

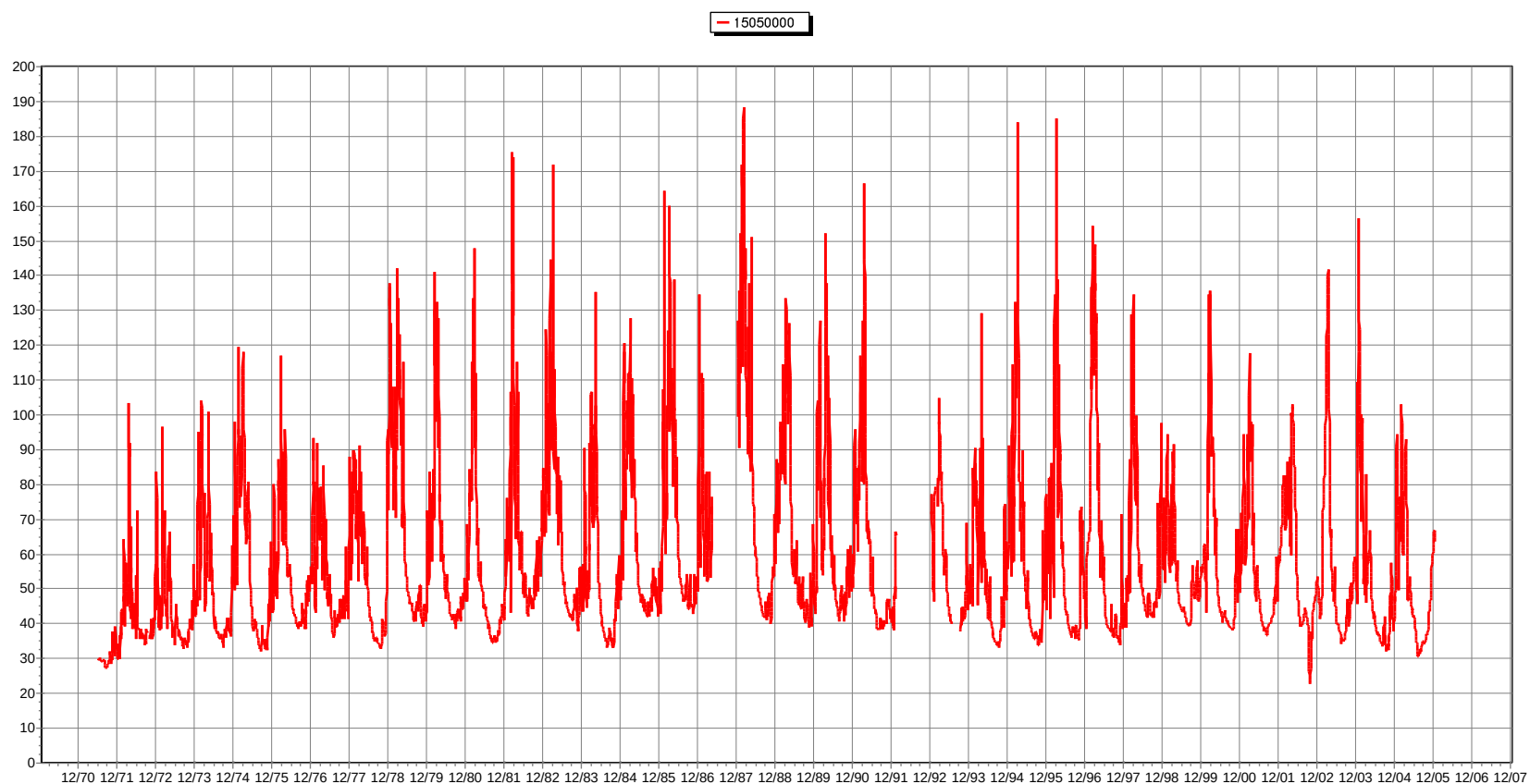
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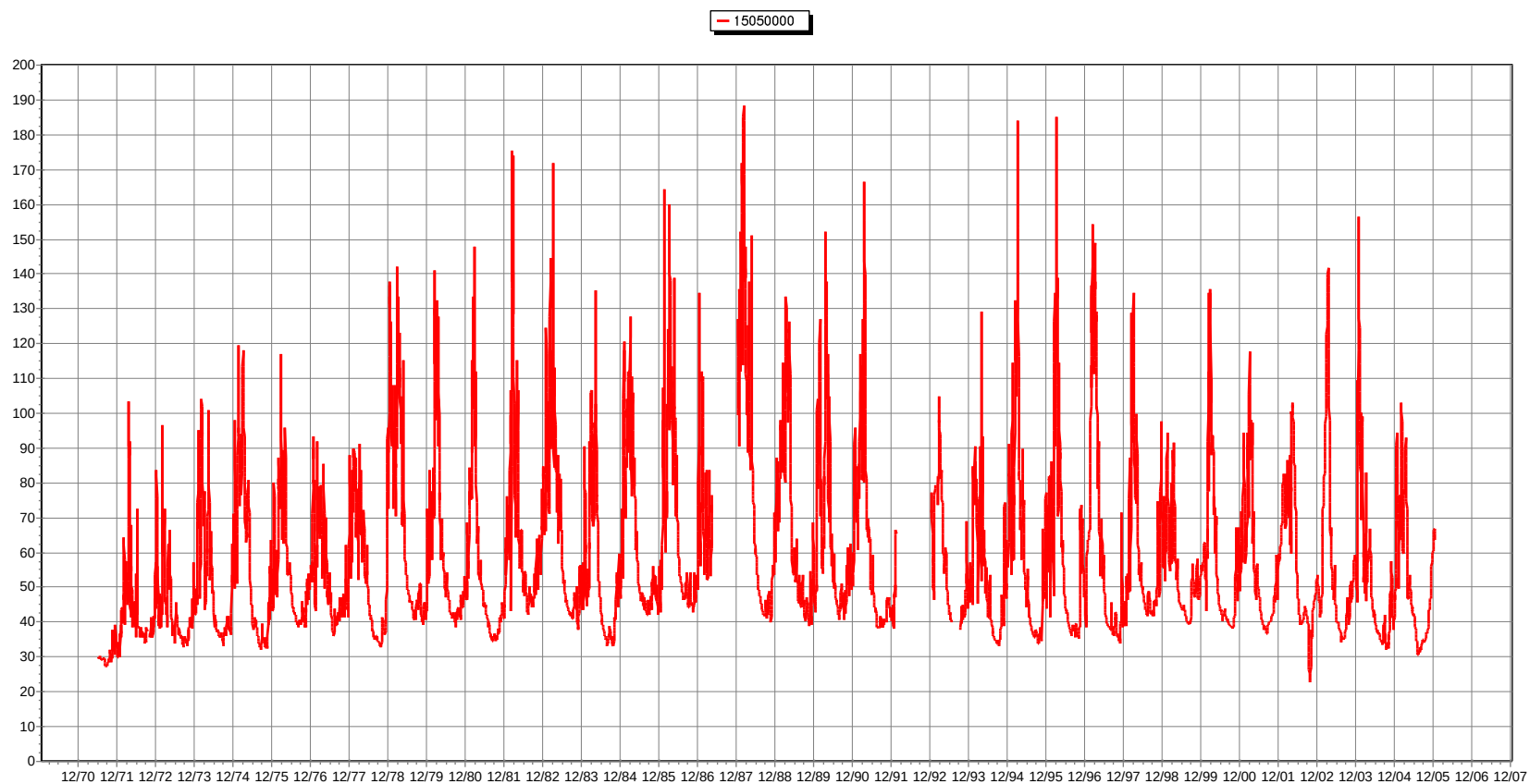
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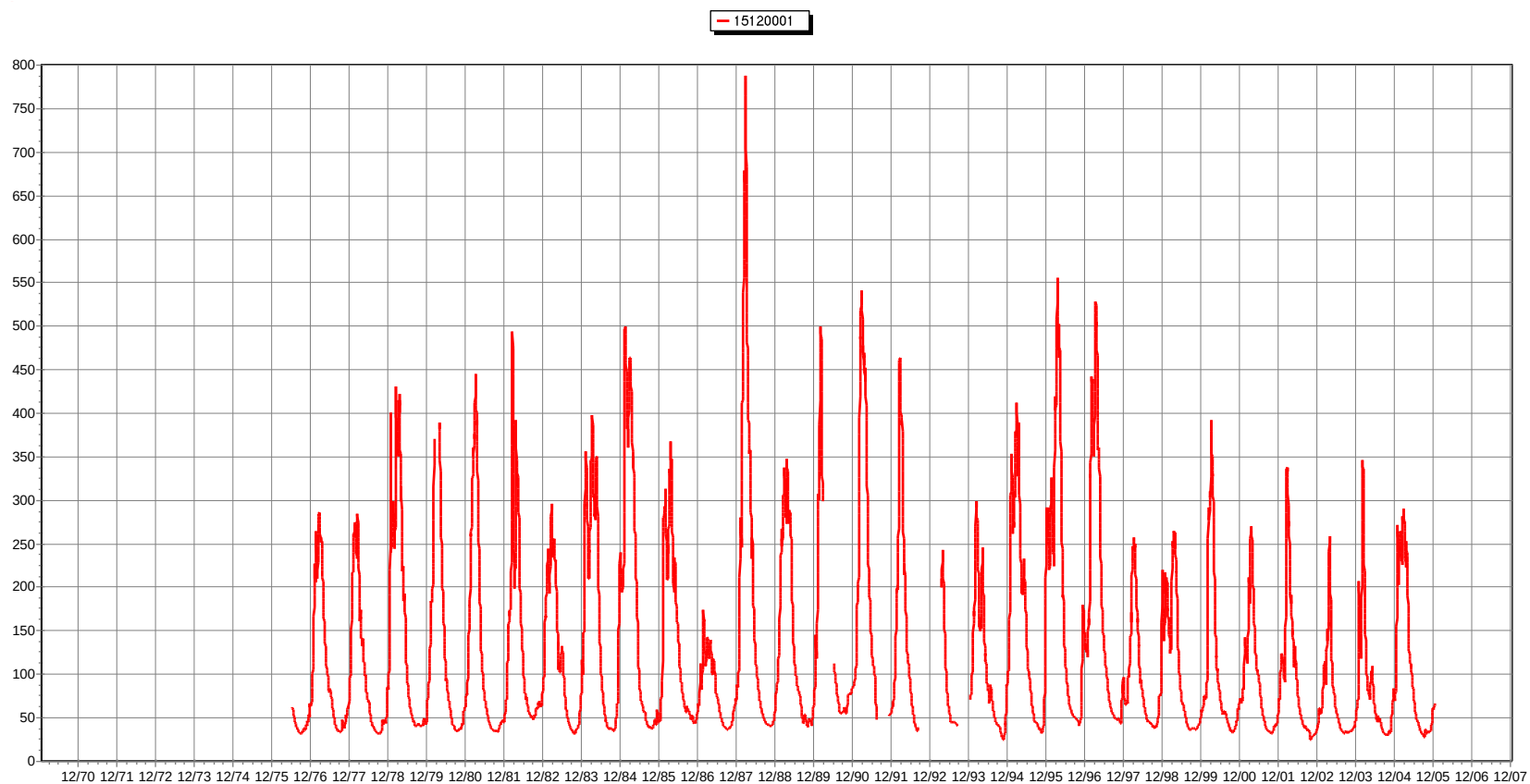
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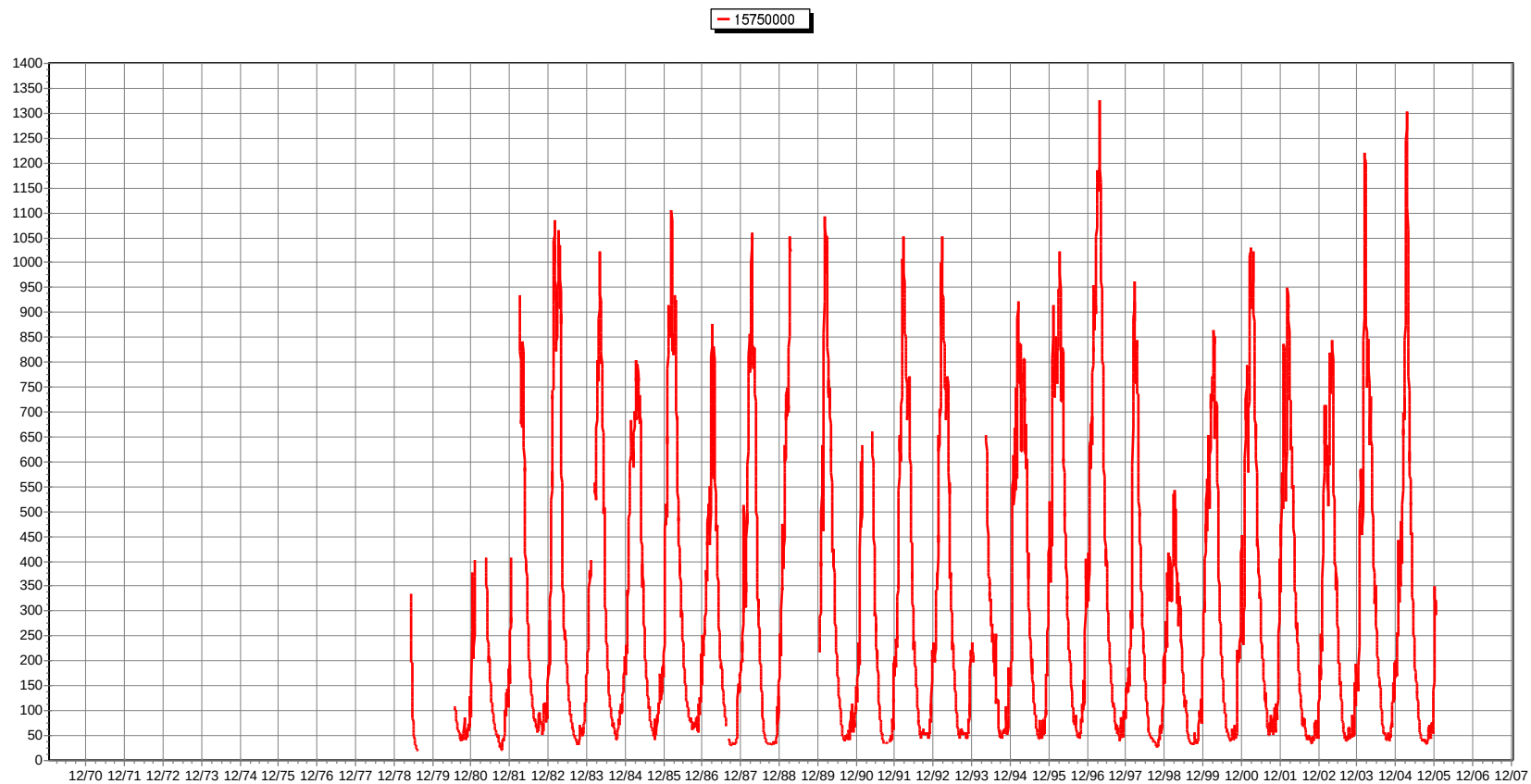
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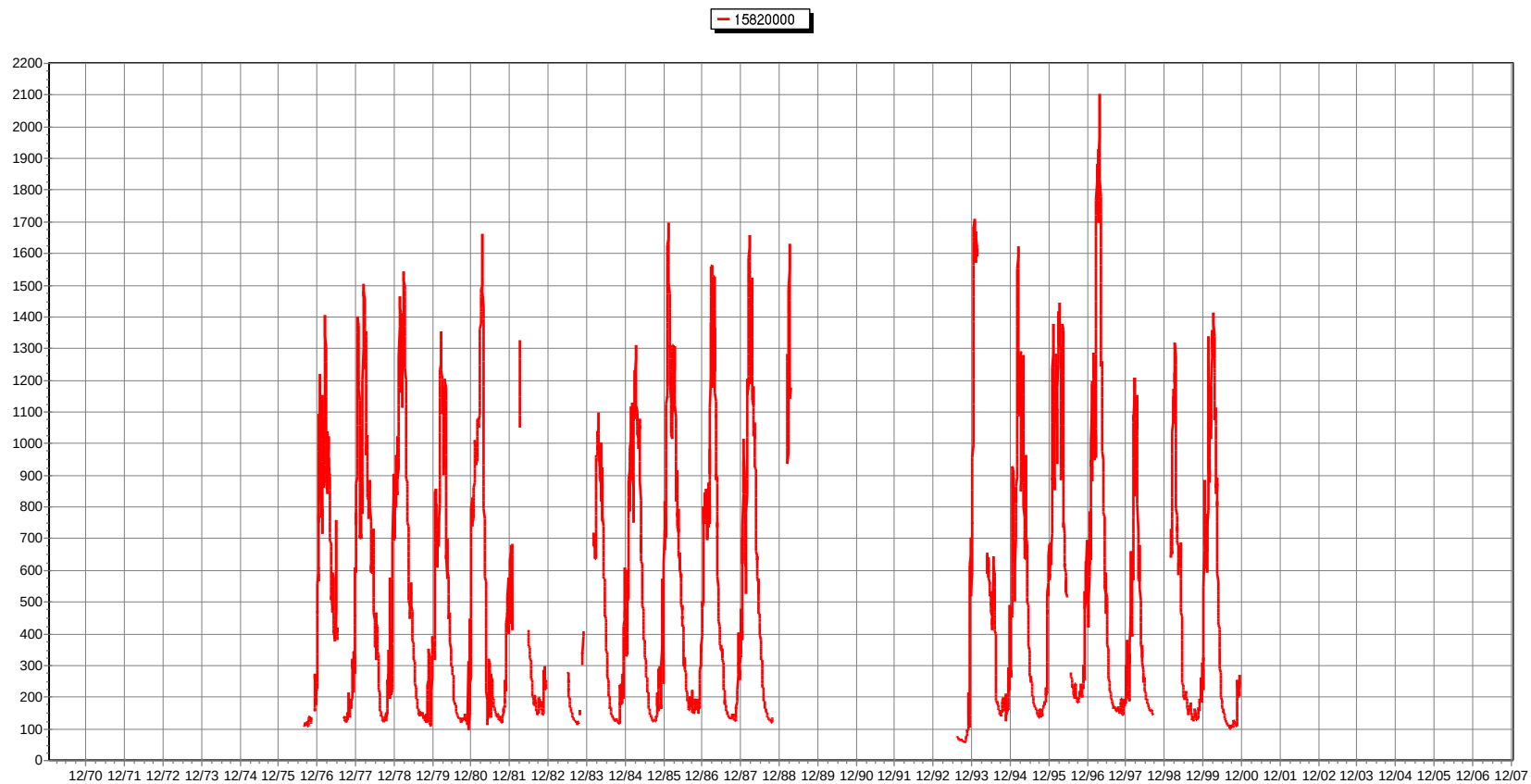
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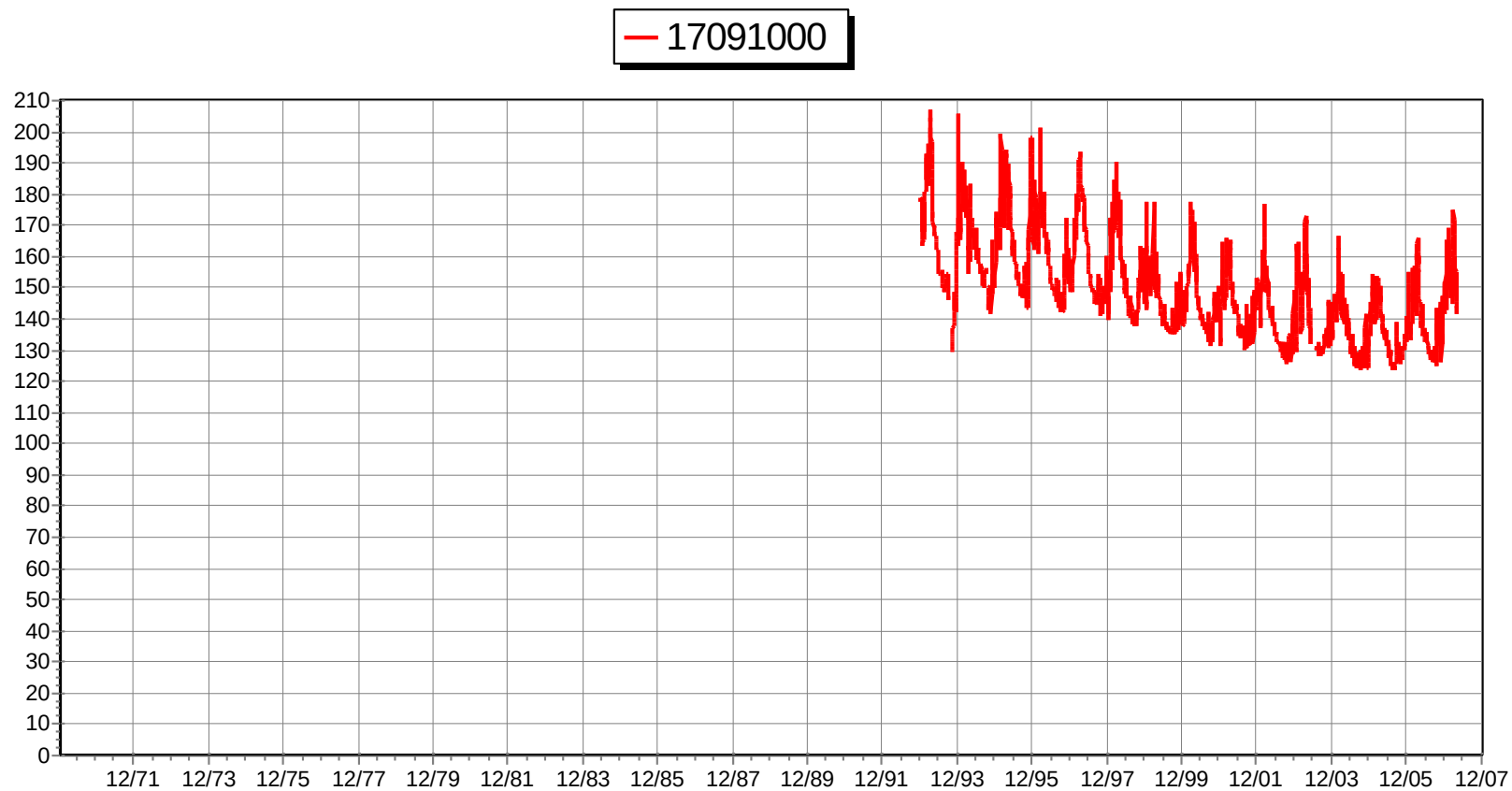


