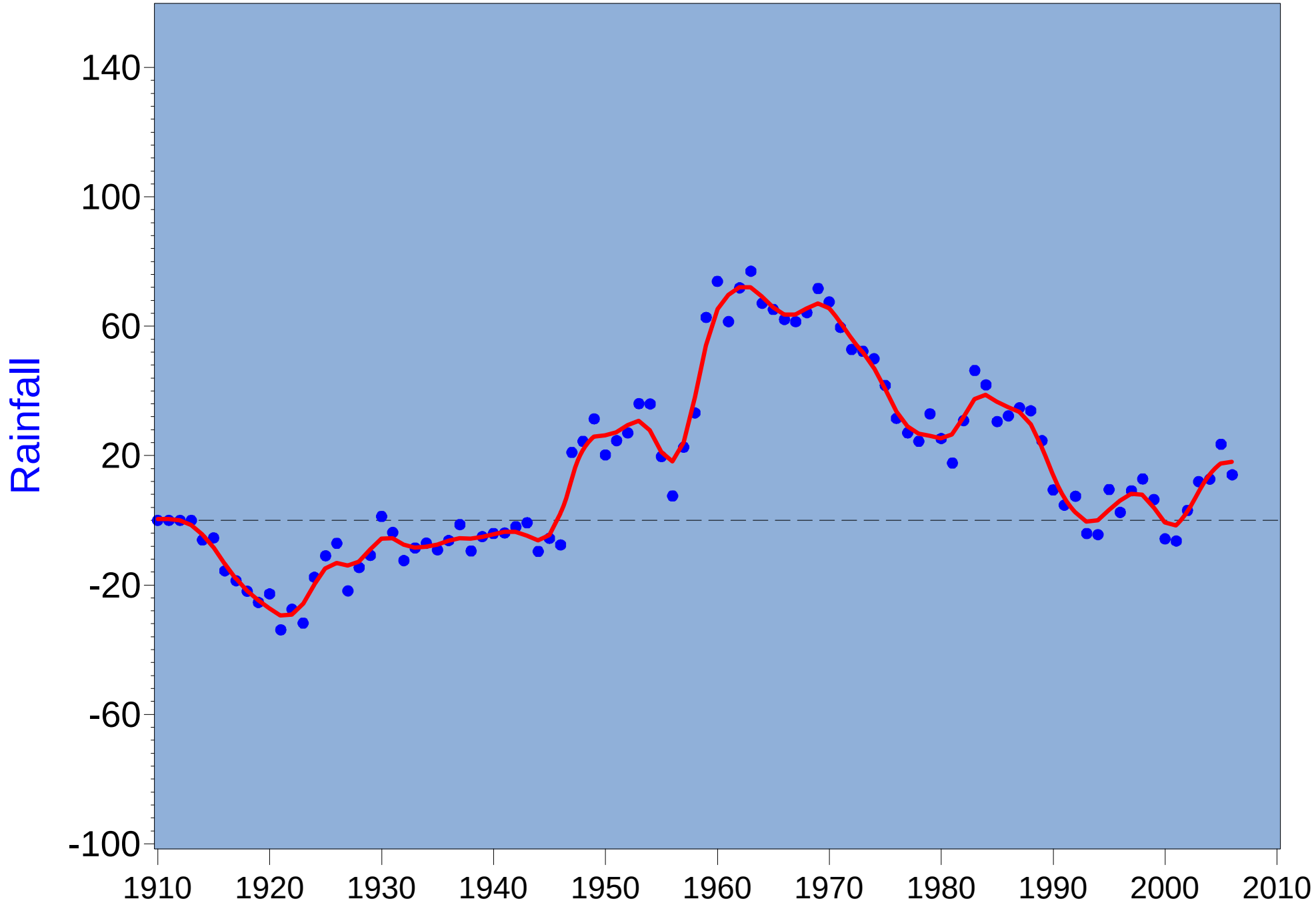


Figure 3.34 Long-term cumulative annual rainfall above 52.0 inches of Bartow, Arcadia and Punta Gorda average rainfall (1915-2006)

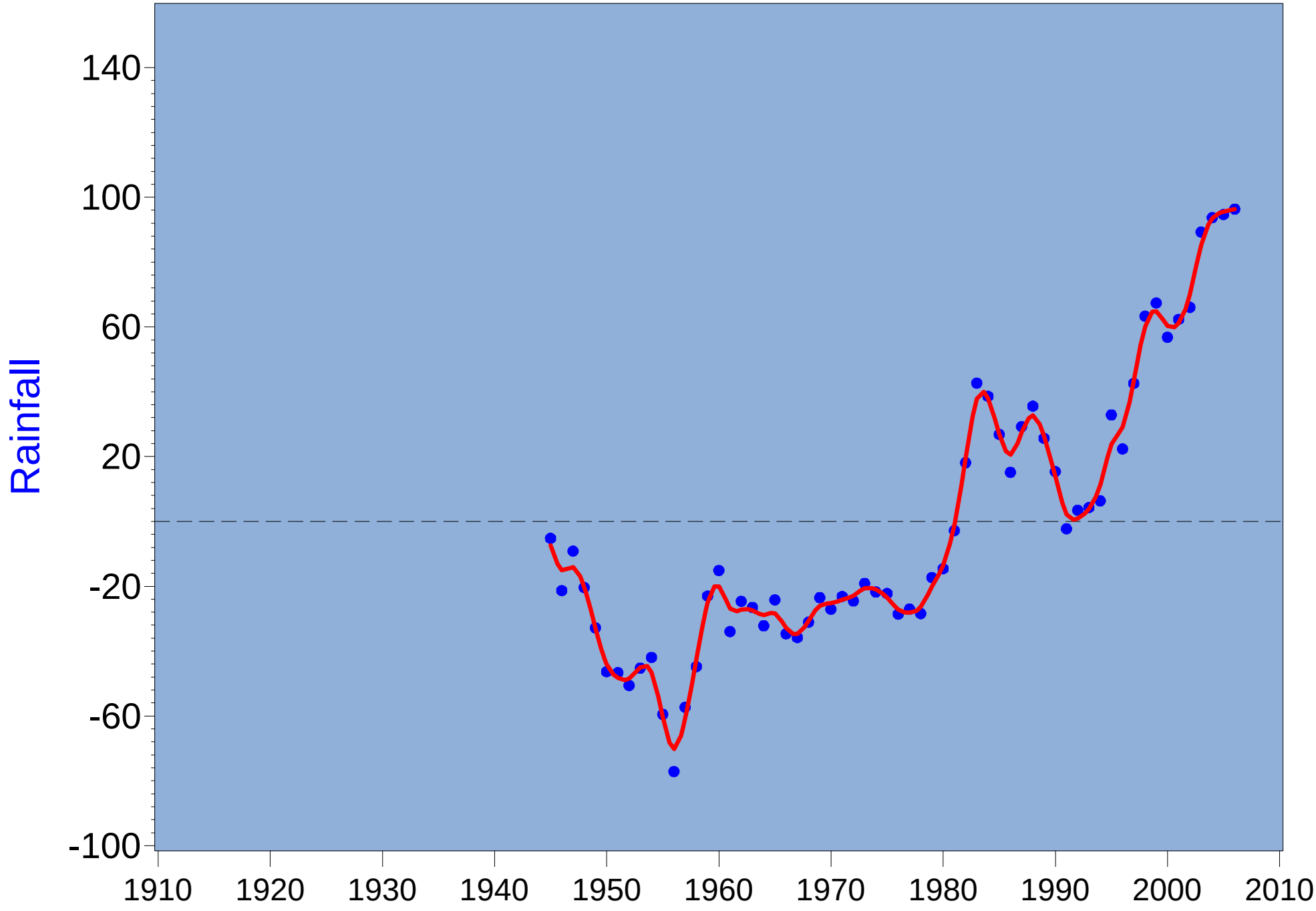


Figure 3.35 Long-term cumulative annual rainfall above 55.8 inches at long-term Myakka NOAA gage (District R336) 1943-2006

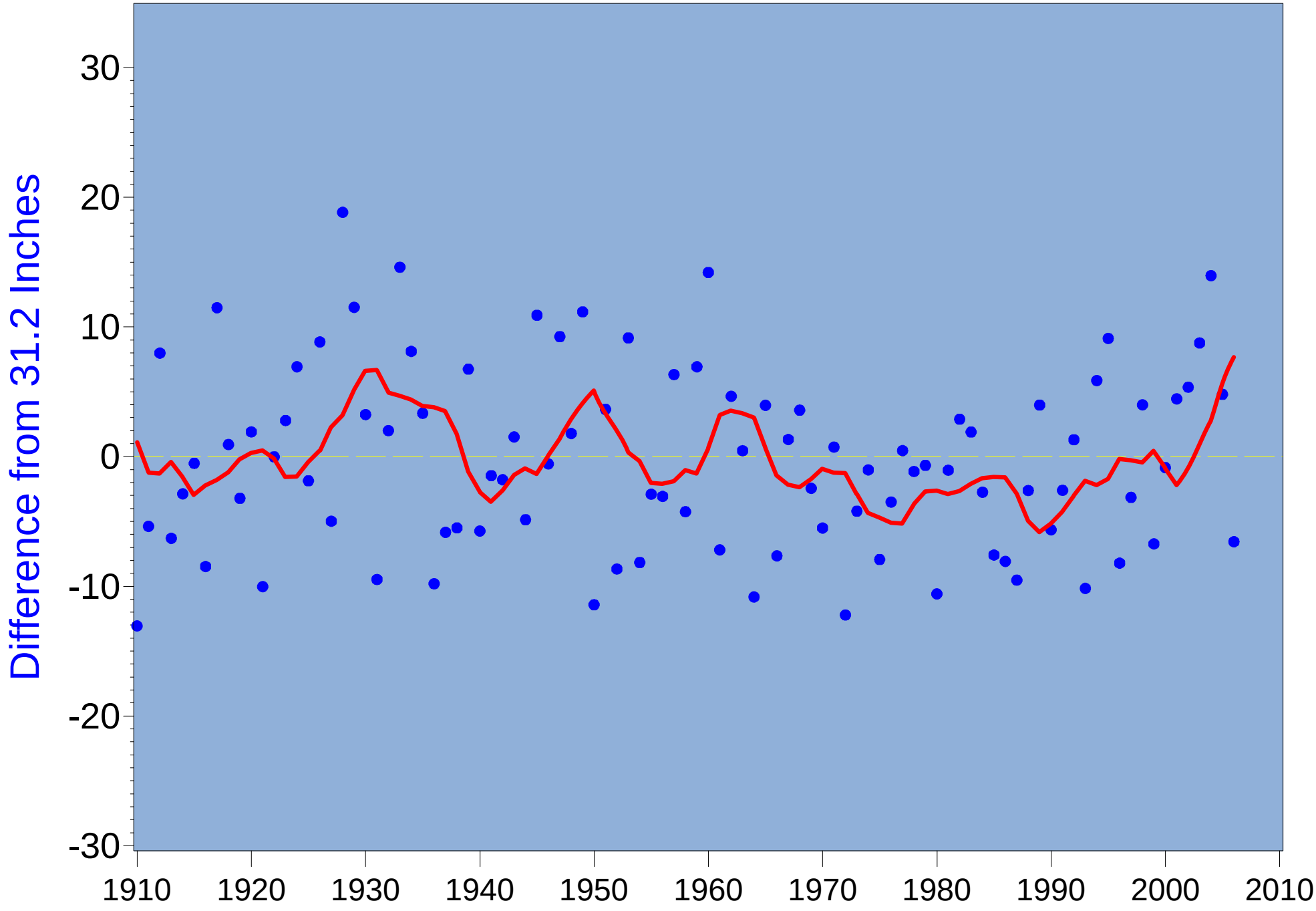


Figure 3.36 Yearly and 5-year moving average annual wet-season rainfall at long-term Bartow NOAA gage (District R142) 1915-2006)

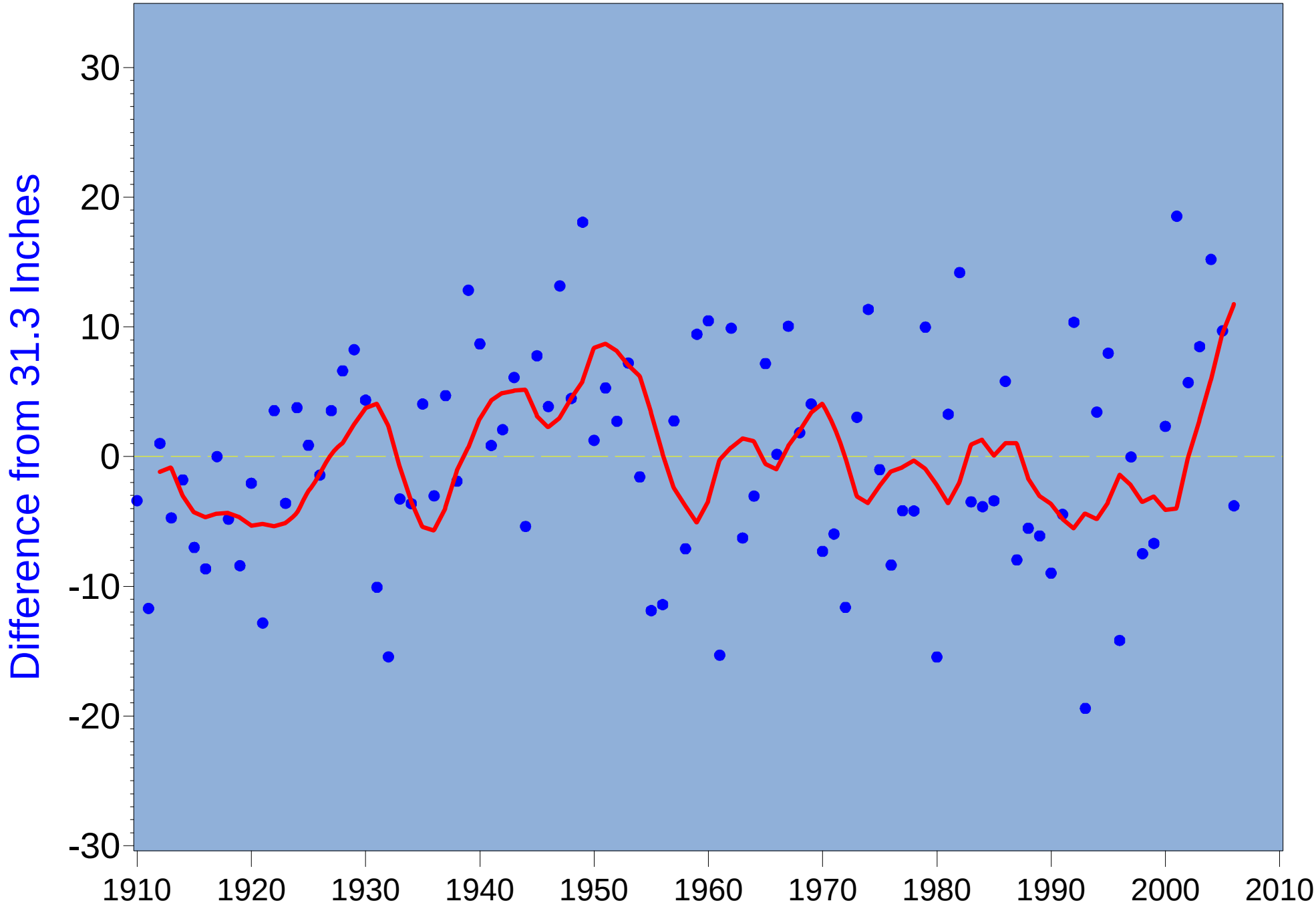


Figure 3.37 Yearly and 5-year moving average annual wet-season rainfall at long-term Arcadia NOAA gage (District R148) 1915-2006)

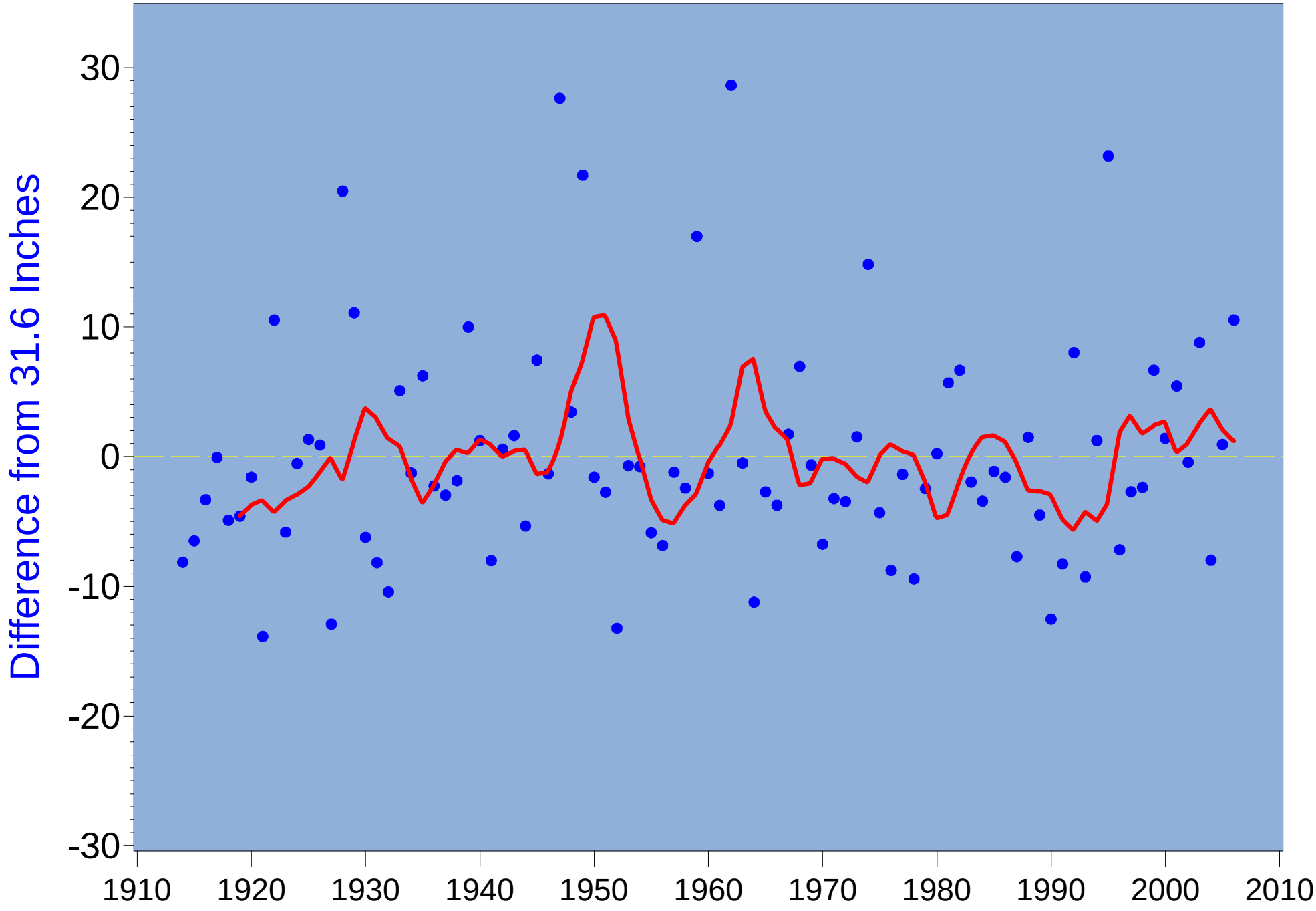


Figure 3.38 Yearly and 5-year moving average annual wet-season rainfall at long-term Punta Gorda NOAA gage (District R255) 1915-2006)

Table 3.9
Summary of Results of Seasonal Kendall Trend Analyses
Period-of-Record Through 2006 - Monthly Minimum Values (P0 or Q100)

USGS ID	Gage Identification	Time Period of Data	Number of Years	Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
Peace River Watershed							
2294650	Peace River at Bartow	1940	67	-0.28	0.001	**0.001**	-0.90
2295420	Payne Creek near Bowling Green	1980	27	0.10	0.014	0.302	0.50
2295637	Peace River at Zolfo Springs	1934	73	-0.20	0.001	**0.001**	-1.58
2296500	Charlie Creek near Gardner	1951	56	-0.04	0.121	0.439	-0.21
2296750	Peace River at Arcadia	1932	75	-010	0.001	**0.035**	-1.05
2297100	Joshua Creek at Nocatee	1951	56	0.38	0.001	**0.001**	0.57
2297310	Horse Creek near Arcadia	1951	56	0.03	0.294	0.598	14.86
	Total Gaged Flow Upstream of the Facility	1951	56	-0.13	0.001	**0.024**	-1.49
2298123	Prairie Creek near Fort Ogden	1978	29	0.21	0.001	**0.008**	0.81
2298202	Shell Creek near Punta Gorda	1965	41	0.13	0.001	**0.038**	0.68
	Total Gaged Peace River Flow to the Harbor	1965	41	0.02	0.482	0.736	0.58
Reference Watershed							
2298830	Myakka River near Sarasota	1937	70	0.21	0.001	**0.001**	0.26

* Red values denote significant trend at p=0.05 level, while blue indicates trends significant at p=0.10

** Positive Tau statistic and slope values indicate increasing trend over time, negative values correspond to declining changes in flow over time

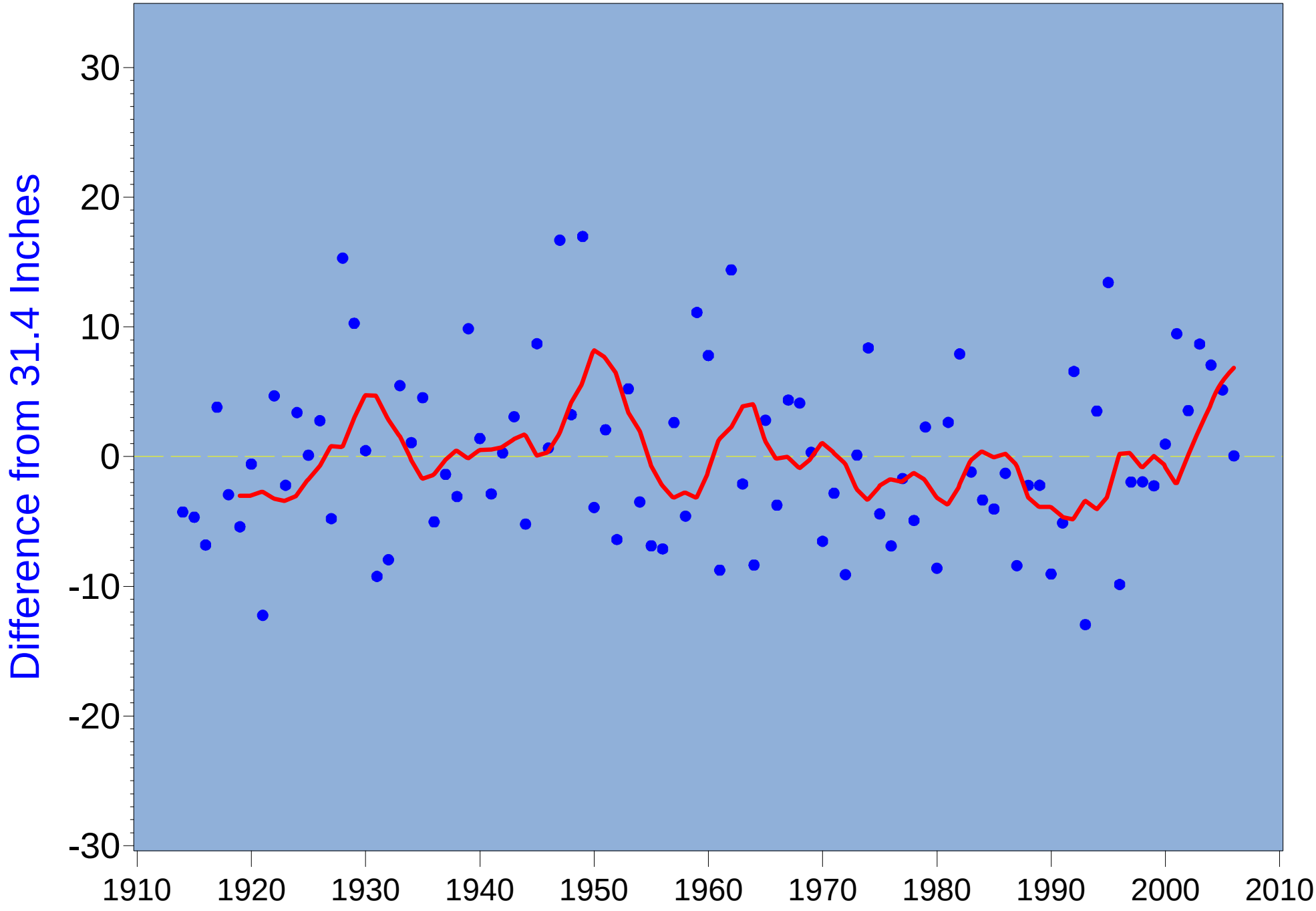


Figure 3.39 Yearly and 5-year moving average anuual wet-season Bartow, Arcadia and Punta Gorda average rainfall (1915-2006)

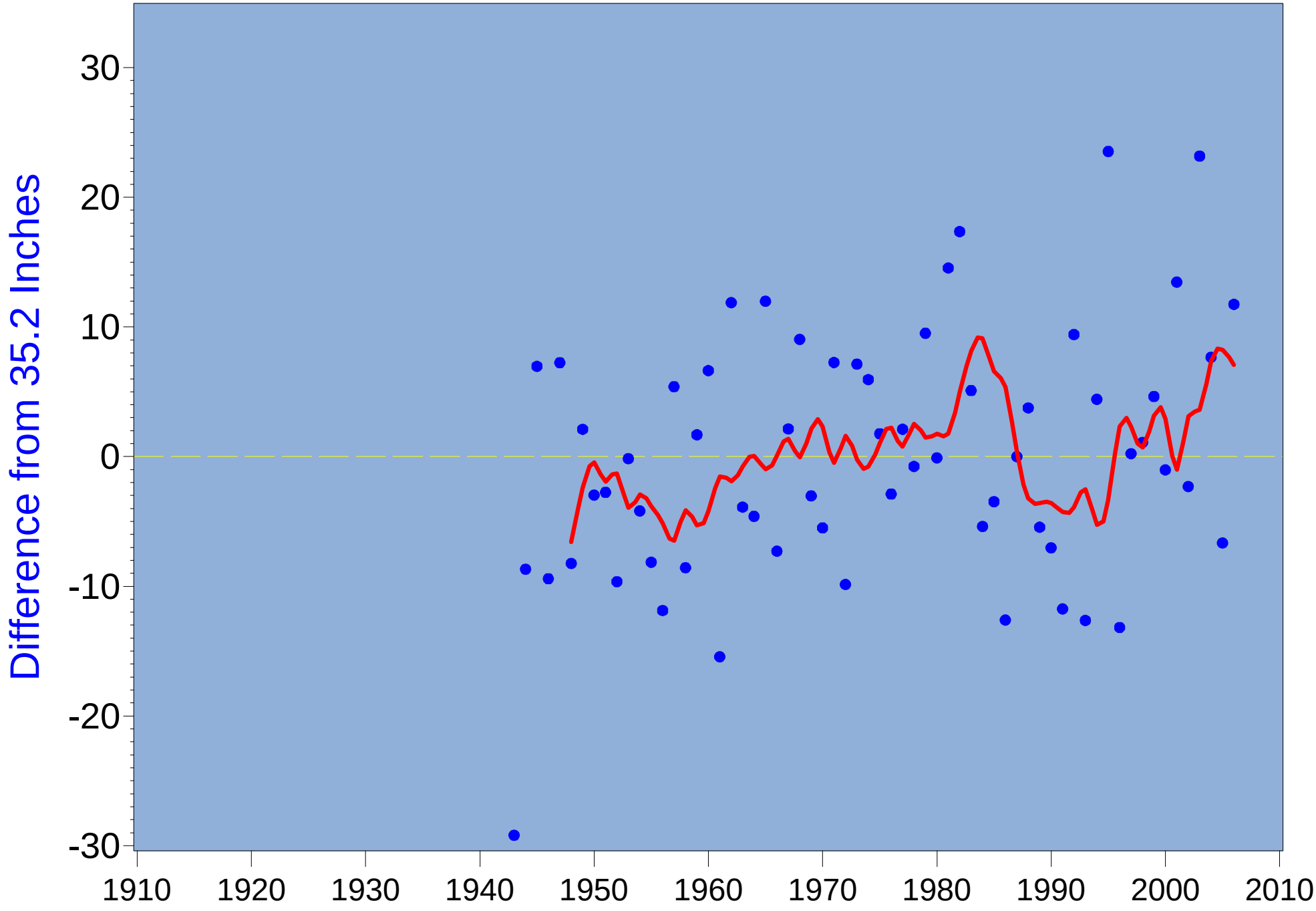


Figure 3.40 Yearly and 5-year moving average annual wet-season rainfall at long-term Myakka NOAA gage (District R336) 1943-2006)

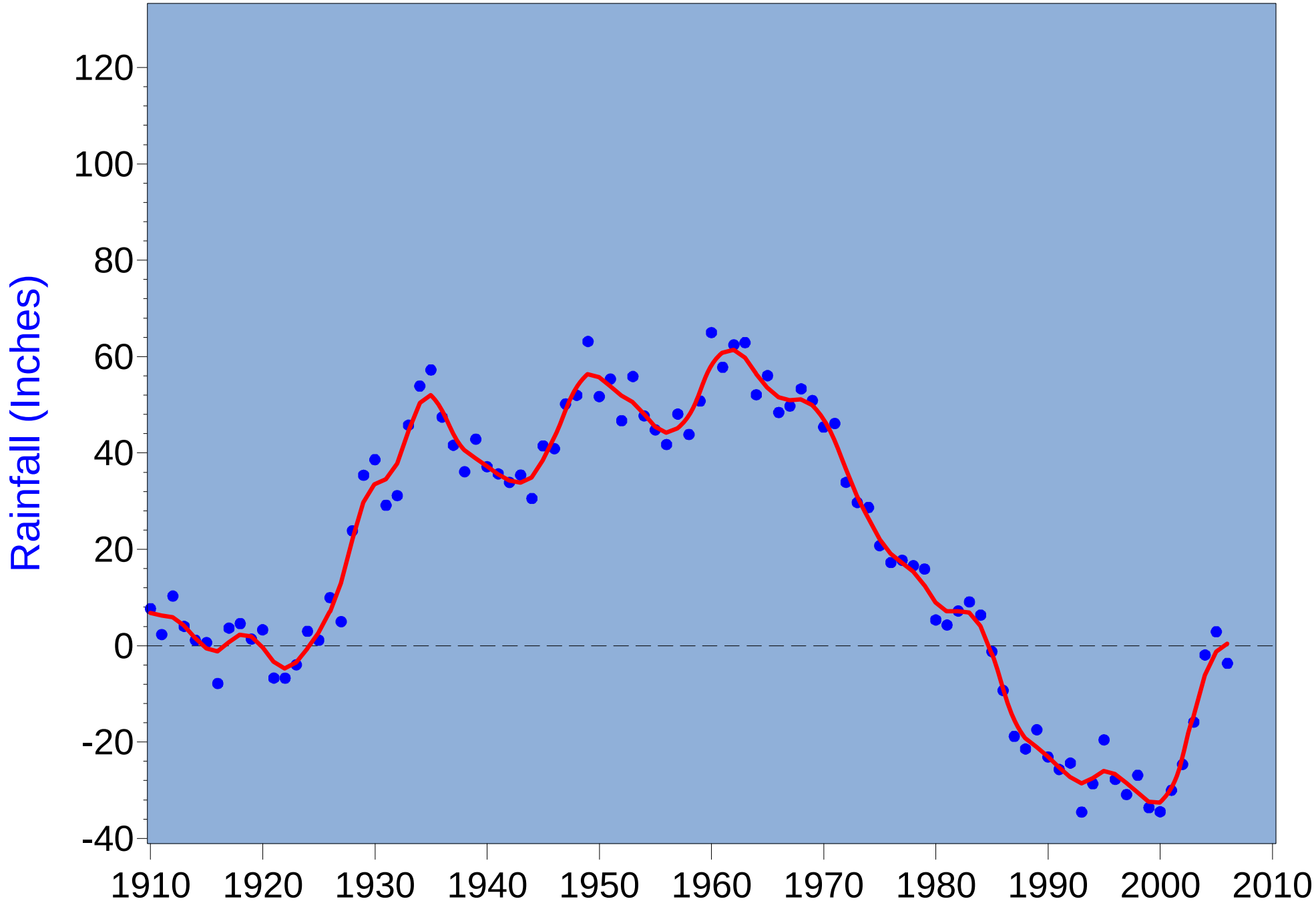


Figure 3.41 Long-term cumulative annual wet-season rainfall above 31.2 inches at Bartow NOAA gage (District #R42) 1915-2006

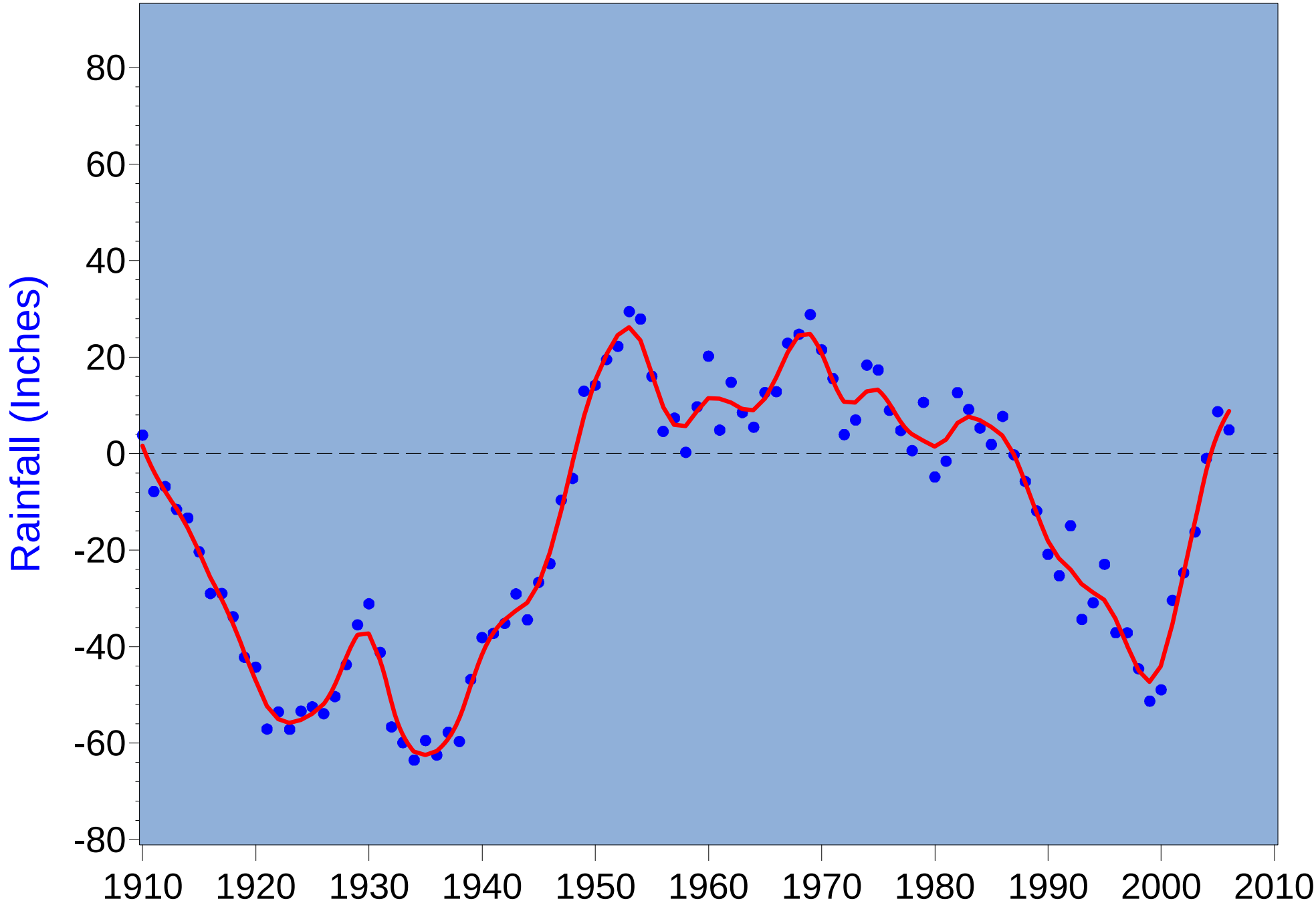


Figure 3.42 Long-term cumulative annual wet-season rainfall above 31.3 inches at long-term Arcadia NOAA gage (District R148) 1915-2006

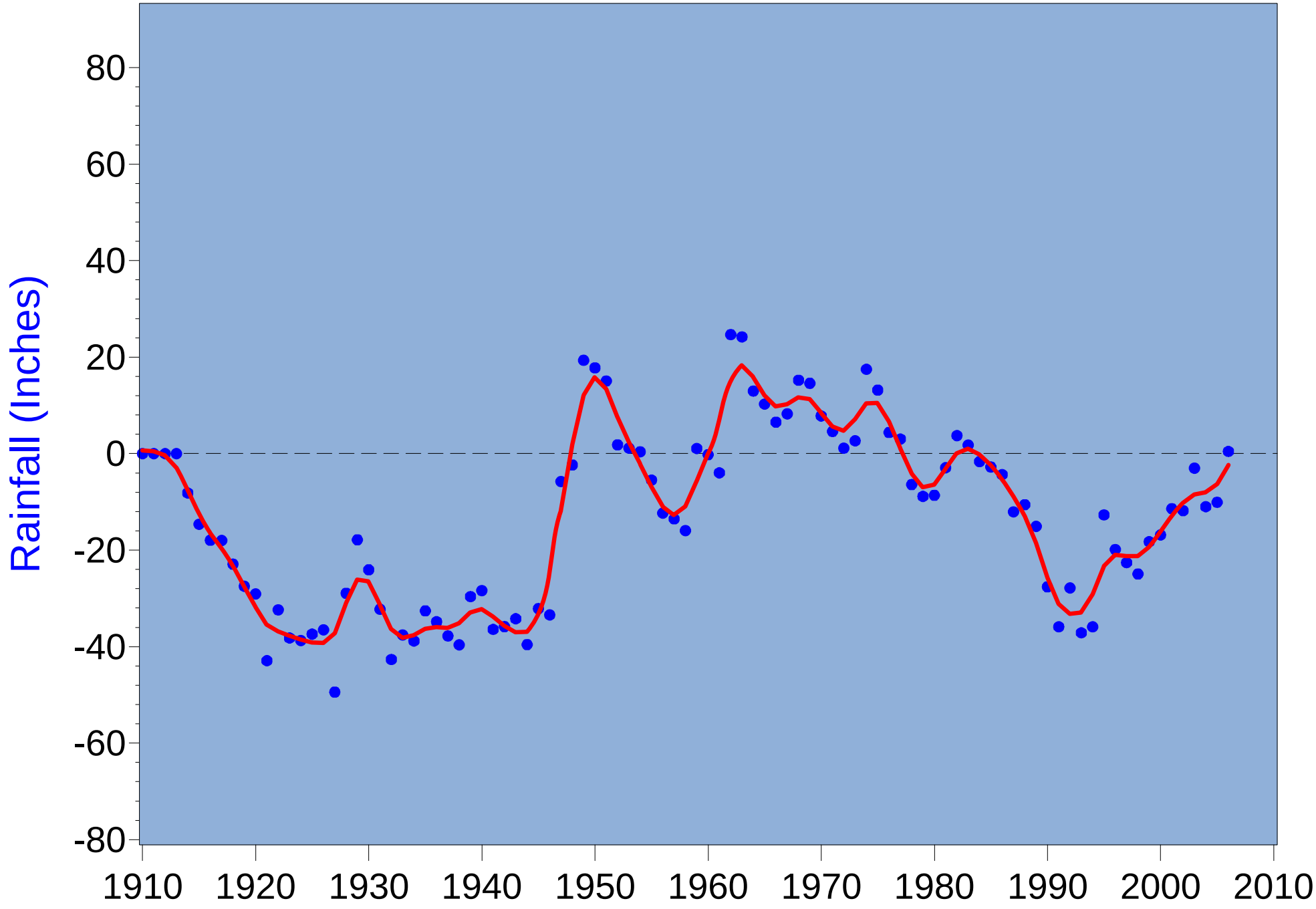


Figure 3.43 Long-term cumulative annual wet-season rainfall above 31.6 inches at long-term Punta Gorda NOAA gage (District R255) 1915-2006

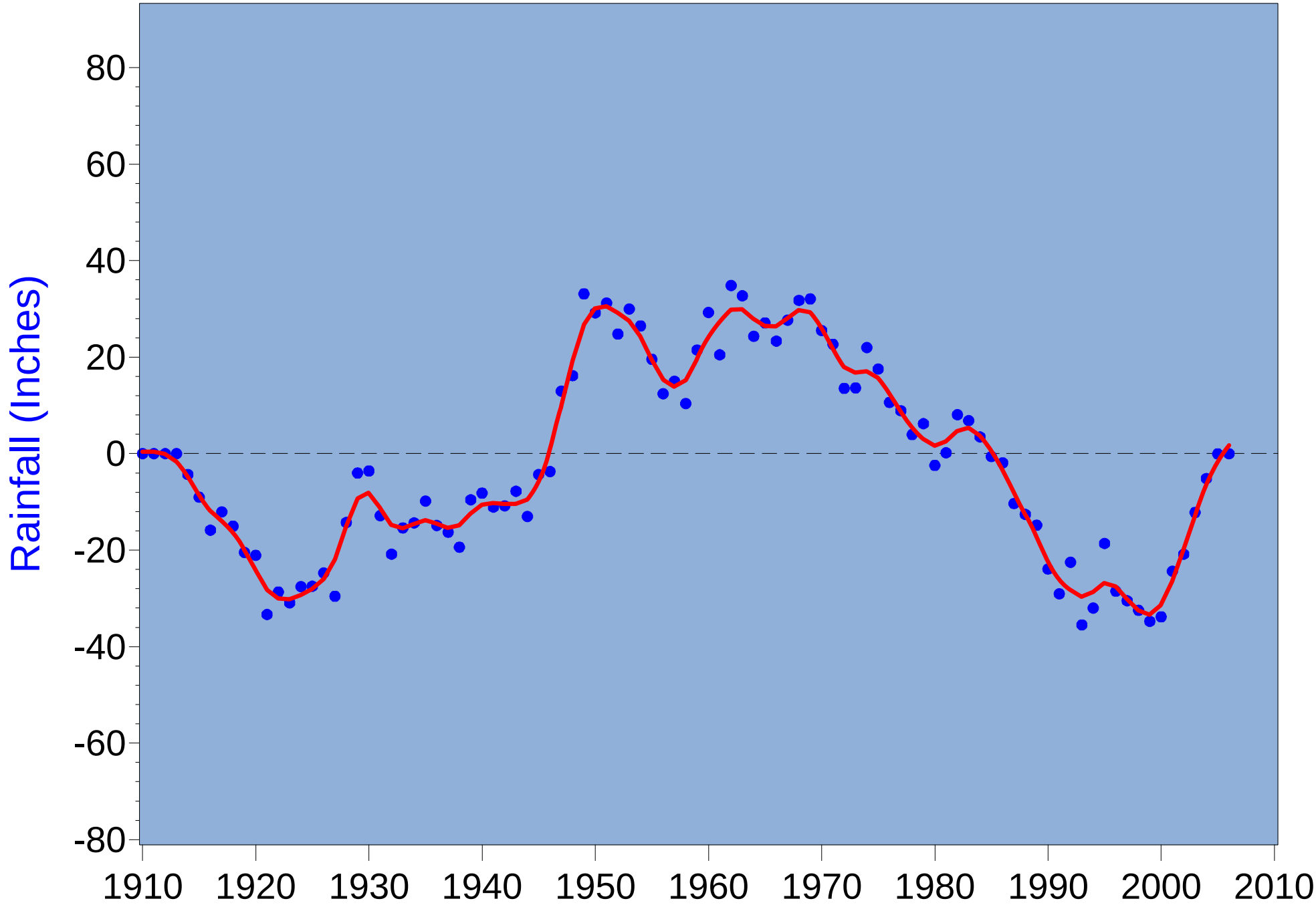


Figure 3.44 Long-term cumulative annual wet-season rainfall above 31.4 inches of Bartow, Arcadia and Punta Gorda average rainfall (1915-2006)

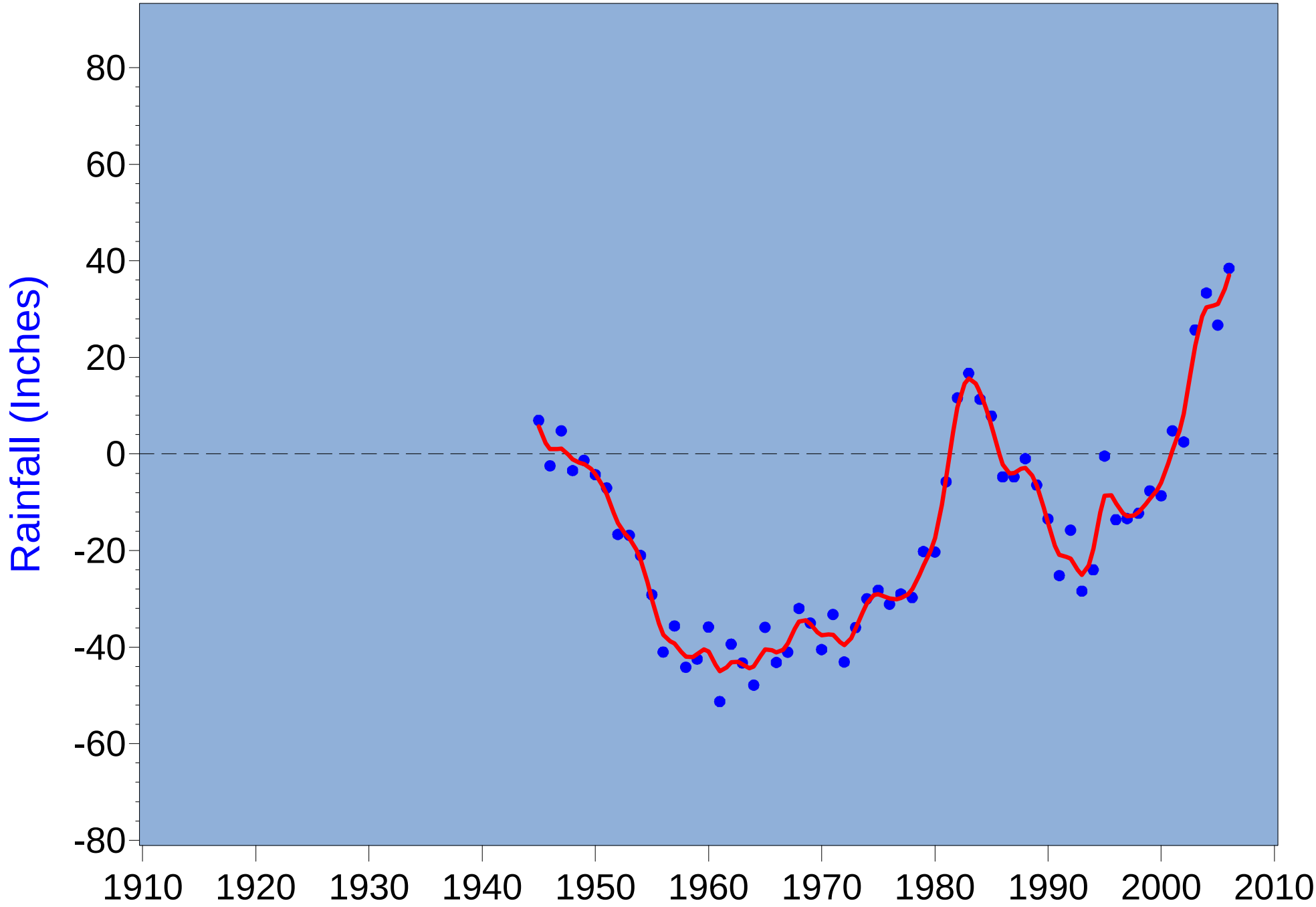


Figure 3.45 Long-term cumulative annual wet-season rainfall above 35.2 inches at long-term Myakka NOAA gage (District R336) 1943-2006

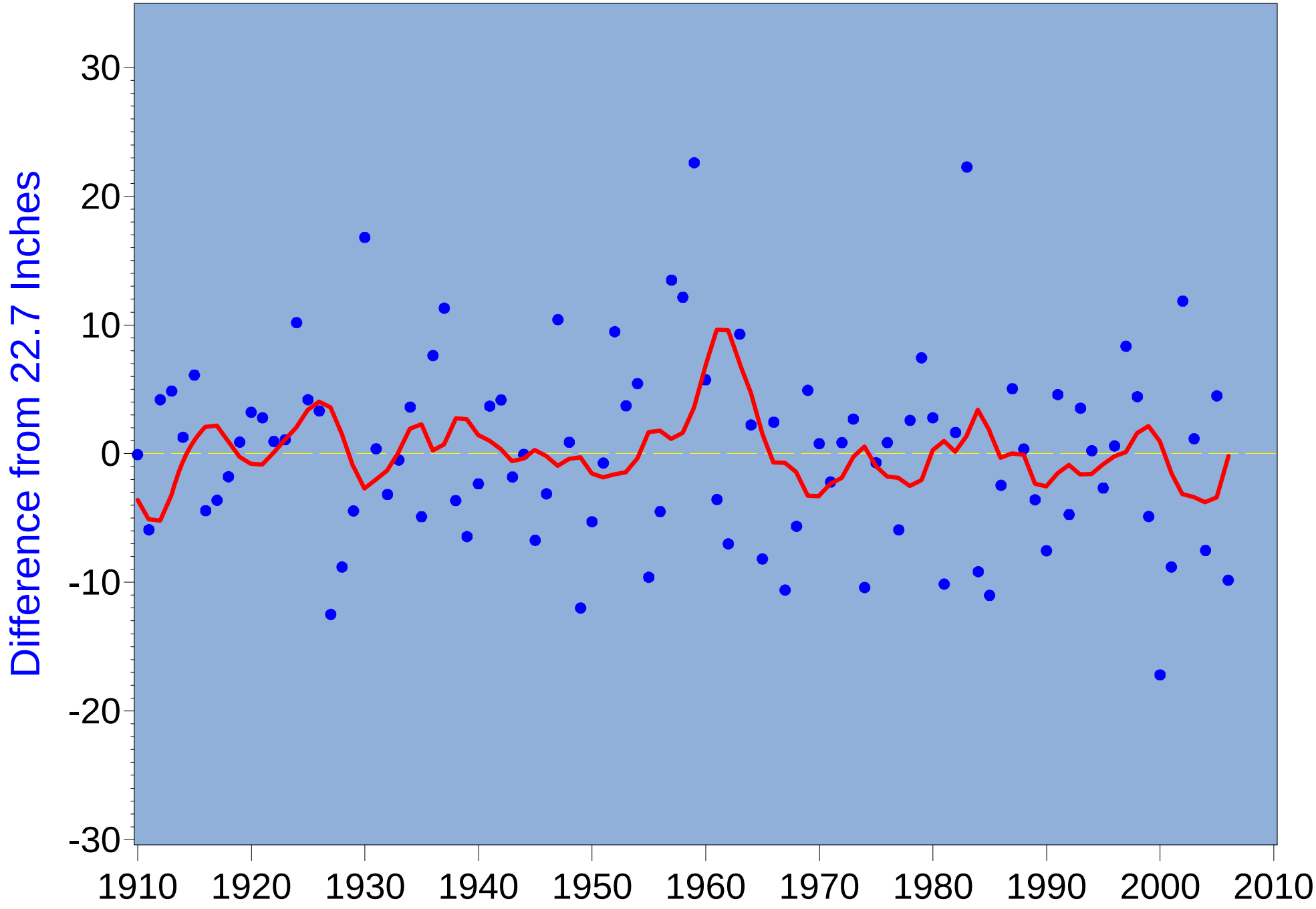


Figure 3.46 Yearly and 5-year moving average annual dry-season rainfall at long-term Bartow NOAA gage (District R142) 1915-2006)

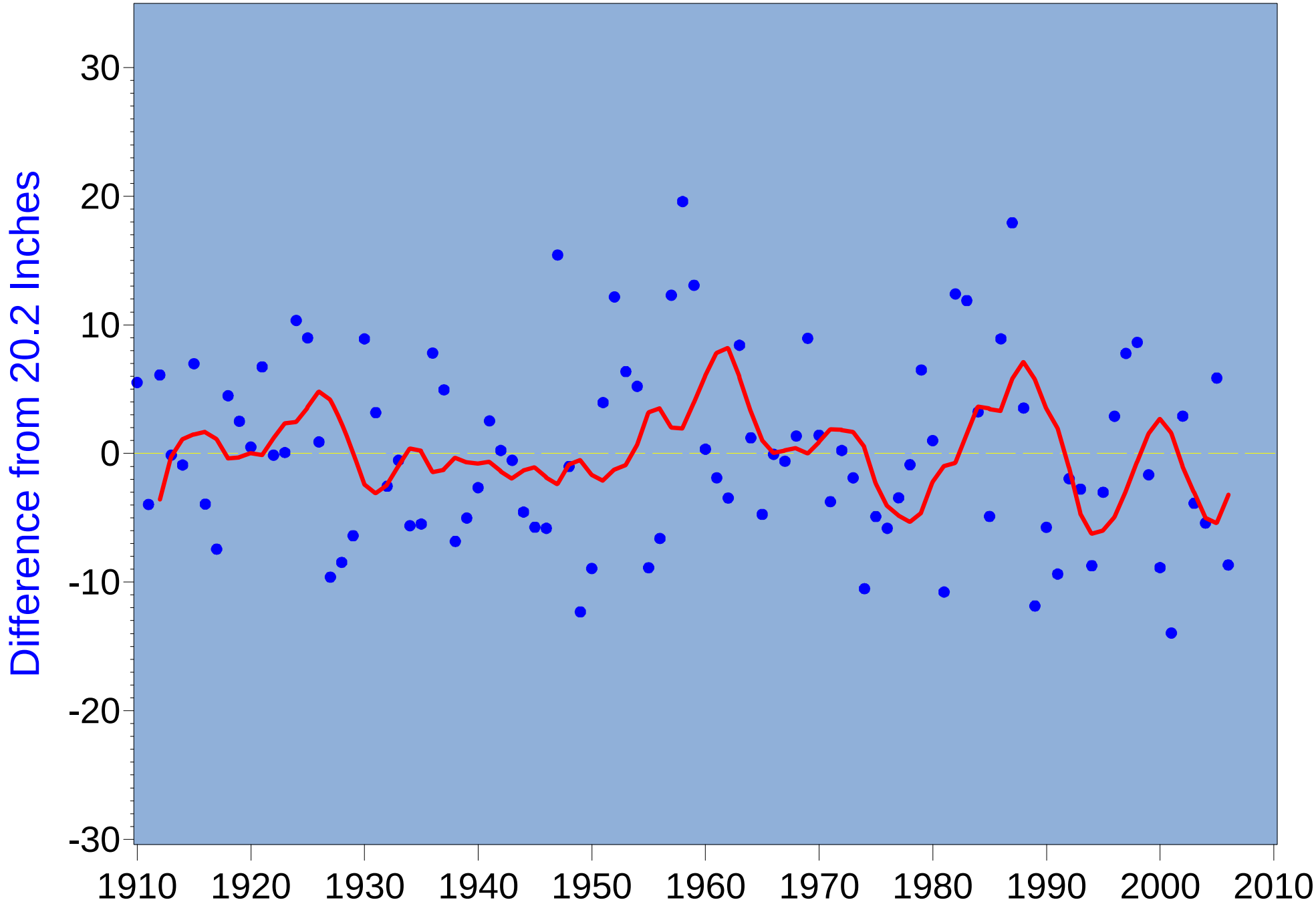


Figure 3.47 Yearly and 5-year moving average annual dry-season rainfall at long-term Arcadia NOAA gage (District R148) 1915-2006)

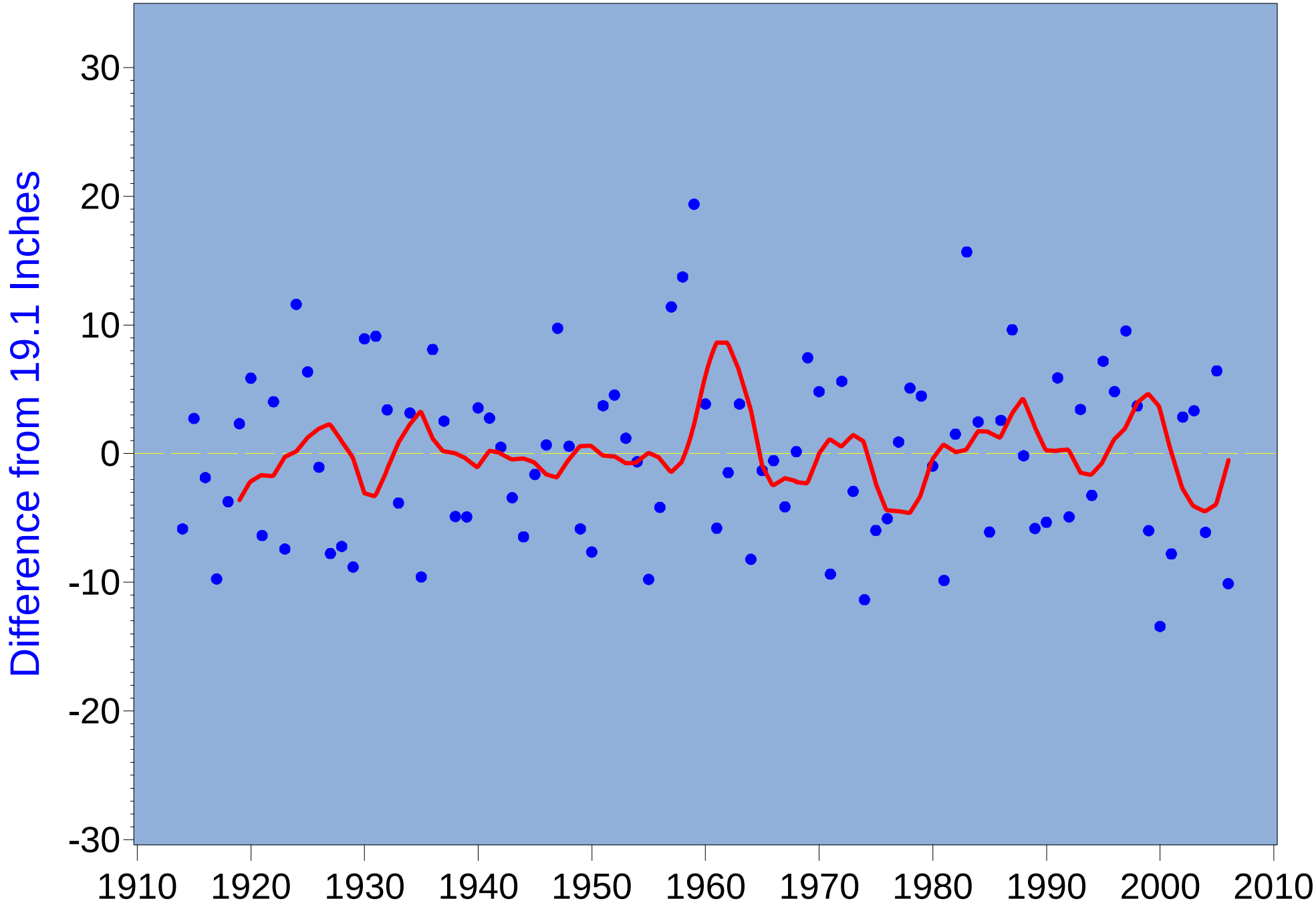


Figure 3.48 Yearly and 5-year moving average annual dry-season rainfall at long-term Punta Gorda NOAA gage (District R255) 1915-2006)

Table 3.10
Summary of Results of Seasonal Kendall Trend Analyses
Period-of-Record Through 2006 - P10 (or Q90)

USGS ID	Gage Identification	Time Period of Data	Number of Years	Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
Peace River Watershed							
2294650	Peace River at Bartow	1940	67	-0.18	0.001	**0.001**	-1.93
2295420	Payne Creek near Bowling Green	1980	27	0.09	0.018	0.308	0.60
2295637	Peace River at Zolfo Springs	1934	73	-0.12	0.001	**0.008**	-3.20
2296500	Charlie Creek near Gardner	1951	56	-0.04	0.126	0.439	0.26
2296750	Peace River at Arcadia	1932	75	-0.06	0.014	0.198	-2.10
2297100	Joshua Creek at Nocatee	1951	56	0.36	0.001	**0.001**	4.17
2297310	Horse Creek near Arcadia	1951	56	0.03	0.326	0.615	10.44
	Total Gaged Flow Upstream of the Facility	1951	56	-0.13	0.001	**0.029**	-1.60
2298123	Prairie Creek near Fort Ogden	1978	29	0.19	0.001	**0.014**	0.78
2298202	Shell Creek near Punta Gorda	1965	41	0.11	0.001	**0.058**	0.67
	Total Gaged Peace River Flow to the Harbor	1965	41	0.01	0.734	0.869	0.31
Reference Watershed							
2298830	Myakka River near Sarasota	1937	70	0.09	0.001	**0.029**	0.55

* Red values denote significant trend at p=0.05 level, while blue indicates trends significant at p=0.10

** Positive Tau statistic and slope values indicate increasing trend over time, negative values correspond to declining changes in flow over time

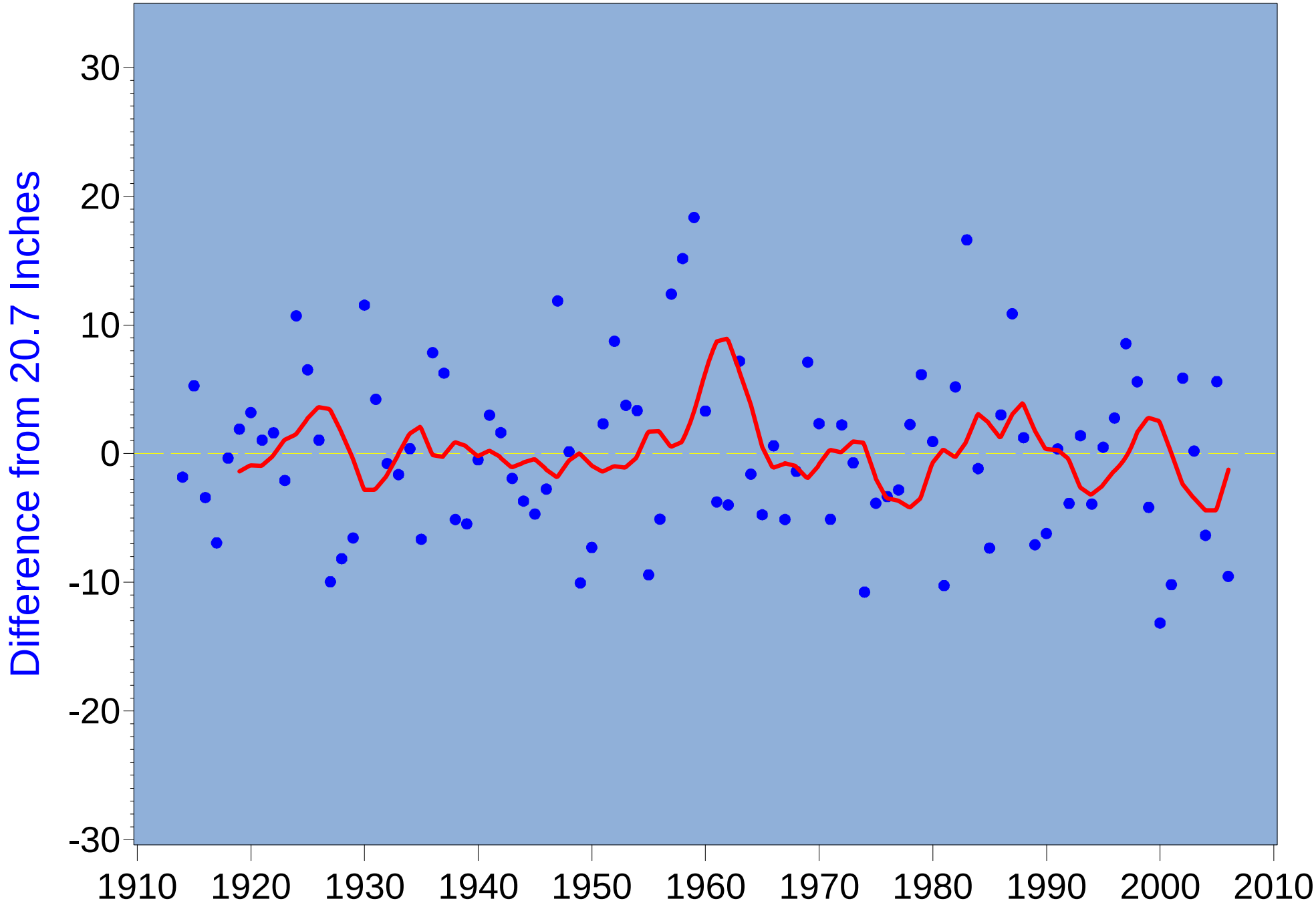


Figure 3.49 Yearly and 5-year moving average anuual dry-season average Bartow, Arcadia and Punta Gorda rainfall (1915-2006)

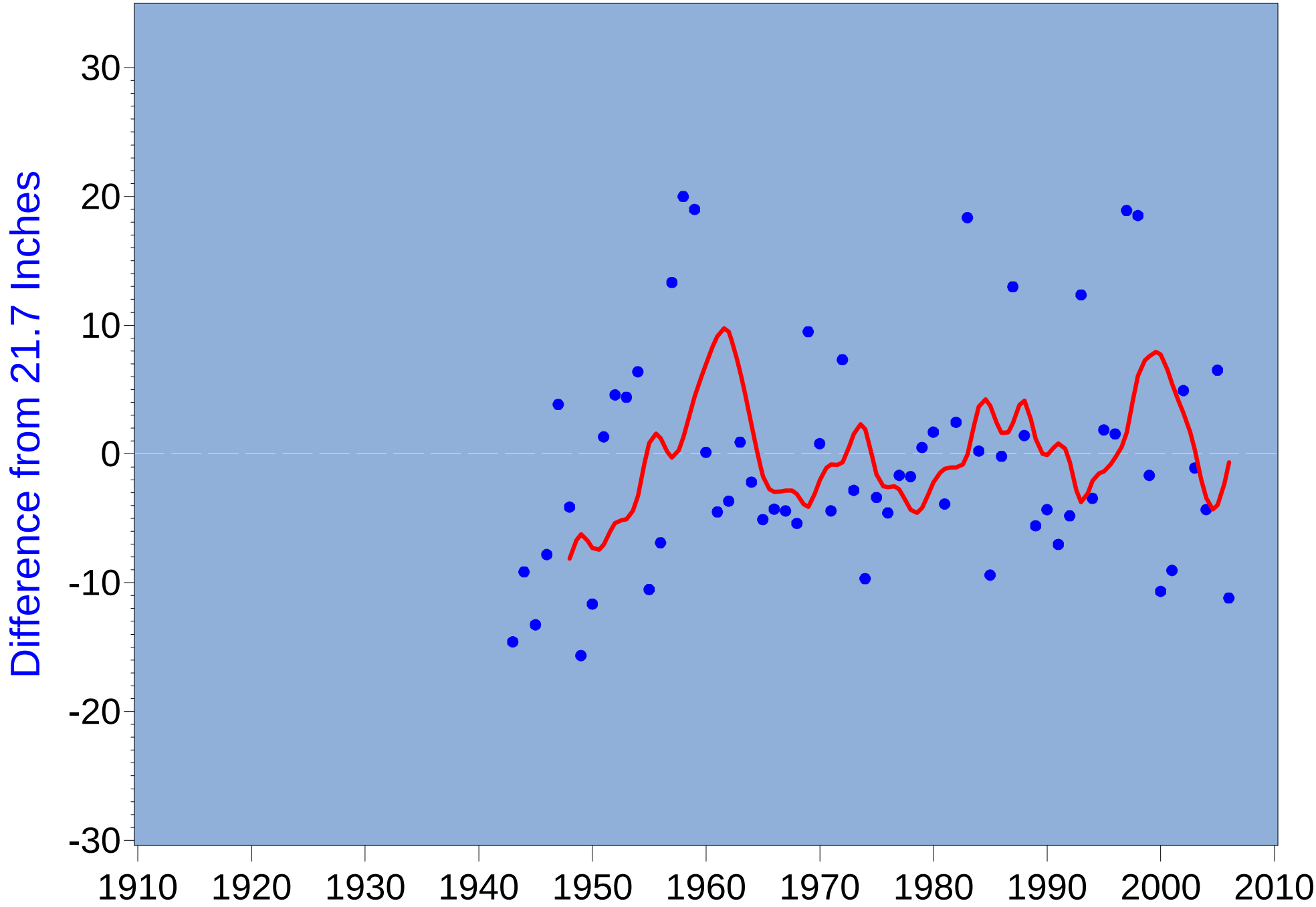


Figure 3.50 Yearly and 5-year moving average annual dry-season rainfall at long-term Myakka NOAA gage (District R336) 1943-2006)

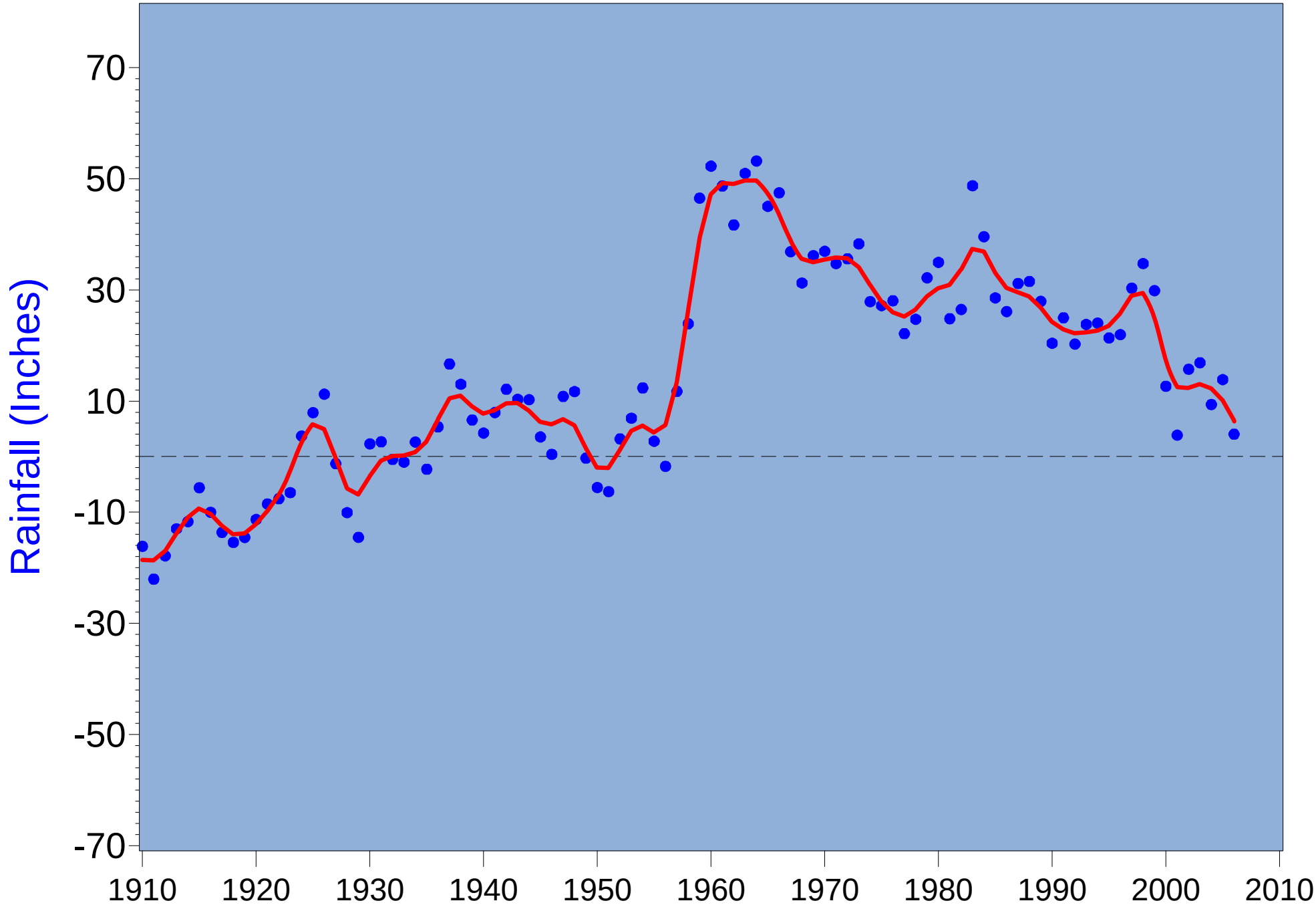


Figure 3.51 Long-term cumulative annual dry-season rainfall above 22.7 inches at Bartow NOAA gage (District R142) 1915-2006

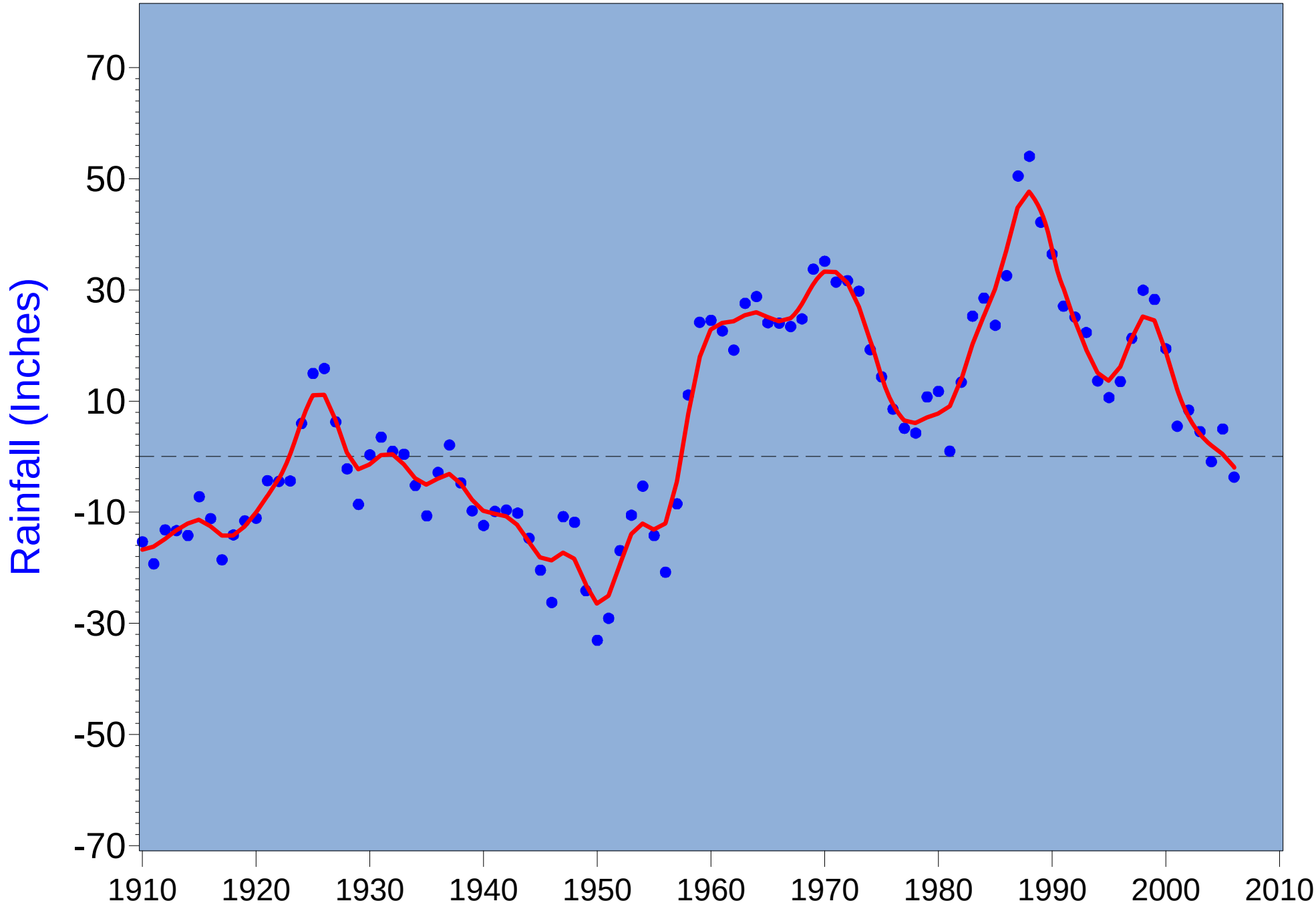


Figure 3.52 Long-term cumulative annual dry-season rainfall above 20.2 inches at long-term Arcadia NOAA gage (District R148) 1915-2006

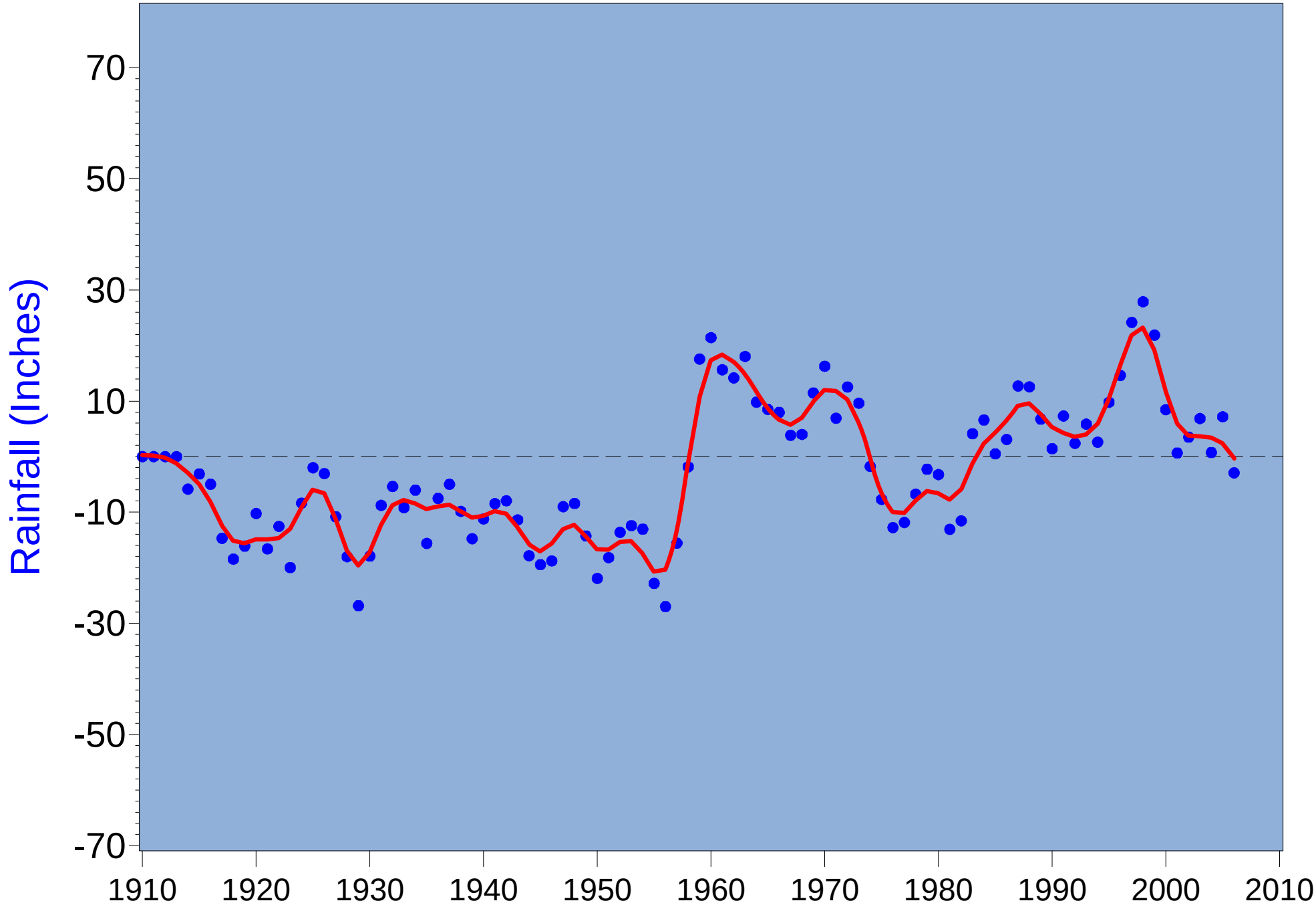


Figure 3.53 Long-term cumulative annual dry-season rainfall above 19.1 inches at long-term Punta Gorda NOAA gage (District R255) 1915-2006

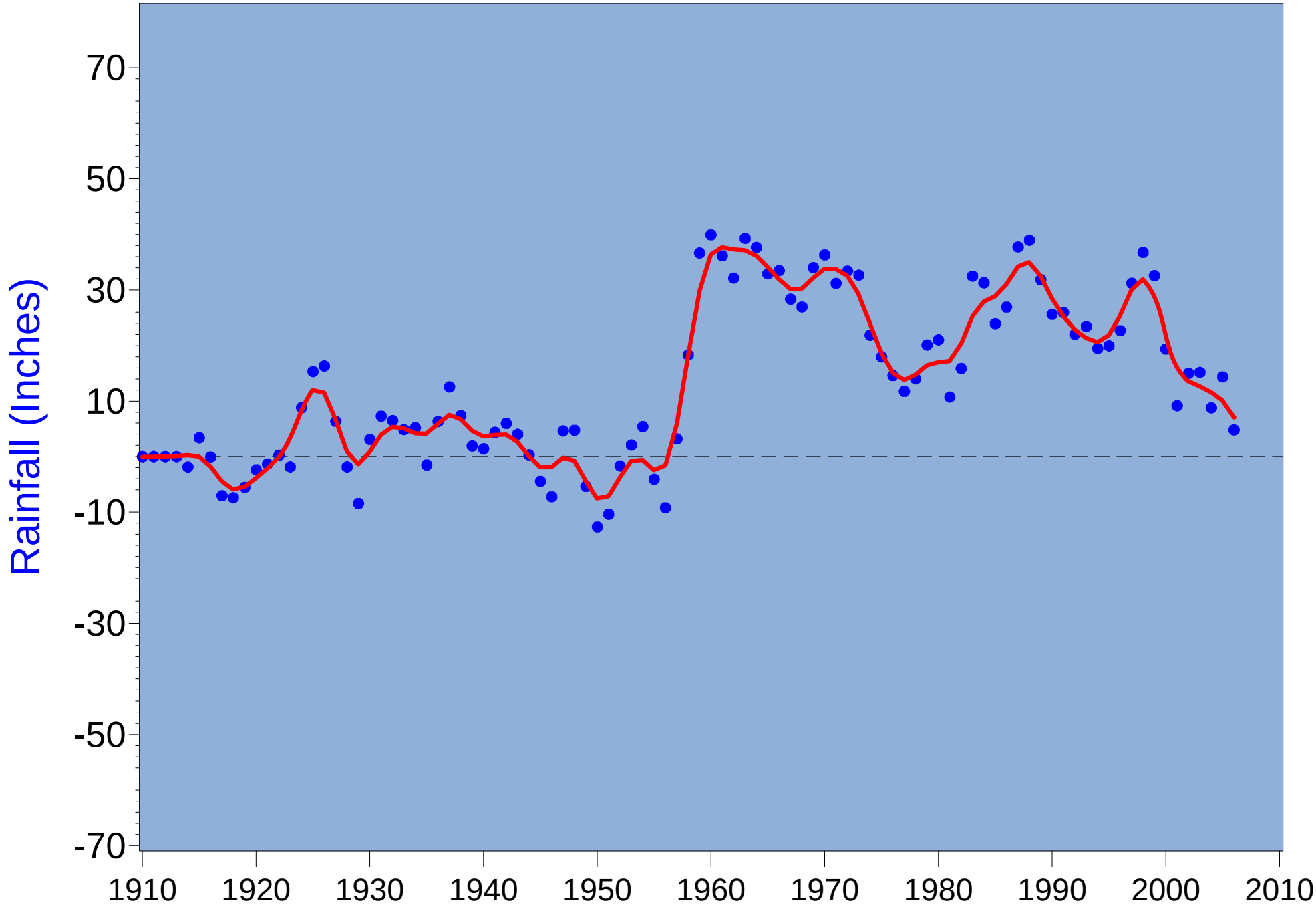


Figure 3.54 Long-term cumulative annual dry-season rainfall above 20.7 inches of Bartow, Arcadia and Punta Gorda average rainfall (1915-2006)

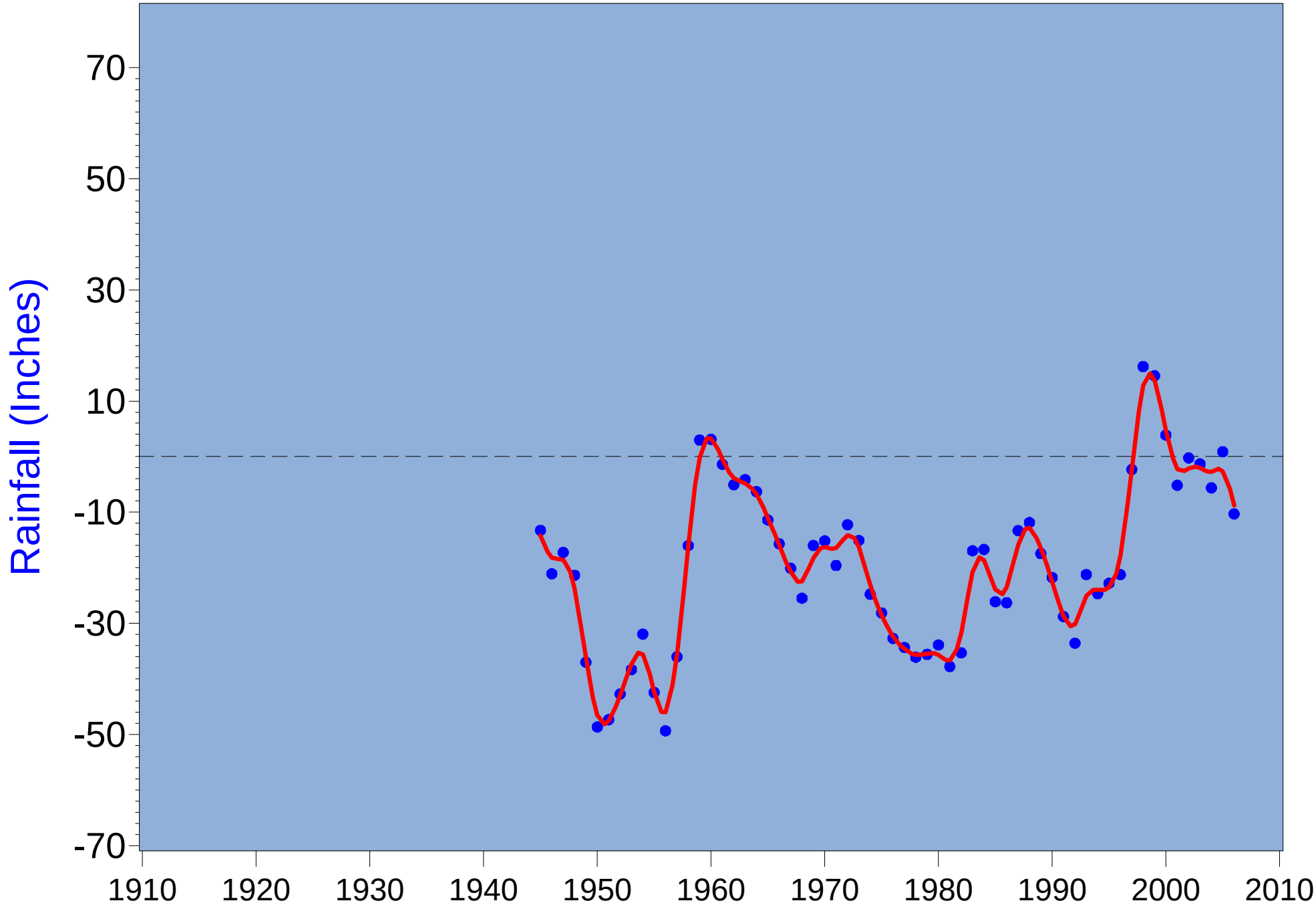


Figure 3.55 Long-term cumulative annual dry-season rainfall above 21.7 inches at long-term Myakka NOAA gage (District R336) 1915-2006

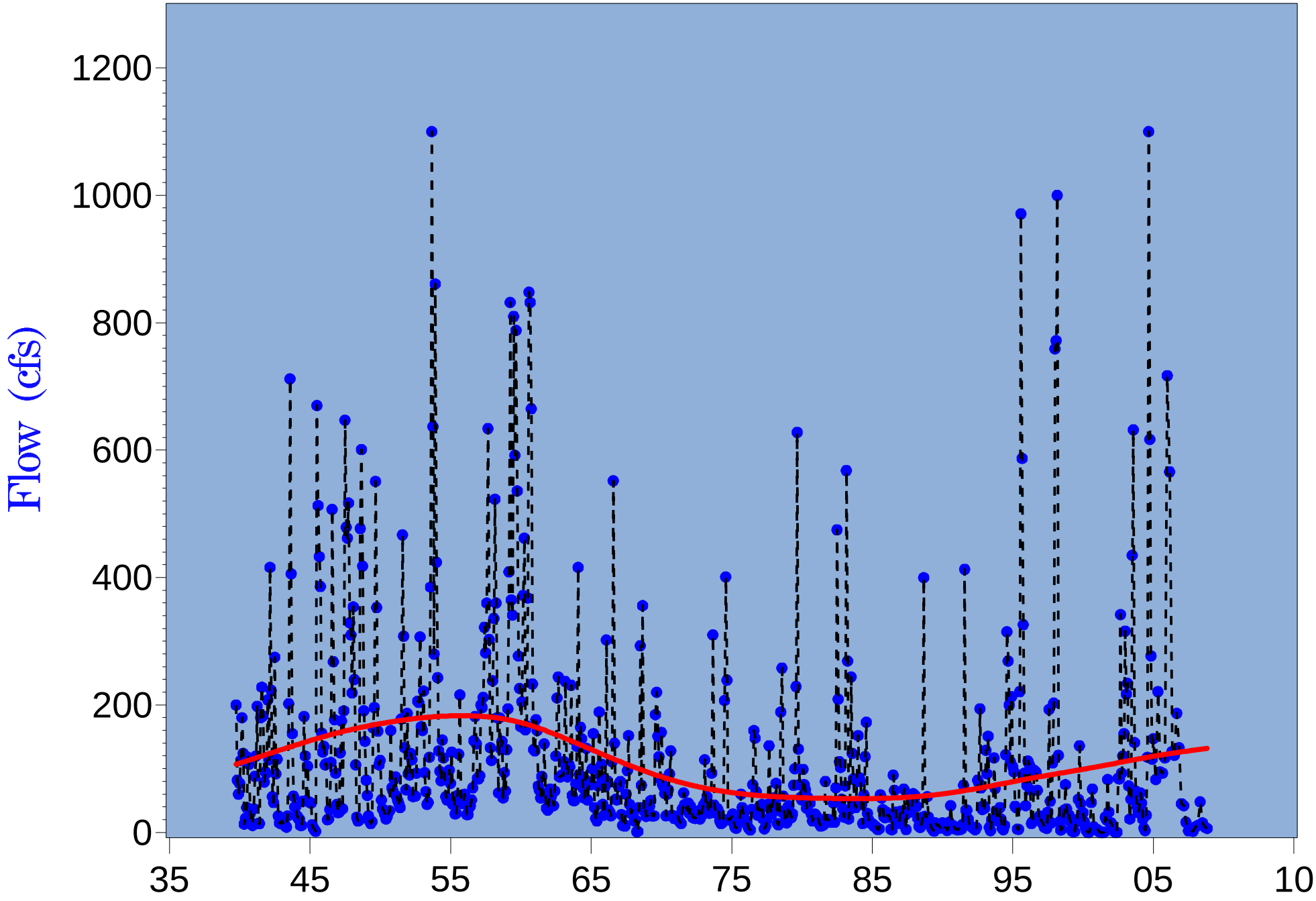


Figure 3.56 Monthly minimum flow at long-term Peace River at Bartow (2294650) gage (1939-2006)

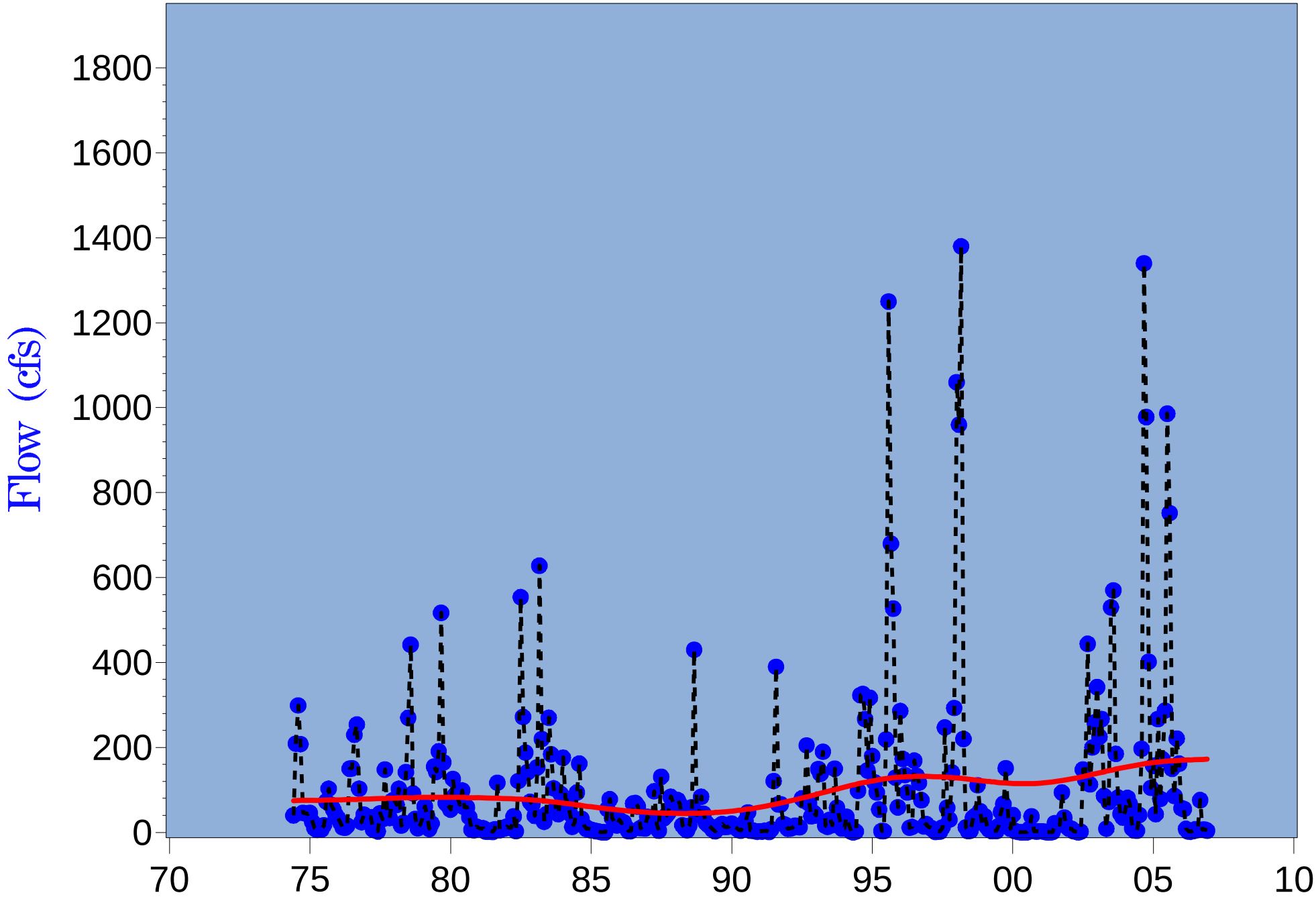


Figure 3.57 Monthly minimum flow at long-term Peace River at Ft. Meade (2294898) gage (1974-2006)

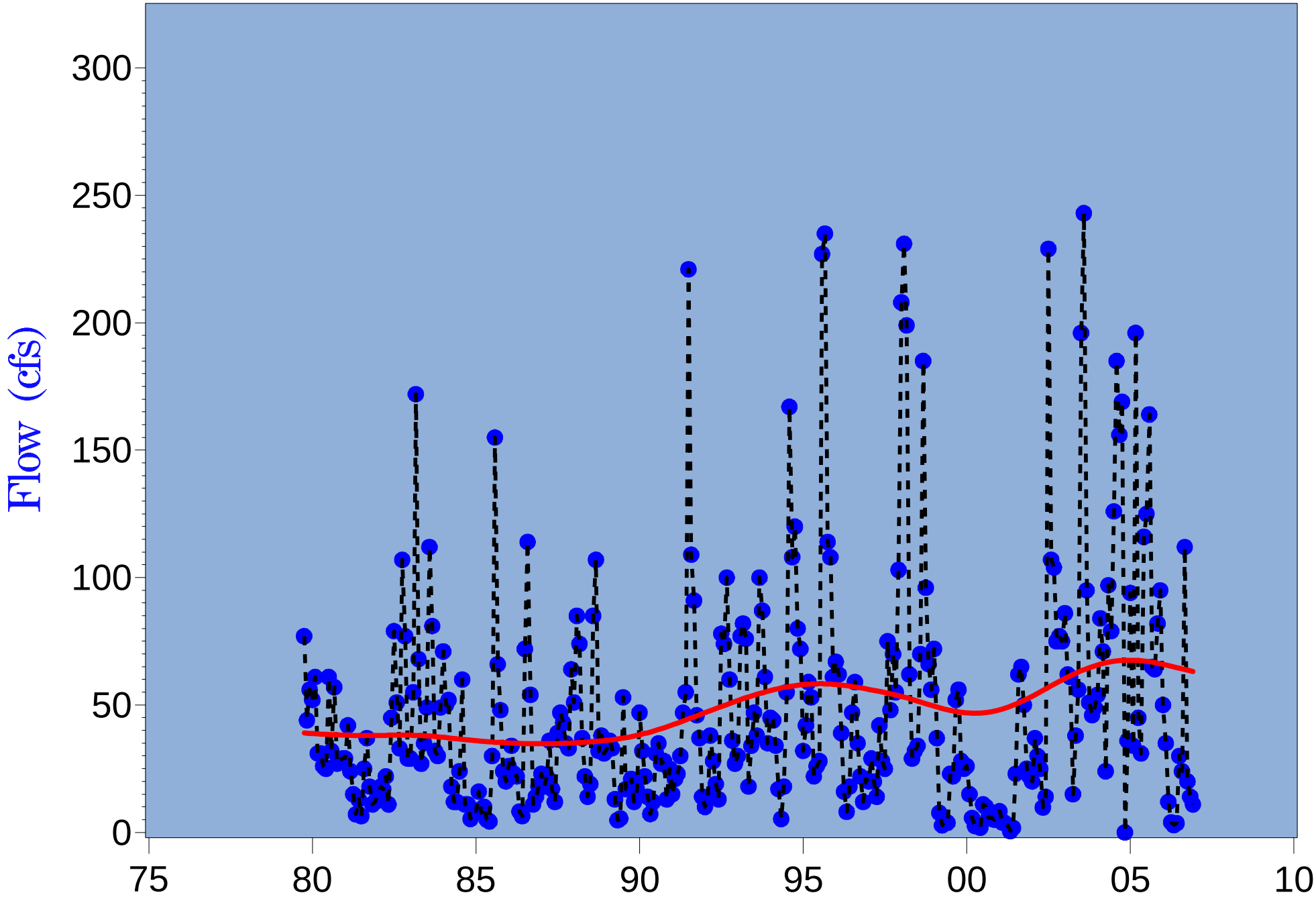


Figure 3.58a Monthly minimum flow at long-term Payne Creek (2295420) gage (1979-2006)

Table 3.11
Summary of Results of Seasonal Kendall Trend Analyses
Period-of-Record Through 2006 - P25 (or Q75)

USGS ID	Gage Identification	Time Period of Data	Number of Years	Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
Peace River Watershed							
2294650	Peace River at Bartow	1940	67	-0.19	0.001	**0.001**	-1.63
2295420	Payne Creek near Bowling Green	1980	27	0.09	0.016	0.293	0.74
2295637	Peace River at Zolfo Springs	1934	73	-0.12	0.001	**0.009**	-2.51
2296500	Charlie Creek near Gardner	1951	56	-0.05	0.061	0.335	0.32
2296750	Peace River at Arcadia	1932	75	-0.06	0.015	0.210	-1.66
2297100	Joshua Creek at Nocatee	1951	56	0.31	0.001	**0.001**	0.68
2297310	Horse Creek near Arcadia	1951	56	0.02	0.420	0.679	0.51
	Total Gaged Flow Upstream of the Facility	1951	56	-0.11	0.001	**0.043**	-2.94
2298123	Prairie Creek near Fort Ogden	1978	29	0.16	0.001	**0.034**	0.83
2298202	Shell Creek near Punta Gorda	1965	41	0.08	0.013	0.178	0.53
	Total Gaged Peace River Flow to the Harbor	1965	41	0.02	0.536	0.760	0.80
Reference Watershed							
2298830	Myakka River near Sarasota	1937	70	0.11	0.001	**0.006**	0.53

* Red values denote significant trend at p=0.05 level, while blue indicates trends significant at p=0.10

** Positive Tau statistic and slope values indicate increasing trend over time, negative values correspond to declining changes in flow over time

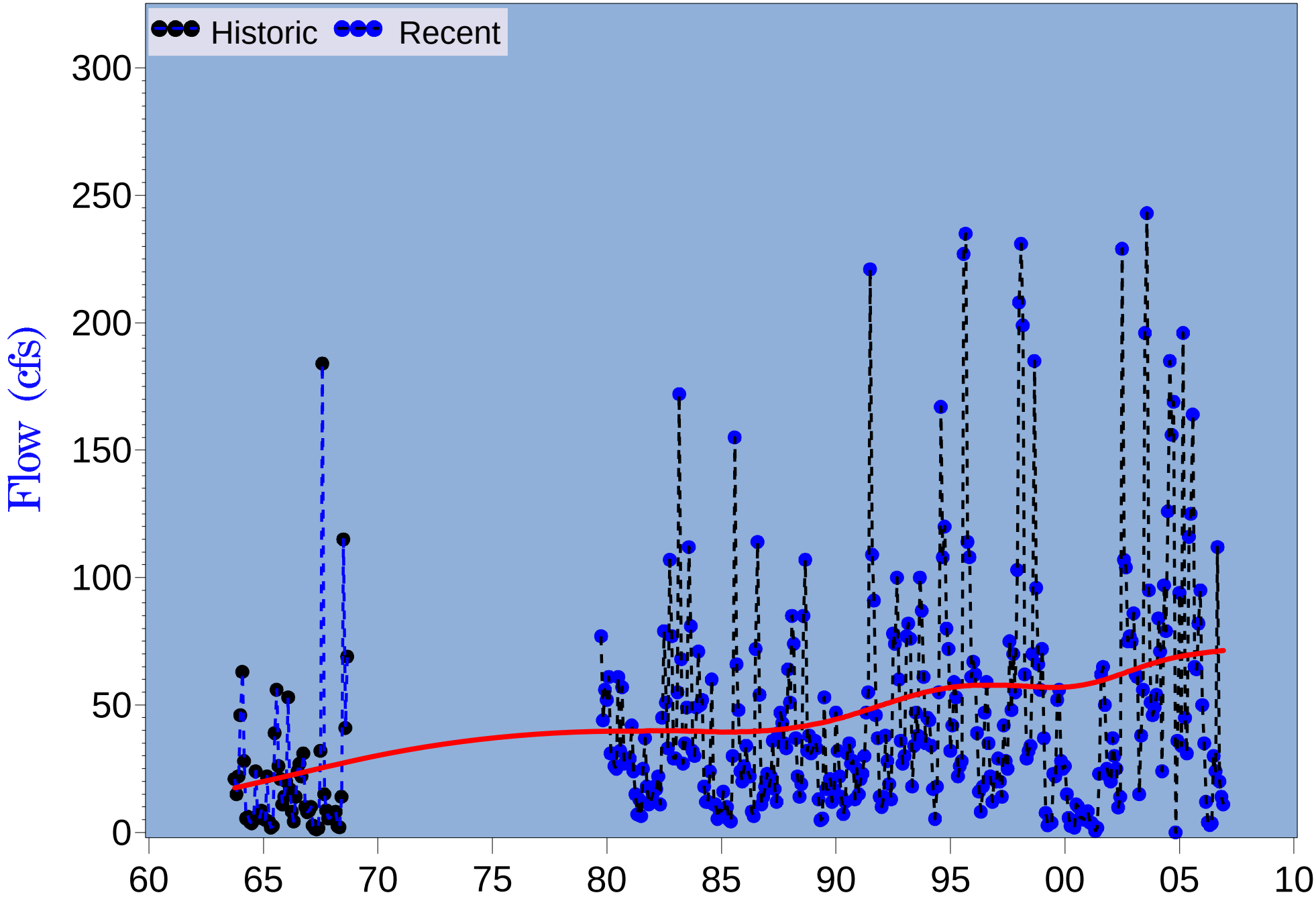


Figure 3.58b Monthly minimum flow at long-term Payne Creek (2295420) gage (1963-2006)

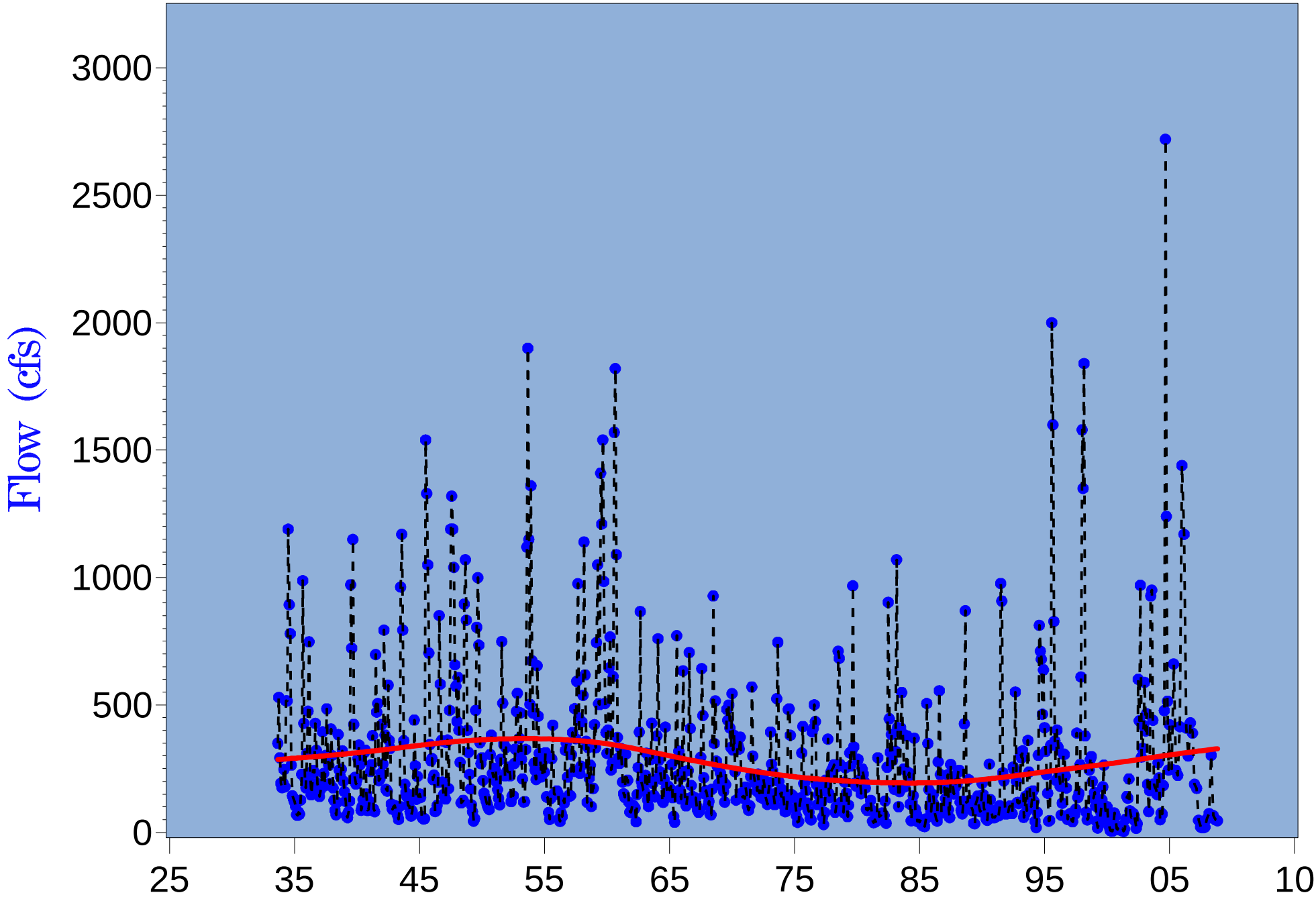


Figure 3.59 Monthly minimum flow at long-term Peace River at Zolfo (2295637) gage (1933-2006)

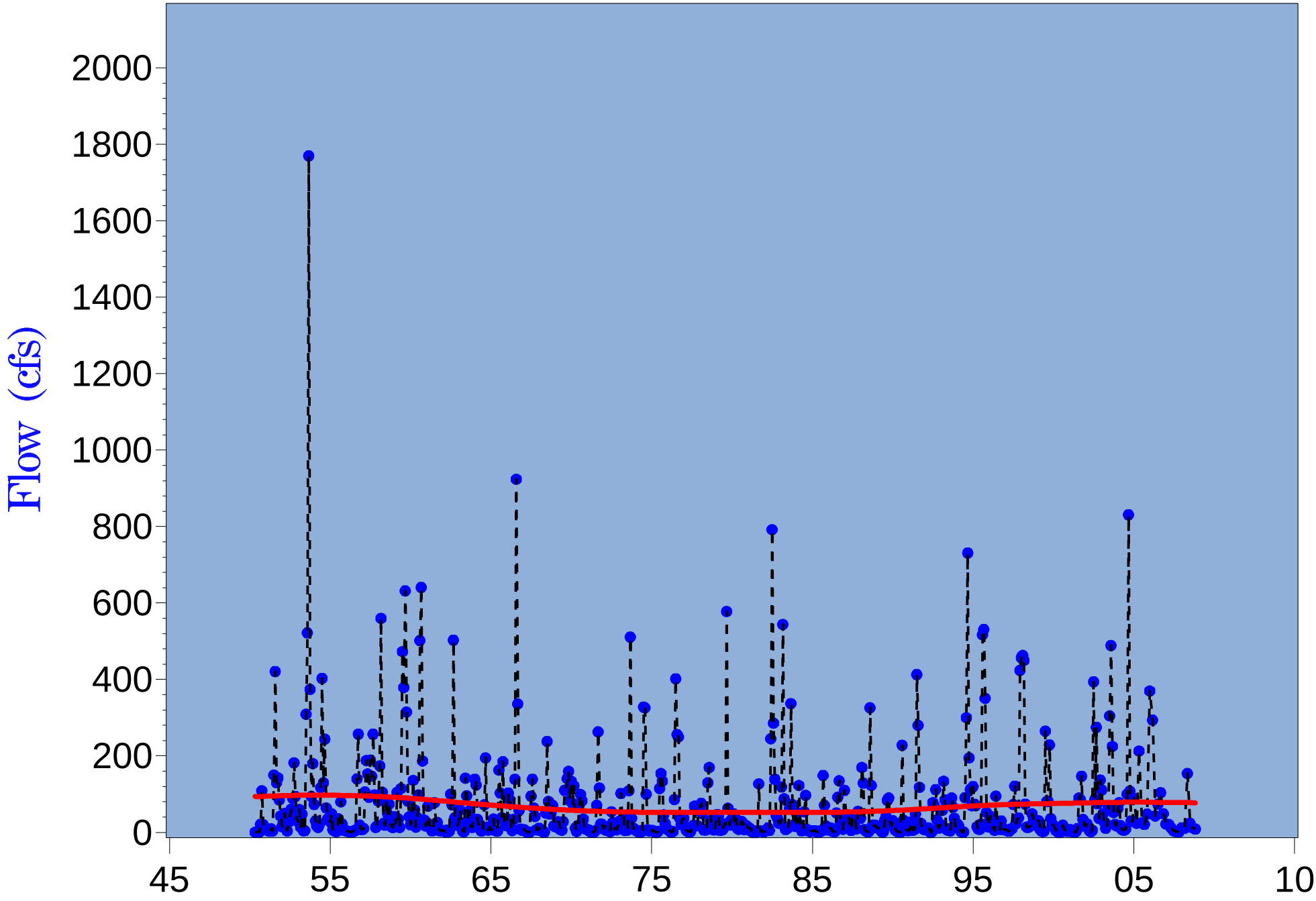


Figure 3.60 Monthly minimum flow at long-term Charlie Creek (2296500) gage (1950-2006)

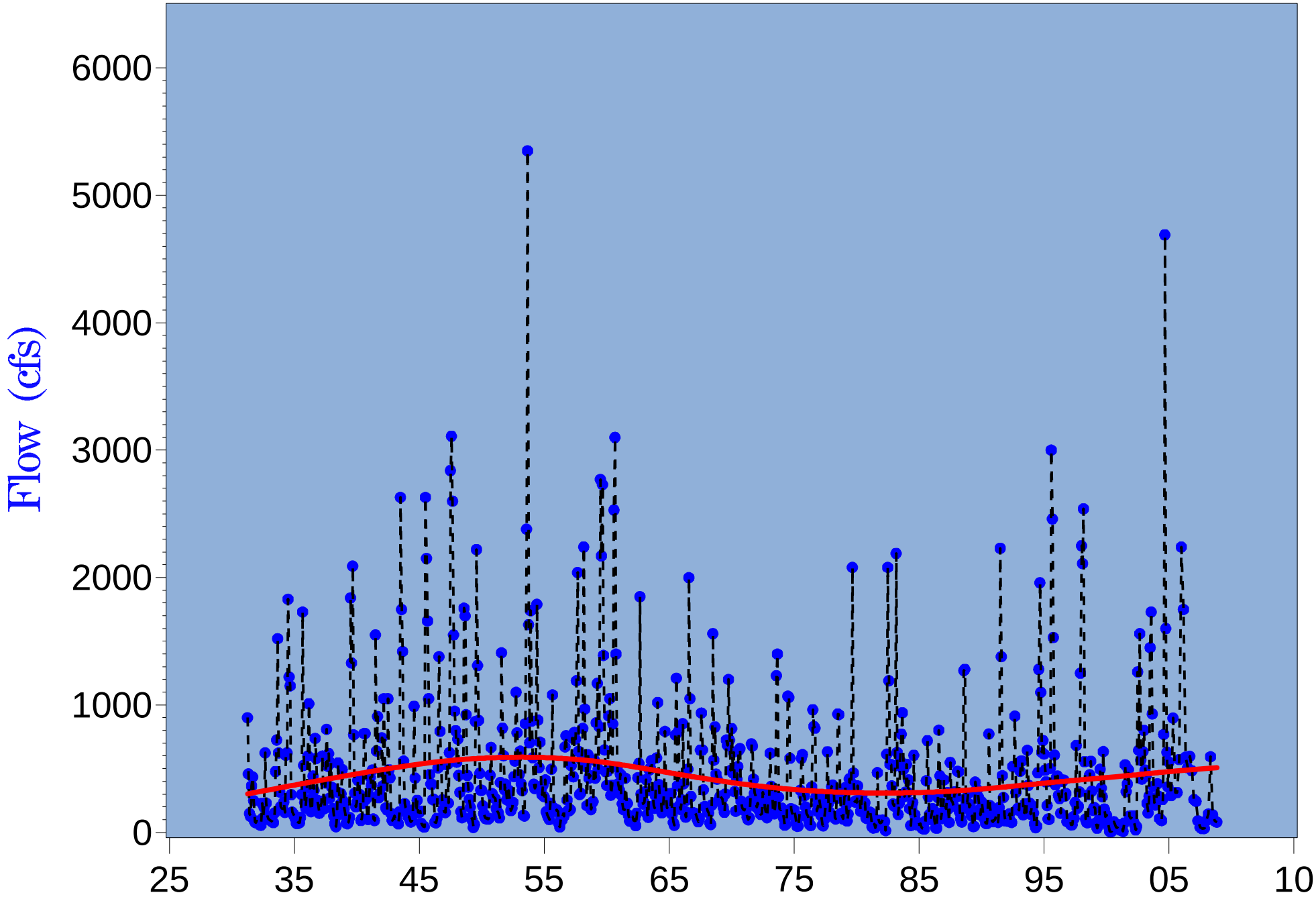


Figure 3.61 Monthly minimum flow at long-term Peace River at Arcadia (2296750) gage (1931-2006)

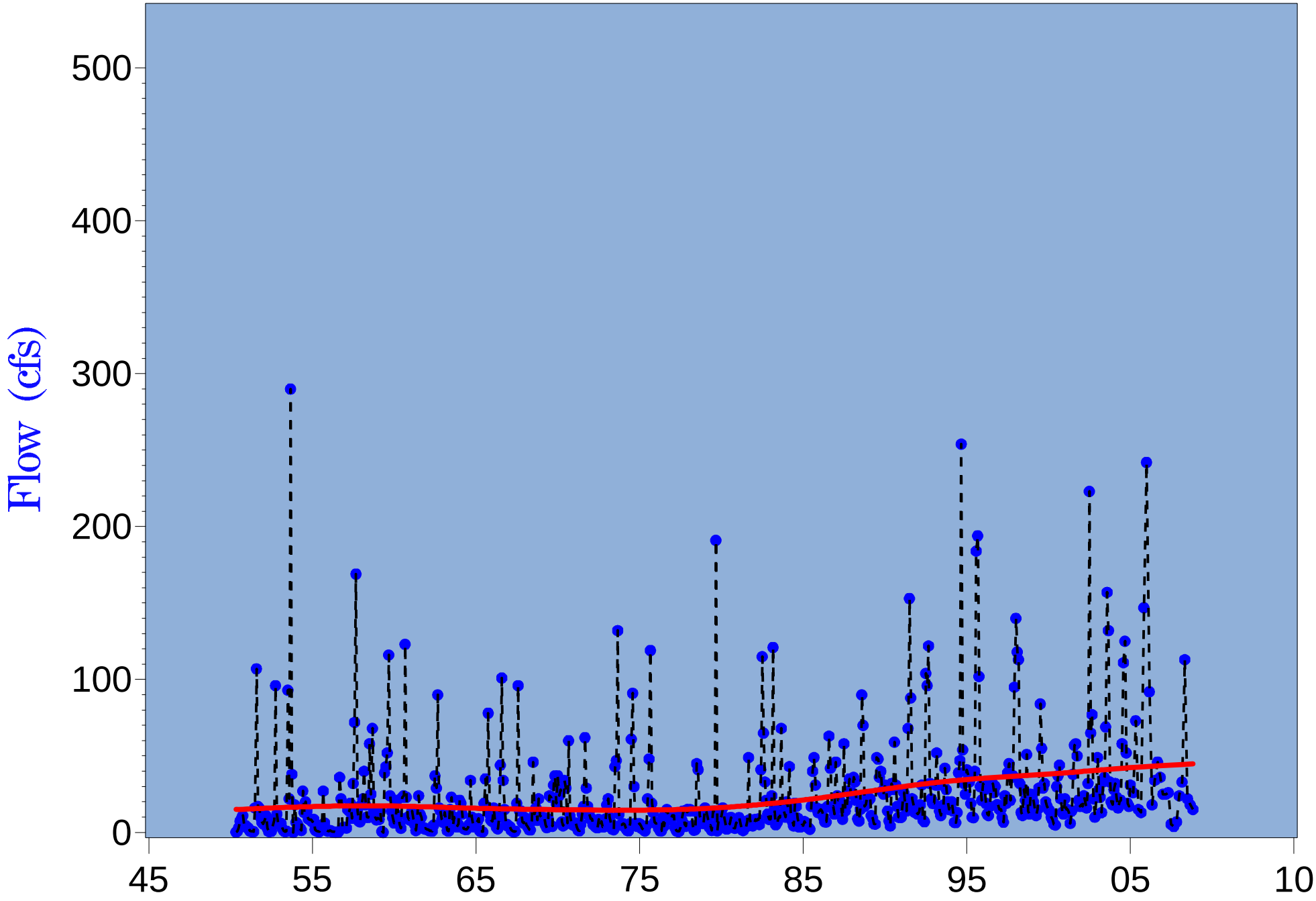


Figure 3.62 Monthly minimum flow at long-term Joshua Creek at Nocatee (2297100) gage (1950-2006)

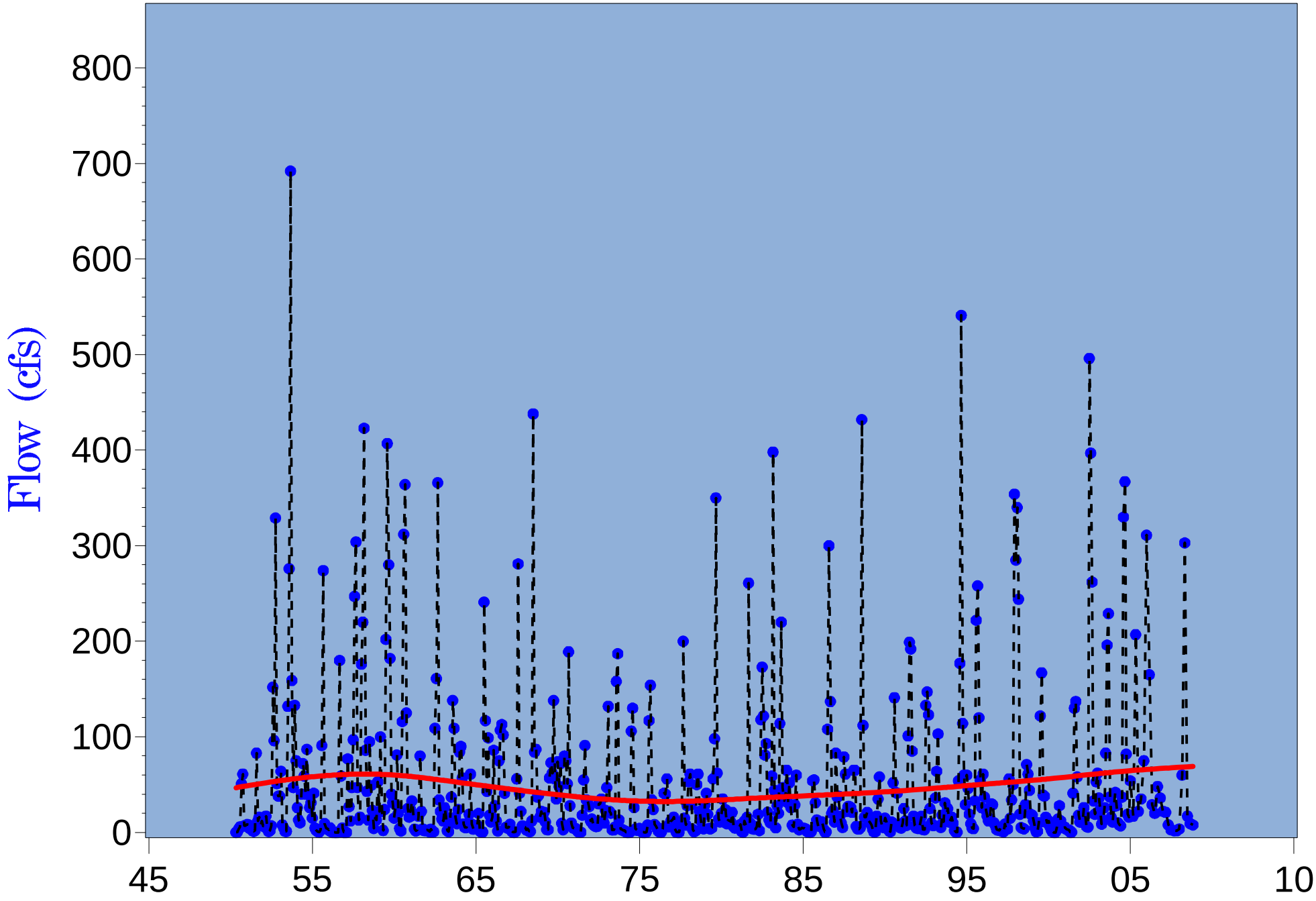


Figure 3.63 Monthly minimum flow at long-term Horse Creek near Arcadia(2297310) gage (1950-2006)

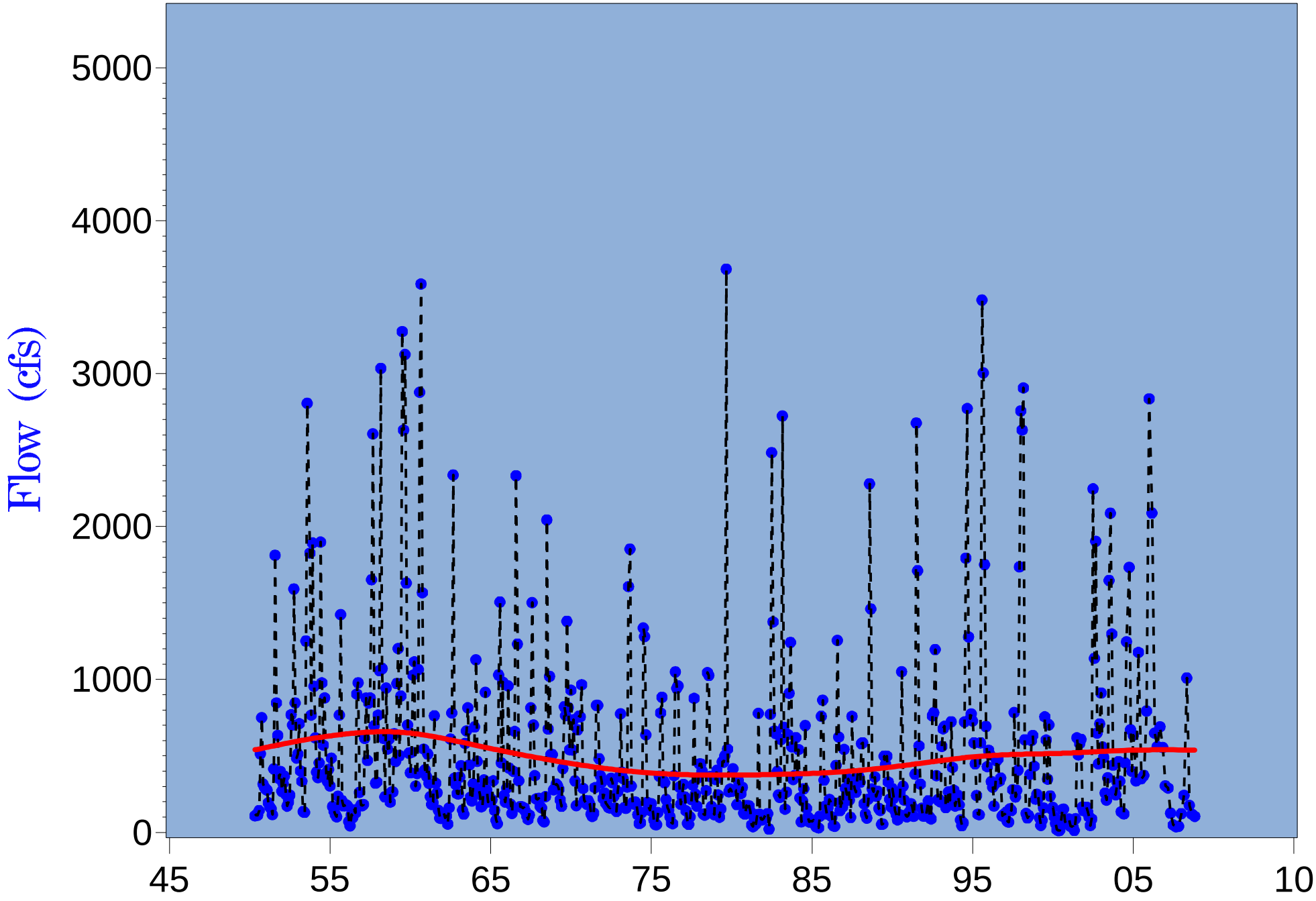


Figure 3.64 Monthly minimum flow for long-term for total gaged flow upstream of the Facility (1950-2006)

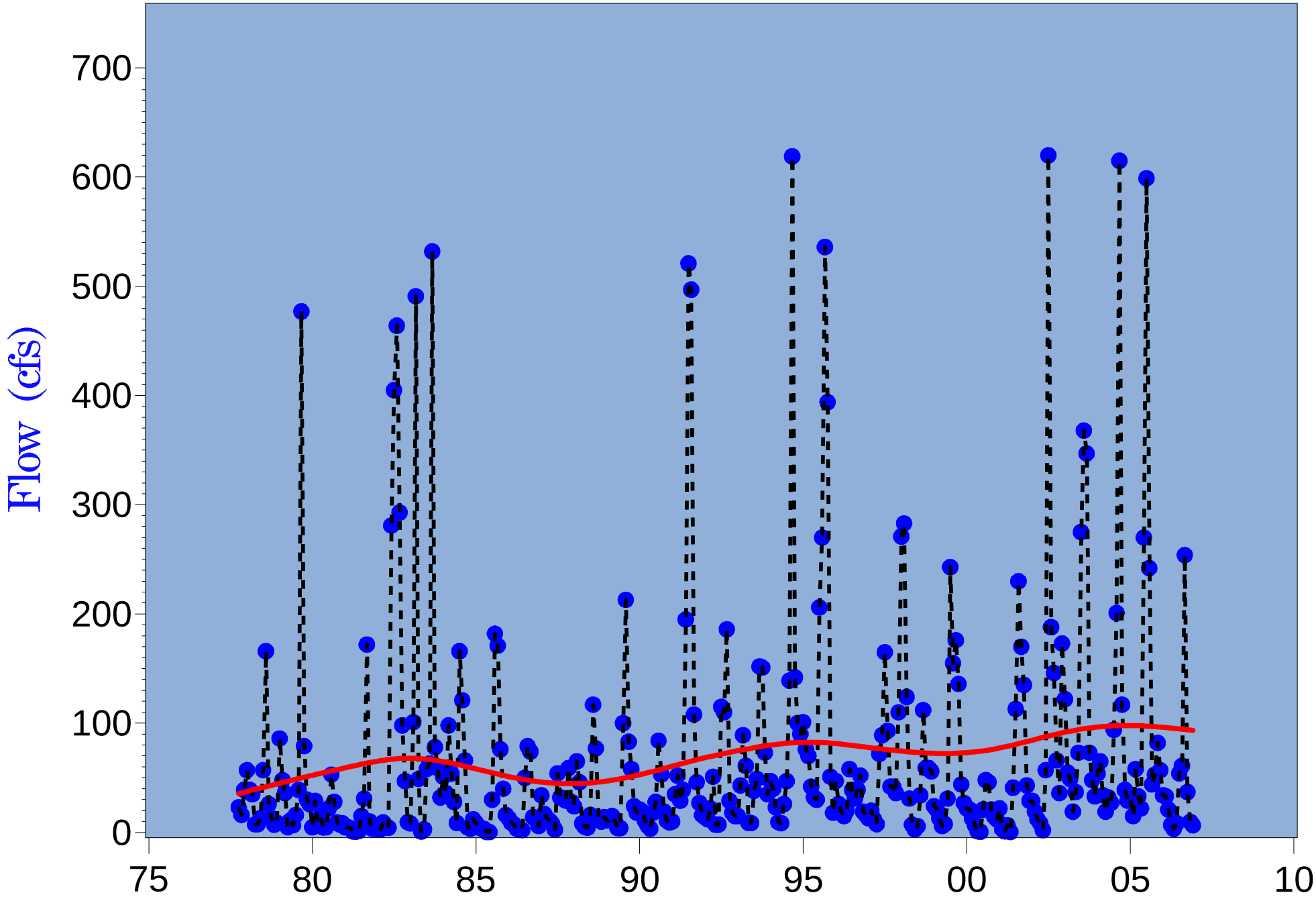


Figure 3.65a Monthly minimum flow at long-term Prairie Creek (2298123) gage (1977-2006)

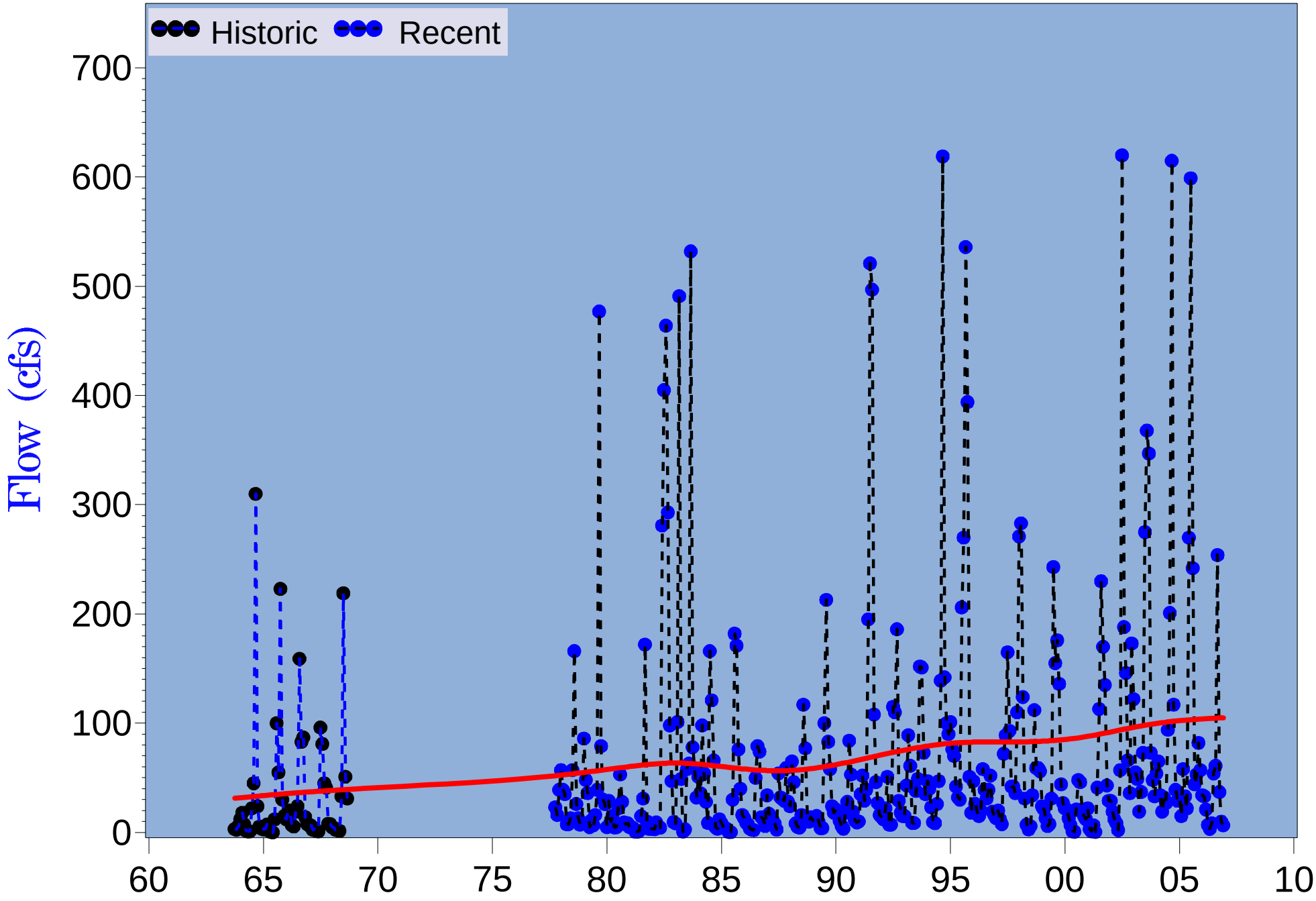


Figure 3.65b Monthly minimum flow at long-term Prairie Creek (2298123) gage (1963-2006)

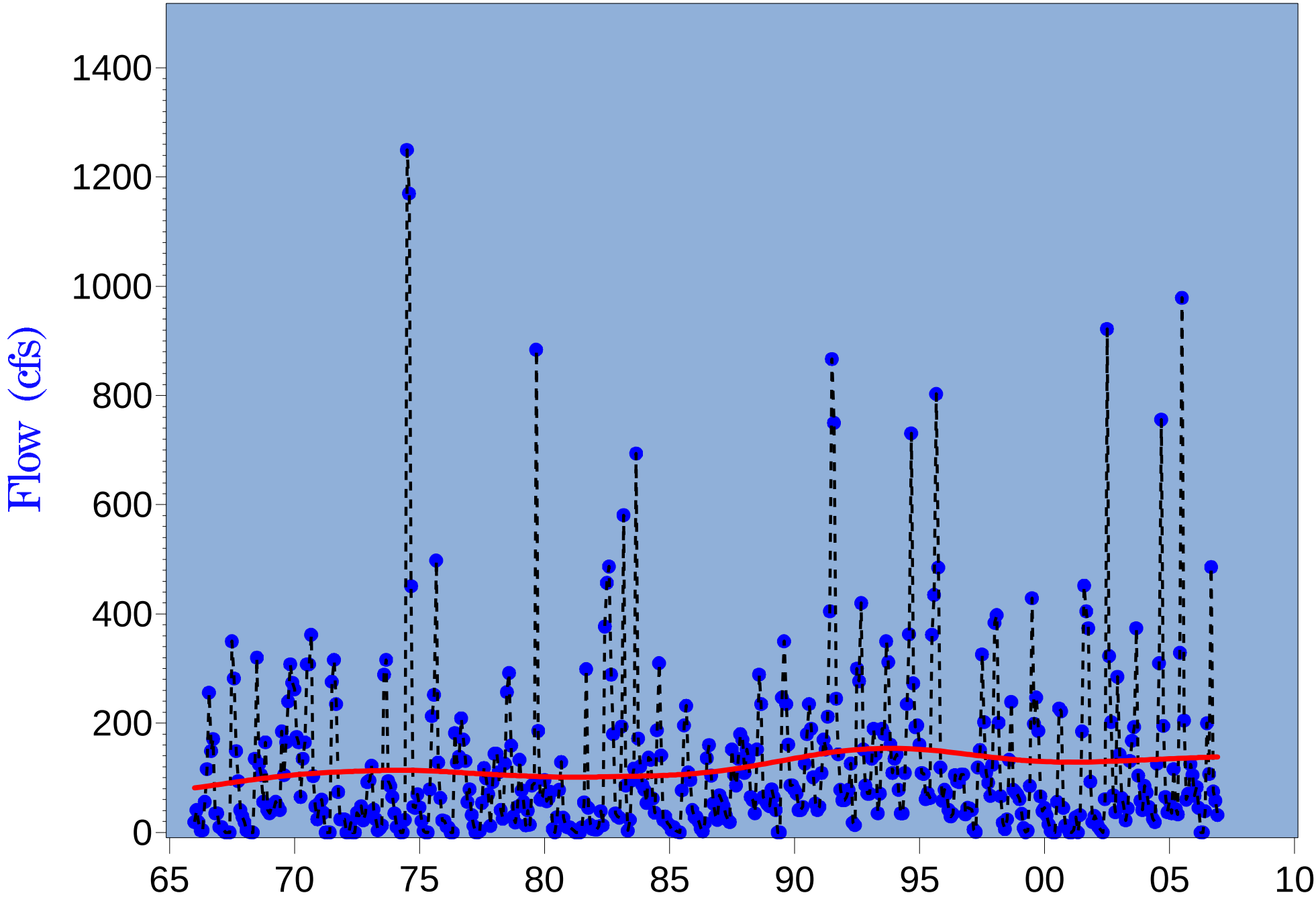


Figure 3.66 Monthly minimum flow at long-term Shell Creek gage (1965-2006)

Table 3.12
Summary of Results of Seasonal Kendall Trend Analyses
Period-of-Record Through 2006 - Monthly Median Values (P50)

USGS ID	Gage Identification	Time Period of Data	Number of Years	Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
Peace River Watershed							
2294650	Peace River at Bartow	1940	67	-0.23	0.001	**0.001**	-1.32
2295420	Payne Creek near Bowling Green	1980	27	0.11	0.005	0.210	1.08
2295637	Peace River at Zolfo Springs	1934	73	-0.13	0.001	**0.006**	-1.94
2296500	Charlie Creek near Gardner	1951	56	-0.05	0.050	0.295	0.64
2296750	Peace River at Arcadia	1932	75	-0.07	0.003	0.143	-1.28
2297100	Joshua Creek at Nocatee	1951	56	0.24	0.001	**0.001**	0.96
2297310	Horse Creek near Arcadia	1951	56	0.01	0.799	0.892	0.66
	Total Gaged Flow Upstream of the Facility	1951	56	-0.09	0.001	**0.086**	-4.40
2298123	Prairie Creek near Fort Ogden	1978	29	0.12	0.002	**0.104**	0.88
2298202	Shell Creek near Punta Gorda	1965	41	0.07	0.036	0.253	0.70
	Total Gaged Peace River Flow to the Harbor	1965	41	0.02	0.534	0.751	1.04
Reference Watershed							
2298830	Myakka River near Sarasota	1937	70	0.14	0.001	**0.001**	0.41

* Red values denote significant trend at p=0.05 level, while blue indicates trends significant at p=0.10
** Positive Tau statistic and slope values indicate increasing trend over time, negative values correspond to declining changes in flow over time

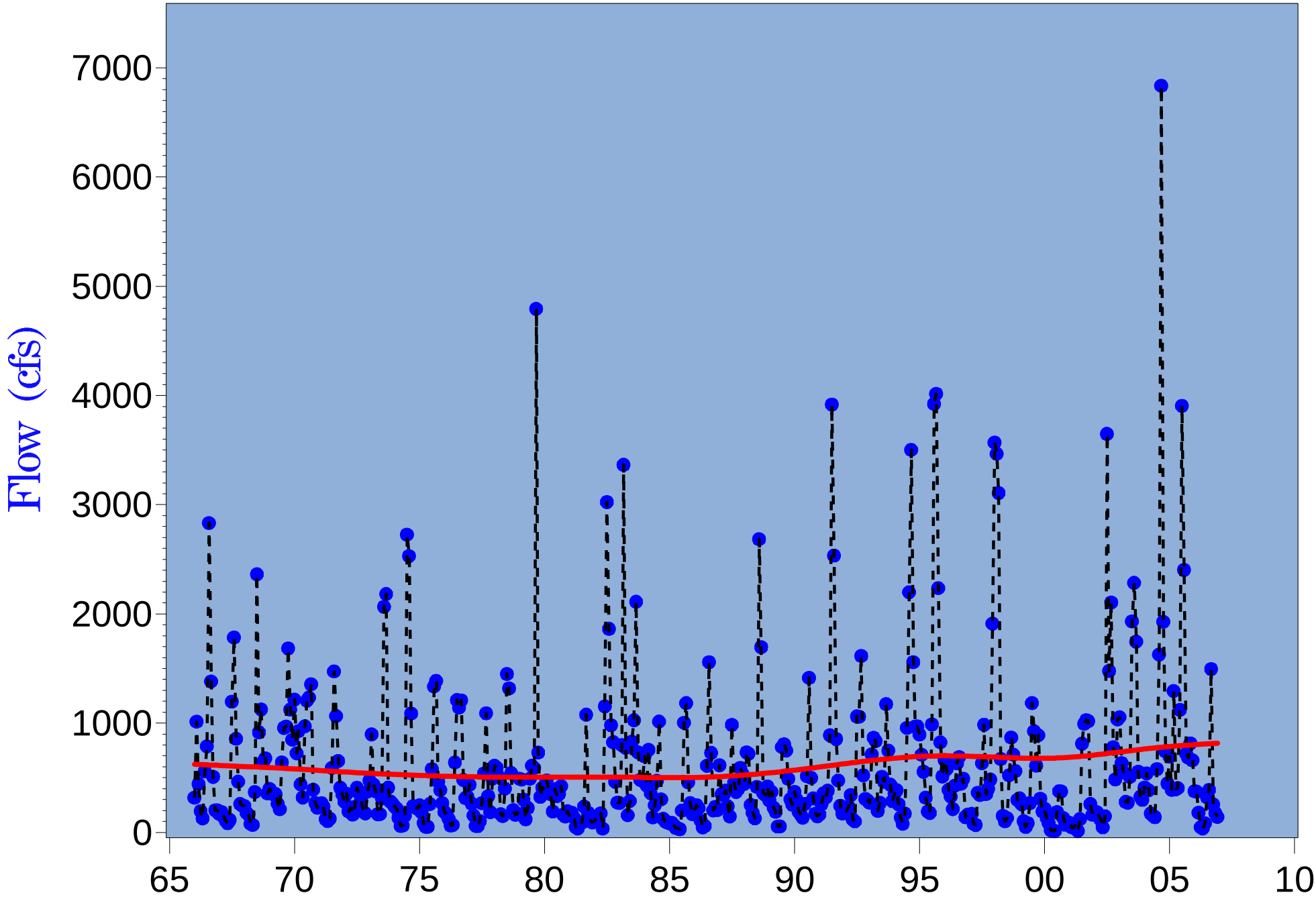


Figure 3.67 Monthly minimum flow for total gaged Peace River flow to the Upper Harbor (1965-2006)

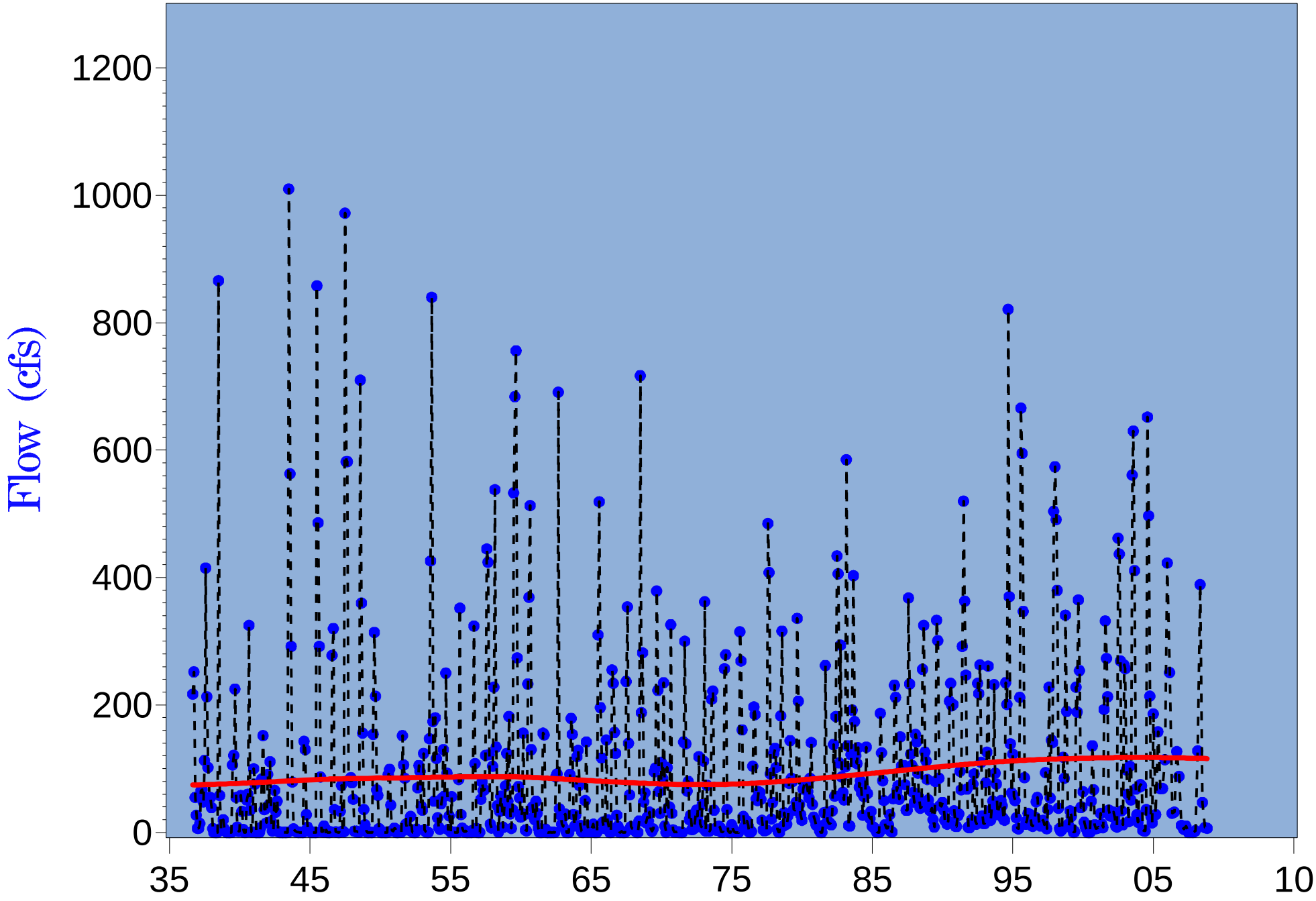


Figure 3.68 Monthly minimum flow at long-term Myakka River near Sarasota (2298830) gage (1936-2006)

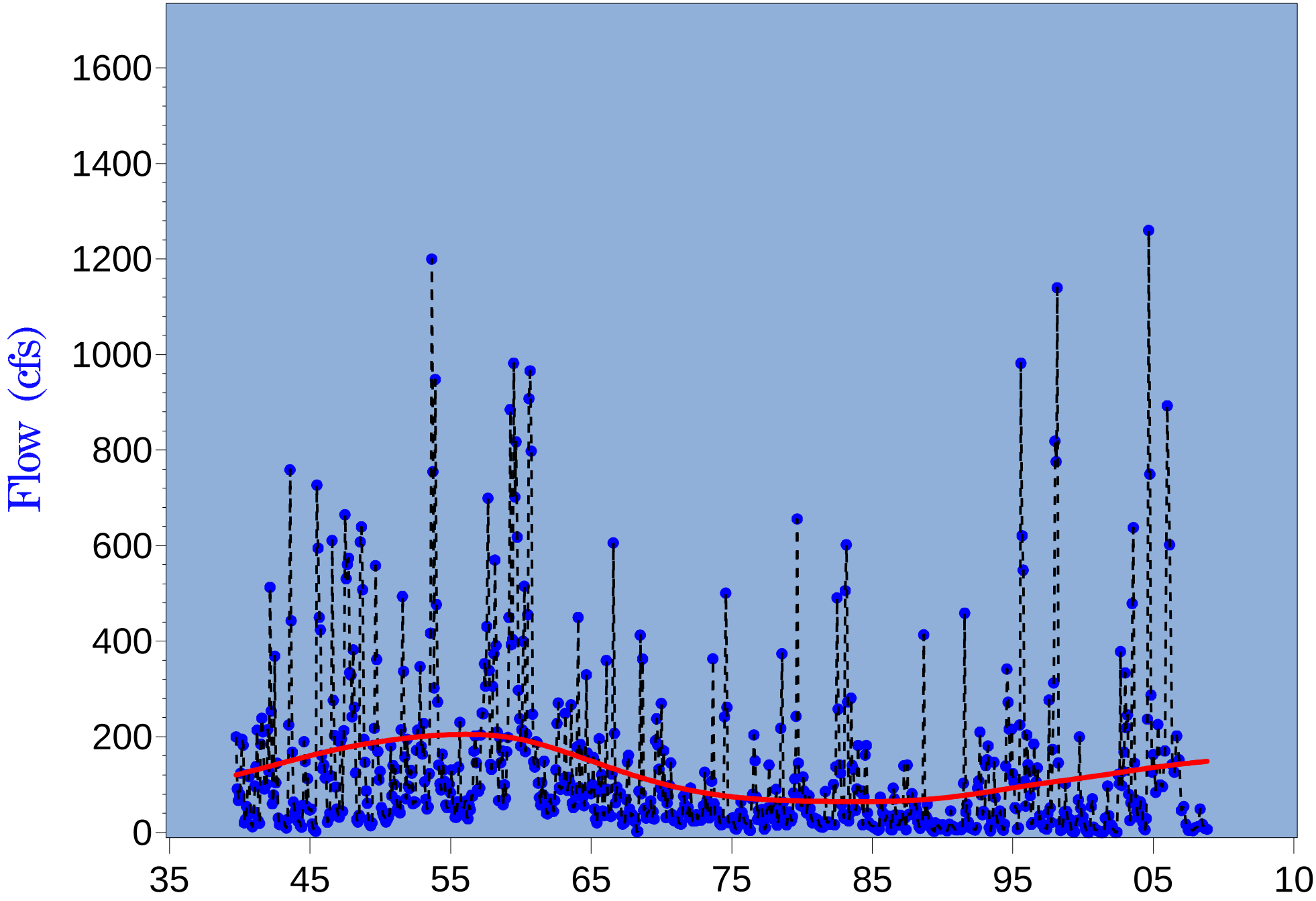


Figure 3.69 Monthly P10 flow at long-term Peace River at Bartow (2294650) gage (1939-2006)

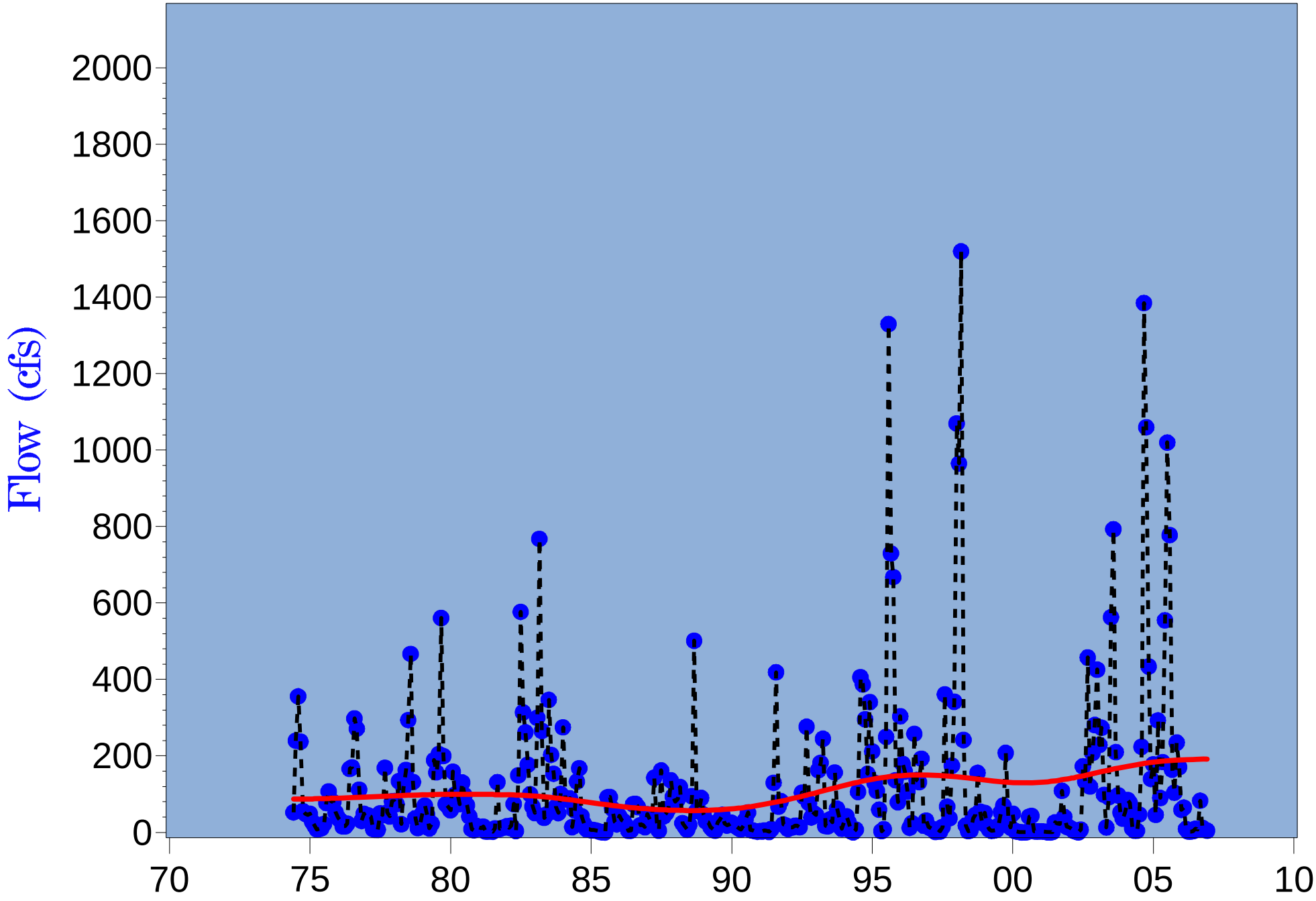


Figure 3.70 Monthly P10 flow at long-term Peace River at Ft. Meade (2294898) gage (1974-2006)

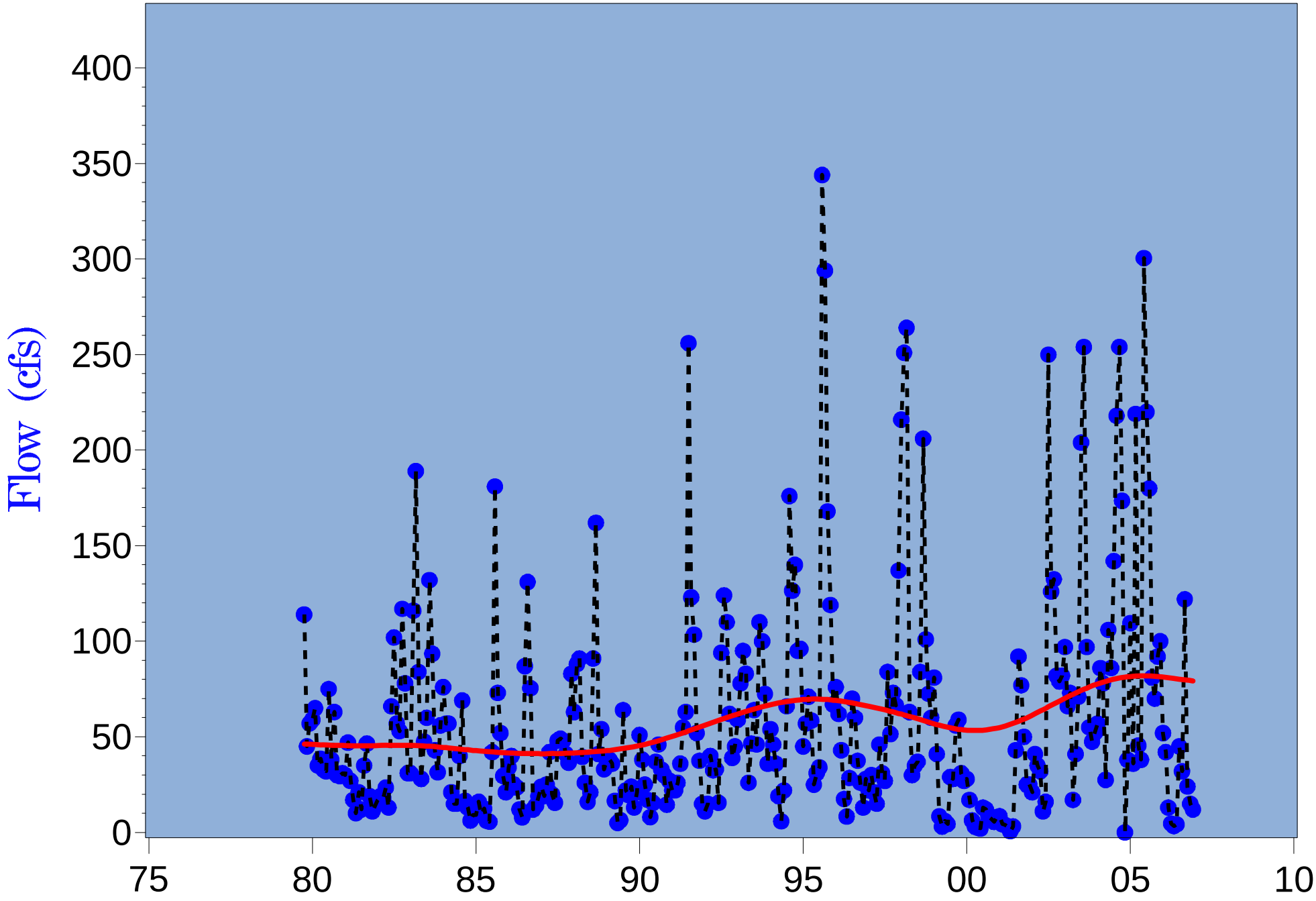


Figure 3.71a Monthly P10 flow at long-term Payne Creek (2295420) gage (1979-2006)

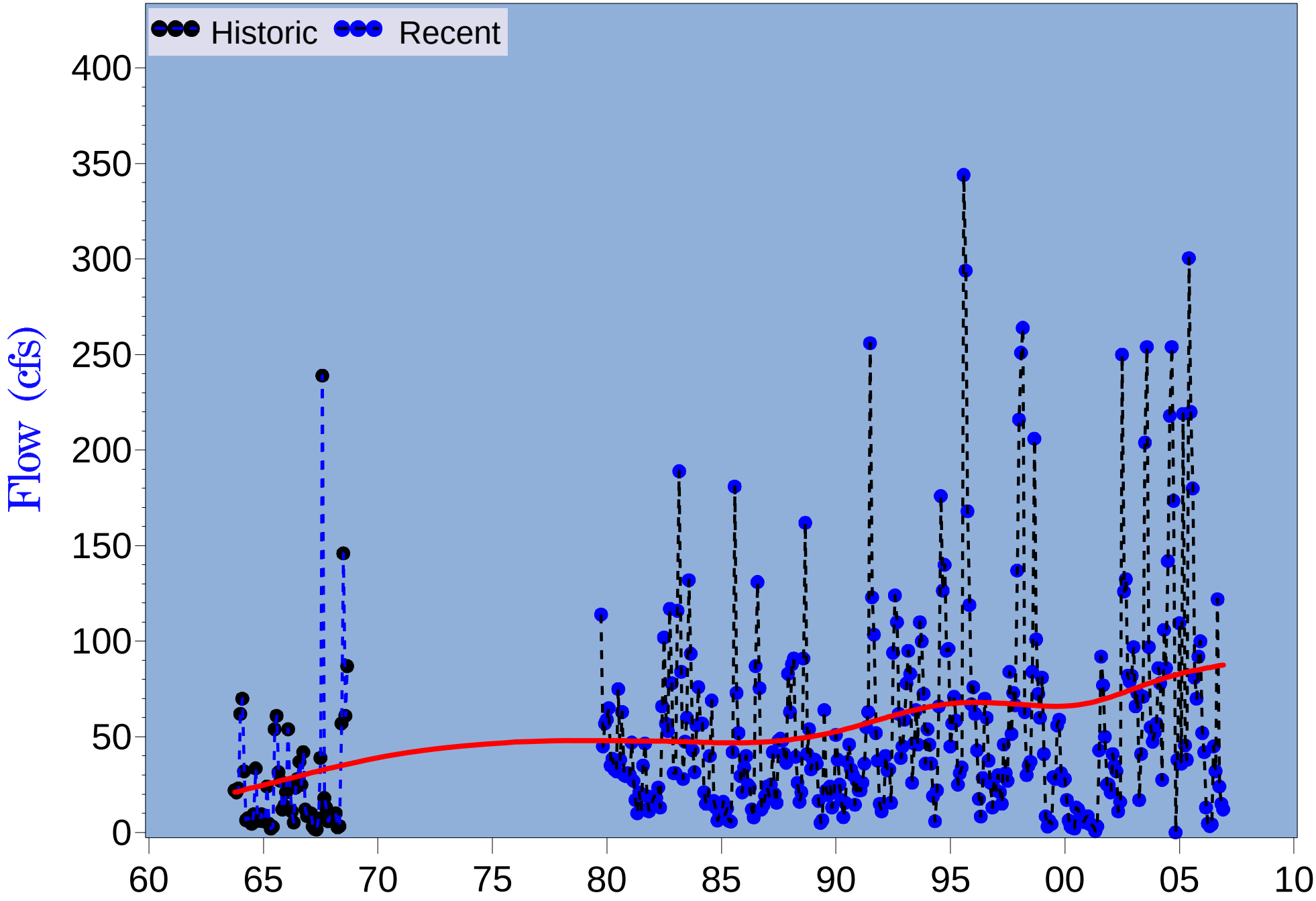


Figure 3.71b Monthly P10 flow at long-term Payne Creek (2295420) gage (1963-2006)

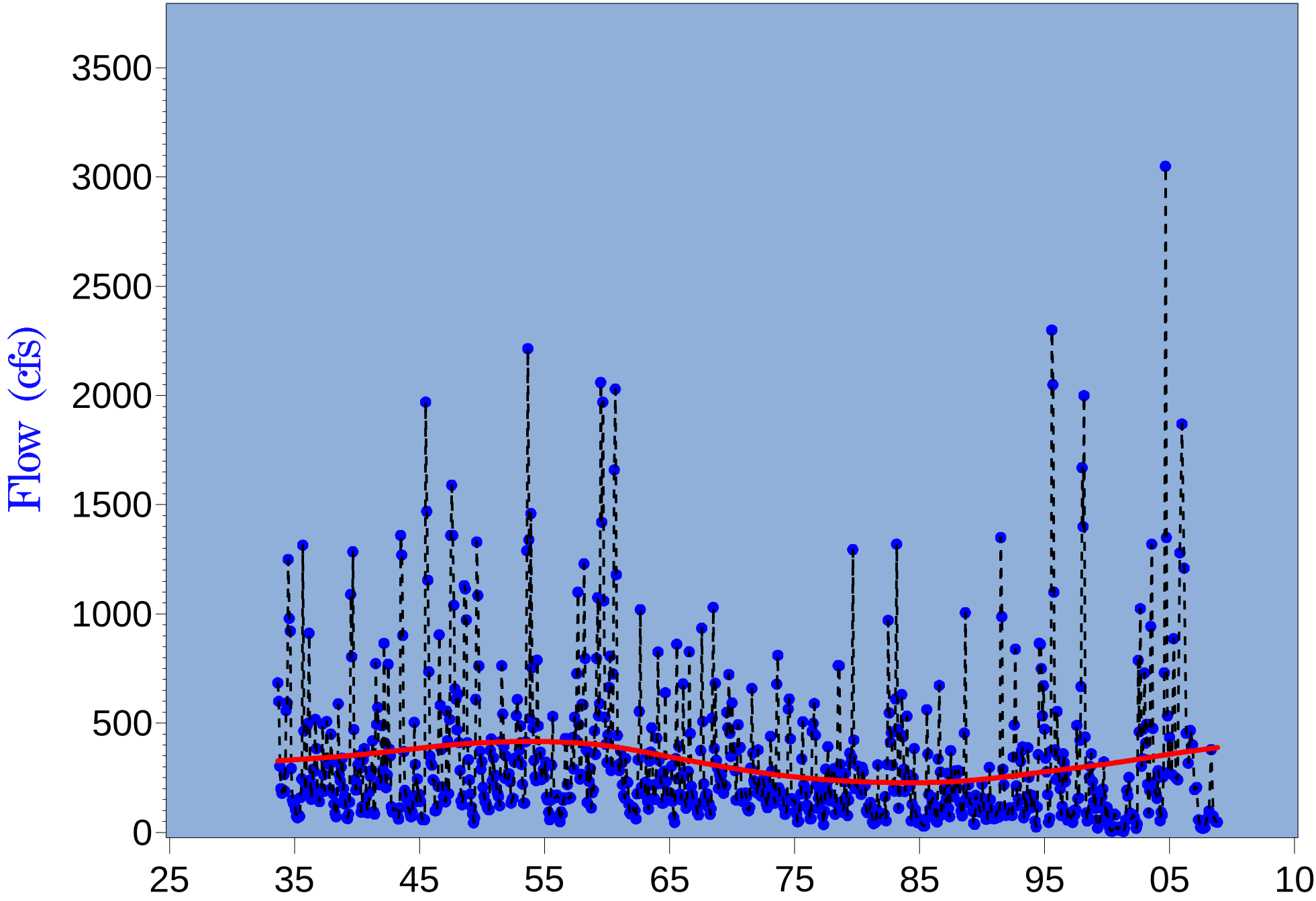


Figure 3.72 Monthly P10 flow at long-term Peace River at Zolfo (2295637) gage (1933-2006)

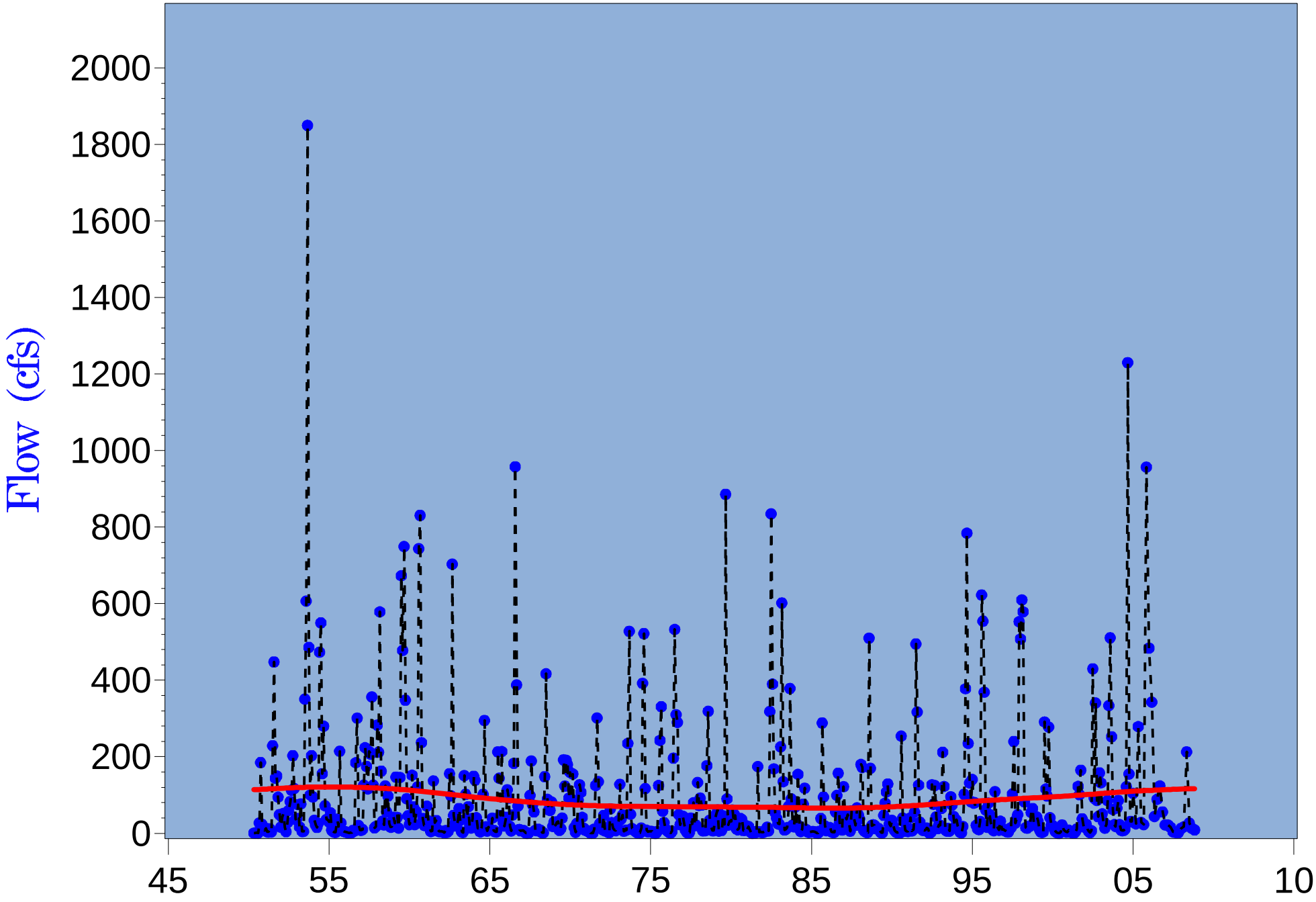


Figure 3.73 Monthly P10 flow at long-term Charlie Creek (2296500) gage (1950-2006)

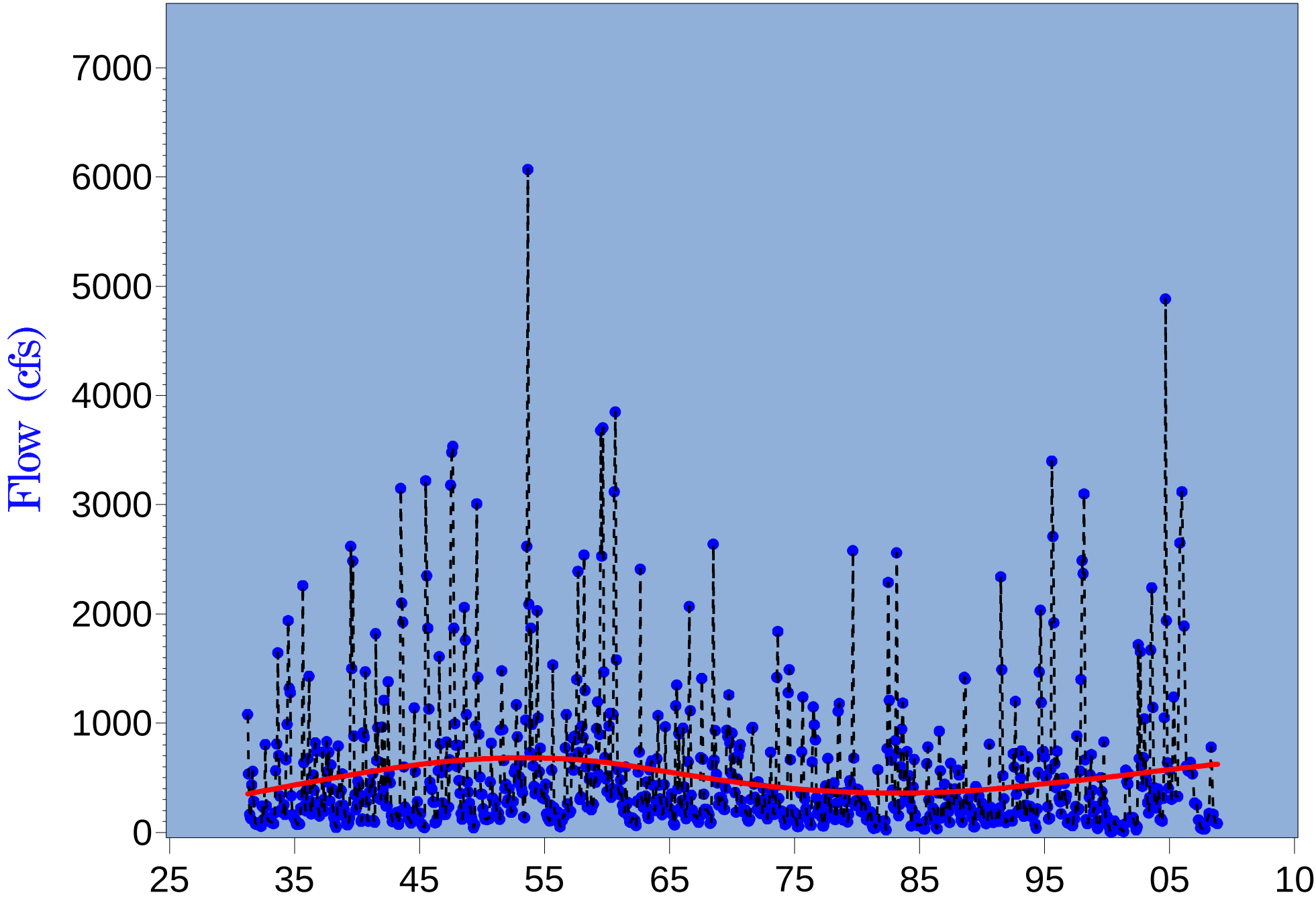


Figure 3.74 Monthly P10 flow at long-term Peace River at Arcadia (2296750) gage (1931-2006)

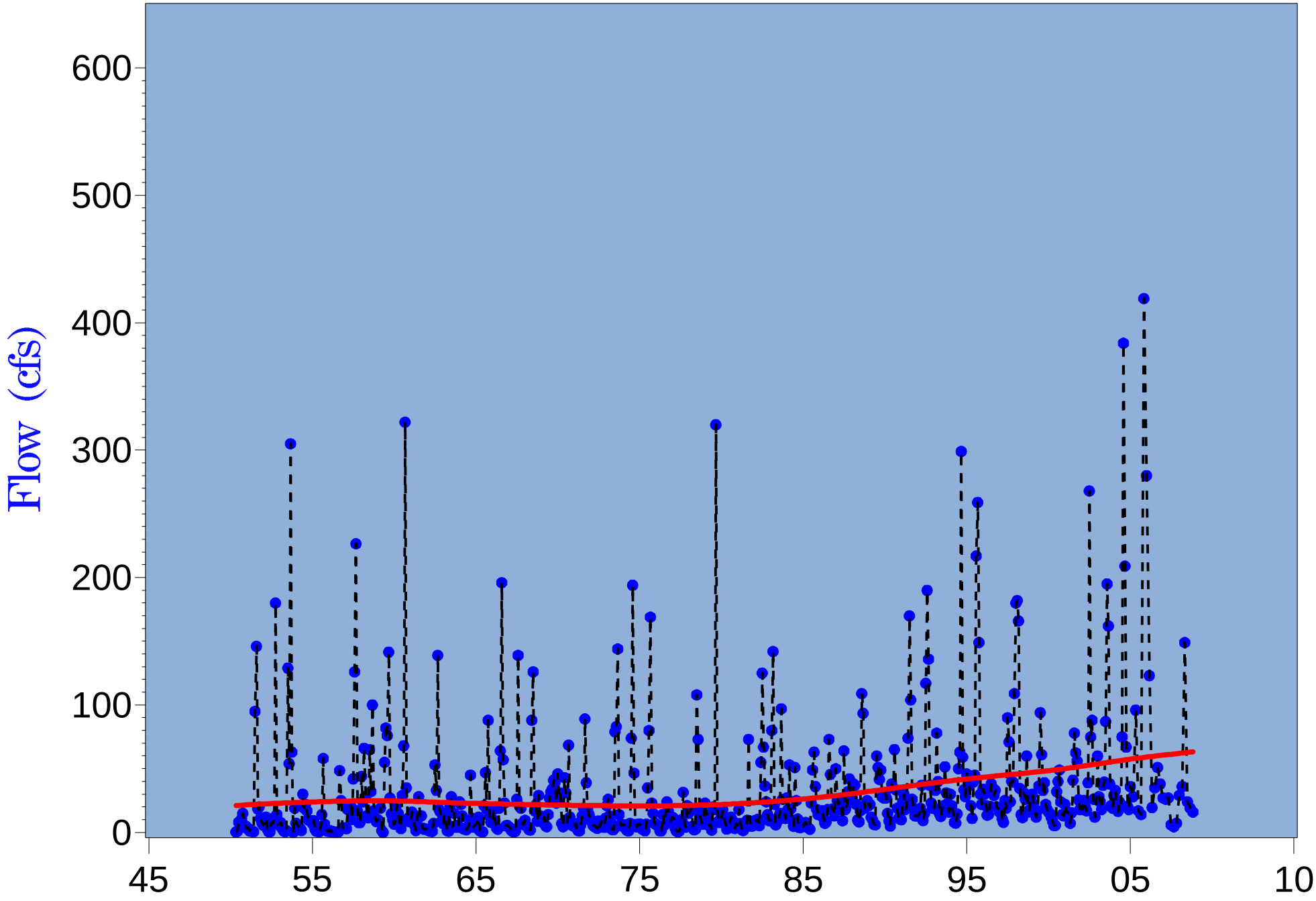


Figure 3.75 Monthly P10 flow at long-term Joshua Creek at Nocatee (2297100) gage (1950-2006)

Table 3.13
Summary of Results of Seasonal Kendall Trend Analyses
Period-of-Record Through 2006 - P75 (or Q25)

USGS ID	Gage Identification	Time Period of Data	Number of Years	Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
Peace River Watershed							
2294650	Peace River at Bartow	1940	67	-0.27	0.001	**0.001**	-1.17
2295420	Payne Creek near Bowling Green	1980	27	0.12	0.002	0.176	1.35
2295637	Peace River at Zolfo Springs	1934	73	-0.16	0.001	**0.001**	-1.73
2296500	Charlie Creek near Gardner	1951	56	-0.05	0.085	0.354	48.70
2296750	Peace River at Arcadia	1932	75	-0.09	0.001	**0.050**	-1.28
2297100	Joshua Creek at Nocatee	1951	56	0.15	0.001	**0.003**	17.71
2297310	Horse Creek near Arcadia	1951	56	-0.01	0.620	0.793	-1.35
	Total Gaged Flow Upstream of the Facility	1951	56	-0.08	0.003	0.133	-8.66
2298123	Prairie Creek near Fort Ogden	1978	29	0.08	0.038	0.263	1.00
2298202	Shell Creek near Punta Gorda	1965	41	0.06	0.064	0.274	0.92
	Total Gaged Peace River Flow to the Harbor	1965	41	0.03	0.366	0.633	2.20
Reference Watershed							
2298830	Myakka River near Sarasota	1937	70	0.18	0.001	**0.001**	0.31

* Red values denote significant trend at p=0.05 level, while blue indicates trends significant at p=0.10

** Positive Tau statistic and slope values indicate increasing trend over time, negative values correspond to declining changes in flow over time

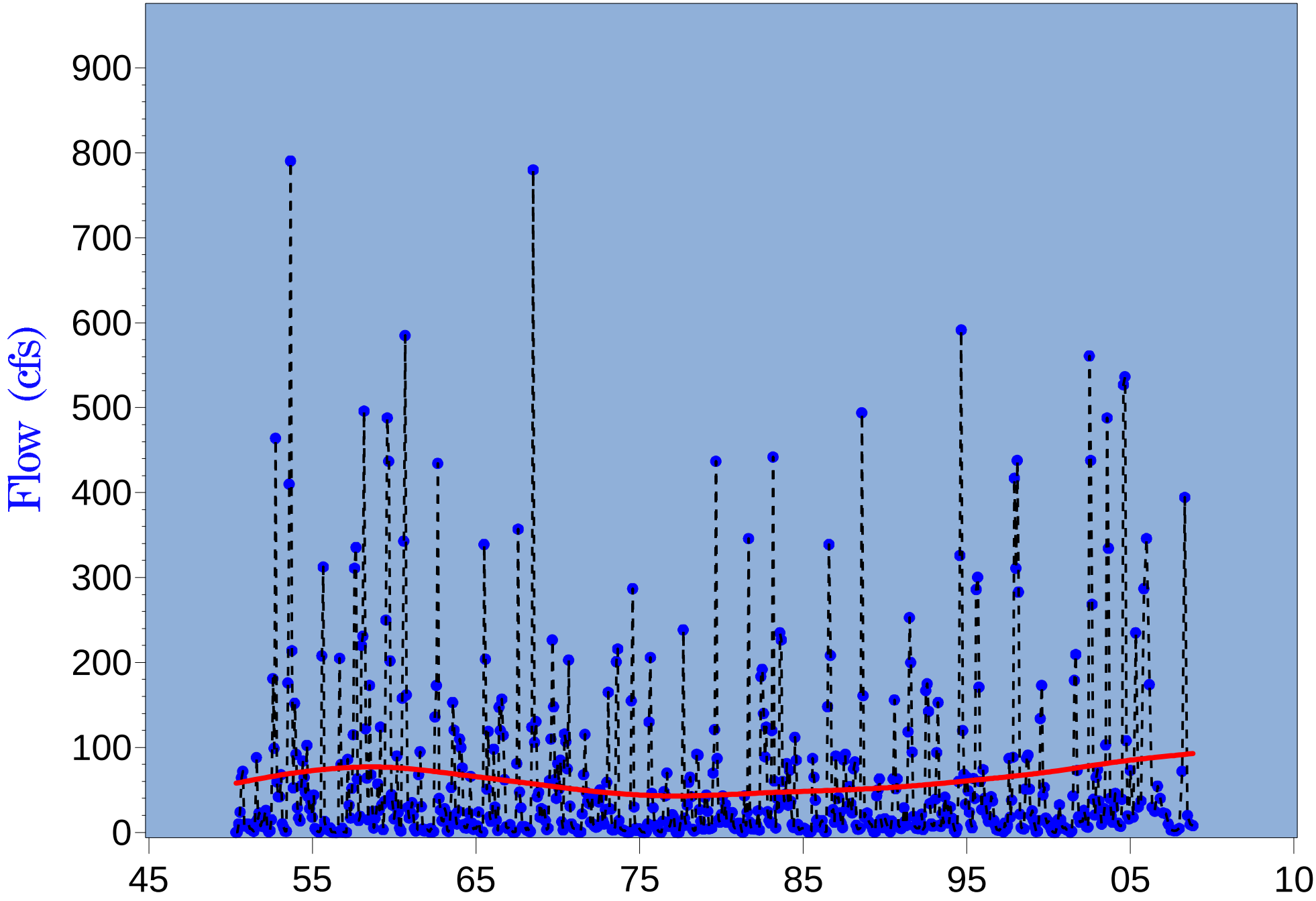


Figure 3.76 Monthly P10 flow at long-term Horse Creek near Arcadia(2297310) gage (1950-2006)

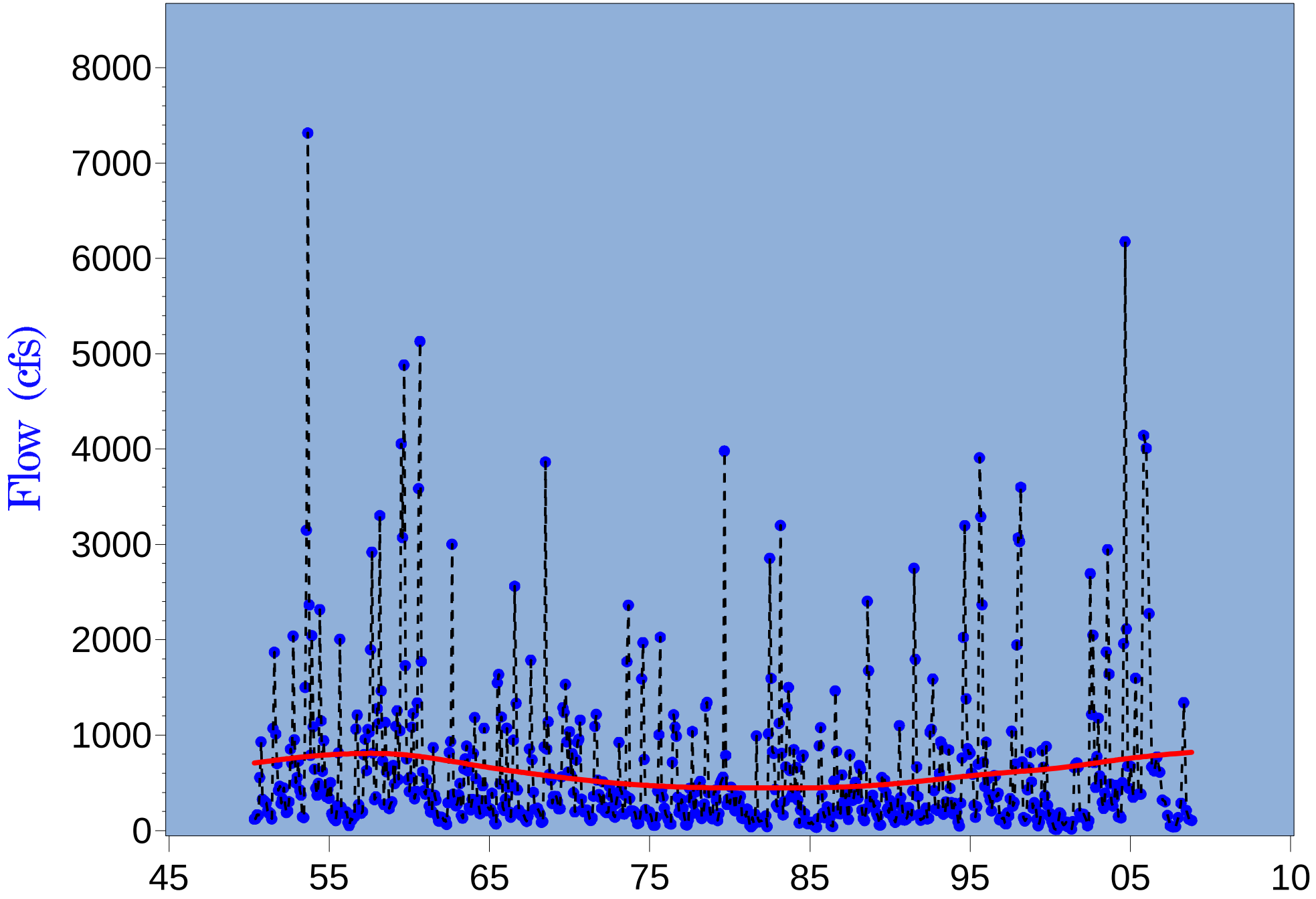


Figure 3.77 Monthly P10 flow for long-term for total gaged flow upstream of the Facility (1950-2006)

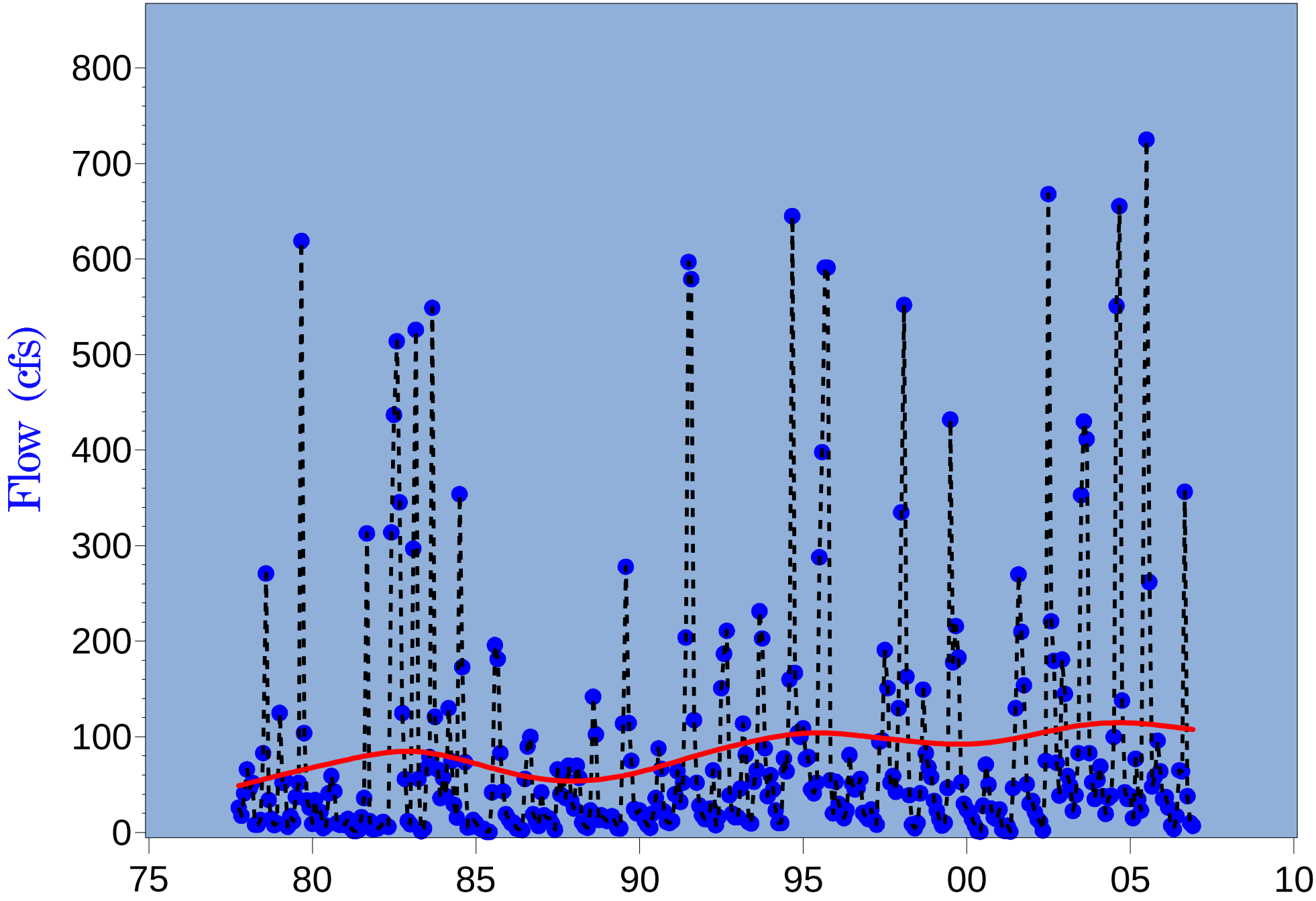


Figure 3.78a Monthly P10 flow at long-term Prairie Creek (2298123) gage (1977-2006)

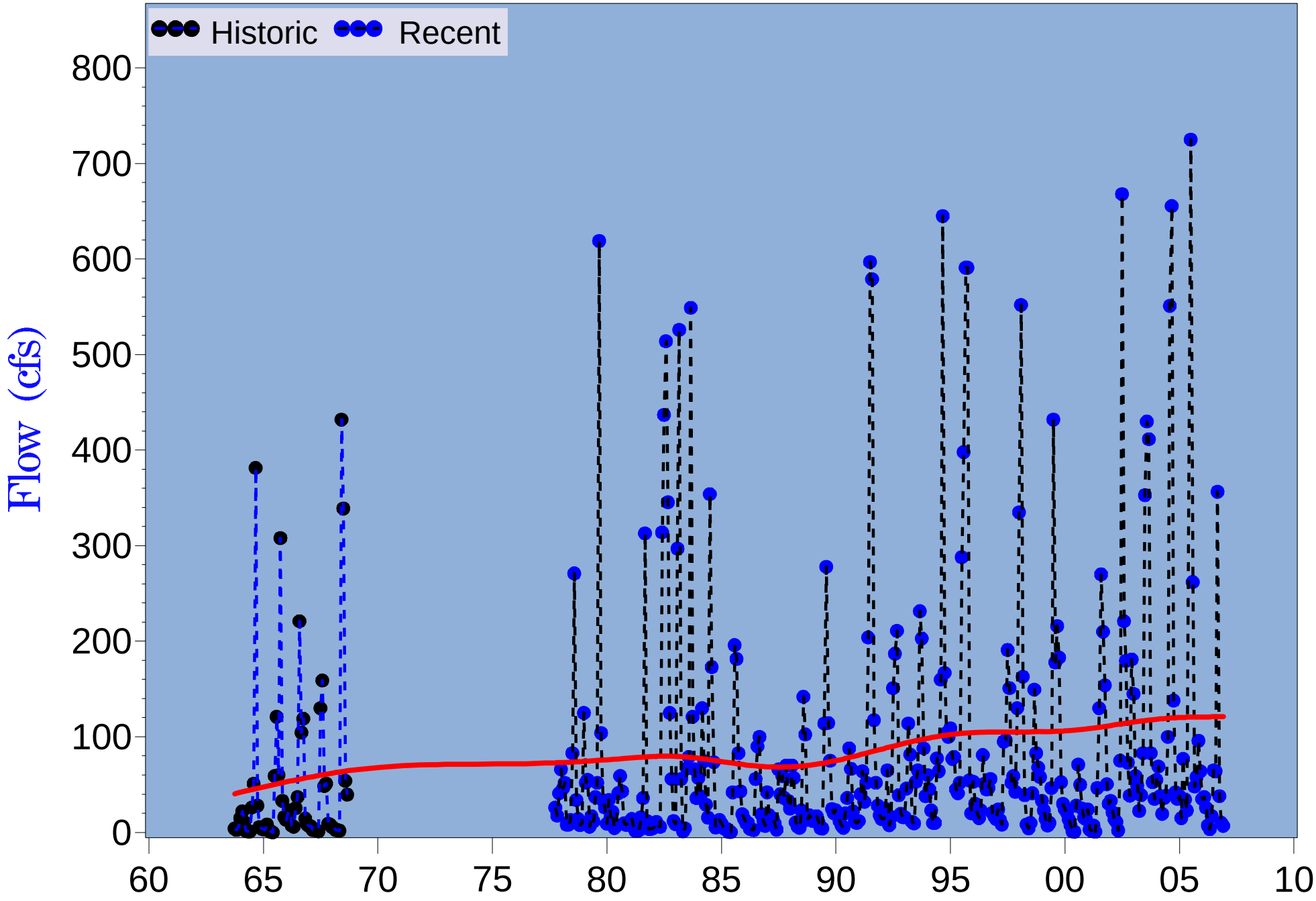


Figure 3.78b Monthly P10 flow at long-term Prairie Creek (2298123) gage (1963-2006)

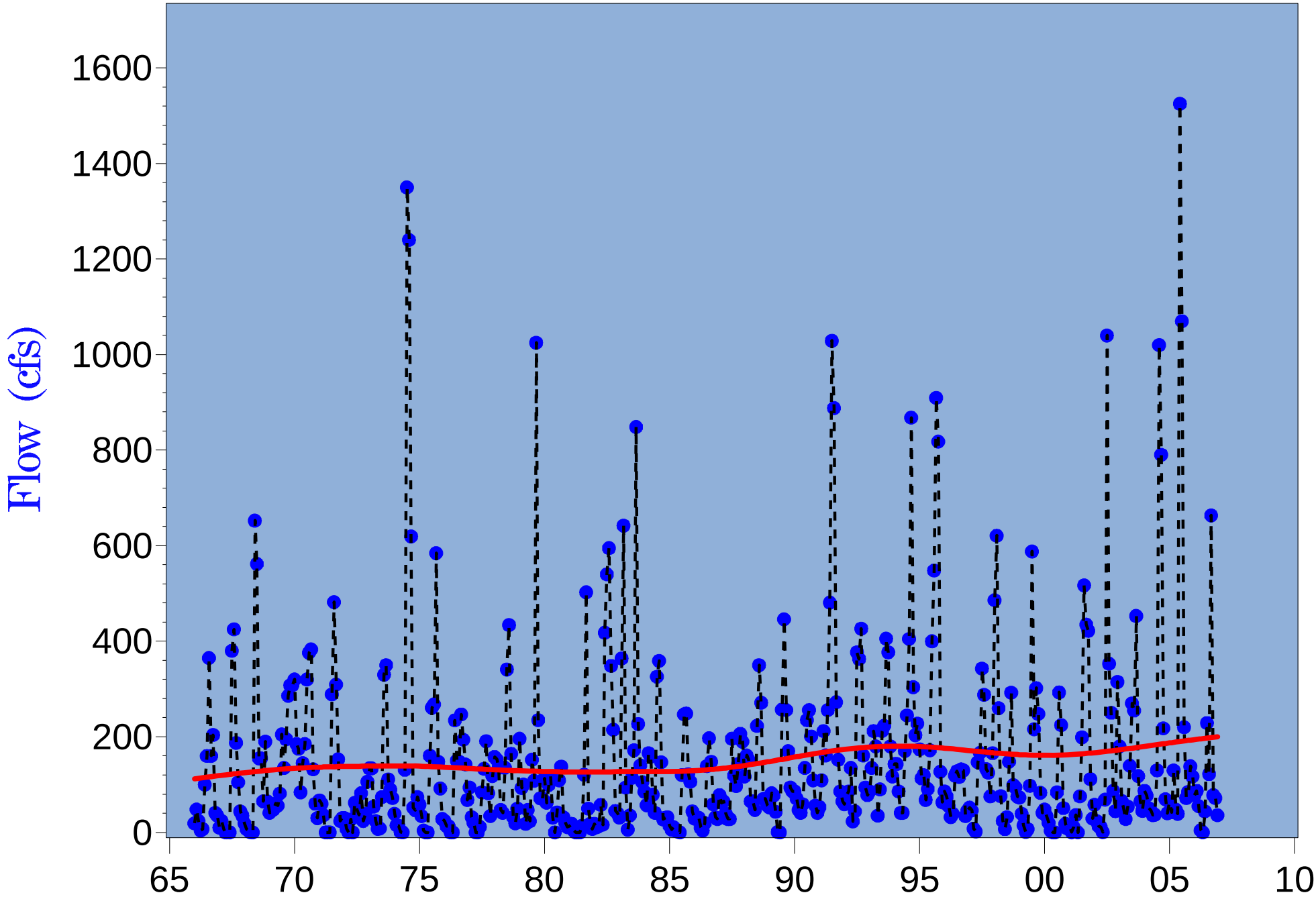


Figure 3.79 Monthly P10 flow at long-term Shell Creek gage (1965-2006)