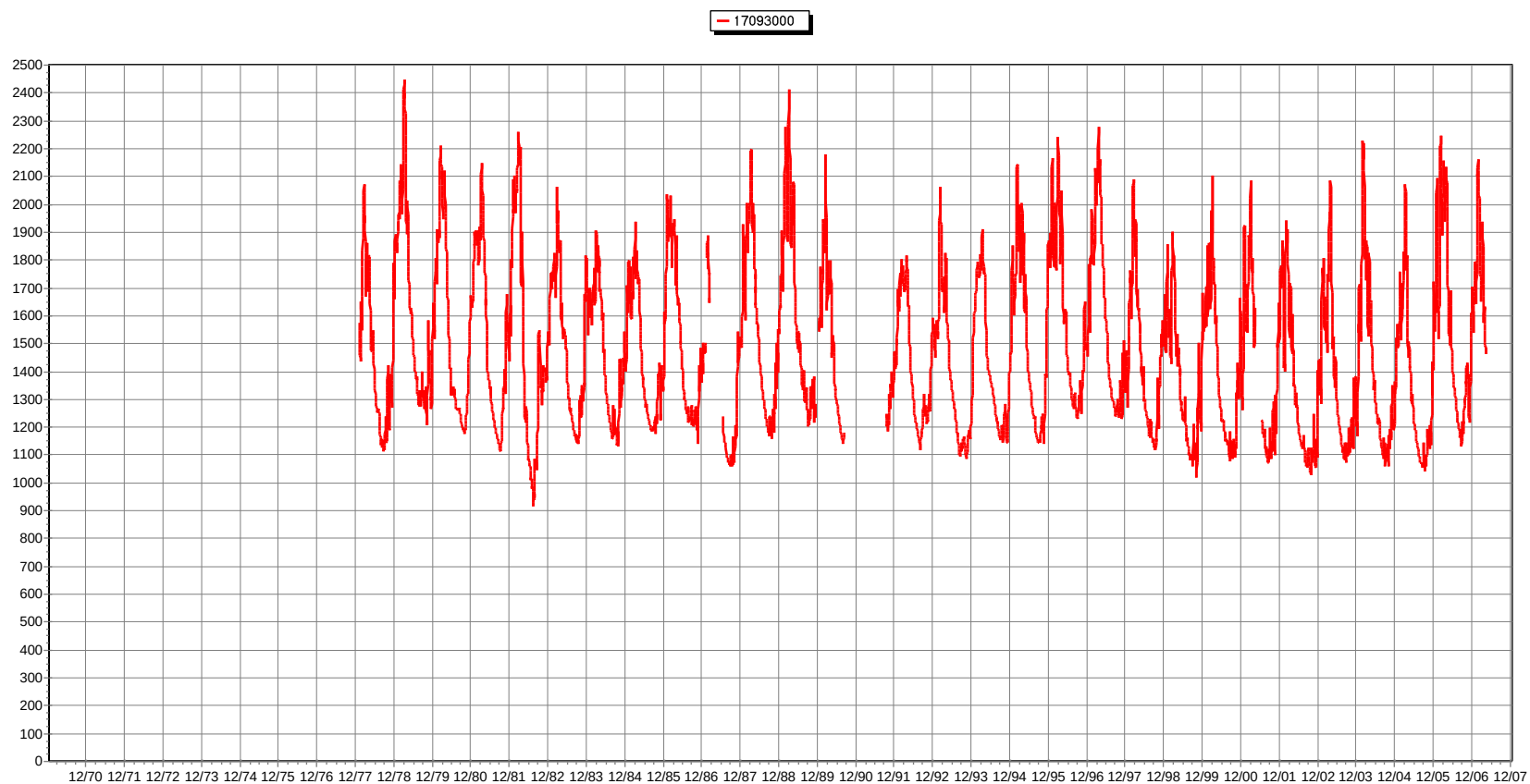


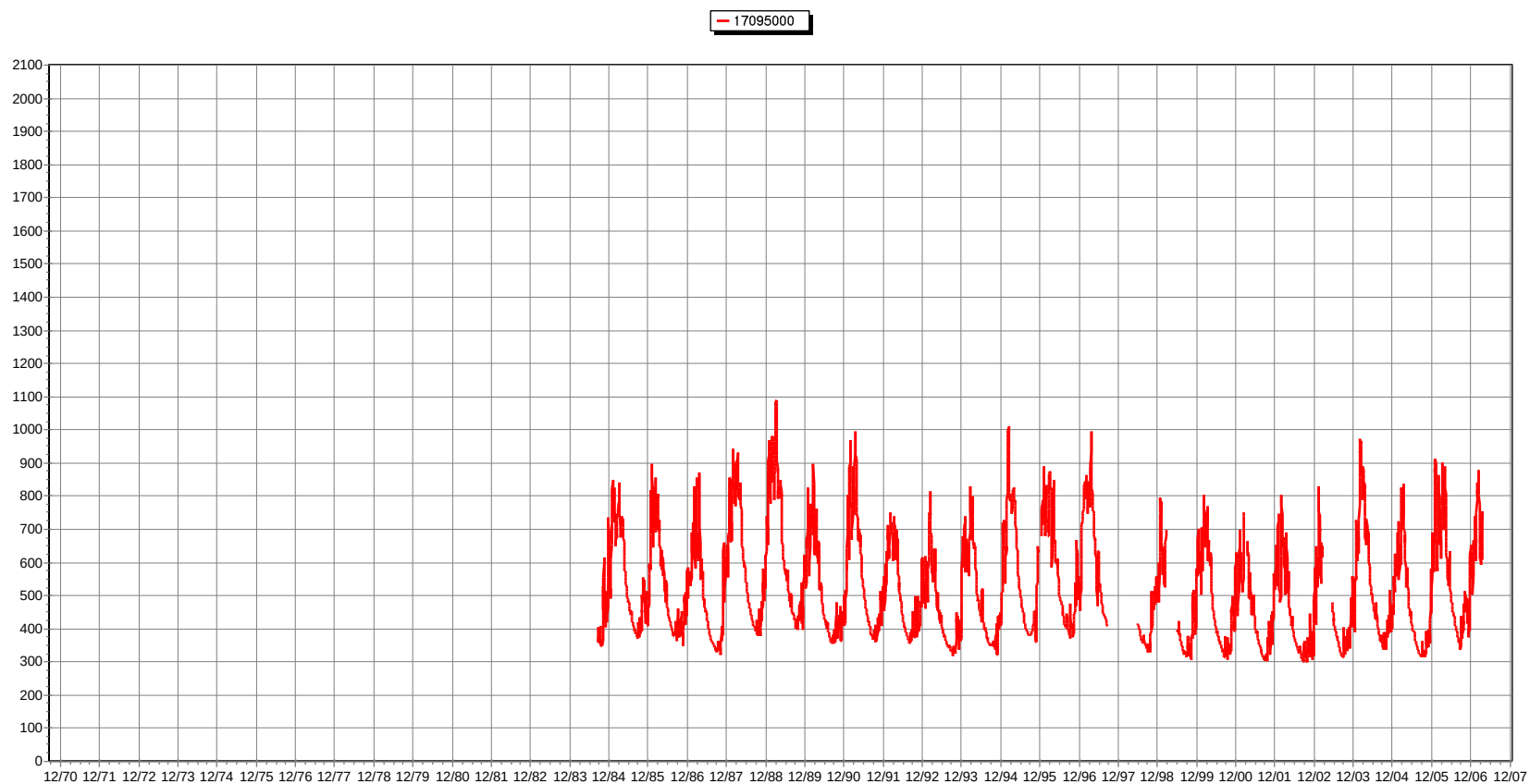


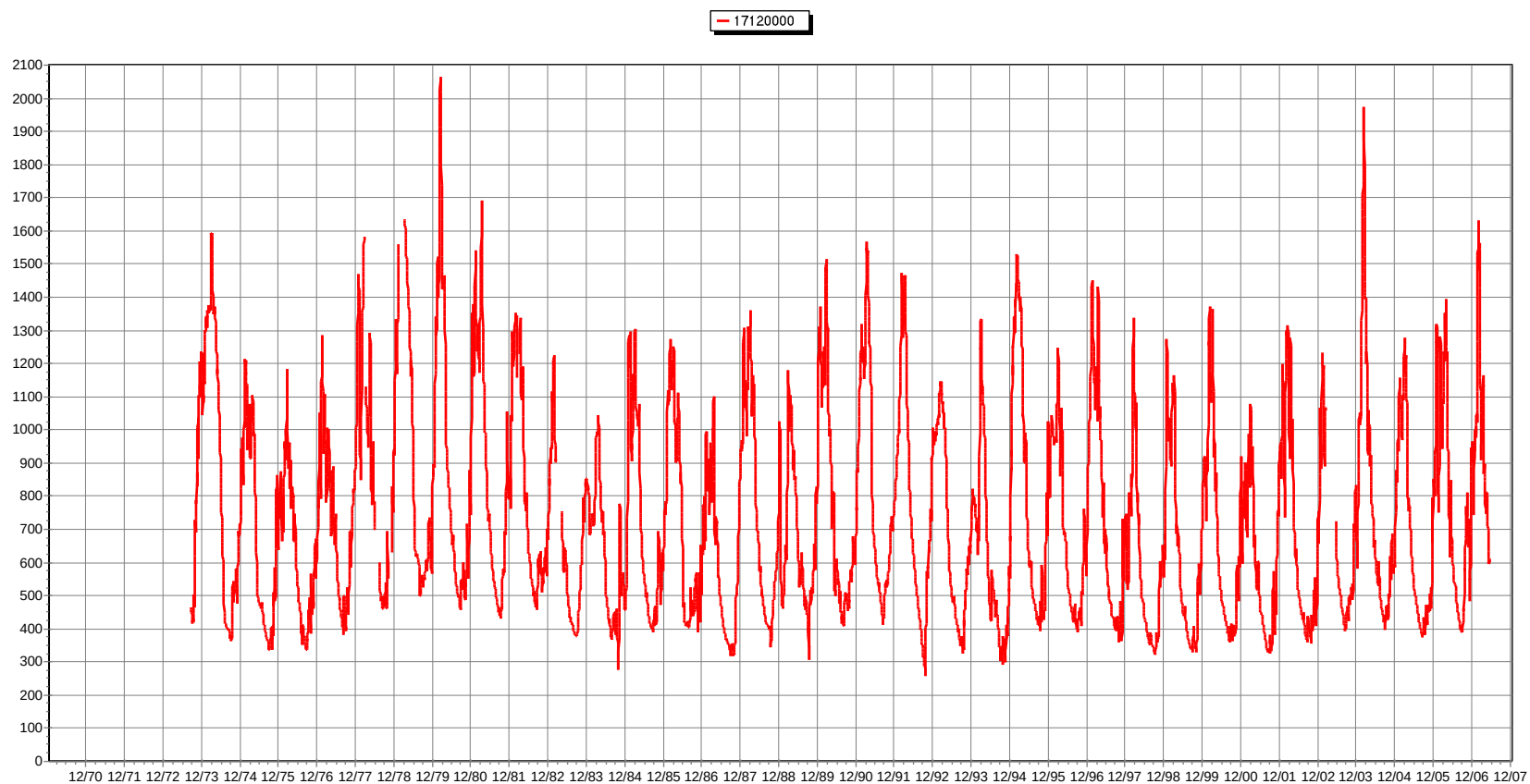


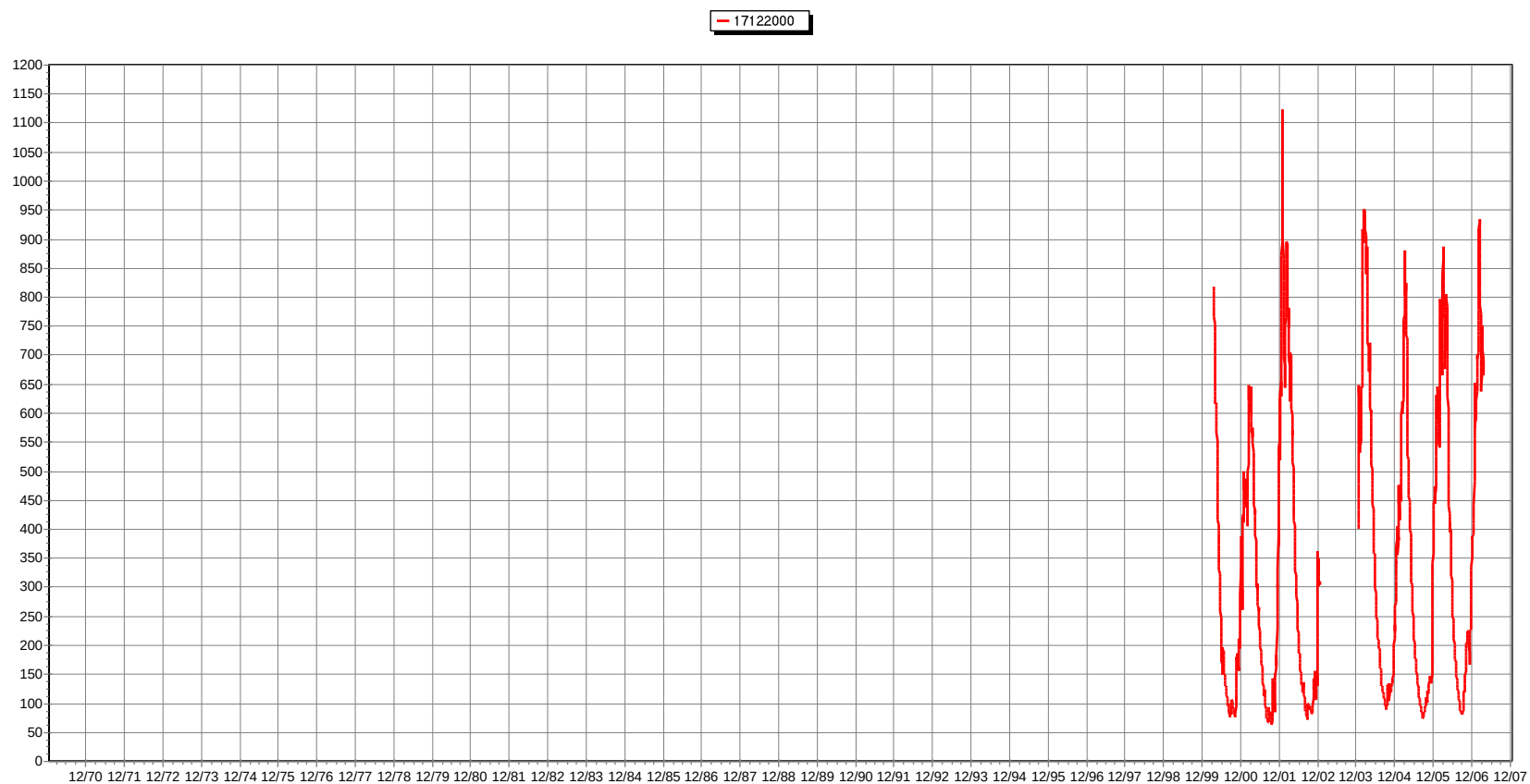


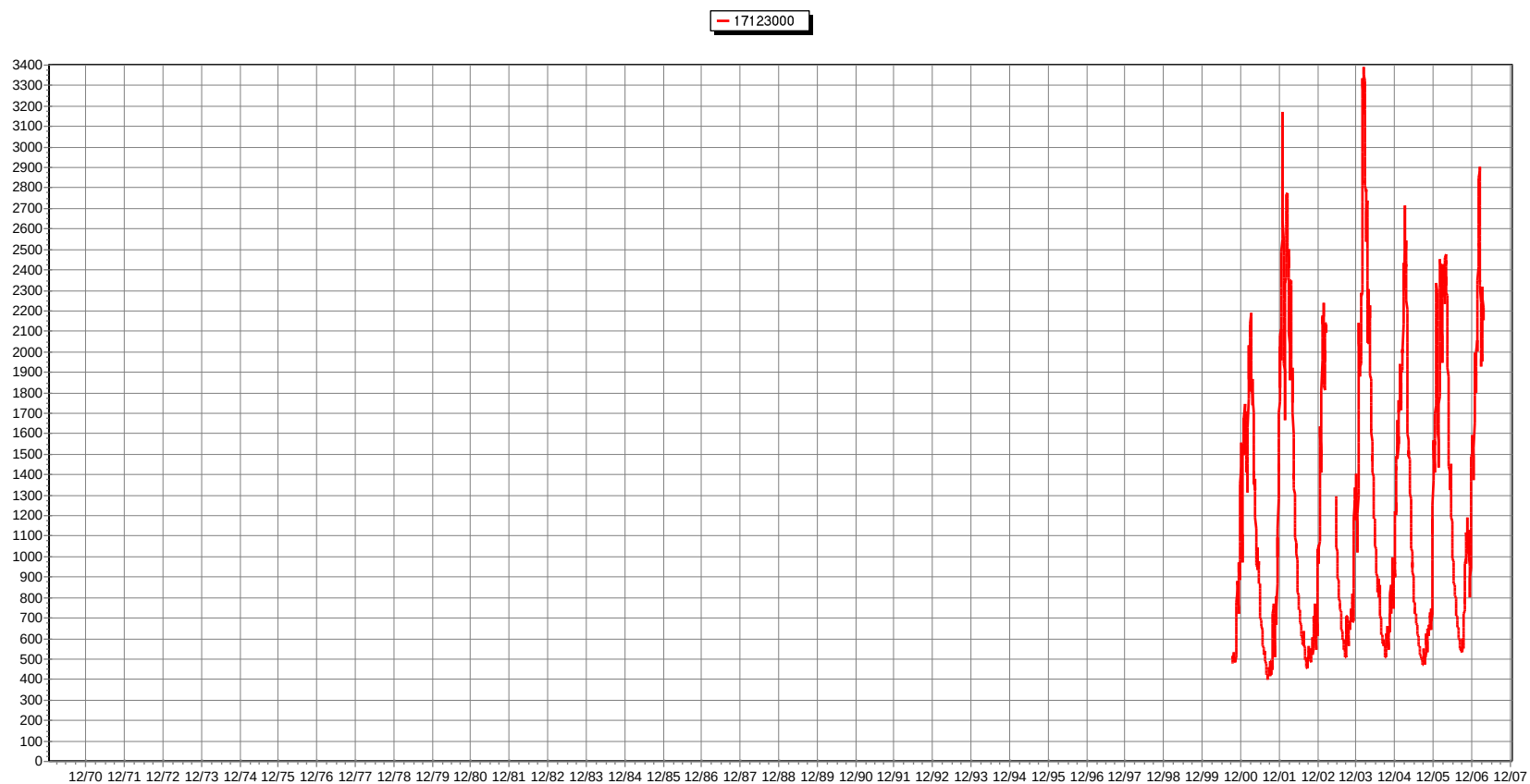


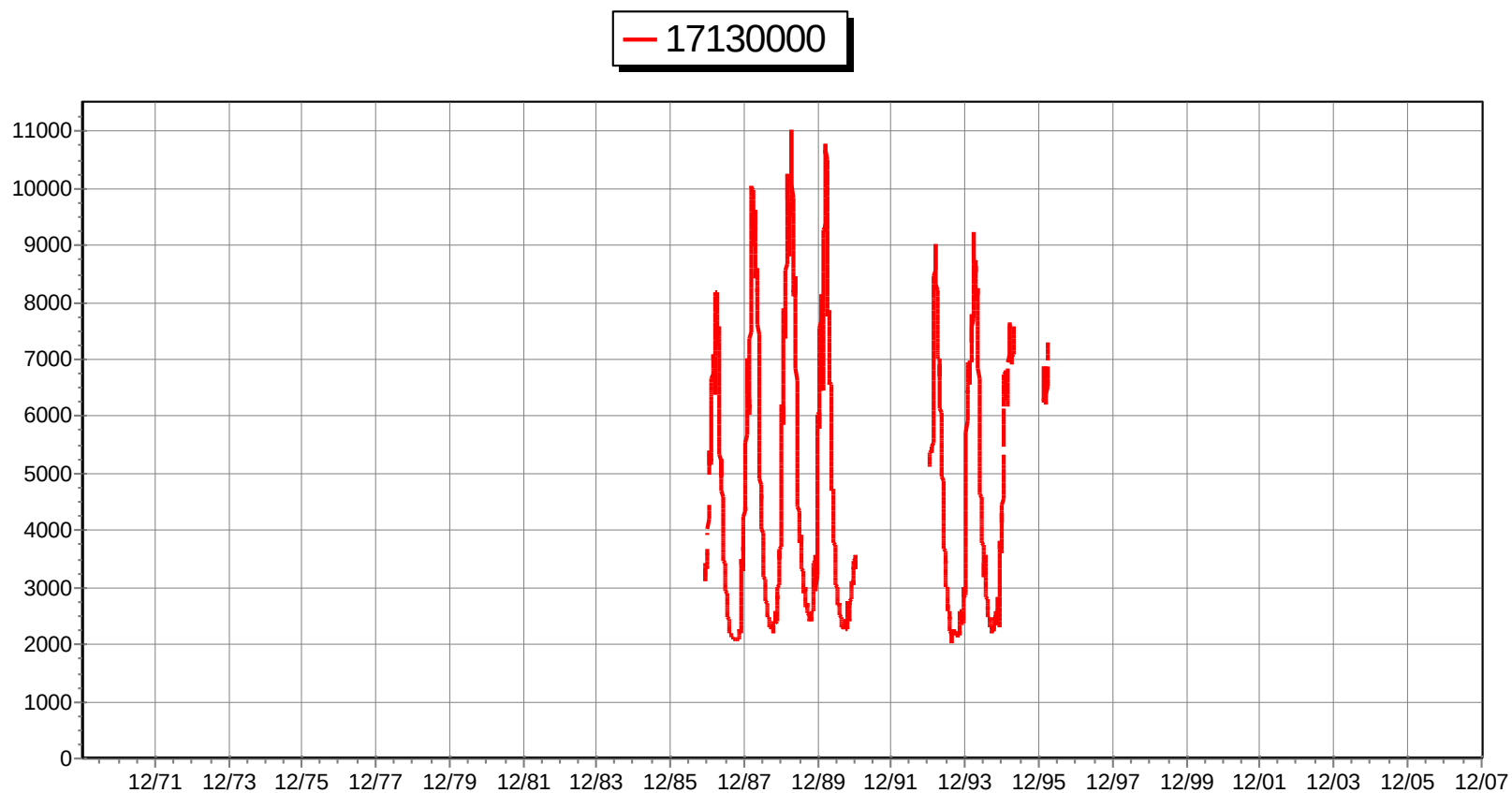