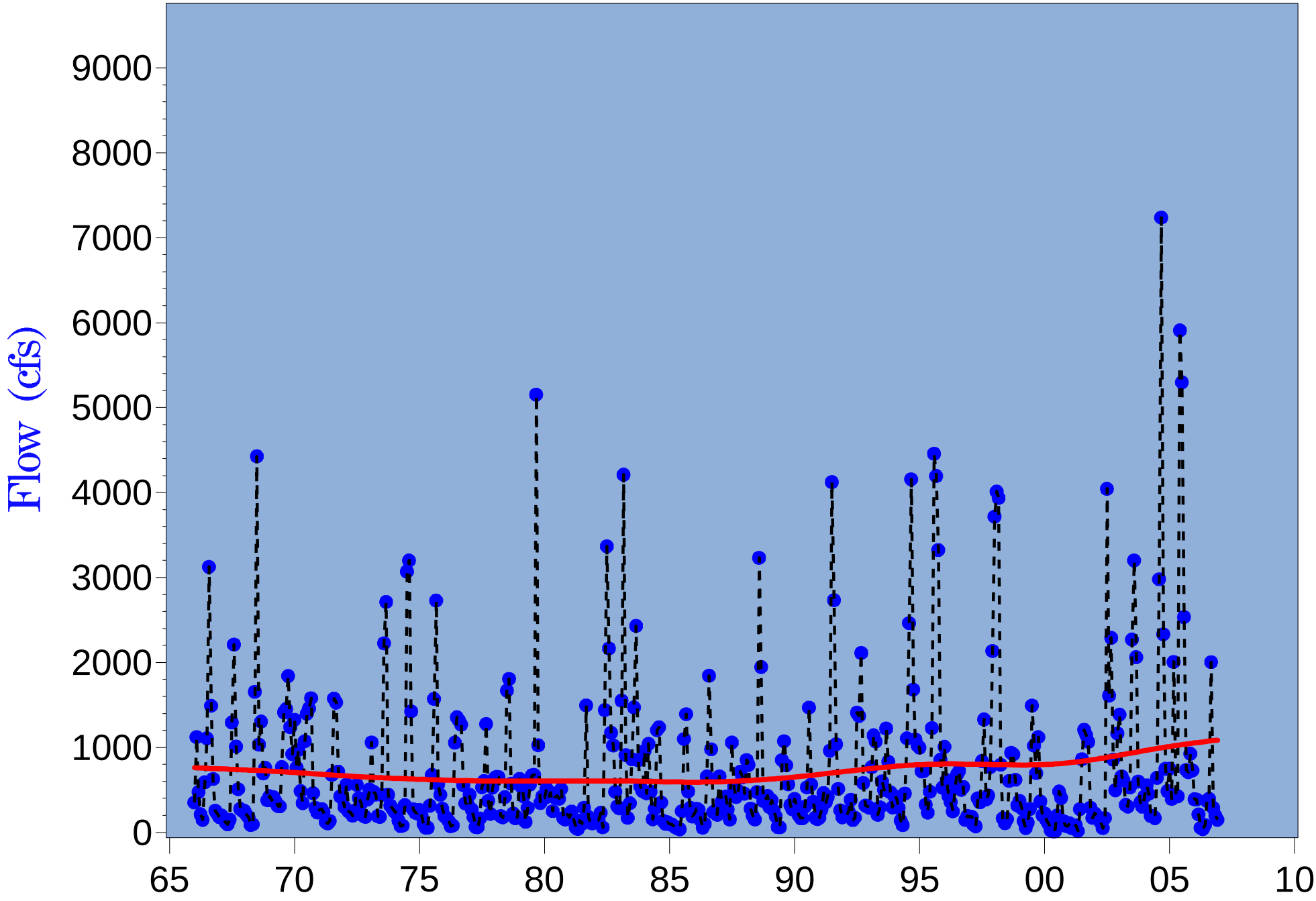


Figure 3.80 Monthly P10 flow for total gaged Peace River flow to the Upper Harbor (1965-2006)

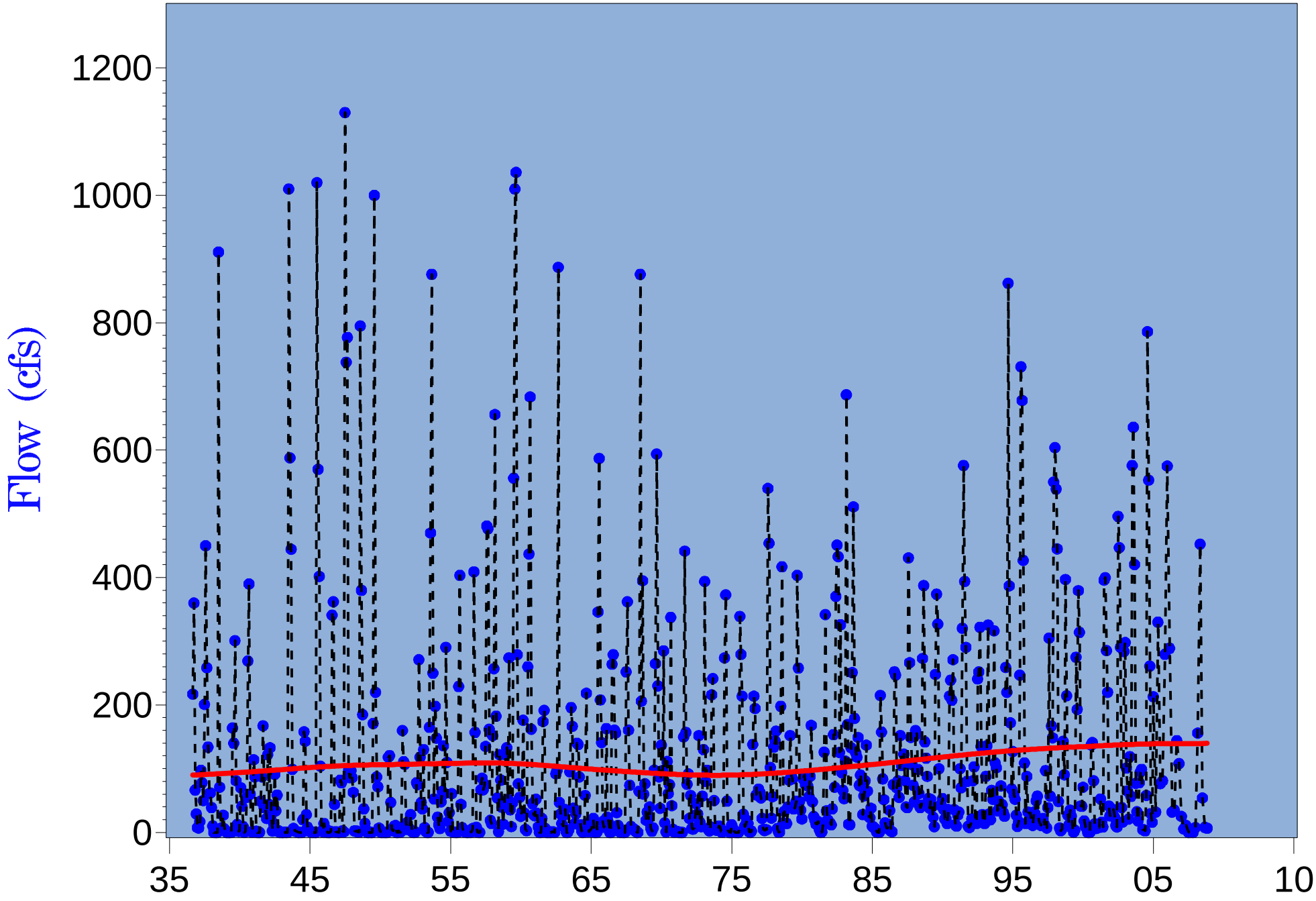


Figure 3.81 Monthly P10 flow at long-term Myakka River near Sarasota (2298830) gage (1936-2006)

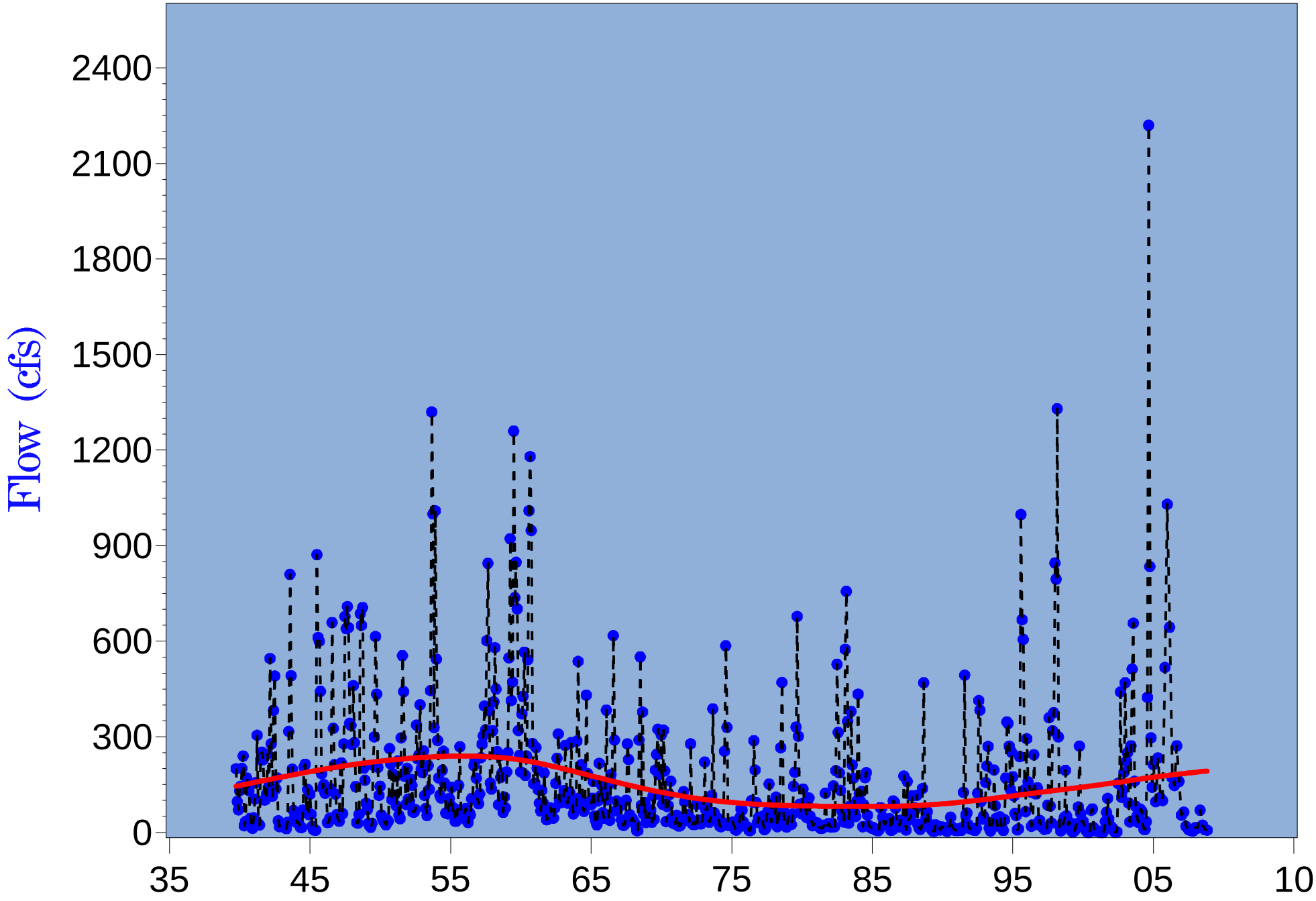


Figure 3.82 Monthly P25 flow at long-term Peace River at Bartow (2294650) gage (1939-2006)

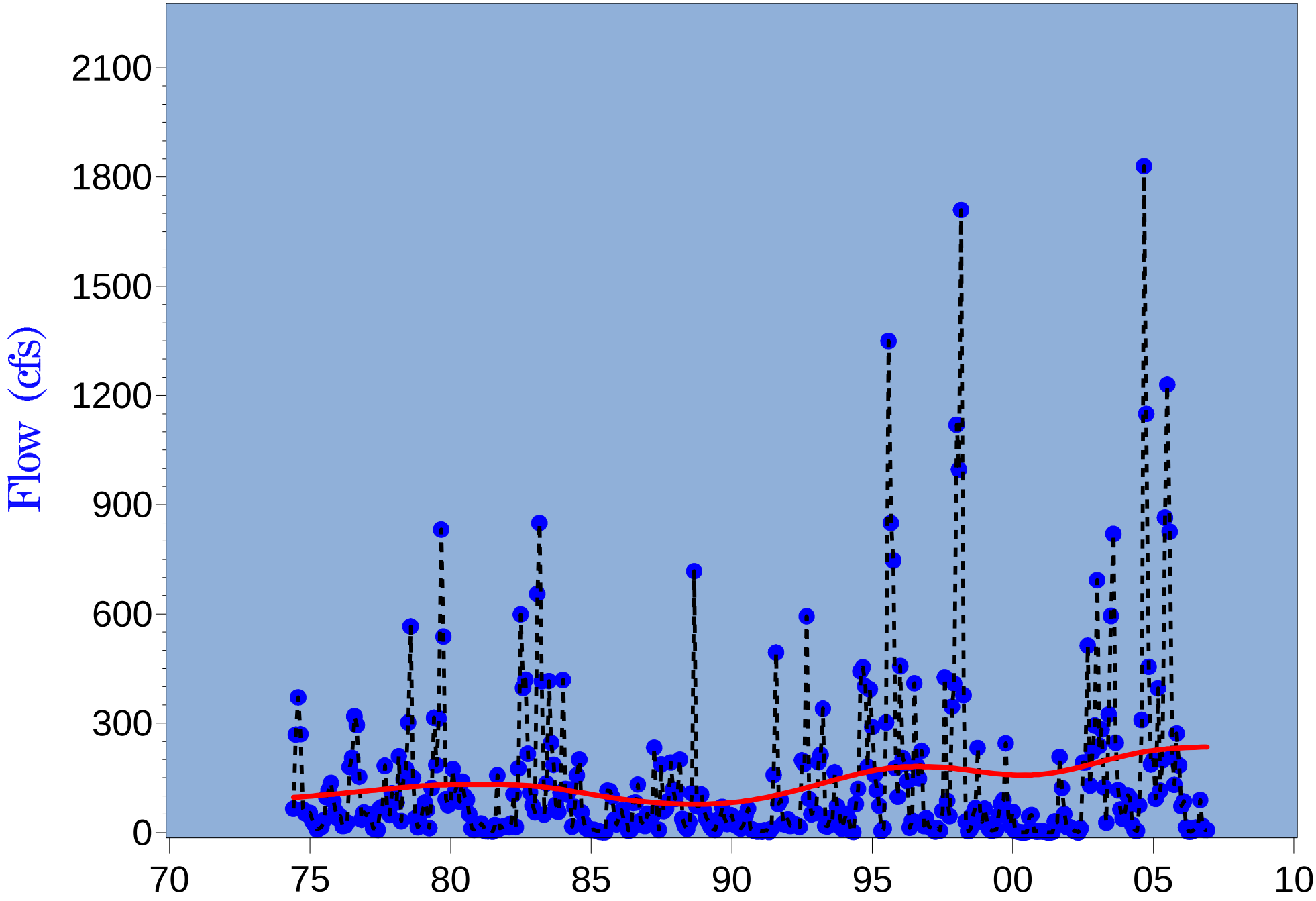


Figure 3.83 Monthly P25 flow at long-term Peace River at Ft. Meade (2294898) gage (1974-2006)

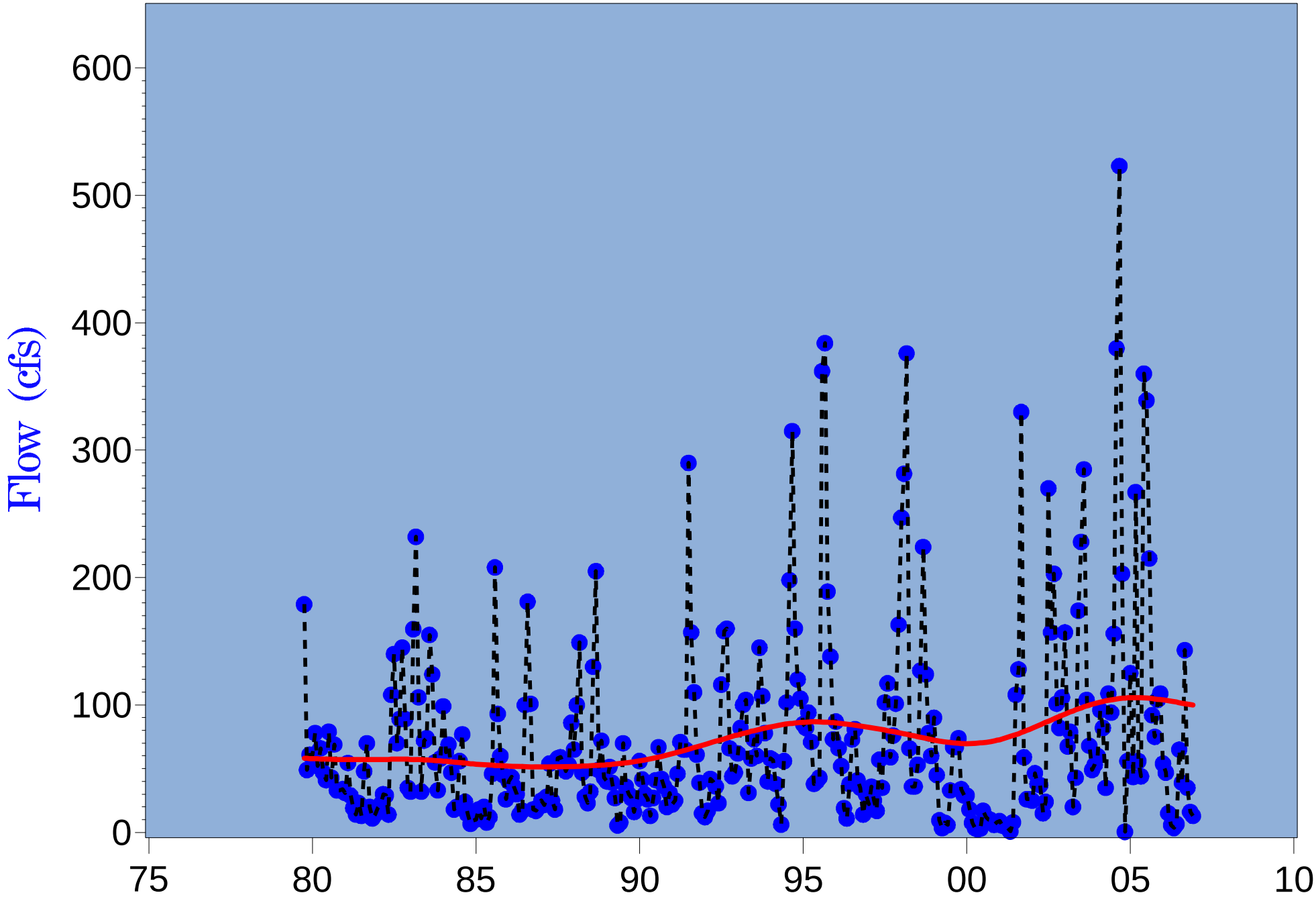


Figure 3.84a Monthly P25 flow at long-term Payne Creek (2295420) gage (1979-2006)

Table 3.14
Summary of Results of Seasonal Kendall Trend Analyses
Period-of-Record Through 2006 - P90 (or Q10)

USGS ID	Gage Identification	Time Period of Data	Number of Years	Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
Peace River Watershed							
2294650	Peace River at Bartow	1940	67	-0.27	0.001	**0.001**	-1.00
2295420	Payne Creek near Bowling Green	1980	27	0.11	0.007	0.214	1.87
2295637	Peace River at Zolfo Springs	1934	73	-0.19	0.001	**0.001**	-1.66
2296500	Charlie Creek near Gardner	1951	56	-0.04	0.135	0.406	-78.15
2296750	Peace River at Arcadia	1932	75	-0.10	0.001	**0.050**	-1.13
2297100	Joshua Creek at Nocatee	1951	56	0.11	0.001	**0.024**	80.90
2297310	Horse Creek near Arcadia	1951	56	-0.01	0.755	0.866	-2.17
	Total Gaged Flow Upstream of the Facility	1951	56	-0.07	0.008	0.170	-14.32
2298123	Prairie Creek near Fort Ogden	1978	29	0.05	0.151	0.428	1.00
2298202	Shell Creek near Punta Gorda	1965	41	0.04	0.172	0.438	0.88
	Total Gaged Peace River Flow to the Harbor	1965	41	0.03	0.301	0.577	3.53
Reference Watershed							
2298830	Myakka River near Sarasota	1937	70	0.20	0.001	**0.001**	0.29

* Red values denote significant trend at p=0.05 level, while blue indicates trends significant at p=0.10

** Positive Tau statistic and slope values indicate increasing trend over time, negative values correspond to declining changes in flow over time

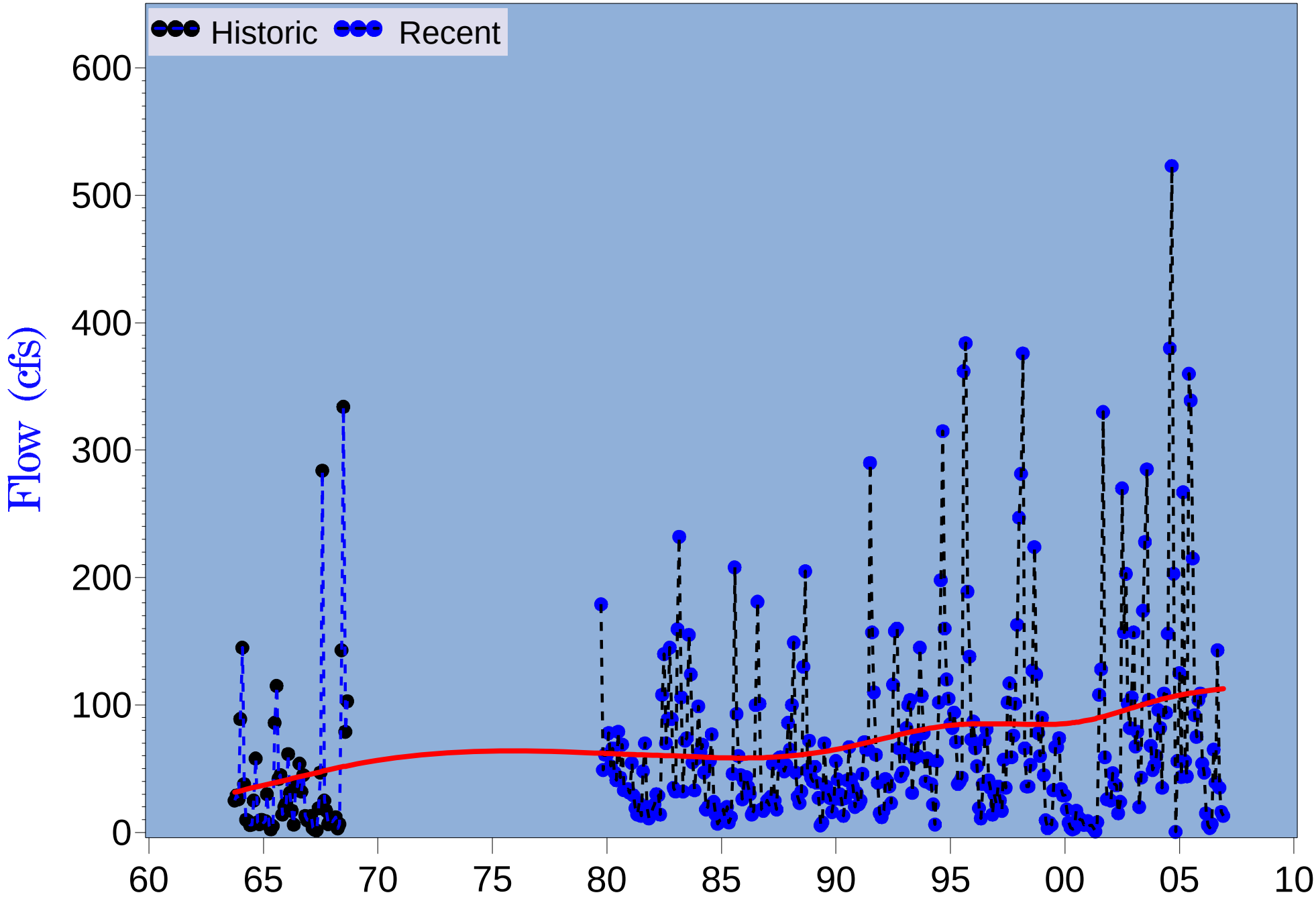


Figure 3.84b Monthly P25 flow at long-term Payne Creek (2295420) gage (1963-2006)

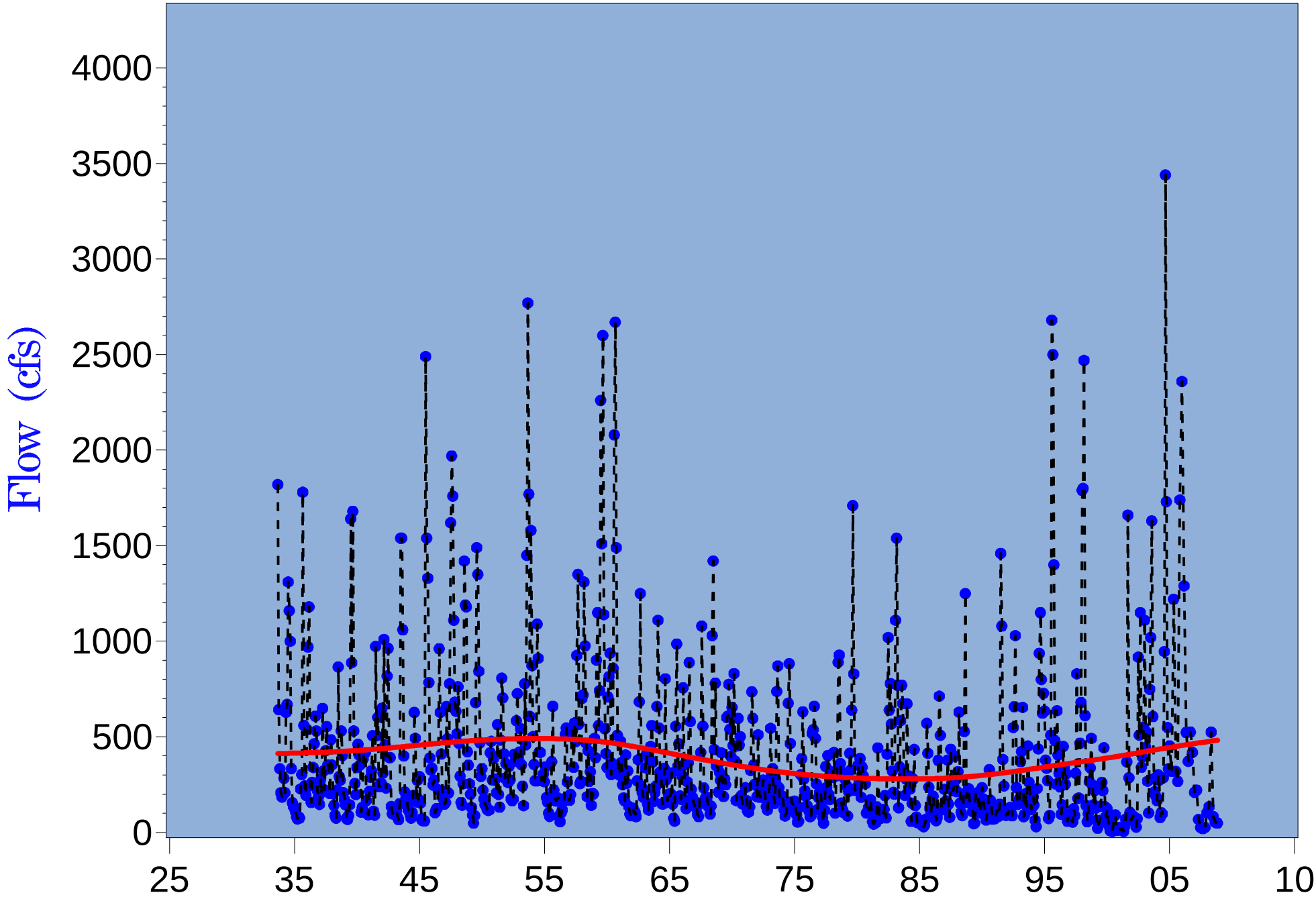


Figure 3.85 Monthly P25 flow at long-term Peace River at Zolfo (2295637) gage (1933-2006)

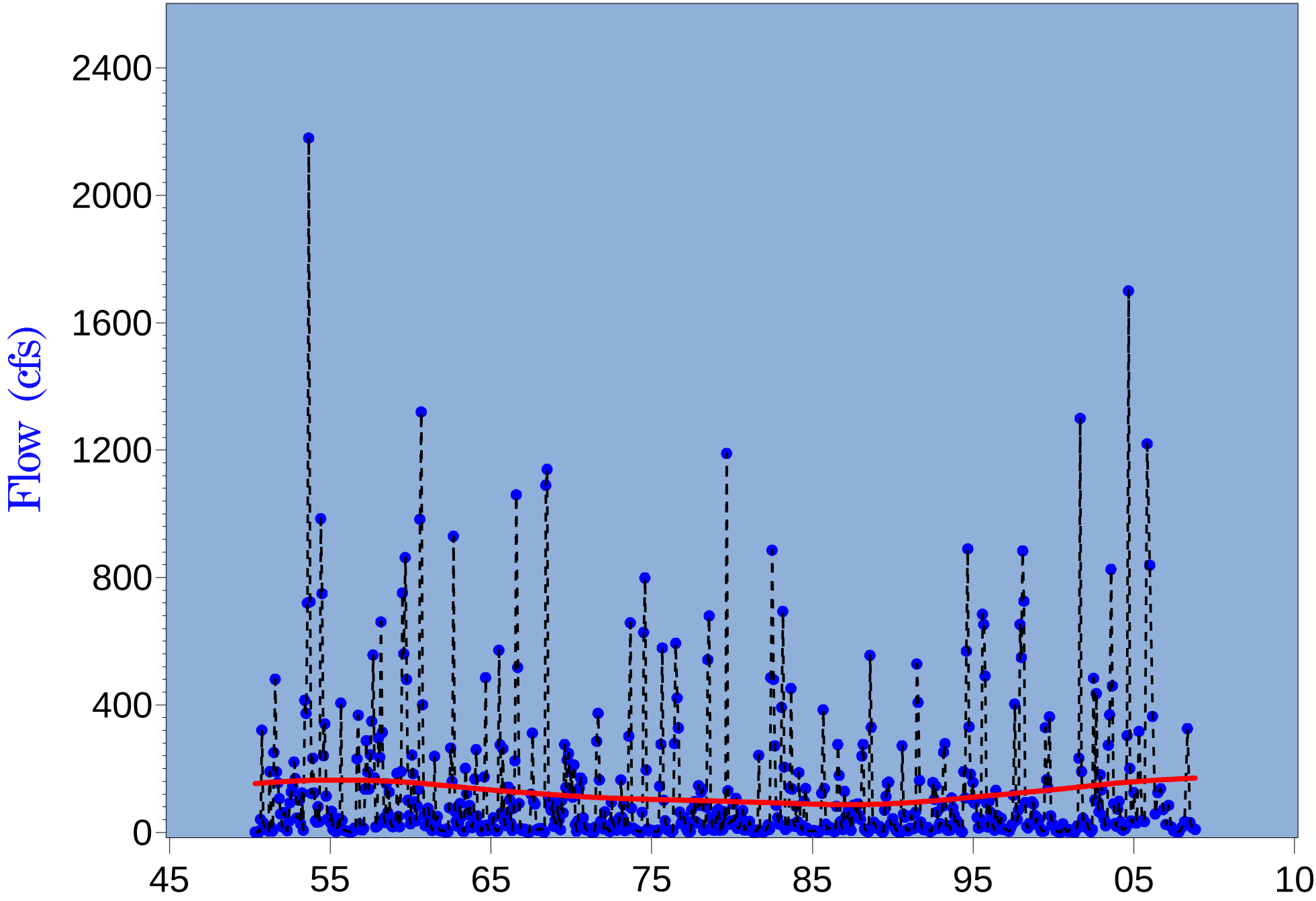


Figure 3.86 Monthly P25 flow at long-term Charlie Creek (2296500) gage (1950-2006)

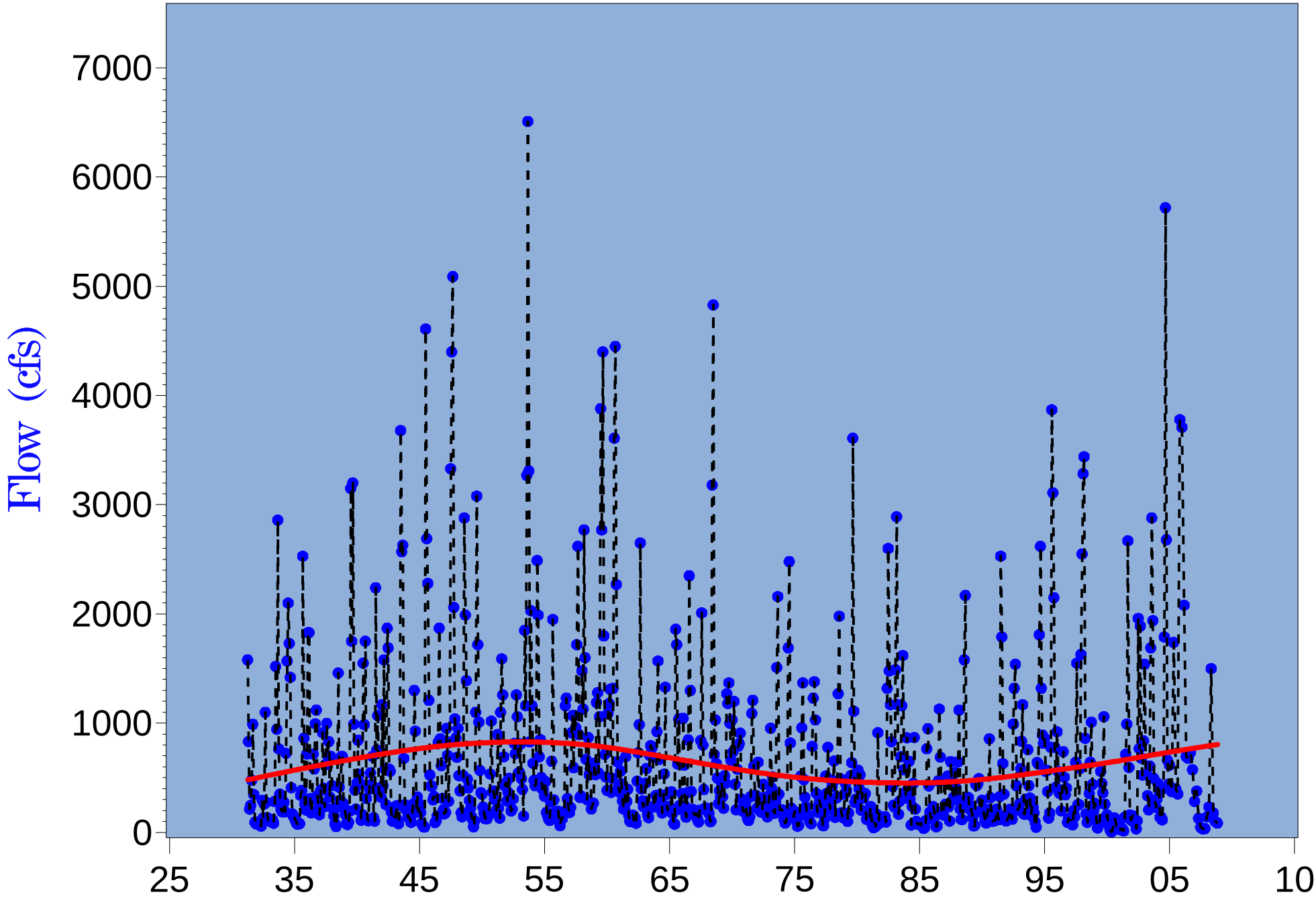


Figure 3.87 Monthly P25 flow at long-term Peace River at Arcadia (2296750) gage (1931-2006)

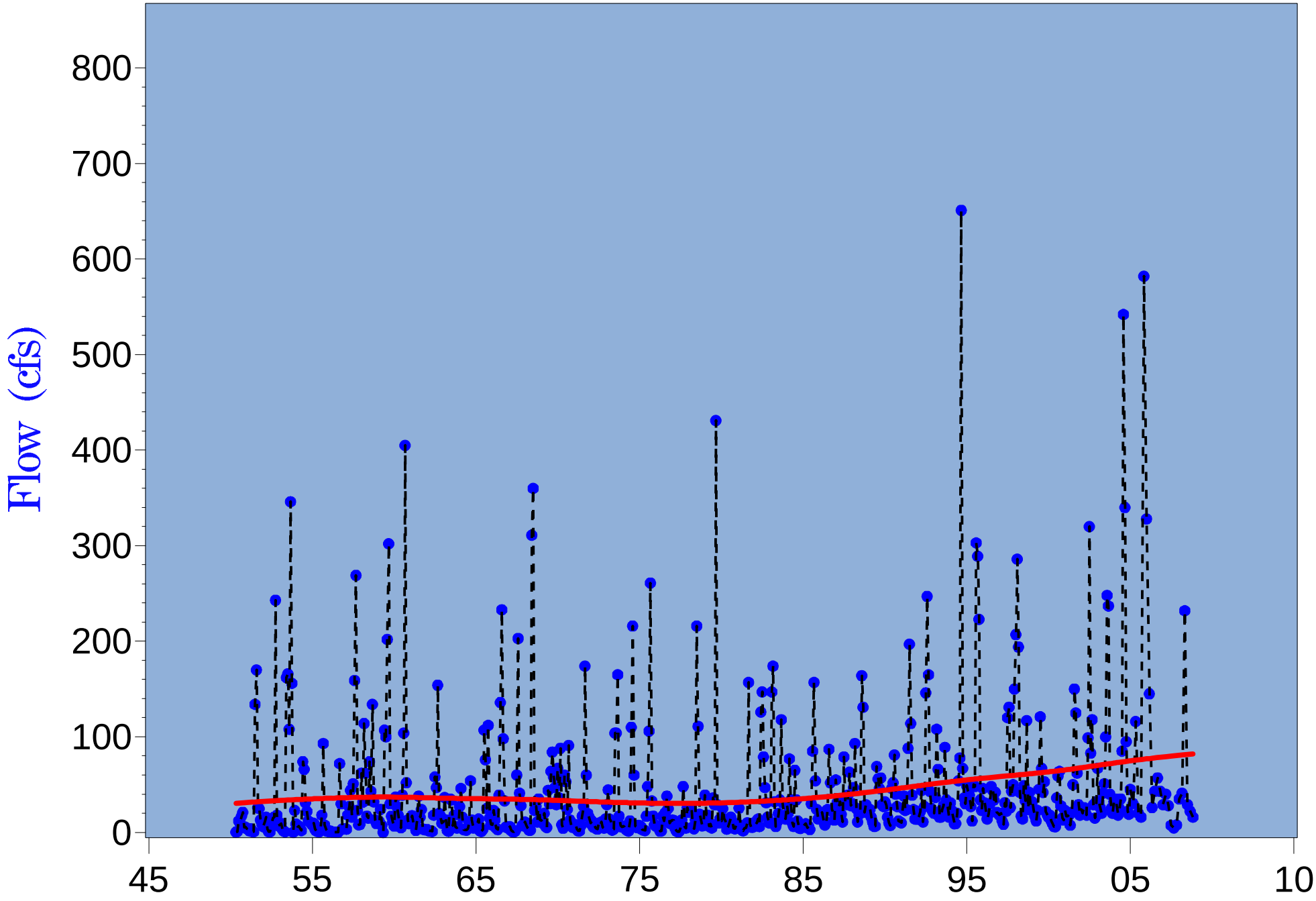


Figure 3.88 Monthly P25 flow at long-term Joshua Creek at Nocatee (2297100) gage (1950-2006)

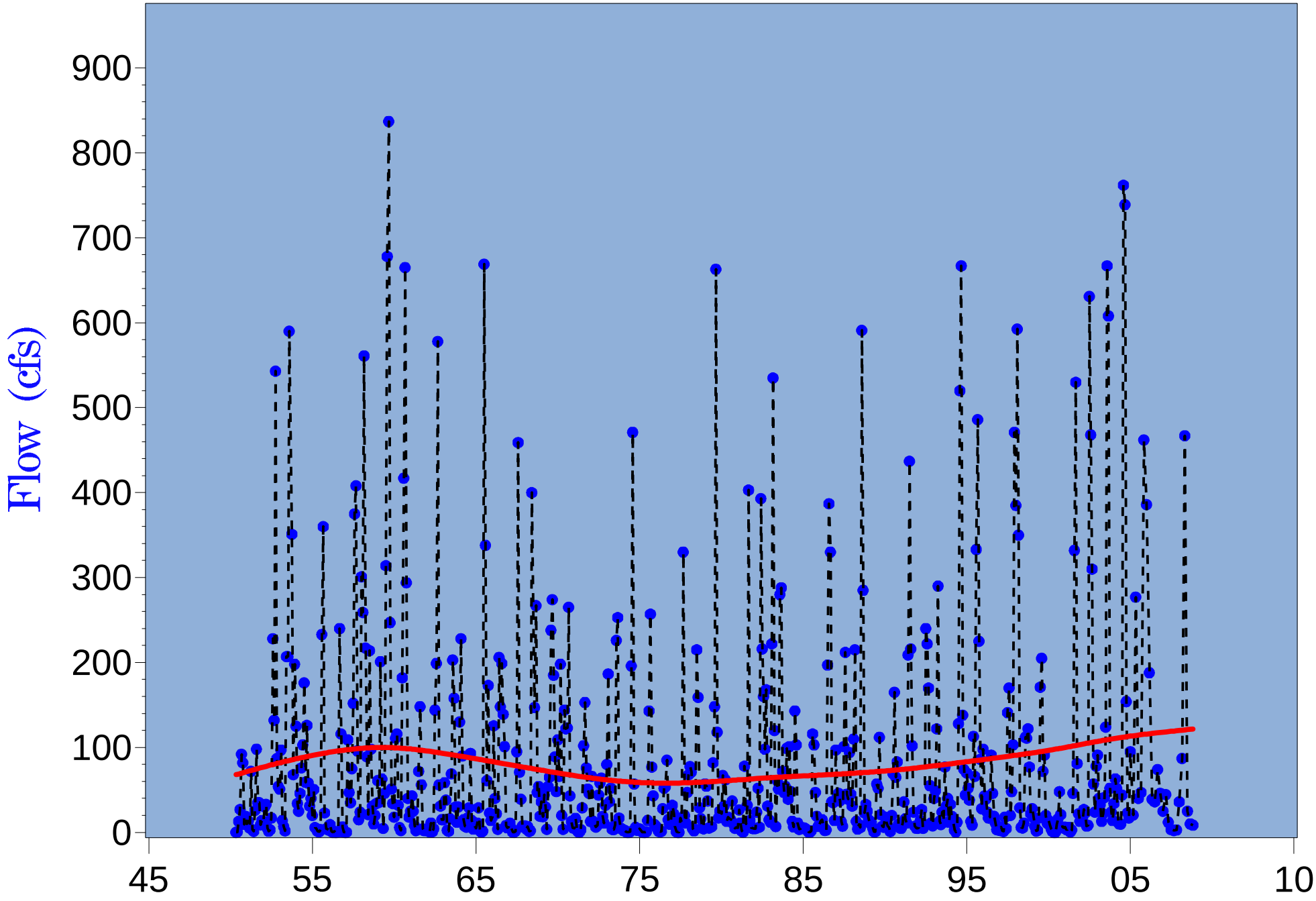


Figure 3.89 Monthly P25 flow at long-term Horse Creek near Arcadia(2297310) gage (1950-2006)

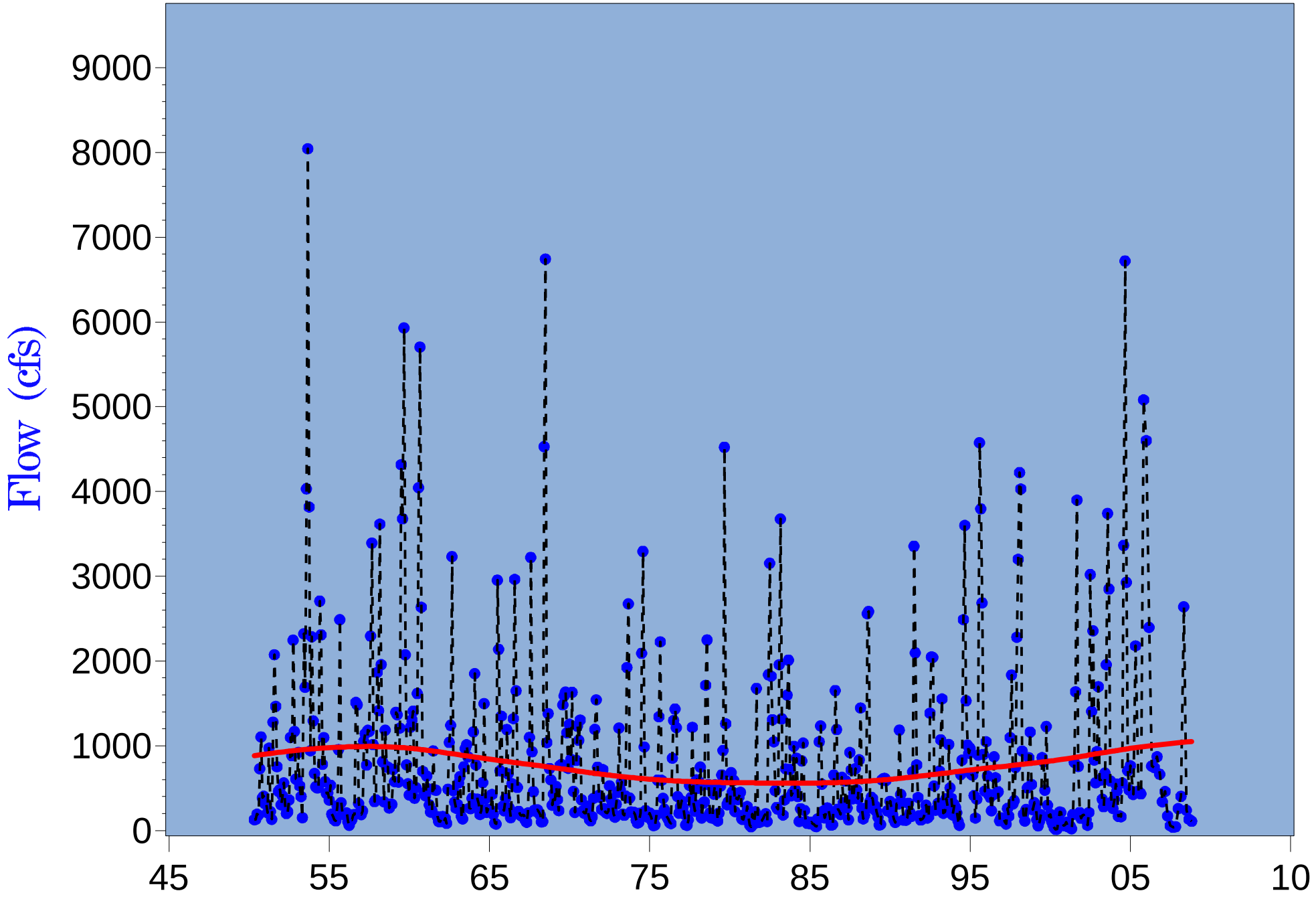


Figure 3.90 Monthly P25 flow for long-term for total gaged flow upstream of the Facility (1950-2006)

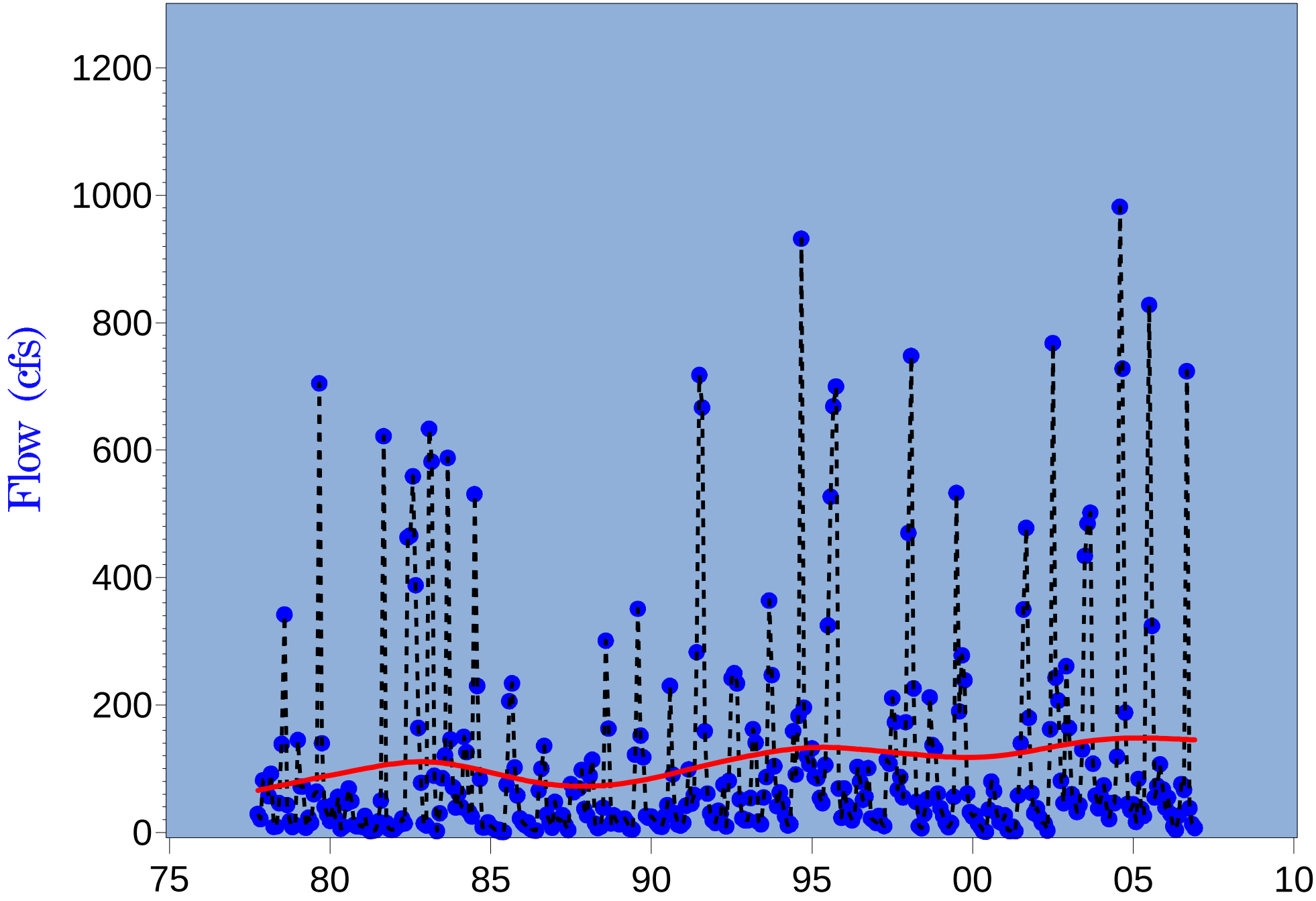


Figure 3.91a Monthly P25 flow at long-term Prairie Creek (2298123) gage (1977-2006)

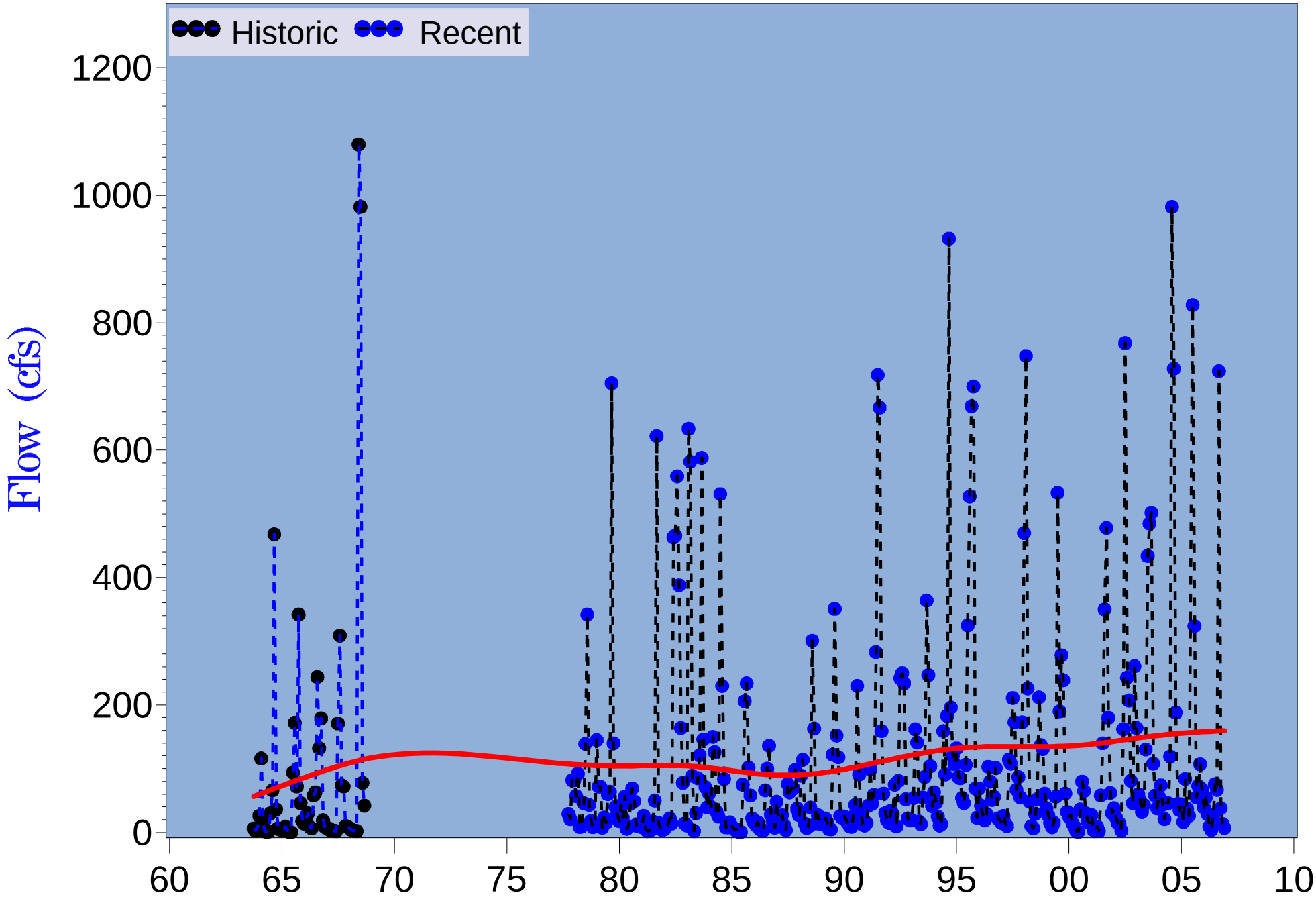


Figure 3.91b Monthly P25 flow at long-term Prairie Creek (2298123) gage (1963-2006)

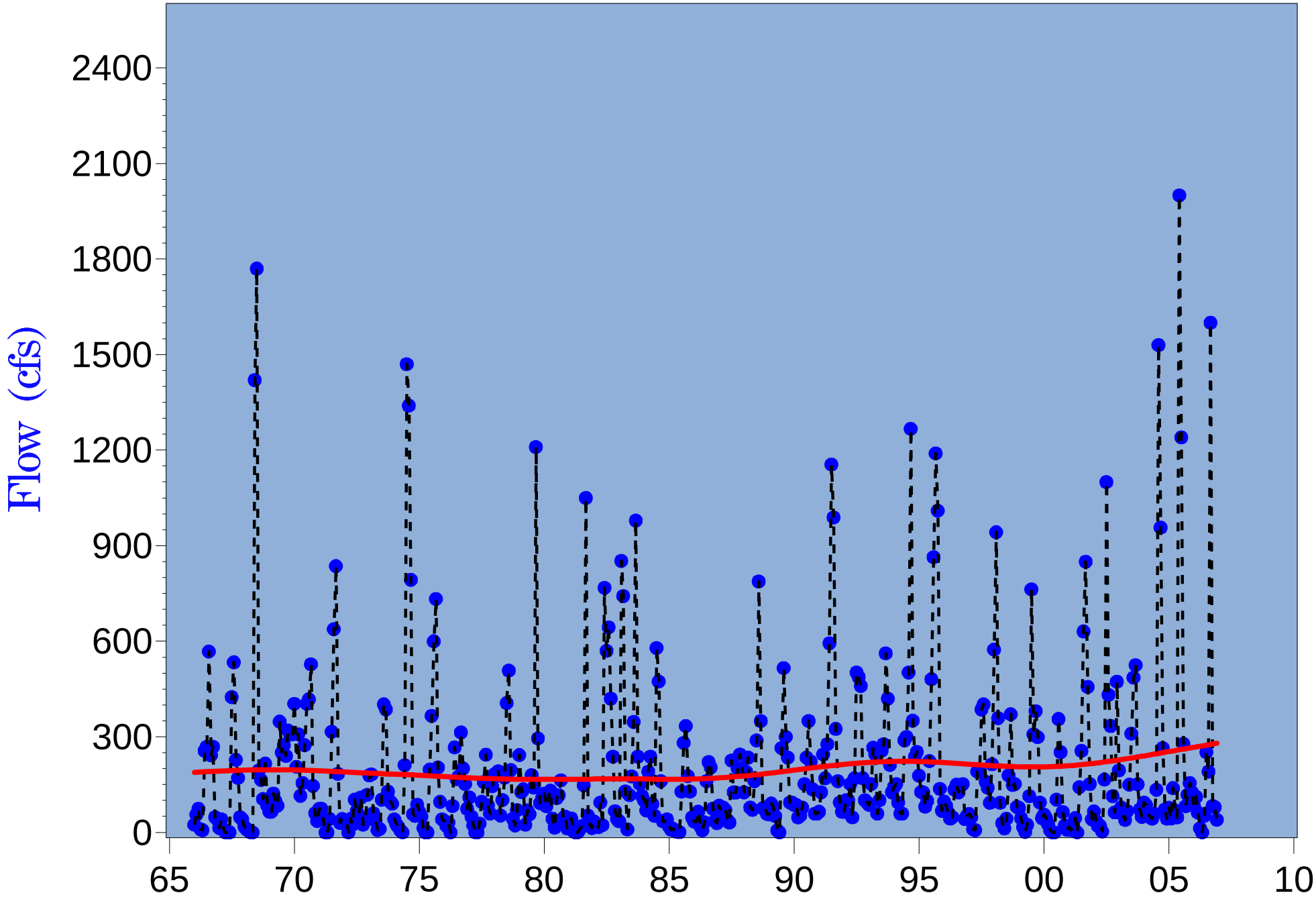


Figure 3.92 Monthly P25 flow at long-term Shell Creek gage (1965-2006)

Table 3.15
Summary of Results of Seasonal Kendall Trend Analyses
Period-of-Record Through 2006 - Monthly Maximum Values (P100)

USGS ID	Gage Identification	Time Period of Data	Number of Years	Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
Peace River Watershed							
2294650	Peace River at Bartow	1940	67	-0.18	0.001	**0.002**	-2.28
2295420	Payne Creek near Bowling Green	1980	27	0.09	0.018	0.308	0.60
2295637	Peace River at Zolfo Springs	1934	73	-0.11	0.001	**0.015**	-3.64
2296500	Charlie Creek near Gardner	1951	56	-0.04	0.126	0.439	-0.26
2296750	Peace River at Arcadia	1932	75	-0.06	0.012	0.179	-2.78
2297100	Joshua Creek at Nocatee	1951	56	0.36	0.001	**0.001**	4.17
2297310	Horse Creek near Arcadia	1951	56	0.03	0.326	0.615	10.44
	Total Gaged Flow Upstream of the Facility	1951	56	-0.13	0.001	**0.029**	-1.60
2298123	Prairie Creek near Fort Ogden	1978	29	0.19	0.001	**0.014**	0.78
2298202	Shell Creek near Punta Gorda	1965	41	0.11	0.001	**0.058**	0.67
	Total Gaged Peace River Flow to the Harbor	1965	41	0.01	0.734	0.869	0.31
Reference Watershed							
2298830	Myakka River near Sarasota	1937	70	0.08	0.001	**0.053**	0.56

* Red values denote significant trend at p=0.05 level, while blue indicates trends significant at p=0.10

** Positive Tau statistic and slope values indicate increasing trend over time, negative values correspond to declining changes in flow over time

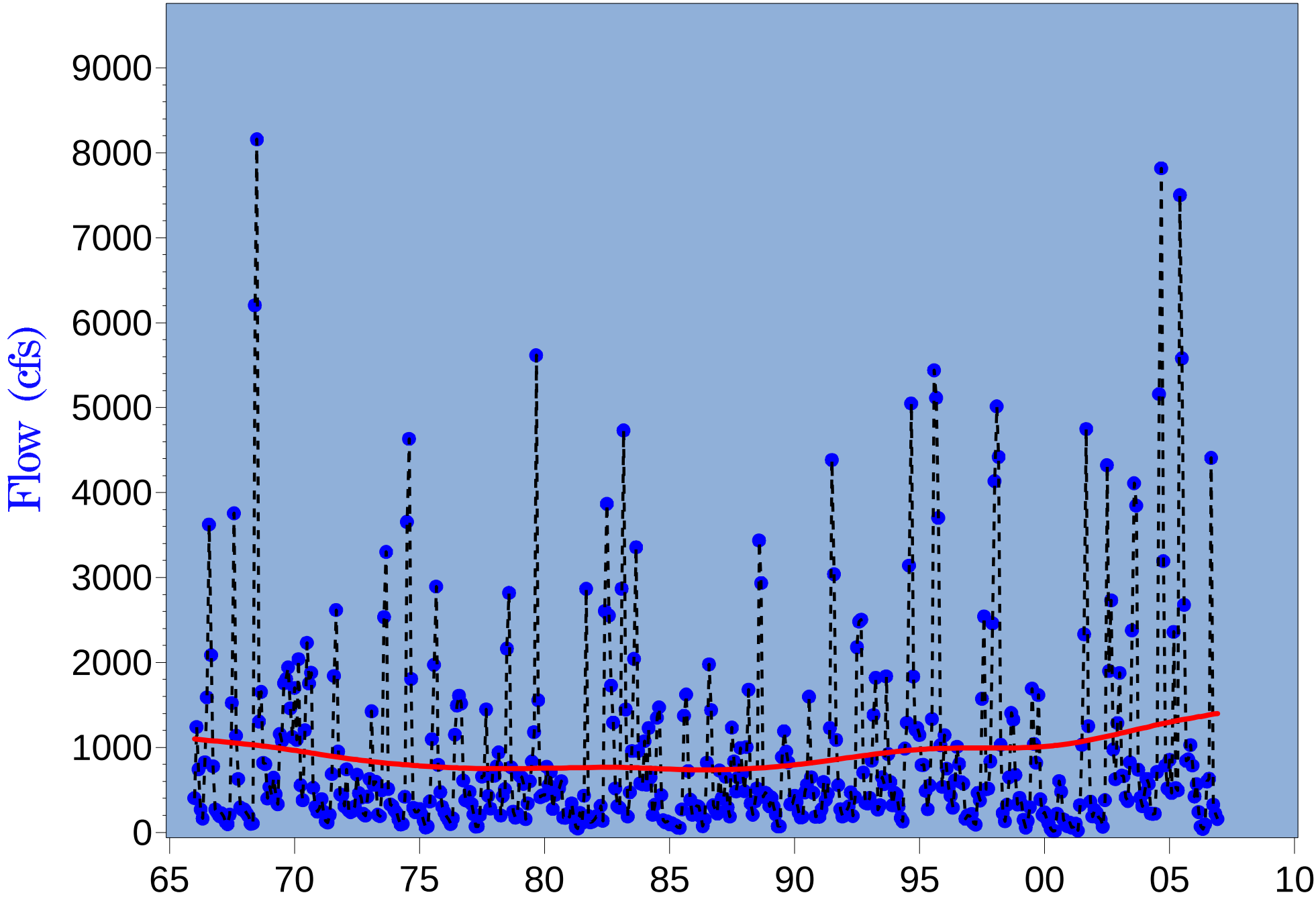


Figure 3.93 Monthly P25 flow for total gaged Peace River flow to the Upper Harbor (1965-2006)

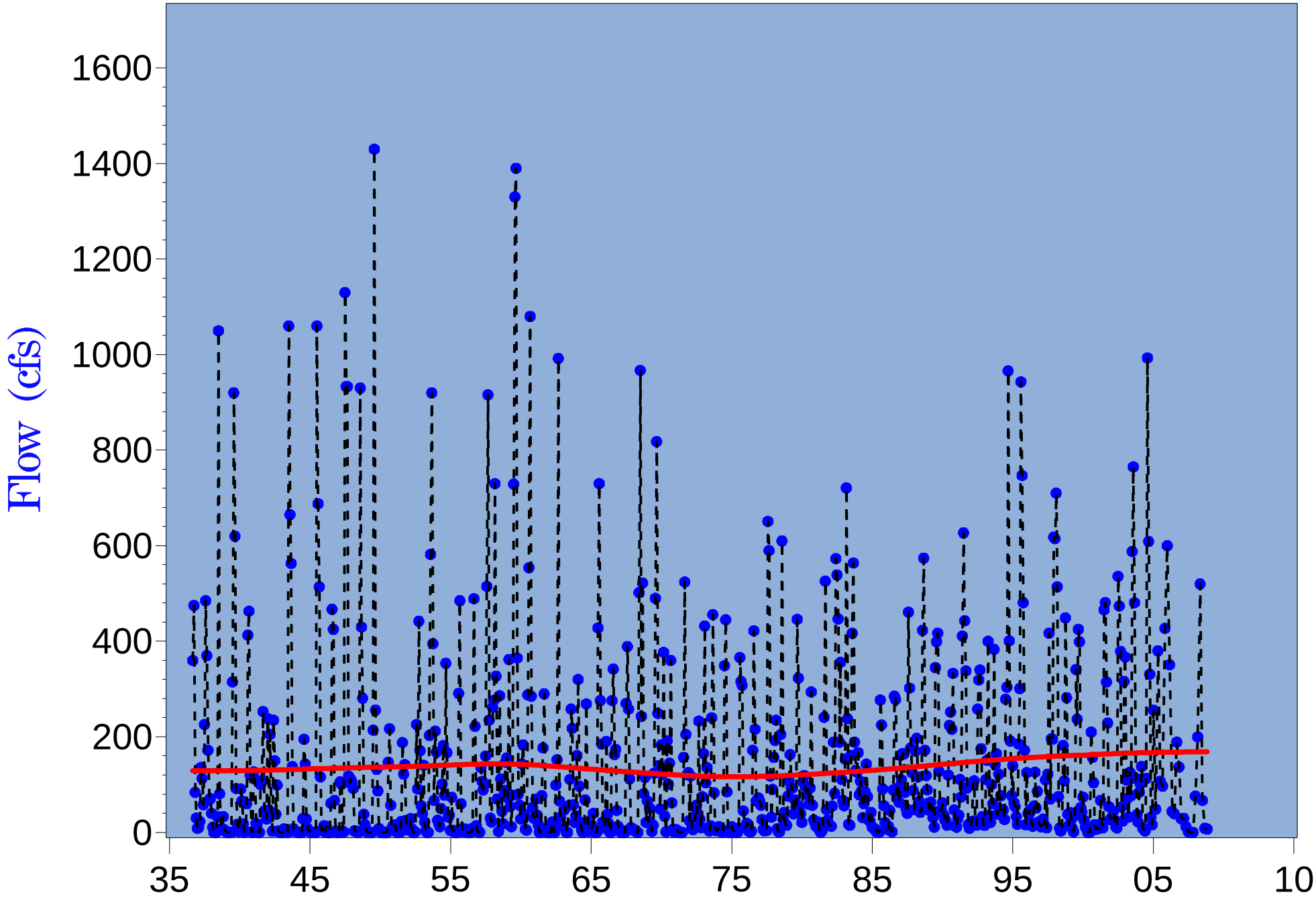


Figure 3.94 Monthly P25 flow at long-term Myakka River near Sarasota (2298830) gage (1936-2006)

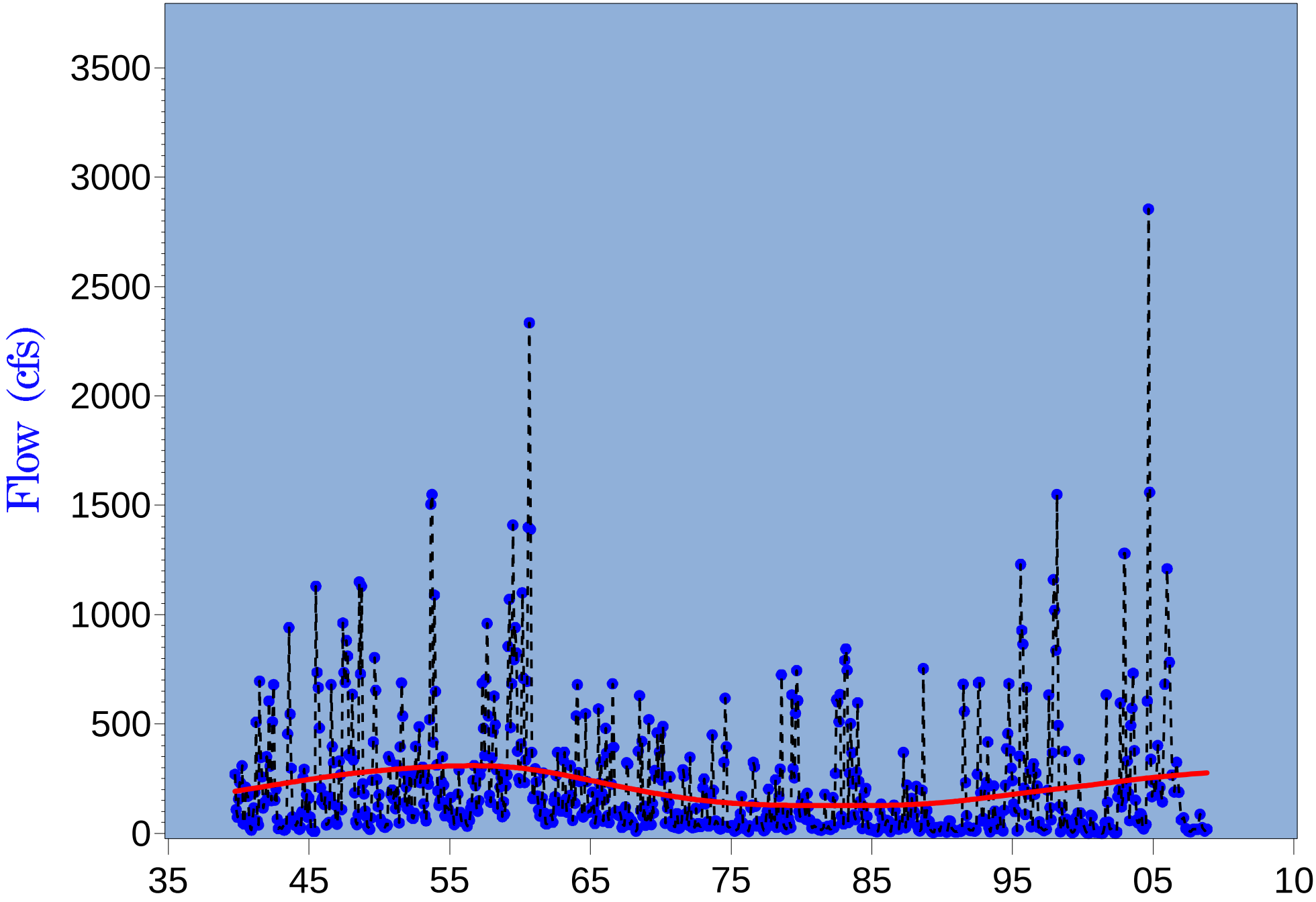


Figure 3.95 Monthly P50 (median) flow at long-term Peace River at Bartow (2294650) gage (1939-2006)

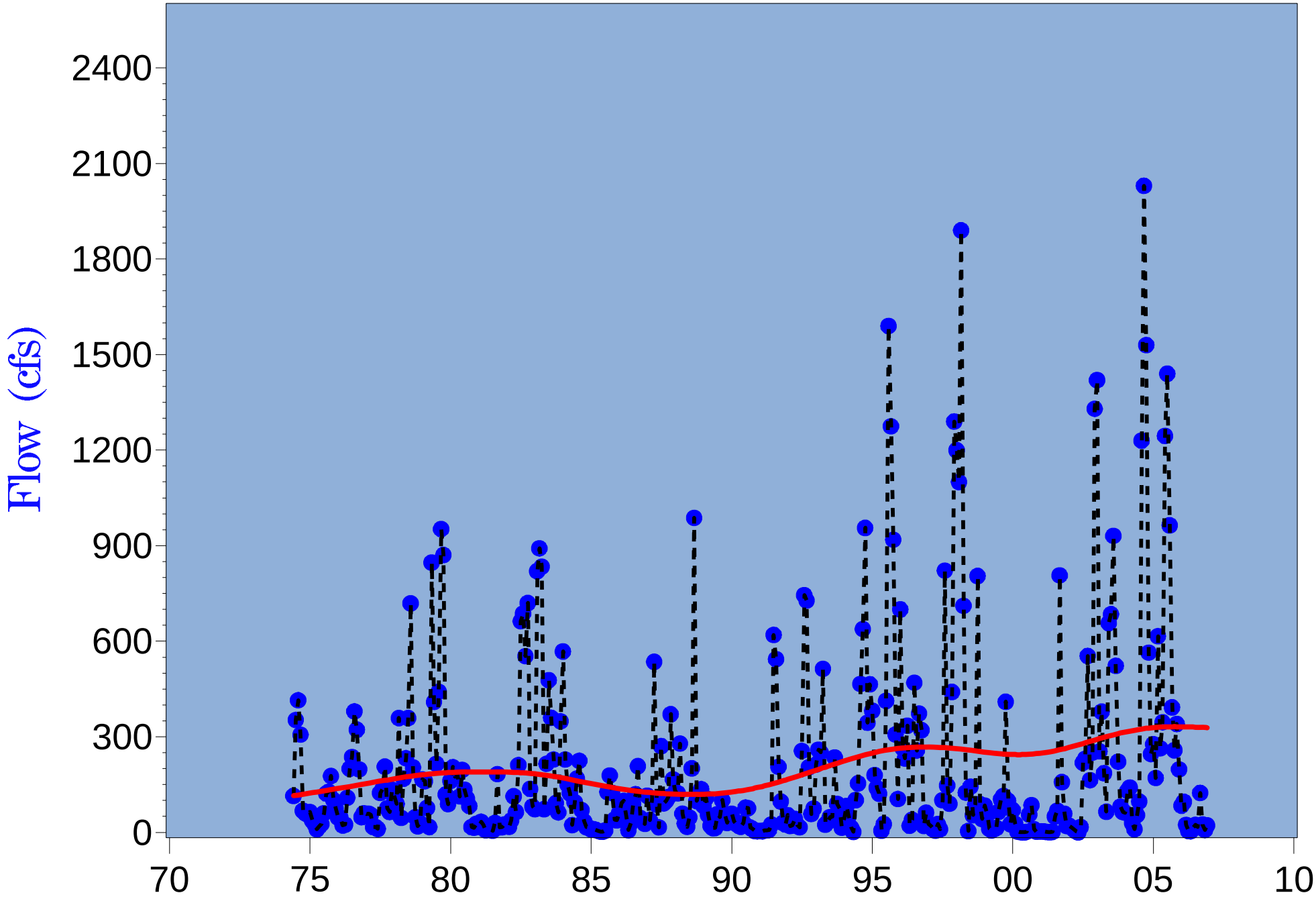


Figure 3.96 Monthly P50 (median) flow at long-term Peace River at Ft. Meade (2294898) gage (1974-2006)

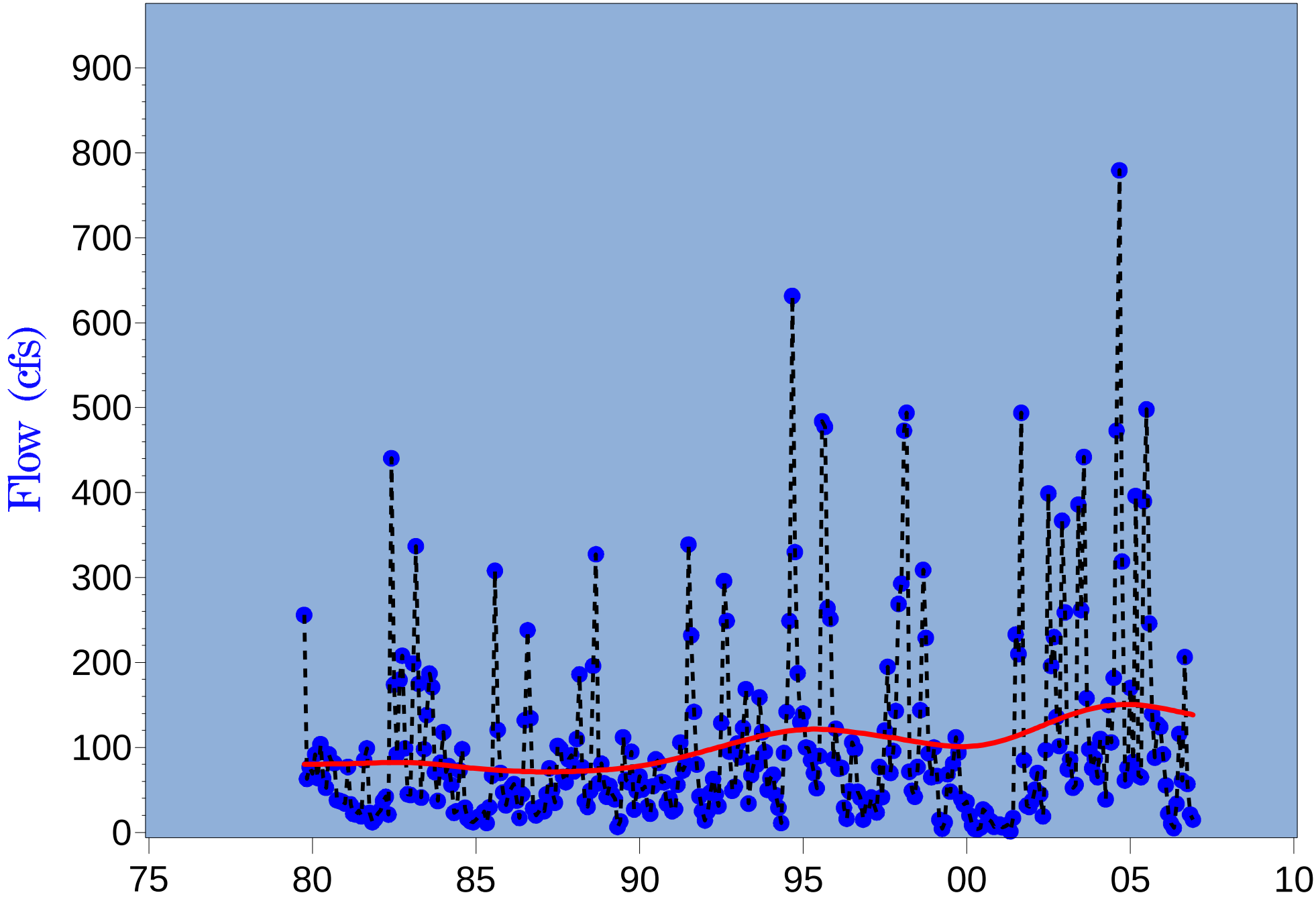


Figure 3.97a Monthly P50 (median) flow at long-term Payne Creek (2295420) gage (1979-2006)

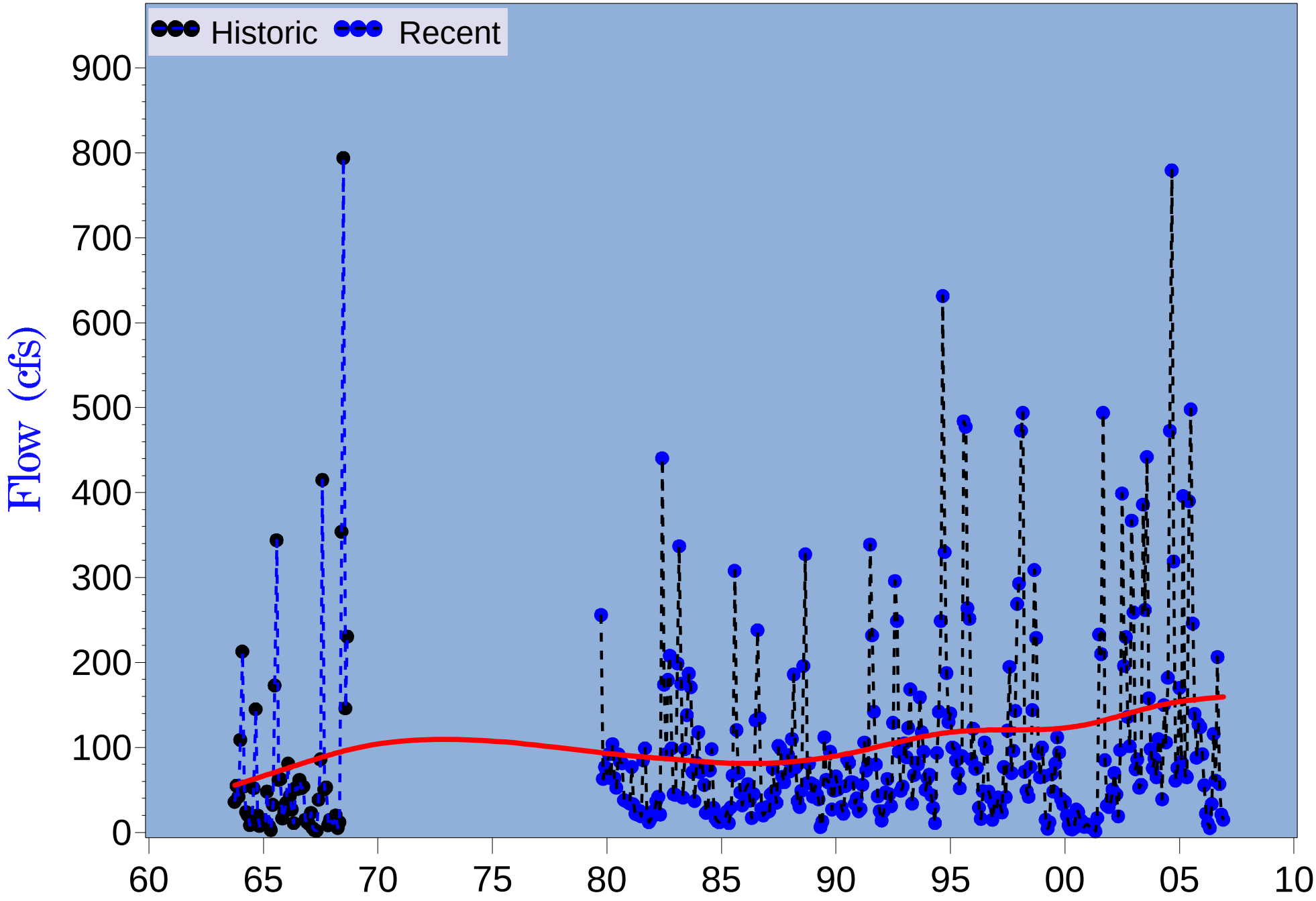


Figure 3.97b Monthly P50 (median) flow at long-term Payne Creek (2295420) gage (1963-2006)

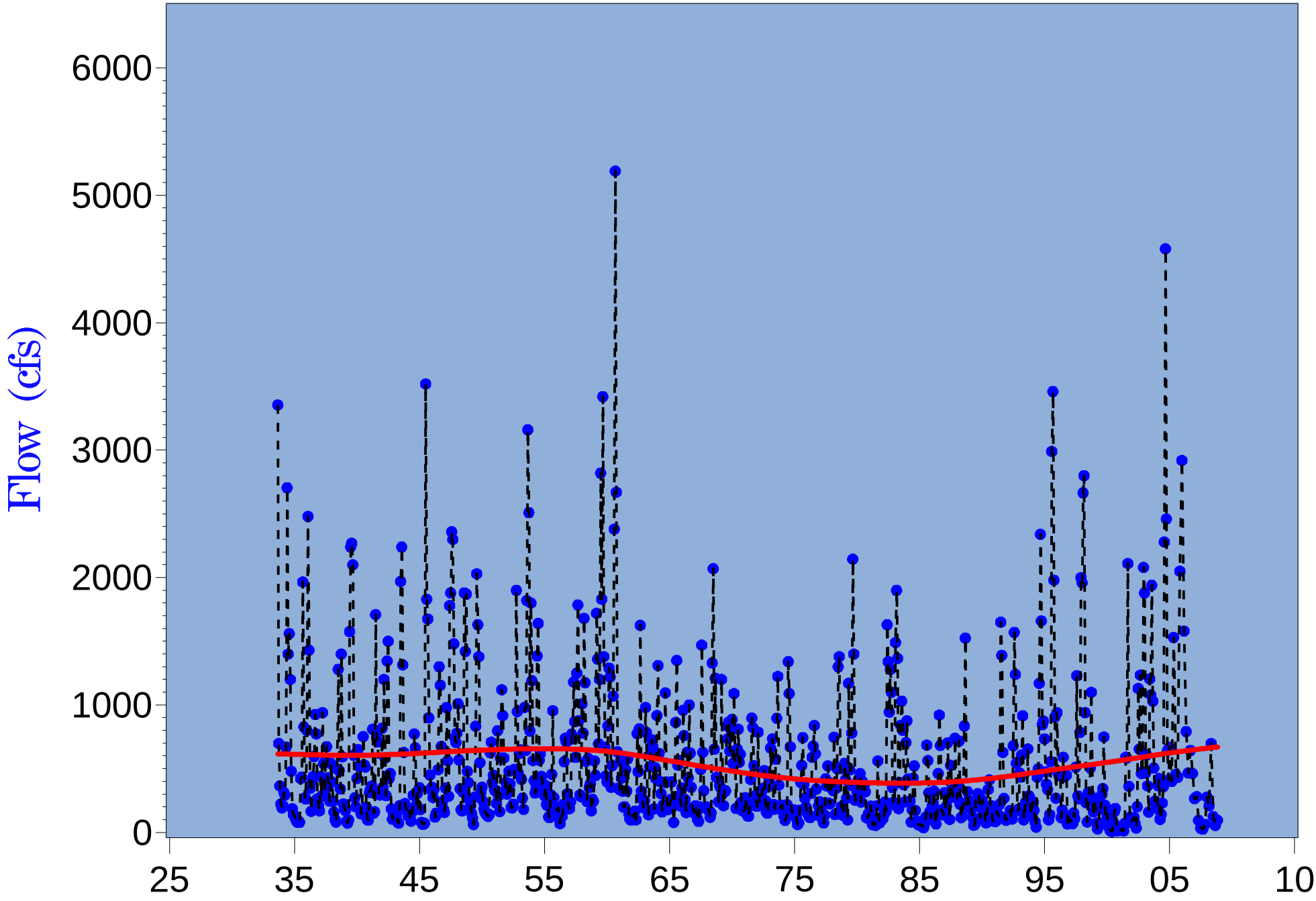


Figure 3.98 Monthly P50 (median) flow at long-term Peace River at Zolfo (2295637) gage (1933-2006)

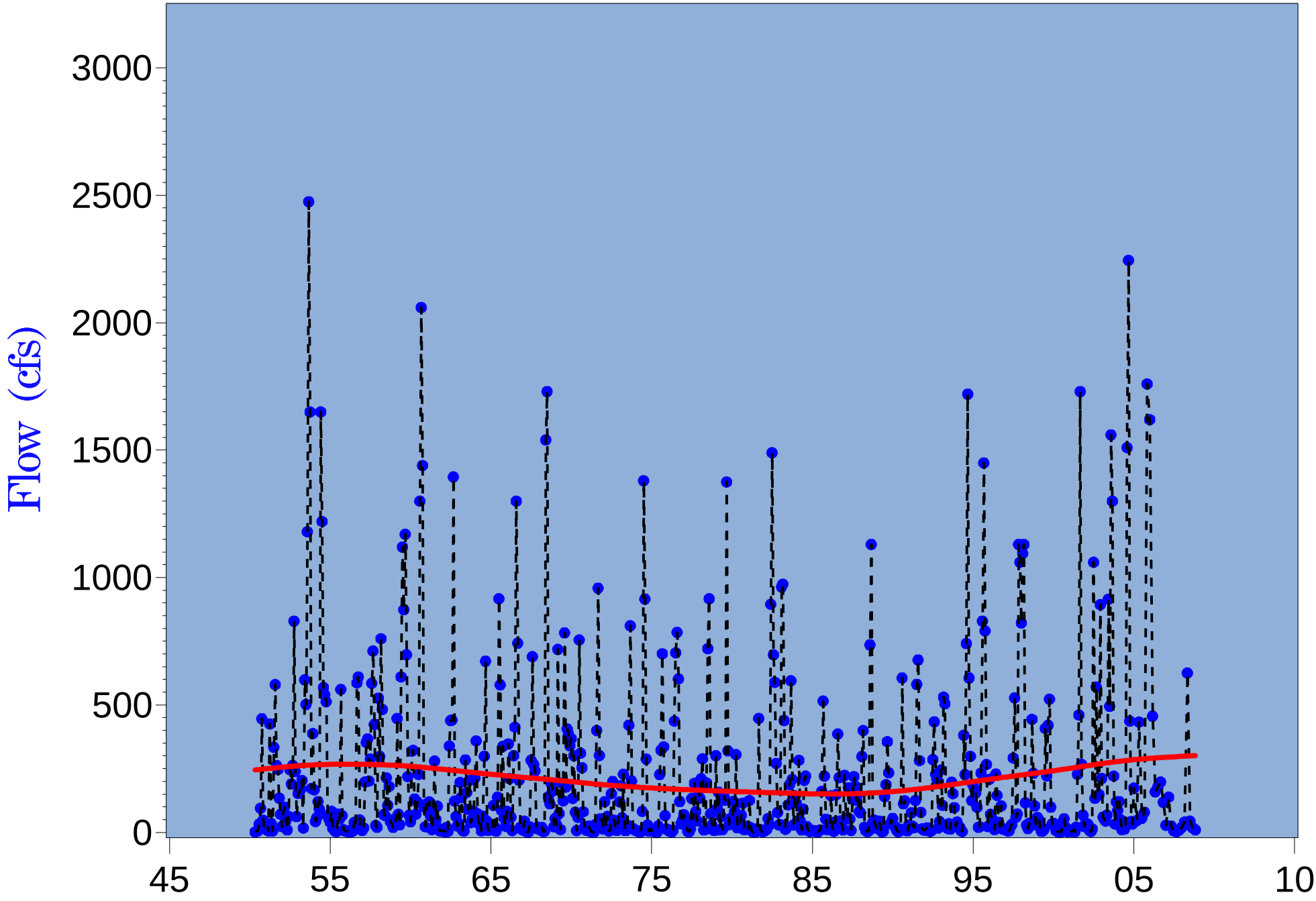


Figure 3.99 Monthly P50 (median) flow at long-term Charlie Creek (2296500) gage (1950-2006)

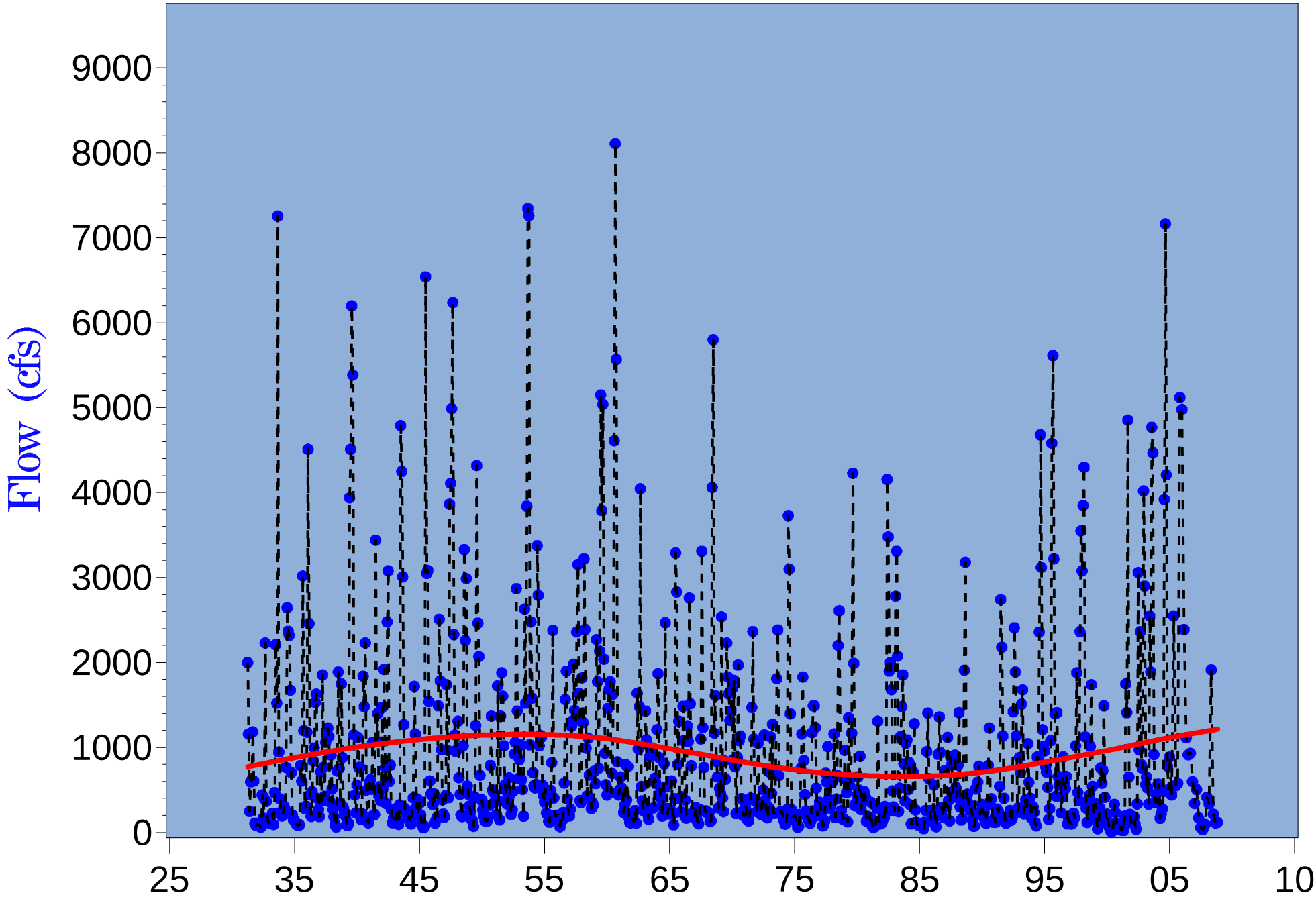


Figure 3.100 Monthly P50 (median) flow at long-term Peace River at Arcadia (2296750) gage (1931-2006)

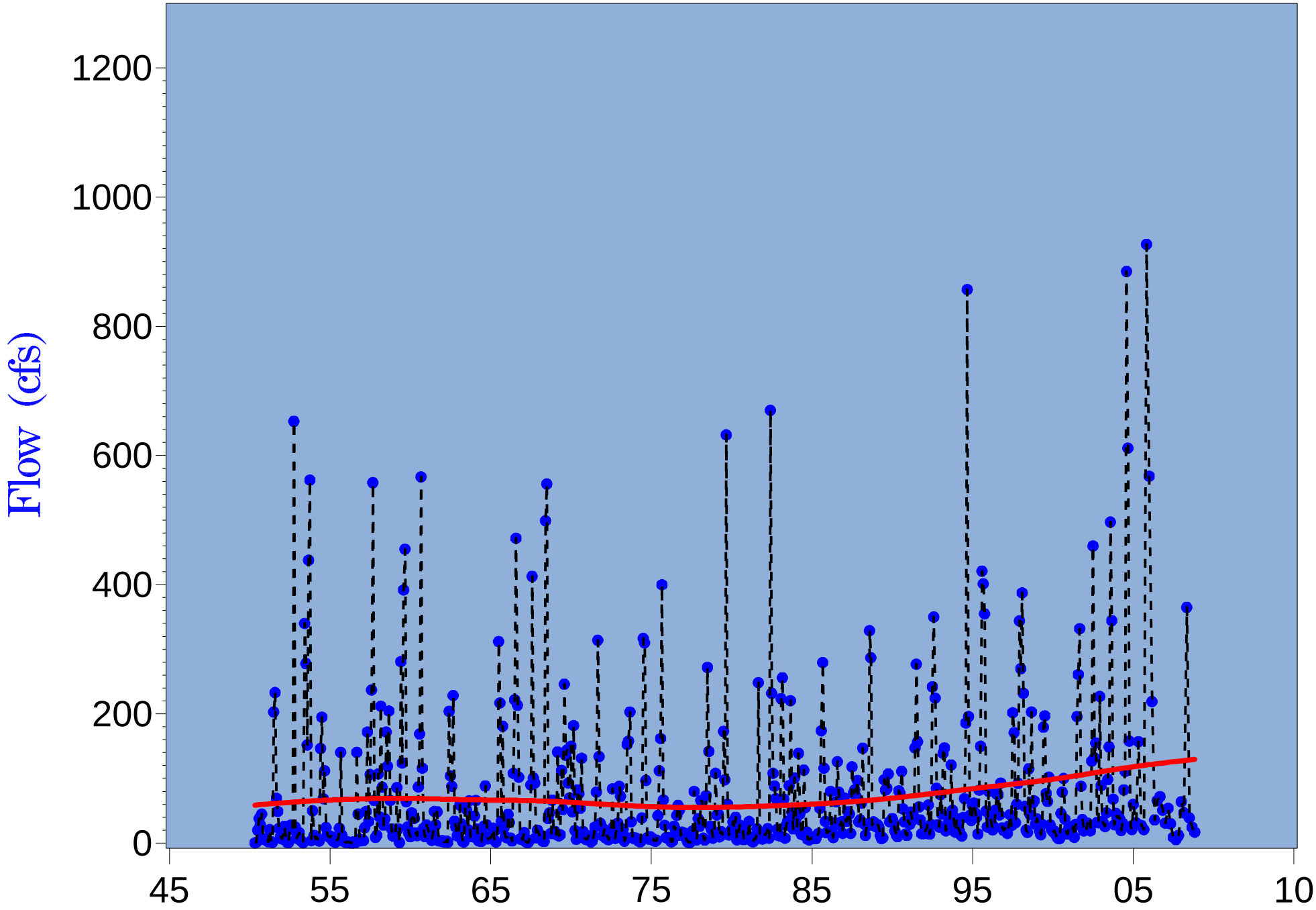


Figure 3.101 Monthly P50 (median) flow at long-term Joshua Creek at Nocatee (2297100) gage (1950-2006)

Table 1.2
Population in Counties Served by PRMRWSA
(estimated values after 2006)

Year	Charlotte	DeSoto	Manatee	Sarasota	Regional
1970	27,560	13,060	97,115	120,413	258,148
1971	30,980	13,737	106,398	129,778	280,893
1972	34,901	14,900	116,400	140,100	306,301
1973	37,902	16,500	122,003	150,204	326,609
1974	42,102	17,702	131,005	160,706	351,515
1975	44,599	17,900	131,398	164,298	358,195
1976	44,703	17,901	132,706	166,506	361,816
1977	47,102	17,900	134,903	172,404	372,309
1978	50,800	18,400	137,800	182,201	389,201
1979	54,900	18,600	142,800	193,500	409,800
1980	58,460	19,039	148,445	202,251	428,195
1981	62,112	19,476	155,988	211,325	448,901
1982	67,927	20,145	162,943	220,316	471,331
1983	71,535	20,620	168,968	229,193	490,316
1984	75,584	21,043	173,930	236,672	507,229
1985	80,712	21,469	180,077	244,144	526,402
1986	85,719	21,954	186,129	251,146	544,948
1987	91,379	22,435	193,532	258,106	565,452
1988	96,974	22,891	199,668	264,279	583,812
1989	103,194	23,527	205,713	271,403	603,837
1990	110,975	23,865	211,707	277,776	624,323
1991	116,356	24,973	215,917	283,269	640,515
1992	119,356	25,561	220,722	286,609	652,248
1993	122,506	26,234	225,206	289,531	663,477
1994	125,718	27,015	230,394	294,324	677,451
1995	128,896	27,820	235,729	299,108	691,553
1996	130,998	28,336	240,008	303,393	702,735
1997	132,850	29,087	245,505	308,052	715,494
1998	134,917	30,128	250,871	313,218	729,134
1999	138,128	31,169	257,391	318,338	745,026
2000	141,627	32,209	264,002	325,961	763,799
2001	144,571	32,736	270,771	334,023	782,101
2002	148,521	32,798	277,362	339,684	798,365
2003	151,994	33,713	286,884	348,761	821,352

Table 3.16
Summary of Results of Seasonal Kendall Trend Analyses
Period-of-Record Through 2006 - Monthly Mean Values

USGS ID	Gage Identification	Time Period of Data	Number of Years	Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
Peace River Watershed							
2294650	Peace River at Bartow	1940	67	-0.22	0.001	**0.001**	-1.46
2295420	Payne Creek near Bowling Green	1980	27	0.11	0.005	0.210	1.18
2295637	Peace River at Zolfo Springs	1934	73	-0.13	0.001	**0.005**	-2.31
2296500	Charlie Creek near Gardner	1951	56	-0.05	0.075	0.339	-1.27
2296750	Peace River at Arcadia	1932	75	-0.07	0.004	0.155	-1.54
2297100	Joshua Creek at Nocatee	1951	56	0.16	0.001	**0.002**	18.03
2297310	Horse Creek near Arcadia	1951	56	0.00	0.893	0.943	1.01
	Total Gaged Flow Upstream of the Facility	1951	56	-0.09	0.001	0.110	-6.51
2298123	Prairie Creek near Fort Ogden	1978	29	0.09	0.019	0.215	0.97
2298202	Shell Creek near Punta Gorda	1965	41	0.07	0.027	0.224	0.88
	Total Gaged Peace River Flow to the Harbor	1965	41	0.03	0.369	0.644	1.89
Reference Watershed							
2298830	Myakka River near Sarasota	1937	70	0.11	0.001	**0.001**	0.43

* Red values denote significant trend at p=0.05 level, while blue indicates trends significant at p=0.10

** Positive Tau statistic and slope values indicate increasing trend over time, negative values correspond to declining changes in flow over time

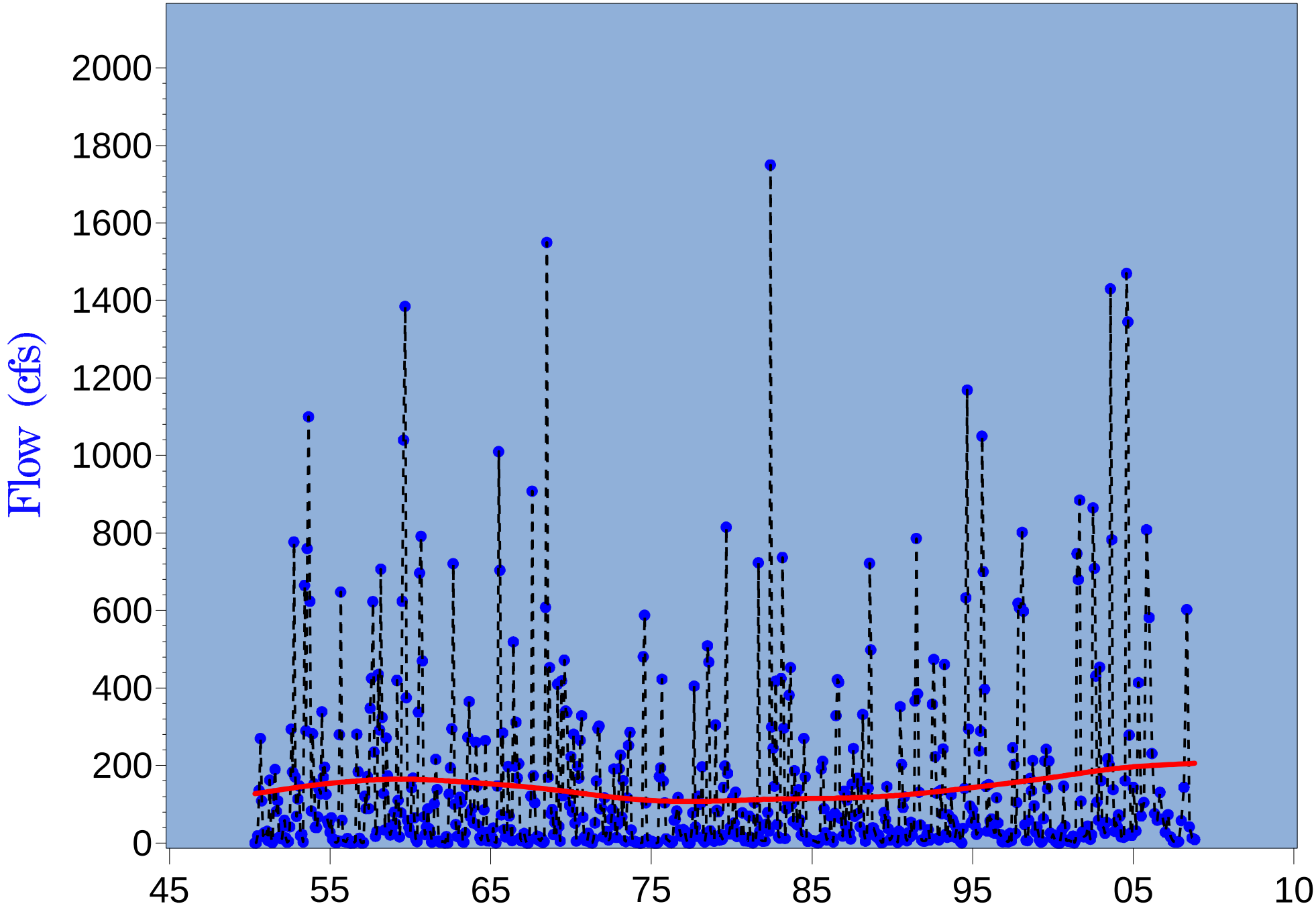


Figure 3.102 Monthly P50 (median) flow at long-term Horse Creek near Arcadia(2297310) gage (1950-2006)

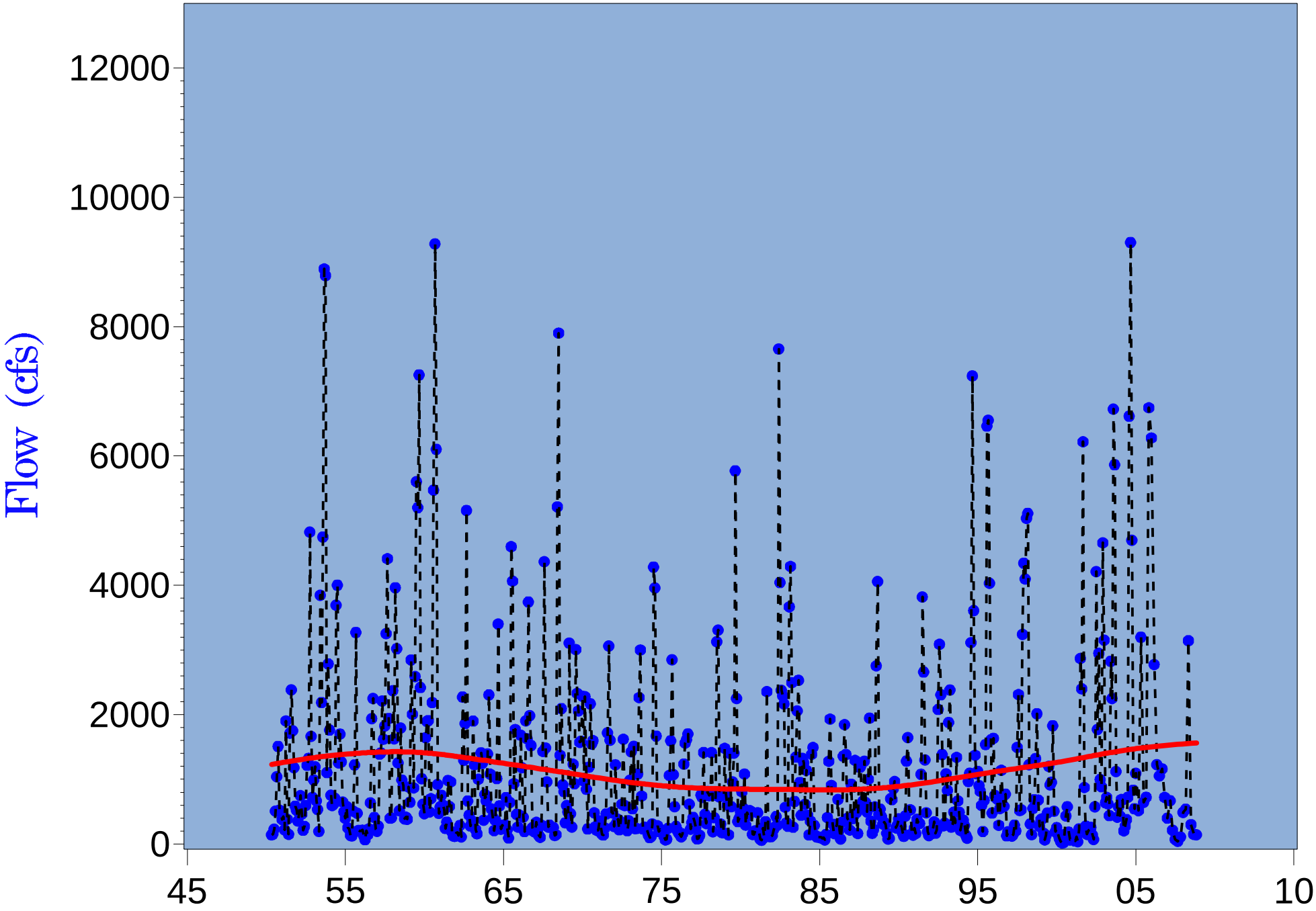


Figure 3.103 Monthly P50 (median) flow for long-term for total gaged flow upstream of the Facility (1950-2006)

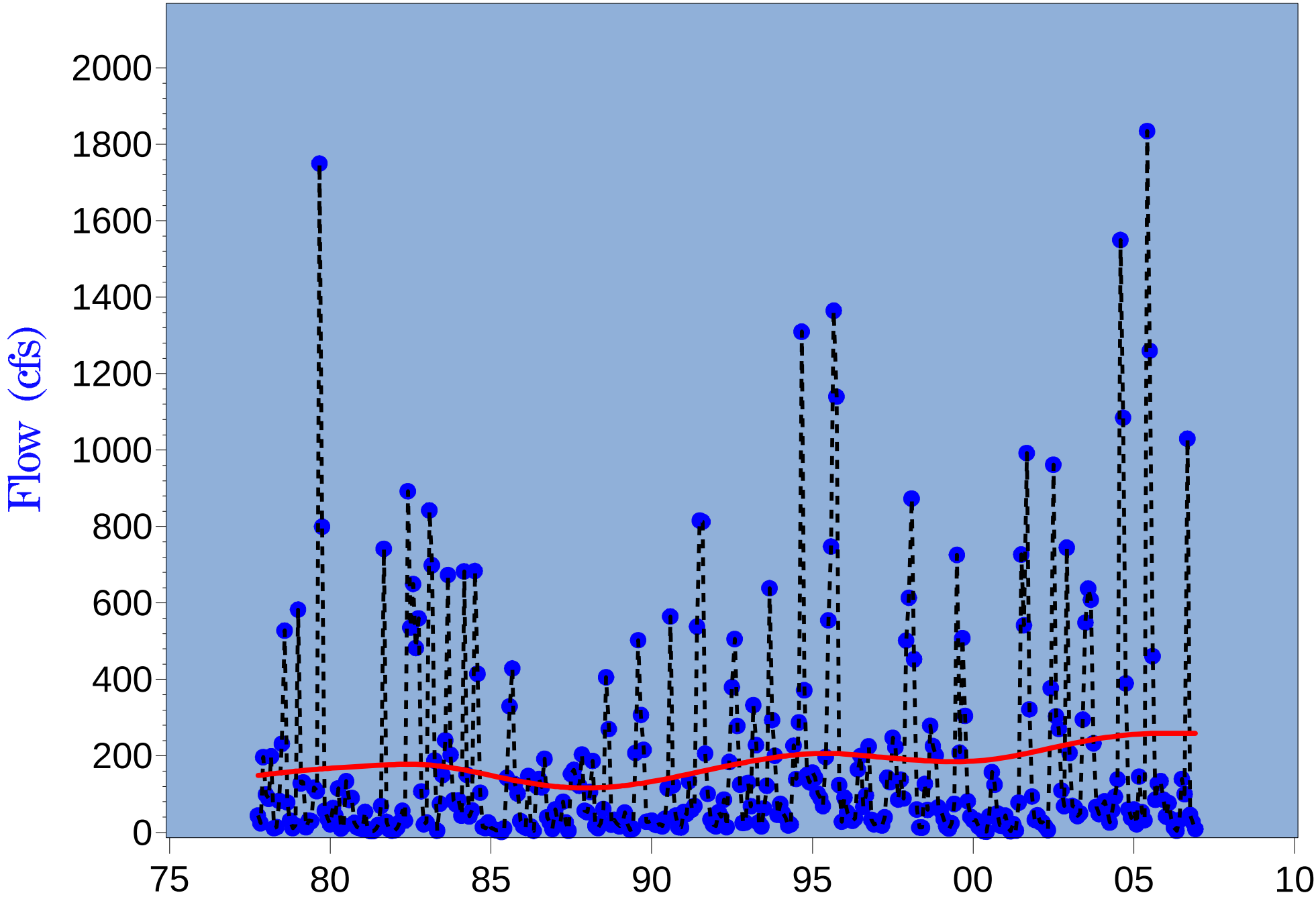


Figure 3.104a Monthly P50 (median) flow at long-term Prairie Creek (2298123) gage (1977-2006)

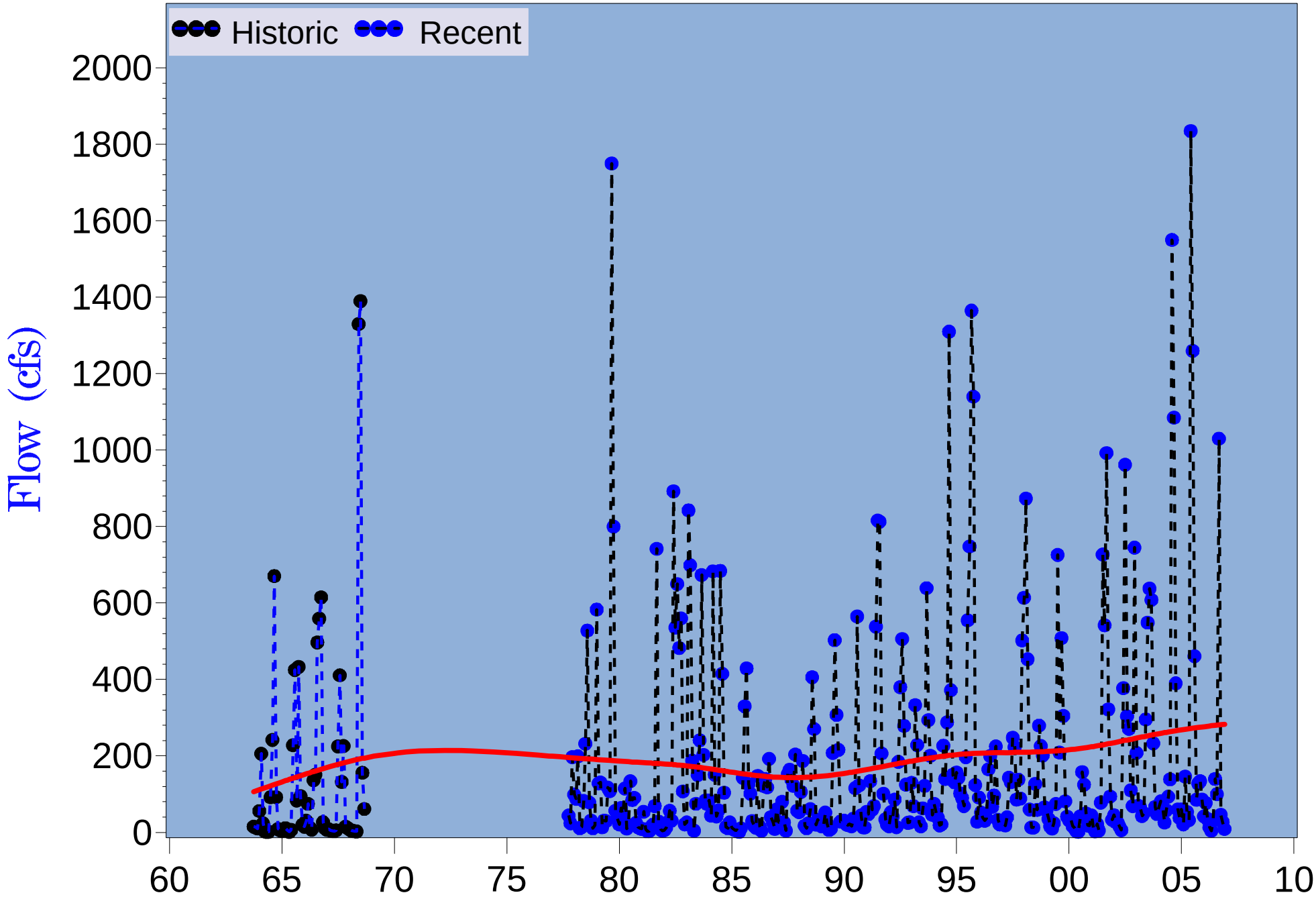


Figure 3.104b Monthly P50 (median) flow at long-term Prairie Creek (2298123) gage (1963-2006)

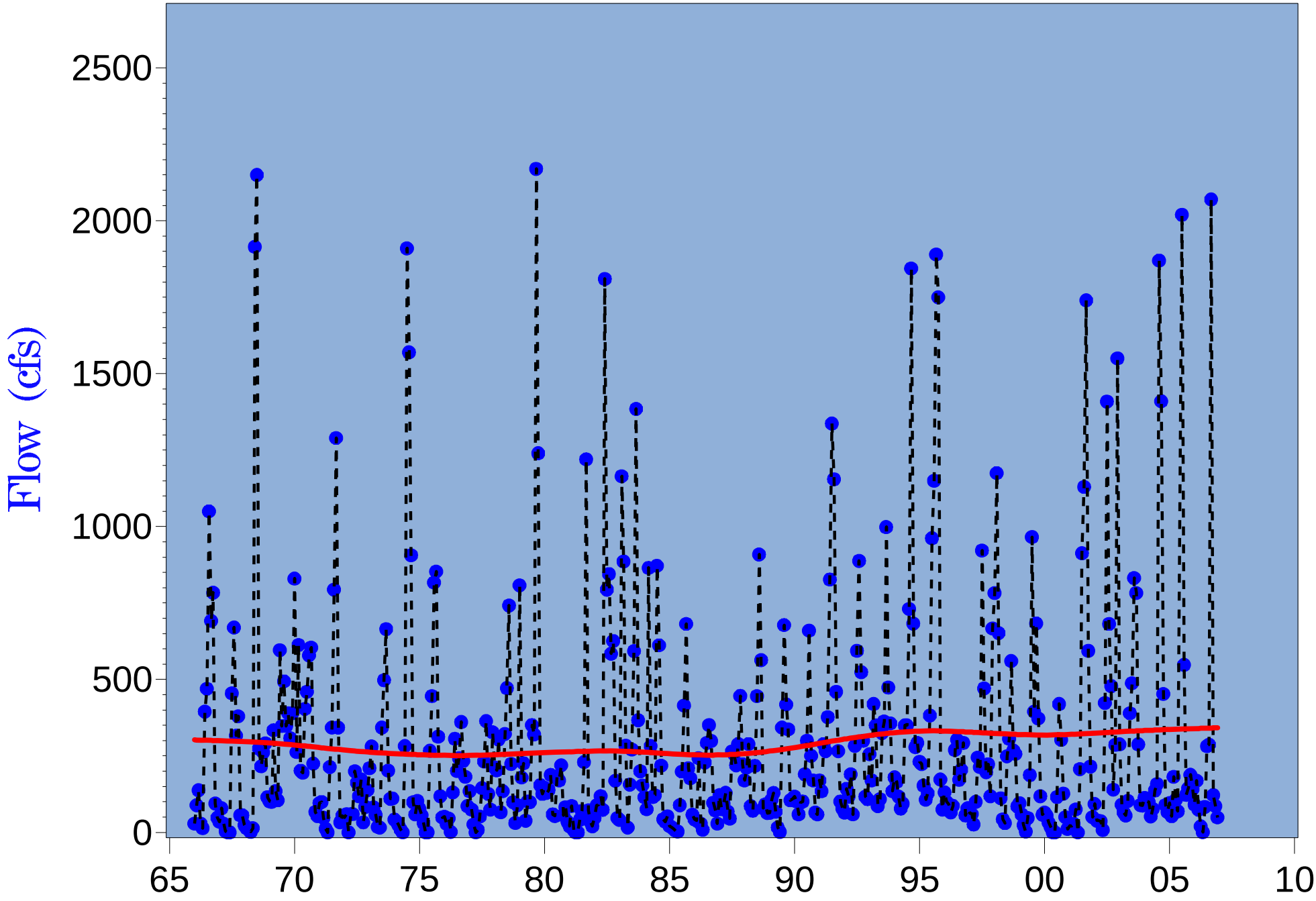


Figure 3.105 Monthly P50 (median) flow at long-term Shell Creek gage (1965-2006)

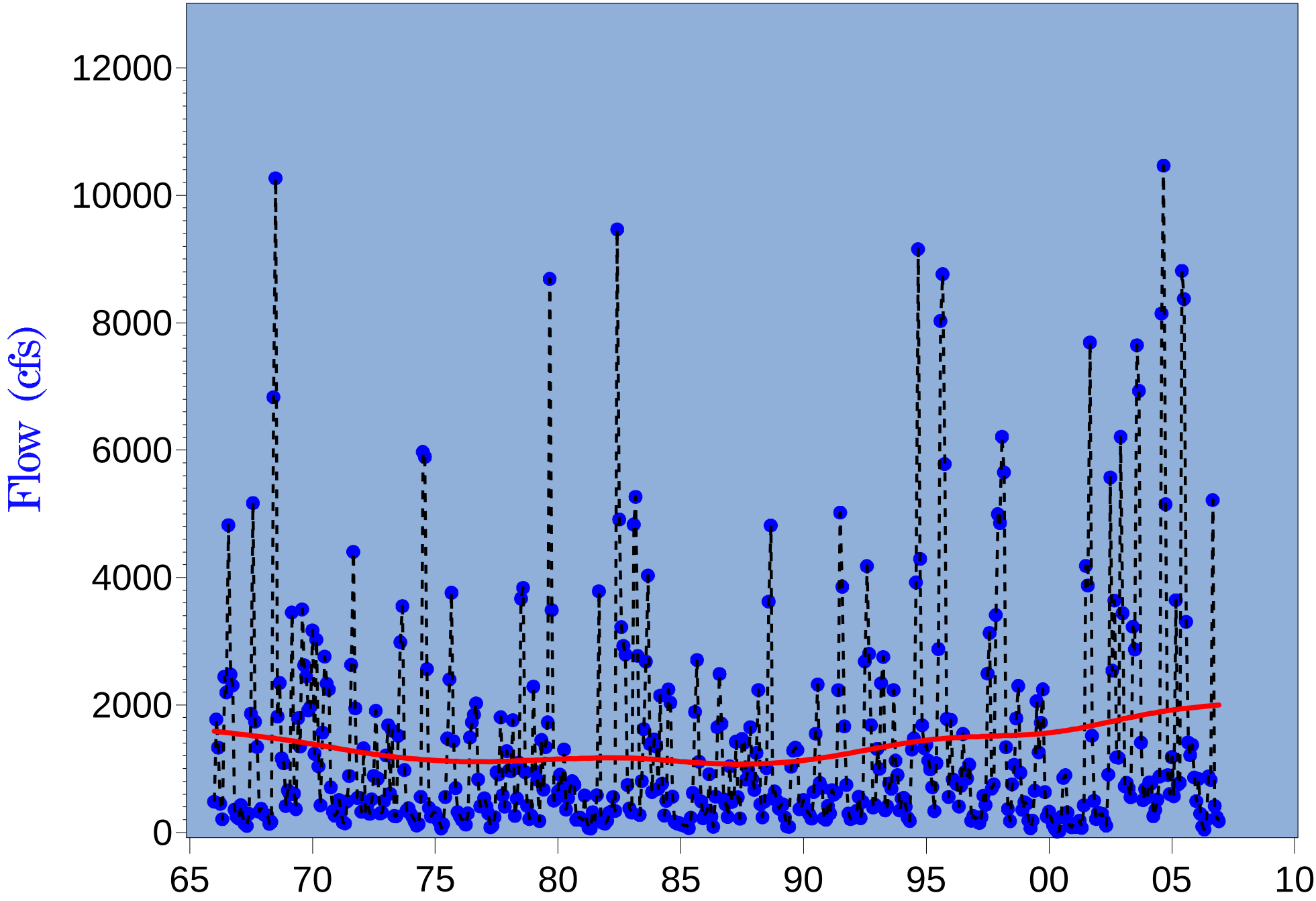


Figure 3.106 Monthly P50 (median) flow for total gaged Peace River flow to the Upper Harbor (1965-2006)

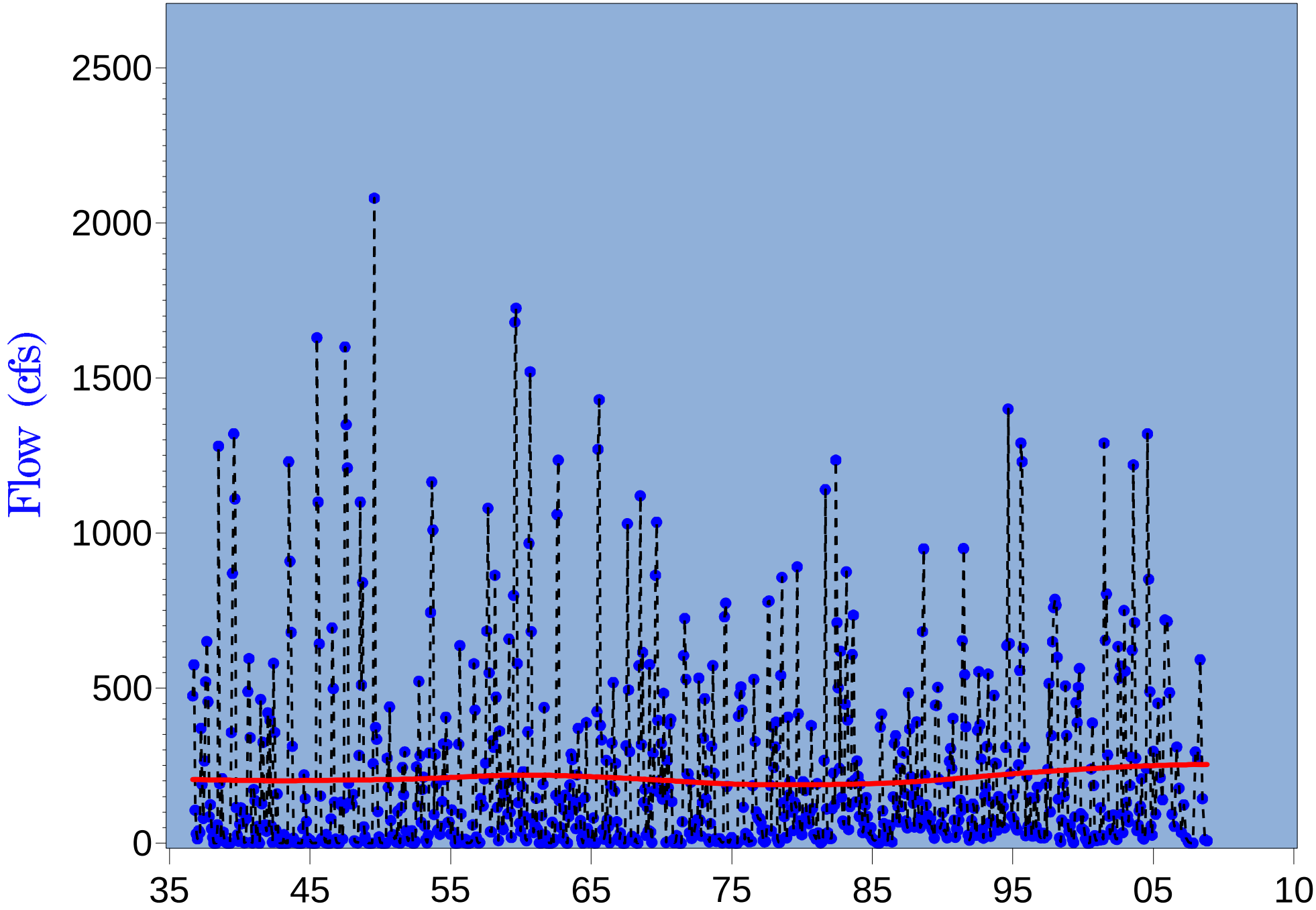


Figure 3.107 Monthly P50 (median) flow at long-term Myakka River near Sarasota (2298830) gage (1936-2006)

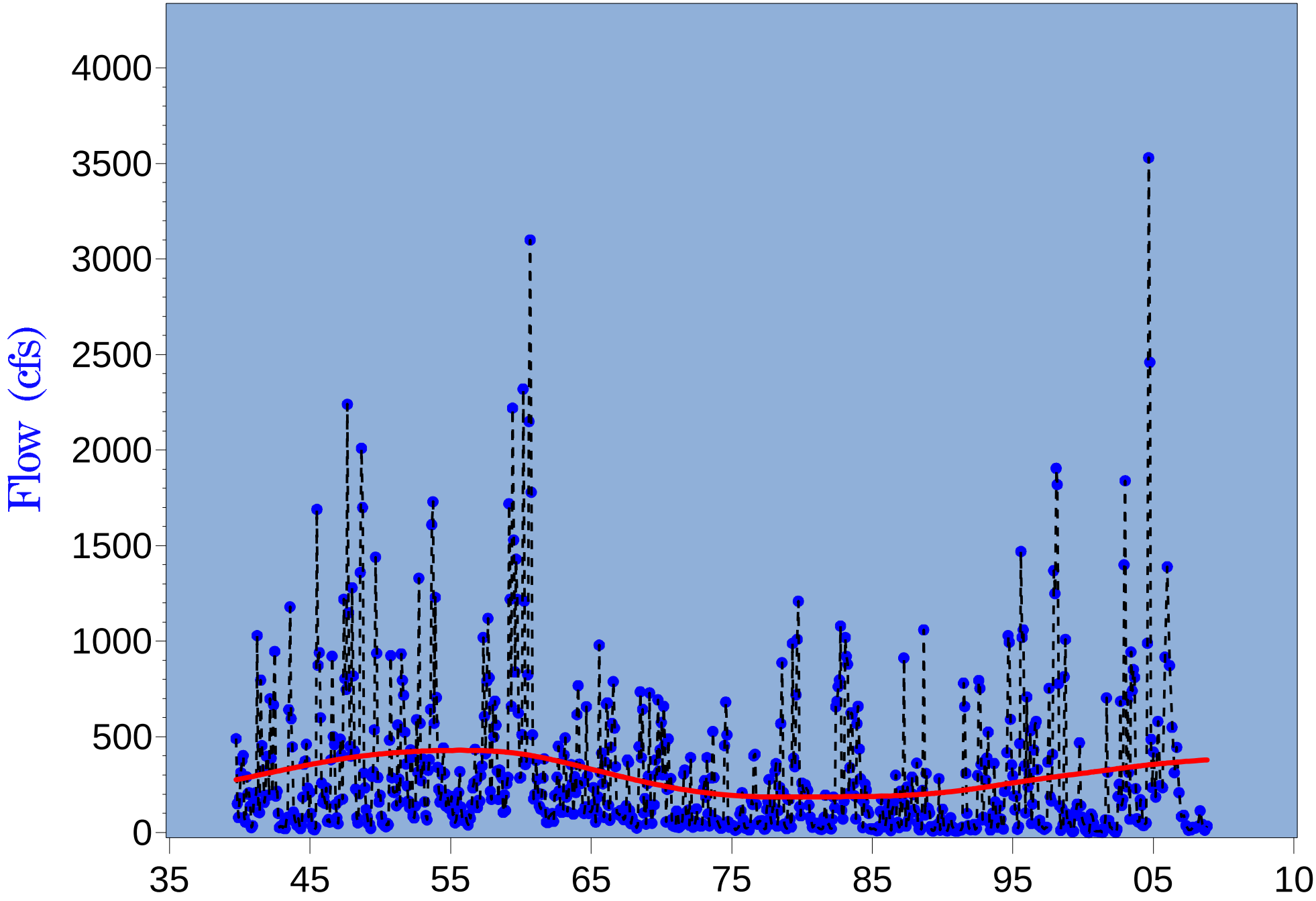


Figure 3.108 Monthly P75 flow at long-term Peace River at Bartow (2294650) gage (1939-2006)

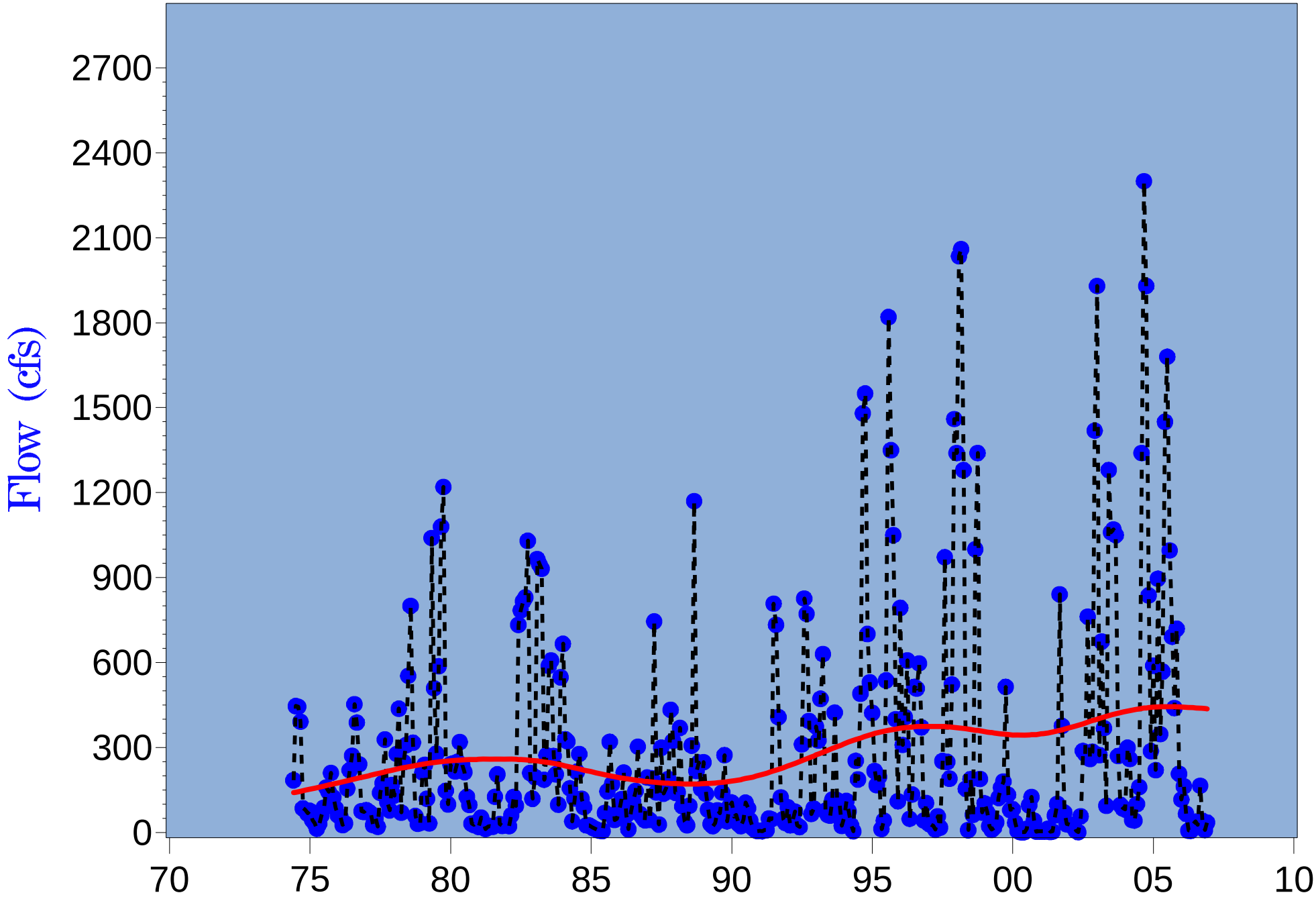


Figure 3.109 Monthly P75 flow at long-term Peace River at Ft. Meade (2294898) gage (1974-2006)

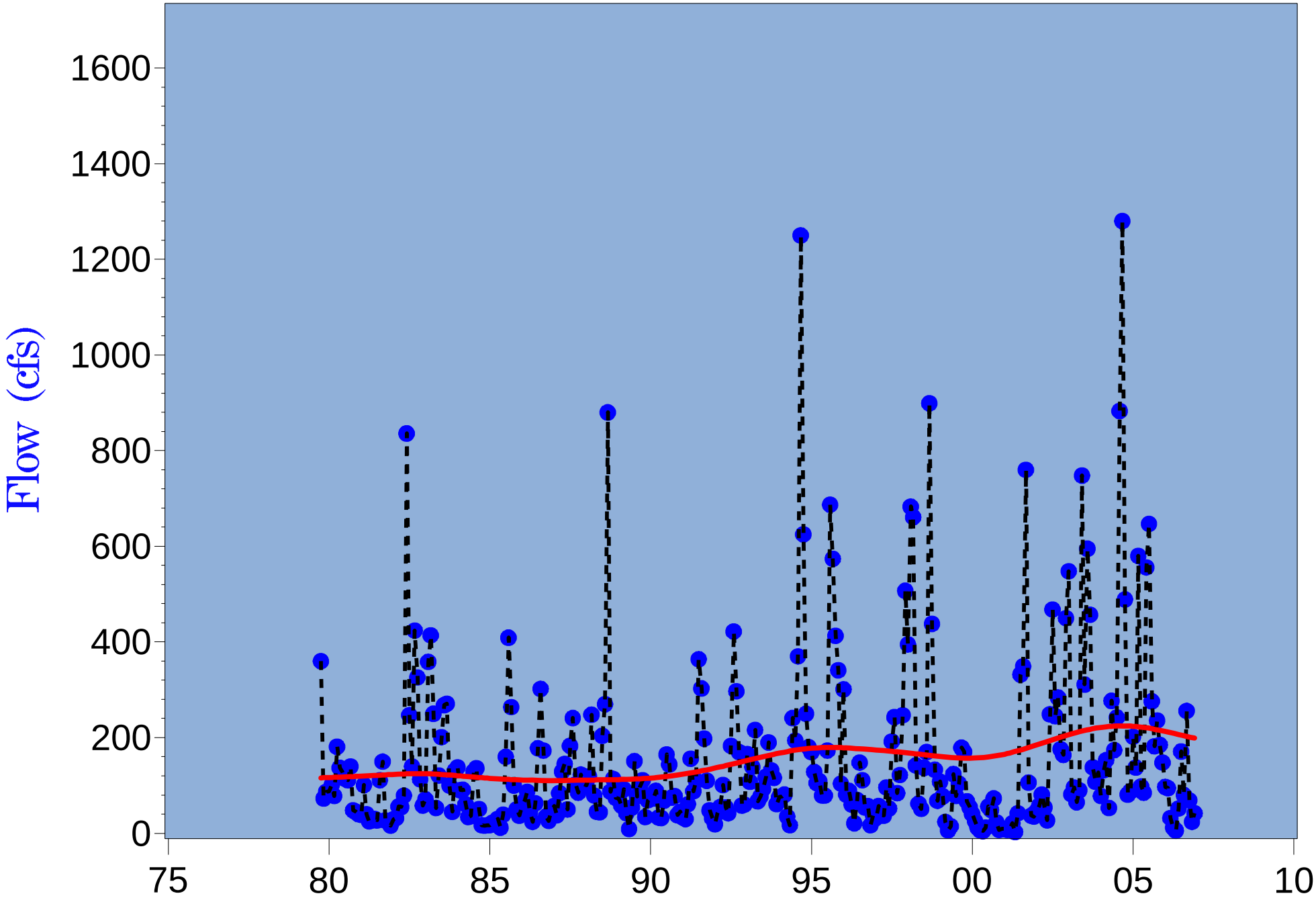


Figure 3.110a Monthly P75 flow at long-term Payne Creek (2295420) gage (1979-2006)

Table 3.18
Summary of Results of Seasonal Kendal Trend Analyses Period of Record - 2006
(With Corrections for Serial Correlations)

USGS ID	Gage Identification	First Year	P0 (Min)	P10	P25	P50 (Median)	P75	P90	P100 (Max)	Mean
Peace River Watershed										
2294650	**Peace River at Bartow**	1940	▼	▼	▼	▼	▼	▼	▼	▼
2295420	**Payne Creek near Bowling Green**	1980								
2295637	**Peace River at Zolfo Springs**	1934	▼	▼	▼	▼	▼	▼	▼	▼
2296500	**Charlie Creek near Gardner**	1951								
2296750	**Peace River at Arcadia**	1932	▼				▼	▼		
2297100	**Joshua Creek at Nocatee**	1951	▲	▲	▲	▲	▲	▲	▲	▲
2297310	**Horse Creek near Arcadia**	1951								
	Total Gaged Flow at Facility	1951	▼	▼	▼	▼				
2298123	**Prairie Creek near Fort Ogden**	1978	▲	▲	▲	▲				
2298202	**Shell Creek near Punta Gorda**	1965	▲	▲					▲	
	Total Gaged Peace River Flow to Harbor	1965								
Reference Watershed										
2298830	**Myakka River near Sarasota**	1937	▲	▲	▲	▲	▲	▲	▲	▲

Note: Direction of arrow denotes significant increasing or decreasing trend. Red arrows are significant at p=0.05 level, while blue show trends significant at p=0.10, and blanks indicate no significant trends in Seasonal Kendall Tau test corrected for serial correlations.

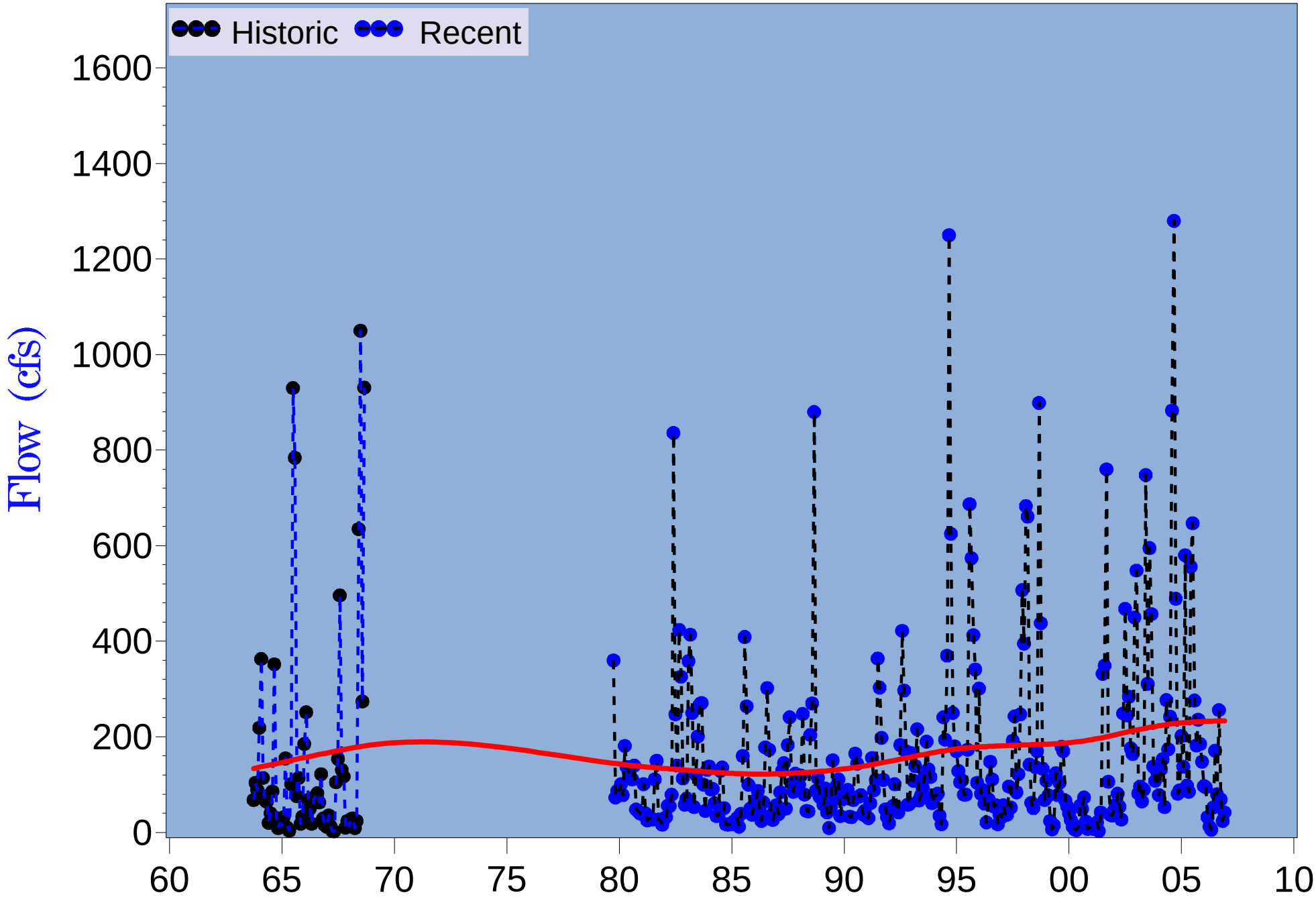


Figure 3.110b Monthly P75 flow at long-term Payne Creek (2295420) gage (1963-2006)

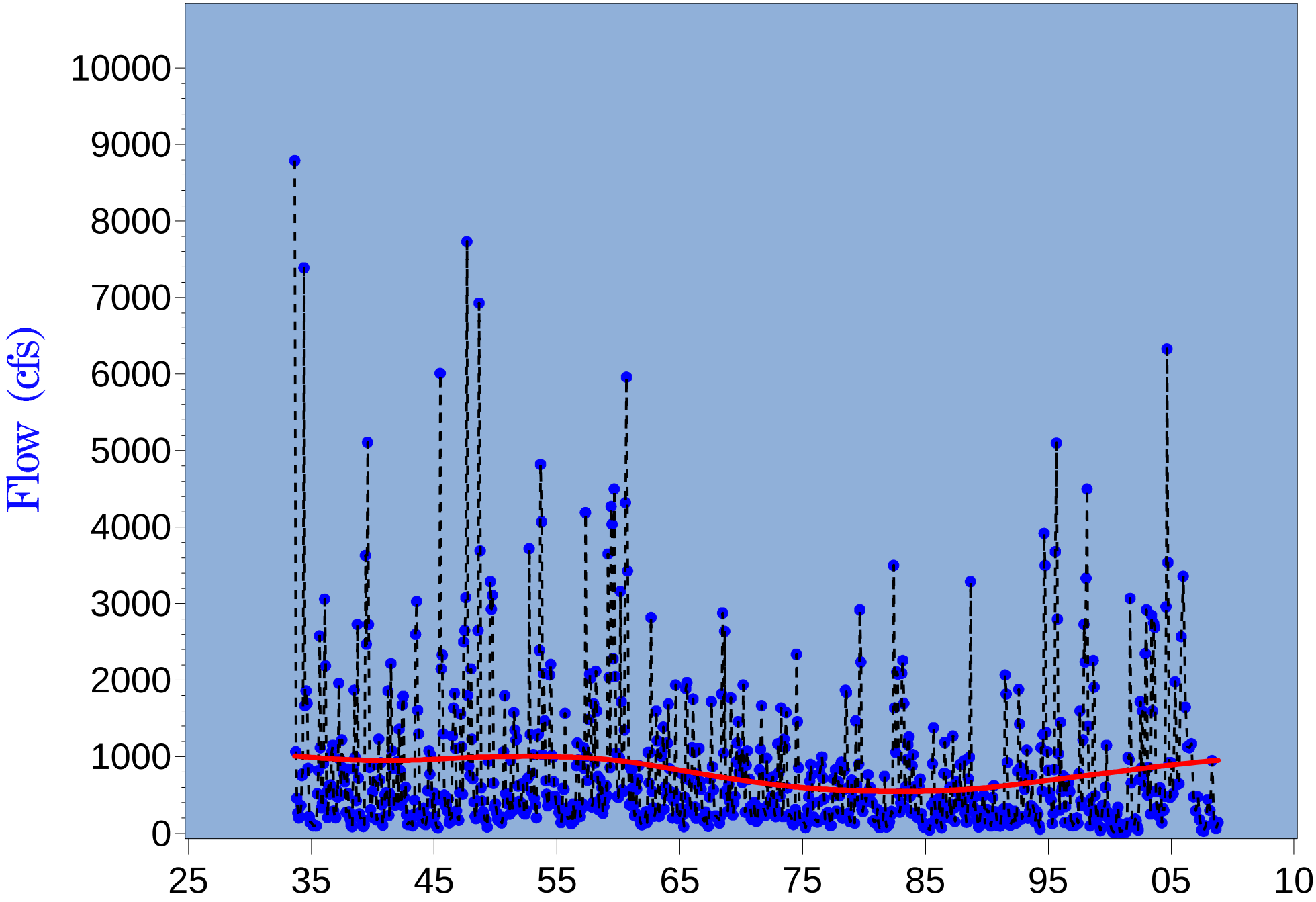


Figure 3.111 Monthly P75 flow at long-term Peace River at Zolfo (2295637) gage (1933-2006)

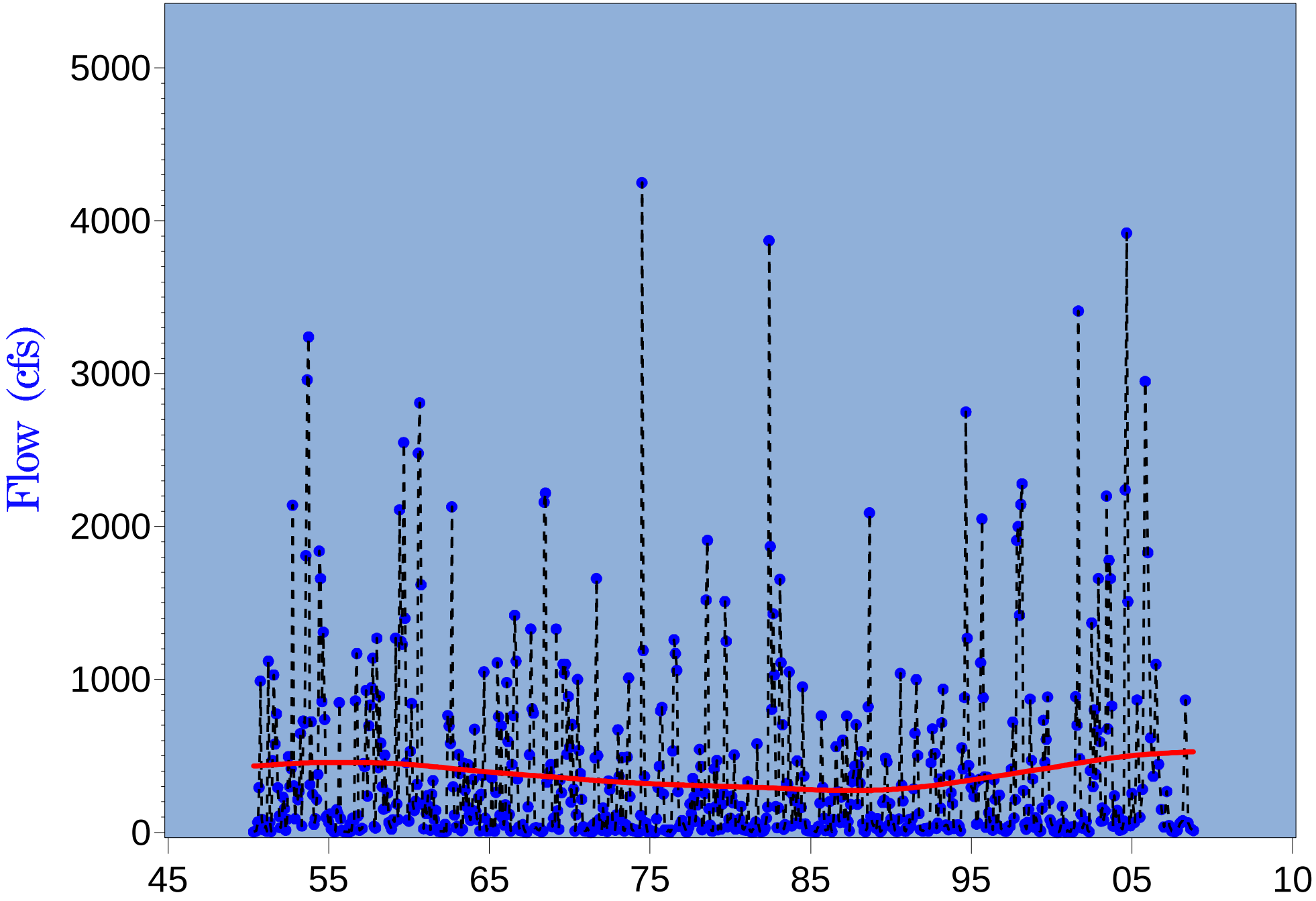


Figure 3.112 Monthly P75 flow at long-term Charlie Creek (2296500) gage (1950-2006)

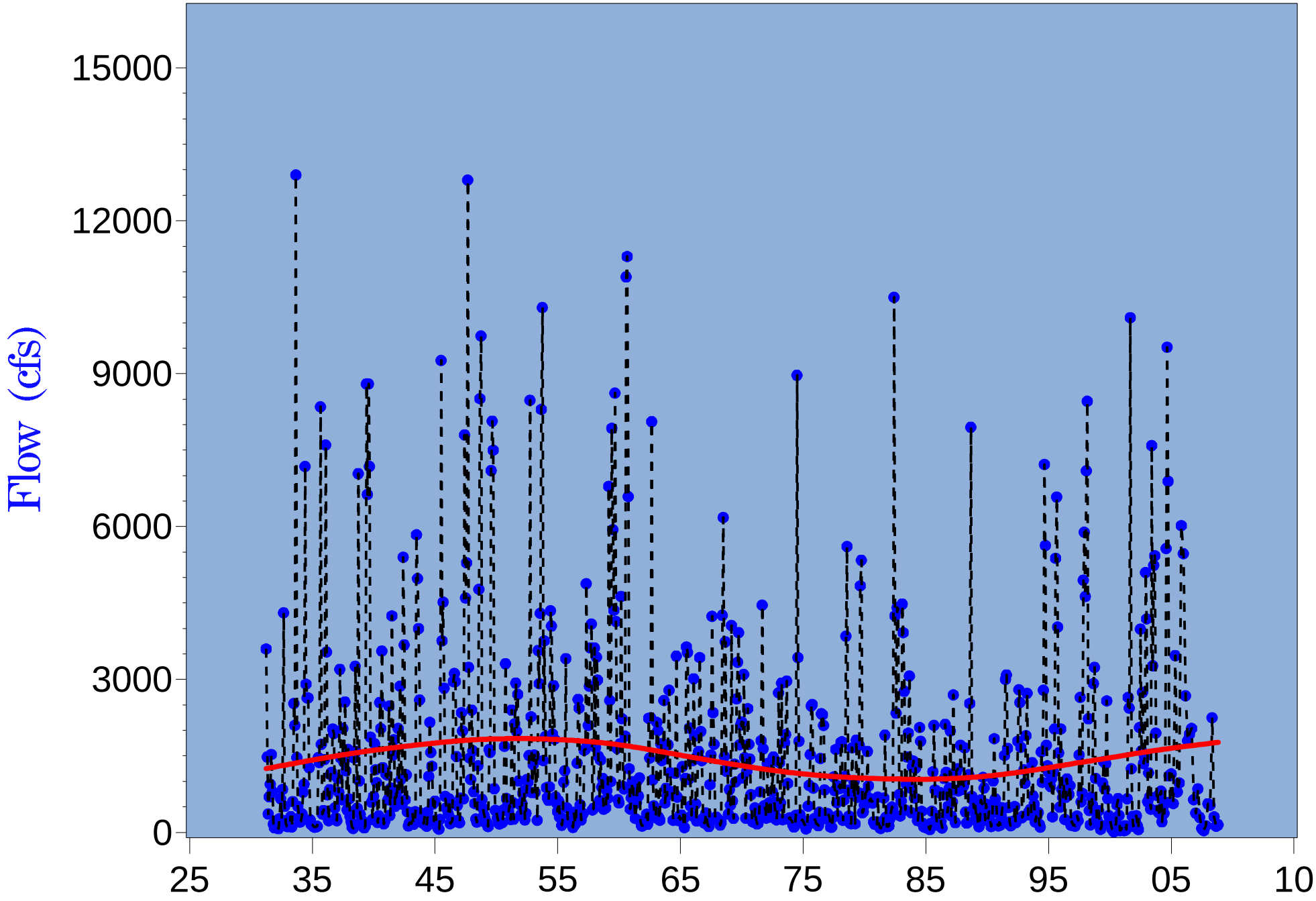


Figure 3.113 Monthly P75 flow at long-term Peace River at Arcadia (2296750) gage (1931-2006)

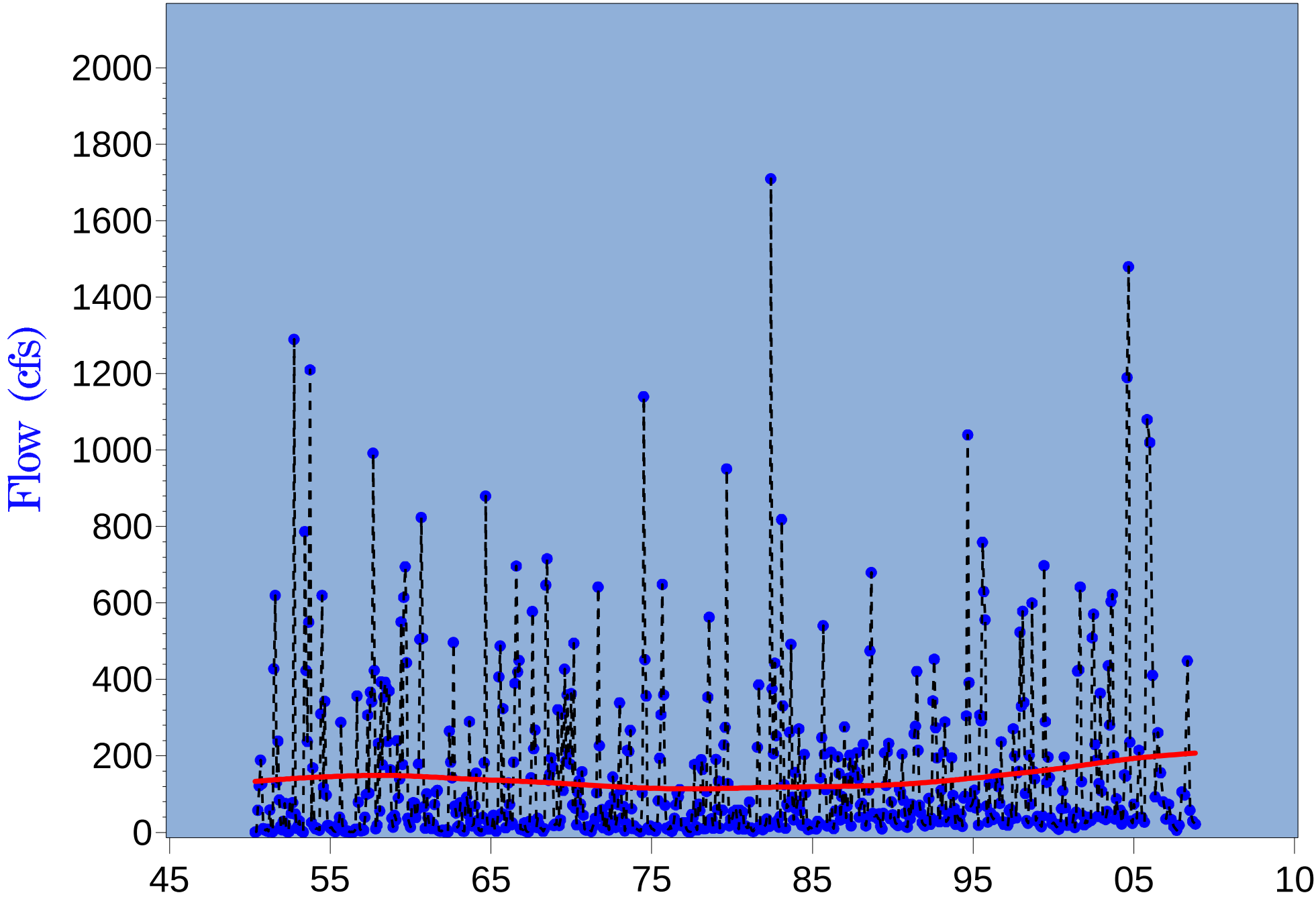


Figure 3.114 Monthly P75 flow at long-term Joshua Creek at Nocatee (2297100) gage (1950-2006)

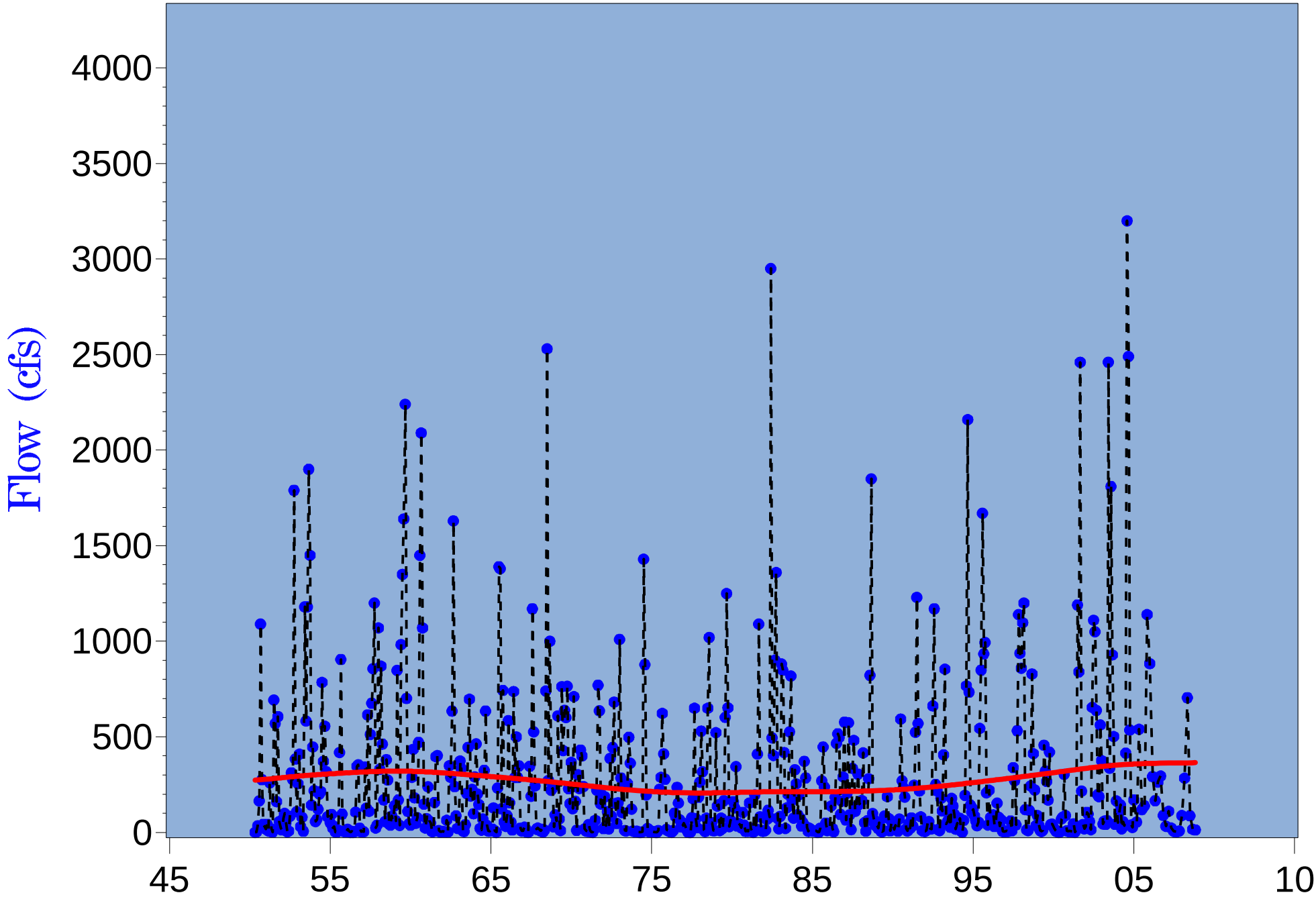


Figure 3.115 Monthly P75 flow at long-term Horse Creek near Arcadia(2297310) gage (1950-2006)

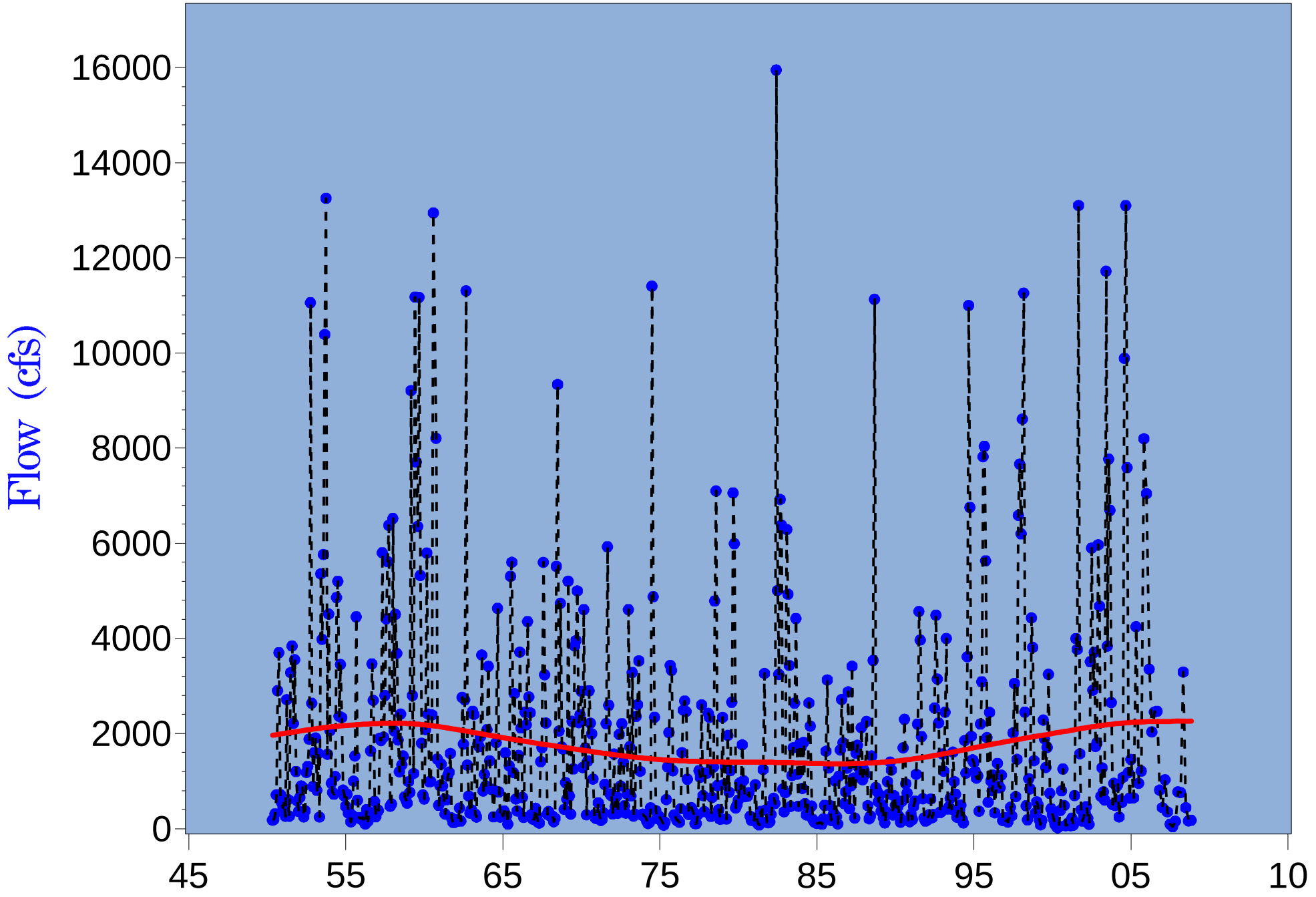


Figure 3.116 Monthly P75 flow for long-term for total gaged flow upstream of the Facility (1950-2006)

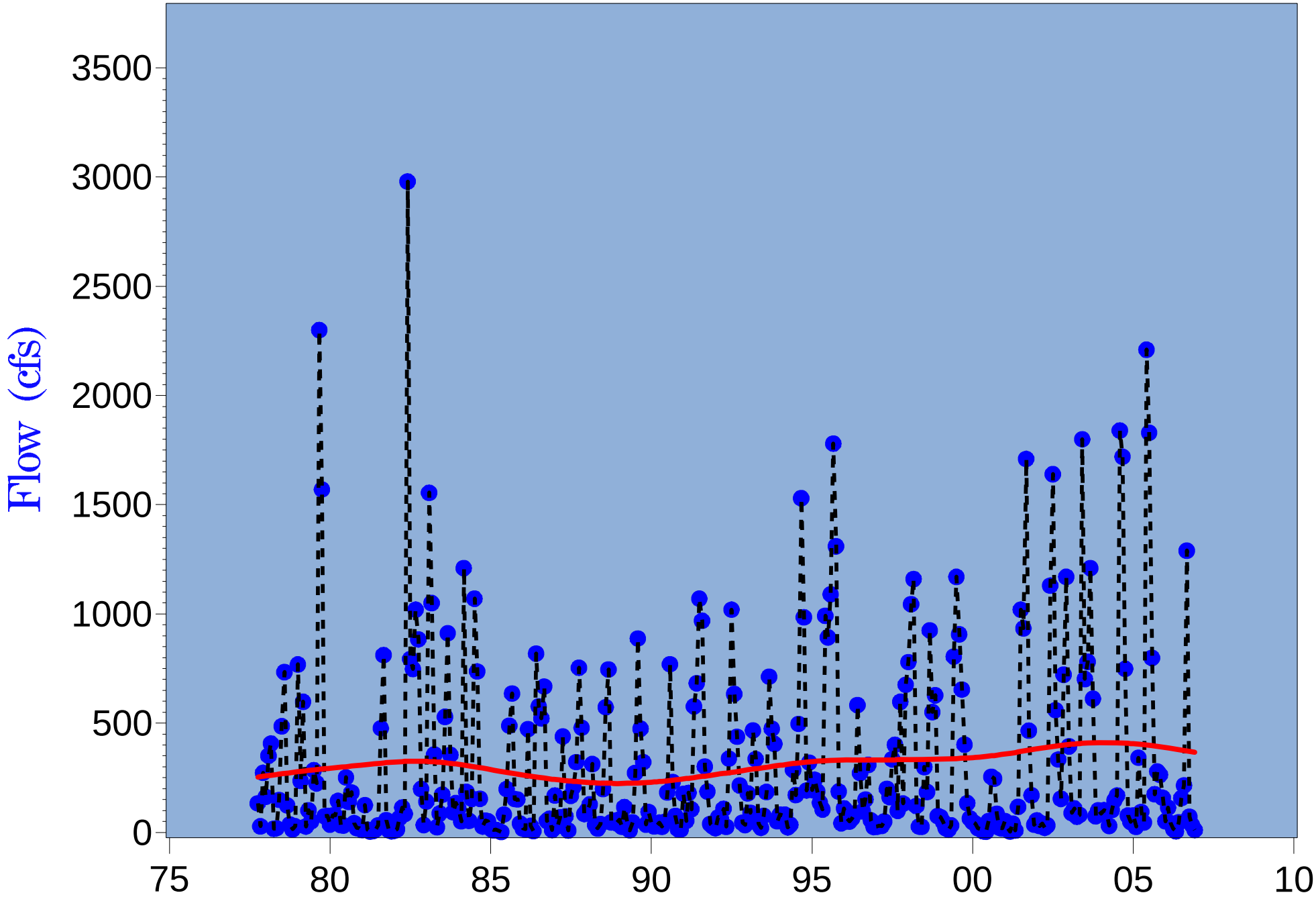


Figure 3.117a Monthly P75 flow at long-term Prairie Creek (2298123) gage (1977-2006)

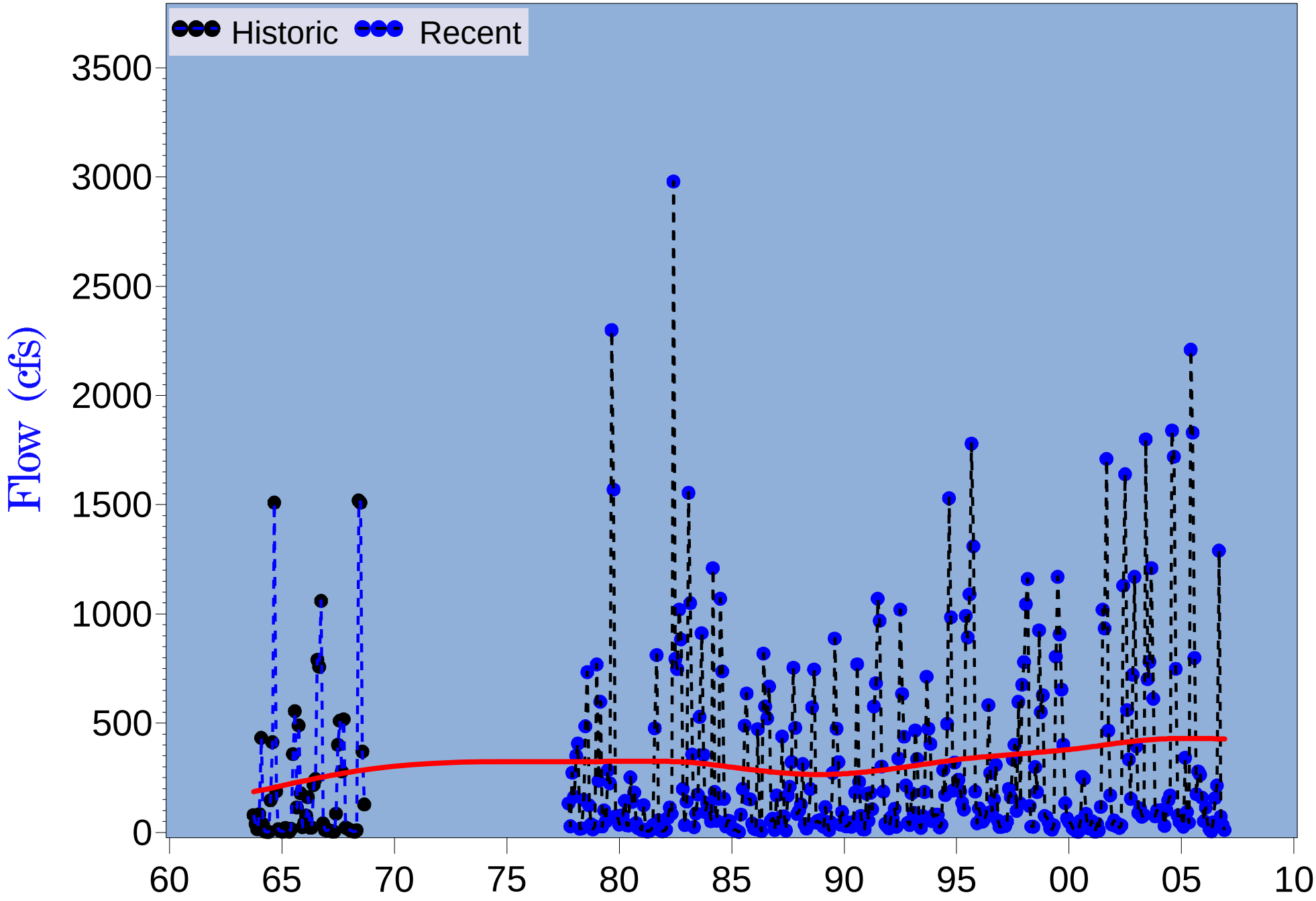


Figure 3.117b Monthly P75 flow at long-term Prairie Creek (2298123) gage (1963-2006)

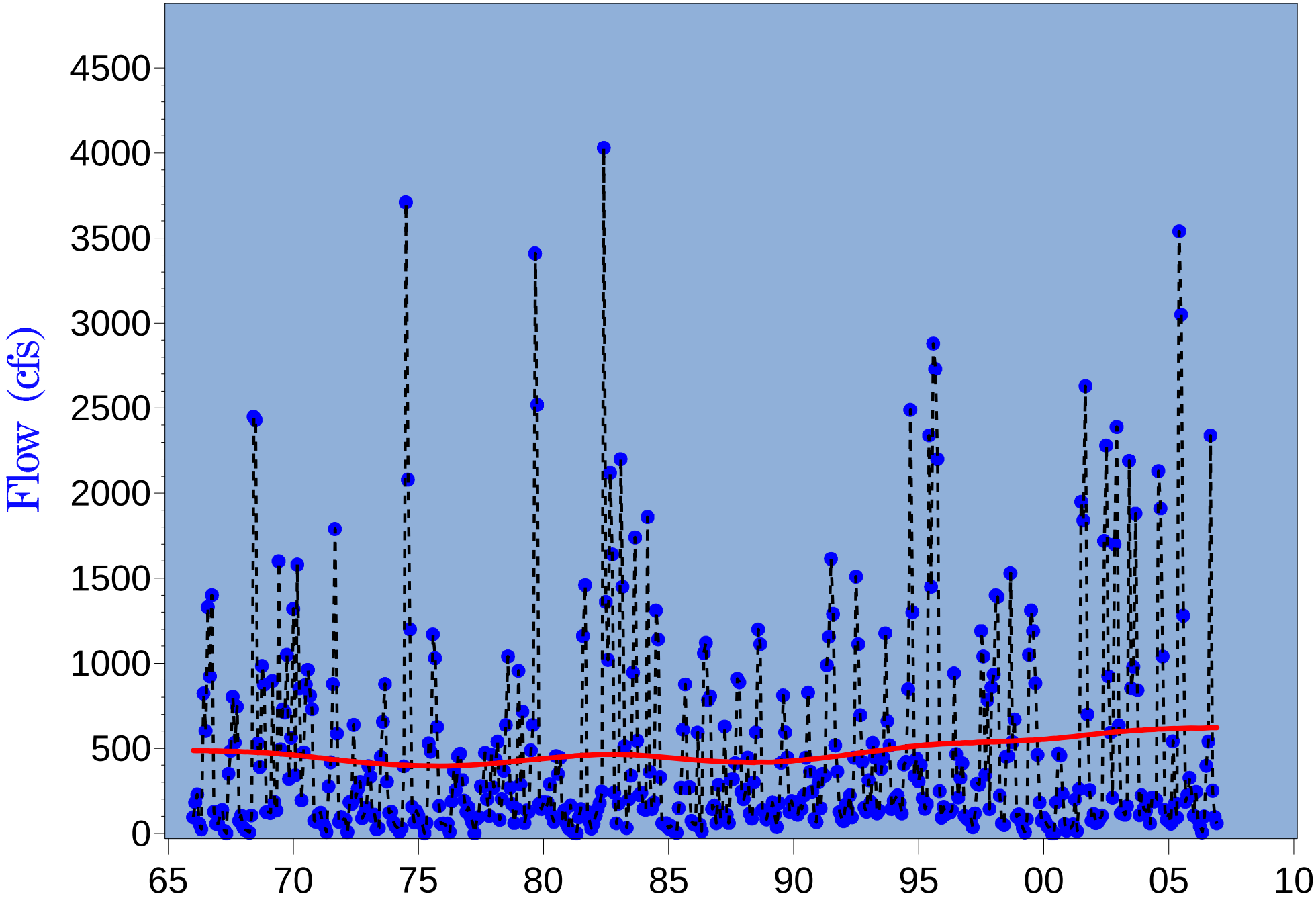


Figure 3.118 Monthly P75 flow at long-term Shell Creek gage (1965-2006)

Table 3.19
Summary of Results of Seasonal Kendall Trend Analyses of Monthly Flow Percentiles over Different Selected Periods of Time Through 2006*

USGS Gaging Site	Flow Percentile	1935 - 2006	1940 - 2006	1945 - 2006	1950 - 2006	1955 - 2006	1960 - 2006	1965 - 2006	1970 - 2006	1975 - 2006	1980 - 2006	1985 - 2006	1990 - 2006	1995- 2006
Peace River Watershed														
Peace River at Bartow	Low (P10)		▼	▼	▼	▼	▼	▼	▼					
	Median (P50)		▼	▼	▼	▼	▼							
	High (P90)		▼	▼	▼	▼								
Payne Creek near Bowling Green	Low (P10)													
	Median (P50)													
	High (P90)													
Peace River at Zolfo Springs	Low (P10)	▼	▼	▼	▼	▼	▼	▼						
	Median (P50)	▼	▼	▼	▼	▼	▼							
	High (P90)	▼	▼	▼	▼	▼								
Charlie Creek near Gardner	Low (P10)								▲					
	Median (P50)													
	High (P90)								▲					
Peace River at Arcadia	Low (P10)	▼	▼	▼	▼	▼								
	Median (P50)	▼	▼	▼	▼									
	High (P90)	▼	▼	▼	▼									
Joshua Creek at Nocatee	Low (P10)					▲	▲	▲	▲	▲	▲	▲		
	Median (P50)					▲	▲	▲	▲	▲	▲			
	High (P90)					▲	▲	▲	▲	▲	▲			

Note: Direction of arrow denotes significant increasing or decreasing trend. Red arrows are significant at p=0.05 level, blue show trends significant at p=0.10, and blanks indicate no significant trends in Seasonal Kendall Tau tests corrected for serial correlations. Dashed lines indicate periods priors prior to USGS gaging at each location.

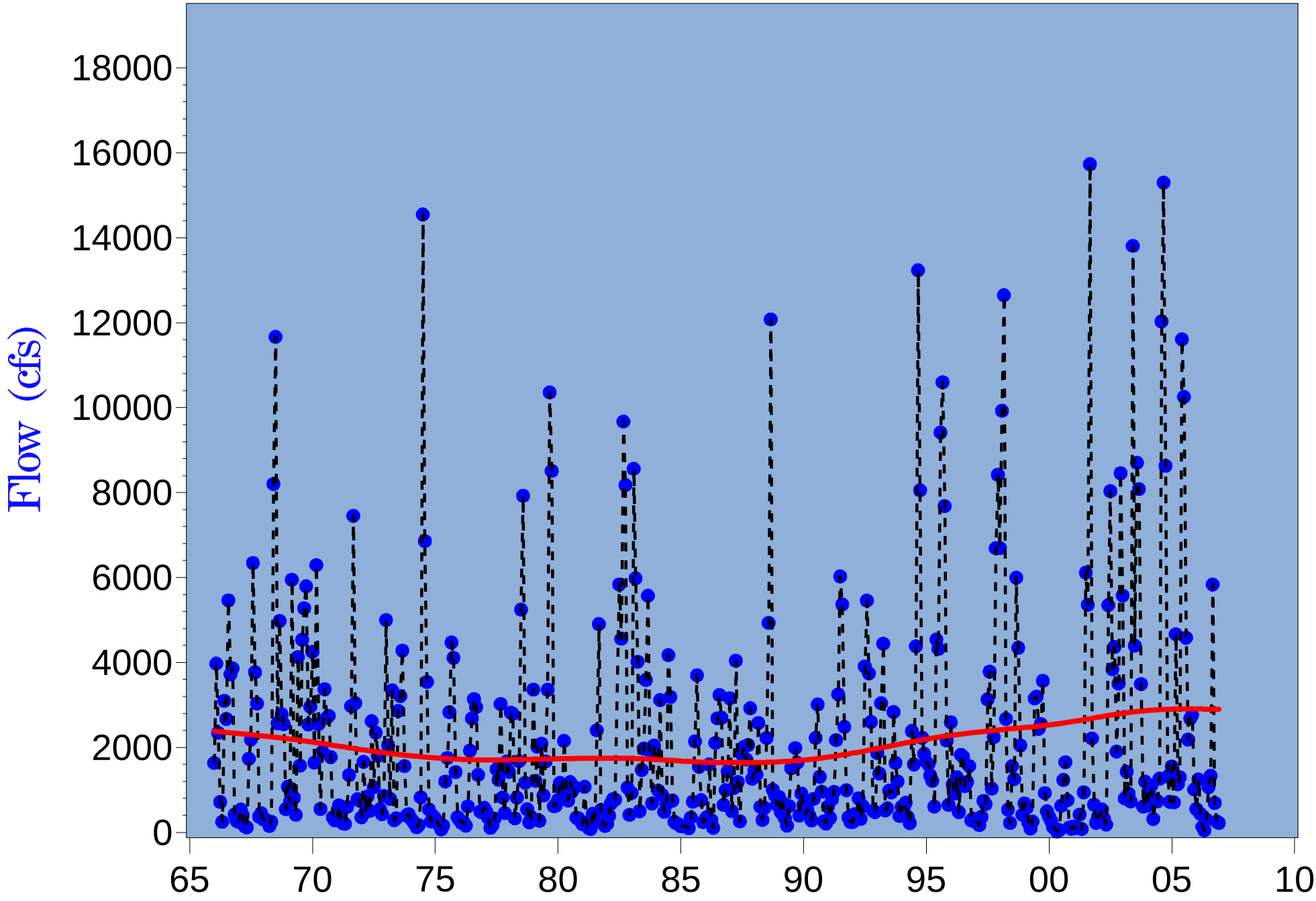


Figure 3.119 Monthly P75 flow for total gaged Peace River flow to the Upper Harbor (1965-2006)

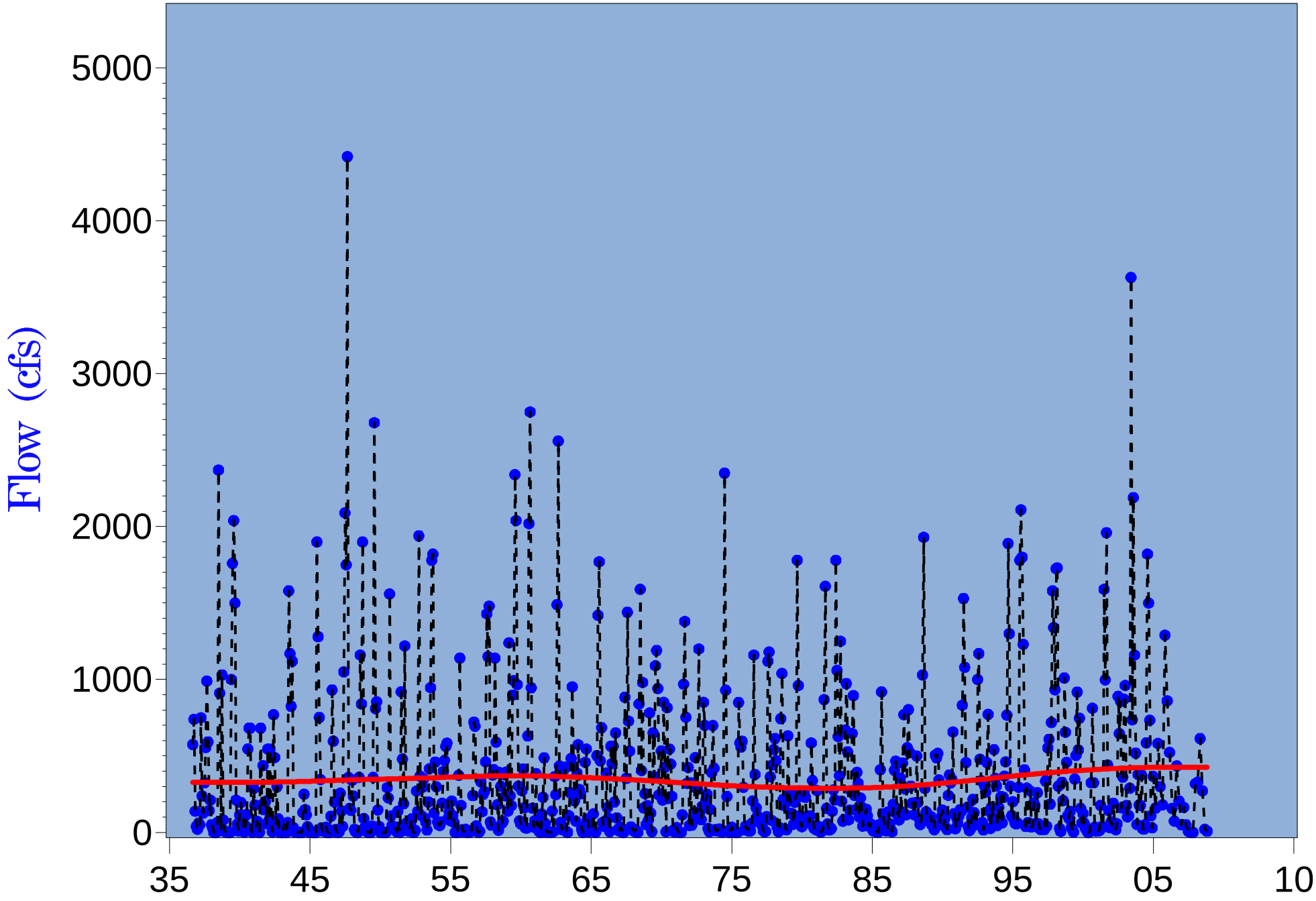


Figure 3.120 Monthly P75 flow at long-term Myakka River near Sarasota (2298830) gage (1936-2006)

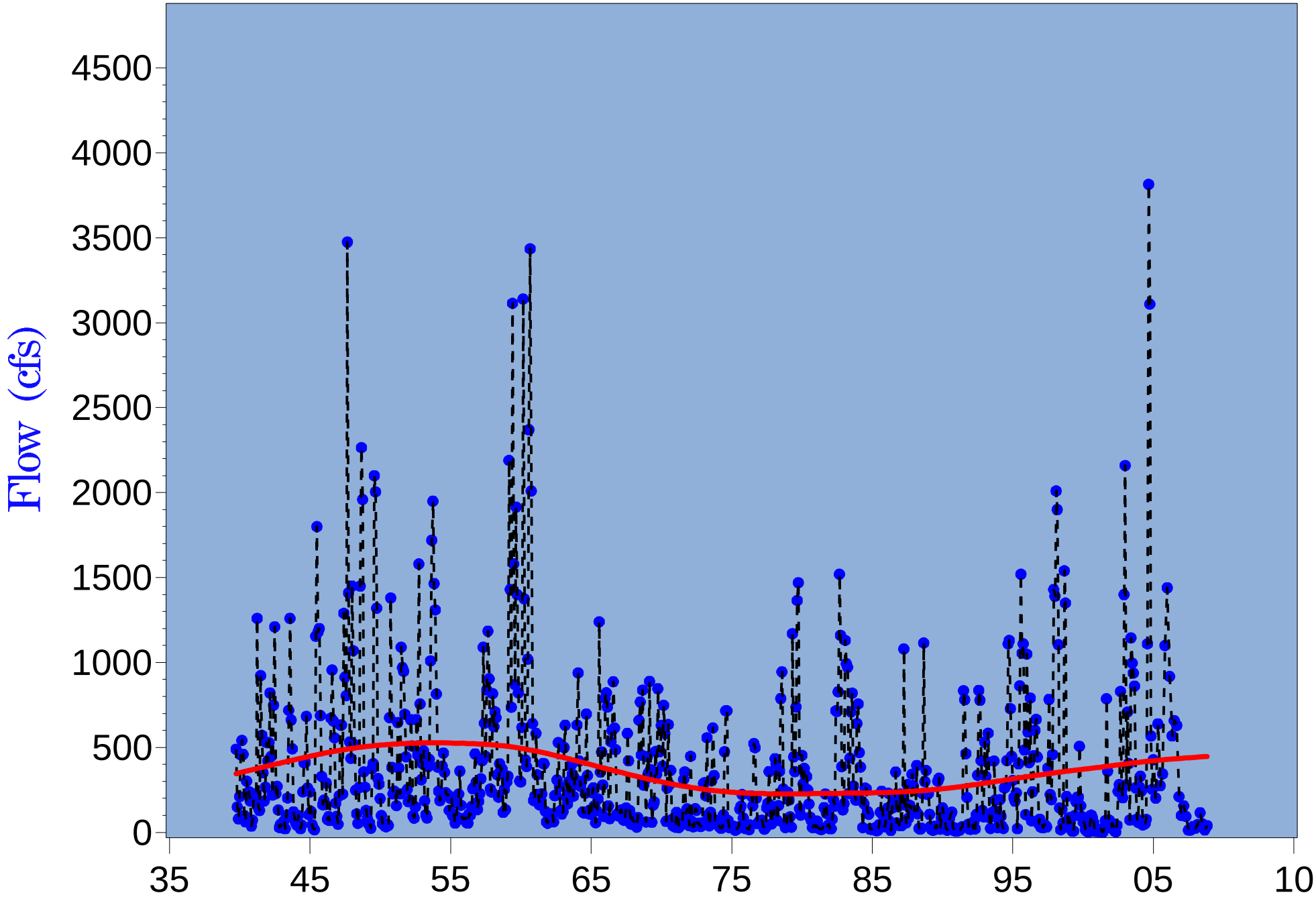


Figure 3.121 Monthly P90 flow at long-term Peace River at Bartow (2294650) gage (1939-2006)

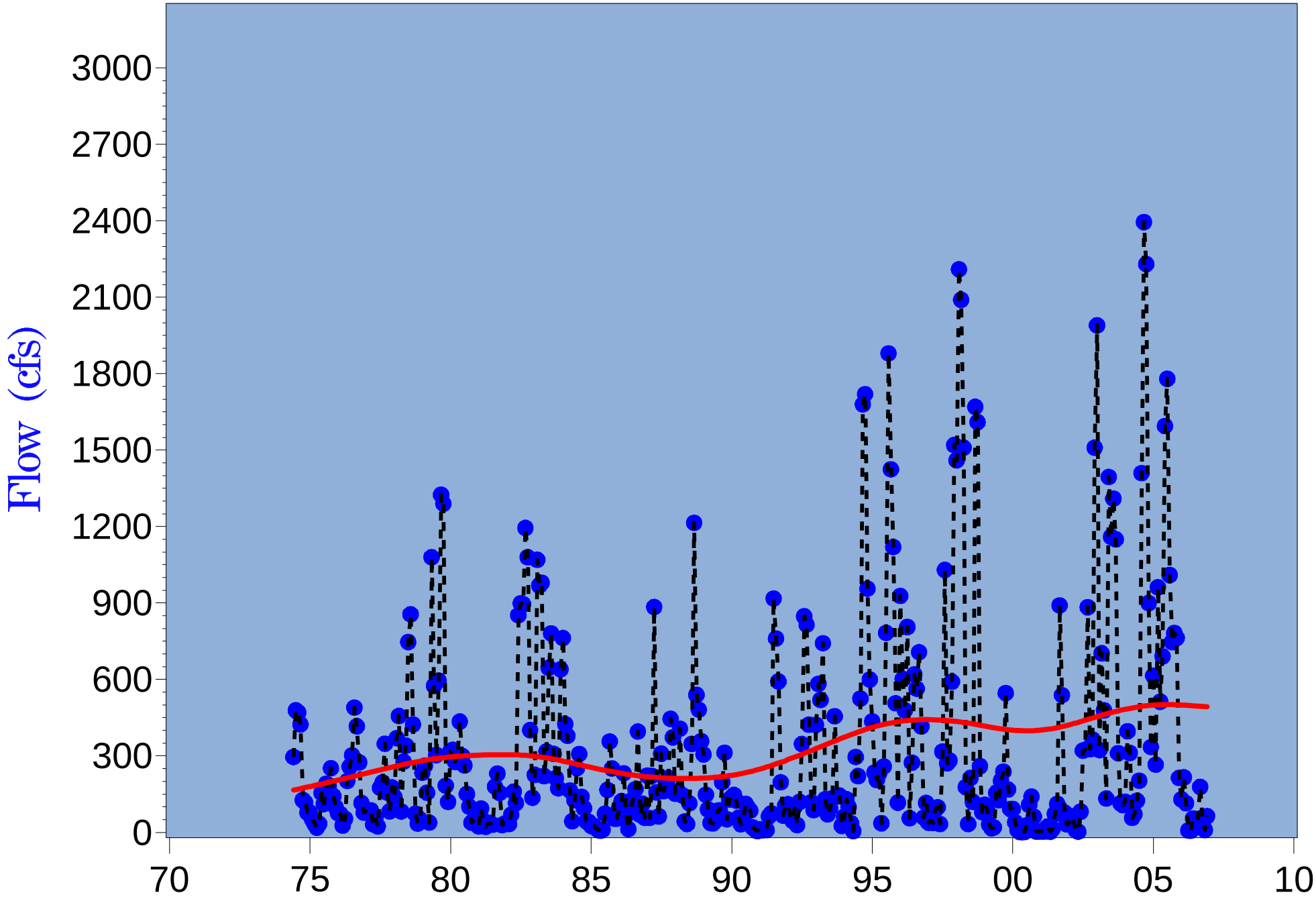


Figure 3.122 Monthly P90 flow at long-term Peace River at Ft. Meade (2294898) gage (1974-2006)

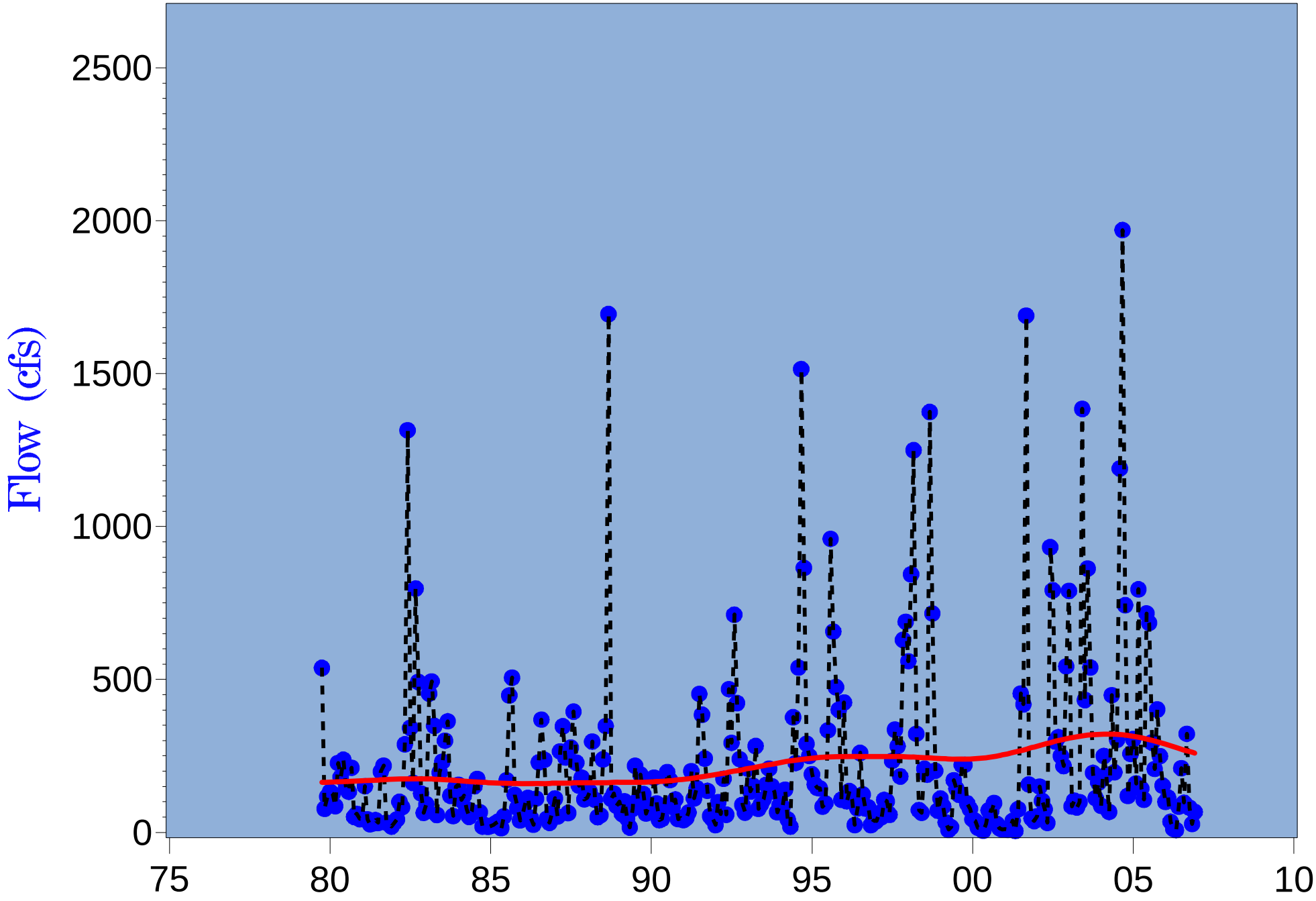


Figure 3.123a Monthly P90 flow at long-term Payne Creek (2295420) gage (1979-2006)

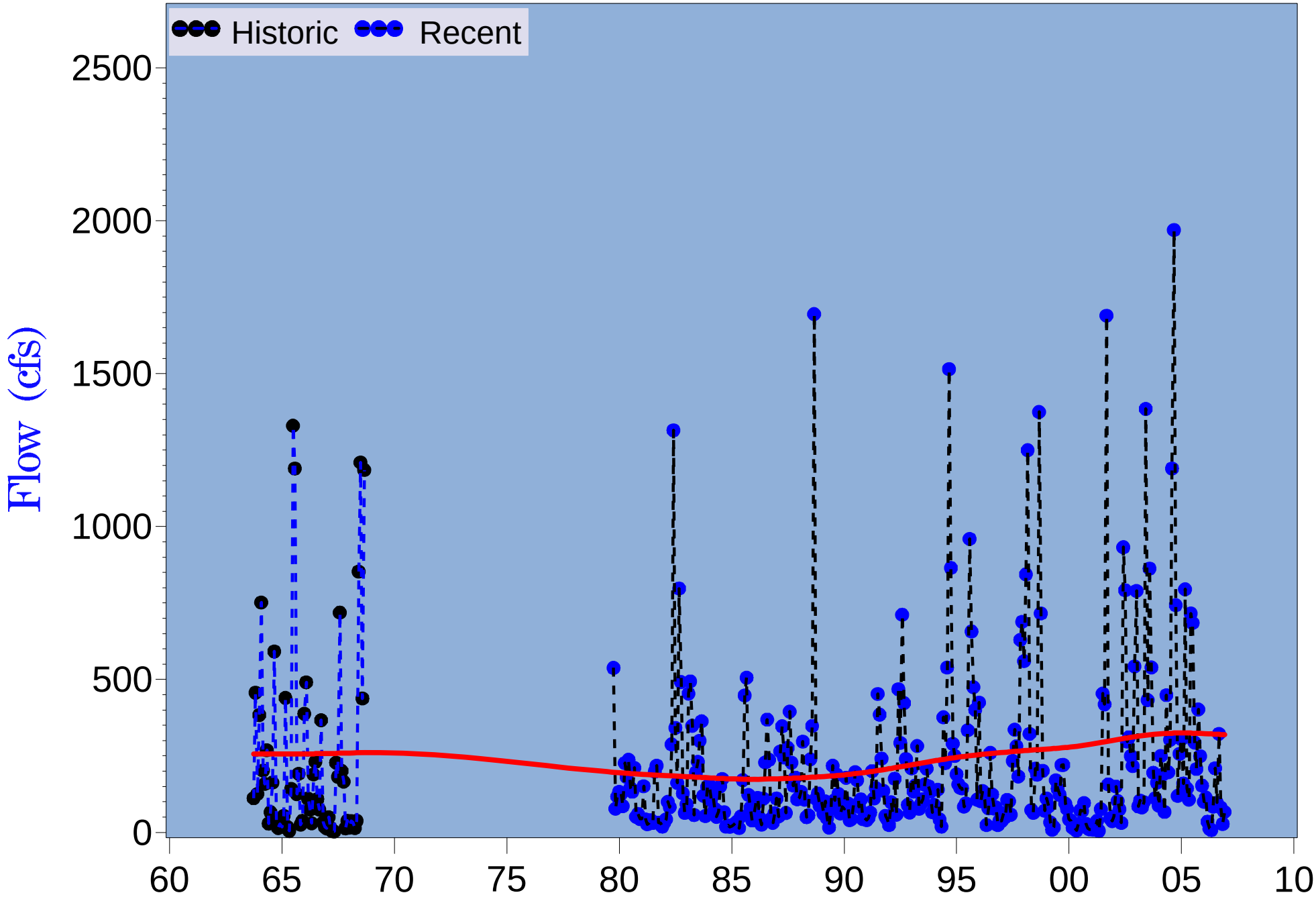


Figure 3.123b Monthly P90 flow at long-term Payne Creek (2295420) gage (1963-2006)

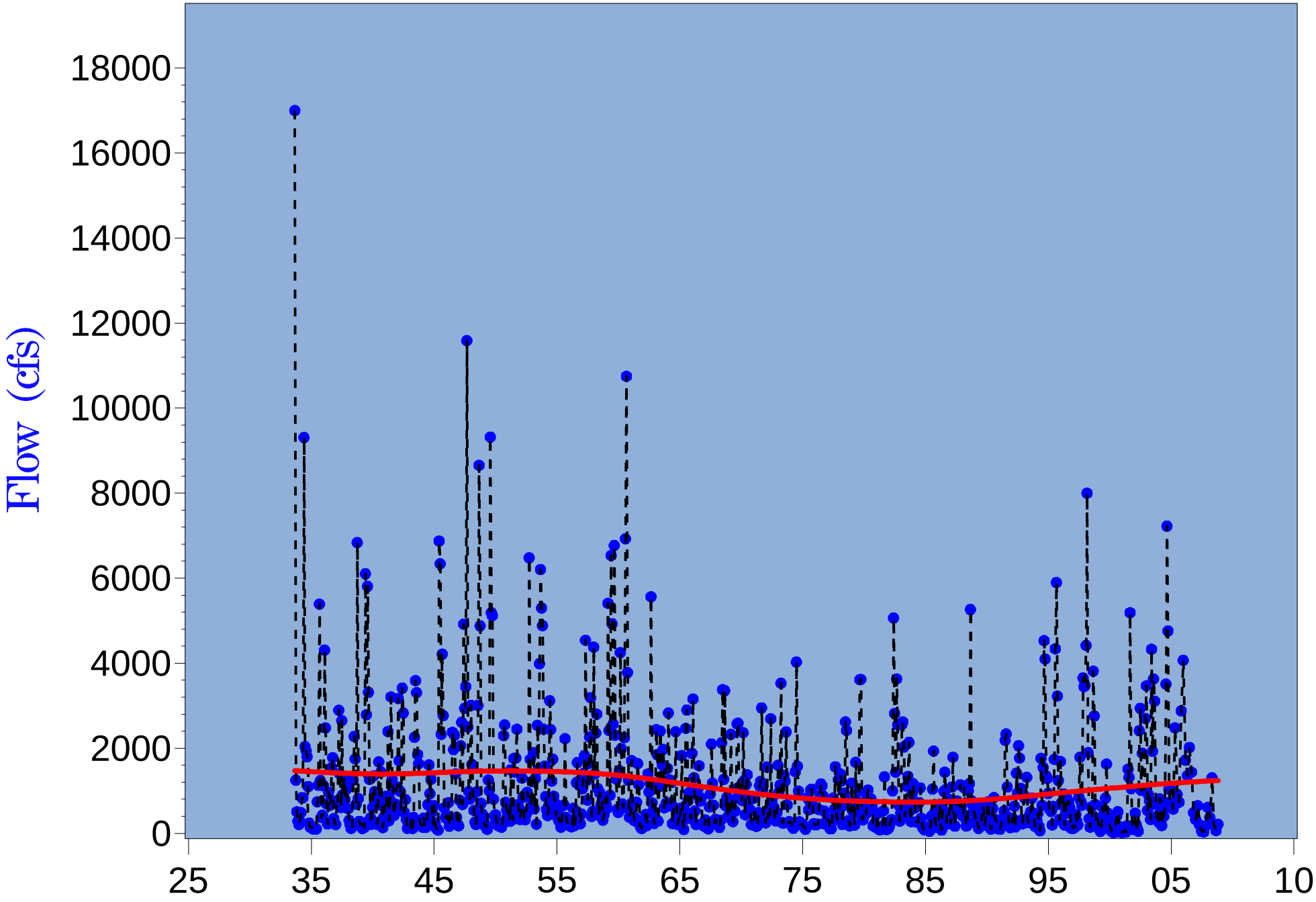


Figure 3.124 Monthly P90 flow at long-term Peace River at Zolfo (2295637) gage (1933-2006)

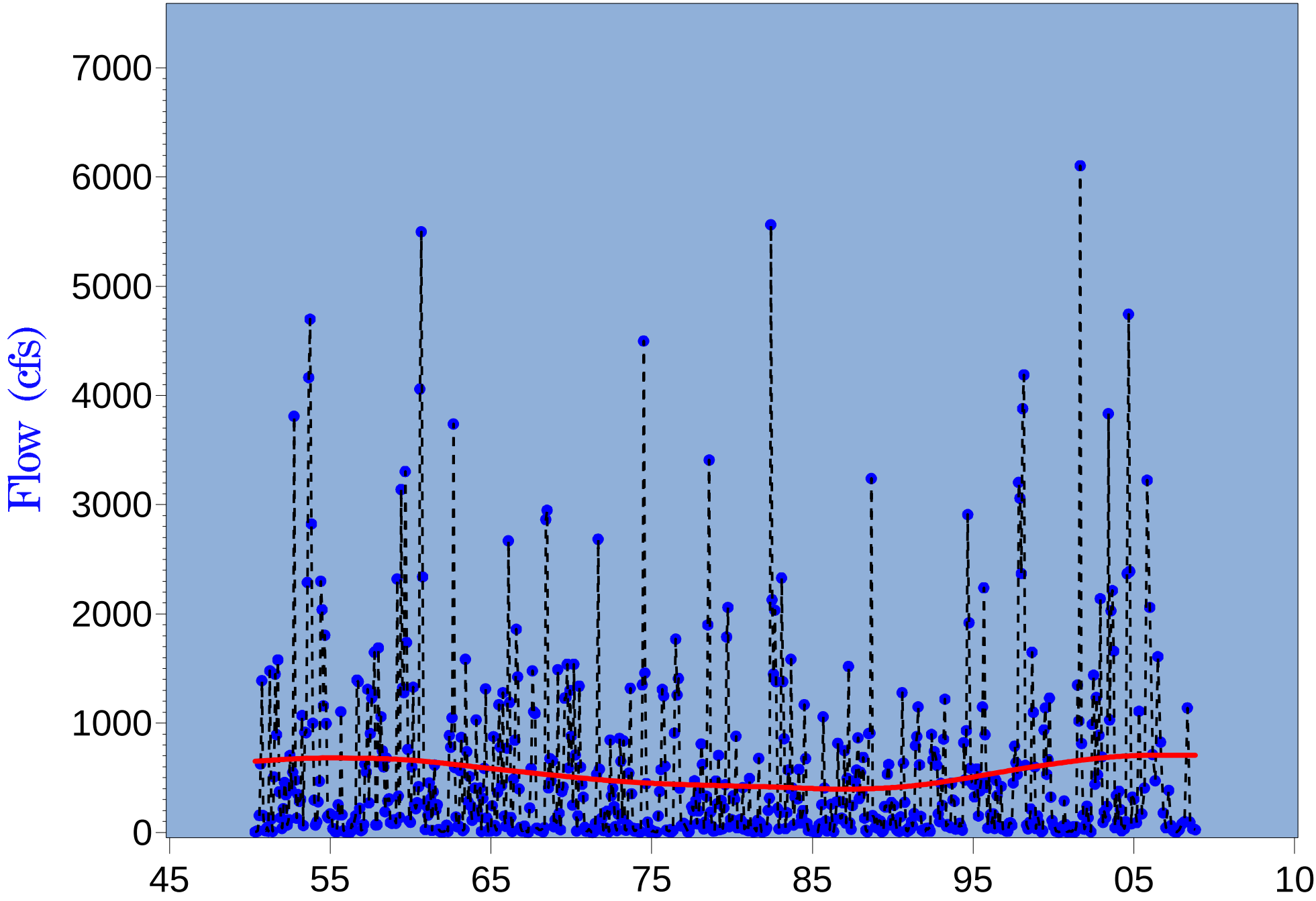


Figure 3.125 Monthly P90 flow at long-term Charlie Creek (2296500) gage (1950-2006)

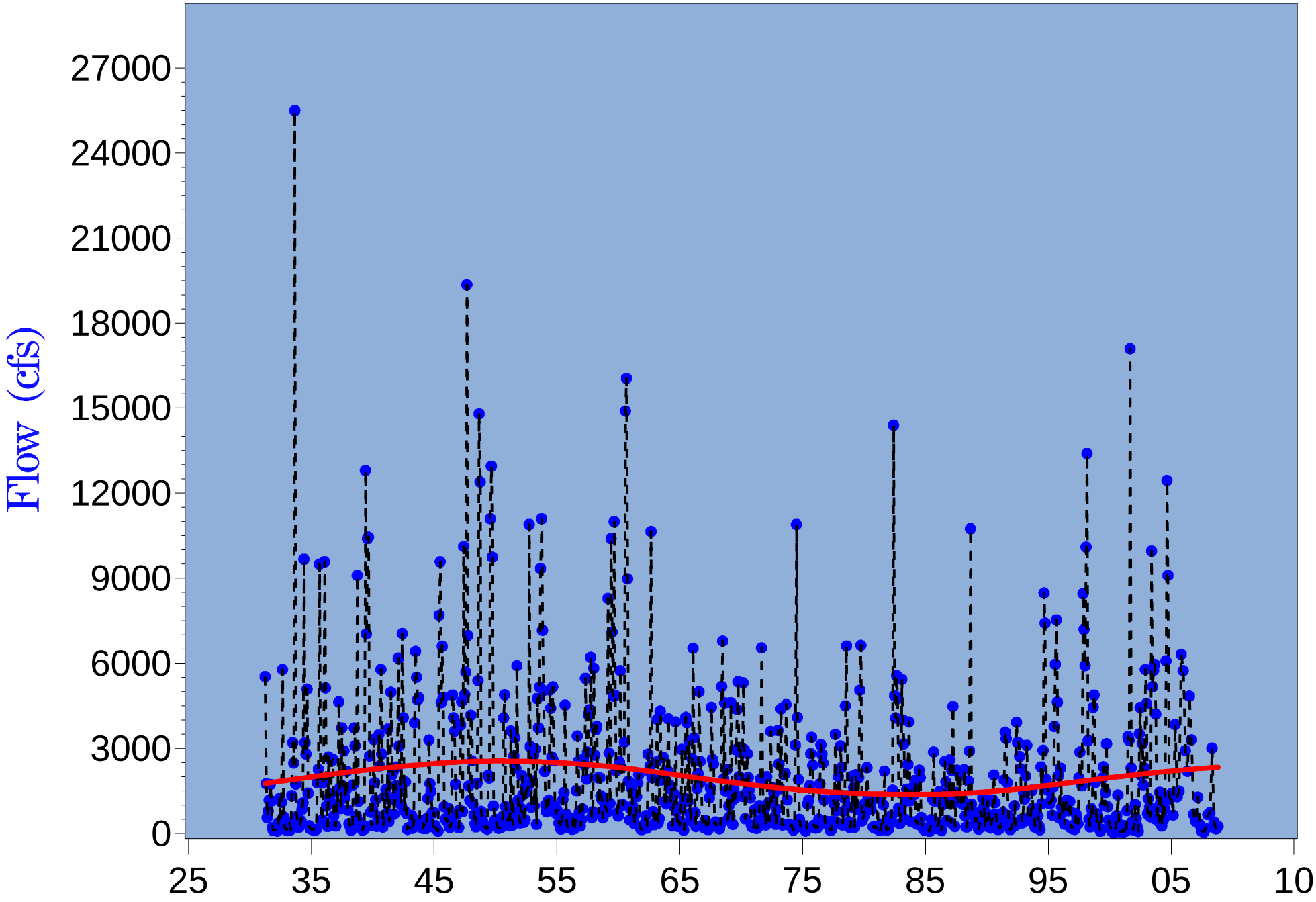


Figure 3.126 Monthly P90 flow at long-term Peace River at Arcadia (2296750) gage (1931-2006)

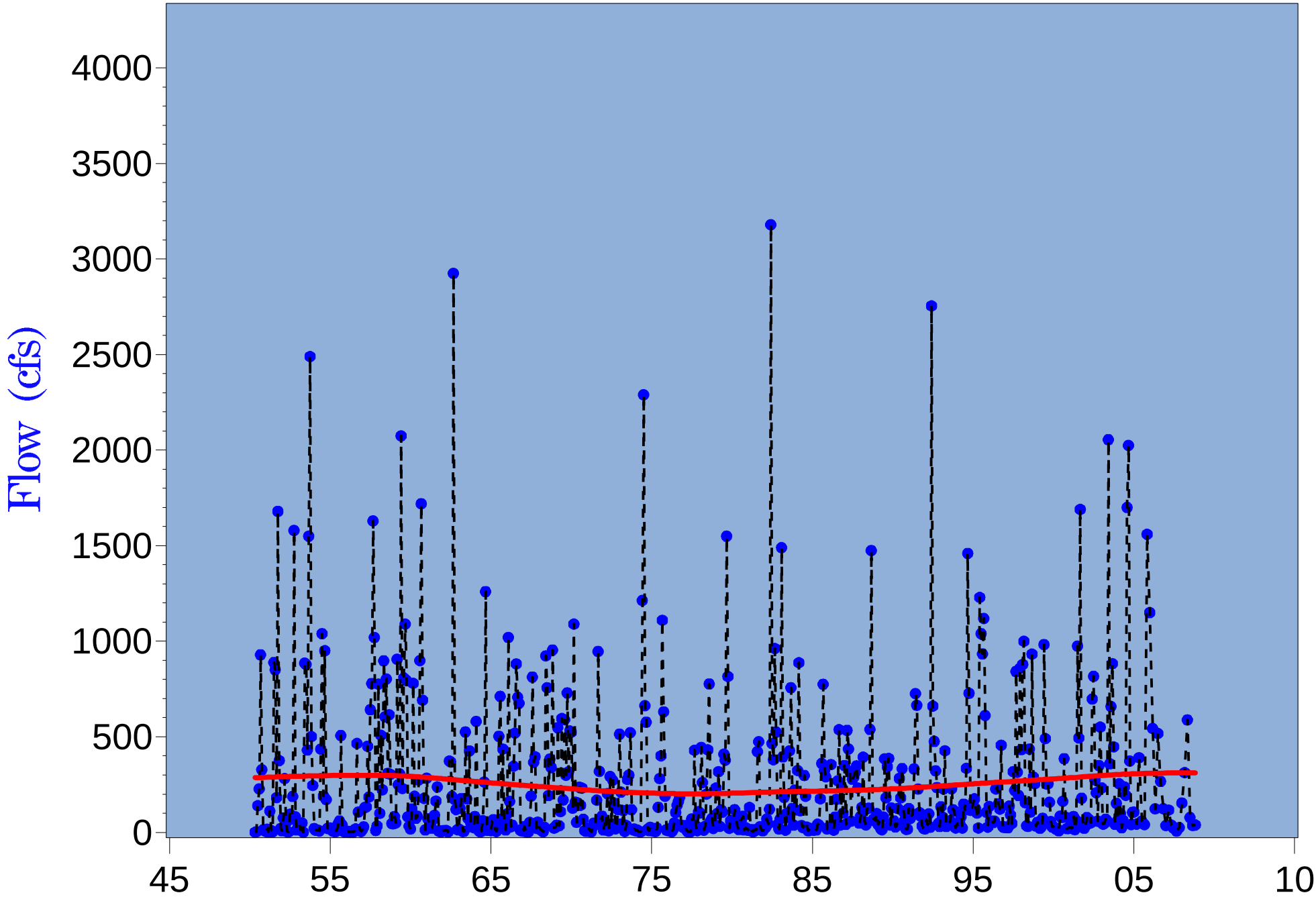


Figure 3.127 Monthly P90 flow at long-term Joshua Creek at Nocatee (2297100) gage (1950-2006)

Table 3.19 (continued)
Summary of Results of Seasonal Kendall Trend Analyses of Monthly Flow Percentiles over Different Selected Periods of Time Through 2006

USGS Gaging Site	Flow Percentile	1935 - 2006	1940 - 2006	1945 - 2006	1950 - 2006	1955 - 2006	1960 - 2006	1965 - 2006	1970 - 2006	1975 - 2006	1980 - 2006	1985 - 2006	1990 - 2006	1995 - 2006
Horse Creek near Arcadia	Low (P10)							▲	▲	▲				
	Median (P50)								▲	▲				
	High (P90)								▲	▲				
Total Gaged Flow Upstream of the Facility	Low (P10)													
	Median (P50)													
	High (P90)													
Prairie Creek near Fort Ogden	Low (P10)										▲	▲		
	Median (P50)										▲			
	High (P90)													
Shell Creek near Punta Gorda	Low (P10)							▲						
	Median (P50)													
	High (P90)													
Total Gaged Peace River Flow to Upper Harbor	Low (P10)													
	Median (P50)													
	High (P90)													
Reference Watershed														
Myakka River near Sarasota	Low (P10)		▲	▲	▲	▲	▲	▲	▲					
	Median (P50)		▲	▲	▲	▲	▲	▲	▲					
	High (P90)		▲				▲	▲	▲					

Note: Direction of arrow denotes significant increasing or decreasing trend. Red arrows are significant at p=0.05 level, blue show trends significant at p=0.10, and blanks indicate no significant trends in Seasonal Kendall Tau tests corrected for serial correlations. Dashed lines indicate periods priors prior to continuous USGS gaging at each location.

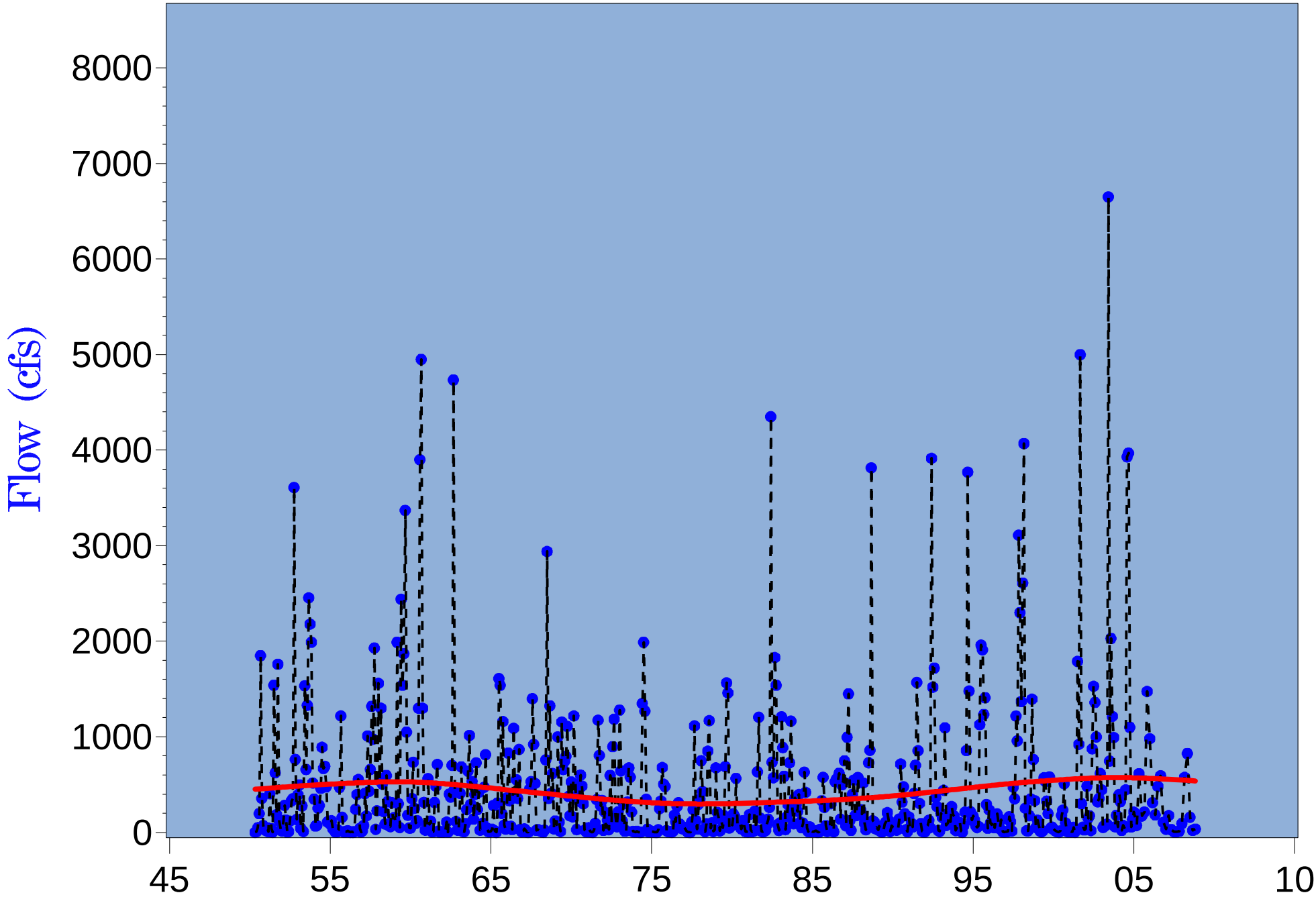


Figure 3.128 Monthly P90 flow at long-term Horse Creek near Arcadia(2297310) gage (1950-2006)

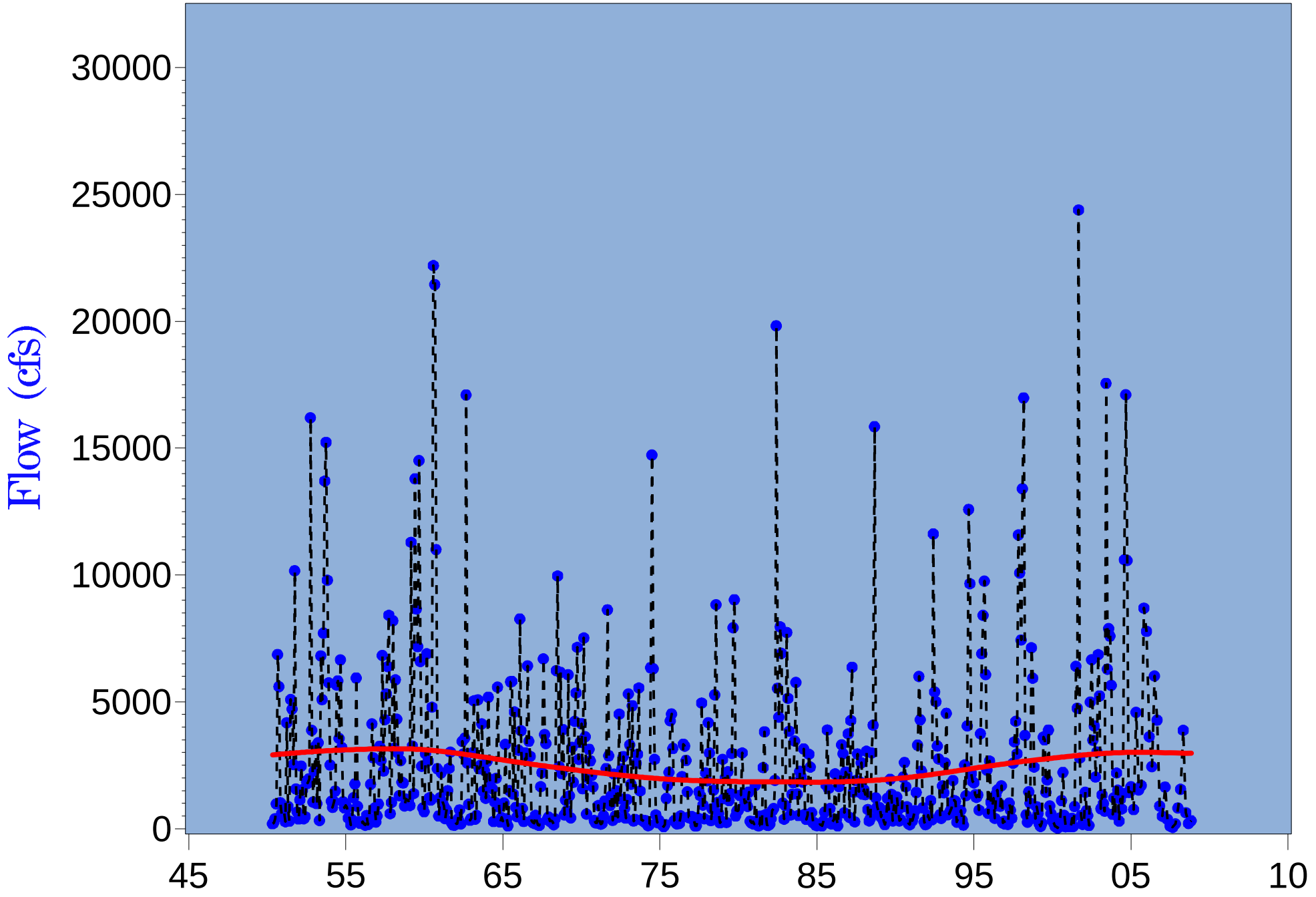


Figure 3.129 Monthly P90 flow for long-term for total gaged flow upstream of the Facility (1950-2006)

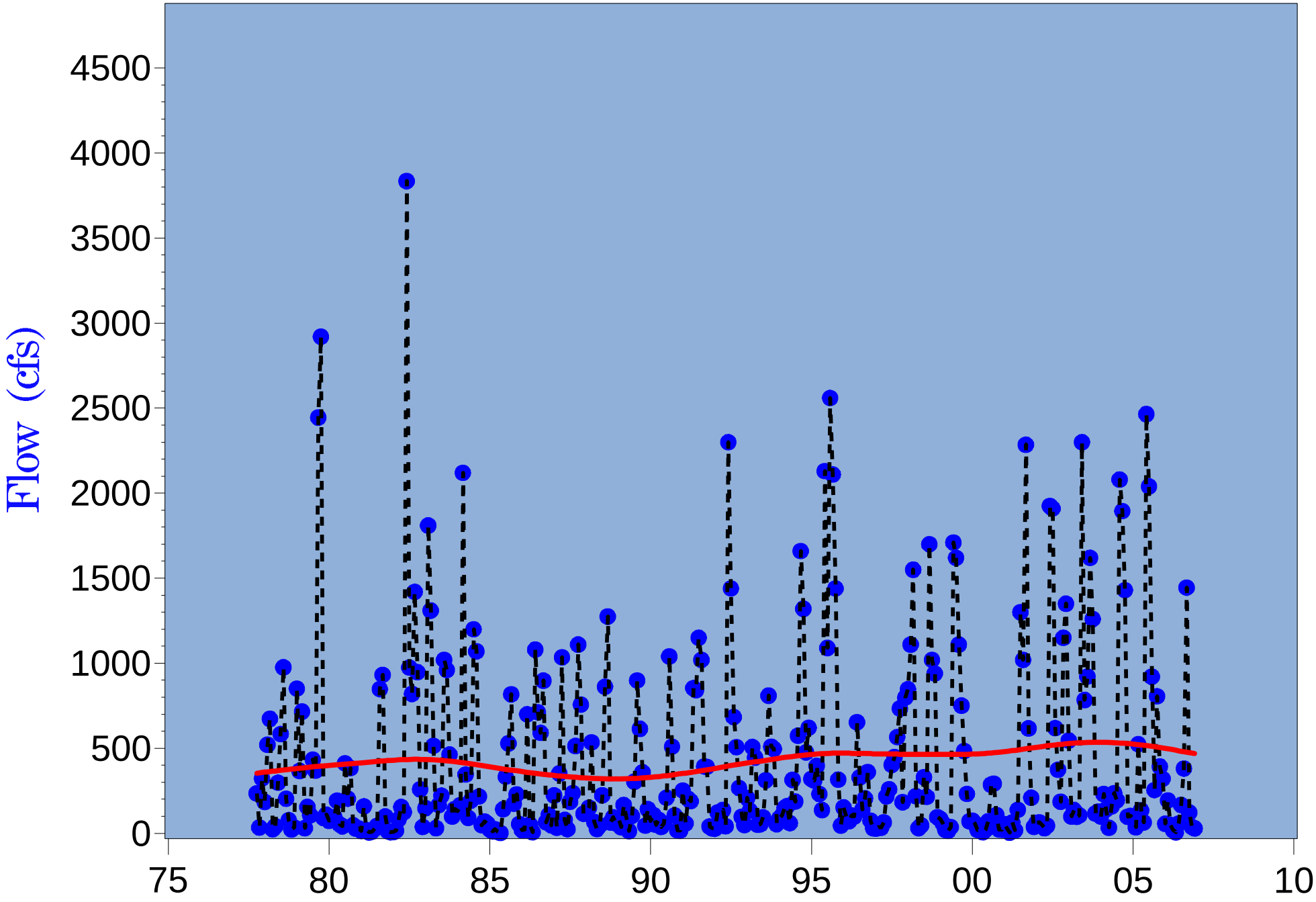


Figure 3.130a Monthly P90 flow at long-term Prairie Creek (2298123) gage (1977-2006)

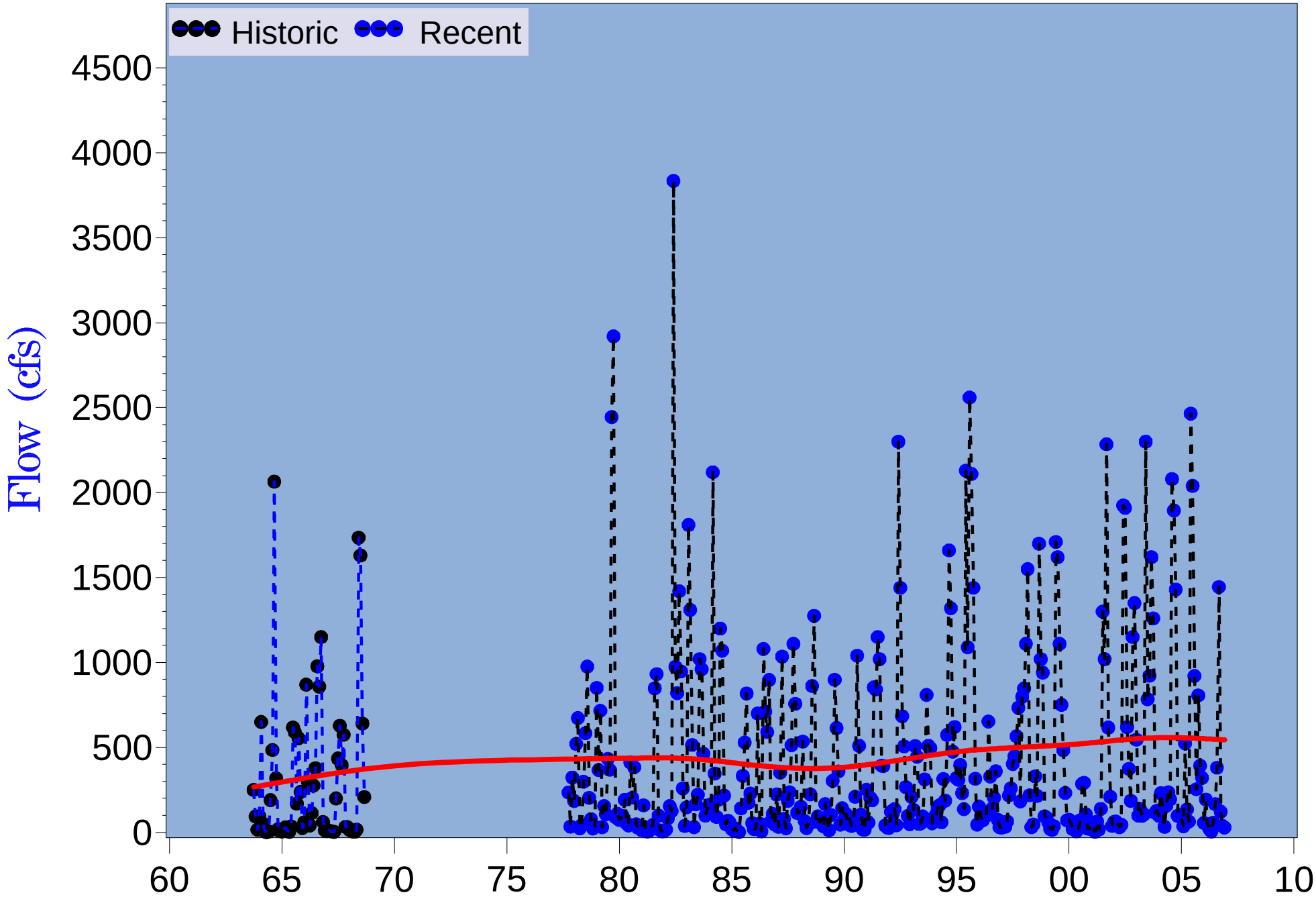


Figure 3.130b Monthly P90 flow at long-term Prairie Creek (2298123) gage (1963-2006)

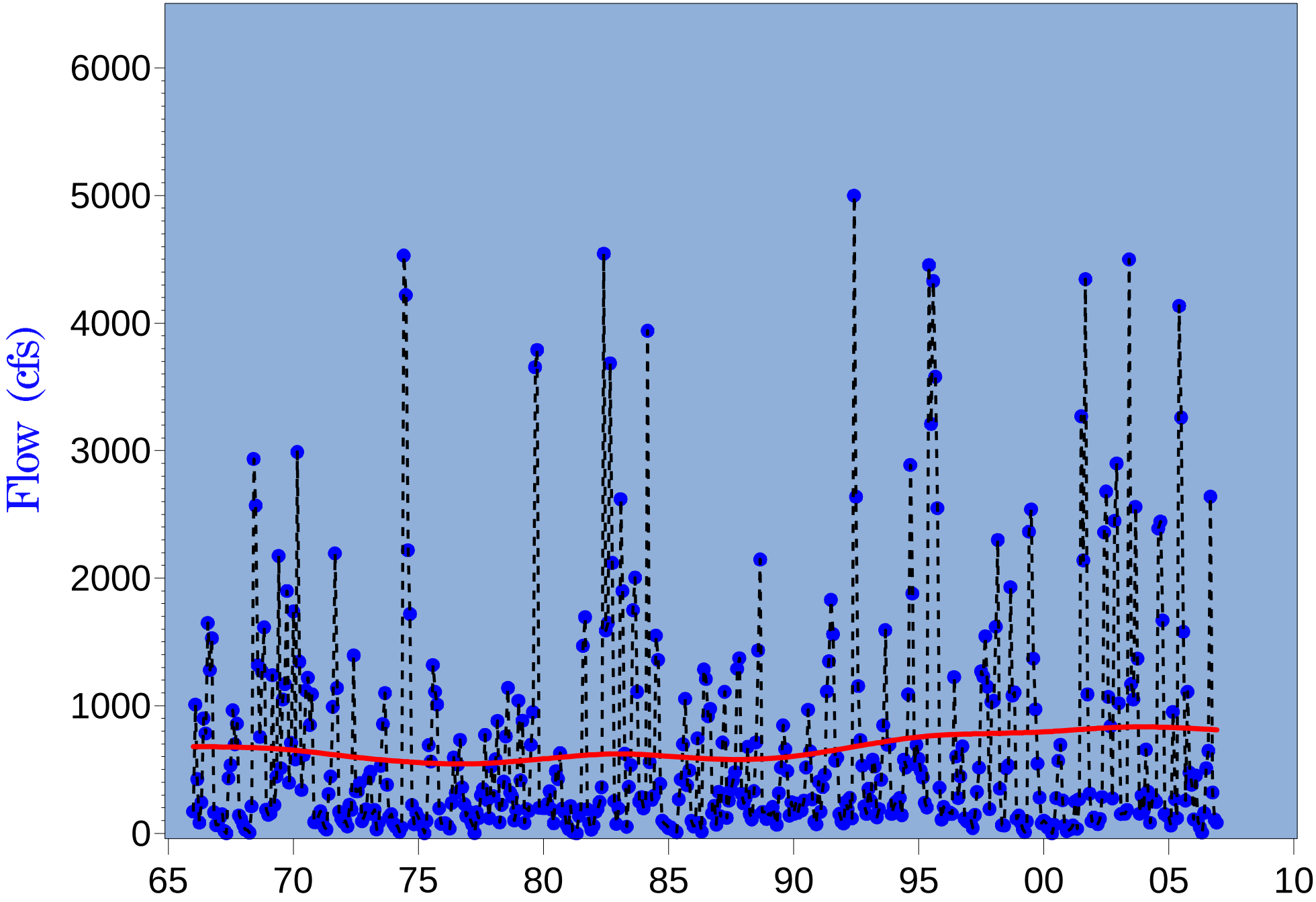


Figure 3.131 Monthly P90 flow at long-term Shell Creek gage (1965-2006)

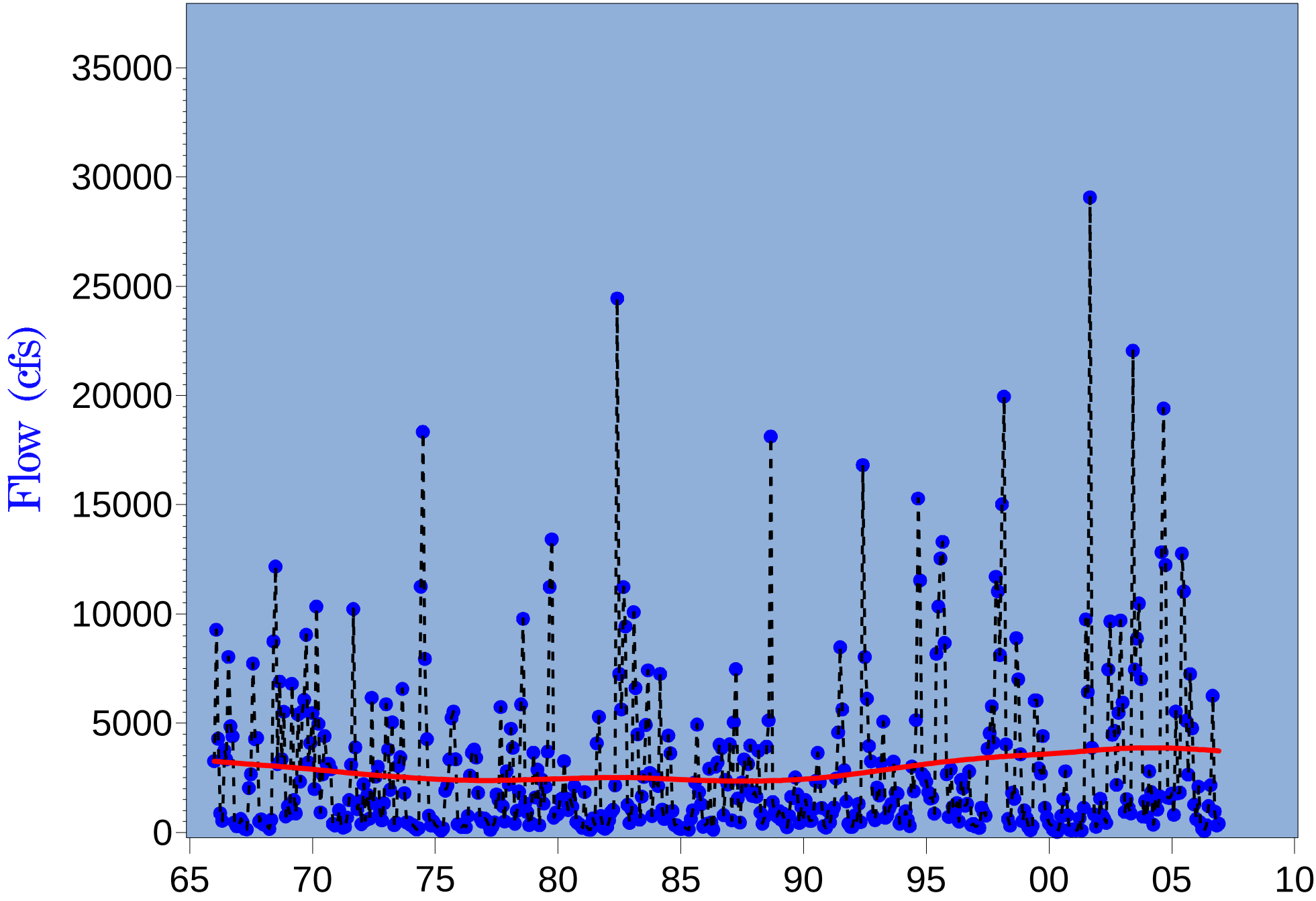


Figure 3.132 Monthly P90 flow for total gaged Peace River flow to the Upper Harbor (1965-2006)

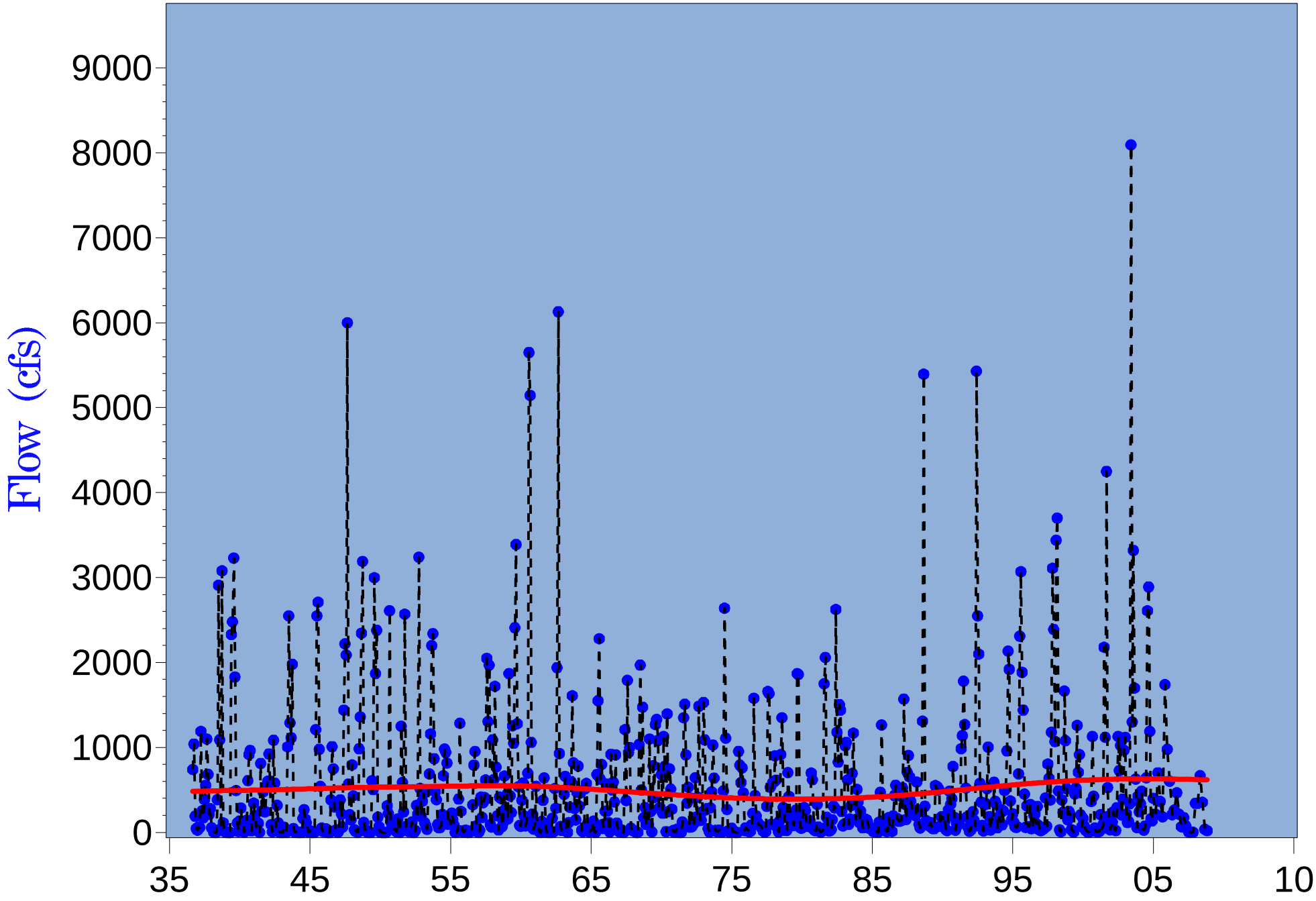


Figure 3.133 Monthly P90 flow at long-term Myakka River near Sarasota (2298830) gage (1936-2006)

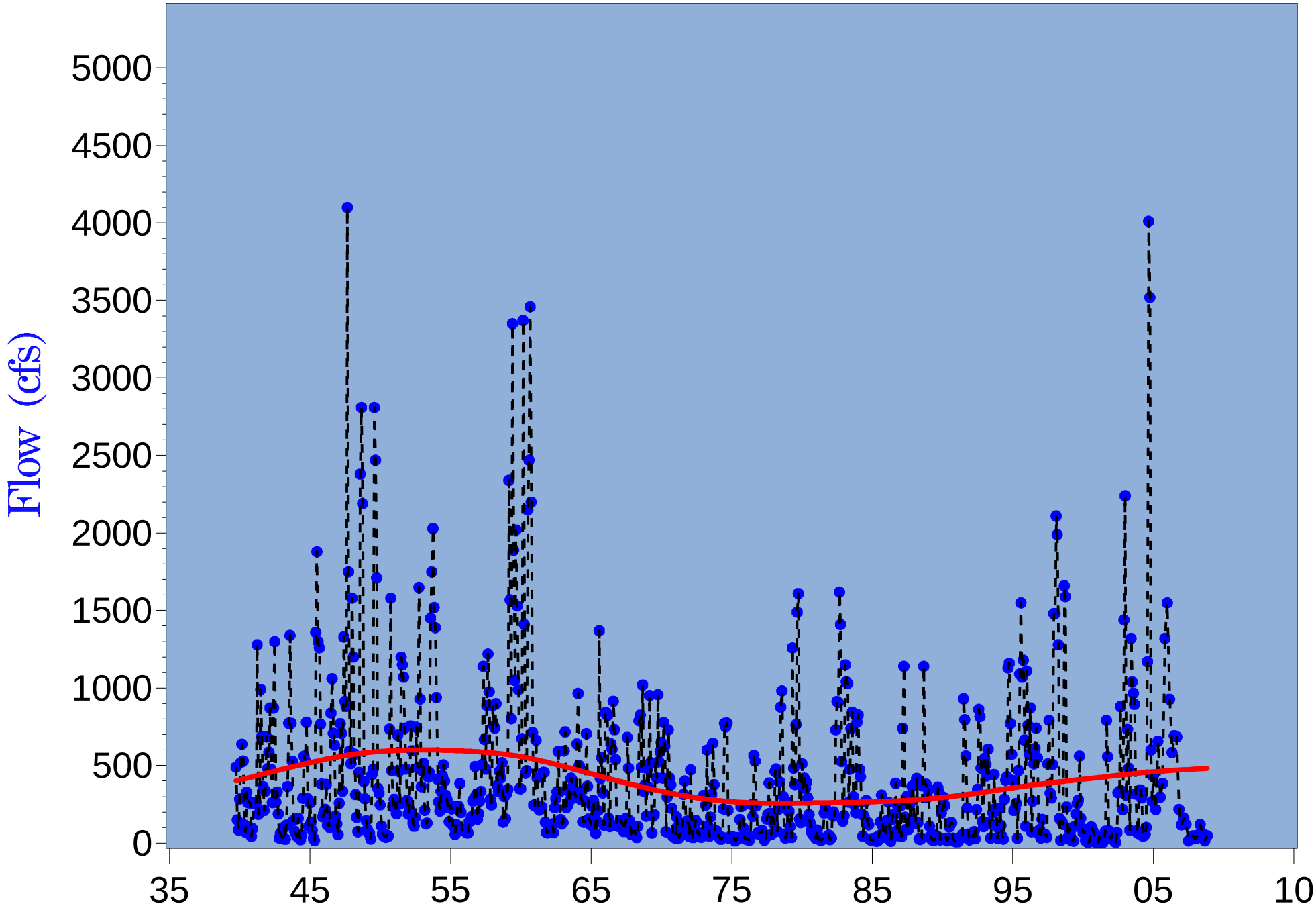


Figure 3.134 Monthly P100 (maximum) flow at long-term Peace River at Bartow (2294650) gage (1939-2006)

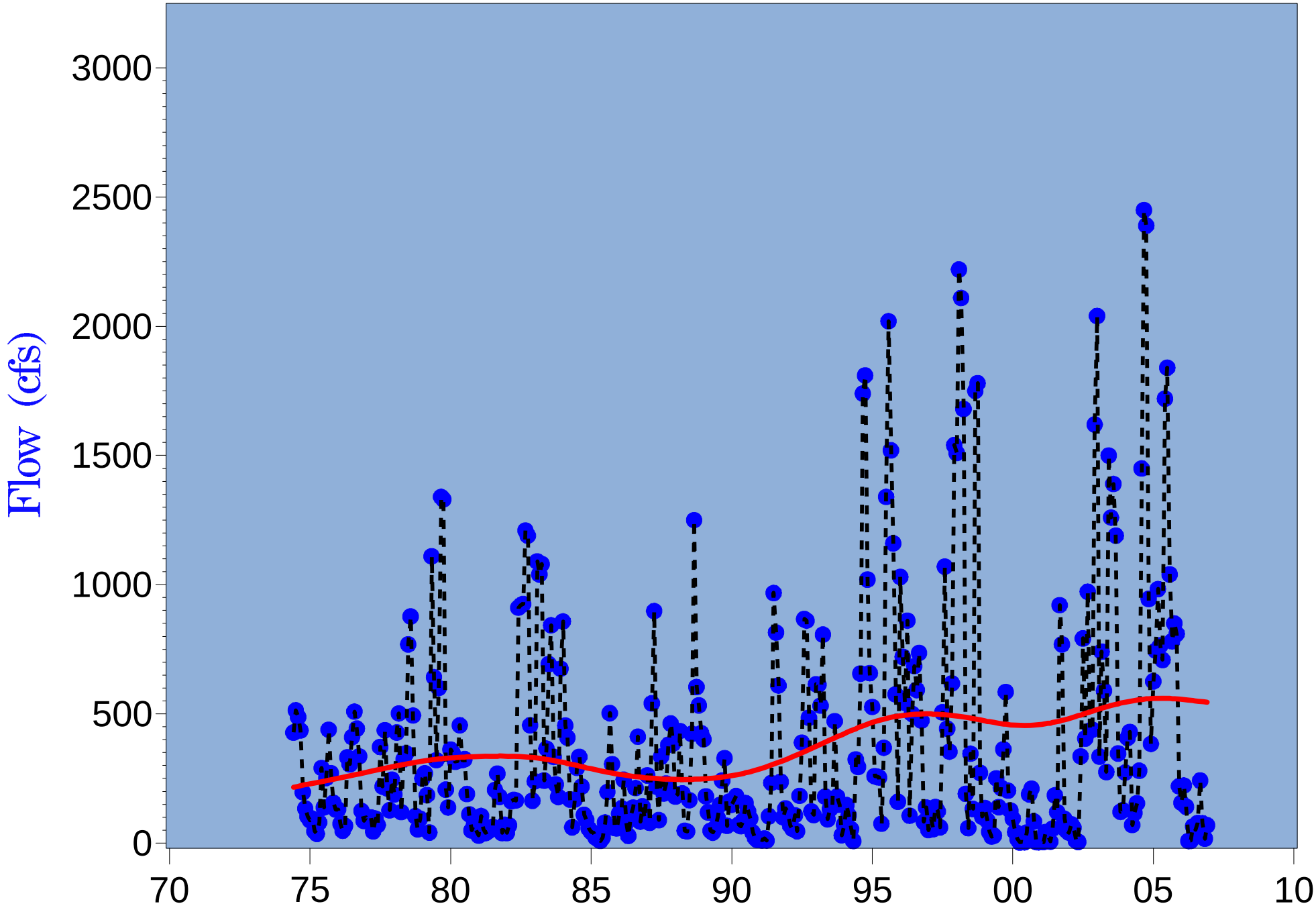


Figure 3.135 Monthly P100 (maximum) flow at long-term Peace River at Ft. Meade (2294898) gage (1974-2006)

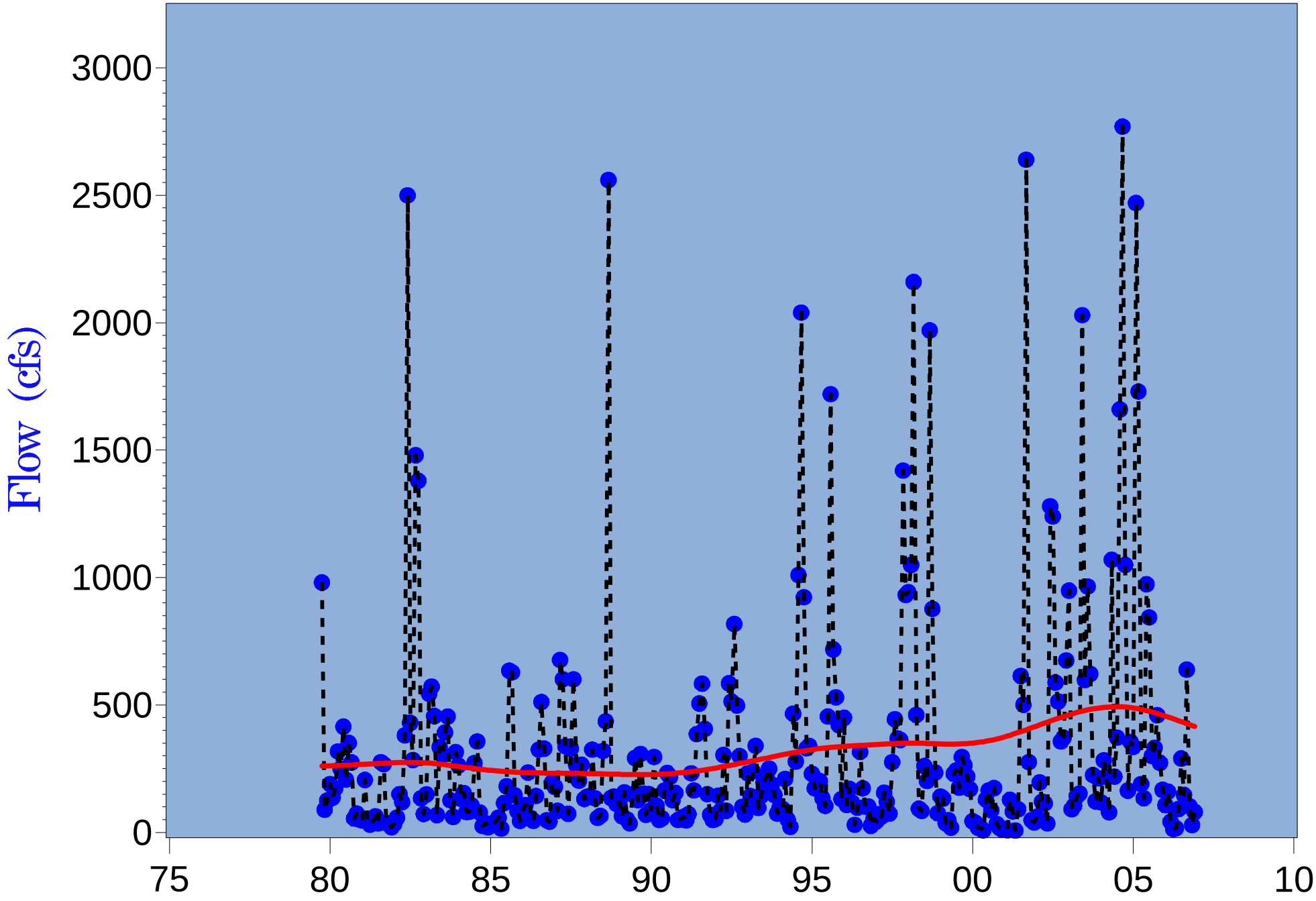


Figure 3.136a Monthly P100 (maximum) flow at long-term Payne Creek (2295420) gage (1979-2006)

Table 3.20
Summary of Results of Seasonal Kendall Trend Analyses
1976 Through 2006 - Monthly Minimum Values (P0)

USGS ID	Gage Identification	Time Interval	Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
Peace River Watershed						
2294650	Peace River at Bartow	1976-2006	-0.04	0.272	0.634	-0.14
2295420	Payne Creek near Bowling Green	1976-2006	-0.03	0.465	0.748	-0.07
2295637	Peace River at Zolfo Springs	1976-2006	-0.03	0.438	0.744	-0.44
2296500	Charlie Creek near Gardner	1976-2006	0.08	0.021	0.240	0.17
2296750	Peace River at Arcadia	1976-2006	0.04	0.287	0.637	0.87
2297100	Joshua Creek at Nocatee	1976-2006	0.41	0.001	**0.001**	0.68
2297310	Horse Creek near Arcadia	1976-2006	0.13	0.000	**0.063**	0.24
	Total Gaged Flow Upstream of the Facility	1976-2006	0.07	0.061	0.394	2.00
2298123	Prairie Creek near Fort Ogden	1976-2006	0.21	0.001	**0.009**	0.80
2298202	Shell Creek near Punta Gorda	1976-2006	0.10	0.007	0.176	0.82
	Total Gaged Peace River Flow to the Harbor	1976-2006	0.08	0.028	0.309	2.78
Reference Watershed						
2298830	Myakka River near Sarasota	1976-2006	-0.01	0.860	0.929	-0.01

* Red values denote significant trend at p=0.05 level, while blue indicates trends significant at p=0.10

** Positive Tau statistic and slope values indicate increasing trend over time, negative values correspond to declining changes in flow over time

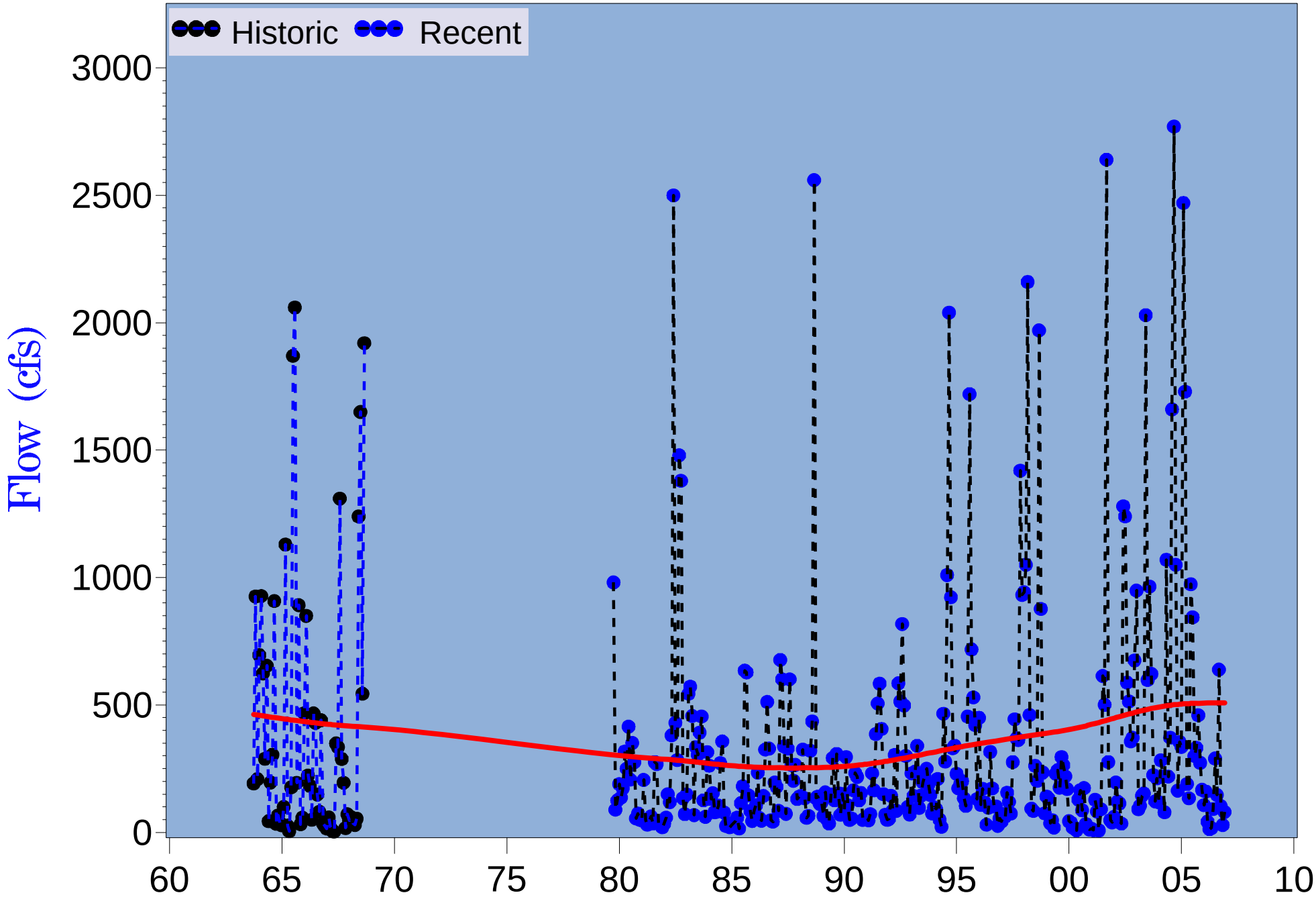


Figure 3.136b Monthly P100 (maximum) flow at long-term Payne Creek (2295420) gage (1963-2006)

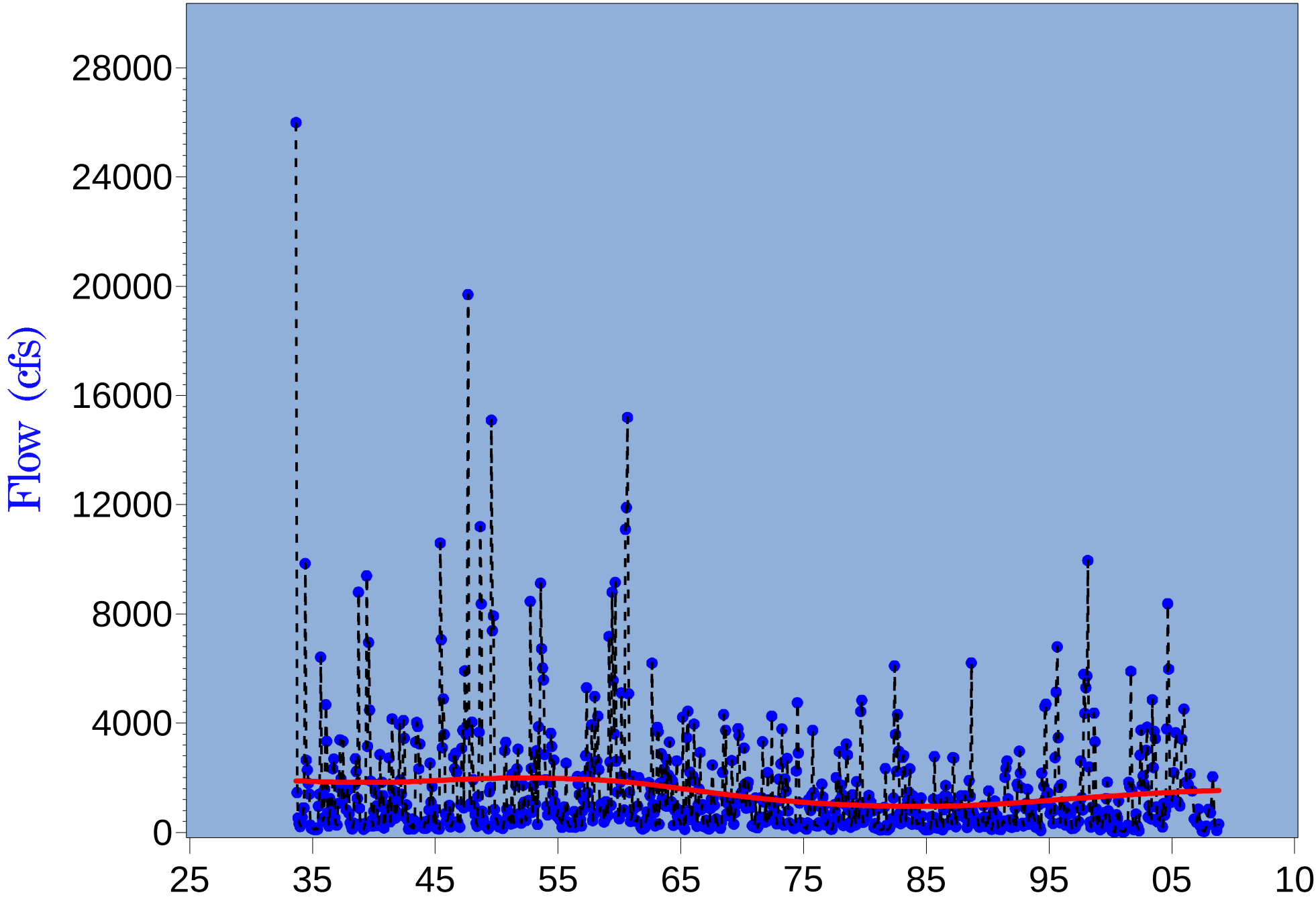


Figure 3.137 Monthly P100 (maximum) flow at long-term Peace River at Zolfo (2295637) gage (1933-2006)

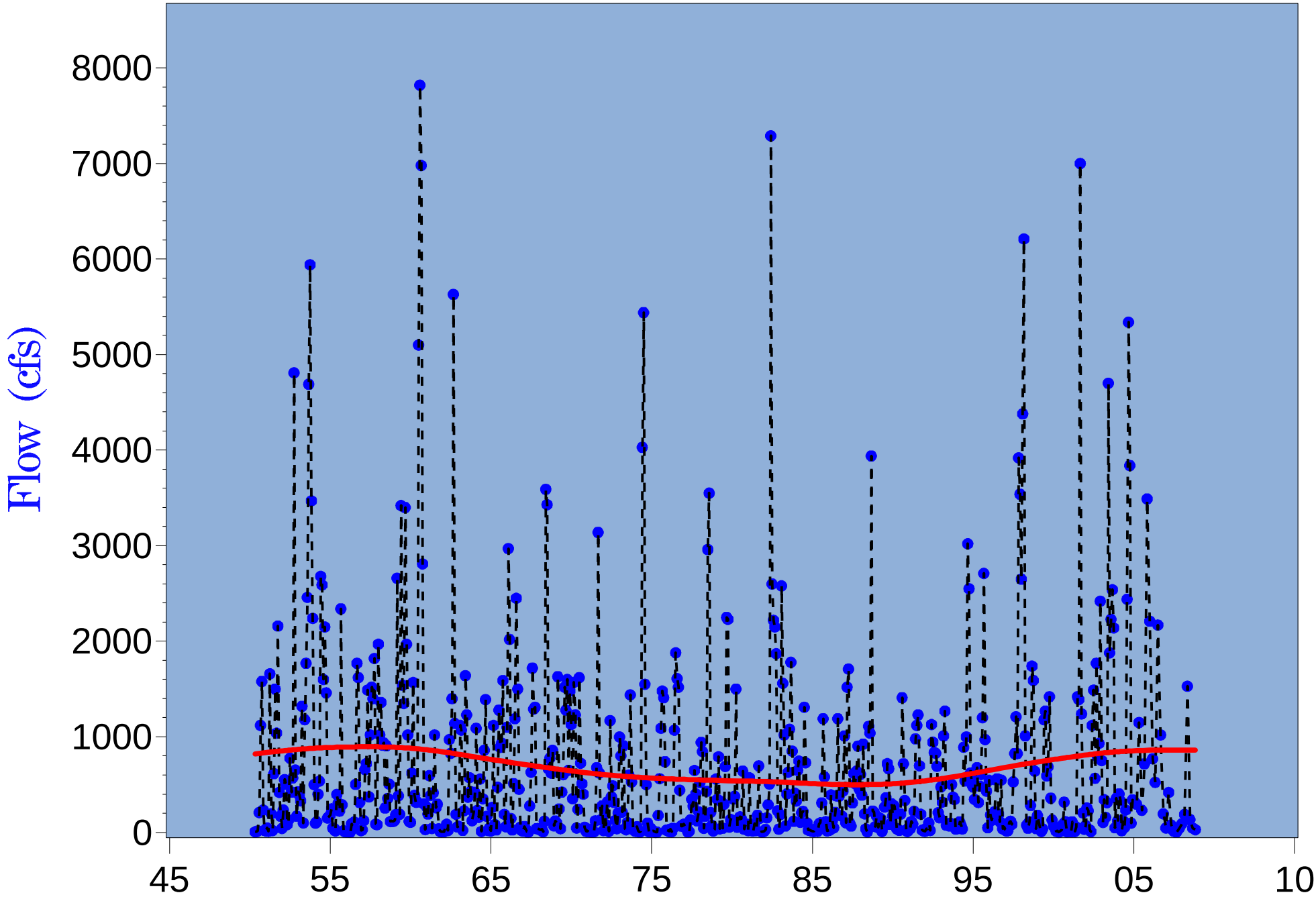


Figure 3.138 Monthly P100 (maximum) flow at long-term Charlie Creek (2296500) gage (1950-2006)

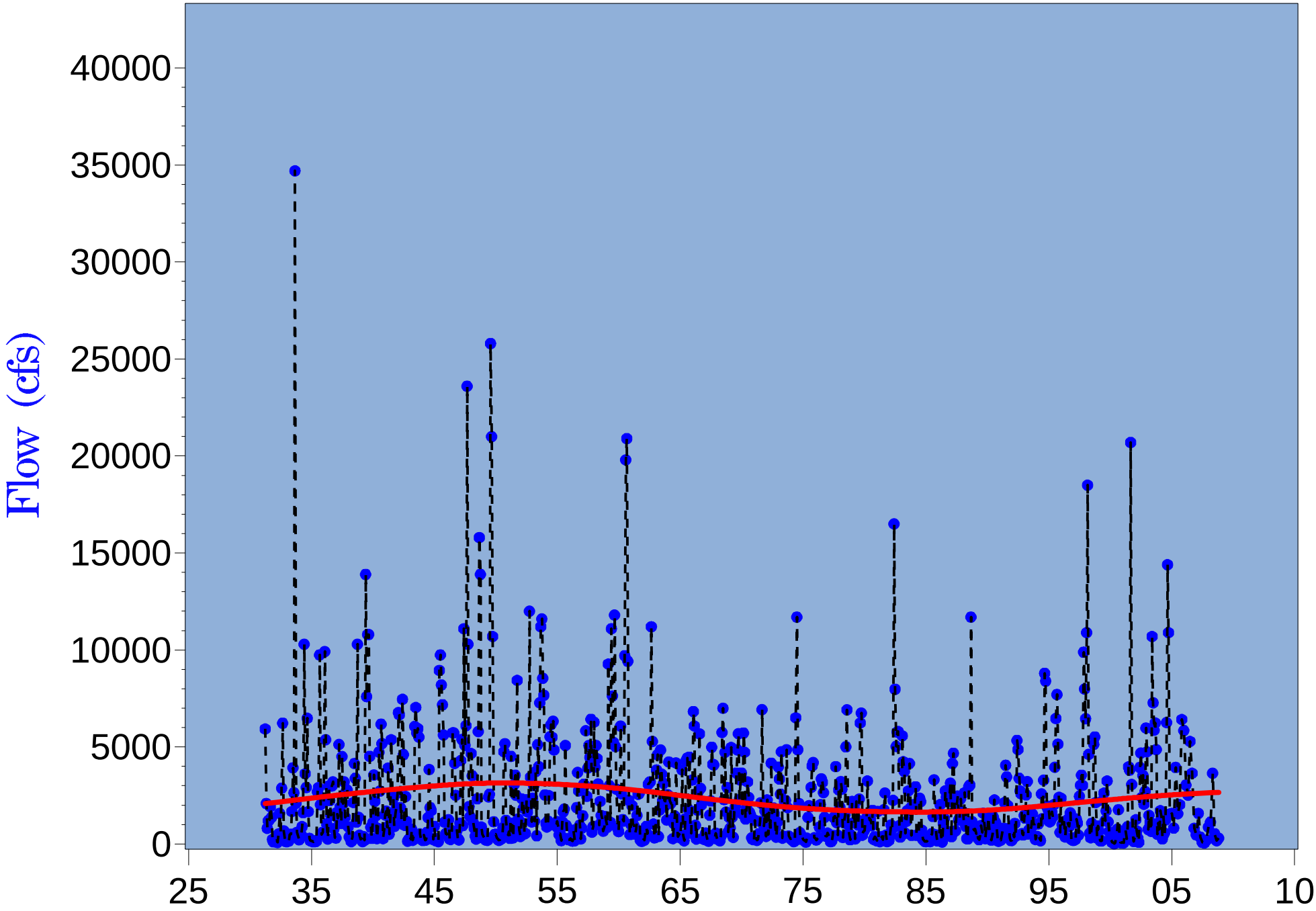


Figure 3.139 Monthly P100 (maximum) flow at long-term Peace River at Arcadia (2296750) gage (1931-2006)

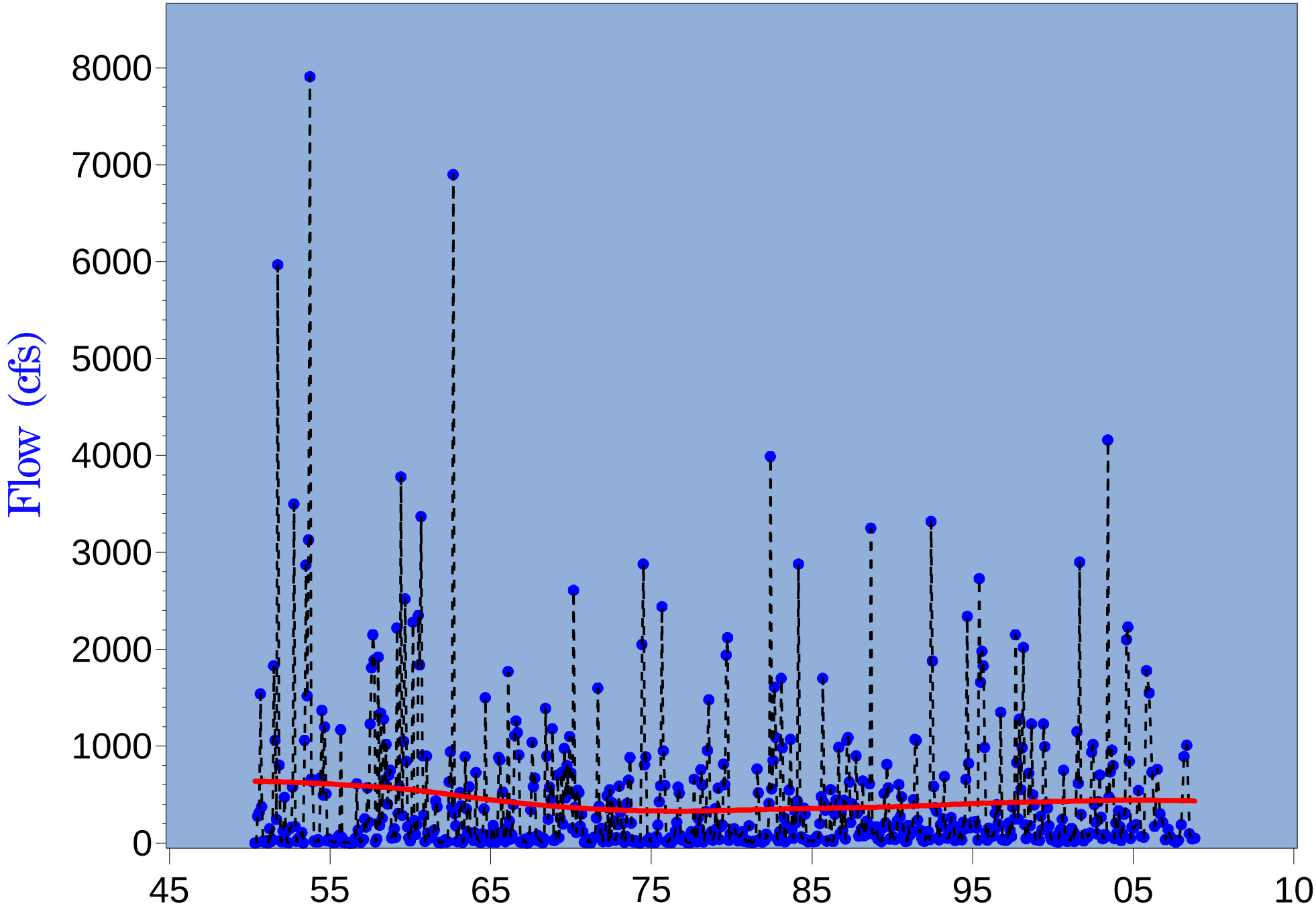


Figure 3.140 Monthly P100 (maximum) flow at long-term Joshua Creek at Nocatee (2297100) gage (1950-2006)

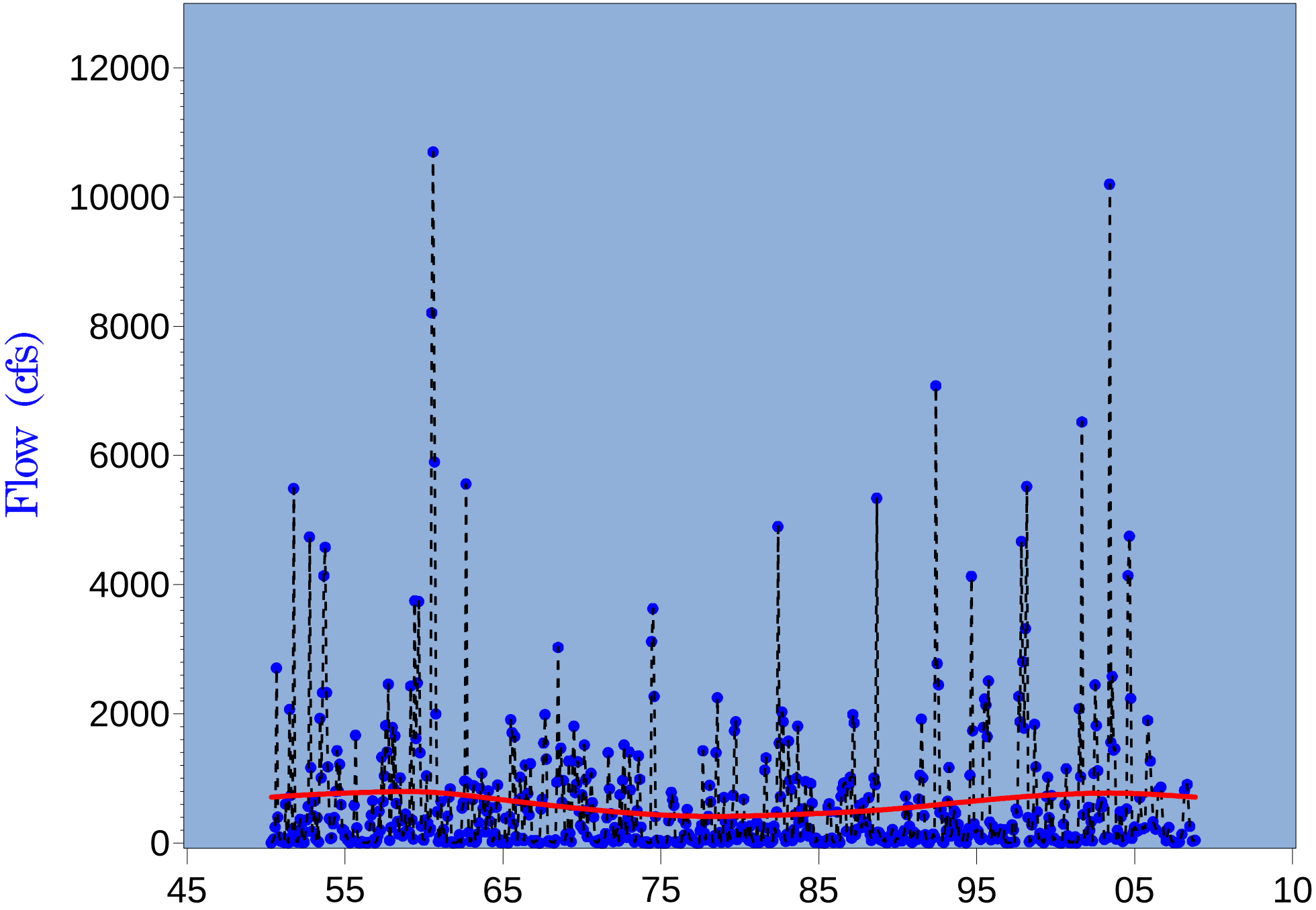


Figure 3.141 Monthly P100 (maximum) flow at long-term Horse Creek near Arcadia(2297310) gage (1950-2006)

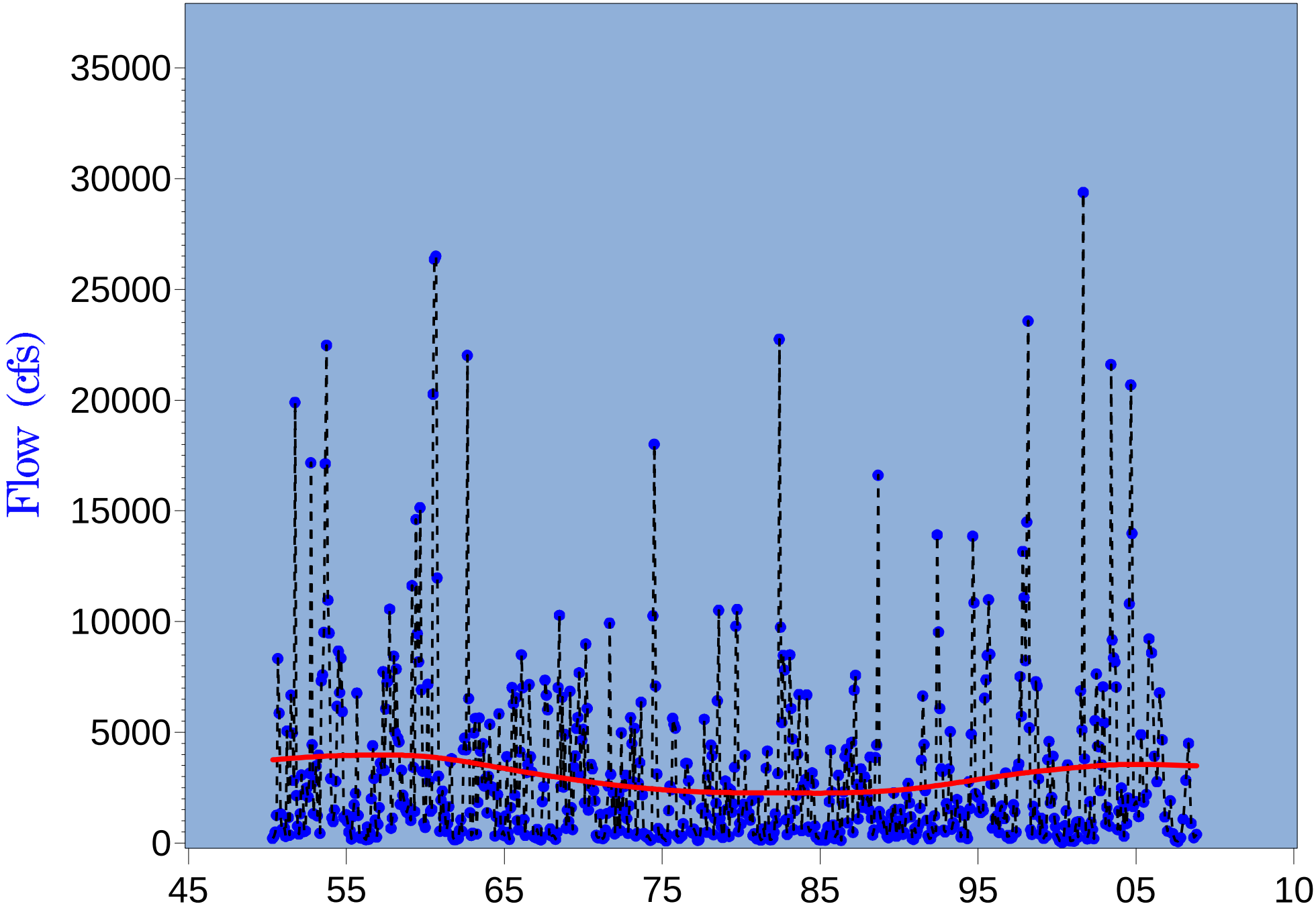


Figure 3.142 Monthly P100 (maximum) flow for long-term for total gaged flow upstream of the Facility (1950-2006)

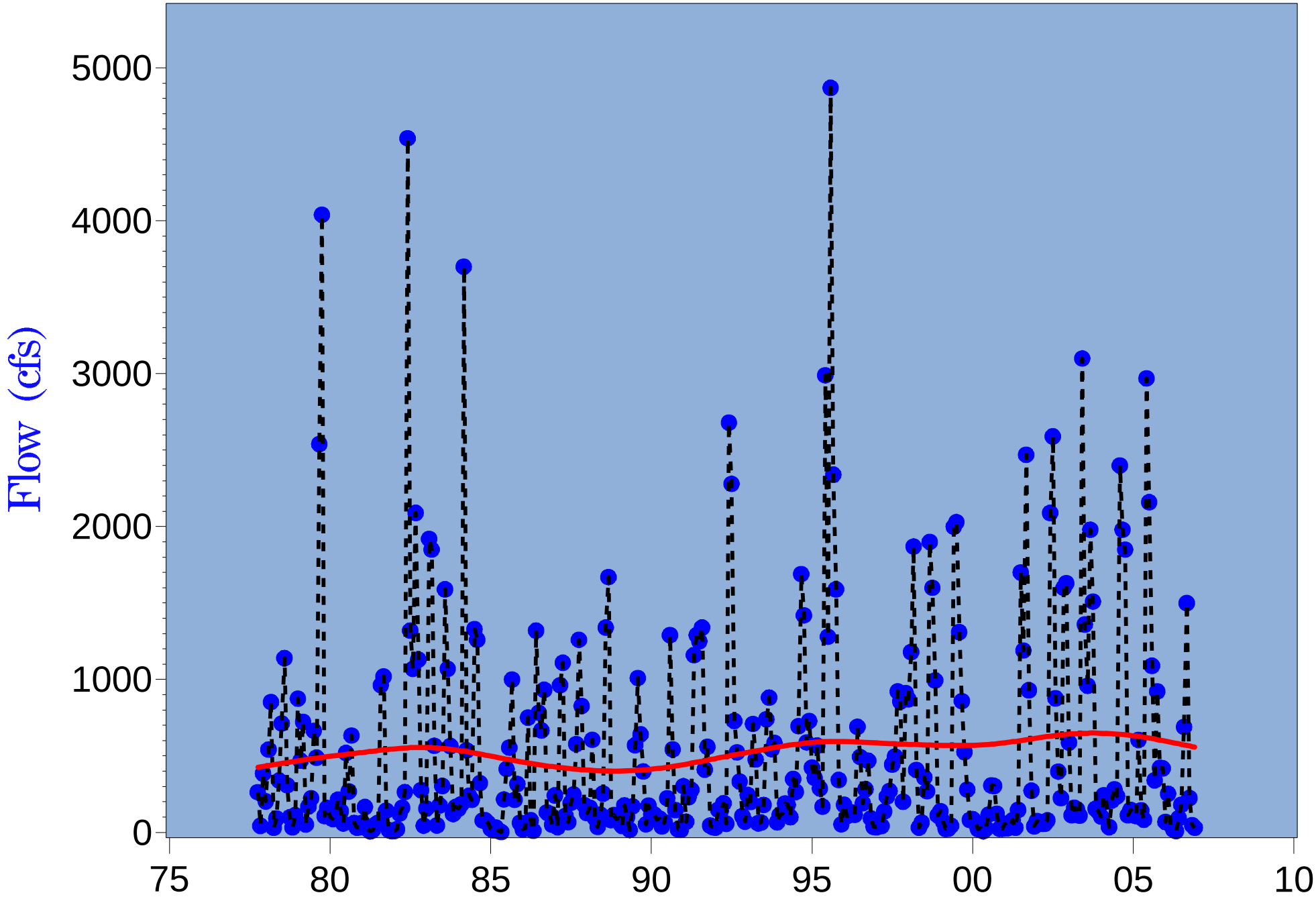


Figure 3.143a Monthly P100 (maximum) flow at long-term Prairie Creek (2298123) gage (1977-2006)

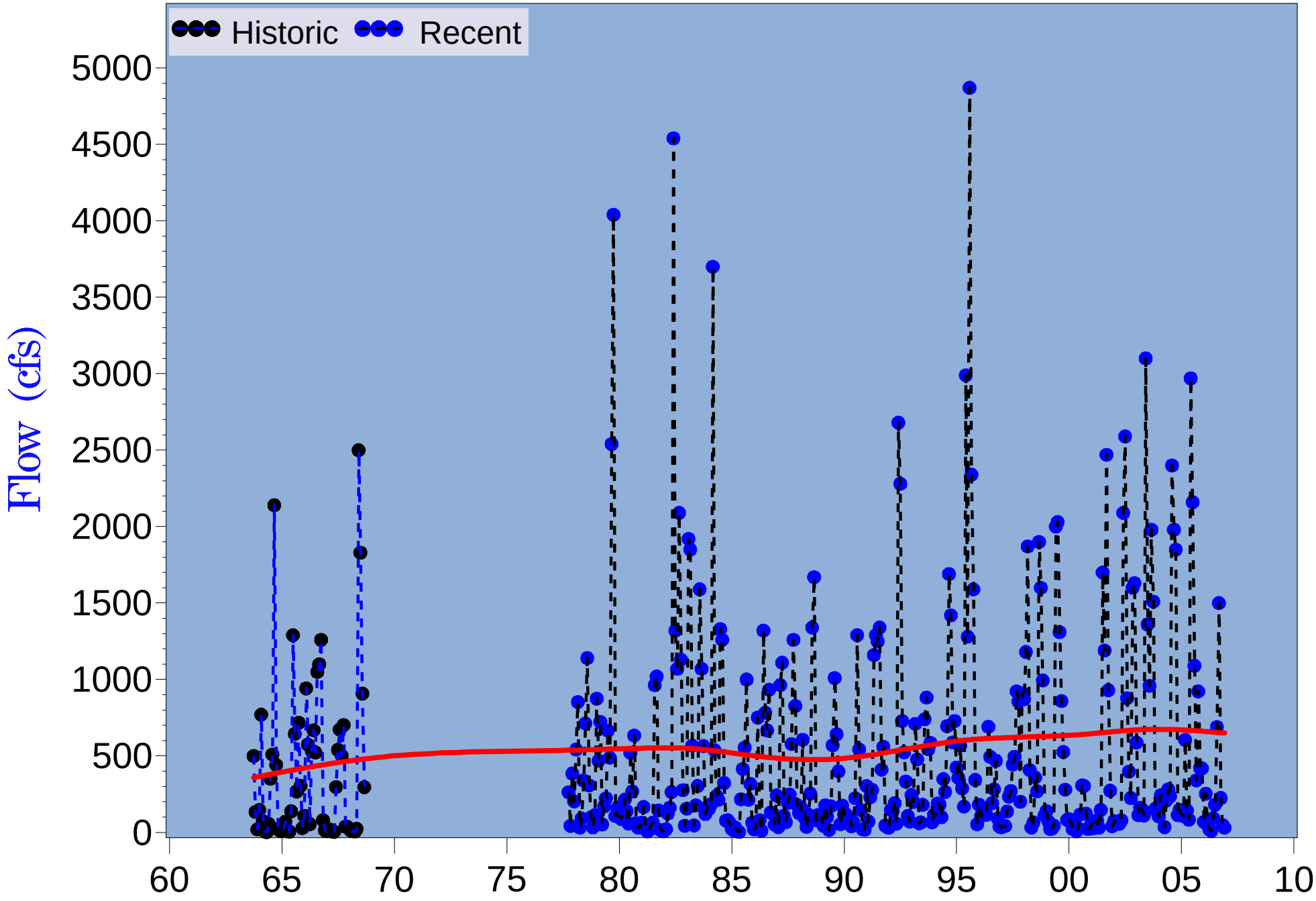


Figure 3.143b Monthly P100 (maximum) flow at long-term Prairie Creek (2298123) gage (1963-2006)

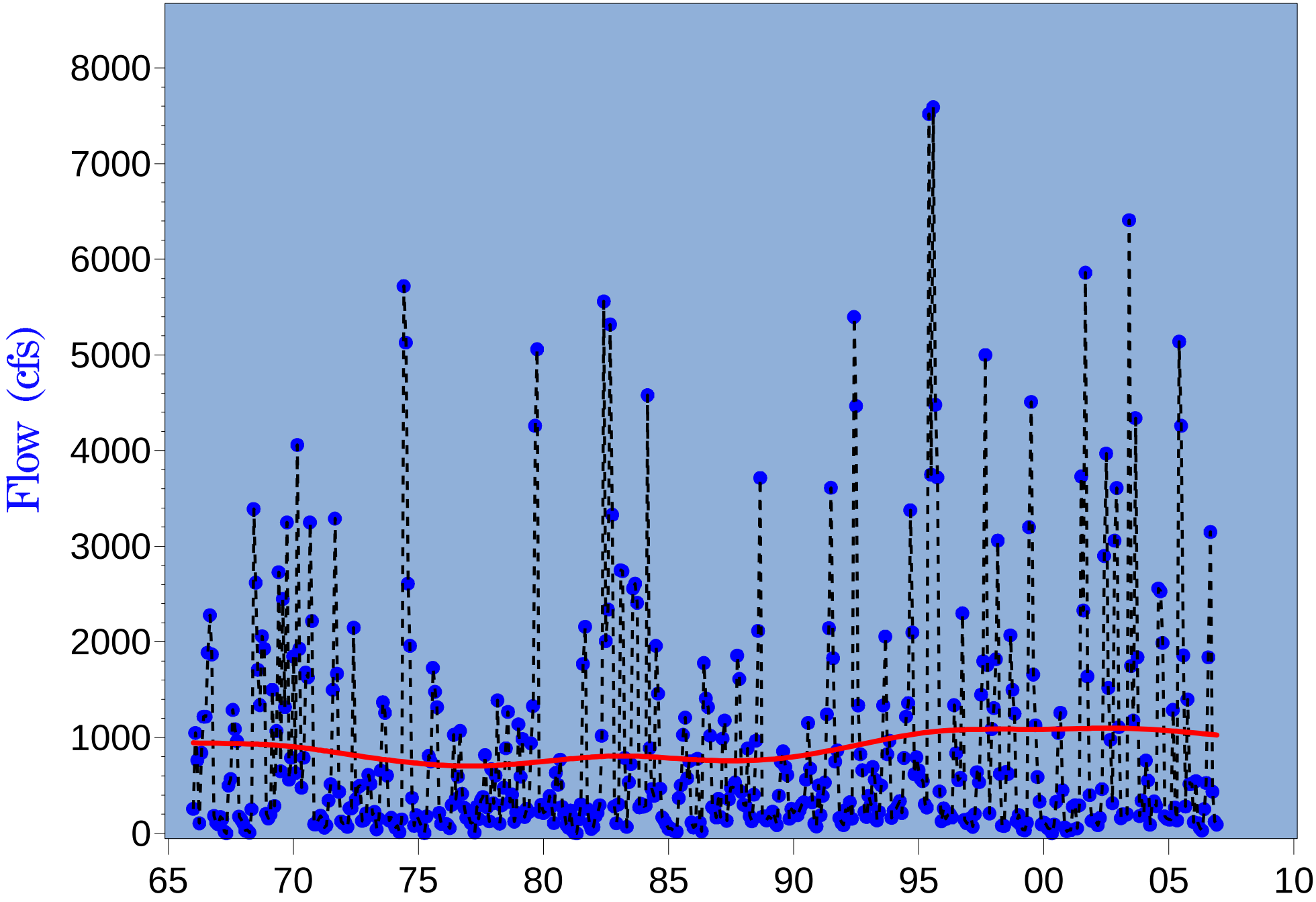


Figure 3.144 Monthly P100 (maximum) flow at long-term Shell Creek gage (1965-2006)

Table 3.21
Summary of Results of Seasonal Kendall Trend Analyses
1976 Through 2006 - Monthly P10 Value (Q90)

USGS ID	Gage Identification	Time Interval	Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
Peace River Watershed						
2294650	Peace River at Bartow	1976-2006	-0.03	0.354	0.688	-0.15
2295420	Payne Creek near Bowling Green	1976-2006	0.08	0.035	0.364	0.50
2295637	Peace River at Zolfo Springs	1976-2006	-0.03	0.410	0.727	-0.62
2296500	Charlie Creek near Gardner	1976-2006	0.08	0.022	0.241	0.20
2296750	Peace River at Arcadia	1976-2006	0.03	0.372	0.689	0.92
2297100	Joshua Creek at Nocatee	1976-2006	0.38	0.000	**0.001**	0.71
2297310	Horse Creek near Arcadia	1976-2006	0.12	0.001	**0.086**	0.24
	Total Gaged Flow Upstream of the Facility	1976-2006	0.06	0.110	0.460	1.89
2298123	Prairie Creek near Fort Ogden	1976-2006	0.19	0.000	**0.015**	0.78
2298202	Shell Creek near Punta Gorda	1976-2006	0.09	0.011	0.195	0.88
	Total Gaged Peace River Flow to the Harbor	1976-2006	0.07	0.065	0.389	3.01
Reference Watershed						
2298830	Myakka River near Sarasota	1976-2006	0.01	0.818	0.905	0.02

* Red values denote significant trend at p=0.05 level, while blue indicates trends significant at p=0.10

** Positive Tau statistic and slope values indicate increasing trend over time, negative values correspond to declining changes in flow over time

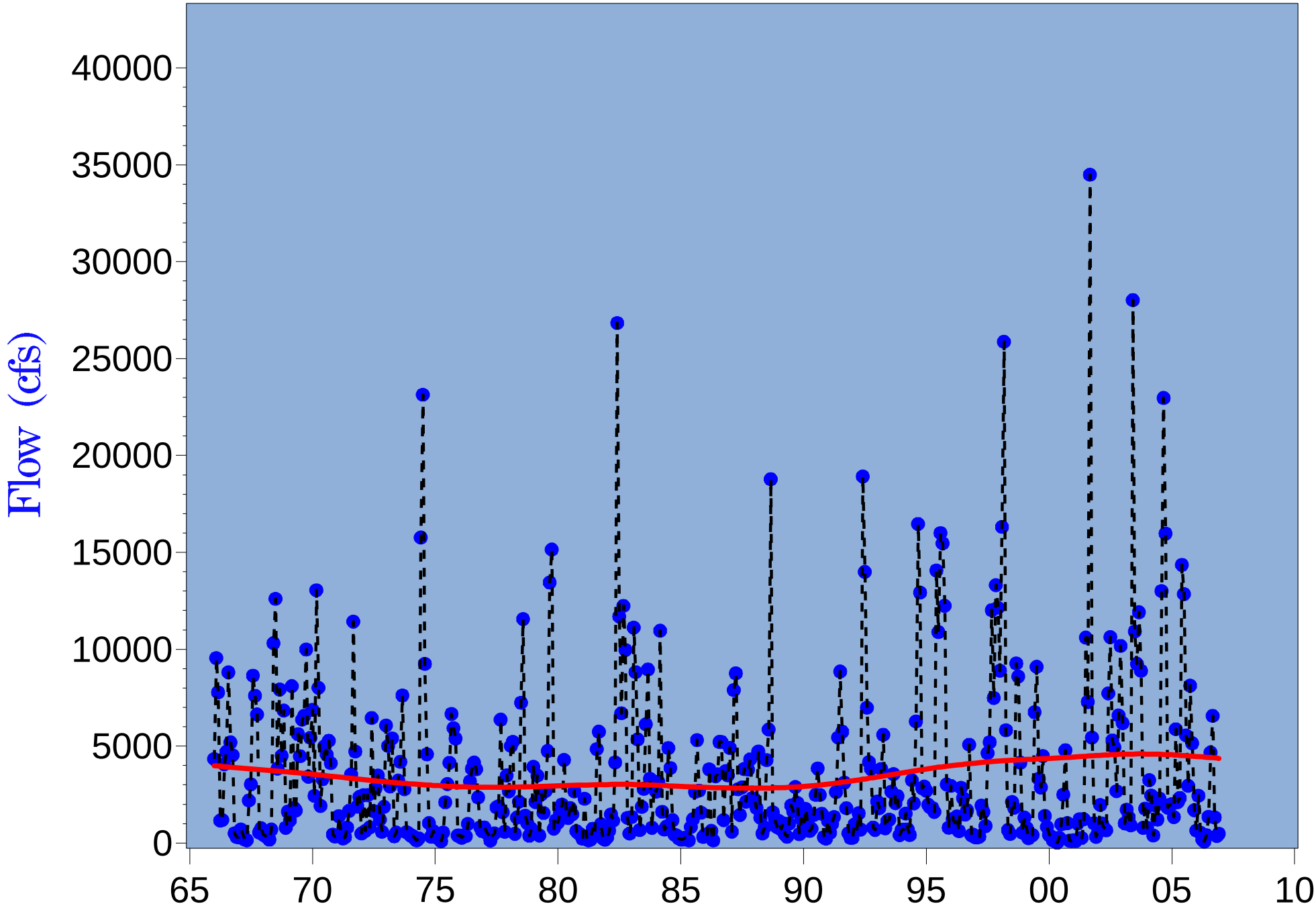


Figure 3.145 Monthly P100 (maximum) flow for total gaged Peace River flow to the Upper Harbor (1965-2006)

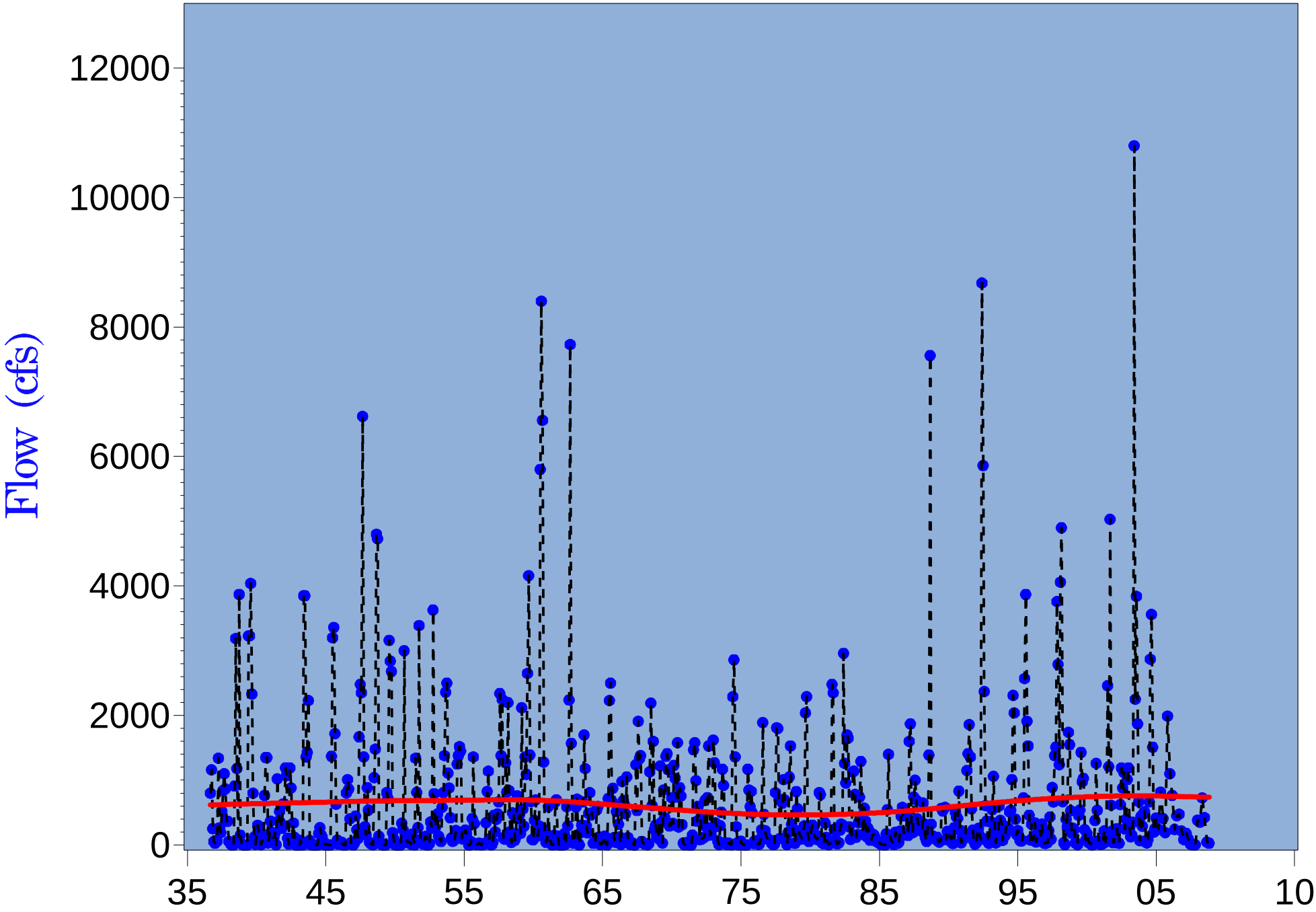


Figure 3.146 Monthly P100 (maximum) flow at long-term Myakka River near Sarasota (2298830) gage (1936-2006)

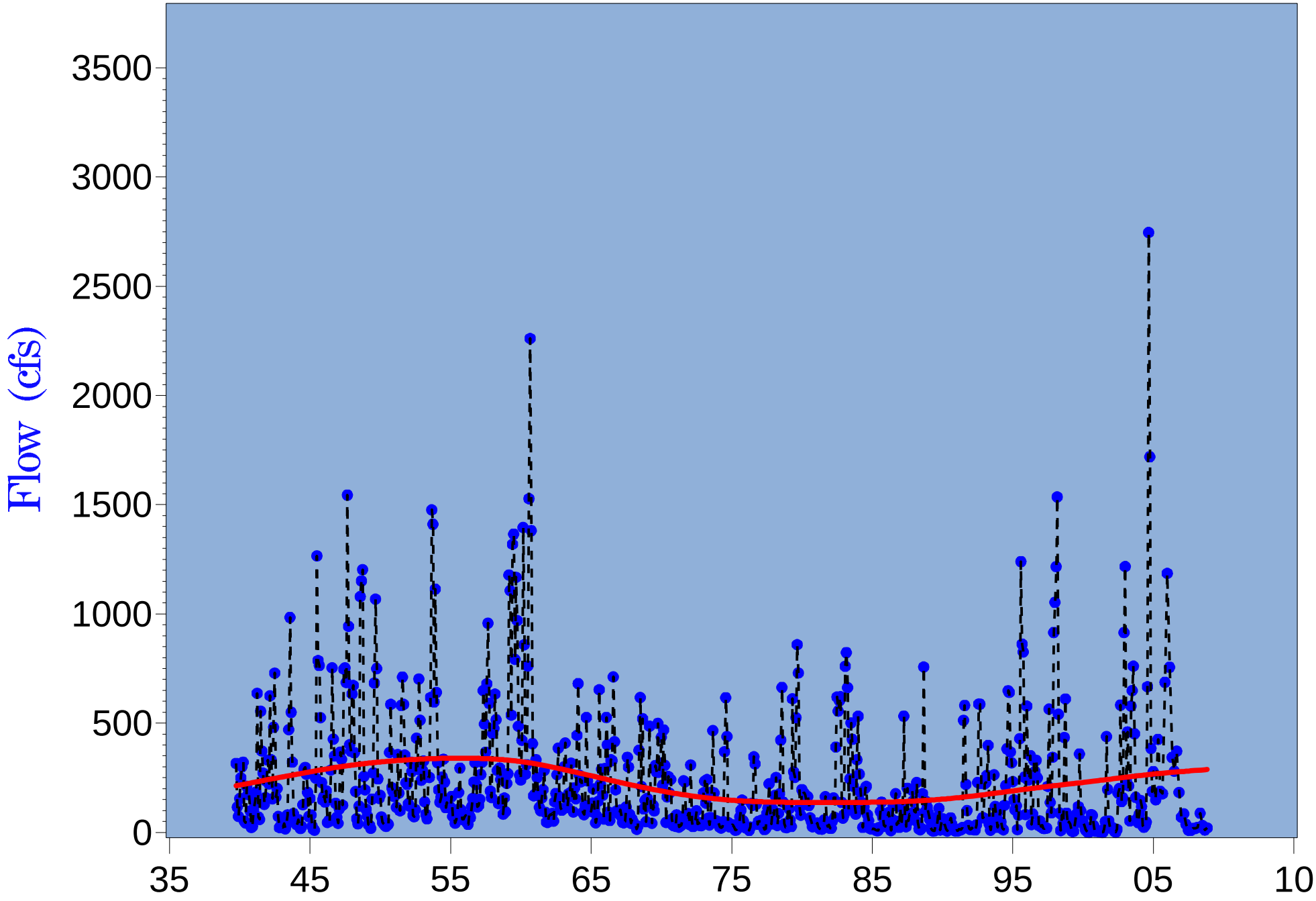


Figure 3.147 Monthly mean flow at long-term Peace River at Bartow (2294650) gage (1939-2006)

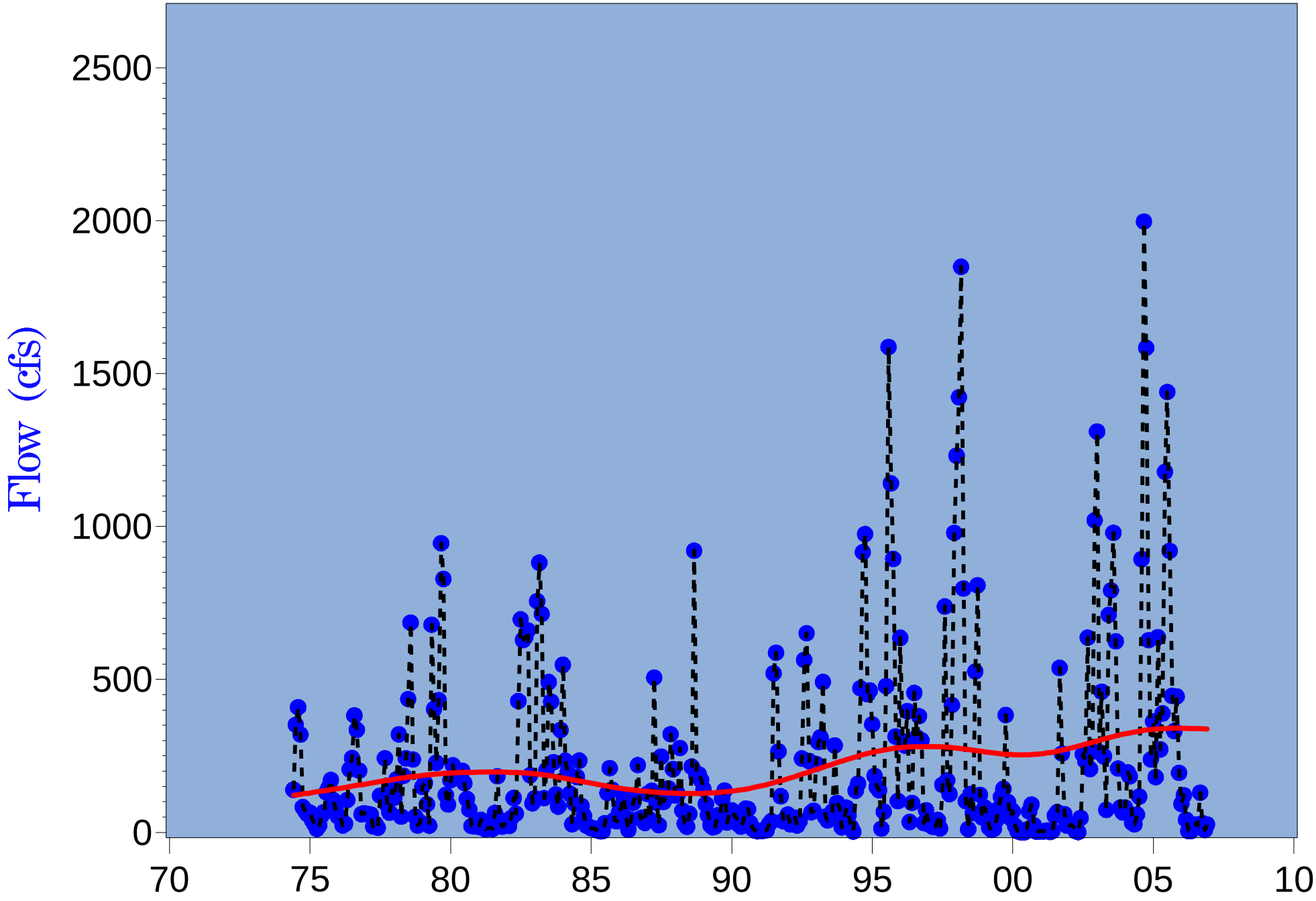


Figure 3.148 Monthly mean flow at long-term Peace River at Ft. Meade (2294898) gage (1974-2006)

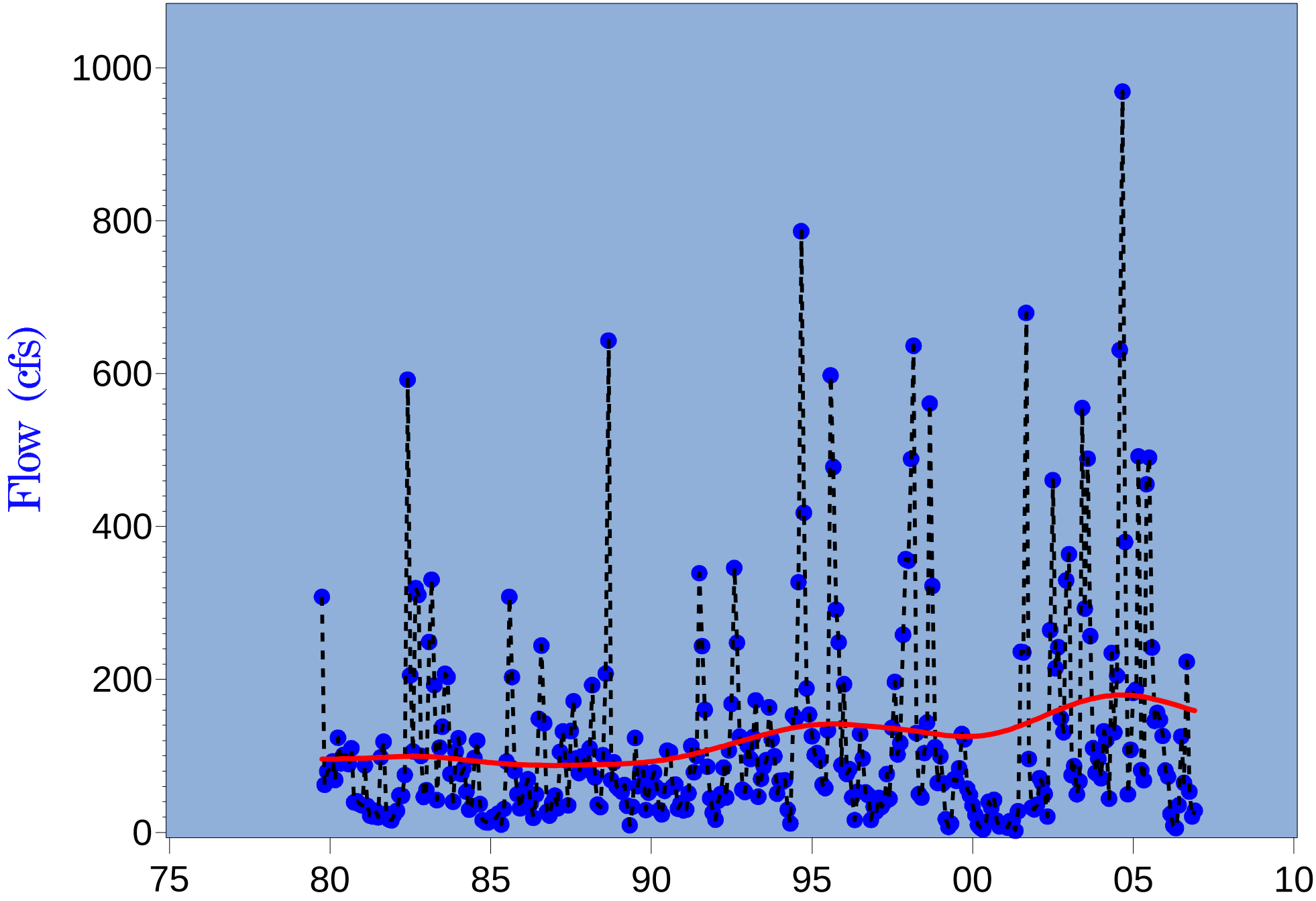


Figure 3.149a Monthly mean flow at long-term Payne Creek (2295420) gage (1979-2006)

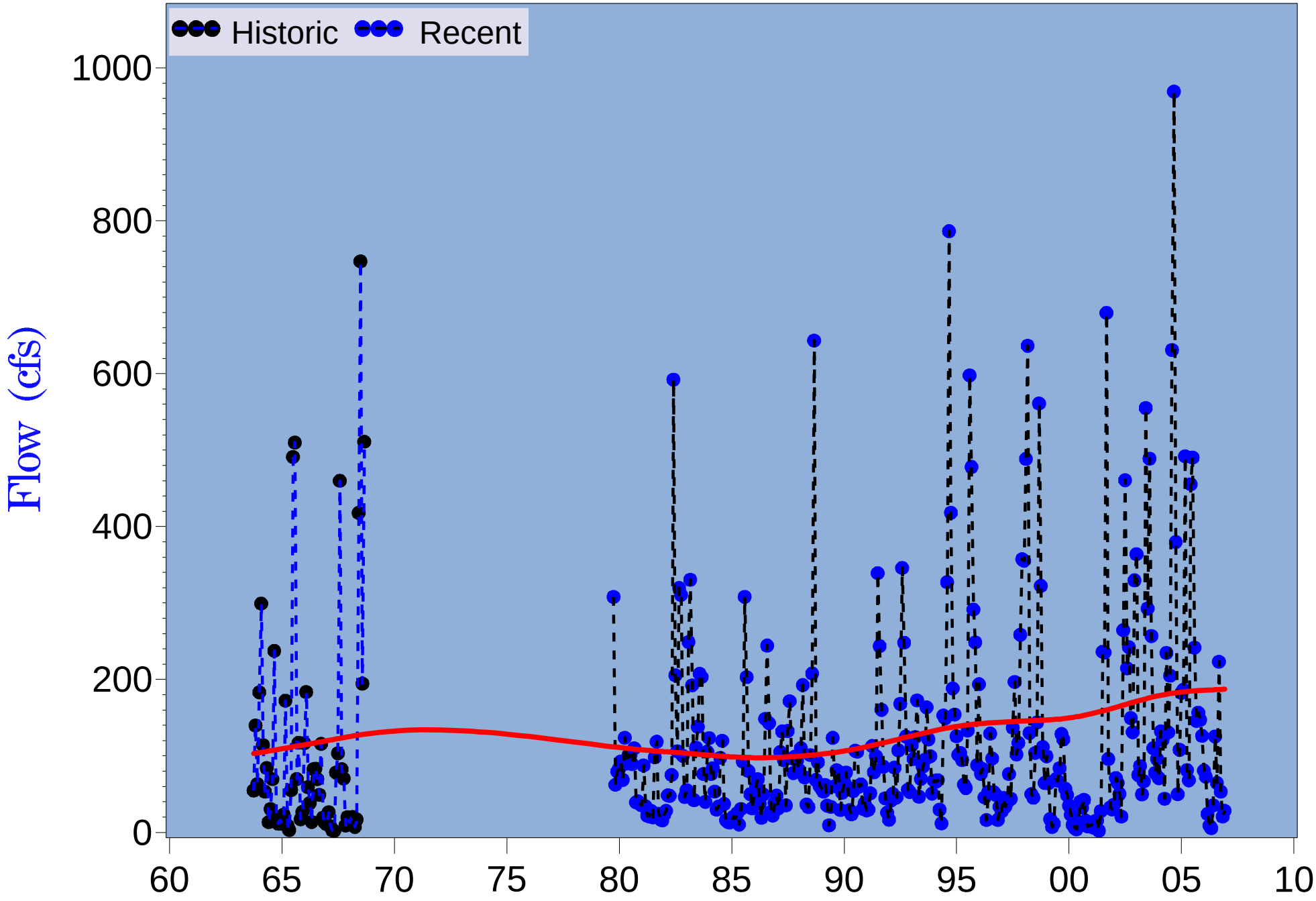


Figure 3.149b Monthly mean flow at long-term Payne Creek (2295420) gage (1963-2006)

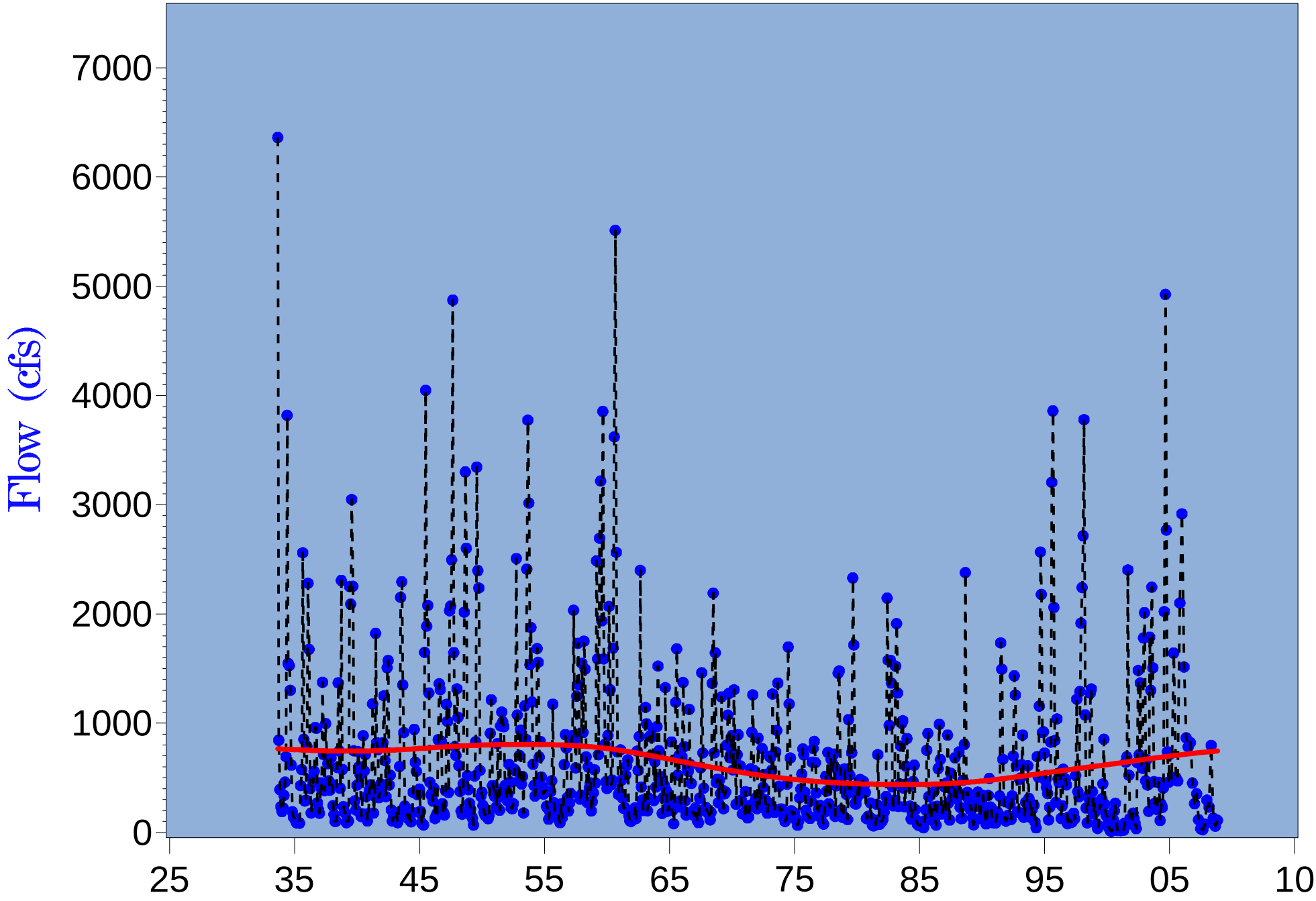


Figure 3.150 Monthly mean flow at long-term Peace River at Zolfo (2295637) gage (1933-2006)

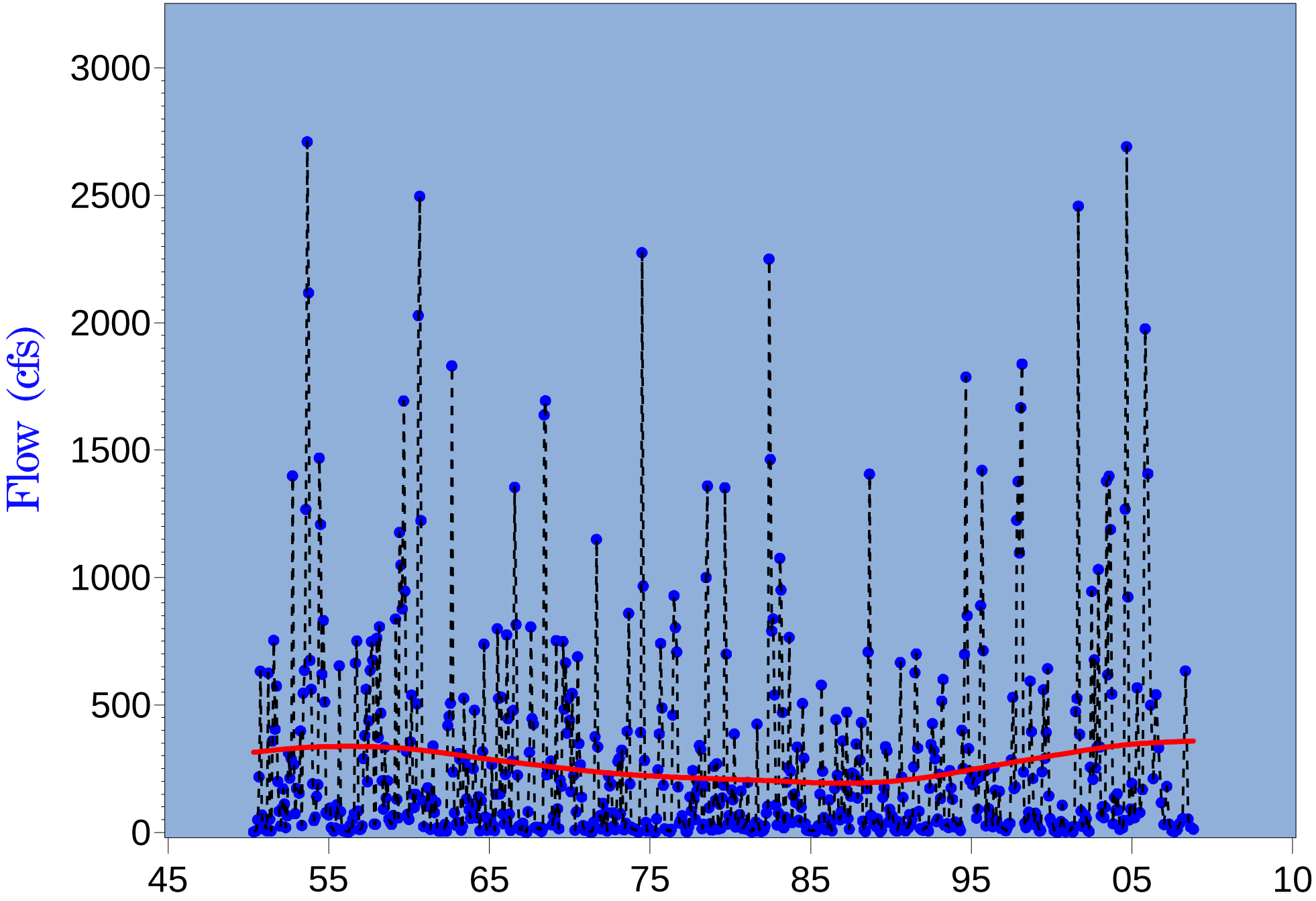


Figure 3.151 Monthly mean flow at long-term Charlie Creek (2296500) gage (1950-2006)

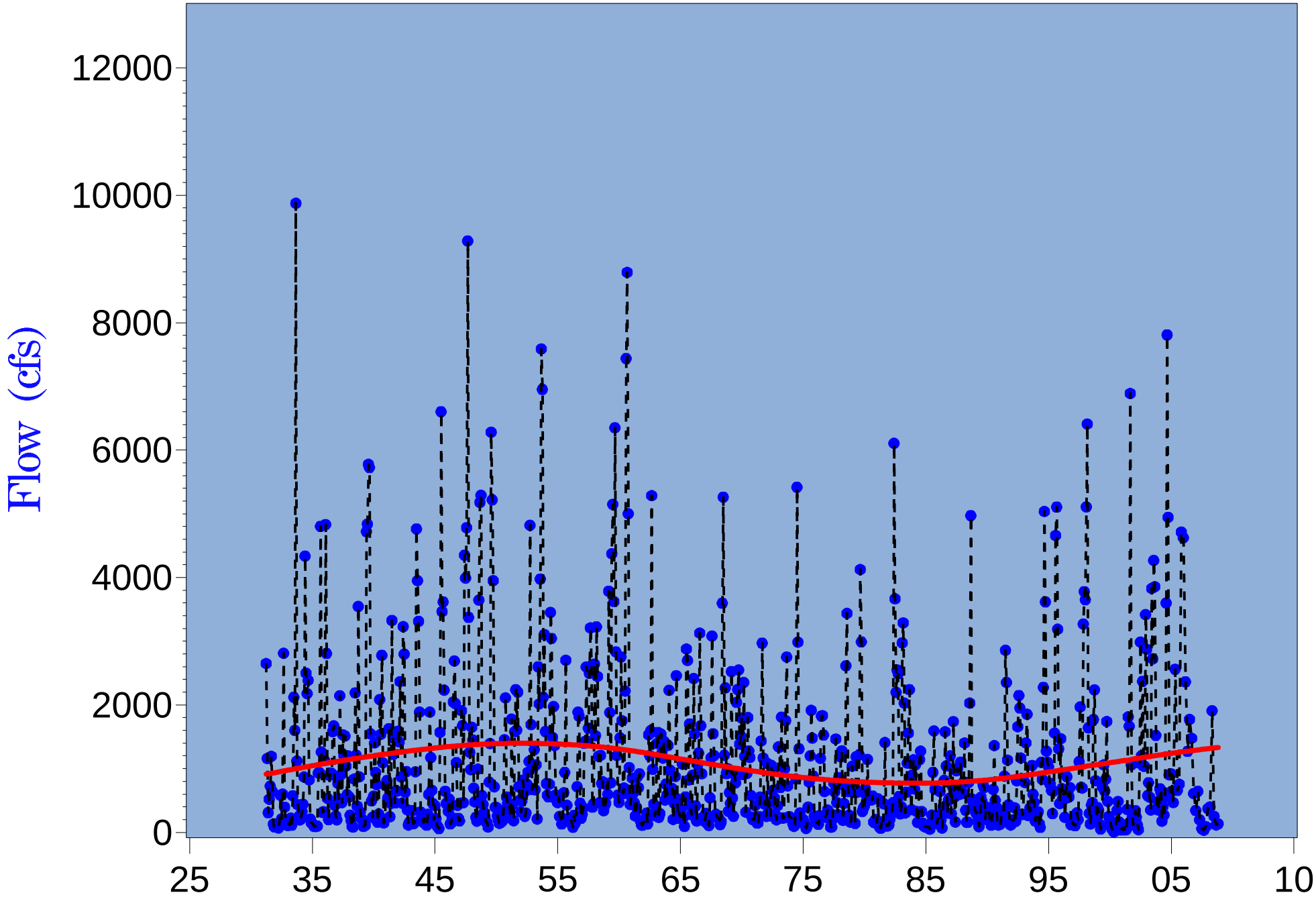


Figure 3.152 Monthly mean flow at long-term Peace River at Arcadia (2296750) gage (1931-2006)

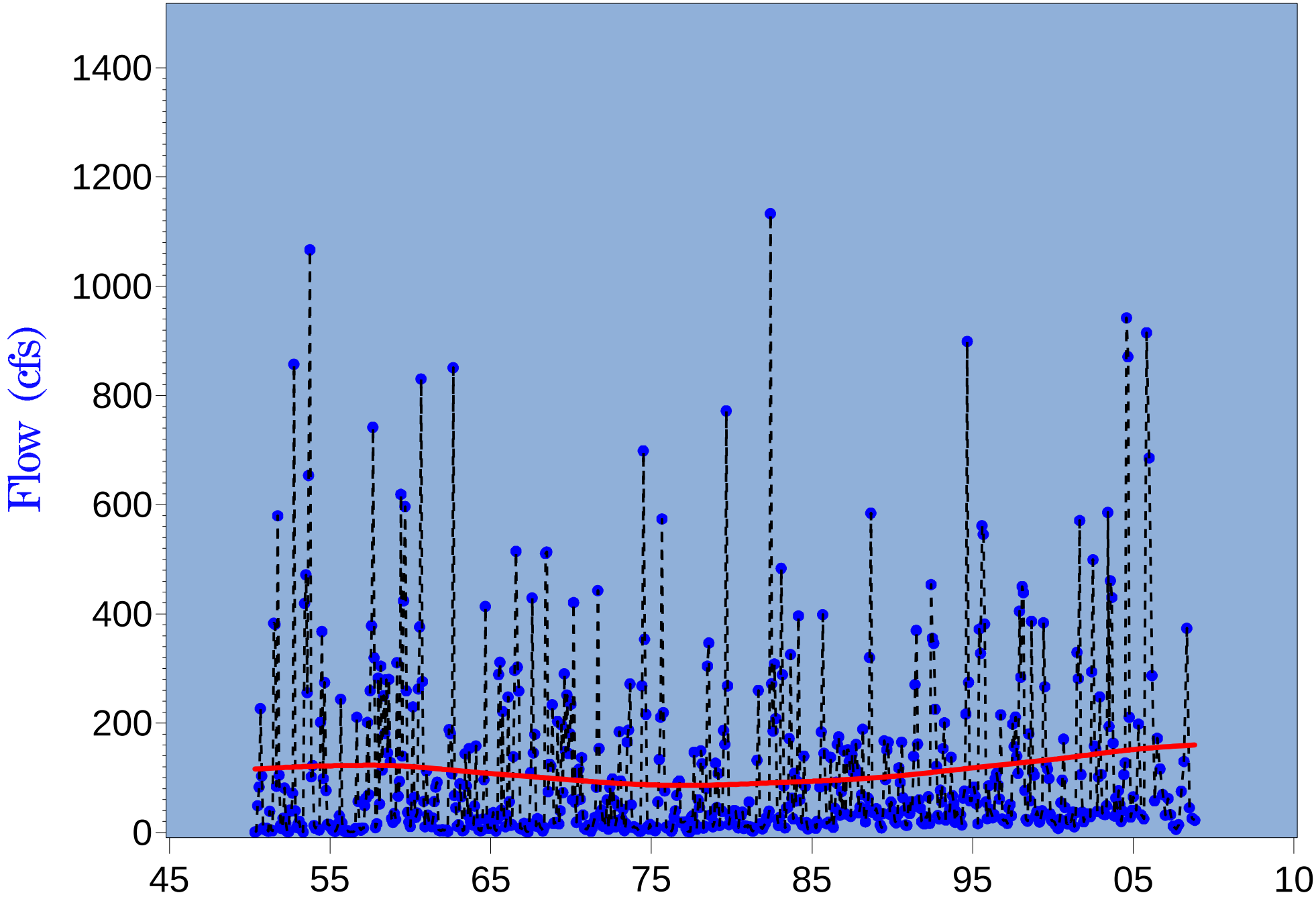


Figure 3.153 Monthly mean flow at long-term Joshua Creek at Nocatee (2297100) gage (1950-2006)

Table 3.22
Summary of Results of Seasonal Kendall Trend Analyses
1976 Through 2006 - Monthly P25 Value (Q75)

USGS ID	Gage Identification	Time Interval	Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
Peace River Watershed						
2294650	Peace River at Bartow	1976-2006	-0.02	0.562	0.802	-0.09
2295420	Payne Creek near Bowling Green	1976-2006	0.08	0.035	0.354	0.64
2295637	Peace River at Zolfo Springs	1976-2006	-0.02	0.624	0.831	-0.37
2296500	Charlie Creek near Gardner	1976-2006	0.07	0.045	0.289	0.21
2296750	Peace River at Arcadia	1976-2006	0.03	0.407	0.701	1.00
2297100	Joshua Creek at Nocatee	1976-2006	0.34	0.000	**0.001**	0.78
2297310	Horse Creek near Arcadia	1976-2006	0.12	0.001	**0.084**	0.33
	Total Gaged Flow Upstream of the Facility	1976-2006	0.06	0.108	0.443	2.32
2298123	Prairie Creek near Fort Ogden	1976-2006	0.16	0.000	**0.034**	0.82
2298202	Shell Creek near Punta Gorda	1976-2006	0.06	0.090	0.382	0.75
	Total Gaged Peace River Flow to the Harbor	1976-2006	0.07	0.069	0.385	3.49
Reference Watershed						
2298830	Myakka River near Sarasota	1976-2006	0.03	0.453	0.690	0.16

* Red values denote significant trend at p=0.05 level, while blue indicates trends significant at p=0.10

** Positive Tau statistic and slope values indicate increasing trend over time, negative values correspond to declining changes in flow over time

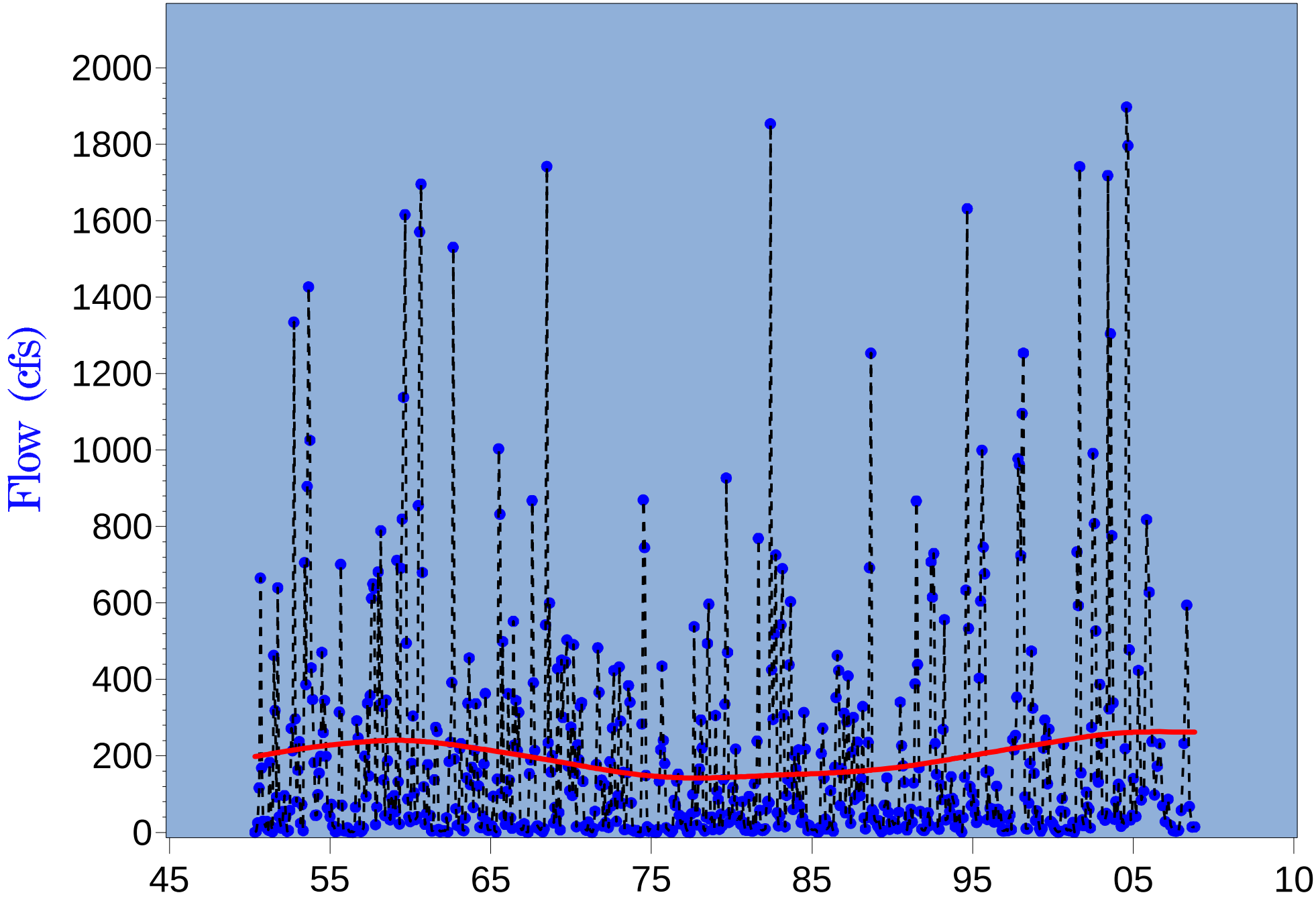


Figure 3.154 Monthly mean flow at long-term Horse Creek near Arcadia(2297310) gage (1950-2006)

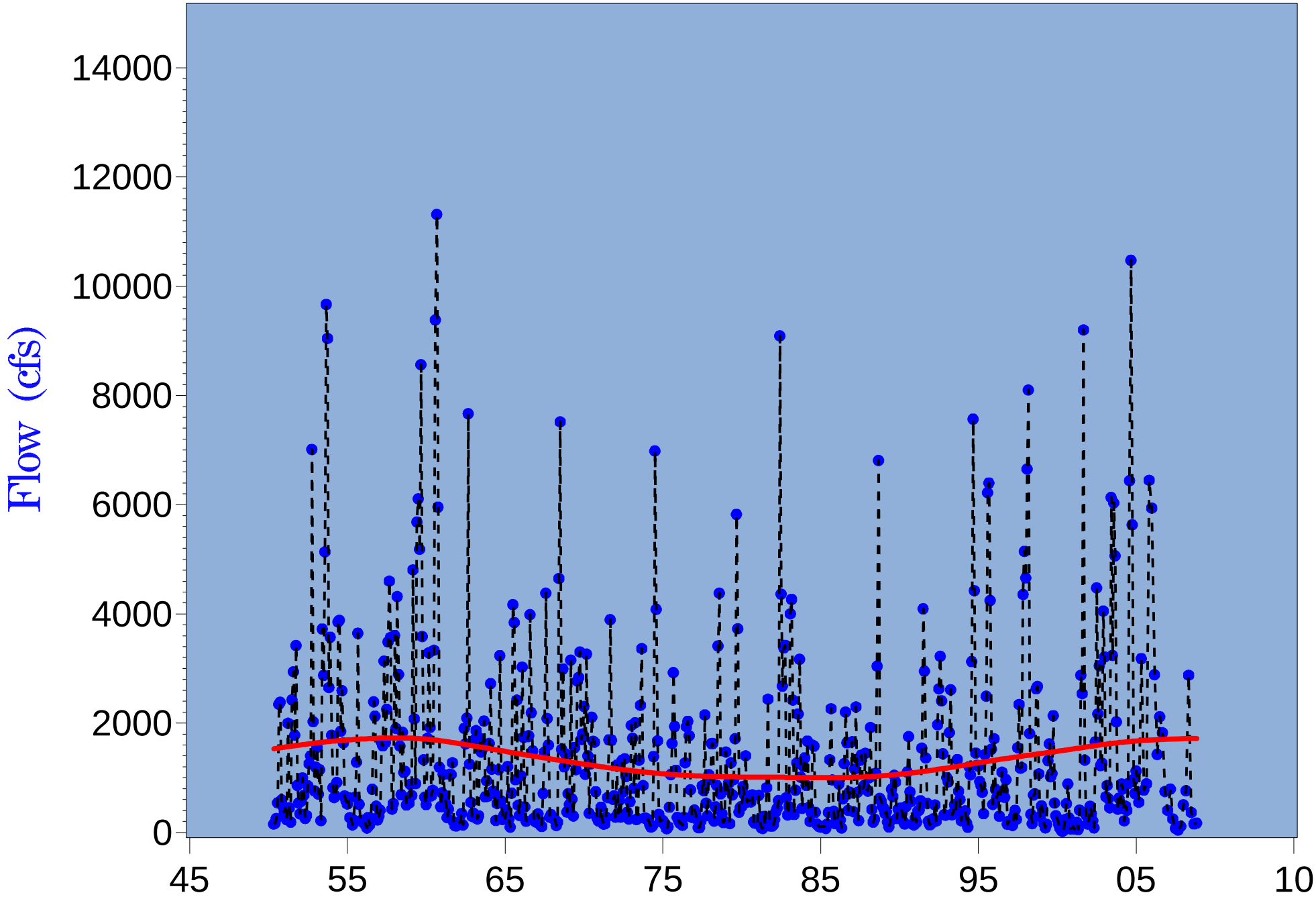


Figure 3.155 Monthly mean flow for long-term for total gaged flow upstream of the Facility (1950-2006)

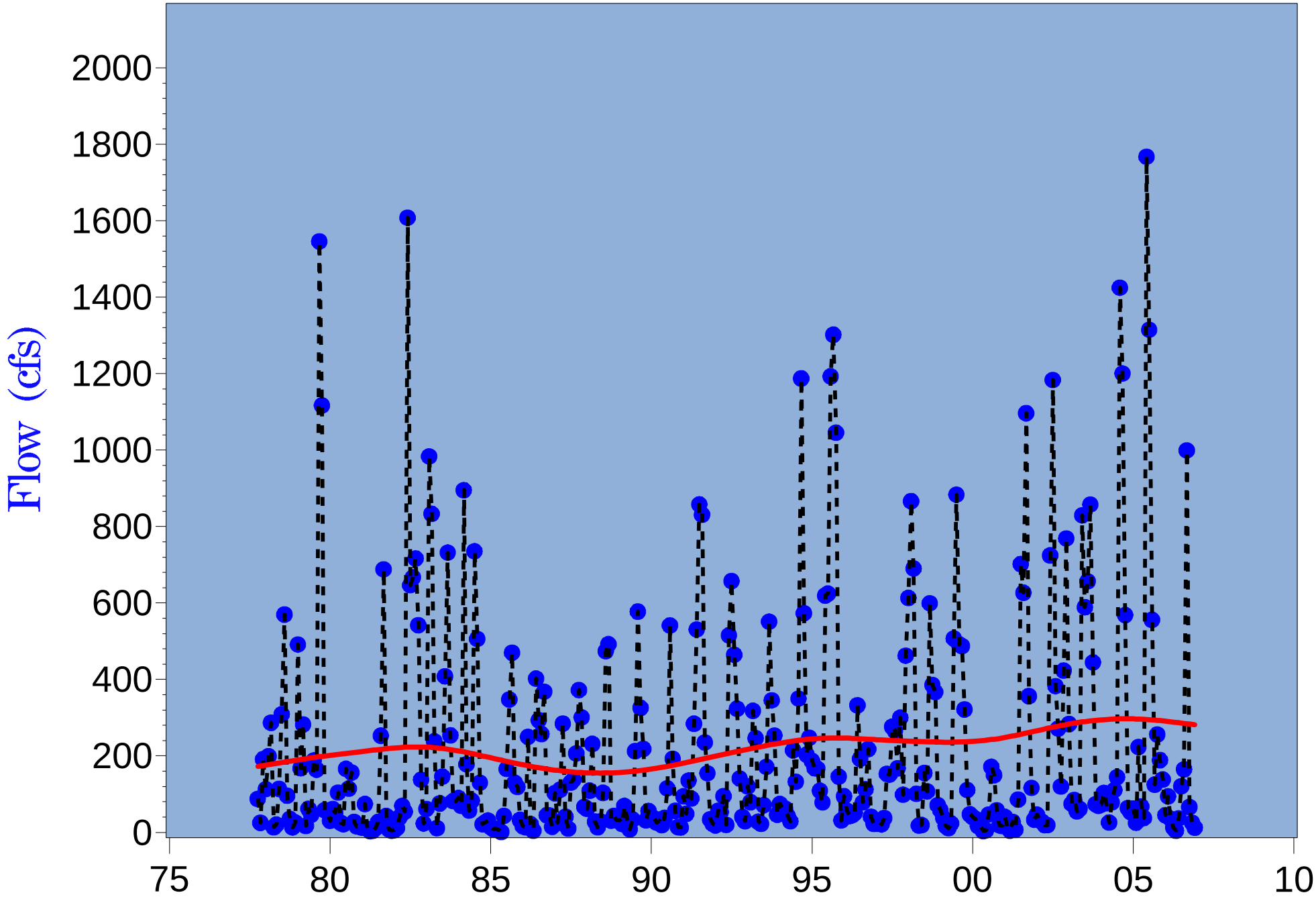


Figure 3.156a Monthly mean flow at long-term Prairie Creek (2298123) gage (1977-2006)

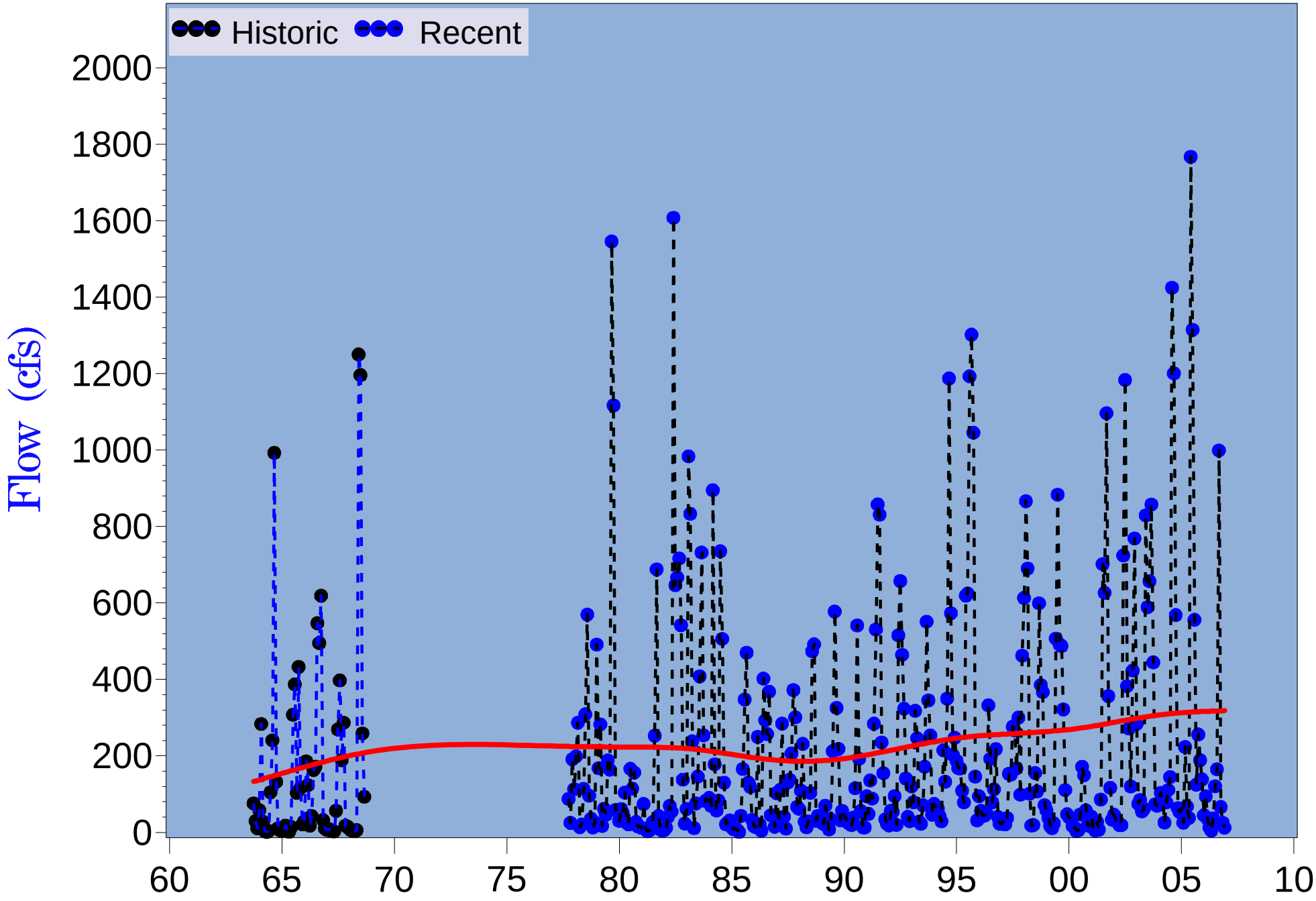


Figure 3.156b Monthly mean flow at long-term Prairie Creek (2298123) gage (1963-2006)

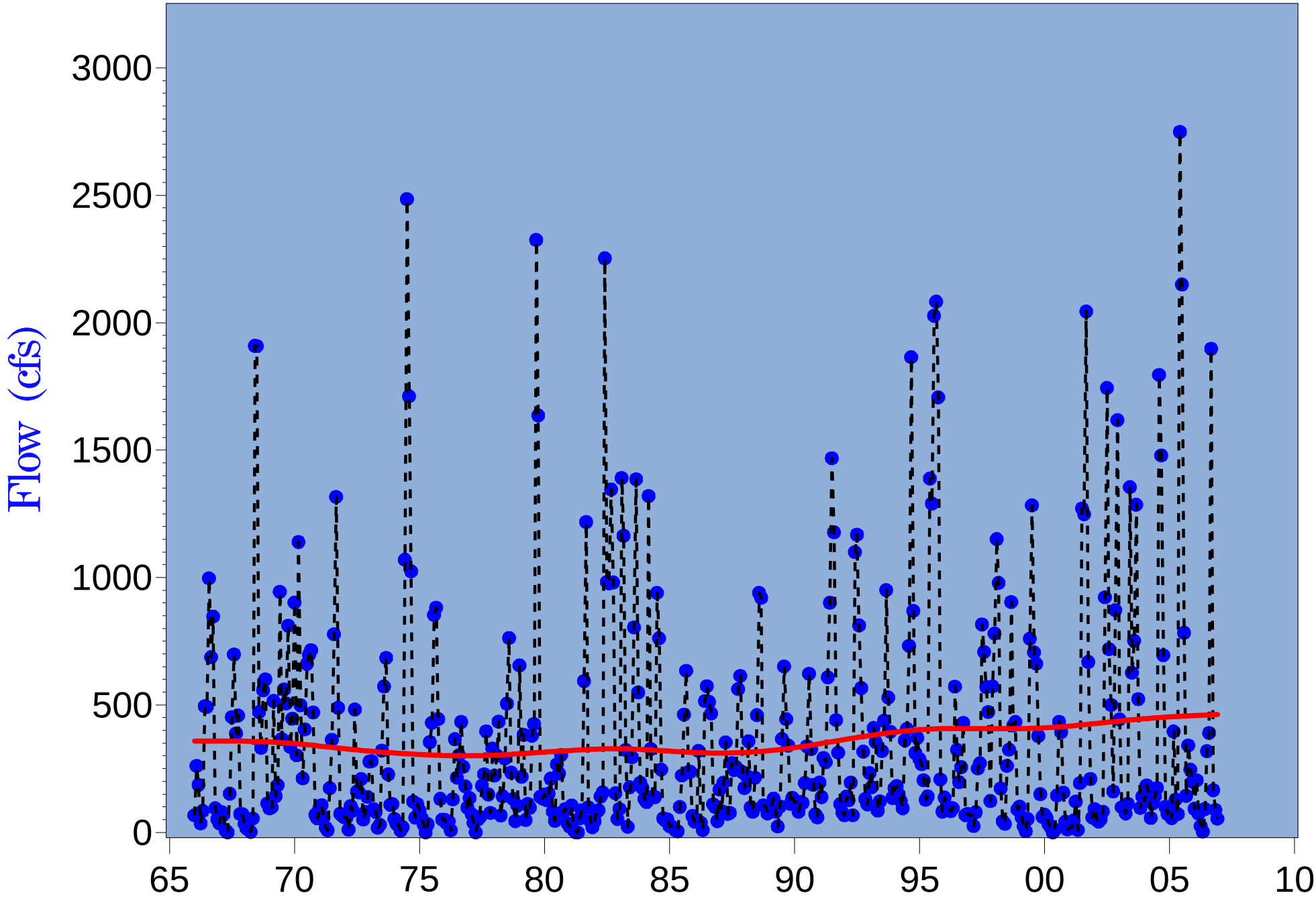


Figure 3.157 Monthly mean flow at long-term Shell Creek gage (1965-2006)

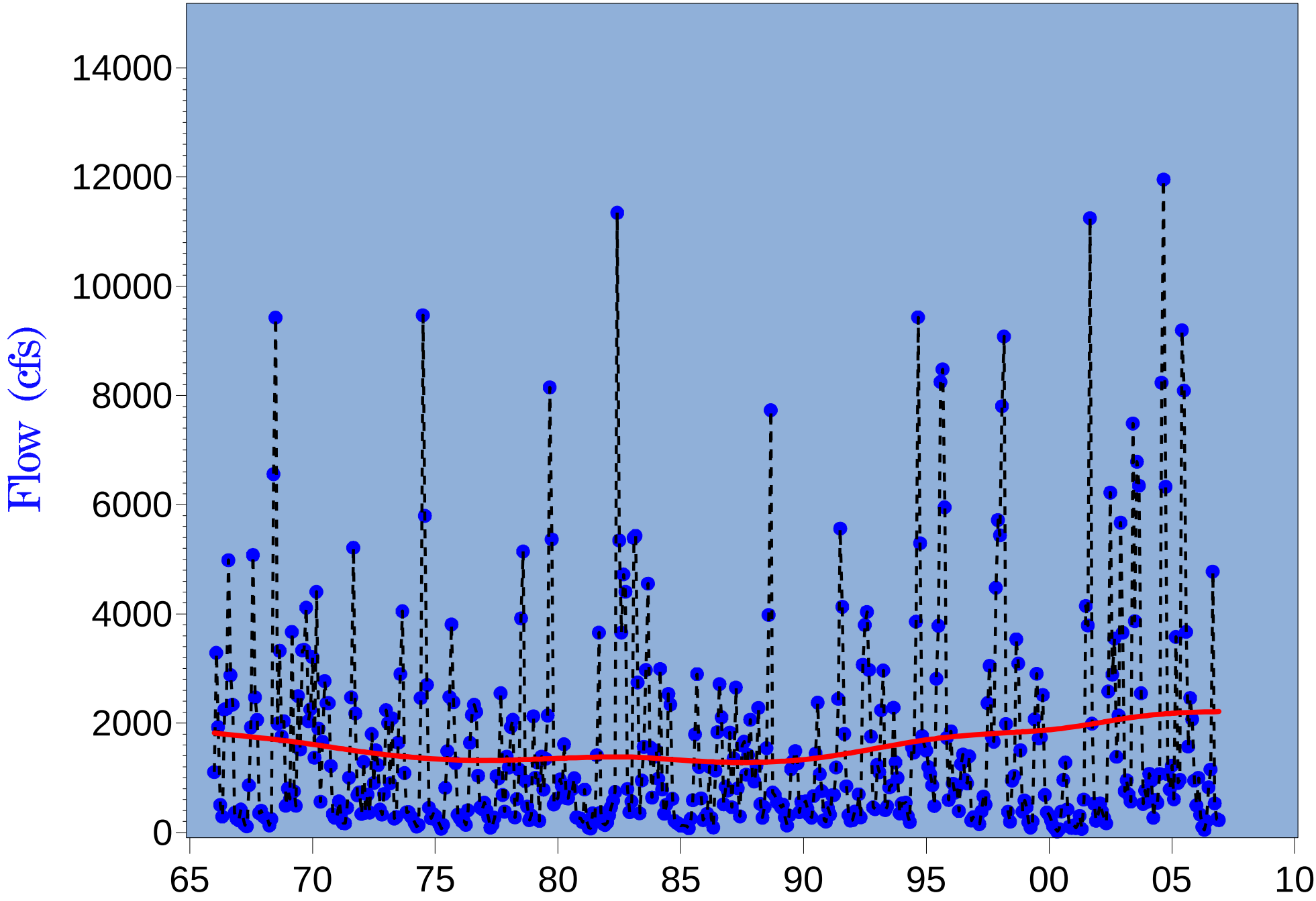


Figure 3.158 Monthly mean flow for total gaged Peace River flow to the Upper Harbor (1965-2006)

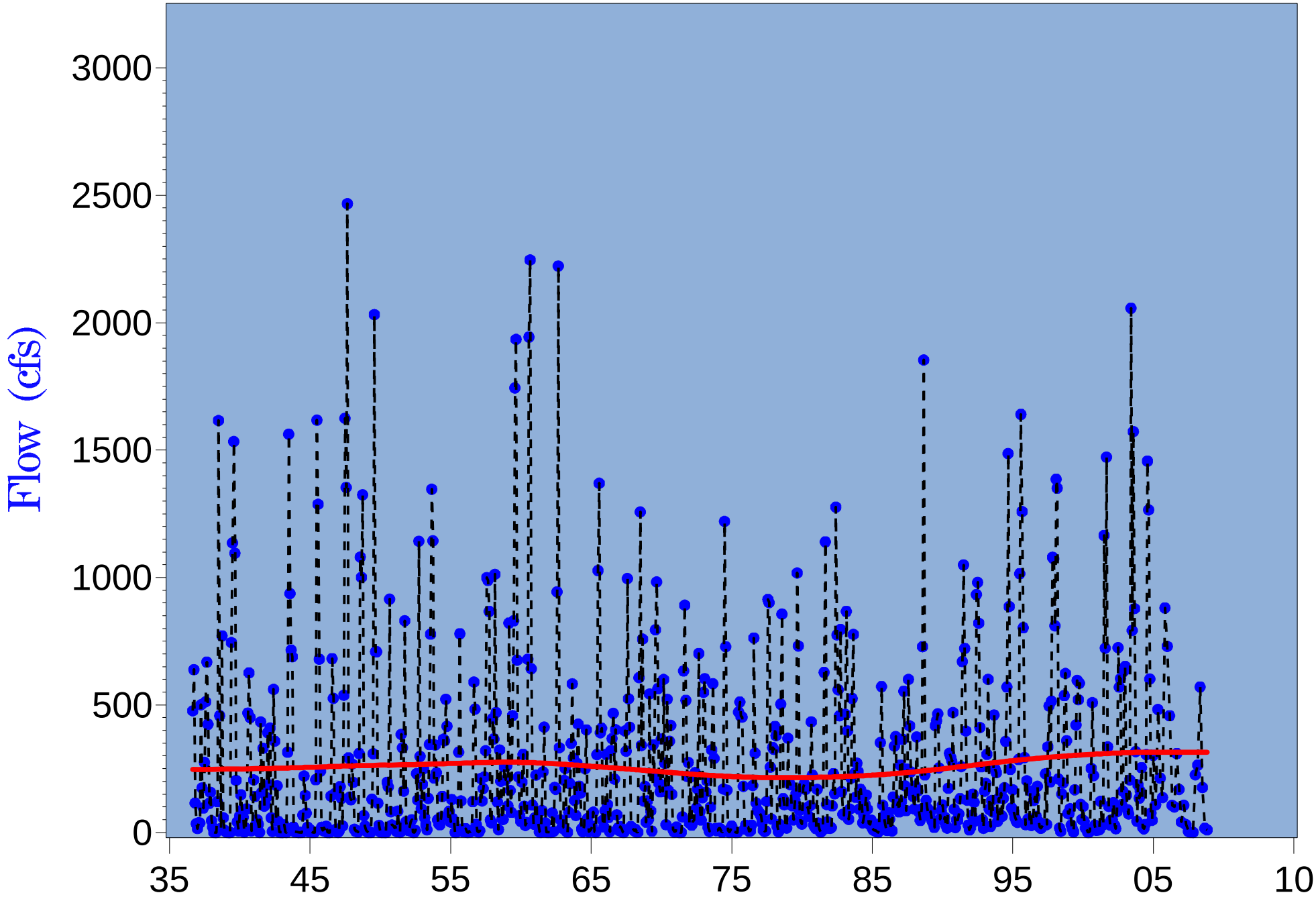


Figure 3.159 Monthly mean flow at long-term Myakka River near Sarasota (2298830) gage (1936-2006)

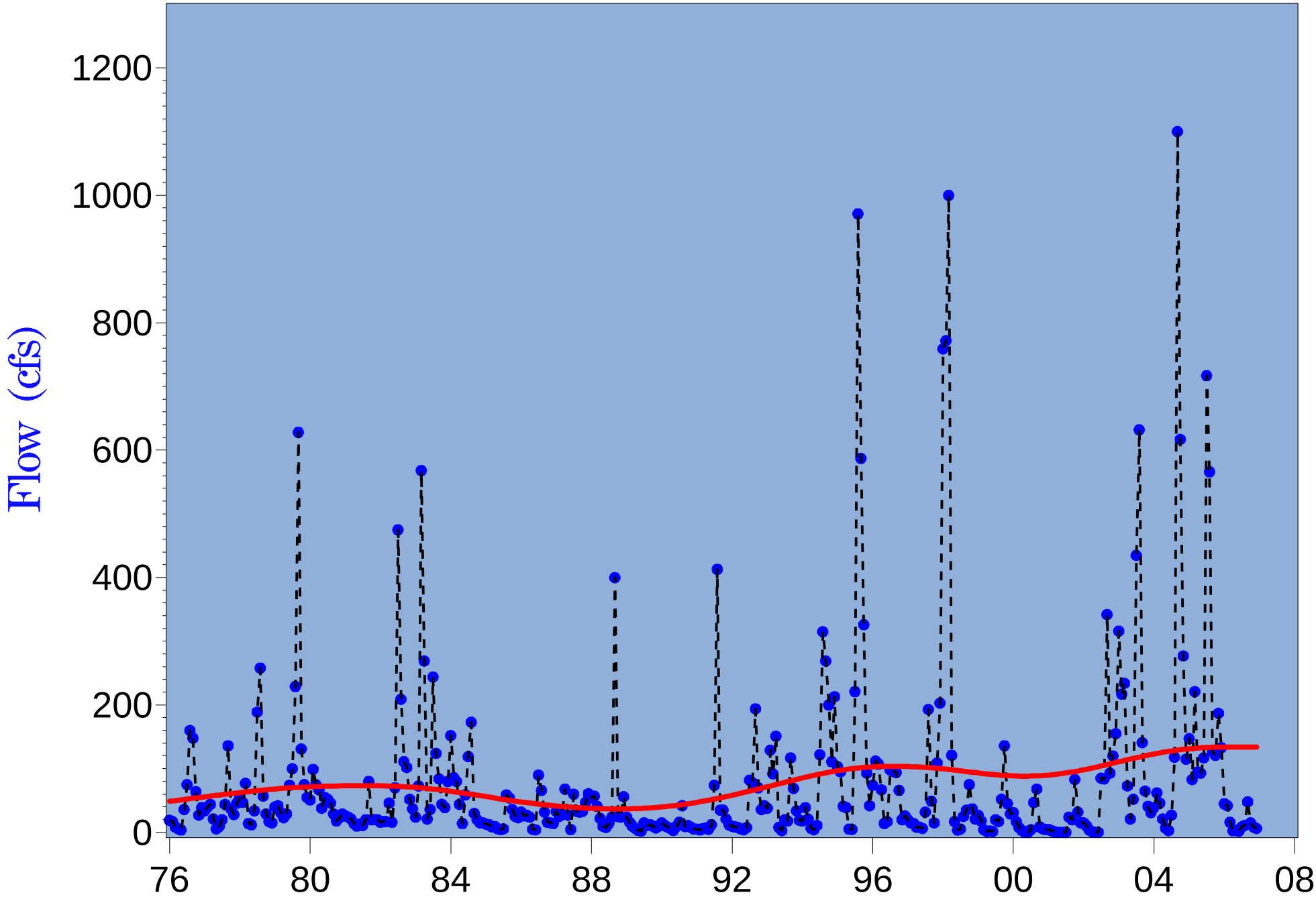


Figure 3.160 Monthly minimum flow at long-term Peace River at Bartow (2294650) gage (1976-2006)

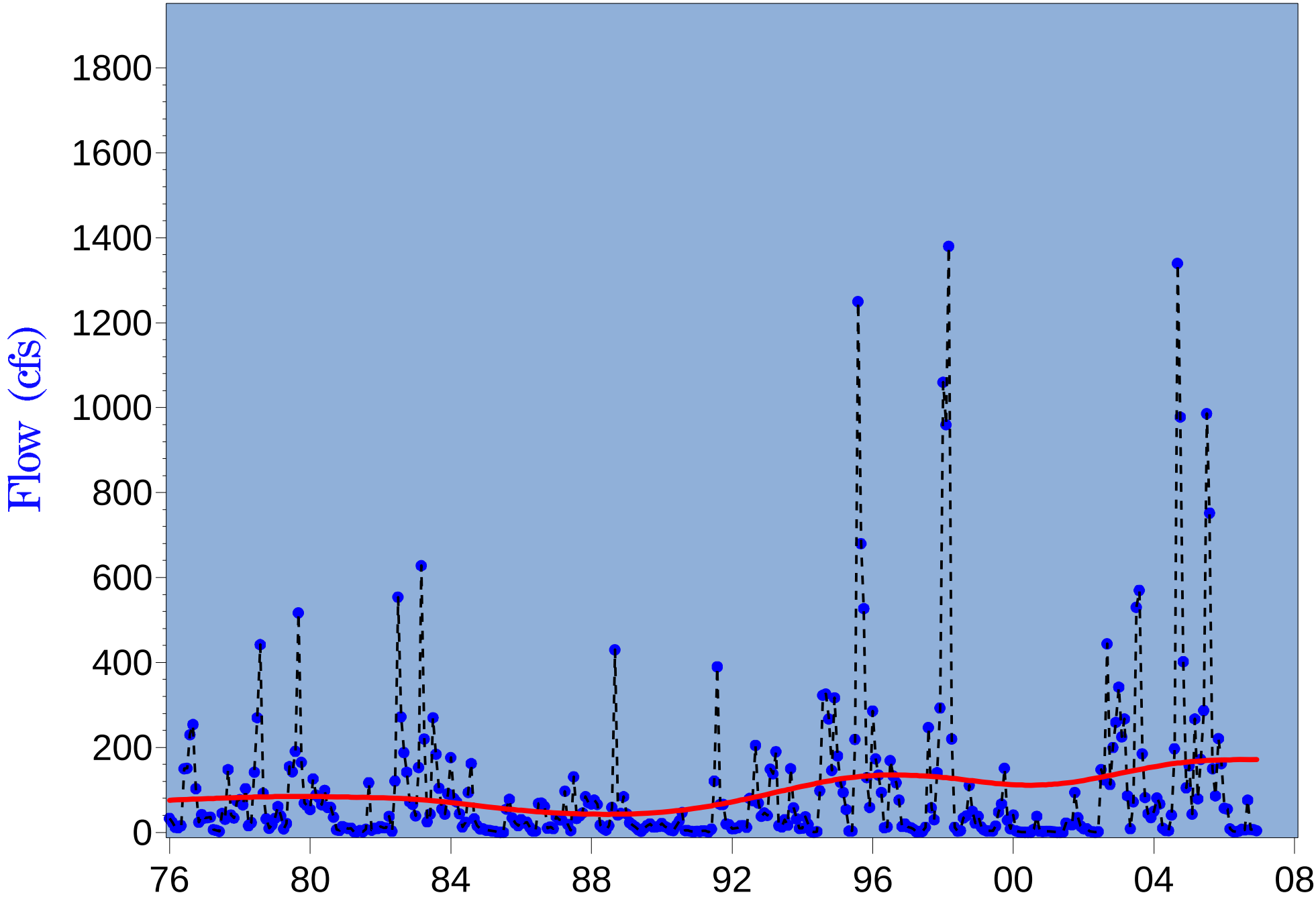


Figure 3.161 Monthly minimum flow at long-term Peace River at Ft. Meade (2294898) gage (1976-2006)

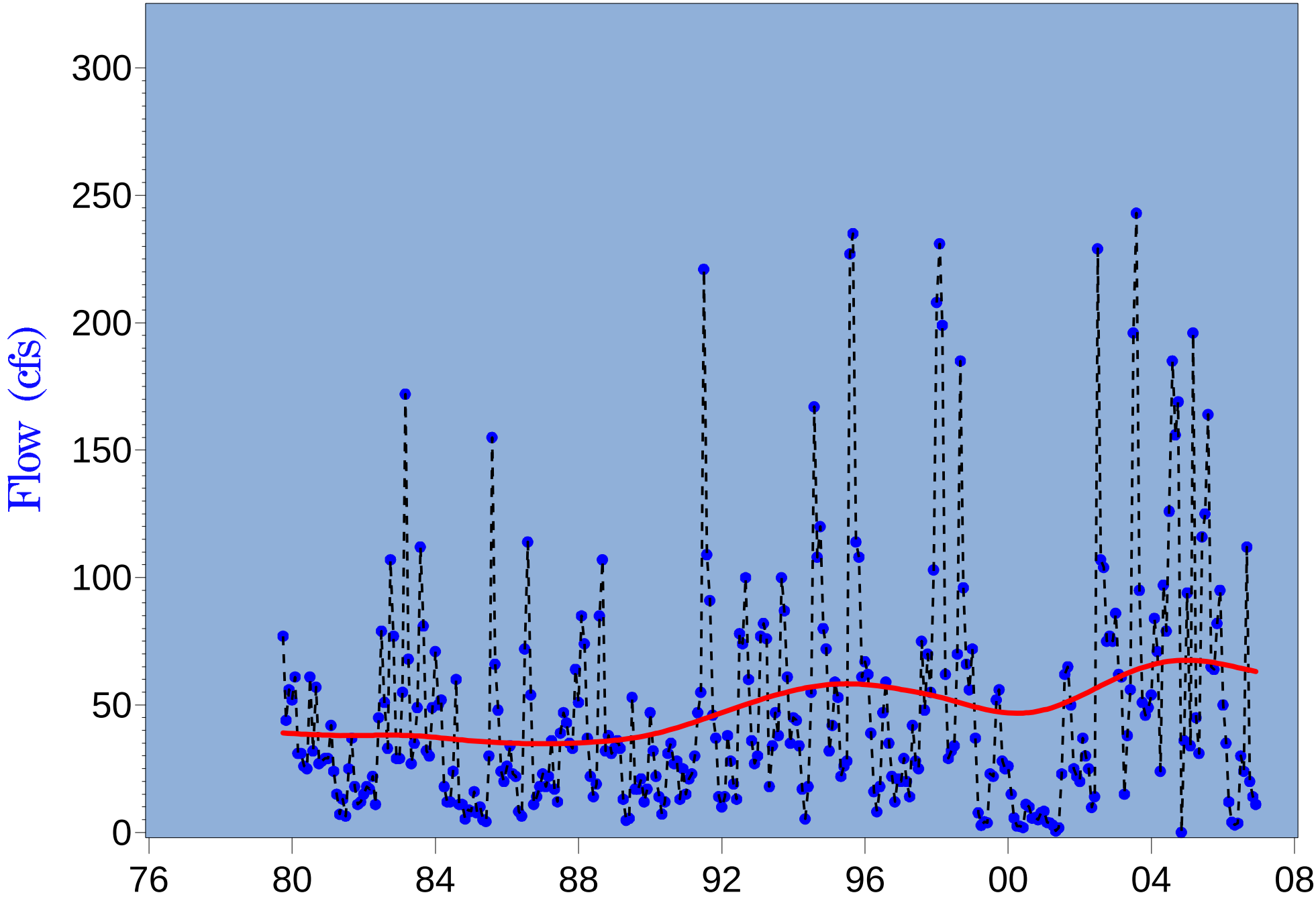


Figure 3.162 Monthly minimum flow at long-term Payne Creek (2295420) gage (1976-2006)

Table 3.23
Summary of Results of Seasonal Kendall Trend Analyses
1976 Through 2006 - Monthly Median Values (P50)

USGS ID	Gage Identification	Time Interval	Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
Peace River Watershed						
2294650	Peace River at Bartow	1976-2006	-0.01	0.860	0.938	-0.04
2295420	Payne Creek near Bowling Green	1976-2006	0.10	0.010	0.254	1.00
2295637	Peace River at Zolfo Springs	1976-2006	0.00	0.969	0.986	0.03
2296500	Charlie Creek near Gardner	1976-2006	0.07	0.058	0.303	0.33
2296750	Peace River at Arcadia	1976-2006	0.04	0.253	0.590	1.86
2297100	Joshua Creek at Nocatee	1976-2006	0.26	0.000	**0.001**	0.89
2297310	Horse Creek near Arcadia	1976-2006	0.11	0.003	**0.108**	0.50
	Total Gaged Flow Upstream of the Facility	1976-2006	0.06	0.115	0.449	3.33
2298123	Prairie Creek near Fort Ogden	1976-2006	0.12	0.002	**0.102**	0.86
2298202	Shell Creek near Punta Gorda	1976-2006	0.07	0.064	0.333	1.11
	Total Gaged Peace River Flow to the Harbor	1976-2006	0.07	0.058	0.353	5.51
Reference Watershed						
2298830	Myakka River near Sarasota	1976-2006	0.05	0.165	0.444	0.52

* Red values denote significant trend at p=0.05 level, while blue indicates trends significant at p=0.10

** Positive Tau statistic and slope values indicate increasing trend over time, negative values correspond to declining changes in flow over time

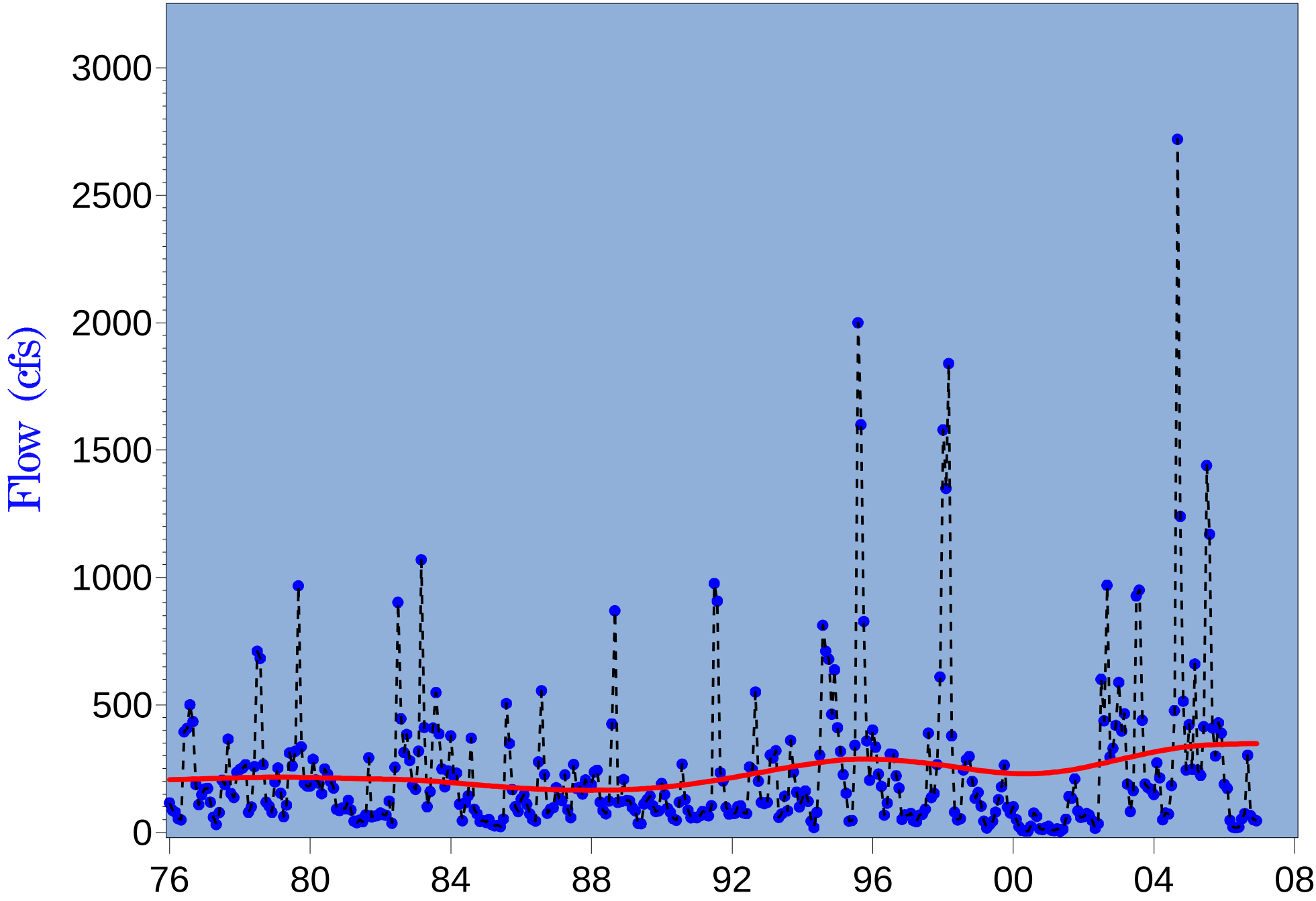


Figure 3.163 Monthly minimum flow at long-term Peace River at Zolfo (2295637) gage (1976-2006)

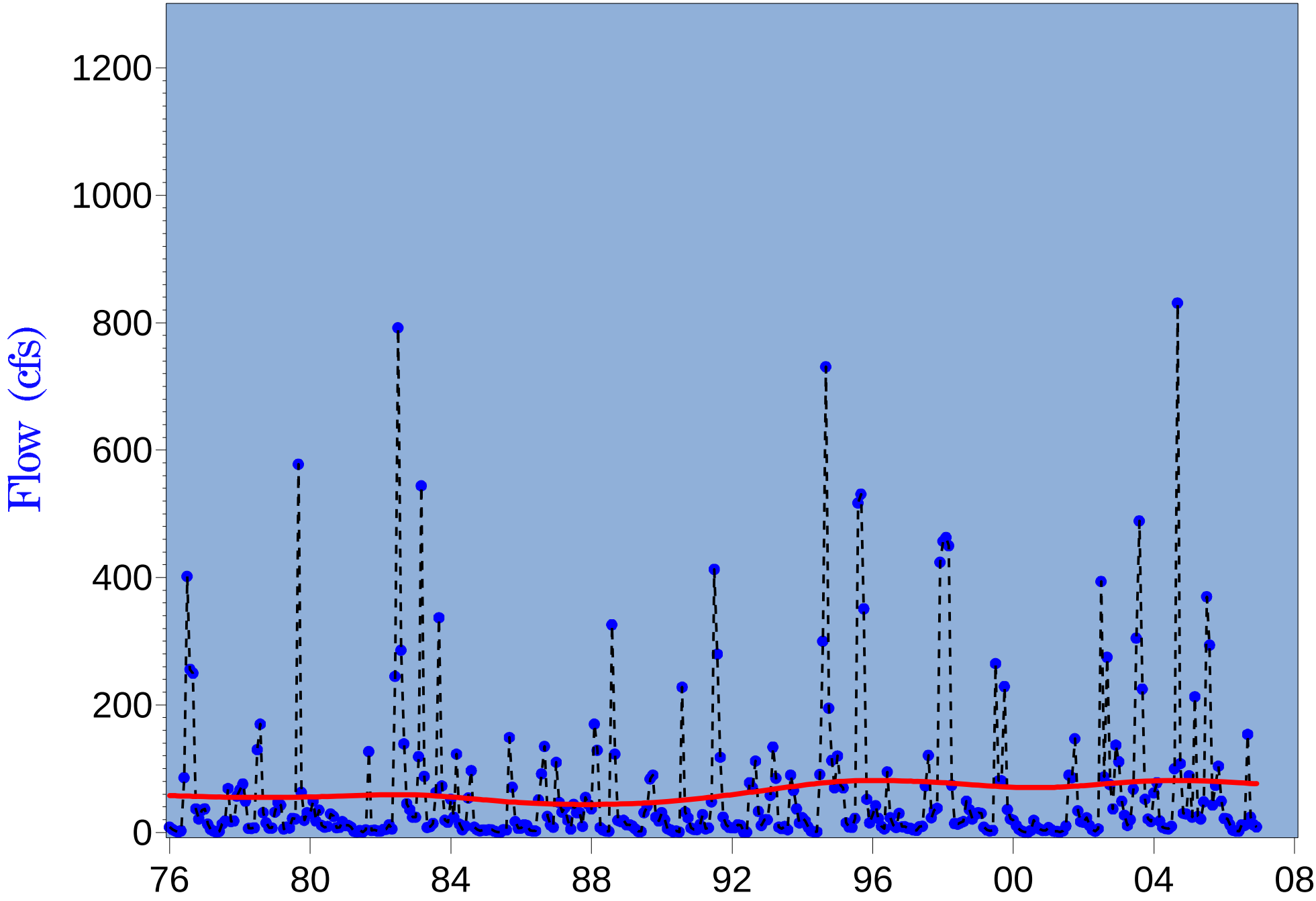


Figure 3.164 Monthly minimum flow at long-term Charlie Creek (2296500) gage (1976-2006)

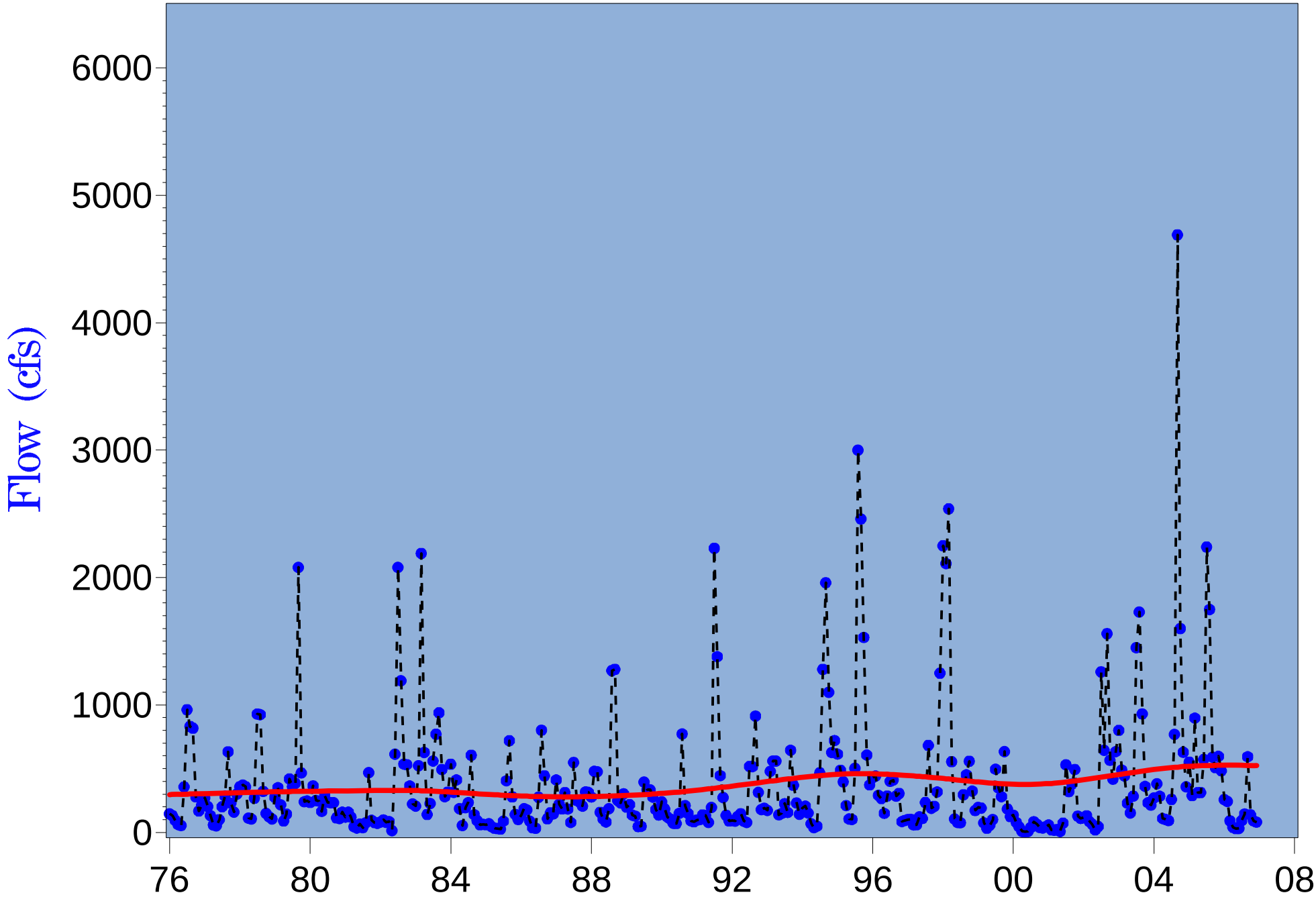


Figure 3.165 Monthly minimum flow at long-term Peace River at Arcadia (2296750) gage (1976-2006)

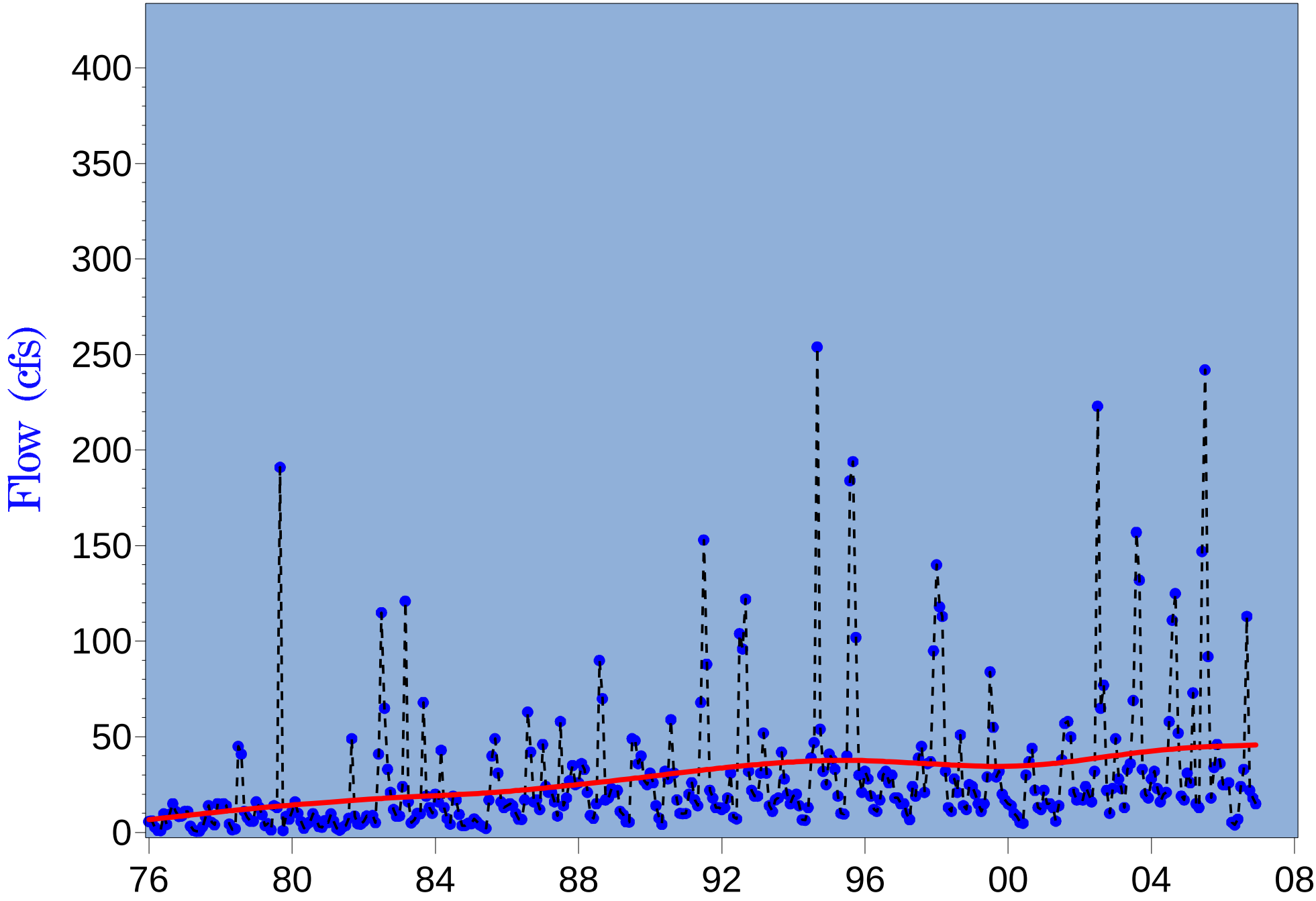


Figure 3.166 Monthly minimum flow at long-term Joshua Creek at Nocatee (2297100) gage (1976-2006)

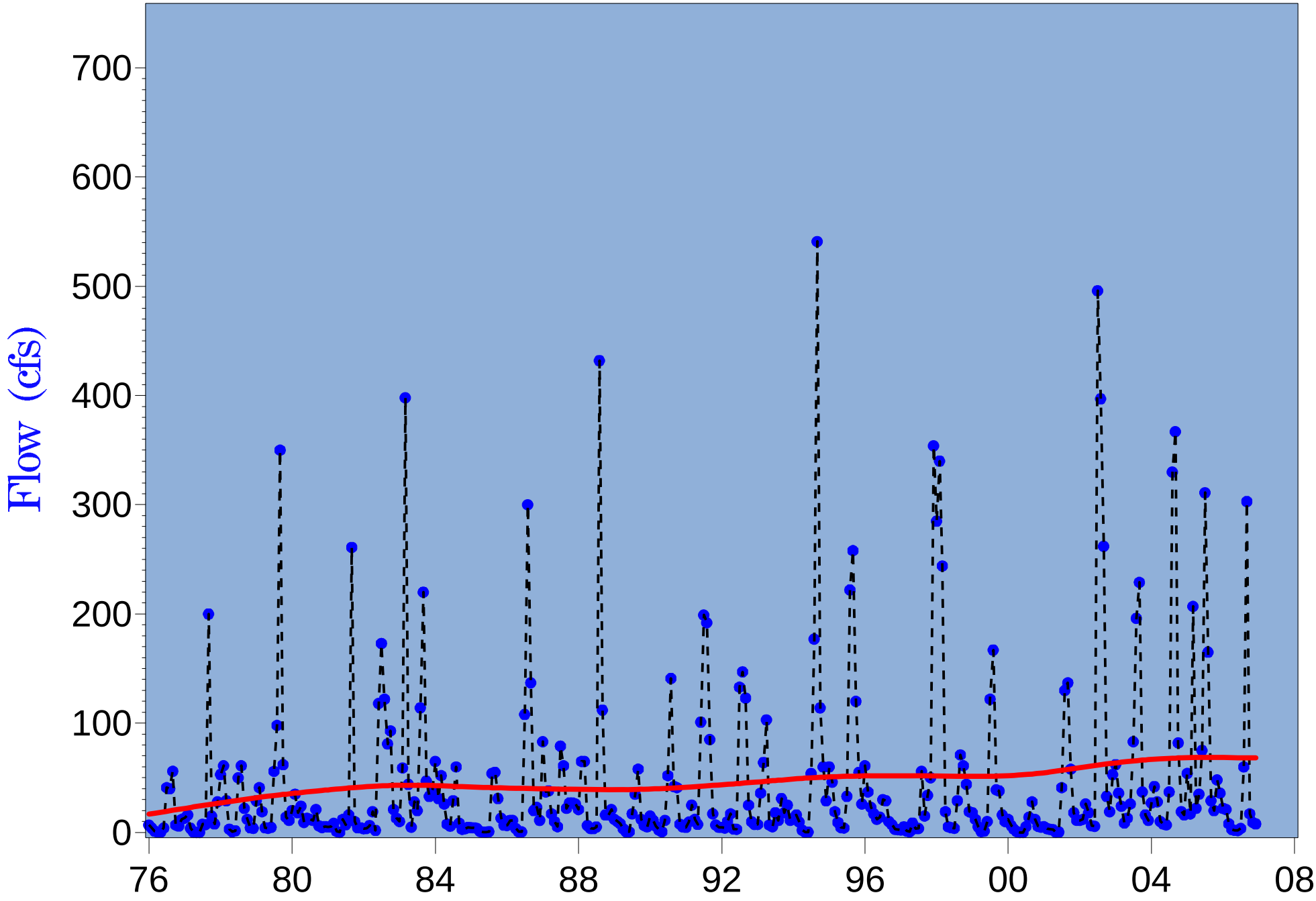


Figure 3.167 Monthly minimum flow at long-term Horse Creek near Arcadia(2297310) gage (1760-2006)

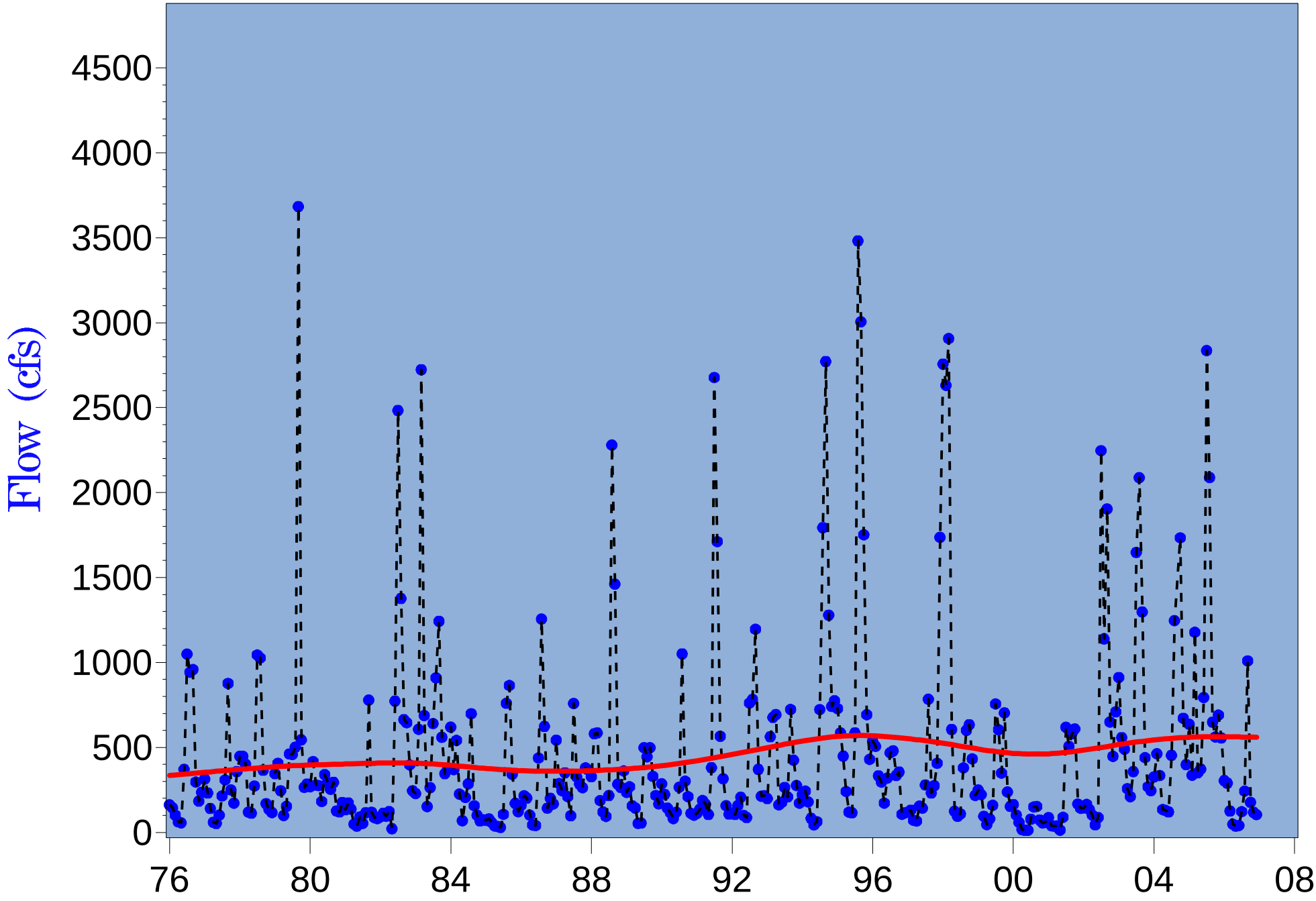


Figure 3.168 Monthly minimum flow at long-term for total gaged flow upstream of the Facility (1976-2006)