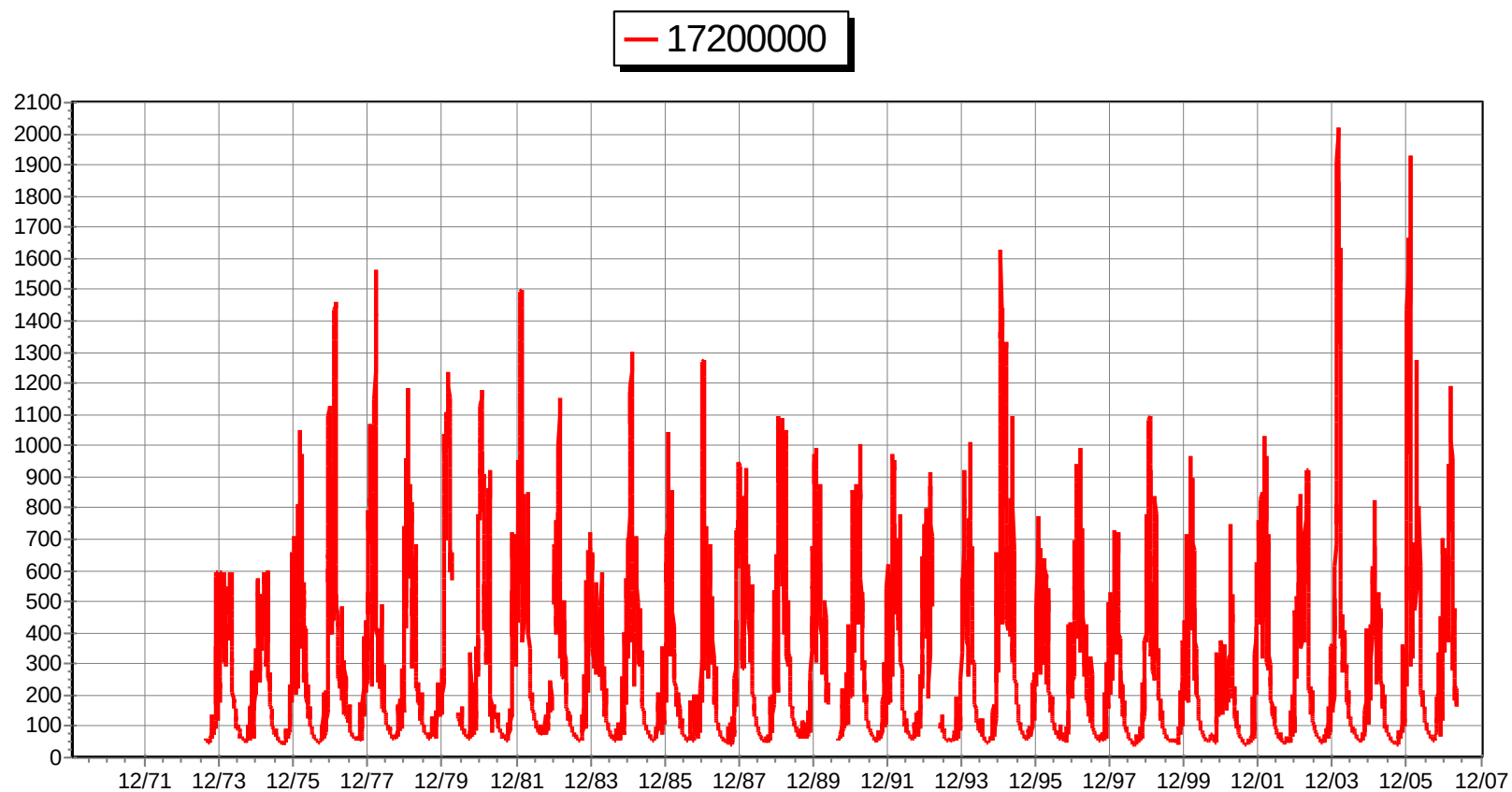


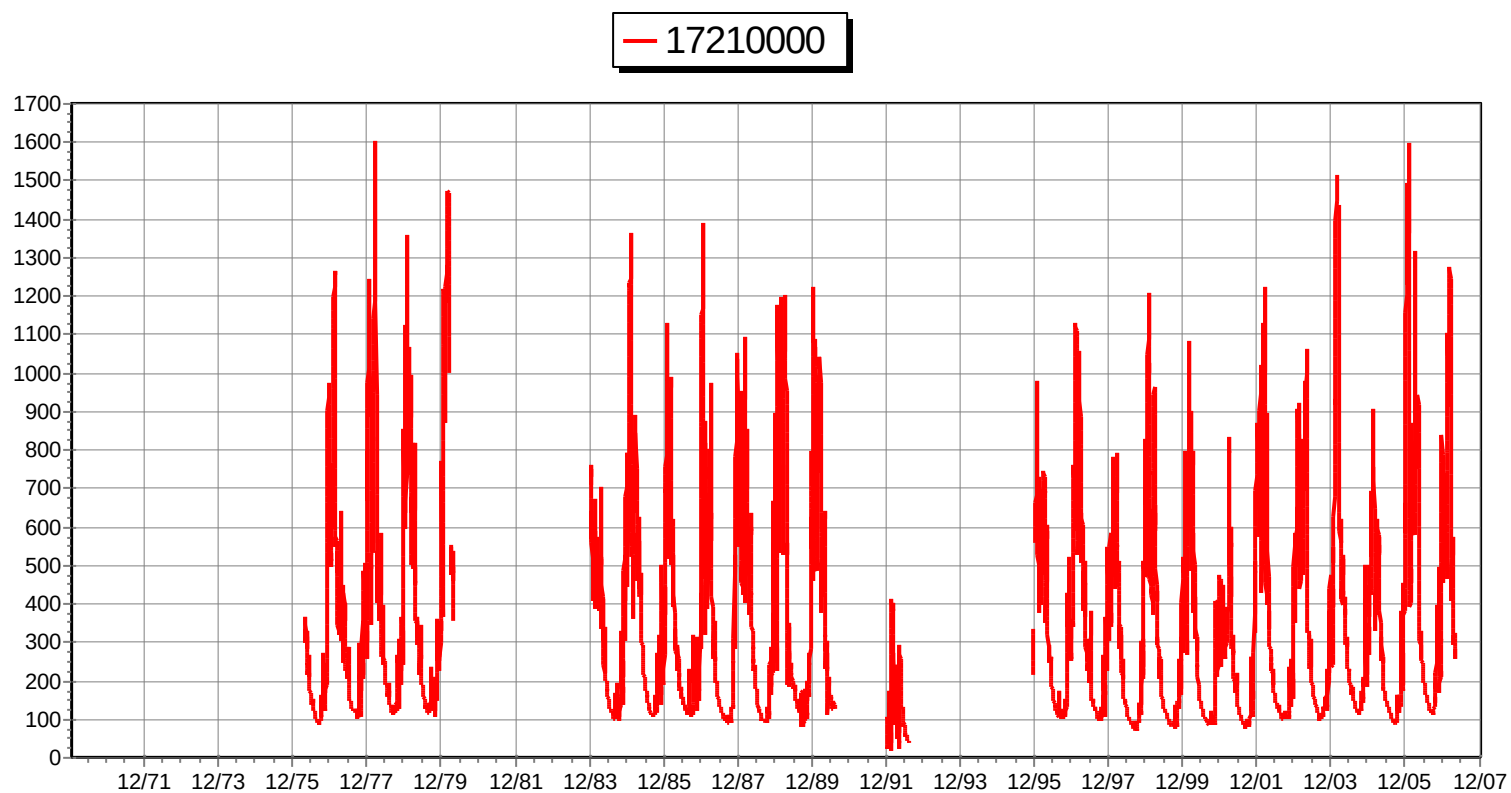


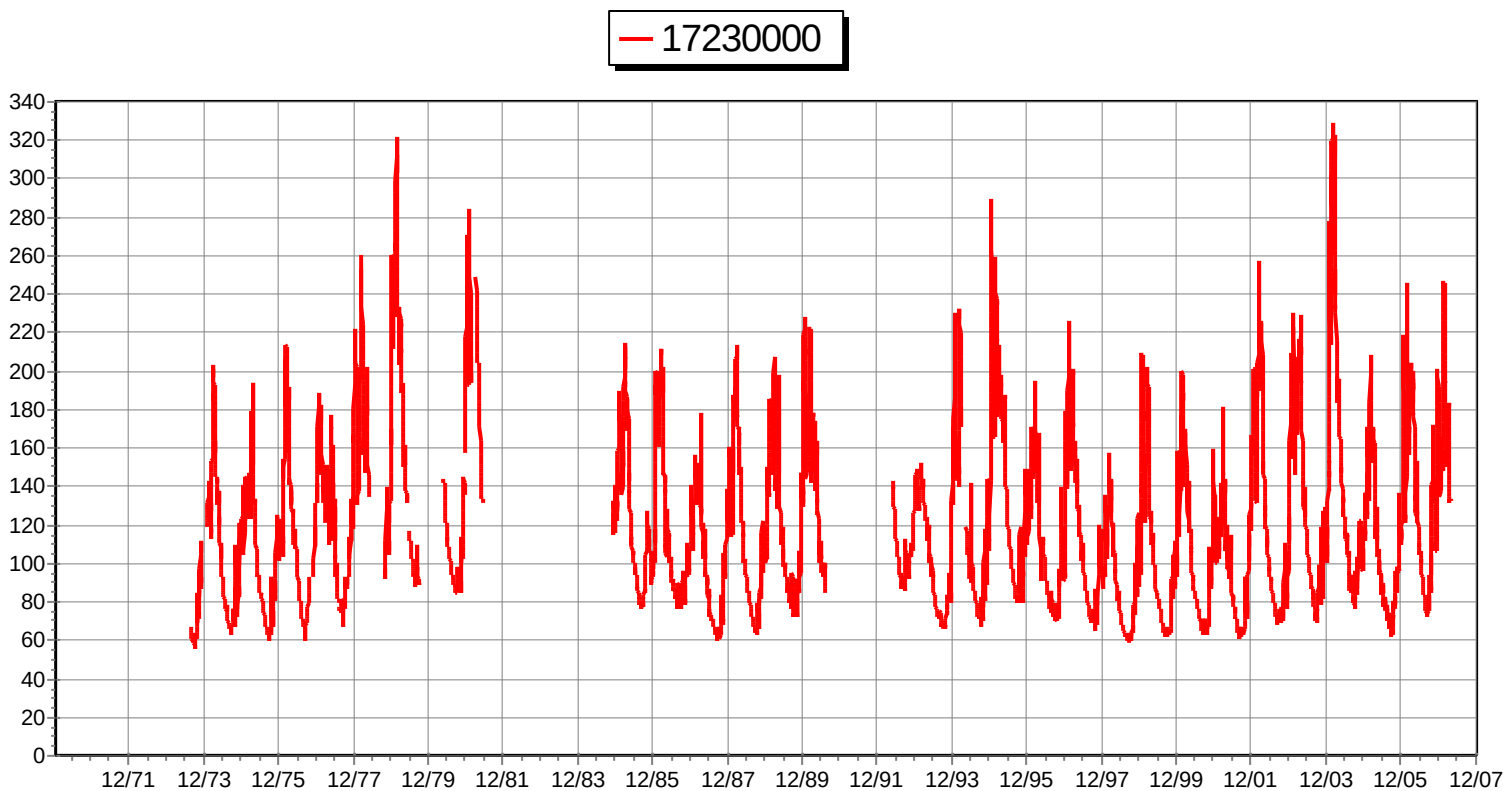


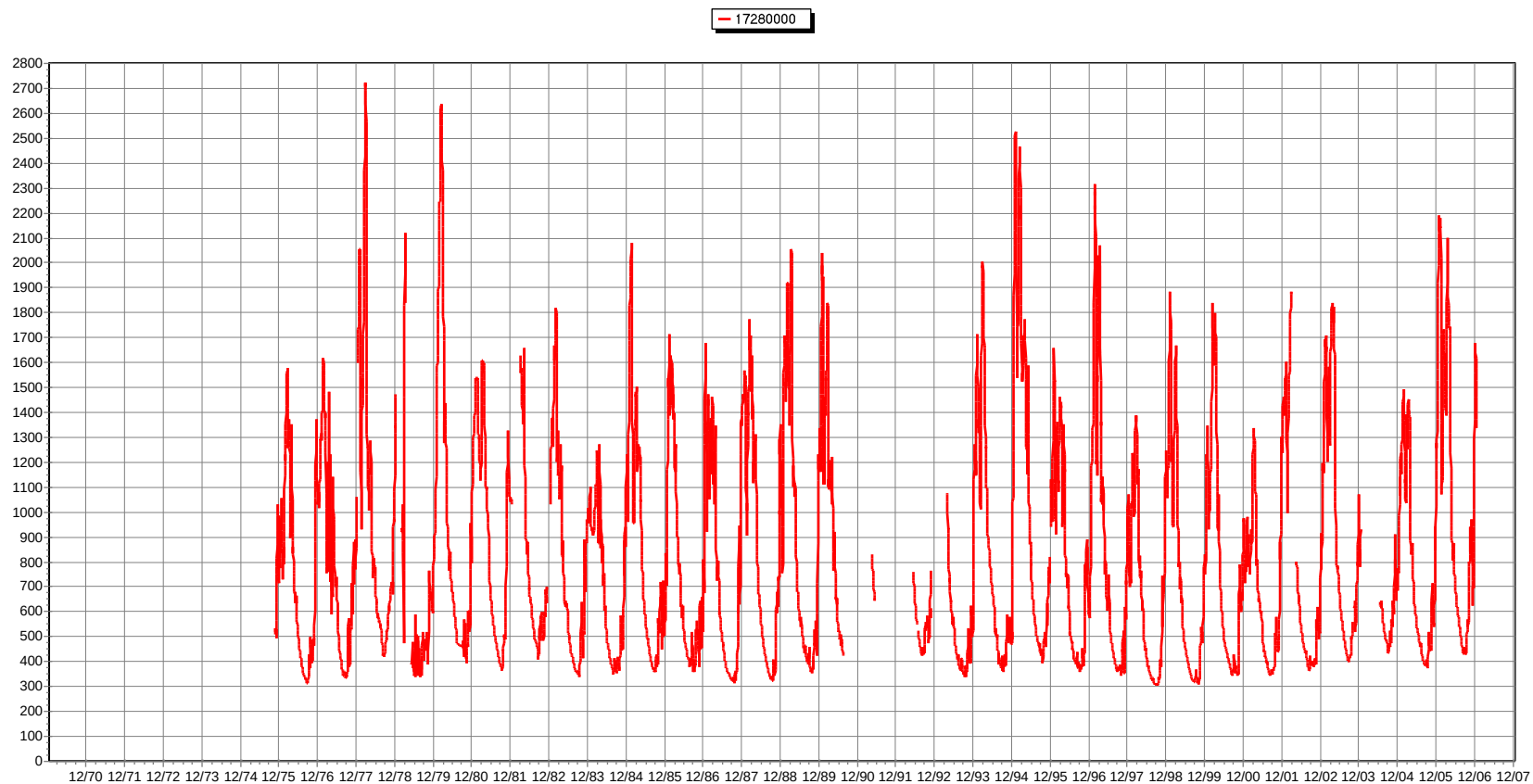


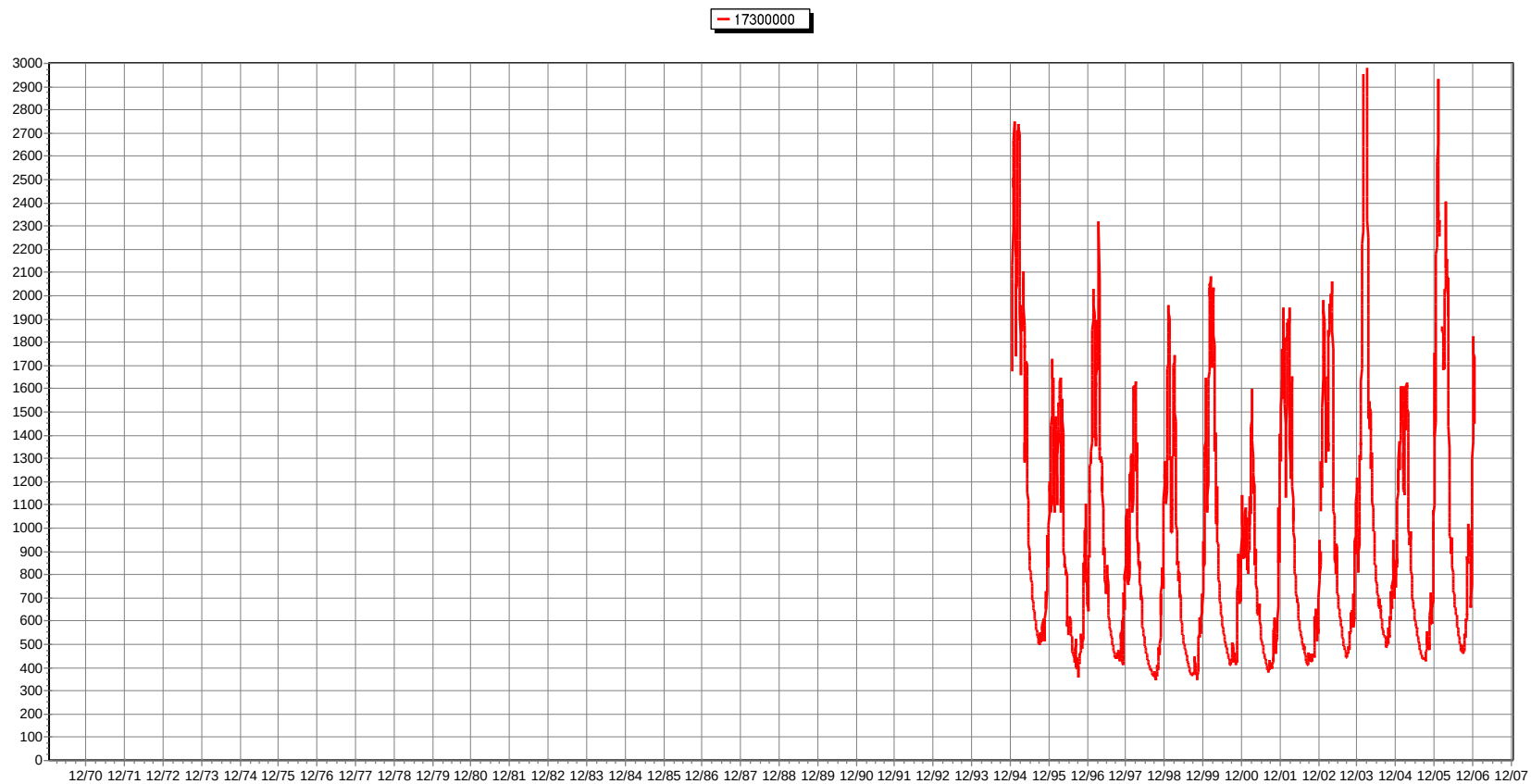