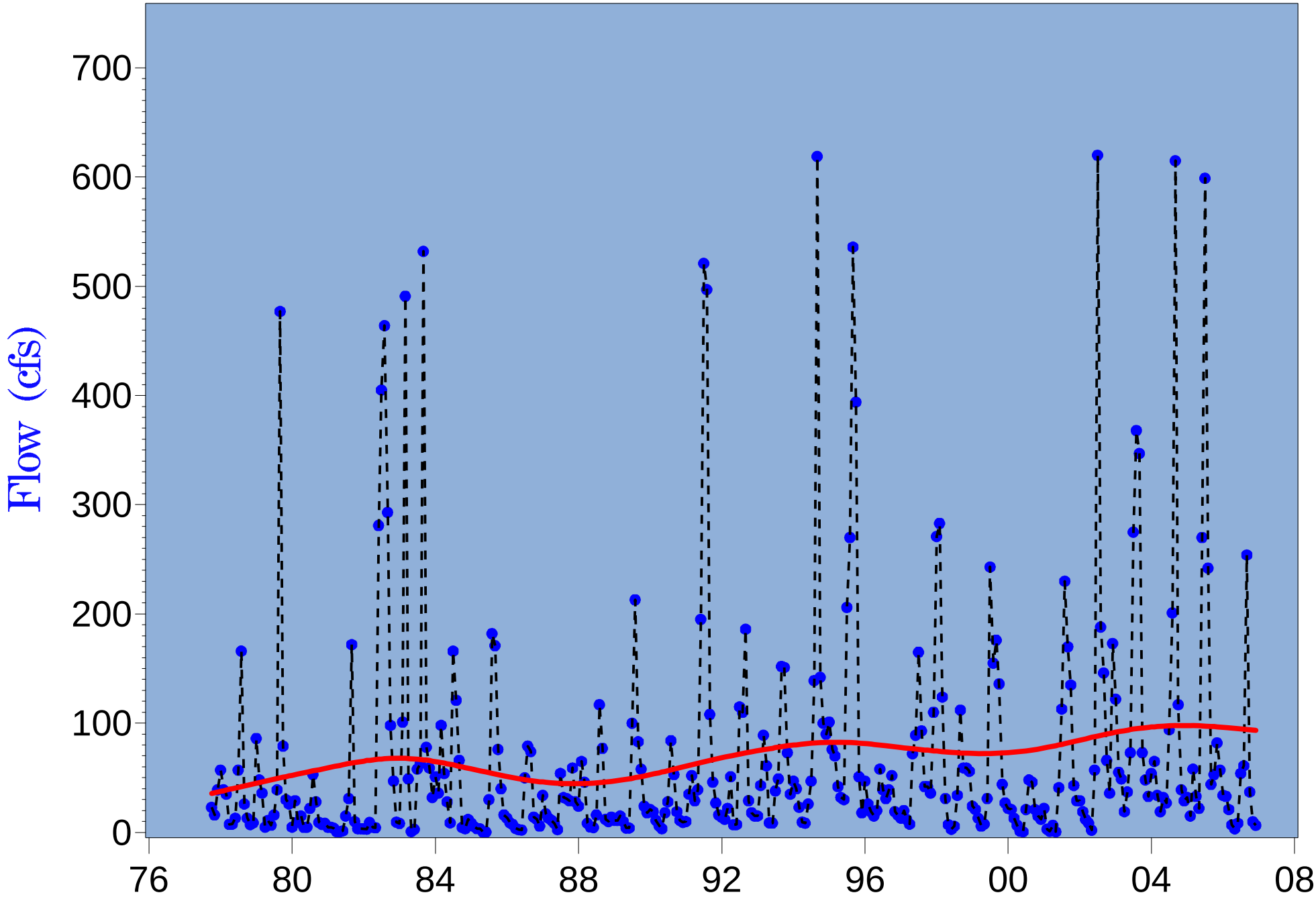


Figure 3.169 Monthly minimum flow at long-term Prairie Creek (2298123) gage (1976-2006)

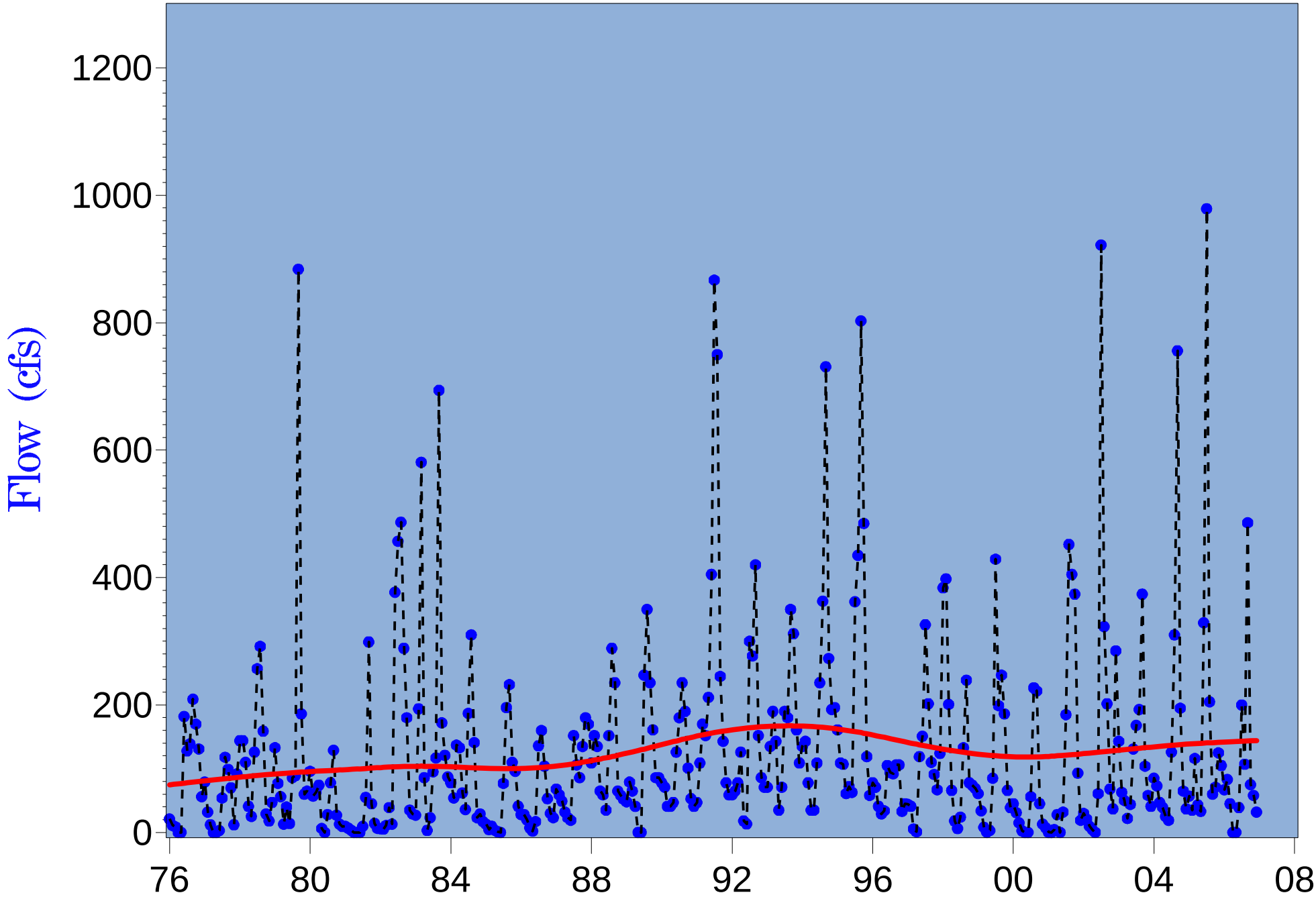


Figure 3.170 Monthly minimum flow at long-term Shell Creek gage (1976-2006)

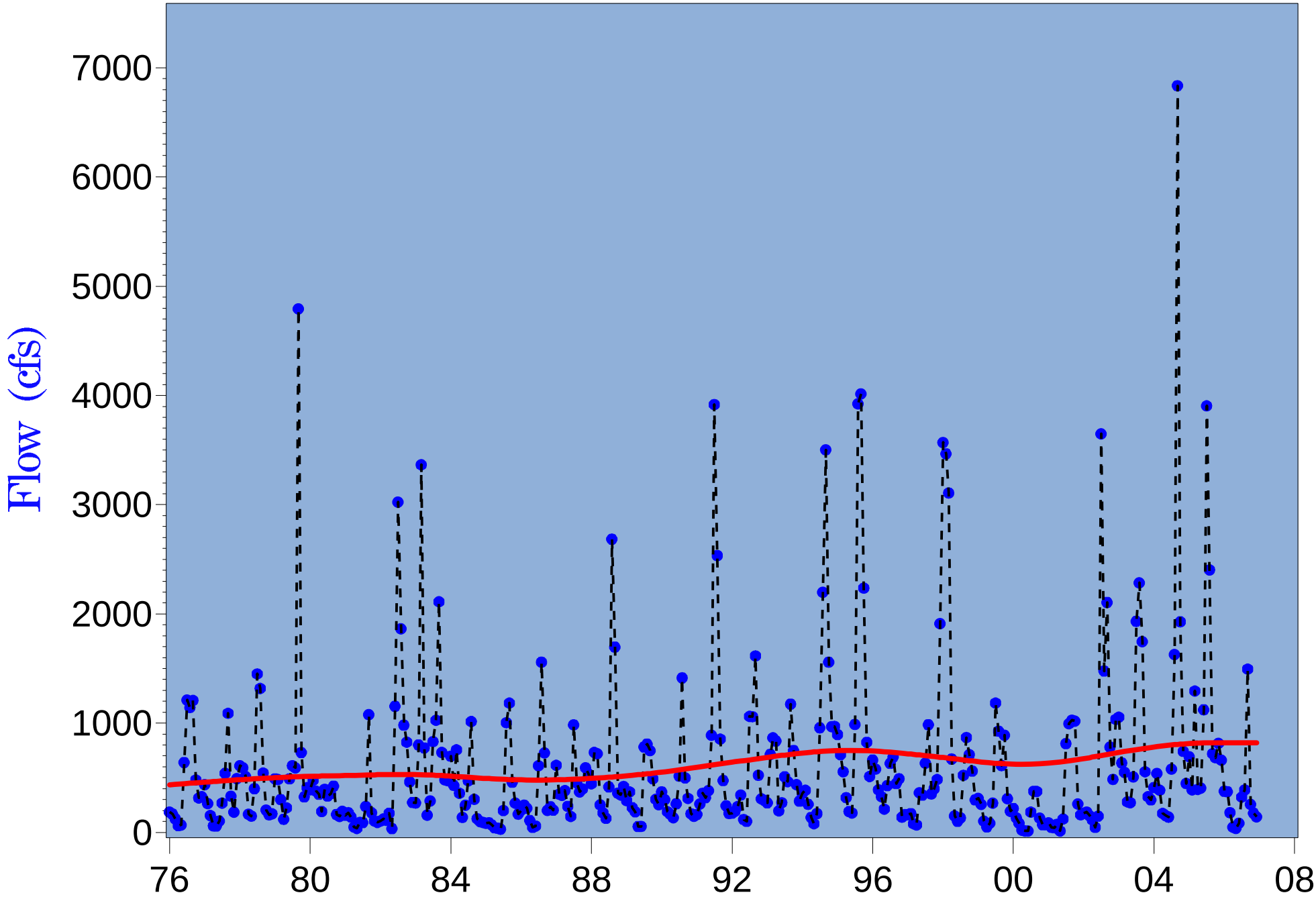


Figure 3.171 Monthly minimum flow of total gaged Peace River flow to the Upper Harbor (1976-2006)

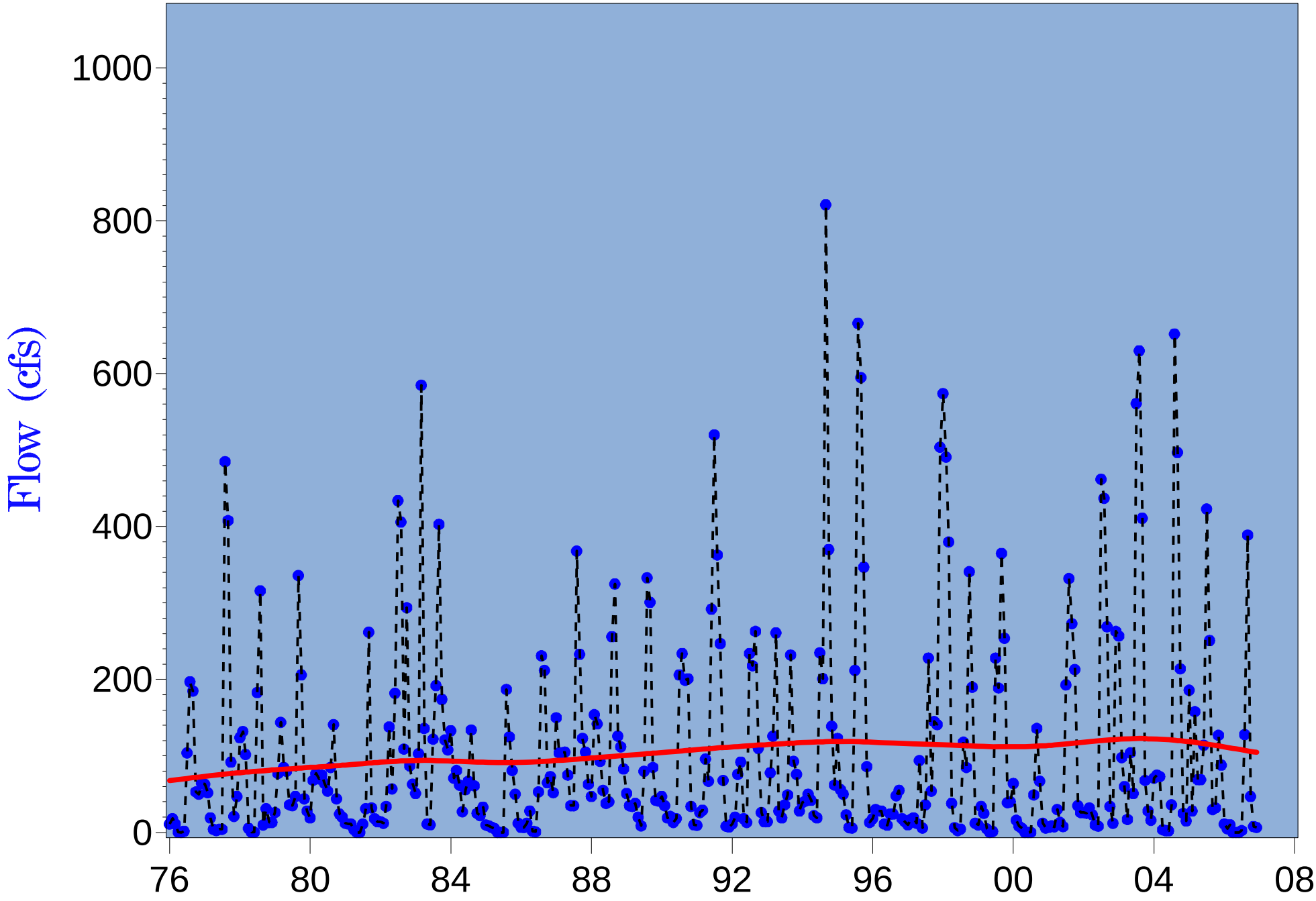


Figure 3.172 Monthly minimum flow at long-term Myakka River near Sarasota (2298830) gage (1976-2006)

Table 3.24
Summary of Results of Seasonal Kendall Trend Analyses
1976 Through 2006 - Monthly P75 Values (Q25)

USGS ID	Gage Identification	Time Interval	Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
Peace River Watershed						
2294650	Peace River at Bartow	1976-2006	0.01	0.814	0.917	0.11
2295420	Payne Creek near Bowling Green	1976-2006	0.11	0.005	0.211	1.28
2295637	Peace River at Zolfo Springs	1976-2006	0.02	0.613	0.814	1.00
2296500	Charlie Creek near Gardner	1976-2006	0.07	0.058	0.302	0.76
2296750	Peace River at Arcadia	1976-2006	0.04	0.257	0.578	2.89
2297100	Joshua Creek at Nocatee	1976-2006	0.18	0.000	**0.011**	1.00
2297310	Horse Creek near Arcadia	1976-2006	0.10	0.009	0.174	0.75
	Total Gaged Flow Upstream of the Facility	1976-2006	0.06	0.082	0.382	5.95
2298123	Prairie Creek near Fort Ogden	1976-2006	0.08	0.037	0.259	1.00
2298202	Shell Creek near Punta Gorda	1976-2006	0.07	0.064	0.296	1.53
	Total Gaged Peace River Flow to the Harbor	1976-2006	0.08	0.035	0.287	8.96
Reference Watershed						
2298830	Myakka River near Sarasota	1976-2006	0.06	0.086	0.335	1.12

* Red values denote significant trend at p=0.05 level, while blue indicates trends significant at p=0.10

** Positive Tau statistic and slope values indicate increasing trend over time, negative values correspond to declining changes in flow over time

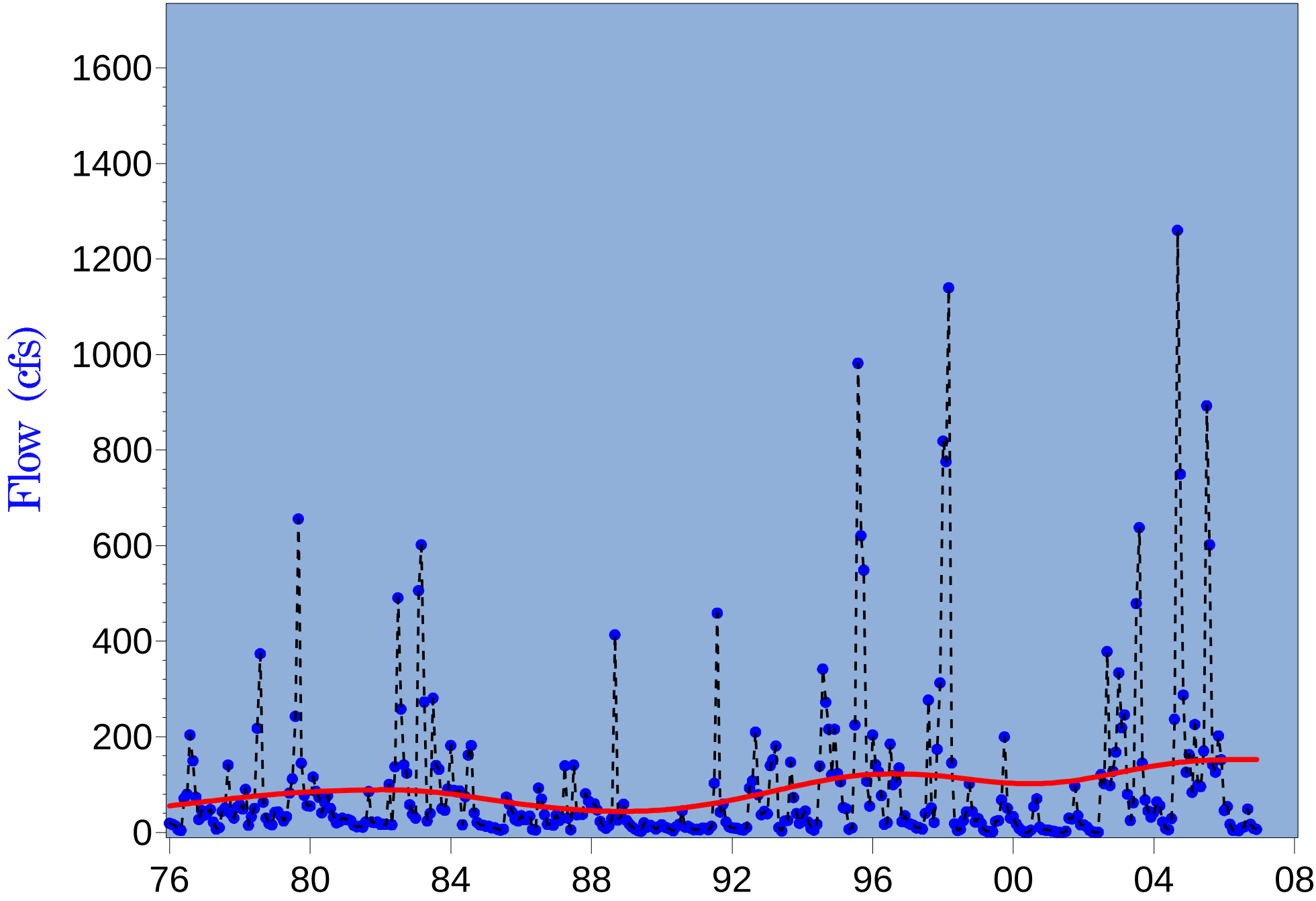


Figure 3.173 Monthly P10 flow at long-term Peace River at Bartow (2294650) gage (1976-2006)

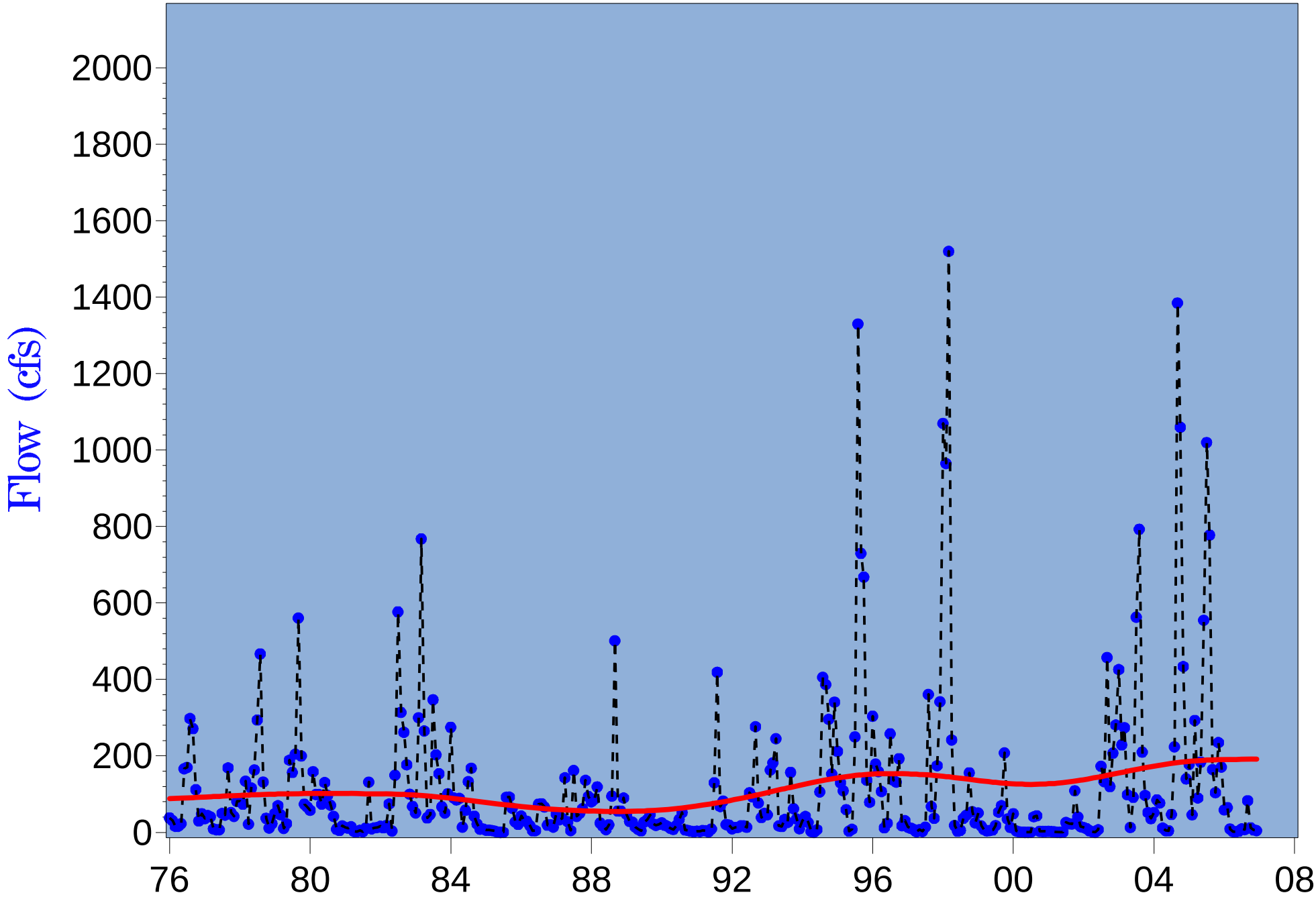


Figure 3.174 Monthly P10 flow at long-term Peace River at Ft. Meade (2294898) gage (1976-2006)

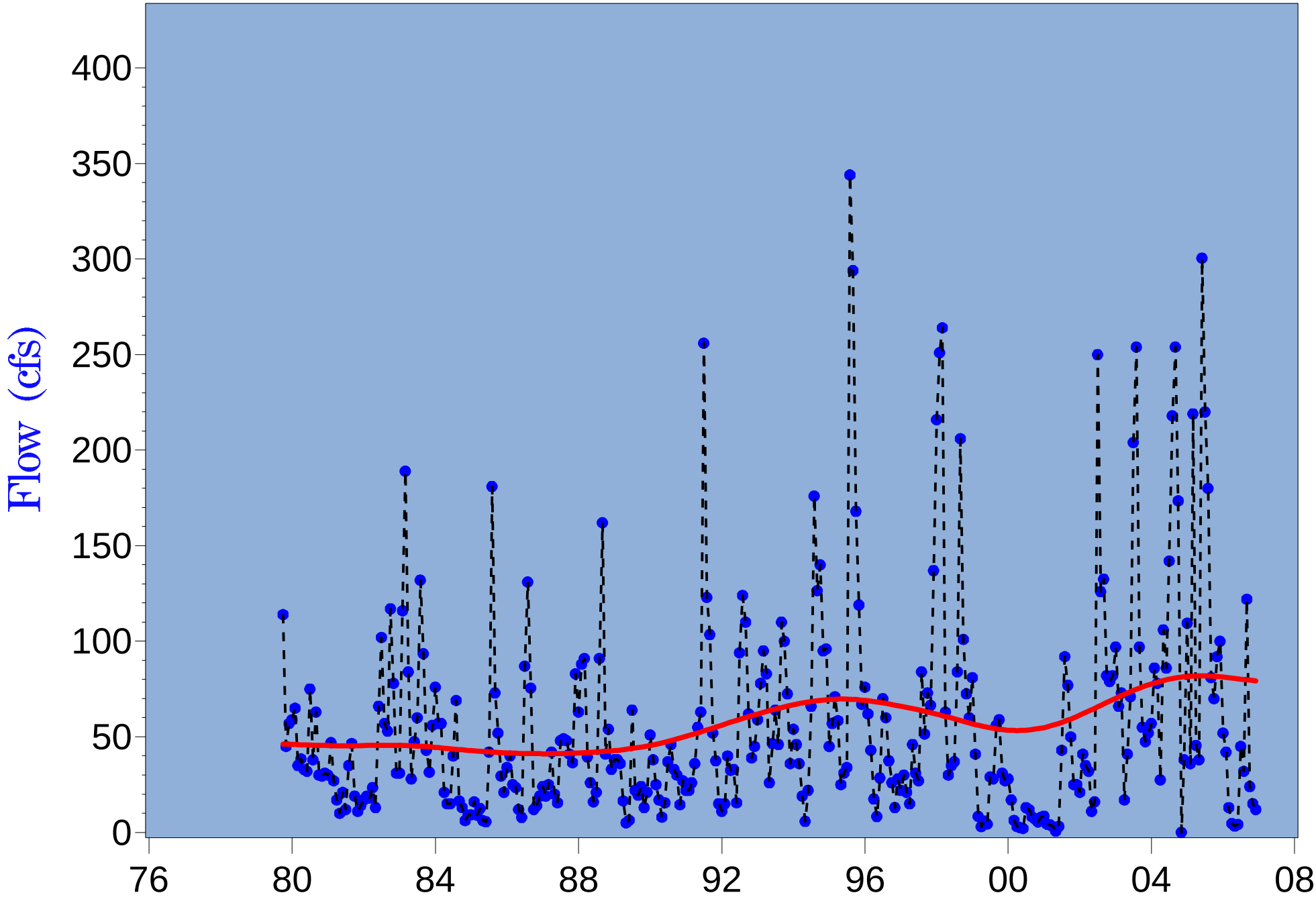


Figure 3.175 Monthly P10 flow at long-term Payne Creek (2295420) gage (1976-2006)

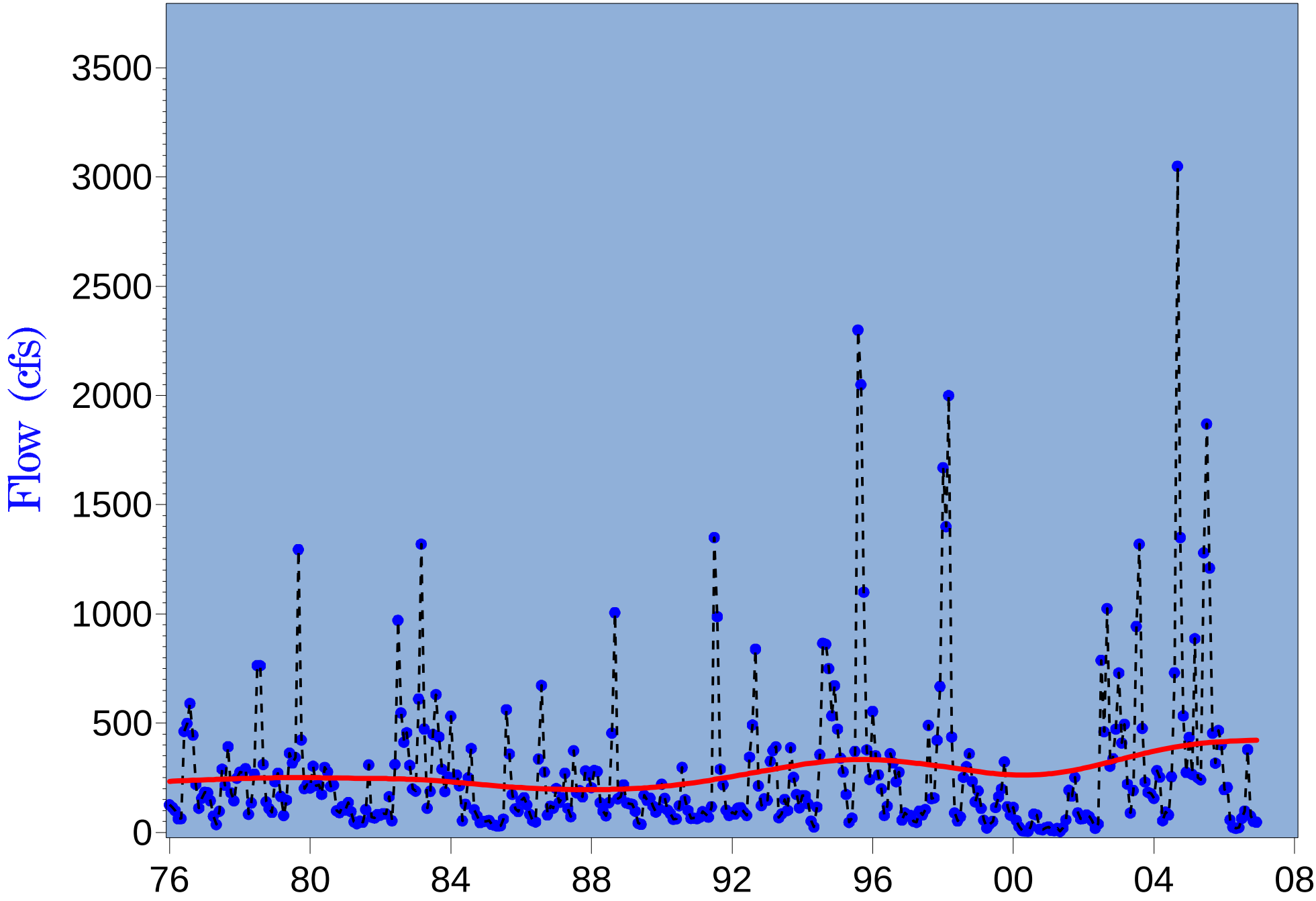


Figure 3.176 Monthly P10 flow at long-term Peace River at Zolfo (2295637) gage (1976-2006)

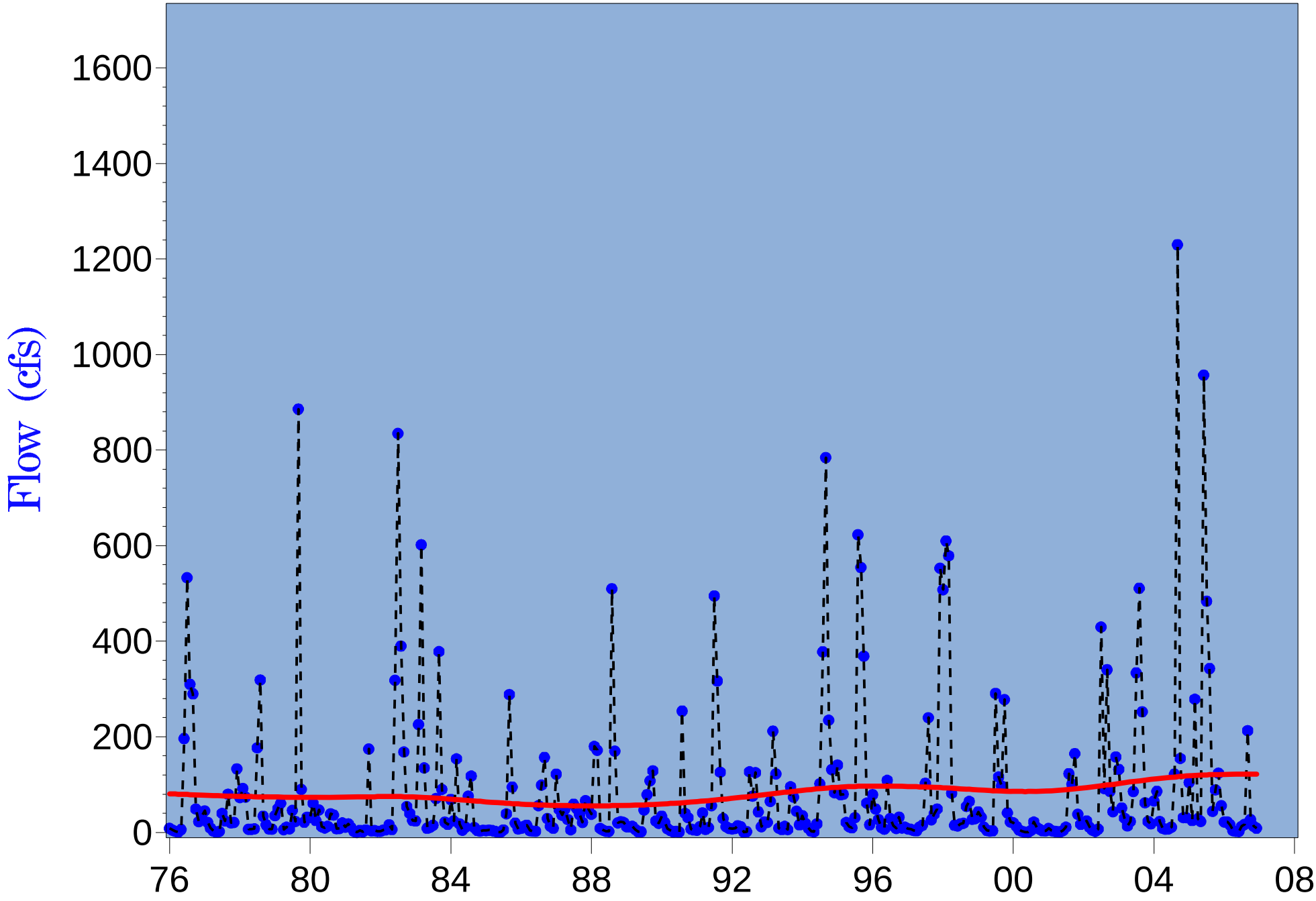


Figure 3.177 Monthly P10 flow at long-term Charlie Creek (2296500) gage (1976-2006)

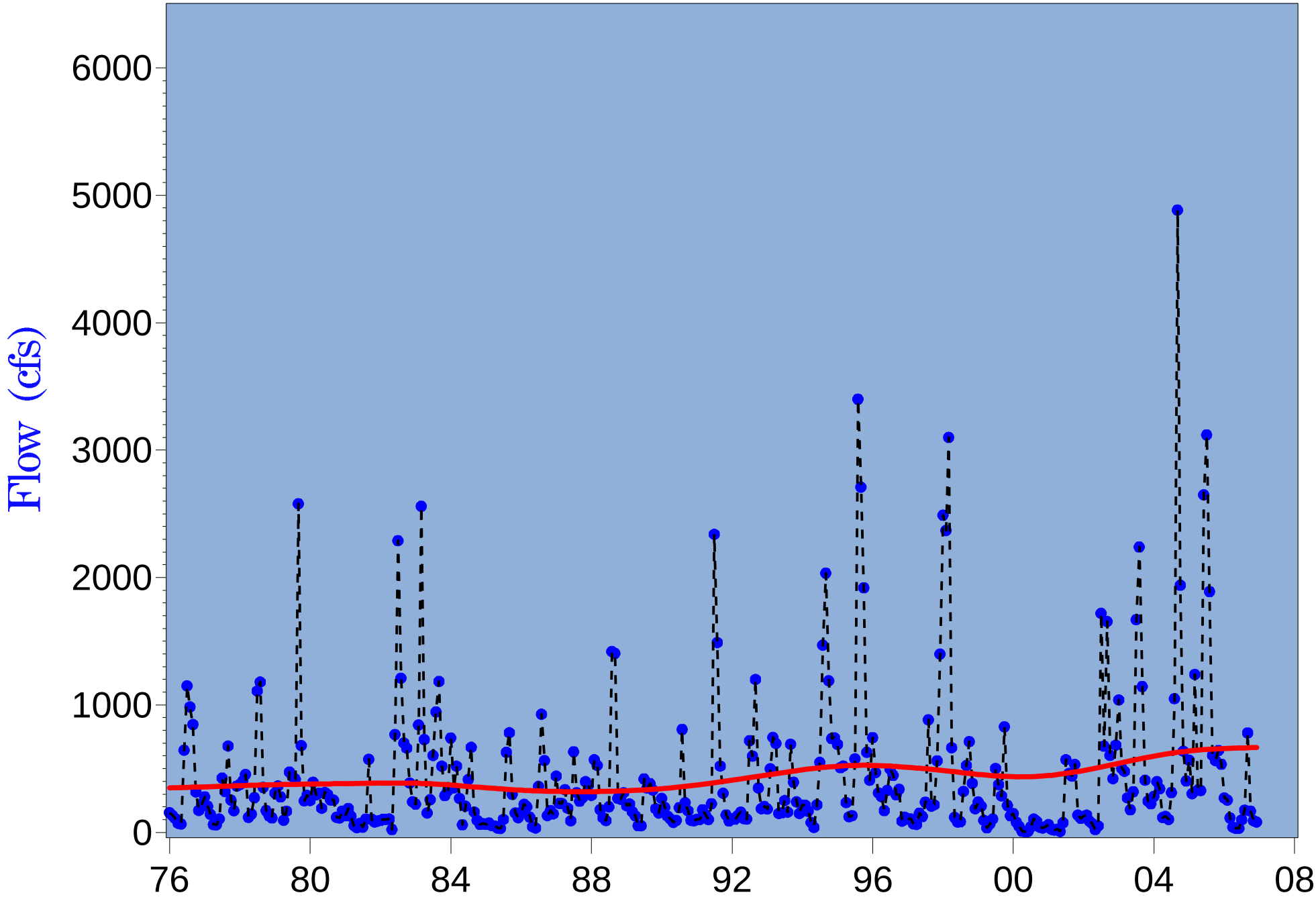


Figure 3.178 Monthly P10 flow at long-term Peace River at Arcadia (2296750) gage (1976-2006)

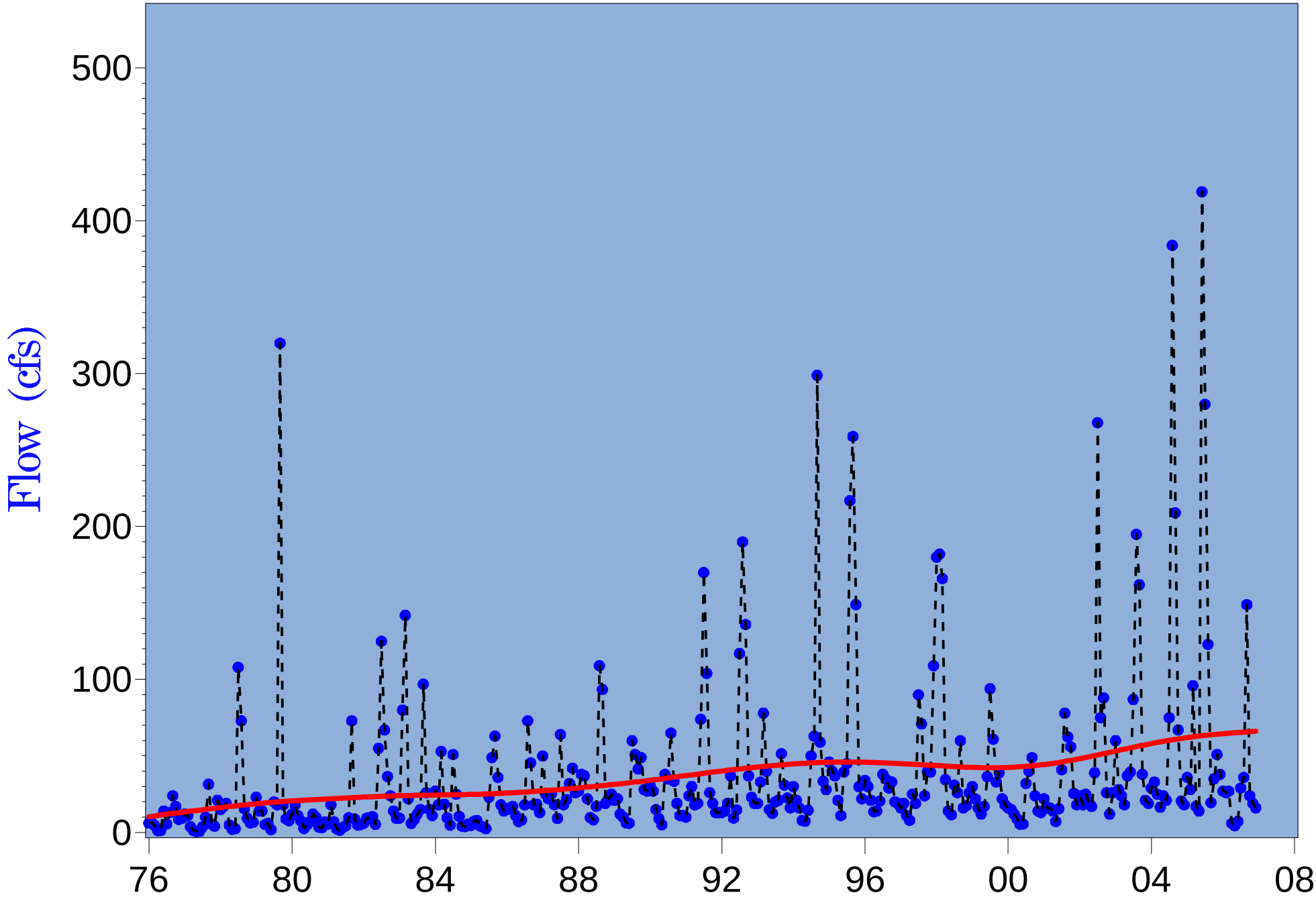


Figure 3.179 Monthly P10 flow at long-term Joshua Creek at Nocatee (2297100) gage (1976-2006)

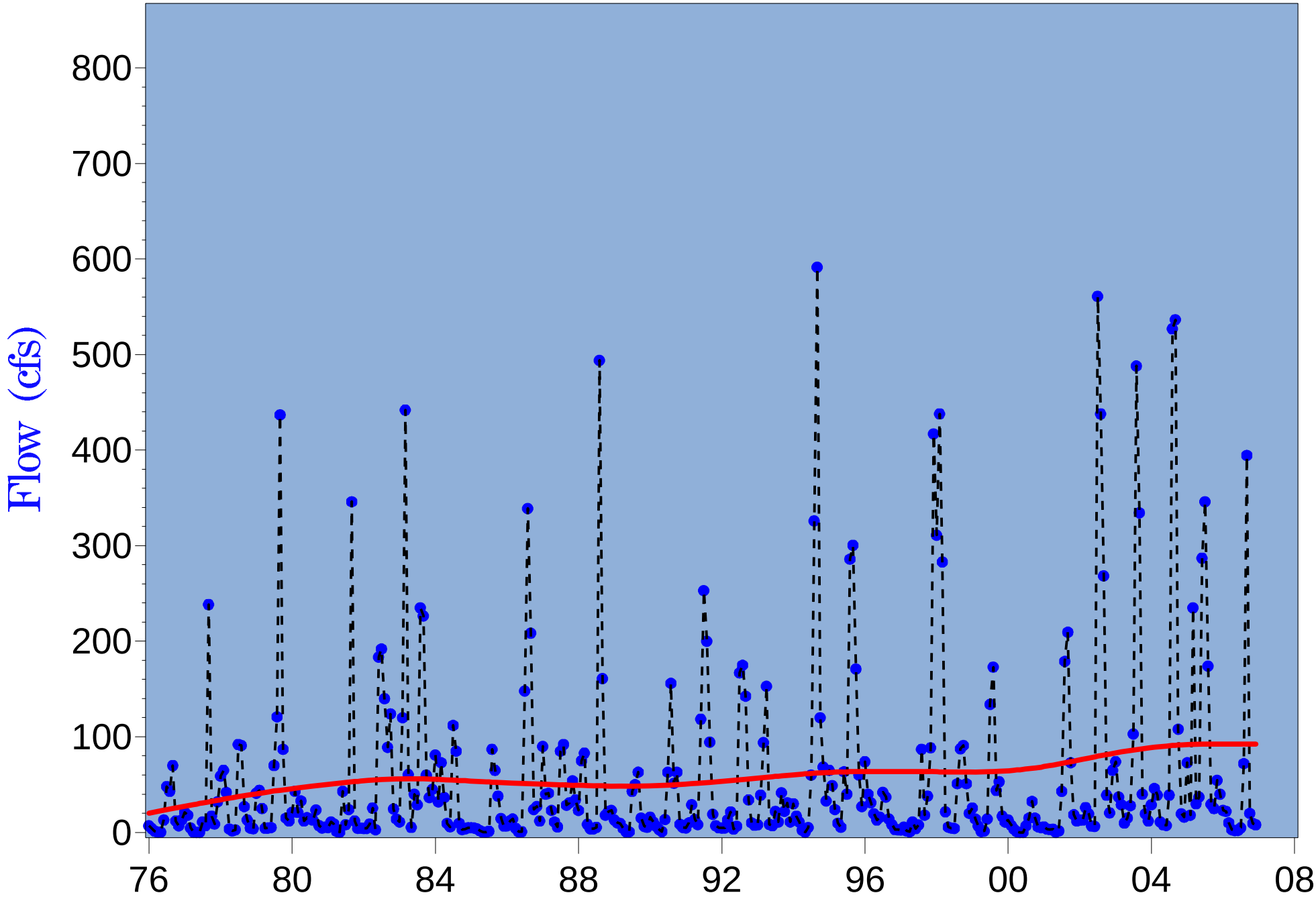


Figure 3.180 Monthly P10 flow at long-term Horse Creek near Arcadia(2297310) gage (1976-2006)

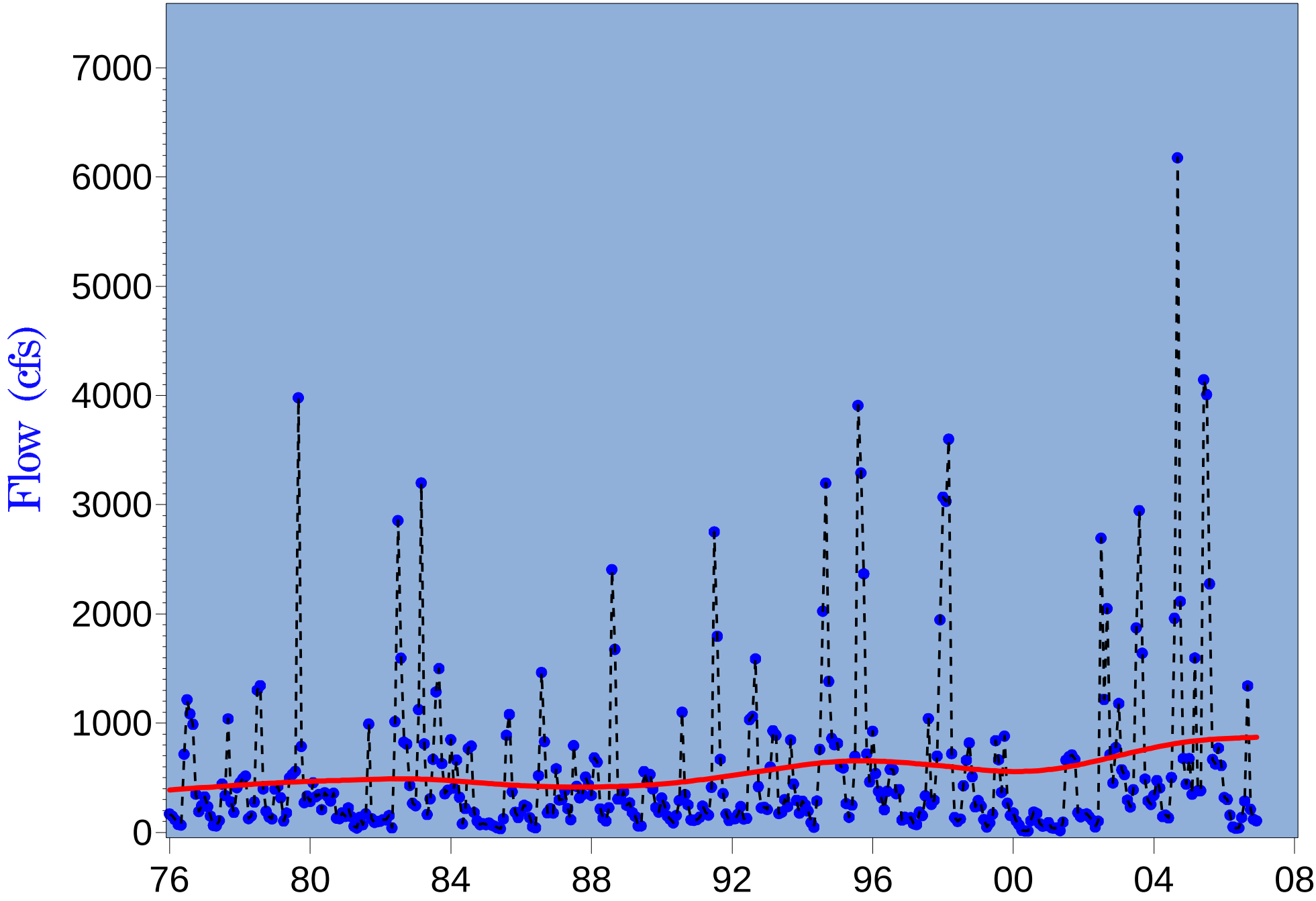


Figure 3.181 Monthly P10 flow at long-term for total gaged flow upstream of the Facility (1976-2006)

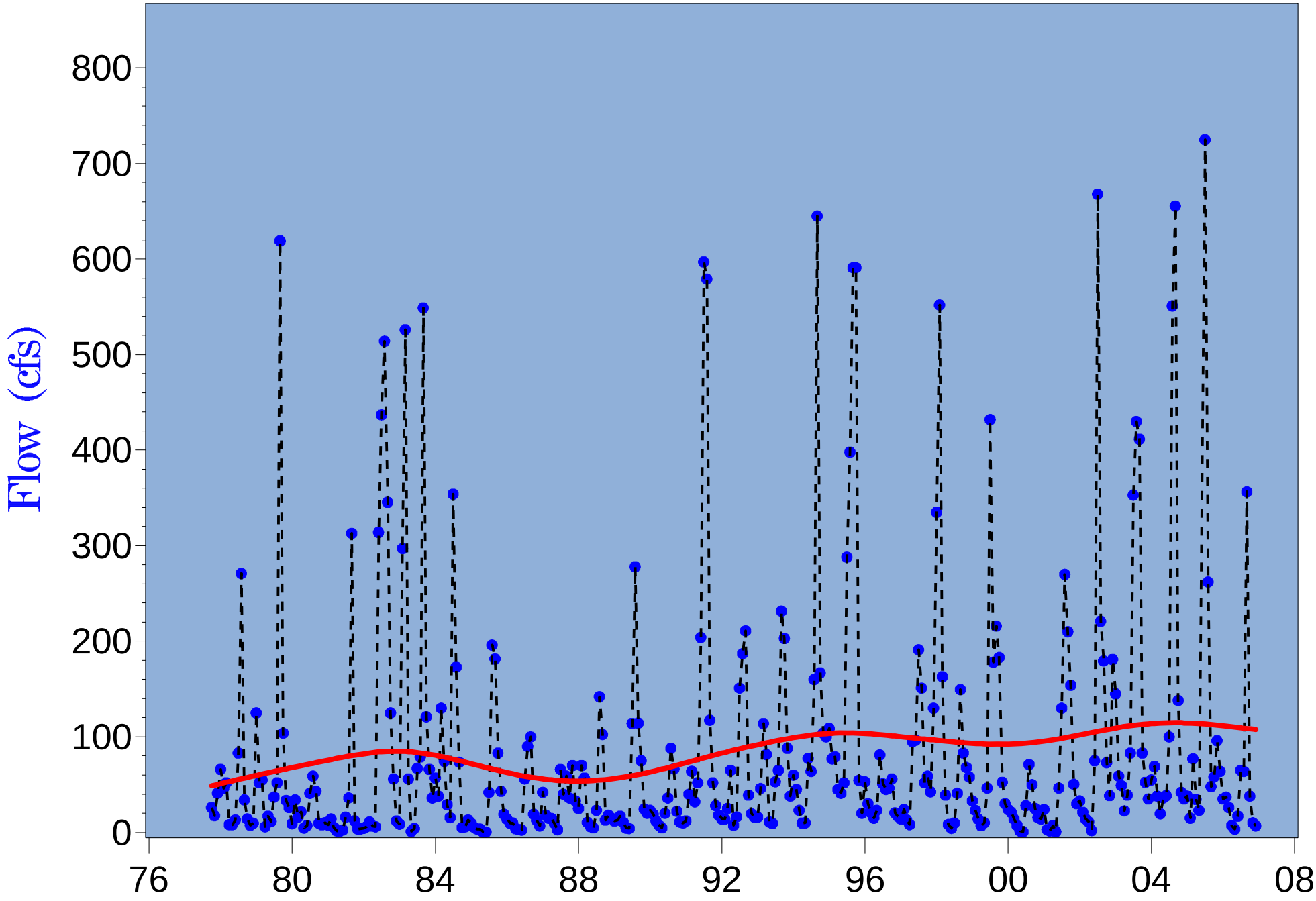


Figure 3.182 Monthly P10 flow at long-term Prairie Creek (2298123) gage (1976-2006)

Table 3.25
Summary of Results of Seasonal Kendall Trend Analyses
1976 Through 2006 - Monthly P90 Values (Q10)

USGS ID	Gage Identification	Time Interval	Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
Peace River Watershed						
2294650	Peace River at Bartow	1976-2006	0.03	0.430	0.730	0.43
2295420	Payne Creek near Bowling Green	1976-2006	0.10	0.014	0.254	1.72
2295637	Peace River at Zolfo Springs	1976-2006	0.03	0.462	0.724	1.71
2296500	Charlie Creek near Gardner	1976-2006	0.07	0.054	0.284	1.38
2296750	Peace River at Arcadia	1976-2006	0.06	0.095	0.398	5.51
2297100	Joshua Creek at Nocatee	1976-2006	0.15	0.000	**0.027**	1.35
2297310	Horse Creek near Arcadia	1976-2006	0.10	0.006	0.150	1.50
	Total Gaged Flow Upstream of the Facility	1976-2006	0.08	0.021	0.239	10.54
2298123	Prairie Creek near Fort Ogden	1976-2006	0.05	0.152	0.428	0.96
2298202	Shell Creek near Punta Gorda	1976-2006	0.06	0.079	0.332	2.00
	Total Gaged Peace River Flow to the Harbor	1976-2006	0.09	0.018	0.224	13.67
Reference Watershed						
2298830	Myakka River near Sarasota	1976-2006	0.08	0.037	0.254	1.88

* Red values denote significant trend at p=0.05 level, while blue indicates trends significant at p=0.10

** Positive Tau statistic and slope values indicate increasing trend over time, negative values correspond to declining changes in flow over time

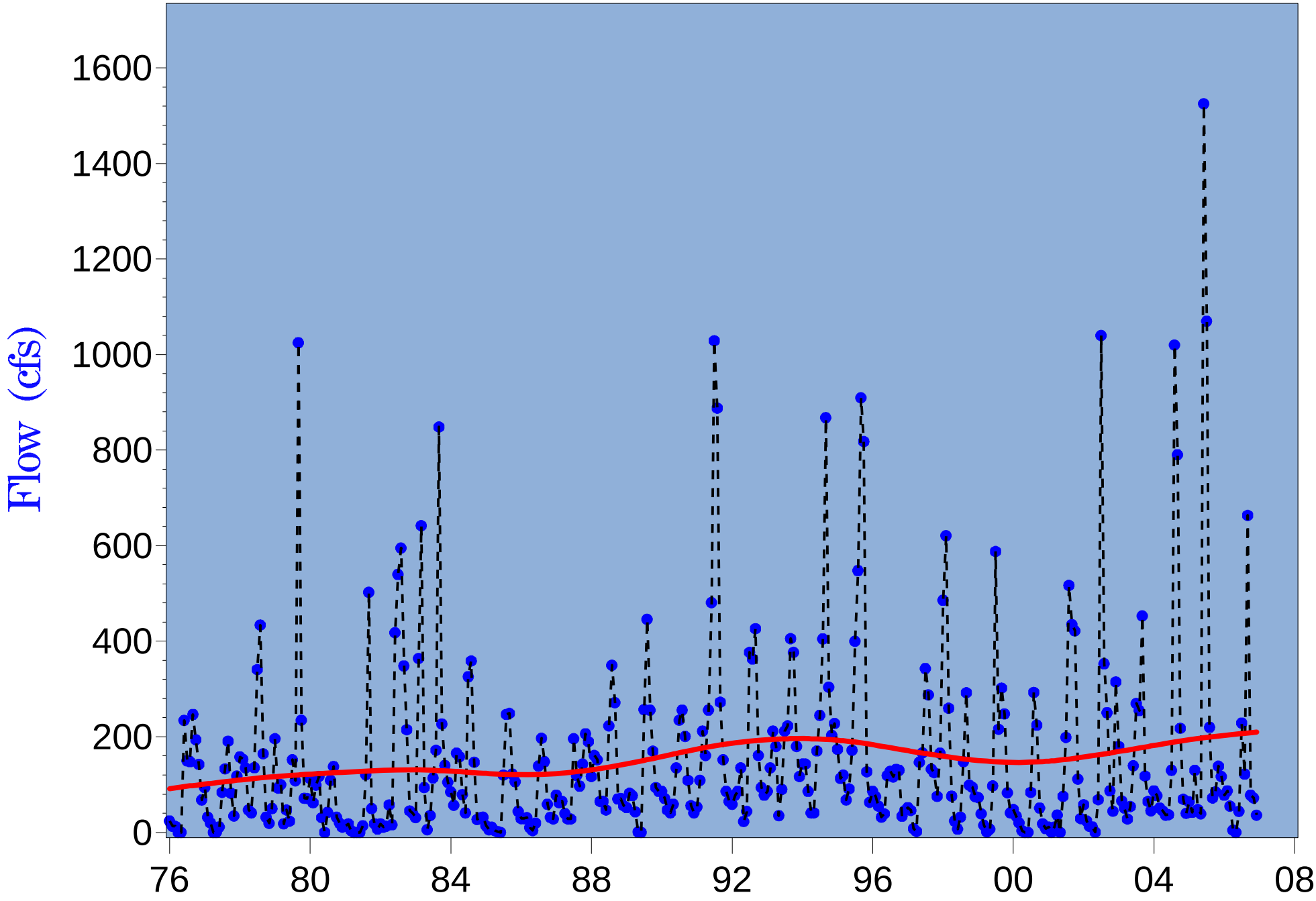


Figure 3.183 Monthly P10 flow at long-term Shell Creek gage (1976-2006)

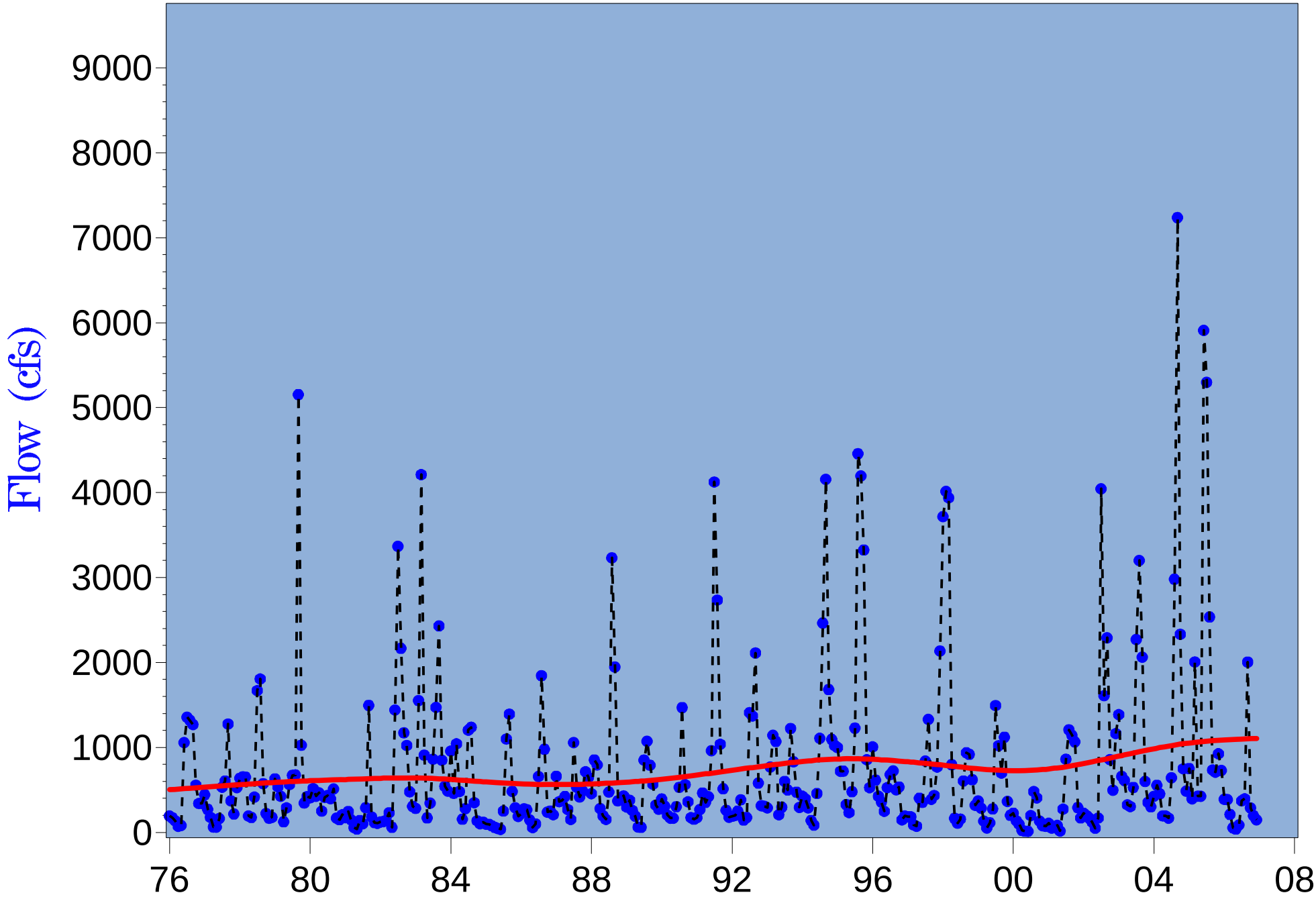


Figure 3.184 Monthly P10 flow of total gaged Peace River flow to the Upper Harbor (1976-2006)

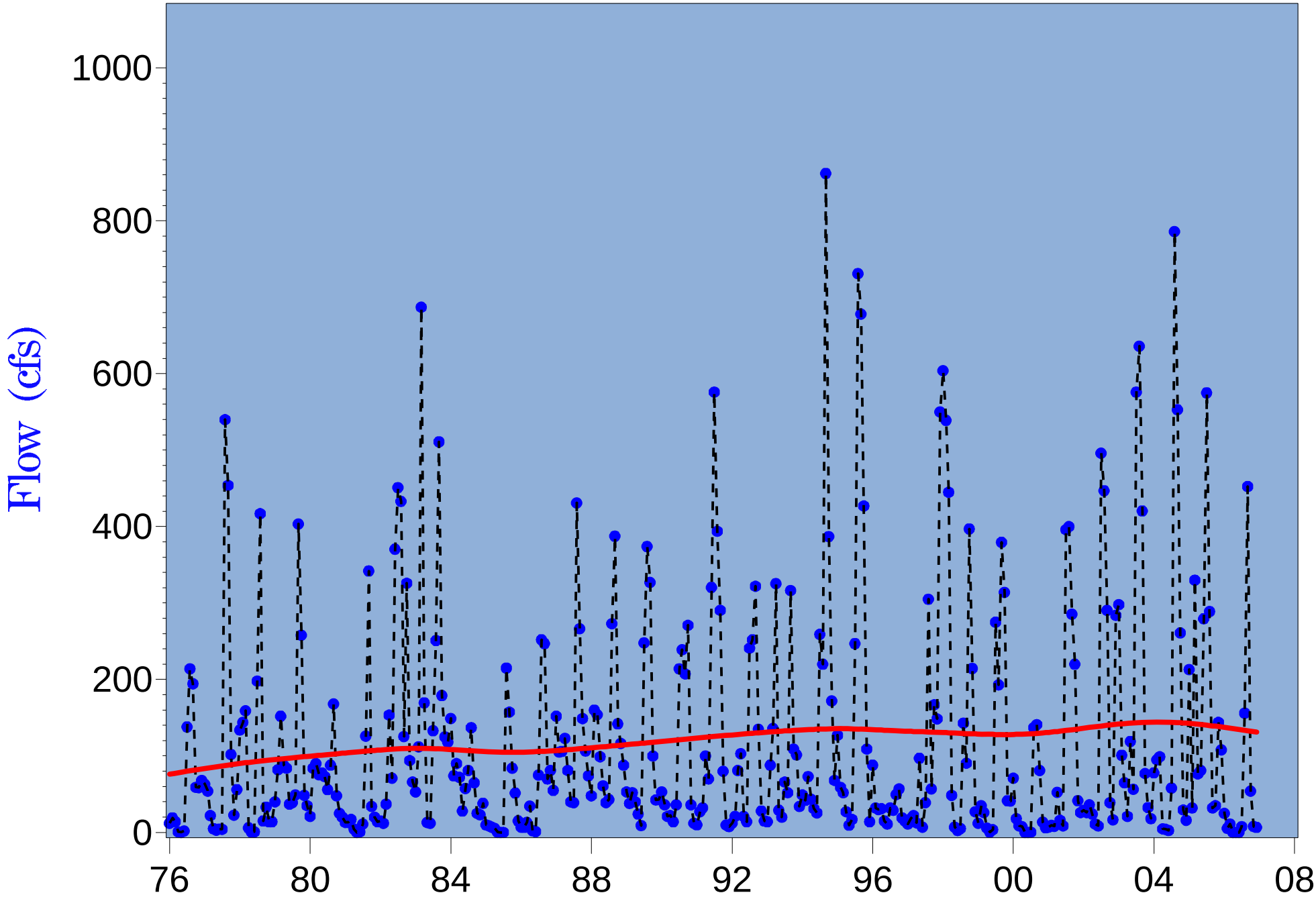


Figure 3.185 Monthly P10 flow at long-term Myakka River near Sarasota (2298830) gage (1976-2006)

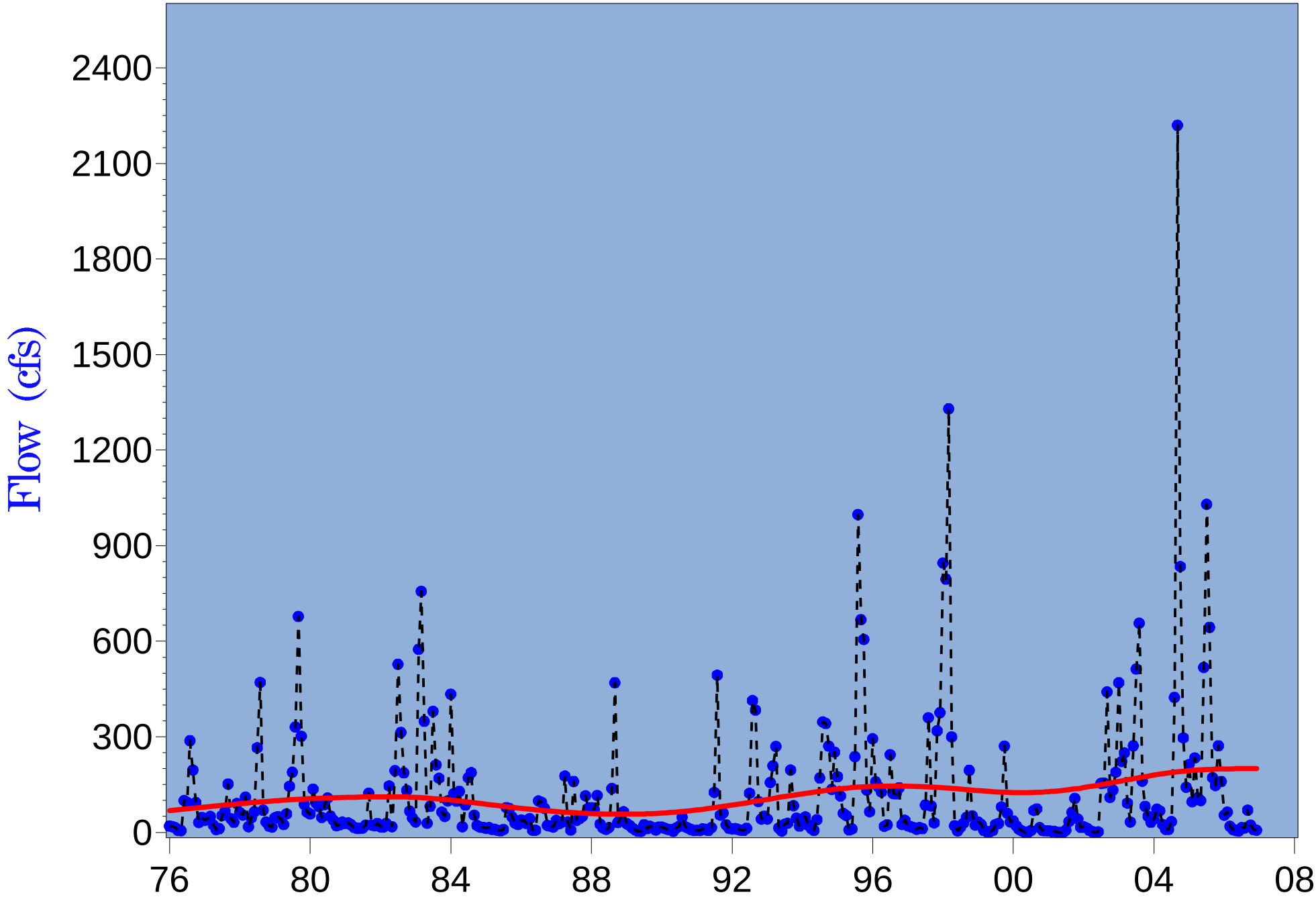


Figure 3.186 Monthly P25 flow at long-term Peace River at Bartow (2294650) gage (1976-2006)

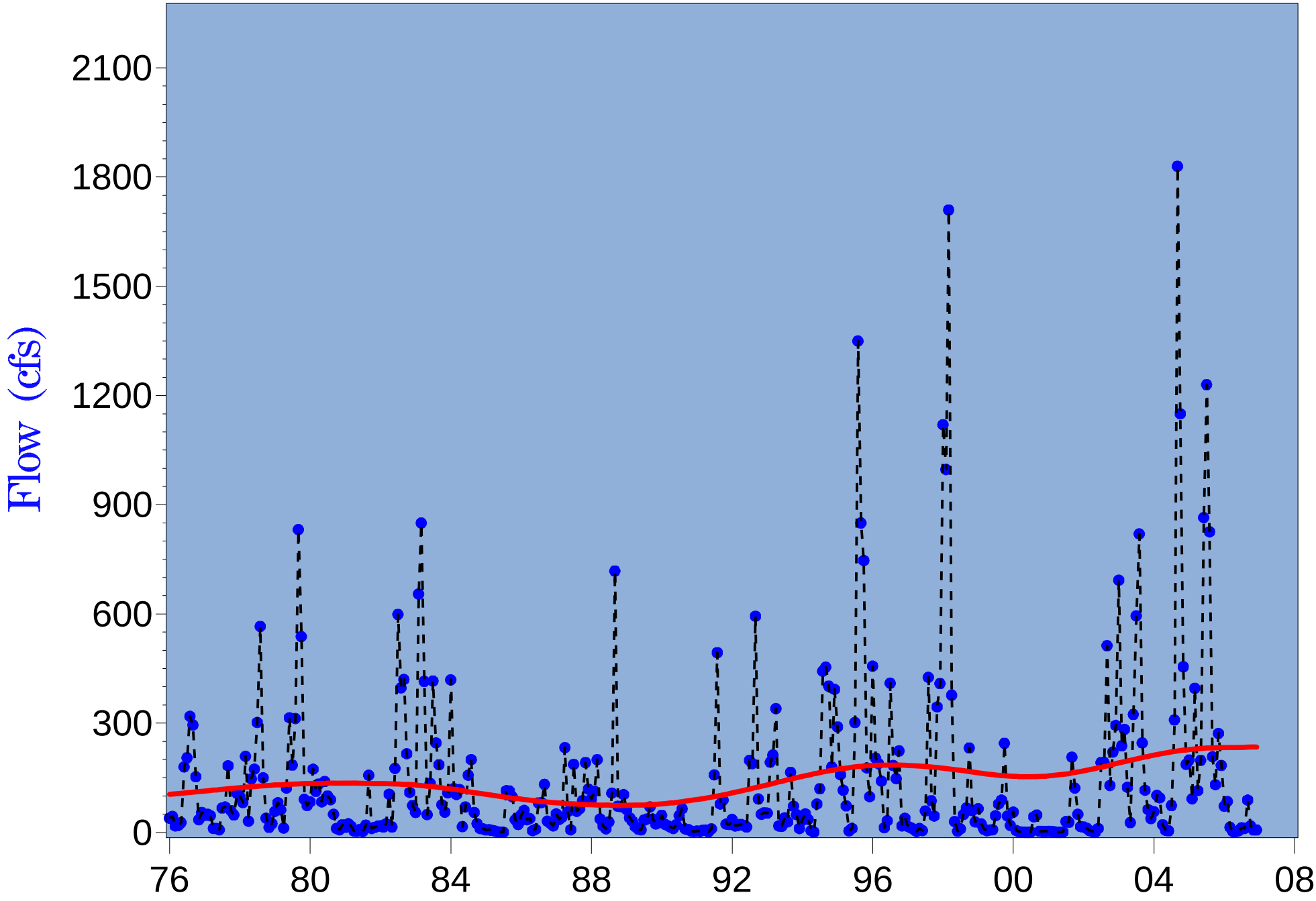


Figure 3.187 Monthly P25 flow at long-term Peace River at Ft. Meade (2294898) gage (1976-2006)

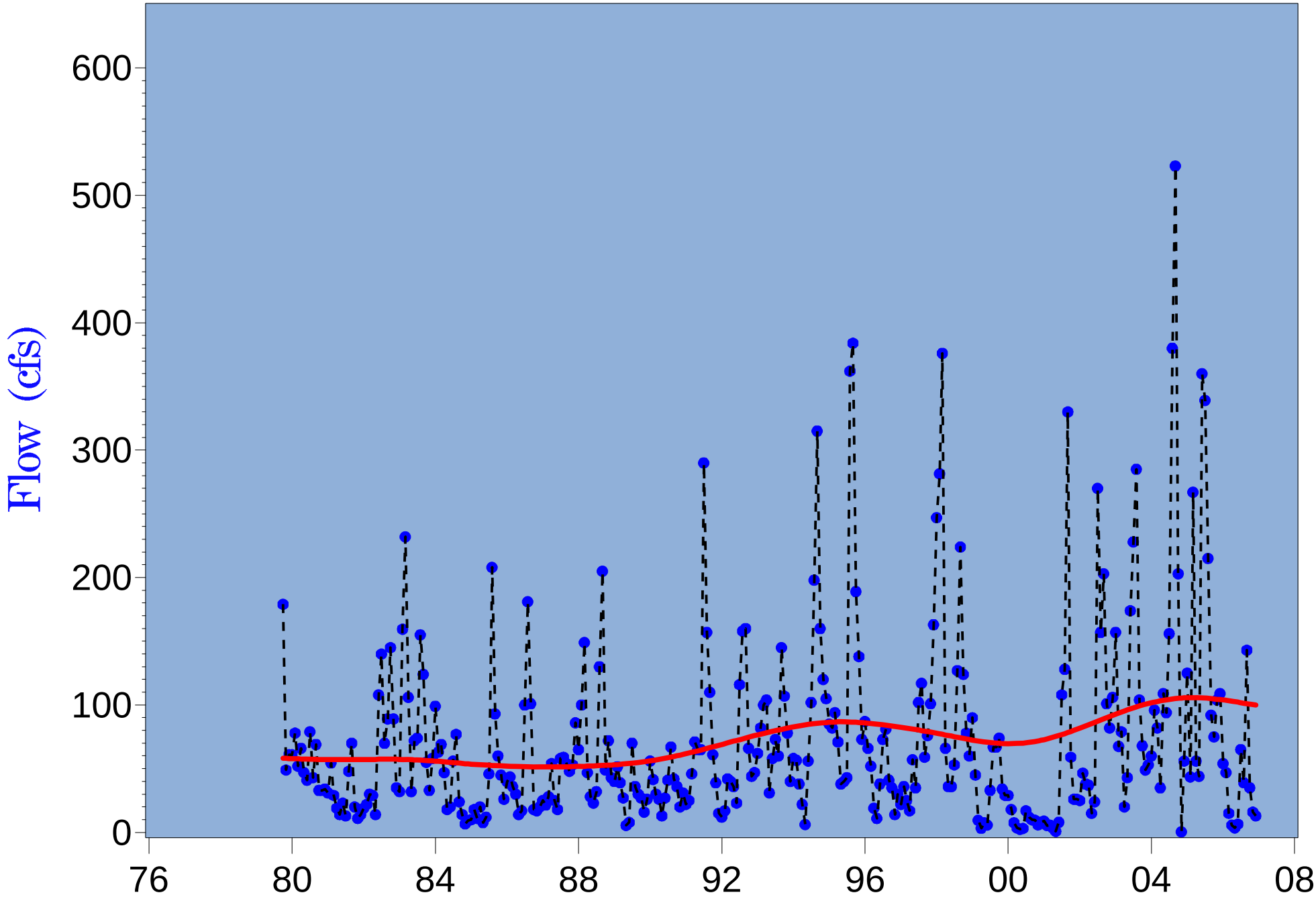


Figure 3.188 Monthly P25 flow at long-term Payne Creek (2295420) gage (1976-2006)

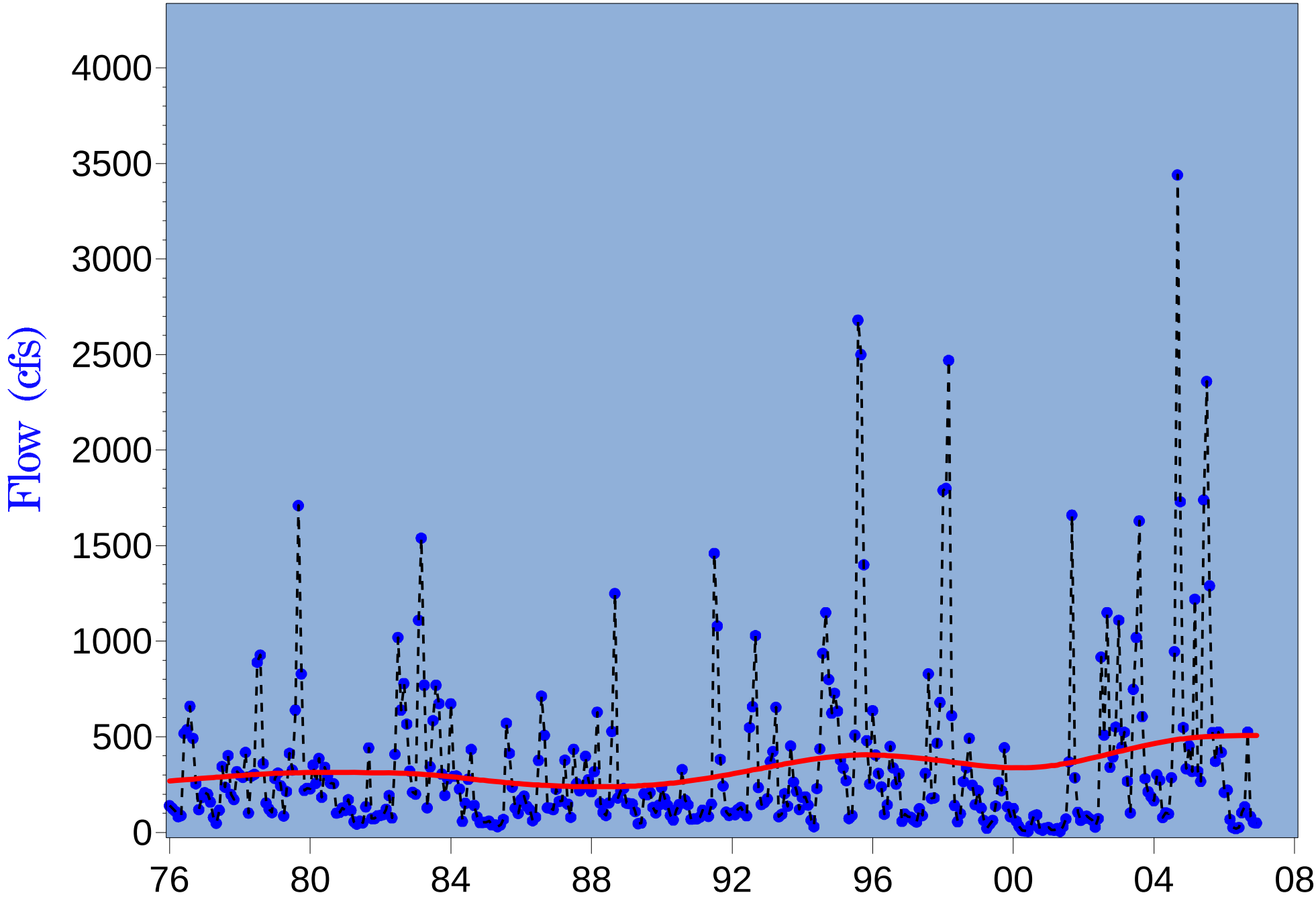


Figure 3.189 Monthly P25 flow at long-term Peace River at Zolfo (2295637) gage (1976-2006)

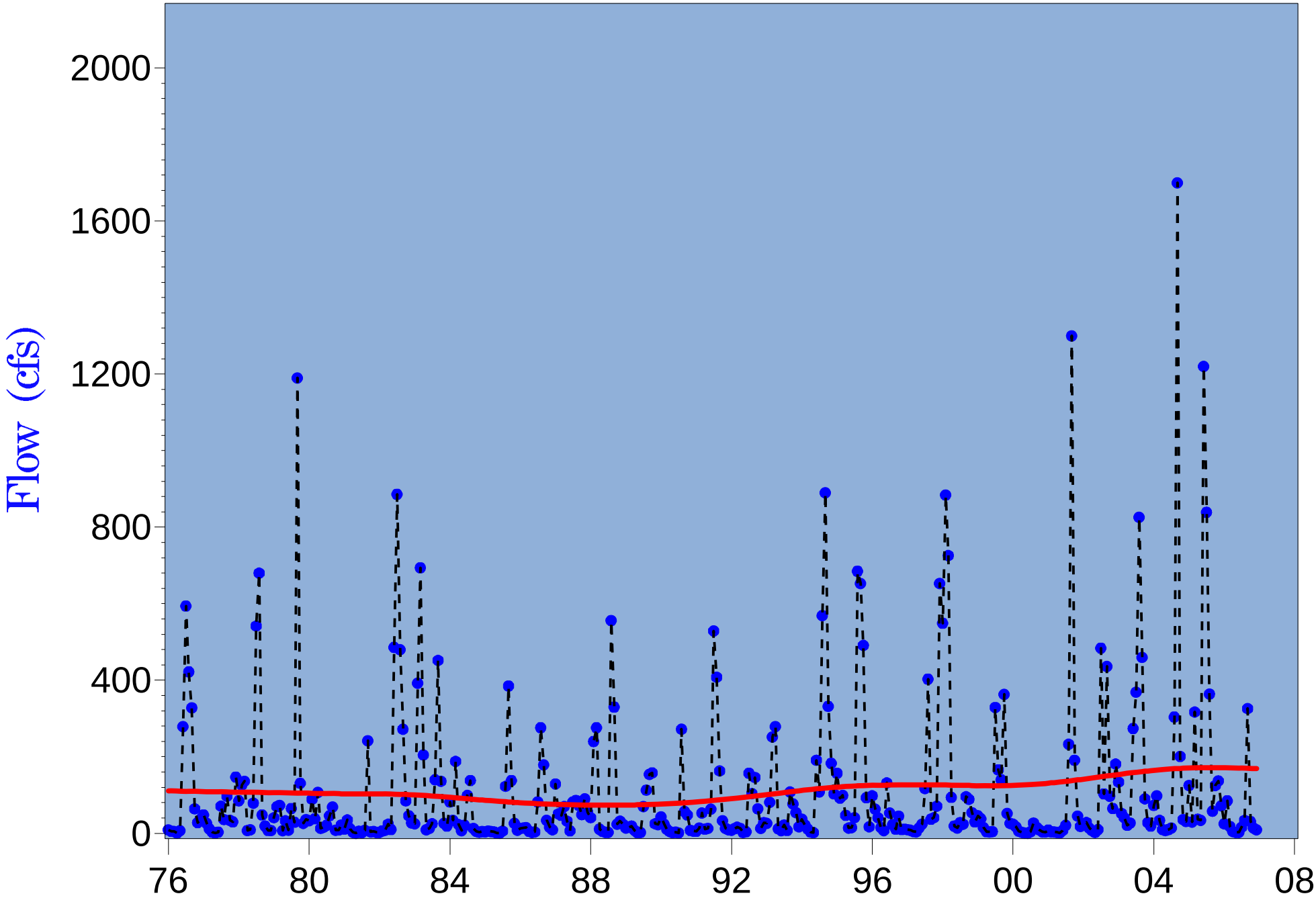


Figure 3.190 Monthly P25 flow at long-term Charlie Creek (2296500) gage (1976-2006)

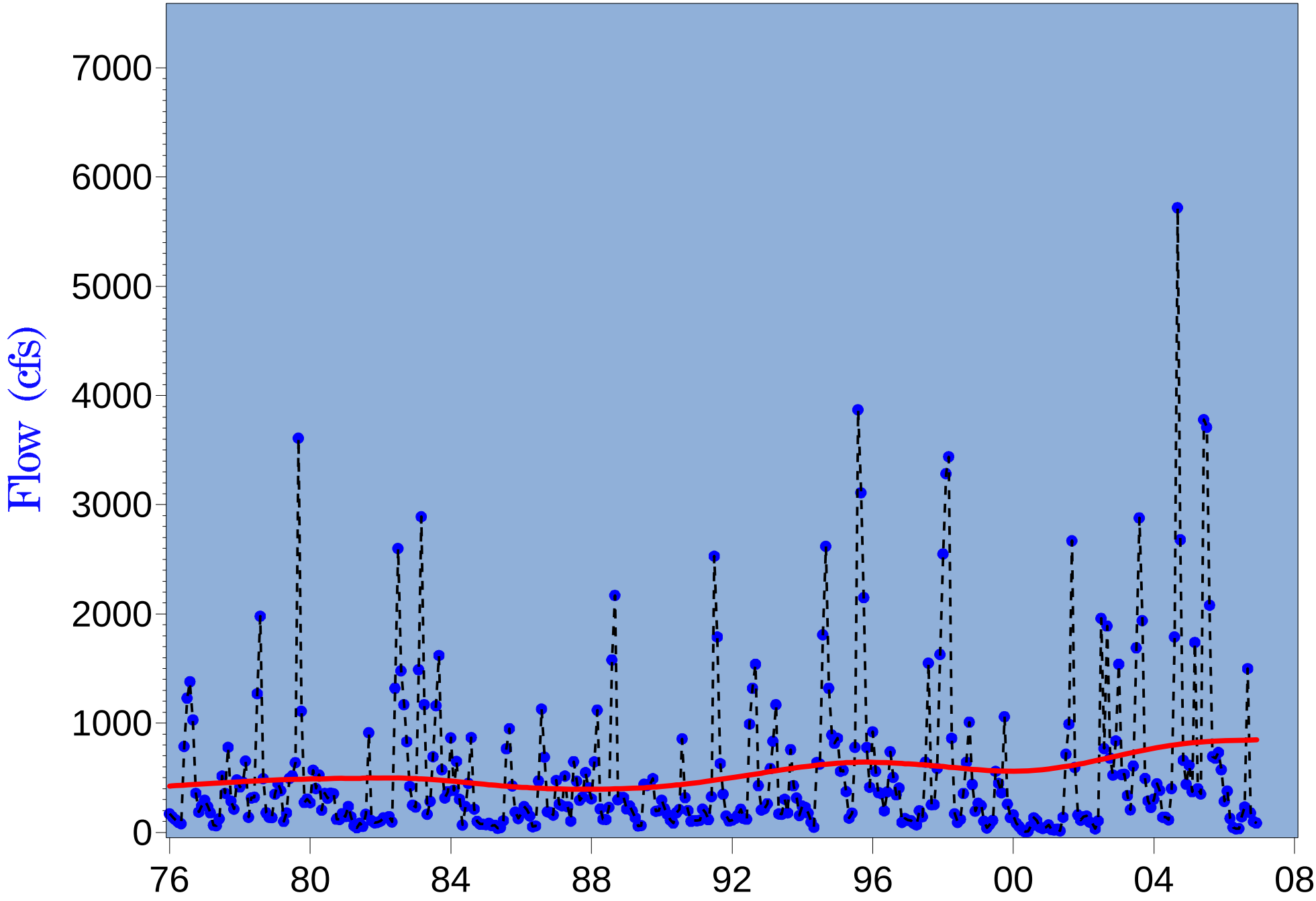


Figure 3.191 Monthly P25 flow at long-term Peace River at Arcadia (2296750) gage (1976-2006)

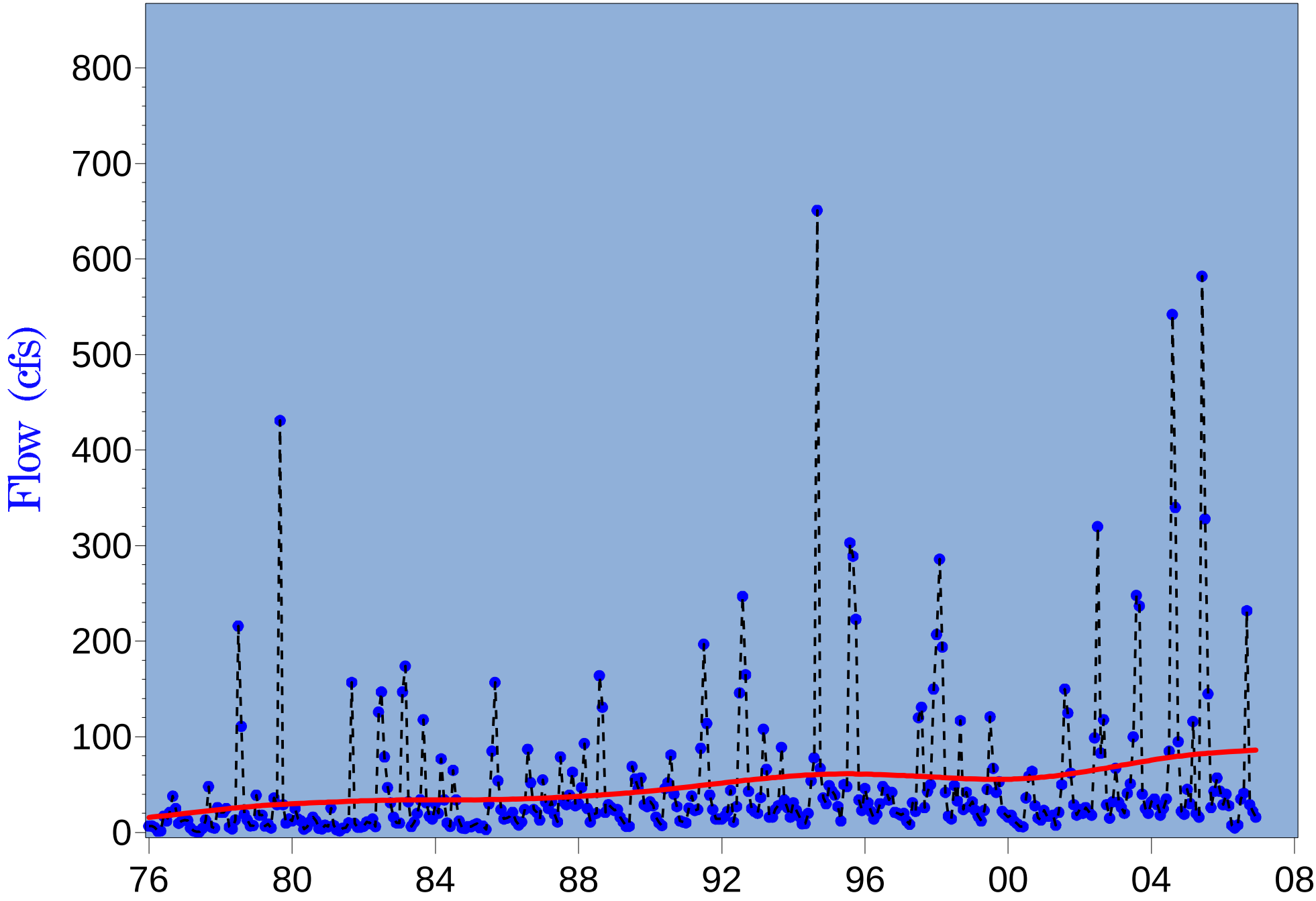


Figure 3.192 Monthly P25 flow at long-term Joshua Creek at Nocatee (2297100) gage (1976-2006)

Table 1.2
Population in Counties Served by PRMRWSA
(estimated values after 2006)

Year	Charlotte	DeSoto	Manatee	Sarasota	Regional
2004	156,985	34,105	295,242	358,307	844,639
2005	154,030	32,606	304,364	367,867	858,867
2006	160,315	33,164	308,325	379,386	881,190
2007	164,653	33,776	316,023	387,624	902,076
2008	168,399	34,258	321,917	394,530	919,104
2009	172,016	34,949	329,960	404,585	941,510
2010	175,389	35,707	338,254	412,970	962,320
2011	178,602	36,473	345,468	420,545	981,088
2012	181,976	37,295	352,381	428,157	999,809
2013	185,497	38,154	359,121	435,860	1,018,632
2014	189,113	39,023	365,743	443,616	1,037,495
2015	192,753	39,870	372,269	451,354	1,056,246
2016	196,035	40,498	378,761	458,631	1,073,925
2017	199,275	41,083	385,177	465,815	1,091,350
2018	202,464	41,632	391,502	472,888	1,108,486
2019	205,582	42,149	397,687	479,795	1,125,213
2020	208,615	42,641	403,707	486,507	1,141,470
2021	211,557	43,151	409,535	493,007	1,157,250
2022	214,417	43,645	415,193	499,308	1,172,563
2023	217,207	44,125	420,702	505,434	1,187,468
2024	219,952	44,595	426,112	511,447	1,202,106
2025	222,668	45,060	431,448	517,374	1,216,550
2026	225,374	45,518	436,712	523,216	1,230,820
2027	228,053	45,971	441,912	528,984	1,244,920
2028	230,701	46,418	447,044	534,672	1,258,835
2029	233,304	46,858	452,086	540,255	1,272,503
2030	235,855	47,291	457,030	545,724	1,285,900

Table 3.26
Summary of Results of Seasonal Kendall Trend Analyses
1976 Through 2006 - Monthly Maximum Values (P100)

USGS ID	Gage Identification	Time Interval	Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
Peace River Watershed						
2294650	Peace River at Bartow	1976-2006	0.04	0.296	0.642	0.67
2295420	Payne Creek near Bowling Green	1976-2006	0.09	0.027	0.276	1.90
2295637	Peace River at Zolfo Springs	1976-2006	0.05	0.206	0.527	4.00
2296500	Charlie Creek near Gardner	1976-2006	0.06	0.126	0.400	1.62
2296750	Peace River at Arcadia	1976-2006	0.06	0.131	0.446	7.29
2297100	Joshua Creek at Nocatee	1976-2006	0.12	0.001	**0.055**	1.69
2297310	Horse Creek near Arcadia	1976-2006	0.09	0.014	0.187	1.94
	Total Gaged Flow Upstream of the Facility	1976-2006	0.08	0.028	0.262	12.52
2298123	Prairie Creek near Fort Ogden	1976-2006	0.04	0.310	0.580	1.03
2298202	Shell Creek near Punta Gorda	1976-2006	0.07	0.059	0.293	2.44
	Total Gaged Peace River Flow to the Harbor	1976-2006	0.09	0.018	0.224	17.79
Reference Watershed						
2298830	Myakka River near Sarasota	1976-2006	0.08	0.021	0.204	2.37

* Red values denote significant trend at p=0.05 level, while blue indicates trends significant at p=0.10

** Positive Tau statistic and slope values indicate increasing trend over time, negative values correspond to declining changes in flow over time

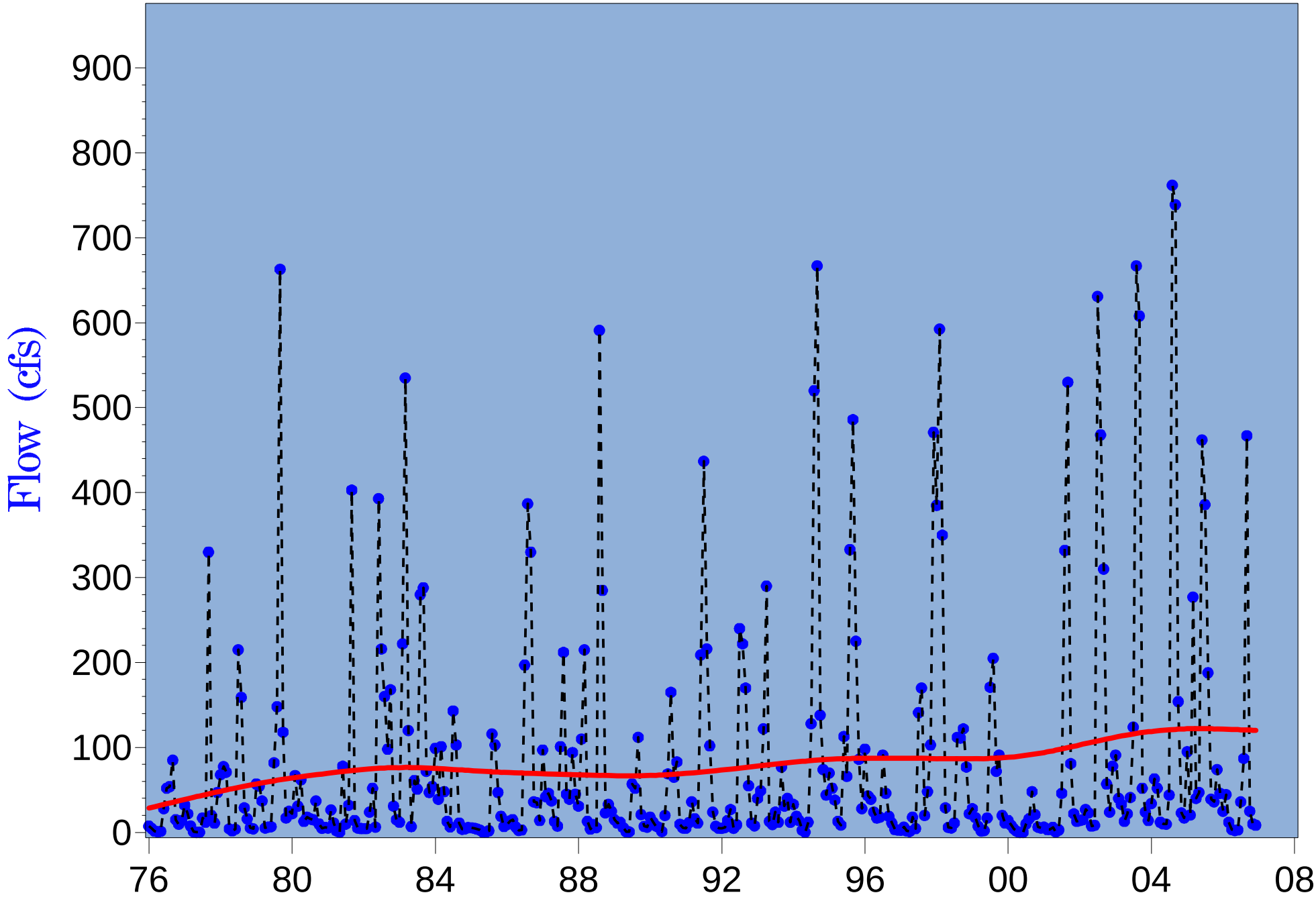


Figure 3.193 Monthly P25 flow at long-term Horse Creek near Arcadia(2297310) gage (1976-2006)

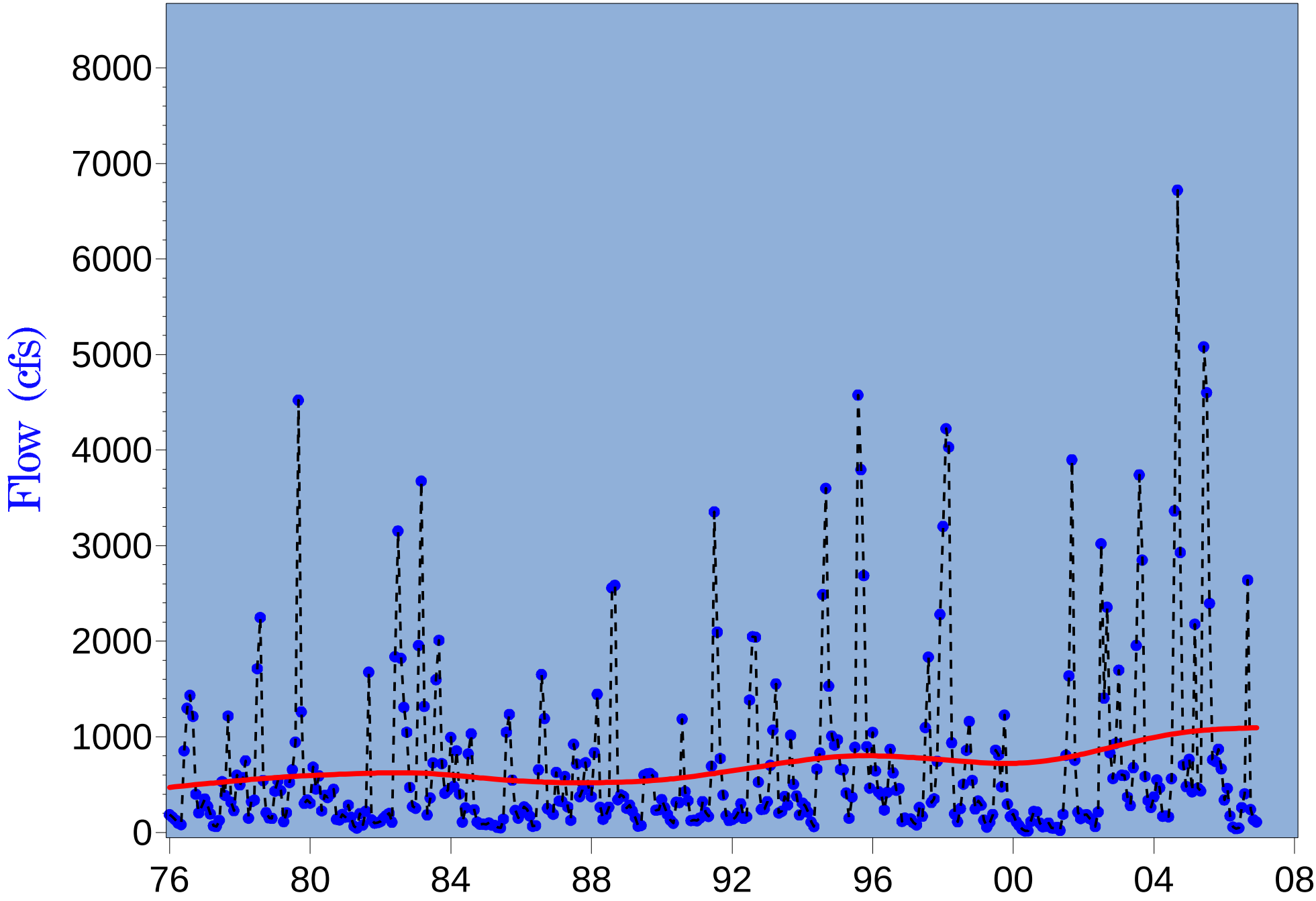


Figure 3.194 Monthly P25 flow at long-term for total gaged flow upstream of the Facility (1976-2006)

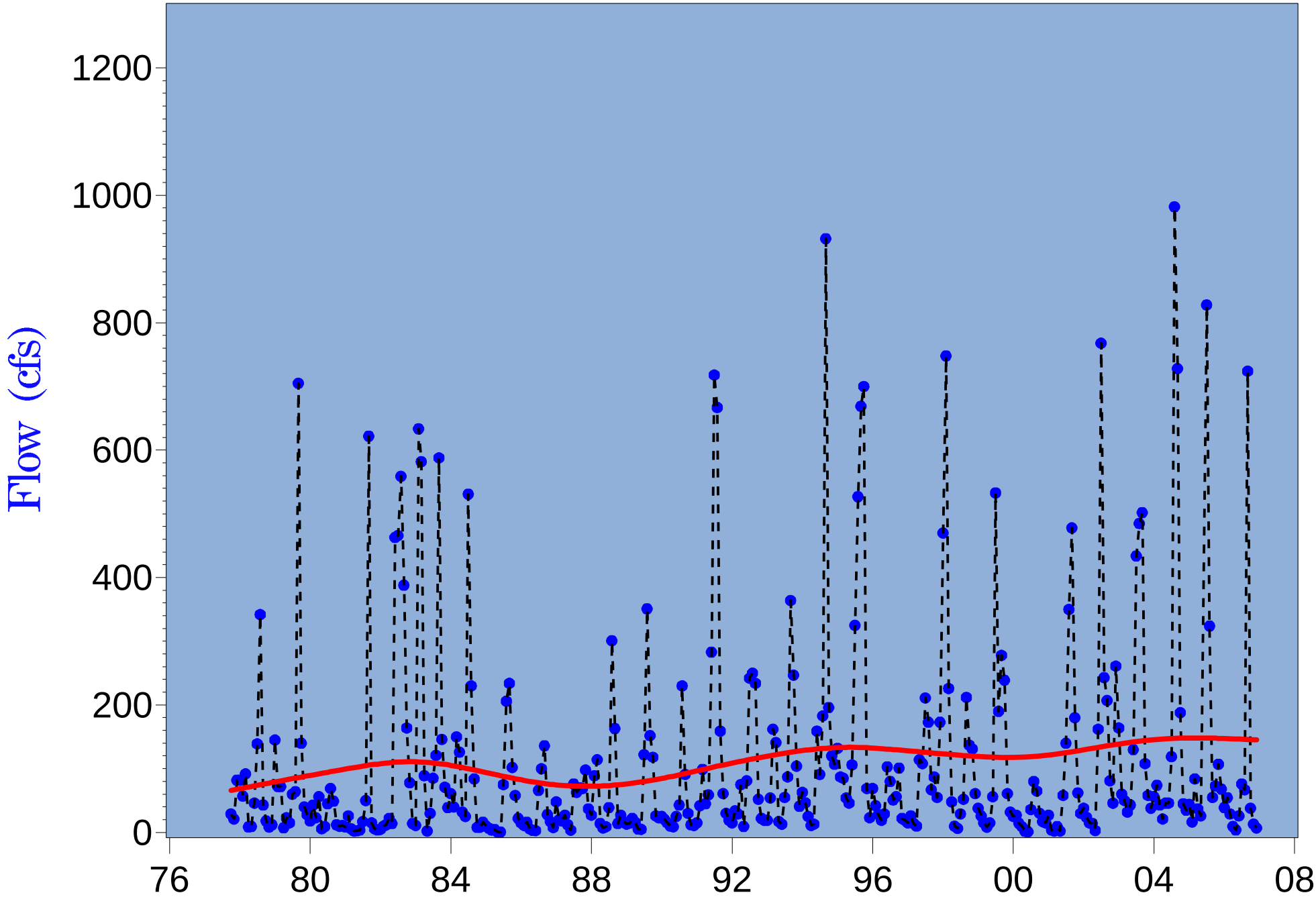


Figure 3.195 Monthly P25 flow at long-term Prairie Creek (2298123) gage (1976-2006)

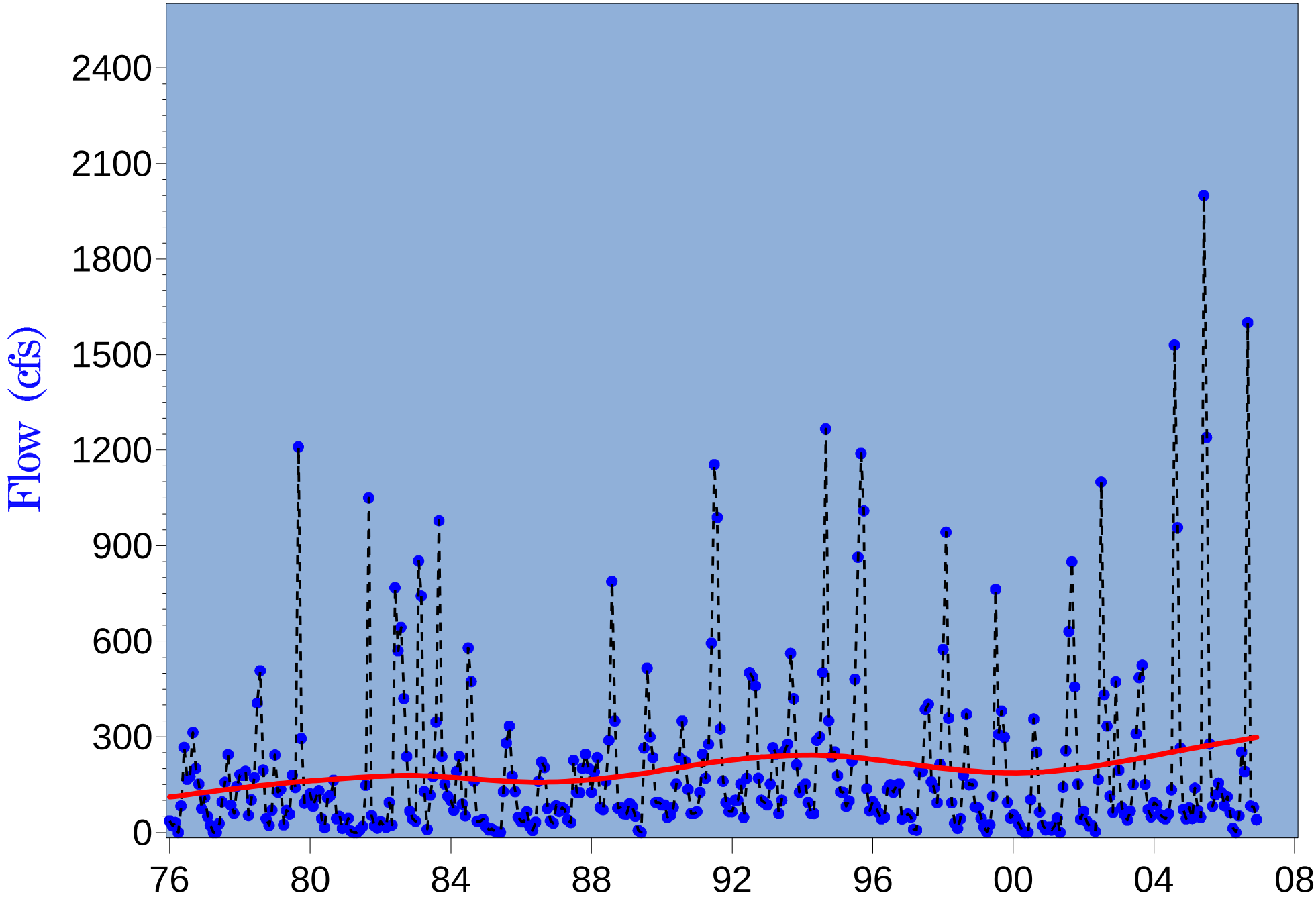


Figure 3.196 Monthly P25 flow at long-term Shell Creek gage (1976-2006)

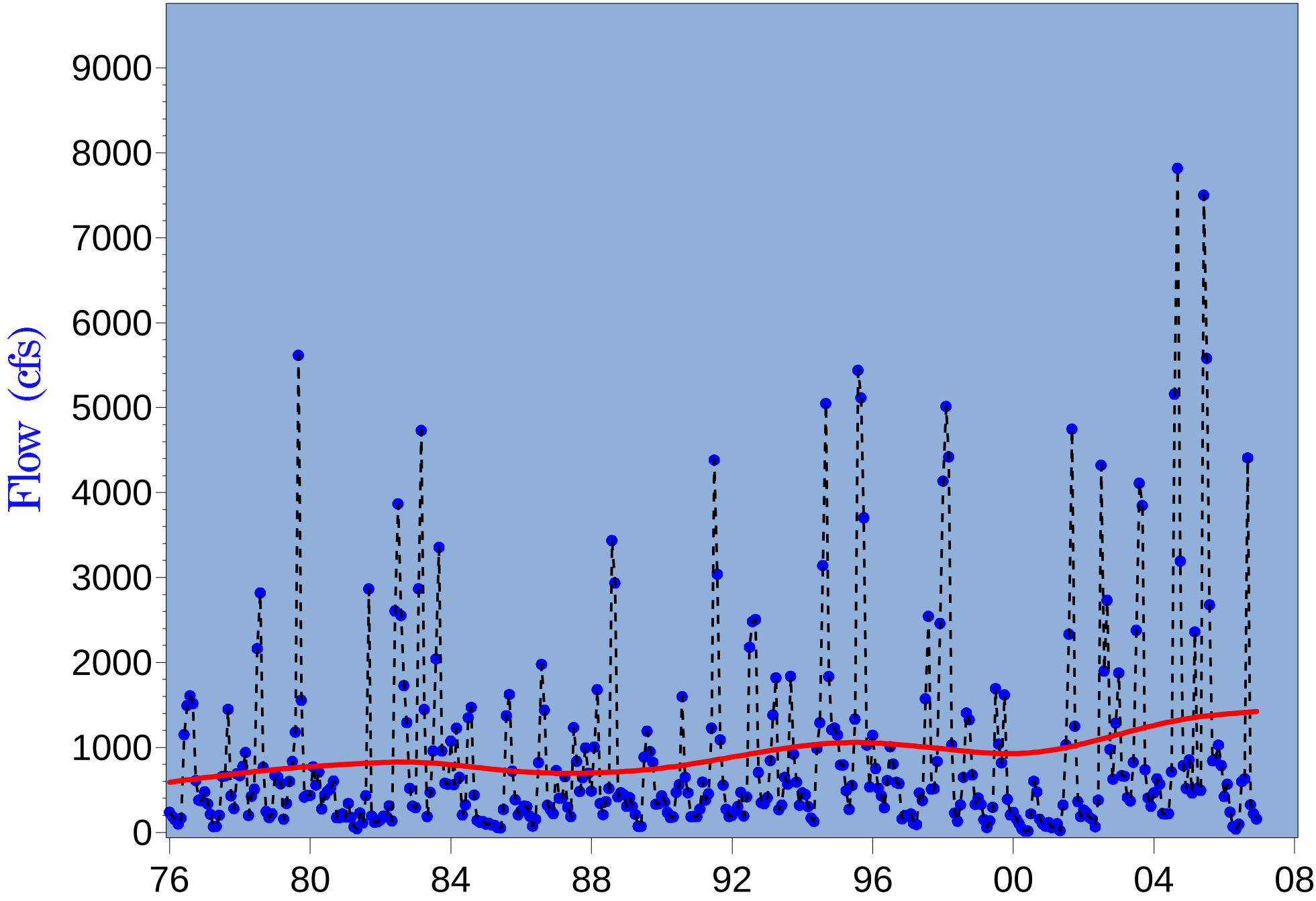


Figure 3.197 Monthly P25 flow of total gaged Peace River flow to the Upper Harbor (1976-2006)

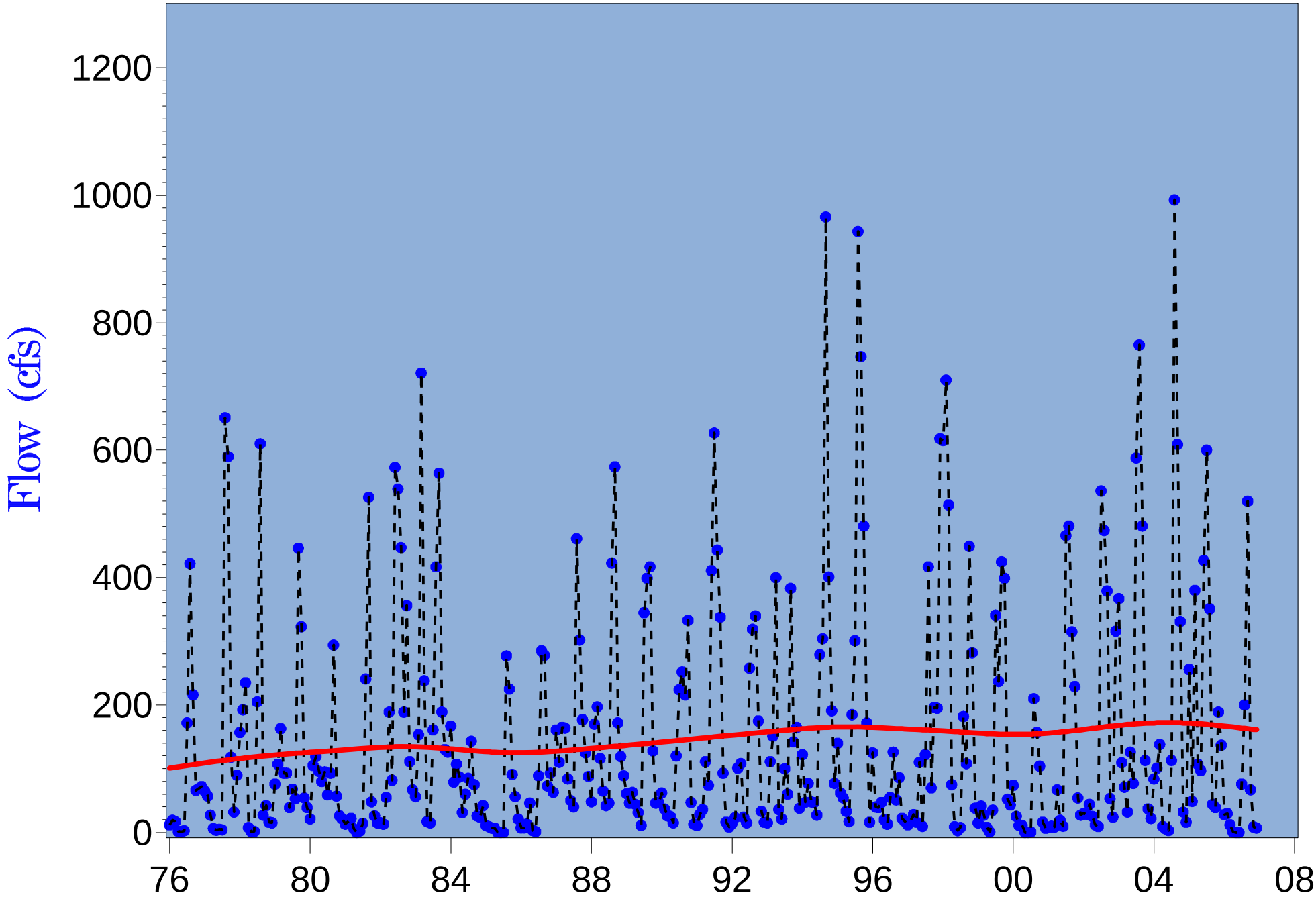


Figure 3.198 Monthly P25 flow at long-term Myakka River near Sarasota (2298830) gage (1976-2006)

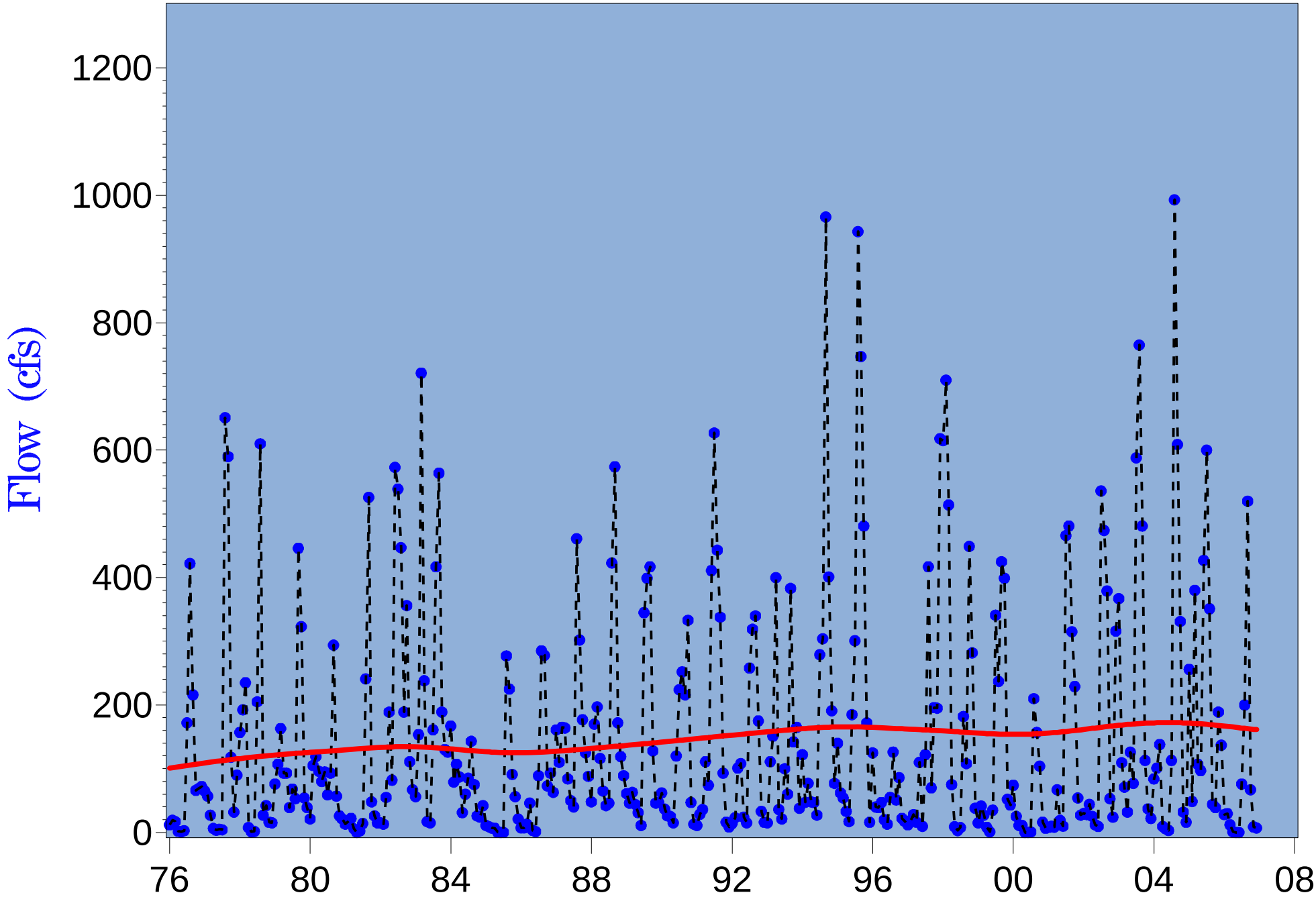


Figure 3.198 Monthly P25 flow at long-term Myakka River near Sarasota (2298830) gage (1976-2006)

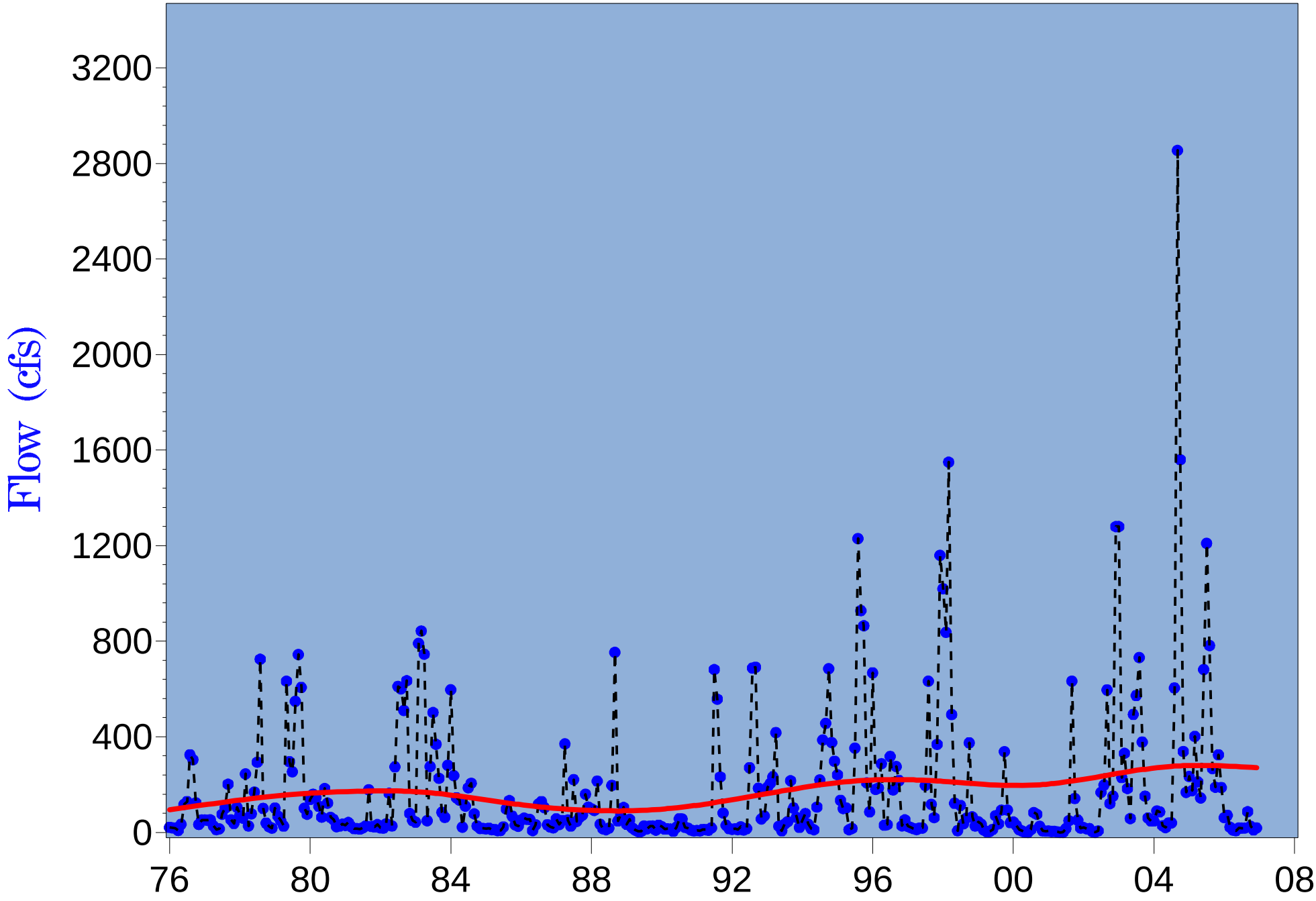


Figure 3.199 Monthly P50 (median) flow at long-term Peace River at Bartow (2294650) gage (1976-2006)

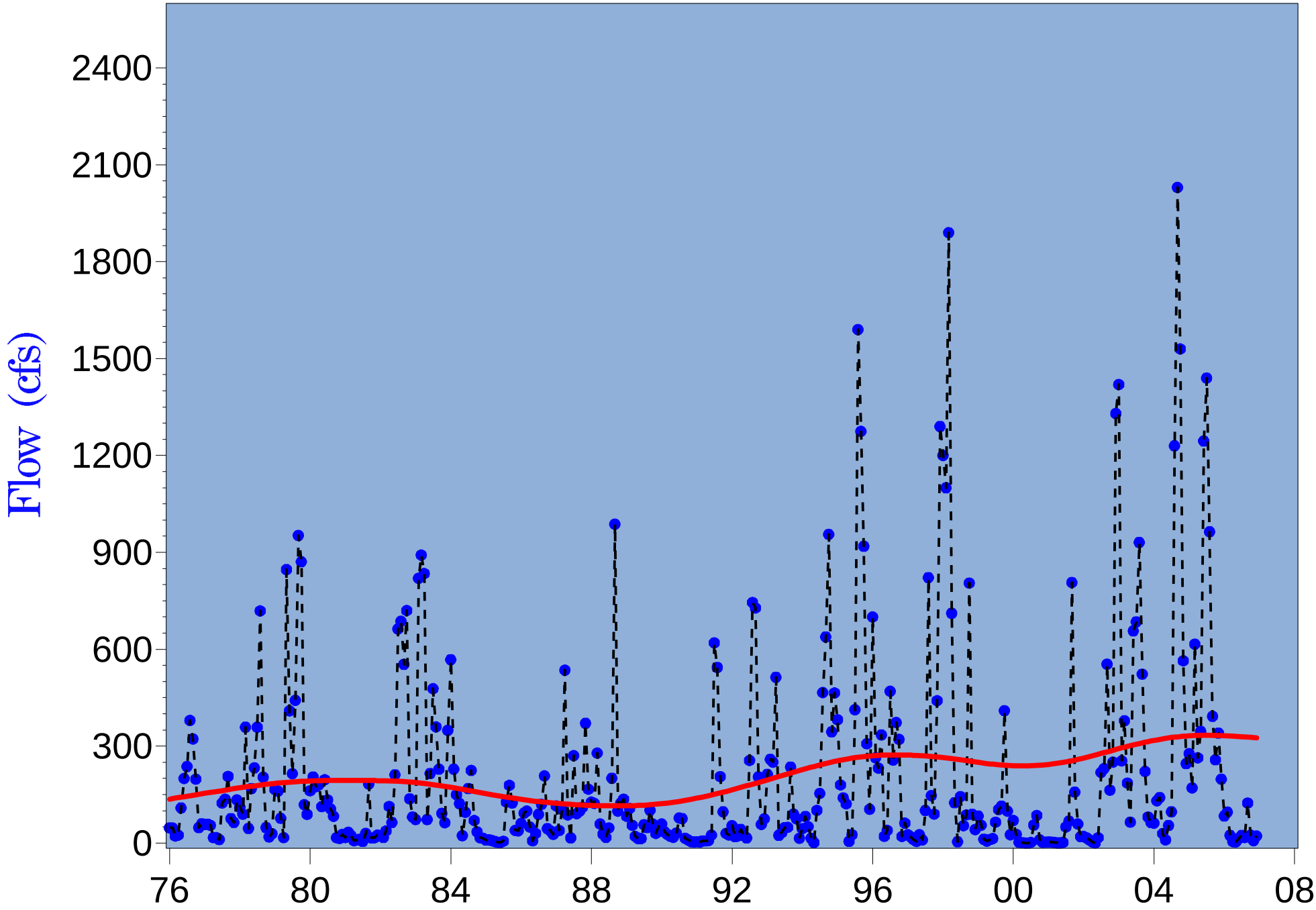


Figure 3.200 Monthly P50 (median) flow at long-term Peace River at Ft. Meade (2294898) gage (1976-2006)

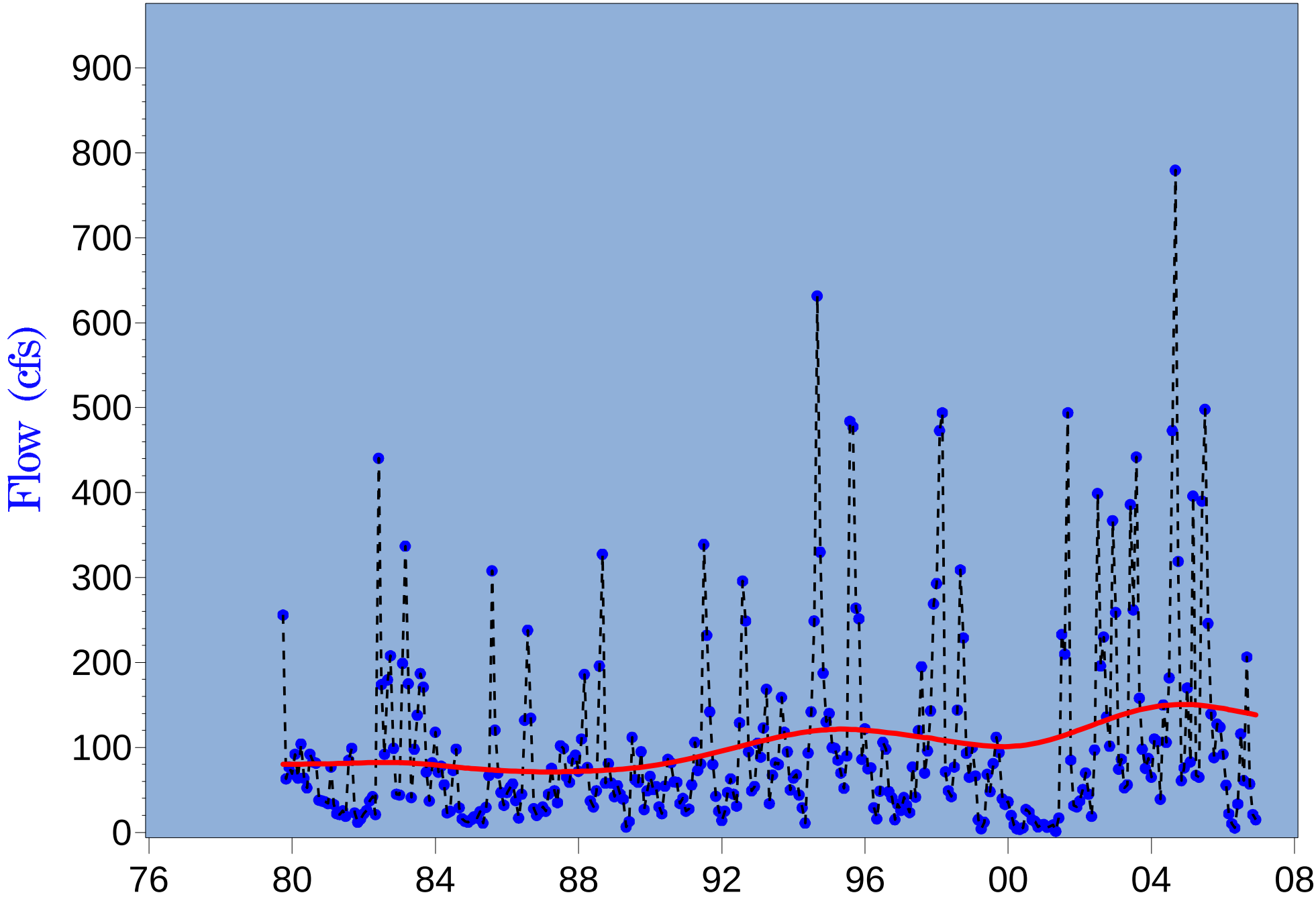


Figure 3.201 Monthly P50 (median) flow at long-term Payne Creek (2295420) gage (1976-2006)

Table 3.27
Summary of Results of Seasonal Kendall Trend Analyses
1976 Through 2006 - Monthly Mean Values

USGS ID	Gage Identification	Time Interval	Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
Peace River Watershed						
2294650	Peace River at Bartow	1976-2006	0.01	0.895	0.954	0.04
2295420	Payne Creek near Bowling Green	1976-2006	0.10	0.009	0.250	1.08
2295637	Peace River at Zolfo Springs	1976-2006	0.01	0.742	0.883	0.52
2296500	Charlie Creek near Gardner	1976-2006	0.07	0.050	0.296	0.58
2296750	Peace River at Arcadia	1976-2006	0.05	0.159	0.504	2.81
2297100	Joshua Creek at Nocatee	1976-2006	0.21	0.000	**0.005**	1.00
2297310	Horse Creek near Arcadia	1976-2006	0.11	0.003	0.125	0.77
	Total Gaged Flow Upstream of the Facility	1976-2006	0.07	0.045	0.332	5.65
2298123	Prairie Creek near Fort Ogden	1976-2006	0.09	0.019	0.212	0.97
2298202	Shell Creek near Punta Gorda	1976-2006	0.08	0.021	0.225	1.71
	Total Gaged Peace River Flow to the Harbor	1976-2006	0.09	0.019	0.248	7.59
Reference Watershed						
2298830	Myakka River near Sarasota	1976-2006	0.05	0.137	0.418	0.80

* Red values denote significant trend at p=0.05 level, while blue indicates trends significant at p=0.10

** Positive Tau statistic and slope values indicate increasing trend over time, negative values correspond to declining changes in flow over time

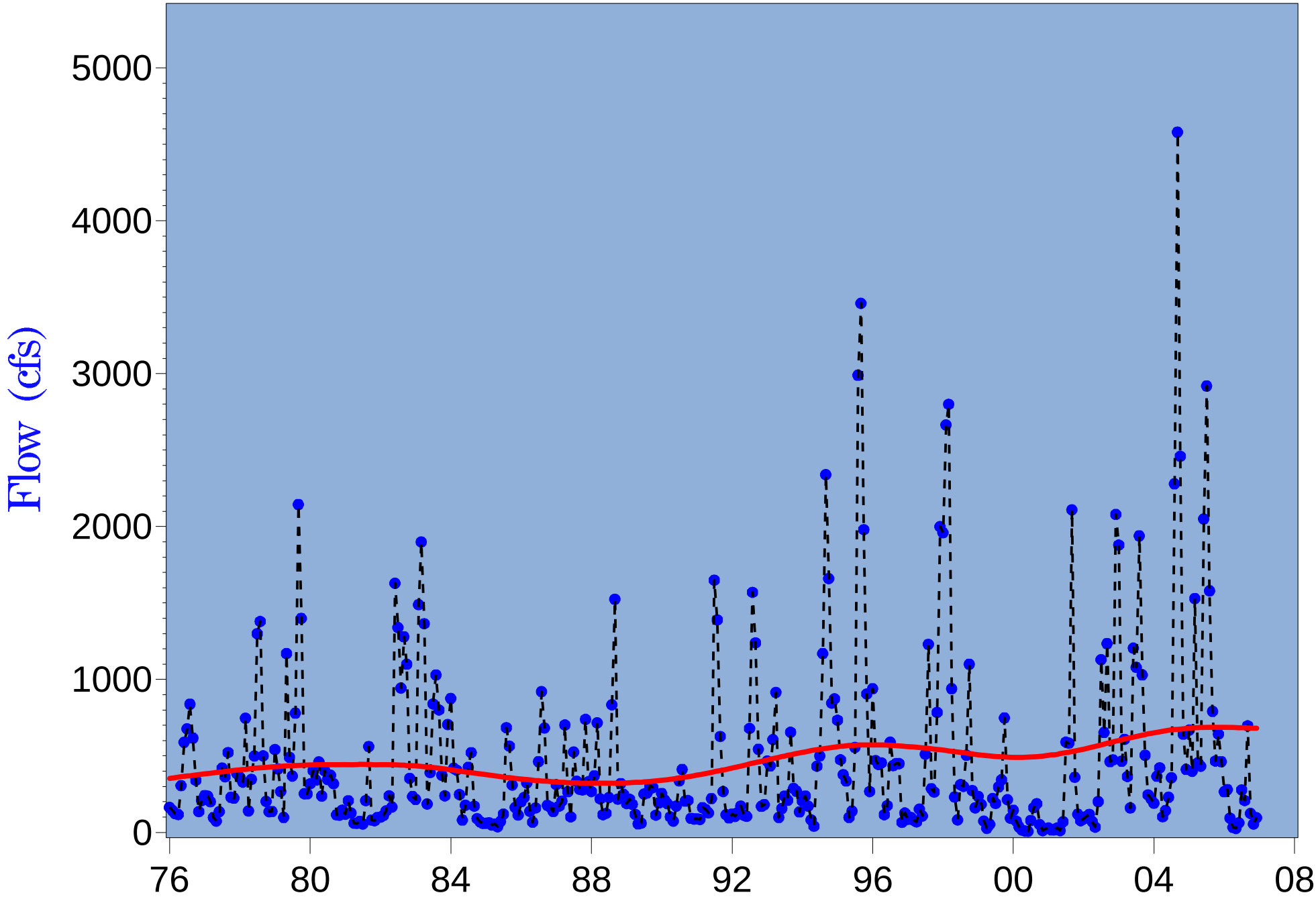


Figure 3.202 Monthly P50 (median) flow at long-term Peace River at Zolfo (2295637) gage (1976-2006)

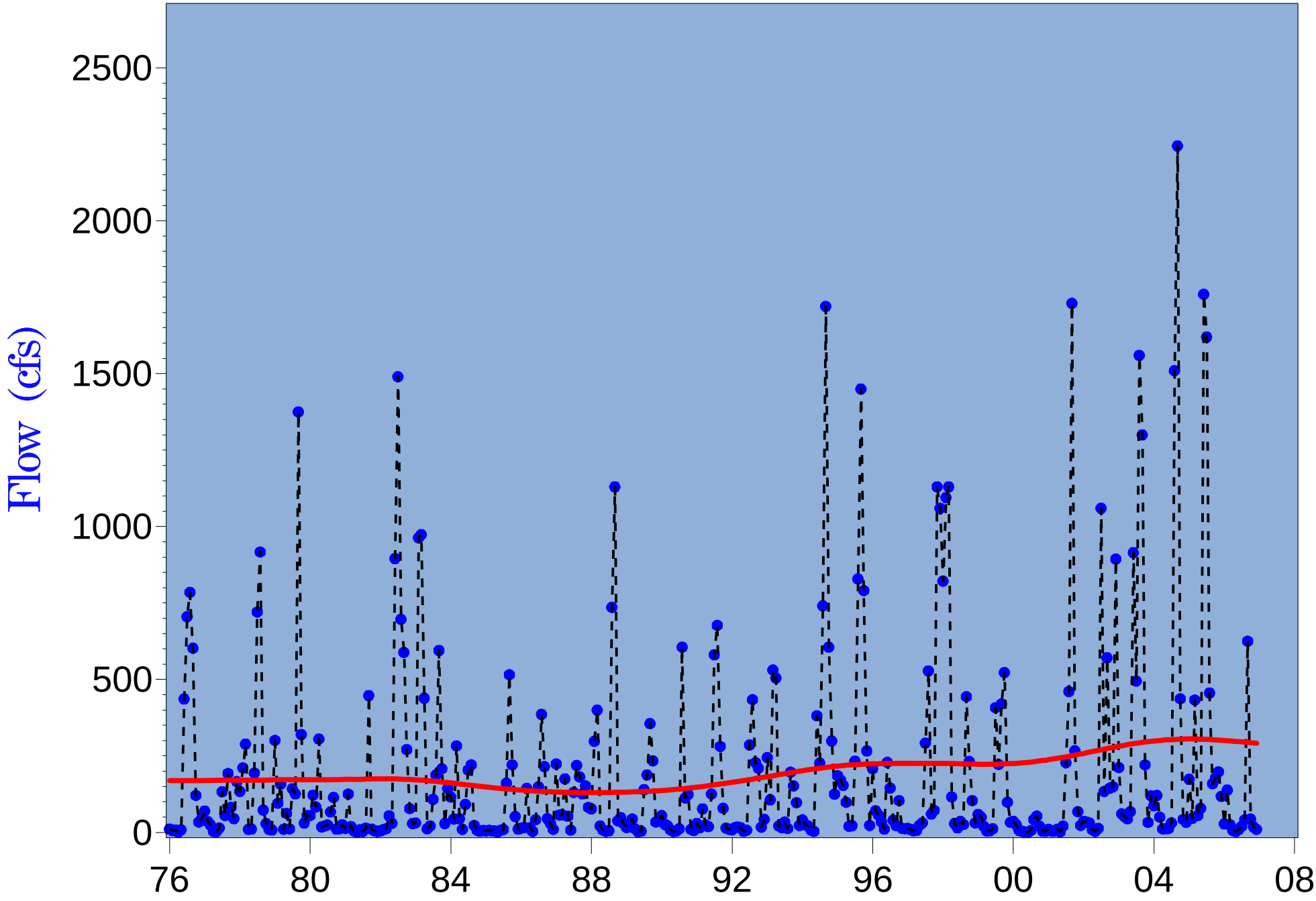


Figure 3.203 Monthly P50 (median) flow at long-term Charlie Creek (2296500) gage (1976-2006)

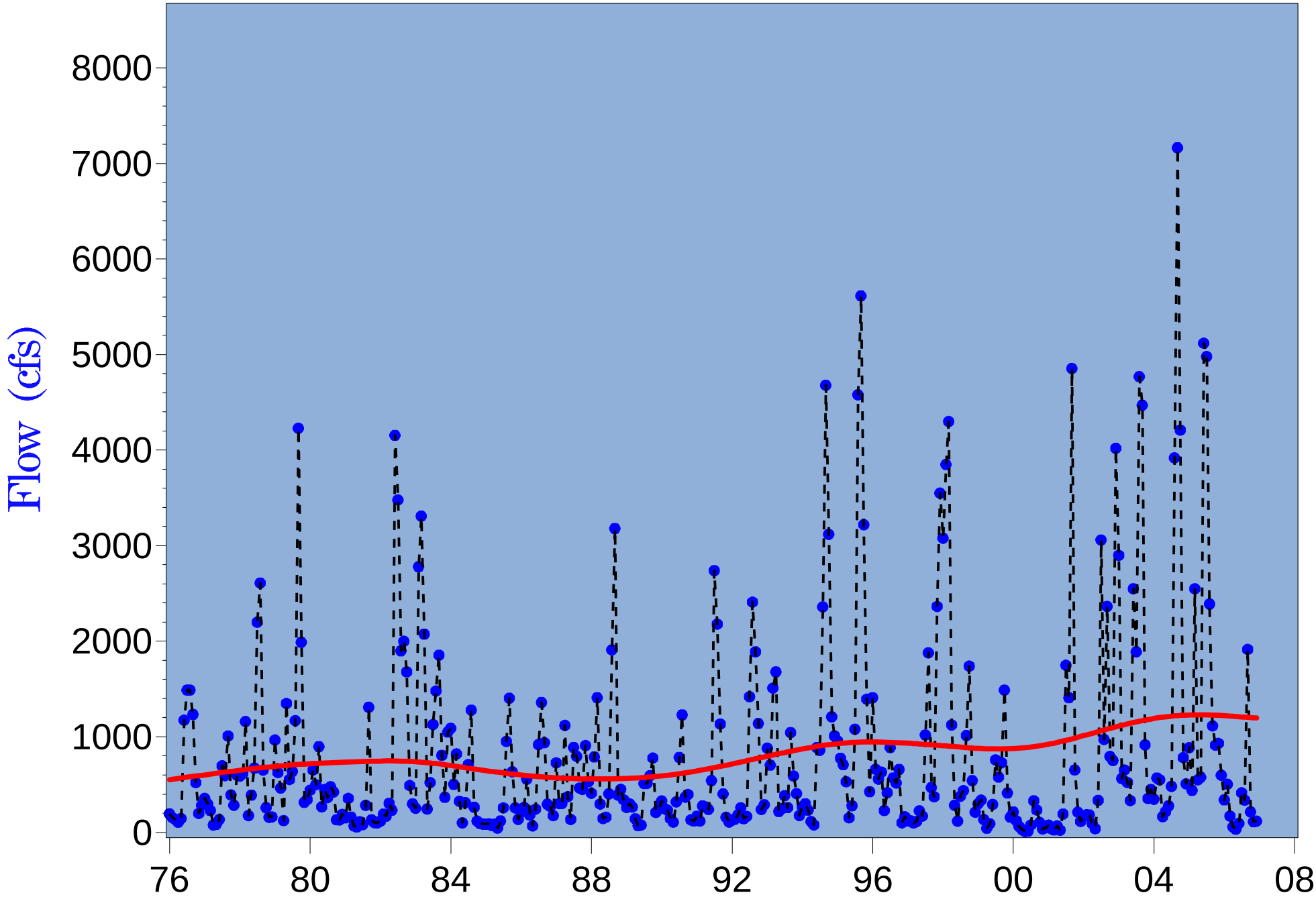


Figure 3.204 Monthly P50 (median) flow at long-term Peace River at Arcadia (2296750) gage (1976-2006)

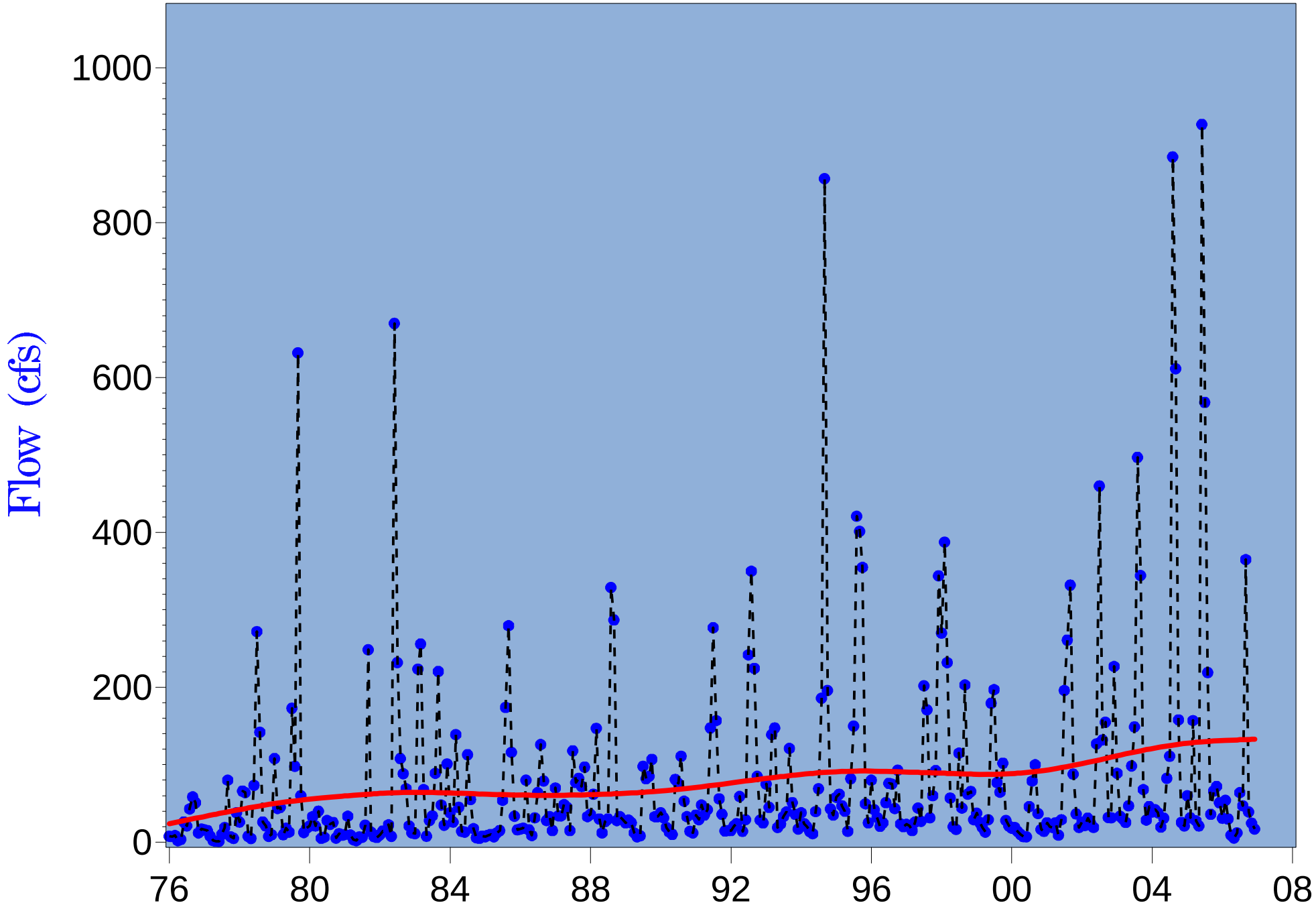


Figure 3.205 Monthly P50 (median) flow at long-term Joshua Creek at Nocatee (2297100) gage (1976-2006)

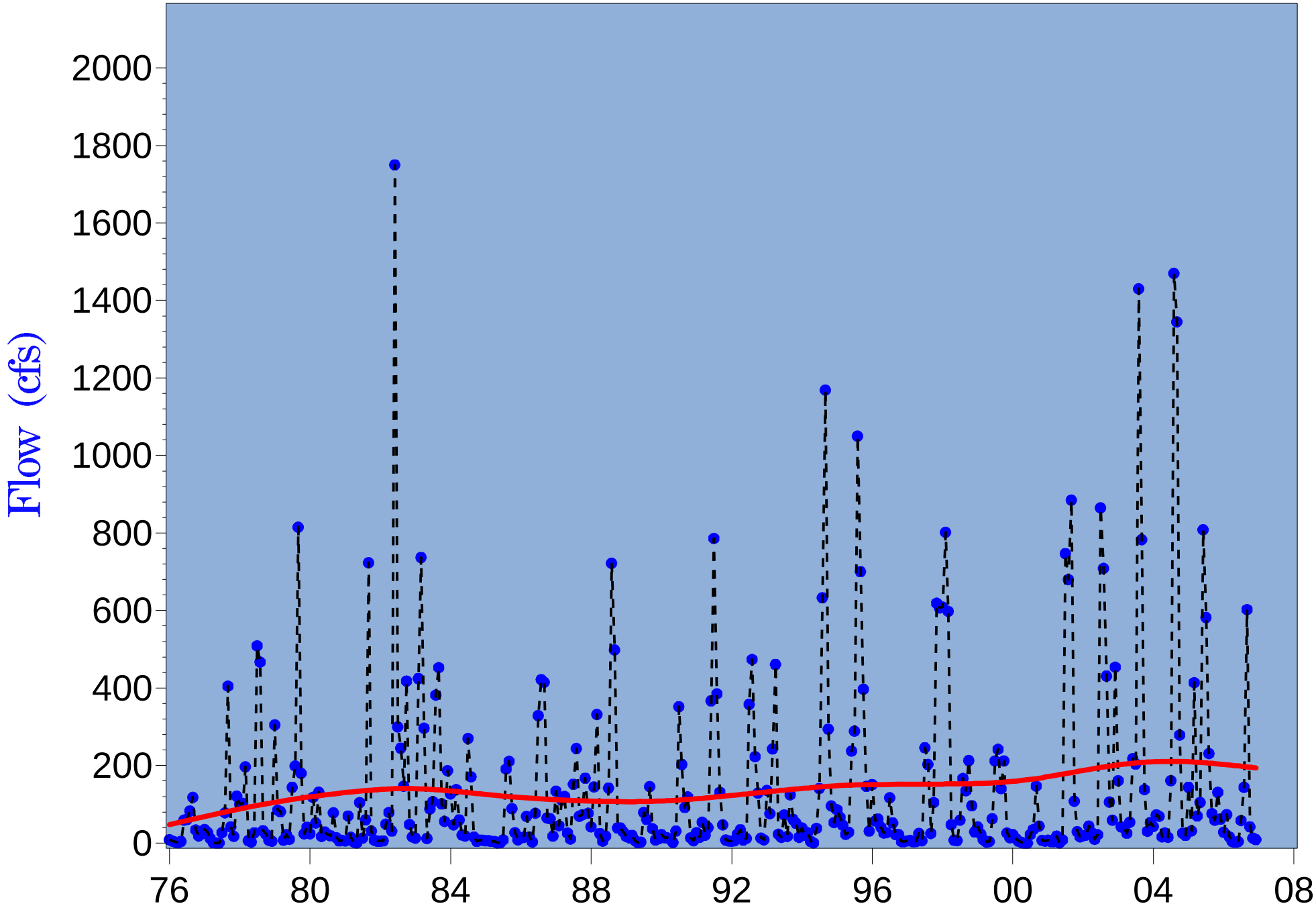


Figure 3.206 Monthly P50 (median) flow at long-term Horse Creek near Arcadia(2297310) gage (1976-2006)

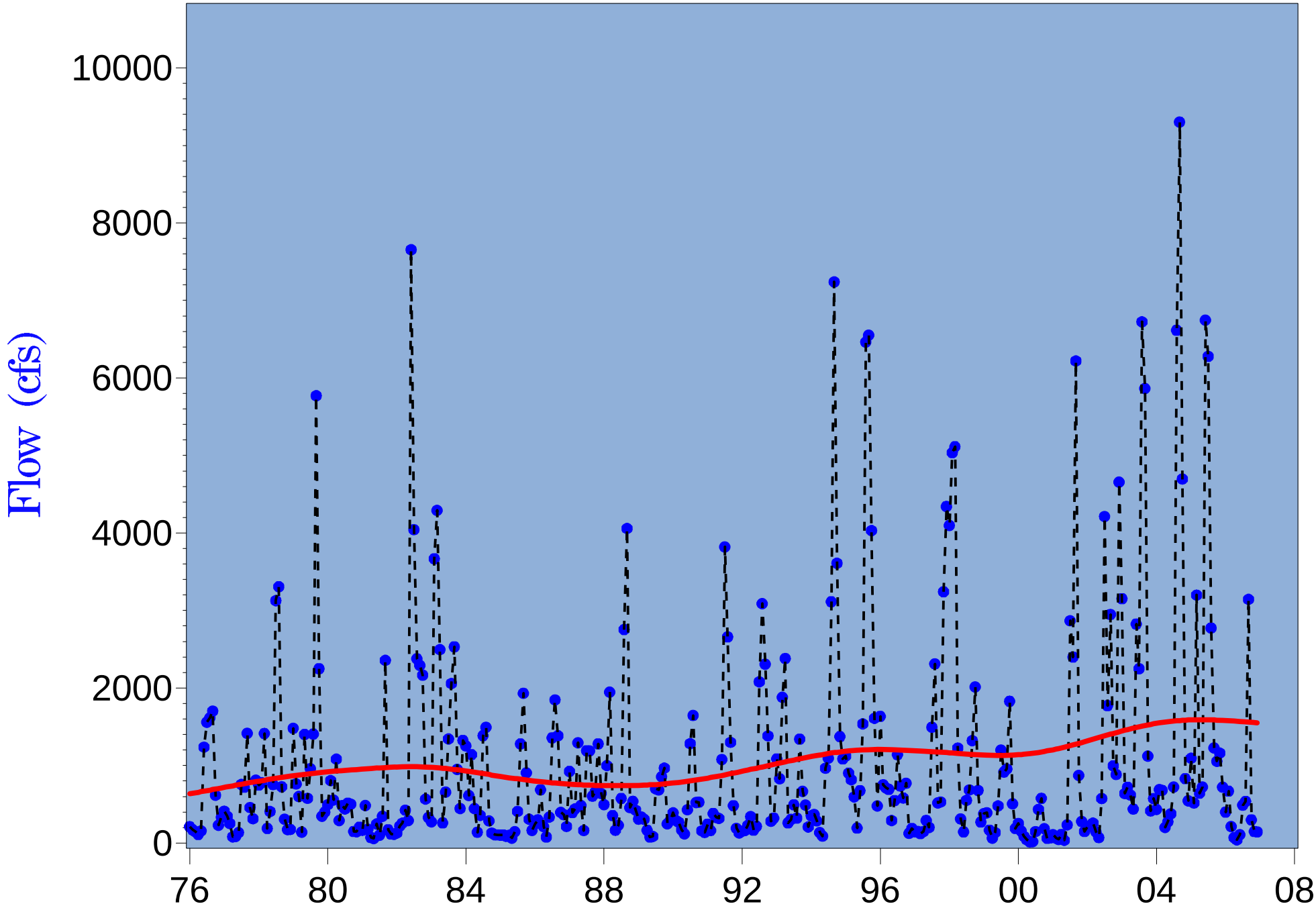


Figure 3.207 Monthly P50 (median) flow at long-term for total gaged flow upstream of the Facility (1950-2006)

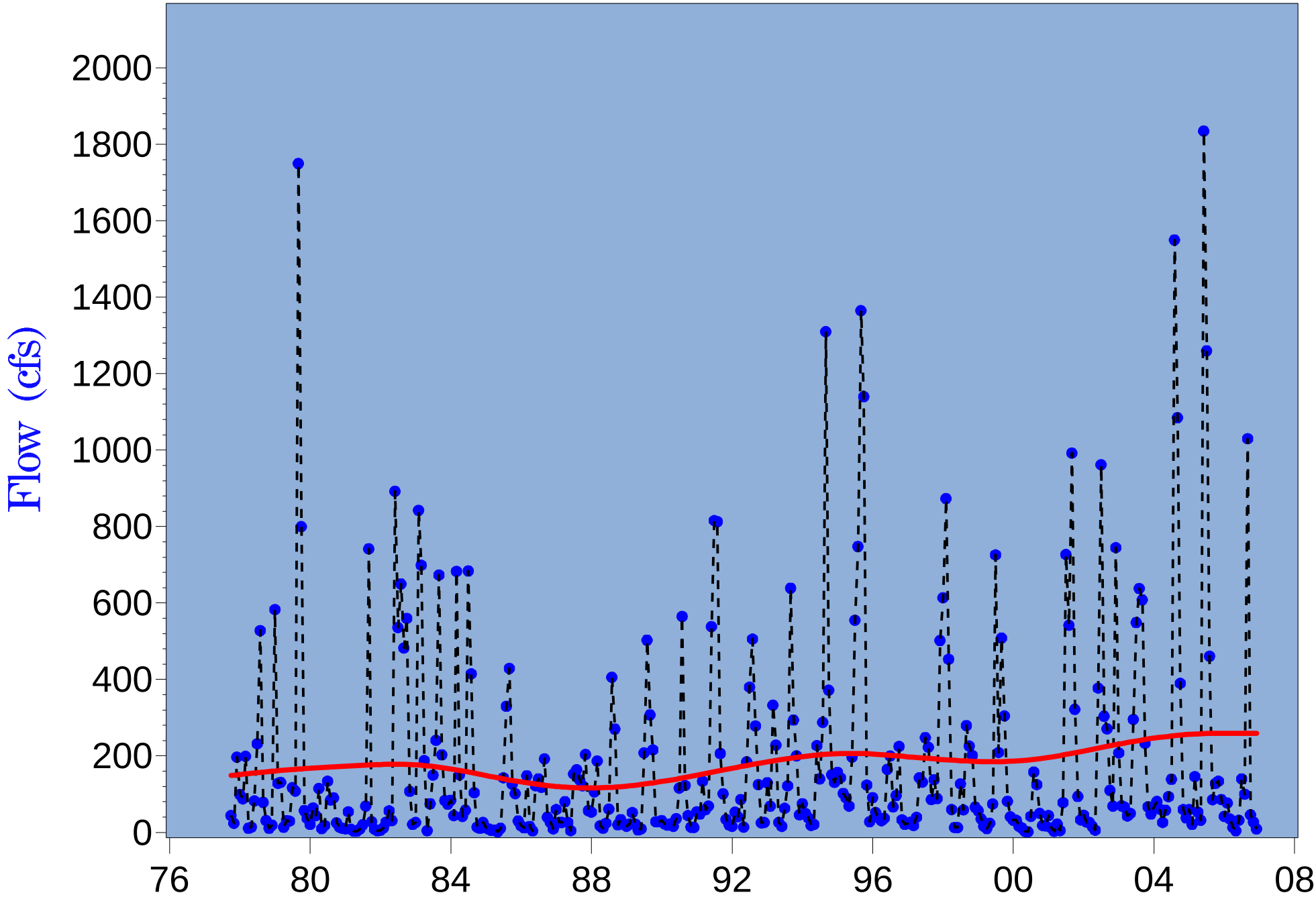


Figure 3.208 Monthly P50 (median) flow at long-term Prairie Creek (2298123) gage (1976-2006)

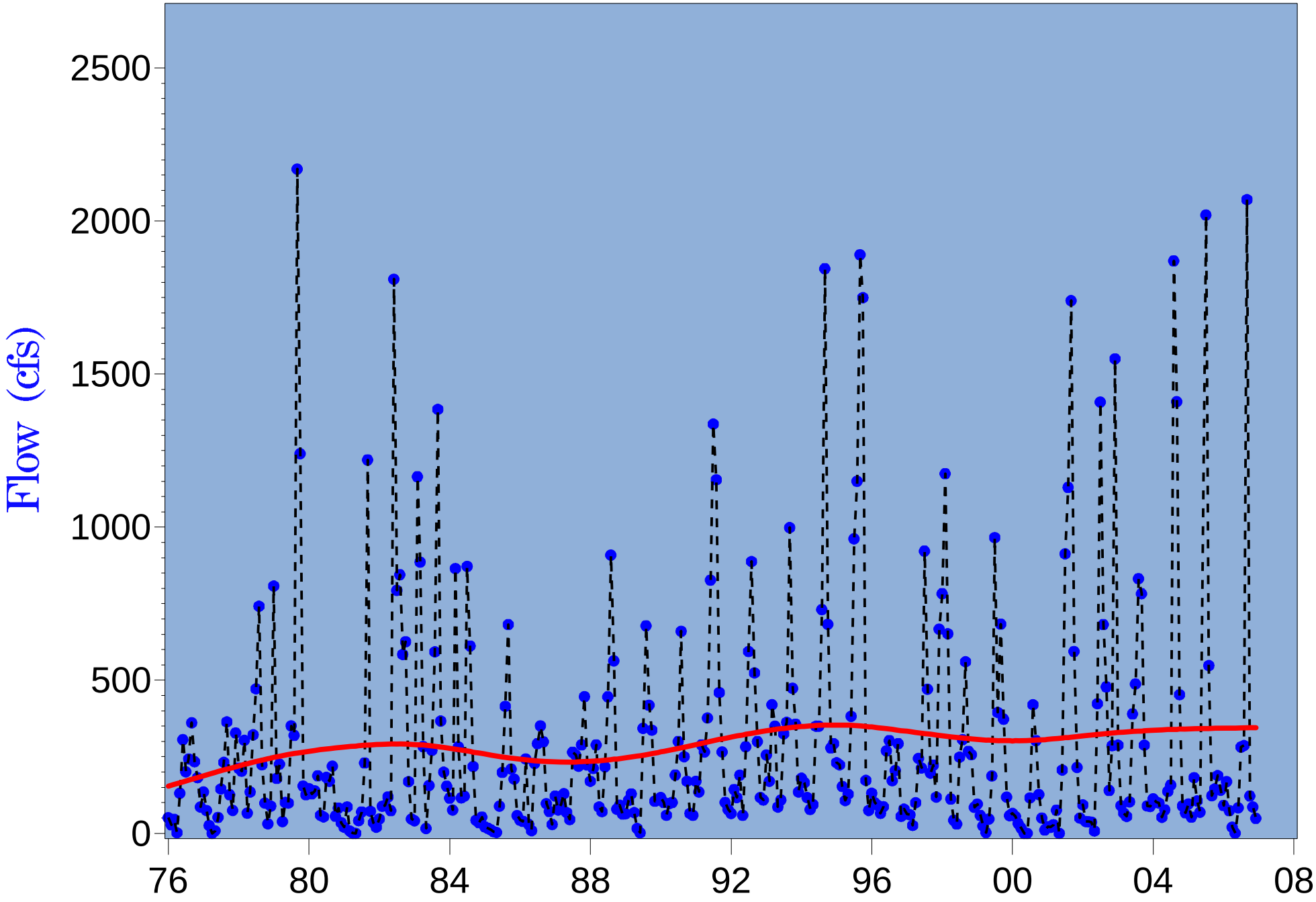


Figure 3.209 Monthly P50 (median) flow at long-term Shell Creek gage (1976-2006)

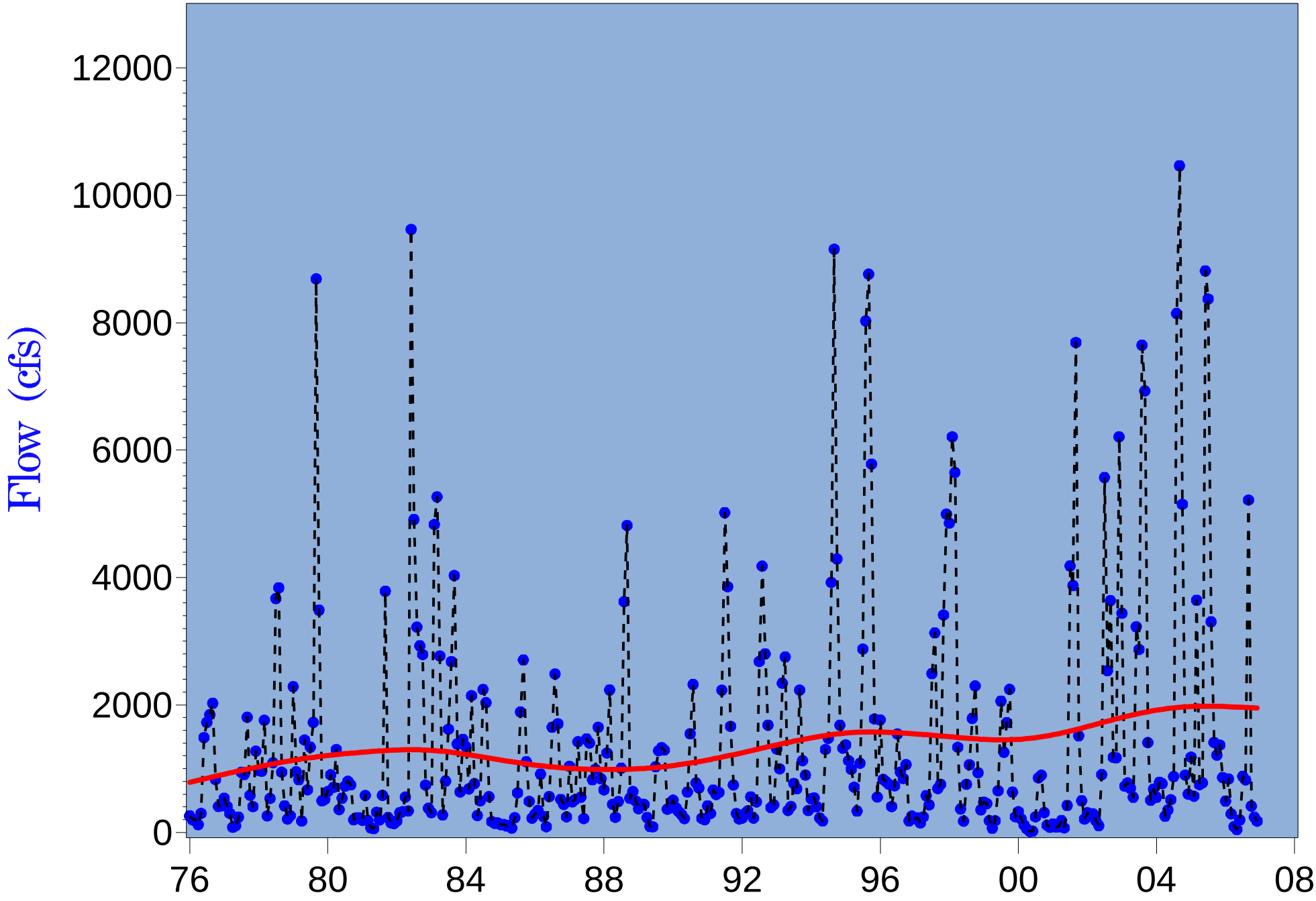


Figure 3.210 Monthly P50 (median) flow of total gaged Peace River flow to the Upper Harbor (1976-2006)

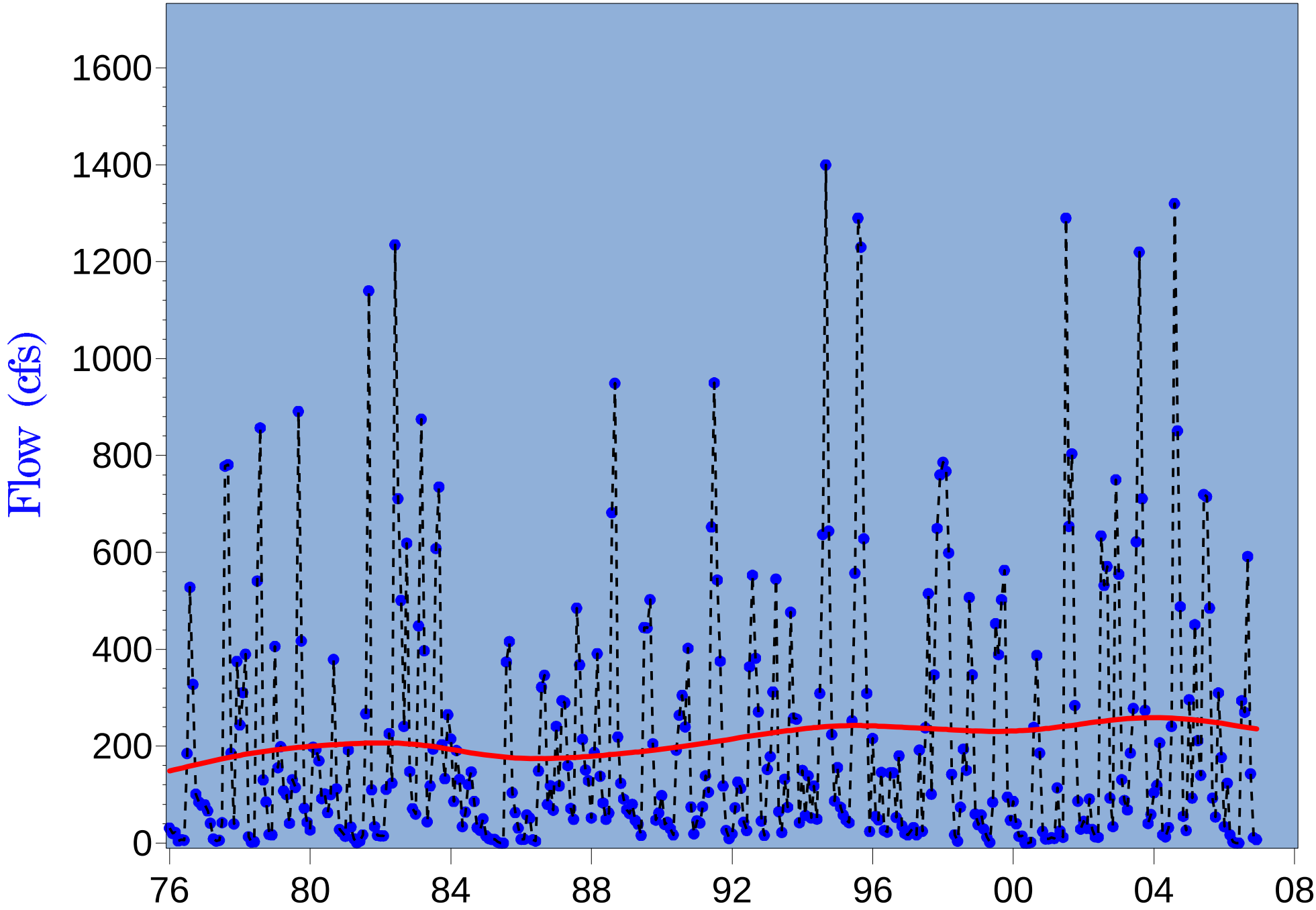


Figure 3.211 Monthly P50 (median) flow at long-term Myakka River near Sarasota (2298830) gage (1976-2006)

Table 3.28
Summary of Results of Seasonal Kendal Trend Analyses 1976 - 2006
(With Corrections for Serial Correlations)

USGS ID	Gage Identification	First Year	P0 (Min)	P10	P25	P50 (Median)	P75	P90	P100 (Max)	Mean
Peace River Watershed										
2294650	**Peace River at Bartow**	1976								
2295420	**Payne Creek near Bowling Green**	1976								
2295637	**Peace River at Zolfo Springs**	1976								
2296500	**Charlie Creek near Gardner**	1976								
2296750	**Peace River at Arcadia**	1976								
2297100	**Joshua Creek at Nocatee**	1976	▲	▲	▲	▲	▲	▲	▲	▲
2297310	**Horse Creek near Arcadia**	1976	▲	▲	▲	▲				
	Total Gaged Flow at Facility	1976								
2298123	**Prairie Creek near Fort Ogden**	1976	▲	▲	▲	▲				
2298202	**Shell Creek near Punta Gorda**	1976								
	Total Gaged Peace River Flow to Harbor	1976								
Reference Watershed										
2298830	**Myakka River near Sarasota**	1976								

Note: Direction of arrow denotes significant increasing or decreasing trend. Red arrows are significant at p=0.05 level, while blue show trends significant at p=0.10, and blanks indicate no significant trends in Seasonal Kendall Tau test corrected for serial correlations.

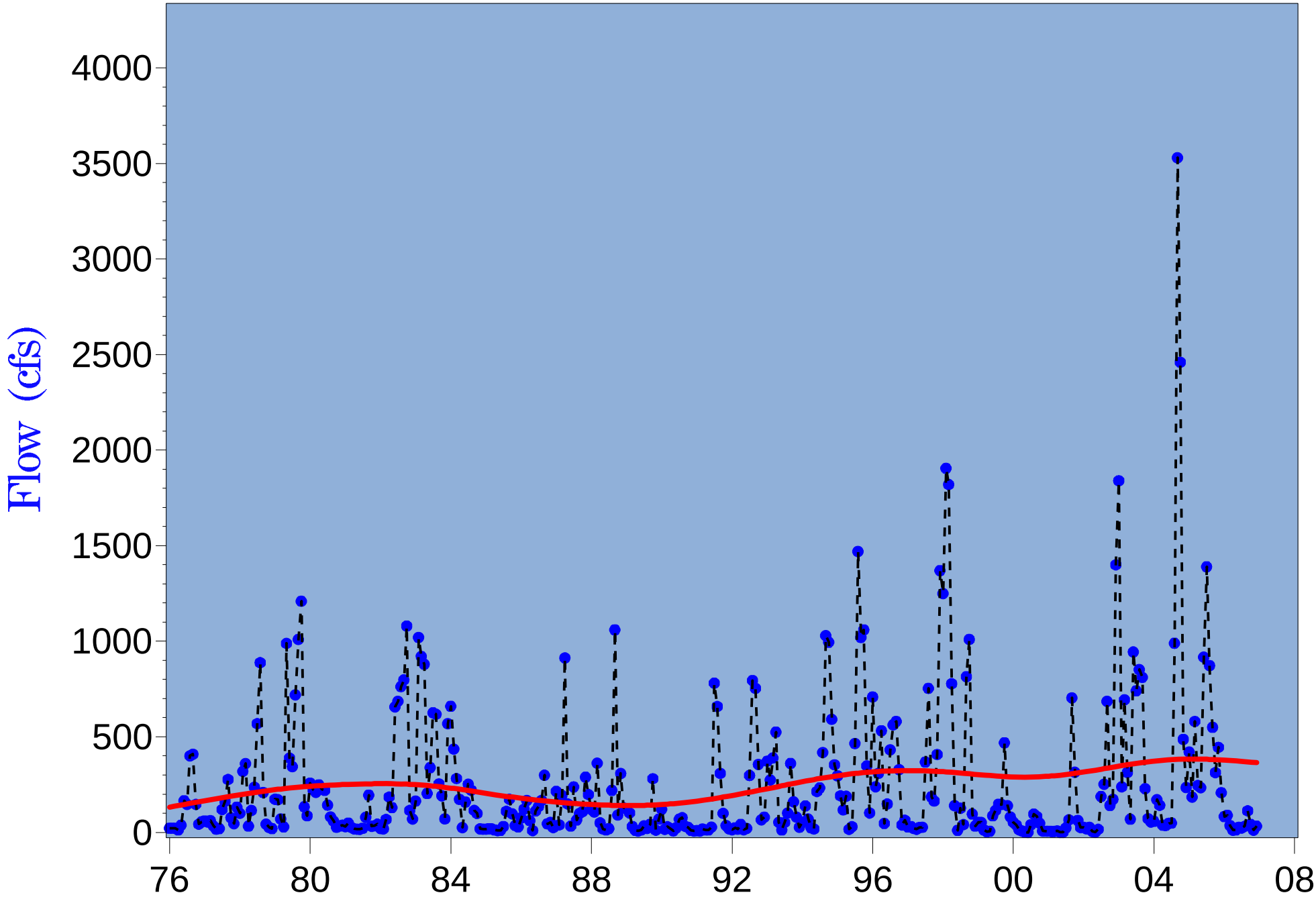


Figure 3.212 Monthly P75 flow at long-term Peace River at Bartow (2294650) gage (1976-2006)

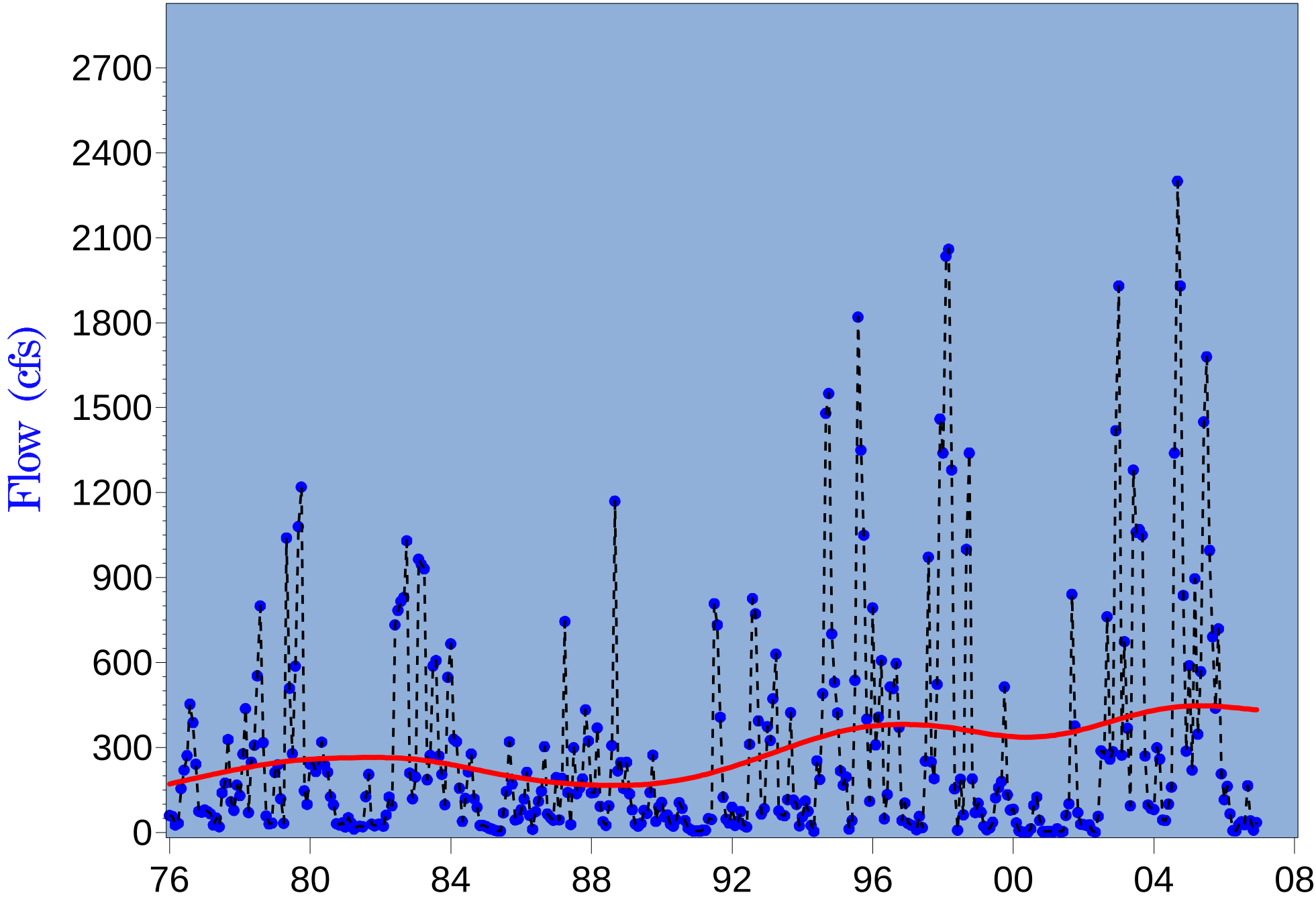


Figure 3.213 Monthly P75 flow at long-term Peace River at Ft. Meade (2294898) gage (1976-2006)

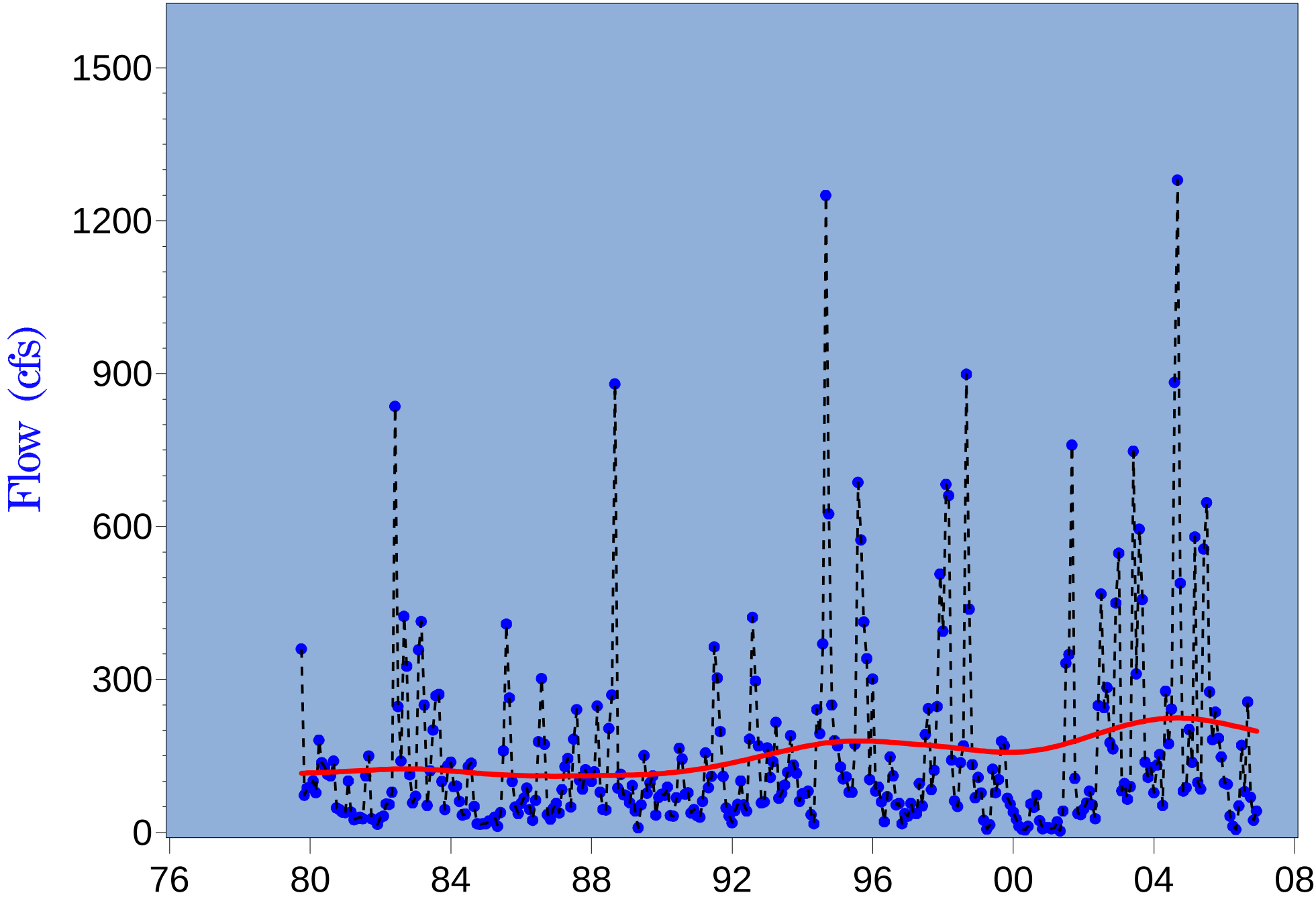


Figure 3.214 Monthly P75 flow at long-term Payne Creek (2295420) gage (1976-2006)

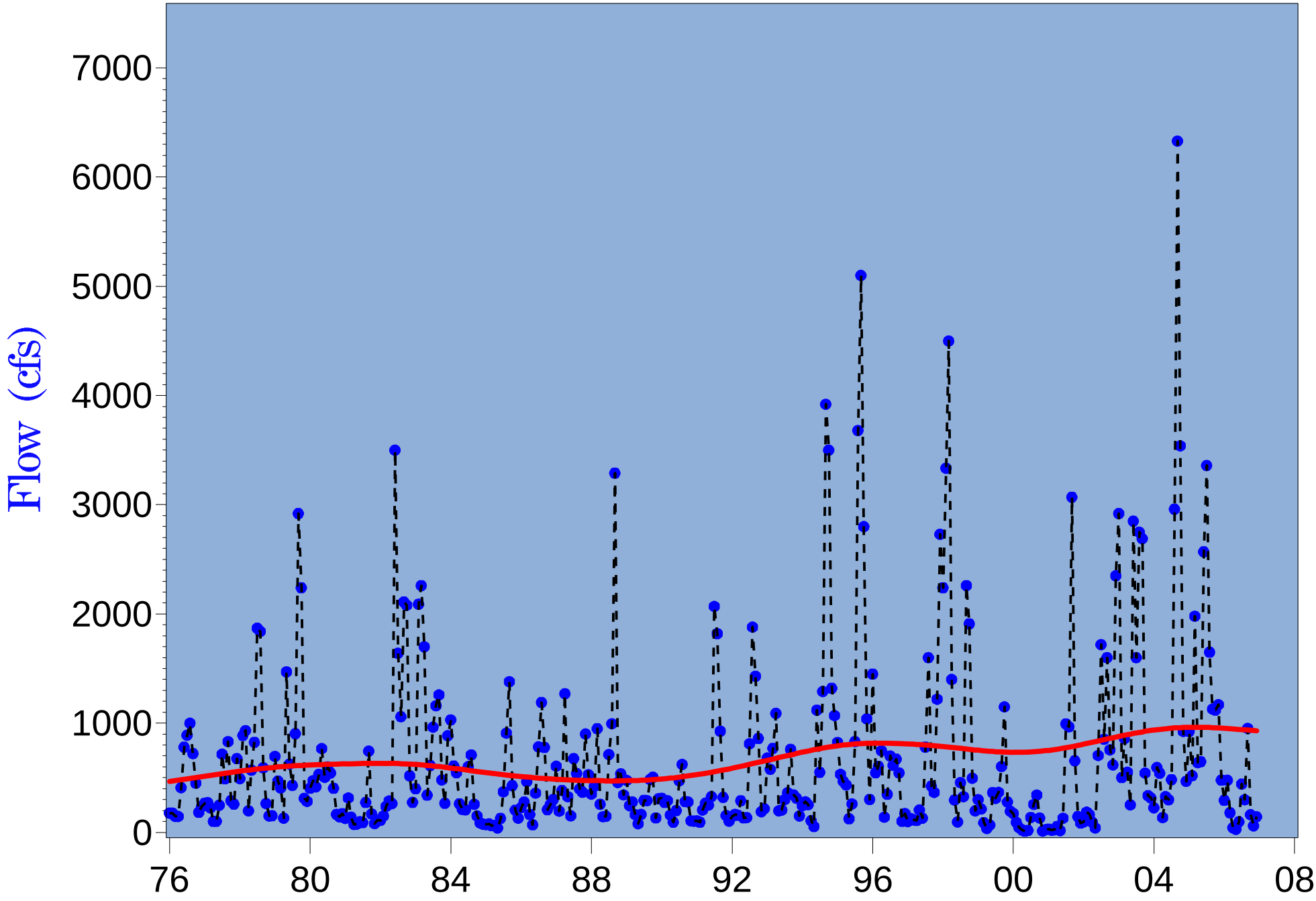


Figure 3.215 Monthly P75 flow at long-term Peace River at Zolfo (2295637) gage (1976-2006)

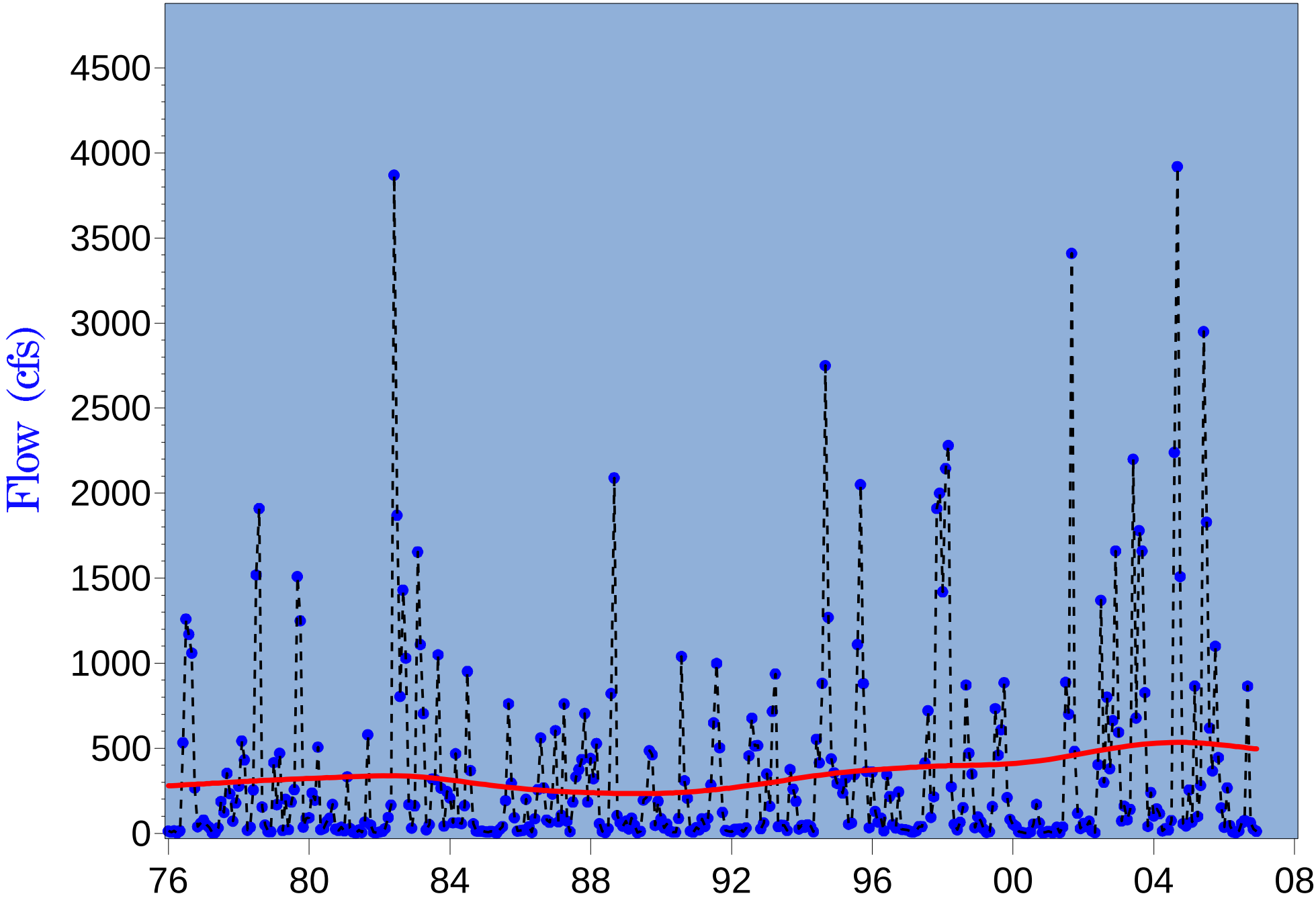


Figure 3.216 Monthly P75 flow at long-term Charlie Creek (2296500) gage (1976-2006)

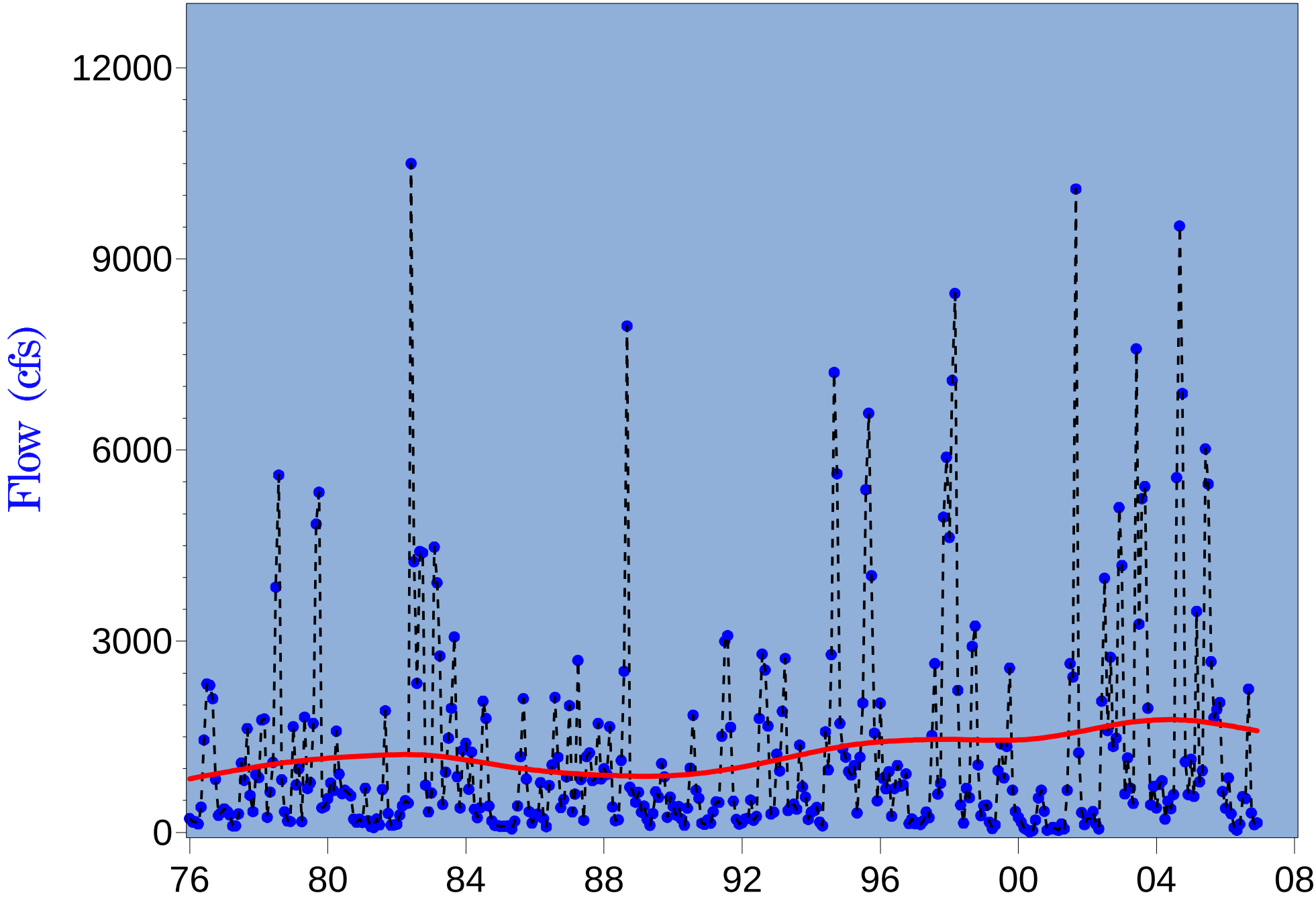


Figure 3.217 Monthly P75 flow at long-term Peace River at Arcadia (2296750) gage (1976-2006)

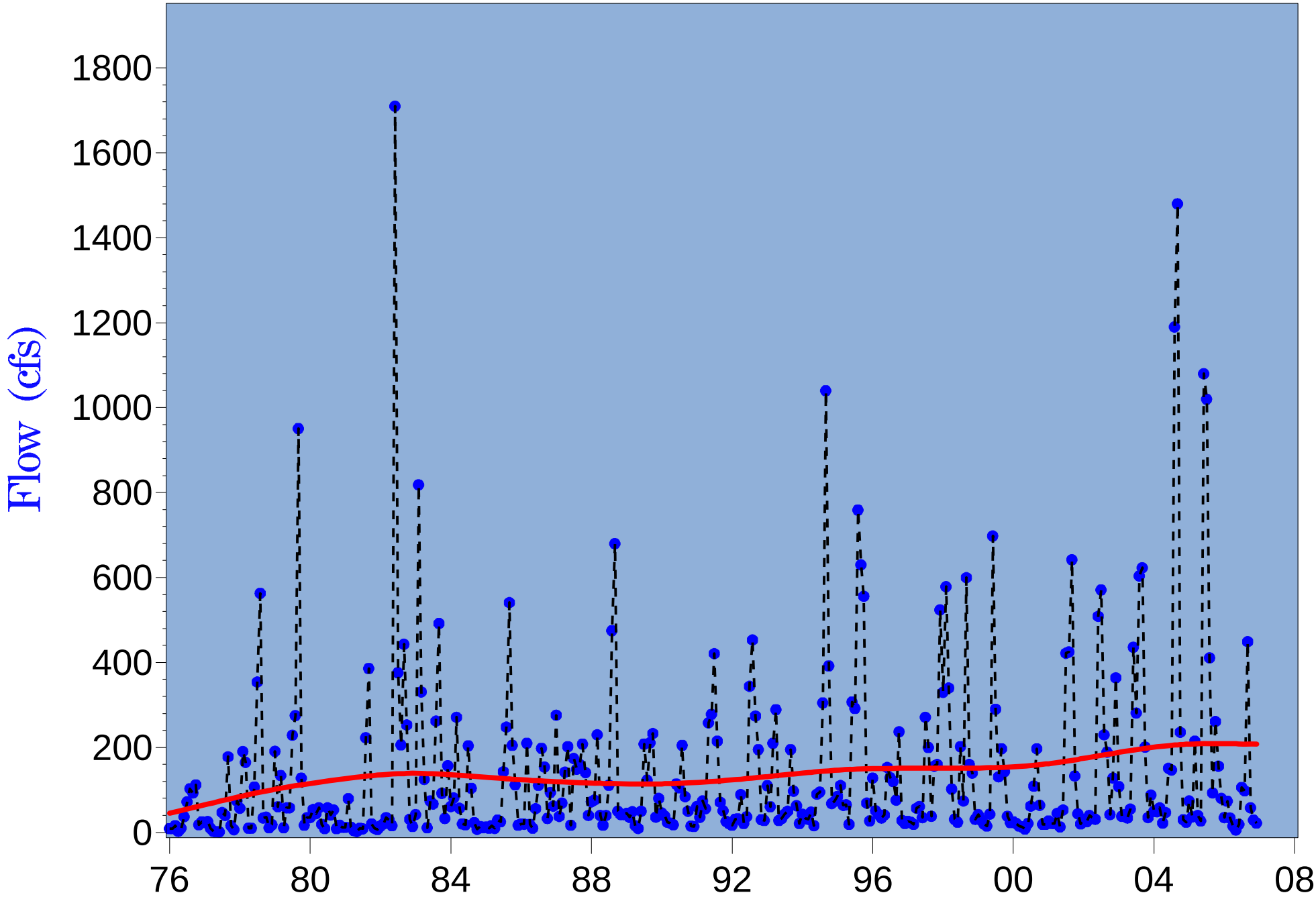


Figure 3.218 Monthly P75 flow at long-term Joshua Creek at Nocatee (2297100) gage (1976-2006)

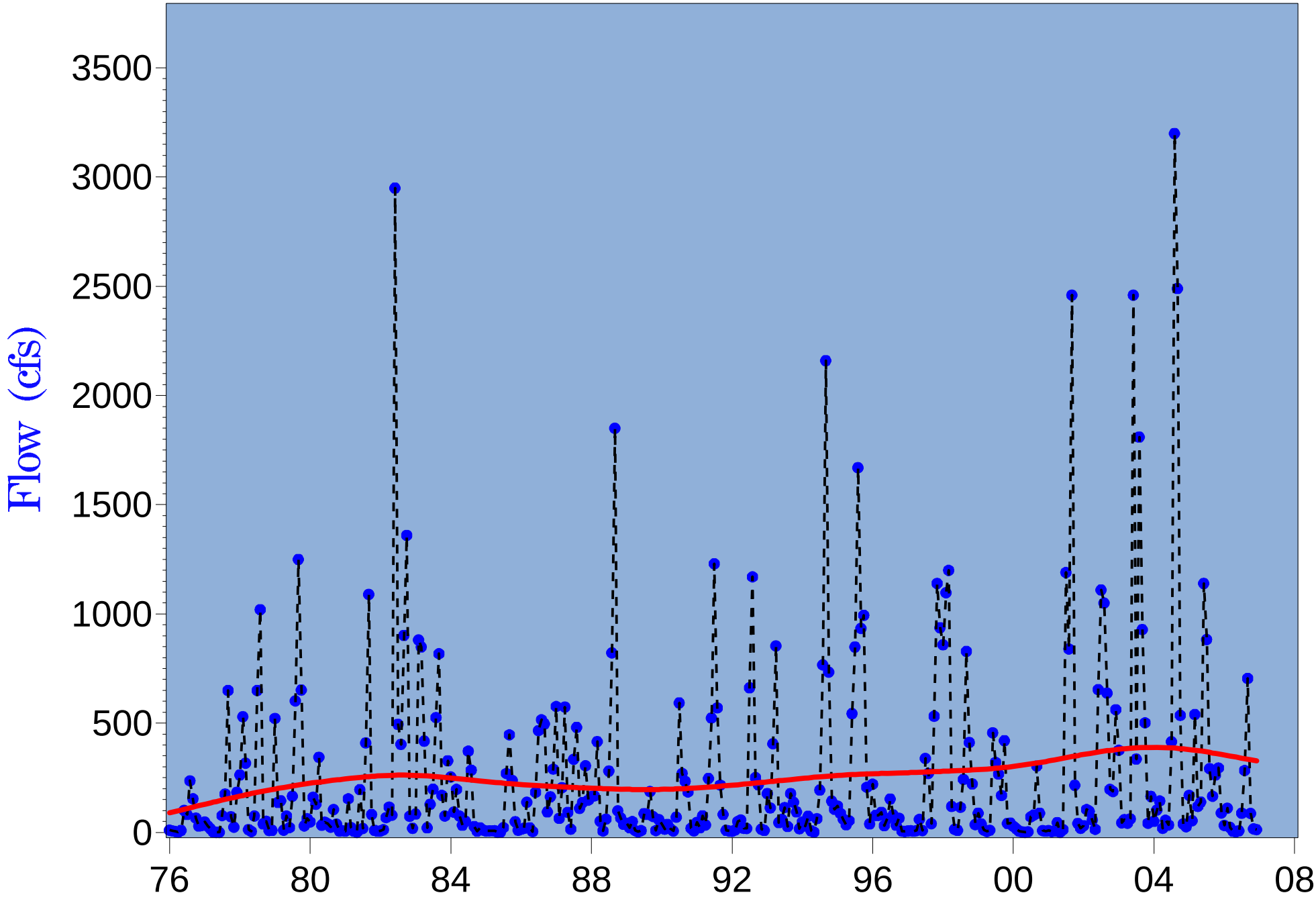


Figure 3.219 Monthly P75 flow at long-term Horse Creek near Arcadia(2297310) gage (1976-2006)

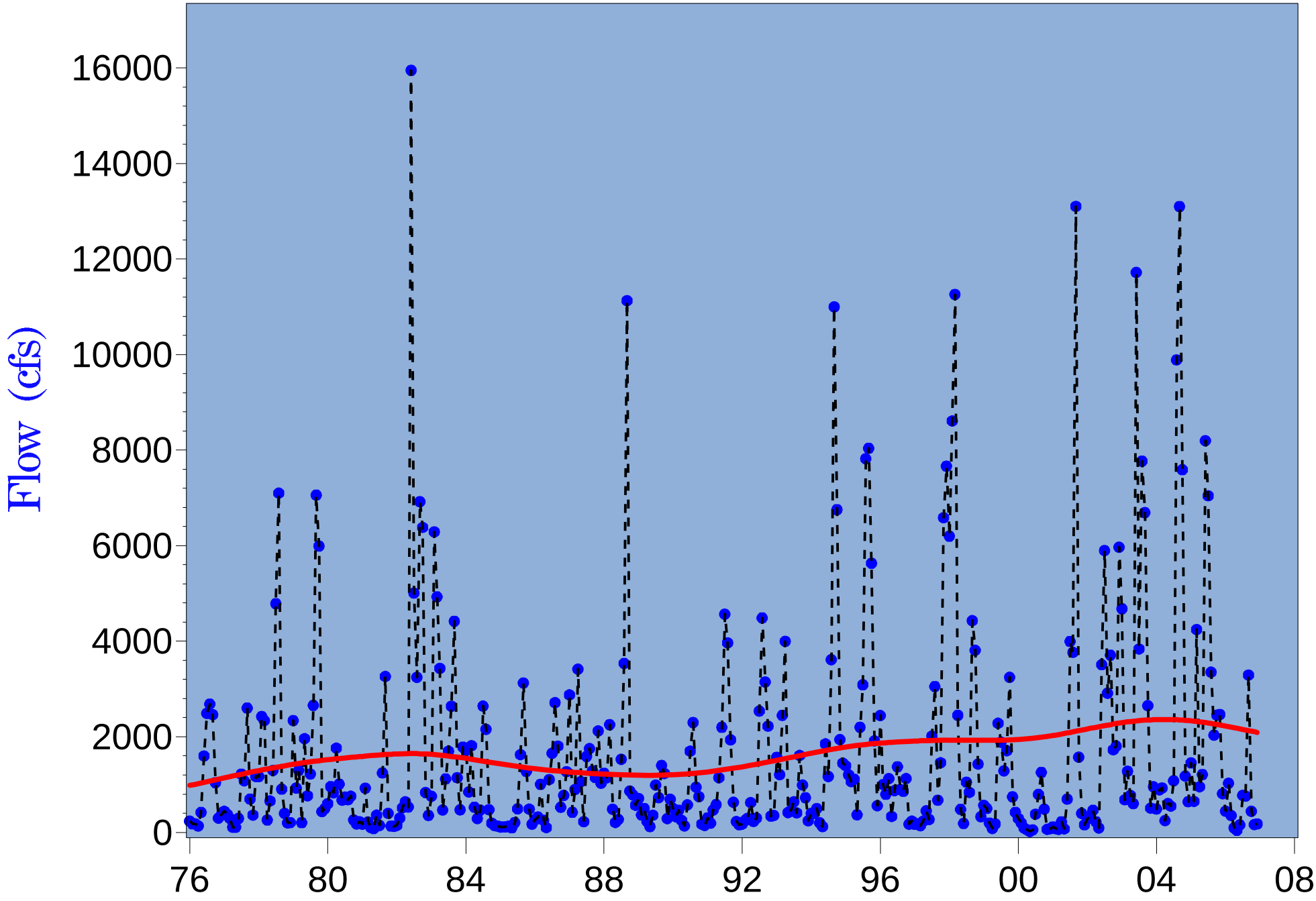


Figure 3.220 Monthly P75 flow at long-term for total gaged flow upstream of the Facility (1976-2006)

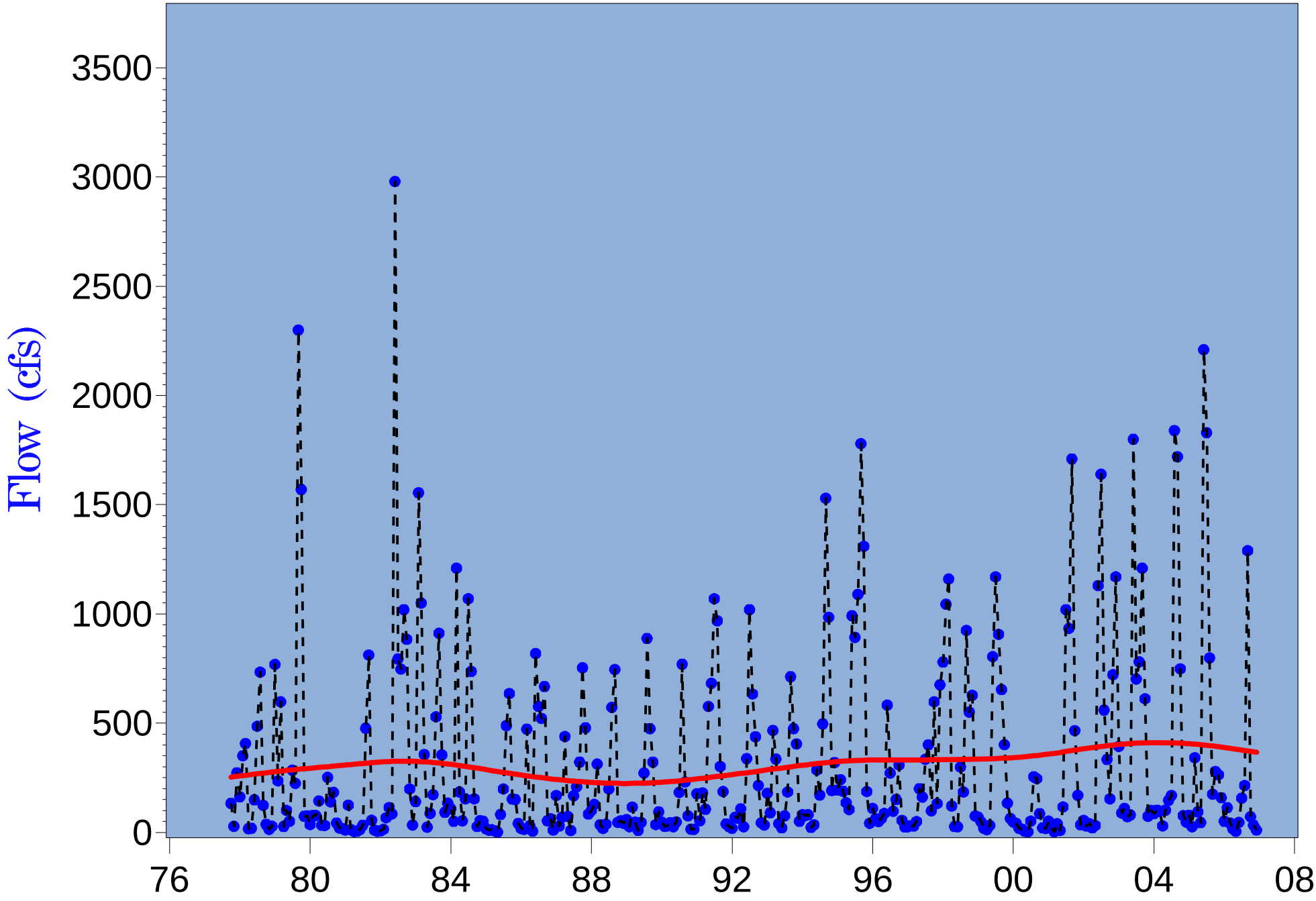


Figure 3.221 Monthly P75 flow at long-term Prairie Creek (2298123) gage (1976-2006)

Table 3.37
Historic Overview of Facility Capacity and Demand

Year	Facility Treatment Capacity (MGD)	River Intake Pumping Capacity (MGD)	Surface Water Reservoir Capacity (MG)	Aquifer Storage Recovery Well Capacity (MG)	Annual Avg. Permitted River Diversion (MGD)	Annual Avg. Public Demand (MGD)	Annual Avg. River Diversion (MGD)
1980	6.0	22.0	625	0	5.0	2.4	2.2
1981	6.0	22.0	625	0	5.0	3.4	3.3
1982	6.0	22.0	625	0	8.2	3.4	3.8
1983	6.0	22.0	625	0	8.2	3.4	3.3
1984	6.0	22.0	625	0	8.2	3.6	2.6
1985	6.0	22.0	625	720	8.2	3.4	4.6
1986	6.0	22.0	625	720	8.2	4.2	4.9
1987	6.0	22.0	625	1080	8.2	4.3	4.9
1988	6.0	22.0	625	1080	10.7	5.6	6.1
1989	12.0	22.0	625	2160	10.7	6.6	6.2
1990	12.0	22.0	625	2160	10.7	7.0	5.6
1991	12.0	22.0	625	2160	10.7	5.6	6.8
1992	12.0	22.0	625	2160	10.7	6.3	6.3
1993	12.0	22.0	625	2160	10.7	6.9	7.8
1994	12.0	22.0	625	2160	10.7	7.3	7.5
1995	12.0	22.0	625	3240	10.7	7.8	7.9
1996	12.0	22.0	625	3240	32.7	8.3	8.1
1997	12.0	22.0	625	3240	32.7	7.8	7.8
1998	12.0	22.0	625	3240	32.7	8.6	10.0
1999	12.0	22.0	625	3240	32.7	8.5	8.3
2000	12.0	22.0	625	3240	32.7	8.9	3.7
2001	12.0	22.0	625	3240	32.7	8.3	5.1
2002	24.0	42.0	625	7560	32.7	11.0	14.7
2003	24.0	42.0	625	7560	32.7	13.9	16.9
2004	24.0	42.0	625	7560	32.7	16.2	15.6
2005	24.0	42.0	625	7560	32.7	16.1	18.8
2006	24.0	42.0	625	7560	32.7	16.9	11.9

Notes:

- Facility treatment capacity is physical capacity to treat water.
- Reservoir capacity is the capacity of the reservoir when full. The actual volume in the reservoir varies depending on public demand and river diversion.
- ASR wellfield capacity is calculated by taking the number of individual wells times 360 MG to equal a full well. Actual volume in the wells varies depending on public demand and river diversions and time well has existed.
- Public demand is total public demand from the Facility.
- Annual average river diversion is the total diversion from the river no matter whether the water is stored in the reservoir, stored in ASR or met public demand.
- Permitted river diversion by the Peace River Facility.

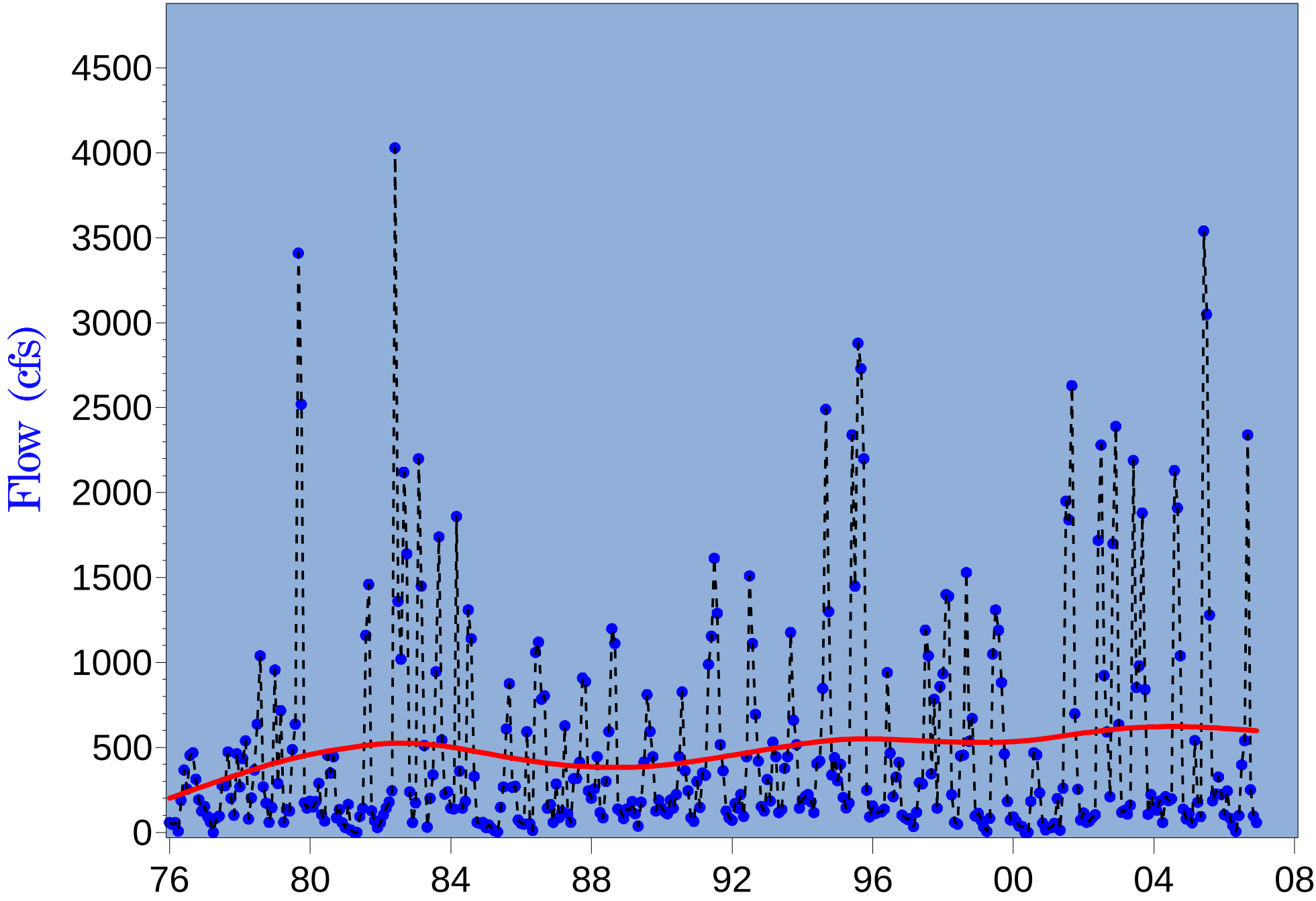


Figure 3.222 Monthly P75 flow at long-term Shell Creek gage (1976-2006)

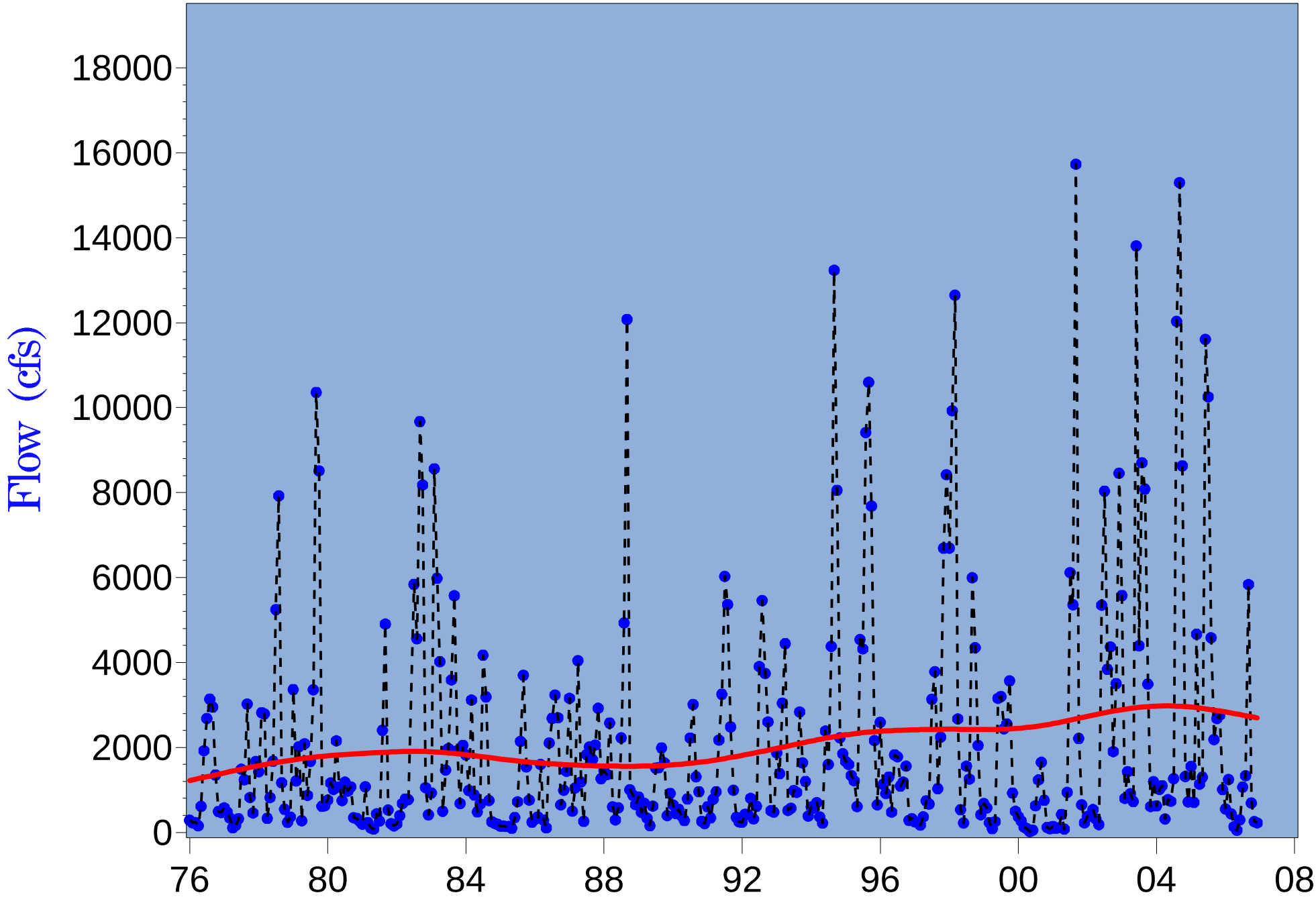


Figure 3.223 Monthly P75 flow of total gaged Peace River flow to the Upper Harbor (1976-2006)

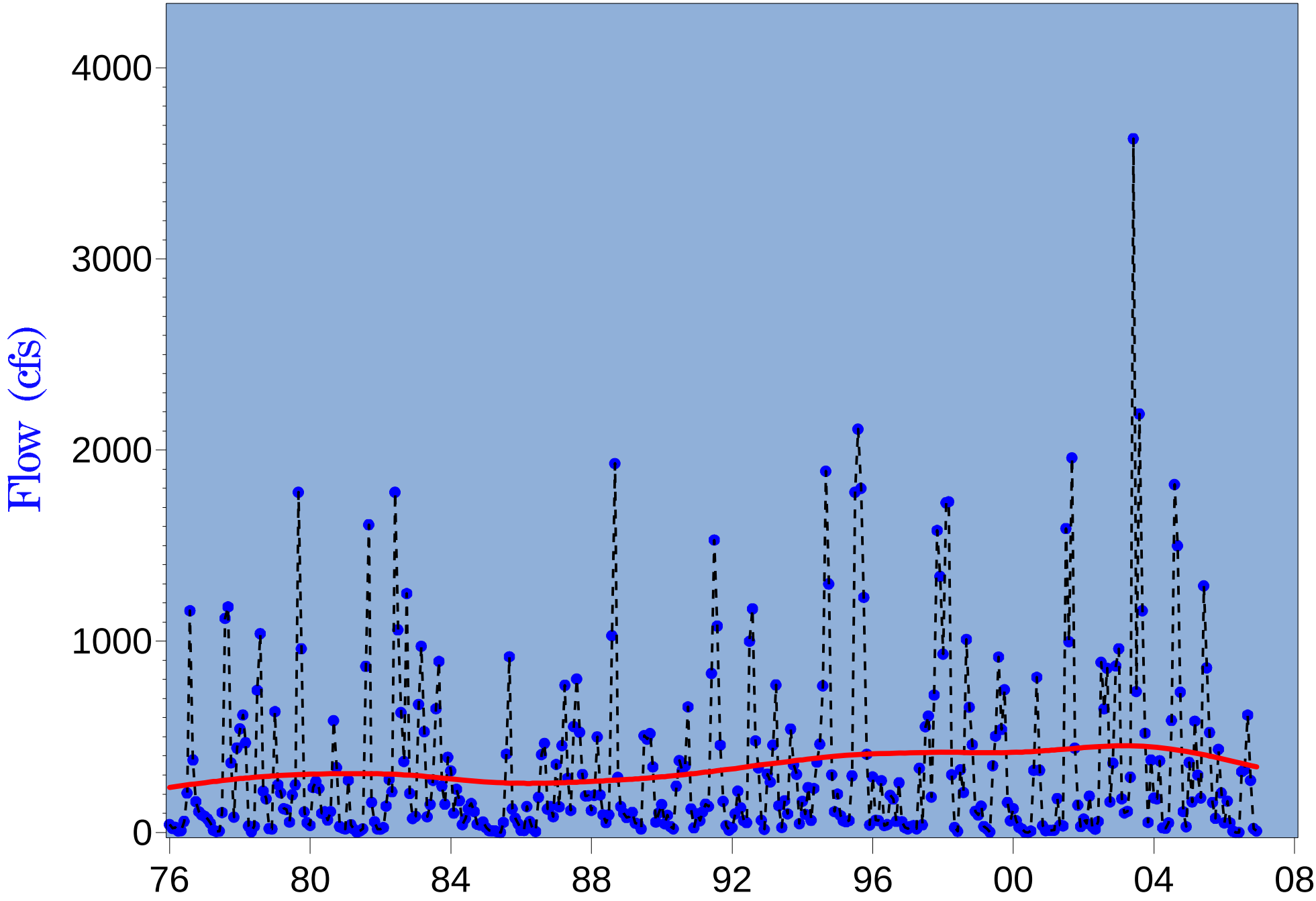


Figure 3.224 Monthly P75 flow at long-term Myakka River near Sarasota (2298830) gage (1976-2006)

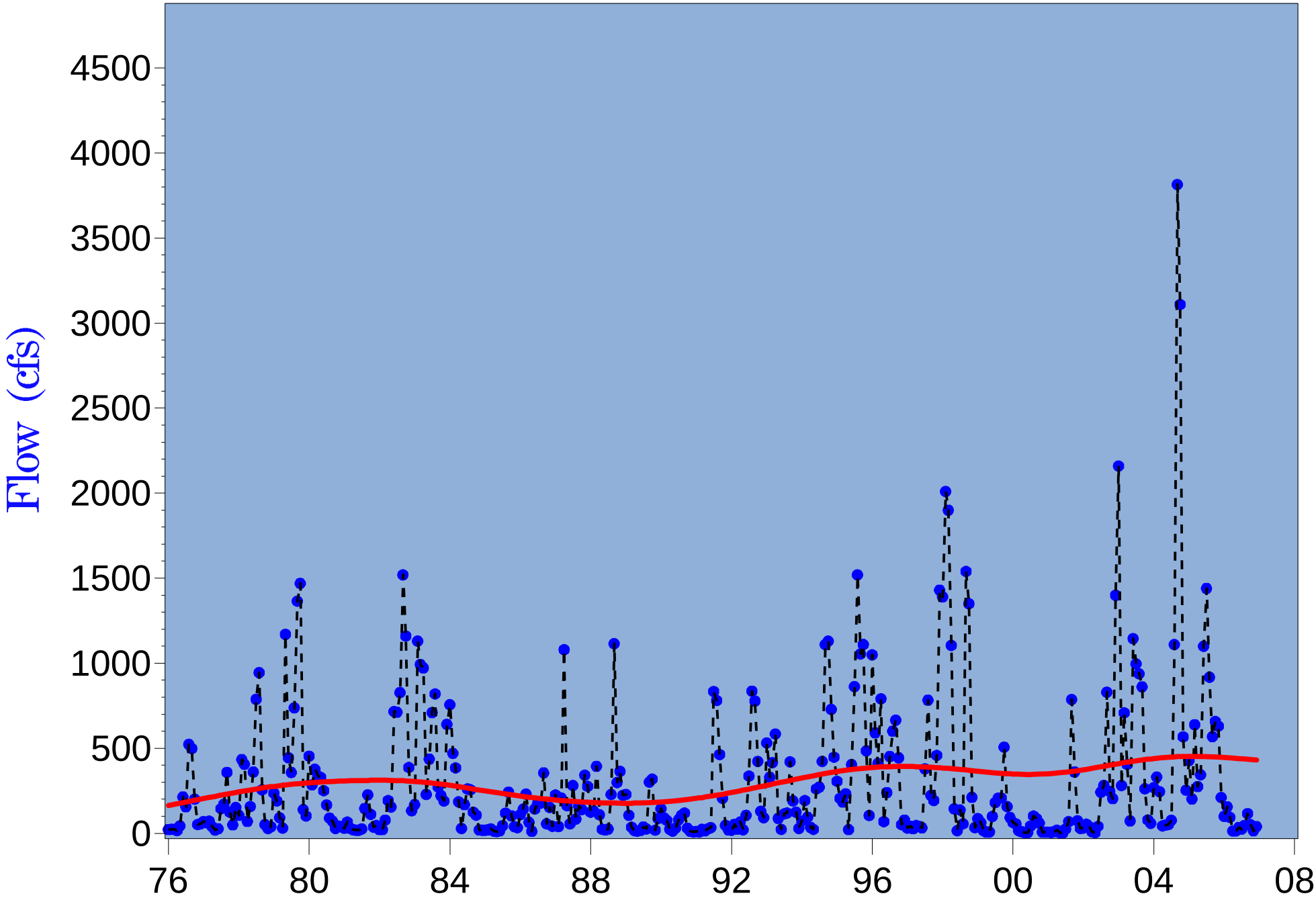


Figure 3.225 Monthly P90 flow at long-term Peace River at Bartow (2294650) gage (1976-2006)

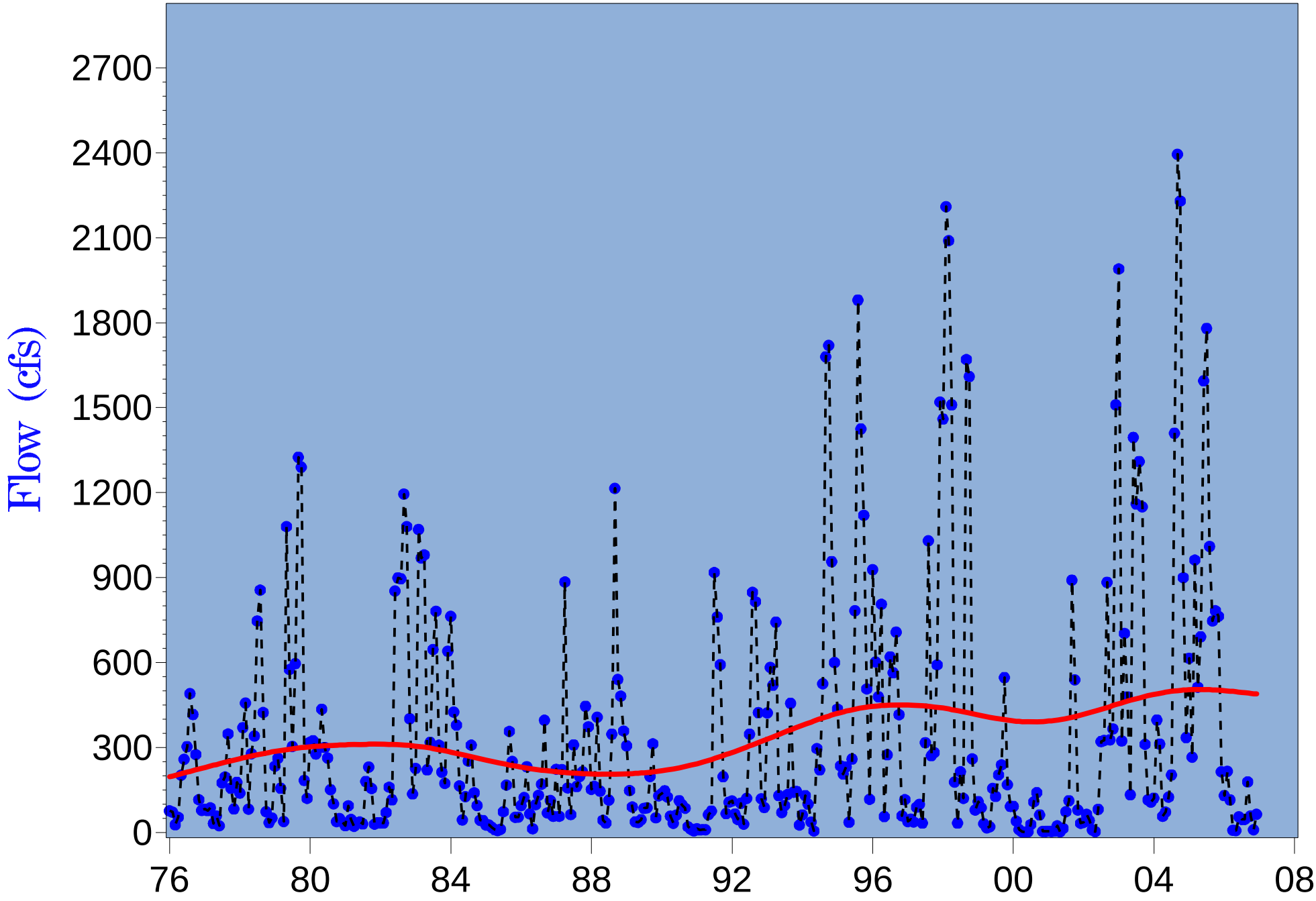


Figure 3.226 Monthly P90 flow at long-term Peace River at Ft. Meade (2294898) gage (1976-2006)

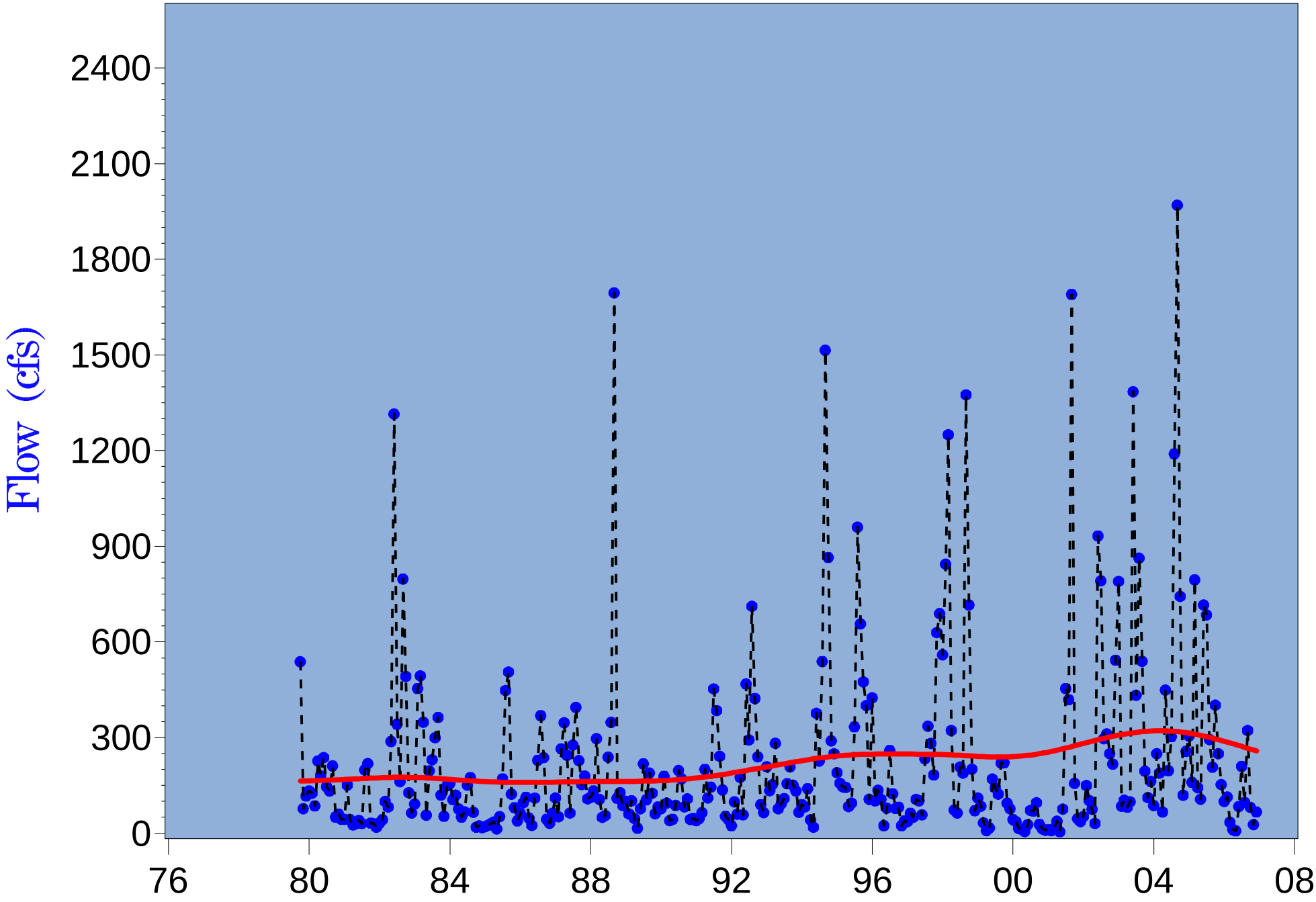


Figure 3.227 Monthly P90 flow at long-term Payne Creek (2295420) gage (1976-2006)

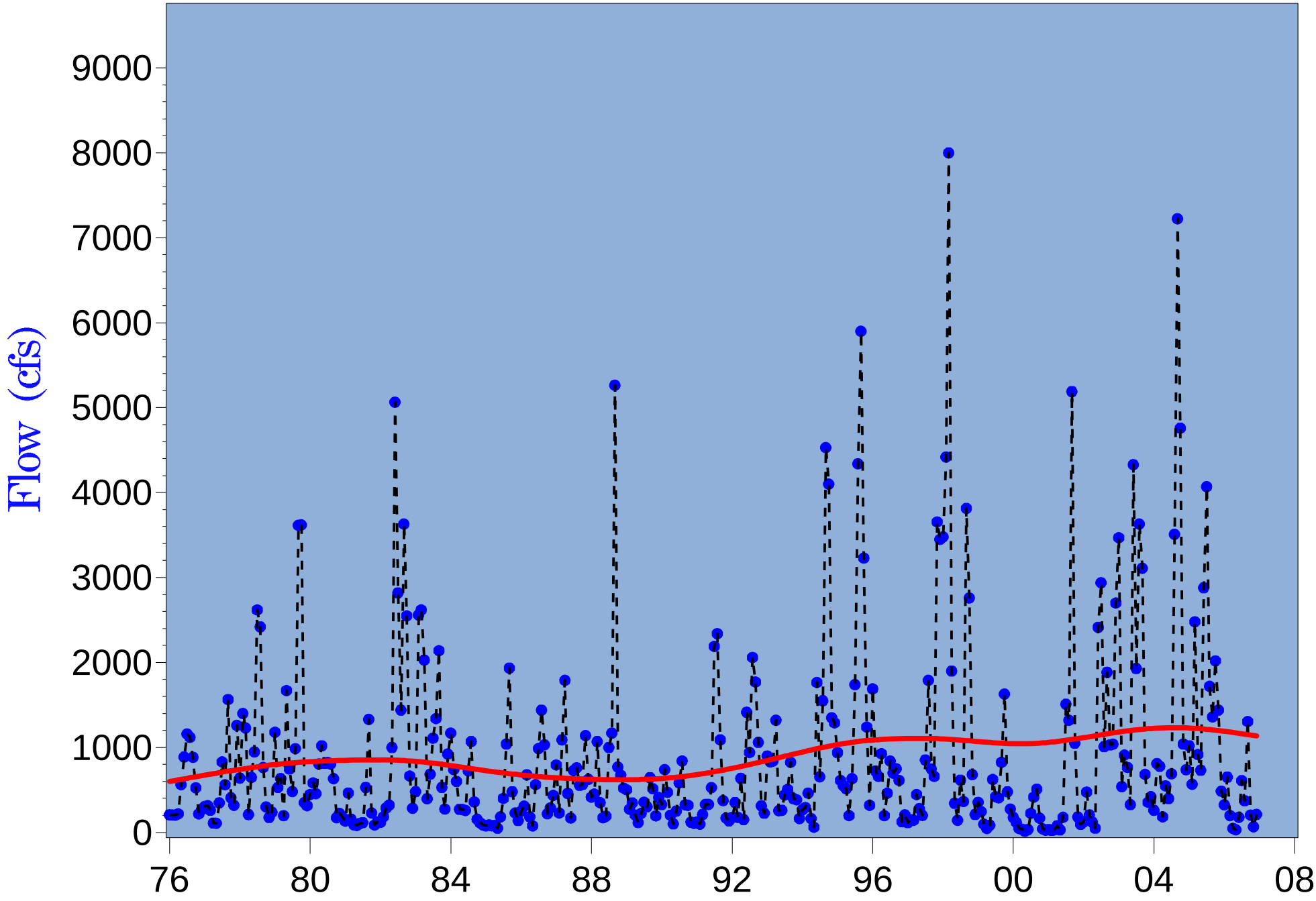


Figure 3.228 Monthly P90 flow at long-term Peace River at Zolfo (2295637) gage (1976-2006)

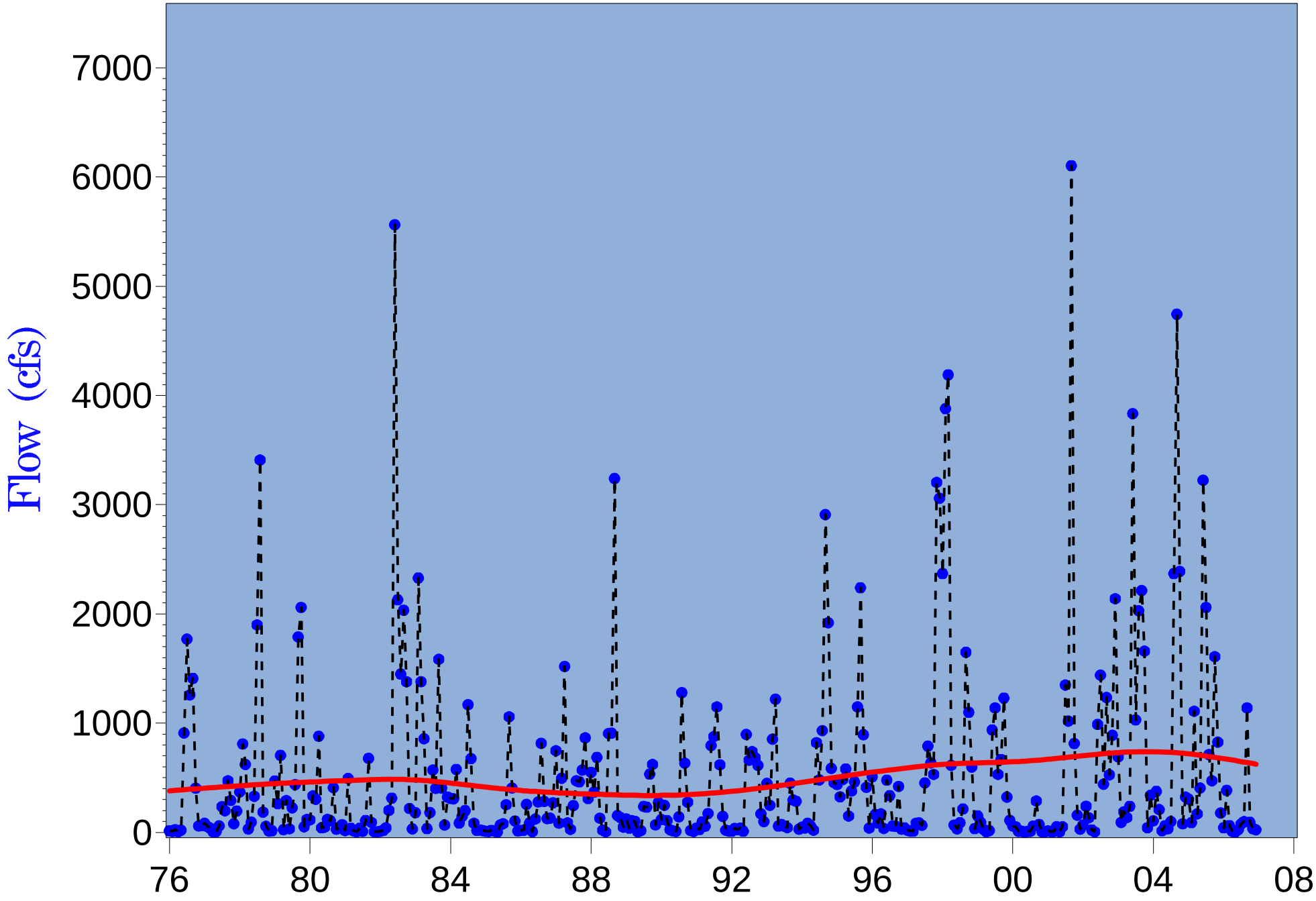


Figure 3.229 Monthly P90 flow at long-term Charlie Creek (2296500) gage (1976-2006)

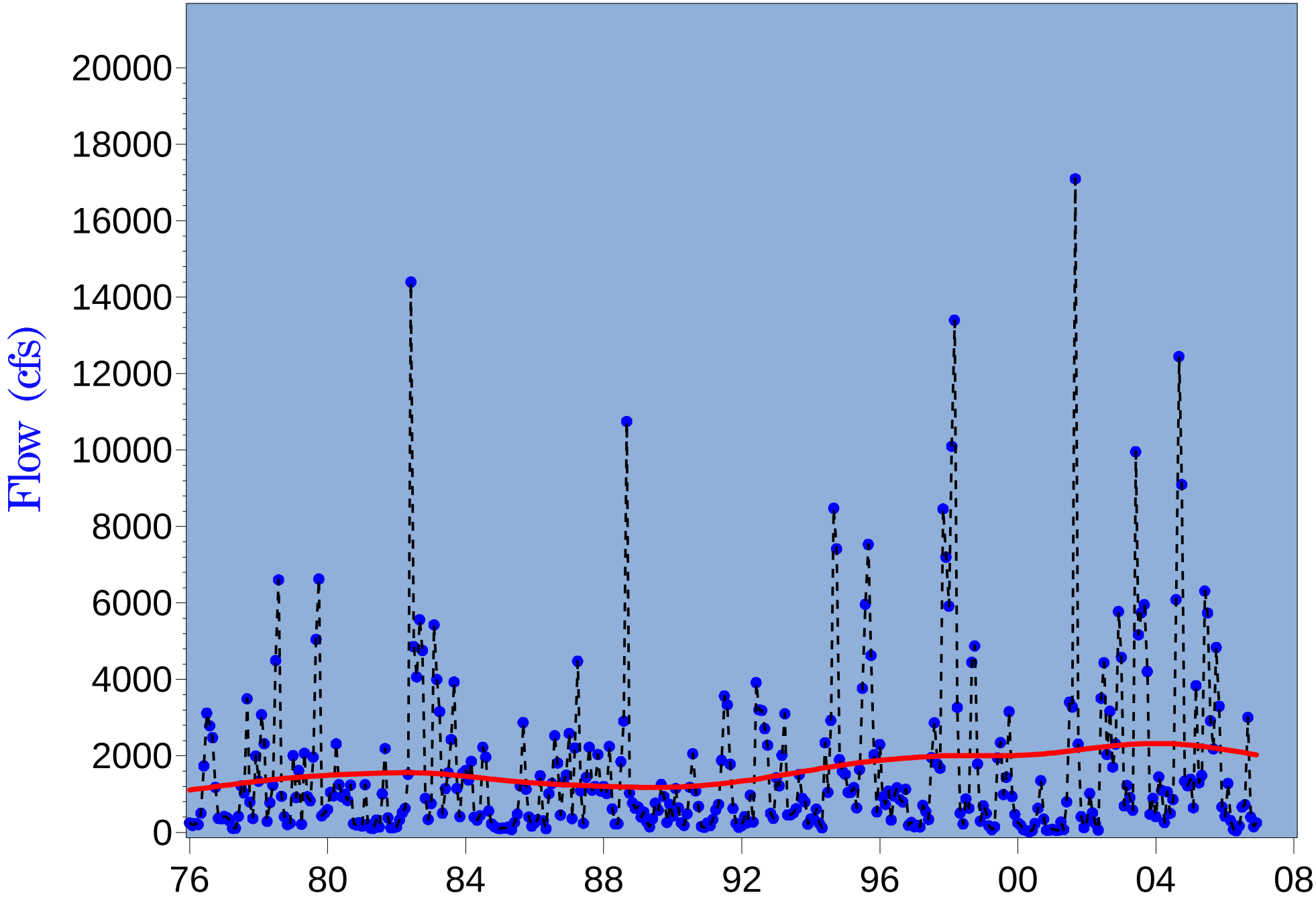


Figure 3.230 Monthly P90 flow at long-term Peace River at Arcadia (2296750) gage (1976-2006)

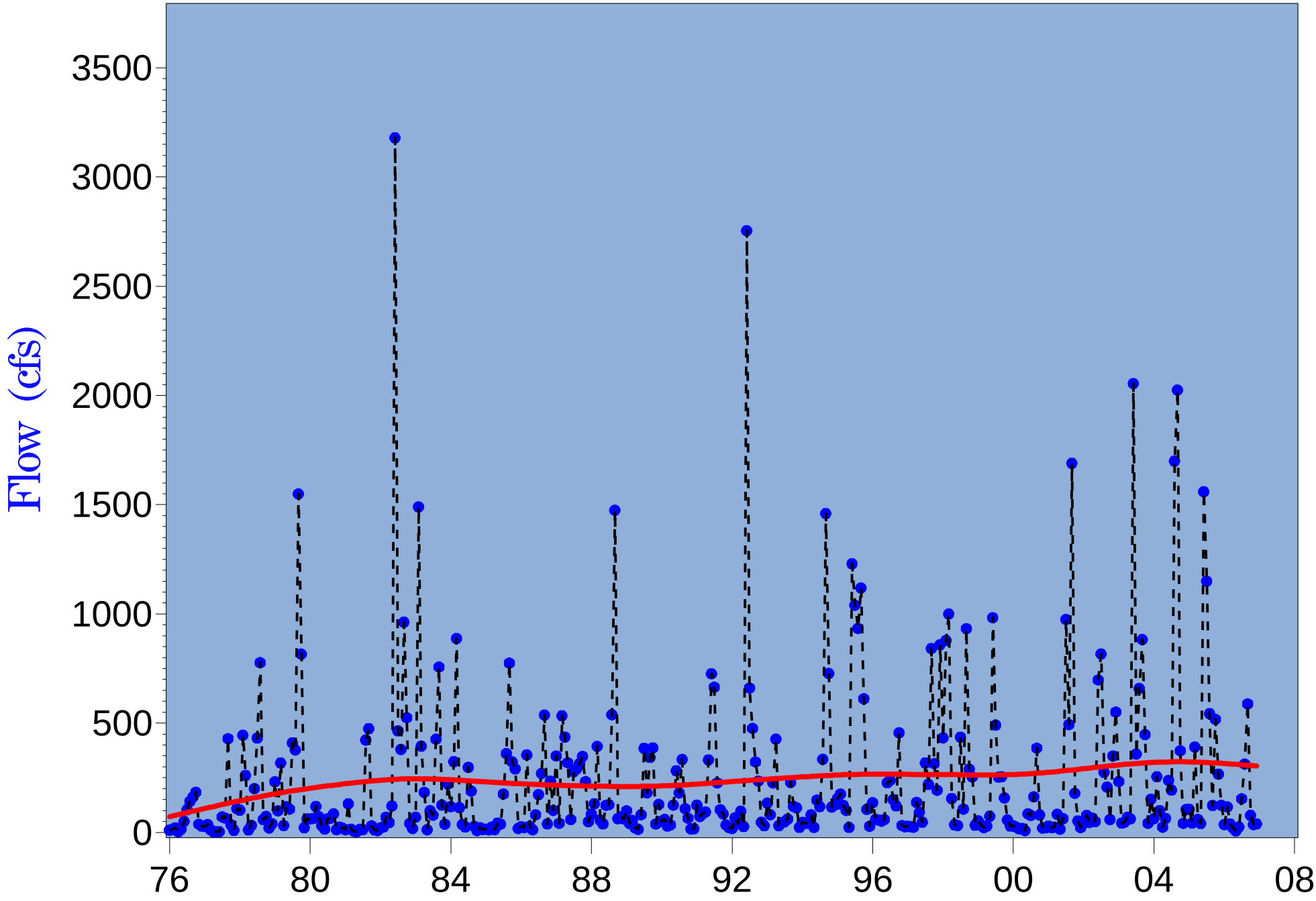


Figure 3.231 Monthly P90 flow at long-term Joshua Creek at Nocatee (2297100) gage (1976-2006)

Table 3.38

Long-Term Yearly Mean Measurements of Peace River Flows and Facility Withdrawals during 1976-2006 HBMP Monitoring Period

Year	Peace River Total Gaged Flow (cfs) at:			Withdrawals (cfs)		Peace River Facility Withdrawals as Percentages of Total Gaged Flows at:			Total of Authority and City of Punta Gorda Withdrawals as Percent of Total Gaged Flow as US 41 Bridge
	Arcadia	Peace River Facility	US 41 Bridge	Peace River Facility from Lower Peace River	City of Punta Gorda from Shell Creek	Arcadia	Facility	US 41 Bridge	
1976	704.5	784.2	960.8	No Withdrawals	2.5	No Withdrawals			0.3
1977	478.7	588.0	732.0		3.0				0.4
1978	997.3	1254.6	1525.8		3.0				0.2
1979	1171.5	1532.7	2080.5		3.2				0.2
1980	495.2	578.2	726.3	3.9	3.4	0.7	0.6	0.5	0.9
1981	288.4	442.3	629.7	5.1	3.7	1.8	1.2	0.8	1.4
1982	1610.5	2141.9	2746.9	5.9	3.9	0.4	0.3	0.2	0.4
1983	1371.4	1778.7	2319.9	5.1	3.8	0.4	0.3	0.2	0.4
1984	567.0	742.9	1102.7	4.1	4.2	0.7	0.6	0.4	0.8
1985	369.0	510.6	680.8	7.2	3.9	2.0	1.4	1.1	1.6
1986	549.0	781.3	1013.7	7.5	3.8	1.4	1.0	0.7	1.1
1987	802.8	1095.5	1357.8	7.6	3.8	1.0	0.7	0.6	0.8
1988	1054.1	1425.2	1738.4	9.5	5.0	0.9	0.7	0.6	0.8
1989	373.6	481.9	699.0	9.6	5.2	2.6	2.0	1.4	2.1
1990	402.4	544.5	741.4	8.7	5.3	2.2	1.6	1.2	1.9
1991	771.2	1063.7	1567.6	10.4	4.7	1.4	1.0	0.7	1.0
1992	784.6	1143.0	1543.7	9.4	5.0	1.2	0.8	0.6	0.9
1993	698.5	903.1	1249.3	12.0	4.9	1.7	1.3	1.0	1.4
1994	1365.9	1788.6	2259.0	11.7	5.0	0.9	0.7	0.5	0.7
1995	1708.1	2250.4	3071.6	12.2	4.9	0.7	0.5	0.4	0.6
1996	598.2	725.6	928.8	12.5	5.2	2.1	1.7	1.3	1.9
1997	1059.9	1439.0	1777.6	12.1	5.0	1.1	0.8	0.7	1.0
1998	1916.0	2459.9	2921.3	15.4	5.1	0.8	0.6	0.5	0.7
1999	565.9	782.7	1144.5	12.8	5.5	2.3	1.7	1.2	1.7

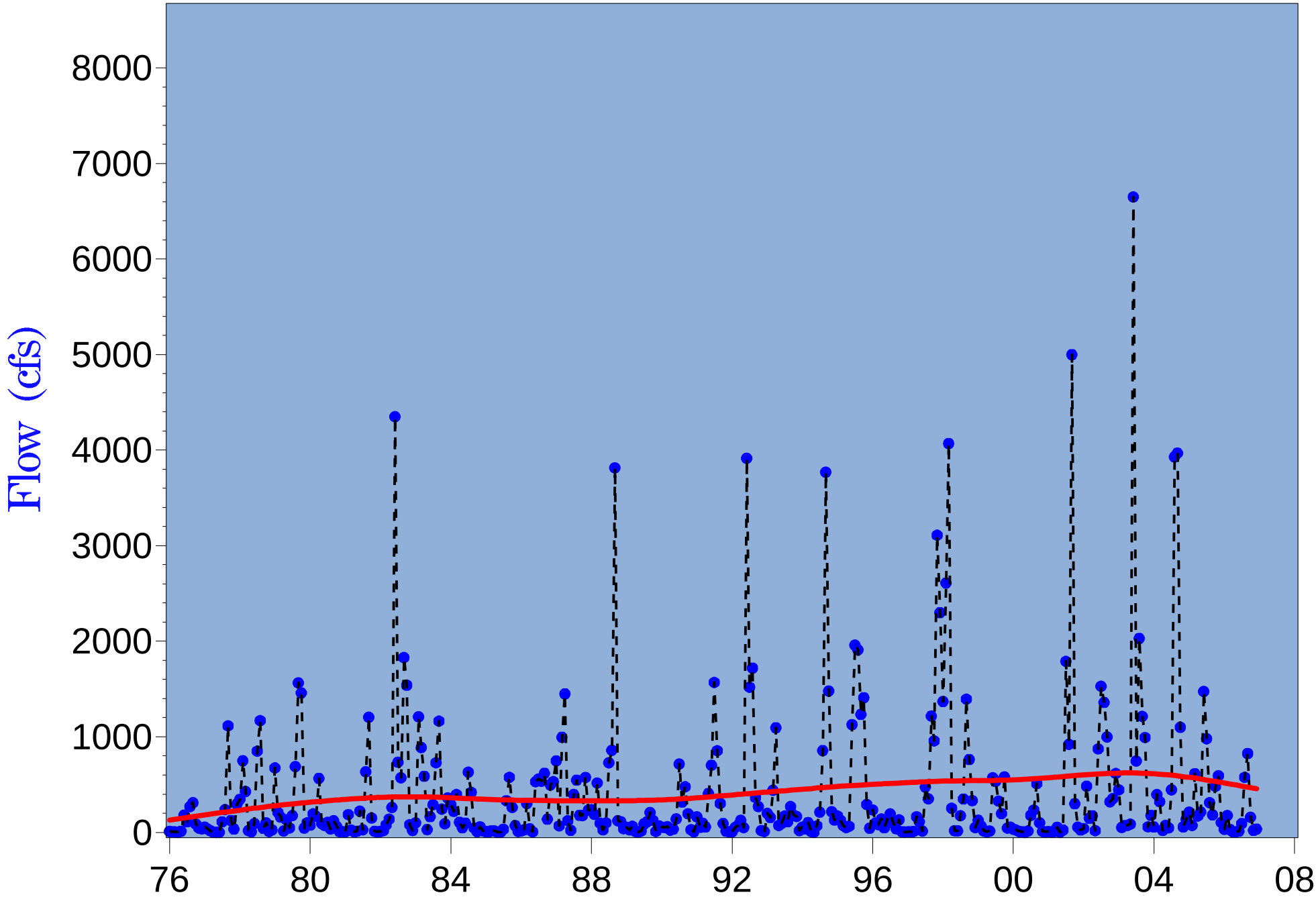


Figure 3.232 Monthly P90 flow at long-term Horse Creek near Arcadia(2297310) gage (1976-2006)

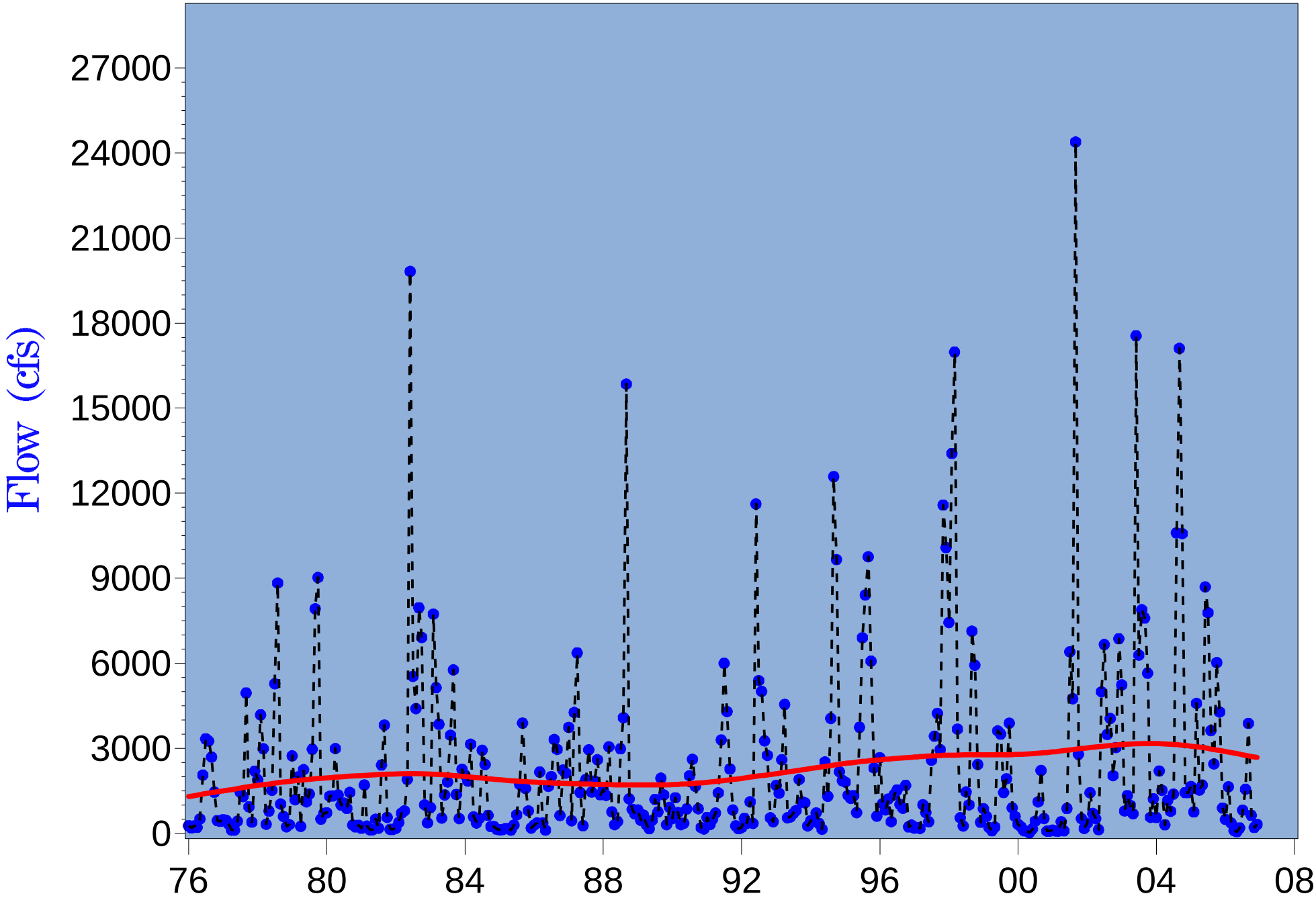


Figure 3.233 Monthly P90 flow at long-term for total gaged flow upstream of the Facility (1976-2006)

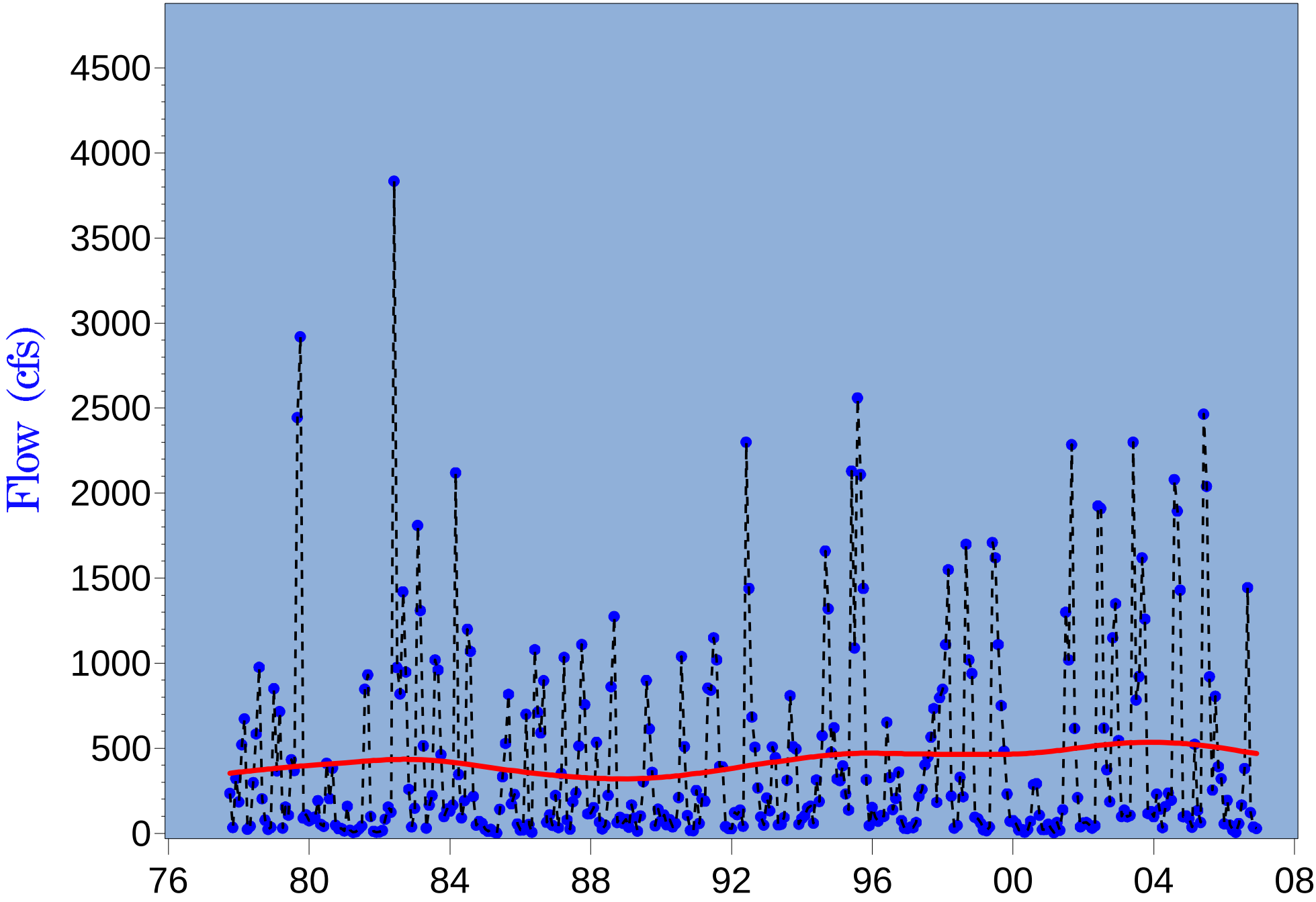


Figure 3.234 Monthly P90 flow at long-term Prairie Creek (2298123) gage (1976-2006)

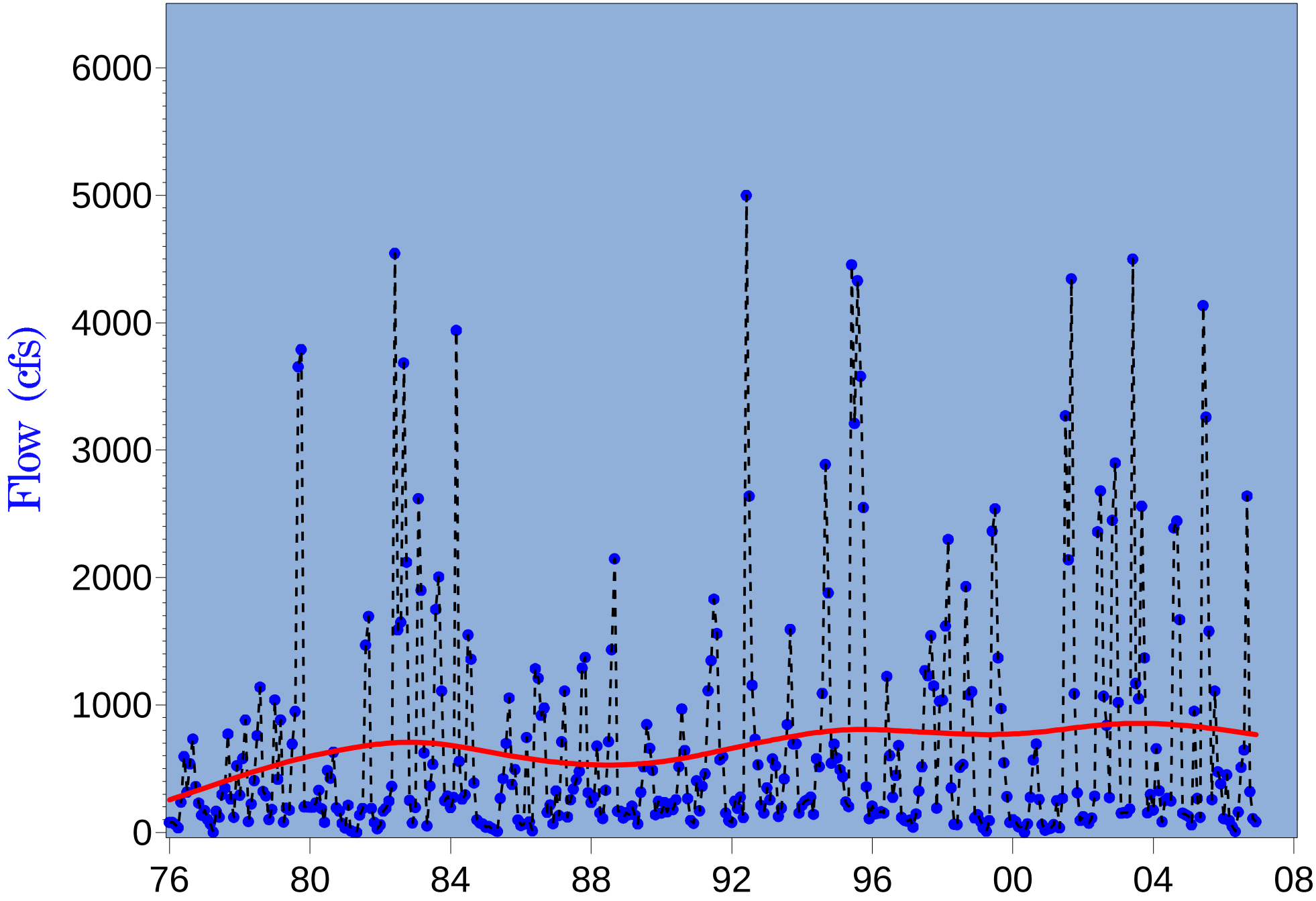


Figure 3.235 Monthly P90 flow at long-term Shell Creek gage (1976-2006)

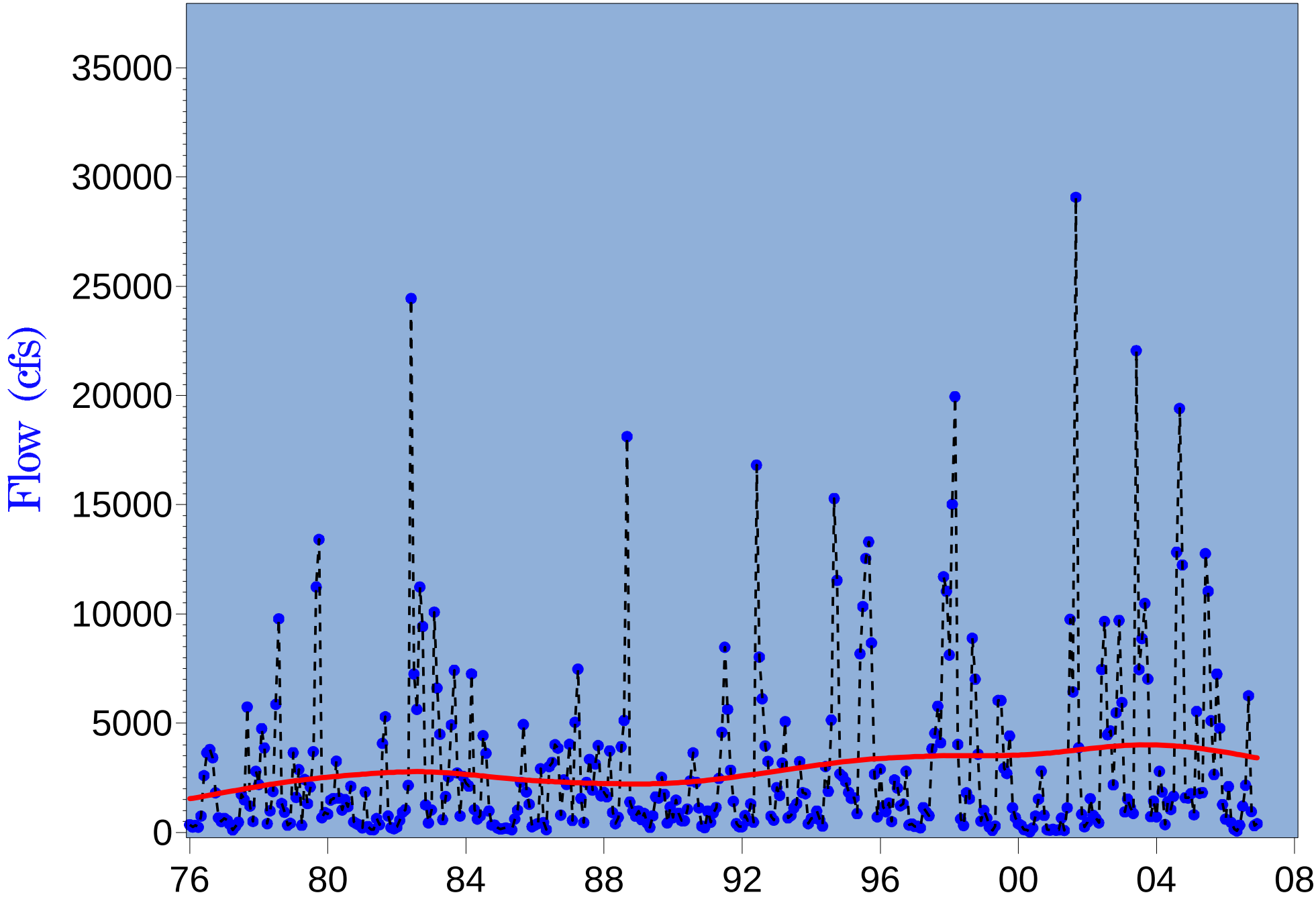


Figure 3.236 Monthly P90 flow of total gaged Peace River flow to the Upper Harbor (1976-2006)

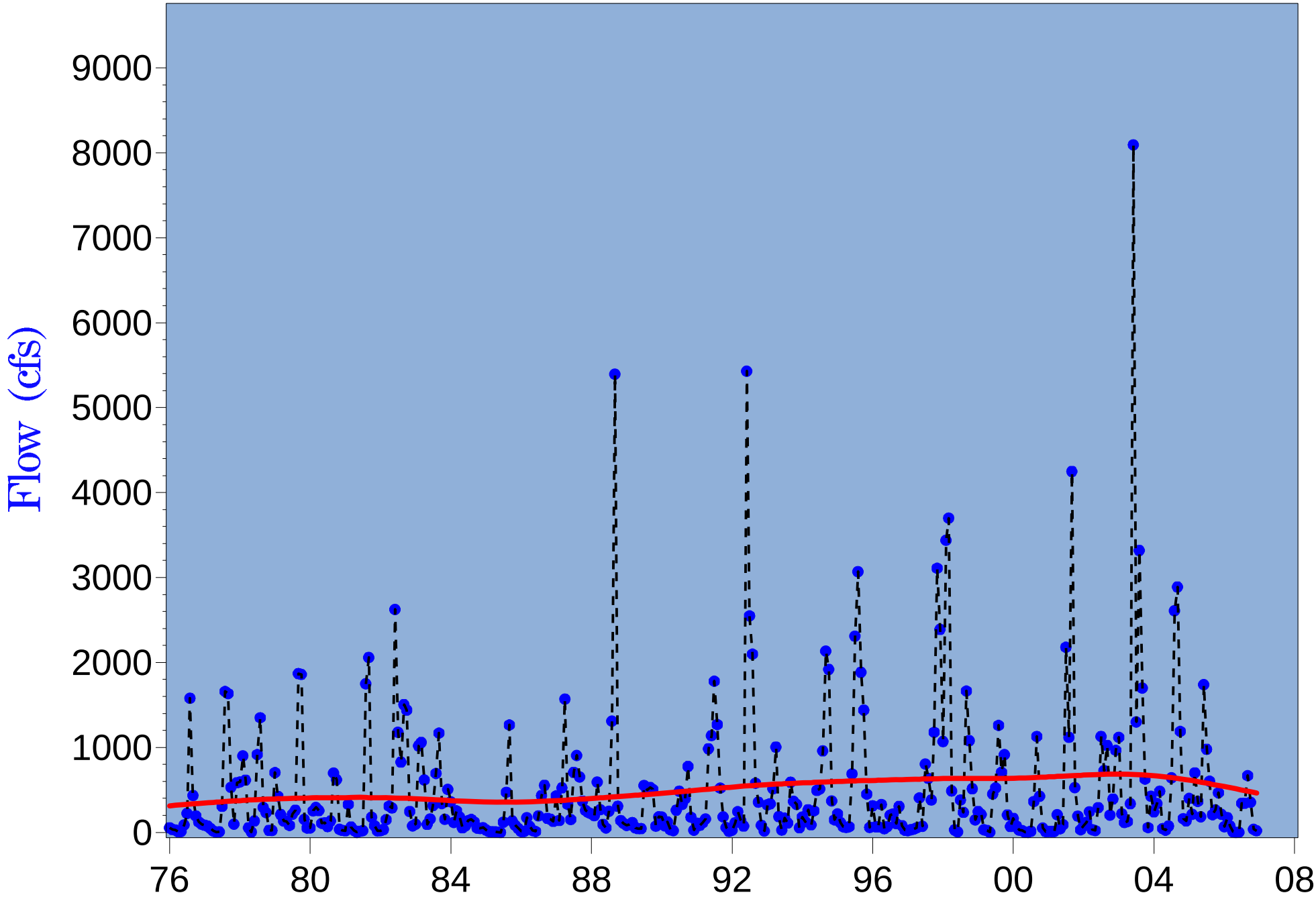


Figure 3.237 Monthly P90 flow at long-term Myakka River near Sarasota (2298830) gage (1976-2006)

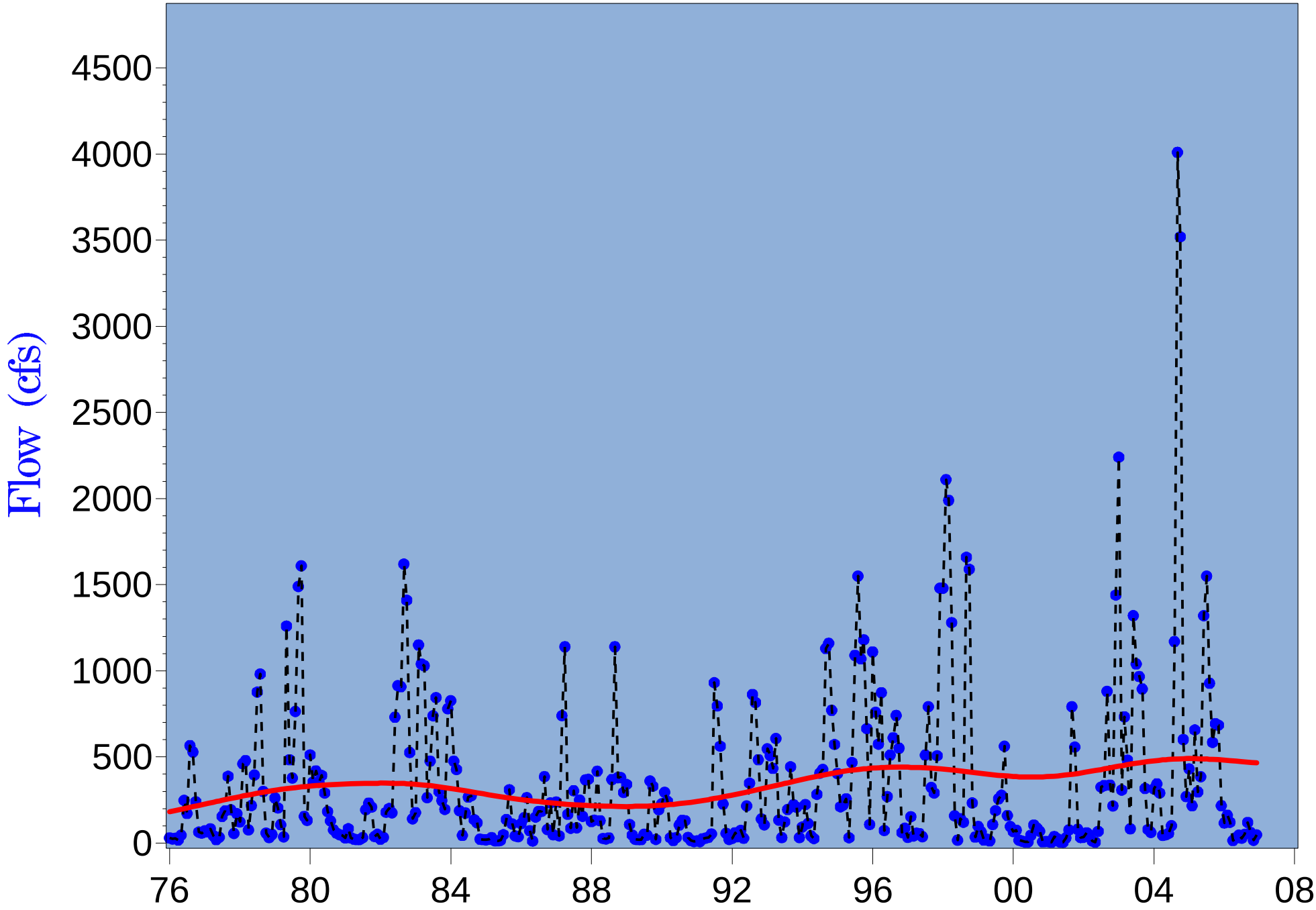


Figure 3.238 Monthly P100 (maximum) flow at long-term Peace River at Bartow (2294650) gage (1976-2006)

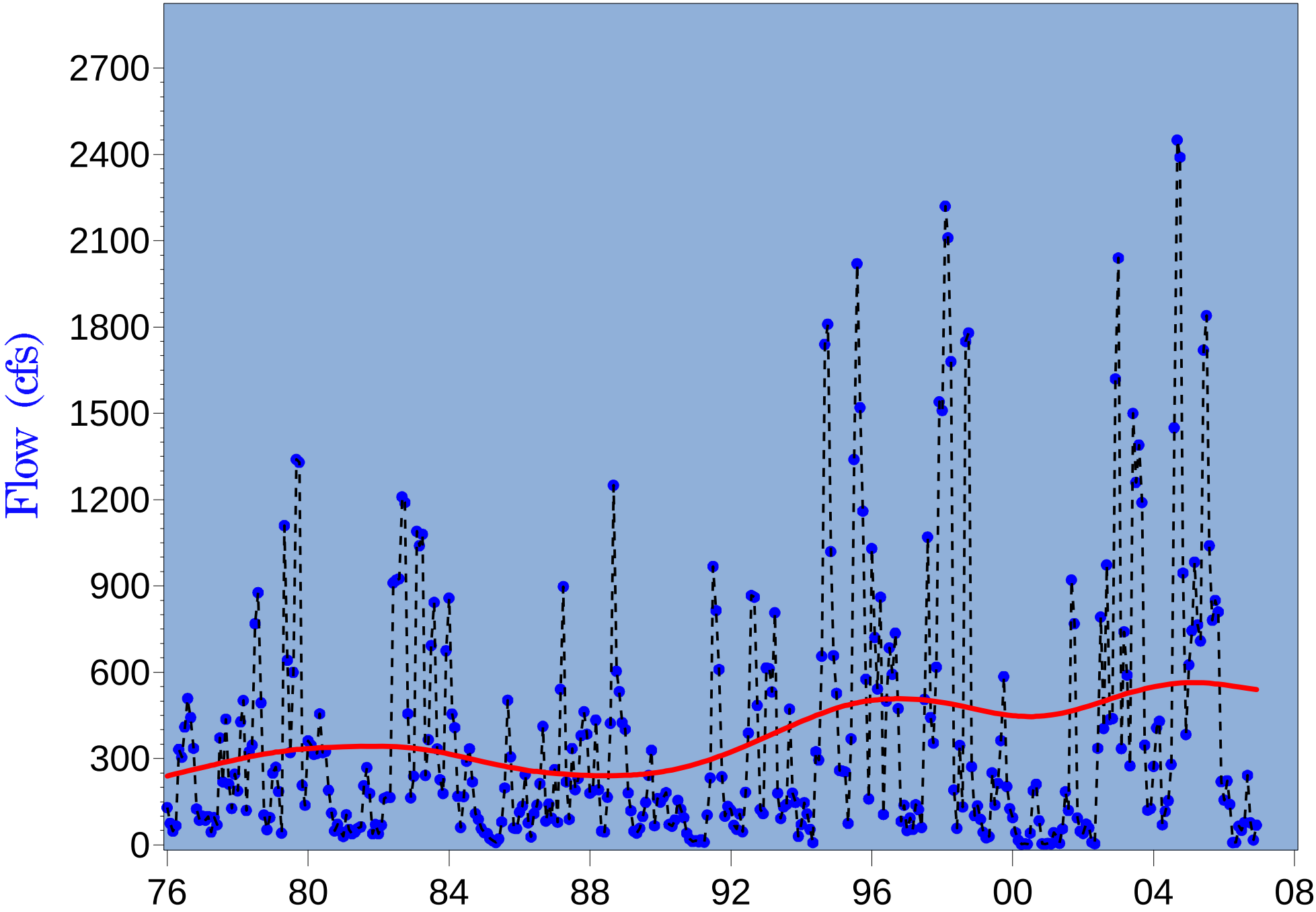


Figure 3.239 Monthly P100 (maximum) flow at long-term Peace River at Ft. Meade (2294898) gage (1976-2006)

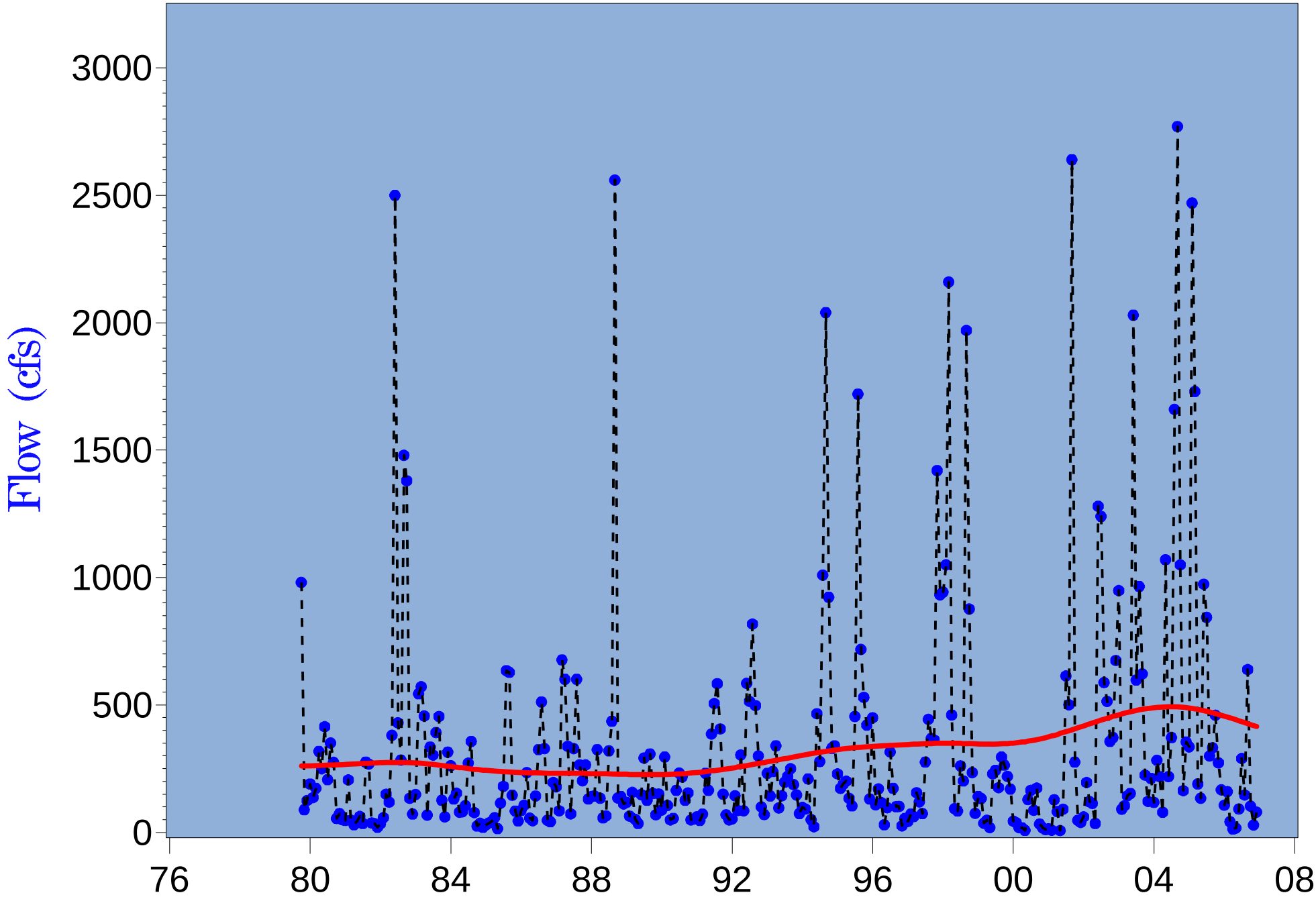


Figure 3.240 Monthly P100 (maximum) flow at long-term Payne Creek (2295420) gage (1976-2006)

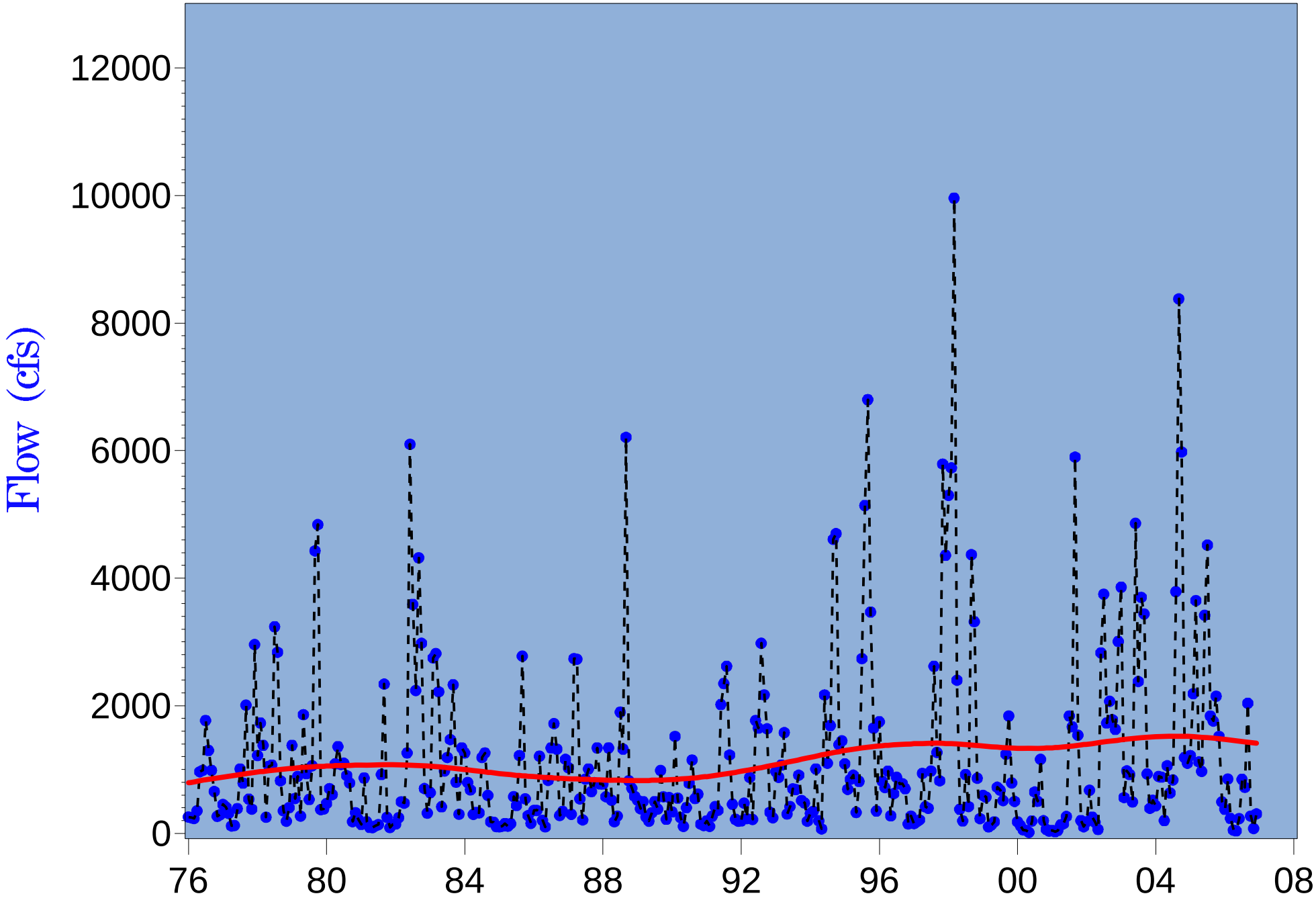


Figure 3.241 Monthly P100 (maximum) flow at long-term Peace River at Zolfo (2295637) gage (1976-2006)

Table 3.38

Long-Term Yearly Mean Measurements of Peace River Flows and Facility Withdrawals during 1976-2006 HBMP Monitoring Period

Year	Peace River Total Gaged Flow (cfs) at:			Withdrawals (cfs)		Peace River Facility Withdrawals as Percentages of Total Gaged Flows at:			Total of Authority and City of Punta Gorda Withdrawals as Percent of Total Gaged Flow as US 41 Bridge
	Arcadia	Peace River Facility	US 41 Bridge	Peace River Facility from Lower Peace River	City of Punta Gorda from Shell Creek	Arcadia	Facility	US 41 Bridge	
2000	138.7	220.8	335.3	5.7	6.1	4.1	2.6	1.7	3.5
2001	1038.4	1442.0	1936.9	7.9	6.1	0.8	0.6	0.4	0.7
2002	1180.7	1615.7	2191.2	22.8	6.5	1.9	1.4	1.0	1.3
2003	1856.3	2454.3	2921.9	26.1	6.8	1.4	1.1	0.9	1.1
2004	1746.5	2363.3	2788.1	24.2	6.9	1.4	1.0	0.9	1.1
2005	1859.9	2338.7	2954.7	29.1	6.9	1.6	1.2	1.0	1.2
2006	376.0	538.2	820.1	18.4	7.5	4.9	3.4	2.2	3.2

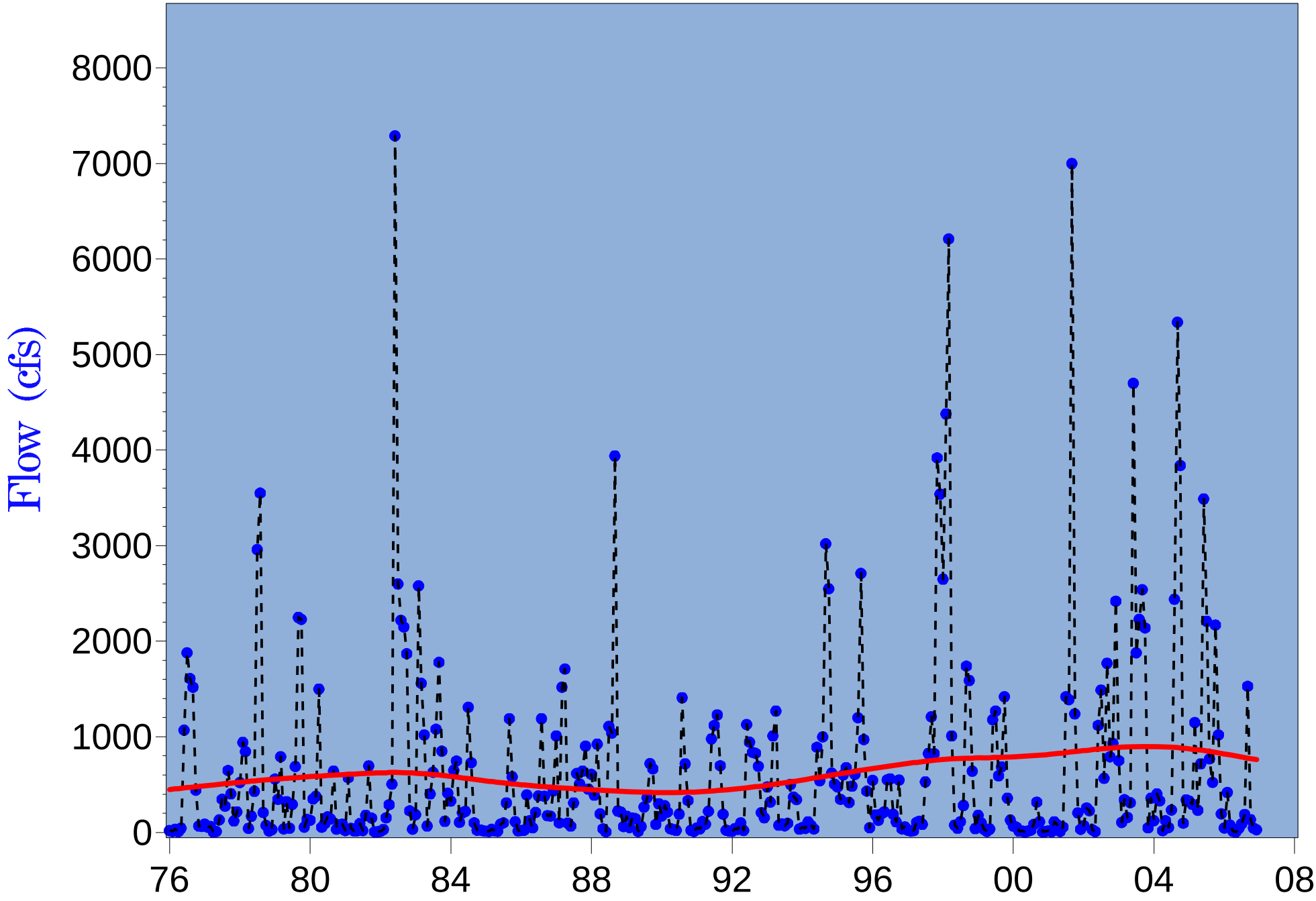


Figure 3.242 Monthly P100 (maximum) flow at long-term Charlie Creek (2296500) gage (1976-2006)

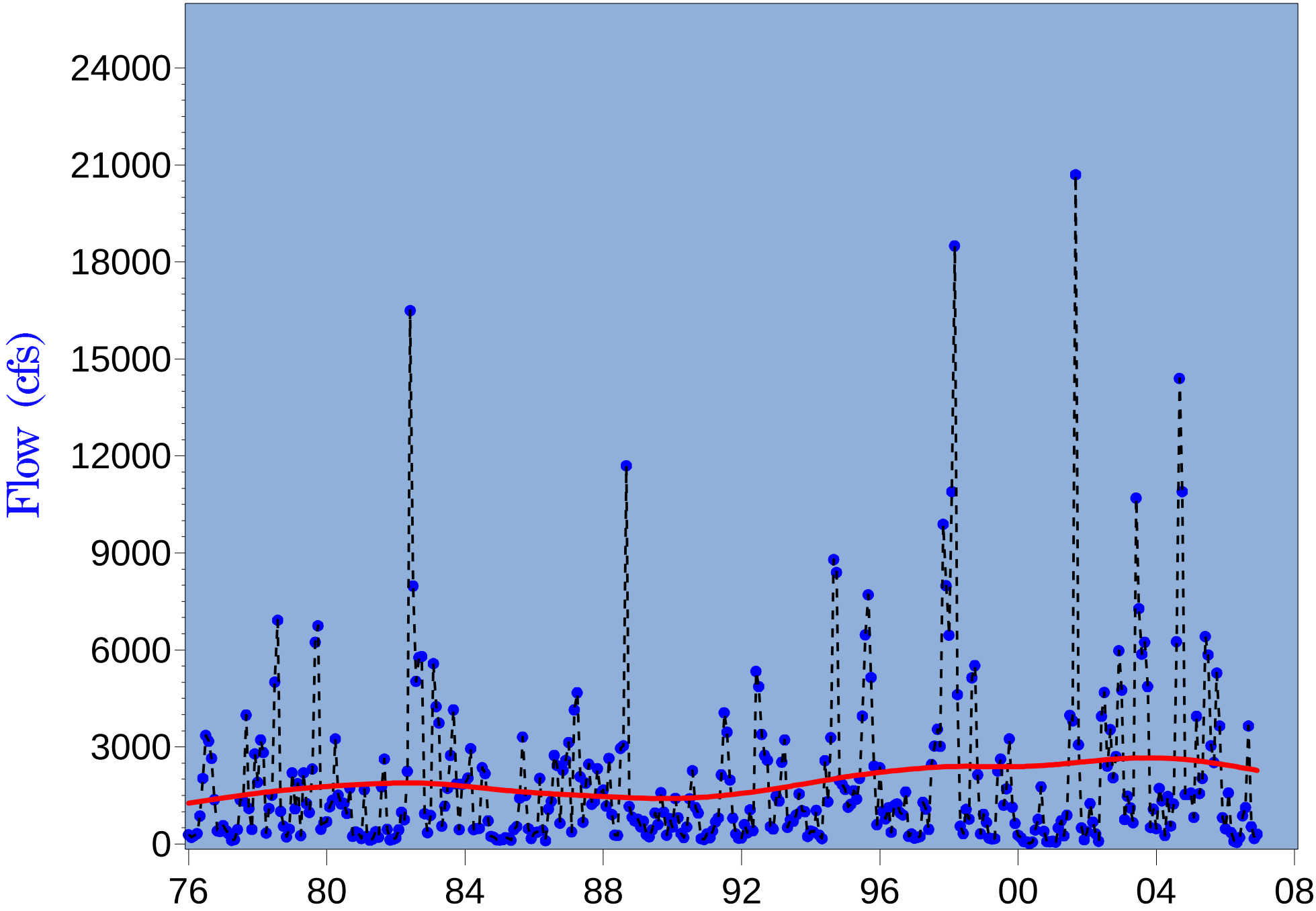


Figure 3.243 Monthly P100 (maximum) flow at long-term Peace River at Arcadia (2296750) gage (1976-2006)

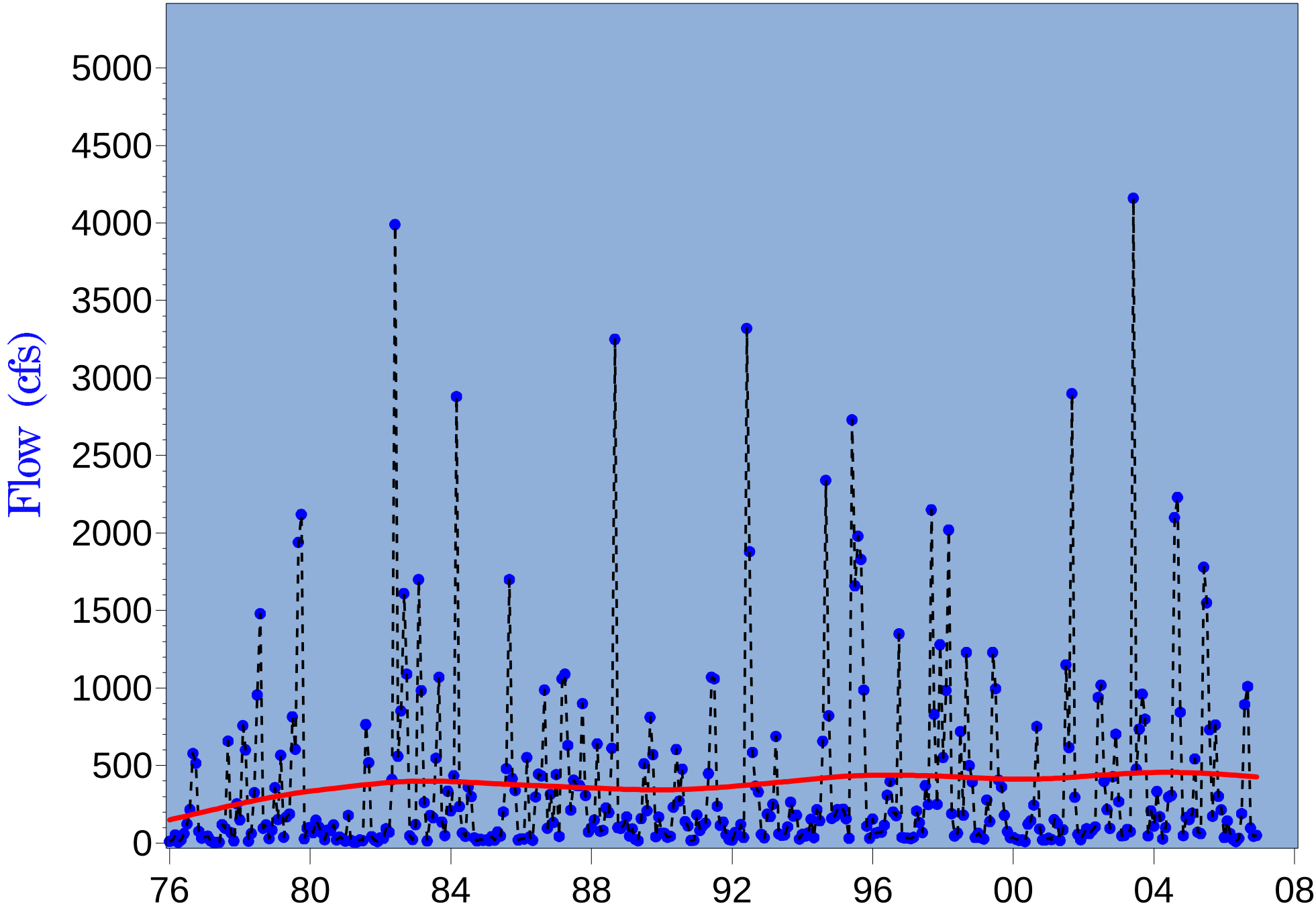


Figure 3.244 Monthly P100 (maximum) flow at long-term Joshua Creek at Nocatee (2297100) gage (1976-2006)

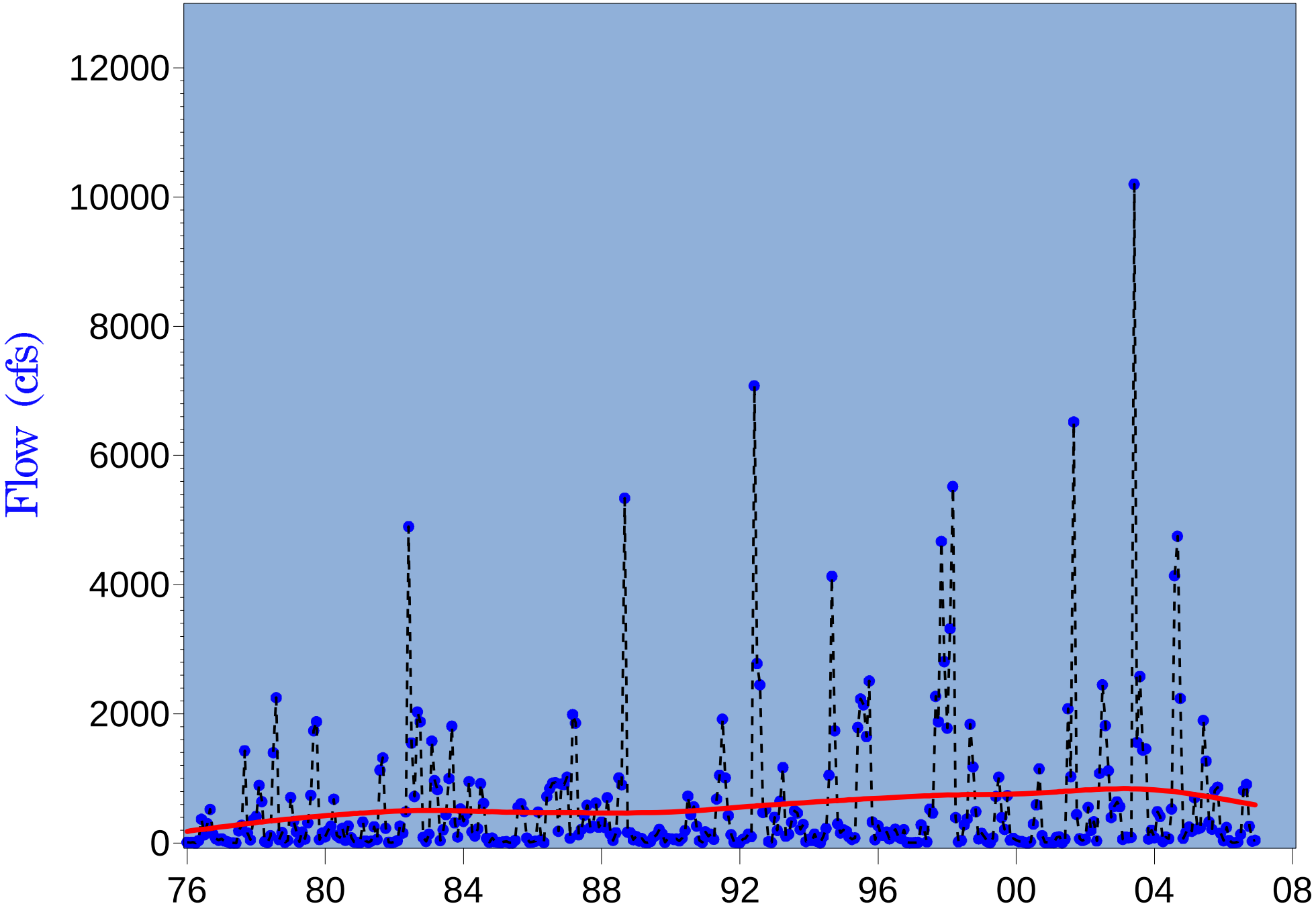


Figure 3.245 Monthly P100 (maximum) flow at long-term Horse Creek near Arcadia(2297310) gage (1976-2006)

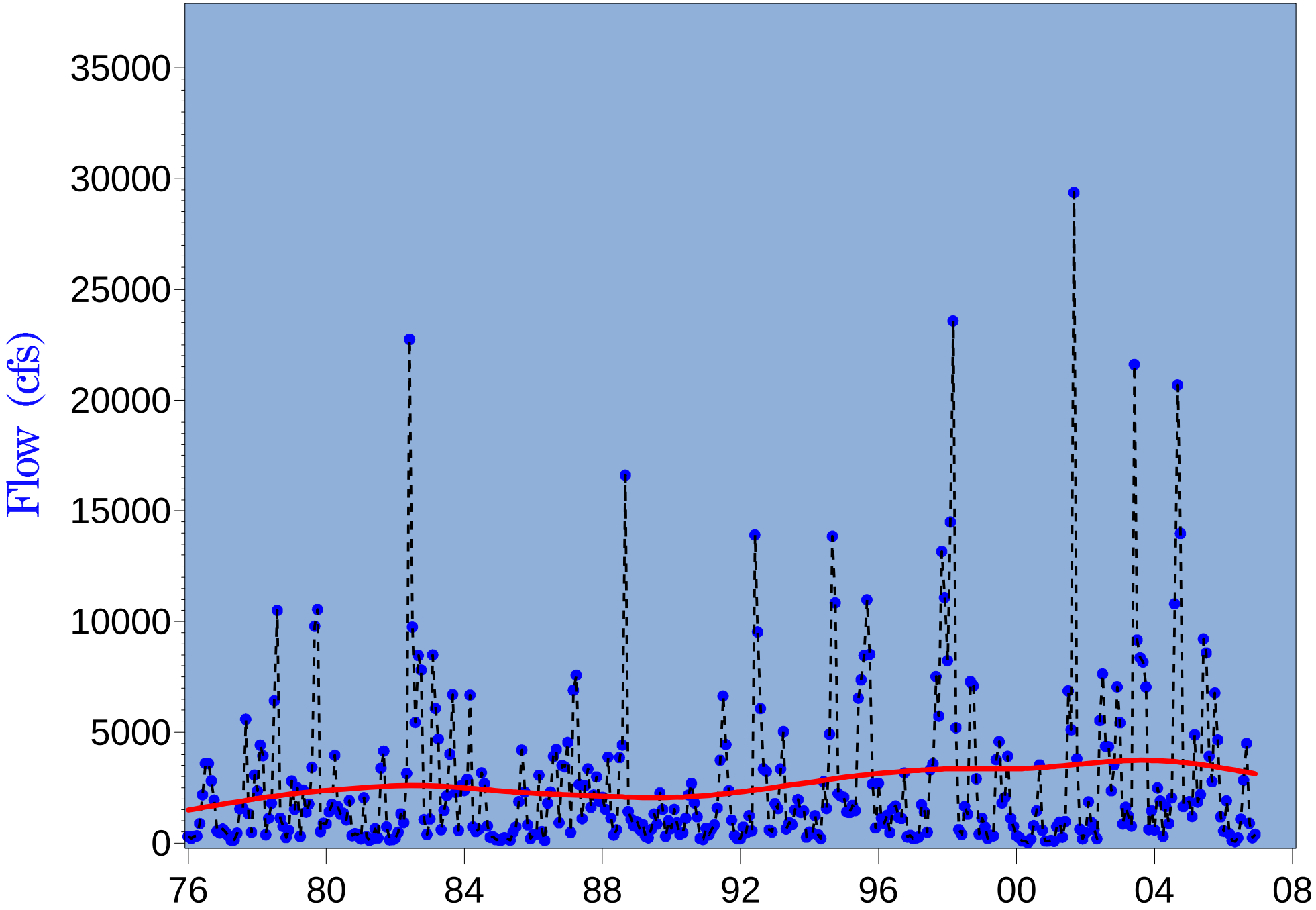


Figure 3.246 Monthly P100 (maximum) flow at long-term for total gaged flow upstream of the Facility (1976-2006)

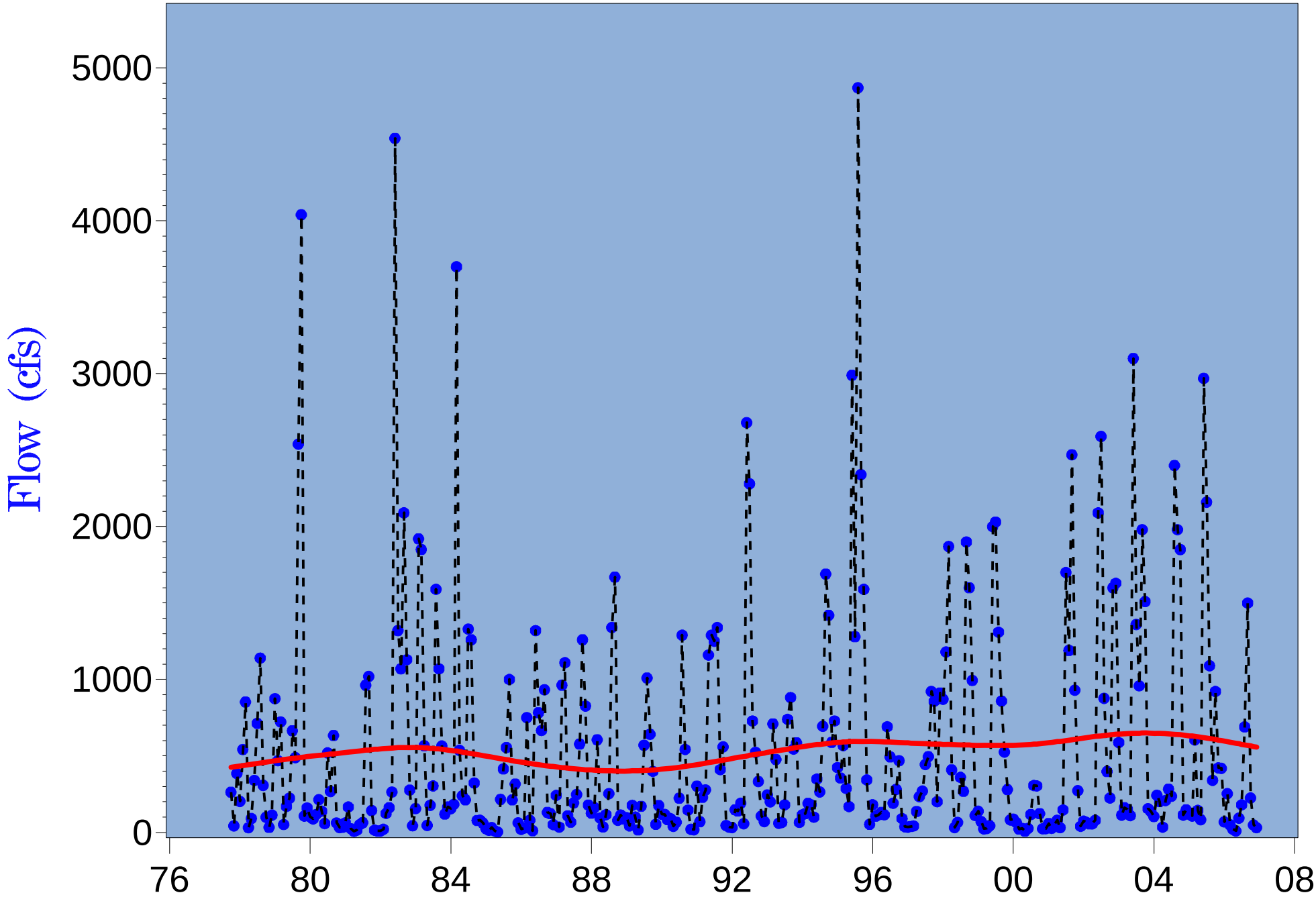


Figure 3.247 Monthly P100 (maximum) flow at long-term Prairie Creek (2298123) gage (1976-2006)

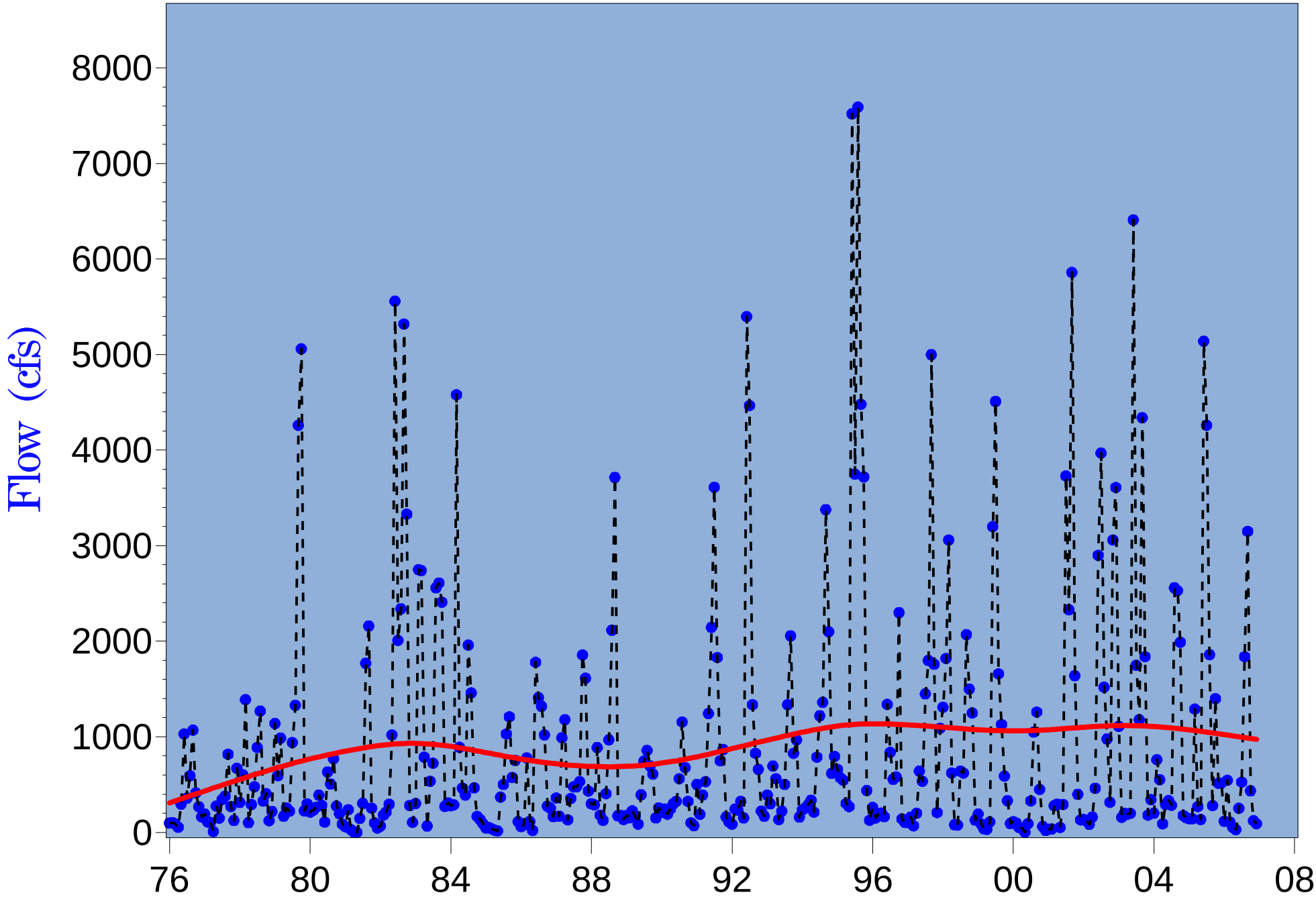


Figure 3.248 Monthly P100 (maximum) flow at long-term Shell Creek gage (1976-2006)

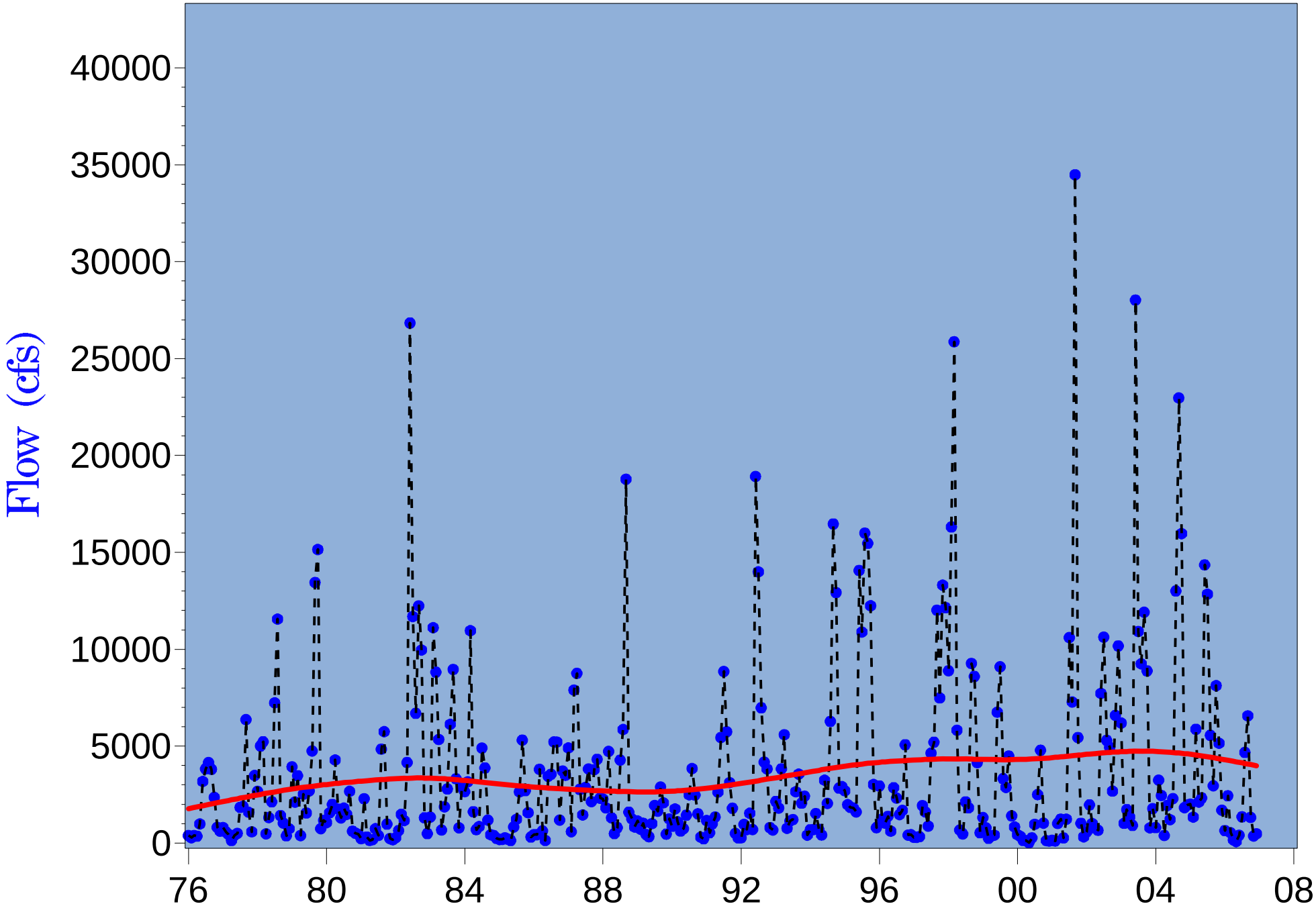


Figure 3.249 Monthly P100 (maximum) flow of total gaged Peace River flow to the Upper Harbor (1976-2006)

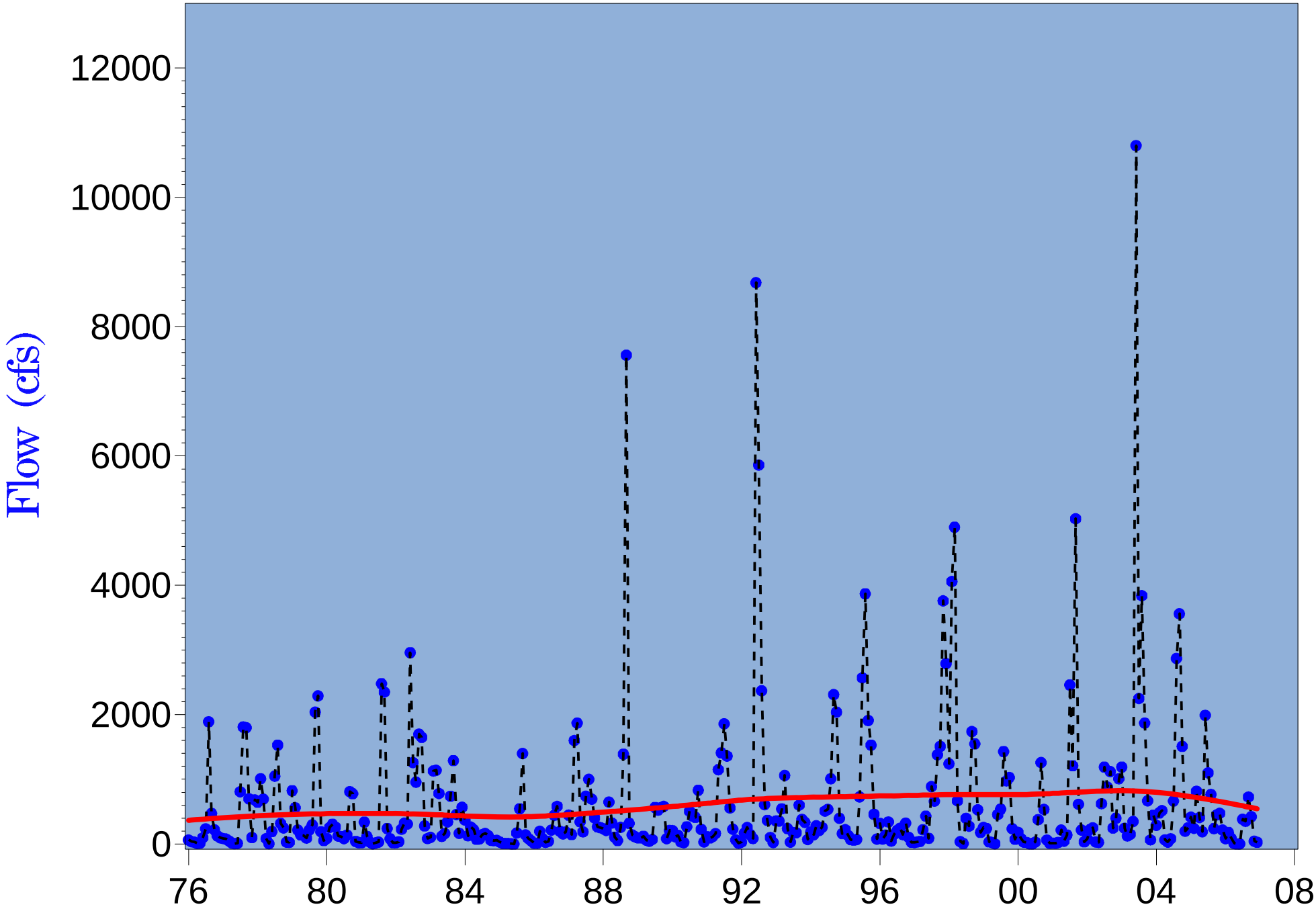


Figure 3.250 Monthly P100 (maximum) flow at long-term Myakka River near Sarasota (2298830) gage (1976-2006)

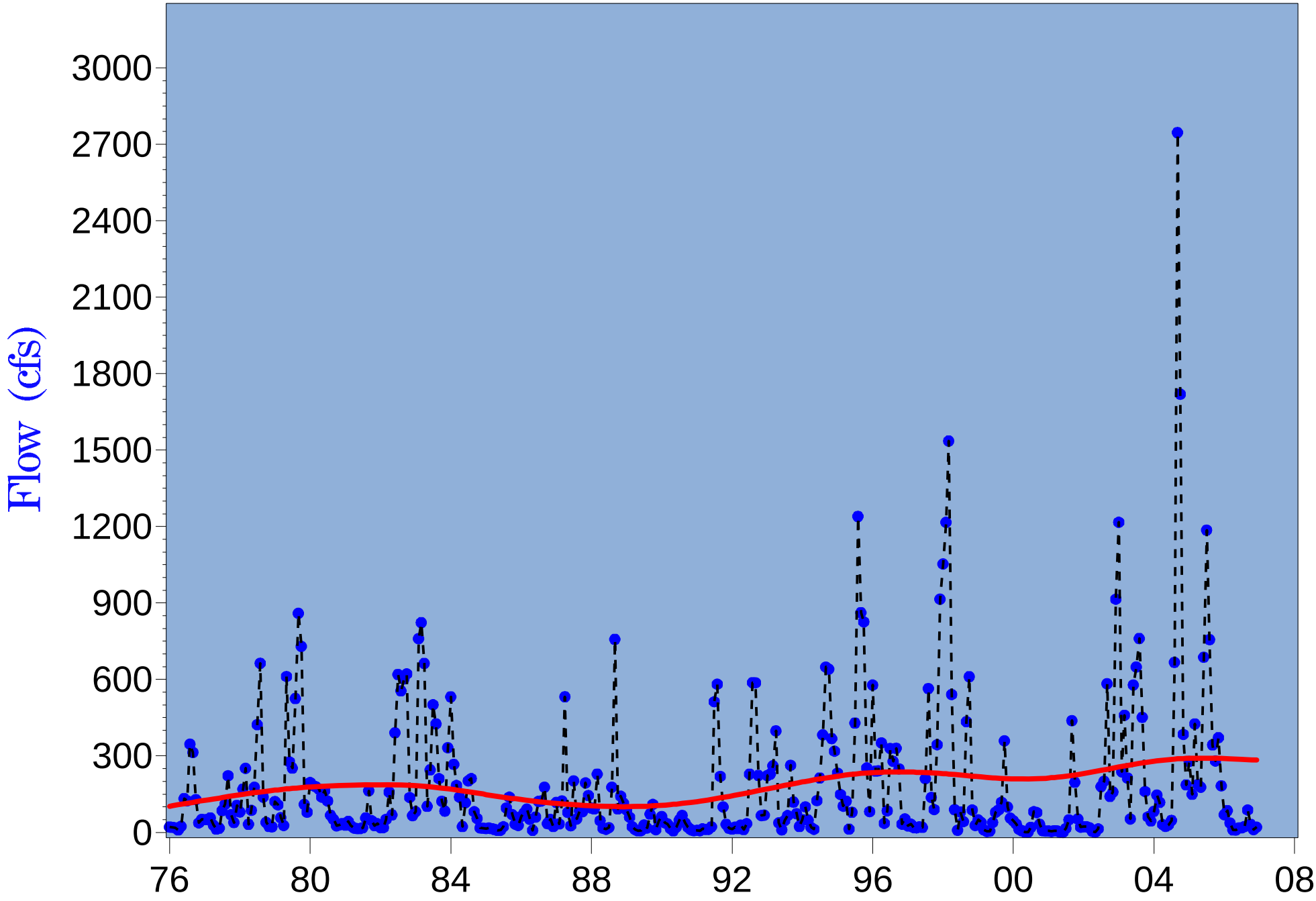


Figure 3.251 Monthly mean flow at long-term Peace River at Bartow (2294650) gage (1976-2006)

Table 4.3
Change in Natural Stream and River Channels (linear miles) in the Peace River Watershed from the 1940s to 1999

Basin	Miles Lost			1999 Land Use in Place of Lost Stream Segment						
	1940s	1999	Change	Urban	Mining	Agriculture	Lakes	Upland habitat	Wetlands	Other
Peace River at Bartow	95.9	38.1	57.8	8.9	10.3	9.8	2.7	7.1	18.7	0.3
Peace River at Zolfo Springs	290.0	240.6	49.4	0.3	31.6	7.8	2.0	1.7	5.9	0.0
Payne Creek	128.7	61.7	66.9	0.4	54.8	6.2	1.1	1.9	2.4	0.1
Charlie Creek	185.8	175.7	10.0	0.0	0.0	6.8	0.1	1.0	2.0	0.0
Peace at Arcadia	133.6	115.7	17.9	0.1	0.0	7.2	0.3	0.1	6.8	4.4
Joshua Creek	57.9	44.2	13.7	0.7	0.0	4.0	0.1	1.4	7.6	0.0
Horse Creek	170.7	140.1	30.6	1.9	4.0	8.6	0.3	6.3	7.2	2.2
Shell Creek	93.0	74.1	18.9	0.3	0.0	7.2	5.4	3.0	2.5	0.5
Coastal Lower Peace	397.7	320.2	77.5	24.8	0.5*	6.8	0.9	13.4	18.7	12.3
Total	**1,553.2**	**1,210.5**	**342.7**	**37.5**	**101.2**	**64.5**	**12.9**	**36.1**	**71.8**	**19.8**

* Sand/shell mining

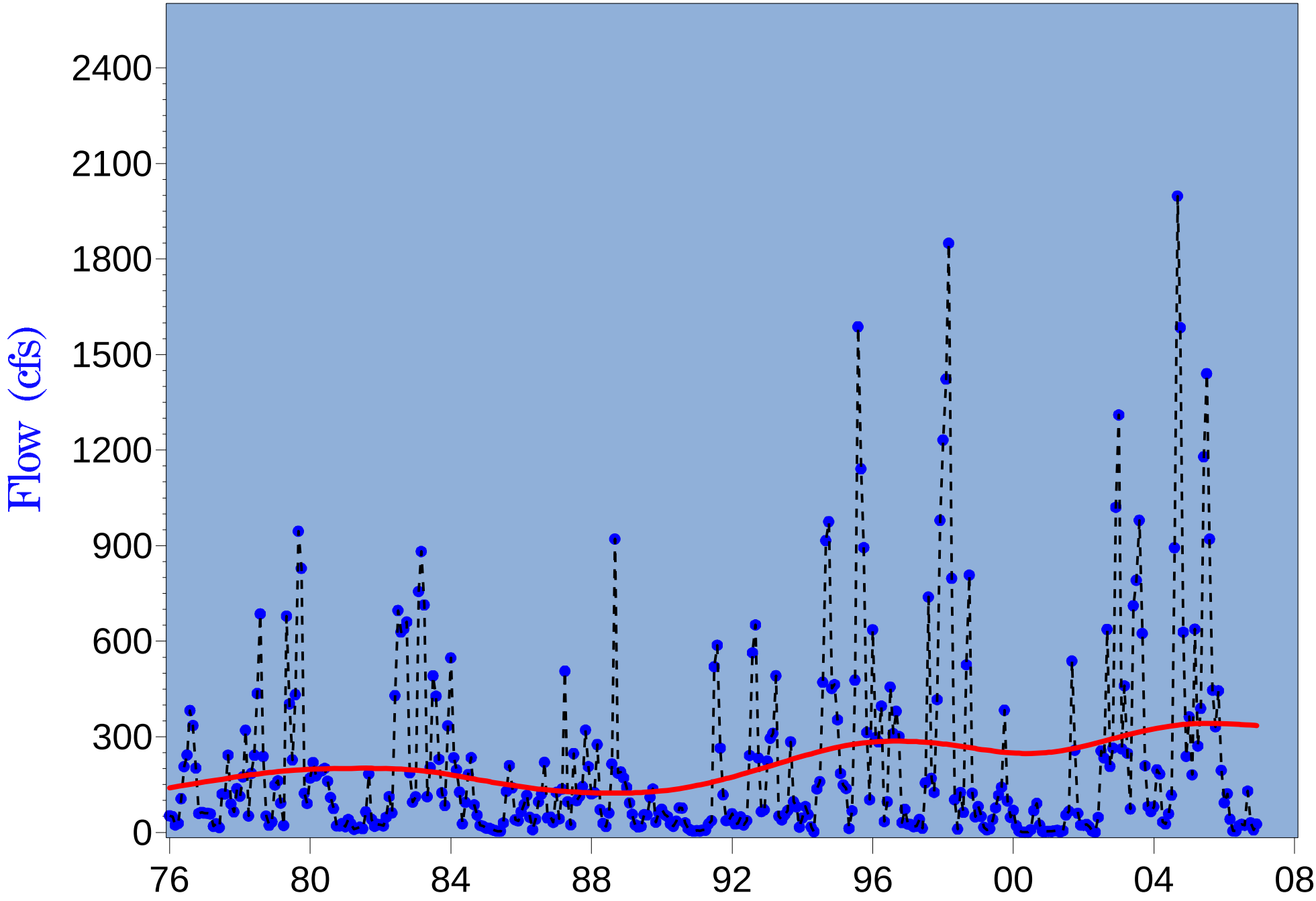


Figure 3.252 Monthly mean flow at long-term Peace River at Ft. Meade (2294898) gage (1976-2006)

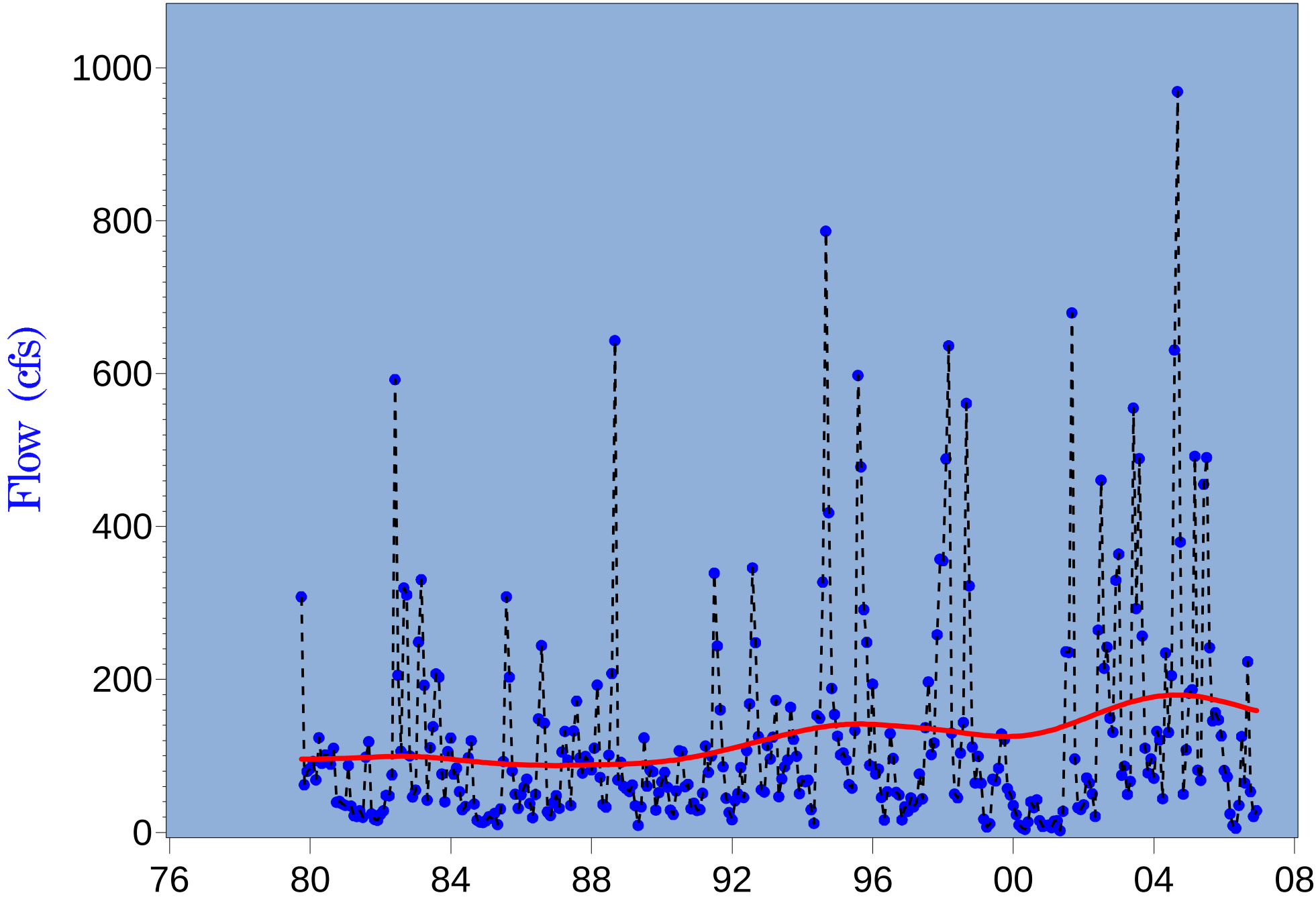


Figure 3.253 Monthly mean flow at long-term Payne Creek (2295420) gage (1976-2006)

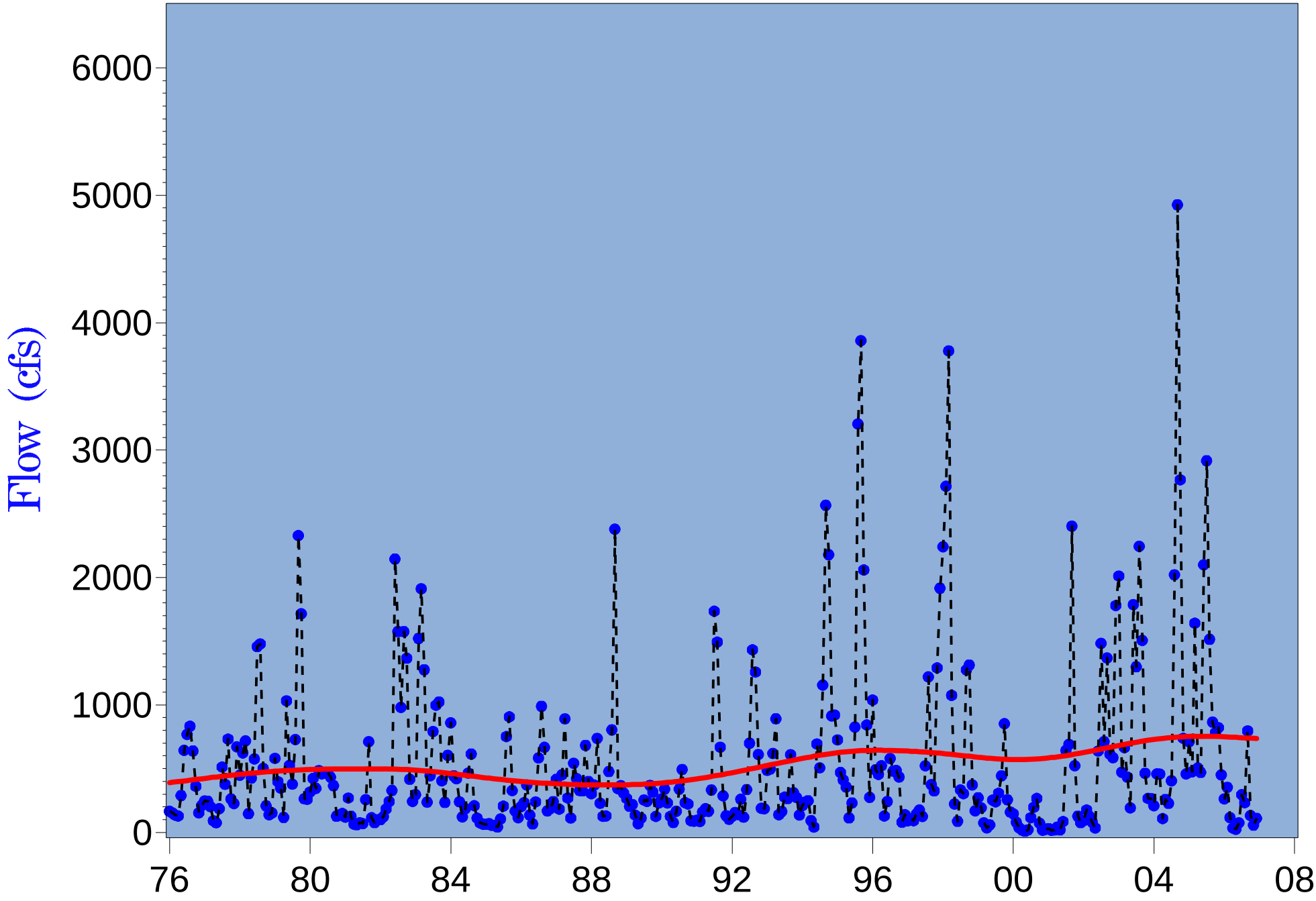


Figure 3.254 Monthly mean flow at long-term Peace River at Zolfo (2295637) gage (1976-2006)

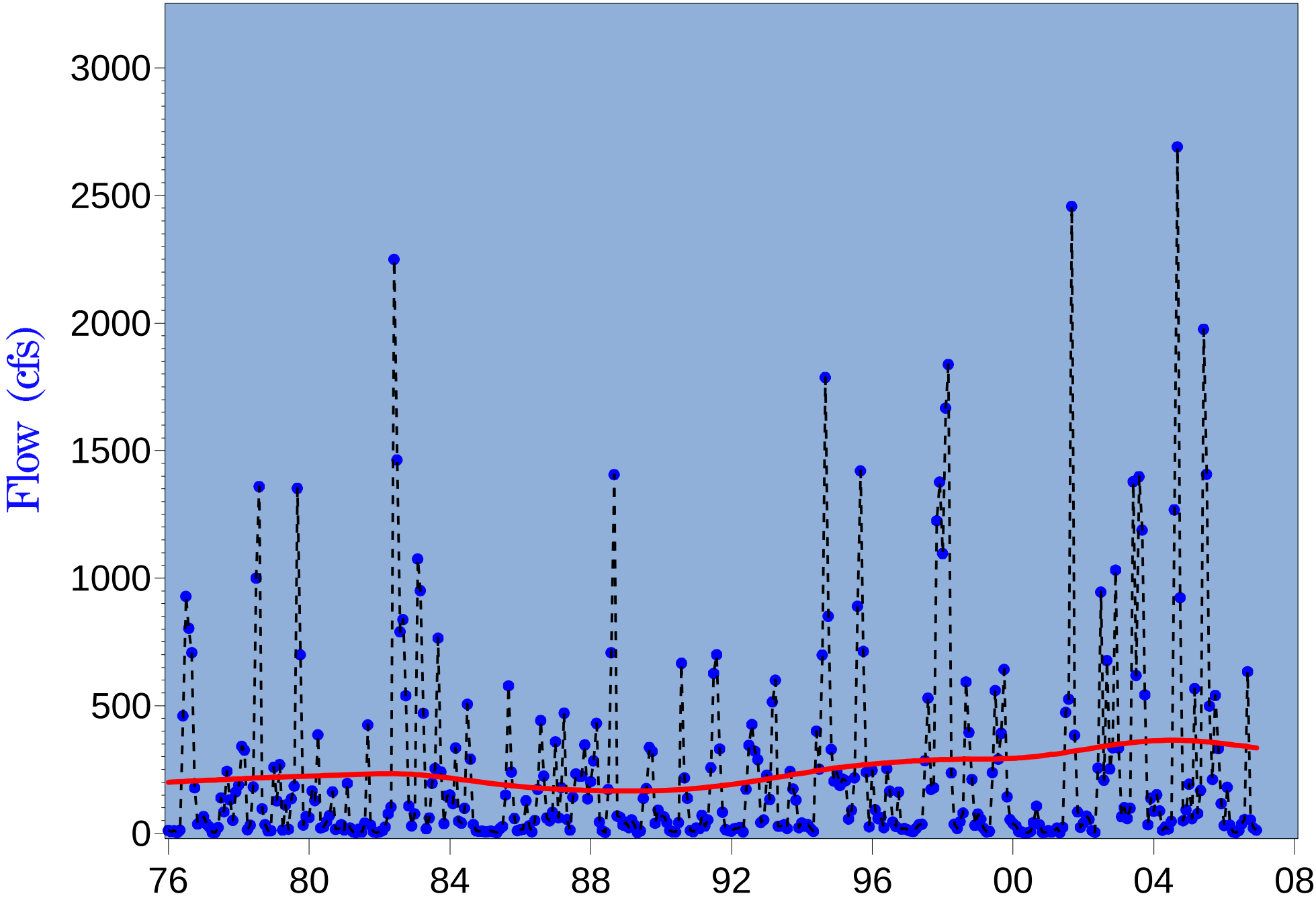


Figure 3.255 Monthly mean flow at long-term Charlie Creek (2296500) gage (1976-2006)

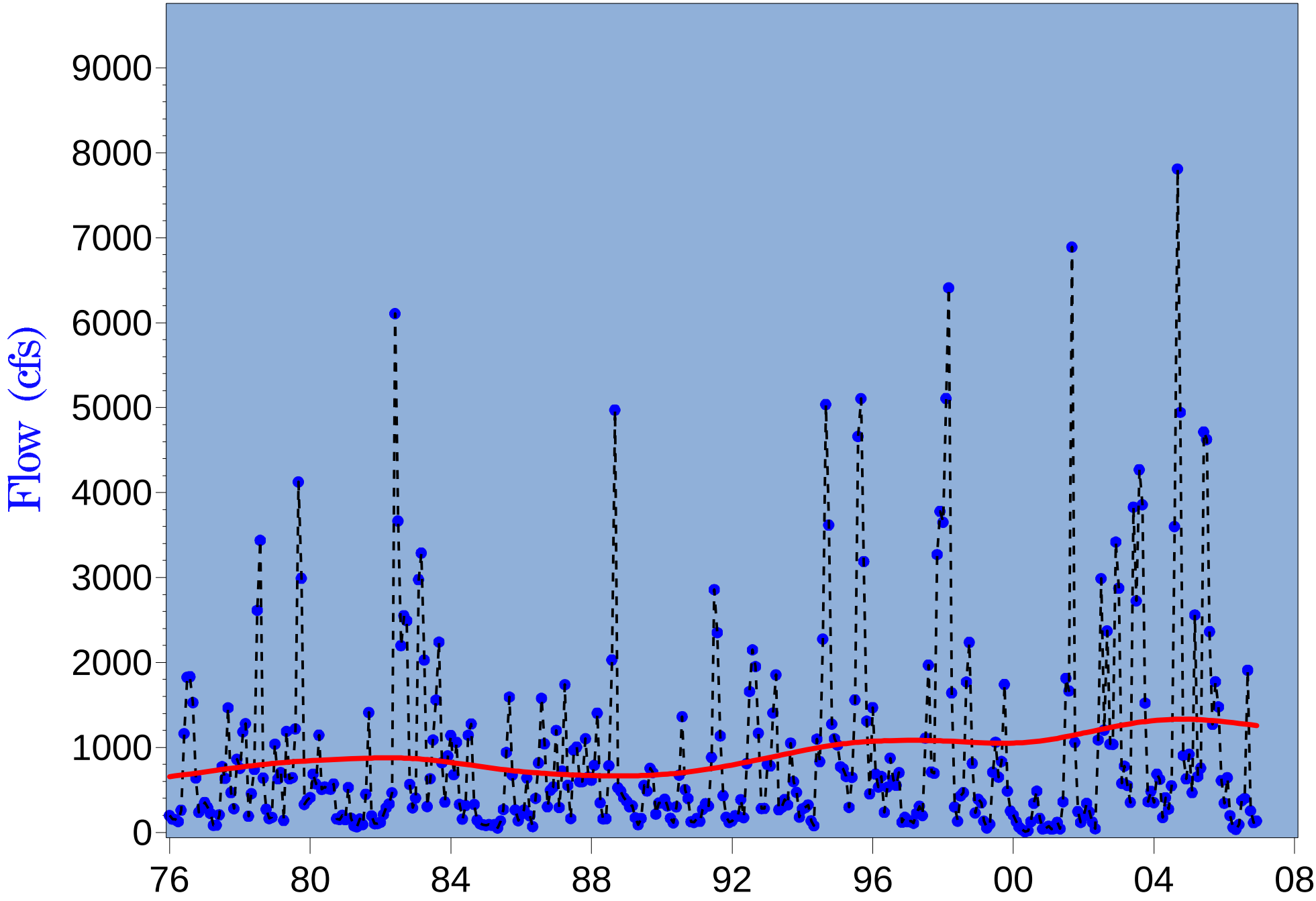


Figure 3.256 Monthly mean flow at long-term Peace River at Arcadia (2296750) gage (1976-2006)

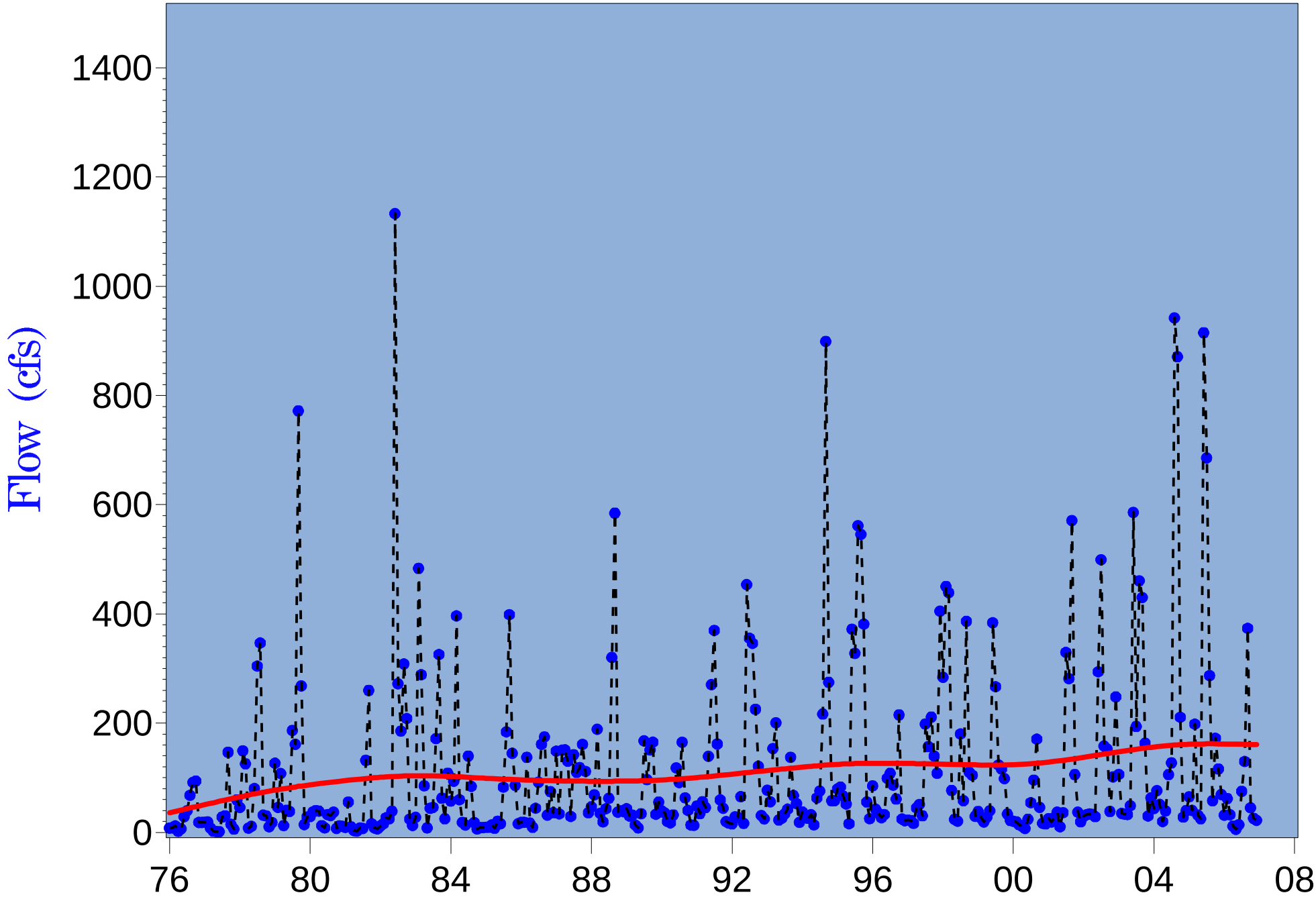


Figure 3.257 Monthly mean flow at long-term Joshua Creek at Nocatee (2297100) gage (1976-2006)

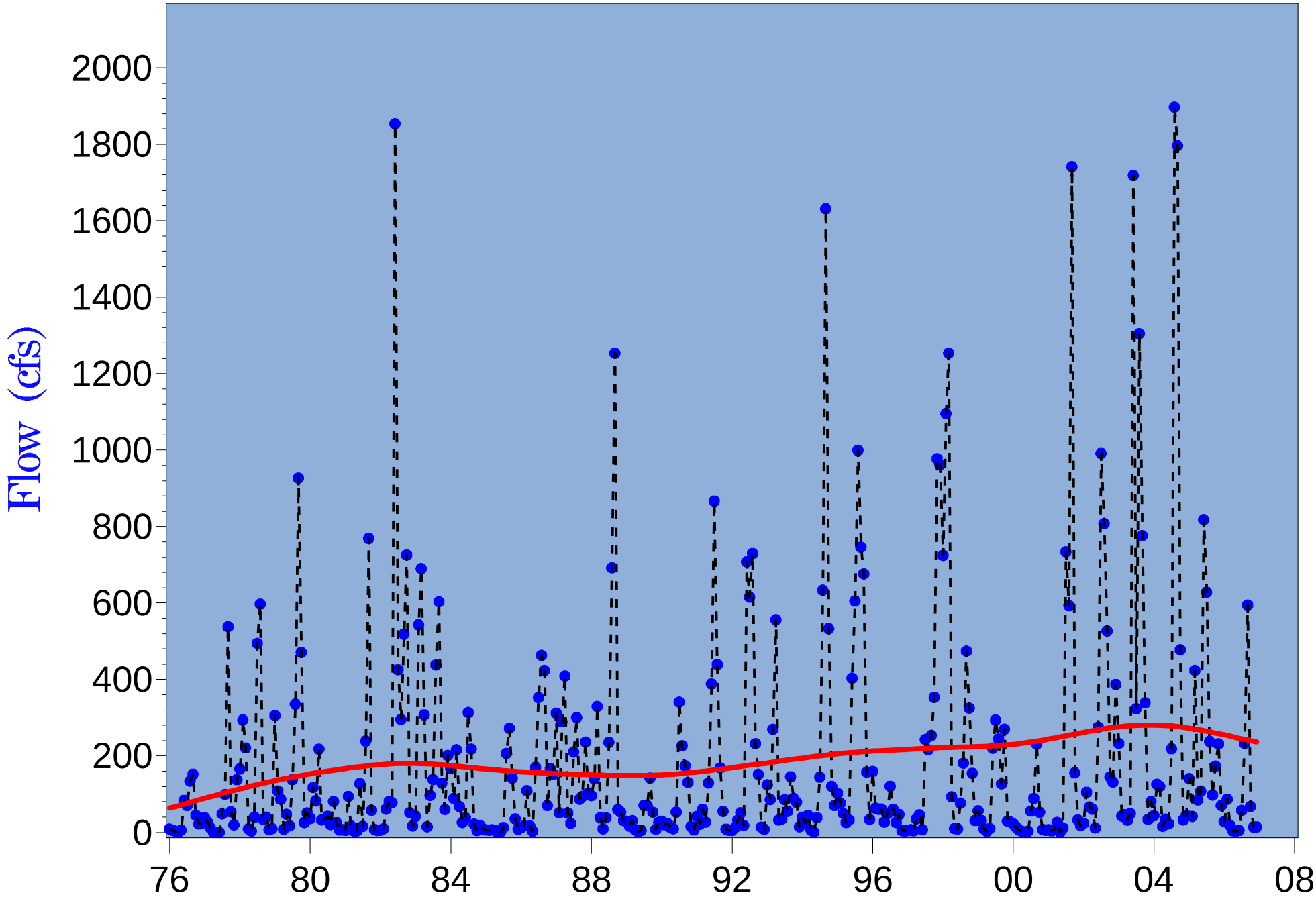


Figure 3.258 Monthly mean flow at long-term Horse Creek near Arcadia(2297310) gage (1976-2006)

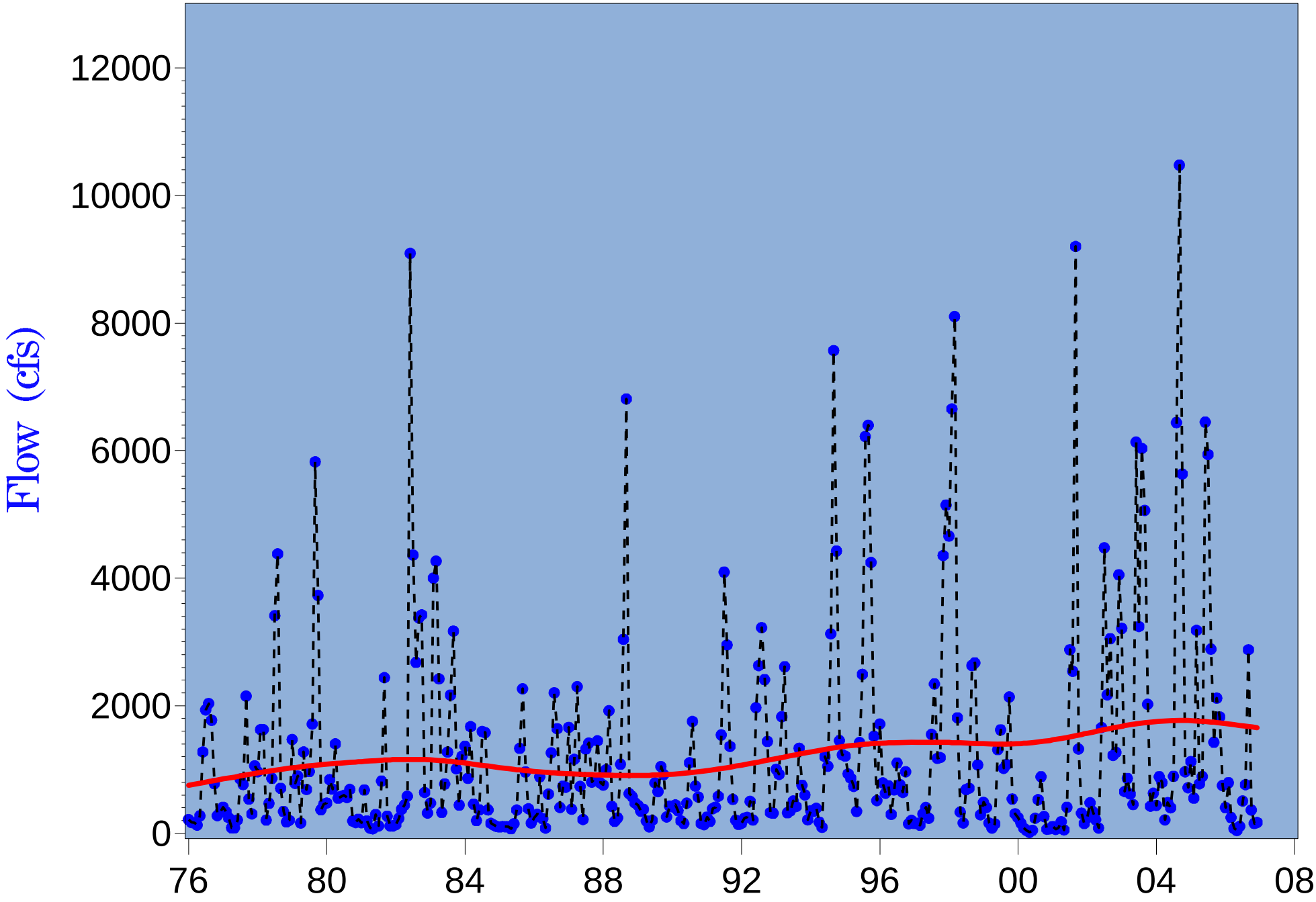


Figure 3.259 Monthly mean flow at long-term for total gaged flow upstream of the Facility (1976-2006)

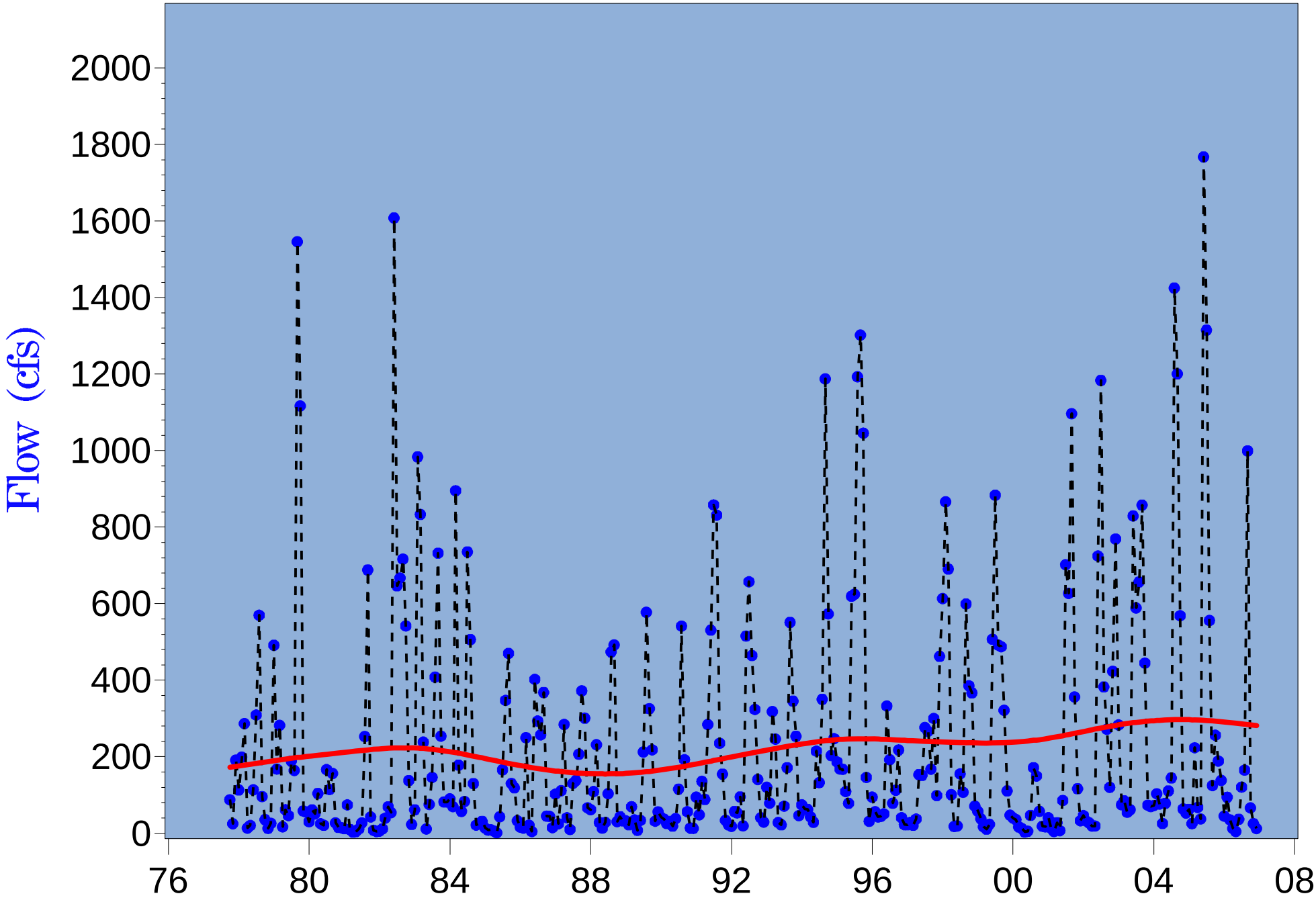


Figure 3.260 Monthly mean flow at long-term Prairie Creek (2298123) gage (1976-2006)

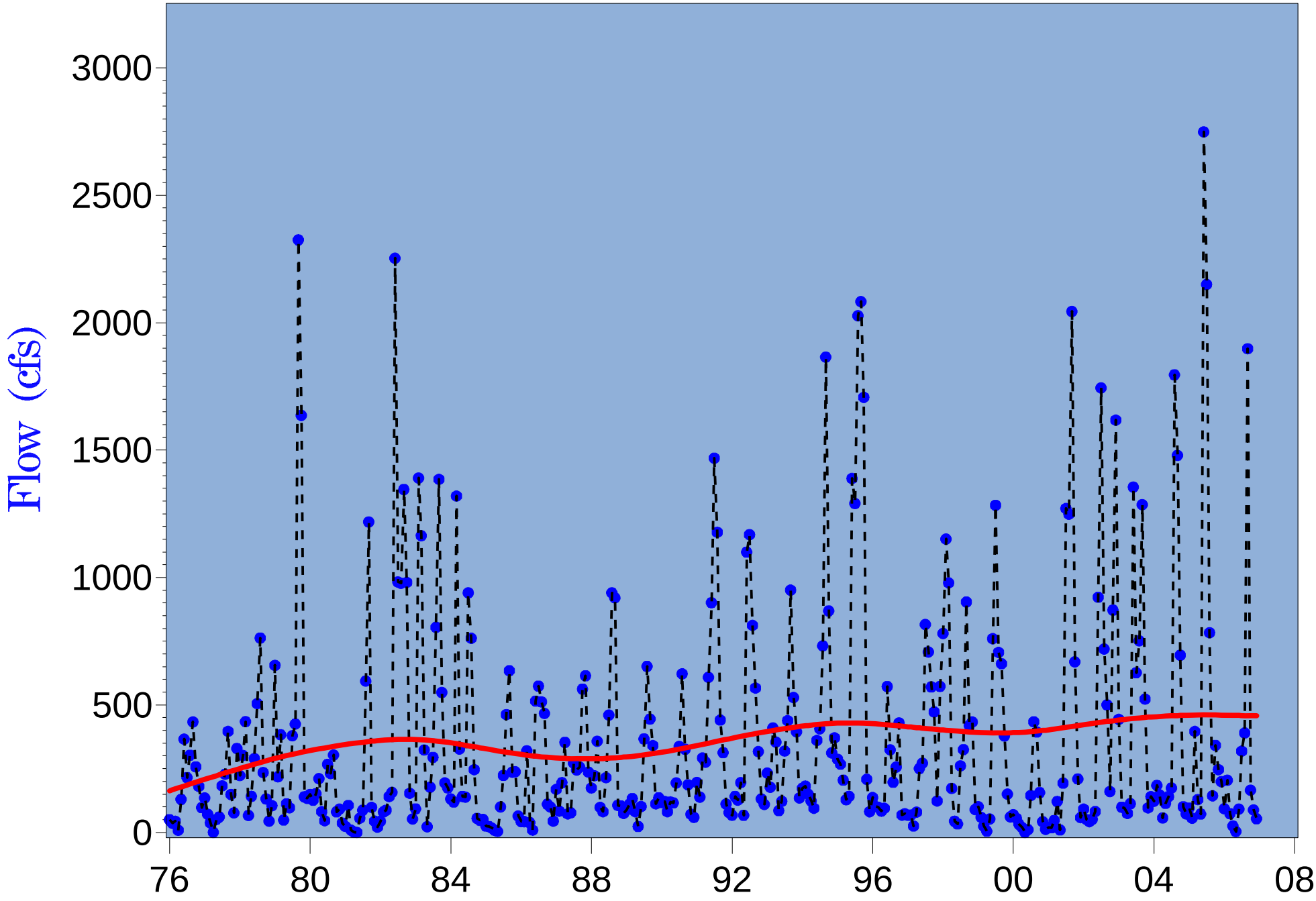


Figure 3.261 Monthly mean flow at long-term Shell Creek gage (1976-2006)

Table 4.4

History of Major Phosphate Mining Spills in the Peace River Watershed

Date	Responsible Parties	Pollutant	Damages
August 1942	International Mining & Chemical Co.	Phosphate Slimes	
April 1945	Virginia-Carolina Chemical Company	Phosphate Slimes	
May 1945	Swift and Company	Phosphate Slimes	
February 1951	Virginia-Carolina Chemical Company	Phosphate Slimes	
July 1951	International Mining & Chemical Co.	Phosphate Slimes	
July 1951	International Mining & Chemical Co.	Phosphate Slimes	
September 1951	Swift and Company	Phosphate Slimes	
February 1952	International Mining & Chemical Co.	Phosphate Slimes	
May 1952	Swift and Company	Phosphate Slimes	
October 1952	American Agriculture & Chemical Co.	Phosphate Slimes	
March 1958	Swift and Company	Phosphate Slimes	
March 1959	Swift and Company	Phosphate Slimes	
January 1960	Swift and Company	Phosphate Slimes	76 miles of stream / heavy fish kill
January 1960	International Mining & Chemical Co.	Phosphate Slimes	$288,222.00 estimated damages
August 1964	Undetermined	Acid	Undetermined
October 1964	Virginia-Carolina Chemical Company	Phosphate Slimes	4 miles of stream / 5,500 pounds of fish killed / $3,320 Estimated damages
April 1965	Armour Phosphate Company	Phosphate Clay	Sedimentation to lake bottom
May 1966	Armour Phosphate Company	Phosphate Slimes	22 miles of stream
March 1967	Mobil Chemical Company	Phosphate Slimes	Dam failure / 250,000 m3 of phosphatic clay slimes, 1.8 million m3 of water / 85 miles of stream / Heavy fish kill (approximately 90%) / $383,201.60-value of fish only
March 1967	Hydro Mines, Inc.	Phosphate Slimes	Several miles of stream and Lake Hancock -- Heavy fish kill
December 1971	Cities Service, Inc.	Phosphate Slimes	Clay pond dam failure / 9 million m3 of clay water / 76.5 miles of stream / 93% of all fish killed / Monetary assessment not available / Cost of clean-up $6 million
October 1994	IMC Global Inc	Phosphate Slimes	Dam failure / 6.8 million m3 of water from a clay settling pond -- 500,000 m3 released into hickey Branch / Cost of clean-up $2 million
October 1994	Cargill	Phosphate Slimes	76,000 m^3 of water spill into Peace River near Fort Meade

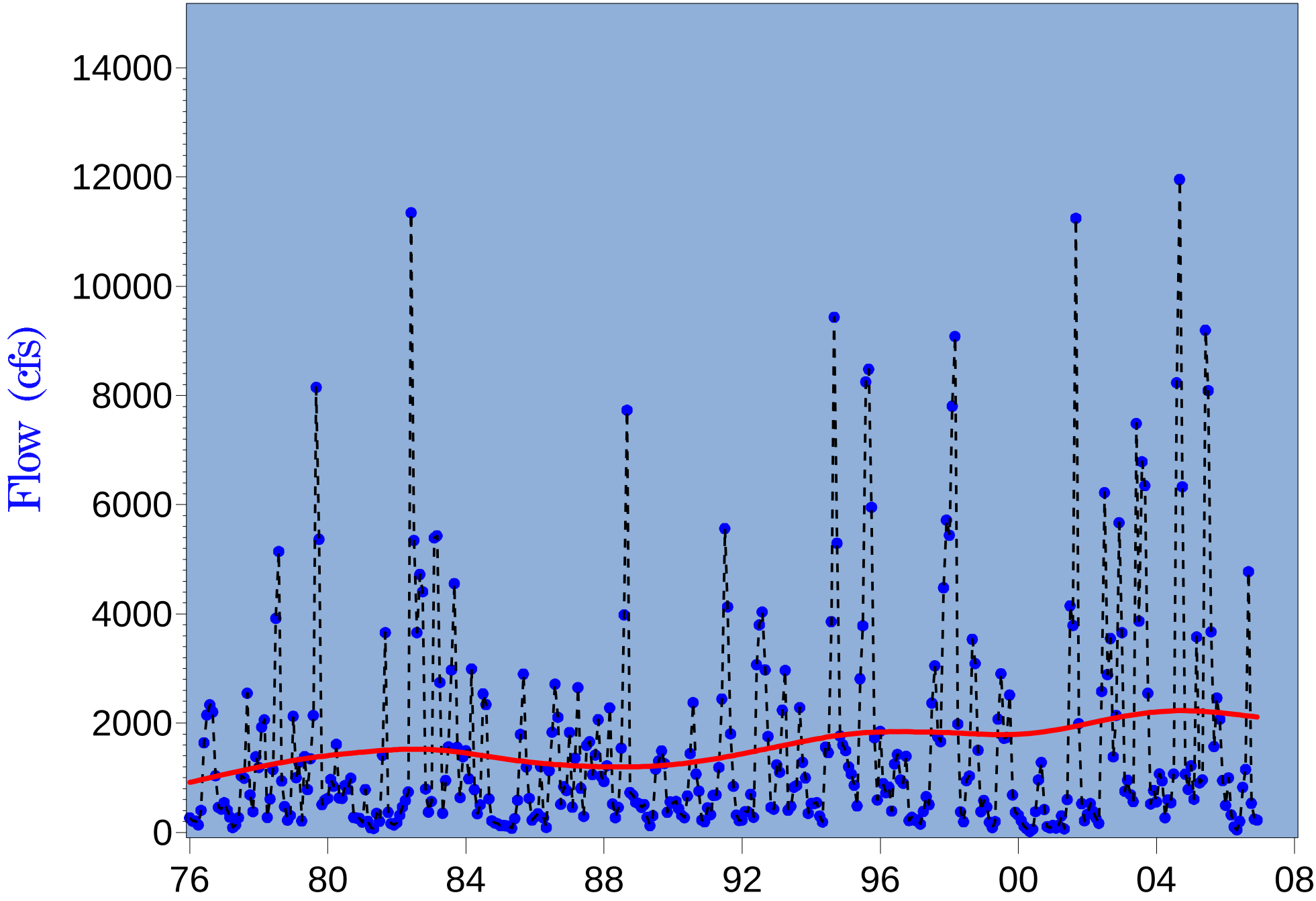


Figure 3.262 Monthly mean flow of total gaged Peace River flow to the Upper Harbor (1976-2006)

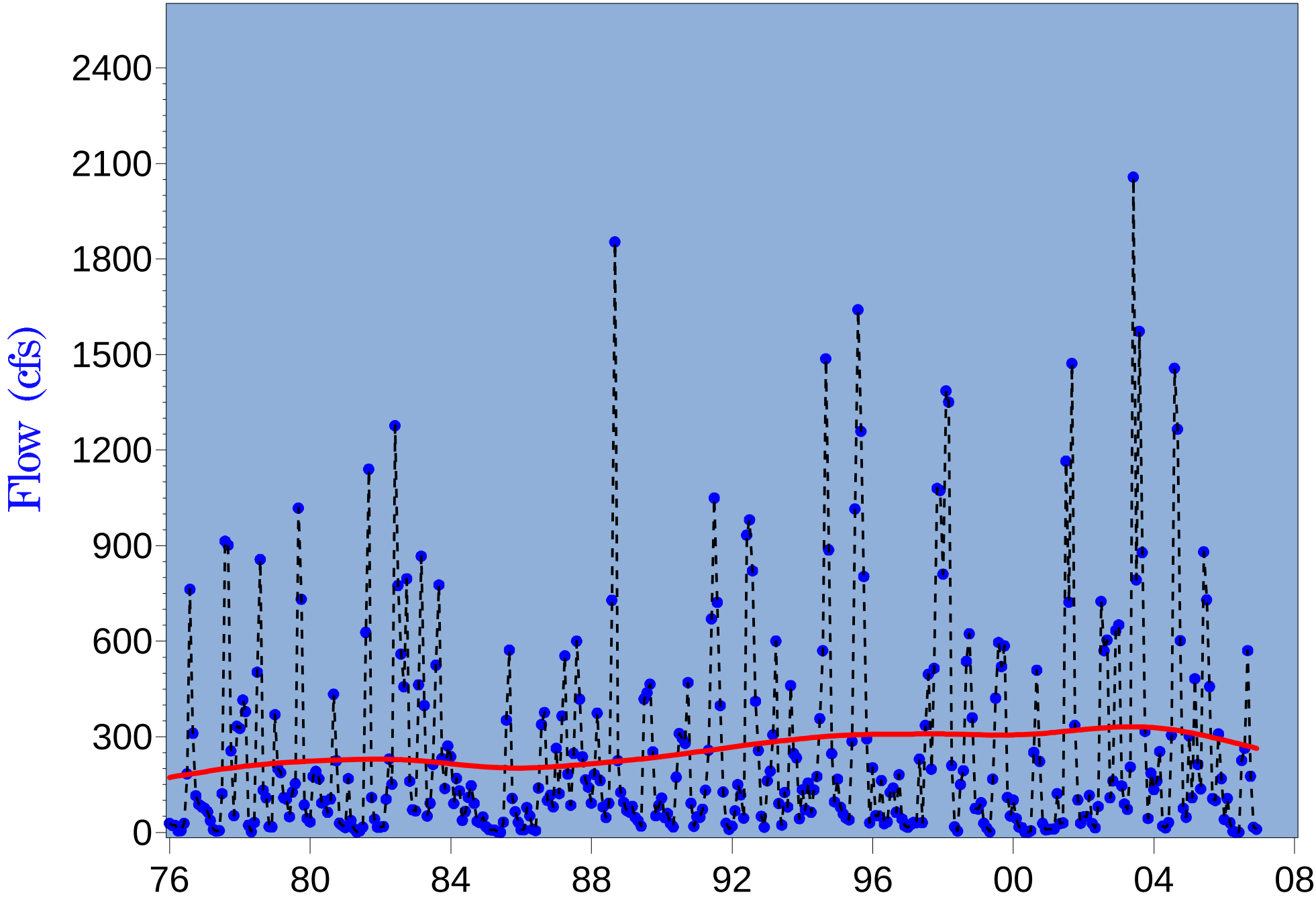


Figure 3.263 Monthly mean flow at long-term Myakka River near Sarasota (2298830) gage (1976-2006)

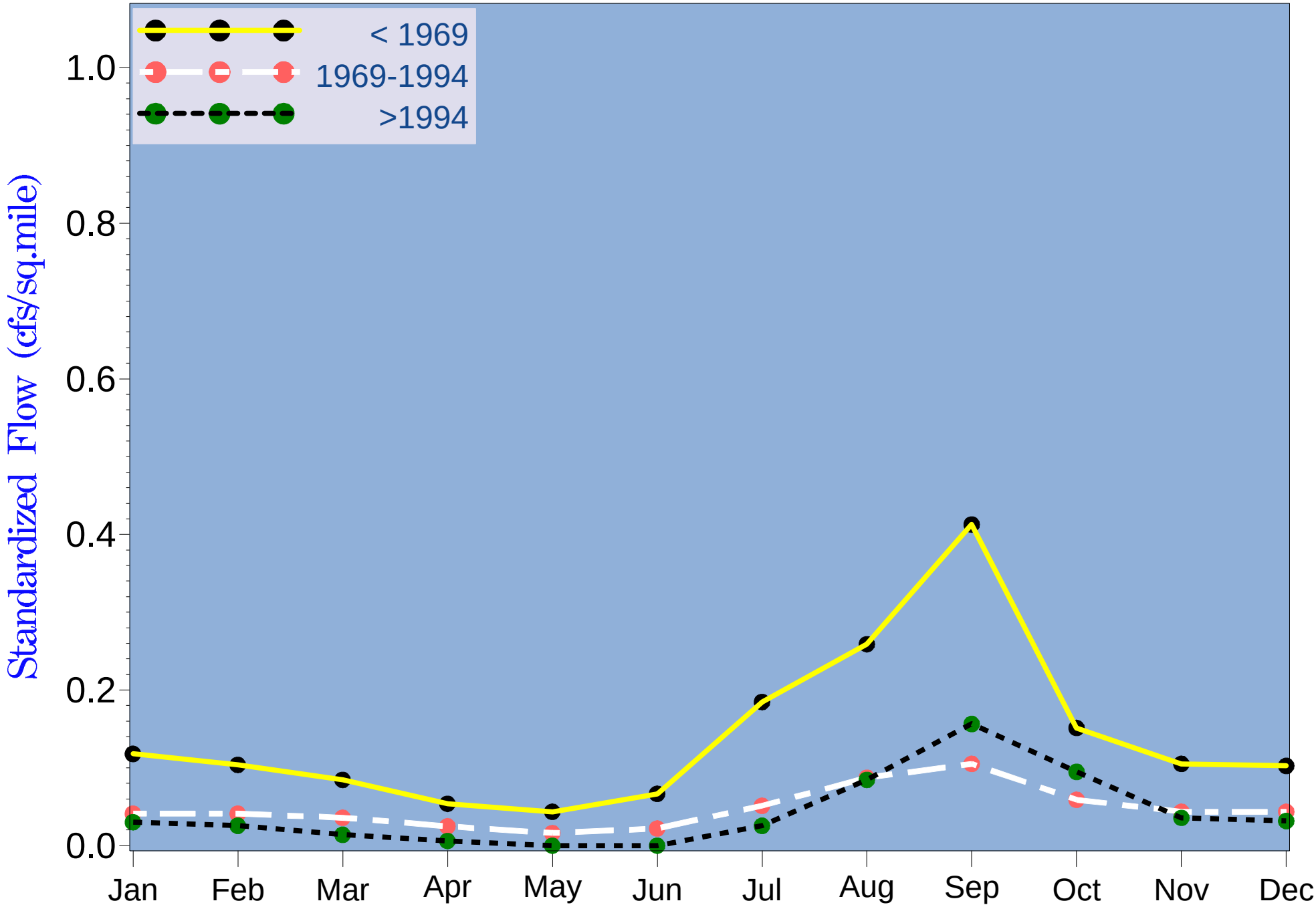


Figure 3.264 Seasonal differences among AMO periods of monthly P10 flow at long-term Peace River at Bartow (2294650) gage

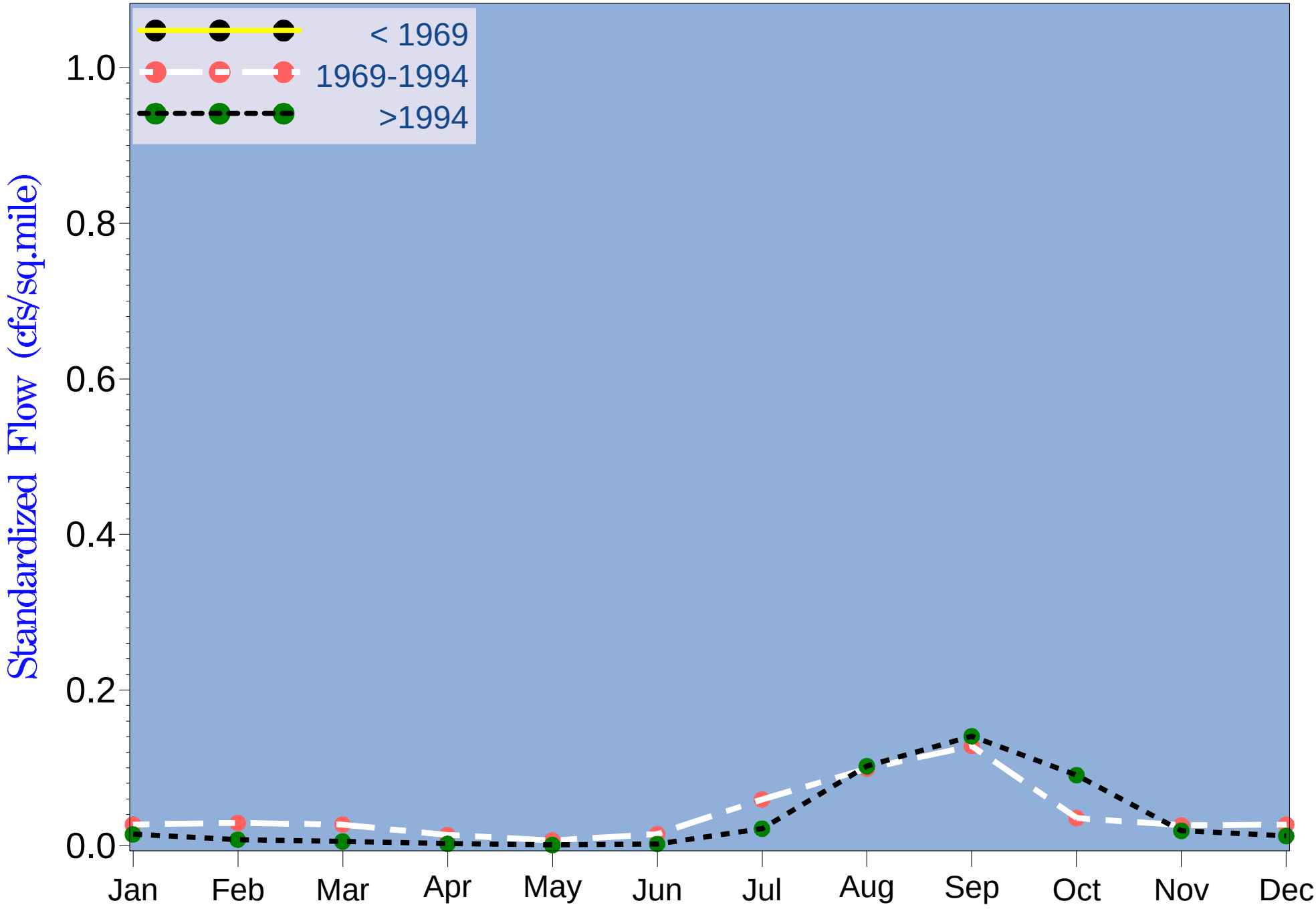


Figure 3.265 Seasonal differences among AMO periods of monthly P10 flow at long-term Peace River at Ft. Meade (2294898) gage

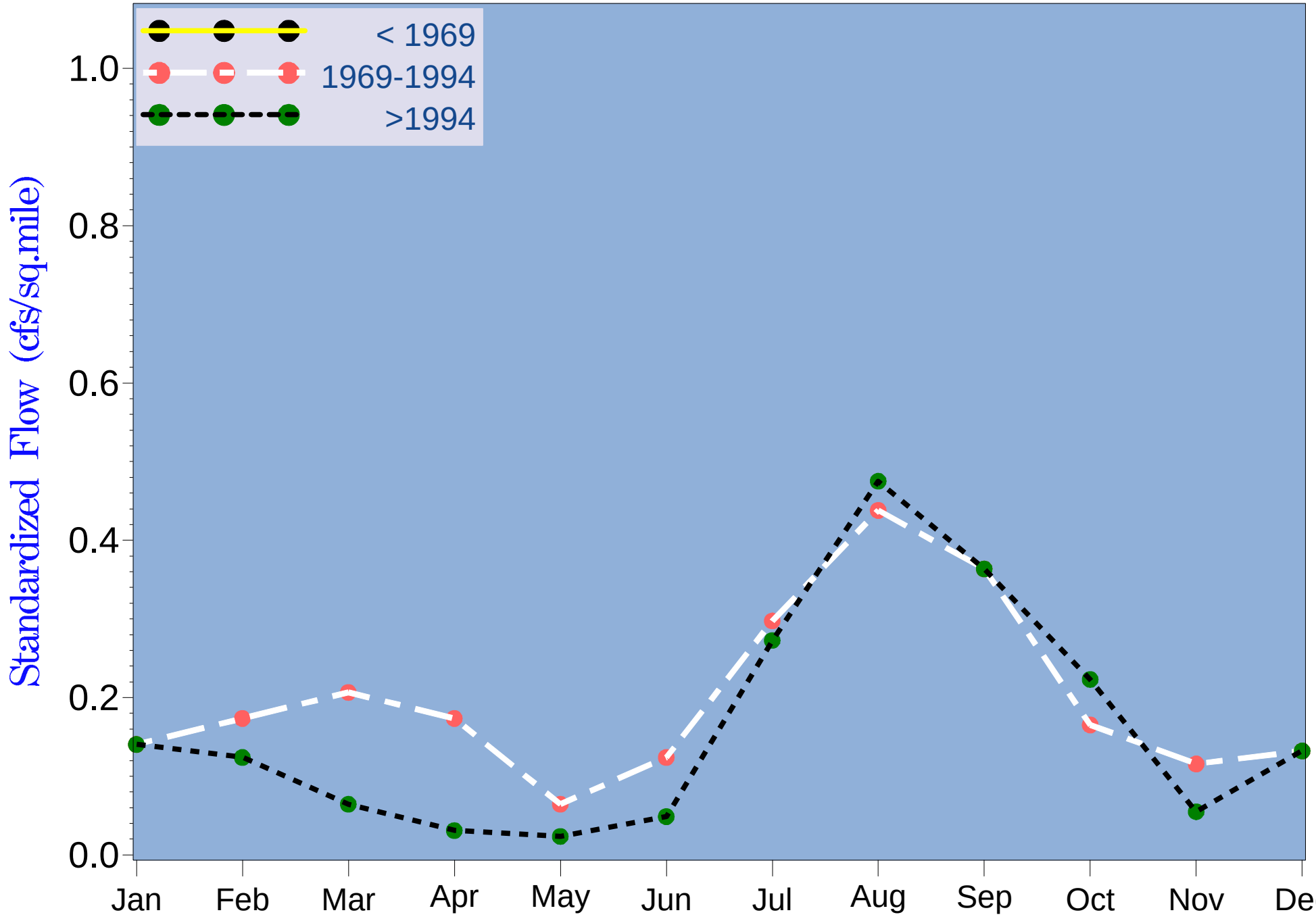


Figure 3.266 Seasonal differences among AMO periods of monthly P10 flow at long-term Payne Creek (2295420) gage

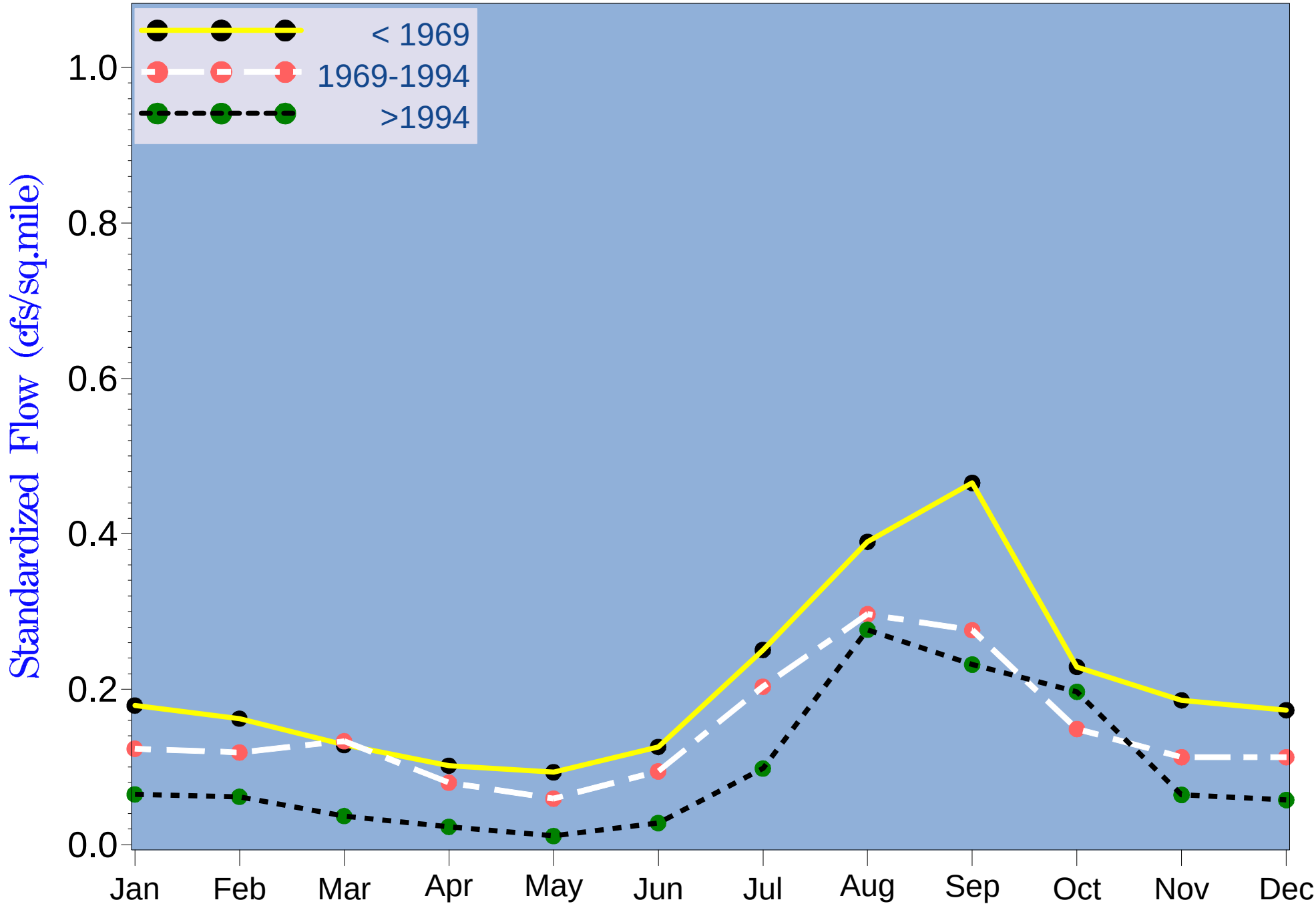


Figure 3.267 Seasonal differences among AMO periods of monthly P10 flow at long-term Peace River at Zolfo (2295637) gage