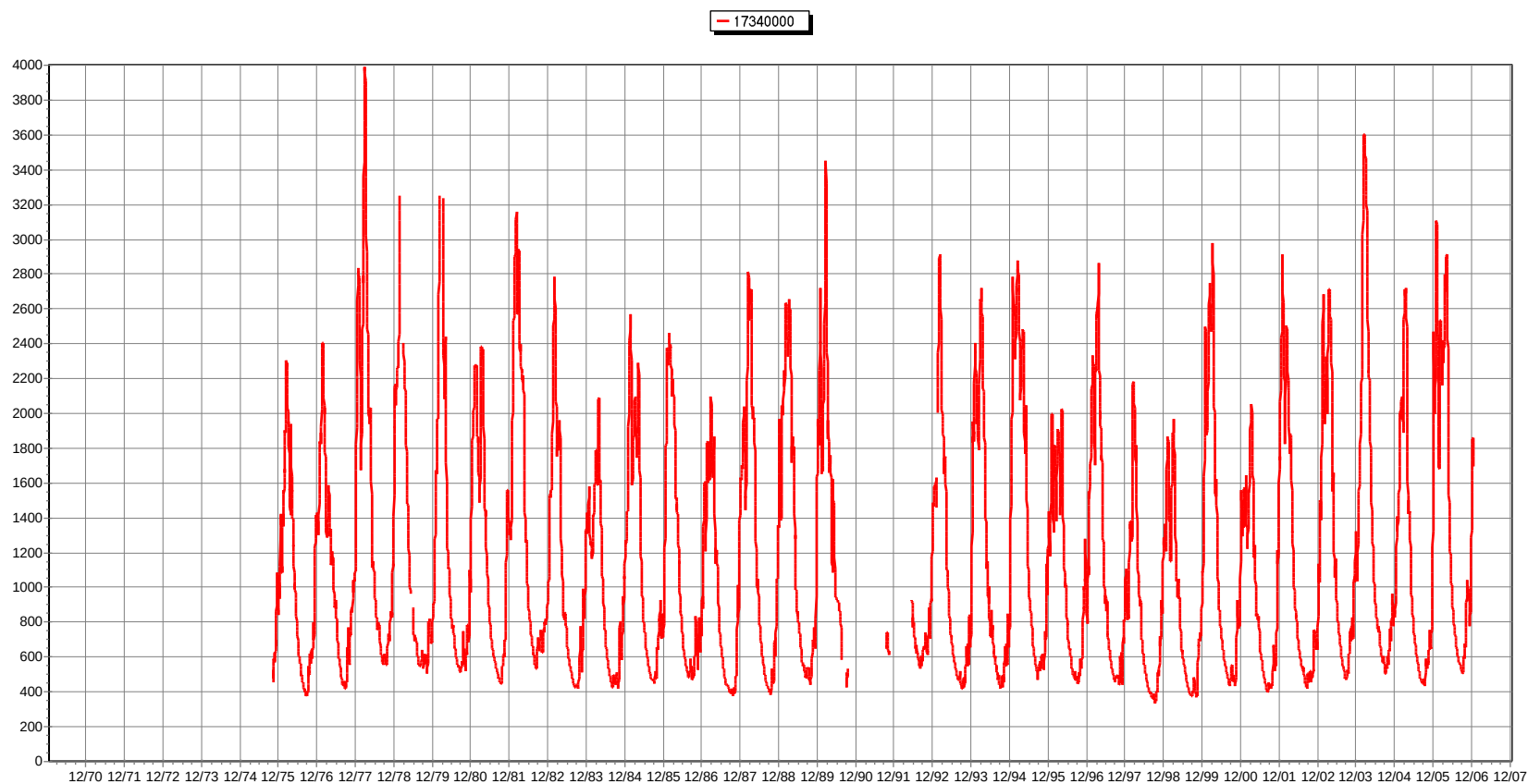


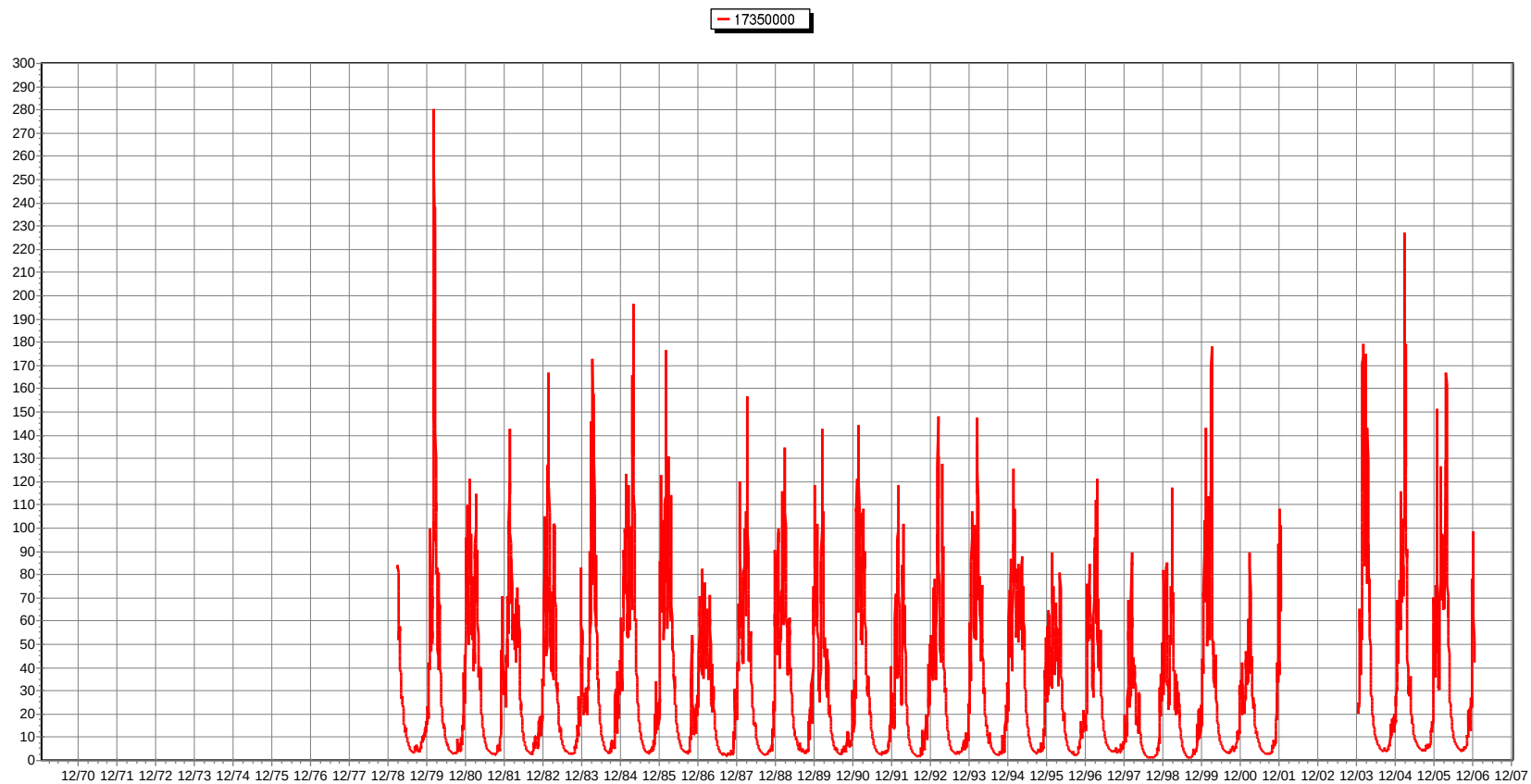


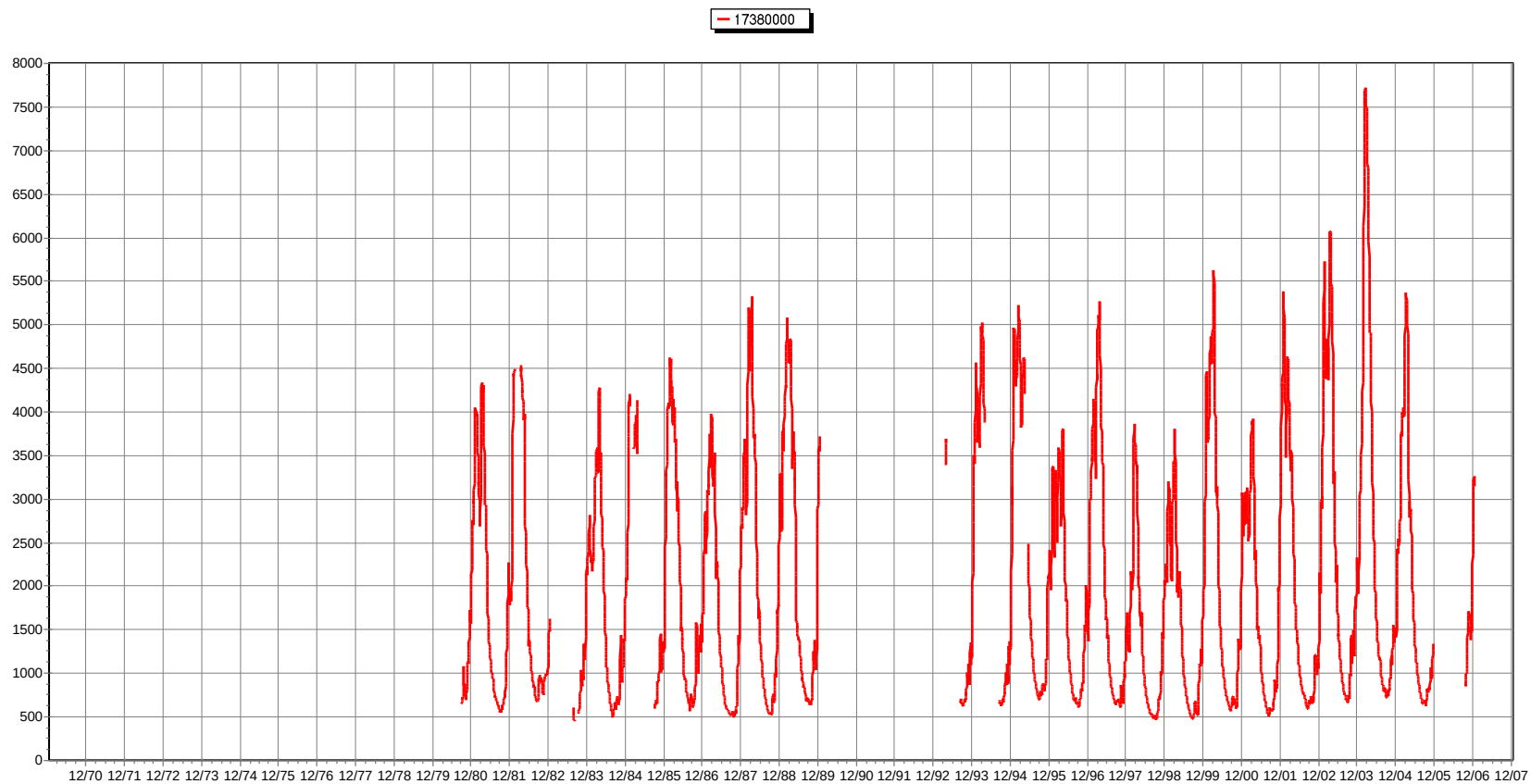


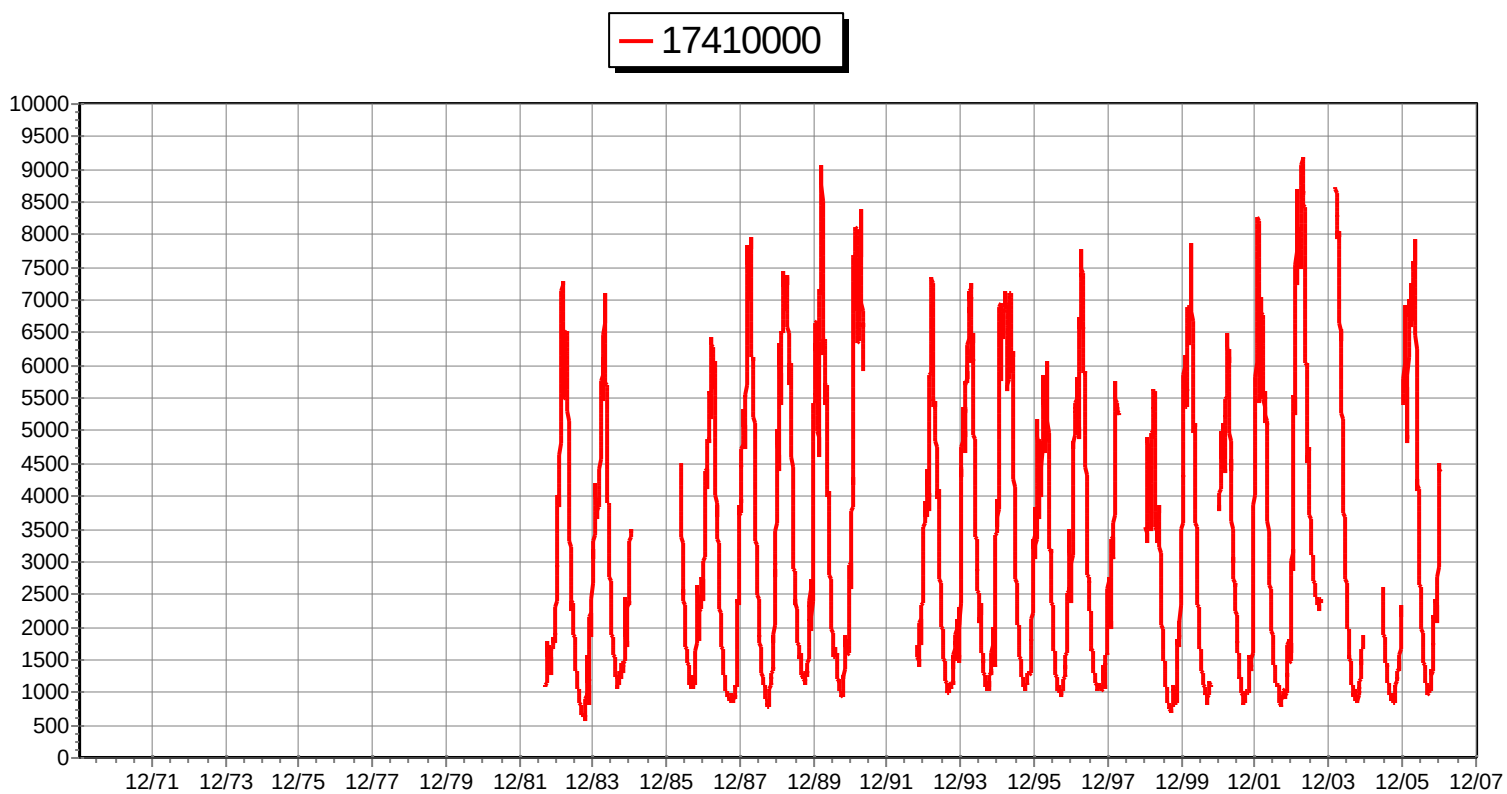


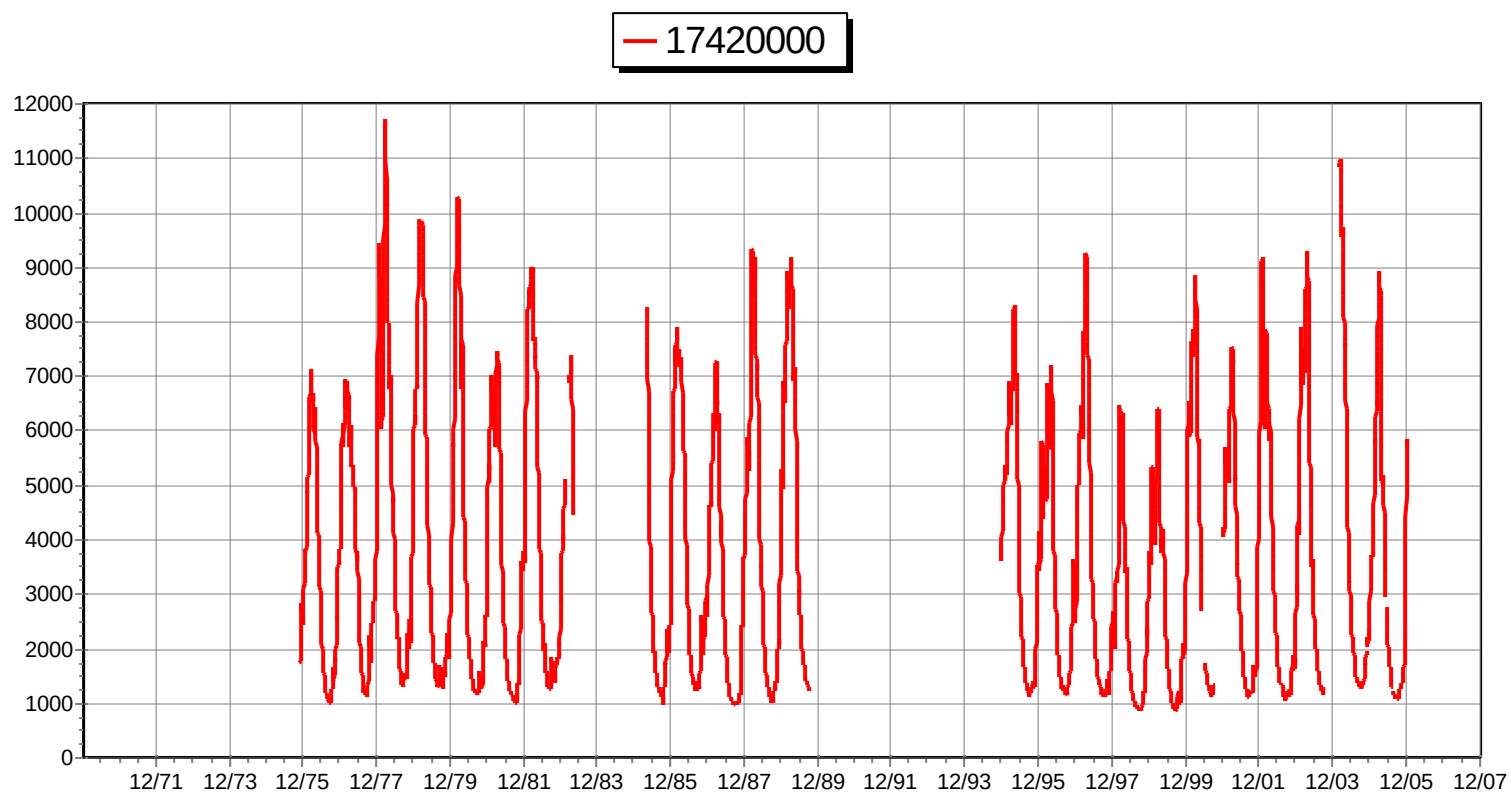


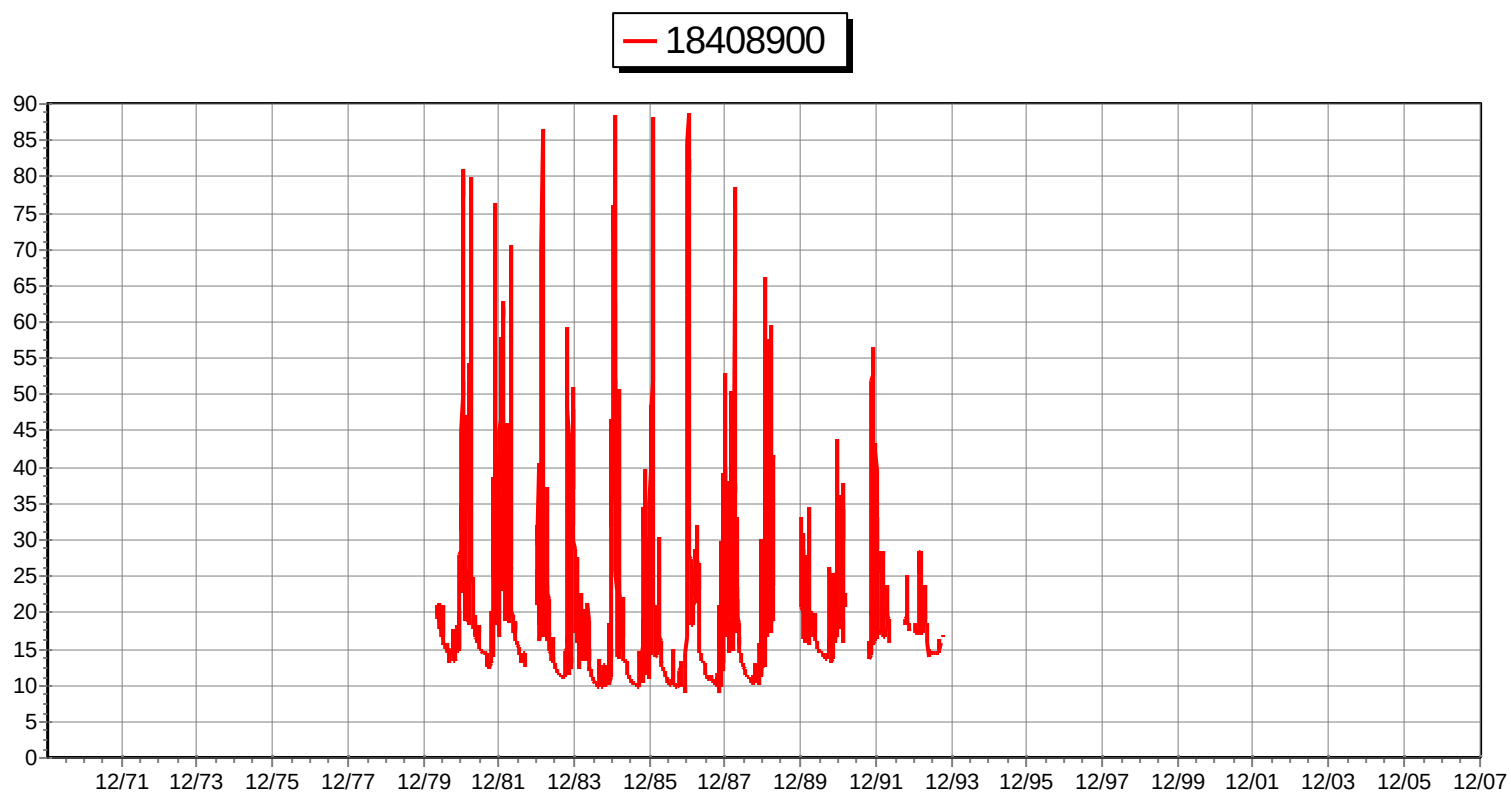