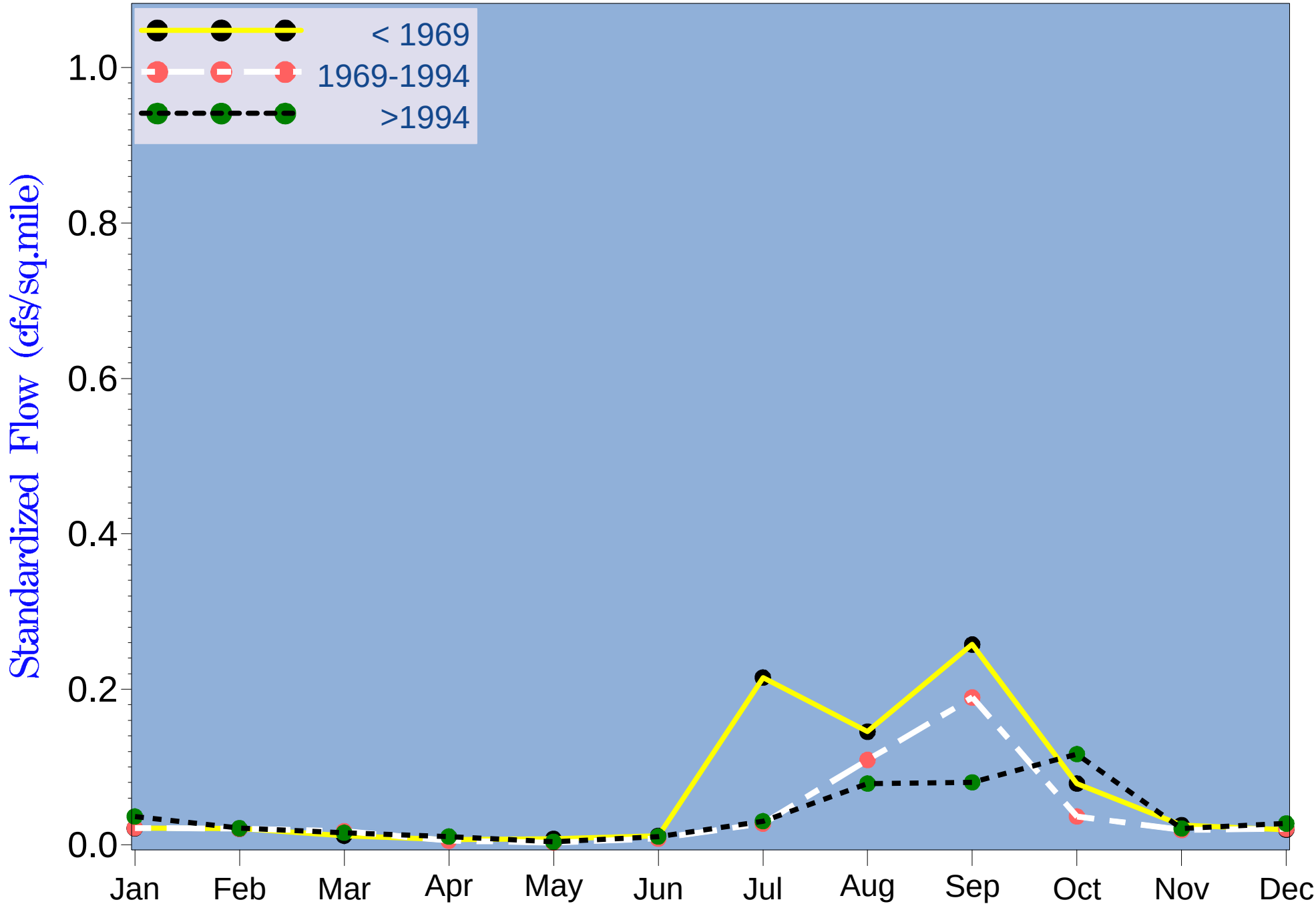


Figure 3.268 Seasonal differences among AMO periods of monthly P10 flow at long-term Charlie Creek (2296500) gage

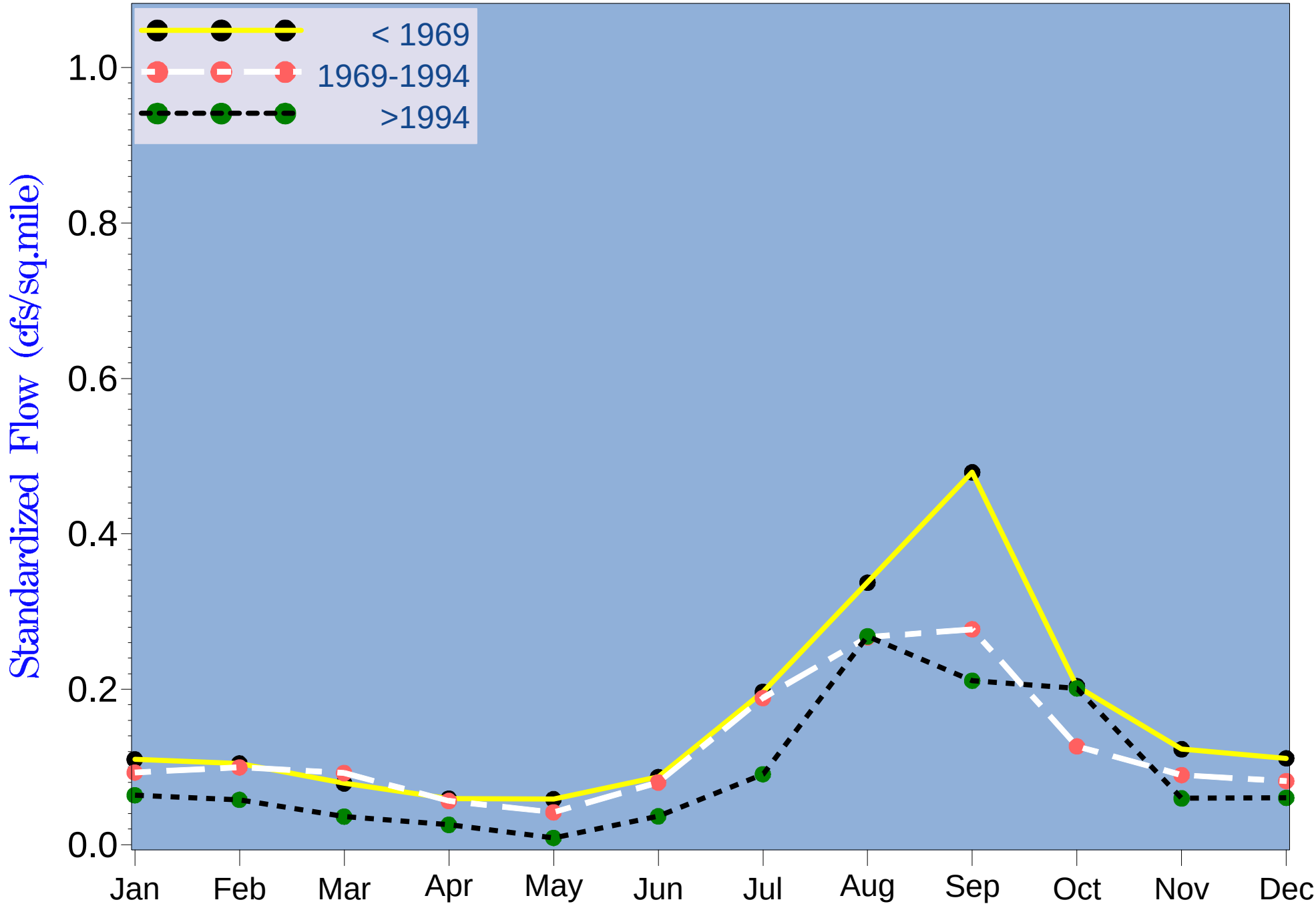


Figure 3.269 Seasonal differences among AMO periods of monthly P10 flow at long-term Peace River at Arcadia (2296750) gage

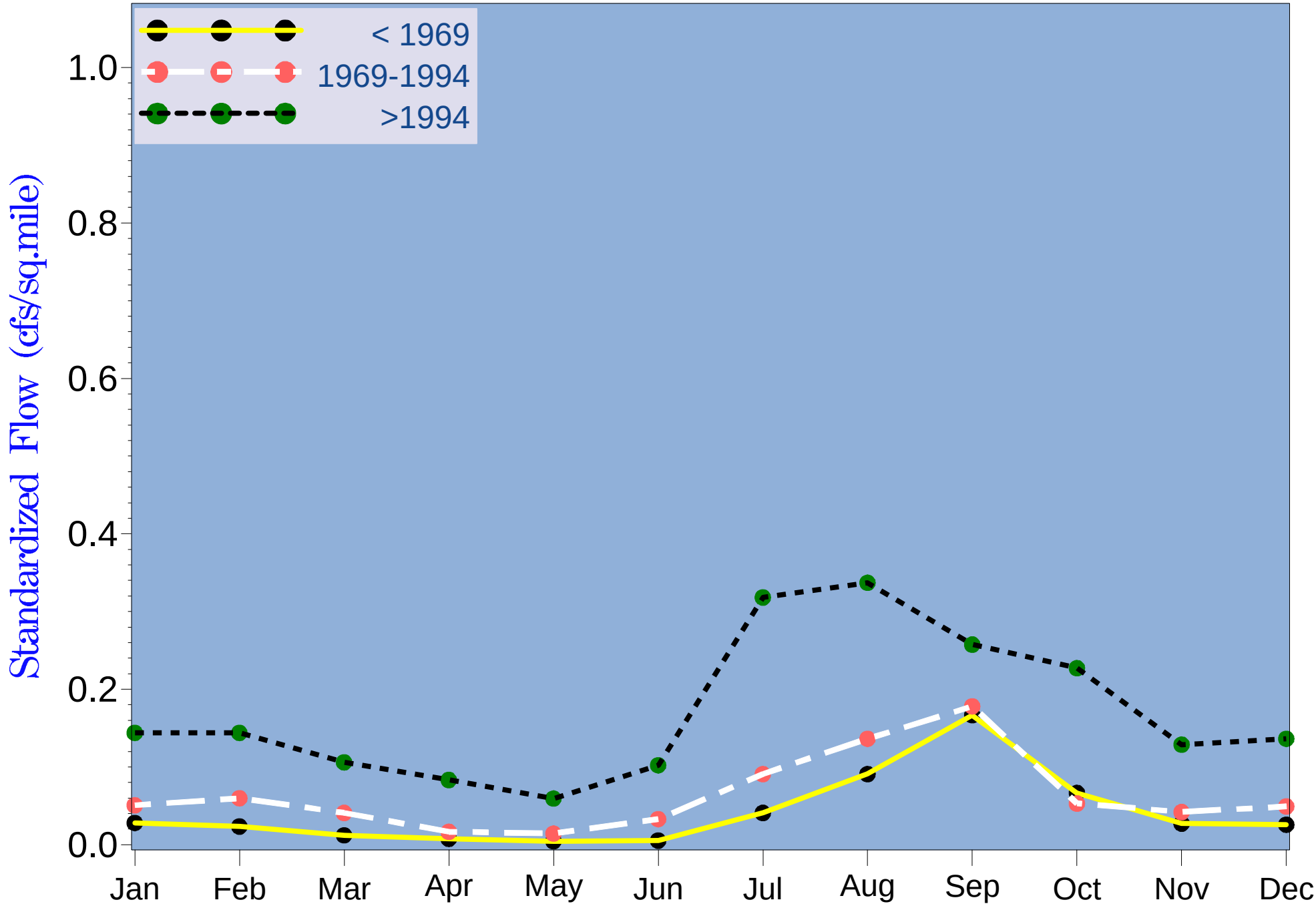


Figure 3.270 Seasonal differences among AMO periods of monthly P10 flow at long-term Joshua Creek at Nocatee (2297100) gage

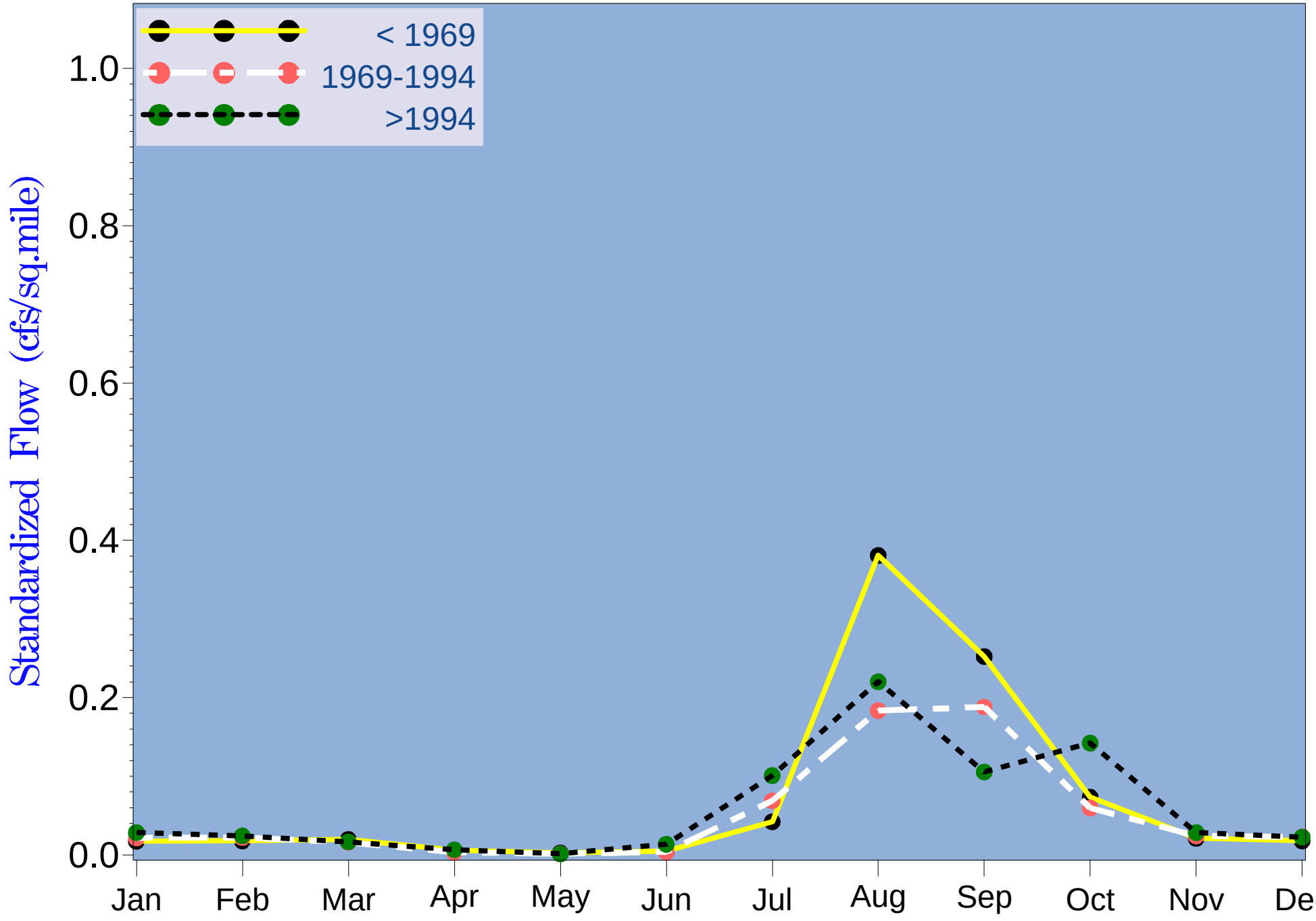


Figure 3.271 Seasonal differences among AMO periods of monthly P10 flow at long-term Horse Creek near Arcadia(2297310) gage

Table 4.5

List of Selected Water Quality Monitoring Sites with Long-term Records

Station ID	Station Name	Latitude	Longitude
Peace River at Bartow			
2293986	Peace Creek Drainage Canal Near Alturas	27°55'23"	81°42'28"
2293987	Peace Creek Drainage Canal Near Wahneta	27°55'28"	81°43'37"
2294068	Lulu Lake Outlet at Eloise	27°59'03"	81°43'47"
2294260	Lake Parker Outlet At Lakeland	28°03'34"	81°54'52"
2294491	Saddle Creek at Structure P-11 near Bartow	27°56'17"	81°51'05"
2294650	Peace River at Bartow	27°54'07"	81°49'03"
Peace River at Zolfo			
2294781	Peace River near Homeland	27°49'13"	81°47'57"
2294898	Peace River at Fort Meade	27°45'04"	81°46'56"
2295013	Bowlegs Creek near Fort Meade	27°41'59"	81°41'44"
2295163	Whidden Creek near Fort Meade	27°42'25"	81°48'28"
2295435	Hog Branch near Wauchula	27°35'32"	81°49'20"
2295637	Peace River at Zolfo Springs	27°30'15"	81°48'04"
Payne Creek			
2295420	Payne Creek near Bowling Green	27°37'13"	81°49'33"
Charlie Creek			
2296389	Oak Creek near Gardner	27°24'42"	81°47'48"
2296500	Charlie Creek near Gardner	27°22'29"	81°47'48"
Peace River at Arcadia			
2295850	Oak Creek near Ona	27°25'30"	81°53'22"
2296750	Peace River at Arcadia	27°13'19"	81°52'34"
Joshua Creek			
FLO3225670	Tributary To Joshua Creek at SR 70	27°12’32”	81°46’57”
FLO6625680	Hawthorne Creek at 760a	27°09’03”	81°51’10”
FLO39725040	Prairie River Grove - Hog Bay Slough	27°06’22”	81°49’20”
2297100	Joshua Creek at Nocatee	27°09'59"	81°52'47"
Horse Creek			
2297153	West Fork Horse Creek near Myakka Head	27°29'26"	82°01'44"
2297155	Horse Creek near Myakka Head	27°29'13"	82°01'25"
2297220	Brushy Creek near Lilly	27°25'38"	81°58'51"
2297290	Buzzard Roost Branch near Pine Level	27°14'10"	81°59'48"
2297310	Horse Creek near Arcadia	27°11'57"	81°59'19"
Shell Creek			
2298123	Prairie Creek near Fort Ogden	27°03'06"	81°47'05"
HBMP#1	Prairie Creek at CR 764 Punta Gorda		
2298202	Shell Creek near Punta Gorda	26°59'04"	81°56'09"
Coastal Lower Peace			
RK 30.4	Peace River near Water Treatment Facility	27°05' 20"	81°59' 38"
RK 23.6	Peace River near Lettuce Lake	27°03' 21"	81°59' 28"
RK 15.5	Peace River near Harbour Heights	26°59' 13"	81°59' 33"
RK 6.6	Peace River near US 41 Bridge	26°56' 38"	82°03' 37"
RK -2.4	Upper Charlotte Harbor near Marker #1	26°53' 58"	82°07' 15"

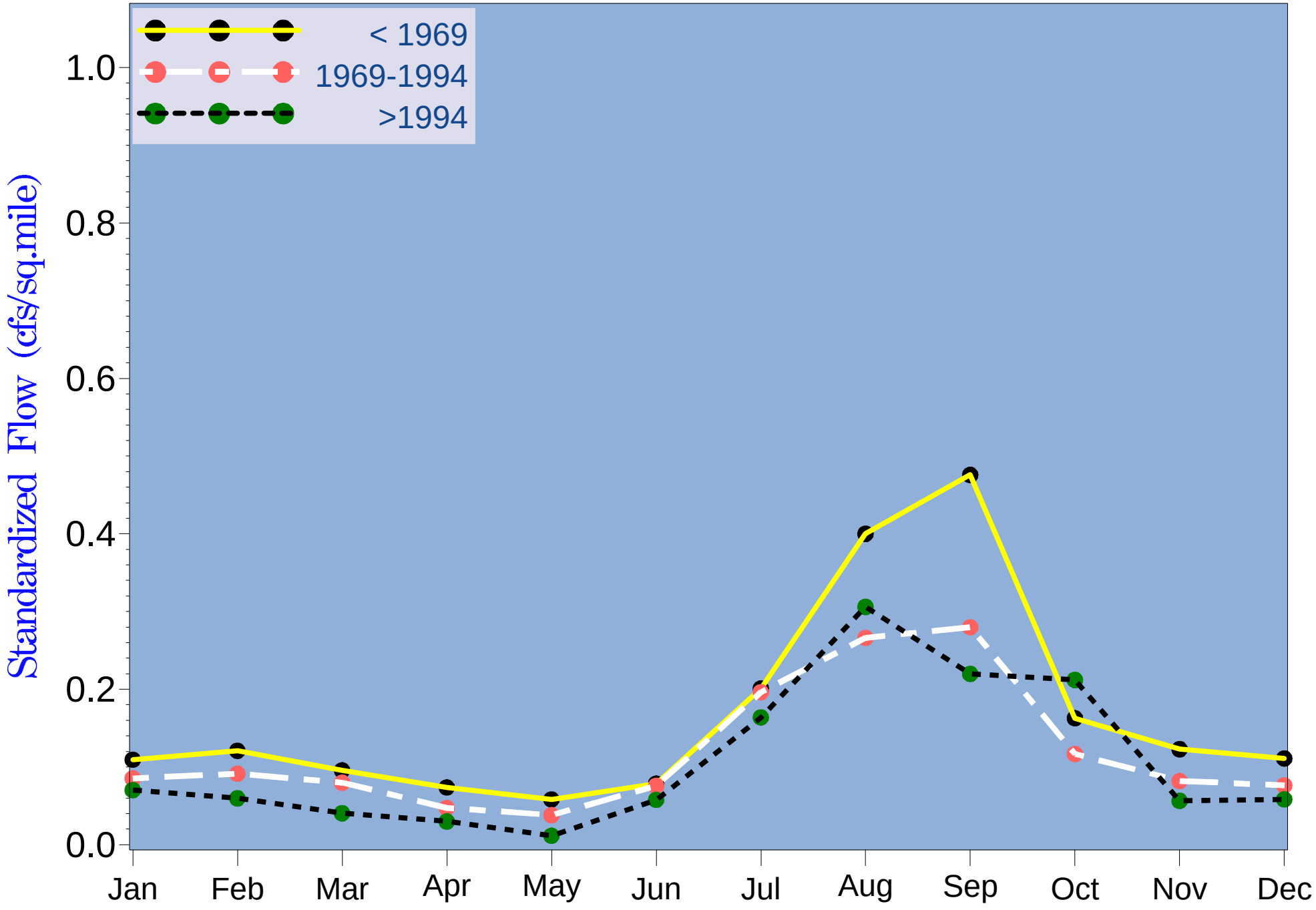


Figure 3.272 Seasonal differences among AMO periods of monthly P10 total gaged flow upstream of the Facility

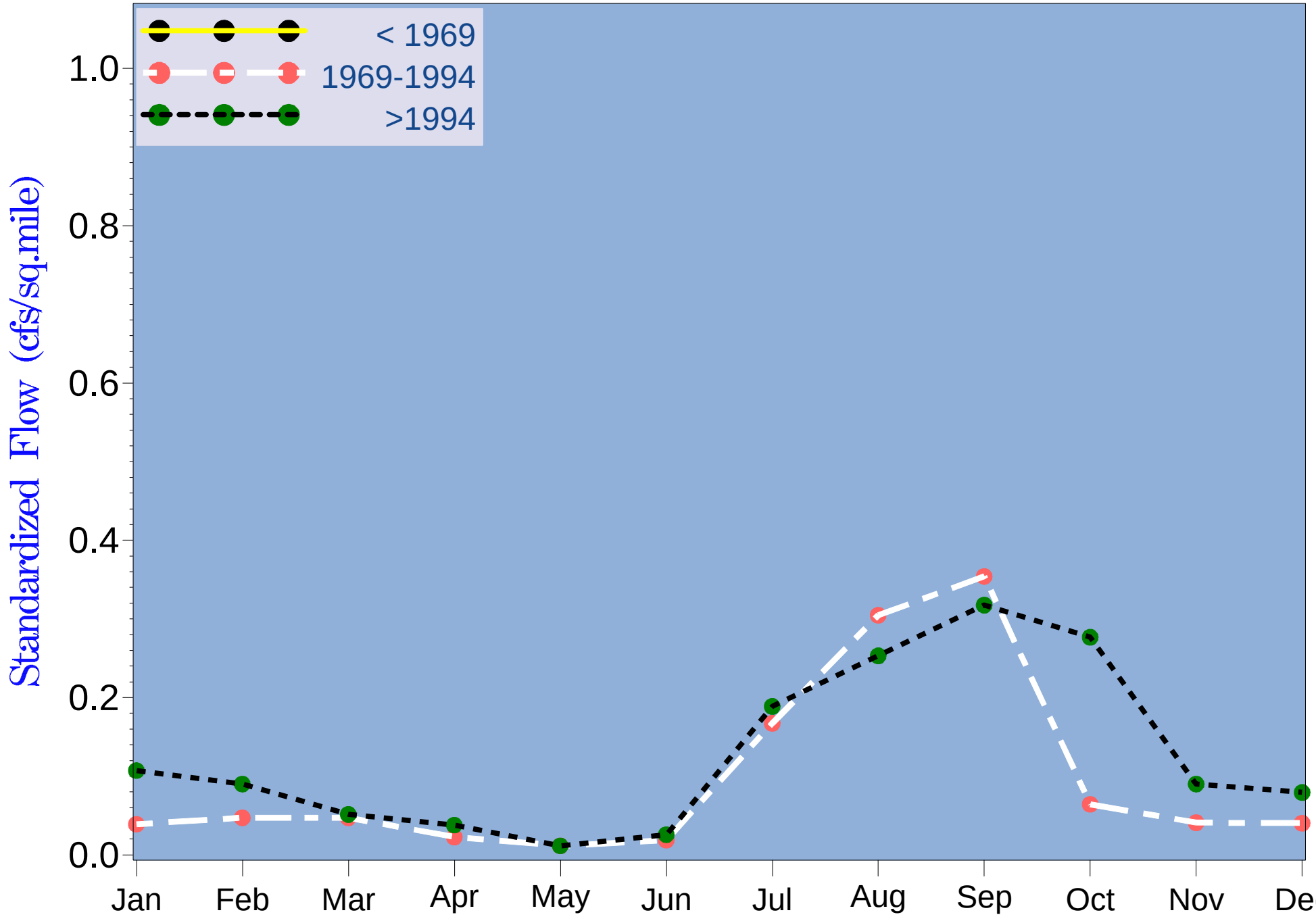


Figure 3.273 Seasonal differences among AMO periods of monthly P10 flow at long-term Prairie Creek (2298123) gage

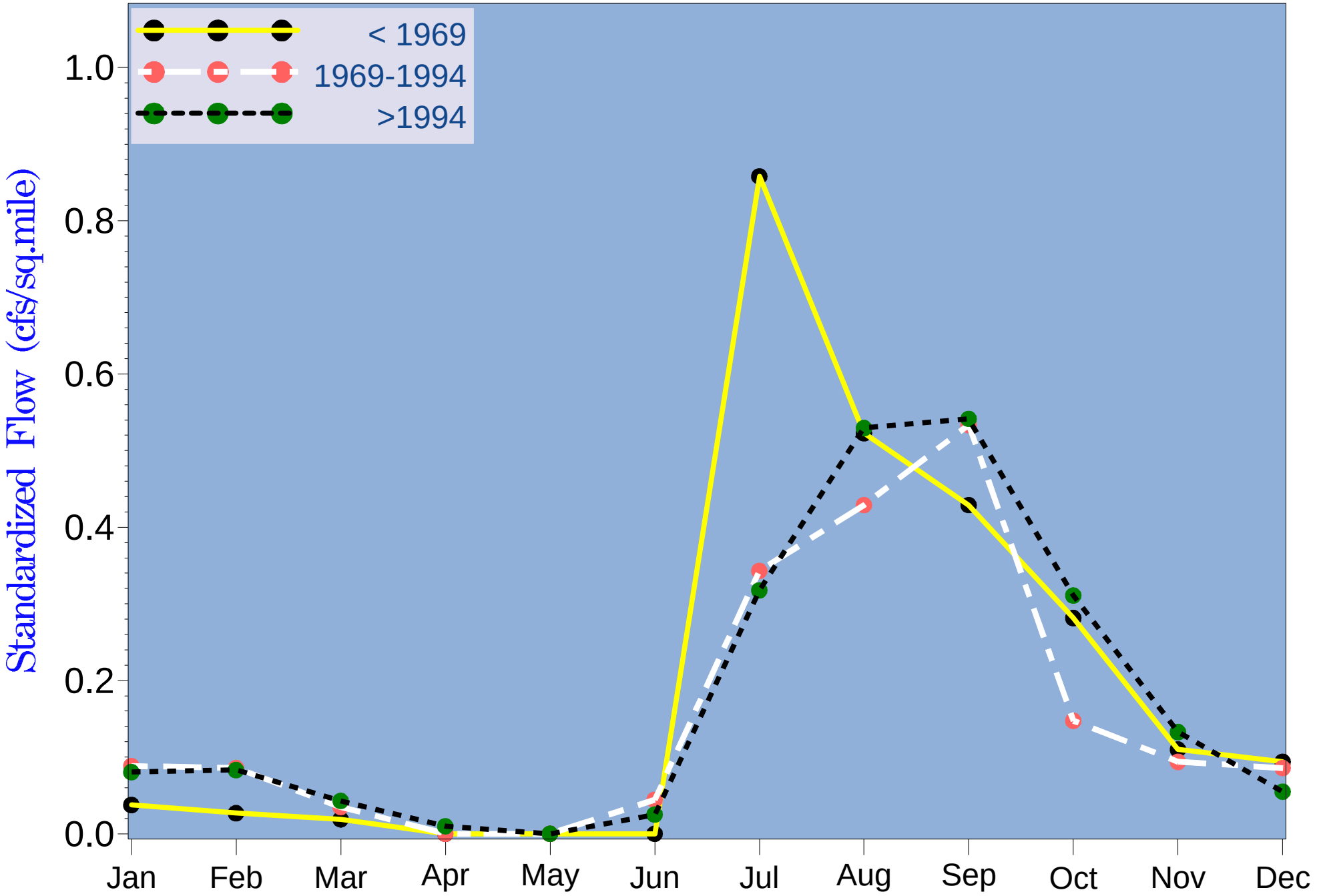


Figure 3.274 Seasonal differences among AMO periods of monthly P10 flow at long-term Shell Creek gage

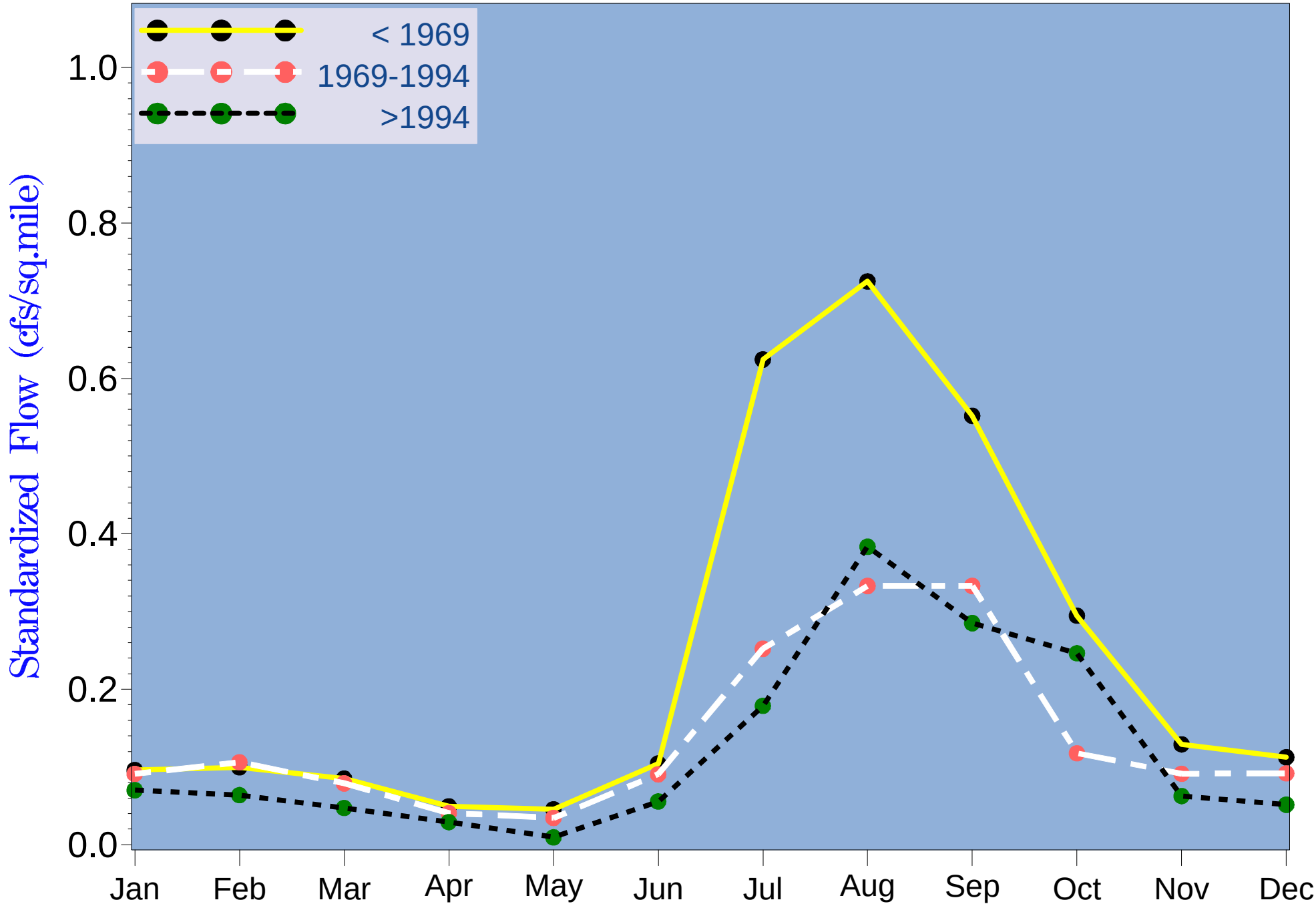


Figure 3.275 Seasonal differences among AMO periods of monthly P10 total gaged flow to the Upper Harbor

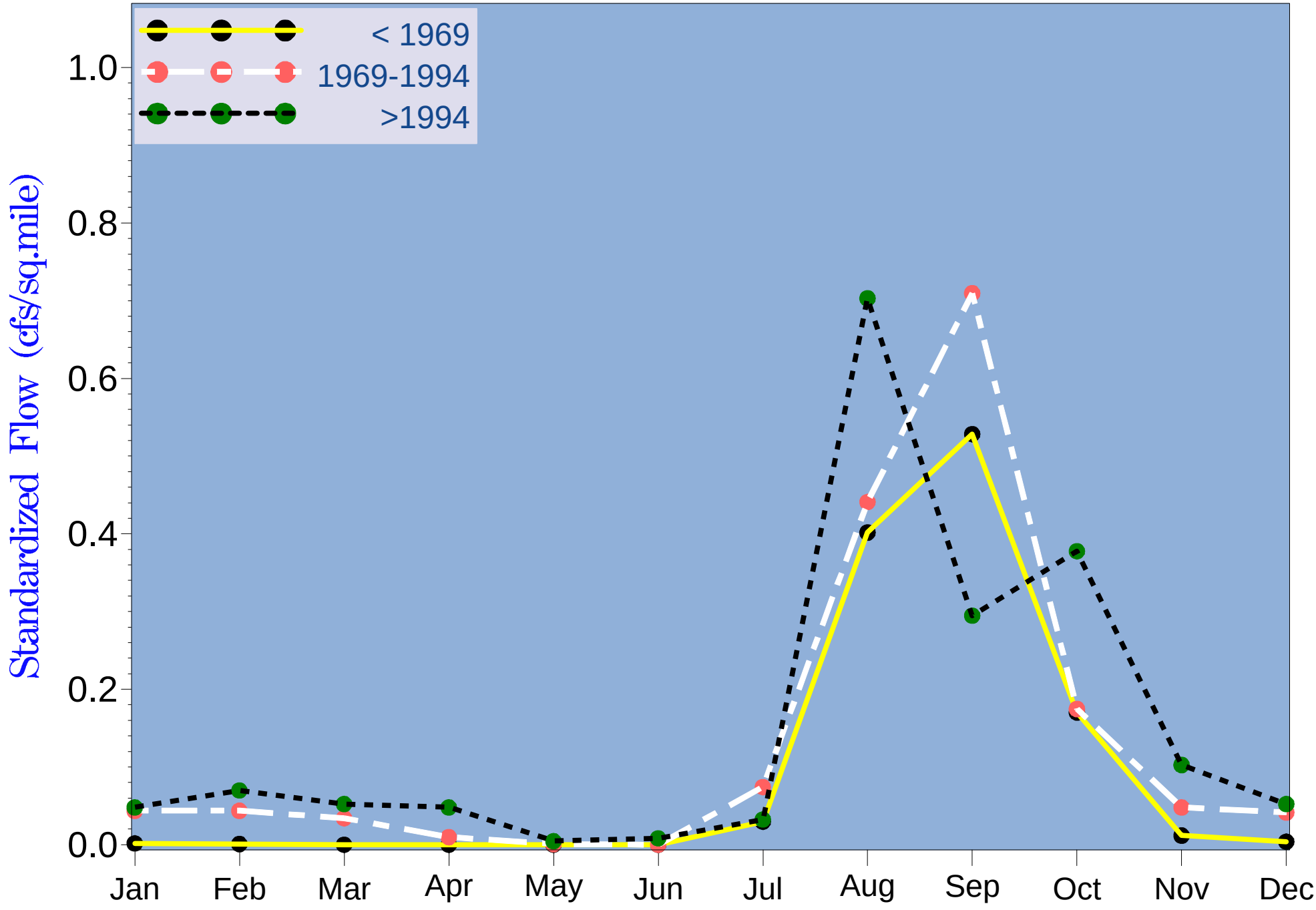


Figure 3.276 Seasonal differences among AMO periods of monthly P10 flow at long-term Myakka River near Sarasota (2298830) gage

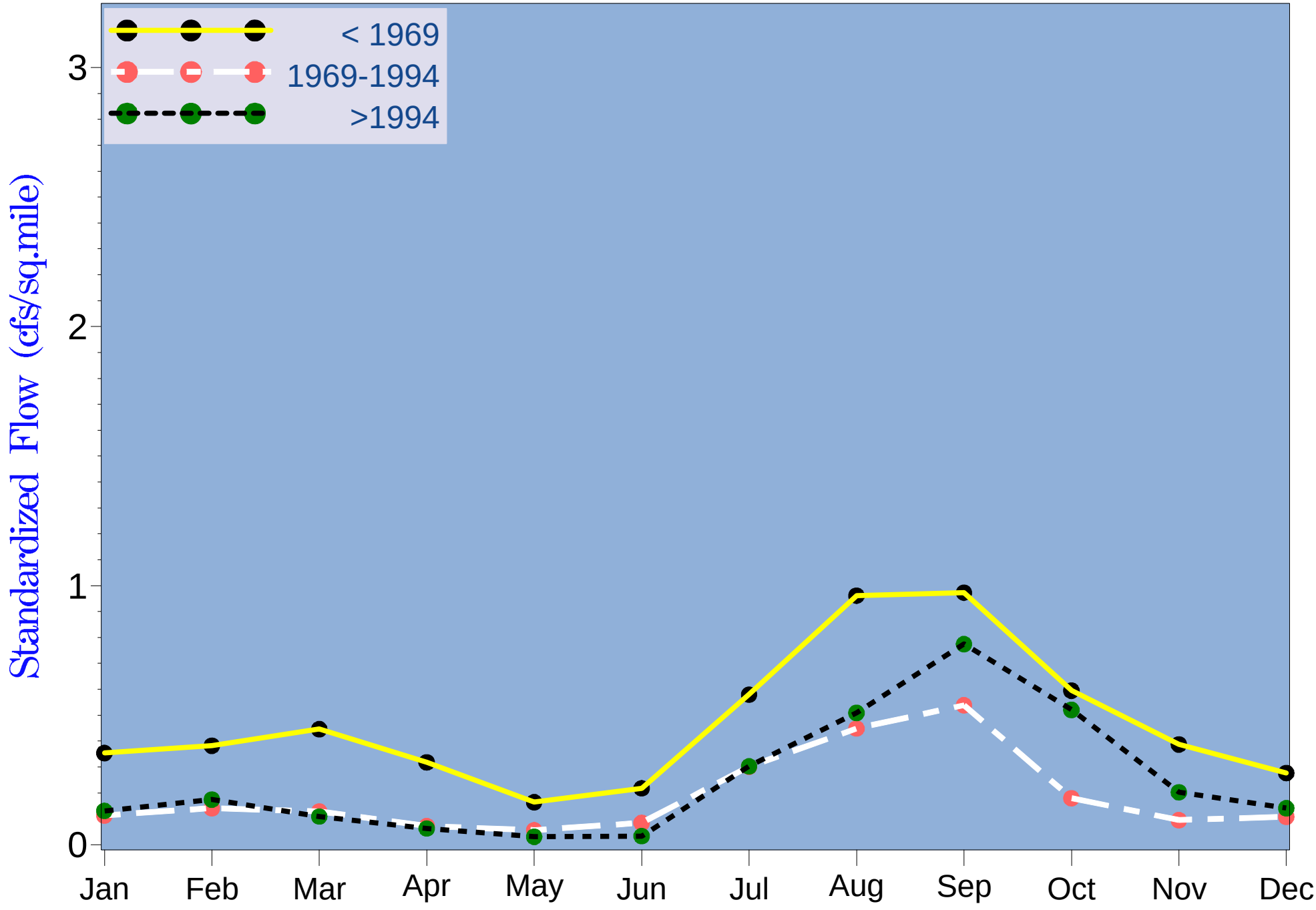


Figure 3.277 Seasonal differences among AMO periods of monthly median flow at long-term Peace River at Bartow (2294650) gage

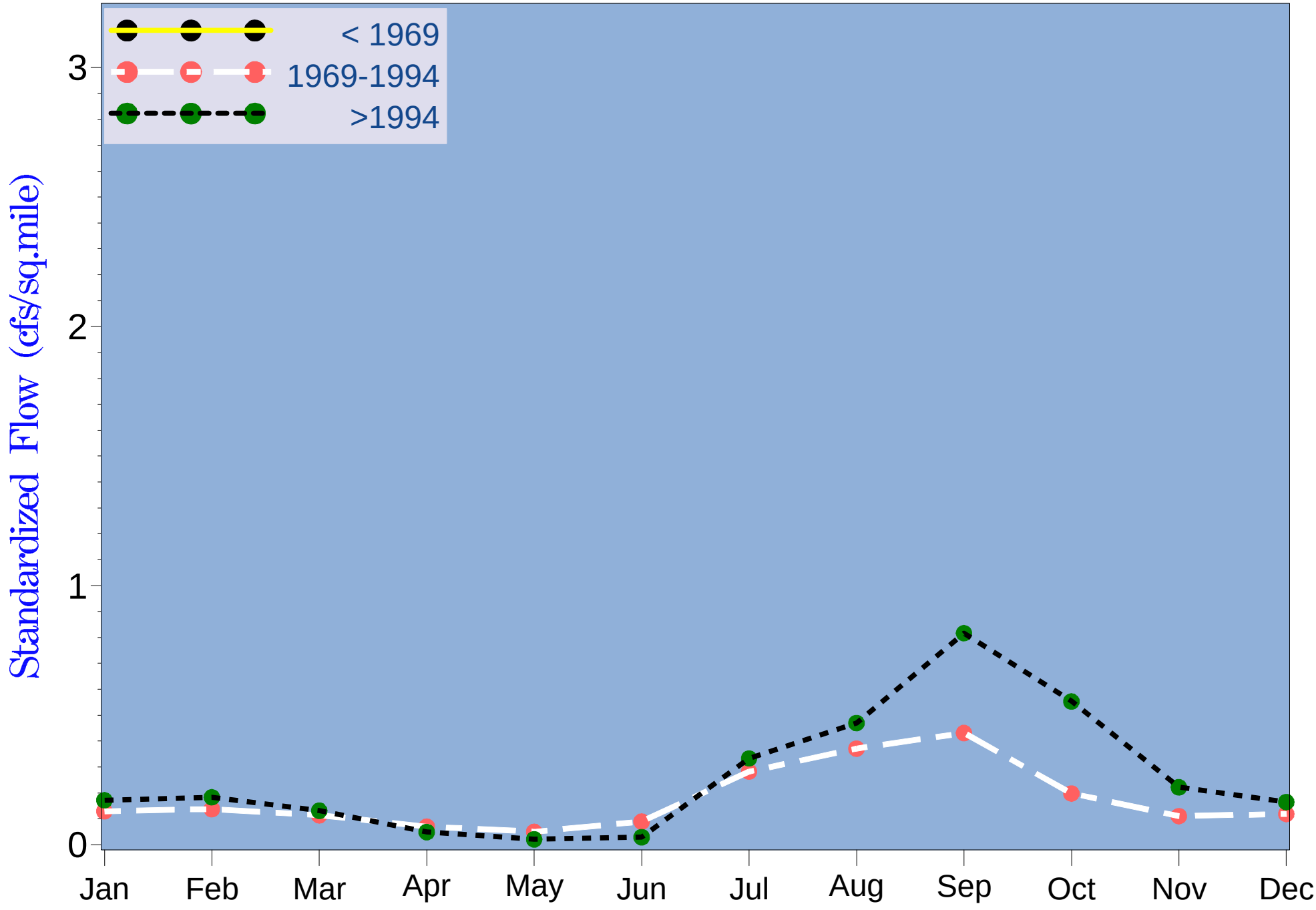


Figure 3.278 Seasonal differences among AMO periods of monthly median flow at long-term Peace River at Ft. Meade (2294898) gage

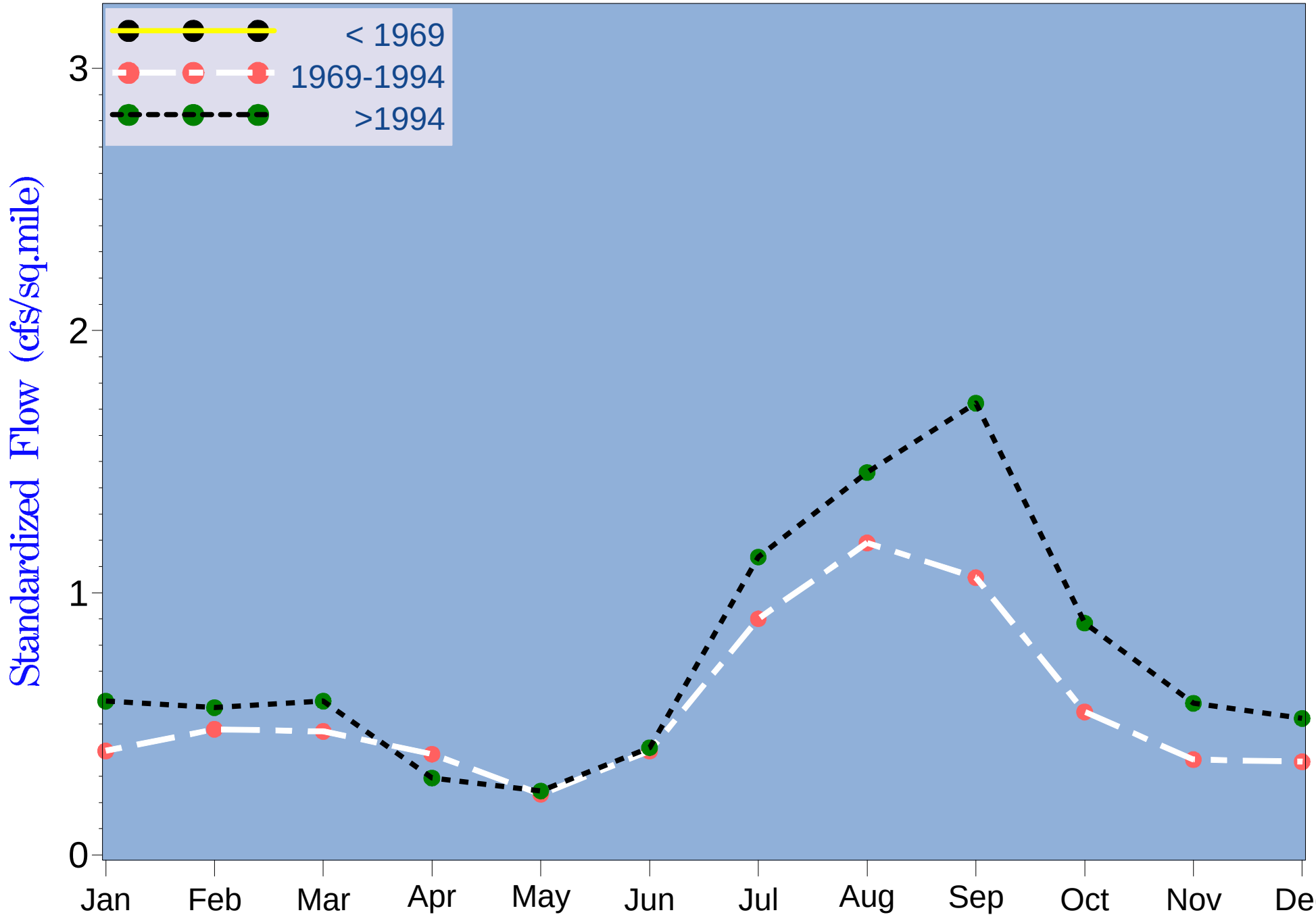


Figure 3.279 Seasonal differences among AMO periods of monthly median flow at long-term Payne Creek (2295420) gage

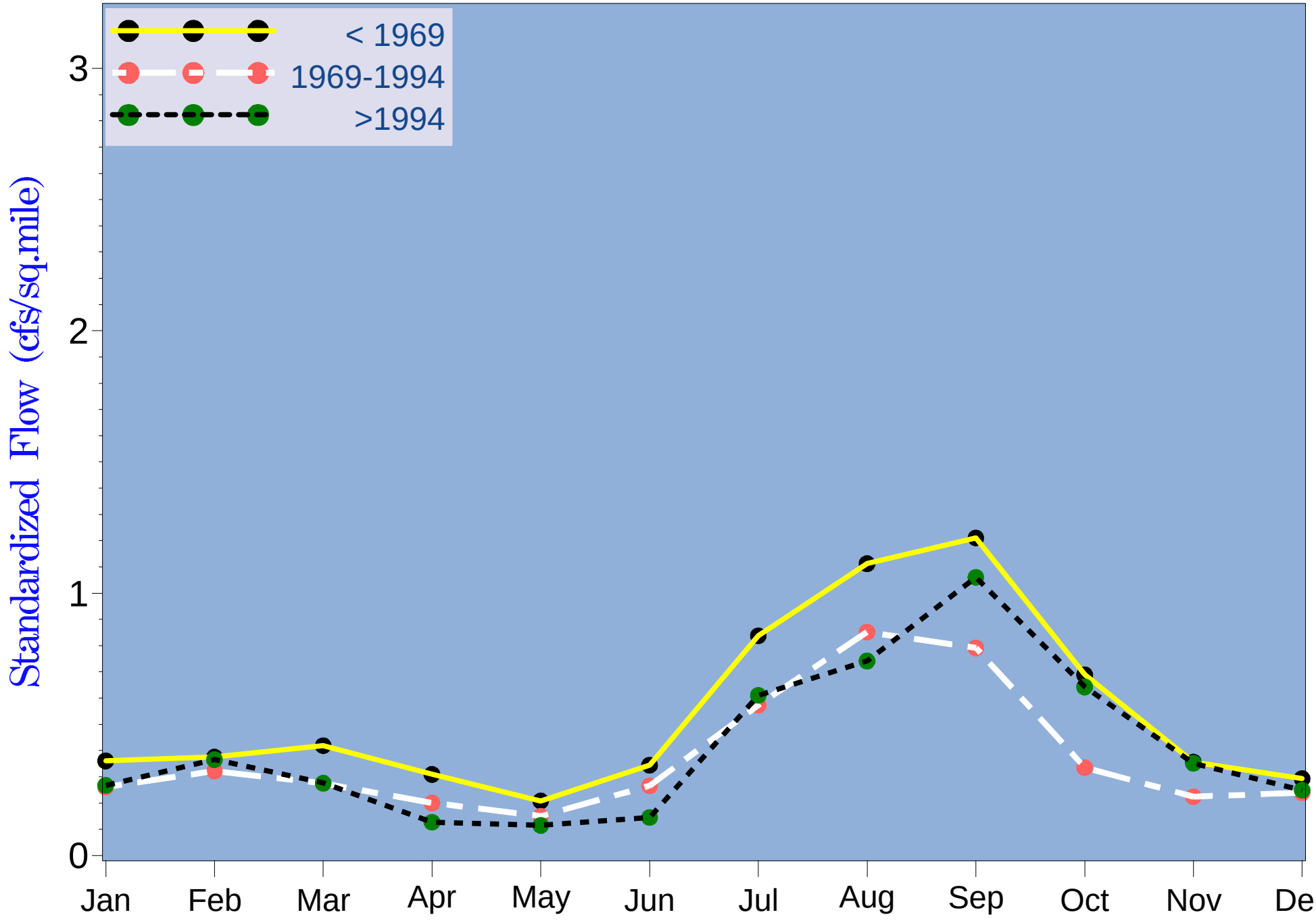


Figure 3.280 Seasonal differences among AMO periods of monthly median flow at long-term Peace River at Zolfo (2295637) gage

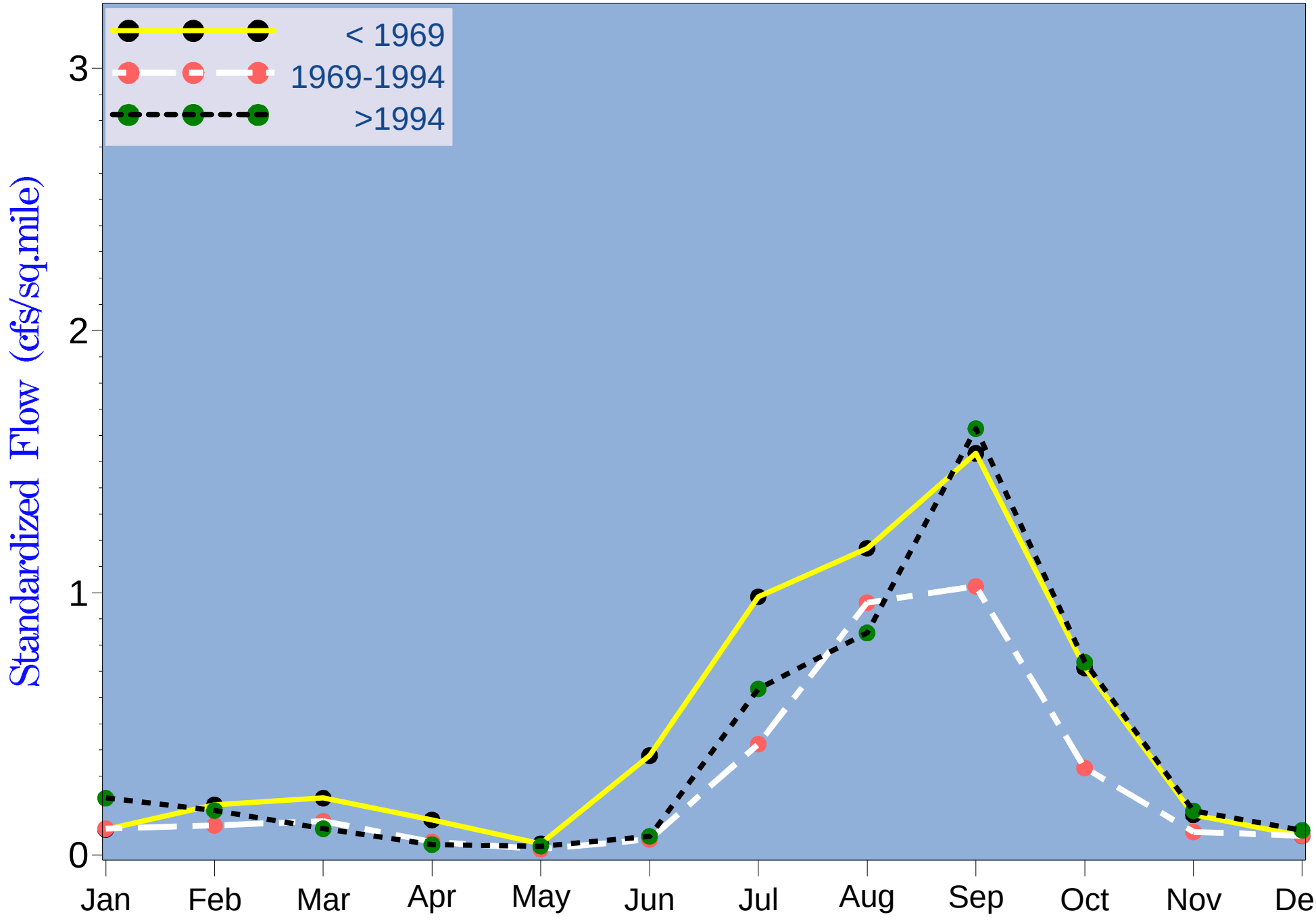


Figure 3.281 Seasonal differences among AMO periods of monthly median flow at long-term Charlie Creek (2296500) gage

Table 4.6

Changes in Water Quality Parameters over Time
Saddle Creek and Peace River at Bartow

Parameter	Saddle Creek	Peace River at Bartow
Color	▲	▲▲▲
Conductivity (Specific Conductance)	▼▼	▼▼
Dissolved Oxygen	---	---
pH	---	---
Total Alkalinity	▼▼	---
Total Suspended Solids	---	---
Dissolved Residue (Total Dissolved Solids)	---	▼▼
Turbidity (NTU)	---	---
Nitrite+Nitrate Nitrogen	---	▼
Ammonia	---	---
Total Nitrogen	▲▲▲	---
Total Kjeldahl Nitrogen (NH4+Organic Nitrogen)	---	---
Total Phosphorus	---	▼▼▼
Orthophosphate	▼▼	▼▼▼
Total Organic Carbon	▼▼	---
Chlorophyll a	---	---
Calcium	---	▼▼
Magnesium	---	▼▼
Sodium	---	---
Potassium	---	▲▲▲
Chloride	---	▲▲
Silica		▼▼
Sulfate	▼▼▼	▼▼▼
Fluoride	▼▼▼	▼▼▼
Iron		▲▲▲
Strontium		▼▼▼

▲▲▲Large Change ▼▼ Intermediate Change ▲ Small Change — No Change Blank = No Data

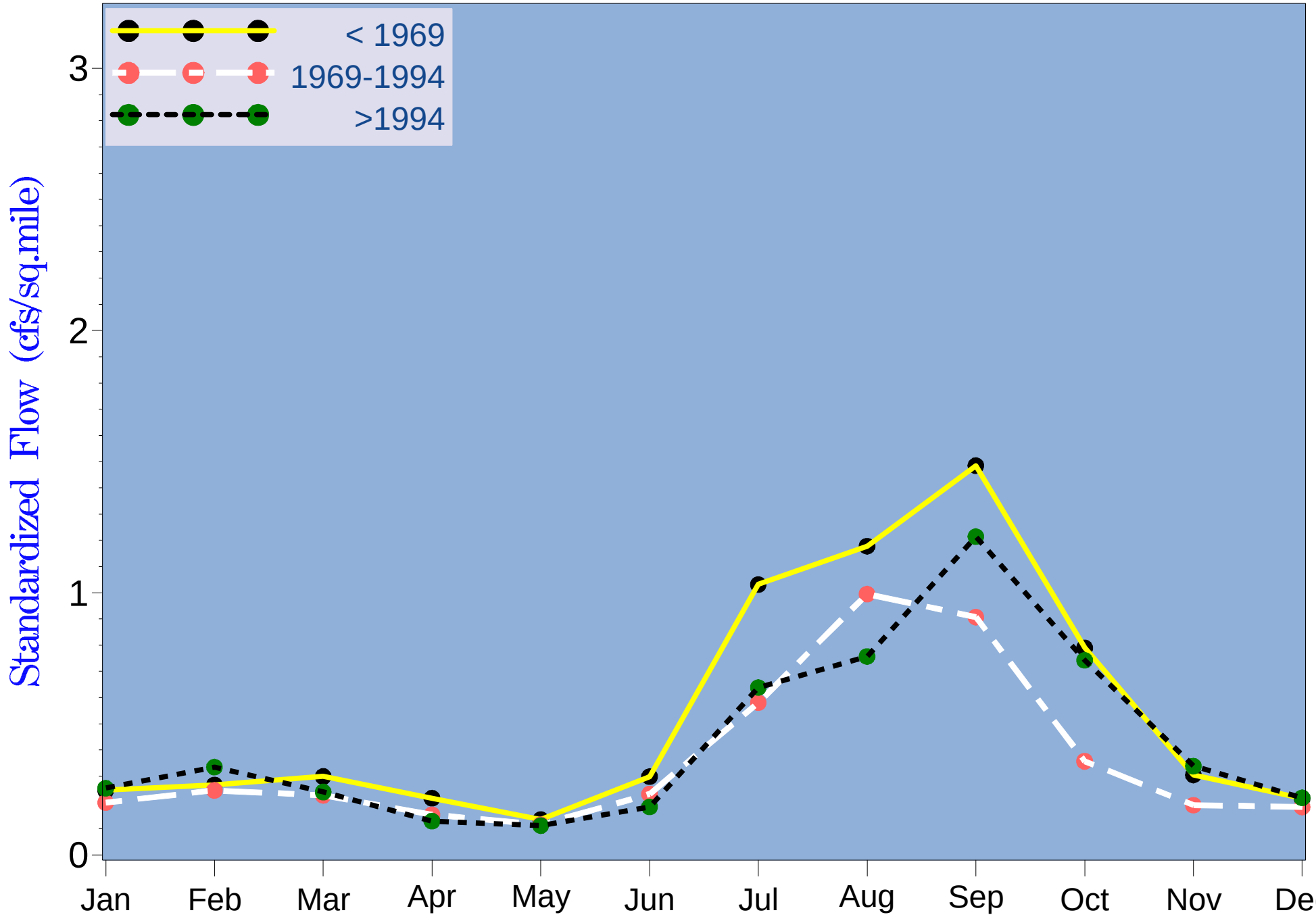


Figure 3.282 Seasonal differences among AMO periods of monthly median flow at long-term Peace River at Arcadia (2296750) gage

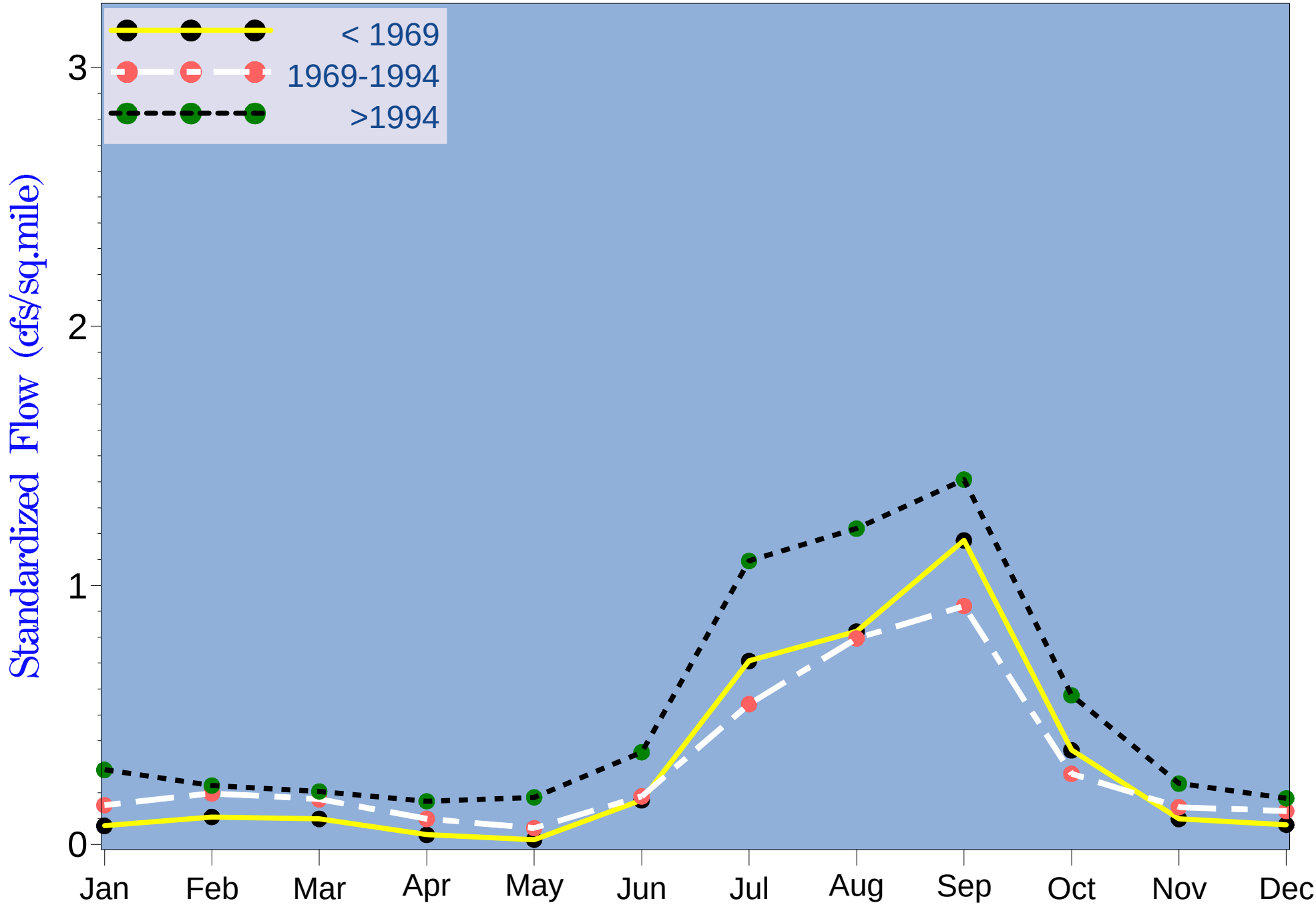


Figure 3.283 Seasonal differences among AMO periods of monthly median flow at long-term Joshua Creek at Nocatee (2297100) gage

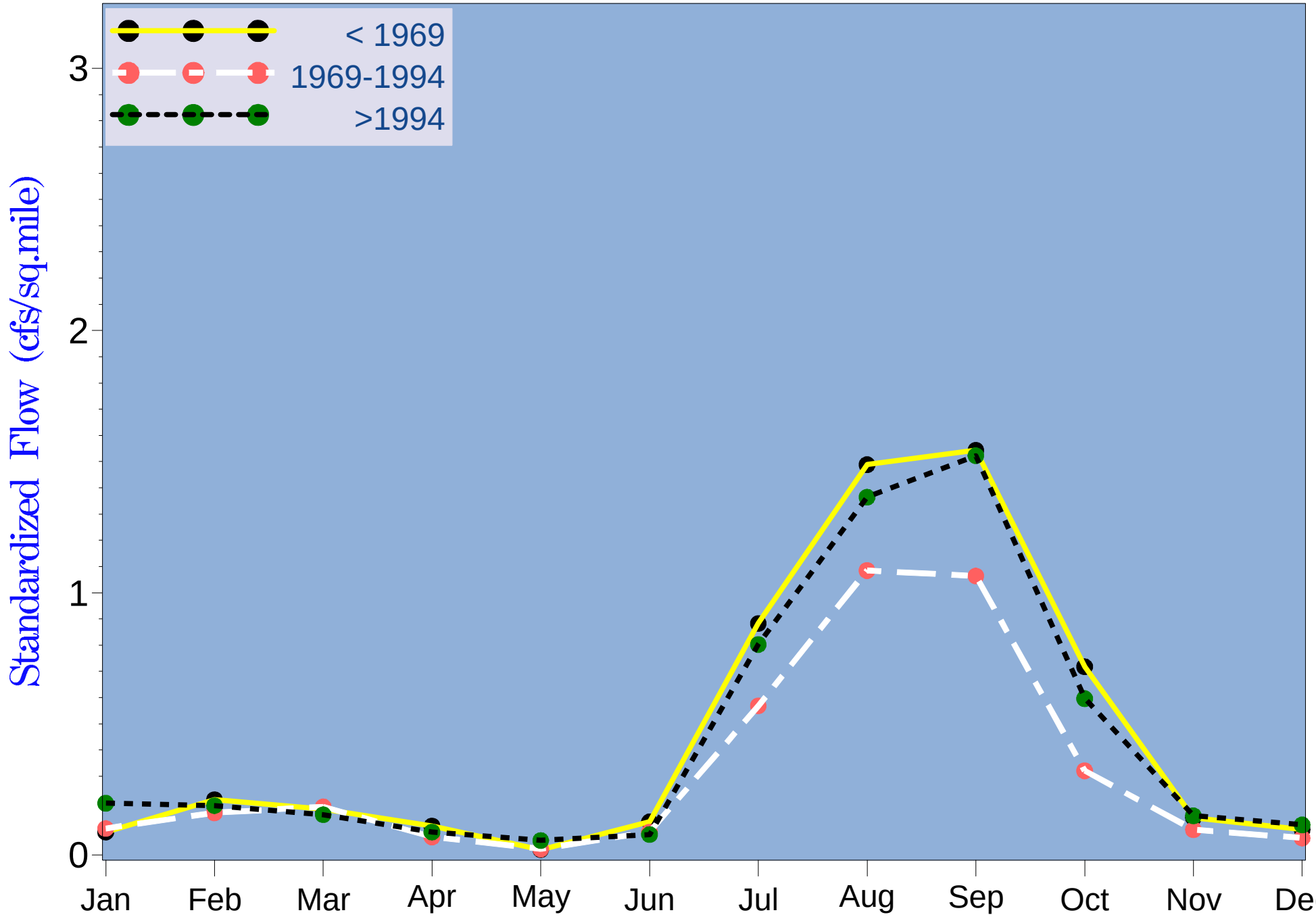


Figure 3.284 Seasonal differences among AMO periods of monthly median flow at long-term Horse Creek near Arcadia(2297310) gage

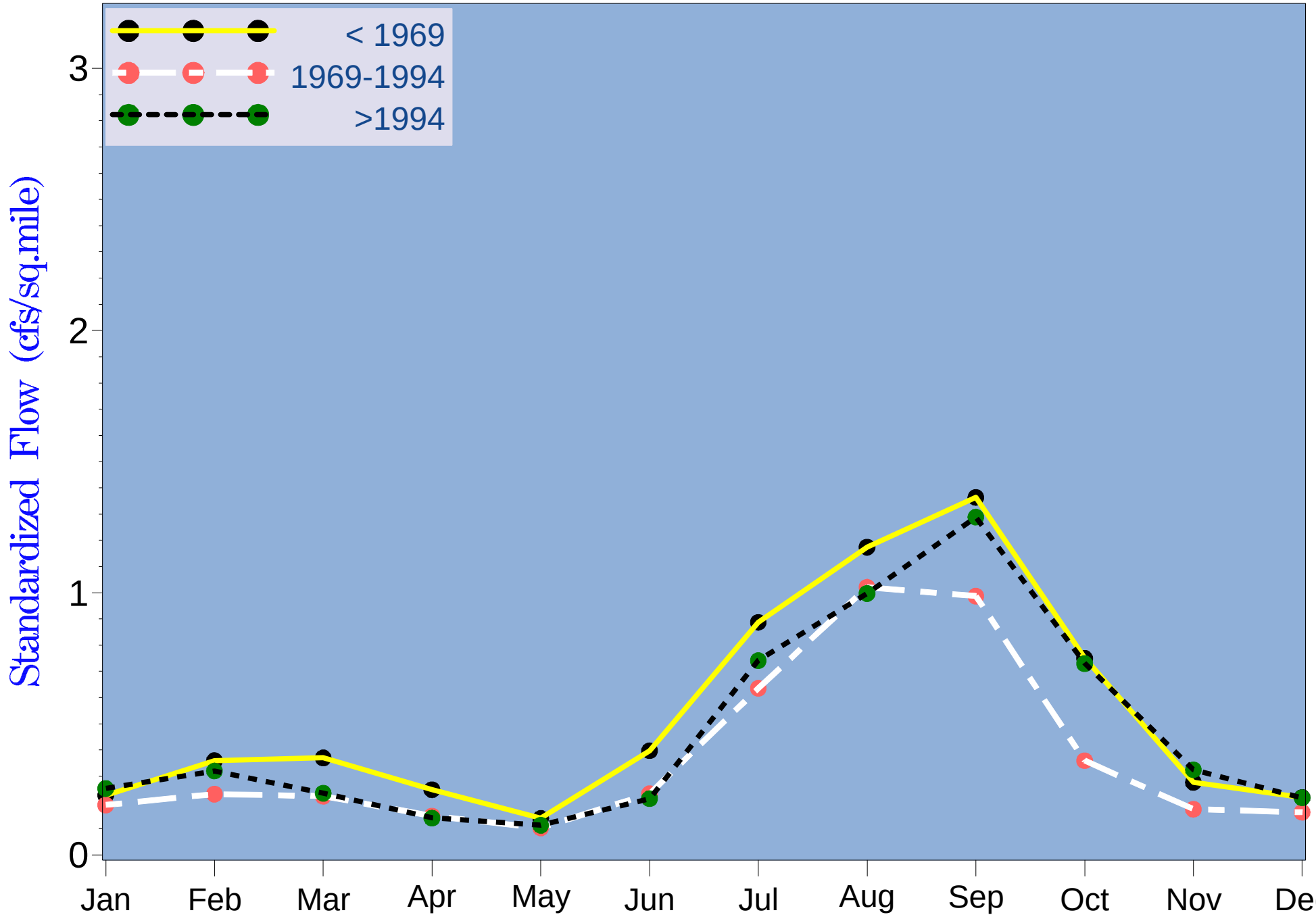


Figure 3.285 Seasonal differences among AMO periods of monthly median total gaged flow upstream of the Facility

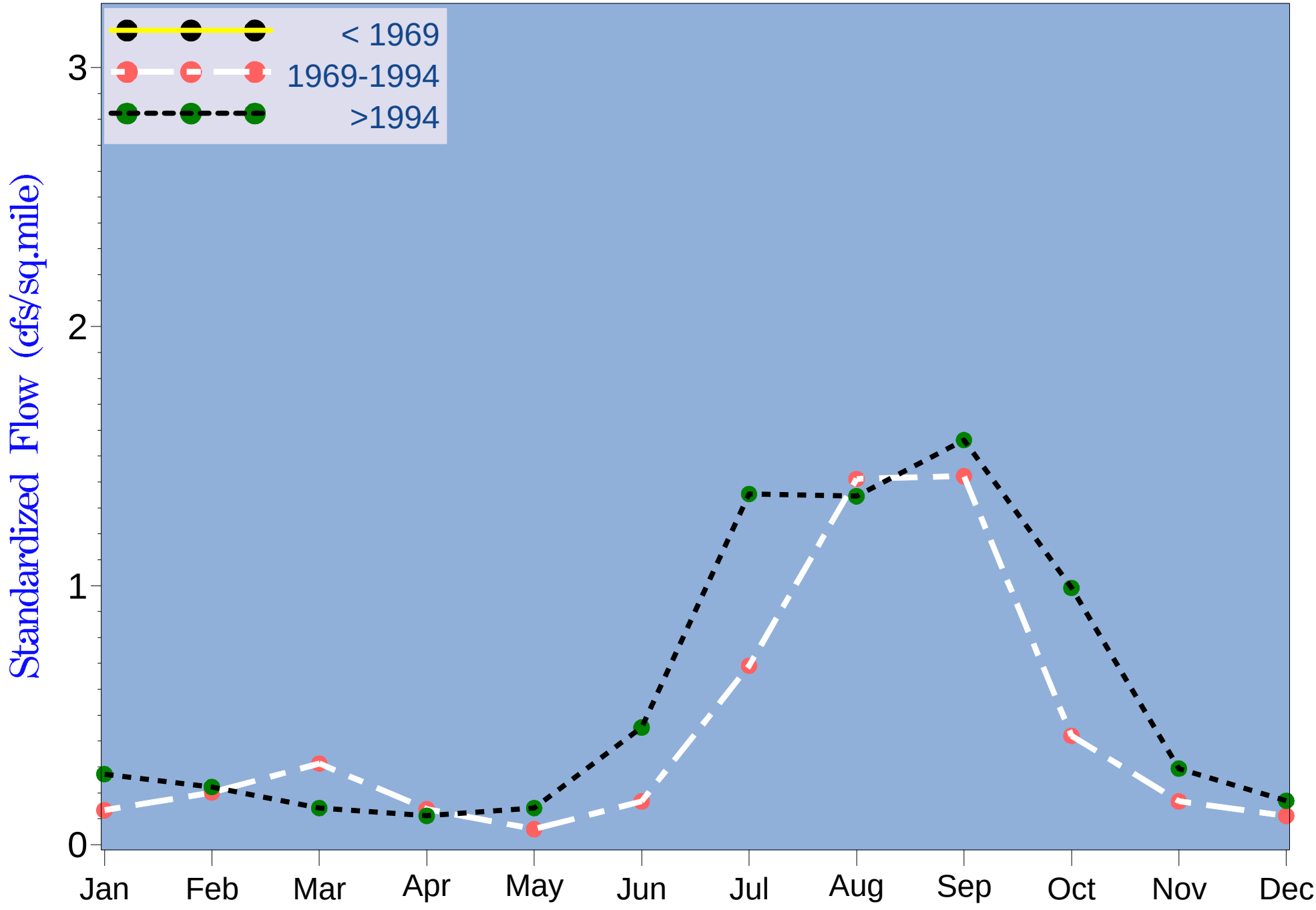


Figure 3.286 Seasonal differences among AMO periods of monthly median flow at long-term Prairie Creek (2298123) gage

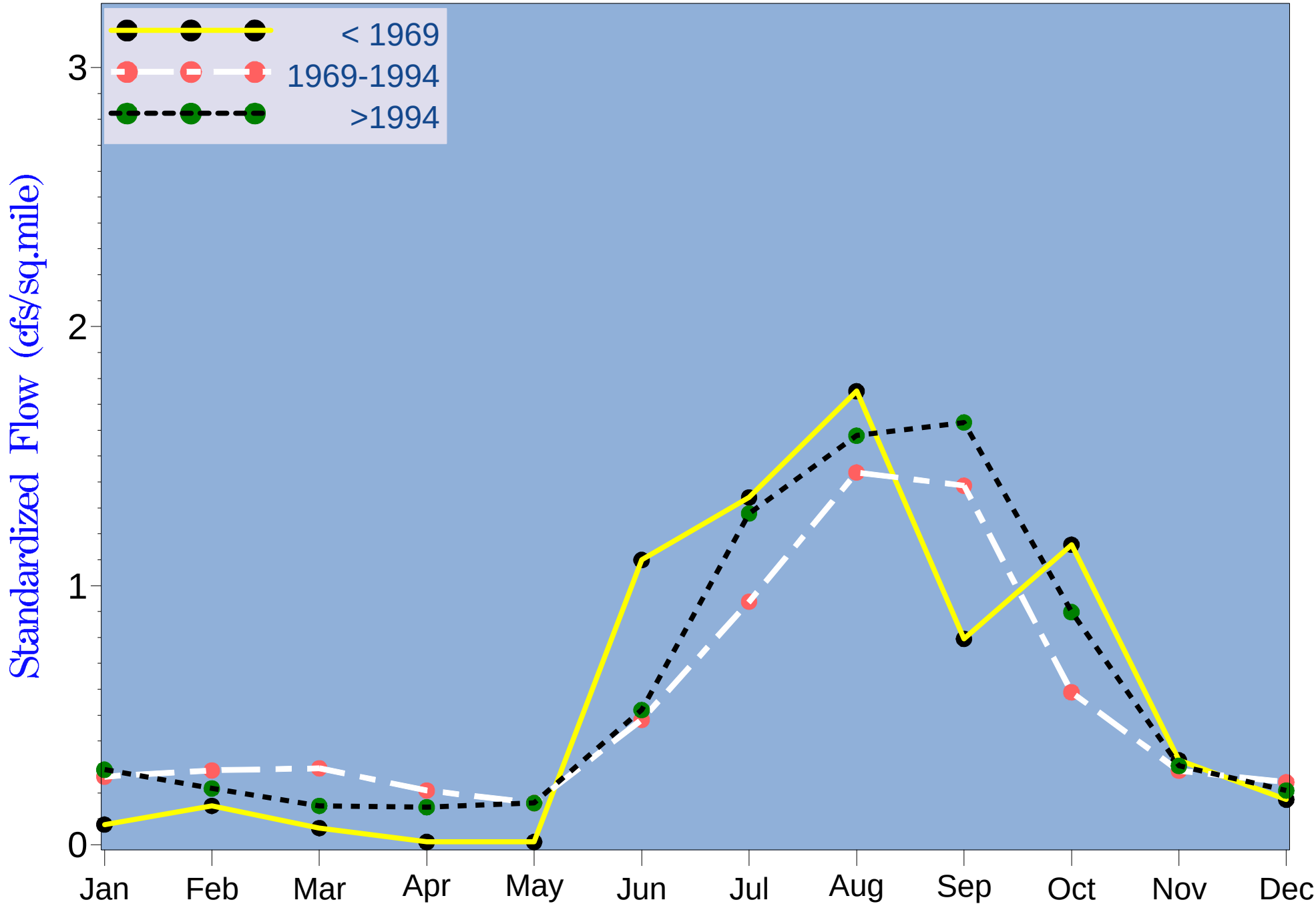


Figure 3.287 Seasonal differences among AMO periods of monthly median flow at long-term Shell Creek gage

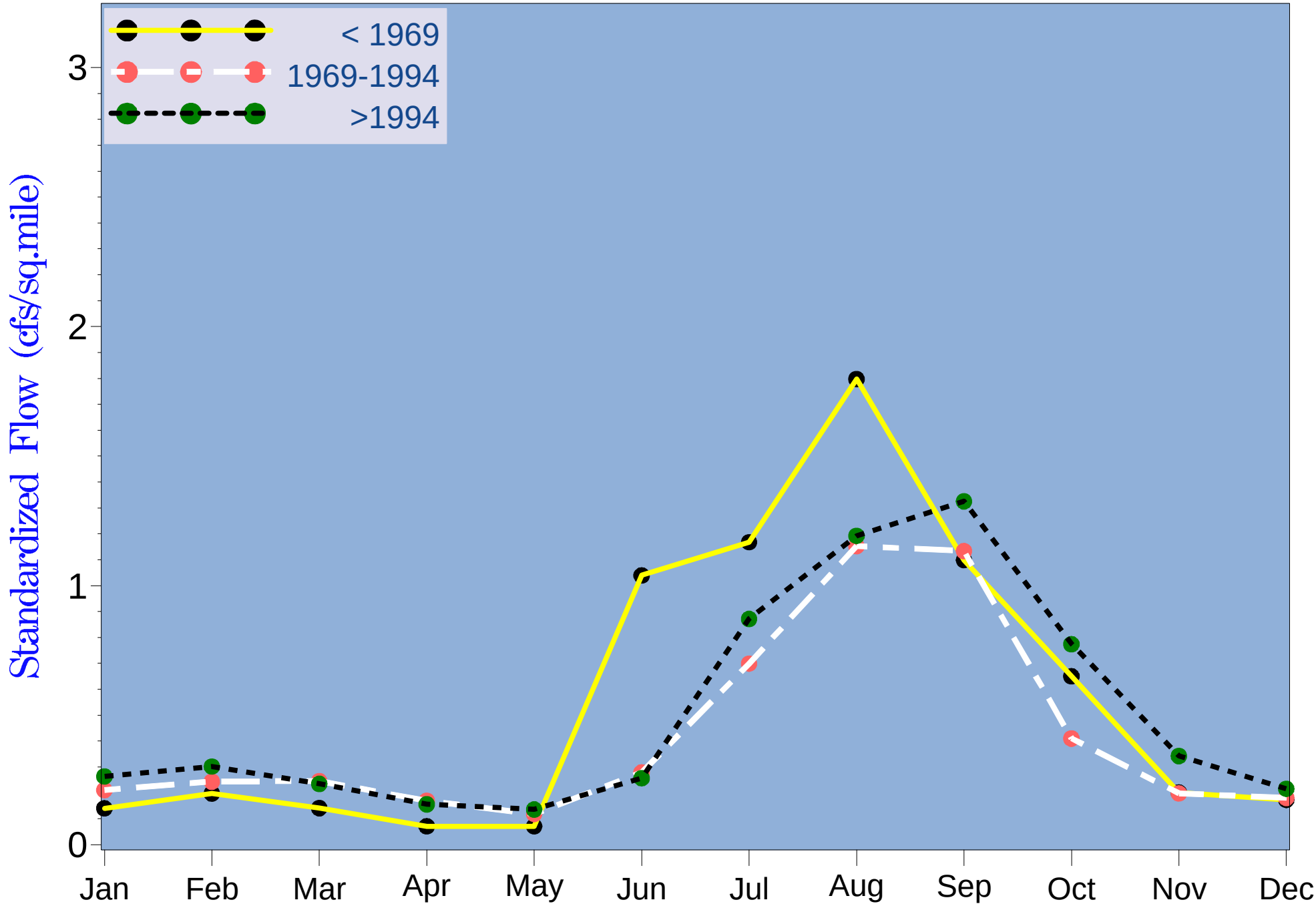


Figure 3.288 Seasonal differences among AMO periods of monthly median total gaged flow to the Upper Harbor

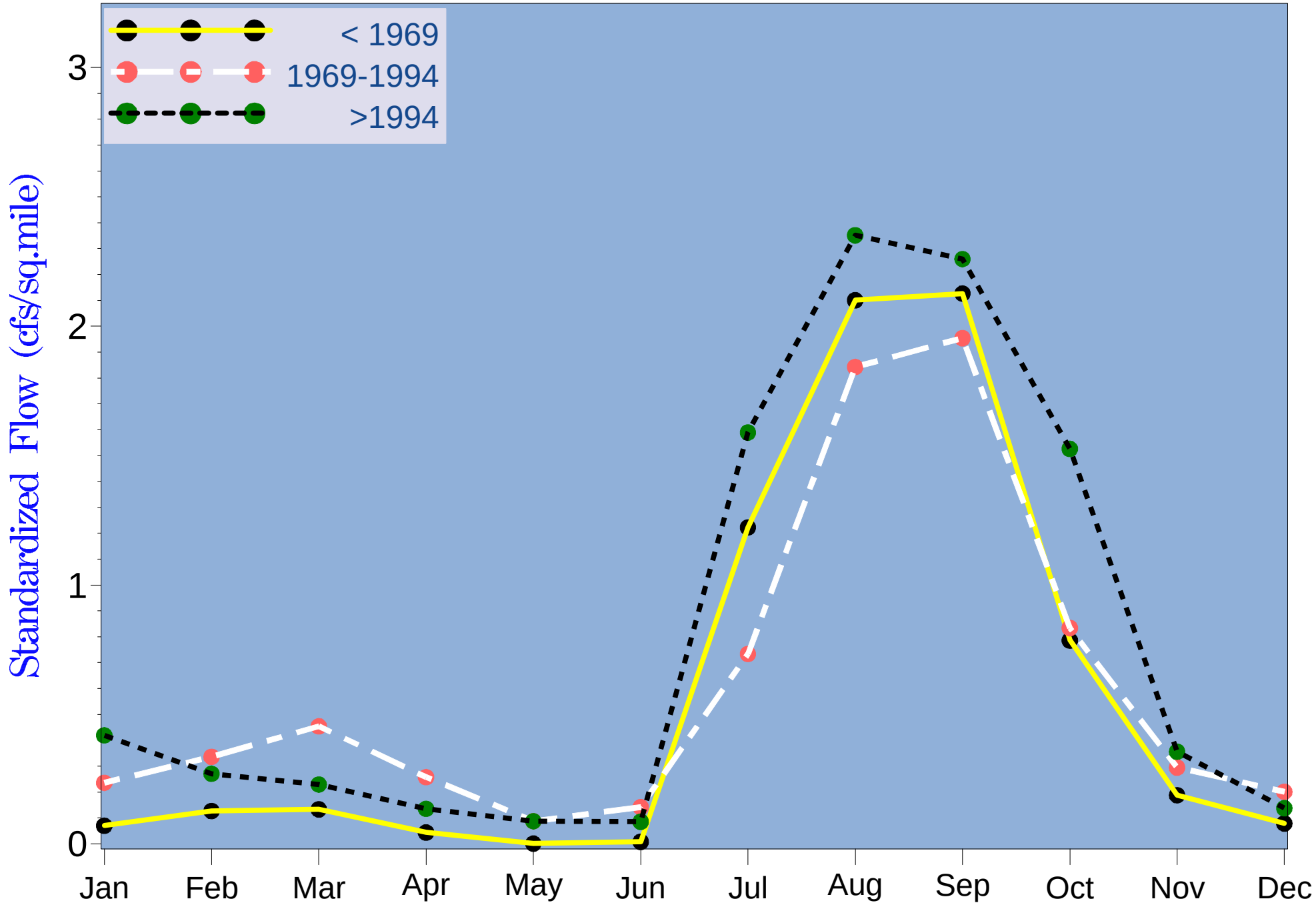


Figure 3.289 Seasonal differences among AMO periods of monthly median flow at long-term Myakka River near Sarasota (2298830) gage

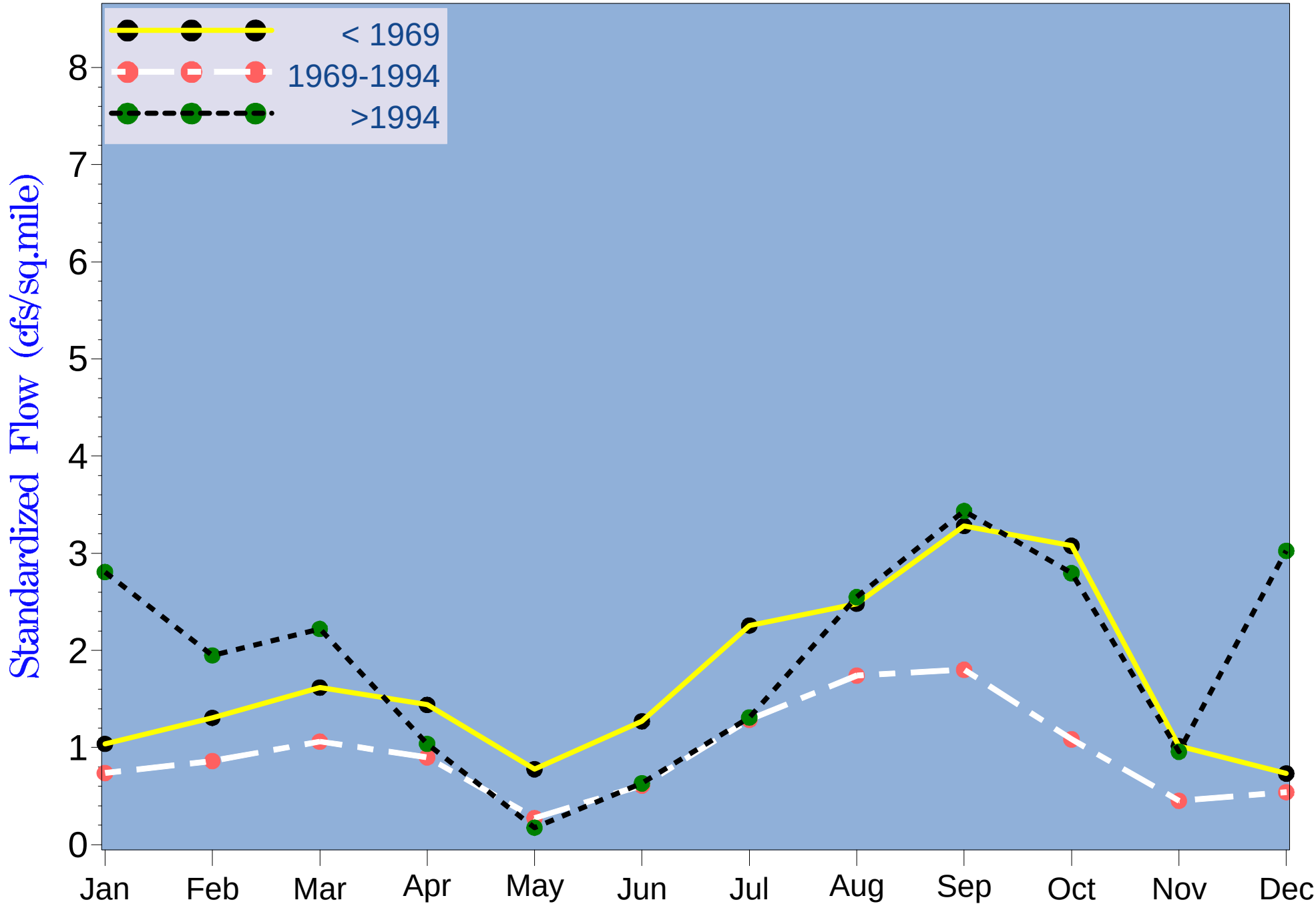


Figure 3.290 Seasonal differences among AMO periods of monthly P90 flow at long-term Peace River at Bartow (2294650) gage

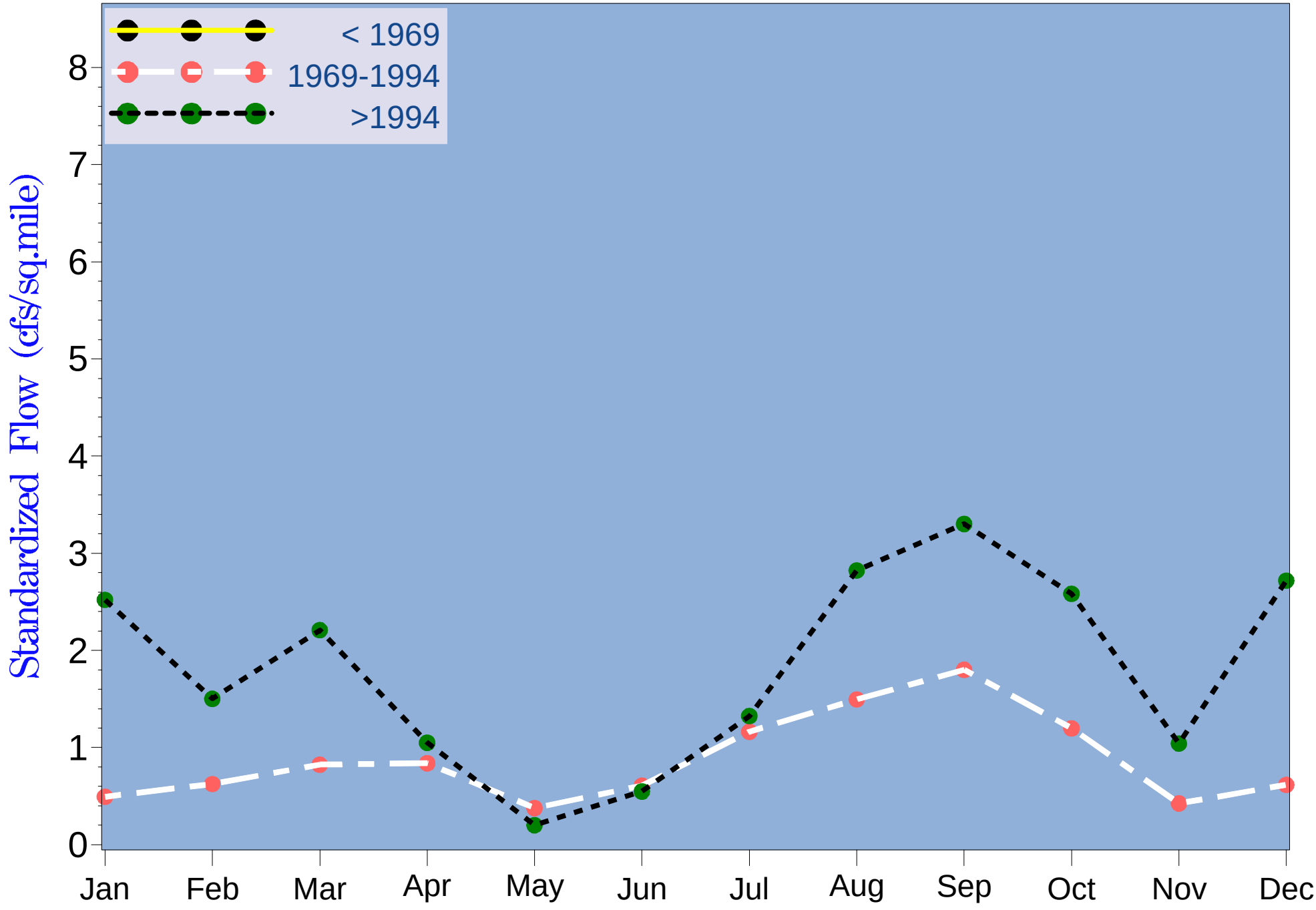


Figure 3.291 Seasonal differences among AMO periods of monthly P90 flow at long-term Peace River at Ft. Meade (2294898) gage

Table 1.3

Time Lines for Major HBMP Study Elements

	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06
Indicator Benthic Species	■	■	■	■	■	■	■	■	■																						
Sea Star	■	■	■	■	■	■	■	■	■																						
Upper Harbor Juvenile Fishes	■	■	■	■	■	■	■	■	■	■	■	■																			
Vegetation - Aerial Photography	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■		■		■		■		■		■		
Vegetation - First and Last		■				■	■	■	■				■		■	■		■		■		■	■		■		■		■		
Vegetation - Transect Sites		■				■	■	■	■				■		■	■		■		■		■	■		■		■		■		
Isohaline Phytoplankton Primary Production								■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■							
Isohaline Phytoplankton Species Identification														■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■		
Zooplankton (Isohalines)														■	■	■	■	■	■	■	■										
Water Quality Lower /Middle Harbor																															
Stations 1, 3, 5, 6	■	■	■	■	■	■																									
↓ Stations 2, 4, 7	■	■	■	■	■	■	■	■	■																						
Water Quality Upper Harbor																															
↓ Station 9	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■						■	■	■	■	■	■	■	■	■	■	■
Water Quality Lower River																															
↓ Stations 10, 12, 14, 18	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■						■	■	■	■	■	■	■	■	■	■	■
↓ Stations 16, 20	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■																
Stations 11, 13, 15, 17, 19	■	■	■	■	■	■	■	■	■												■	■	■	■	■	■	■	■	■	■	■
Stations 21, 22, 23, 24, 25							■	■	■												■	■	■	■	■	■	■	■	■	■	■
Continuous Recorders																					■	■	■	■	■	■	■	■	■	■	■
Benthic Invertebrates & Mollusc																							■	■							
Larval Fish/Plankton																						■	■								

Note: The station locations used in this table refer to the historically used numerical identifications, since not all of the sites in the lower/upper harbor were sampled along the current river kilometer centerline. Table 1.4 provides conversions to the currently used centerline identification system for stations 9 through 25.

↓ Includes Water Chemistry

Table 4.7

Changes in Water Quality Parameters over Time
Peace River at Fort Meade and Zolfo Springs, and Bowlegs Creek

Parameter	Peace River at Fort Meade	Bowlegs Creek	Peace River at Zolfo Springs
Color	▲▲▲	---	▲
Conductivity (Specific Conductance)	---	▲▲	---
Dissolved Oxygen	---	---	---
pH	---	---	---
Total Alkalinity	---		▲▲
Total Suspended Solids	---		---
Dissolved Residue (Total Dissolved Solids)	---		---
Turbidity (NTU)	---		---
Nitrite+Nitrate Nitrogen	---		▼▼
Ammonia	---		▼
Total Nitrogen	---		▼
Total Kjeldahl Nitrogen (NH4+Organic Nitrogen)	---		---
Total Phosphorus	▼▼		▼▼
Orthophosphate	▼▼▼	▼	▼▼▼
Total Organic Carbon	---		---
Chlorophyll a	---		---
Calcium	---	---	---
Magnesium	---	---	---
Sodium	---	---	▲▲
Potassium	▲▲▲	▲▲▲	▲▲▲
Chloride	---	▲	▲▲
Silica	---		▼▼
Sulfate	---	▲▲	---
Fluoride	---	▼▼	▼
Iron			---
Strontium			▼

▲▲▲Large Change ▼▼ Intermediate Change ▲ Small Change — No Change Blank = No Data

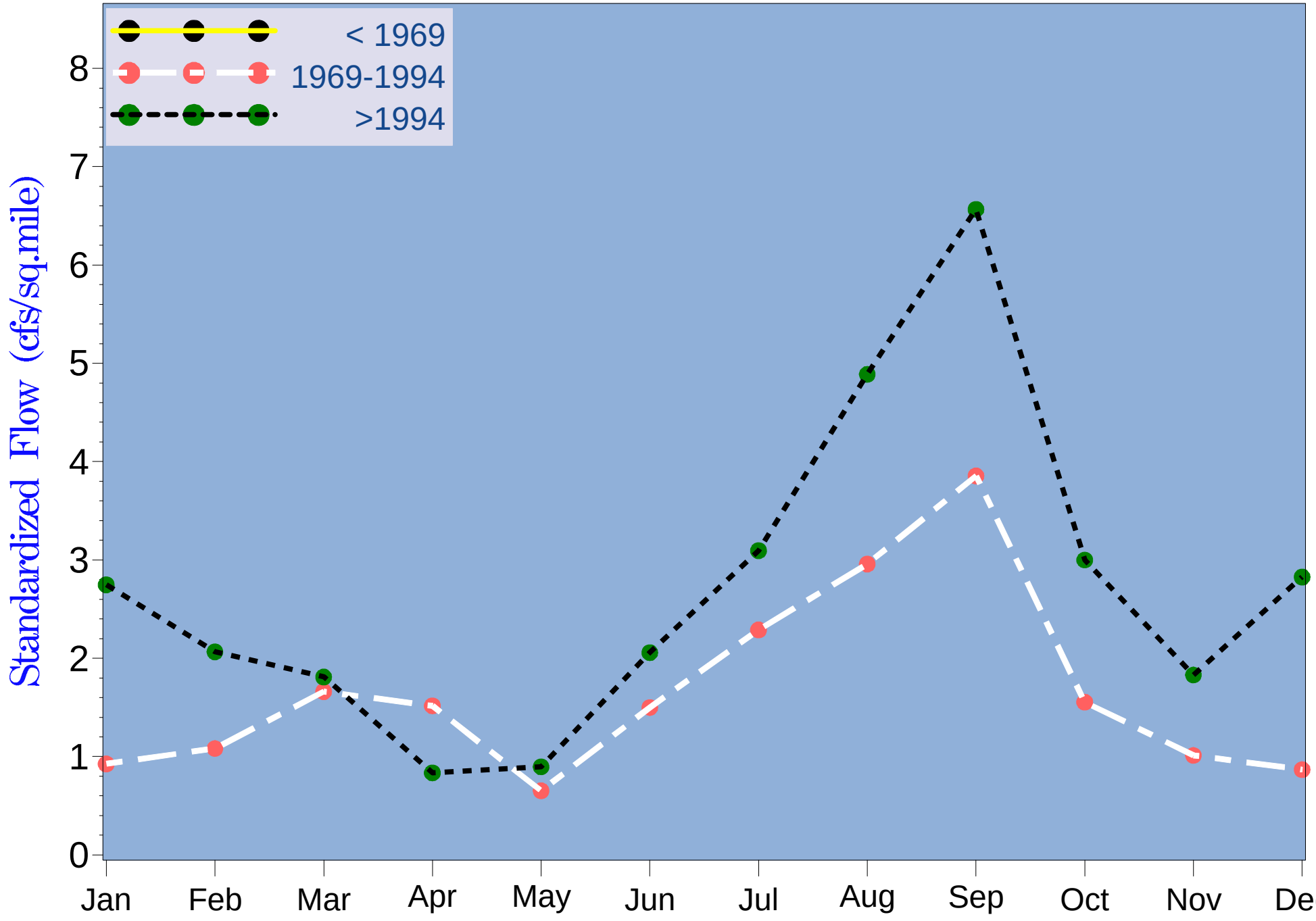


Figure 3.292 Seasonal differences among AMO periods of monthly P90 flow at long-term Payne Creek (2295420) gage

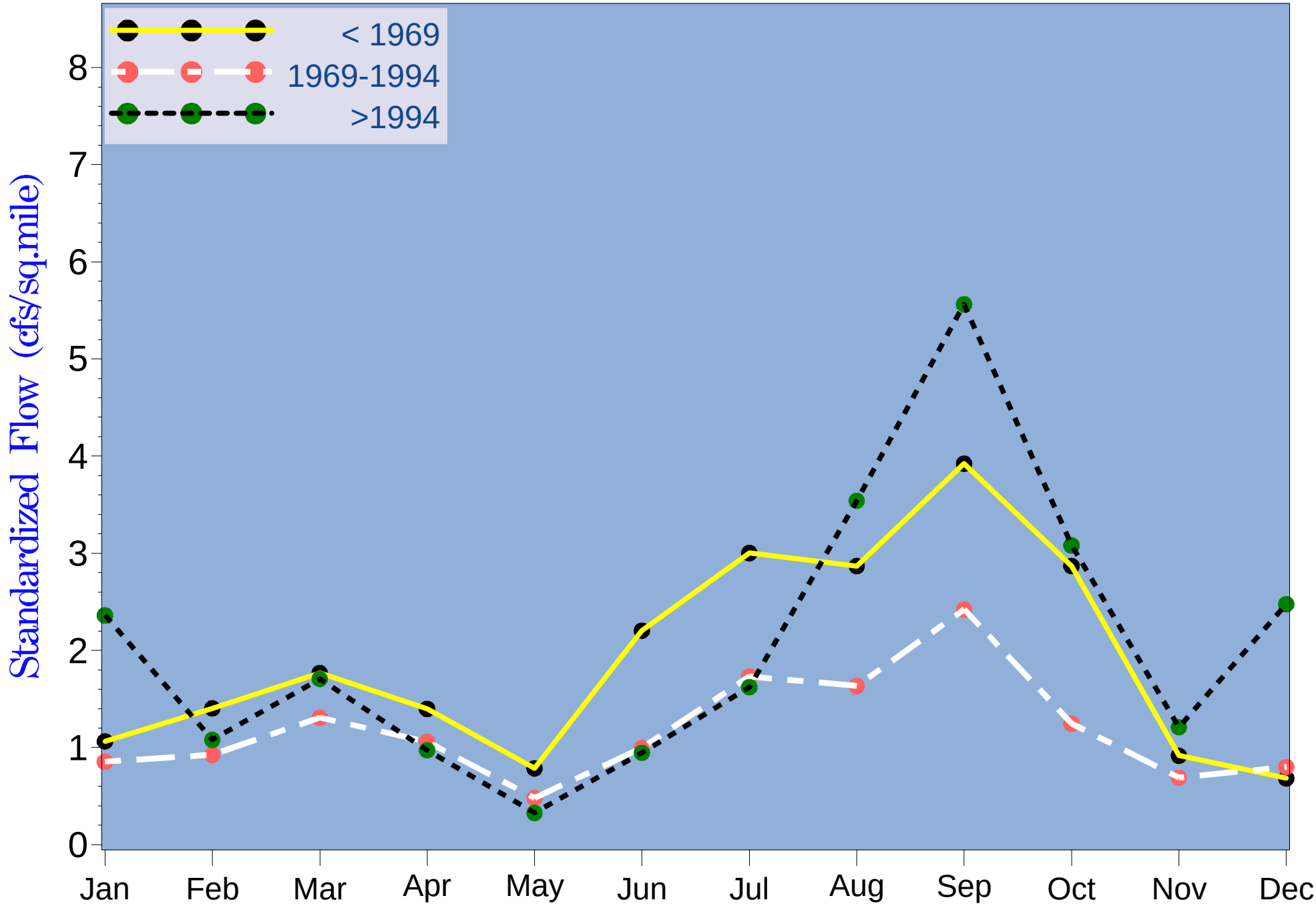


Figure 3.293 Seasonal differences among AMO periods of monthly P90 flow at long-term Peace River at Zolfo (2295637) gage

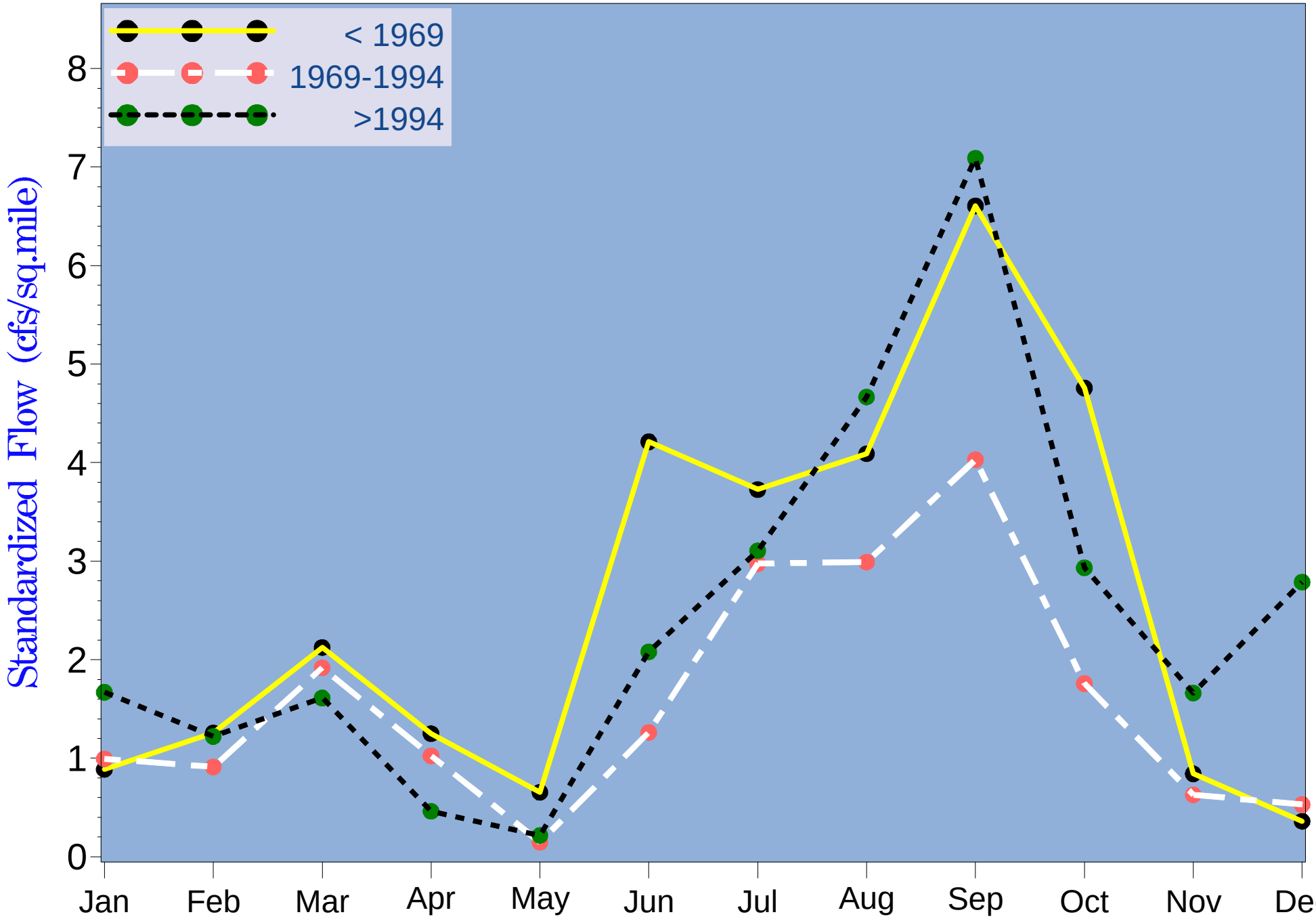


Figure 3.294 Seasonal differences among AMO periods of monthly P90 flow at long-term Charlie Creek (2296500) gage

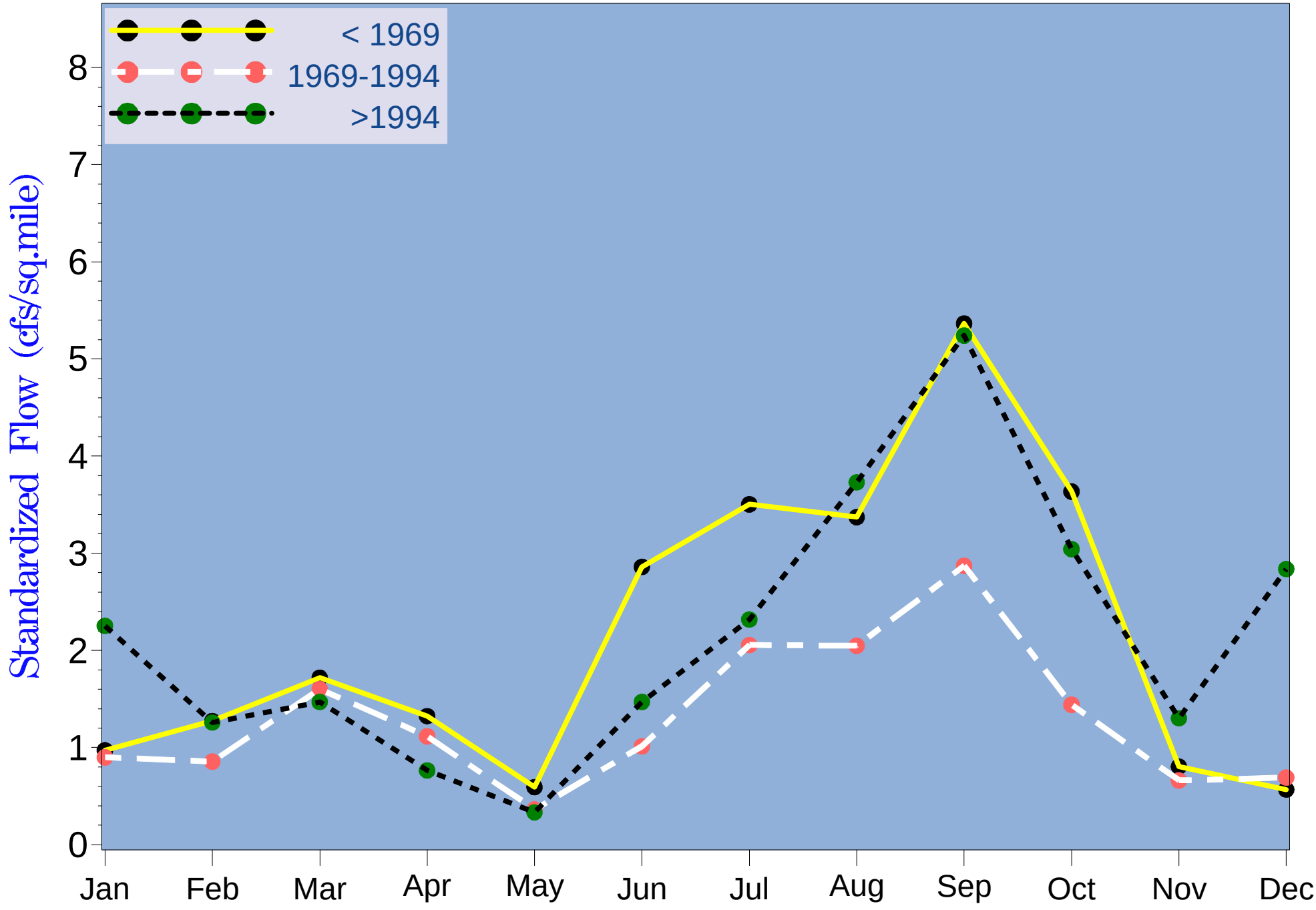


Figure 3.295 Seasonal differences among AMO periods of monthly P90 flow at long-term Peace River at Arcadia (2296750) gage

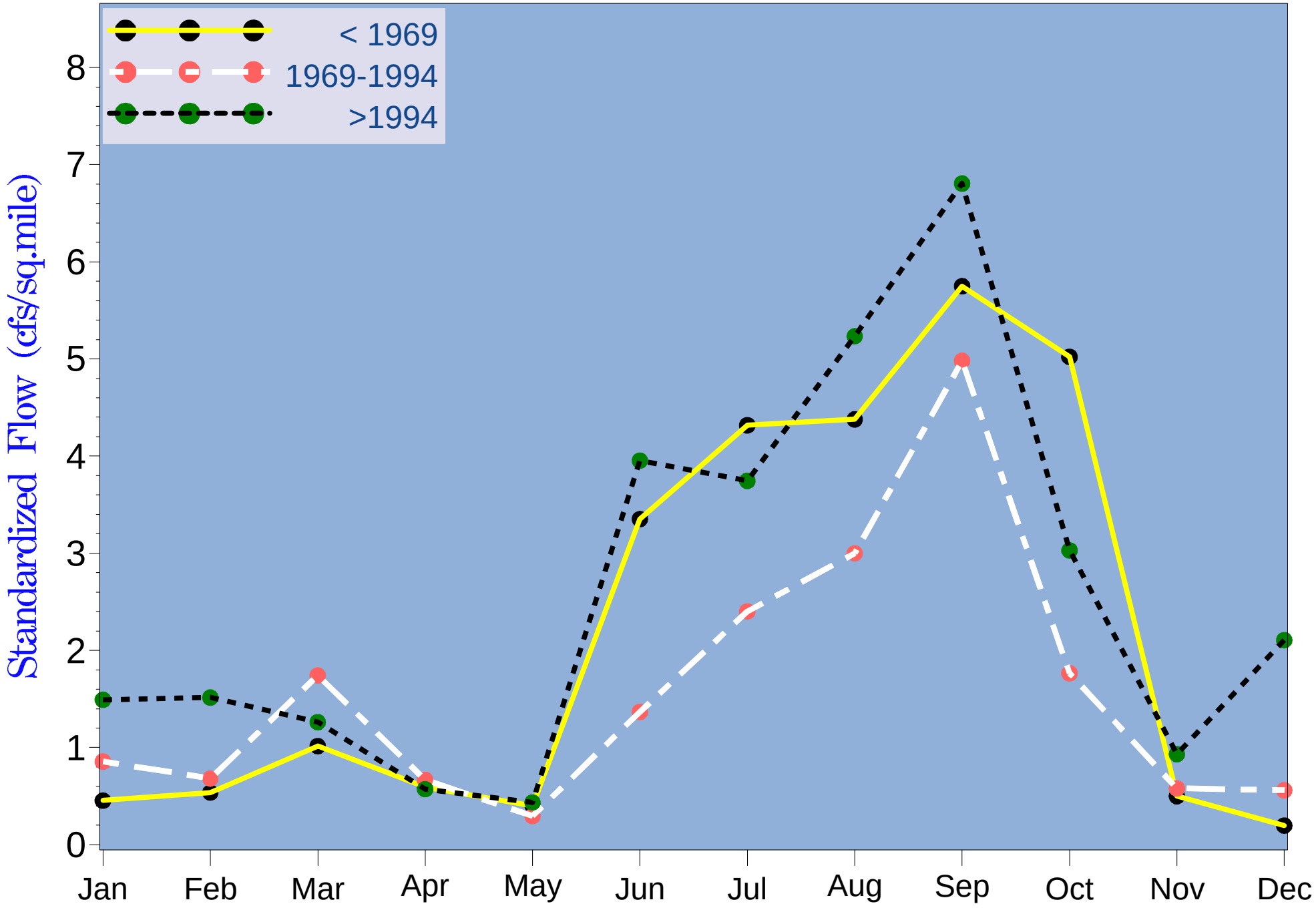


Figure 3.296 Seasonal differences among AMO periods of monthly P90 flow at long-term Joshua Creek at Nocatee (2297100) gage

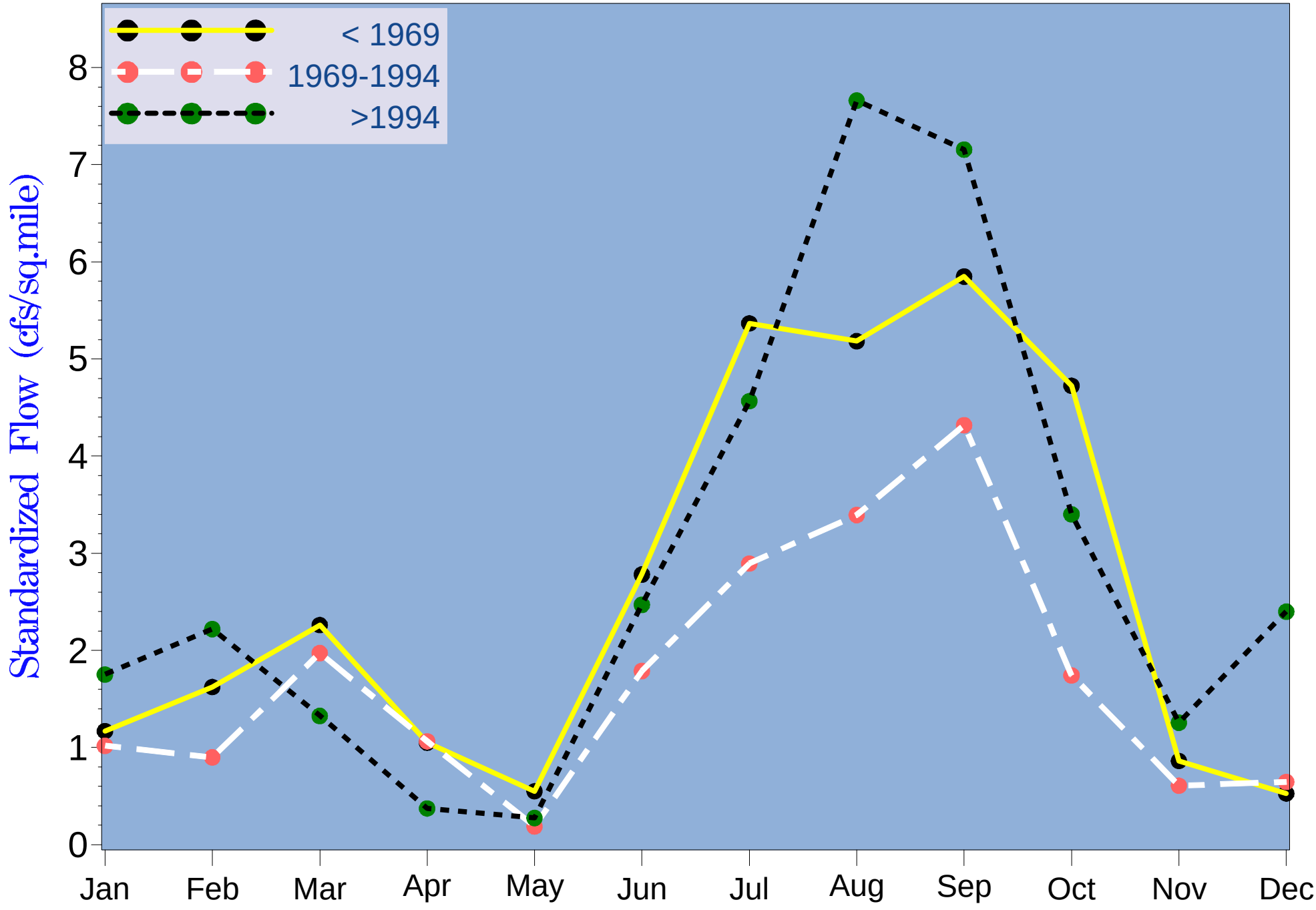


Figure 3.297 Seasonal differences among AMO periods of monthly P90 flow at long-term Horse Creek near Arcadia(2297310) gage

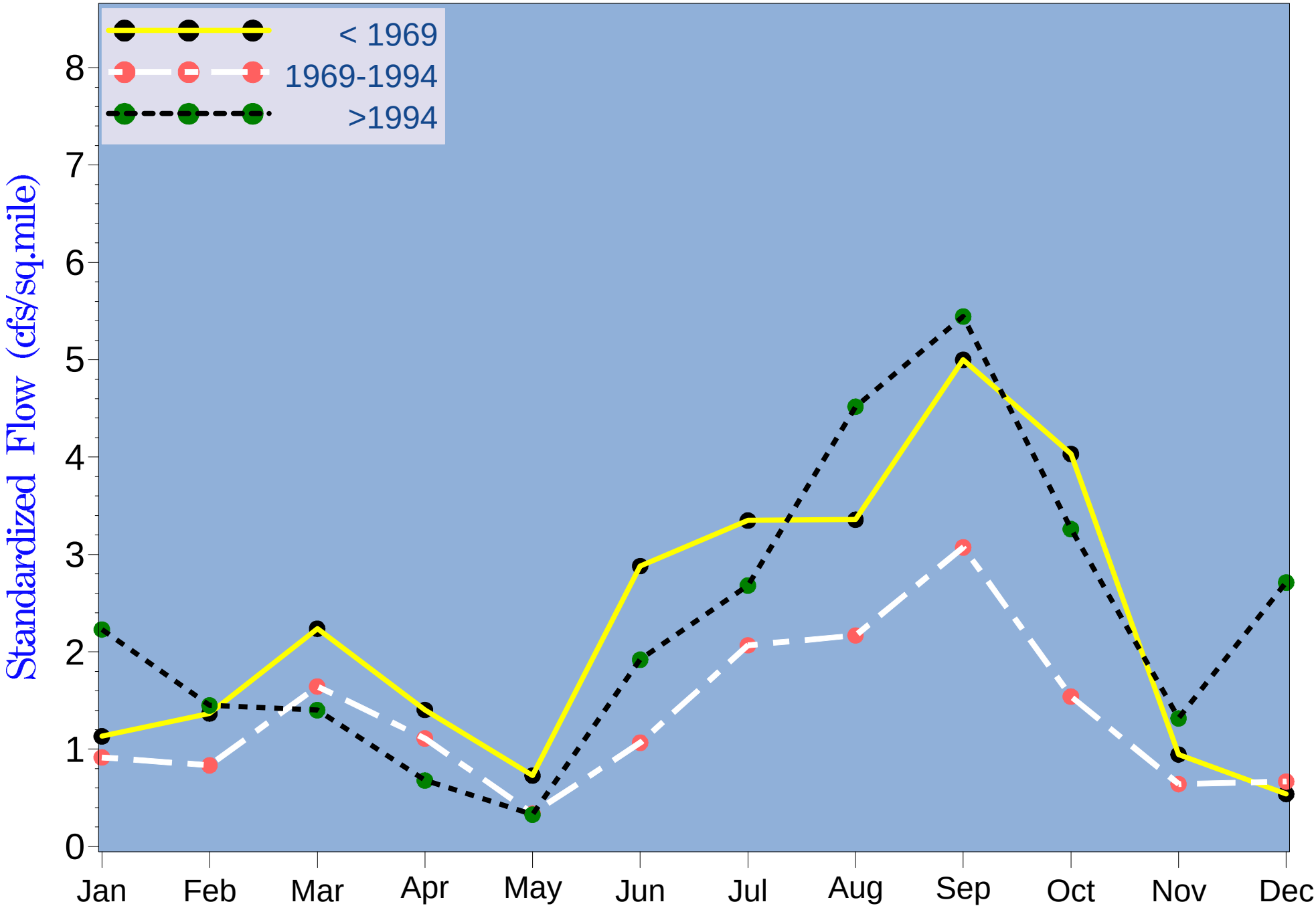


Figure 3.298 Seasonal differences among AMO periods of monthly P90 total gaged flow upstream of the Facility

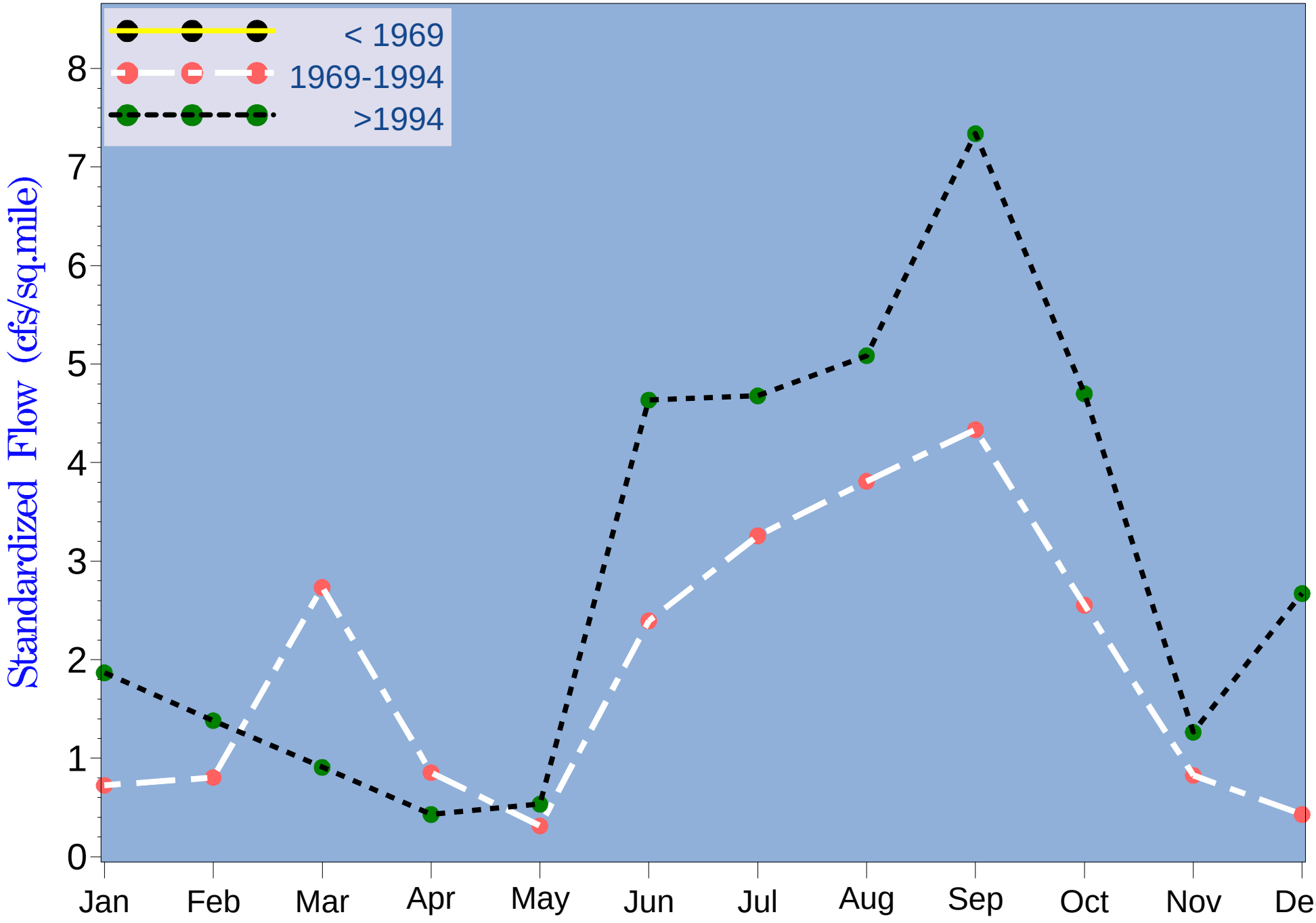


Figure 3.299 Seasonal differences among AMO periods of monthly P90 flow at long-term Prairie Creek (2298123) gage

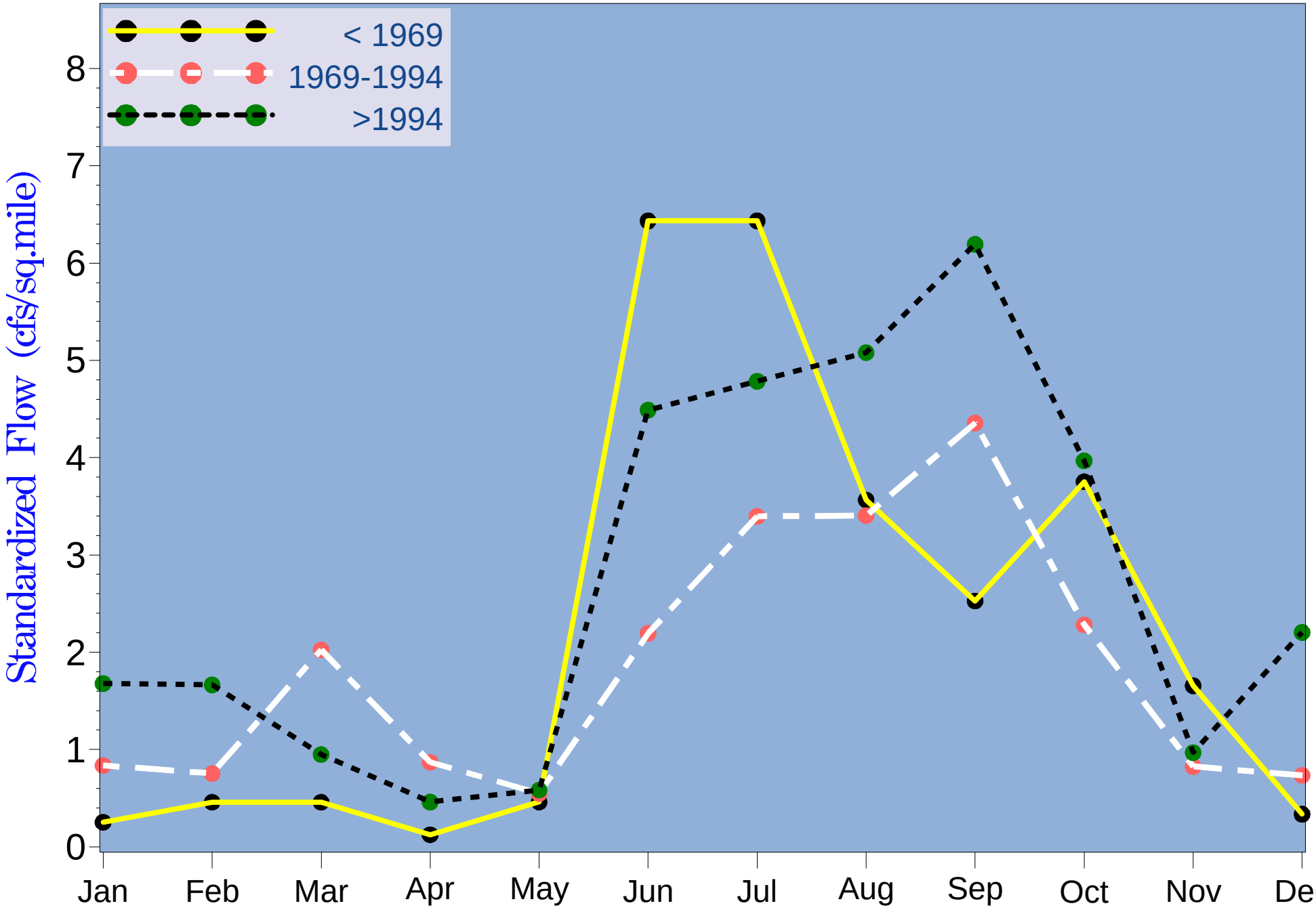


Figure 3.300 Seasonal differences among AMO periods of monthly P90 flow at long-term Shell Creek gage

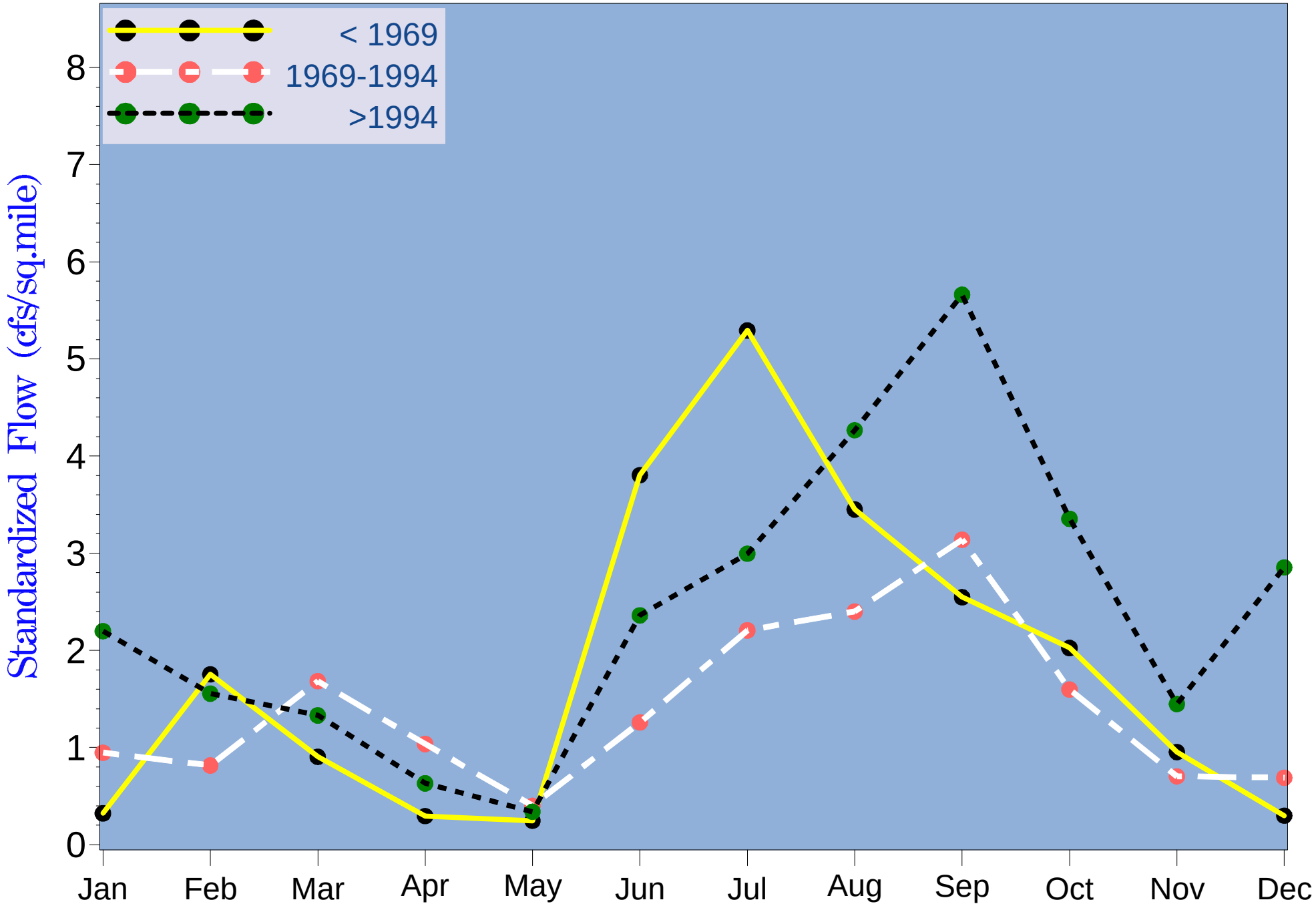


Figure 3.301 Seasonal differences among AMO periods of monthly P90 total gaged flow to the Upper Harbor

Table 4.8

Changes in Water Quality Parameters over Time
Payne and Charlie Creeks and Peace River at Arcadia

Parameter	Payne Creek	Charlie Creek	Peace River at Arcadia
Color	---	▲	---
Conductivity (Specific Conductance)	▲▲	▲	---
Dissolved Oxygen	---	---	---
pH	▲▲	---	▲
Total Alkalinity	▲▲▲	---	▲▲
Total Suspended Solids	---	---	
Dissolved Residue (Total Dissolved Solids)	▲▲▲	▲	▲
Turbidity (NTU)	---	---	---
Nitrite+Nitrate Nitrogen	---	▲	▼
Ammonia	---	---	▼
Total Nitrogen			
Total Kjeldahl Nitrogen (NH4+Organic Nitrogen)	---	---	---
Total Phosphorus	▲	---	▼▼
Orthophosphate	▼▼	---	▼▼▼
Total Organic Carbon	---	---	---
Chlorophyll a	---		
Calcium	▲▲	▲▲	---
Magnesium	▲▲	▲	---
Sodium	▲▲▲	▲	▲
Potassium	▲▲▲	▲▲▲	▲▲▲
Chloride	---	▲▲	▲▲
Silica	---	▲▲	▼
Sulfate	▲▲▲	▲▲	---
Fluoride	---	---	▼▼
Iron	---	---	---
Strontium			---

▲▲▲Large Change ▼▼ Intermediate Change ▲ Small Change — No Change Blank = No Data

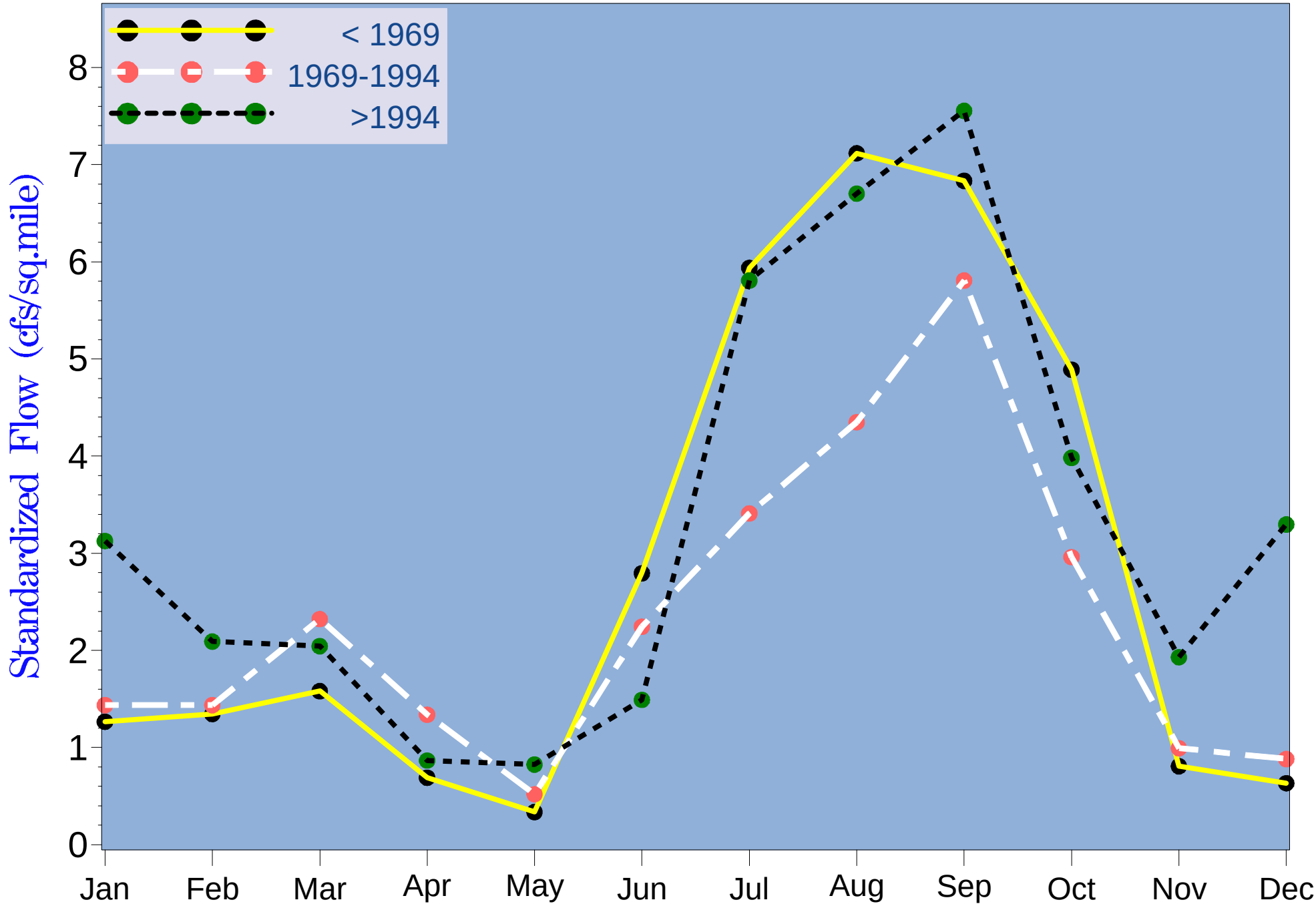


Figure 3.302 Seasonal differences among AMO periods of monthly P90 flow at long-term Myakka River near Sarasota (2298830) gage

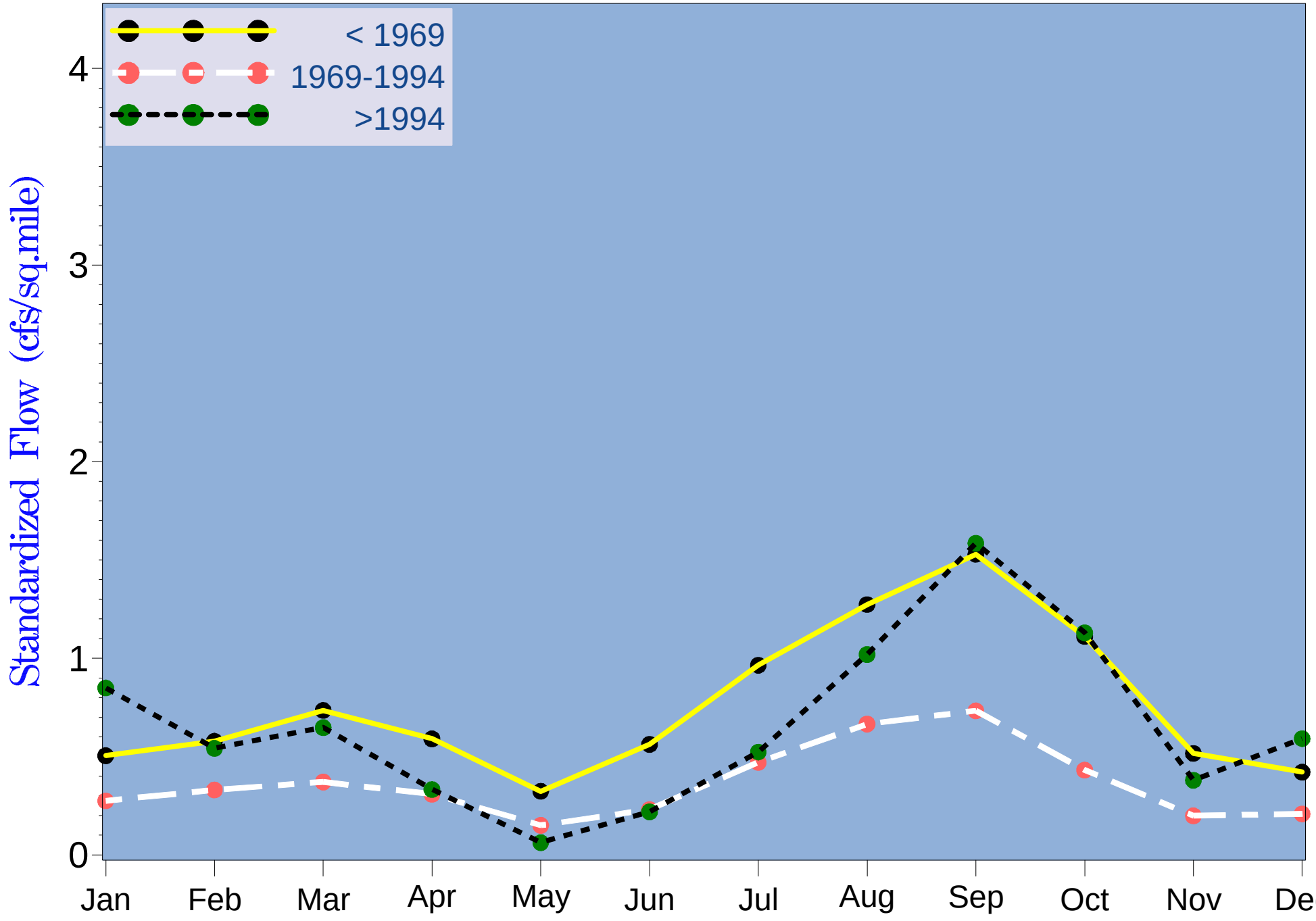


Figure 3.303 Seasonal differences among AMO periods of monthly mean flow at long-term Peace River at Bartow (2294650) gage

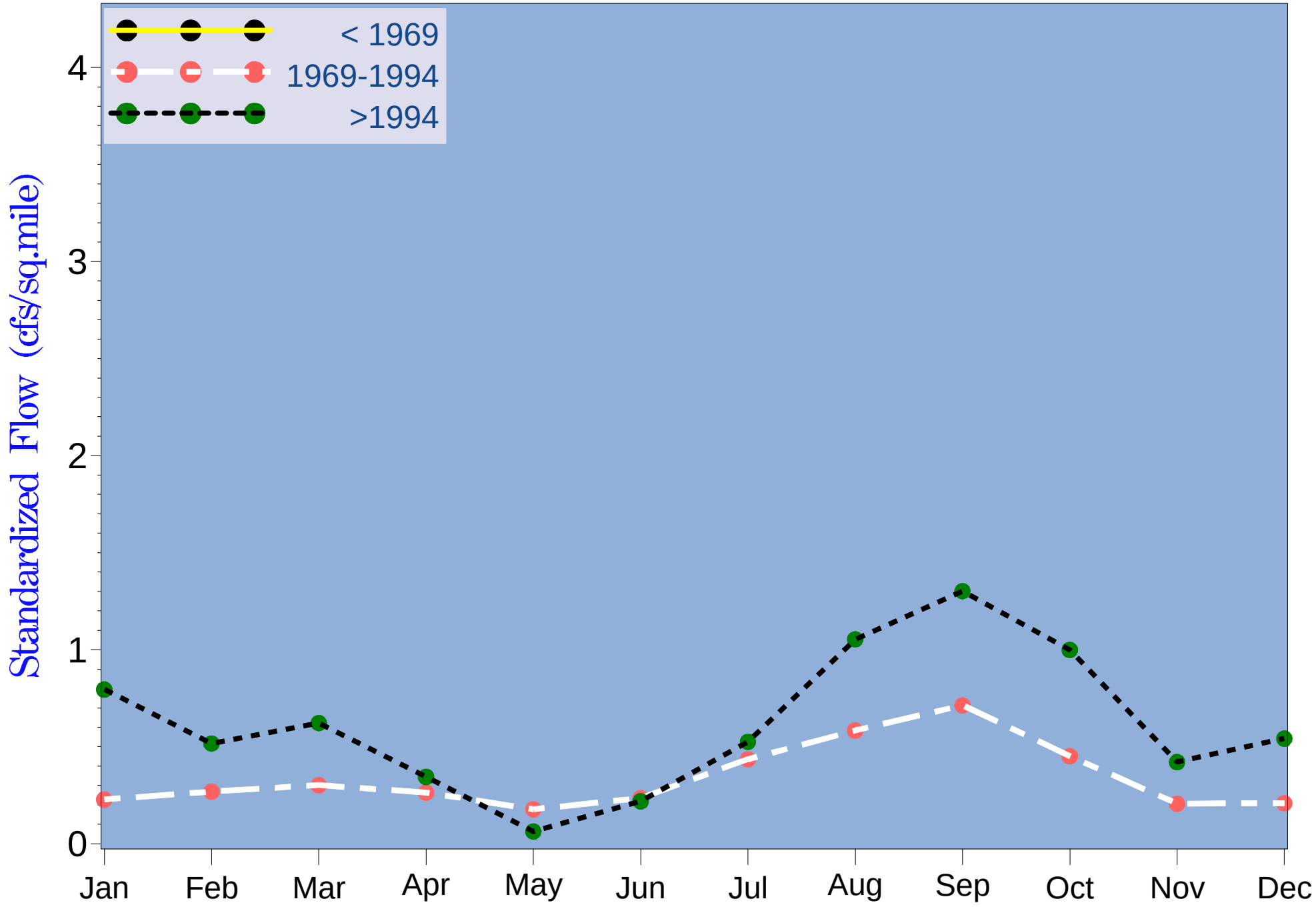


Figure 3.304 Seasonal differences among AMO periods of monthly mean flow at long-term Peace River at Ft. Meade (2294898) gage

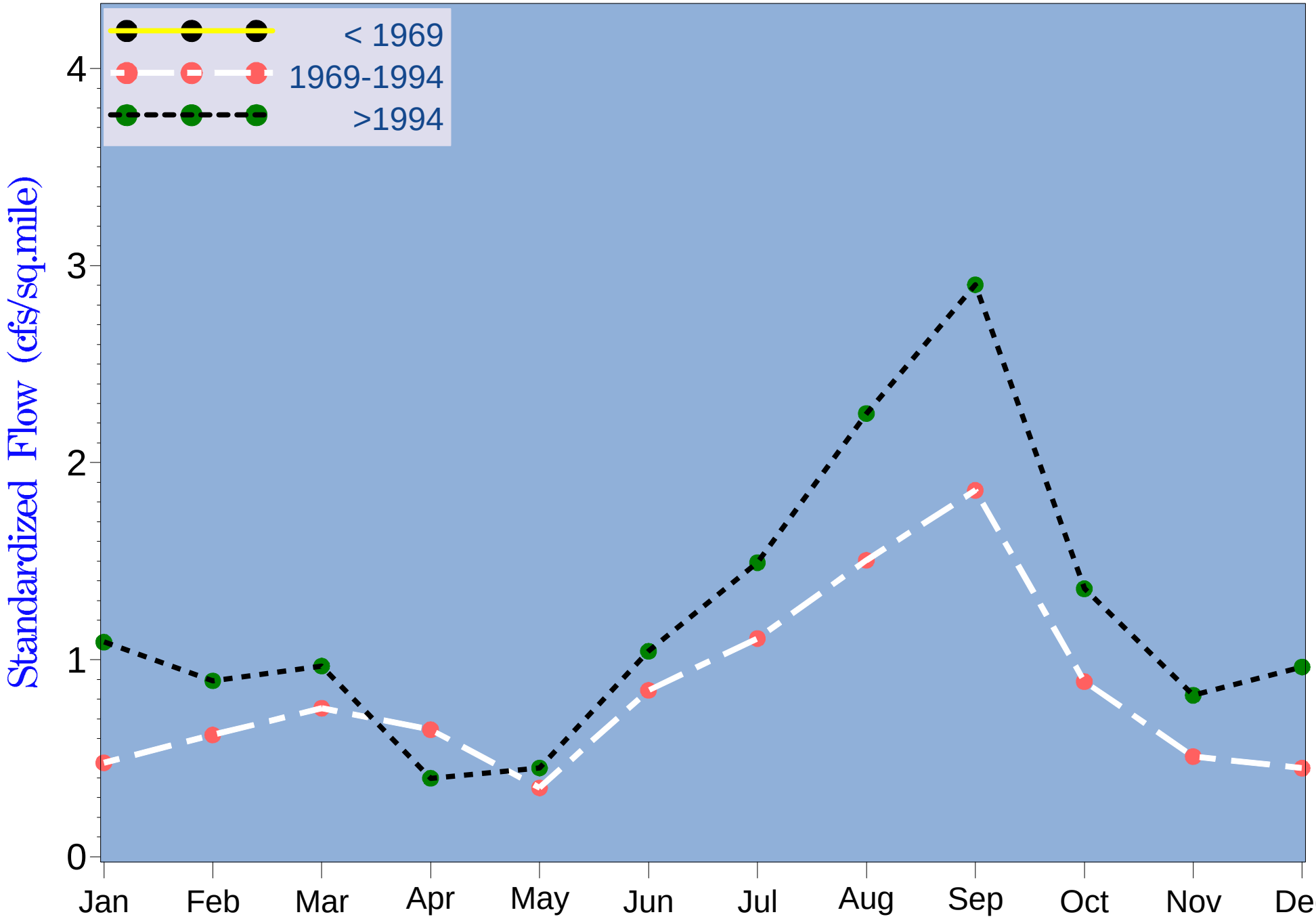


Figure 3.305 Seasonal differences among AMO periods of monthly mean flow at long-term Payne Creek (2295420) gage

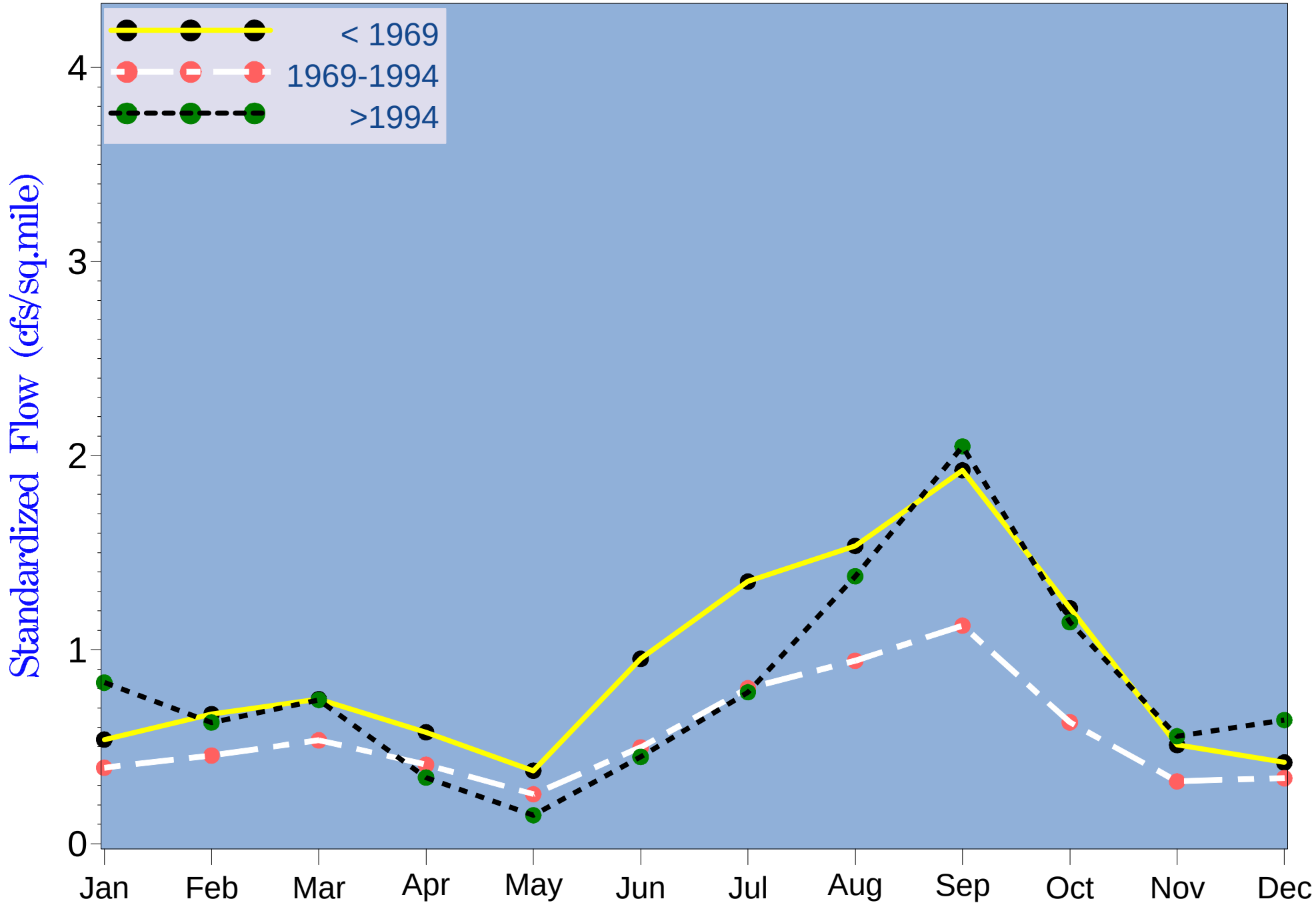


Figure 3.306 Seasonal differences among AMO periods of monthly mean flow at long-term Peace River at Zolfo (2295637) gage

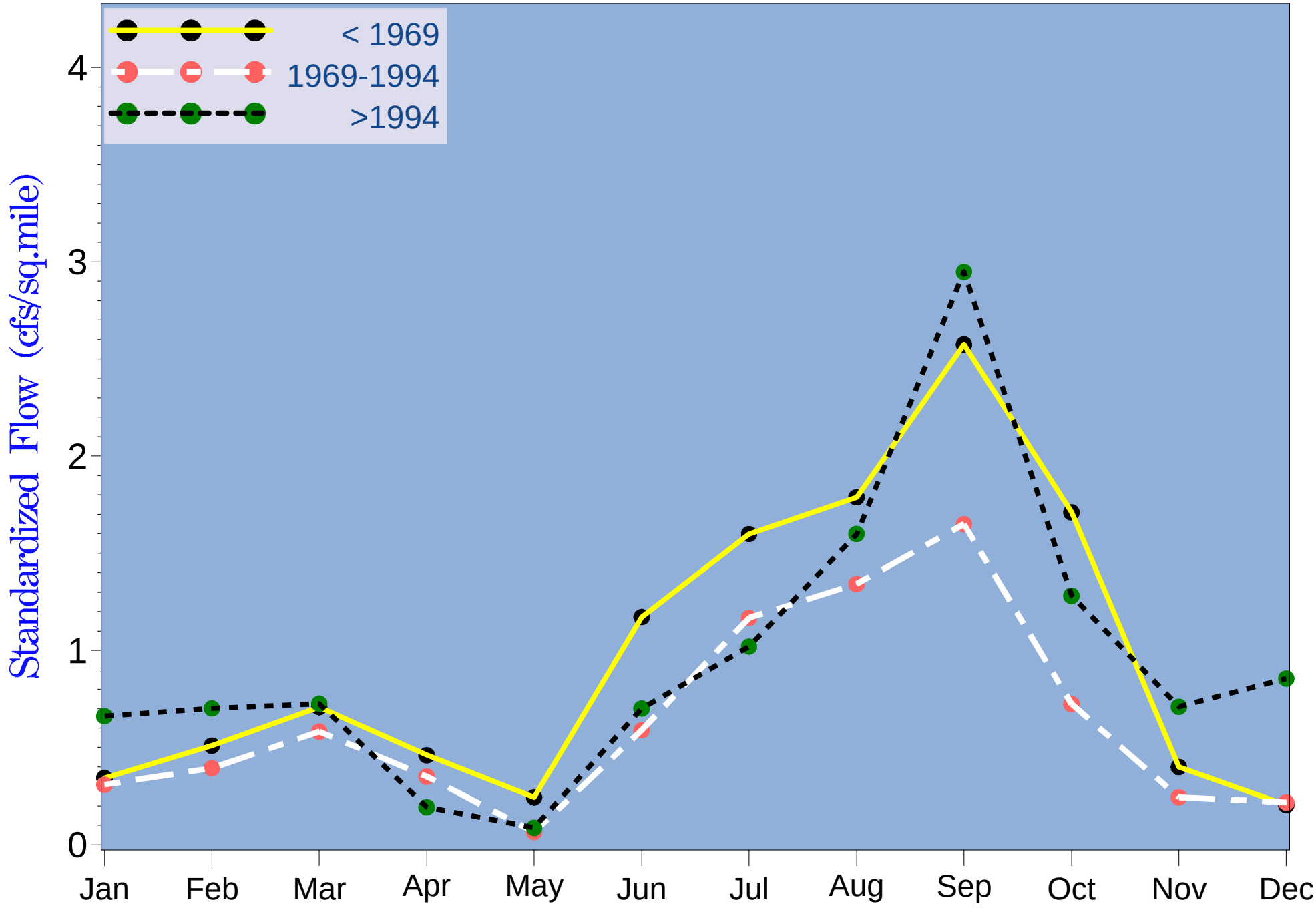


Figure 3.307 Seasonal differences among AMO periods of monthly mean flow at long-term Charlie Creek (2296500) gage

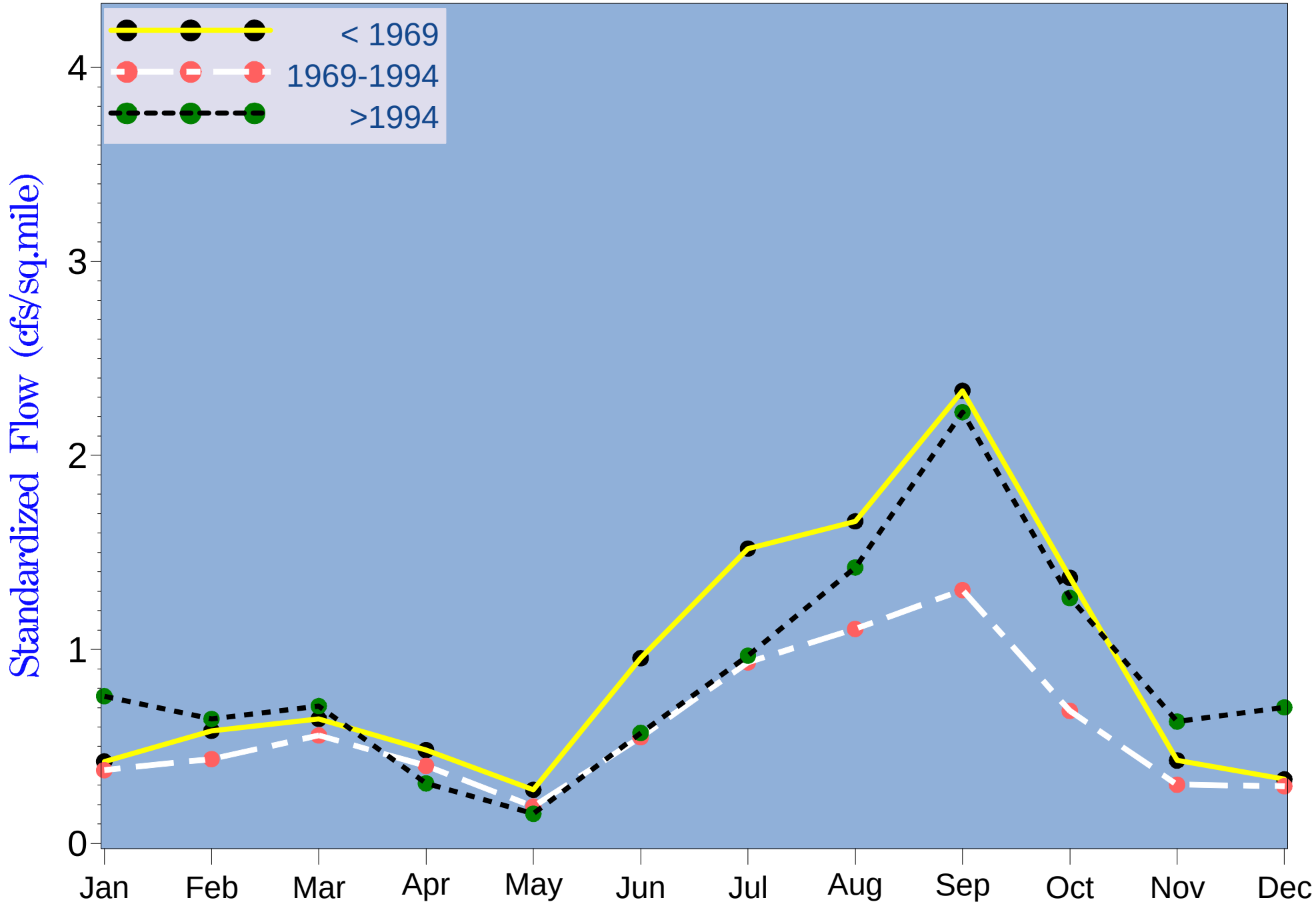


Figure 3.308 Seasonal differences among AMO periods of monthly mean flow at long-term Peace River at Arcadia (2296750) gage

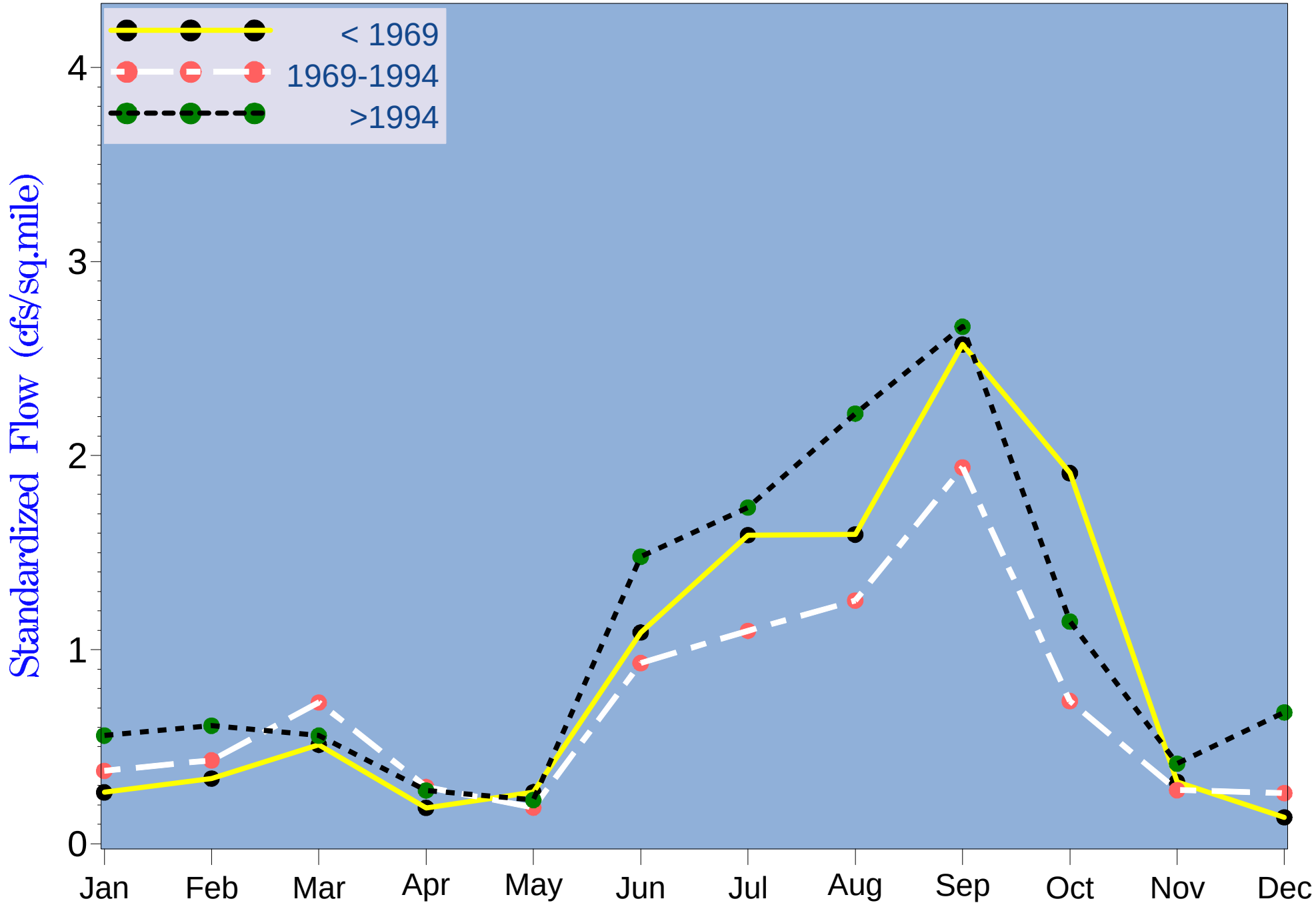


Figure 3.309 Seasonal differences among AMO periods of monthly mean flow at long-term Joshua Creek at Nocatee (2297100) gage

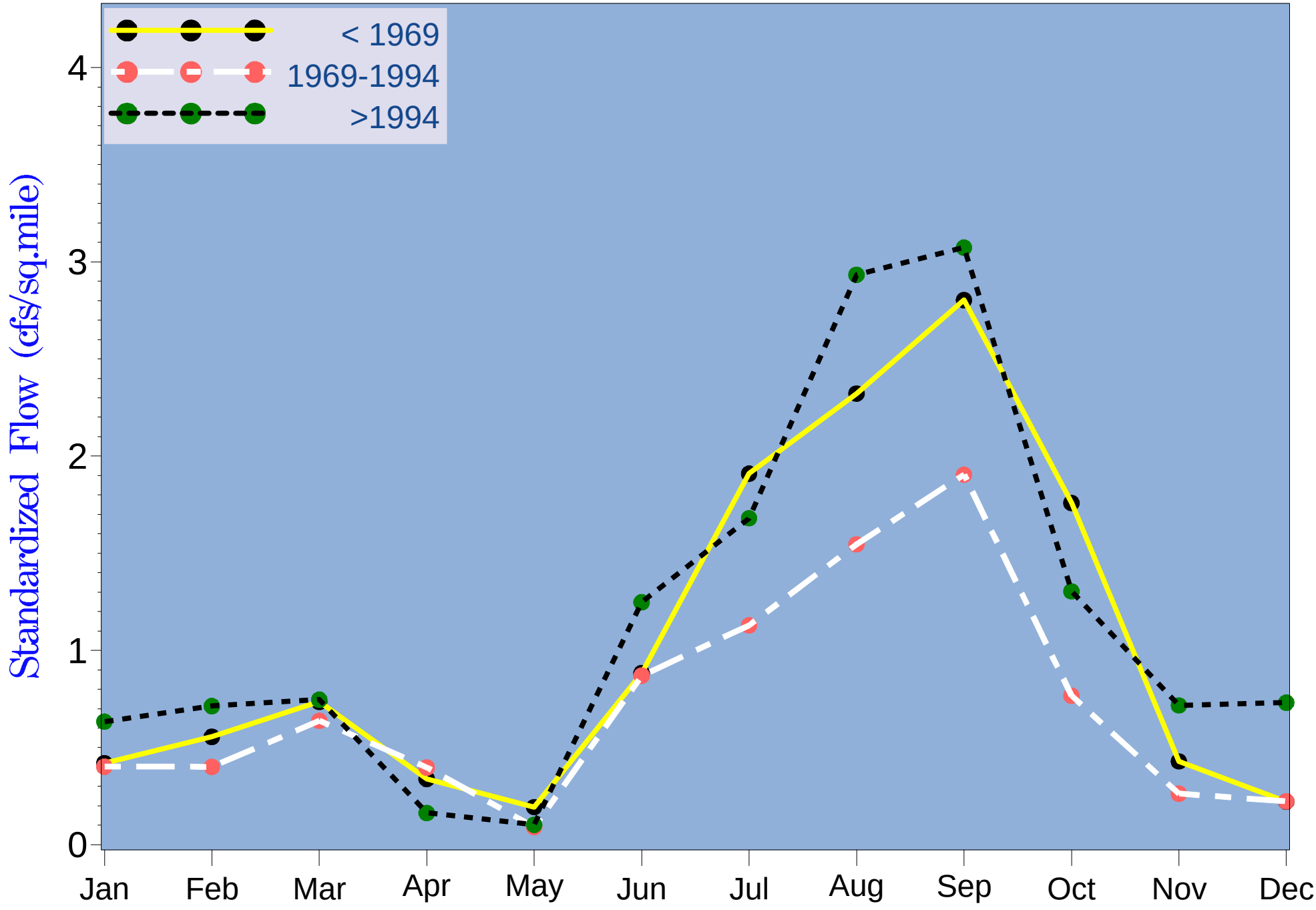


Figure 3.310 Seasonal differences among AMO periods of monthly mean flow at long-term Horse Creek near Arcadia(2297310) gage

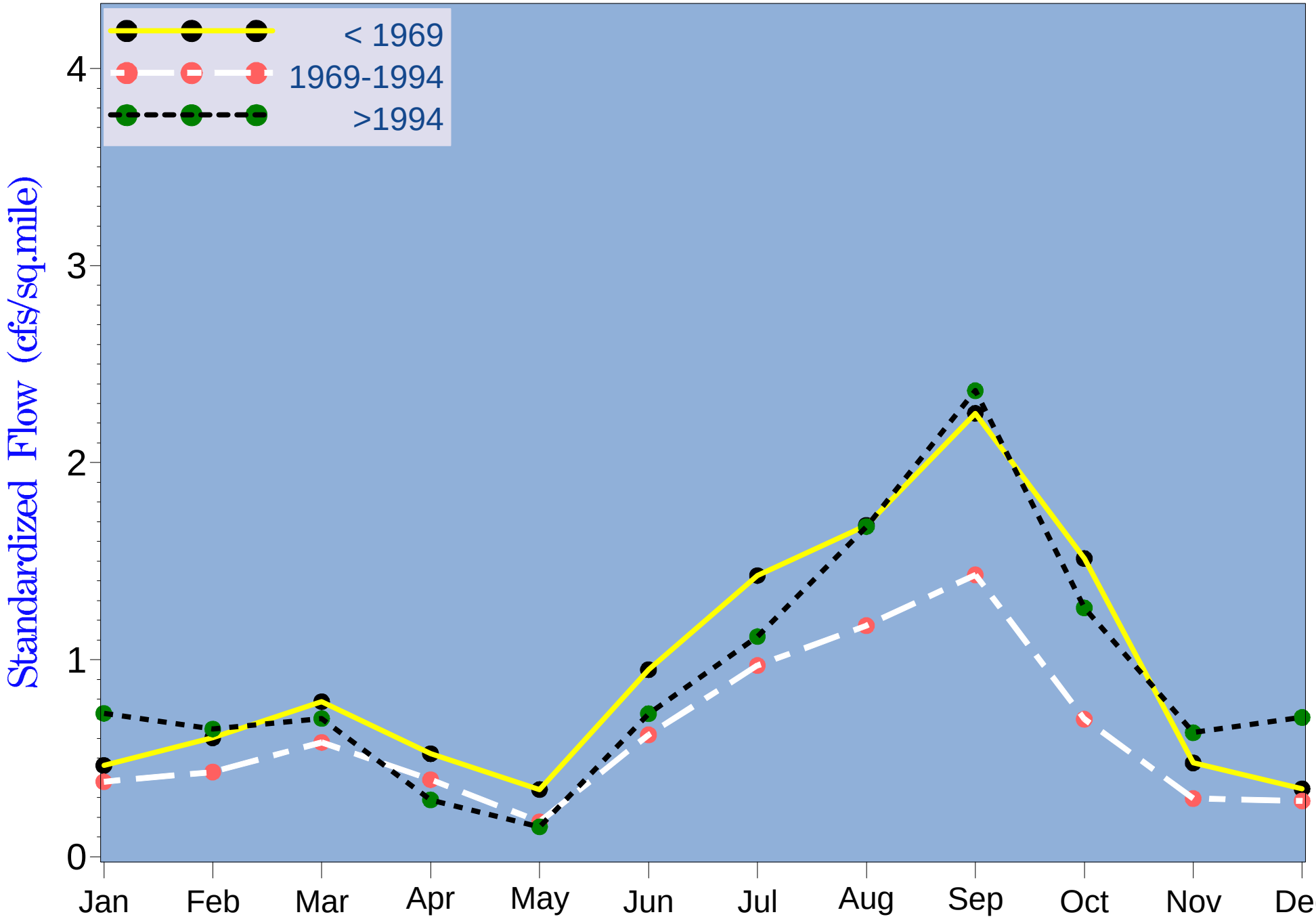


Figure 3.311 Seasonal differences among AMO periods of monthly mean total gaged flow upstream of the Facility

Table 4.9

Changes in Water Quality Parameters over Time
Joshua and Horse Creeks

Parameter	Joshua Creek at Nocatee	Horse Creek near Myakka	Horse Creek near Arcadia
Color	▲	---	▲
Conductivity (Specific Conductance)	▲▲▲	▲▲	▲▲
Dissolved Oxygen	---	---	---
pH	---	▲▲	---
Total Alkalinity	---		---
Total Suspended Solids			
Dissolved Residue (Total Dissolved Solids)	▲▲▲	▲▲	▲▲
Turbidity (NTU)			---
Nitrite+Nitrate Nitrogen	▲▲▲	---	▲▲▲
Ammonia	---	---	---
Total Nitrogen			---
Total Kjeldahl Nitrogen (NH4+Organic Nitrogen)	---	---	---
Total Phosphorus	▼	▲	---
Orthophosphate	▼▼	▲	▼▼
Total Organic Carbon	---	---	
Chlorophyll a		---	---
Calcium	▲▲	▲▲	▲▲▲
Magnesium	▲▲	▲▲▲	▲▲
Sodium	▲▲▲	▲▲	▲
Potassium	▲▲▲	▲	▲▲▲
Chloride	▲▲▲	▲	▲
Silica	▲▲		▲
Sulfate	▲▲▲	▲▲	▲▲▲
Fluoride	▼	▲	▼
Iron			▲▲
Strontium	---	---	---

▲▲▲Large Change ▼▼ Intermediate Change ▲ Small Change — No Change Blank = No Data

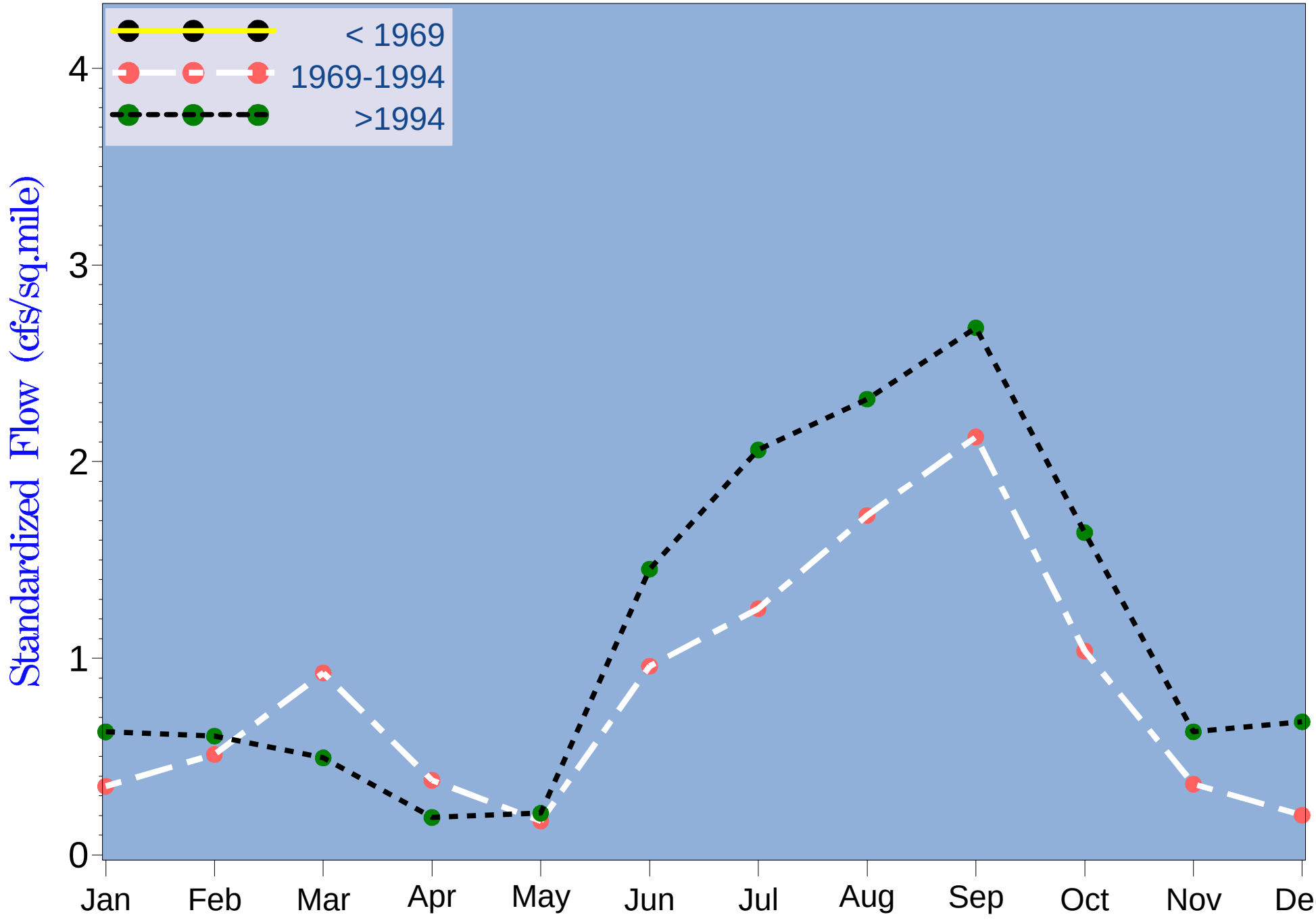


Figure 3.312 Seasonal differences among AMO periods of monthly mean flow at long-term Prairie Creek (2298123) gage

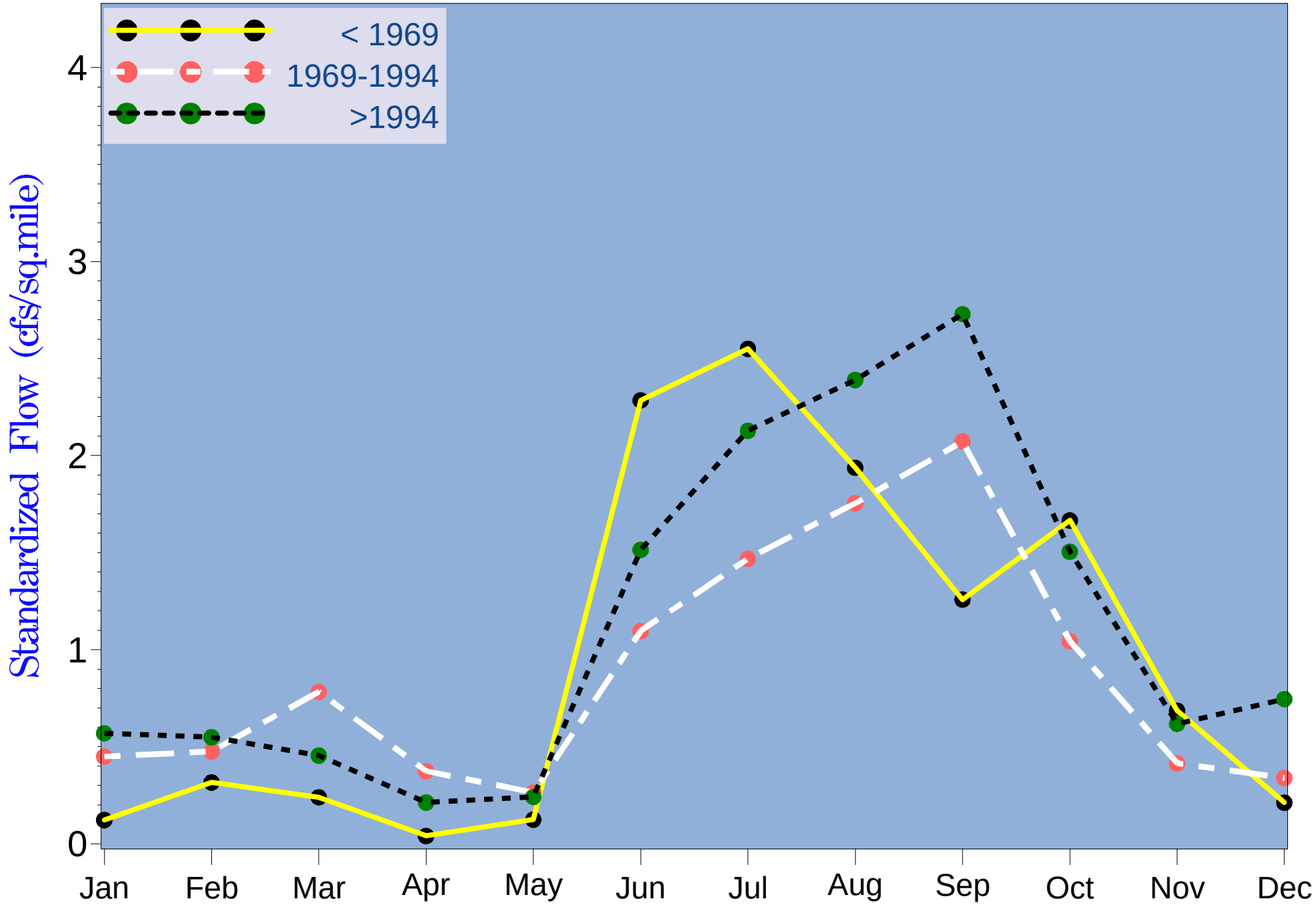


Figure 3.313 Seasonal differences among AMO periods of monthly mean flow at long-term Shell Creek gage

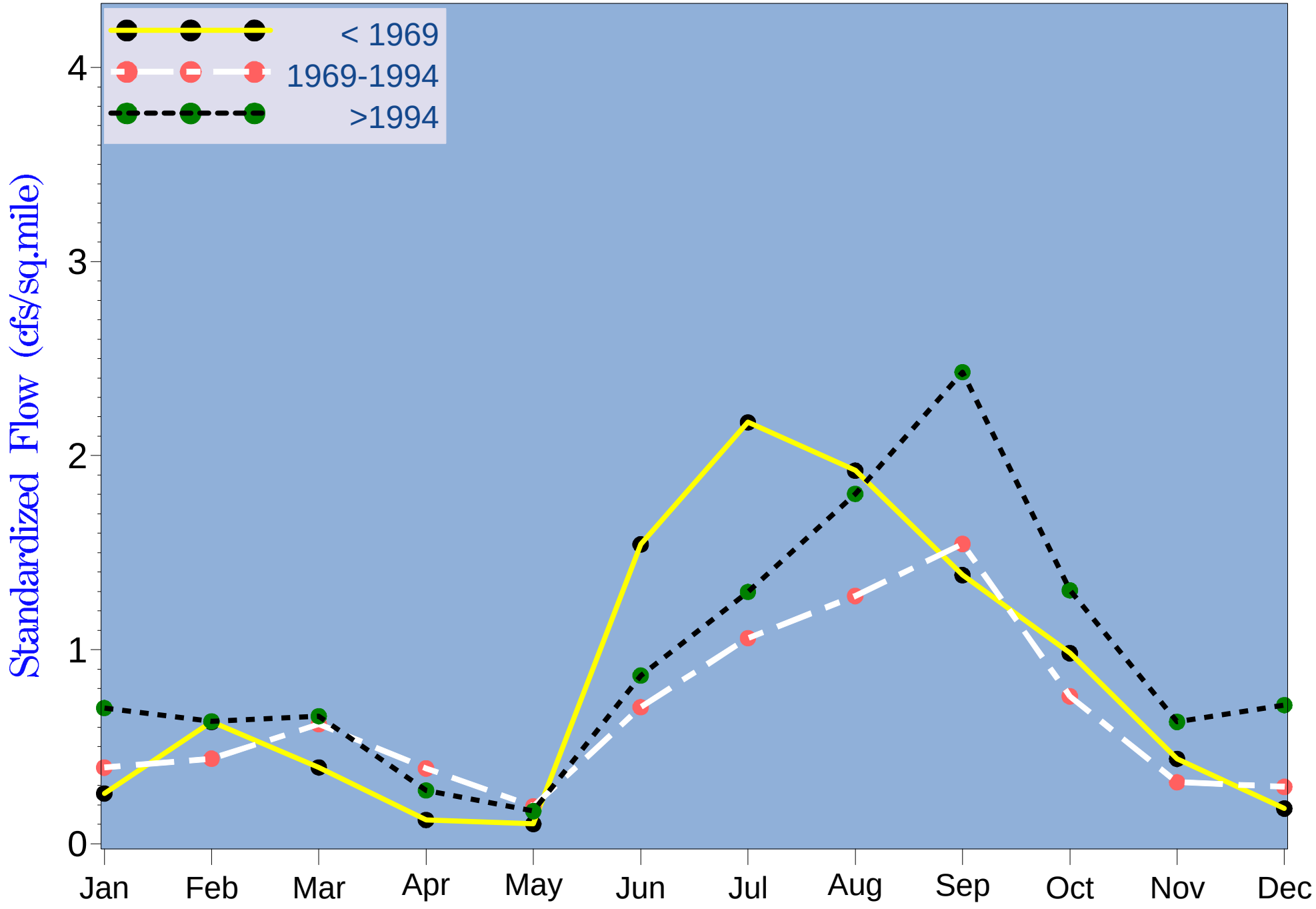


Figure 3.314 Seasonal differences among AMO periods of monthly mean total gaged flow to the Upper Harbor

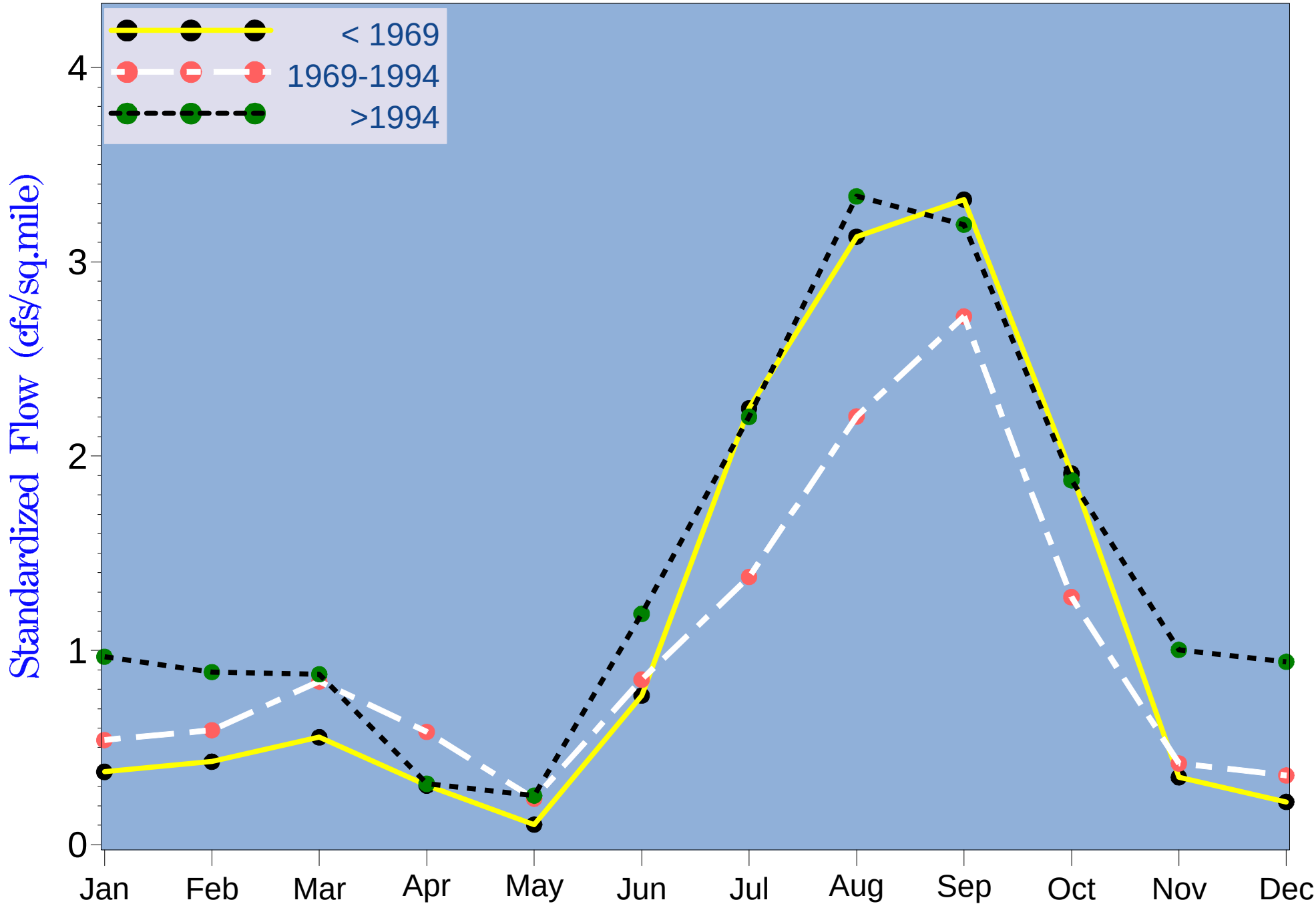


Figure 3.315 Seasonal differences among AMO periods of monthly mean flow at long-term Myakka River near Sarasota (2298830) gage

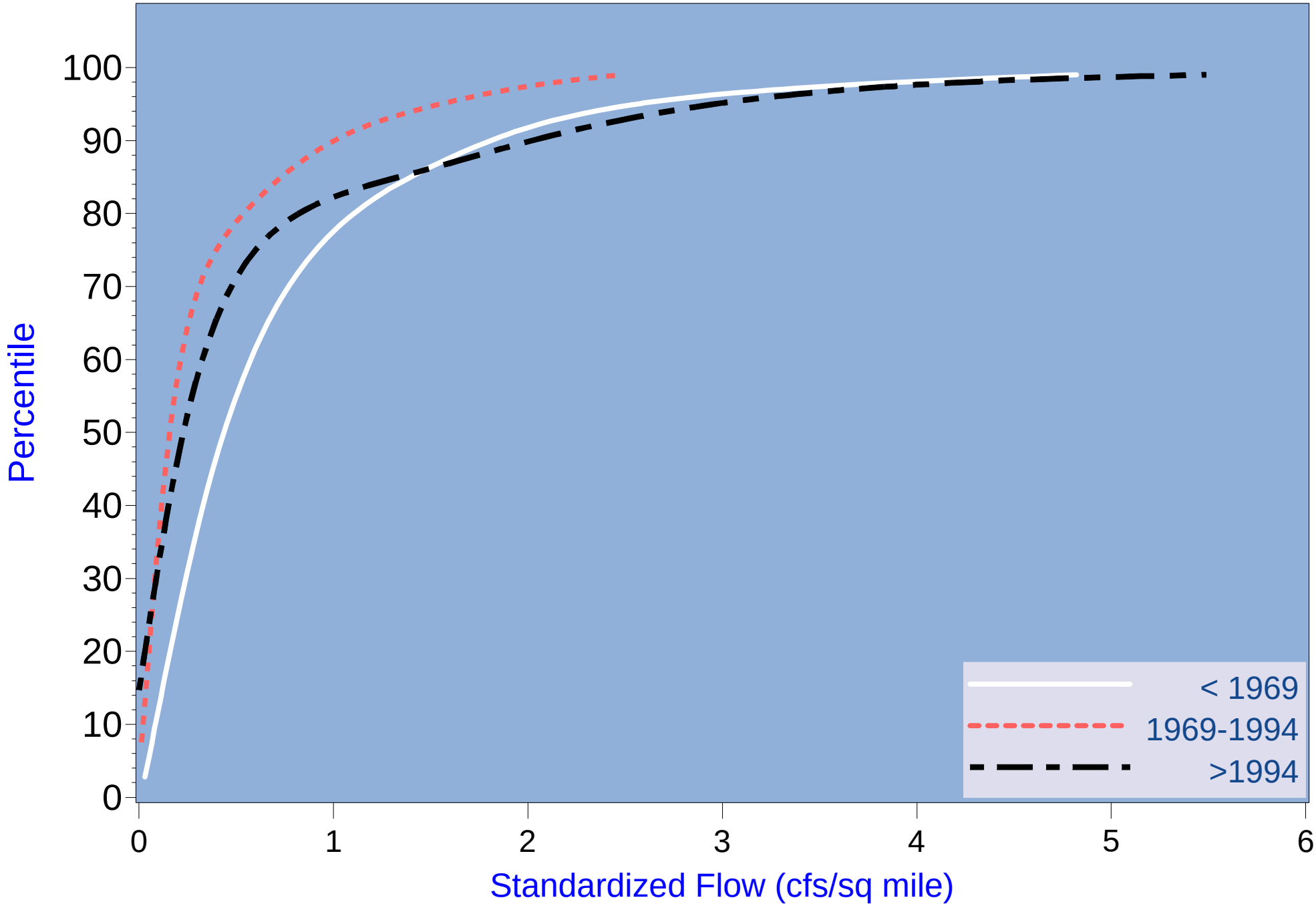


Figure 3.316 Differences in CDFs among AMO periods in flow at long-term Peace River at Bartow (2294650) gage

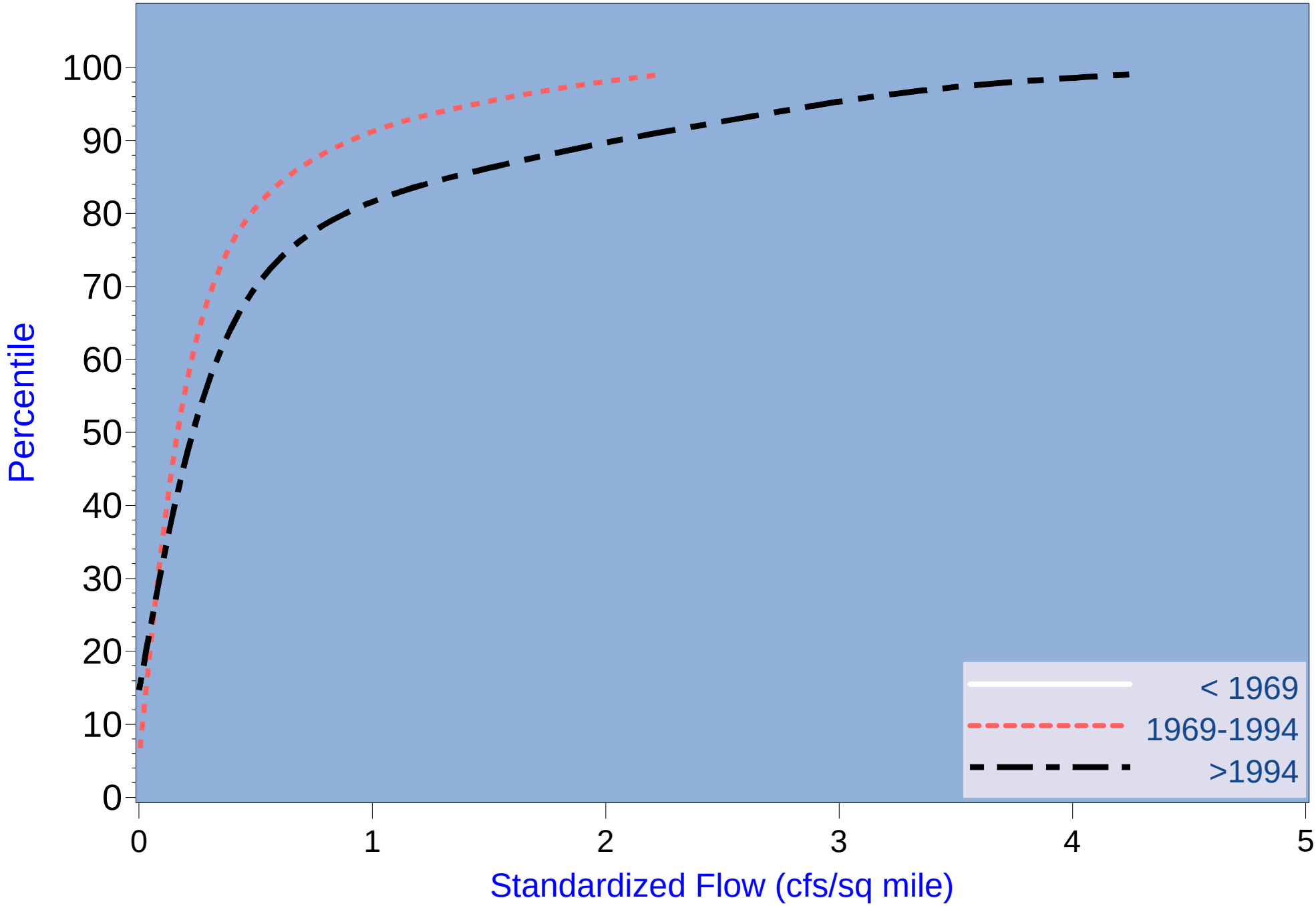


Figure 3.317 Differences in CDFs among AMO periods in flow at long-term Peace River at Ft. Meade (2294898) gage