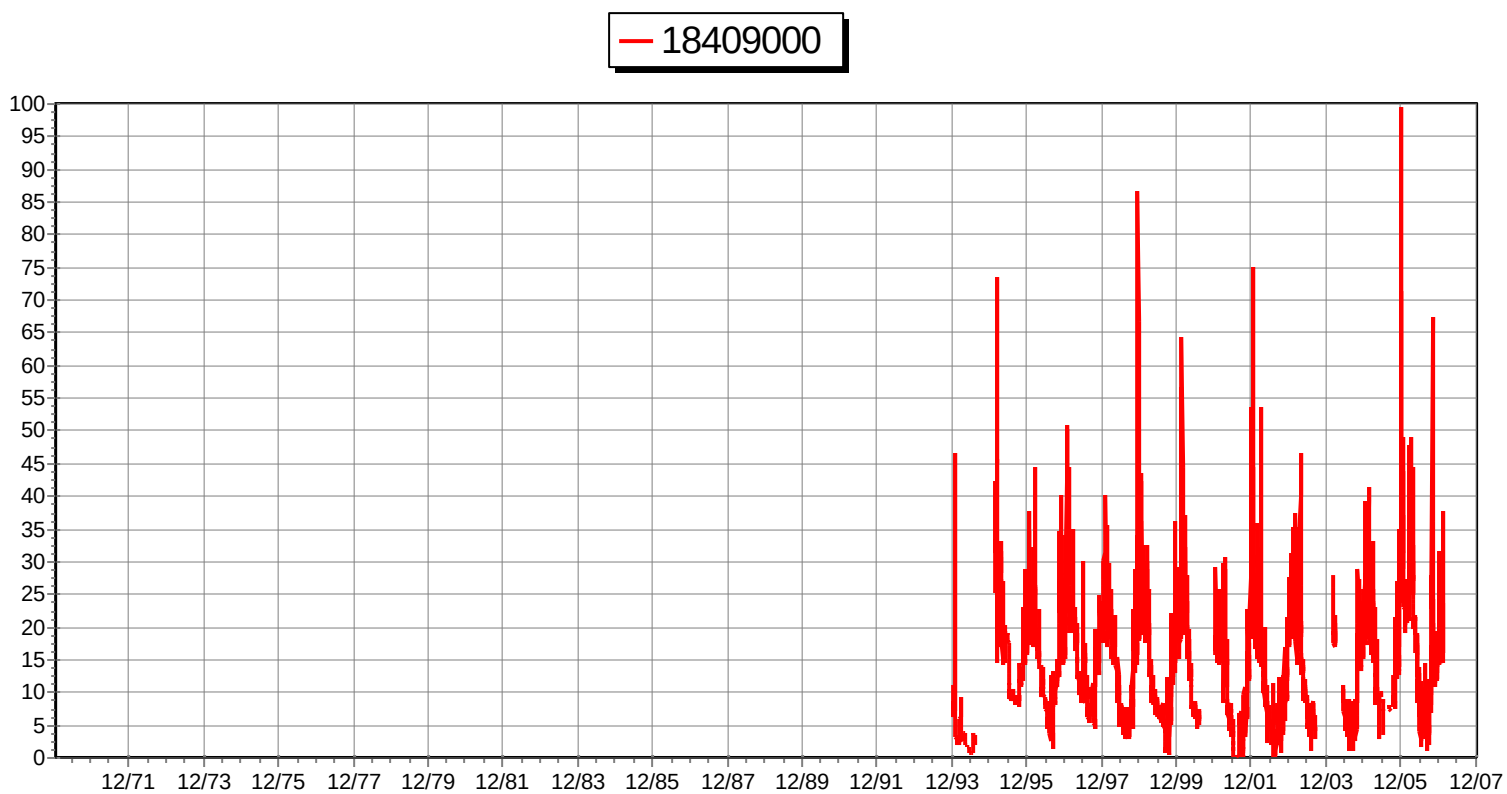


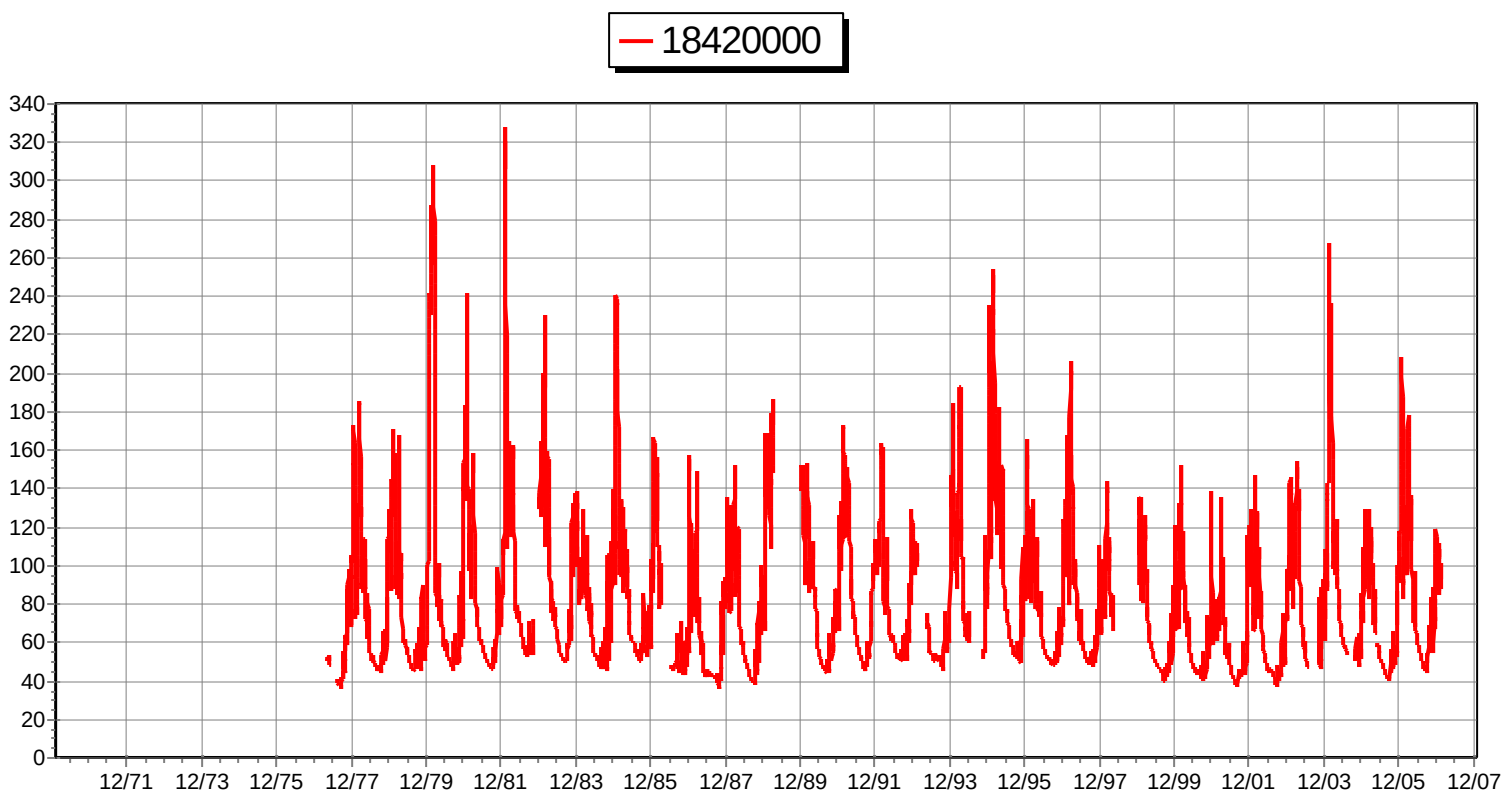


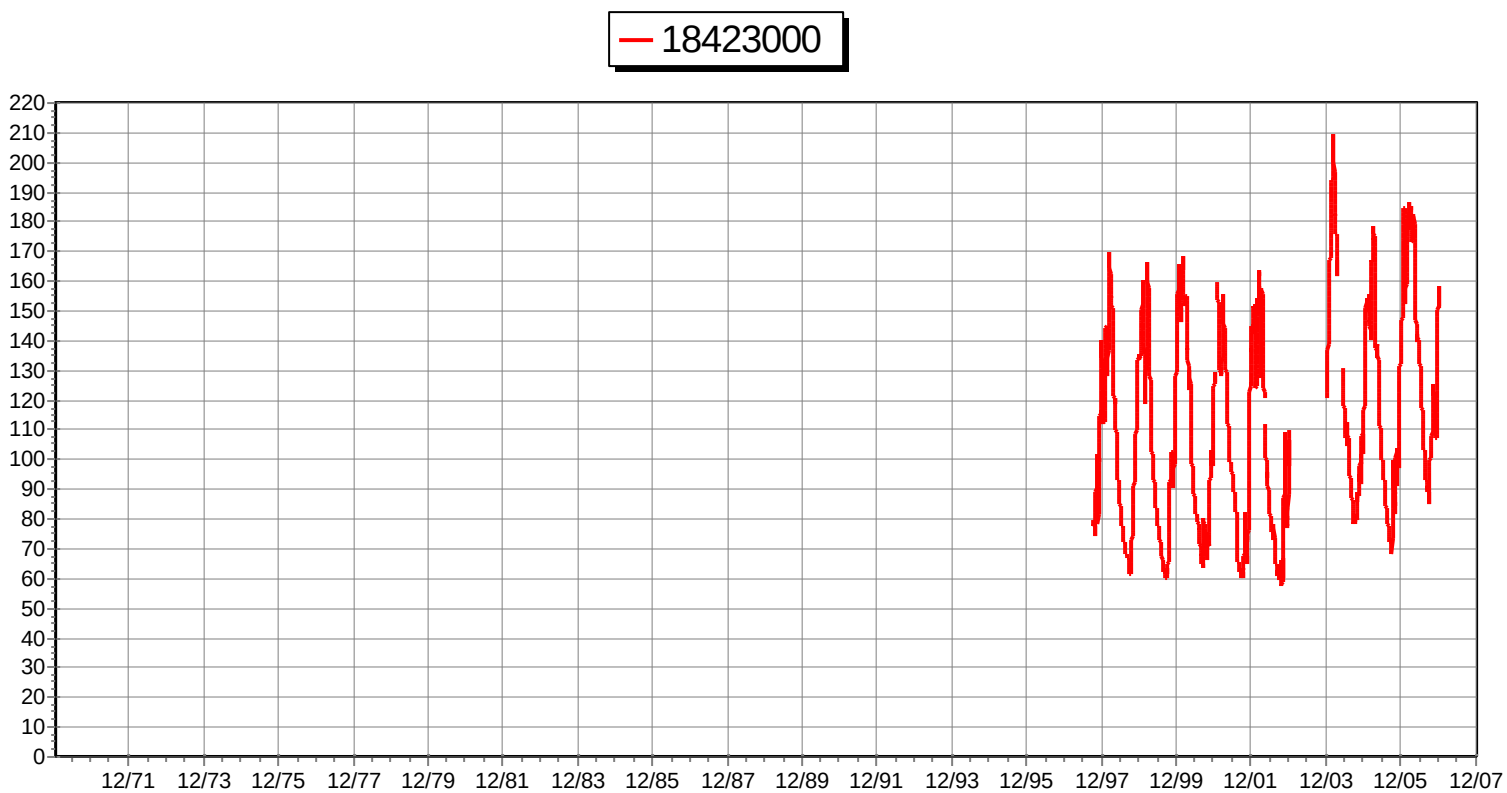


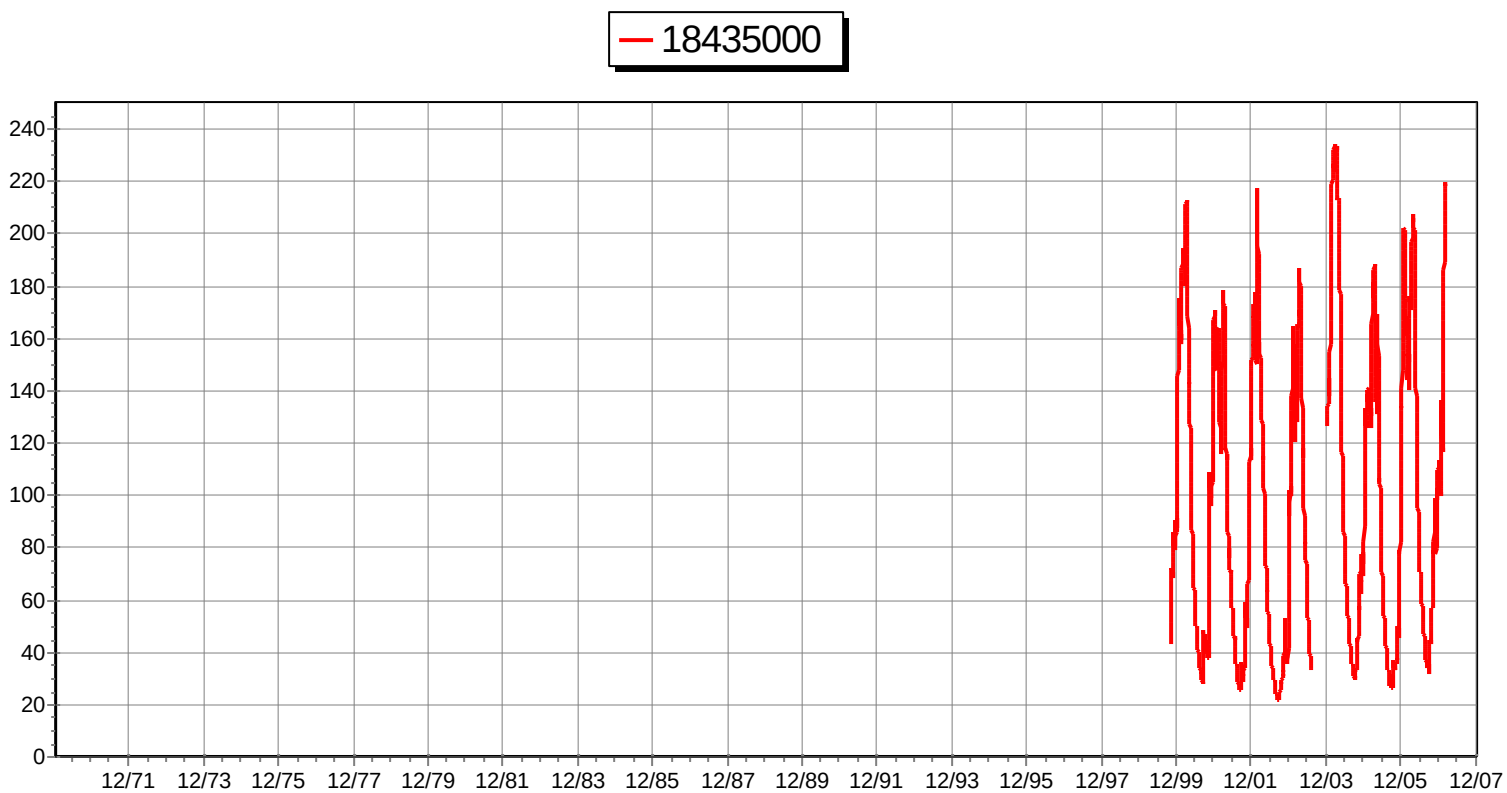


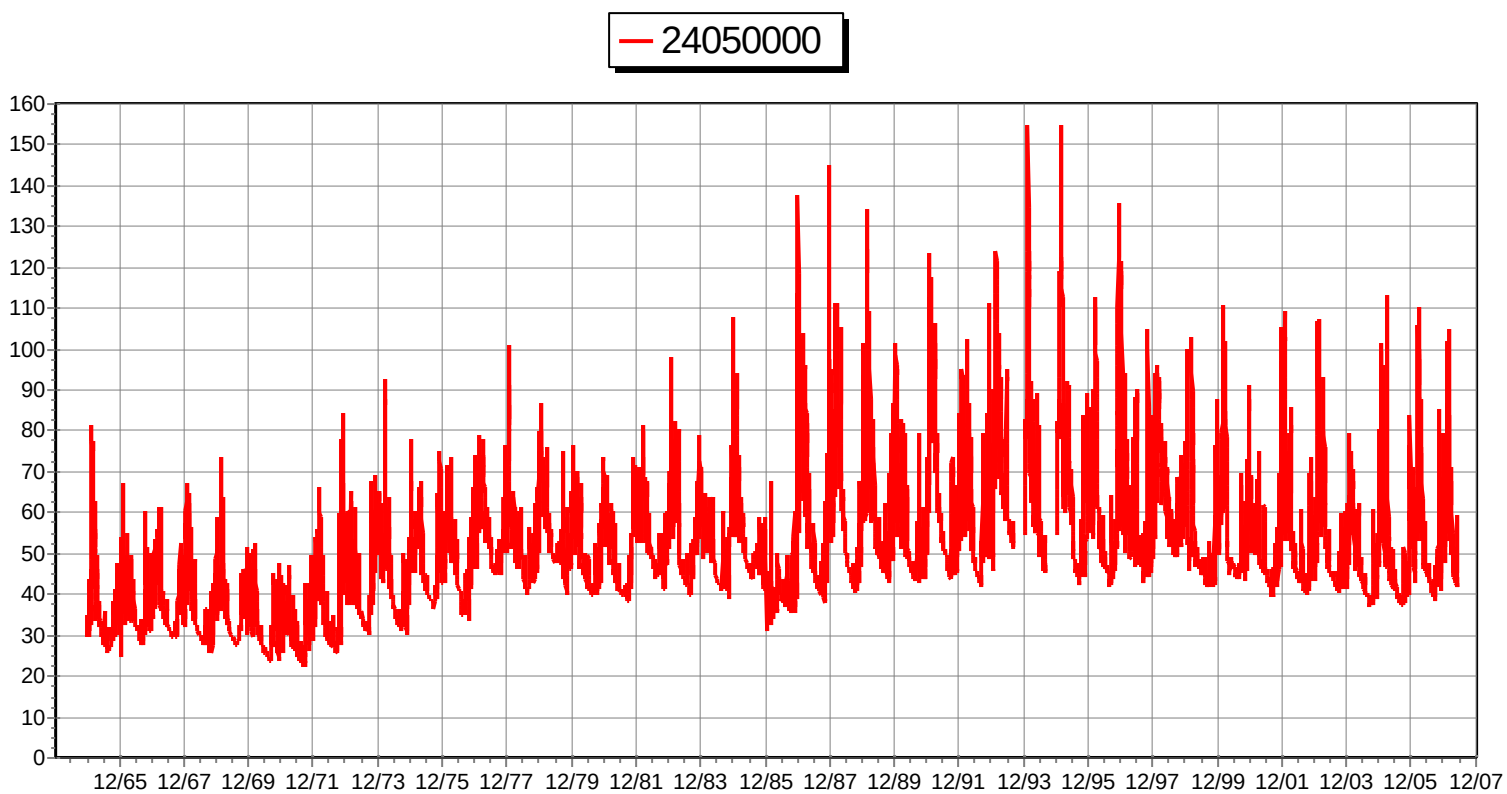


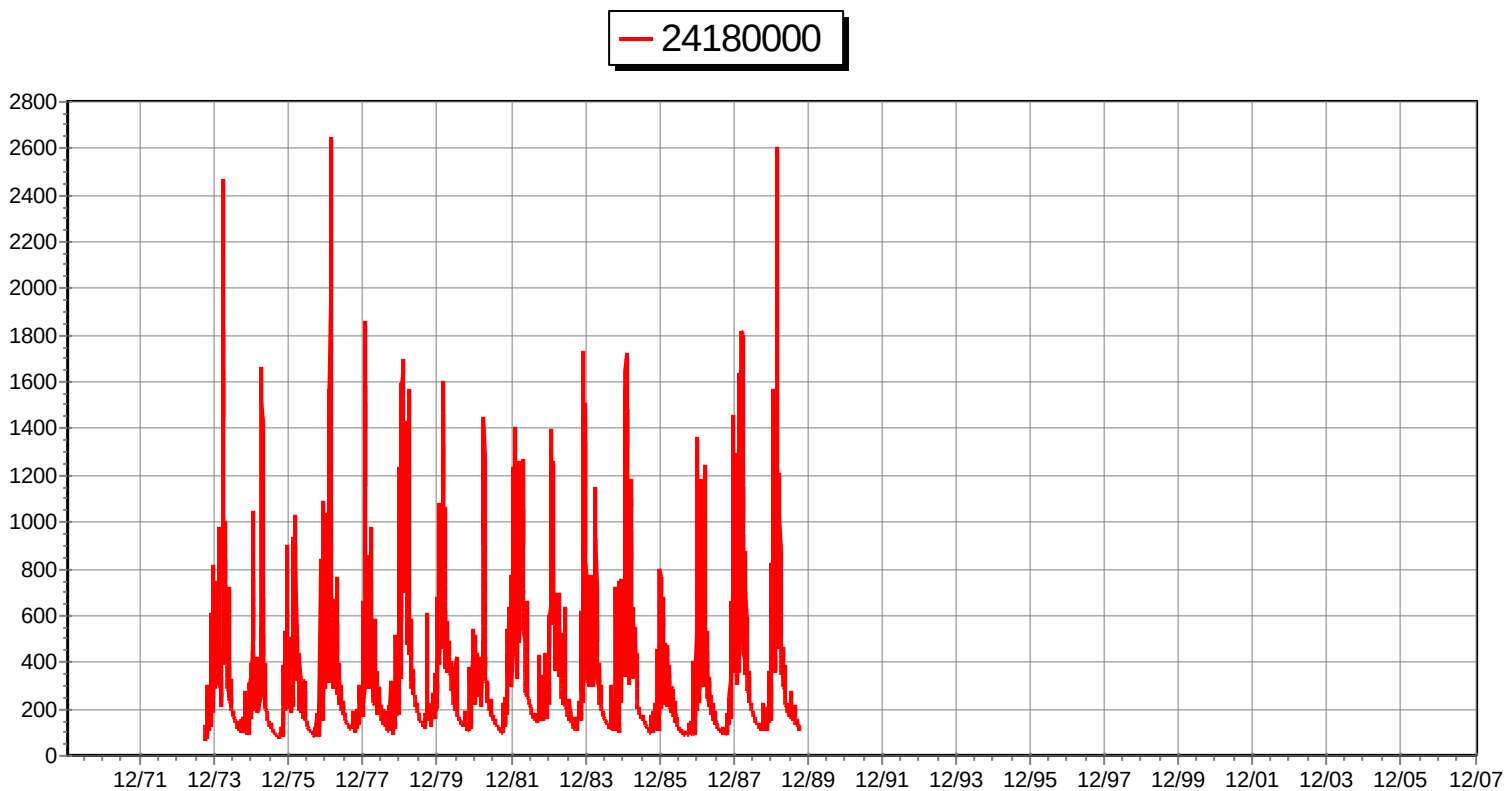