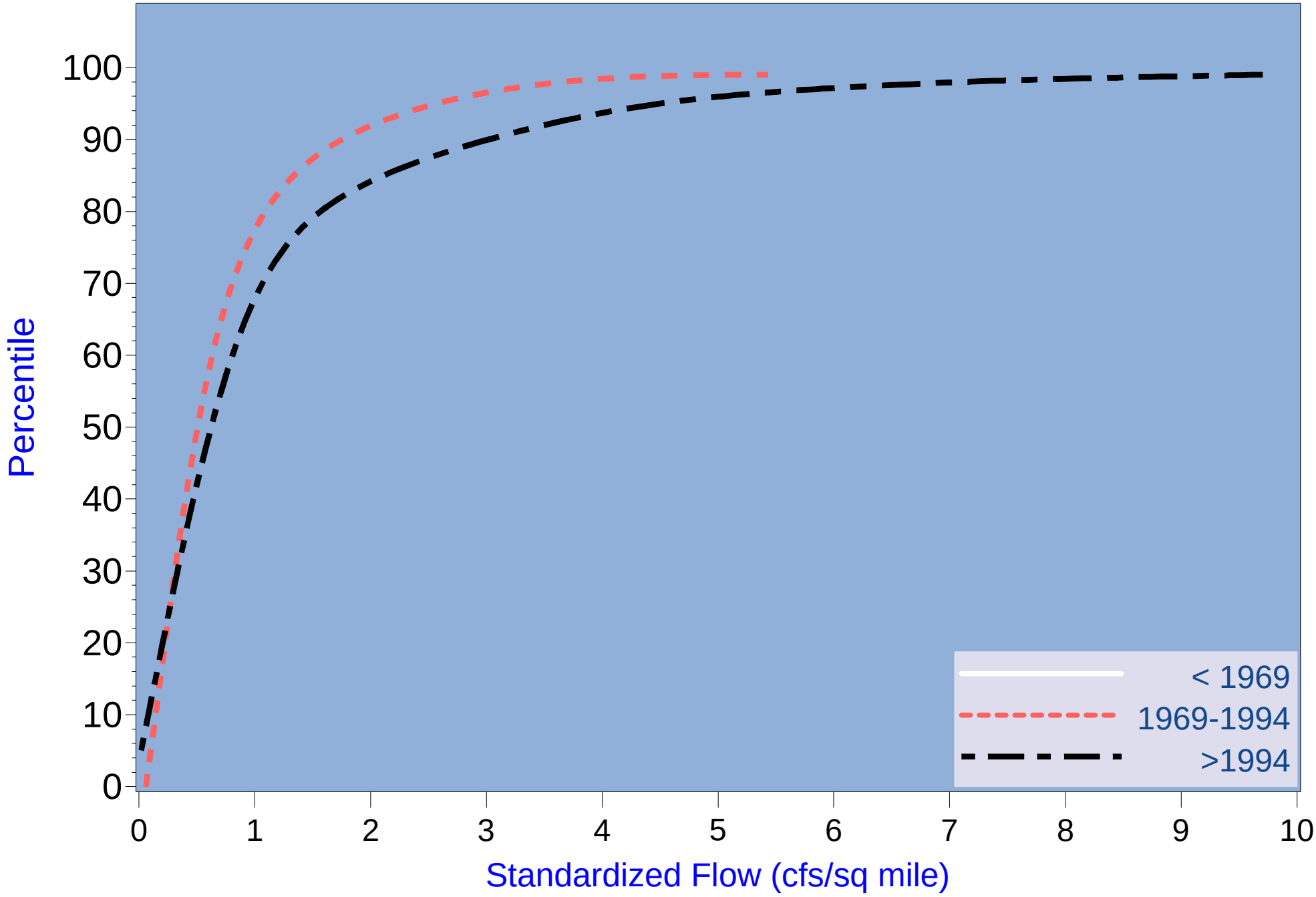


Figure 3.318 Differences in CDFs among AMO periods in flow at long-term Payne Creek (2295420) gage

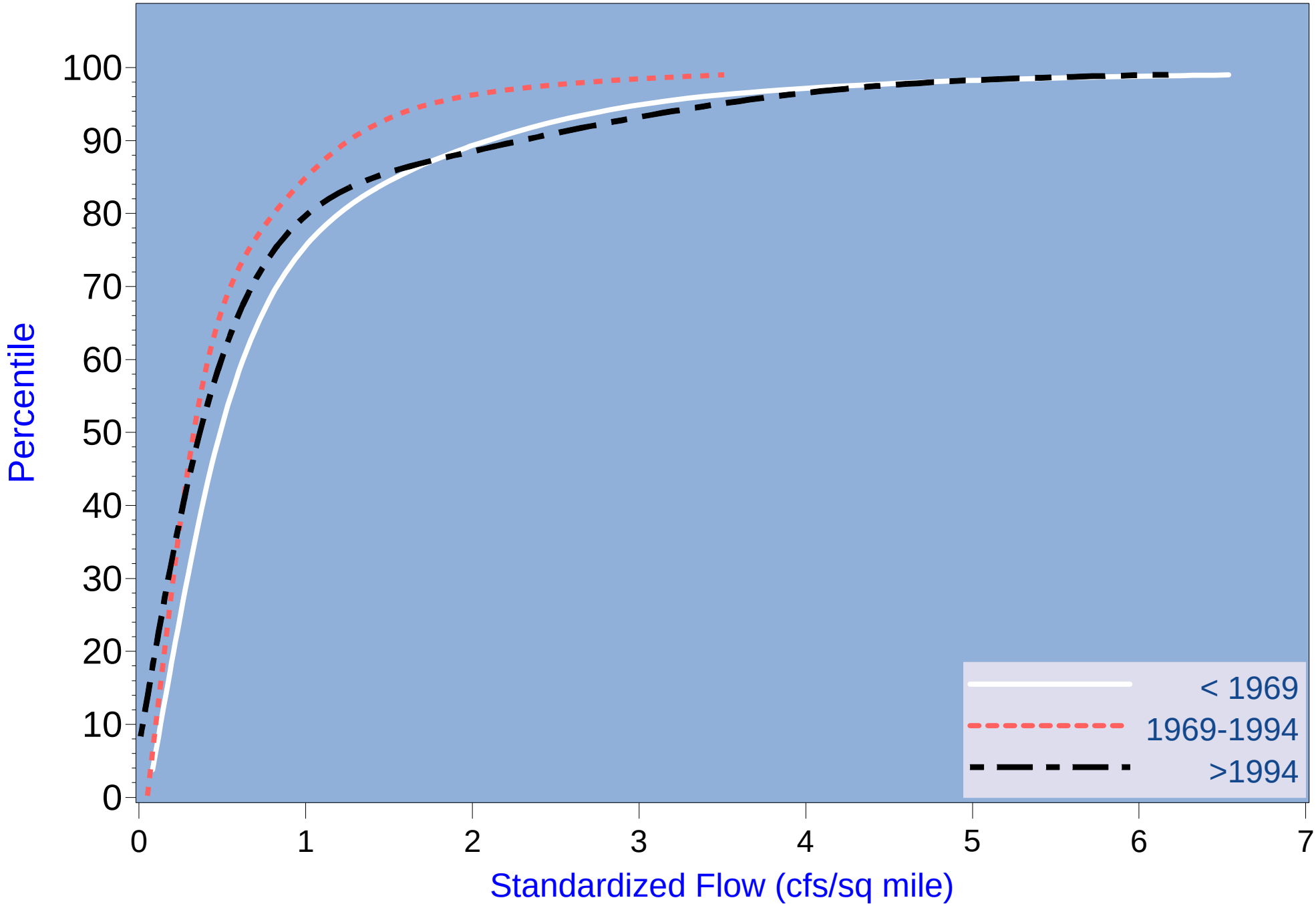


Figure 3.319 Differences in CDFs among AMO periods in flow at long-term Peace River at Zolfo (2295637) gage

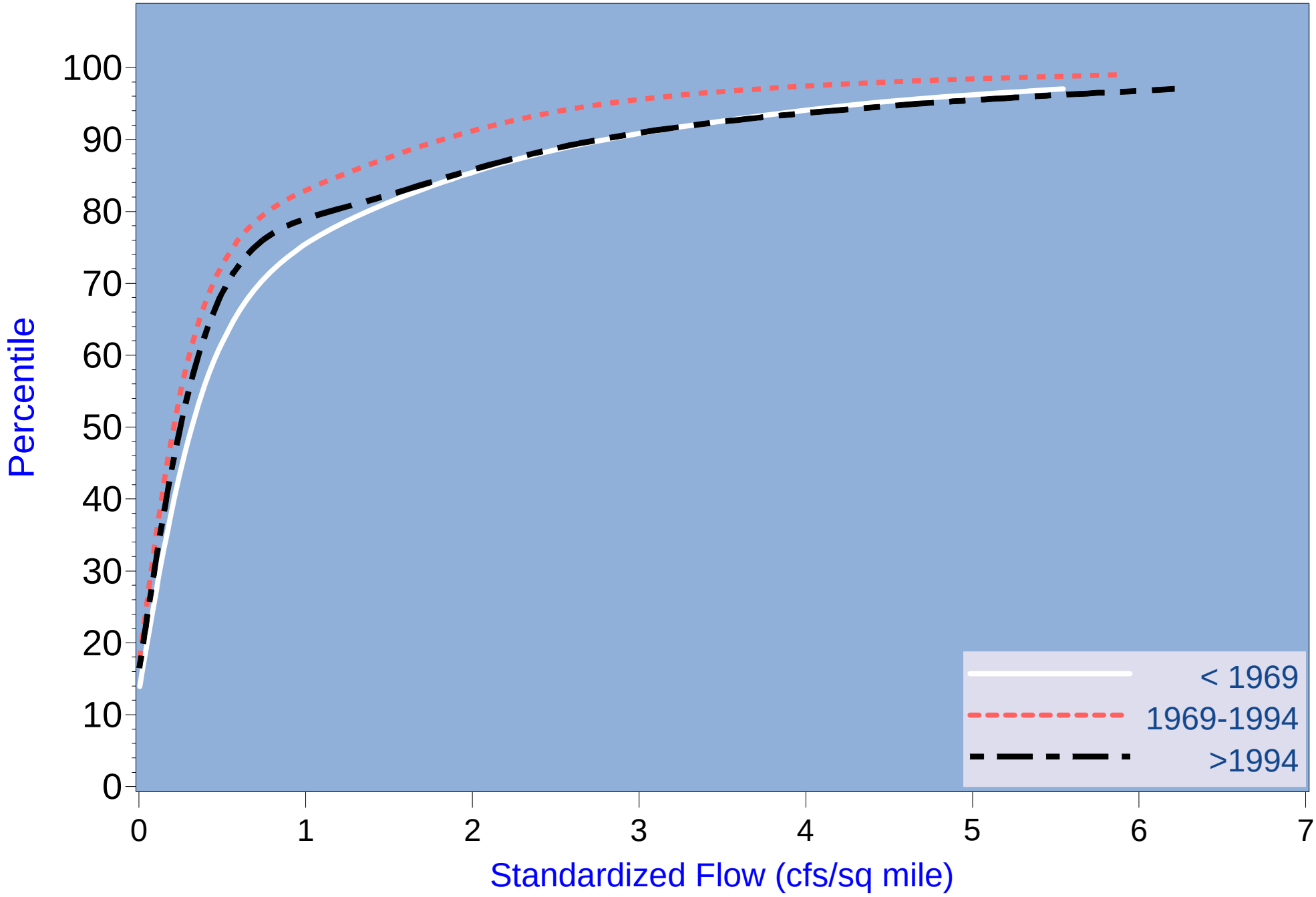


Figure 3.320 Differences in CDFs among AMO periods in flow at long-term Charlie Creek (2296500) gage

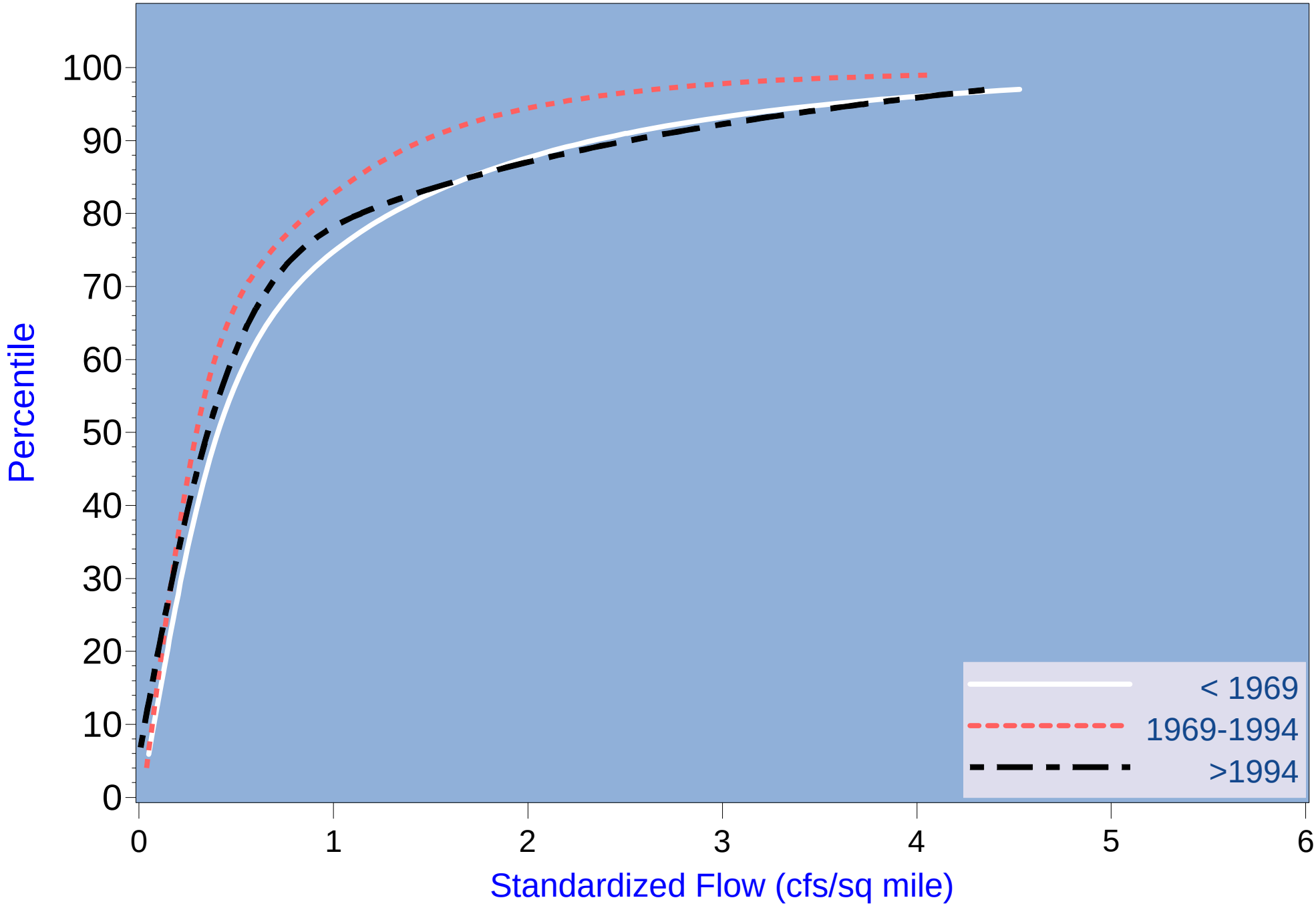


Figure 3.321 Differences in CDFs among AMO periods in flow at long-term Peace River at Arcadia (2296750) gage

Table 4.10

Changes in Water Quality Parameters over Time
Prairie and Shell Creeks

Parameter	Prairie Creek near Fort Ogden	Prairie Creek CR 764	Shell Creek near Punta Gorda
Color		---	---
Conductivity (Specific Conductance)	▲▲▲	---	▲▲▲
Dissolved Oxygen	▼▼	---	▲▲▲
pH	▼▼	---	▲▲
Total Alkalinity			---
Total Suspended Solids			
Dissolved Residue (Total Dissolved Solids)	---		
Turbidity (NTU)			
Nitrite+Nitrate Nitrogen	---	▲▲	▲▲▲
Ammonia	---	▼▼	---
Total Nitrogen			
Total Kjeldahl Nitrogen (NH4+Organic Nitrogen)	---	---	---
Total Phosphorus	---	---	---
Orthophosphate	---	---	---
Total Organic Carbon		---	---
Chlorophyll a			
Calcium			
Magnesium			
Sodium			
Potassium			
Chloride		▲▲▲	▲▲▲
Silica	---	▲▲▲	▲▲
Sulfate			
Fluoride	---		
Iron			
Strontium			

▲▲▲Large Change ▼▼ Intermediate Change ▲ Small Change — No Change Blank = No Data

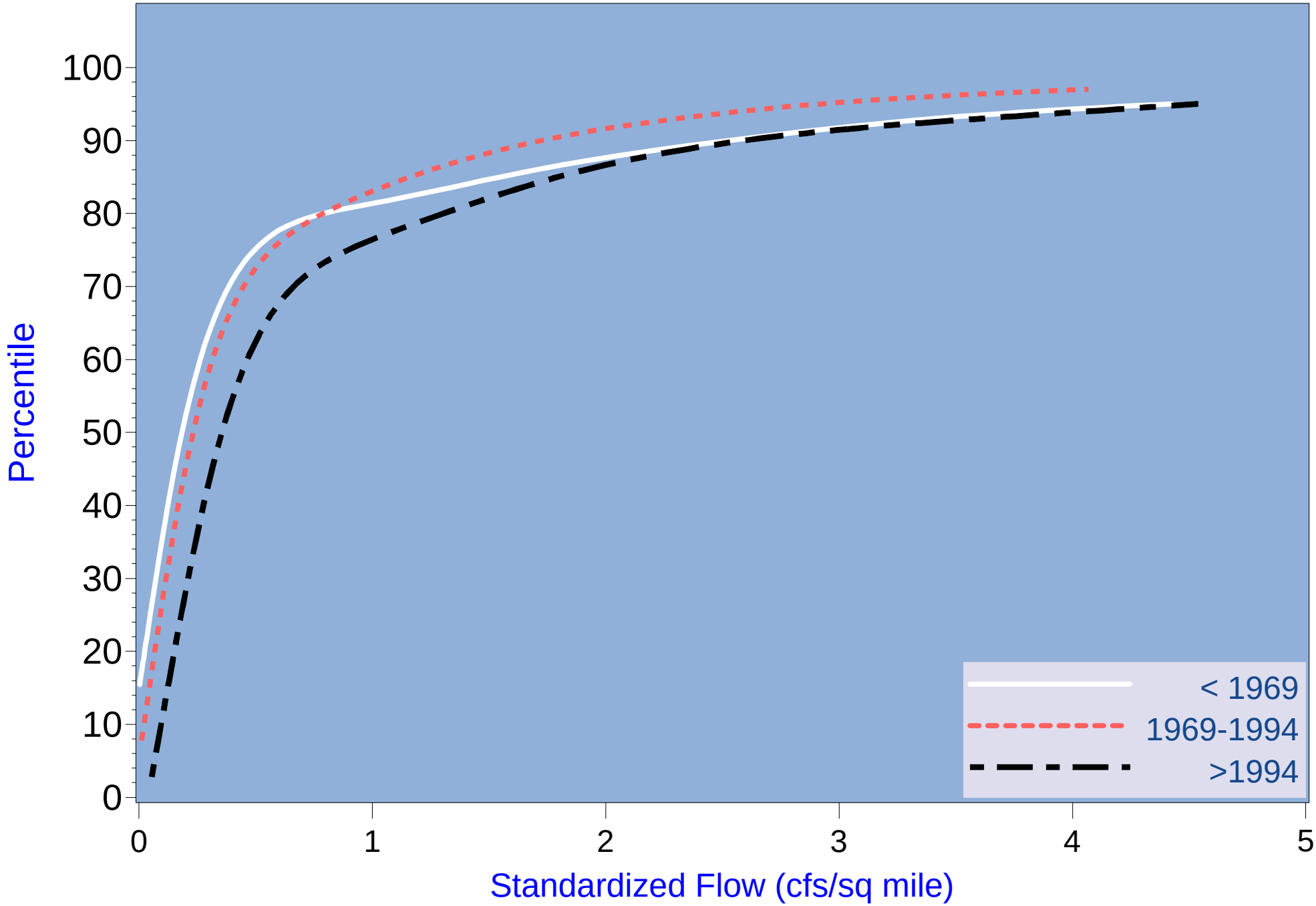


Figure 3.322 Differences in CDFs among AMO periods in flow at long-term Joshua Creek at Nocatee (2297100) gage

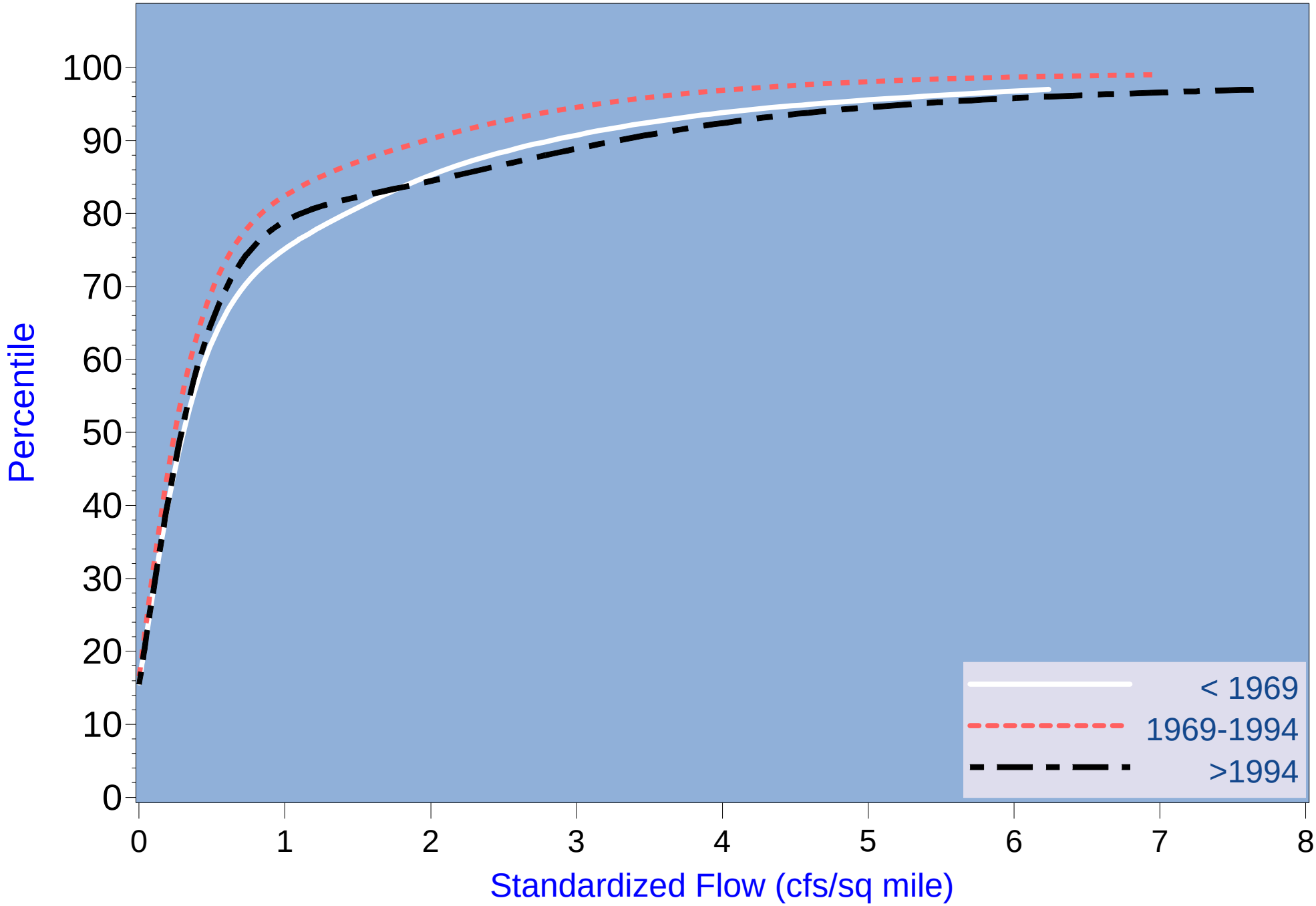


Figure 3.323 Differences in CDFs among AMO periods in flow at long-term Horse Creek near Arcadia(2297310) gage

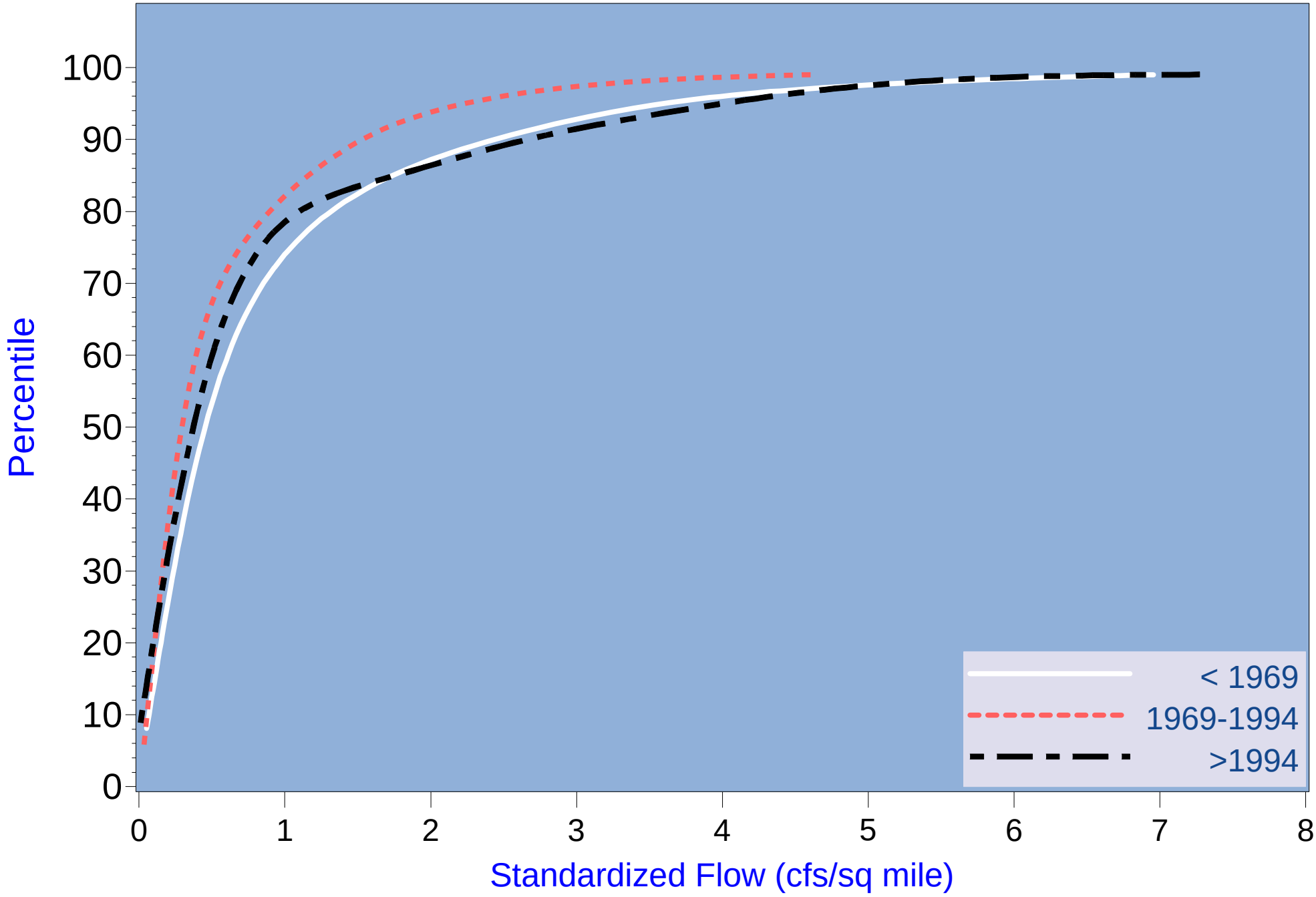


Figure 3.324 Differences in CDFs among AMO periods in total gaged flow upstream of the Facility

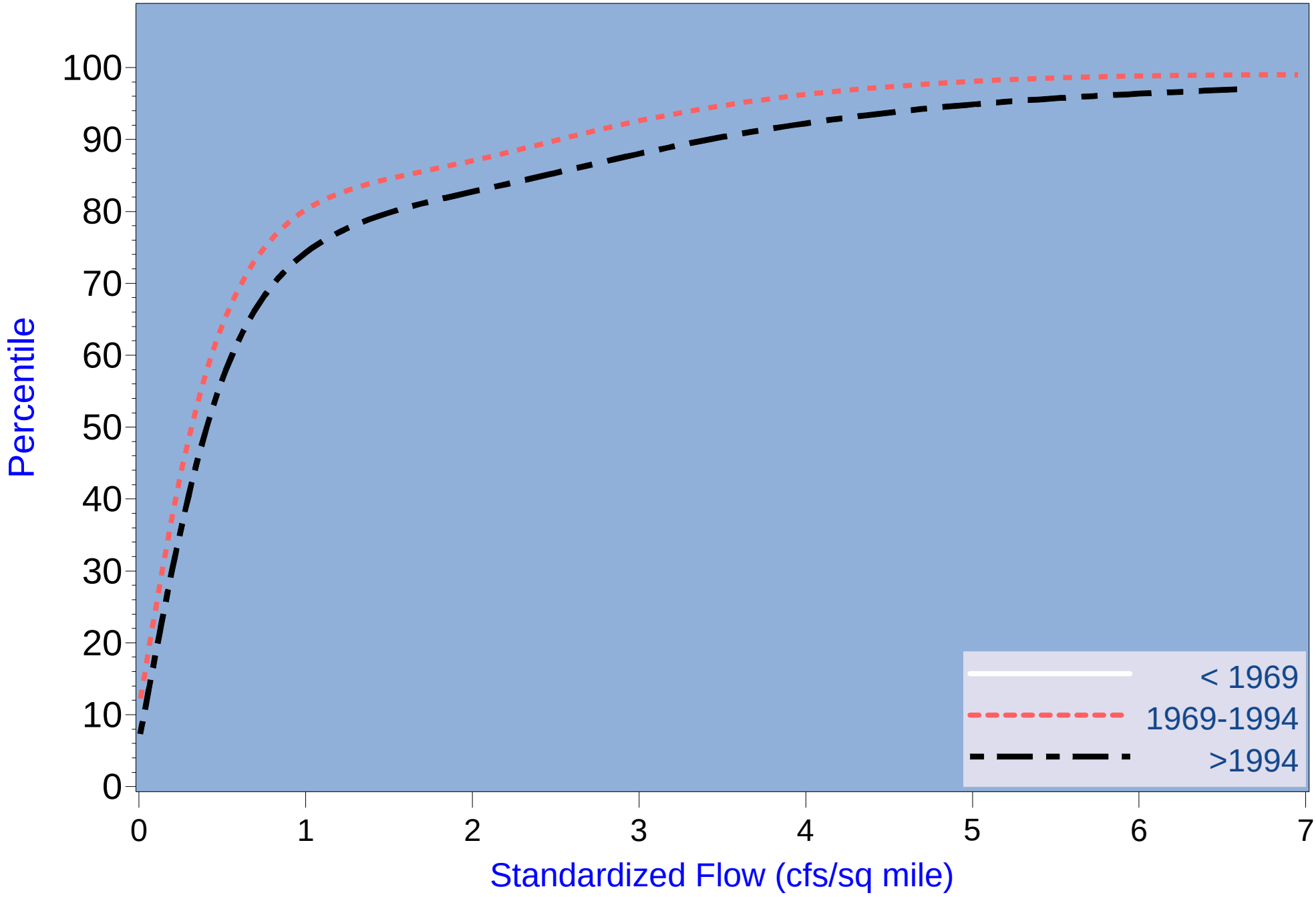


Figure 3.325 Differences in CDFs among AMO periods in flow at long-term Prairie Creek (2298123) gage

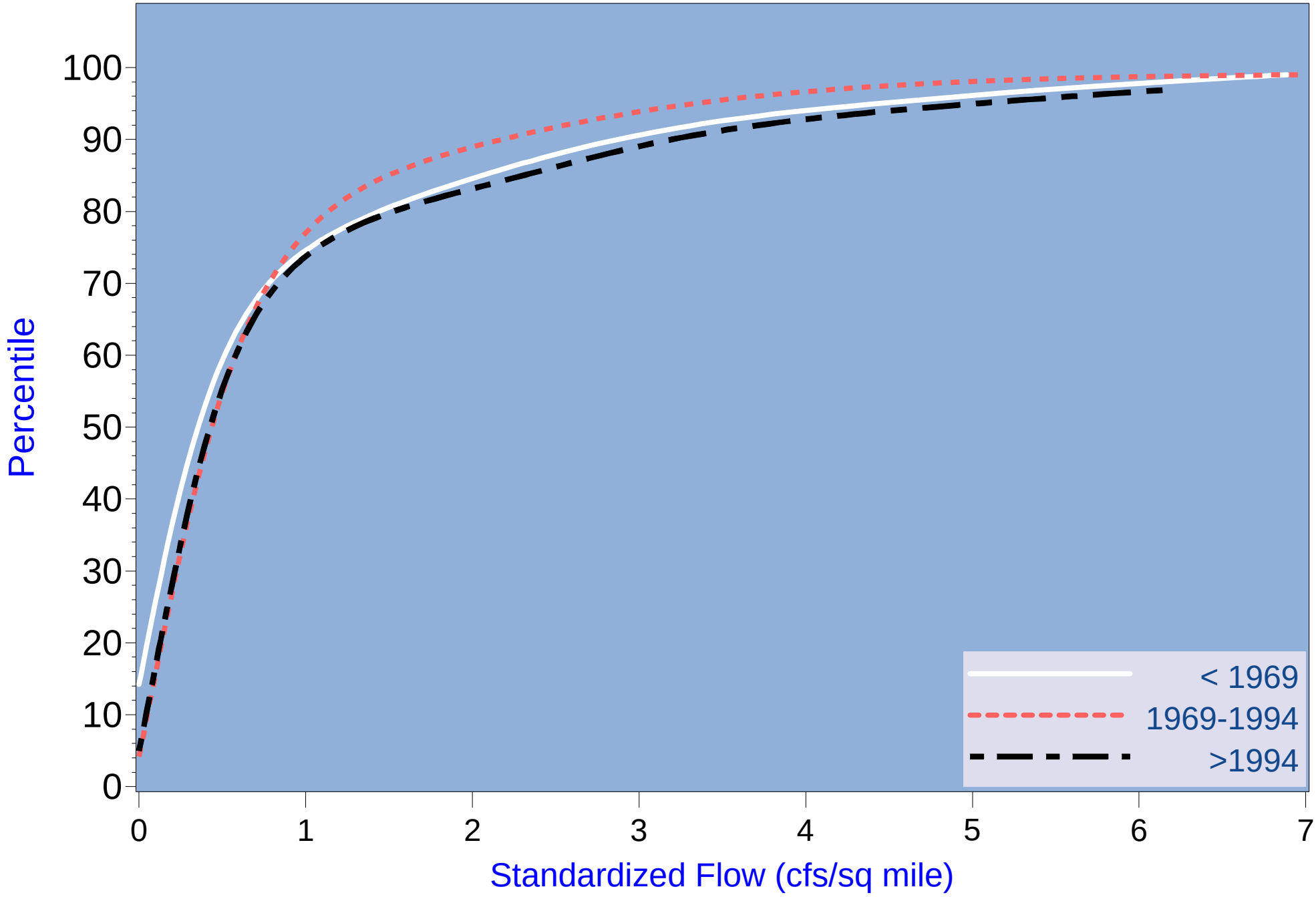


Figure 3.326 Differences in CDFs among AMO periods in flow at long-term Shell Creek gage

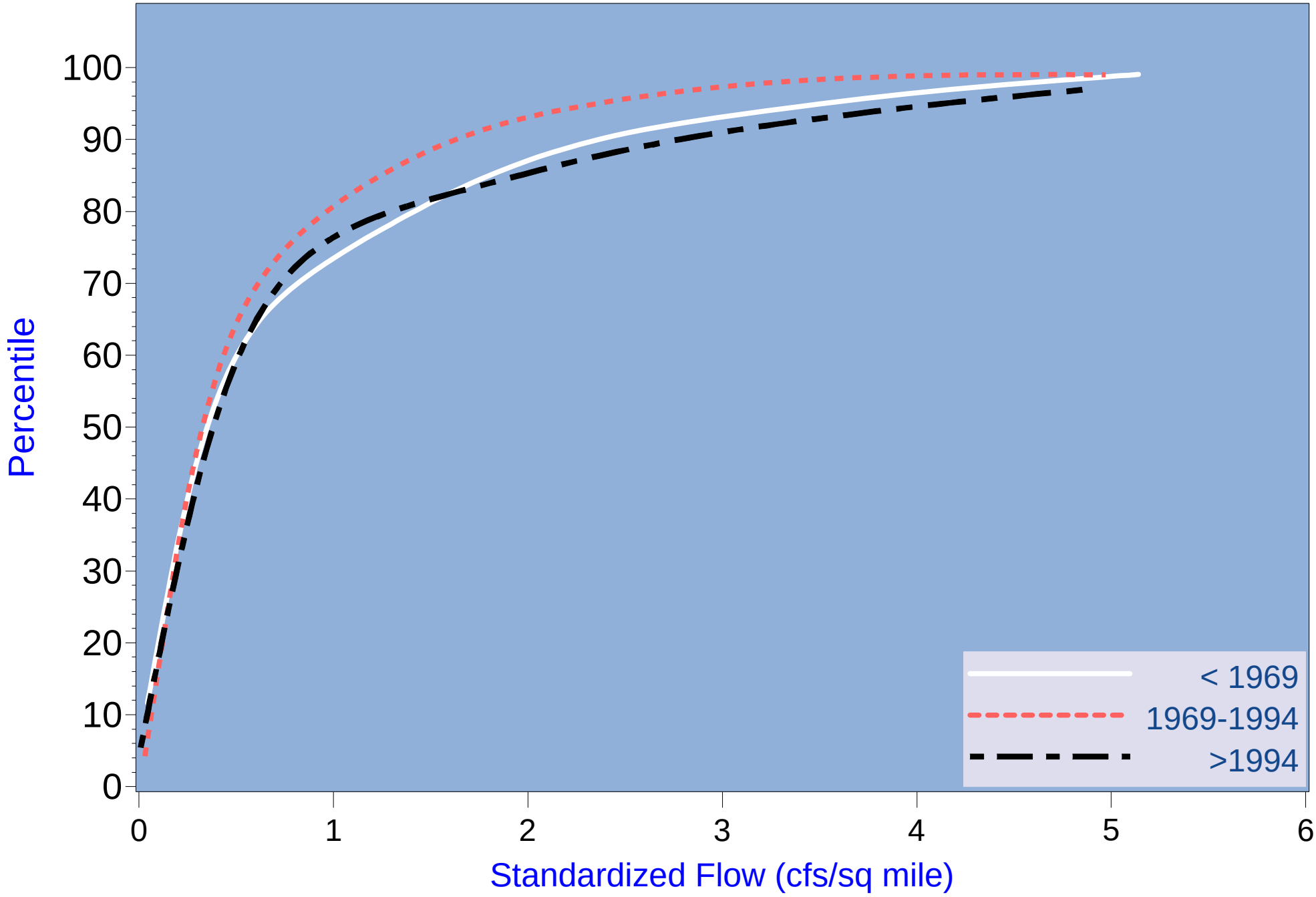


Figure 3.327 Differences in CDFs among AMO periods in total gaged Peace River flow to the Upper Harbor

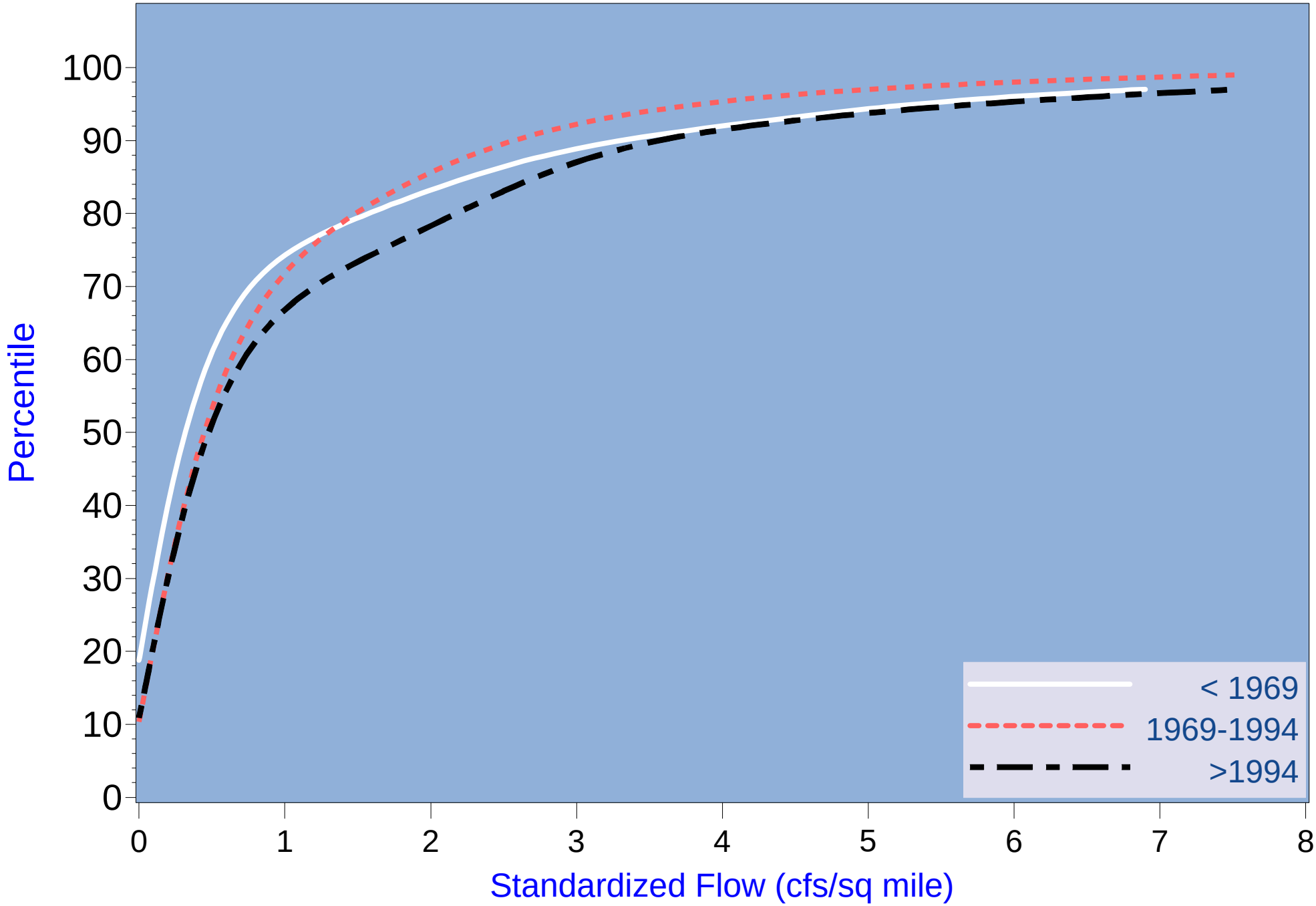


Figure 3.328 Differences in CDFs among AMO periods in flow at long-term Myakka River near Sarasota (2298830) gage

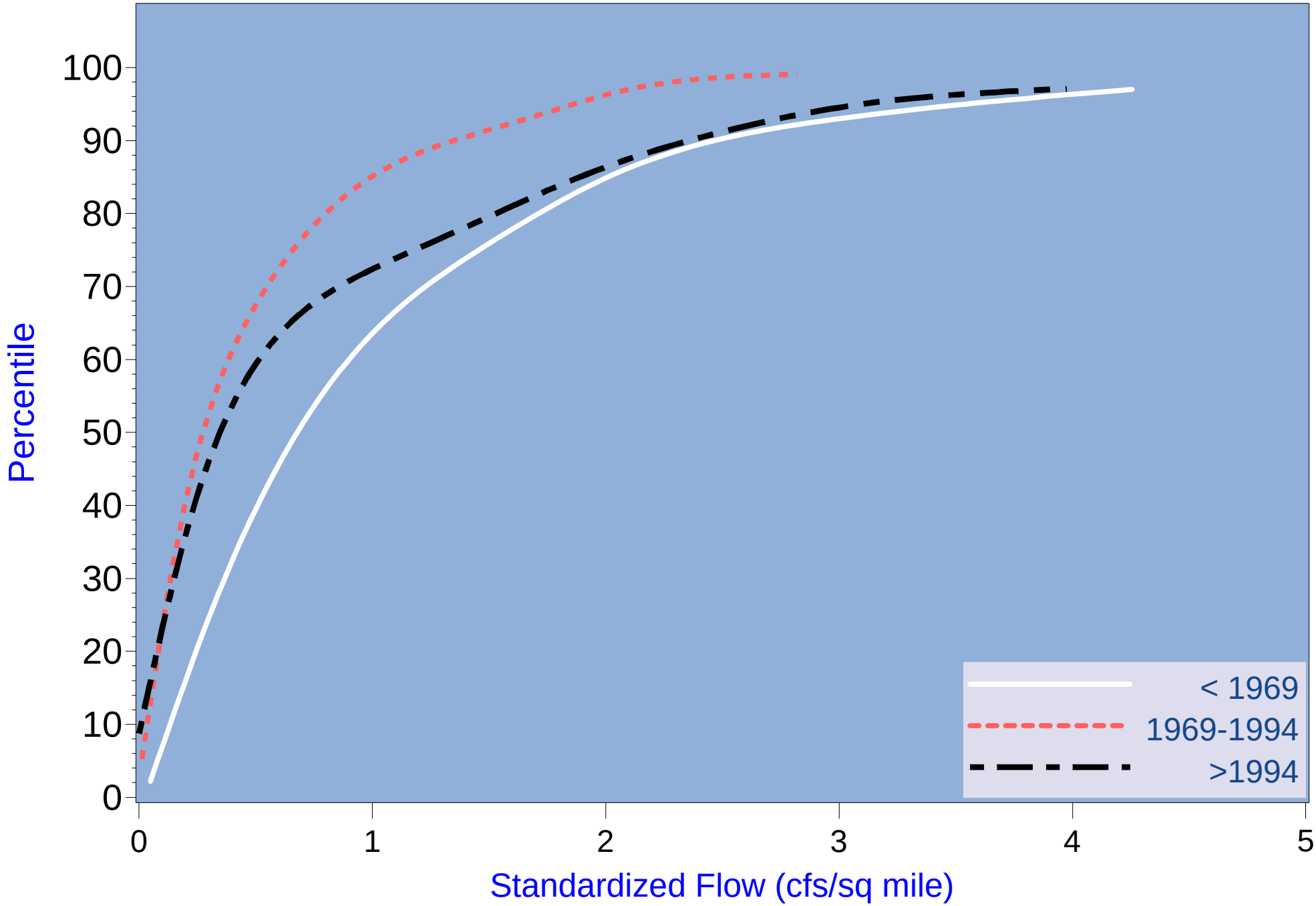


Figure 3.329 Wet season differences in CDFs among AMO periods in flow at long-term Peace River at Bartow (2294650) gage

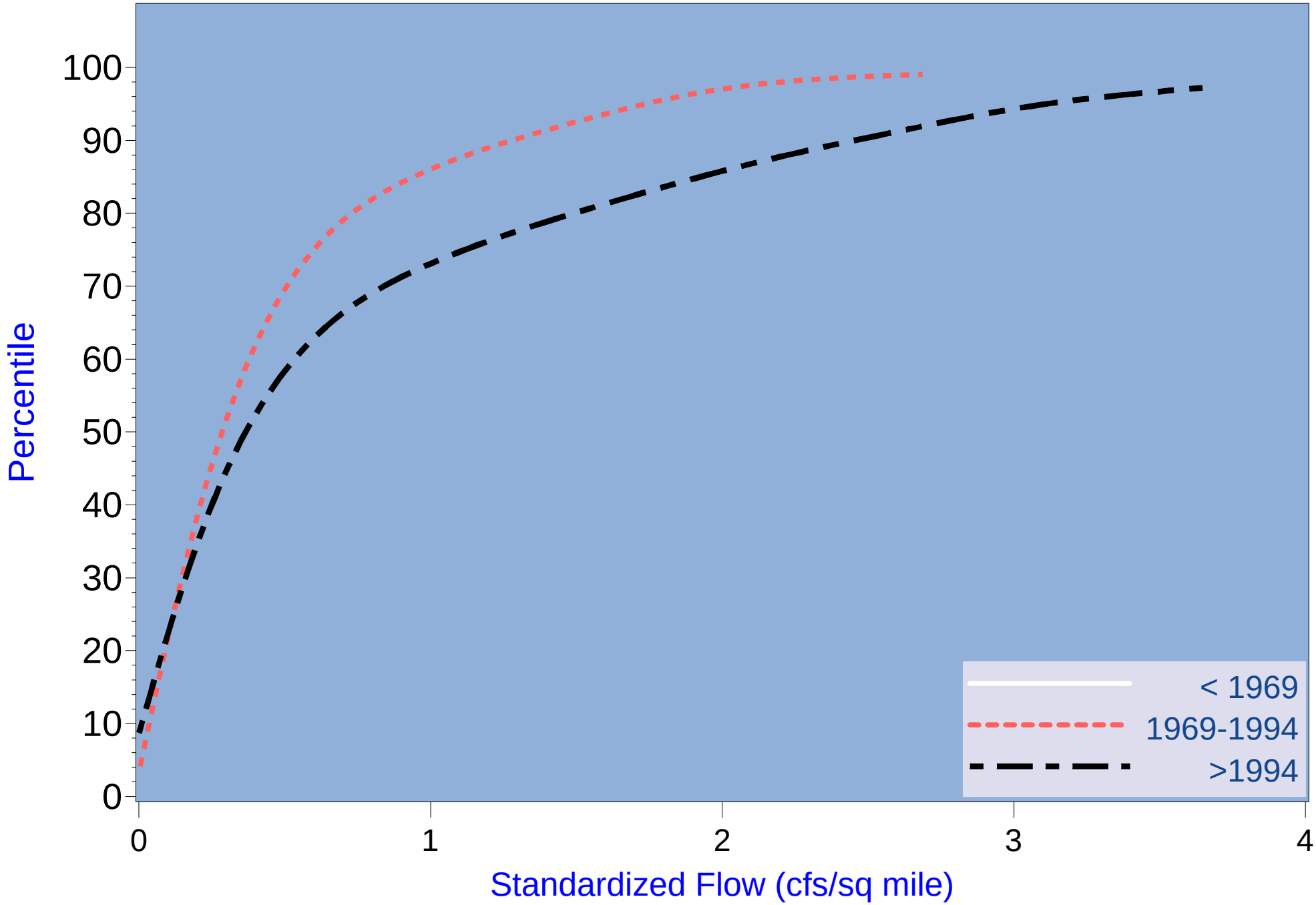


Figure 3.330 Wet season differences in CDFs among AMO periods in flow at long-term Peace River at Ft. Meade (2294898) gage

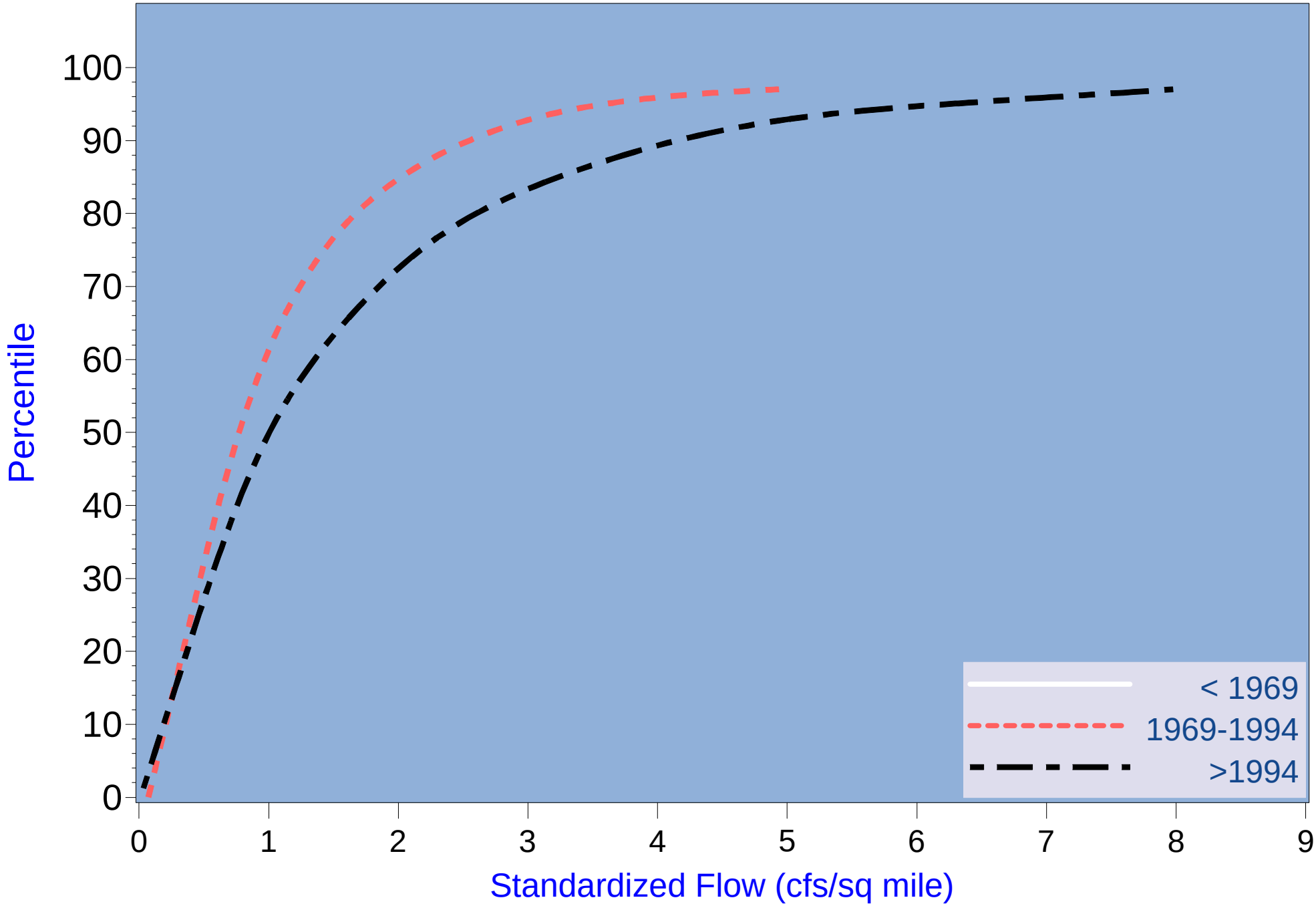


Figure 3.331 Wet season differences in CDFs among AMO periods in flow at long-term Payne Creek (2295420) gage

Table 4.17
Correlation of Water Quality Parameters with Flow by Category – River Kilometer -2.4

Water Quality Parameter	Overall	<90 cfs	90-160 cfs	160-360 cfs	360-920 cfs	920-2100 cfs	> 2100 cfs
Salinity (ppt)							
Correlation Coefficient (R)	-0.72574	-0.50834	-0.26525	-0.24806	-0.28704	-0.30312	-0.57858
Probability	<.0001	0.0021	0.0716	0.0165	0.0048	0.0219	<.0001
Number of Observations	372	34	47	93	95	57	46
Dissolved Oxygen (mg/l)							
Correlation Coefficient (R)	0.03058	0.06372	0.32625	0.28702	0.01624	0.19031	-0.16671
Probability	0.5571	0.7203	0.0287	0.0053	0.8746	0.1562	0.2737
Number of Observations	371	34	45	93	97	57	45
Color (CPU)							
Correlation Coefficient (R)	0.78559	-0.02542	0.08983	0.12318	0.22849	0.43119	0.36654
Probability	<.0001	0.8979	0.5765	0.2763	0.0333	0.0039	0.0257
Number of Observations	316	28	41	80	87	43	37
Turbidity (NTU)							
Correlation Coefficient (R)	0.02276	0.13222	-0.06804	0.03054	-0.1118	0.3084	0.4482
Probability	0.7107	0.5197	0.689	0.7962	0.3753	0.0596	0.0168
Number of Observations	268	26	37	74	65	38	28
Nitrite/Nitrate (mg/l)							
Correlation Coefficient (R)	0.27605	-0.10099	0.24202	0.21631	0.2604	0.20234	0.12017
Probability	<.0001	0.6091	0.1274	0.054	0.0149	0.1932	0.4787
Number of Observations	316	28	41	80	87	43	37
Ammonia/Ammonium (mg/l)							
Correlation Coefficient (R)	0.32661	-0.20226	0.27492	0.01521	0.2043	-0.28214	0.00447
Probability	<.0001	0.3547	0.1215	0.9066	0.0767	0.106	0.98
Number of Observations	262	23	33	62	76	34	34

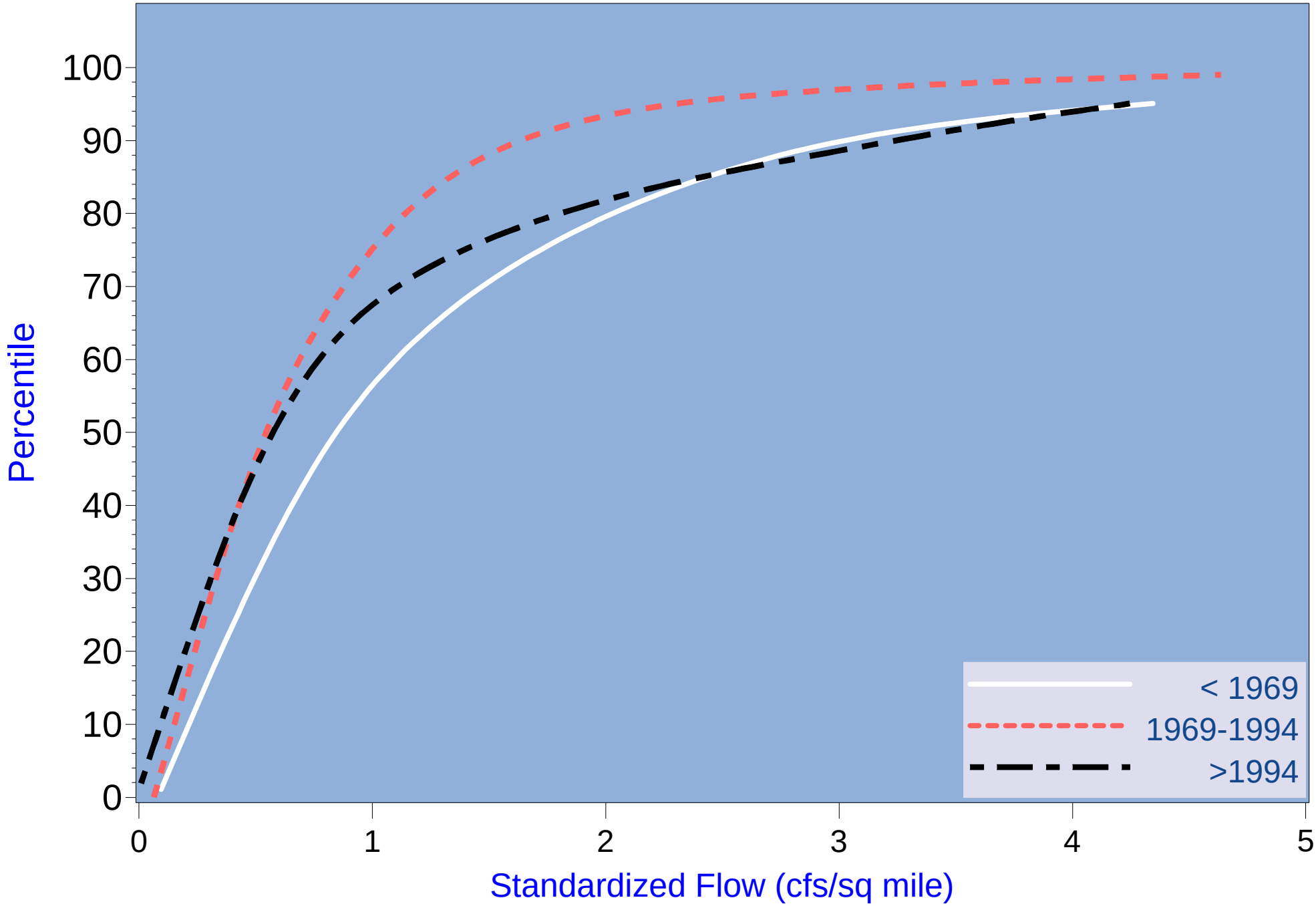


Figure 3.332 Wet season differences in CDFs among AMO periods in flow at long-term Peace River at Zolfo (2295637) gage

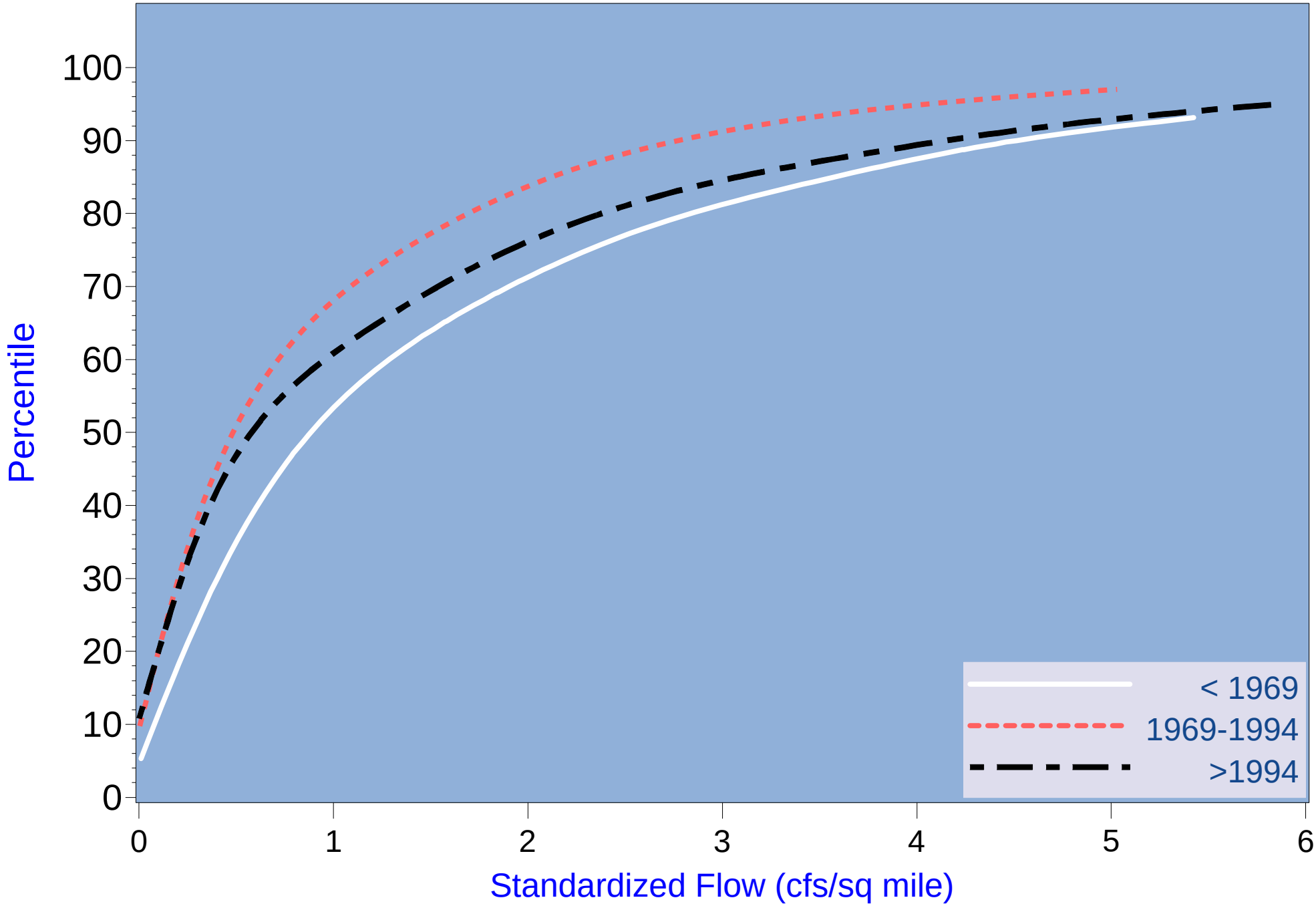


Figure 3.333 Wet season differences in CDFs among AMO periods in flow at long-term Charlie Creek (2296500) gage

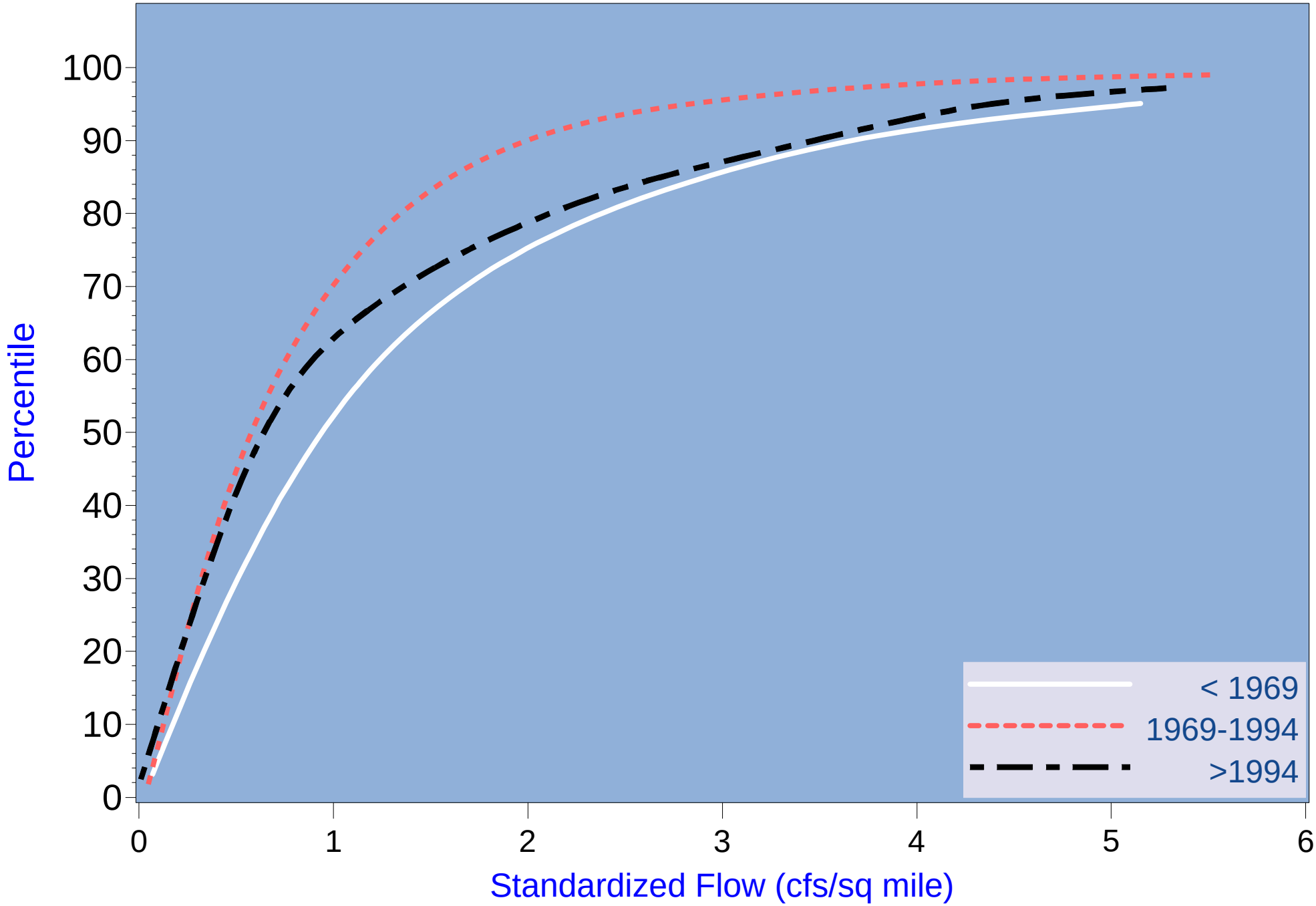


Figure 3.334 Wet season differences in CDFs among AMO periods in flow at long-term Peace River at Arcadia (2296750) gage

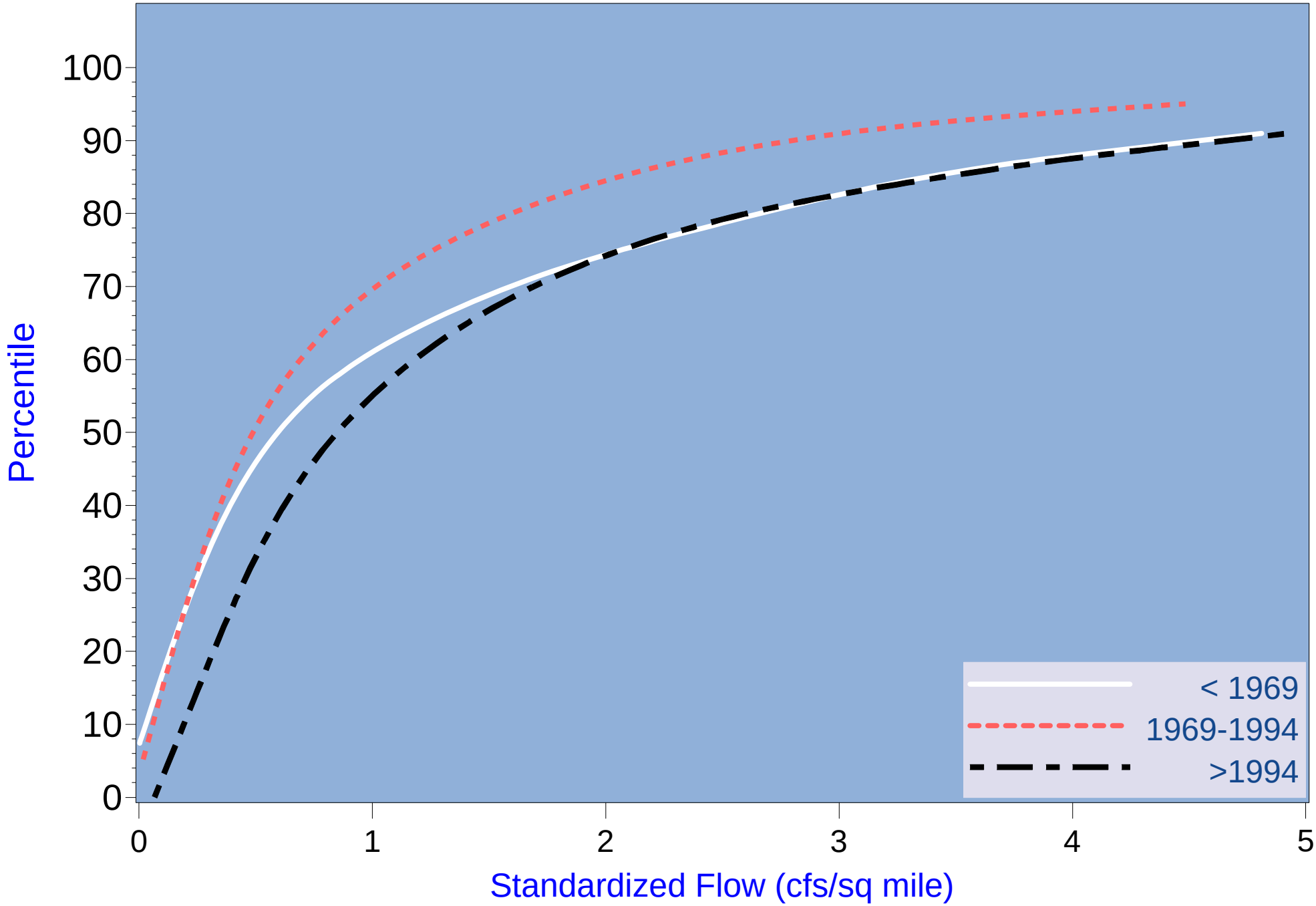


Figure 3.335 Wet season differences in CDFs among AMO periods in flow at long-term Joshua Creek at Nocatee (2297100) gage

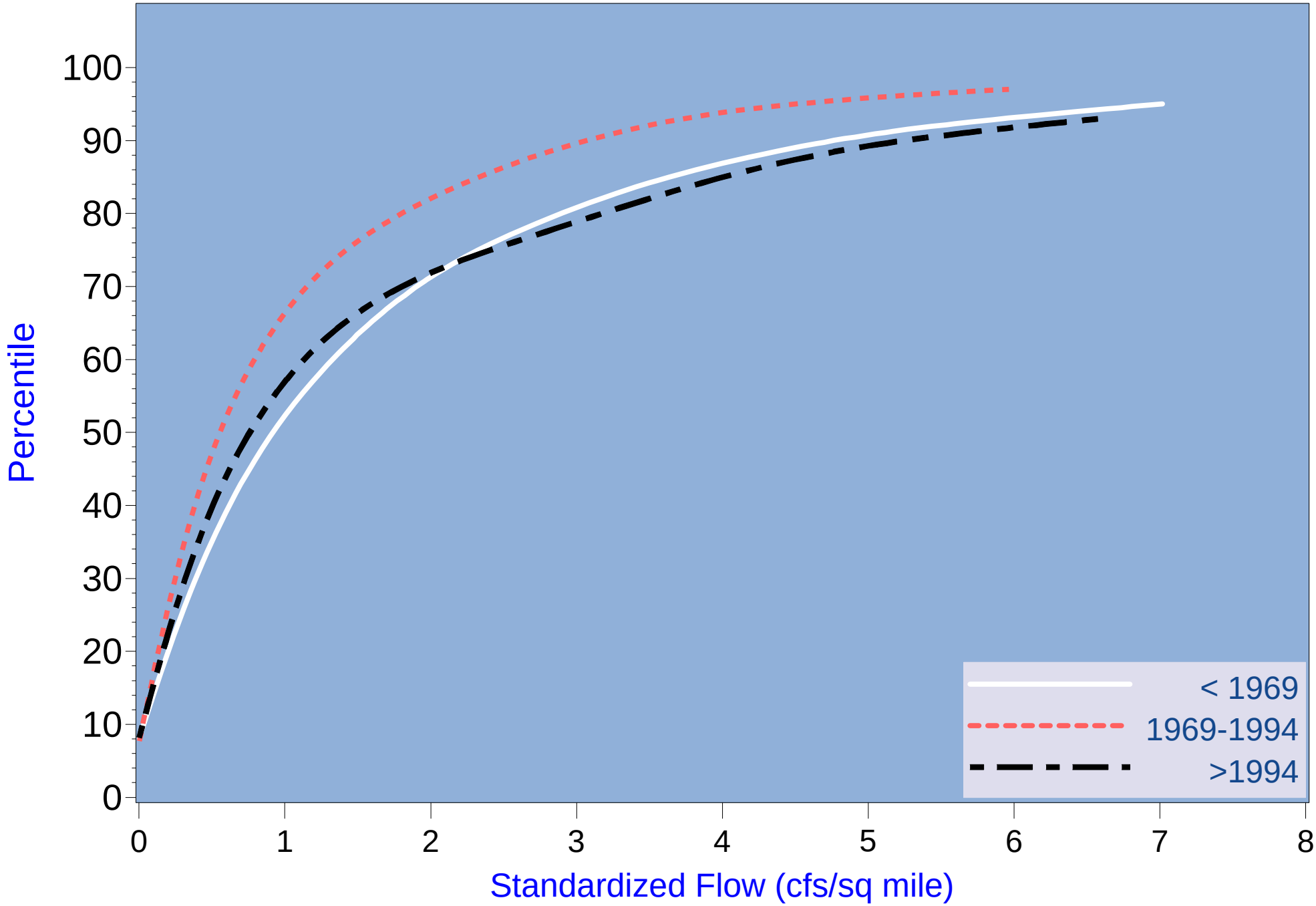


Figure 3.336 Wet season differences in CDFs among AMO periods in flow at long-term Horse Creek near Arcadia(2297310) gage

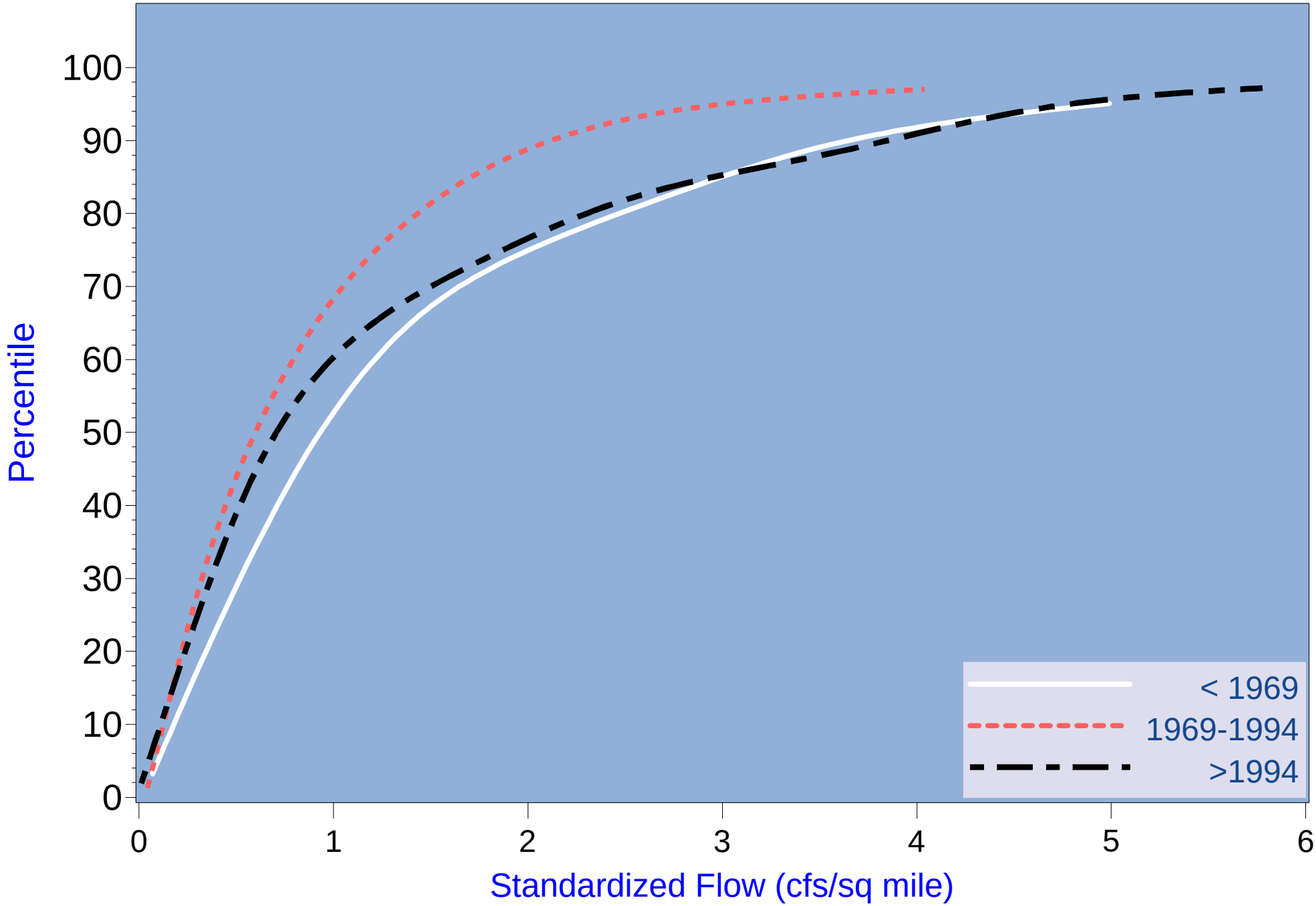


Figure 3.337 Wet season differences in CDFs among AMO periods in total gaged flow upstream of the Facility

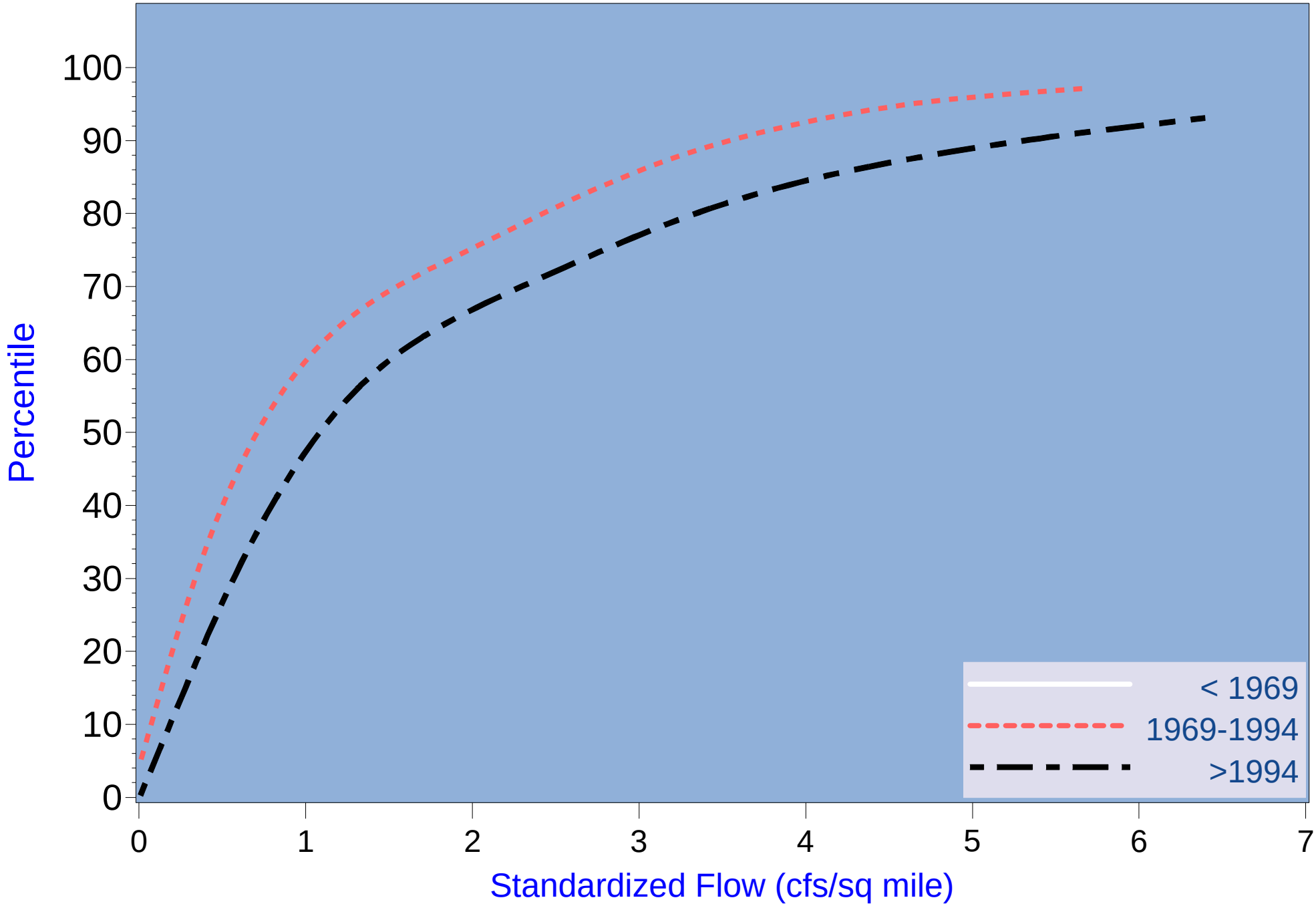


Figure 3.338 Wet season differences in CDFs among AMO periods in flow at long-term Prairie Creek (2298123) gage

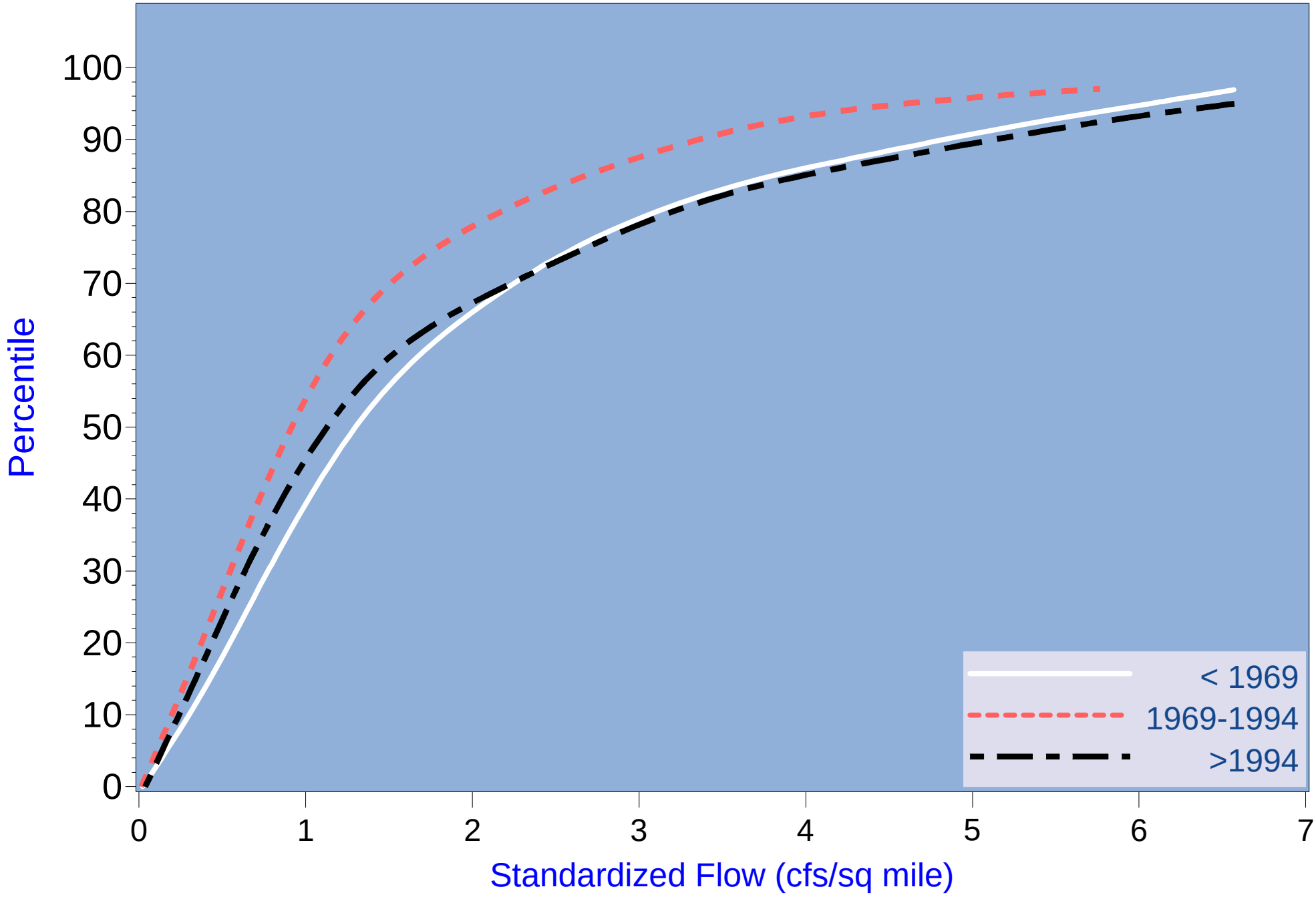


Figure 3.339 Wet season differences in CDFs among AMO periods in flow at long-term Shell Creek gage

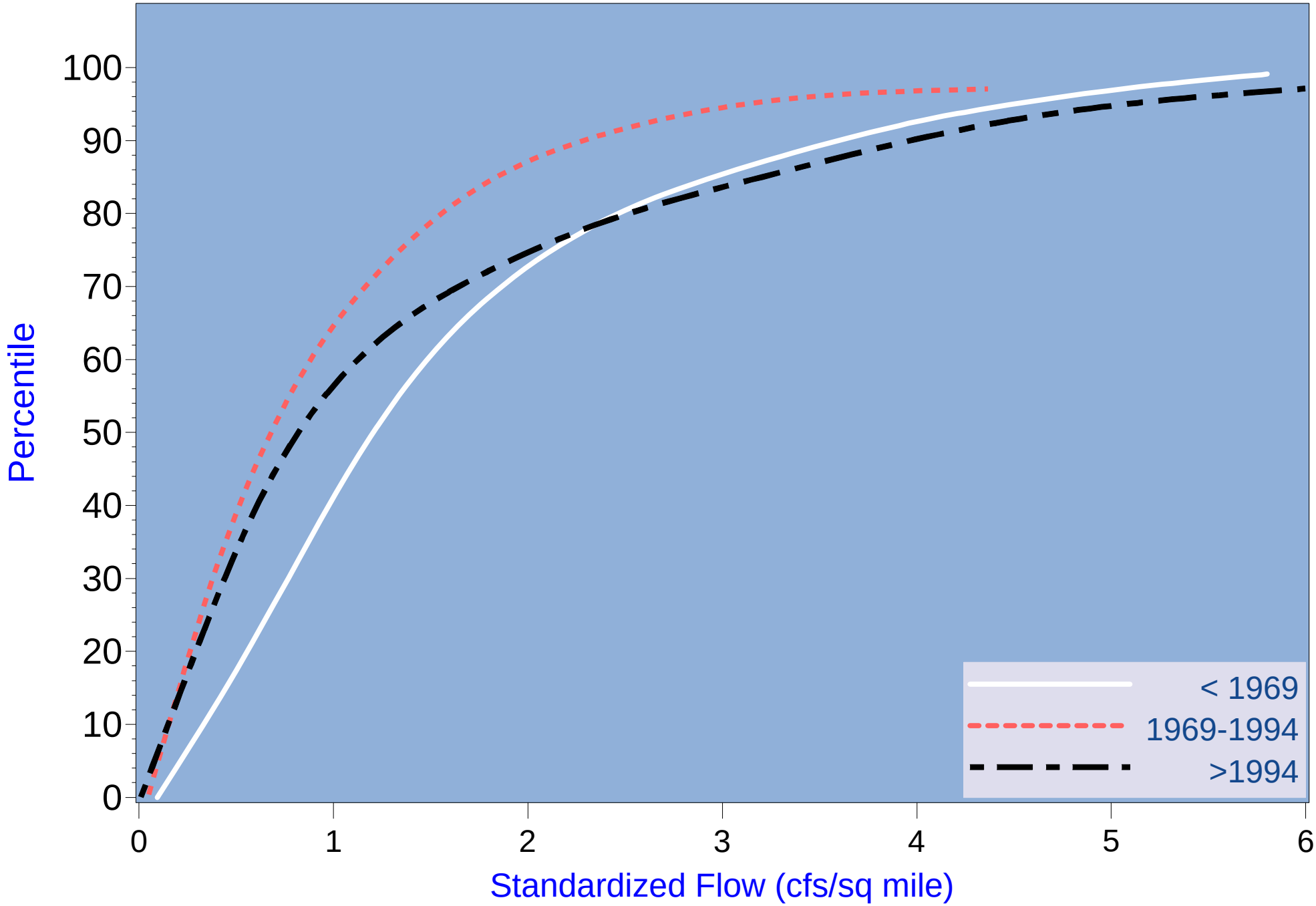


Figure 3.340 Wet season differences in CDFs among AMO periods in total gaged Peace River flow to the Upper Harbor

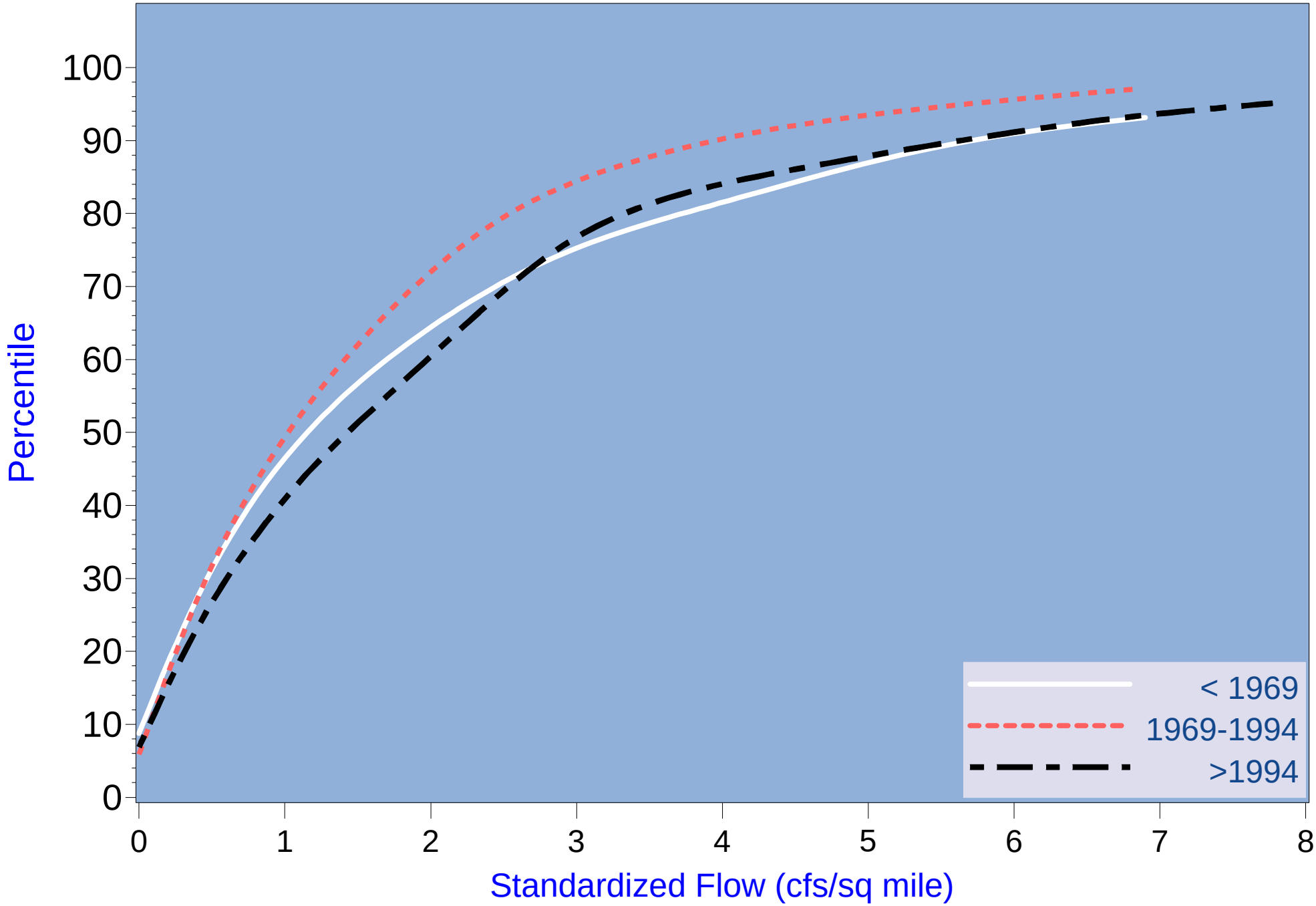


Figure 3.341 Wet season differences in CDFs among AMO periods in flow at long-term Myakka River near Sarasota (2298830) gage

Table 4.17
Correlation of Water Quality Parameters with Flow by Category – River Kilometer -2.4

Water Quality Parameter	Overall	<90 cfs	90-160 cfs	160-360 cfs	360-920 cfs	920-2100 cfs	> 2100 cfs
Total Kjeldahl Nitrogen (mg/l)							
Correlation Coefficient (R)	0.40422	0.27016	-0.0416	0.1658	0.00241	0.19419	0.37384
Probability	<.0001	0.2017	0.8241	0.2308	0.9842	0.2869	0.0321
Number of Observations	244	24	31	54	70	32	33
Total Phosphorus (mg/l)							
Correlation Coefficient (R)	0.54712	0.22393	0.13919	0.35097	0.01971	0.147	0.24706
Probability	<.0001	0.2819	0.4398	0.0036	0.8761	0.3785	0.205
Number of Observations	256	25	33	67	65	38	28
Silica (mg/l)							
Correlation Coefficient (R)	0.49504	-0.24452	0.07664	-0.0808	0.0601	0.30215	0.156
Probability	<.0001	0.2098	0.6339	0.4761	0.5803	0.0489	0.3565
Number of Observations	316	28	41	80	87	43	37
Total Organic Carbon (mg/l)							
Correlation Coefficient (R)	0.09652	0.29857	0.12538	0.13862	0.13819	0.09037	-0.01836
Probability	0.1213	0.1471	0.4662	0.2524	0.2882	0.5895	0.9247
Number of Observations	259	25	36	70	61	38	29
Dissolved Organic Carbon (mg/l)							
Correlation Coefficient (R)	0.16337	0.33901	0.35287	0.17269	0.16262	-0.00409	0.07611
Probability	0.0232	0.1328	0.0836	0.2405	0.2695	0.9842	0.7176
Number of Observations	193	21	25	48	48	26	25
Chlorophyll a (ug/l)							
Correlation Coefficient (R)	0.14216	-0.20775	0.00432	-0.0275	0.04863	0.30106	0.09783
Probability	0.0122	0.2888	0.9789	0.8111	0.6604	0.0498	0.5646
Number of Observations	310	28	40	78	84	43	37

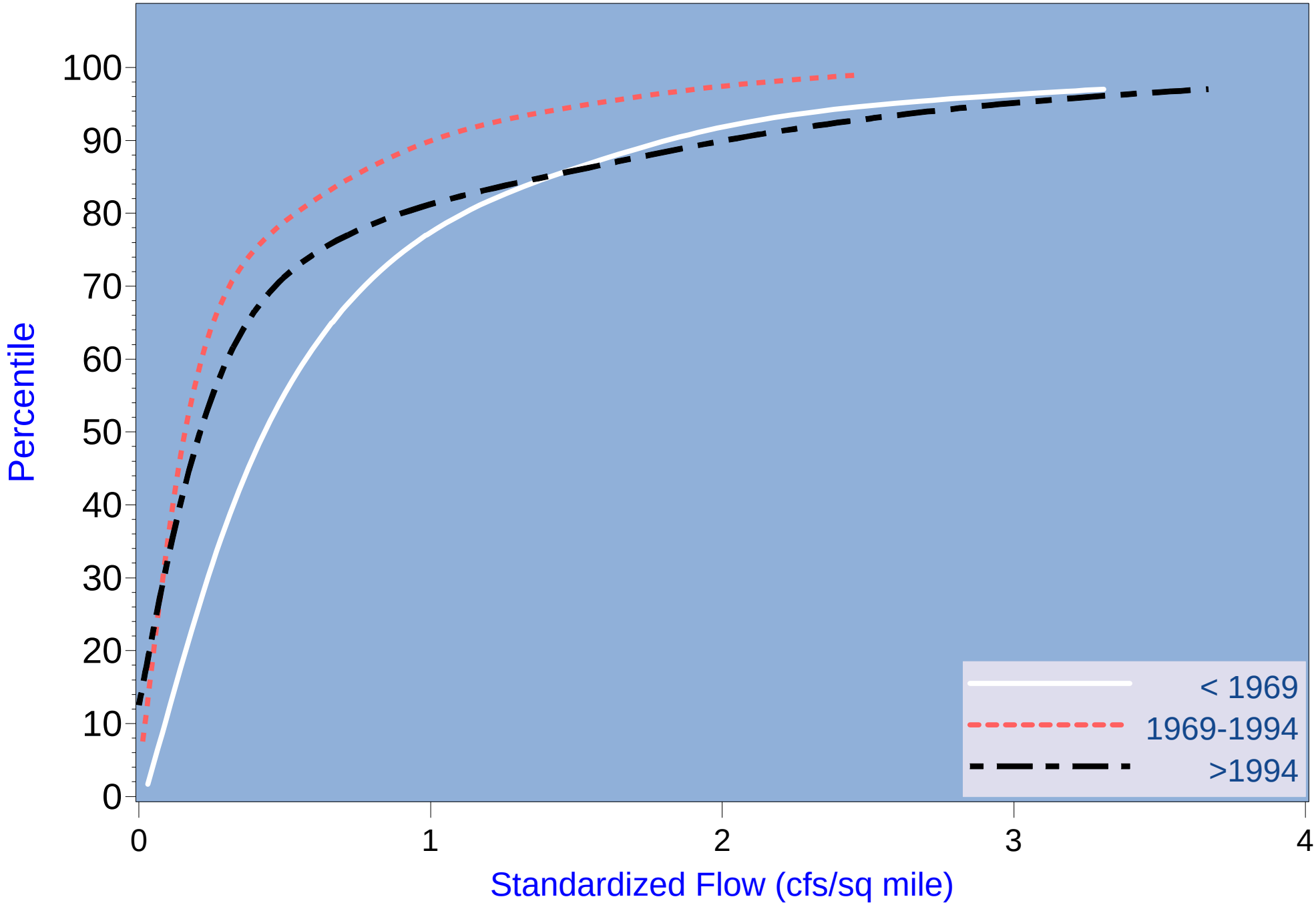


Figure 3.342 Dry season differences in CDFs among AMO periods in flow at long-term Peace River at Bartow (2294650) gage

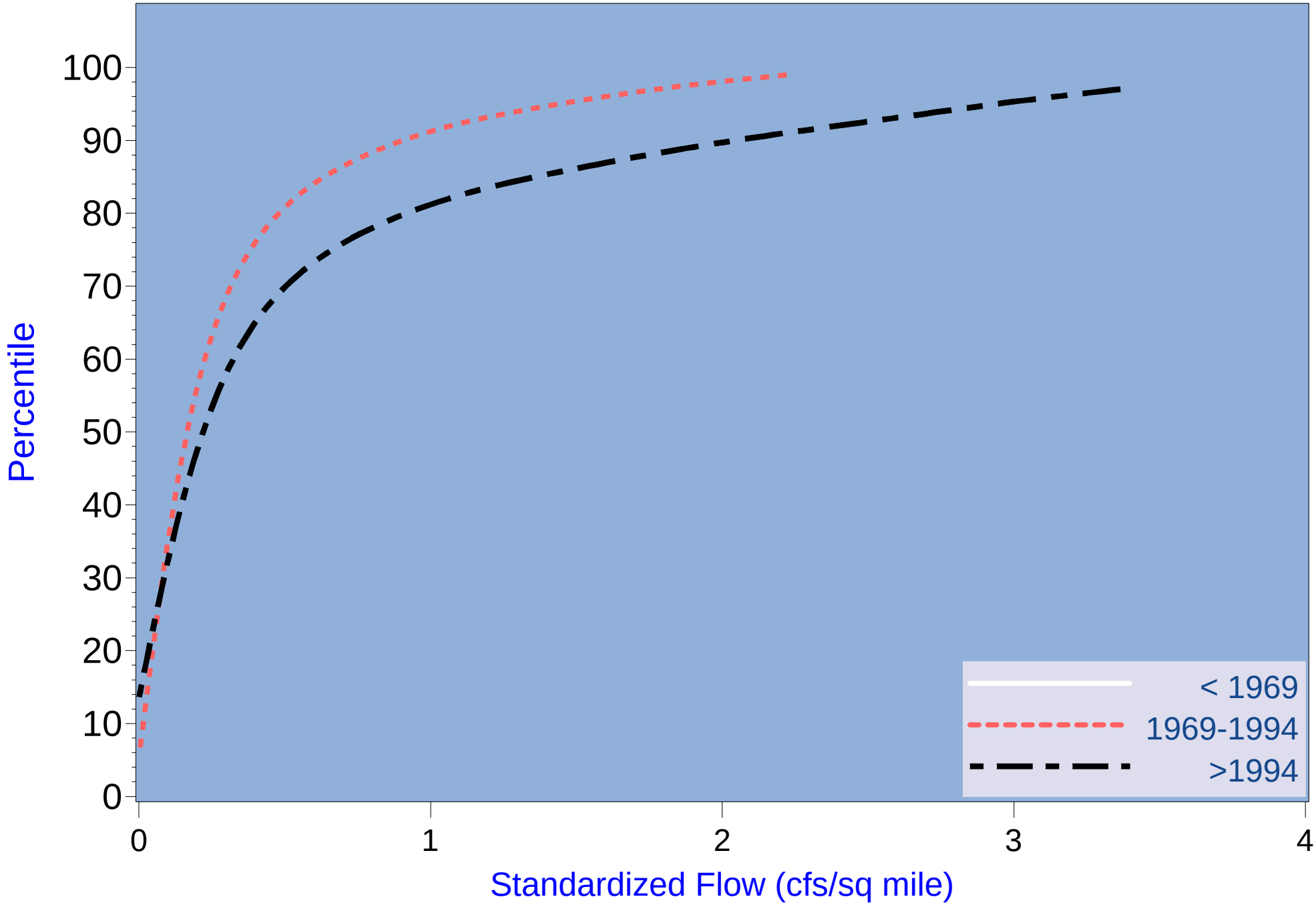


Figure 3.343 Dry season differences in CDFs among AMO periods in flow at long-term Peace River at Ft. Meade (2294898) gage

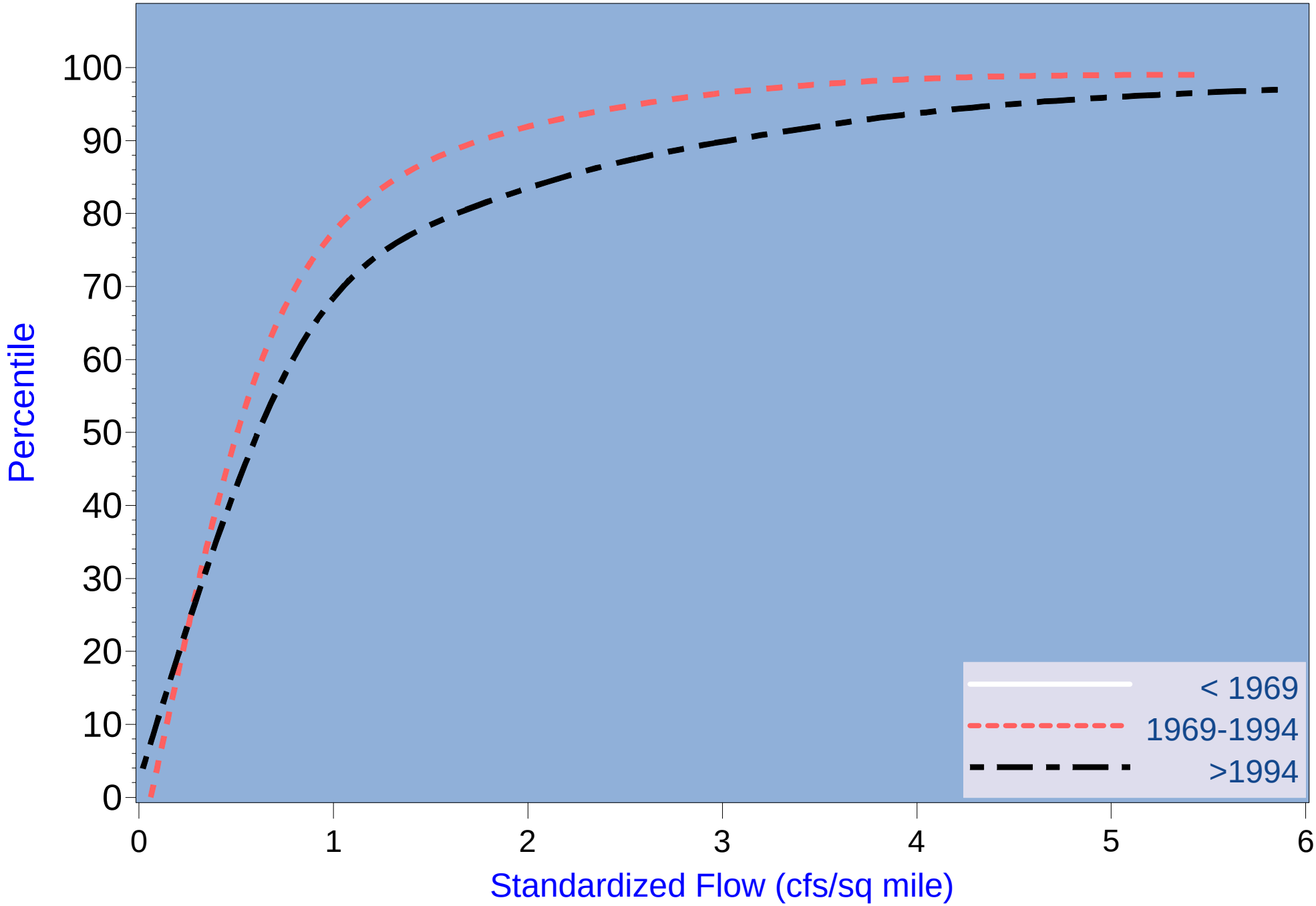


Figure 3.344 Dry season differences in CDFs among AMO periods in flow at long-term Payne Creek (2295420) gage

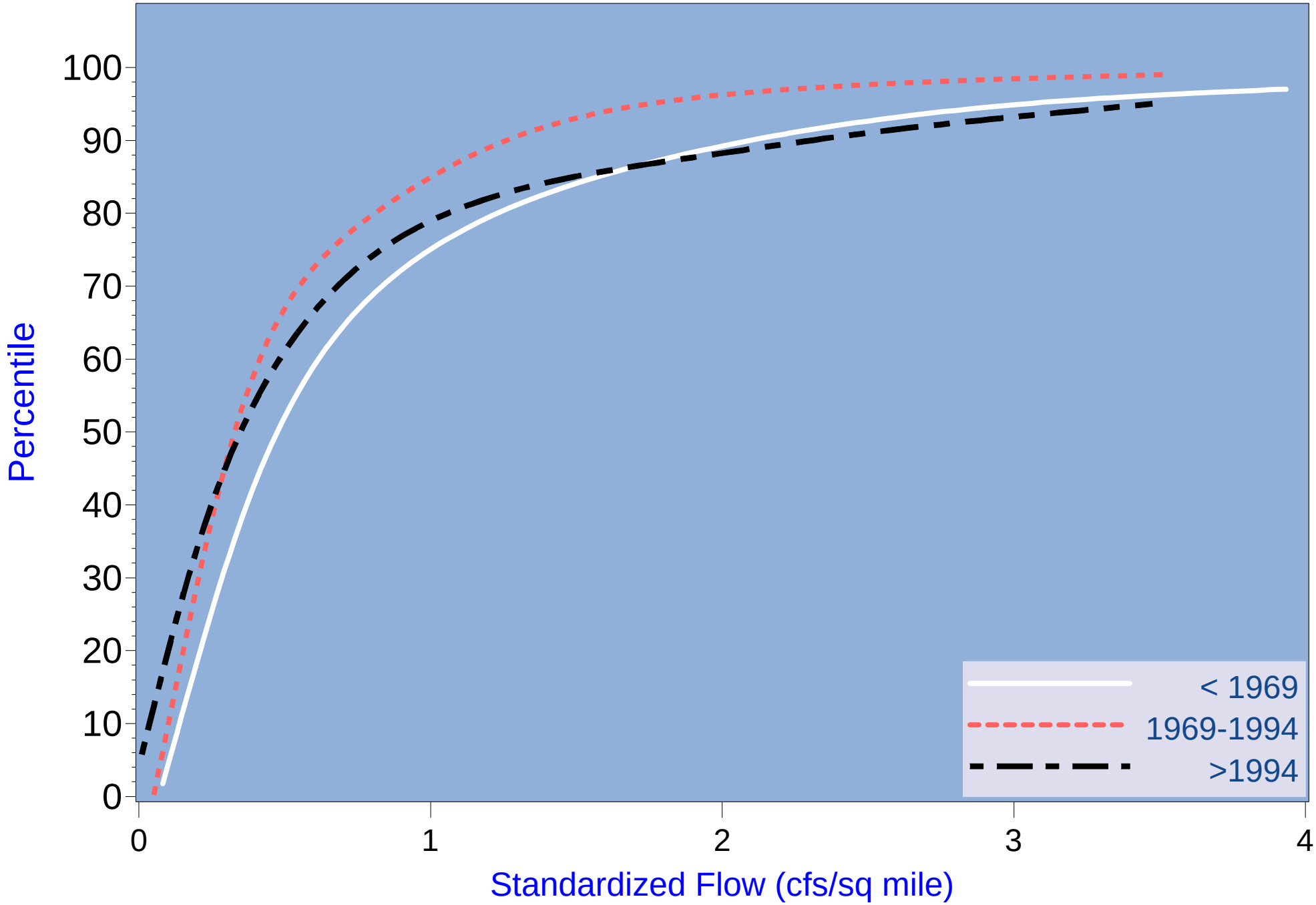


Figure 3.345 Dry season differences in CDFs among AMO periods in flow at long-term Peace River at Zolfo (2295637) gage

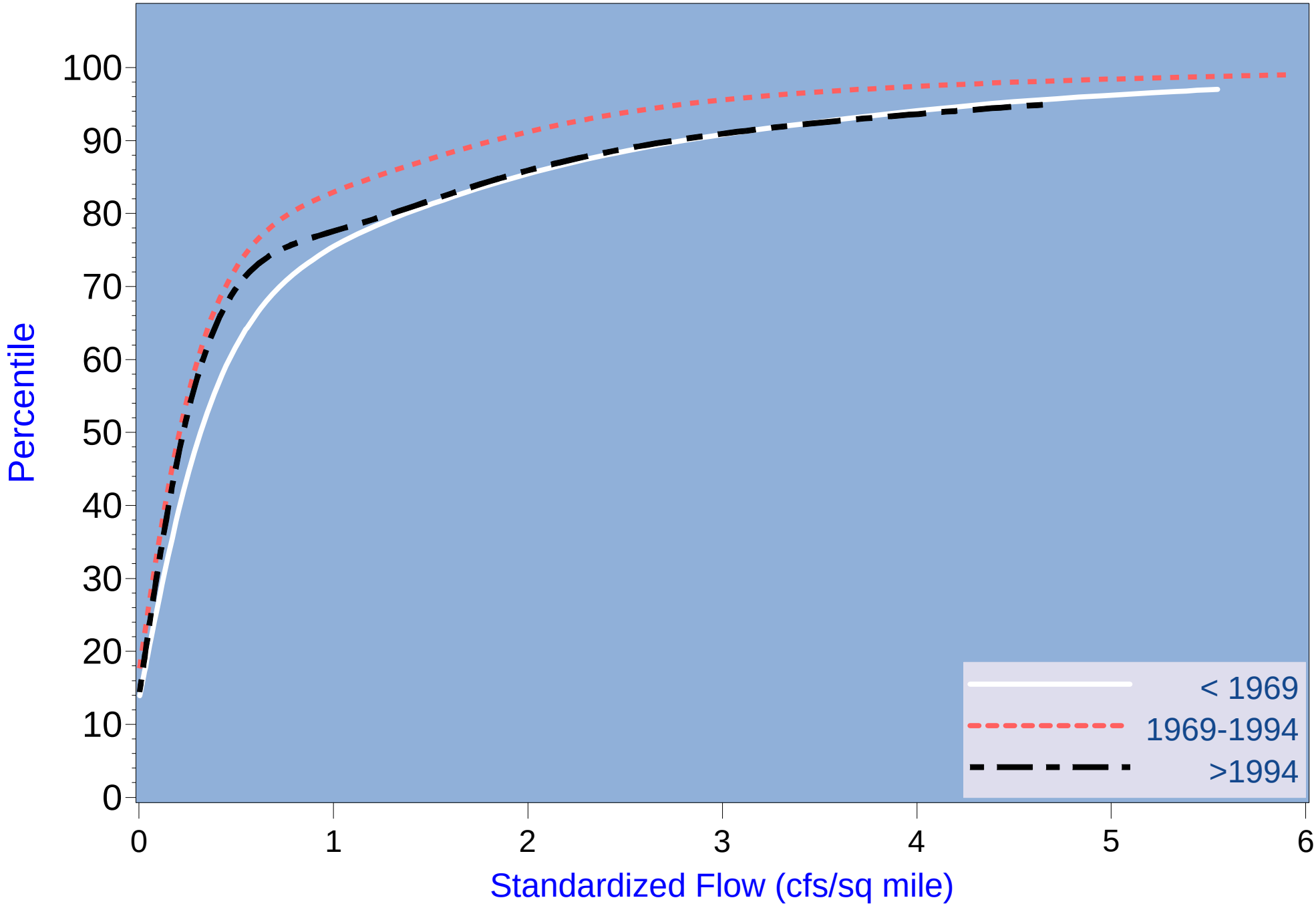


Figure 3.346 Dry season differences in CDFs among AMO periods in flow at long-term Charlie Creek (2296500) gage

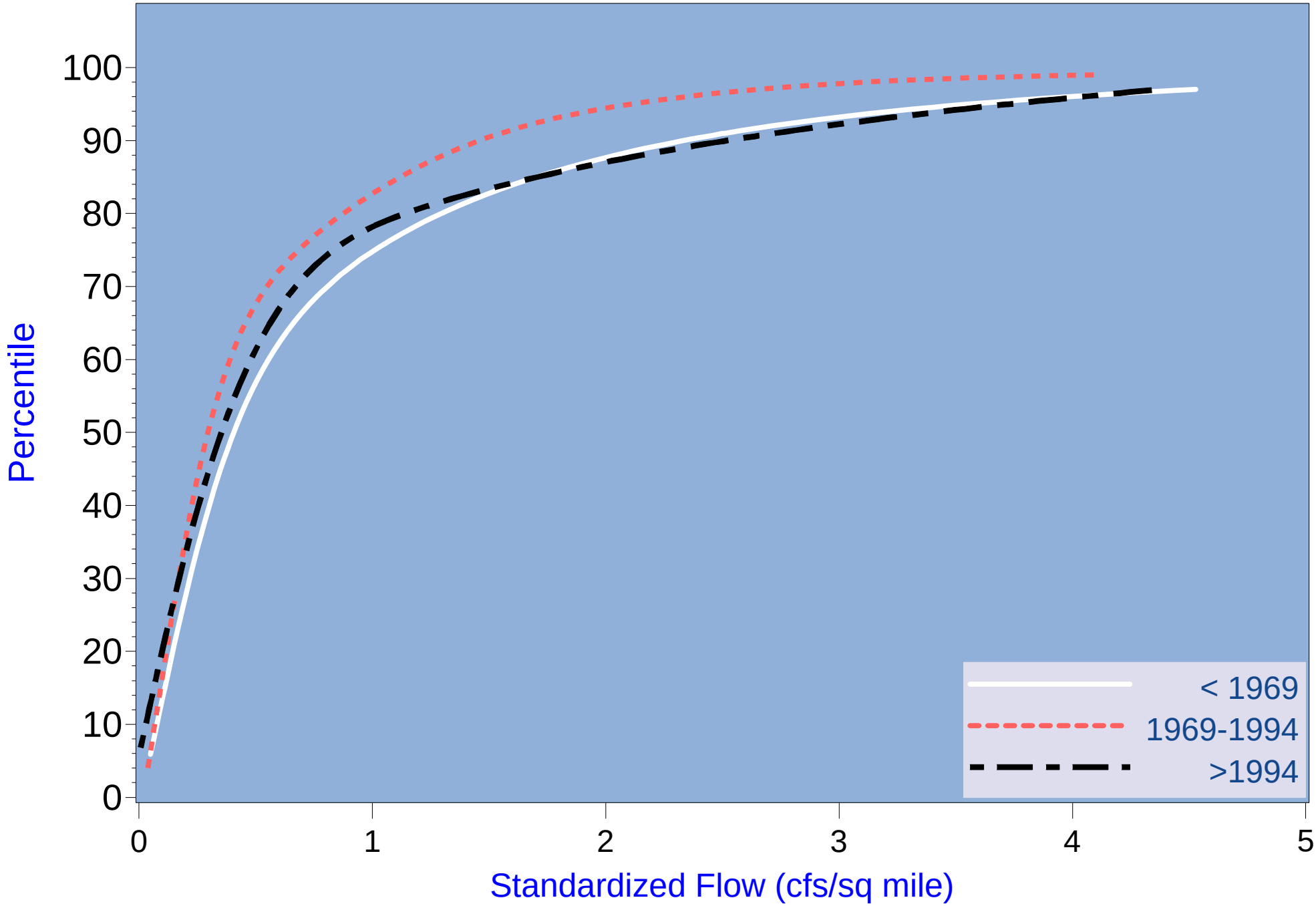


Figure 3.347 Dry season differences in CDFs among AMO periods in flow at long-term Peace River at Arcadia (2296750) gage

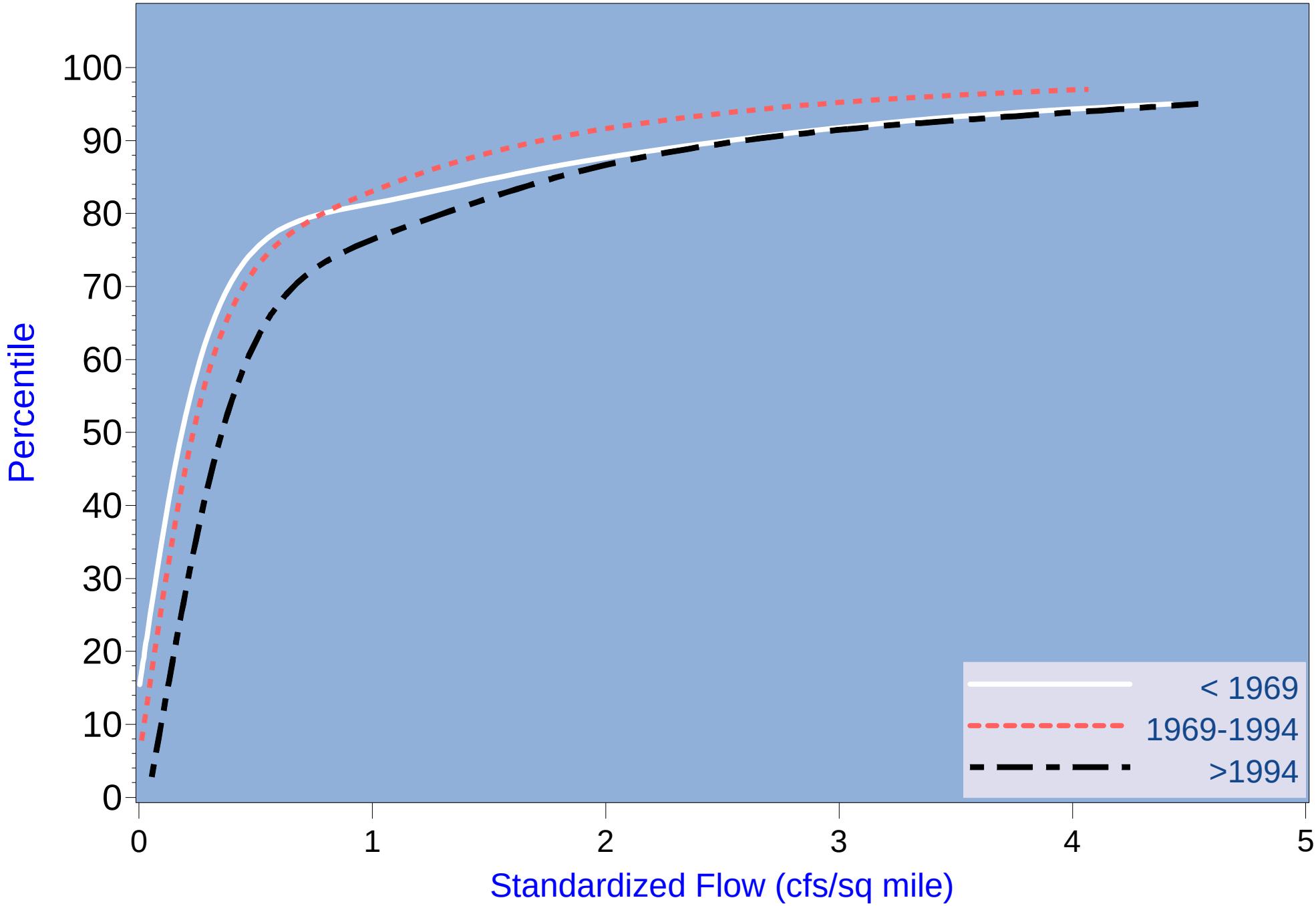


Figure 3.348 Dry season differences in CDFs among AMO periods in flow at long-term Joshua Creek at Nocatee (2297100) gage

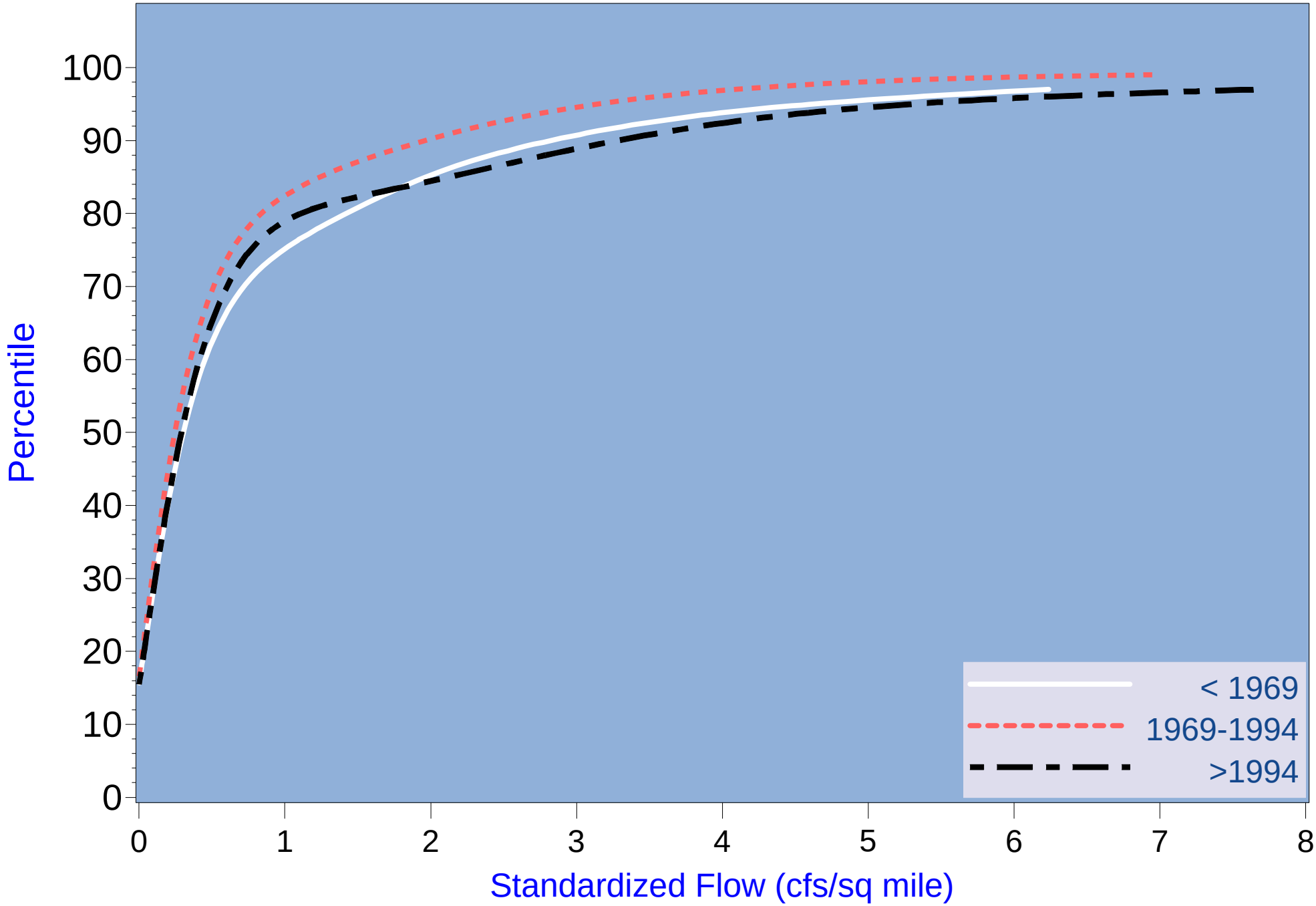


Figure 3.349 Dry season differences in CDFs among AMO periods in flow at long-term Horse Creek near Arcadia(2297310) gage

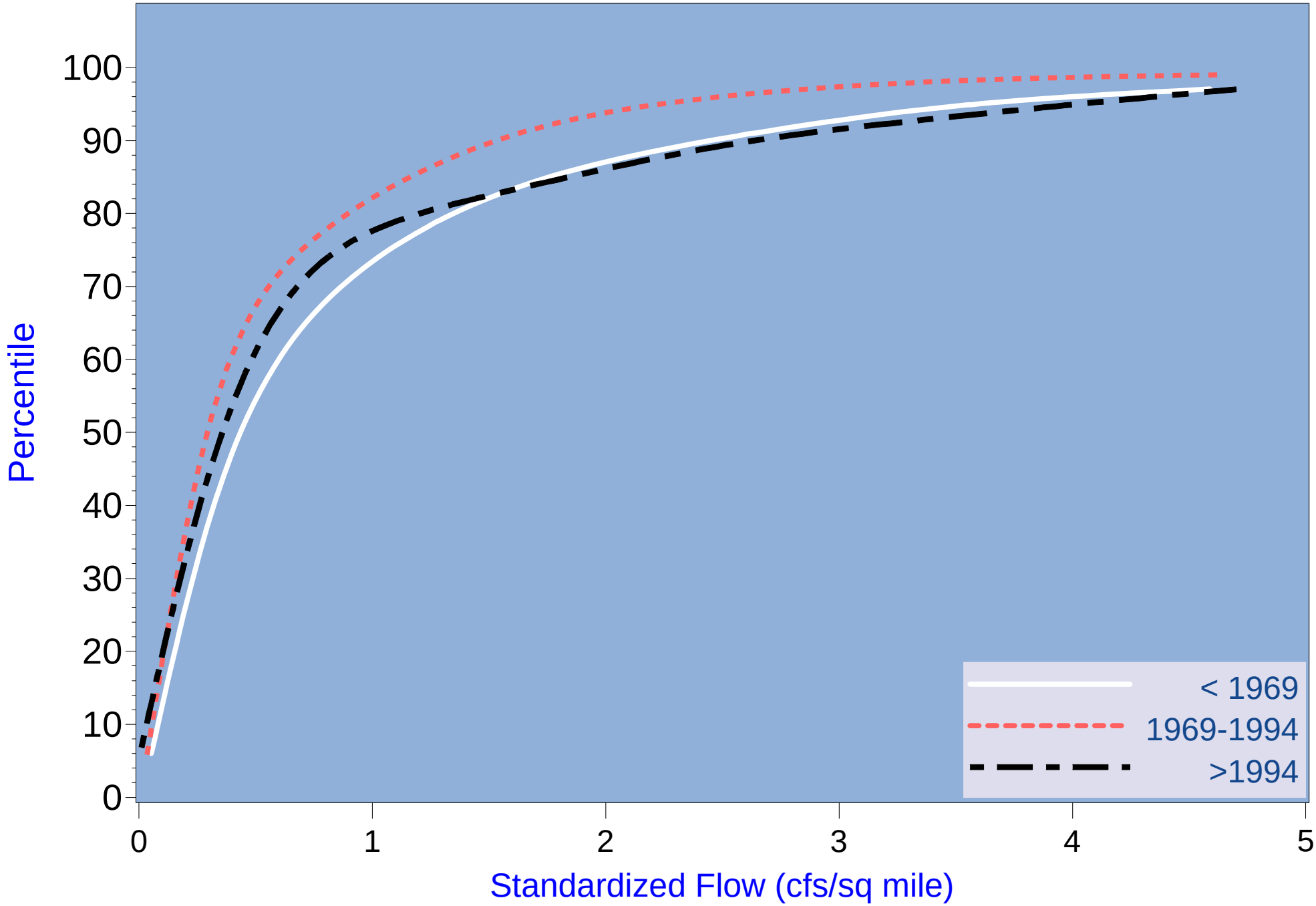


Figure 3.350 Dry season differences in CDFs among AMO periods in total gaged flow upstream of the Facility

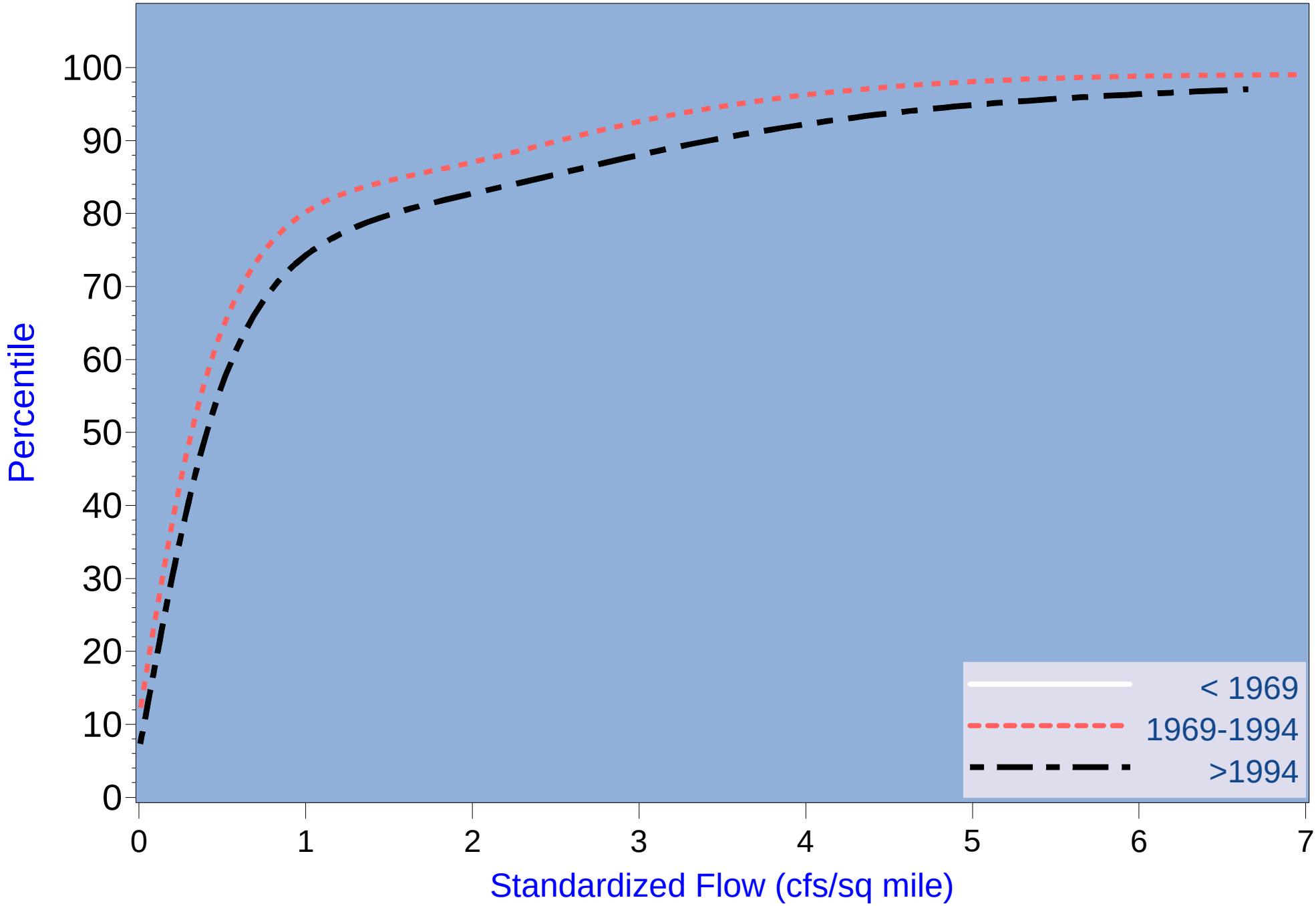


Figure 3.351 Dry season differences in CDFs among AMO periods in flow at long-term Prairie Creek (2298123) gage

Table 4.18
Correlation of Water Quality Parameters with Flow by Category – River Kilometer 6.6

Water Quality Parameter	Overall	<90 cfs	90-160 cfs	160-360 cfs	360-920 cfs	920-2100 cfs	> 2100 cfs
Salinity (ppt)							
Correlation Coefficient (R)	-0.70333	-0.44628	-0.37967	-0.3315	-0.26985	-0.48189	-0.52505
Probability	<.0001	0.0031	0.0065	0.0005	0.0056	<.0001	0.0001
Number of Observations	414	42	50	106	104	64	48
Dissolved Oxygen (mg/l)							
Correlation Coefficient (R)	-0.24438	-0.02937	0.22319	0.24407	-0.03744	-0.42688	-0.20944
Probability	<.0001	0.8554	0.1232	0.0121	0.7032	0.0004	0.1531
Number of Observations	413	41	49	105	106	64	48
Color (CPU)							
Correlation Coefficient (R)	0.82612	-0.11256	0.03081	0.22193	0.3107	0.54835	0.41028
Probability	<.0001	0.5537	0.8483	0.0479	0.0034	0.0001	0.0129
Number of Observations	317	30	41	80	87	43	36
Turbidity (NTU)							
Correlation Coefficient (R)	-0.01731	0.01835	-0.01975	0.12781	-0.08316	0.02422	-0.00476
Probability	0.7771	0.9262	0.9076	0.2745	0.5101	0.8852	0.9812
Number of Observations	270	28	37	75	65	38	27
Nitrite/Nitrate (mg/l)							
Correlation Coefficient (R)	0.16472	-0.22435	0.35065	0.10832	0.20561	0.30707	-0.04859
Probability	0.0033	0.2333	0.0246	0.3388	0.0561	0.0452	0.7784
Number of Observations	317	30	41	80	87	43	36
Ammonia/Ammonium (mg/l)							
Correlation Coefficient (R)	0.10191	-0.34758	-0.01696	-0.05533	0.18801	0.03015	-0.21739
Probability	0.0978	0.0961	0.9254	0.6667	0.1015	0.8656	0.2168
Number of Observations	265	24	33	63	77	34	34

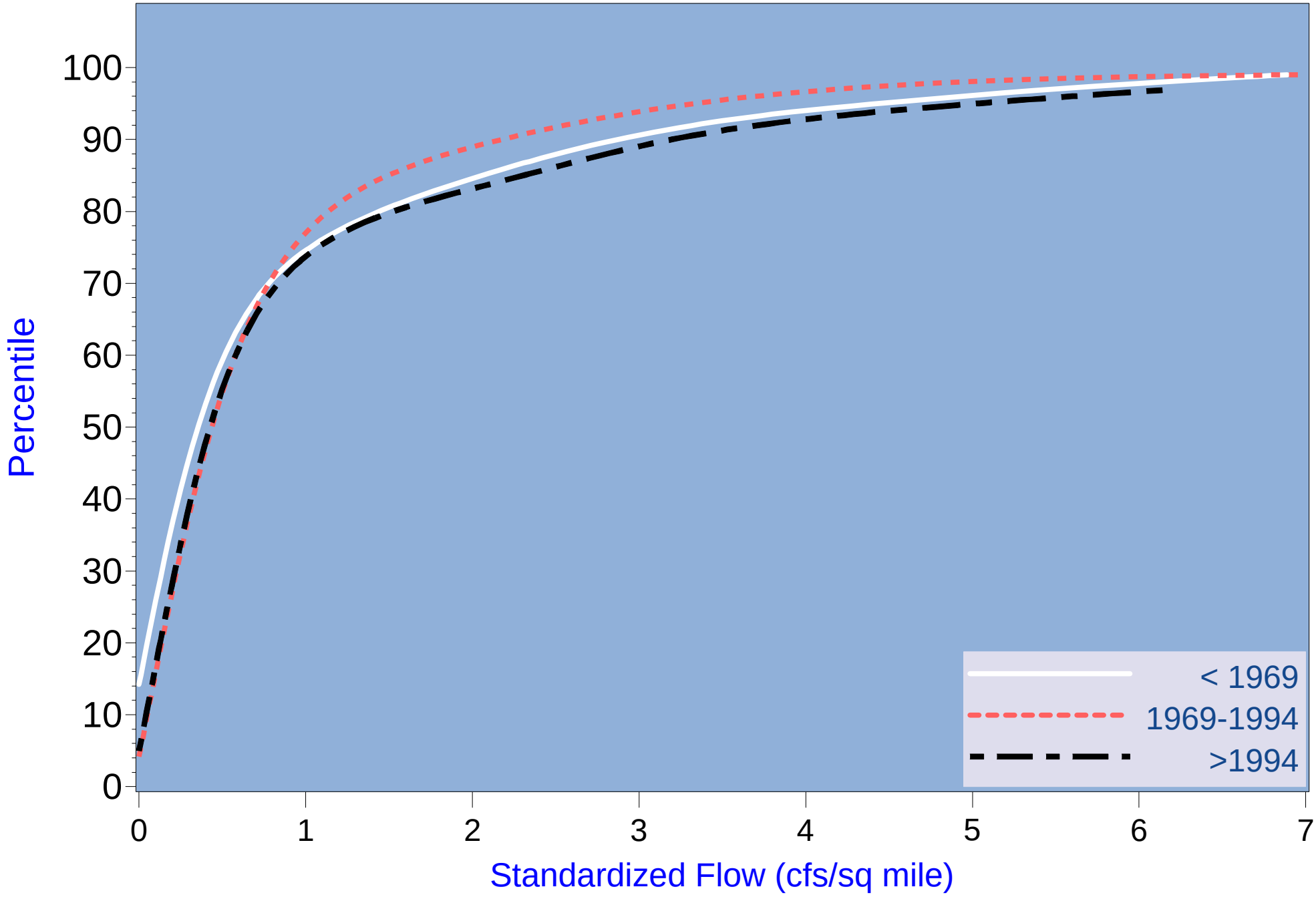


Figure 3.352 Dry season differences in CDFs among AMO periods in flow at long-term Shell Creek gage

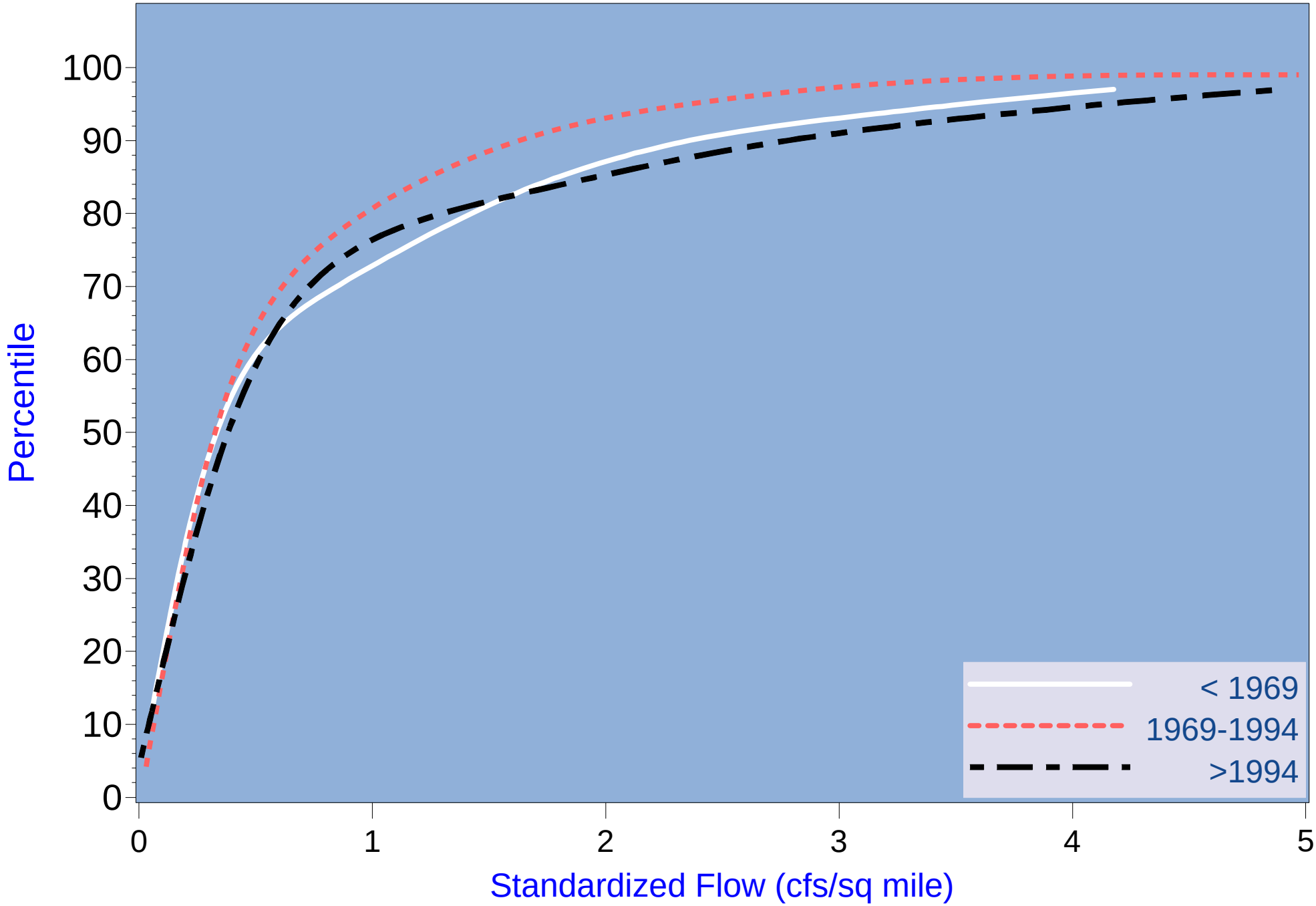


Figure 3.353 Dry season differences in CDFs among AMO periods in total gaged Peace River flow to the Upper Harbor

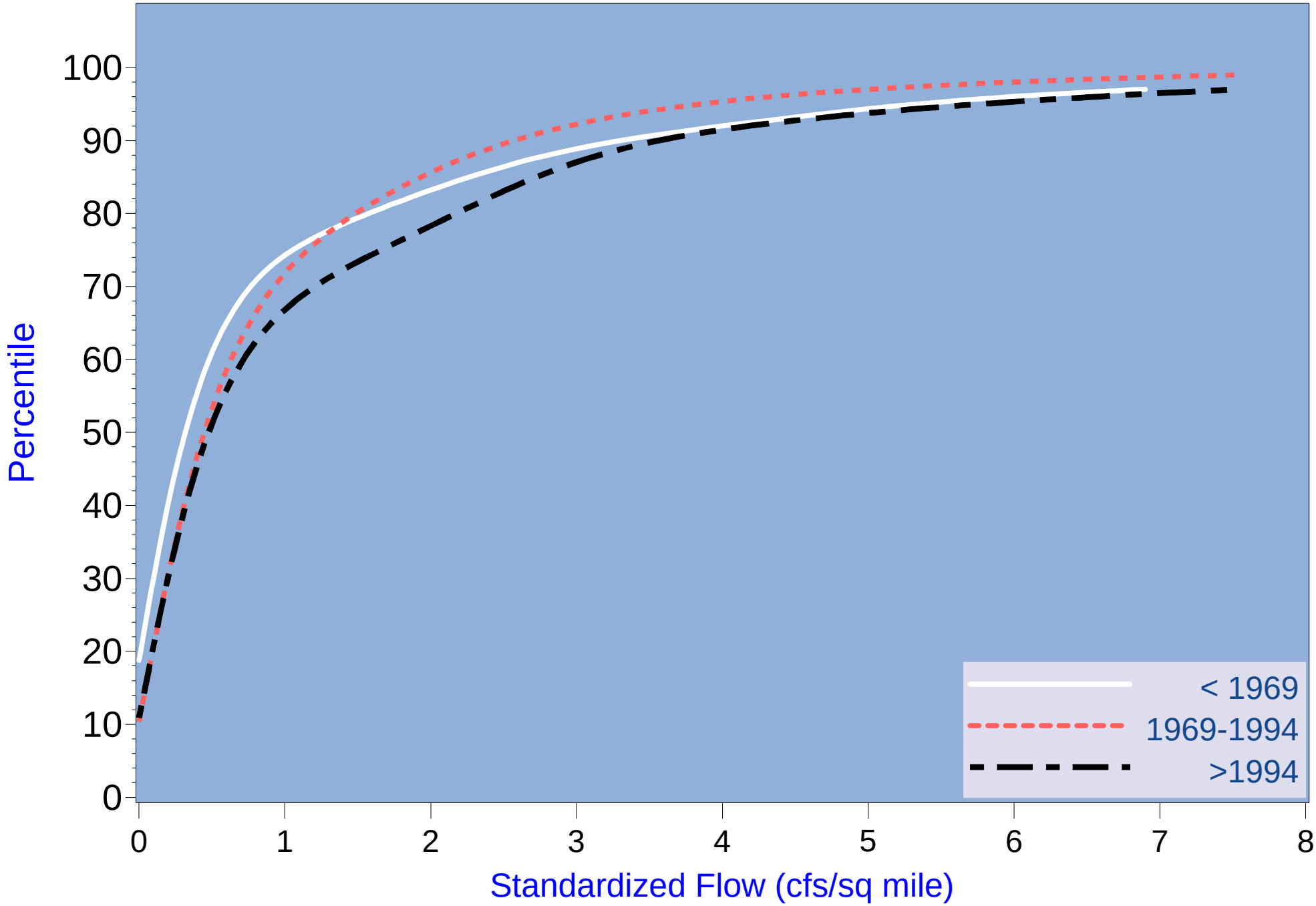


Figure 3.354 Dry season differences in CDFs among AMO periods in flow at long-term Myakka River near Sarasota (2298830) gage

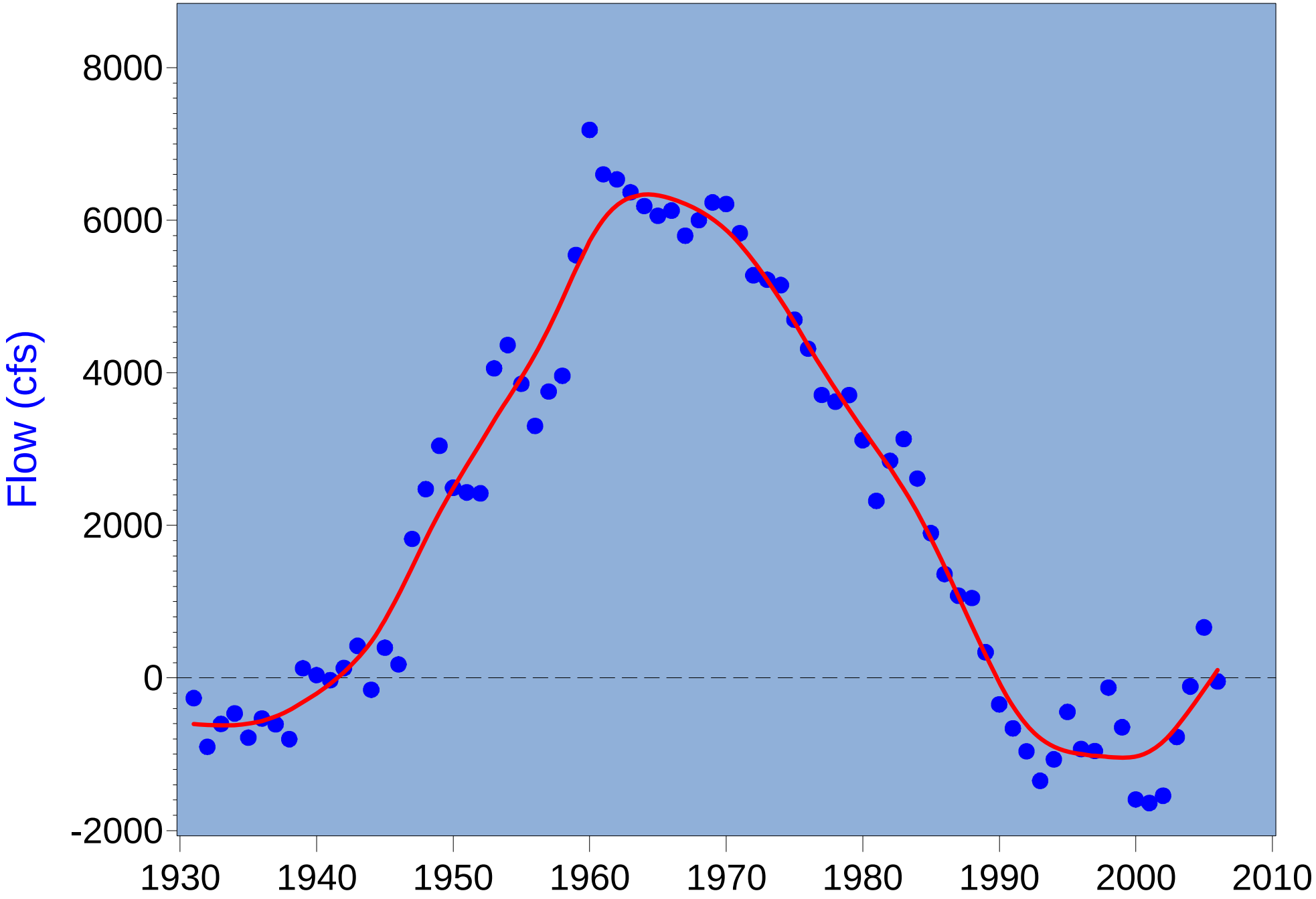


Figure 3.355 Long-term cumulative Peace River at Arcadia flow over 1085 cfs (1932-2006)

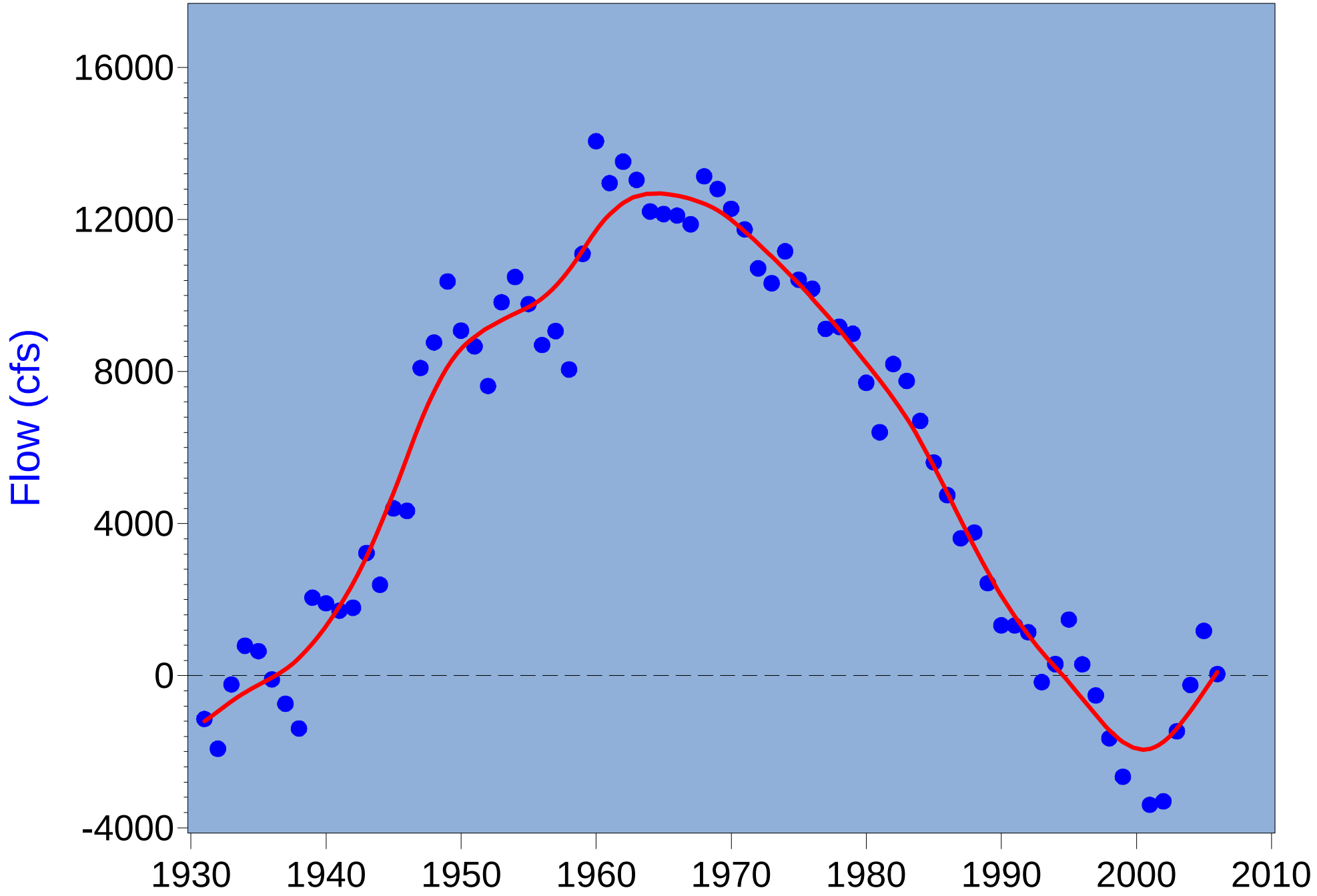


Figure 3.356 Long-term cumulative wet-season Peace River at Arcadia flow over 1824 cfs (1932-2006)

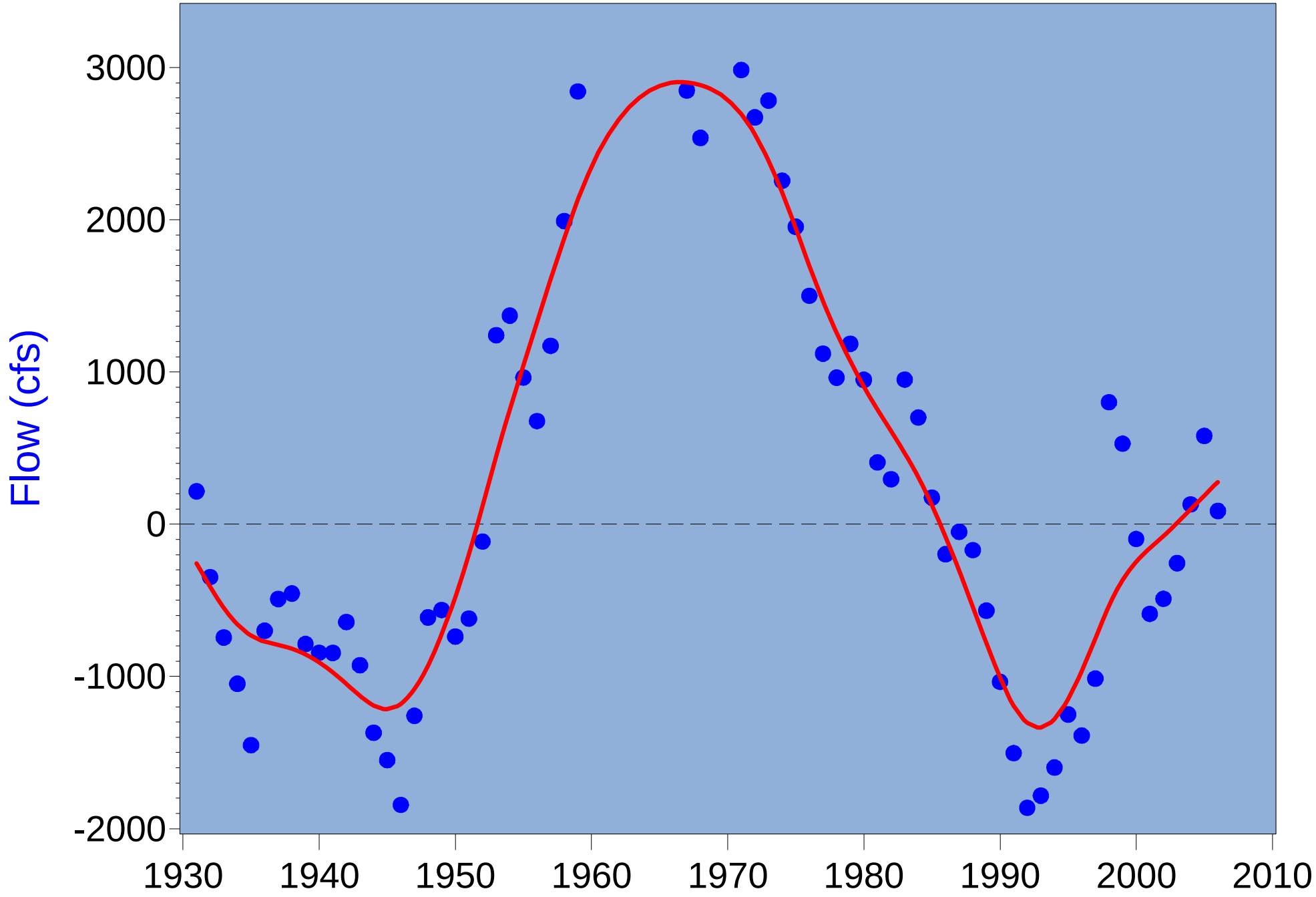


Figure 3.357 Long-term cumulative dry-season Peace River at Arcadia flow over 712 cfs (1932-2006)

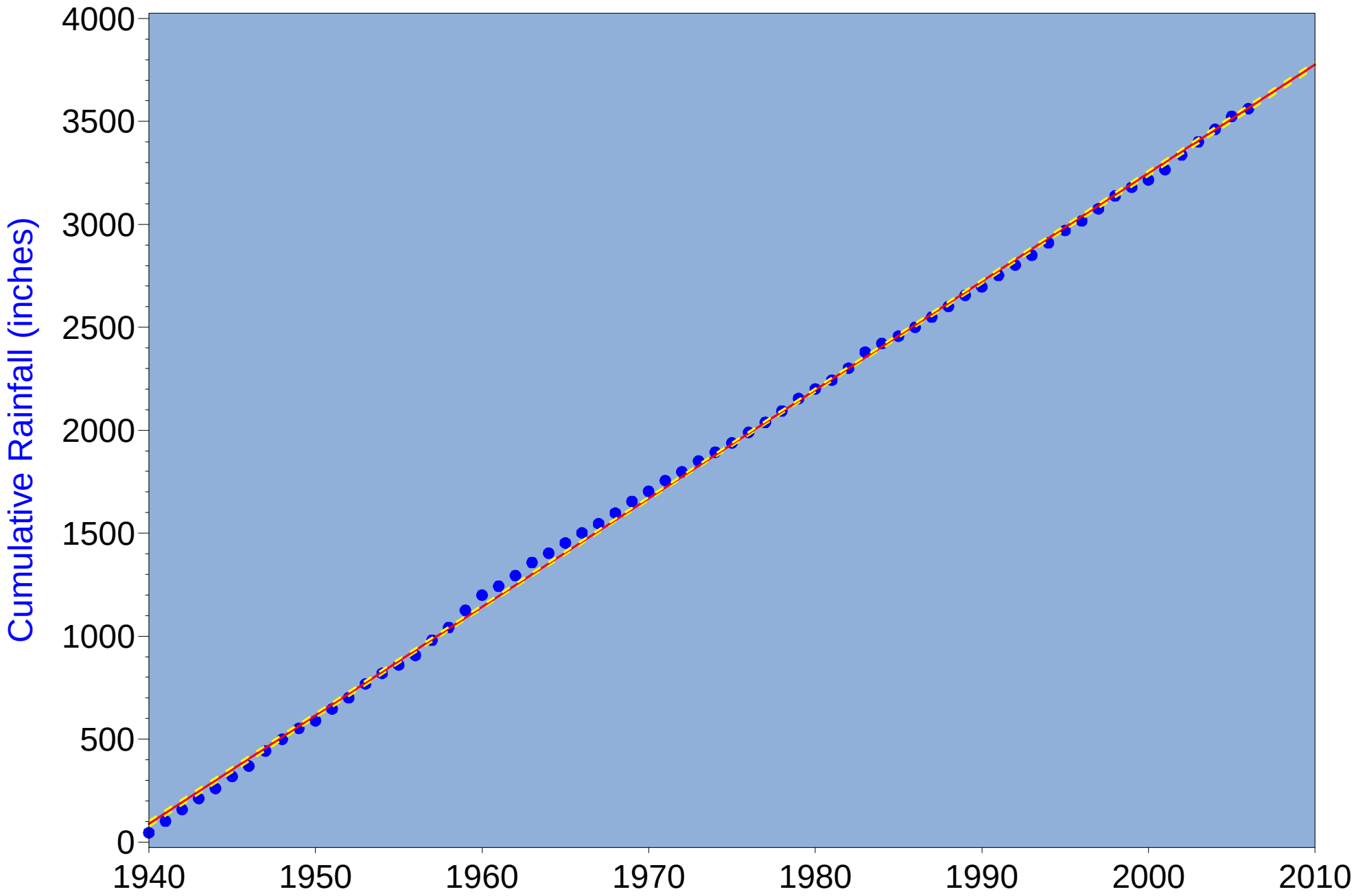


Figure 3.358 Sum of yearly rainfall at Bartow over time (1940-2006)

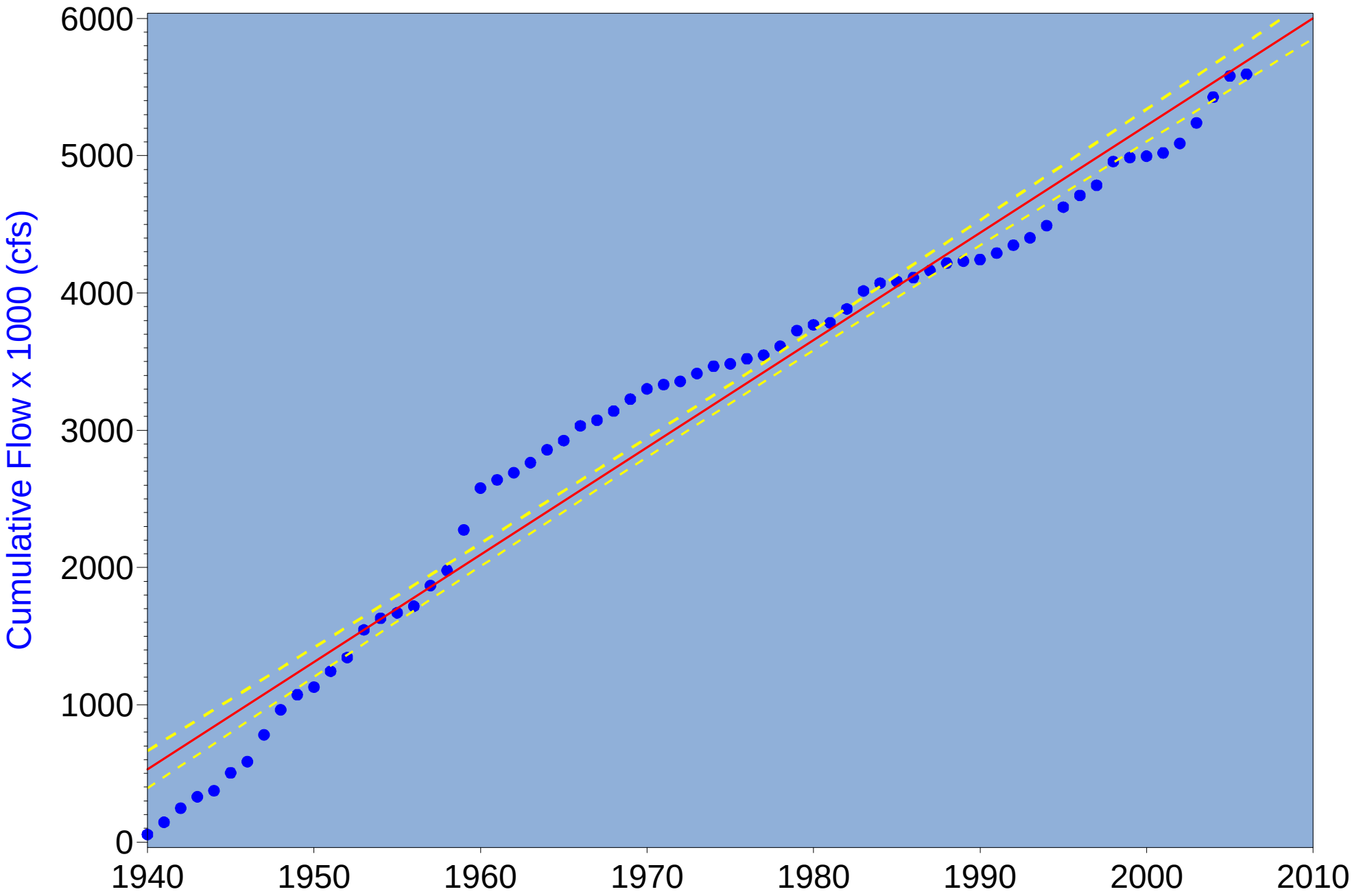


Figure 3.359 Sum of total yearly Peace River at Bartow flow over time (1940-2006)

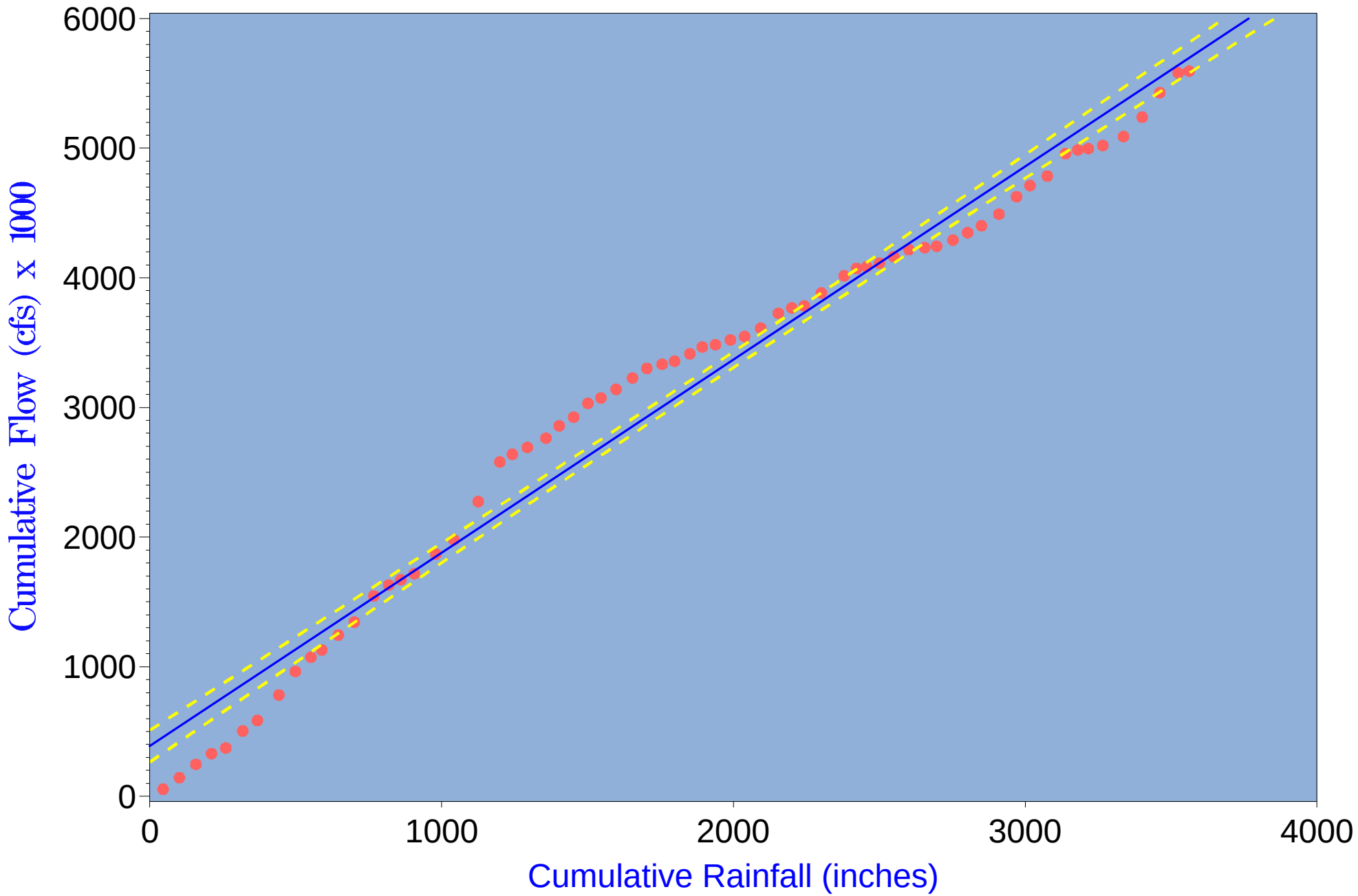


Figure 3.360 NOAA rainfall at Bartow vs. USGS gaged Peace River flow at Bartow (1940-2006)

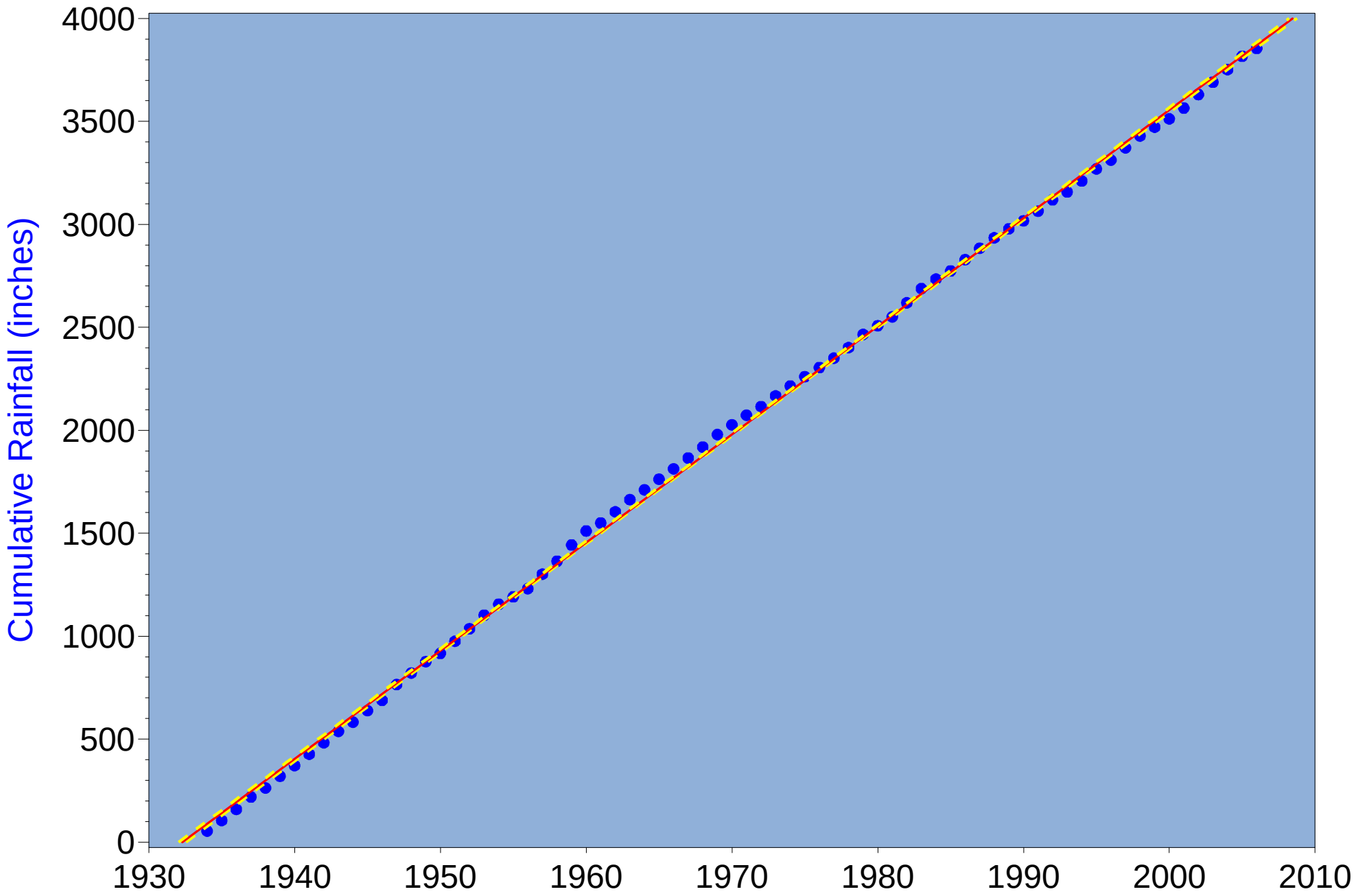


Figure 3.361 Sum of yearly average Bartow/Arcadia NOAA rainfall over time (1934-2006)

Table 4.18
Correlation of Water Quality Parameters with Flow by Category – River Kilometer 6.6

Water Quality Parameter	Overall	<90 cfs	90-160 cfs	160-360 cfs	360-920 cfs	920-2100 cfs	> 2100 cfs
Total Kjeldahl Nitrogen (mg/l)							
Correlation Coefficient (R)	0.33257	0.22405	-0.054	0.17201	0.10724	0.1356	0.1447
Probability	<.0001	0.2816	0.7729	0.2049	0.3699	0.4593	0.4217
Number of Observations	249	25	31	56	72	32	33
Total Phosphorus (mg/l)							
Correlation Coefficient (R)	0.41699	0.4261	0.10004	0.45455	-0.08321	-0.02087	0.31079
Probability	<.0001	0.0238	0.5616	<.0001	0.5065	0.901	0.1146
Number of Observations	267	28	36	72	66	38	27
Silica (mg/l)							
Correlation Coefficient (R)	0.50536	-0.26644	0.15401	-0.00172	0.13744	0.40639	0.0448
Probability	<.0001	0.1547	0.3364	0.9879	0.2043	0.0068	0.7953
Number of Observations	318	30	41	81	87	43	36
Total Organic Carbon (mg/l)							
Correlation Coefficient (R)	0.19519	0.39729	0.15145	0.15488	0.07279	0.0205	-0.06094
Probability	0.0017	0.0402	0.3851	0.2005	0.5804	0.9028	0.7627
Number of Observations	257	27	35	70	60	38	27
Dissolved Organic Carbon (mg/l)							
Correlation Coefficient (R)	0.26305	0.34999	0.29269	0.20807	0.13903	-0.00744	-0.06327
Probability	0.0002	0.1103	0.1557	0.1559	0.346	0.9712	0.7638
Number of Observations	194	22	25	48	48	26	25
Chlorophyll a (ug/l)							
Correlation Coefficient (R)	0.04375	-0.39691	-0.00104	0.05391	0.16305	-0.13357	-0.17609
Probability	0.4413	0.0299	0.9949	0.637	0.1384	0.3932	0.3043
Number of Observations	312	30	40	79	84	43	36

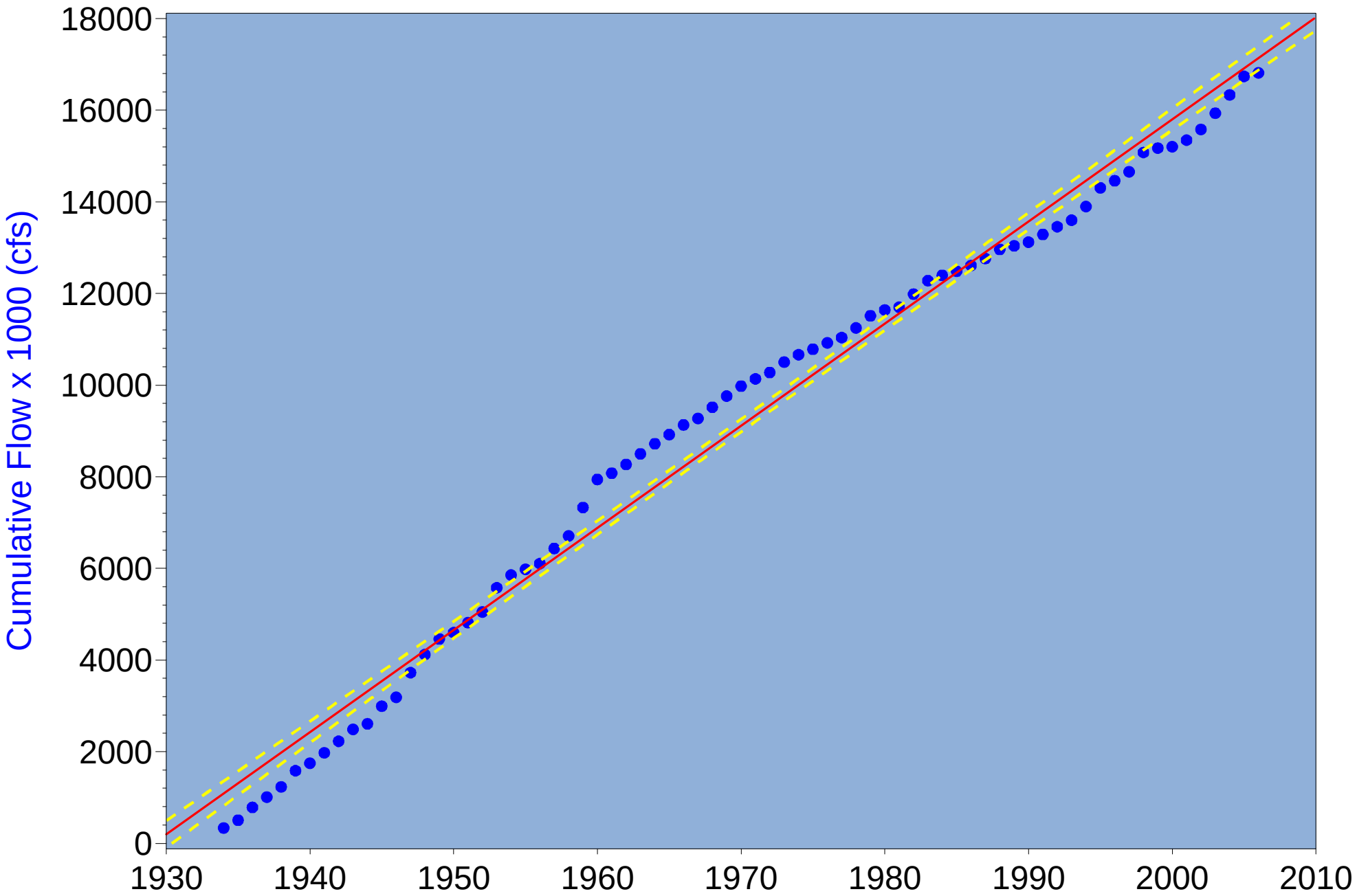


Figure 3.362 Sum of total yearly Peace River at Zolfo Springs flow over time (1934-2006)

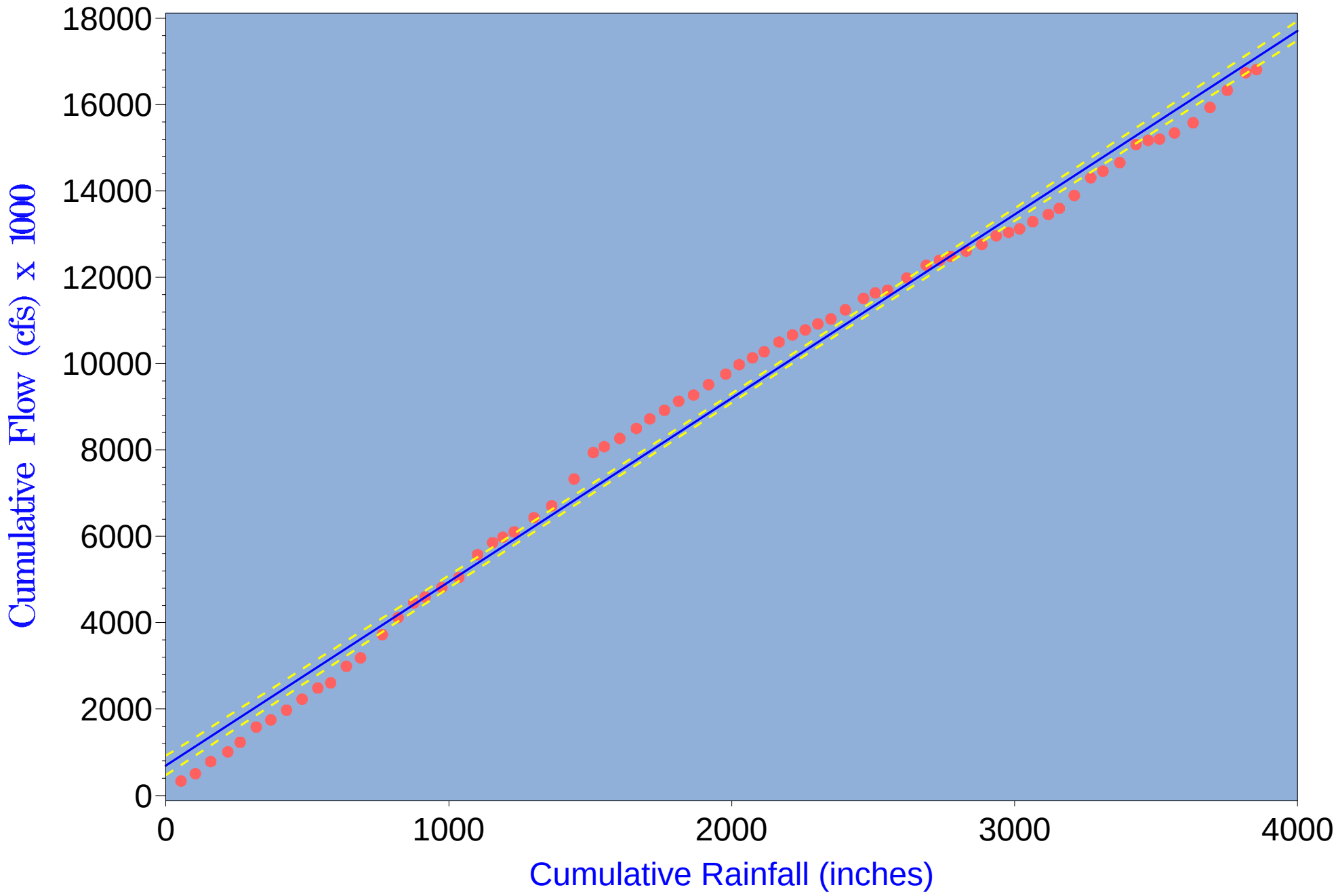


Figure 3.363 Average of Bartow/Arcadia NOAA rainfall vs. USGS gaged Peace River at Zolfo Springs flow (1934-2006)

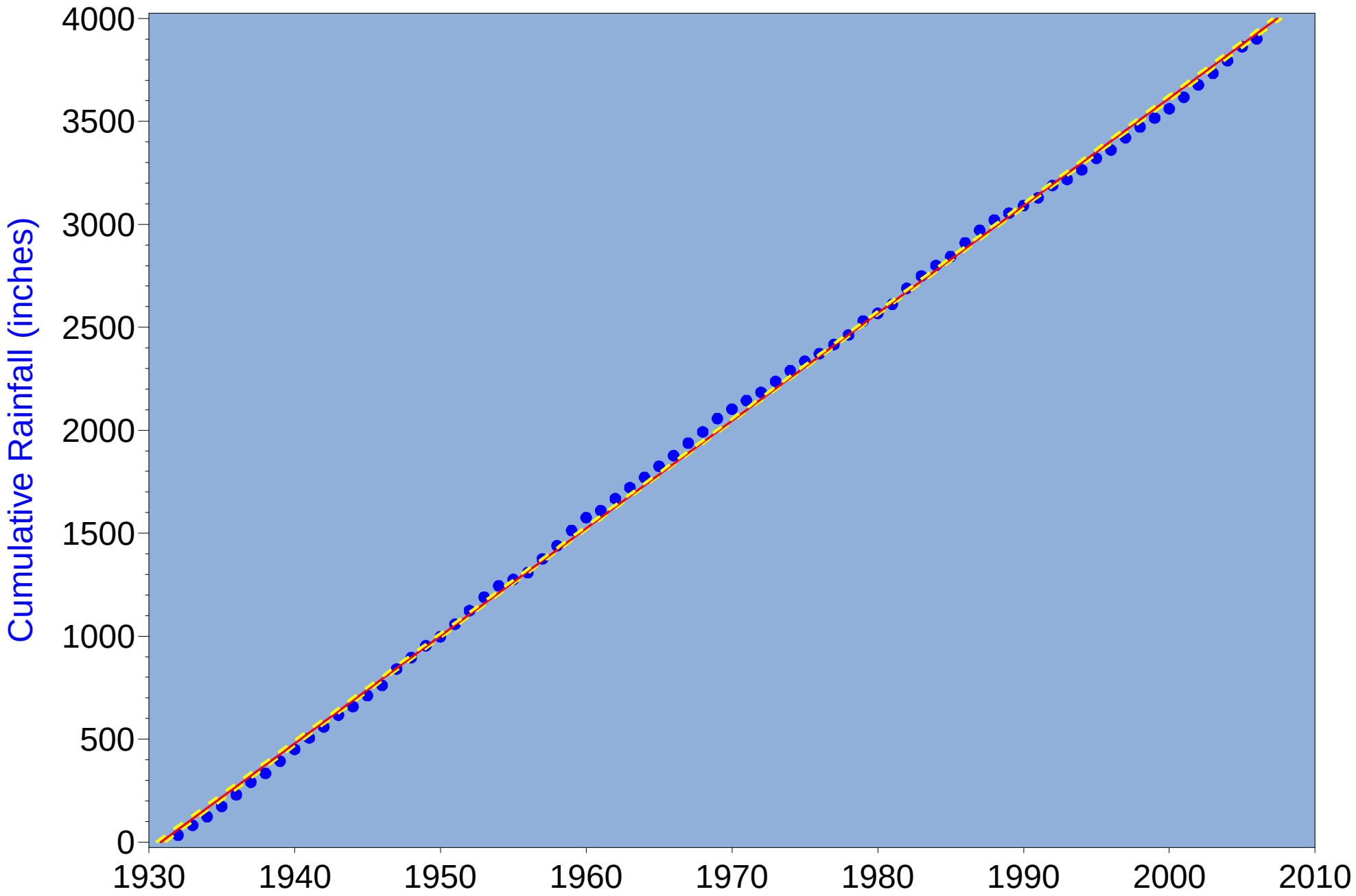


Figure 3.364 Sum of yearly rainfall at Arcadia over time (1932-2006)

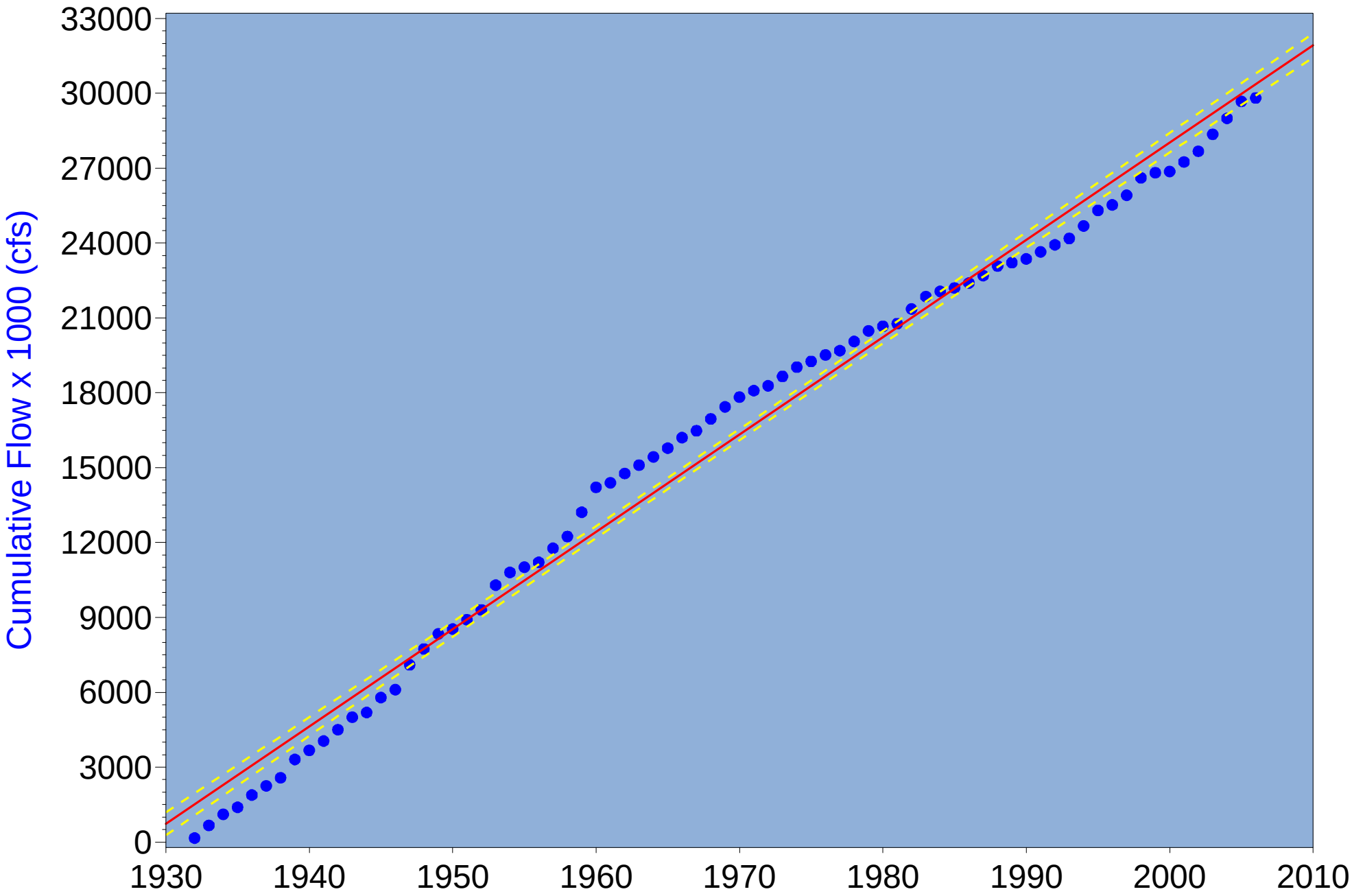


Figure 3.365 Sum of total yearly Peace River at Arcadia flow over time (1932-2006)

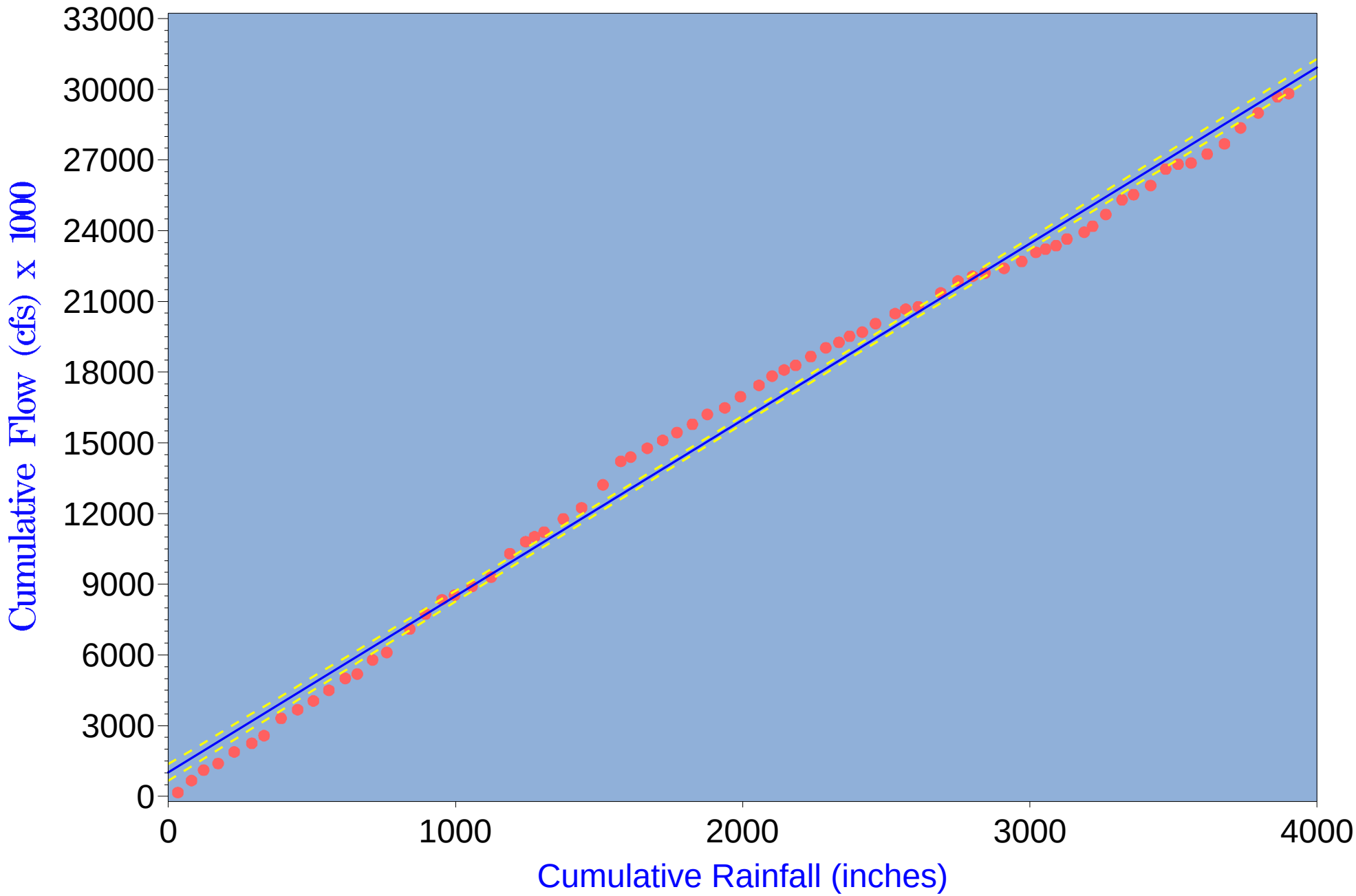


Figure 3.366 NOAA rainfall at Arcadia vs. USGS gaged Peace River at Arcadia flow (1932-2006)

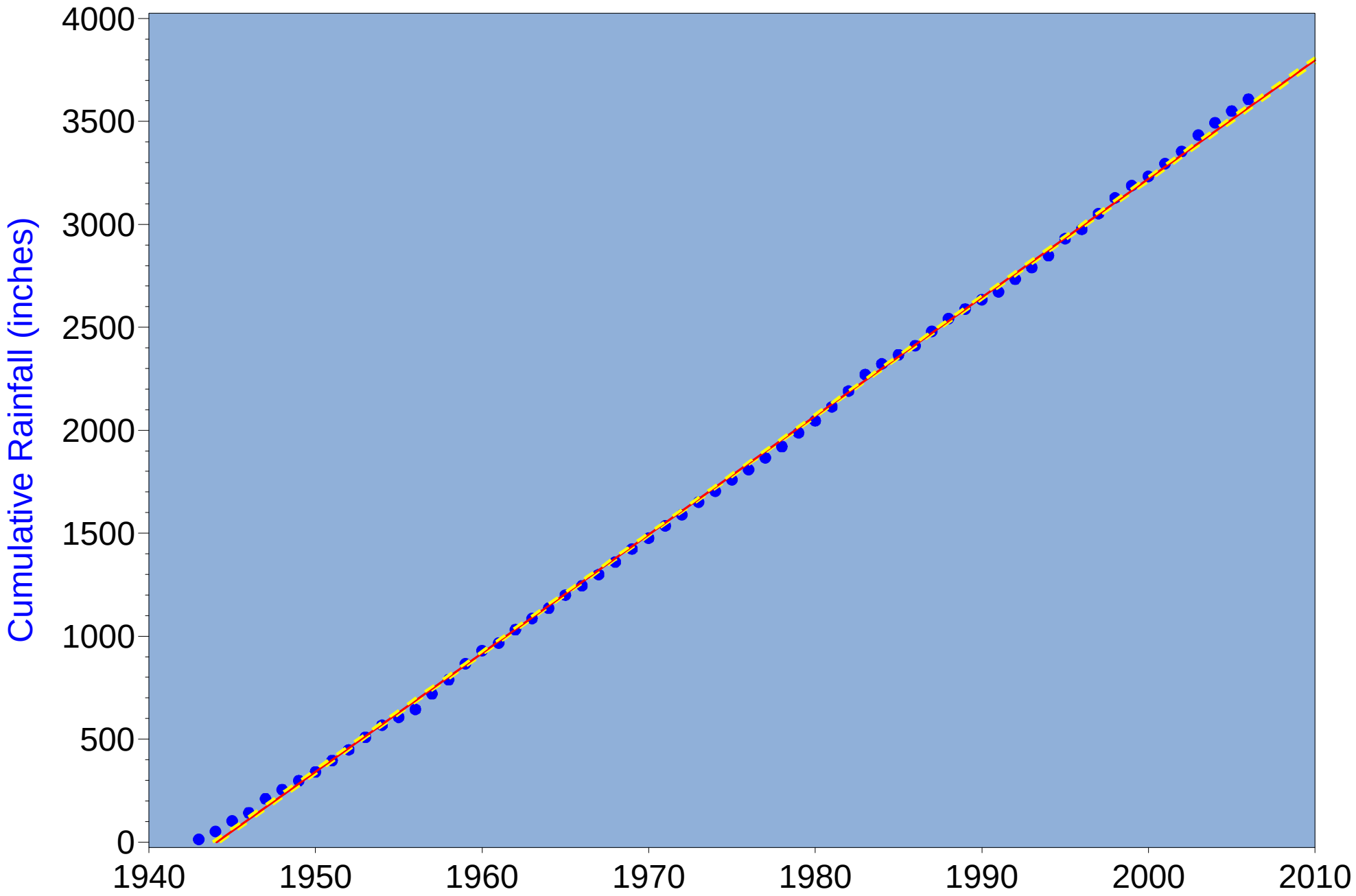


Figure 3.367 Sum of yearly rainfall at Myakka State Park over time (1943-2006)

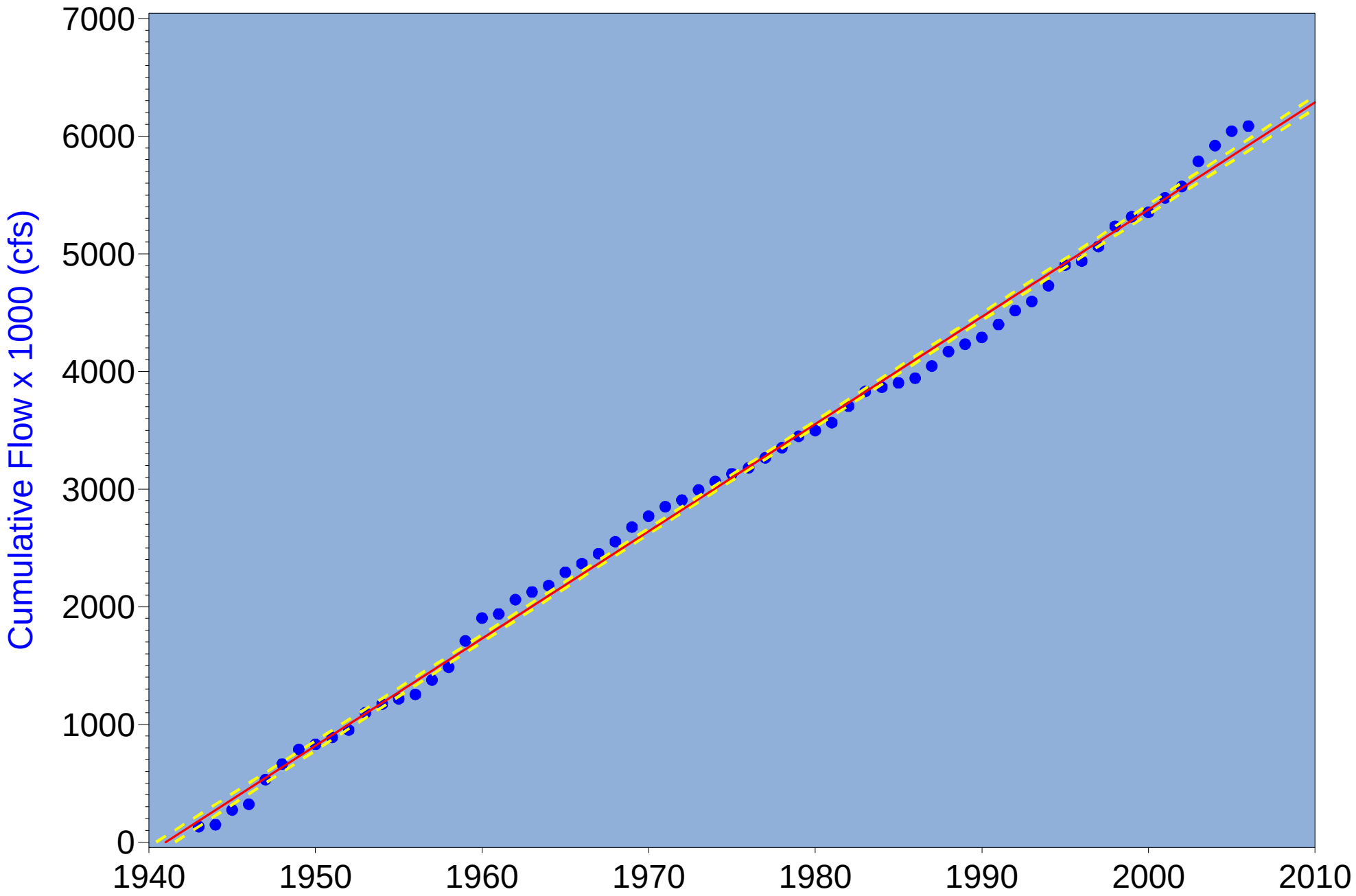


Figure 3.368 Sum of total yearly Myakka River near Sarasota flow over time (1943-2006)