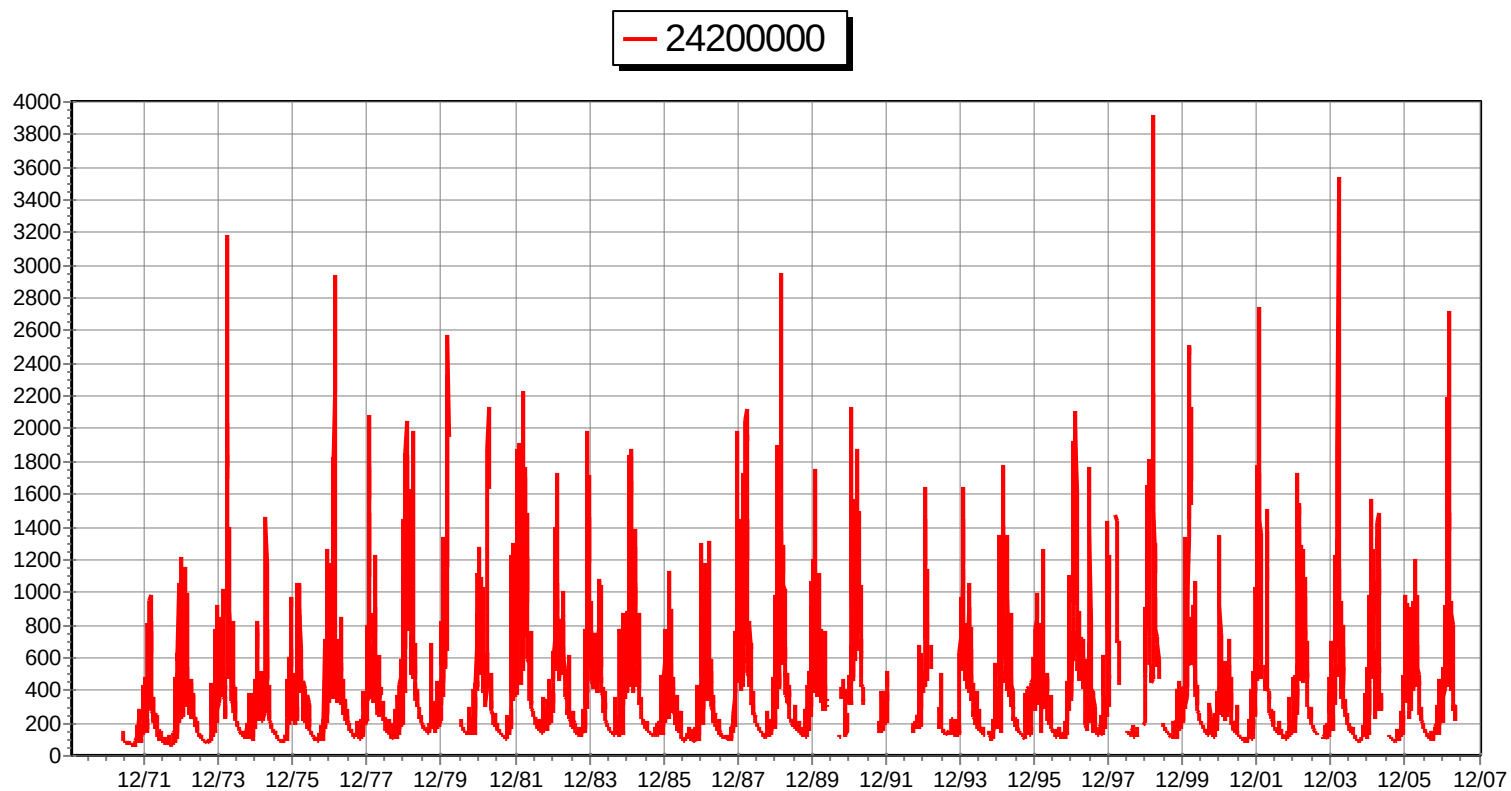


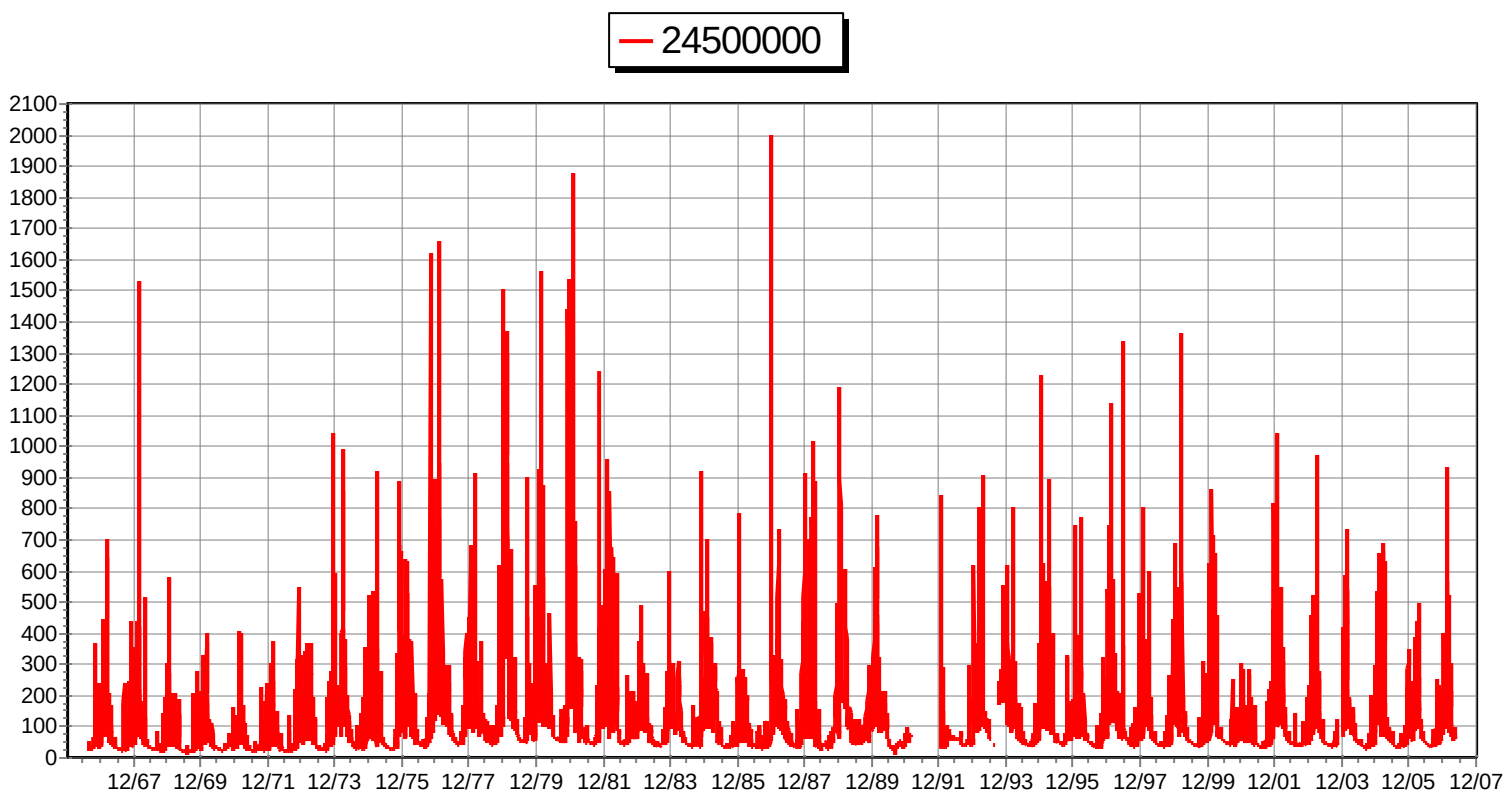


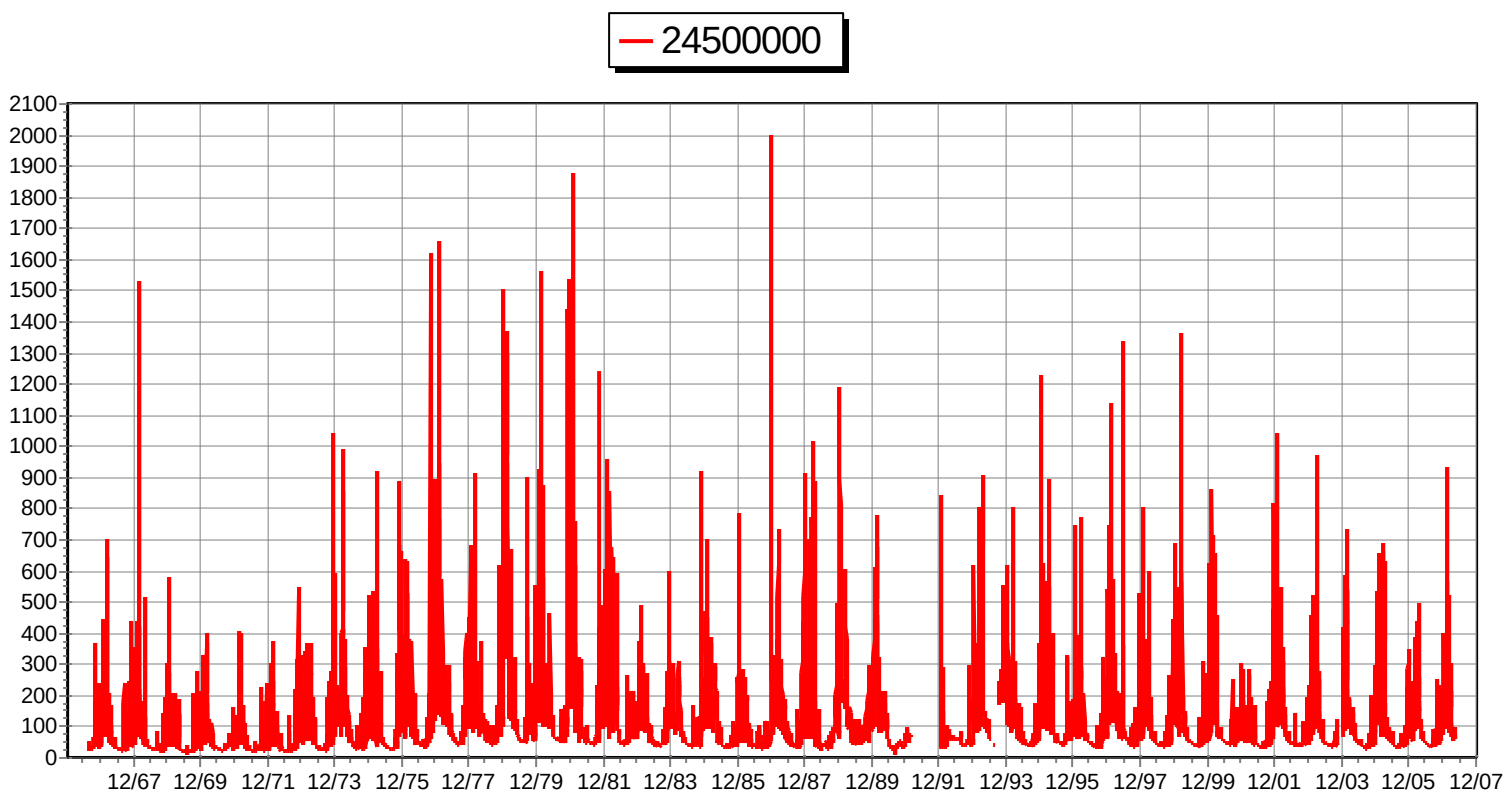


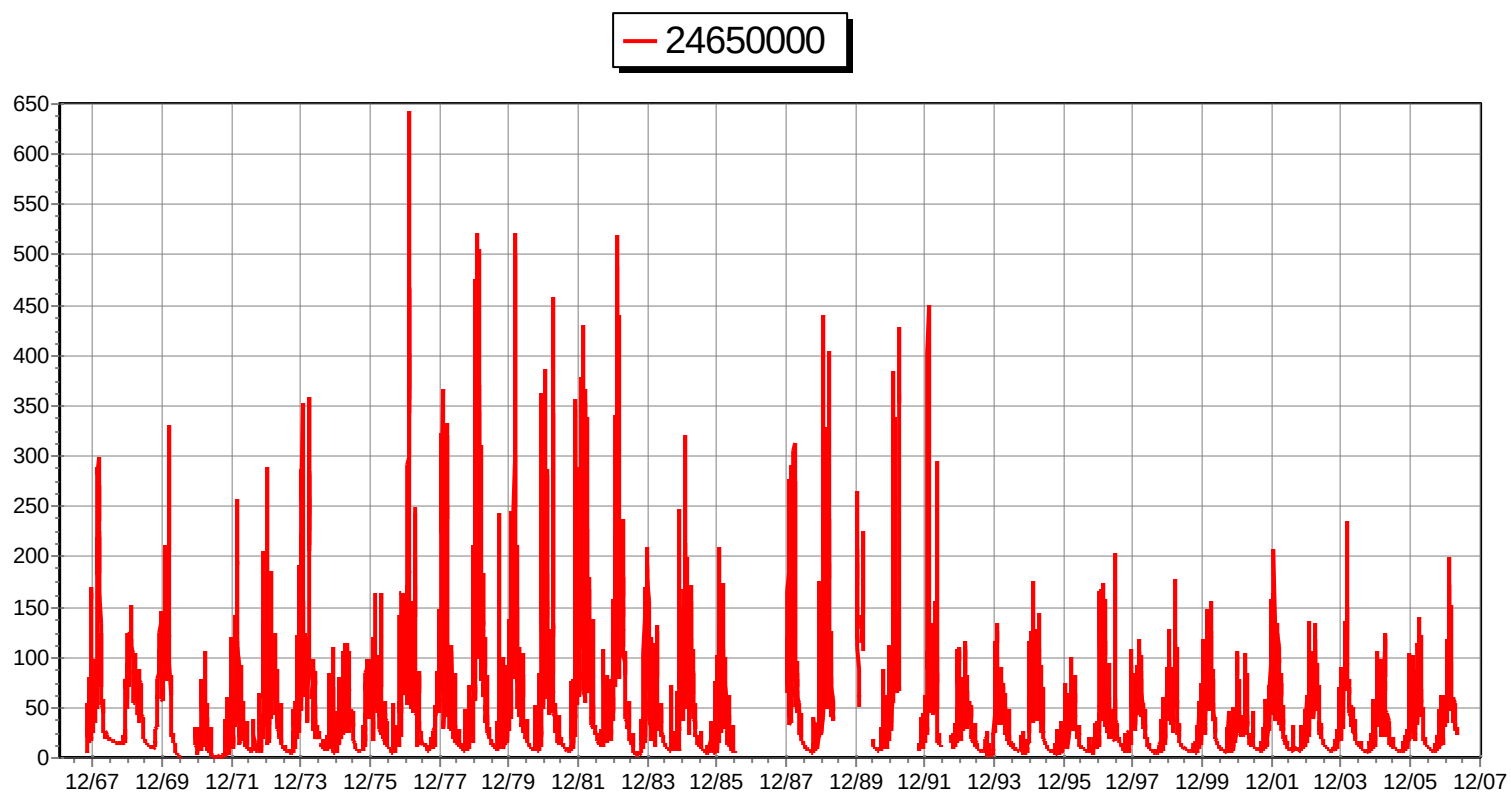


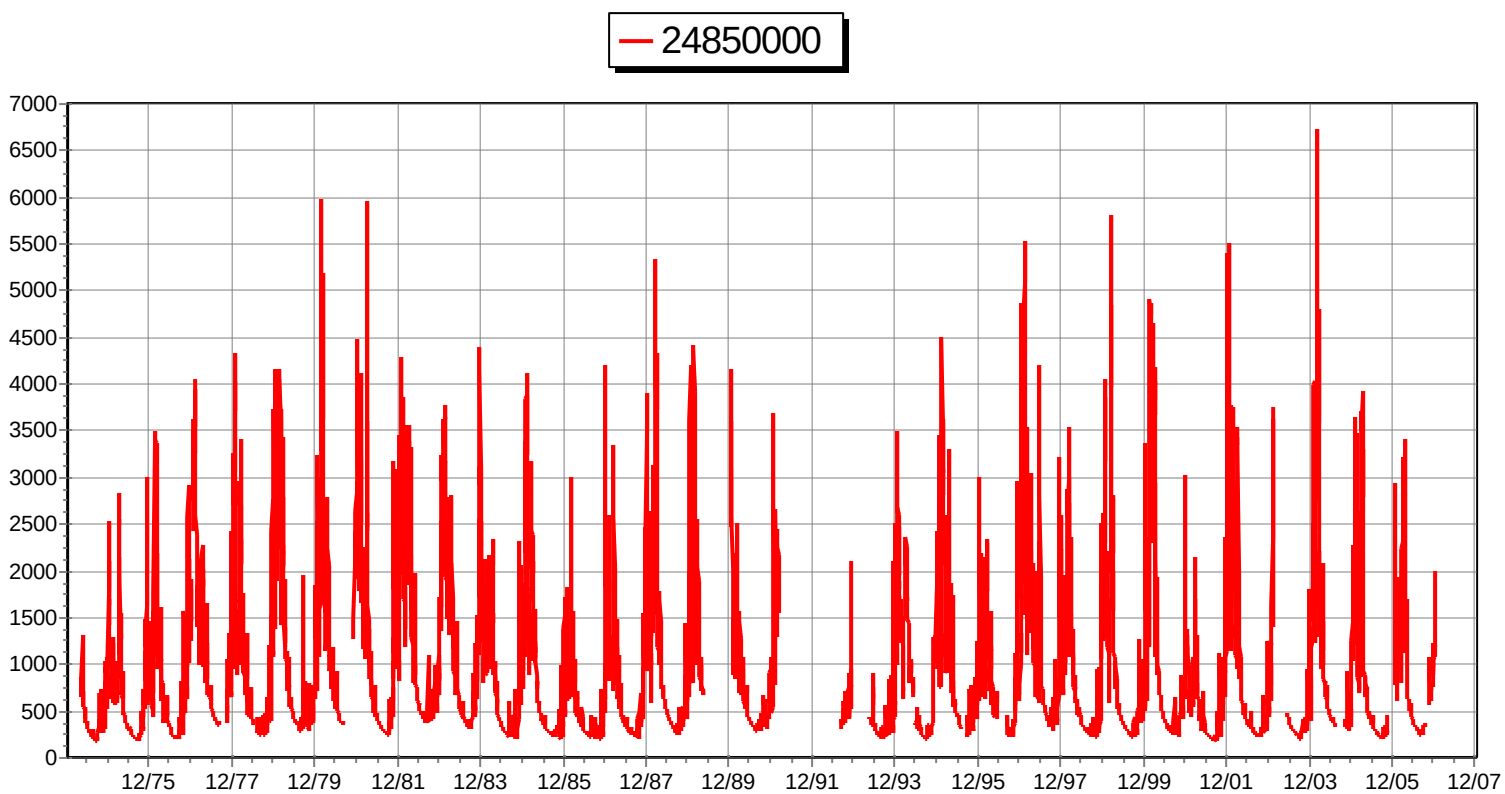


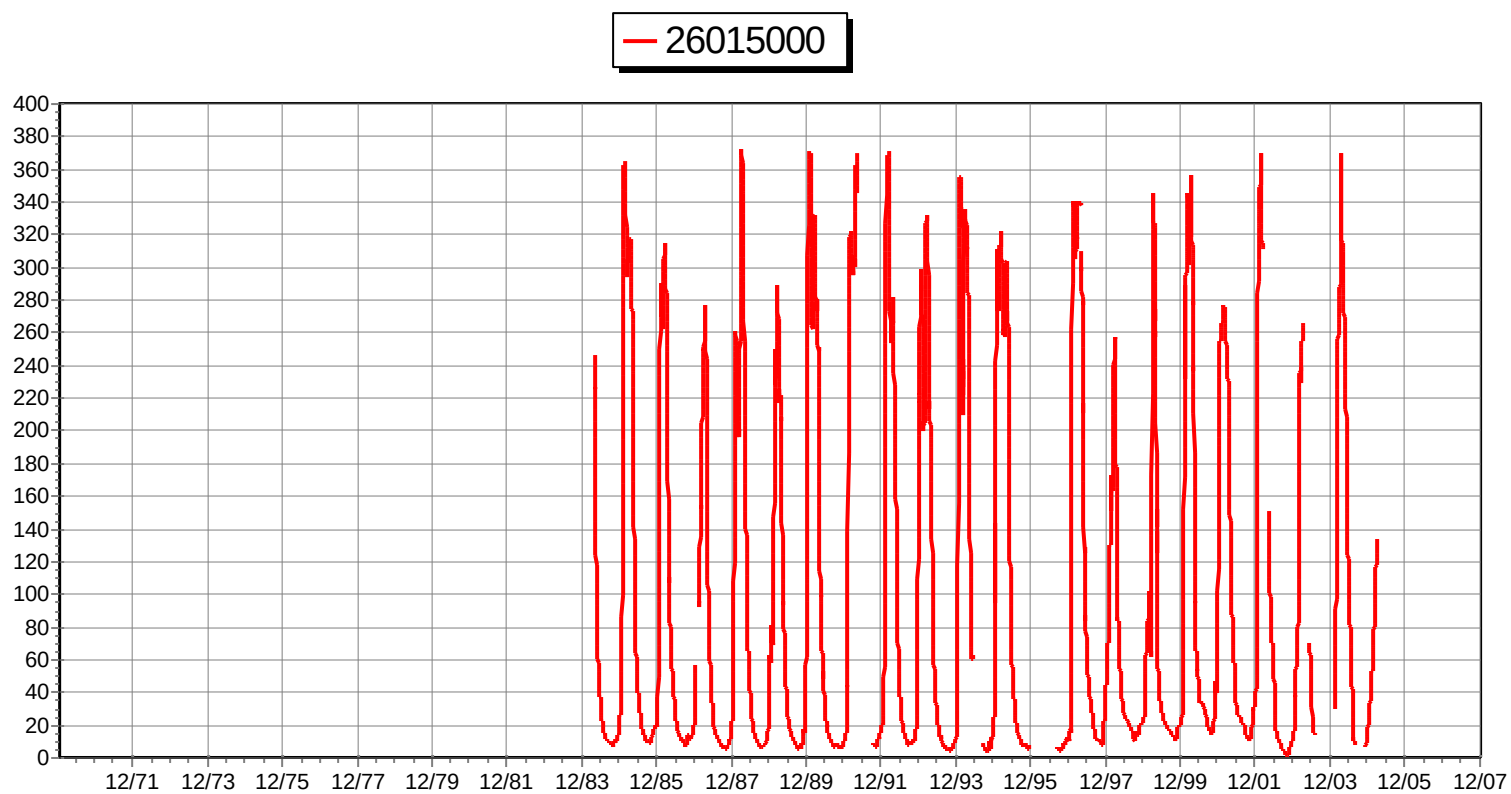