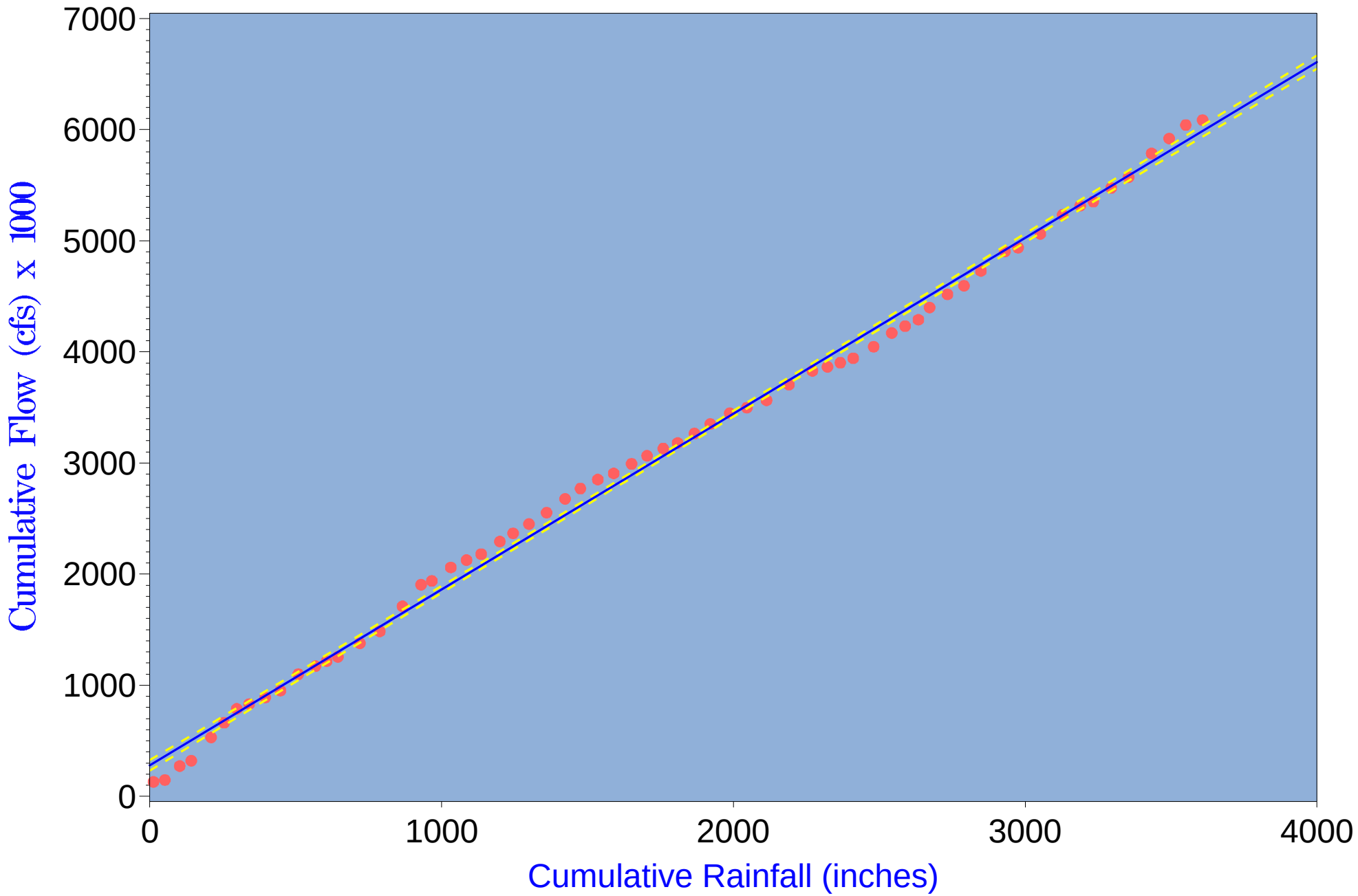
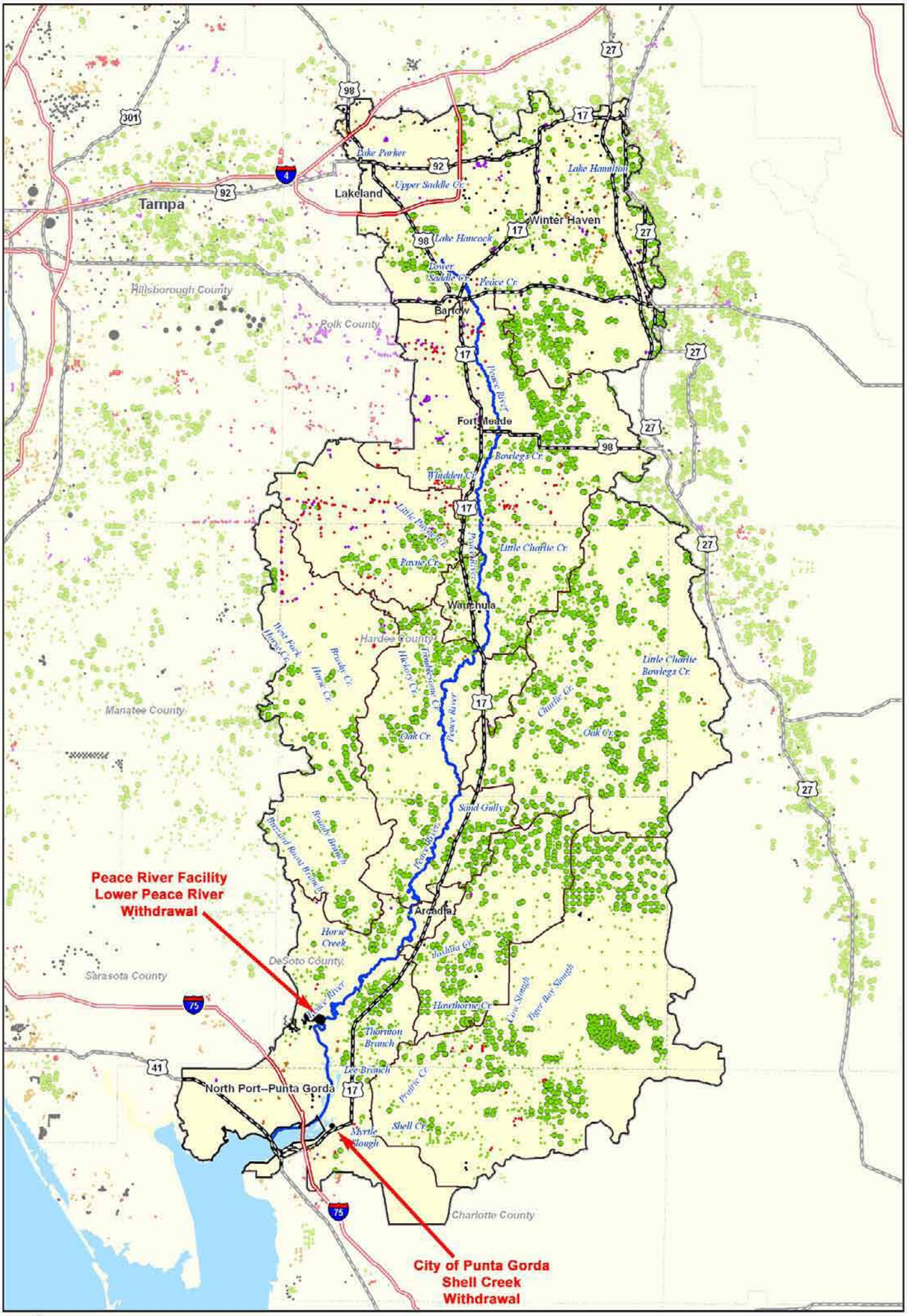


Figure 3.369 NOAA rainfall at Myakka State Park vs. USGS gaged Myakka River flow (1943-2006)



Water Use Permit Withdrawals
Peace River Watershed

Figure 3.370

PBS&J

Figure 3.371
Facility Location

Table 4.19
Correlation of Water Quality Parameters with Flow by Category – River Kilometer 15.5

Water Quality Parameter	Overall	<90 cfs	90-160 cfs	160-360 cfs	360-920 cfs	920-2100 cfs	> 2100 cfs
Salinity (ppt)							
Correlation Coefficient (R)	-0.45107	-0.50469	-0.5162	-0.42074	-0.15622	-0.39148	-0.13272
Probability	<.0001	0.0009	0.0003	<.0001	0.1169	0.0031	0.3792
Number of Observations	380	40	45	92	102	55	46
Dissolved Oxygen (mg/l)							
Correlation Coefficient (R)	-0.3279	0.21797	0.24265	0.03769	0.00231	-0.41926	-0.2027
Probability	<.0001	0.1766	0.1125	0.7228	0.9815	0.0014	0.1767
Number of Observations	379	40	44	91	103	55	46
Color (CPU)							
Correlation Coefficient (R)	0.72111	0.00685	-0.04029	0.18527	0.33618	0.26399	0.24709
Probability	<.0001	0.9724	0.8102	0.1247	0.0016	0.0998	0.1524
Number of Observations	297	28	38	70	86	40	35
Turbidity (NTU)							
Correlation Coefficient (R)	-0.08218	-0.0261	-0.2506	-0.01105	-0.01437	-0.22514	-0.04792
Probability	0.1962	0.8993	0.1529	0.9309	0.9103	0.1935	0.8162
Number of Observations	249	26	34	64	64	35	26
Nitrite/Nitrate (mg/l)							
Correlation Coefficient (R)	0.0599	-0.07144	0.25894	0.26815	0.10189	-0.16092	-0.51785
Probability	0.3035	0.7179	0.1165	0.0248	0.3505	0.3212	0.0014
Number of Observations	297	28	38	70	86	40	35
Ammonia/Ammonium (mg/l)							
Correlation Coefficient (R)	0.00361	-0.0884	-0.0418	-0.09151	0.07916	-0.12824	-0.06348
Probability	0.9532	0.6743	0.8173	0.4757	0.4909	0.4698	0.7214
Number of Observations	267	25	33	63	78	34	34

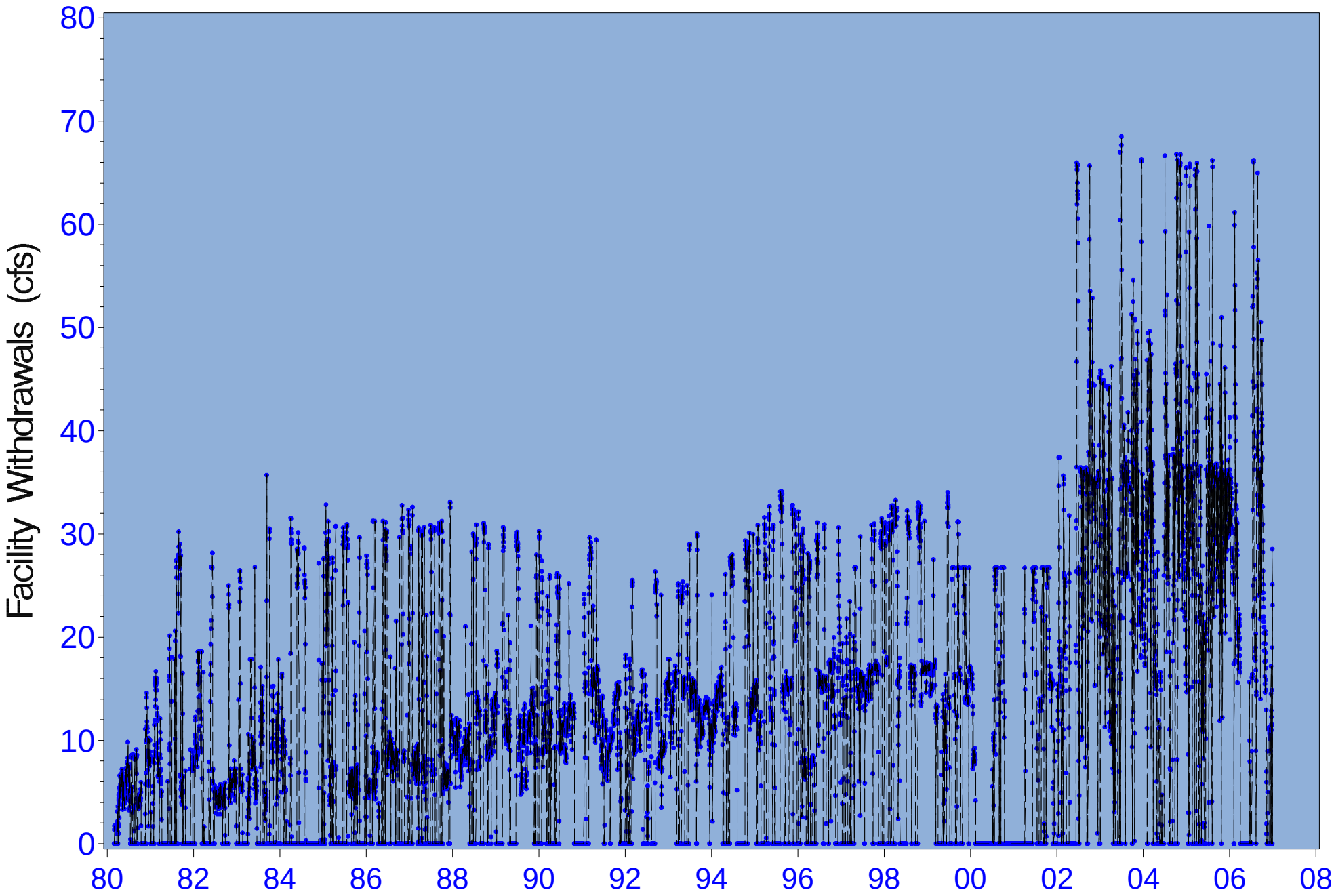


Figure 3.372 Daily water treatment facility withdrawals (1980-2006)

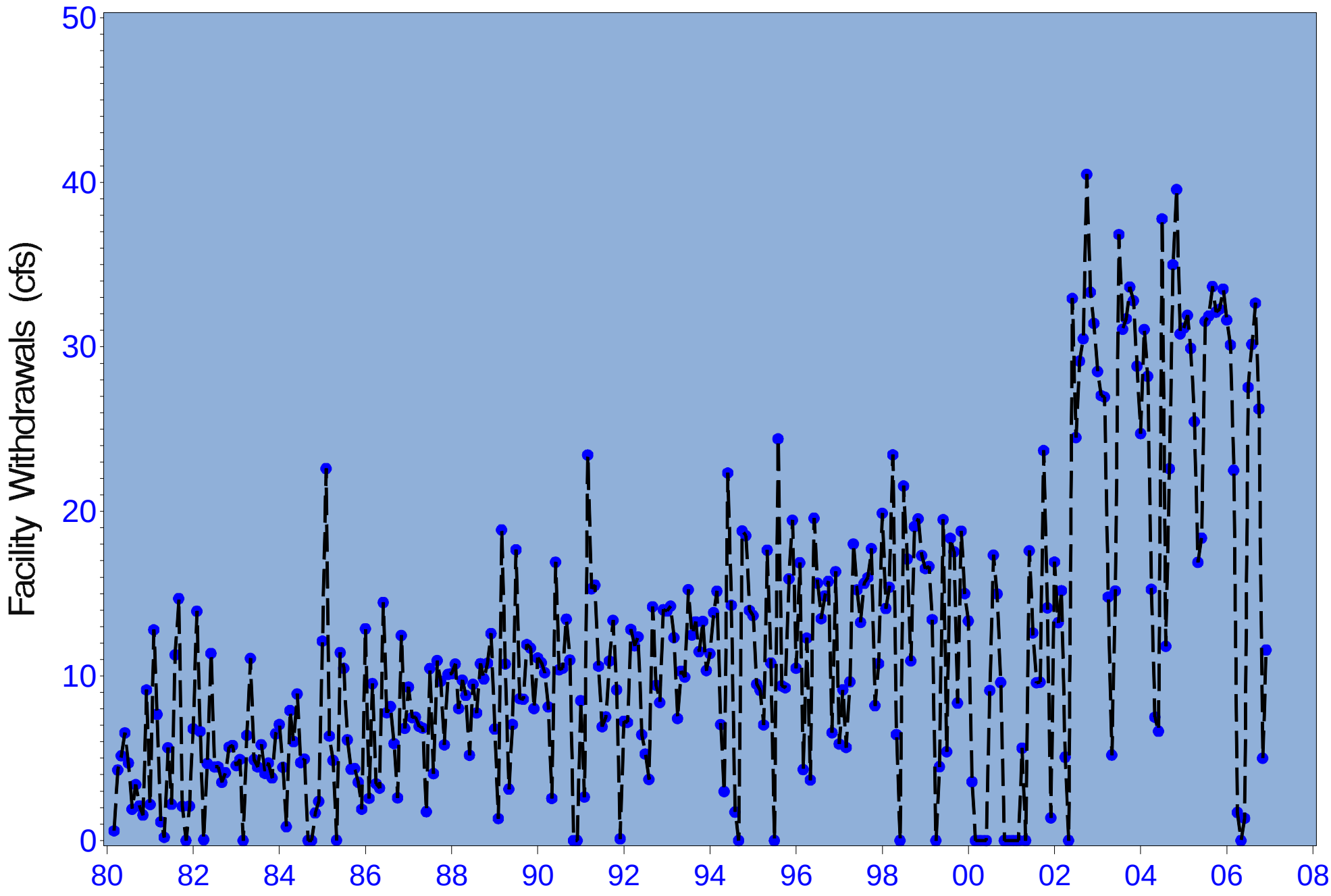


Figure 3.373 Monthly mean water treatment facility withdrawals (1980-2006)

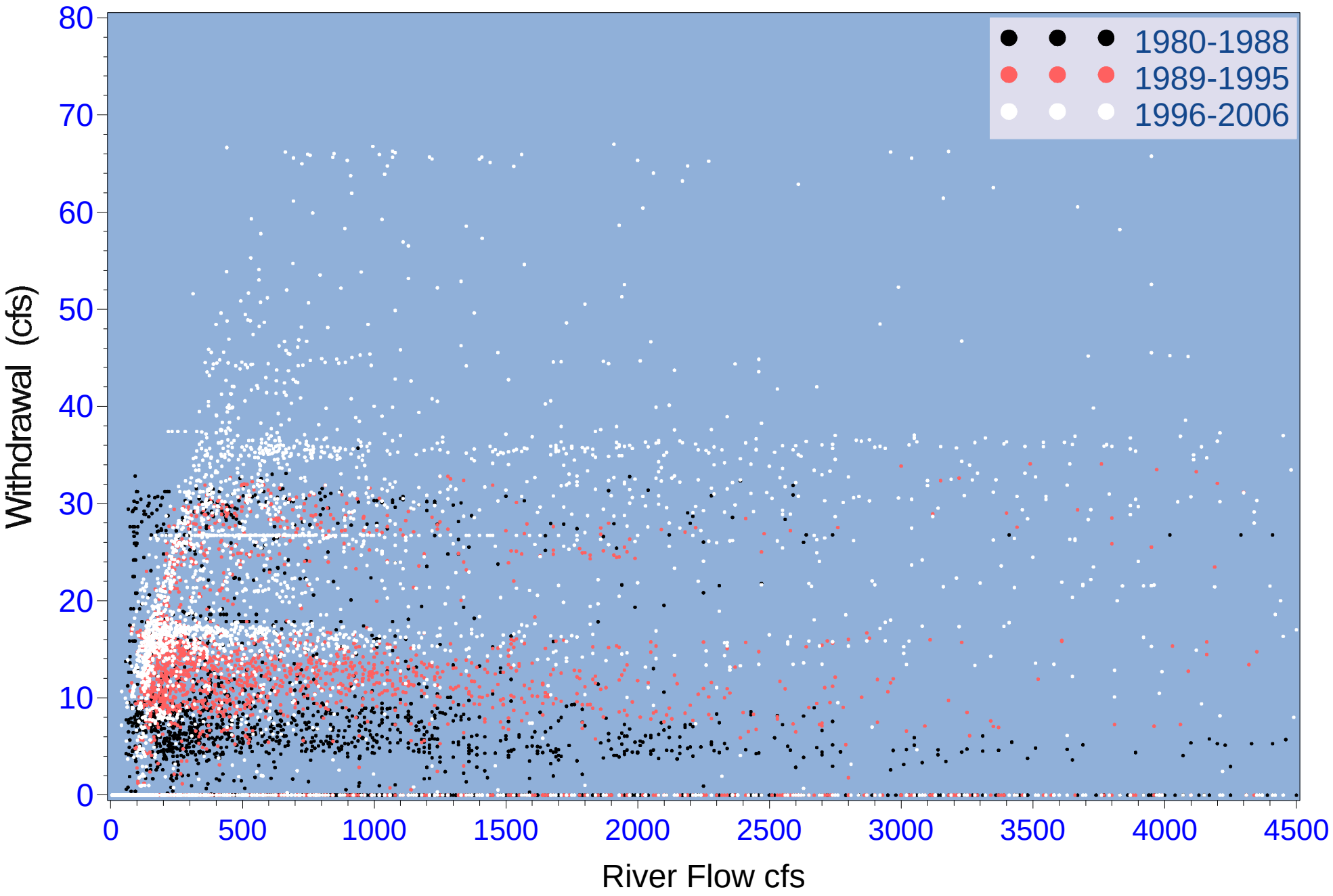


Figure 3.374 Peace River flows at Arcadia vs. water treatment facility withdrawals

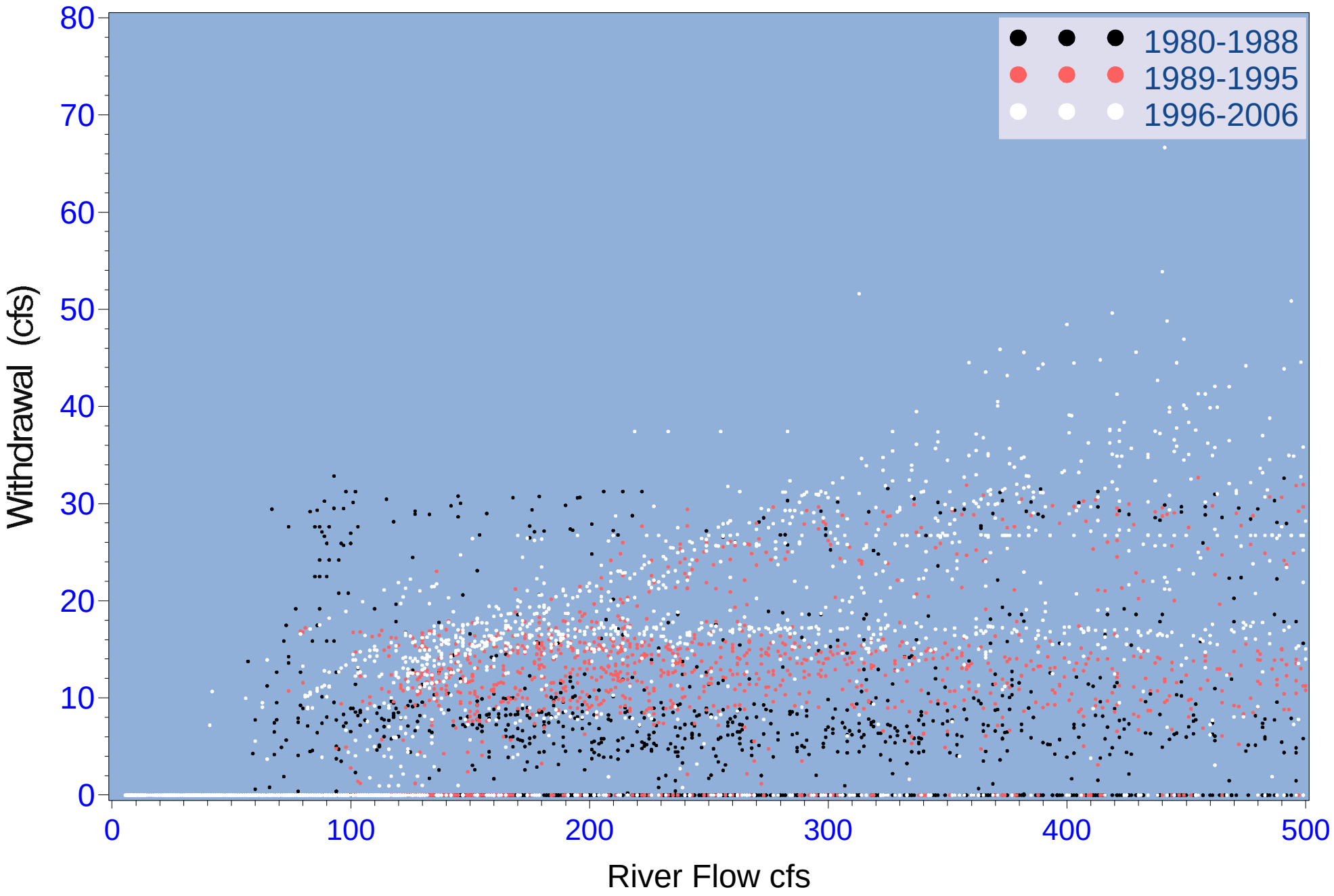


Figure 3.375 Peace River flows at Arcadia vs. water treatment facility withdrawals

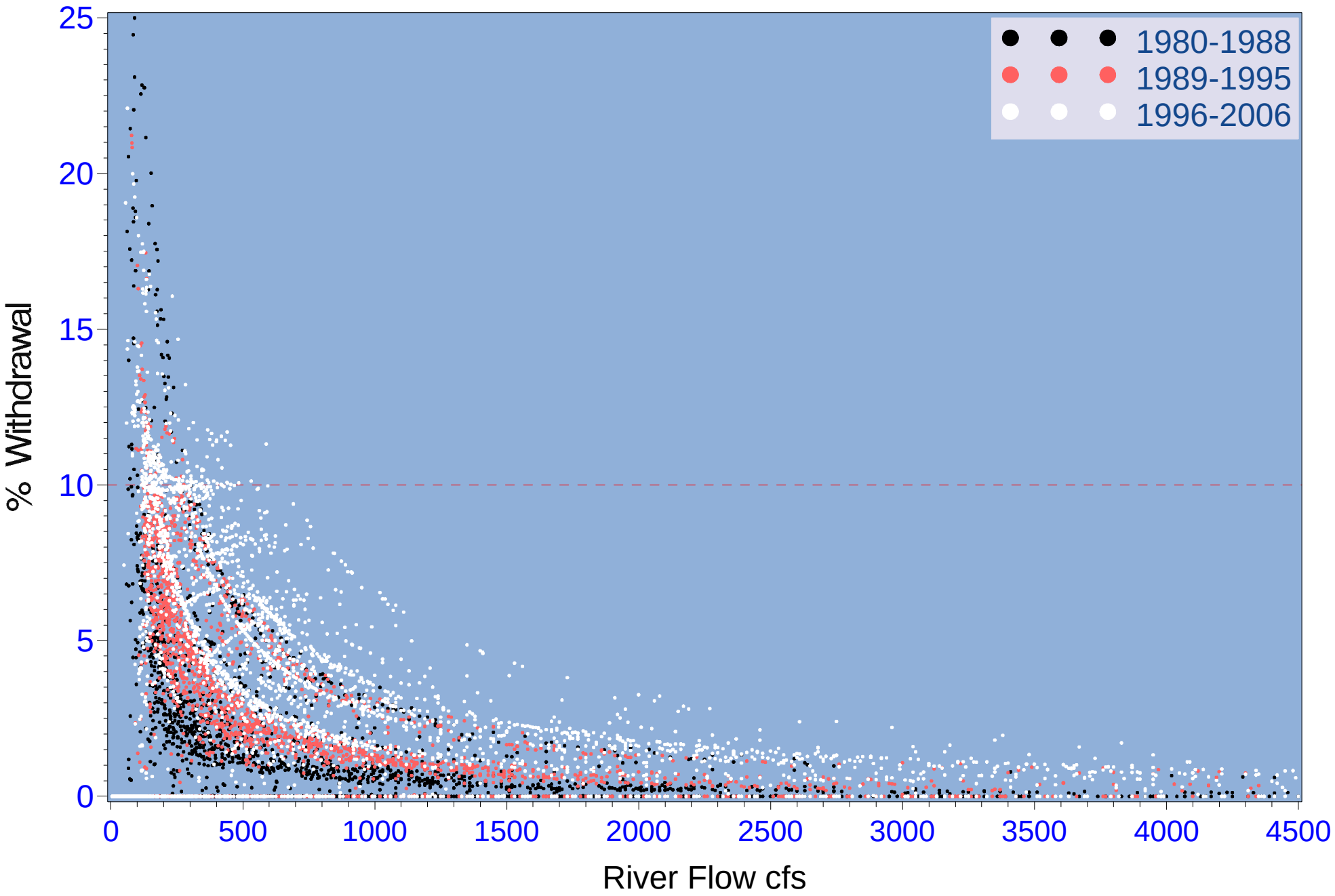


Figure 3.376 Peace River flows at Arcadia vs. % water treatment facility withdrawals

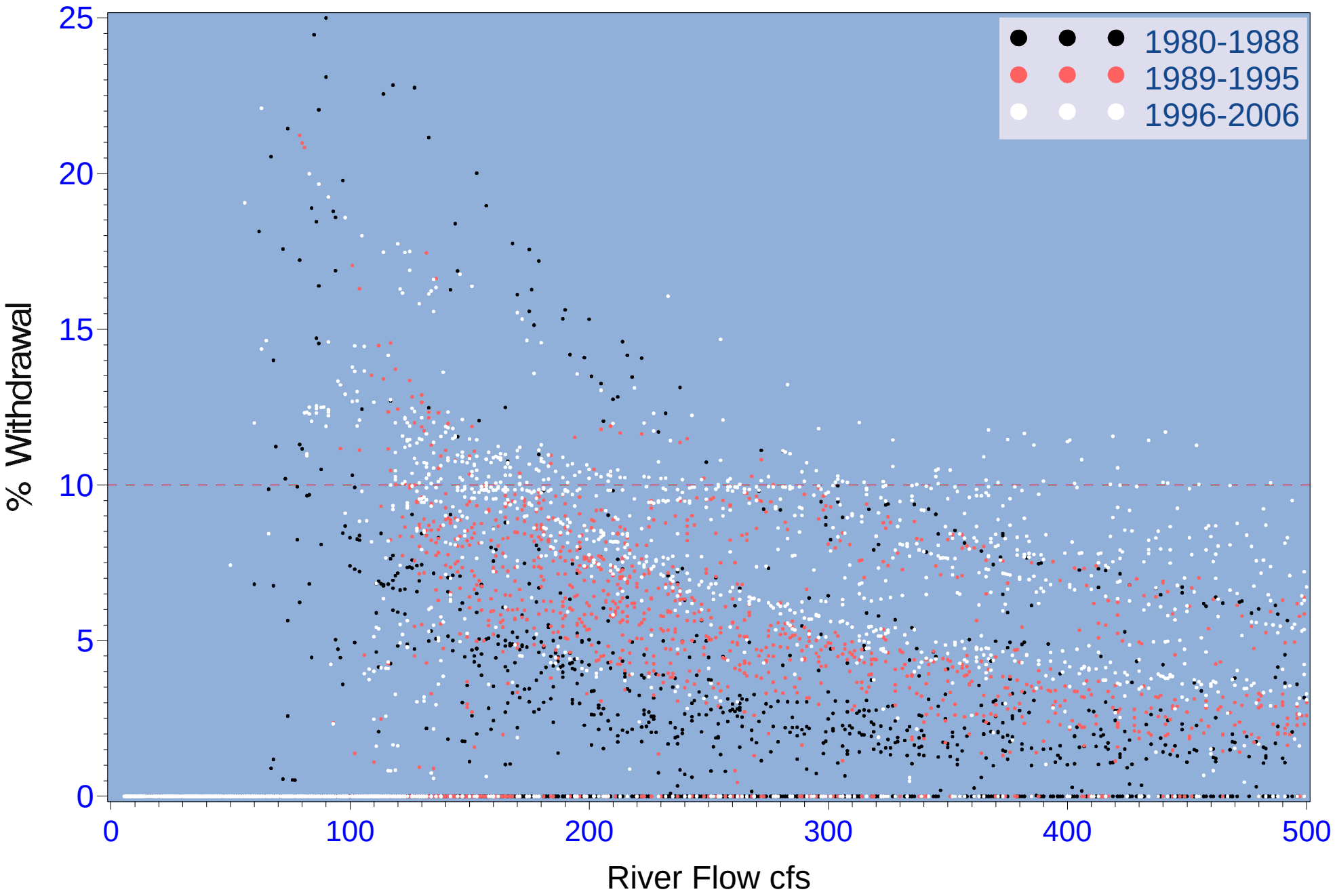


Figure 3.377 Peace River flows at Arcadia vs. % water treatment facility withdrawals

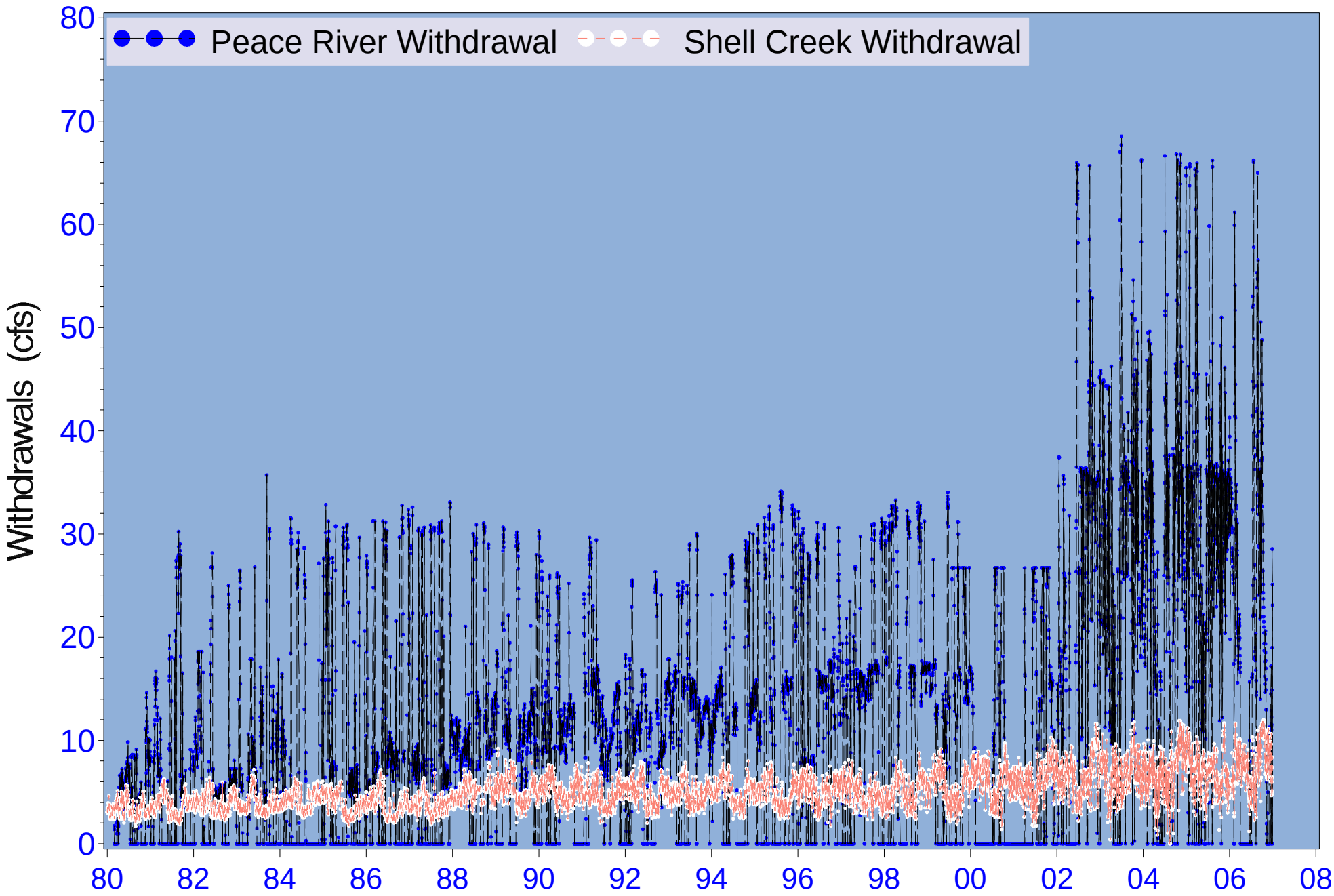


Figure 3.378 Daily Peace River and Shell Creek water treatment facility withdrawals (1980-2006)

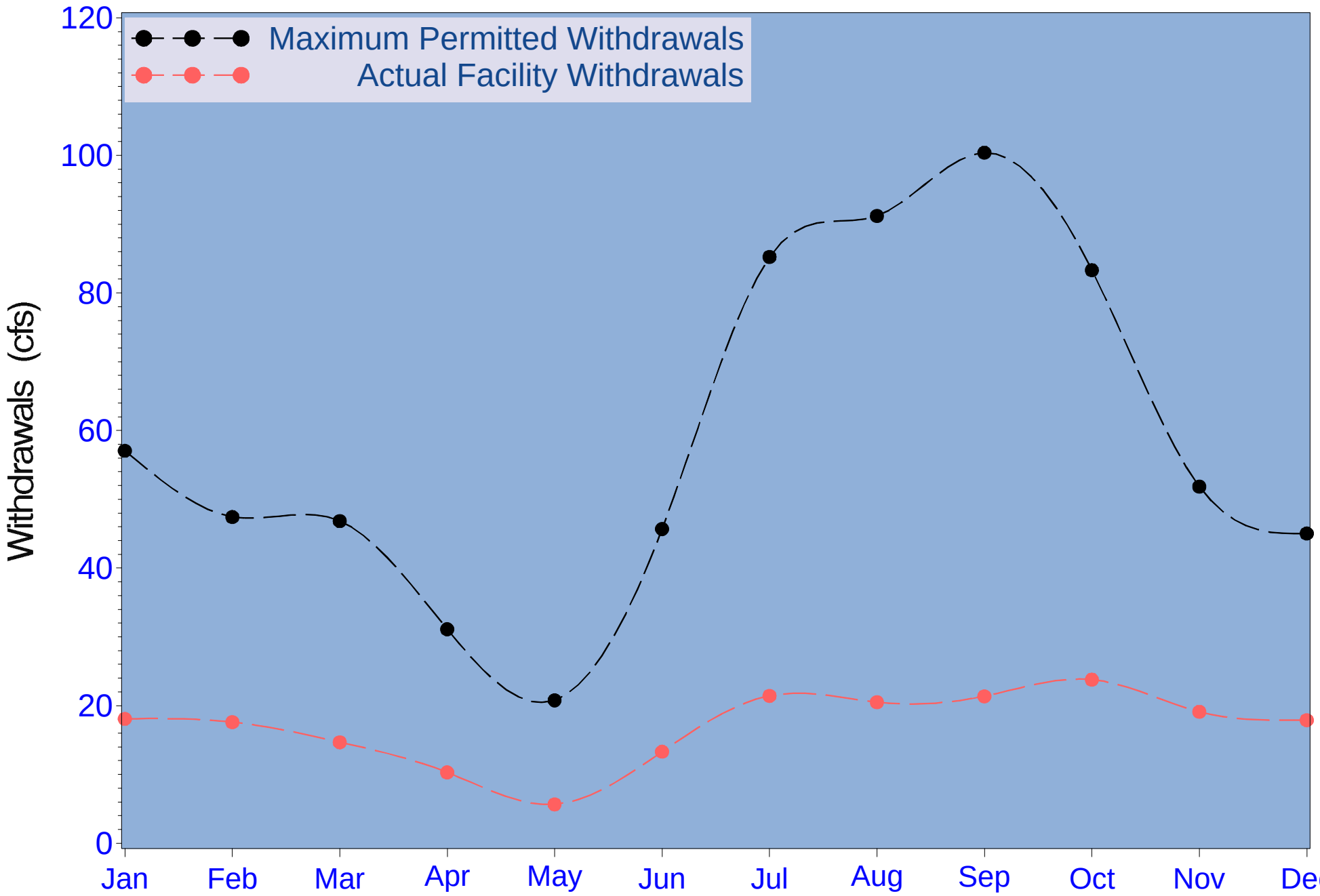


Figure 3.379 Average monthly maximum permitted and actual Facility withdrawals (1996-2006)

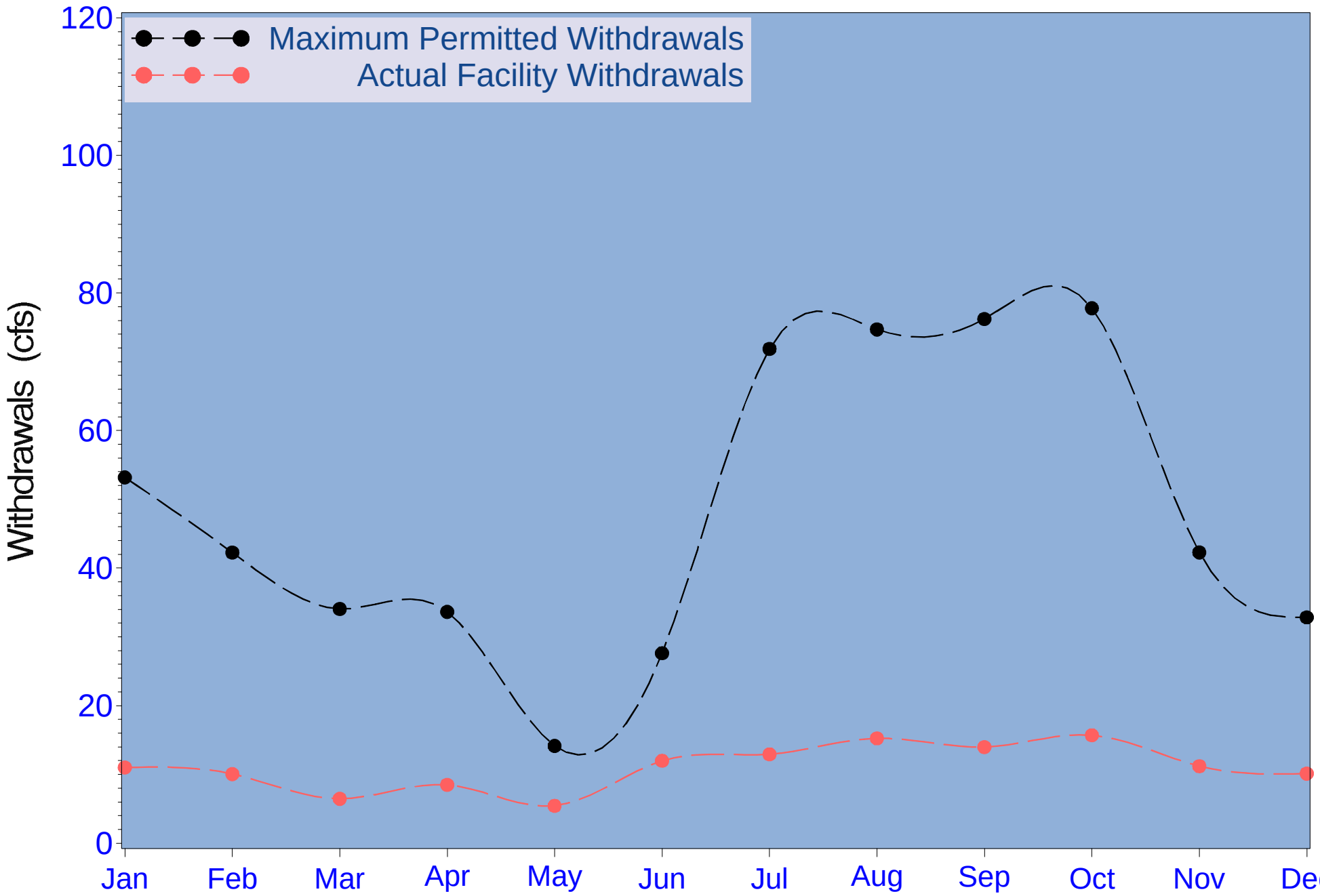


Figure 3.380 Average monthly maximum permitted and actual Facility withdrawals (1996-2002)

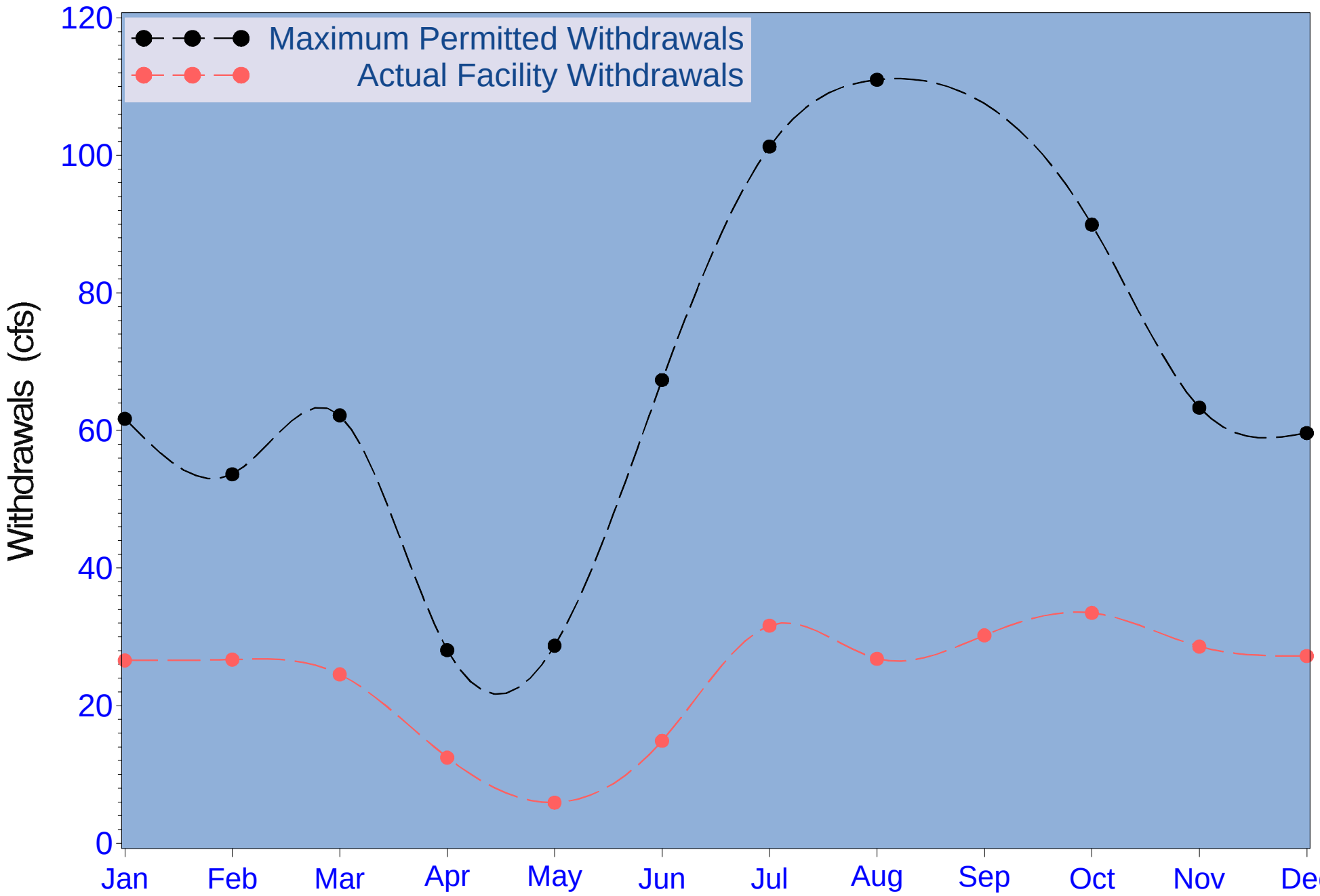


Figure 3.381 Average monthly maximum permitted and actual Facility withdrawals (2002-2006)

Table 4.19
Correlation of Water Quality Parameters with Flow by Category – River Kilometer 15.5

Water Quality Parameter	Overall	<90 cfs	90-160 cfs	160-360 cfs	360-920 cfs	920-2100 cfs	> 2100 cfs
Total Kjeldahl Nitrogen (mg/l)							
Correlation Coefficient (R)	0.15475	0.12362	-0.24999	-0.10623	0.10516	-0.09289	-0.00745
Probability	0.0145	0.5561	0.175	0.4359	0.3759	0.6192	0.9672
Number of Observations	249	25	31	56	73	31	33
Total Phosphorus (mg/l)							
Correlation Coefficient (R)	-0.01732	0.39525	0.11932	0.2573	-0.25697	-0.15029	0.04757
Probability	0.7861	0.0457	0.5084	0.0418	0.0388	0.3888	0.8175
Number of Observations	248	26	33	63	65	35	26
Silica (mg/l)							
Correlation Coefficient (R)	0.29088	-0.33324	0.11364	0.02056	0.16068	0.27301	-0.08196
Probability	<.0001	0.0831	0.4969	0.8658	0.1394	0.0883	0.6397
Number of Observations	297	28	38	70	86	40	35
Total Organic Carbon (mg/l)							
Correlation Coefficient (R)	0.18753	0.32687	0.31147	0.17208	0.08096	-0.03433	-0.16167
Probability	0.0038	0.1107	0.0777	0.1925	0.5422	0.8448	0.4301
Number of Observations	237	25	33	59	59	35	26
Dissolved Organic Carbon (mg/l)							
Correlation Coefficient (R)	0.25192	0.19536	0.21862	0.21541	0.2033	-0.005	-0.16365
Probability	0.0004	0.3836	0.2833	0.1372	0.1658	0.9803	0.4344
Number of Observations	197	22	26	49	48	27	25
Chlorophyll a (ug/l)							
Correlation Coefficient (R)	-0.05919	-0.09512	-0.30571	0.0665	0.07535	-0.28565	0.02026
Probability	0.3143	0.6302	0.0658	0.59	0.4984	0.074	0.908
Number of Observations	291	28	37	68	83	40	35

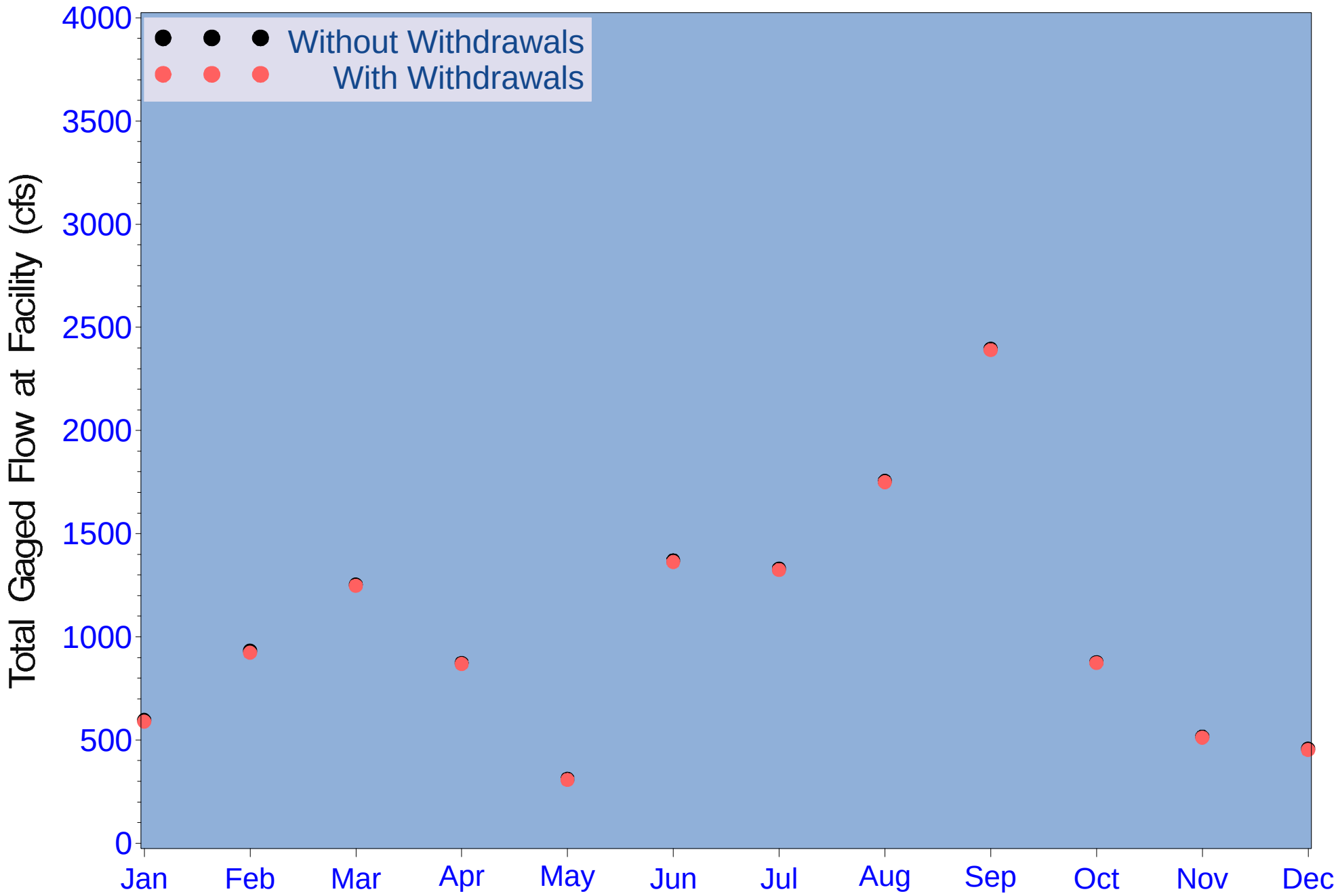


Figure 3.382 Average monthly gaged flow upsteam of the Facility with and without withdrawals (1980-1988)

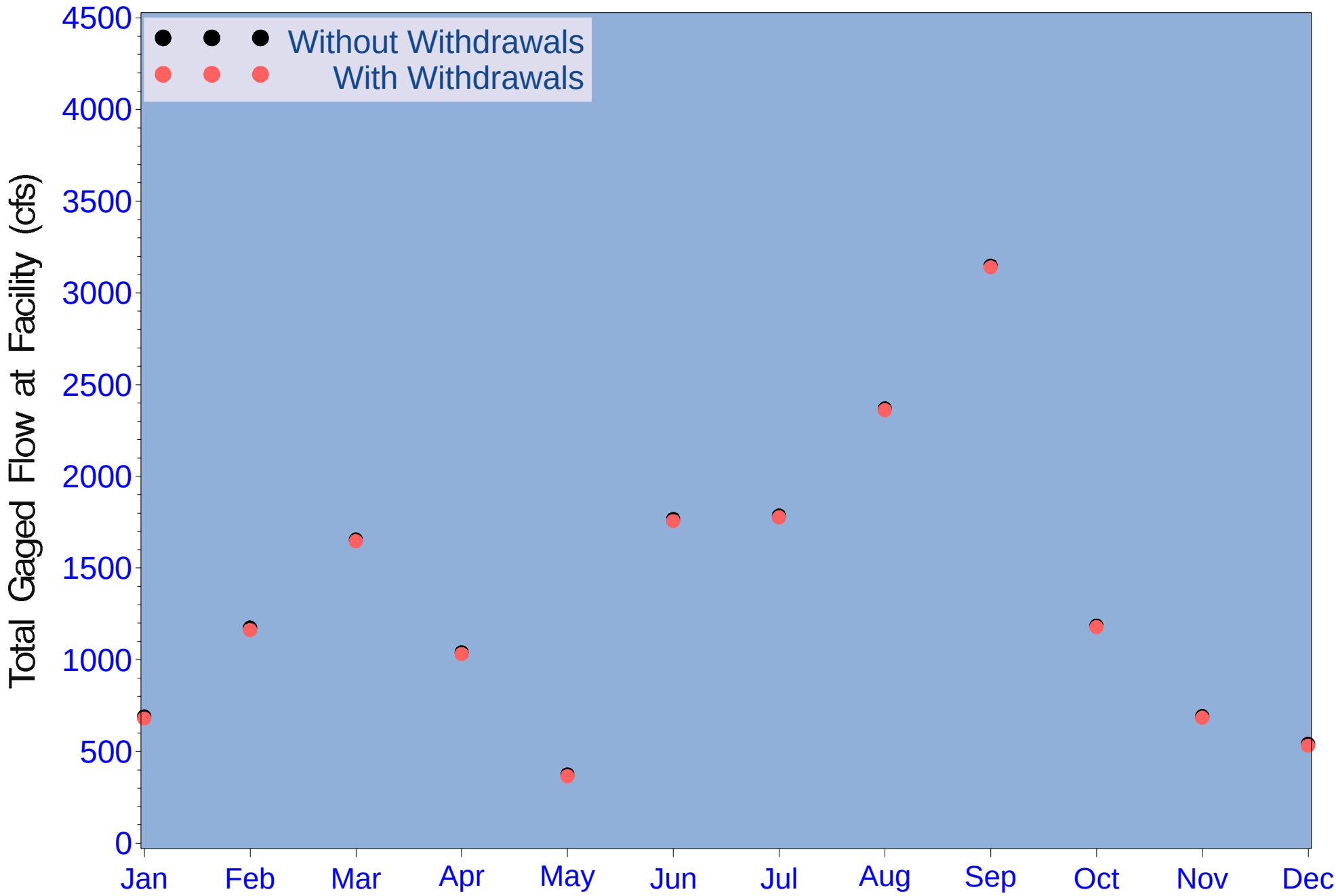


Figure 3.383 Average monthly gaged flow upstream of US41 with and without withdrawals (1980-1988)

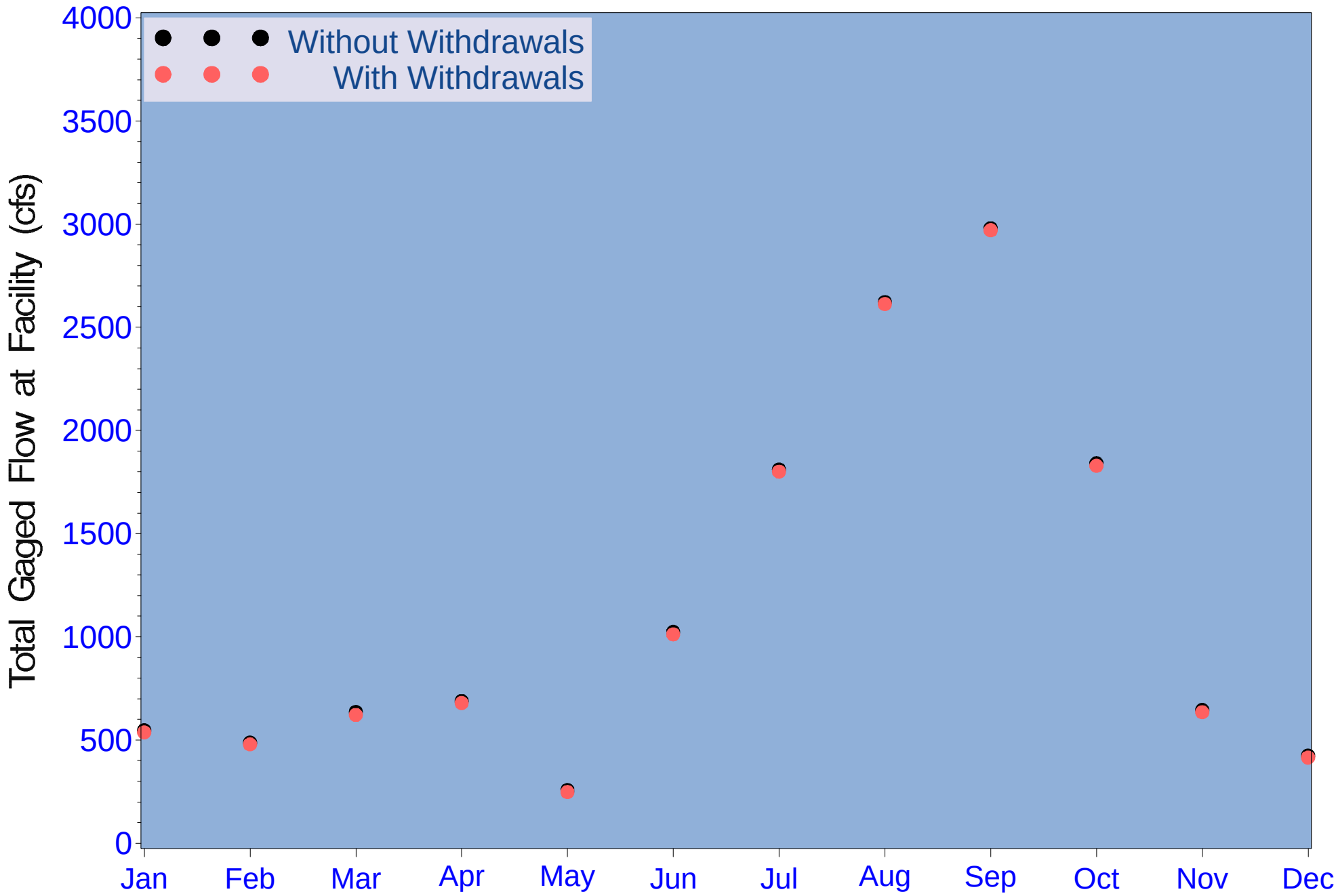


Figure 3.384 Average monthly flow upstream of the Facility with and without withdrawals (1989-1995)

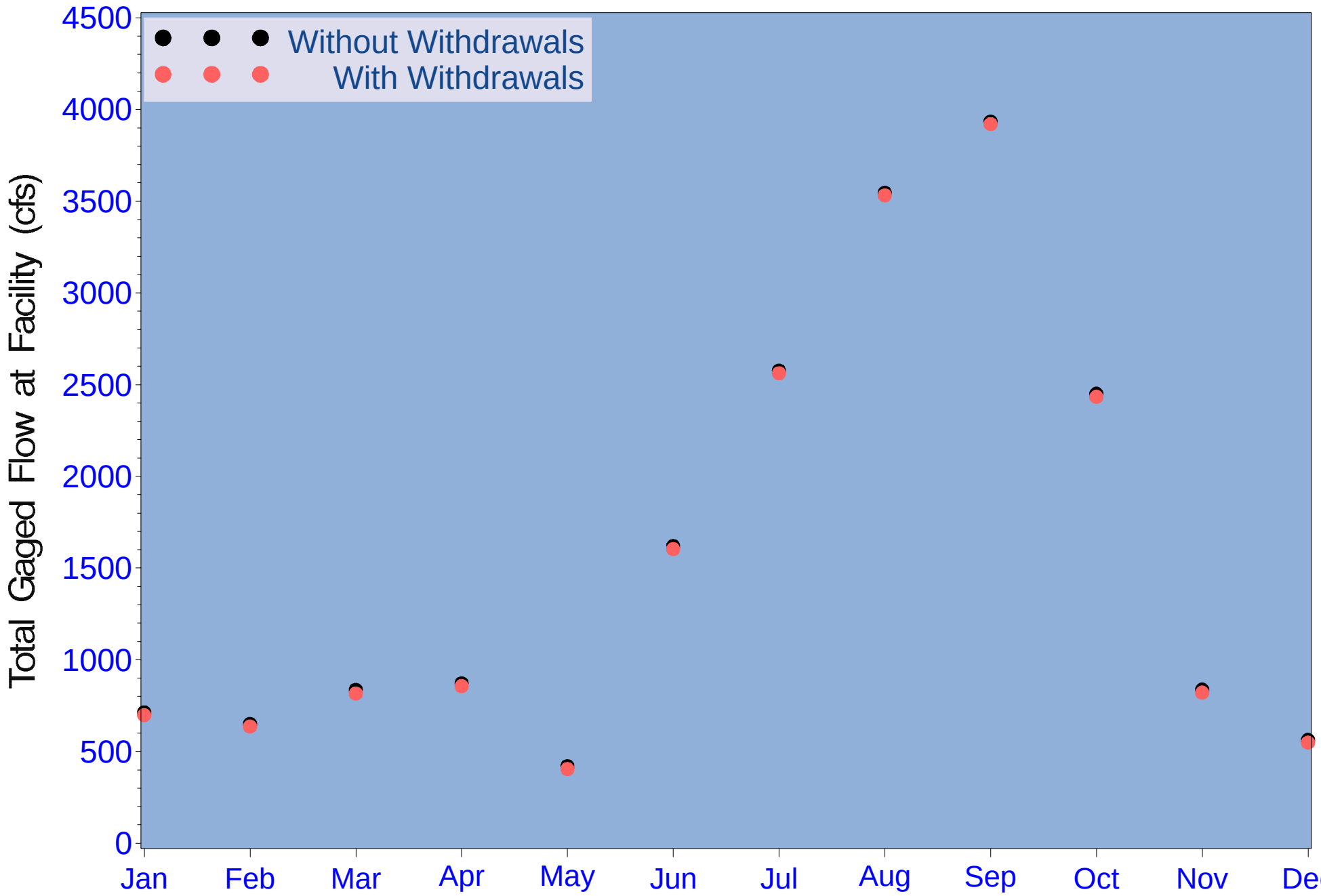


Figure 3.385 Average monthly gaged flow upstream of US41 with and without withdrawals (1989-1995)

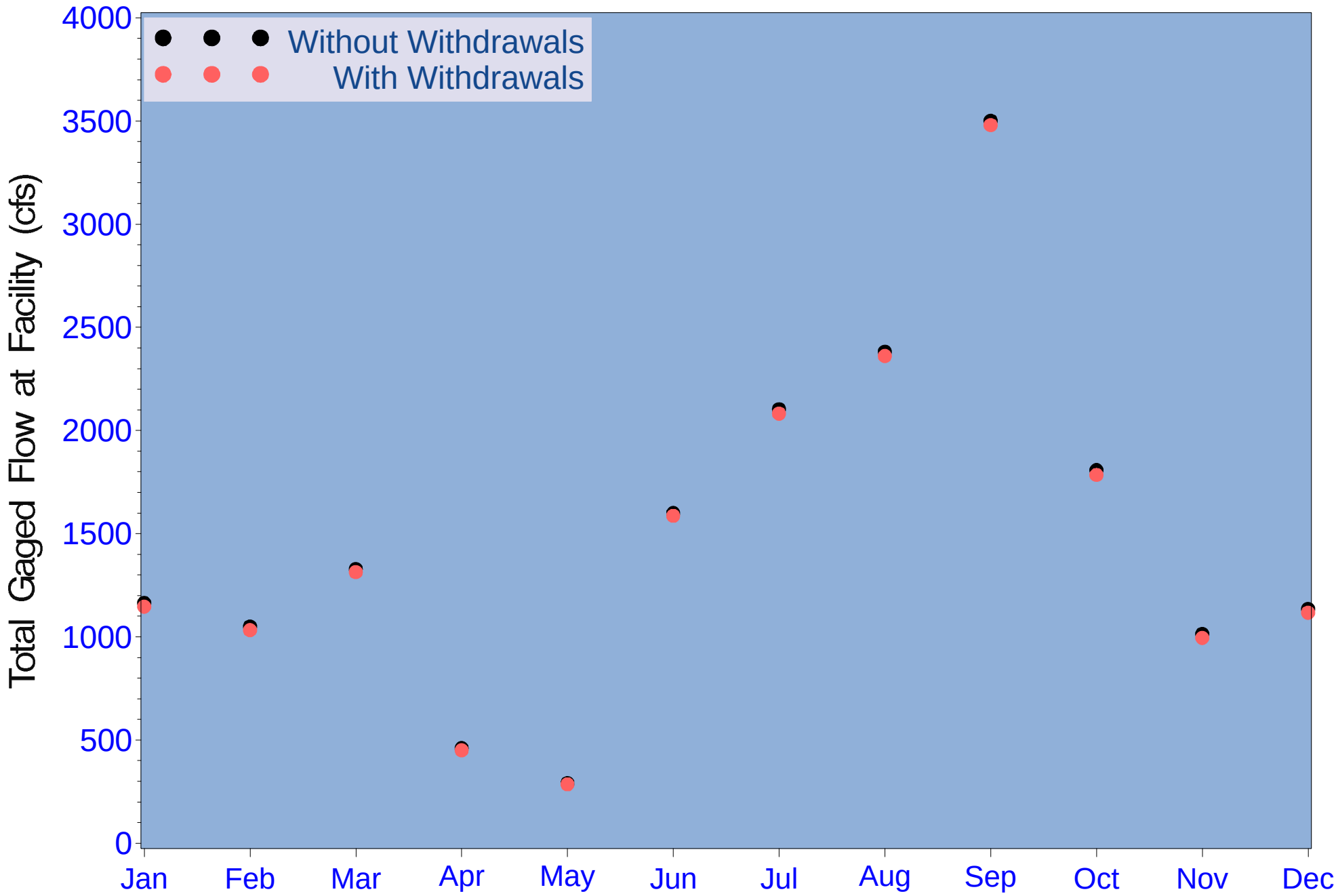


Figure 3.386 Average monthly flow upsteam of the Facility with and without withdrawals (1996-2006)

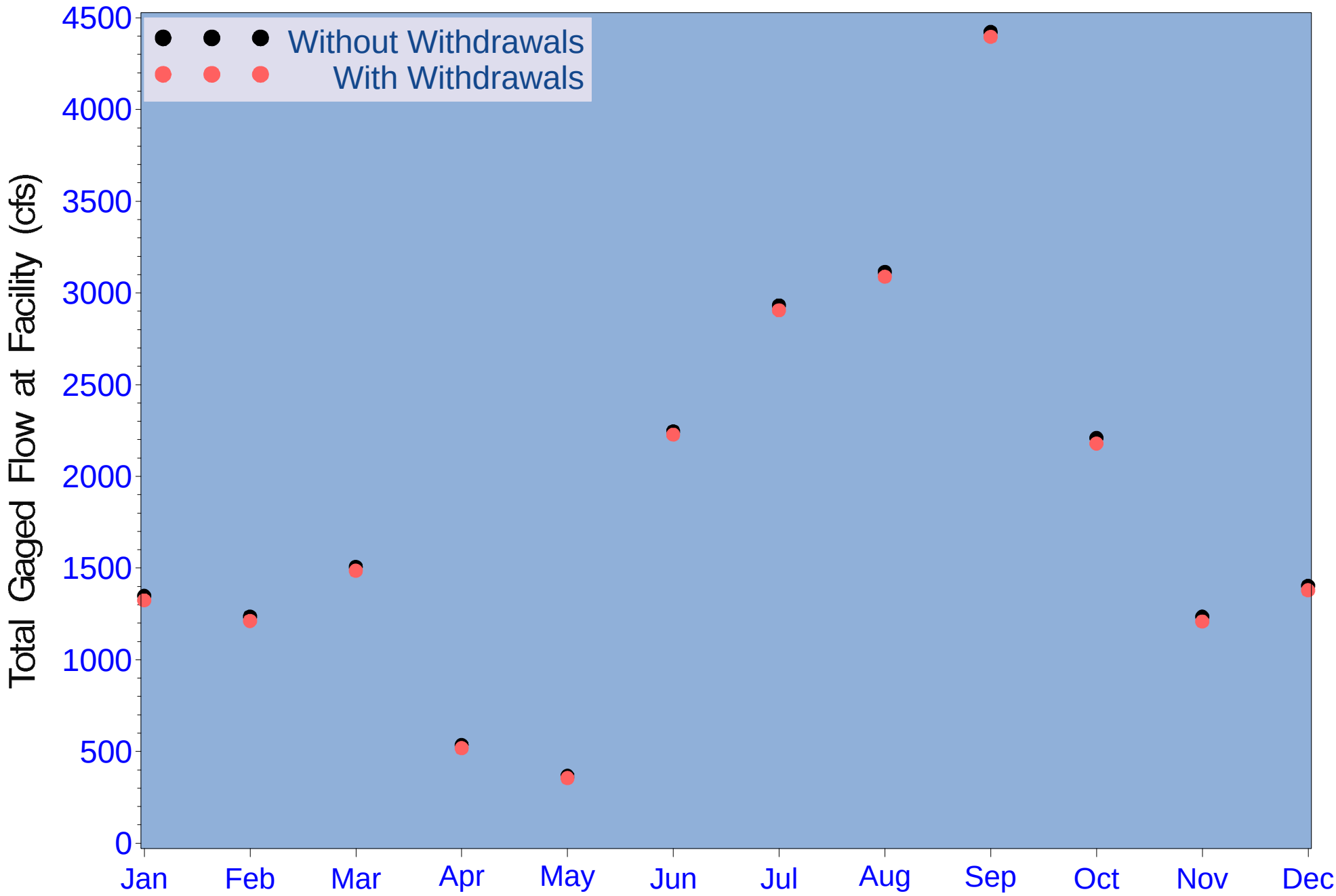
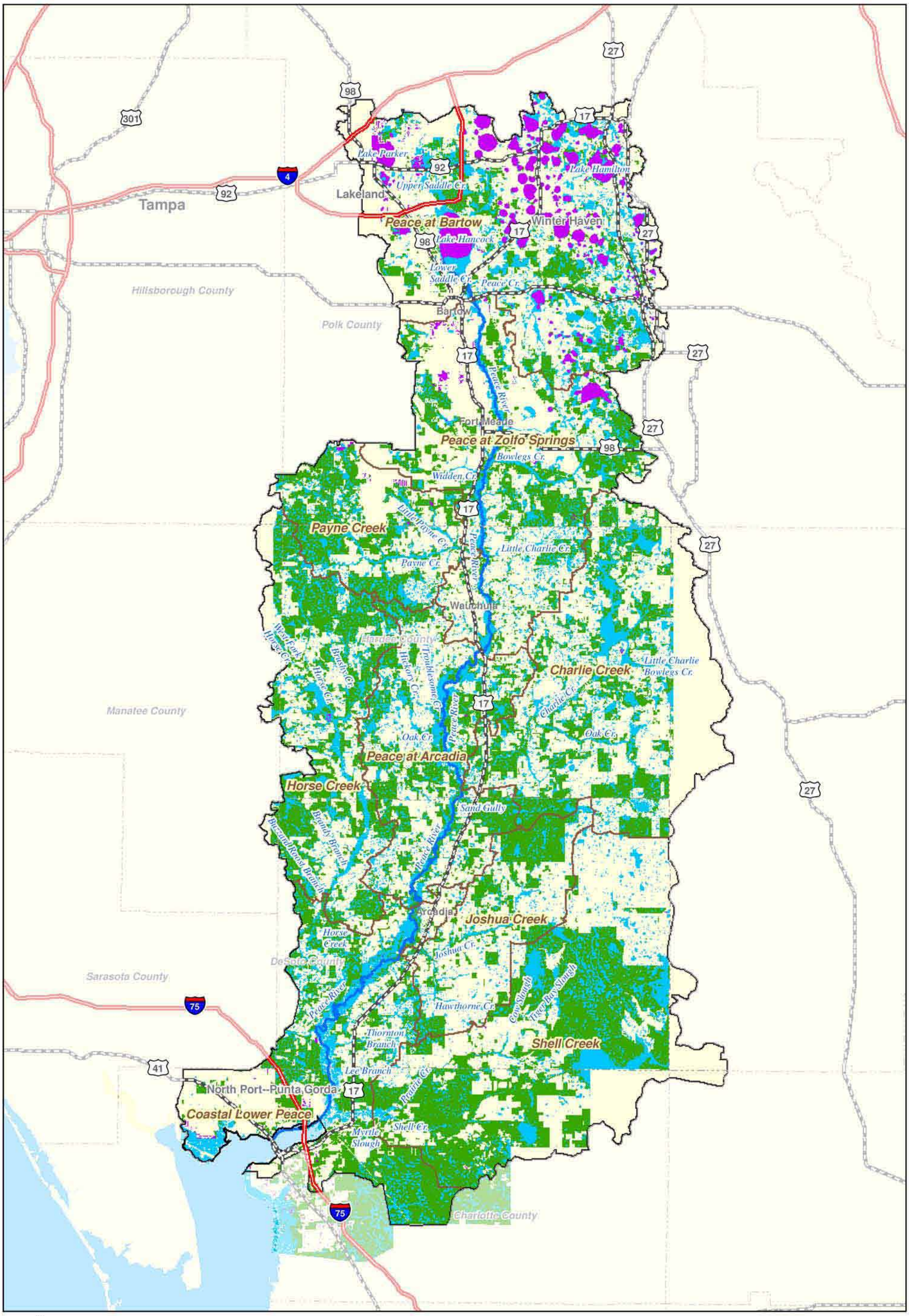


Figure 3.387 Average monthly gaged flow upstream US41 with and without withdrawals (1996-2006)



N
W E
S

0 7 Miles

County Line
Interstate
Highway
Peace River
Watershed Boundary
Basin Boundary

Undeveloped Land Use
Peace River Watershed

1979

Native Upland Habitat
Wetland
Lake

PBS&J

Figure 4.1

Table 1.4

HBMP Fixed Sampling Locations

USGS River Mile	USGS Location Number	Previous EQL Station Number	Additional Sampling	New River Kilometer designation based on Morphometric Study
Current *In Situ* Water Column Profile Sampling Locations				
CH6	265355082075500	9	Water Quality	**-2.4**
RM3.95	265640082033500	10	Water Quality	**6.6**
RM4.88	265724082024400	21		**8.4**
RM6.25	265727082012800	11		**10.5**
RM8.61	265711081595500	Shell Creek 9 (92)		**12.7**
RM8.6B	265819082003200	22		**12.8**
RM10.2	2297460	12	Water Quality/Tide Gage/Conductivity	**15.5**
RM11.2	270022081591000	23		**17.5**
RM 12.55	270124081592500	13		**20.1**
RM13.95	270235081592400	24		**21.9**
RM14.82	270318081593100	14	Water Quality	**23.6**
RM15.45	270337081595800	25		**24.7**
RM16.29	270418082001600	15		**25.9**
N/A	2297350	N/A	Tide Gage/ Conductivity	**26.7**
RM18.25	270451081595100	17		**29.5**
RM18.95	2297330	18	Water Quality	**30.4**
RM19.5	270537081585800	19		**32.3**
Previous Vegetation Transect Locations				
N/A	N/A	I		**15.6**
N/A	N/A	II		**22.3**
N/A	N/A	III		**20.4**
Previous EQL Water Column and Chemistry Sampling Sites				
N/A	N/A	16		**27.1**
N/A	N/A	20		**34.1**

Table 4.20
Correlation of Water Quality Parameters with Flow by Category – River Kilometer 23.6

Water Quality Parameter	Overall	<90 cfs	90-160 cfs	160-360 cfs	360-920 cfs	920-2100 cfs	> 2100 cfs
Salinity (ppt)							
Correlation Coefficient (R)	-0.24192	-0.55083	-0.40985	-0.32018	-0.15526	-0.06507	-0.0024
Probability	<.0001	0.0002	0.0057	0.002	0.1211	0.6369	0.9872
Number of Observations	379	41	44	91	101	55	47
Dissolved Oxygen (mg/l)							
Correlation Coefficient (R)	-0.28178	0.07145	0.30354	0.20094	-0.05114	-0.32827	-0.25179
Probability	<.0001	0.6613	0.0478	0.0576	0.6098	0.0144	0.0914
Number of Observations	376	40	43	90	102	55	46
Color (CPU)							
Correlation Coefficient (R)	0.68302	-0.15202	-0.13642	0.26508	0.36119	0.22135	0.11786
Probability	<.0001	0.4311	0.4276	0.0266	0.0007	0.1699	0.4936
Number of Observations	296	29	36	70	85	40	36
Turbidity (NTU)							
Correlation Coefficient (R)	-0.0641	0.03146	-0.31675	0.07835	-0.01397	0.01137	-0.18191
Probability	0.3157	0.8762	0.0773	0.5383	0.9135	0.9483	0.3738
Number of Observations	247	27	32	64	63	35	26
Nitrite/Nitrate (mg/l)							
Correlation Coefficient (R)	-0.11107	0.24909	0.18324	0.21465	-0.1335	0.13576	-0.48595
Probability	0.0563	0.1926	0.2847	0.0744	0.2232	0.4036	0.0027
Number of Observations	296	29	36	70	85	40	36
Ammonia/Ammonium (mg/l)							
Correlation Coefficient (R)	0.06923	-0.10497	-0.06149	0.20921	-0.03694	-0.1278	0.03073
Probability	0.2587	0.6098	0.7339	0.0999	0.7498	0.4713	0.8609
Number of Observations	268	26	33	63	77	34	35

Table 4.20
Correlation of Water Quality Parameters with Flow by Category – River Kilometer 23.6

Water Quality Parameter	Overall	<90 cfs	90-160 cfs	160-360 cfs	360-920 cfs	920-2100 cfs	> 2100 cfs
Total Kjeldahl Nitrogen (mg/l)							
Correlation Coefficient (R)	0.02343	-0.01931	-0.04424	0.2556	-0.1618	0.08318	-0.38056
Probability	0.7119	0.9254	0.8132	0.0596	0.1684	0.6564	0.0264
Number of Observations	251	26	31	55	74	31	34
Total Phosphorus (mg/l)							
Correlation Coefficient (R)	-0.19533	0.32268	0.00782	0.15799	-0.27699	-0.21566	-0.0755
Probability	0.0021	0.1007	0.9667	0.2162	0.0267	0.2134	0.7139
Number of Observations	246	27	31	63	64	35	26
Silica (mg/l)							
Correlation Coefficient (R)	0.18895	-0.20369	-0.14674	-0.0025	0.10028	0.20616	-0.07338
Probability	0.0011	0.2892	0.3931	0.9838	0.3612	0.2019	0.6706
Number of Observations	295	29	36	69	85	40	36
Total Organic Carbon (mg/l)							
Correlation Coefficient (R)	0.23126	0.26702	0.154	0.18051	0.28061	0.06743	-0.21572
Probability	0.0004	0.1873	0.4082	0.1675	0.0345	0.7003	0.2899
Number of Observations	235	26	31	60	57	35	26
Dissolved Organic Carbon (mg/l)							
Correlation Coefficient (R)	0.26088	0.15941	0.16582	0.20819	0.31186	0.05916	-0.206
Probability	0.0002	0.4675	0.4182	0.1511	0.0328	0.7694	0.3232
Number of Observations	197	23	26	49	47	27	25
Chlorophyll a (ug/l)							
Correlation Coefficient (R)	-0.10746	0.09576	-0.13521	0.009	-0.07184	-0.11101	0.04813
Probability	0.0676	0.6212	0.4387	0.942	0.5213	0.4953	0.7804
Number of Observations	290	29	35	68	82	40	36

Table 4.21
Correlation of Water Quality Parameters with Flow by Category – River Kilometer 30.4

Water Quality Parameter	Overall	<90 cfs	90-160 cfs	160-360 cfs	360-920 cfs	920-2100 cfs	> 2100 cfs
Salinity (ppt)							
Correlation Coefficient (R)	-0.14458	-0.61284	-0.21292	-0.12429	-0.20596	-0.01471	0.03555
Probability	0.0049	<.0001	0.1652	0.2378	0.0388	0.9151	0.8146
Number of Observations	378	40	44	92	101	55	46
Dissolved Oxygen (mg/l)							
Correlation Coefficient (R)	-0.37616	0.1142	0.39202	0.18145	0.01232	-0.39122	-0.23704
Probability	<.0001	0.4829	0.0085	0.087	0.9022	0.0031	0.1127
Number of Observations	377	40	44	90	102	55	46
Color (CPU)							
Correlation Coefficient (R)	0.66126	-0.2544	-0.03157	0.39593	0.34779	0.16641	0.12166
Probability	<.0001	0.1829	0.8507	0.0002	0.0009	0.2636	0.4607
Number of Observations	323	29	38	82	88	47	39
Turbidity (NTU)							
Correlation Coefficient (R)	-0.01115	0.06221	-0.33748	0.13828	0.06631	-0.07311	-0.25765
Probability	0.8543	0.7579	0.0548	0.2336	0.5968	0.6454	0.1693
Number of Observations	274	27	33	76	66	42	30
Nitrite/Nitrate (mg/l)							
Correlation Coefficient (R)	-0.27457	0.26321	0.15943	0.12024	-0.18609	-0.22508	-0.53291
Probability	<.0001	0.1677	0.3459	0.2819	0.0826	0.1282	0.0005
Number of Observations	322	29	37	82	88	47	39
Ammonia/Ammonium (mg/l)							
Correlation Coefficient (R)	0.04918	-0.14799	0.0058	0.15706	0.04164	-0.00435	0.10111
Probability	0.4201	0.4802	0.9749	0.2079	0.7174	0.9808	0.5515
Number of Observations	271	25	32	66	78	33	37

Table 4.21
Correlation of Water Quality Parameters with Flow by Category – River Kilometer 30.4

Water Quality Parameter	Overall	<90 cfs	90-160 cfs	160-360 cfs	360-920 cfs	920-2100 cfs	> 2100 cfs
Total Kjeldahl Nitrogen (mg/l)							
Correlation Coefficient (R)	0.28266	-0.01692	-0.21953	0.24724	0.04651	0.13424	-0.0352
Probability	<.0001	0.936	0.2354	0.059	0.696	0.4715	0.8385
Number of Observations	255	25	31	59	73	31	36
Total Phosphorus (mg/l)							
Correlation Coefficient (R)	-0.25526	0.36959	-0.14628	0.11581	-0.23253	-0.20357	-0.16576
Probability	<.0001	0.0578	0.4166	0.3224	0.0583	0.196	0.3901
Number of Observations	273	27	33	75	67	42	29
Silica (mg/l)							
Correlation Coefficient (R)	0.17722	-0.30176	-0.11504	0.0335	0.068	0.20129	-0.09088
Probability	0.0014	0.1116	0.4916	0.7651	0.529	0.1749	0.5822
Number of Observations	323	29	38	82	88	47	39
Total Organic Carbon (mg/l)							
Correlation Coefficient (R)	0.28608	0.28981	0.13289	0.20759	0.20888	0.00704	-0.18108
Probability	<.0001	0.151	0.461	0.0824	0.1033	0.9647	0.3382
Number of Observations	264	26	33	71	62	42	30
Dissolved Organic Carbon (mg/l)							
Correlation Coefficient (R)	0.30743	0.15581	0.03466	0.21865	0.25233	0.0079	-0.16519
Probability	<.0001	0.4887	0.8665	0.1232	0.0771	0.9695	0.4009
Number of Observations	203	22	26	51	50	26	28
Chlorophyll a (ug/l)							
Correlation Coefficient (R)	-0.07665	-0.33622	-0.01413	0.02477	-0.09269	-0.032	0.01544
Probability	0.1727	0.0745	0.9339	0.8274	0.3988	0.8309	0.9247
Number of Observations	318	29	37	80	85	47	40

Table 4.22

Correlation of Water Quality Parameters – River Kilometer –2.2

Water Quality Parameter	Salinity	Dissolved Oxygen	Color	Turbidity	Nitrite + Nitrate Nitrogen	Ammonia / Ammonium	Total Kjeldahl Nitrogen	Total Phosphorus	Silica	Total Organic Carbon	Dissolved Organic Carbon
Dissolved Oxygen (mg/l)	367										
Correlation Coefficient (R)	-0.06862										
Probability	0.1897										
Color (CPU)	298	298									
Correlation Coefficient (R)	-0.79031	-0.06638									
Probability	<.0001	0.2533									
Turbidity (NTU)	252	252	268								
Correlation Coefficient (R)	0.09765	0.03949	0.01859								
Probability	0.1221	0.5326	0.7619								
Nitrite/Nitrate (mg/l)	298	298	316	268							
Correlation Coefficient (R)	-0.49638	-0.02732	0.22691	-0.04548							
Probability	<.0001	0.6386	<.0001	0.4584							
Ammonia/Ammonium (mg/l)	252	251	262	214	262						
Correlation Coefficient (R)	-0.36441	-0.18106	0.43731	-0.03161	0.50392						
Probability	<.0001	0.004	<.0001	0.6456	<.0001						
Total Kjeldahl Nitrogen (mg/l)	236	234	244	196	244	243					
Correlation Coefficient (R)	-0.53199	0.00024	0.57497	0.06177	0.21931	0.2935					
Probability	<.0001	0.9971	<.0001	0.3898	0.0006	<.0001					
Total Phosphorus (mg/l)	241	241	256	255	256	212	195				
Correlation Coefficient (R)	-0.64016	0.0678	0.68176	-0.04469	0.09329	0.34294	0.54018				
Probability	<.0001	0.2945	<.0001	0.4774	0.1366	<.0001	<.0001				
Silica (mg/l)	298	298	316	268	316	262	244	256			
Correlation Coefficient (R)	-0.56333	-0.19636	0.62866	-0.04523	0.22781	0.32177	0.42826	0.32725			
Probability	<.0001	0.0007	<.0001	0.4609	<.0001	<.0001	<.0001	<.0001			
Total Organic Carbon (mg/l)	246	246	259	256	259	206	189	245	259		
Correlation Coefficient (R)	-0.21465	0.00838	0.13928	-0.07776	-0.01978	0.02335	0.17355	0.3284	-0.04452		
Probability	0.0007	0.896	0.025	0.215	0.7514	0.739	0.0169	<.0001	0.4756		
Dissolved Organic Carbon (mg/l)	187	186	193	191	193	192	183	189	193	193	
Correlation Coefficient (R)	-0.31804	-0.05328	0.24654	-0.07931	-0.0008	0.02923	0.23212	0.41631	-0.01623	0.89966	
Probability	<.0001	0.4701	0.0005	0.2754	0.9912	0.6874	0.0016	<.0001	0.8227	<.0001	
Chlorophyll a (ug/l)	292	293	310	262	310	256	238	251	310	253	187
Correlation Coefficient (R)	-0.29908	0.1503	0.30911	0.09837	0.01179	0.01309	0.66715	0.29329	0.26429	0.09797	0.13402
Probability	<.0001	0.01	<.0001	0.1122	0.8362	0.835	<.0001	<.0001	<.0001	0.1201	0.0675

Table 4.23
Correlation of Water Quality Parameters – River Kilometer 6.6

Water Quality Parameter	SAL	DO	COLOR	TURB	N23	NH34	TKN	TP	SI	TOC	DOC
Dissolved Oxygen (mg/l)	410										
Correlation Coefficient (R)	0.16357										
Probability	0.0009										
Color (CPU)	303	302									
Correlation Coefficient (R)	-0.83829	-0.27681									
Probability	<.0001	<.0001									
Turbidity (NTU)	258	257	269								
Correlation Coefficient (R)	0.0992	0.04305	-0.05663								
Probability	0.1119	0.492	0.3549								
Nitrite/Nitrate (mg/l)	303	302	316	269							
Correlation Coefficient (R)	-0.58862	-0.1446	0.18273	-0.01056							
Probability	<.0001	0.0119	0.0011	0.8631							
Ammonia/Ammonium (mg/l)	256	255	265	217	265						
Correlation Coefficient (R)	-0.20214	-0.23892	0.22676	-0.07015	0.14962						
Probability	0.0011	0.0001	0.0002	0.3037	0.0148						
Total Kjeldahl Nitrogen (mg/l)	242	240	249	201	249	248					
Correlation Coefficient (R)	-0.41415	-0.21364	0.45519	0.04313	0.07638	0.27845					
Probability	<.0001	0.0009	<.0001	0.5432	0.2298	<.0001					
Total Phosphorus (mg/l)	255	254	266	266	267	215	200				
Correlation Coefficient (R)	-0.49623	-0.00731	0.51698	0.22501	0.0277	0.14969	0.28193				
Probability	<.0001	0.9078	<.0001	0.0002	0.6523	0.0282	<.0001				
Silica (mg/l)	304	303	317	270	317	265	249	267			
Correlation Coefficient (R)	-0.65983	-0.24085	0.69909	-0.14187	0.1432	0.20677	0.32999	0.23573			
Probability	<.0001	<.0001	<.0001	0.0197	0.0107	0.0007	<.0001	0.0001			
Total Organic Carbon (mg/l)	246	245	256	254	256	204	190	251	257		
Correlation Coefficient (R)	-0.28122	-0.1151	0.27451	0.07662	0.05276	0.07842	0.19972	0.41807	0.09532		
Probability	<.0001	0.0721	<.0001	0.2237	0.4005	0.2649	0.0057	<.0001	0.1275		
Dissolved Organic Carbon (mg/l)	188	187	194	192	193	192	185	189	194	194	
Correlation Coefficient (R)	-0.36318	-0.18205	0.36111	0.04425	0.05579	0.04714	0.38048	0.49022	0.12345	0.96976	
Probability	<.0001	0.0126	<.0001	0.5422	0.4409	0.5162	<.0001	<.0001	0.0864	<.0001	
Chlorophyll a (ug/l)	298	298	311	264	311	259	243	261	312	251	188
Correlation Coefficient (R)	-0.17987	0.08312	0.21247	0.12187	0.01787	0.0288	0.19994	0.27881	0.14273	0.22895	0.19249
Probability	0.0018	0.1523	0.0002	0.0479	0.7535	0.6445	0.0017	<.0001	0.0116	0.0003	0.0081

Table 4.24

Correlation of Water Quality Parameters – River Kilometer 15.5

Water Quality Parameter	SAL	DO	COLOR	TURB	N23	NH34	TKN	TP	SI	TOC	DOC
Dissolved Oxygen (mg/l)	377										
Correlation Coefficient (R)	0.20835										
Probability	<.0001										
Color (CPU)	283	283									
Correlation Coefficient (R)	-0.67894	-0.48044									
Probability	<.0001	<.0001									
Turbidity (NTU)	237	237	249								
Correlation Coefficient (R)	-0.01104	0.25394	-0.08976								
Probability	0.8658	<.0001	0.1579								
Nitrite/Nitrate (mg/l)	283	283	297	249							
Correlation Coefficient (R)	-0.50238	-0.02388	0.23748	0.01003							
Probability	<.0001	0.6891	<.0001	0.8748							
Ammonia/Ammonium (mg/l)	258	257	267	219	267						
Correlation Coefficient (R)	-0.00496	0.11506	0.08402	0.45137	0.04952						
Probability	0.9367	0.0655	0.171	<.0001	0.4203						
Total Kjeldahl Nitrogen (mg/l)	242	240	249	201	249	249					
Correlation Coefficient (R)	-0.16459	0.0159	0.33142	0.40351	-0.0031	0.74332					
Probability	0.0103	0.8064	<.0001	<.0001	0.9612	<.0001					
Total Phosphorus (mg/l)	236	236	248	247	248	218	201				
Correlation Coefficient (R)	-0.14721	0.142	0.03797	0.22764	0.09173	0.05051	0.10029				
Probability	0.0237	0.0292	0.5517	0.0003	0.1498	0.4581	0.1566				
Silica (mg/l)	283	283	297	249	297	267	249	248			
Correlation Coefficient (R)	-0.47694	-0.2787	0.5362	-0.07579	0.2625	0.09021	0.21892	-0.17908			
Probability	<.0001	<.0001	<.0001	0.2334	<.0001	0.1415	0.0005	0.0047			
Total Organic Carbon (mg/l)	226	226	237	234	237	207	191	233	237		
Correlation Coefficient (R)	-0.4026	-0.15336	0.45926	0.03045	0.21469	0.00193	0.14816	0.36031	0.07011		
Probability	<.0001	0.0211	<.0001	0.6431	0.0009	0.978	0.0408	<.0001	0.2824		
Dissolved Organic Carbon (mg/l)	191	190	197	195	197	197	187	194	197	197	
Correlation Coefficient (R)	-0.47439	-0.23425	0.54875	0.04938	0.2688	0.0034	0.14737	0.313	0.131	0.97348	
Probability	<.0001	0.0011	<.0001	0.493	0.0001	0.9622	0.0441	<.0001	0.0665	<.0001	
Chlorophyll a (ug/l)	277	278	291	243	291	261	243	242	291	231	192
Correlation Coefficient (R)	0.03478	0.12452	-0.04683	0.18962	-0.09587	-0.04311	0.14076	0.03633	0.01661	-0.0337	-0.04662
Probability	0.5643	0.038	0.4261	0.003	0.1026	0.488	0.0282	0.5738	0.7779	0.6104	0.5208

Table 4.25

Correlation of Water Quality Parameters – River Kilometer 23.6

Water Quality Parameter	SAL	DO	COLOR	TURB	N23	NH34	TKN	TP	SI	TOC	DOC
Dissolved Oxygen (mg/l)	374										
Correlation Coefficient (R)	-0.02824										
Probability	0.5862										
Color (CPU)	283	281									
Correlation Coefficient (R)	-0.39328	-0.429									
Probability	<.0001	<.0001									
Turbidity (NTU)	236	235	247								
Correlation Coefficient (R)	-0.05182	0.16919	-0.10014								
Probability	0.4282	0.0094	0.1165								
Nitrite/Nitrate (mg/l)	283	281	296	247							
Correlation Coefficient (R)	-0.3321	0.10556	-0.05225	-0.04794							
Probability	<.0001	0.0773	0.3704	0.4533							
Ammonia/Ammonium (mg/l)	259	256	268	219	268						
Correlation Coefficient (R)	-0.02099	-0.25794	0.18435	-0.09497	0.10248						
Probability	0.7367	<.0001	0.0024	0.1614	0.0941						
Total Kjeldahl Nitrogen (mg/l)	244	240	251	202	251	251					
Correlation Coefficient (R)	-0.07721	0.08541	0.07268	0.22332	0.02643	-0.02636					
Probability	0.2295	0.1873	0.2513	0.0014	0.6769	0.6777					
Total Phosphorus (mg/l)	235	234	246	245	246	218	202				
Correlation Coefficient (R)	-0.03996	0.24092	-0.23688	0.16839	0.12496	0.01435	-0.05716				
Probability	0.5421	0.0002	0.0002	0.0083	0.0503	0.8331	0.4191				
Silica (mg/l)	282	280	295	246	295	267	250	245			
Correlation Coefficient (R)	-0.31138	-0.18696	0.41789	-0.07771	0.14206	0.01605	0.00114	-0.28688			
Probability	<.0001	0.0017	<.0001	0.2246	0.0146	0.794	0.9857	<.0001			
Total Organic Carbon (mg/l)	225	224	235	232	235	207	192	231	234		
Correlation Coefficient (R)	-0.28729	-0.24143	0.54978	0.16372	-0.01148	0.21464	-0.07438	0.11437	0.08287		
Probability	<.0001	0.0003	<.0001	0.0125	0.8611	0.0019	0.3052	0.0828	0.2066		
Dissolved Organic Carbon (mg/l)	191	189	197	195	197	197	189	194	196	197	
Correlation Coefficient (R)	-0.31145	-0.31383	0.62472	0.13182	0.00428	0.22414	-0.01586	0.10882	0.11008	0.97451	
Probability	<.0001	<.0001	<.0001	0.0662	0.9524	0.0015	0.8285	0.131	0.1245	<.0001	
Chlorophyll a (ug/l)	277	276	290	241	290	262	245	240	289	229	191
Correlation Coefficient (R)	0.11524	0.33216	-0.15644	0.59104	-0.24317	-0.19548	0.09157	0.19645	-0.03561	-0.01378	-0.03771
Probability	0.0554	<.0001	0.0076	<.0001	<.0001	0.0015	0.153	0.0022	0.5466	0.8357	0.6045

Table 4.26
Correlation of Water Quality Parameters – River Kilometer 30.4

Water Quality Parameter	SAL	DO	COLOR	TURB	N23	NH34	TKN	TP	SI	TOC	DOC
Dissolved Oxygen (mg/l)	375										
Correlation Coefficient (R)	-0.04837										
Probability	0.3502										
Color (CPU)	281	281									
Correlation Coefficient (R)	-0.2341	-0.50447									
Probability	<.0001	<.0001									
Turbidity (NTU)	234	234	274								
Correlation Coefficient (R)	-0.08356	0.22031	0.02728								
Probability	0.2028	0.0007	0.653								
Nitrite/Nitrate (mg/l)	281	281	321	272							
Correlation Coefficient (R)	-0.15291	0.16619	-0.21324	-0.14644							
Probability	0.0103	0.0052	0.0001	0.0156							
Ammonia/Ammonium (mg/l)	259	258	270	221	271						
Correlation Coefficient (R)	0.03394	-0.32465	0.09946	-0.15924	0.18428						
Probability	0.5866	<.0001	0.1029	0.0178	0.0023						
Total Kjeldahl Nitrogen (mg/l)	245	243	254	205	255	255					
Correlation Coefficient (R)	-0.10533	-0.13082	0.46733	0.71977	-0.27528	-0.00199					
Probability	0.1	0.0416	<.0001	<.0001	<.0001	0.9747					
Total Phosphorus (mg/l)	234	234	272	270	272	222	207				
Correlation Coefficient (R)	-0.01773	0.17852	-0.32918	-0.04071	0.16106	0.1101	-0.06975				
Probability	0.7874	0.0062	<.0001	0.5054	0.0078	0.1018	0.3179				
Silica (mg/l)	281	281	322	273	322	271	255	273			
Correlation Coefficient (R)	-0.13157	-0.1117	0.42076	0.09673	0.02589	-0.05518	0.24657	-0.27756			
Probability	0.0274	0.0615	<.0001	0.1108	0.6435	0.3656	<.0001	<.0001			
Total Organic Carbon (mg/l)	224	225	264	260	262	211	196	258	263		
Correlation Coefficient (R)	-0.20568	-0.21581	0.59968	0.27995	-0.12796	0.09687	0.48261	-0.00001	0.09038		
Probability	0.002	0.0011	<.0001	<.0001	0.0385	0.1609	<.0001	0.9999	0.1438		
Dissolved Organic Carbon (mg/l)	193	193	203	200	202	202	193	199	202	203	
Correlation Coefficient (R)	-0.19052	-0.30408	0.63399	0.1744	-0.09195	0.15276	0.41026	0.07535	0.09714	0.96446	
Probability	0.008	<.0001	<.0001	0.0135	0.1931	0.03	<.0001	0.2902	0.169	<.0001	
Chlorophyll a (ug/l)	275	275	317	268	316	265	249	267	317	258	197
Correlation Coefficient (R)	0.09183	0.35427	-0.11629	0.79021	-0.25152	-0.23521	0.52764	-0.00584	0.05361	0.11789	0.00622
Probability	0.1287	<.0001	0.0385	<.0001	<.0001	0.0001	<.0001	0.9243	0.3414	0.0586	0.9309

Table 4.39
Correlation of Water Quality Parameters with Flow by Category – 0 psu Salinity Zone

Water Quality Parameter	Overall	<90 cfs	90-160 cfs	160-360 cfs	360-920 cfs	920-2100 cfs	> 2100 cfs
River Kilometer (km)							
Correlation Coefficient (R)	-0.6137	-0.53062	-0.19451	-0.42041	-0.21712	-0.34887	-0.50102
Probability	<.0001	0.0053	0.303	0.0005	0.053	0.0175	0.0016
Number of Observations	284	26	30	65	80	46	37
Dissolved Oxygen (mg/l)							
Correlation Coefficient (R)	-0.26064	-0.10101	-0.01219	-0.10978	0.10285	-0.37633	-0.25632
Probability	<.0001	0.6235	0.949	0.3878	0.364	0.0099	0.1257
Number of Observations	283	26	30	64	80	46	37
Color (CPU)							
Correlation Coefficient (R)	0.53807	0.01482	0.33741	0.42886	0.13692	0.47134	-0.14023
Probability	<.0001	0.9427	0.0682	0.0004	0.2259	0.0009	0.4078
Number of Observations	284	26	30	65	80	46	37
Turbidity (NTU)							
Correlation Coefficient (R)	-0.00164	0.2402	-0.09808	0.21751	0.23995	-0.4015	-0.5931
Probability	0.9838	0.3531	0.6986	0.2025	0.1212	0.0712	0.0036
Number of Observations	157	17	18	36	43	21	22
Nitrite/Nitrate (mg/l)							
Correlation Coefficient (R)	-0.23098	0.49261	0.27395	0.02881	-0.14193	-0.277	-0.24253
Probability	<.0001	0.0106	0.1429	0.8198	0.2121	0.0624	0.1481
Number of Observations	283	26	30	65	79	46	37
Ammonia/Ammonium (mg/l)							
Correlation Coefficient (R)	-0.04995	-0.14305	-0.09575	0.20104	-0.20782	0.02749	-0.10664
Probability	0.4025	0.4857	0.6147	0.1083	0.0661	0.8561	0.5299
Number of Observations	283	26	30	65	79	46	37

Table 1.5
HBMP Chemical Water Quality Parameters

Ongoing Long-term Analytes	Analytes Deleted Starting March 2003
Salinity	Alkalinity
Chloride	Turbidity
Color	Total Phosphorus
Silica	Inorganic Carbon
Ortho-Phosphorus	Total Organic Carbon
Nitrate + Nitrite Nitrogen	Dissolved Organic Carbon
Ammonia/Ammonium Nitrogen	
Total Kjeldahl Nitrogen	
Total Nitrogen	
Suspended Solids	
Volatile Solids	
Chlorophyll *a*	

Table 4.39
Correlation of Water Quality Parameters with Flow by Category – 0 psu Salinity Zone

Water Quality Parameter	Overall	<90 cfs	90-160 cfs	160-360 cfs	360-920 cfs	920-2100 cfs	> 2100 cfs
Total Kjeldahl Nitrogen (mg/l)							
Correlation Coefficient (R)	0.1451	-0.11532	0.22747	0.17218	0.00542	-0.02231	-0.23697
Probability	0.0144	0.5748	0.2267	0.1702	0.962	0.883	0.1579
Number of Observations	284	26	30	65	80	46	37
Total Phosphorus (mg/l)							
Correlation Coefficient (R)	-0.27826	0.16983	-0.44286	-0.01553	0.05378	-0.13	-0.09676
Probability	<.0001	0.4385	0.0183	0.9079	0.6631	0.4498	0.6382
Number of Observations	239	23	28	58	68	36	26
Silica (mg/l)							
Correlation Coefficient (R)	0.22292	0.18221	0.09862	0.13217	-0.08018	0.39278	-0.0585
Probability	0.0002	0.373	0.6108	0.2939	0.4796	0.0069	0.7309
Number of Observations	283	26	29	65	80	46	37
Total Organic Carbon (mg/l)							
Correlation Coefficient (R)	0.3958	-0.11892	0.35681	-0.00469	0.03854	0.05796	-0.13979
Probability	<.0001	0.6494	0.1337	0.978	0.8038	0.8029	0.5349
Number of Observations	160	17	19	37	44	21	22
Dissolved Organic Carbon (mg/l)							
Correlation Coefficient (R)	0.41835	-0.08311	0.24664	0.10968	-0.04967	0.09882	-0.18243
Probability	<.0001	0.7511	0.3087	0.5181	0.7488	0.67	0.4165
Number of Observations	160	17	19	37	44	21	22
Chlorophyll a (ug/l)							
Correlation Coefficient (R)	-0.06265	-0.00005	-0.2739	0.18607	0.17731	-0.21834	-0.13225
Probability	0.2953	0.9998	0.143	0.1378	0.118	0.1496	0.442
Number of Observations	281	26	30	65	79	45	36

Table 4.40
Correlation of Water Quality Parameters with Flow by Category – Salinity Zone 6 psu

Water Quality Parameter	Overall	<90 cfs	90-160 cfs	160-360 cfs	360-920 cfs	920-2100 cfs	> 2100 cfs
River Kilometer (km)							
Correlation Coefficient (R)	-0.67325	-0.64351	-0.41596	-0.31819	-0.13397	-0.46774	-0.41703
Probability	<.0001	0.0005	0.0199	0.0104	0.2361	0.001	0.0083
Number of Observations	285	25	31	64	80	46	39
Dissolved Oxygen (mg/l)							
Correlation Coefficient (R)	-0.09403	0.15417	0.4241	-0.09095	0.00149	-0.48113	-0.07667
Probability	0.1132	0.4619	0.0174	0.4748	0.9895	0.0007	0.6427
Number of Observations	285	25	31	64	80	46	39
Color (CPU)							
Correlation Coefficient (R)	0.52994	-0.18822	0.3867	0.23218	0.07309	0.50246	-0.20764
Probability	<.0001	0.3676	0.0316	0.0649	0.5194	0.0004	0.2047
Number of Observations	285	25	31	64	80	46	39
Turbidity (NTU)							
Correlation Coefficient (R)	-0.18513	0.19273	-0.00041	0.0238	0.03383	-0.18368	-0.52132
Probability	0.0203	0.4745	0.9987	0.892	0.8295	0.4255	0.009
Number of Observations	157	16	18	35	43	21	24
Nitrite/Nitrate (mg/l)							
Correlation Coefficient (R)	0.01339	0.32299	0.00564	0.13856	-0.03597	-0.29219	-0.00295
Probability	0.822	0.1153	0.976	0.2749	0.7514	0.0488	0.9858
Number of Observations	285	25	31	64	80	46	39
Ammonia/Ammonium (mg/l)							
Correlation Coefficient (R)	0.18761	-0.24932	-0.03632	0.10353	0.06182	0.43102	0.16333
Probability	0.0015	0.2294	0.8462	0.4156	0.5884	0.0028	0.3205
Number of Observations	284	25	31	64	79	46	39

Table 4.40
Correlation of Water Quality Parameters with Flow by Category – Salinity Zone 6 psu

Water Quality Parameter	Overall	<90 cfs	90-160 cfs	160-360 cfs	360-920 cfs	920-2100 cfs	> 2100 cfs
Total Kjeldahl Nitrogen (mg/l)							
Correlation Coefficient (R)	0.01226	-0.16144	0.30746	0.0909	-0.00955	-0.04963	-0.24264
Probability	0.8368	0.4407	0.0925	0.475	0.933	0.7433	0.1367
Number of Observations	285	25	31	64	80	46	39
Total Phosphorus (mg/l)							
Correlation Coefficient (R)	-0.33887	0.01888	-0.47212	-0.17506	0.10471	-0.04265	-0.23235
Probability	<.0001	0.9335	0.0112	0.1928	0.3954	0.8049	0.2341
Number of Observations	239	22	28	57	68	36	28
Silica (mg/l)							
Correlation Coefficient (R)	0.26328	0.10444	-0.08206	0.0491	0.03239	0.48715	0.00528
Probability	<.0001	0.6193	0.6664	0.7	0.7755	0.0006	0.9745
Number of Observations	284	25	30	64	80	46	39
Total Organic Carbon (mg/l)							
Correlation Coefficient (R)	0.31554	-0.54166	0.28811	-0.11532	0.04876	-0.08053	-0.23823
Probability	<.0001	0.0302	0.2316	0.503	0.7533	0.7286	0.2623
Number of Observations	160	16	19	36	44	21	24
Dissolved Organic Carbon (mg/l)							
Correlation Coefficient (R)	0.36278	-0.32771	0.22731	0.099	-0.08103	-0.04823	-0.20772
Probability	<.0001	0.2153	0.3493	0.5657	0.6011	0.8355	0.3301
Number of Observations	160	16	19	36	44	21	24
Chlorophyll a (ug/l)							
Correlation Coefficient (R)	-0.08216	-0.25208	0.03764	0.04071	0.16771	-0.16233	-0.07038
Probability	0.1688	0.2241	0.8407	0.7494	0.1396	0.2867	0.6746
Number of Observations	282	25	31	64	79	45	38

Table 4.41
Correlation of Water Quality Parameters with Flow by Category – Salinity Zone 12 psu

Water Quality Parameter	Overall	<90 cfs	90-160 cfs	160-360 cfs	360-920 cfs	920-2100 cfs	> 2100 cfs
River Kilometer (km)							
Correlation Coefficient (R)	-0.74873	-0.6704	-0.50342	-0.31498	-0.03307	-0.44325	-0.54083
Probability	<.0001	0.0002	0.0039	0.0119	0.7695	0.002	0.0005
Number of Observations	283	25	31	63	81	46	37
Dissolved Oxygen (mg/l)							
Correlation Coefficient (R)	-0.03925	0.2822	-0.00081	0.06561	0.0448	-0.18045	-0.07449
Probability	0.5115	0.1717	0.9965	0.6094	0.6931	0.2301	0.6613
Number of Observations	282	25	31	63	80	46	37
Color (CPU)							
Correlation Coefficient (R)	0.52422	-0.20002	0.08708	0.198	0.1074	0.34381	0.04689
Probability	<.0001	0.3378	0.6414	0.1198	0.3399	0.0193	0.7829
Number of Observations	283	25	31	63	81	46	37
Turbidity (NTU)							
Correlation Coefficient (R)	-0.08346	0.09289	-0.08042	0.0552	-0.11819	0.01855	0.12795
Probability	0.3018	0.7322	0.7511	0.7565	0.4448	0.9364	0.5704
Number of Observations	155	16	18	34	44	21	22
Nitrite/Nitrate (mg/l)							
Correlation Coefficient (R)	-0.00531	0.10115	0.27632	0.23947	-0.03171	-0.20327	-0.21168
Probability	0.9292	0.6305	0.1324	0.0587	0.7787	0.1754	0.2085
Number of Observations	283	25	31	63	81	46	37
Ammonia/Ammonium (mg/l)							
Correlation Coefficient (R)	0.13424	-0.08732	-0.02534	0.18125	-0.02768	0.098	0.10782
Probability	0.0242	0.6781	0.8924	0.1551	0.8075	0.517	0.5253
Number of Observations	282	25	31	63	80	46	37

Table 4.41
Correlation of Water Quality Parameters with Flow by Category – Salinity Zone 12 psu

Water Quality Parameter	Overall	<90 cfs	90-160 cfs	160-360 cfs	360-920 cfs	920-2100 cfs	> 2100 cfs
Total Kjeldahl Nitrogen (mg/l)							
Correlation Coefficient (R)	-0.02237	-0.11378	-0.20127	-0.05372	-0.03626	-0.10269	-0.24688
Probability	0.7079	0.5881	0.2776	0.6758	0.7479	0.4971	0.1407
Number of Observations	283	25	31	63	81	46	37
Total Phosphorus (mg/l)							
Correlation Coefficient (R)	-0.36929	-0.0161	-0.38736	-0.10864	0.07759	0.20324	-0.30000
Probability	<.0001	0.9433	0.0417	0.4254	0.5263	0.2345	0.1365
Number of Observations	237	22	28	56	69	36	26
Silica (mg/l)							
Correlation Coefficient (R)	0.27368	-0.02574	-0.05546	-0.00943	0.08384	0.47669	-0.00045
Probability	<.0001	0.9028	0.771	0.9415	0.4568	0.0009	0.9979
Number of Observations	281	25	30	63	81	45	37
Total Organic Carbon (mg/l)							
Correlation Coefficient (R)	0.15944	-0.51489	0.20157	-0.30856	0.04086	-0.07325	-0.12437
Probability	0.0454	0.0413	0.4079	0.0713	0.7899	0.7524	0.5813
Number of Observations	158	16	19	35	45	21	22
Dissolved Organic Carbon (mg/l)							
Correlation Coefficient (R)	0.1973	-0.56028	0.24001	-0.28945	-0.03047	-0.06559	-0.15329
Probability	0.013	0.024	0.3223	0.0917	0.8425	0.7776	0.4958
Number of Observations	158	16	19	35	45	21	22
Chlorophyll a (ug/l)							
Correlation Coefficient (R)	0.00389	0.10018	-0.29807	0.17306	0.17509	-0.12682	-0.1129
Probability	0.9483	0.6337	0.1034	0.175	0.1203	0.4064	0.5121
Number of Observations	280	25	31	63	80	45	36

Table 4.42
Correlation of Water Quality Parameters with Flow by Category – Salinity Zone 20 psu

Water Quality Parameter	Overall	<90 cfs	90-160 cfs	160-360 cfs	360-920 cfs	920-2100 cfs	> 2100 cfs
River Kilometer (km)							
Correlation Coefficient (R)	-0.70883	-0.66269	-0.36369	-0.35353	-0.10264	-0.4524	-0.47711
Probability	<.0001	0.0003	0.0443	0.0045	0.3619	0.0016	0.0028
Number of Observations	283	25	31	63	81	46	37
Dissolved Oxygen (mg/l)							
Correlation Coefficient (R)	0.00399	0.11465	0.13243	0.04281	0.07267	-0.17263	-0.09471
Probability	0.9468	0.5853	0.4776	0.739	0.5218	0.2513	0.5771
Number of Observations	282	25	31	63	80	46	37
Color (CPU)							
Correlation Coefficient (R)	0.4423	-0.35087	0.13045	0.04028	0.06825	0.55427	0.26355
Probability	<.0001	0.0855	0.4843	0.7539	0.5449	<.0001	0.115
Number of Observations	283	25	31	63	81	46	37
Turbidity (NTU)							
Correlation Coefficient (R)	-0.02024	-0.01556	0.11969	0.00649	-0.14786	-0.36375	0.14925
Probability	0.8026	0.9544	0.6362	0.971	0.3382	0.105	0.5074
Number of Observations	155	16	18	34	44	21	22
Nitrite/Nitrate (mg/l)							
Correlation Coefficient (R)	0.09135	0.15118	0.26091	0.21258	-0.05346	-0.32735	0.07049
Probability	0.1253	0.4707	0.1563	0.0944	0.6355	0.0264	0.6785
Number of Observations	283	25	31	63	81	46	37
Ammonia/Ammonium (mg/l)							
Correlation Coefficient (R)	0.0088	0.08386	0.22039	0.0536	-0.12373	-0.13321	0.10206
Probability	0.8831	0.6902	0.2335	0.6765	0.2742	0.3775	0.5478
Number of Observations	282	25	31	63	80	46	37

Table 4.42
Correlation of Water Quality Parameters with Flow by Category – Salinity Zone 20 psu

Water Quality Parameter	Overall	<90 cfs	90-160 cfs	160-360 cfs	360-920 cfs	920-2100 cfs	> 2100 cfs
Total Kjeldahl Nitrogen (mg/l)							
Correlation Coefficient (R)	-0.0689	-0.37343	-0.03815	-0.1876	0.12059	0.10243	-0.18186
Probability	0.248	0.066	0.8386	0.1409	0.2835	0.4982	0.2814
Number of Observations	283	25	31	63	81	46	37
Total Phosphorus (mg/l)							
Correlation Coefficient (R)	-0.31437	-0.1151	-0.37452	-0.03555	0.0317	0.3132	-0.13893
Probability	<.0001	0.61	0.0496	0.7947	0.796	0.0629	0.4985
Number of Observations	237	22	28	56	69	36	26
Silica (mg/l)							
Correlation Coefficient (R)	0.23624	-0.15134	-0.05244	-0.02682	0.05794	0.46632	-0.00304
Probability	<.0001	0.4702	0.7831	0.8347	0.6074	0.0011	0.9857
Number of Observations	282	25	30	63	81	46	37
Total Organic Carbon (mg/l)							
Correlation Coefficient (R)	0.02491	-0.5851	0.17855	-0.3239	-0.02445	-0.10841	-0.10086
Probability	0.756	0.0173	0.4646	0.0577	0.8733	0.64	0.6552
Number of Observations	158	16	19	35	45	21	22
Dissolved Organic Carbon (mg/l)							
Correlation Coefficient (R)	0.02193	-0.45494	0.34083	-0.25647	-0.05879	-0.1039	-0.13247
Probability	0.7845	0.0766	0.1533	0.137	0.7013	0.654	0.5568
Number of Observations	158	16	19	35	45	21	22
Chlorophyll a (ug/l)							
Correlation Coefficient (R)	0.04429	-0.44435	0.00742	-0.01526	0.10438	0.46972	0.10155
Probability	0.4604	0.0261	0.9684	0.9055	0.3568	0.0011	0.5556
Number of Observations	280	25	31	63	80	45	36

Table 4.43

Correlation of Water Quality Parameters – 0 psu Salinity Zone

Water Quality Parameter	River Kilometer	Dissolved Oxygen	Color	Turbidity	Nitrite + Nitrate Nitrogen	Ammonia / Ammonium	Total Kjeldahl Nitrogen	Total Phosphorus	Silica	Total Organic Carbon	Dissolved Organic Carbon
Dissolved Oxygen (mg/l)	283										
Correlation Coefficient (R)	0.28733										
Probability	<.0001										
Color (CPU)	284	283									
Correlation Coefficient (R)	-0.59386	-0.47997									
Probability	<.0001	<.0001									
Turbidity (NTU)	157	156	157								
Correlation Coefficient (R)	-0.31014	-0.01818	0.05717								
Probability	<.0001	0.8217	0.477								
Nitrite/Nitrate (mg/l)	283	282	283	156							
Correlation Coefficient (R)	0.15075	0.17182	-0.1404	-0.12957							
Probability	0.0111	0.0038	0.0181	0.1069							
Ammonia/Ammonium (mg/l)	283	282	283	157	282						
Correlation Coefficient (R)	-0.03472	-0.17266	0.08914	-0.03127	0.09185						
Probability	0.5608	0.0036	0.1347	0.6975	0.1238						
Total Kjeldahl Nitrogen (mg/l)	284	283	284	157	283	283					
Correlation Coefficient (R)	-0.20171	-0.17448	0.36506	0.22224	0.15197	0.15714					
Probability	0.0006	0.0032	<.0001	0.0051	0.0105	0.0081					
Total Phosphorus (mg/l)	239	238	239	157	238	238	239				
Correlation Coefficient (R)	0.24319	-0.0375	-0.24877	0.07826	-0.08866	0.09082	-0.1049				
Probability	0.0001	0.5648	0.0001	0.3299	0.1728	0.1625	0.1057				
Silica (mg/l)	283	282	283	156	282	282	283	238			
Correlation Coefficient (R)	-0.27458	-0.12653	0.44483	0.11572	0.04013	-0.02874	0.14176	-0.11805			
Probability	<.0001	0.0337	<.0001	0.1503	0.5021	0.6308	0.017	0.0691			
Total Organic Carbon (mg/l)	160	159	160	157	159	160	160	160	159		
Correlation Coefficient (R)	-0.50774	-0.28193	0.60141	0.09515	-0.06395	0.03412	0.32539	-0.0993	0.30892		
Probability	<.0001	0.0003	<.0001	0.2359	0.4232	0.6684	<.0001	0.2115	<.0001		
Dissolved Organic Carbon (mg/l)	160	159	160	157	159	160	160	160	159	160	
Correlation Coefficient (R)	-0.50679	-0.15295	0.47723	0.14603	-0.07628	0.01074	0.37335	-0.07952	0.31815	0.78613	
Probability	<.0001	0.0543	<.0001	0.068	0.3392	0.8927	<.0001	0.3176	<.0001	<.0001	
Chlorophyll a (ug/l)	281	280	281	155	280	280	281	236	280	158	158
Correlation Coefficient (R)	-0.07145	0.22477	-0.02701	0.55347	-0.26082	-0.05215	0.12026	0.17405	0.1157	-0.06616	0.11447
Probability	0.2325	0.0001	0.6521	<.0001	<.0001	0.3847	0.044	0.0074	0.0531	0.4089	0.1521

Table 4.44

Correlation of Water Quality Parameters – 6 psu Salinity Zone

Water Quality Parameter	River Kilometer	Dissolved Oxygen	Color	Turbidity	Nitrite + Nitrate Nitrogen	Ammonia / Ammonium	Total Kjeldahl Nitrogen	Total Phosphorus	Silica	Total Organic Carbon	Dissolved Organic Carbon
Dissolved Oxygen (mg/l)	285										
Correlation Coefficient (R)	-0.00469										
Probability	0.9371										
Color (CPU)	285	285									
Correlation Coefficient (R)	-0.60606	-0.12483									
Probability	<.0001	0.0352									
Turbidity (NTU)	157	157	157								
Correlation Coefficient (R)	0.0993	0.21098	0.03914								
Probability	0.216	0.008	0.6265								
Nitrite/Nitrate (mg/l)	285	285	285	157							
Correlation Coefficient (R)	-0.01567	-0.04766	-0.03971	0.02741							
Probability	0.7922	0.4228	0.5043	0.7333							
Ammonia/Ammonium (mg/l)	284	284	284	157	284						
Correlation Coefficient (R)	-0.24633	-0.33636	0.19394	-0.12568	0.07812						
Probability	<.0001	<.0001	0.001	0.1168	0.1893						
Total Kjeldahl Nitrogen (mg/l)	285	285	285	157	285	284					
Correlation Coefficient (R)	-0.09826	0.01614	0.11075	0.44437	-0.08552	0.1604					
Probability	0.0978	0.7861	0.0619	<.0001	0.1498	0.0068					
Total Phosphorus (mg/l)	239	239	239	157	239	238	239				
Correlation Coefficient (R)	0.57039	-0.09728	-0.34904	0.33679	0.02087	-0.04451	-0.09229				
Probability	<.0001	0.1337	<.0001	<.0001	0.7482	0.4943	0.1549				
Silica (mg/l)	284	284	284	156	284	283	284	238			
Correlation Coefficient (R)	-0.2533	-0.18941	0.49609	0.01	0.11318	0.14557	-0.04553	-0.17998			
Probability	<.0001	0.0013	<.0001	0.9014	0.0568	0.0142	0.4447	0.0054			
Total Organic Carbon (mg/l)	160	160	160	157	160	160	160	160	159		
Correlation Coefficient (R)	-0.38318	-0.07319	0.49994	-0.0175	-0.08228	0.22813	0.32539	-0.14662	0.18071		
Probability	<.0001	0.3577	<.0001	0.8278	0.3009	0.0037	<.0001	0.0643	0.0226		
Dissolved Organic Carbon (mg/l)	160	160	160	157	160	160	160	160	159	160	
Correlation Coefficient (R)	-0.43166	0.0143	0.40824	-0.00015	-0.09841	0.24398	0.39899	-0.19616	0.12647	0.77059	
Probability	<.0001	0.8576	<.0001	0.9985	0.2157	0.0019	<.0001	0.0129	0.1122	<.0001	
Chlorophyll a (ug/l)	282	282	282	155	282	281	282	236	281	158	158
Correlation Coefficient (R)	0.03119	0.28449	0.07707	0.60625	-0.18898	-0.12504	0.29539	0.14042	0.00386	0.02271	0.09082
Probability	0.602	<.0001	0.1969	<.0001	0.0014	0.0362	<.0001	0.0311	0.9487	0.777	0.2564

Table 4.45

Correlation of Water Quality Parameters – 12 psu Salinity Zone

Water Quality Parameter	River Kilometer	Dissolved Oxygen	Color	Turbidity	Nitrite + Nitrate Nitrogen	Ammonia / Ammonium	Total Kjeldahl Nitrogen	Total Phosphorus	Silica	Total Organic Carbon	Dissolved Organic Carbon
Dissolved Oxygen (mg/l)	282										
Correlation Coefficient (R)	-0.05134										
Probability	0.3904										
Color (CPU)	283	282									
Correlation Coefficient (R)	-0.49777	-0.03592									
Probability	<.0001	0.548									
Turbidity (NTU)	155	154	155								
Correlation Coefficient (R)	0.07749	0.12325	0.08587								
Probability	0.3379	0.1278	0.2881								
Nitrite/Nitrate (mg/l)	283	282	283	155							
Correlation Coefficient (R)	0.04635	-0.10154	0.06182	-0.06258							
Probability	0.4374	0.0888	0.3	0.4392							
Ammonia/Ammonium (mg/l)	282	281	282	155	282						
Correlation Coefficient (R)	-0.14988	-0.30445	0.13342	-0.12212	0.10367						
Probability	0.0117	<.0001	0.0251	0.1301	0.0822						
Total Kjeldahl Nitrogen (mg/l)	283	282	283	155	283	282					
Correlation Coefficient (R)	-0.01799	0.14651	0.25016	0.75624	-0.06054	0.06948					
Probability	0.7632	0.0138	<.0001	<.0001	0.3102	0.2448					
Total Phosphorus (mg/l)	237	236	237	155	237	236	237				
Correlation Coefficient (R)	0.51569	-0.09646	-0.18075	0.28427	-0.04475	0.00463	0.18886				
Probability	<.0001	0.1396	0.0053	0.0003	0.4929	0.9436	0.0035				
Silica (mg/l)	281	280	281	153	281	280	281	235			
Correlation Coefficient (R)	-0.16873	-0.06426	0.55682	0.07073	0.16395	0.14359	0.12671	0.0052			
Probability	0.0046	0.2839	<.0001	0.385	0.0059	0.0162	0.0337	0.9368			
Total Organic Carbon (mg/l)	158	157	158	155	158	158	158	158	156		
Correlation Coefficient (R)	-0.26161	0.04599	0.24854	0.09511	-0.09471	0.0384	0.13161	-0.10474	0.06518		
Probability	0.0009	0.5674	0.0016	0.2391	0.2365	0.6319	0.0993	0.1903	0.4189		
Dissolved Organic Carbon (mg/l)	158	157	158	155	158	158	158	158	156	158	
Correlation Coefficient (R)	-0.29261	0.07324	0.26037	0.09892	-0.09843	0.05519	0.16936	-0.09391	0.07936	0.91376	
Probability	0.0002	0.362	0.001	0.2207	0.2186	0.491	0.0334	0.2405	0.3247	<.0001	
Chlorophyll a (ug/l)	280	279	280	153	280	279	280	234	278	156	156
Correlation Coefficient (R)	0.02593	0.26162	0.27525	0.37261	-0.09539	-0.06595	0.64155	0.14491	0.17729	0.11737	0.12289
Probability	0.6657	<.0001	<.0001	<.0001	0.1112	0.2723	<.0001	0.0267	0.003	0.1445	0.1264

Table 3.4
Statistical Summary of Results of Seasonal Kendall Tau Trend Analyses of Total Monthly Rainfall
(Recent 1932-2006 Historic Period)

SWFWMD ID	NOAA Gage Identification	Time Interval	Number of Years	Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
Peace River Watershed							
R142	Peace River at Bartow (ATM0274)	1932-2006	75	-0.03	0.200	0.240	-0.004
R148	Arcadia (ATM007)	1932-2006	75	-0.03	0.127	0.234	-0.004
R255	Punta Gorda (ATM0117)	1932-2006	75	-0.01	0.884	0.897	-0.001
Reference Watershed							
R336	Myakka River State Park (ATM0101)	1944-2006	63	0.05	0.029	**0.092**	0.009

(1976-2006 Period of HBMP Monitoring)

SWFWMD ID	NOAA Gage Identification	Time Interval	Number of Years	Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
Peace River Watershed							
R142	Peace River at Bartow (ATM0274)	1976-2006	31	-0.01	0.914	0.923	0.001
R148	Arcadia (ATM007)	1976-2006	31	-0.02	0.664	0.753	-0.004
R255	Punta Gorda (ATM0117)	1976-2006	31	-0.02	0.613	0.649	-0.004
Reference Watershed							
R336	Myakka River State Park (ATM0101)	1976-2006	31	0.01	0.902	0.906	0.001

*** Red values denote significant trend at p=0.05 level, while blue indicates trends significant at p=0.10**

**** Positive Tau statistic and slope values indicate increasing trend over time, negative values correspond to declining changes in flow over time**

Table 4.46

Correlation of Water Quality Parameters – 20 psu Salinity Zone

Water Quality Parameter	River Kilometer	Dissolved Oxygen	Color	Turbidity	Nitrite + Nitrate Nitrogen	Ammonia / Ammonium	Total Kjeldahl Nitrogen	Total Phosphorus	Silica	Total Organic Carbon	Dissolved Organic Carbon
Dissolved Oxygen (mg/l)	282										
Correlation Coefficient (R)	0.00568										
Probability	0.9243										
Color (CPU)	283	282									
Correlation Coefficient (R)	-0.34251	-0.0718									
Probability	<.0001	0.2294									
Turbidity (NTU)	155	154	155								
Correlation Coefficient (R)	0.13138	-0.00269	0.06486								
Probability	0.1032	0.9736	0.4227								
Nitrite/Nitrate (mg/l)	283	282	283	155							
Correlation Coefficient (R)	0.07146	0.07111	0.14136	0.08196							
Probability	0.2308	0.2339	0.0173	0.3107							
Ammonia/Ammonium (mg/l)	282	281	282	155	282						
Correlation Coefficient (R)	0.0161	-0.18036	0.1851	-0.00294	0.27916						
Probability	0.7877	0.0024	0.0018	0.9711	<.0001						
Total Kjeldahl Nitrogen (mg/l)	283	282	283	155	283	282					
Correlation Coefficient (R)	0.03464	-0.08384	0.10473	0.33375	-0.02235	0.11359					
Probability	0.5616	0.1603	0.0786	<.0001	0.7081	0.0567					
Total Phosphorus (mg/l)	237	236	237	155	237	236	237				
Correlation Coefficient (R)	0.52705	-0.14059	-0.00567	0.22961	0.25827	0.05054	0.17338				
Probability	<.0001	0.0308	0.9308	0.0041	<.0001	0.4397	0.0075				
Silica (mg/l)	282	281	282	154	282	281	282	236			
Correlation Coefficient (R)	-0.13206	-0.18446	0.50424	0.0671	0.24043	0.20026	0.03761	0.12787			
Probability	0.0266	0.0019	<.0001	0.4083	<.0001	0.0007	0.5293	0.0498			
Total Organic Carbon (mg/l)	158	157	158	155	158	158	158	158	157		
Correlation Coefficient (R)	-0.09216	0.02616	0.13829	0.27396	-0.04522	0.12313	0.13237	0.02689	-0.05991		
Probability	0.2494	0.745	0.0831	0.0006	0.5726	0.1232	0.0973	0.7374	0.4561		
Dissolved Organic Carbon (mg/l)	158	157	158	155	158	158	158	158	157	158	
Correlation Coefficient (R)	-0.05971	0.0196	0.10277	0.31866	-0.02365	0.10243	0.15649	0.05993	-0.05348	0.91374	
Probability	0.4561	0.8075	0.1988	<.0001	0.768	0.2003	0.0496	0.4544	0.5059	<.0001	
Chlorophyll a (ug/l)	280	279	280	153	280	279	280	234	279	156	156
Correlation Coefficient (R)	-0.02019	0.12791	0.24685	0.45789	-0.02527	-0.00636	0.53781	0.18457	0.13597	0.10508	0.08288
Probability	0.7366	0.0327	<.0001	<.0001	0.6737	0.9158	<.0001	0.0046	0.0231	0.1917	0.3036

Table 5.1
Specific Conductance in Joshua Creek Relative to Established Standards

Year	Number of Measurements	Percent of Measurements Exceeding 775 uS/cm	Percent of Measurements Exceeding 1275 uS/cm
1965	3	0	0
1966	5	0	0
1967	1	0	0
1968	1	0	0
1969	1	0	0
1970	1	0	0
1971	1	0	0
1972	3	0	0
1973	6	0	0
1974	5	20	0
1975	8	37.5	0
1976	8	0	0
1977	7	14.29	0
1978	7	0	0
1979	6	0	0
1980	7	0	0
1981	8	0	0
1982	9	0	0
1983	7	0	0
1984	7	0	0
1985	6	0	0
1986	4	0	0
1991	1	100	0
1992	4	25	0
1993	5	40	0
1994	5	20	0
1995	5	20	0
1996	6	0	0
1997	7	57.14	0
1998	11	45.45	0
1999	17	76.47	17.65
2000	11	100	54.55
2001	24	91.67	20.83
2002	377	56.76	15.65
2003	377	55.7	4.24
2004	375	42.4	3.73
2005	361	21.05	0
2006	365	66.85	7.95

Table 5.2
Specific Conductance in Horse Creek Relative to Established Standards

Year	Number of Measurements	Percent of Measurements Exceeding 775 uS/cm	Percent of Measurements Exceeding 1275 uS/cm
1962	1	0	0
1963	2	0	0
1964	5	0	0
1965	2	0	0
1966	6	0	0
1967	8	0	0
1968	1	0	0
1969	1	0	0
1970	2	0	0
1971	7	0	0
1972	4	0	0
1973	6	0	0
1974	6	0	0
1975	8	0	0
1976	8	0	0
1977	7	0	0
1978	8	0	0
1979	6	0	0
1980	8	0	0
1981	9	0	0
1982	8	0	0
1983	8	0	0
1984	8	0	0
1985	9	0	0
1986	8	12.5	0
1987	7	0	0
1988	6	0	0
1989	6	0	0
1990	7	14.29	0
1991	4	0	0
1992	4	0	0
1993	5	0	0
1994	7	0	0
1995	5	0	0
1996	6	0	0
1997	12	0	0
1998	17	0	0
1999	14	7.14	0
2000	11	18.18	0
2001	12	33.33	0
2002	12	0	0
2003	12	0	0
2004	12	8.33	0
2005	3	0	0

Table 5.3
Annual Relative Flow Contributions from Gages Upstream of the Facility

Year	Relative Percent Contributions to Total Mean Gaged Flow at the Facility			Mean Total Flow at the Facility (cfs)	Median Total Flow at the Facility (cfs)
	Peace River at Arcadia (Percent of Total)	Joshua Creek (Percent of Total)	Horse Creek (Percent of Total)		
1951	89.71	4.6	5.69	1314	583
1952	86.78	3.52	9.7	1380	713
1953	85.17	4.31	10.52	3465	2050
1954	86.13	3.27	10.6	1662	976
1955	89.83	2.27	7.9	710	331
1956	94.41	1.63	3.96	612	218
1957	85.07	5.53	9.4	1978	1268
1958	77.1	10.21	12.69	1722	1221
1959	84.53	4.99	10.49	3382	1797
1960	87.49	3.83	8.68	3384	1528
1961	86.81	4.46	8.73	624	468
1962	86.53	4.54	8.92	1362	358
1963	85.87	3.3	10.83	1120	741
1964	88.31	3.55	8.14	1094	648
1965	85.1	4.82	10.07	1277	486
1966	81.94	7.14	10.92	1503	1011
1967	87.24	4.71	8.04	995	297
1968	84.78	5.63	9.59	1719	510
1969	81.45	6.47	12.08	1700	1183
1970	82.98	5.58	11.44	1360	1040
1971	86.43	5.08	8.49	888	380
1972	83.12	4.42	12.46	686	367
1973	85.04	6.01	8.95	1277	588
1974	89.85	5.61	4.54	1324	229
1975	85.34	7.89	6.77	845	276
1976	90.84	4.38	4.77	784	338
1977	88.62	3.49	7.89	588	364
1978	85.38	6.07	8.55	1255	581
1979	81.82	7.39	10.79	1533	733
1980	87.15	4.46	8.38	578	438
1981	79.34	6.33	14.32	442	161
1982	81.6	6.53	11.87	2142	625
1983	81.22	5.94	12.84	1779	1200
1984	81.08	7.65	11.28	743	439
1985	78.99	13.98	7.03	511	158

Table 5.3
Annual Relative Flow Contributions from Gages Upstream of the Facility

Year	Relative Percent Contributions to Total Mean Gaged Flow at the Facility			Mean Total Flow at the Facility (cfs)	Median Total Flow at the Facility (cfs)
	Peace River at Arcadia (Percent of Total)	Joshua Creek (Percent of Total)	Horse Creek (Percent of Total)		
1986	76.72	8.75	14.54	781	342
1987	76.48	9.63	13.88	1096	693
1988	79.66	8.52	11.83	1425	582
1989	81.66	11.97	6.36	482	330
1990	77.8	10.6	11.6	545	316
1991	75.2	12.13	12.67	1064	412
1992	79.06	11.17	9.77	1143	329
1993	80.13	8.23	11.63	903	632
1994	81.69	8.58	9.73	1789	902
1995	80.2	8.06	11.74	2250	1085
1996	83.43	9.75	6.82	726	615
1997	78.16	11.69	10.14	1439	376
1998	78.72	9.61	11.67	2460	1000
1999	75.06	13.9	11.05	783	424
2000	64.76	24.52	10.72	221	99
2001	70.23	18.24	11.53	1442	192
2002	71.1	12.65	16.25	1616	790
2003	82.33	7.06	10.61	2454	964
2004	78.73	9.86	11.41	2363	678
2005	82.65	7.34	10.01	2339	1263
2006	75.37	13.1	11.52	538	251

Table 6.2
Annual Summary Statistics of Gage Height (Water Level) and Surface and Bottom Salinities over the Period-of-Record at the Two USGS Continuous Recorders

Year	Gage Height (feet)				Surface Salinity (psu)				Bottom Salinity (psu)			
	Mean	Median	Minimum	Maximum	Mean	Median	Minimum	Maximum	Mean	Median	Minimum	Maximum
River Kilometer 15.5 (Harbour Heights)												
1997	0.72	0.73	-1.91	3.28	5.5	3.8	0.0	22.9	6.0	4.3	0.0	25.0
1998	0.77	0.79	-2.12	3.59	2.0	0.3	0.0	17.6	2.1	0.3	0.0	18.2
1999	0.80	0.84	-1.81	3.32	6.7	6.6	0.1	23.1	6.8	6.8	0.1	22.9
2000	0.72	0.77	-2.46	4.19	12.6	13.8	0.2	28.8	13.2	14.3	0.2	29.8
2001	0.60	0.61	-1.98	5.64	11.0	11.8	0.0	28.6	11.2	12.2	0.0	29.5
2002	0.75	0.78	-2.09	3.00	6.0	2.6	0.1	24.8	6.2	2.8	0.1	24.1
2003	0.77	0.84	-2.09	3.21	2.6	1.2	0.0	19.1	3.0	1.4	0.0	19.9
2004	0.83	0.87	-2.38	5.36	4.6	3.1	0.0	20.0	4.6	3.1	0.0	19.4
2005	0.89	0.94	-1.59	3.38	2.1	0.5	0.0	20.0	2.4	0.6	0.1	20.8
2006	0.77	0.81	-1.94	3.54	8.1	7.6	0.1	24.7	8.6	8.2	0.1	25.3
River Kilometer 26.5 (Peace River Heights)												
1998	1.05	1.01	-1.69	5.63	0.2	0.1	0.0	1.6	0.2	0.1	0.0	1.7
1999	0.78	0.84	-1.88	3.20	0.4	0.2	0.1	11.5	0.4	0.2	0.1	11.4
2000	0.62	0.67	-2.55	4.08	2.9	0.9	0.1	19.8	3.0	0.9	0.1	20.5
2001	0.73	0.68	-2.10	5.99	1.5	0.4	0.0	15.4	1.6	0.4	0.0	15.9
2002	0.78	0.85	-2.02	3.04	0.6	0.2	0.0	9.2	0.6	0.2	0.1	9.5
2003	1.12	1.17	-1.69	5.08	0.2	0.2	0.0	1.8	0.2	0.2	0.0	2.0
2004	1.14	1.07	-1.98	5.55	0.2	0.2	0.1	6.8	0.2	0.2	0.1	6.7
2005	1.10	1.19	-1.47	3.76	0.1	0.1	0.1	3.3	0.1	0.1	0.1	3.4
2006	0.75	0.79	-2.10	3.50	1.1	0.3	0.1	14.1	1.2	0.3	0.1	14.1

Table 6.6 Best Fit GLM Model of Surface Salinity at Harbour Heights (RK 15.5)

The GLM Procedure

Dependent Variable: Surface Salinity

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	5	1056367.000	211273.400	23919.2	<.0001
Error	53061	468676.640	8.833		
Corrected Total	53066	1525043.640			

R-Square	Coeff Var	Root MSE	SAL_T Mean
0.692680	47.99565	2.972001	6.192229

Source	DF	Type I SS	Mean Square	F Value	Pr > F
F5	1	602276.5713	602276.5713	68186.5	<.0001
LF5	1	342021.1483	342021.1483	38721.8	<.0001
GHEIGHT	1	79860.0211	79860.0211	9041.31	<.0001
LF60	1	19141.4176	19141.4176	2167.09	<.0001
F60	1	13067.8417	13067.8417	1479.47	<.0001

Source	DF	Type III SS	Mean Square	F Value	Pr > F
F5	1	16119.3621	16119.3621	1824.95	<.0001
LF5	1	173247.2126	173247.2126	19614.1	<.0001
GHEIGHT	1	84222.3561	84222.3561	9535.19	<.0001
LF60	1	31124.8540	31124.8540	3523.79	<.0001
F60	1	13067.8417	13067.8417	1479.47	<.0001

Table 6.6 Best Fit GLM Model of Surface Salinity at Harbour Heights (RK 15.5)

The GLM Procedure
Dependent Variable: Surface Salinity

Parameter	Estimate	Standard Error	t Value	Pr > |t|
Intercept	41.67725485	0.16080141	259.18	<.0001
F5	0.00305101	0.00007142	42.72	<.0001
LF5	-5.18361552	0.03701251	-140.05	<.0001
GHEIGHT	1.63682490	0.01676245	97.65	<.0001
LF60	-1.47225276	0.02480148	-59.36	<.0001
F60	0.00090797	0.00002361	38.46	<.0001

Table 6.7 Best Fit GLM Model of Surface Salinity at MZ4 Heights (RK 21.9)

The GLM Procedure

Dependent Variable: Surface Salinity

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	7	31902.84614	4557.54945	2440.92	<.0001
Error	5695	10633.38609	1.86714		
Corrected Total	5702	42536.23223			

R-Square	Coeff Var	Root MSE	SAL_T Mean
0.750016	58.44207	1.366435	2.338101

Source	DF	Type I SS	Mean Square	F Value	Pr > F
GHEIGHT	1	4973.31400	4973.31400	2663.59	<.0001
F5	1	14008.49193	14008.49193	7502.63	<.0001
F52	1	4178.51940	4178.51940	2237.92	<.0001
F53	1	1487.87872	1487.87872	796.87	<.0001
F30	1	584.20069	584.20069	312.88	<.0001
LF302	1	4543.78160	4543.78160	2433.55	<.0001
FGH	1	2126.65980	2126.65980	1138.99	<.0001

Source	DF	Type III SS	Mean Square	F Value	Pr > F
GHEIGHT	1	6057.392409	6057.392409	3244.20	<.0001
F5	1	554.354521	554.354521	296.90	<.0001
F52	1	638.379548	638.379548	341.90	<.0001
F53	1	626.884805	626.884805	335.75	<.0001
F30	1	1894.615710	1894.615710	1014.71	<.0001

Table 6.7 Best Fit GLM Model of Surface Salinity at MZ4 Heights (RK 21.9)

The GLM Procedure
Dependent Variable: Surface Salinity

Source	DF	Type III SS	Mean Square	F Value	Pr > F
LF302	1	4772.924569	4772.924569	2556.27	<.0001
FGH	1	2126.659801	2126.659801	1138.99	<.0001

Parameter	Estimate	Standard Error	t Value	Pr > |t|
Intercept	19.81958065	0.25582722	77.47	<.0001
GHEIGHT	2.72177822	0.04778579	56.96	<.0001
F5	-0.03168349	0.00183877	-17.23	<.0001
F52	0.00011286	0.00000610	18.49	<.0001
F53	-0.00000011	0.00000001	-18.32	<.0001
F30	0.00386304	0.00012127	31.85	<.0001
LF302	-1.58998773	0.03144781	-50.56	<.0001
FGH	-0.00736653	0.00021827	-33.75	<.0001

Table 3.5
Statistical Summary of Results of Seasonal Kendall Tau Trend Analyses of Total Annual Rainfall
(Recent 1932-2006 Historic Period)

SWFWMD ID	NOAA Gage Identification	Time Interval	Number of Years	Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
Peace River Watershed							
R142	Peace River at Bartow (ATM0274)	1932-2006	75	-0.09	0.228	0.228	-0.061
R148	Arcadia (ATM007)	1932-2006	75	-0.05	0.561	0.561	-0.039
R255	Punta Gorda (ATM0117)	1932-2006	75	-0.02	0.787	0.787	-0.010
Reference Watershed							
R336	Myakka River State Park (ATM0101)	1944-2006	63	0.17	0.050	**0.050**	0.165

(1976-2006 Period of HBMP Monitoring)

SWFWMD ID	NOAA Gage Identification	Time Interval	Number of Years	Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
Peace River Watershed							
R142	Peace River at Bartow (ATM0274)	1976-2006	31	0.13	0.308	0.308	0.243
R148	Arcadia (ATM007)	1976-2006	31	0.09	0.465	0.465	0.198
R255	Punta Gorda (ATM0117)	1976-2006	31	0.10	0.455	0.455	0.111
Reference Watershed							
R336	Myakka River State Park (ATM0101)	1976-2006	31	0.05	0.683	0.683	0.090

*** Red values denote significant trend at p=0.05 level, while blue indicates trends significant at p=0.10**

**** Positive Tau statistic and slope values indicate increasing trend over time, negative values correspond to declining changes in flow over time**

Table 6.8 Best Fit GLM Model of Surface Salinity at MZ3 Heights (RK 23.4)

The GLM Procedure

Dependent Variable: Surface Salinity

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	7	16501.95363	2357.42195	1630.25	<.0001
Error	4858	7024.89437	1.44605		
Corrected Total	4865	23526.84800			

R-Square	Coeff Var	Root MSE	SAL_T Mean
0.701409	66.75568	1.202517	1.801370

Source	DF	Type I SS	Mean Square	F Value	Pr > F
GHEIGHT	1	4117.784466	4117.784466	2847.62	<.0001
F5	1	5846.289696	5846.289696	4042.95	<.0001
F52	1	1651.508307	1651.508307	1142.09	<.0001
F53	1	870.187539	870.187539	601.77	<.0001
F30	1	501.033198	501.033198	346.48	<.0001
LF302	1	2074.053313	2074.053313	1434.29	<.0001
FGH	1	1441.097106	1441.097106	996.58	<.0001

Source	DF	Type III SS	Mean Square	F Value	Pr > F
GHEIGHT	1	4231.142092	4231.142092	2926.01	<.0001
F5	1	1116.036624	1116.036624	771.78	<.0001
F52	1	1253.064536	1253.064536	866.55	<.0001
F53	1	1209.147531	1209.147531	836.17	<.0001
F30	1	768.953584	768.953584	531.76	<.0001

Table 6.8 Best Fit GLM Model of Surface Salinity at MZ3 Heights (RK 23.4)

The GLM Procedure
Dependent Variable: Surface Salinity

Source	DF	Type III SS	Mean Square	F Value	Pr > F
LF302	1	2412.717254	2412.717254	1668.49	<.0001
FGH	1	1441.097106	1441.097106	996.58	<.0001

Parameter	Estimate	Standard Error	t Value	Pr > |t|
Intercept	16.58805277	0.26178173	63.37	<.0001
GHEIGHT	2.53524856	0.04686870	54.09	<.0001
F5	-0.06117897	0.00220219	-27.78	<.0001
F52	0.00026144	0.00000888	29.44	<.0001
F53	-0.00000031	0.00000001	-28.92	<.0001
F30	0.00277698	0.00012042	23.06	<.0001
LF302	-1.19087915	0.02915450	-40.85	<.0001
FGH	-0.00748614	0.00023714	-31.57	<.0001

Table 6.9 Best Fit GLM Model of Surface Salinity at MZ2 Heights (RK 24.5)

The GLM Procedure

Dependent Variable: Surface Salinity

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	7	9932.64388	1418.94913	1349.60	<.0001
Error	4544	4777.49349	1.05139		
Corrected Total	4551	14710.13737			

R-Square	Coeff Var	Root MSE	SAL_T Mean
0.675224	73.95326	1.025371	1.386512

Source	DF	Type I SS	Mean Square	F Value	Pr > F
GHEIGHT	1	2467.858342	2467.858342	2347.25	<.0001
F5	1	3029.583700	3029.583700	2881.52	<.0001
F52	1	1242.836877	1242.836877	1182.09	<.0001
F53	1	659.396063	659.396063	627.17	<.0001
F30	1	288.446229	288.446229	274.35	<.0001
LF302	1	1312.365395	1312.365395	1248.23	<.0001
FGH	1	932.157274	932.157274	886.60	<.0001

Source	DF	Type III SS	Mean Square	F Value	Pr > F
GHEIGHT	1	2776.097081	2776.097081	2640.42	<.0001
F5	1	779.601545	779.601545	741.50	<.0001
F52	1	856.648744	856.648744	814.78	<.0001
F53	1	809.588066	809.588066	770.02	<.0001
F30	1	590.777298	590.777298	561.90	<.0001

Table 6.9 Best Fit GLM Model of Surface Salinity at MZ2 Heights (RK 24.5)

The GLM Procedure
Dependent Variable: Surface Salinity

Source	DF	Type III SS	Mean Square	F Value	Pr > F
LF302	1	1540.265185	1540.265185	1464.99	<.0001
FGH	1	932.157274	932.157274	886.60	<.0001

Parameter	Estimate	Standard Error	t Value	Pr > |t|
Intercept	13.38004492	0.22294981	60.01	<.0001
GHEIGHT	2.16914737	0.04221362	51.39	<.0001
F5	-0.05271746	0.00193597	-27.23	<.0001
F52	0.00022560	0.00000790	28.54	<.0001
F53	-0.00000027	0.00000001	-27.75	<.0001
F30	0.00247437	0.00010438	23.70	<.0001
LF302	-0.96376720	0.02517997	-38.28	<.0001
FGH	-0.00688895	0.00023136	-29.78	<.0001

Table 6.10 Best Fit GLM Model of Surface Salinity at Peace River Heights (RK 26.7)

The GLM Procedure

Dependent Variable: Surface Salinity

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	7	16436.42718	2348.06103	2923.17	<.0001
Error	24135	19386.62005	0.80326		
Corrected Total	24142	35823.04723			

R-Square	Coeff Var	Root MSE	SAL_T Mean
0.458823	140.6236	0.896246	0.637337

Source	DF	Type I SS	Mean Square	F Value	Pr > F
GHEIGHT	1	1660.621144	1660.621144	2067.36	<.0001
F5	1	4790.367863	4790.367863	5963.68	<.0001
F52	1	2916.569229	2916.569229	3630.93	<.0001
F53	1	2125.911535	2125.911535	2646.61	<.0001
F30	1	78.615594	78.615594	97.87	<.0001
LF302	1	3377.115319	3377.115319	4204.27	<.0001
FGH	1	1487.226495	1487.226495	1851.49	<.0001

Source	DF	Type III SS	Mean Square	F Value	Pr > F
GHEIGHT	1	3099.063517	3099.063517	3858.12	<.0001
F5	1	597.141554	597.141554	743.40	<.0001
F52	1	808.940663	808.940663	1007.08	<.0001
F53	1	829.717807	829.717807	1032.94	<.0001
F30	1	1896.033966	1896.033966	2360.43	<.0001

Table 6.10 Best Fit GLM Model of Surface Salinity at Peace River Heights (RK 26.7)

The GLM Procedure
Dependent Variable: Surface Salinity

Source	DF	Type III SS	Mean Square	F Value	Pr > F
LF302	1	3616.315031	3616.315031	4502.06	<.0001
FGH	1	1487.226495	1487.226495	1851.49	<.0001

Parameter	Estimate	Standard Error	t Value	Pr > |t|
Intercept	7.693856965	0.07228163	106.44	<.0001
GHEIGHT	0.985452688	0.01586529	62.11	<.0001
F5	-0.016179931	0.00059342	-27.27	<.0001
F52	0.000067226	0.00000212	31.73	<.0001
F53	-0.000000076	0.00000000	-32.14	<.0001
F30	0.002524712	0.00005197	48.58	<.0001
LF302	-0.654562671	0.00975541	-67.10	<.0001
FGH	-0.003442042	0.00007999	-43.03	<.0001

Table 6.12
Predicted Salinity Changes due to Facility Withdrawals based on Statistical Model Results

Year	River Kilometer	Modeled Differences (Increases) Between No-Withdrawals and Actual Facility Withdrawals				Modeled Differences (Increases) Between No-Withdrawals and Maximum 1996 Permitted Facility Withdrawals			
		Mean (psu)	Median (psu)	Minimum (psu)	Maximum (psu)	Mean (psu)	Median (psu)	Minimum (psu)	Maximum (psu)
1998	RK 15.5	0.09	0.00	0.00	1.25	0.21	0.00	0.00	0.64
	RK 21.9	0.04	0.00	0.00	1.12	0.07	0.00	0.00	0.74
	RK 23.4	0.02	0.00	0.00	1.08	0.04	0.00	0.00	0.86
	RK 24.5	0.02	0.00	0.00	0.92	0.03	0.00	0.00	0.69
	RK 26.7	0.01	0.00	0.00	0.44	0.02	0.00	0.00	0.91
1999	RK 15.5	0.25	0.17	0.00	1.16	0.31	0.40	0.00	0.64
	RK 21.9	0.14	0.00	0.00	0.91	0.11	0.00	0.00	1.04
	RK 23.4	0.11	0.00	0.00	0.89	0.08	0.00	0.00	1.03
	RK 24.5	0.09	0.00	0.00	0.77	0.05	0.00	0.00	0.76
	RK 26.7	0.04	0.00	0.00	0.36	0.03	0.00	0.00	0.86
2000	RK 15.5	0.16	0.00	0.00	1.91	0.19	0.00	0.00	0.64
	RK 21.9	0.09	0.00	0.00	1.32	0.08	0.00	0.00	1.15
	RK 23.4	0.07	0.00	0.00	1.31	0.05	0.00	0.00	0.85
	RK 24.5	0.05	0.00	0.00	1.10	0.04	0.00	0.00	0.65
	RK 26.7	0.02	0.00	0.00	0.56	0.02	0.00	0.00	0.81
2001	RK 15.5	0.11	0.00	0.00	1.17	0.17	0.00	0.00	0.64
	RK 21.9	0.06	0.00	0.00	0.90	0.06	0.00	0.00	0.98
	RK 23.4	0.04	0.00	0.00	0.79	0.04	0.00	0.00	1.39
	RK 24.5	0.03	0.00	0.00	0.67	0.03	0.00	0.00	0.85

Table 6.12
Predicted Salinity Changes due to Facility Withdrawals based on Statistical Model Results

Year	River Kilometer	Modeled Differences (Increases) Between No-Withdrawals and Actual Facility Withdrawals				Modeled Differences (Increases) Between No-Withdrawals and Maximum 1996 Permitted Facility Withdrawals			
		Mean (psu)	Median (psu)	Minimum (psu)	Maximum (psu)	Mean (psu)	Median (psu)	Minimum (psu)	Maximum (psu)
	RK 26.7	0.02	0.00	0.00	0.38	0.03	0.00	0.00	0.90
2002	RK 15.5	0.16	0.00	0.00	1.10	0.22	0.00	0.00	0.64
	RK 21.9	0.07	0.00	0.00	0.72	0.07	0.00	0.00	1.18
	RK 23.4	0.04	0.00	0.00	0.73	0.05	0.00	0.00	1.10
	RK 24.5	0.03	0.00	0.00	0.50	0.04	0.00	0.00	0.86
	RK 26.7	0.01	0.00	0.00	0.57	0.02	0.00	0.00	1.09
2003	RK 15.5	0.08	0.00	0.00	0.60	0.22	0.00	0.00	0.64
	RK 21.9	0.03	0.00	0.00	0.65	0.07	0.00	0.00	1.47
	RK 23.4	0.02	0.00	0.00	0.87	0.04	0.00	0.00	1.30
	RK 24.5	0.01	0.00	0.00	0.79	0.03	0.00	0.00	1.14
	RK 26.7	0.02	0.00	0.00	0.54	0.04	0.00	0.00	1.04
2004	RK 15.5	0.20	0.10	0.00	0.99	0.31	0.43	0.00	0.64
	RK 21.9	0.08	0.00	0.00	0.98	0.10	0.00	0.00	0.92
	RK 23.4	0.06	0.00	0.00	0.79	0.08	0.00	0.00	1.02
	RK 24.5	0.04	0.00	0.00	0.67	0.05	0.00	0.00	0.81
	RK 26.7	0.02	0.00	0.00	0.48	0.03	0.00	0.00	0.78
2005	RK 15.5	0.11	0.00	0.00	0.64	0.22	0.12	0.00	0.59
	RK 21.9	0.03	0.00	0.00	0.64	0.05	0.00	0.00	1.01
	RK 23.4	0.02	0.00	0.00	0.79	0.03	0.00	0.00	1.26

Table 6.12
Predicted Salinity Changes due to Facility Withdrawals based on Statistical Model Results

Year	River Kilometer	Modeled Differences (Increases) Between No-Withdrawals and Actual Facility Withdrawals				Modeled Differences (Increases) Between No-Withdrawals and Maximum 1996 Permitted Facility Withdrawals			
		Mean (psu)	Median (psu)	Minimum (psu)	Maximum (psu)	Mean (psu)	Median (psu)	Minimum (psu)	Maximum (psu)
	RK 24.5	0.01	0.00	0.00	0.65	0.02	0.00	0.00	1.08
	RK 26.7	0.02	0.00	0.00	0.67	0.03	0.00	0.00	0.89
2006	RK 15.5	0.38	0.45	0.00	1.50	0.31	0.41	0.00	0.64
	RK 21.9	0.20	0.04	0.00	1.22	0.13	0.00	0.00	0.89
	RK 23.4	0.16	0.00	0.00	1.24	0.09	0.00	0.00	1.54
	RK 24.5	0.12	0.00	0.00	1.06	0.07	0.00	0.00	0.94
	RK 26.7	0.06	0.00	0.00	0.92	0.03	0.00	0.00	1.01

Table 6.13
Summary of Previous Lower Peace River Estuary Salinity / Isohaline Models

Study	Year	Descriptions	Summary of Potential Impacts of Withdrawals
University of Miami	1975	Statistical models were developed from monthly salinity data collected between 1973-1974 at fixed sampling locations along the lower Peace River, and Arcadia gaged flows.	Potential increase of 1.3 to 3.2 psu with 30 mgd withdrawals during flows of 100 cfs
Environmental Quality Laboratory	1982, 1984, 1989, 1996	Statistical models were developed of surface and bottom salinities at HBMP long-term fixed monitoring sites in the lower river and upper Charlotte Harbor based on monthly data and daily gaged freshwater inflows and withdrawals. Additional models were used to indicate the spatial variability of both freshwater interface and isohalines in relation to inflows and withdrawals.	Less than 0.5 psu change under 1988 revised withdrawal schedule, and isohaline movement less than 0.4 kilometers
2000 HBMP Midterm Interpretive Report	2002	Long-term monthly HBMP fixed station and moving isohaline data were combined to develop statistical models of the spatial salinity relationships in the lower Peace River with daily gaged inflows and withdrawals.	Less than 0.5 psu change under the 1996 revised permit withdrawals schedule
Janicki Environmental	2003	Updated long-term monthly HBMP fixed station and moving isohaline data were used to develop predictive models of salinity water column profile and relative isohaline relationships in the lower Peace River with daily gaged inflows and withdrawals.	Average potential increases of 0.1 to 0.3 psu in salinity and upstream movement of 0.1 to 0.3 kilometers of the isohalines under 1996 withdrawal schedule
2002 HBMP Comprehensive Summary Report	2004	Statistical models were developed using hourly averaged subsurface and near bottom salinities collected at 15-minute intervals between 1997 and 2002 at river kilometers 15.5 and 26.7 with corresponding stage level and daily gaged inflows and Facility withdrawals	Increases in salinities at each site under 1996 permit conditions predicted to be less than 0.4 psu (actual predicted increases have exceeded this approximately ten percent of the time).
Evaluation of Low Flow “Pump Test” Findings using Observed Data and Modeled Results from the Lower Peace River USGS and HBMP Continuous Recorders	2007	The primary object of this report was to graphically and statistically summarize and present conclusions from a series of sixteen “pump test” events conducted during the period between December 2006 and May 2007. Statistical models were developed using hourly averaged salinities collected at 15-minute intervals between at river kilometers 15.5, 21.9, 23.4, 24.5 and 26.7 with corresponding stage level and daily gaged inflows and Facility withdrawals.	The results of specifically developed low flow models indicated that the magnitude of daily salinity differences due to withdrawals were between 0.1 and 0.5 psu. However, larger differences were observed that were confined to the top end of incoming tides.

Table 3.7
Summary of Time Series Graphics for Period of Record for each Gage

USGS ID	Gage Identification	Time Period of Data		P0 (Minimum)	P10	P25	P50 (Median)
Peace River Watershed							
2294650	Peace River at Bartow	10/01/39	12/31/06	Figure 3.56	Figure 3.69	Figure 3.82	Figure 3.95
2294898	Peace River at Fort Meade	06/01/74	12/31/06	Figure 3.57	Figure 3.70	Figure 3.83	Figure 3.96
2295420	Payne Creek near Bowling Green	10/01/63	12/31/06	Figure 3.58	Figure 3.71	Figure 3.84	Figure 3.97
2295637	Peace River at Zolfo Springs	09/01/33	12/31/06	Figure 3.59	Figure 3.72	Figure 3.85	Figure 3.98
2296500	Charlie Creek near Gardner	05/01/50	12/31/06	Figure 3.60	Figure 3.73	Figure 3.86	Figure 3.99
2296750	Peace River at Arcadia	04/01/31	12/31/06	Figure 3.61	Figure 3.74	Figure 3.87	Figure 3.100
2297100	Joshua Creek at Nocatee	05/01/50	12/31/06	Figure 3.62	Figure 3.75	Figure 3.88	Figure 3.101
2297310	Horse Creek near Arcadia	05/01/50	12/31/06	Figure 3.63	Figure 3.76	Figure 3.89	Figure 3.102
	Total Gaged Flow at Facility	05/01/50	12/31/06	Figure 3.64	Figure 3.77	Figure 3.90	Figure 3.103
2298123	Prairie Creek near Fort Ogden	10/01/63	12/31/06	Figure 3.65	Figure 3.78	Figure 3.91	Figure 3.104
2298202	Shell Creek near Punta Gorda	01/01/65	12/31/06	Figure 3.66	Figure 3.79	Figure 3.92	Figure 3.105
	Total Gaged Flow to Harbor	01/01/65	12/31/06	Figure 3.67	Figure 3.80	Figure 3.93	Figure 3.106
Reference Watershed							
2298830	Myakka River near Sarasota	9/1/1936	12/31/06	Figure 3.68	Figure 3.81	Figure 3.94	Figure 3.107

2006 HBMP
Comprehensive Summary Report
Figures, Maps & Photos

This section contains figures, maps and photos not included directly in the text for each section

Chapter 1 – Introduction

Chapter 2* – Summaries of Recent HBMP Reports and Primary Conclusions

Chapter 3 – Status and Trends in Regional Rainfall and Flows, and Facility Withdrawals

Chapter 4 – Status and Trends of Hydrobiological Water Quality Indicators in the Lower Peace River/Upper Charlotte Harbor Estuarine System

Chapter 5 – Influences of Increasing Conductivity in the Lower Peace River Watershed

Chapter 6 – Salinity/Flow/Withdrawal Relationships at Continuous Recorders

Chapter 7 – Evaluation of Existing Withdrawal Schedule and Assessment of Effectiveness in Limiting Potential Impacts

Chapter 8 – Analyses of Updated Morphometery

Chapter 9 – Evaluation of the Presence or Absence of Adverse Impacts and Appropriate Indicators

Chapter 10 –Proposed Monitoring Design Modifications to the Existing Long-term HBMP Elements

*** Denotes chapter without additional figures**

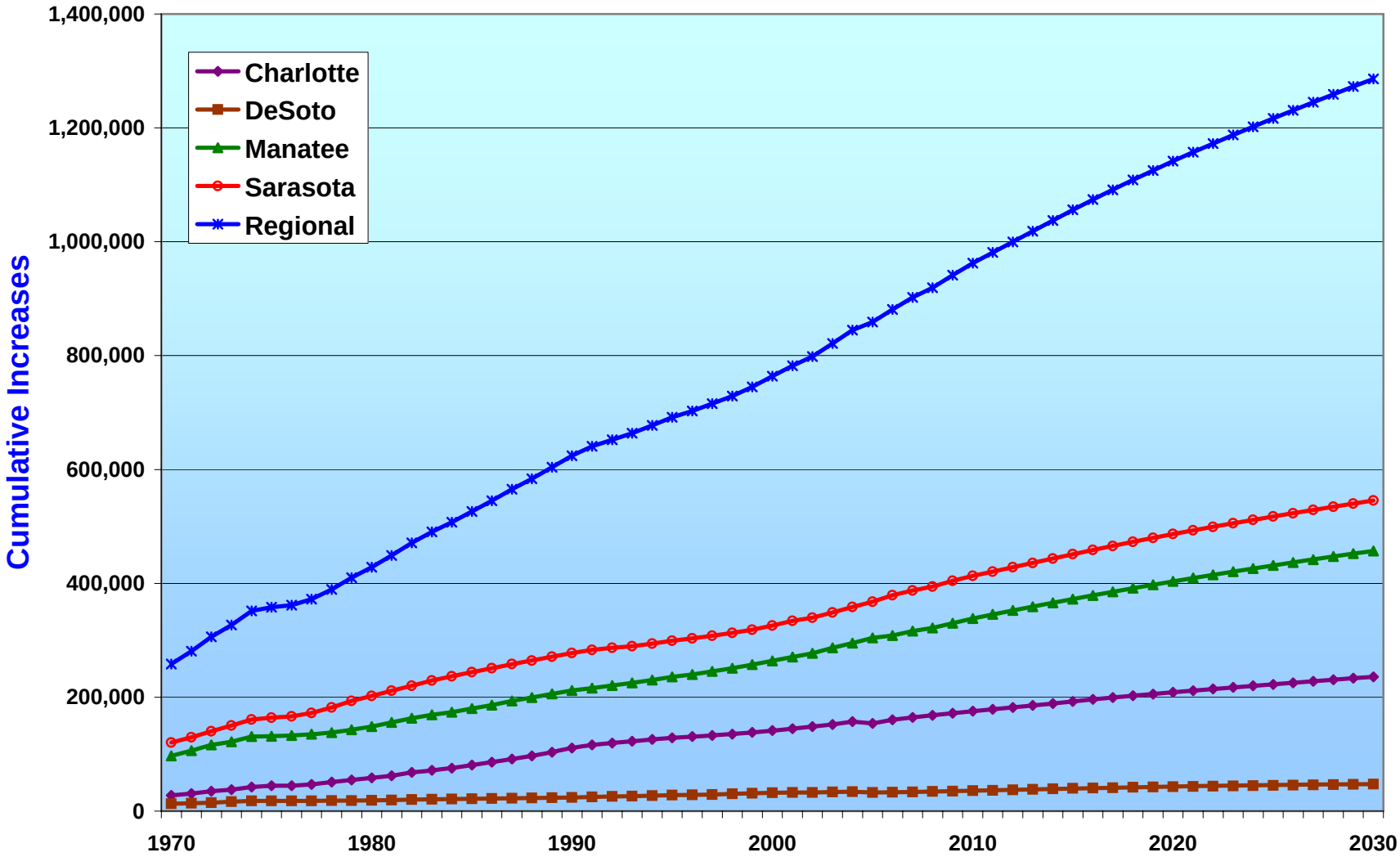


Figure 1.1 Cumulative population increase in the counties receiving water from the Peace River

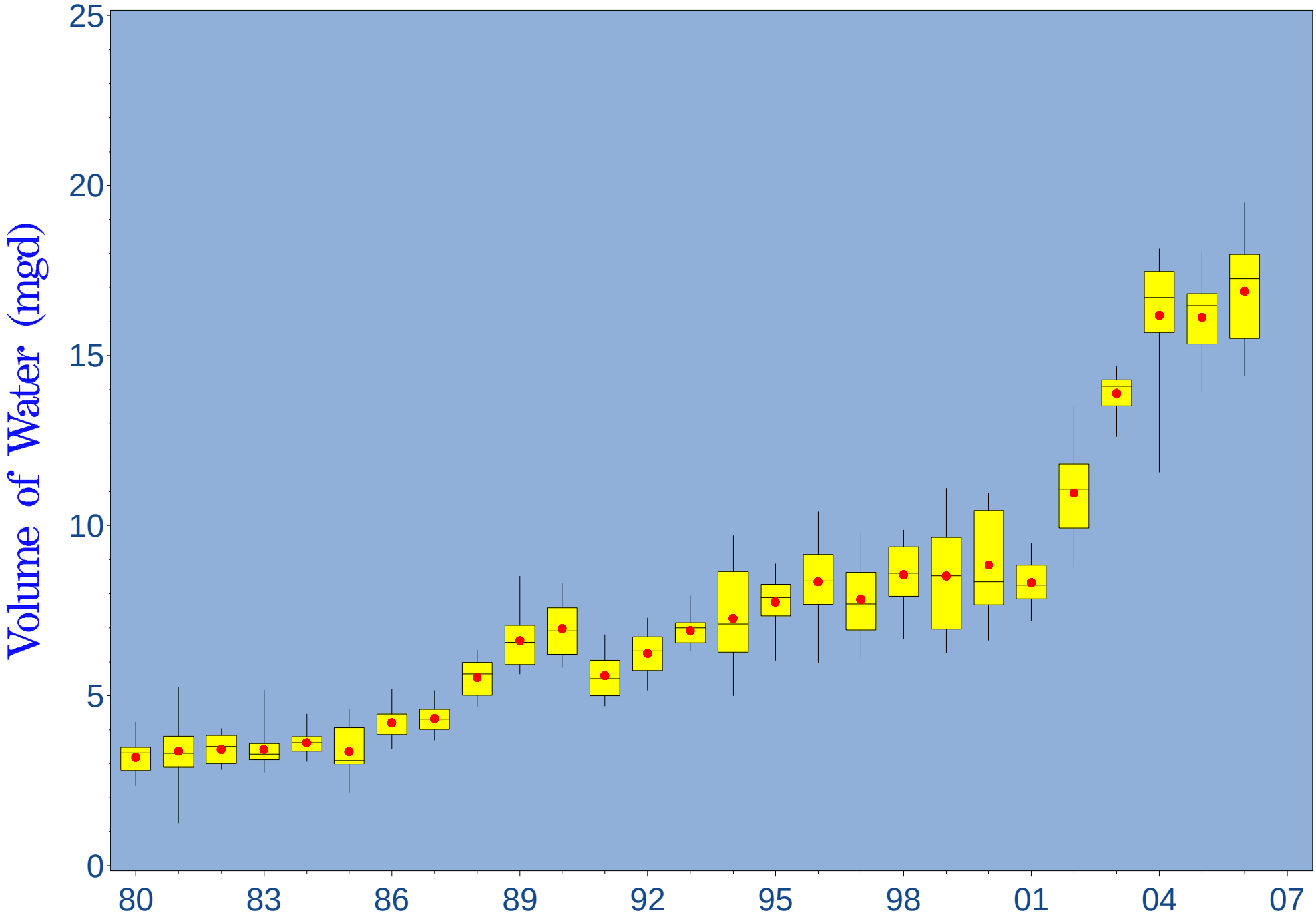


Figure 1.2 Facility demand over time

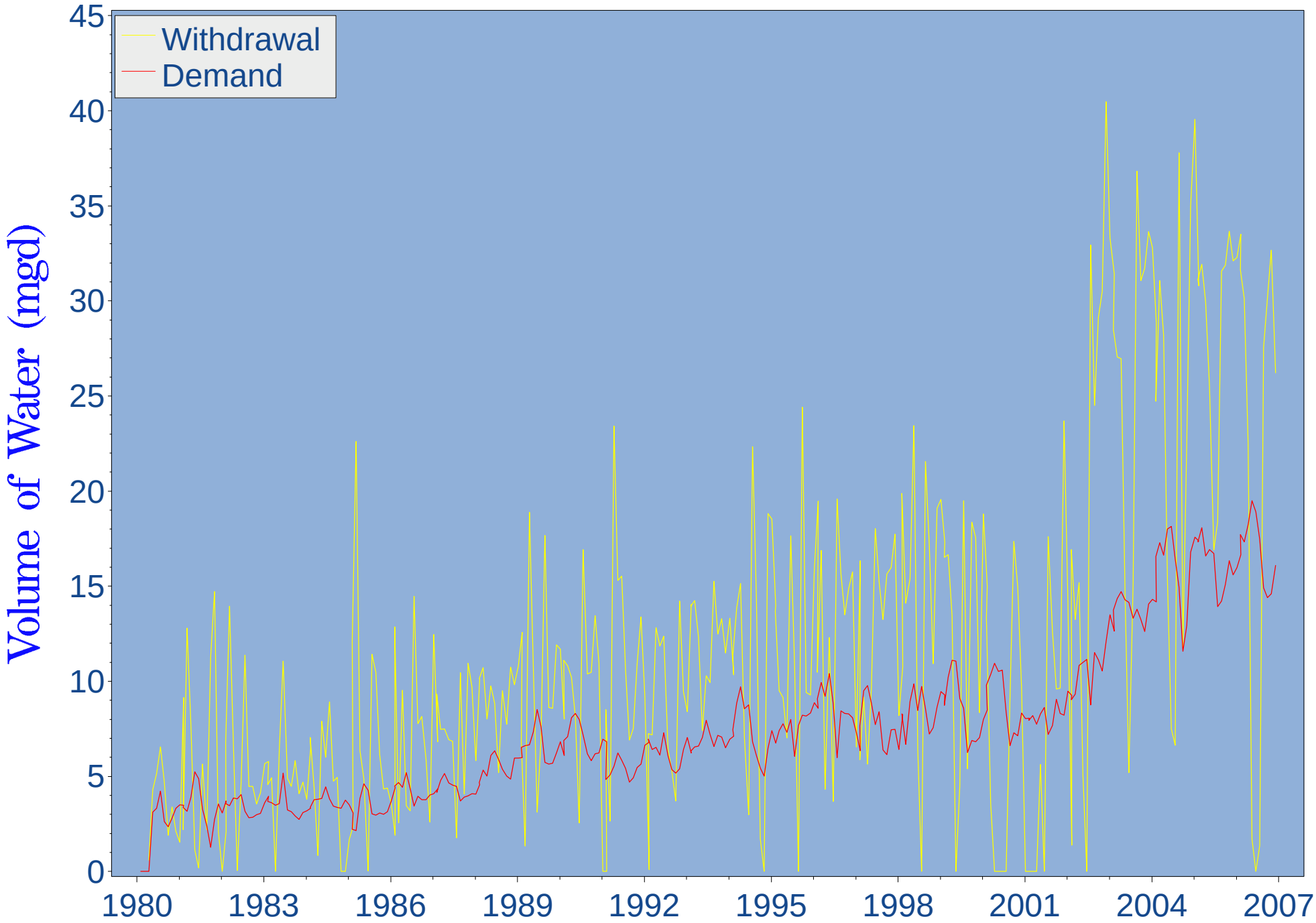
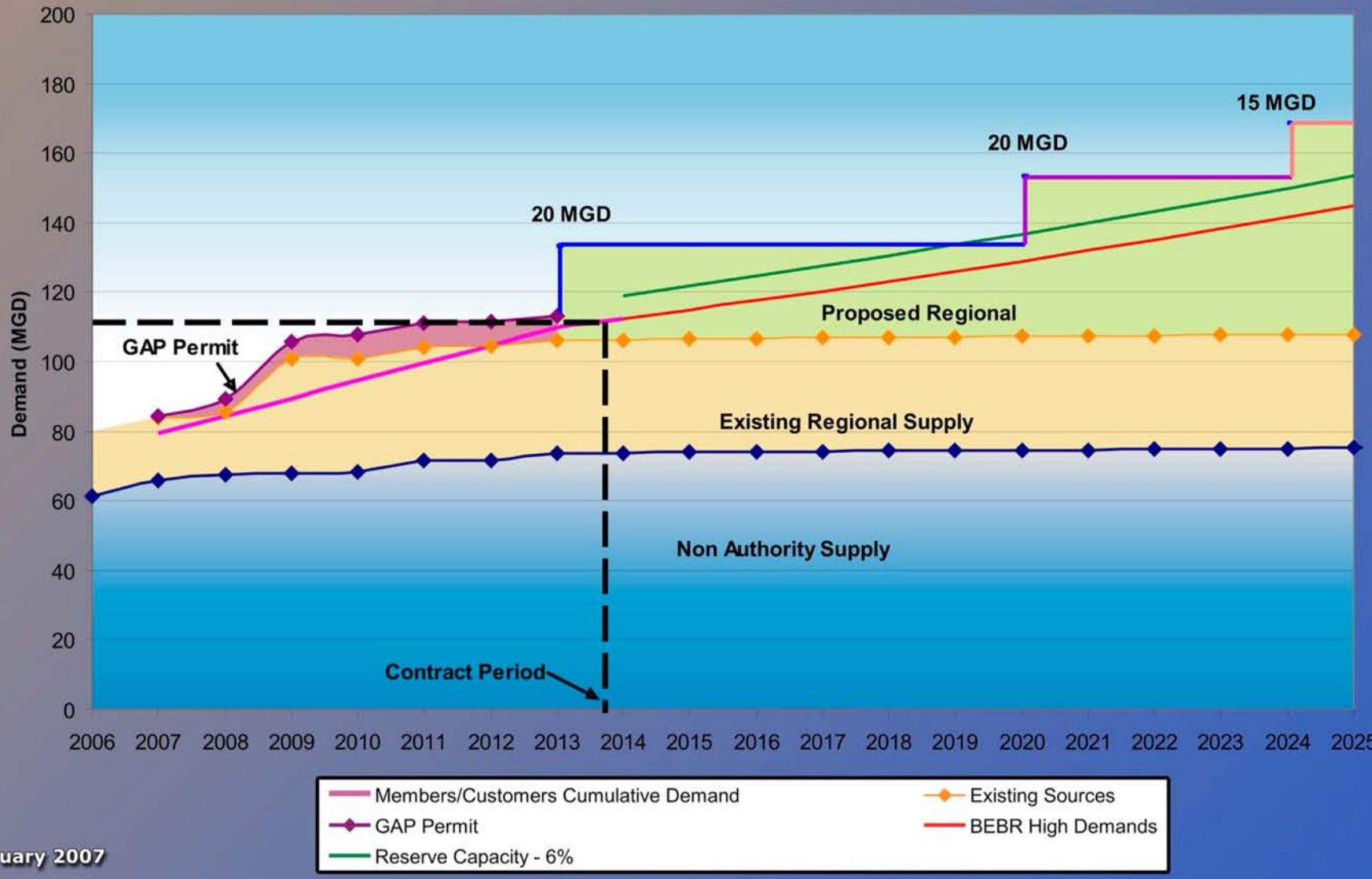


Figure 1.3 A comparison of demand and withdrawal over time

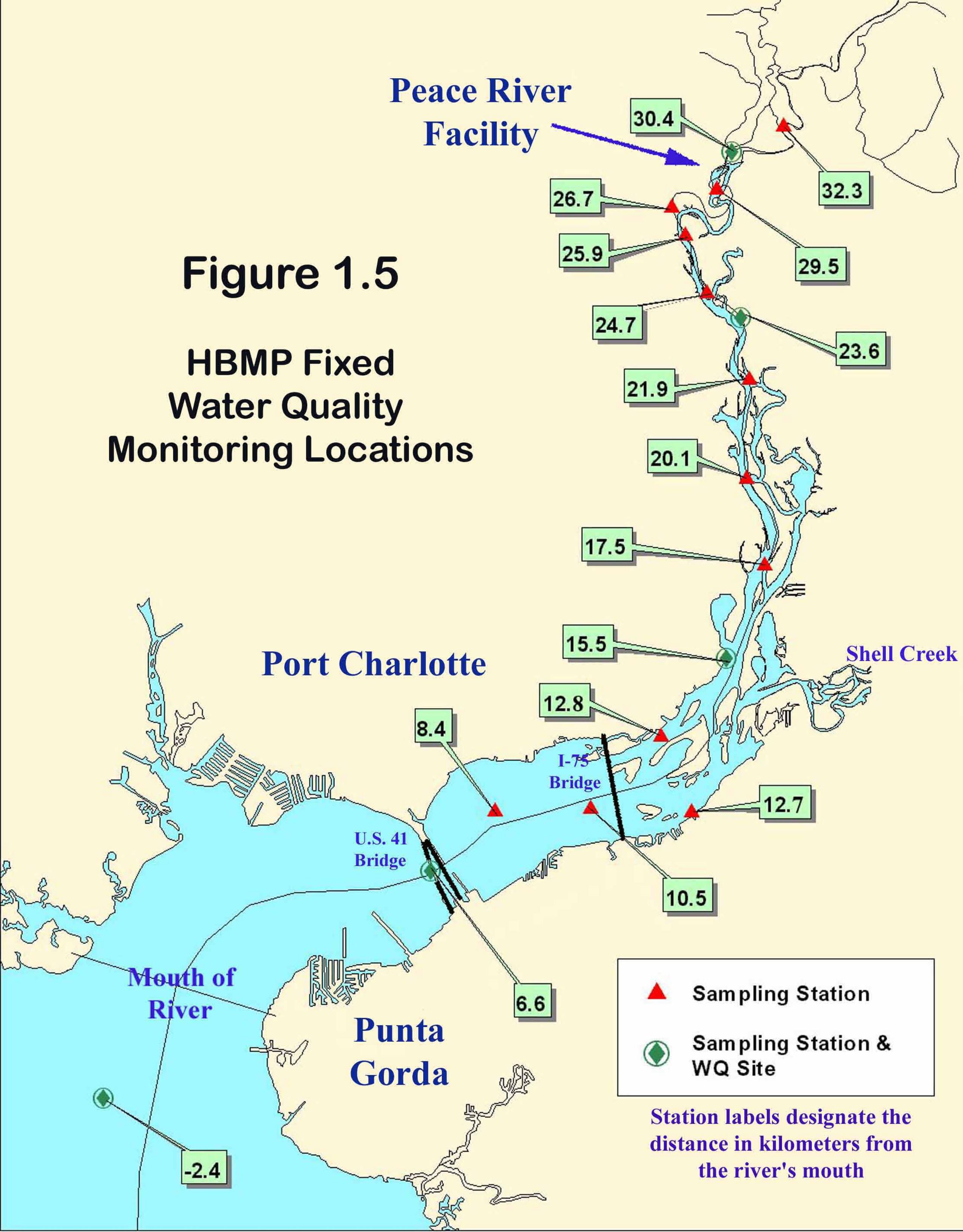
Figure 1.4 Contracted and Projected Water Demands and Proposed Projects Implementaiton Schedule

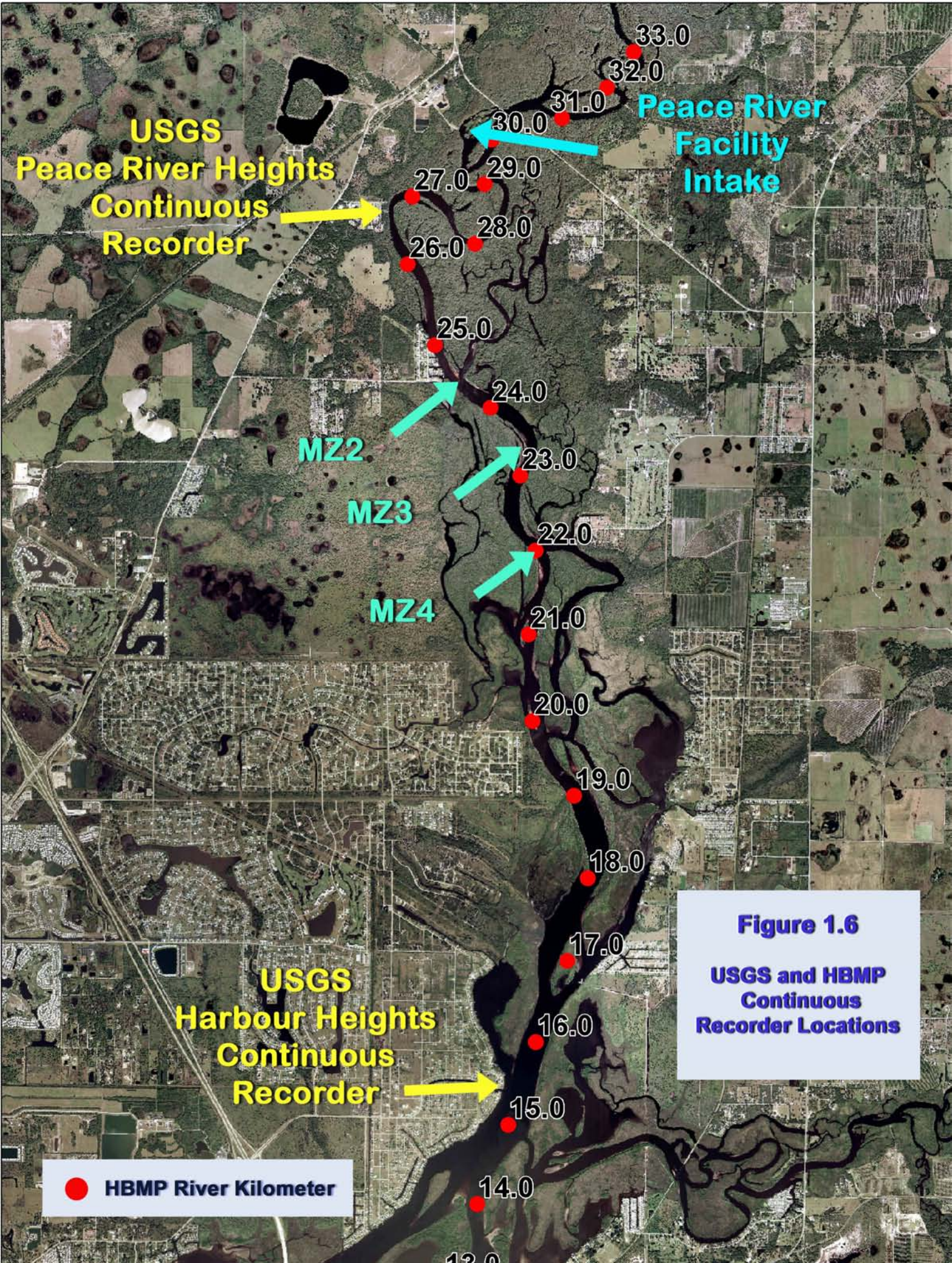


February 2007

Figure 1.5

HBMP Fixed Water Quality Monitoring Locations

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15.0
14.0
USGS
Peace River Heights
Continuous
Recorder
Peace River
Facility
Intake
MZ2
MZ3
MZ4
USGS
Harbour Heights
Continuous
Recorder
HBMP River Kilometer
Figure 1.6
USGS and HBMP
Continuous
Recorder Locations

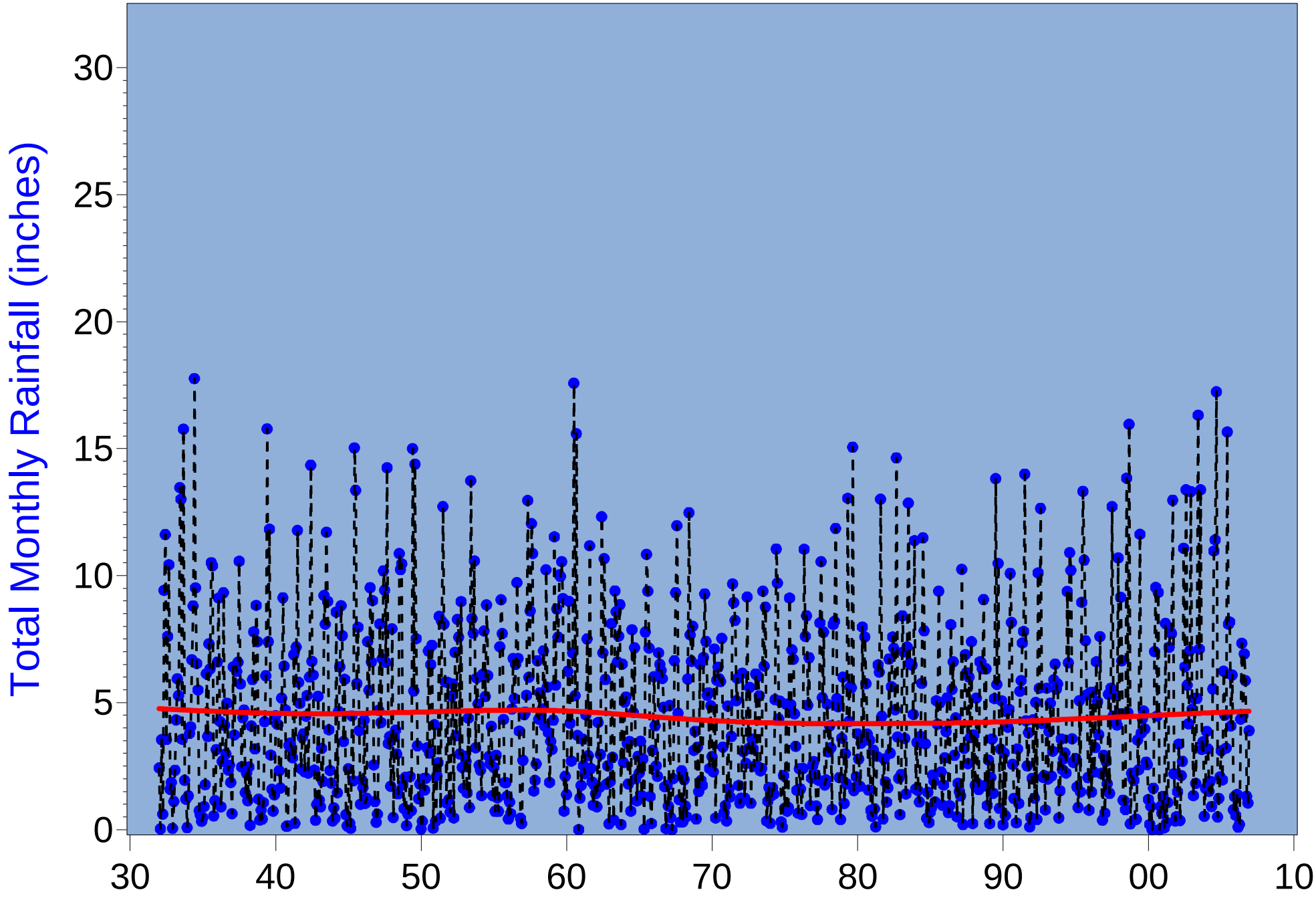

Figure 3.6 Monthly rainfall at long-term Bartow NOAA gage (District R142), 1932-2006

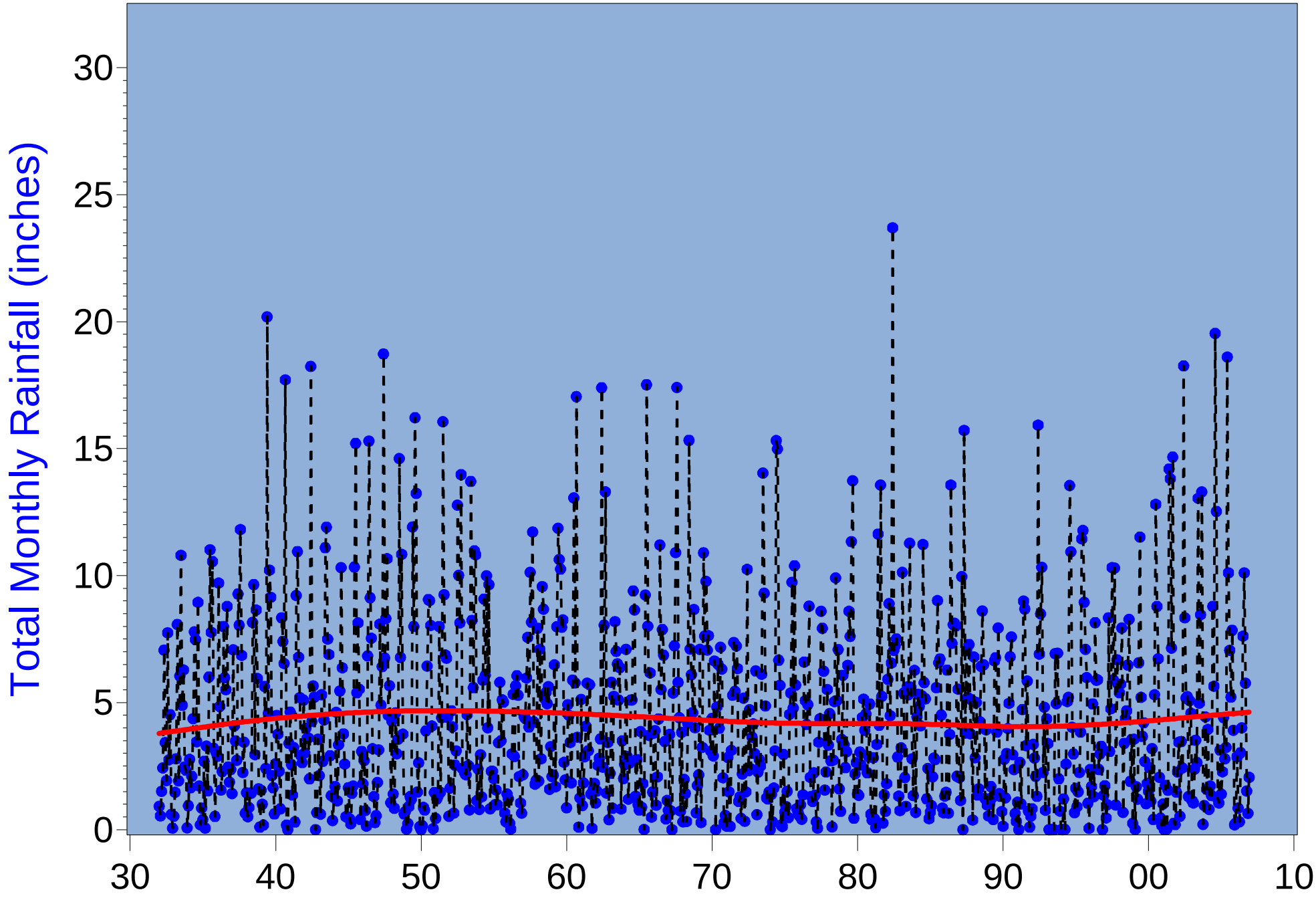

Figure 3.7 Monthly rainfall at long-term Arcadia NOAA gage (District R148), 1932-2006

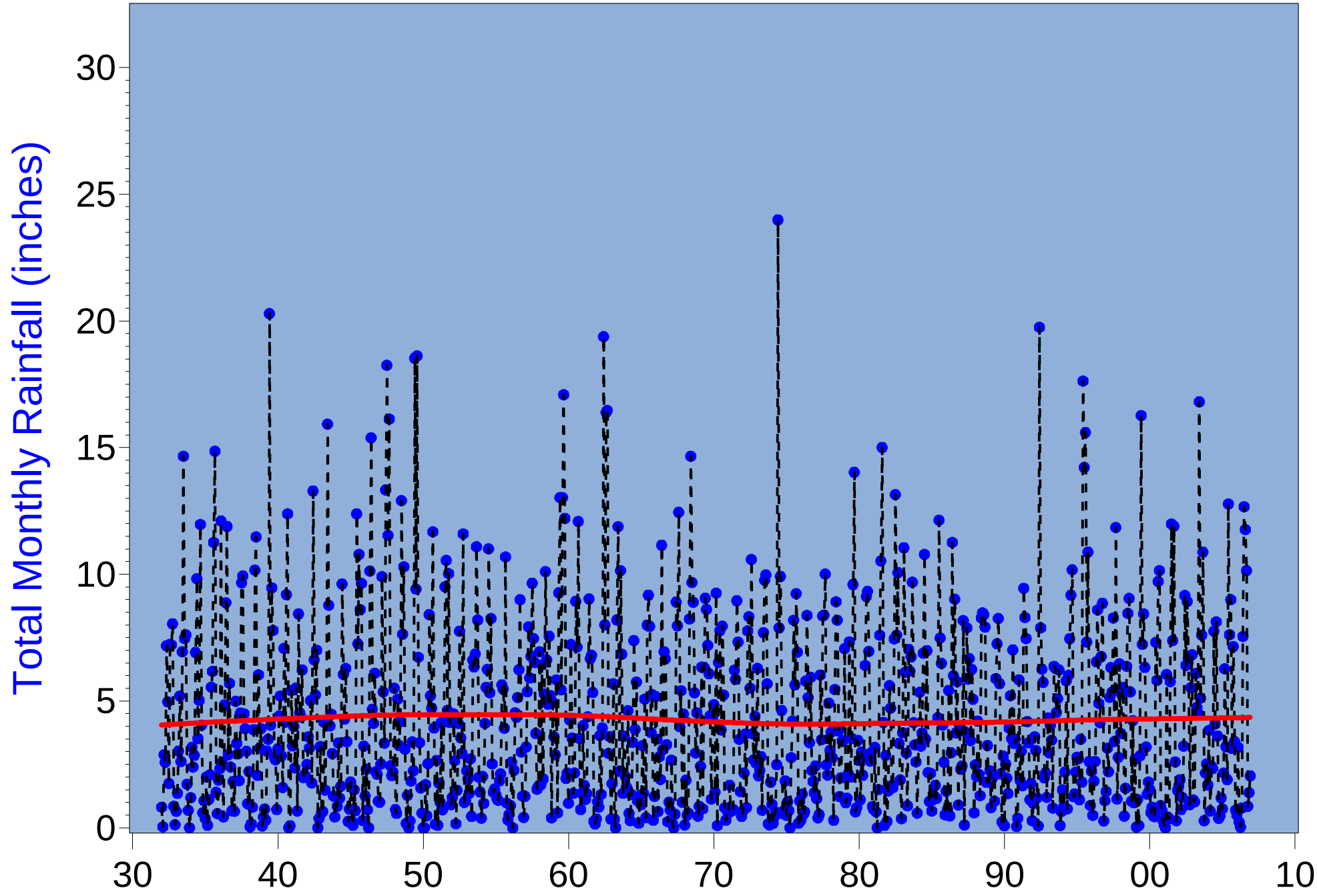

Figure 3.8 Monthly rainfall at long-term Punta Gorda NOAA gage (District R255), 1932-2006