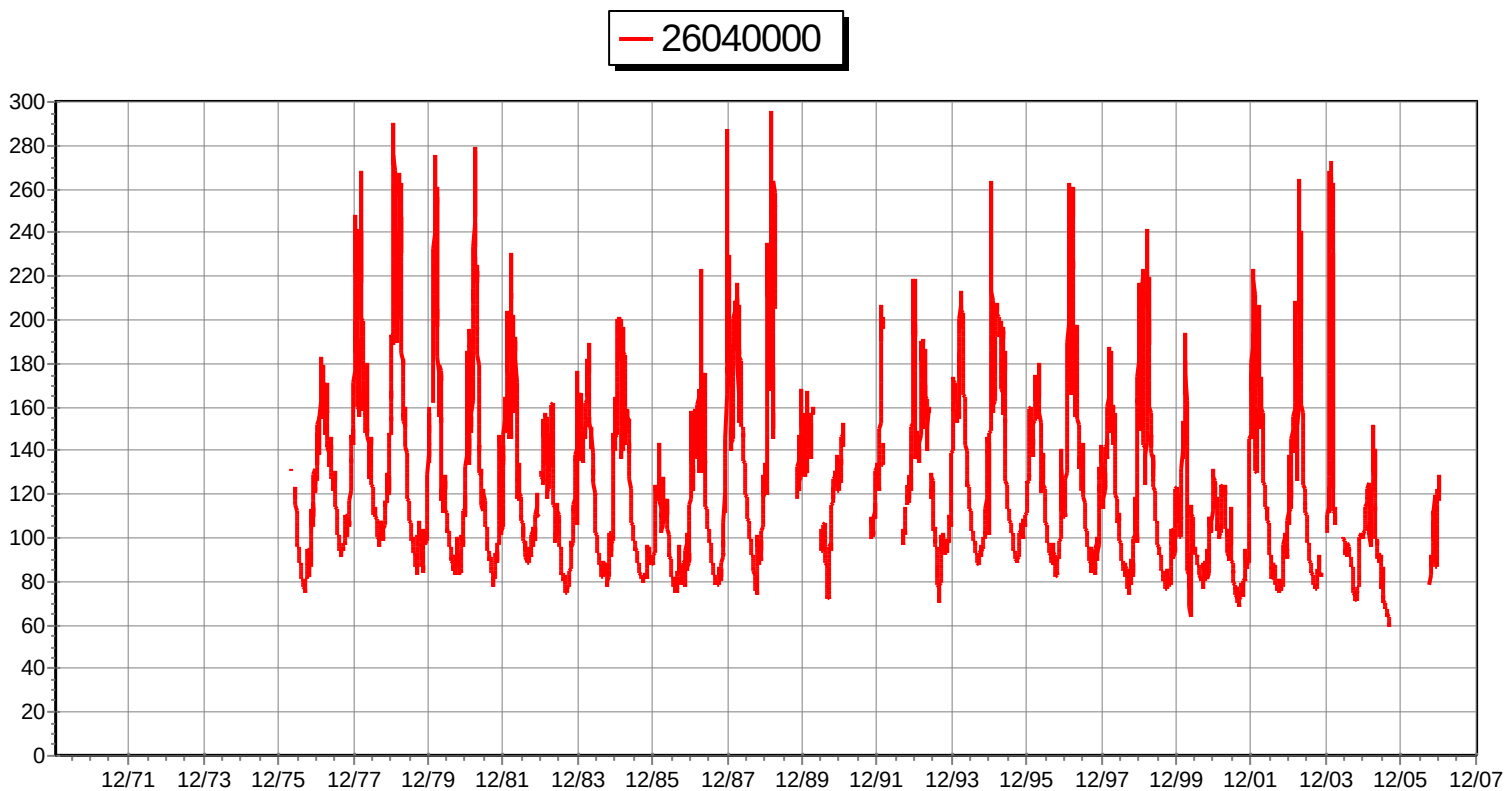


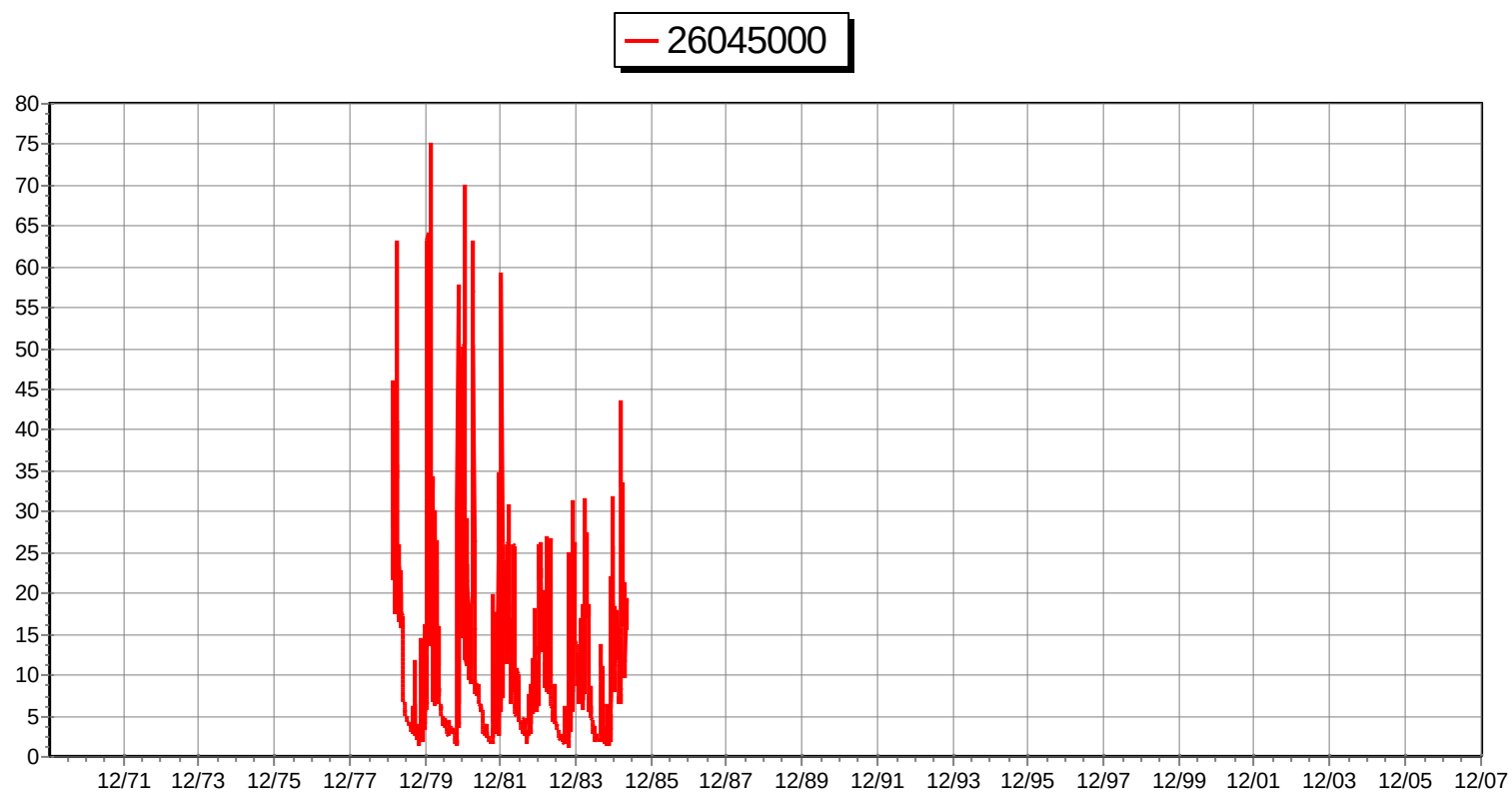


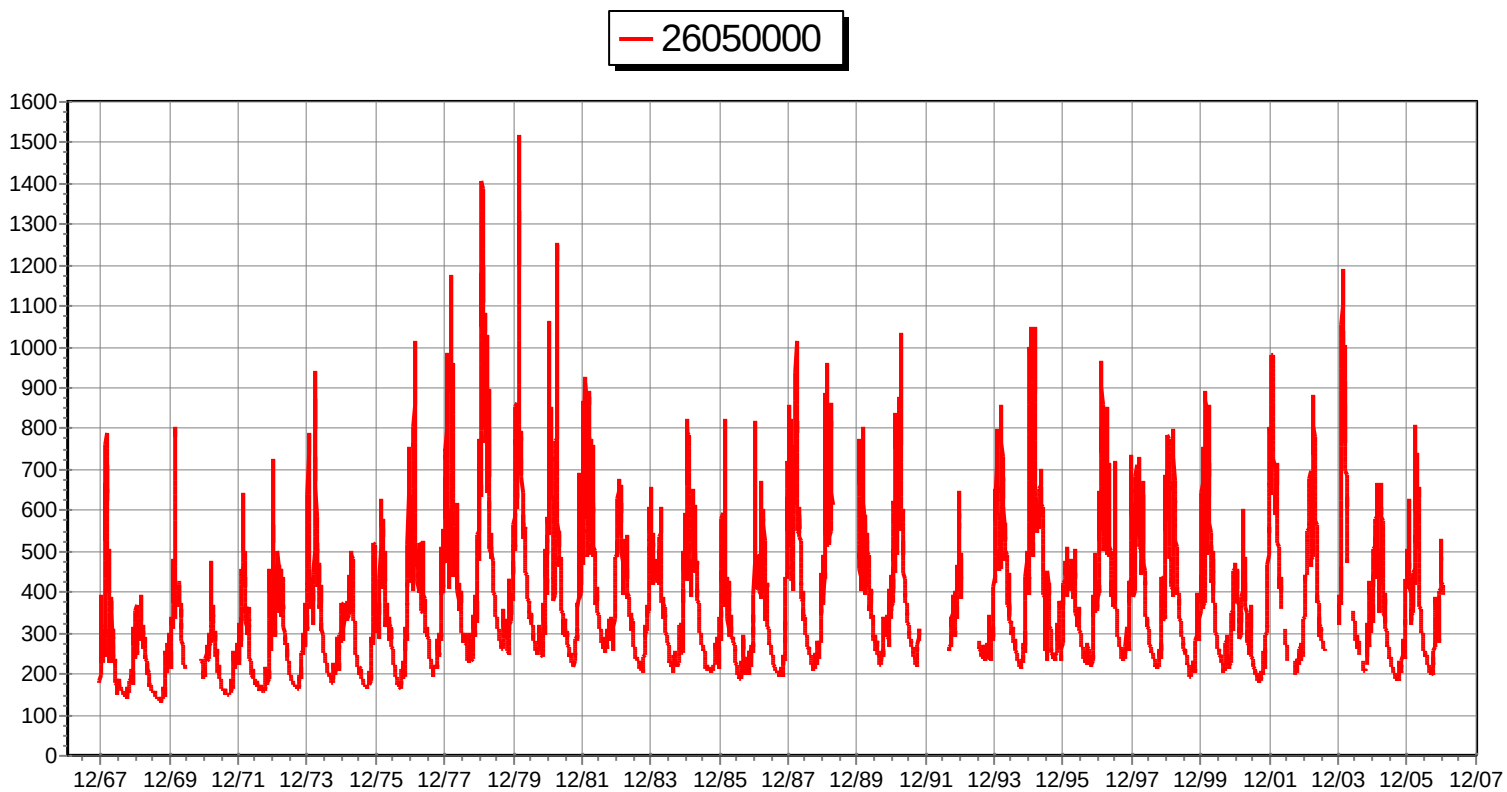


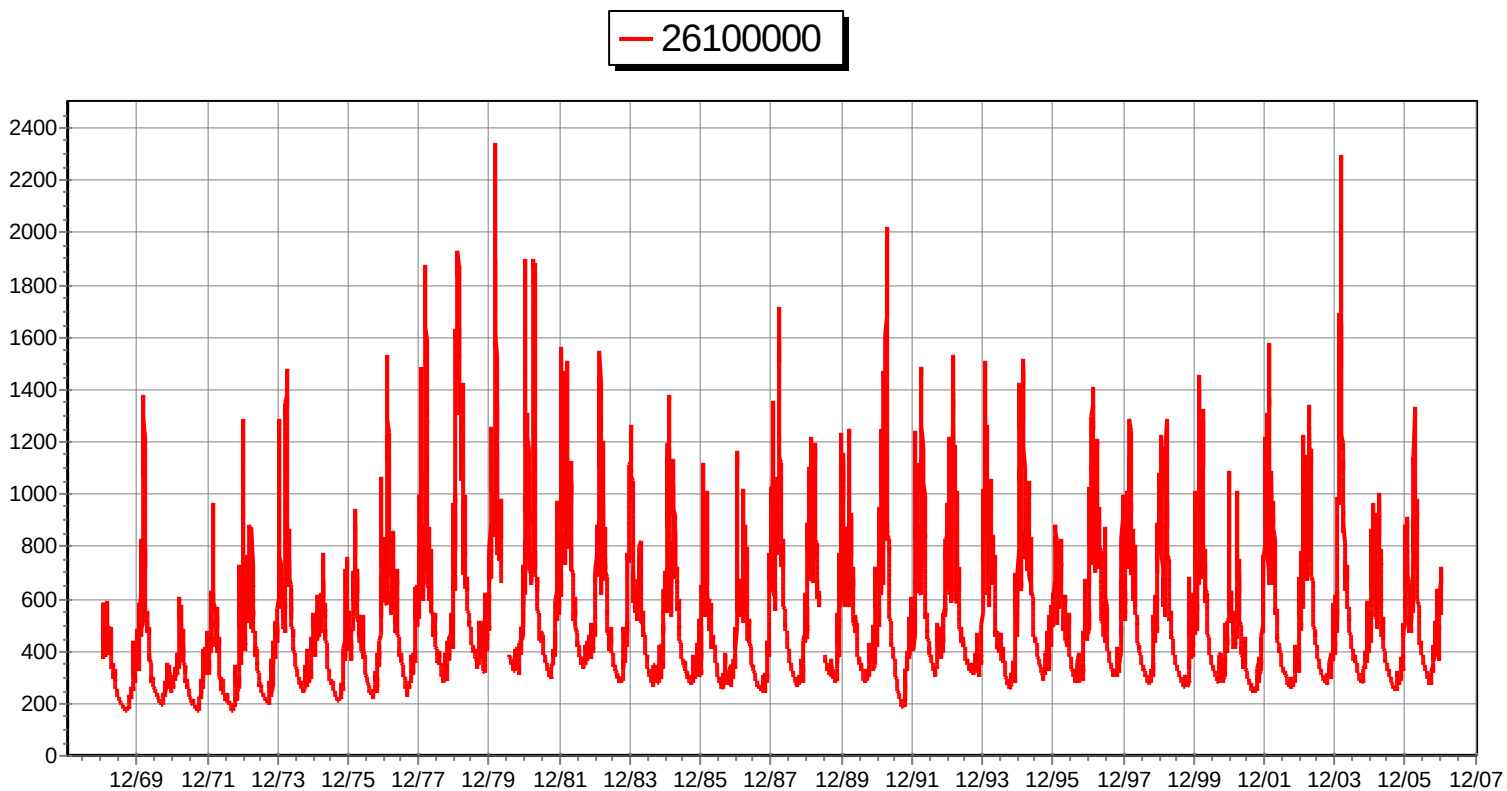


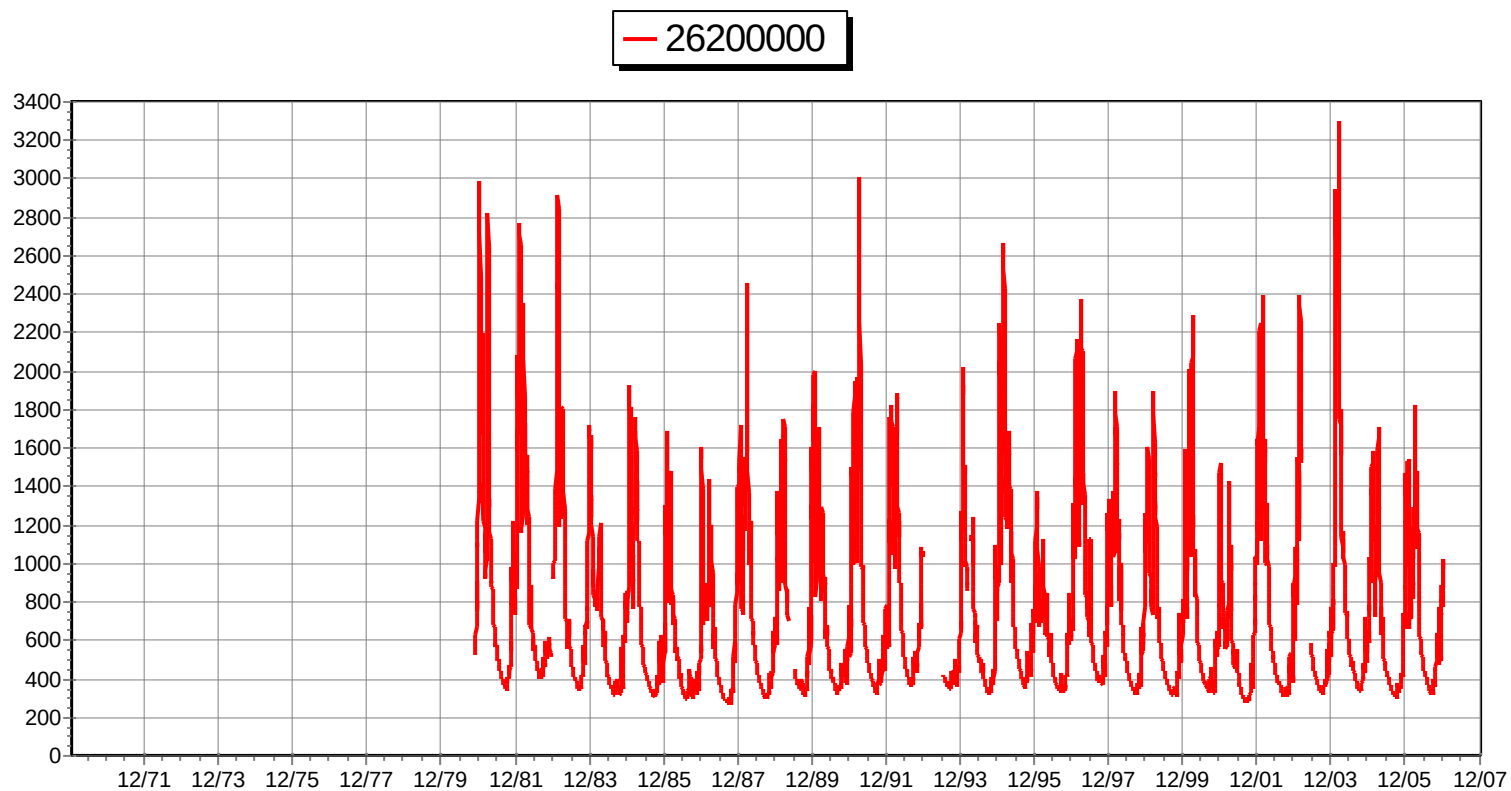


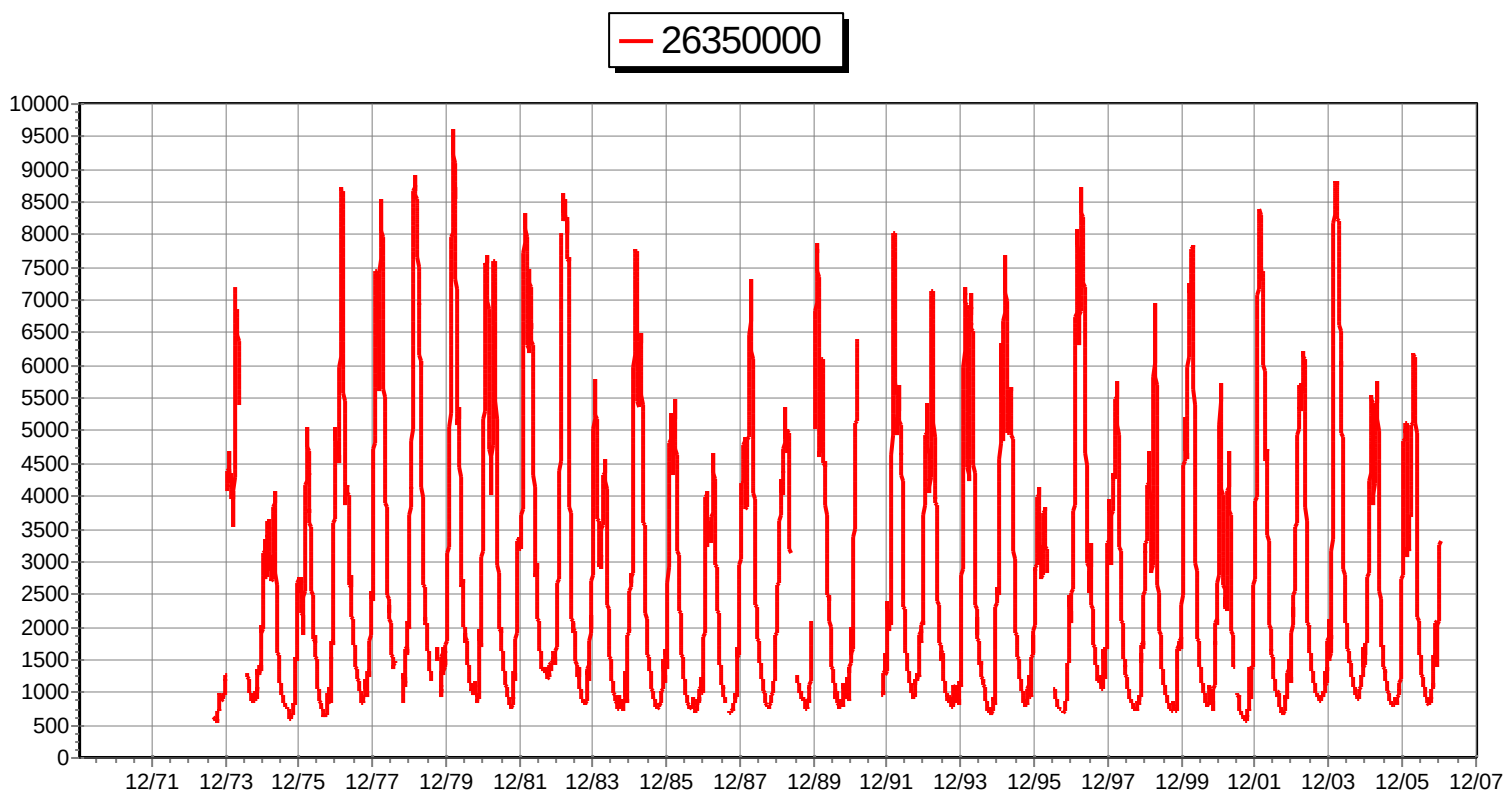


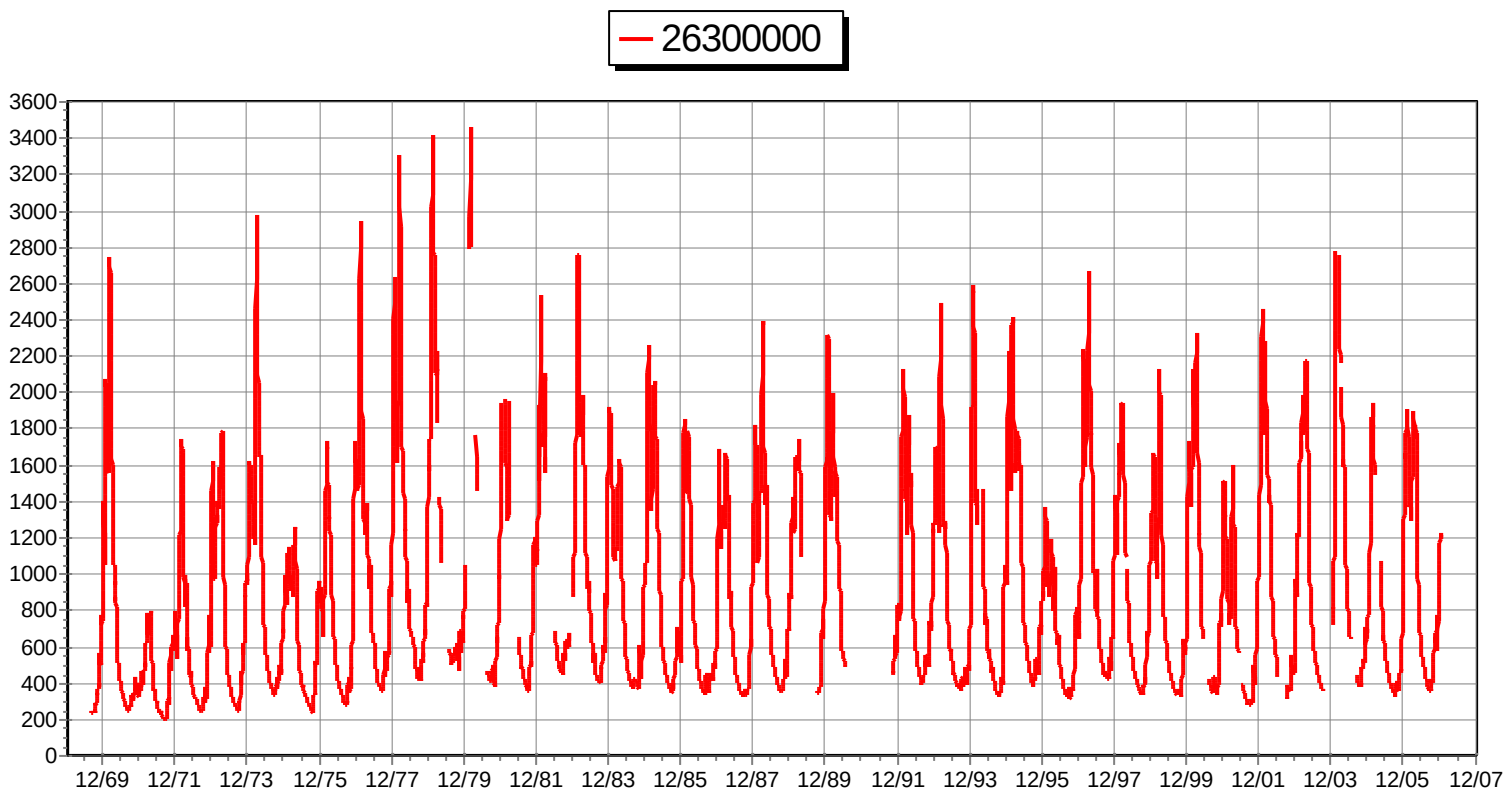


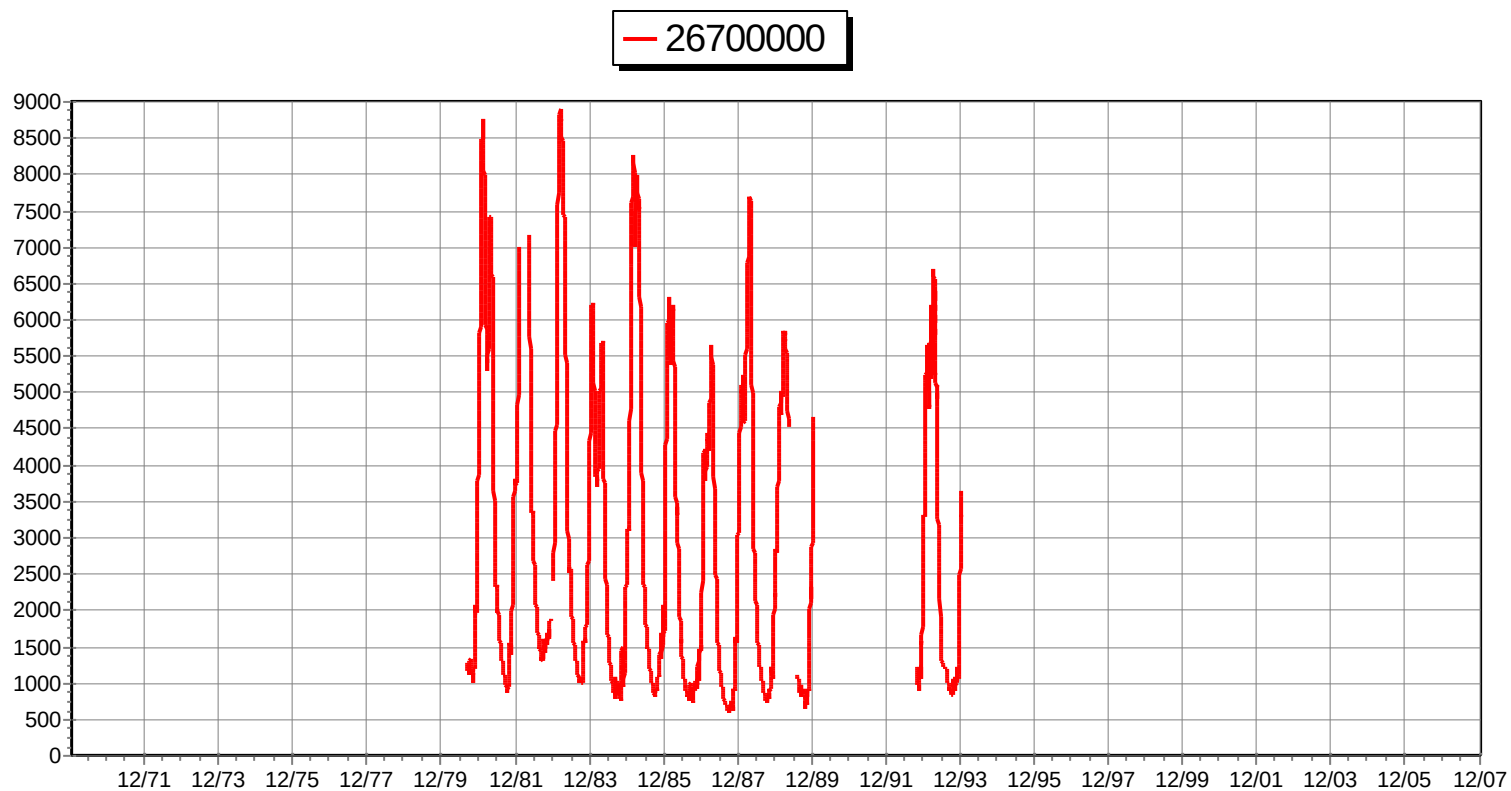


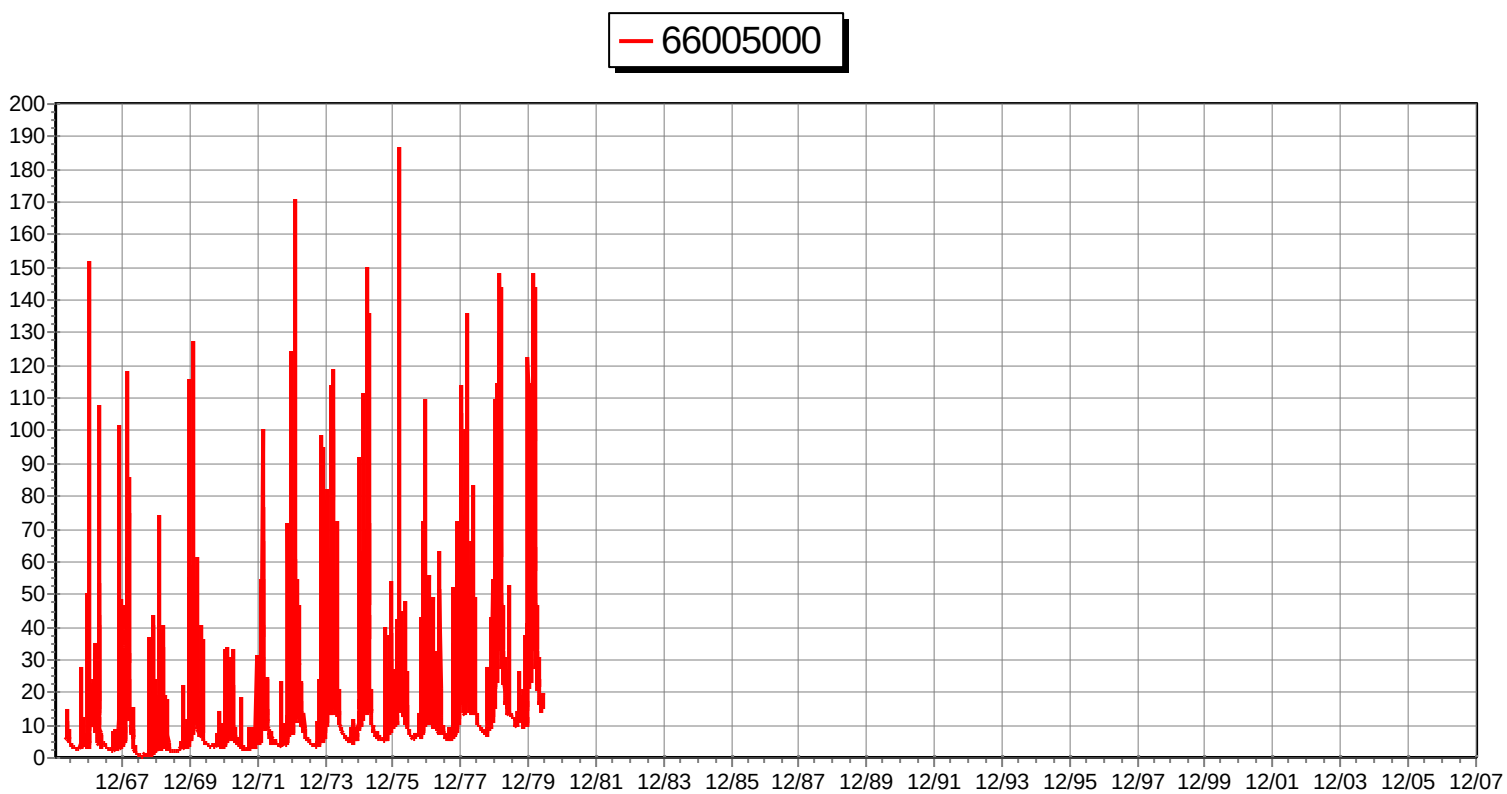


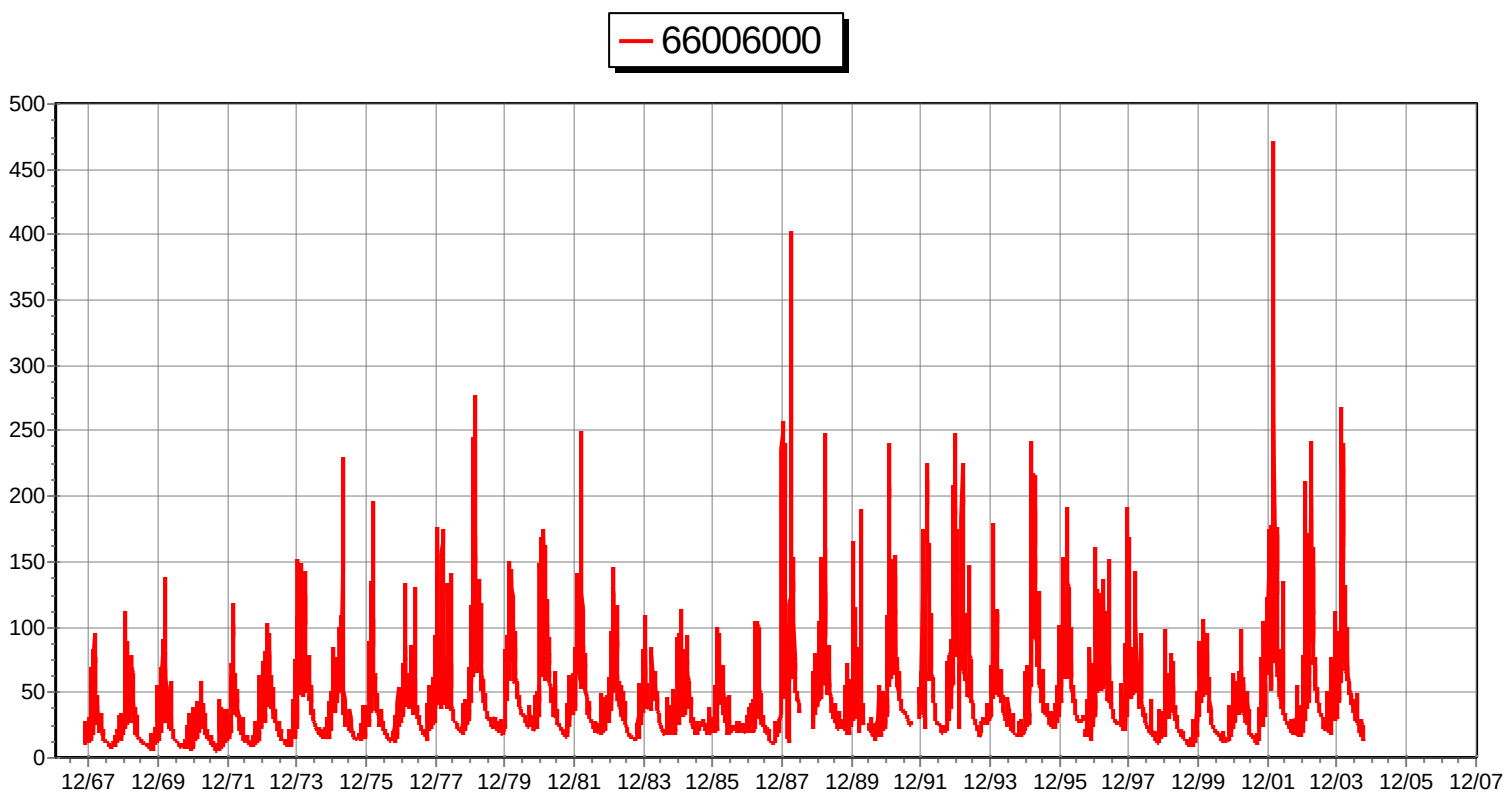


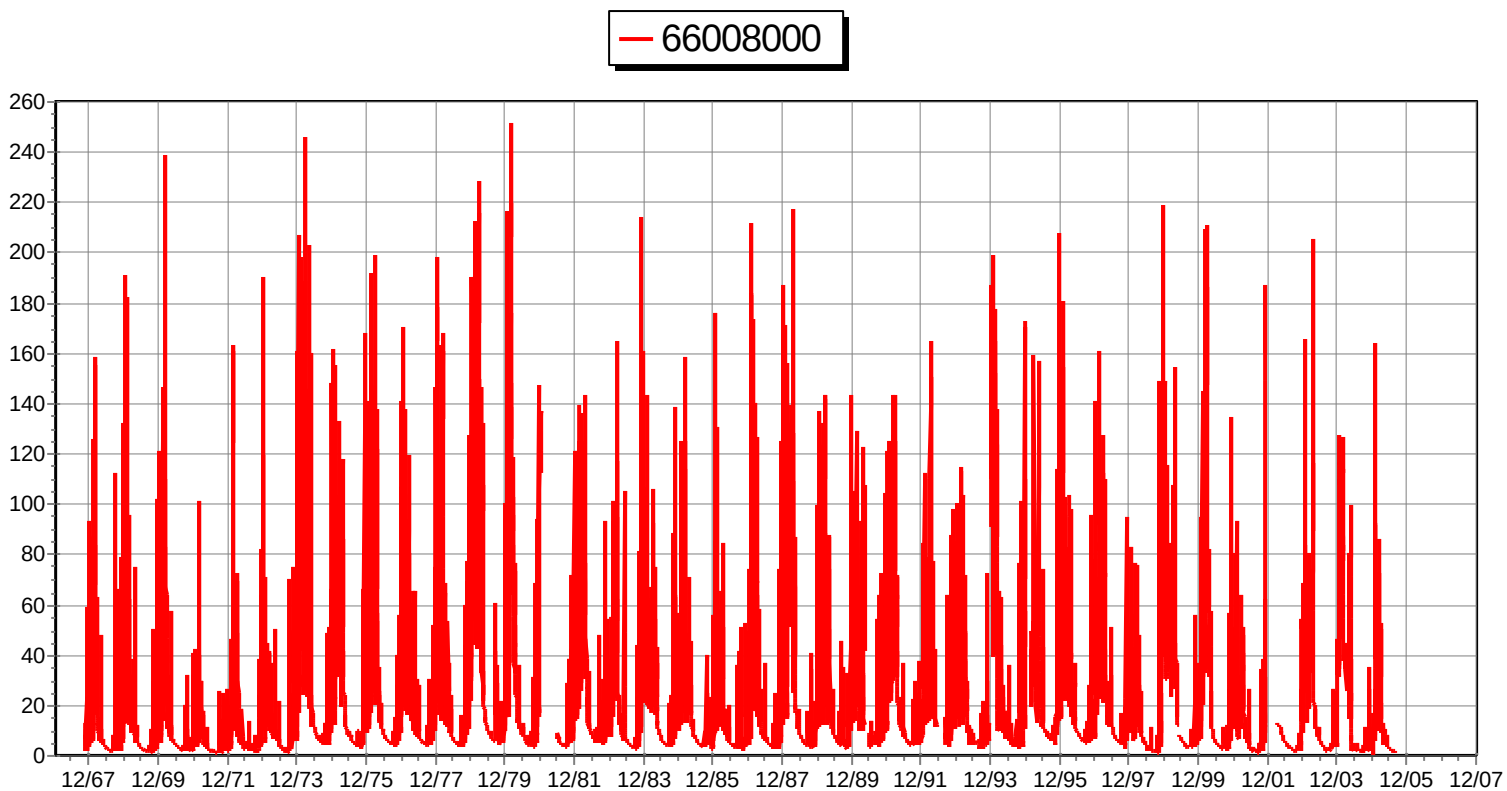


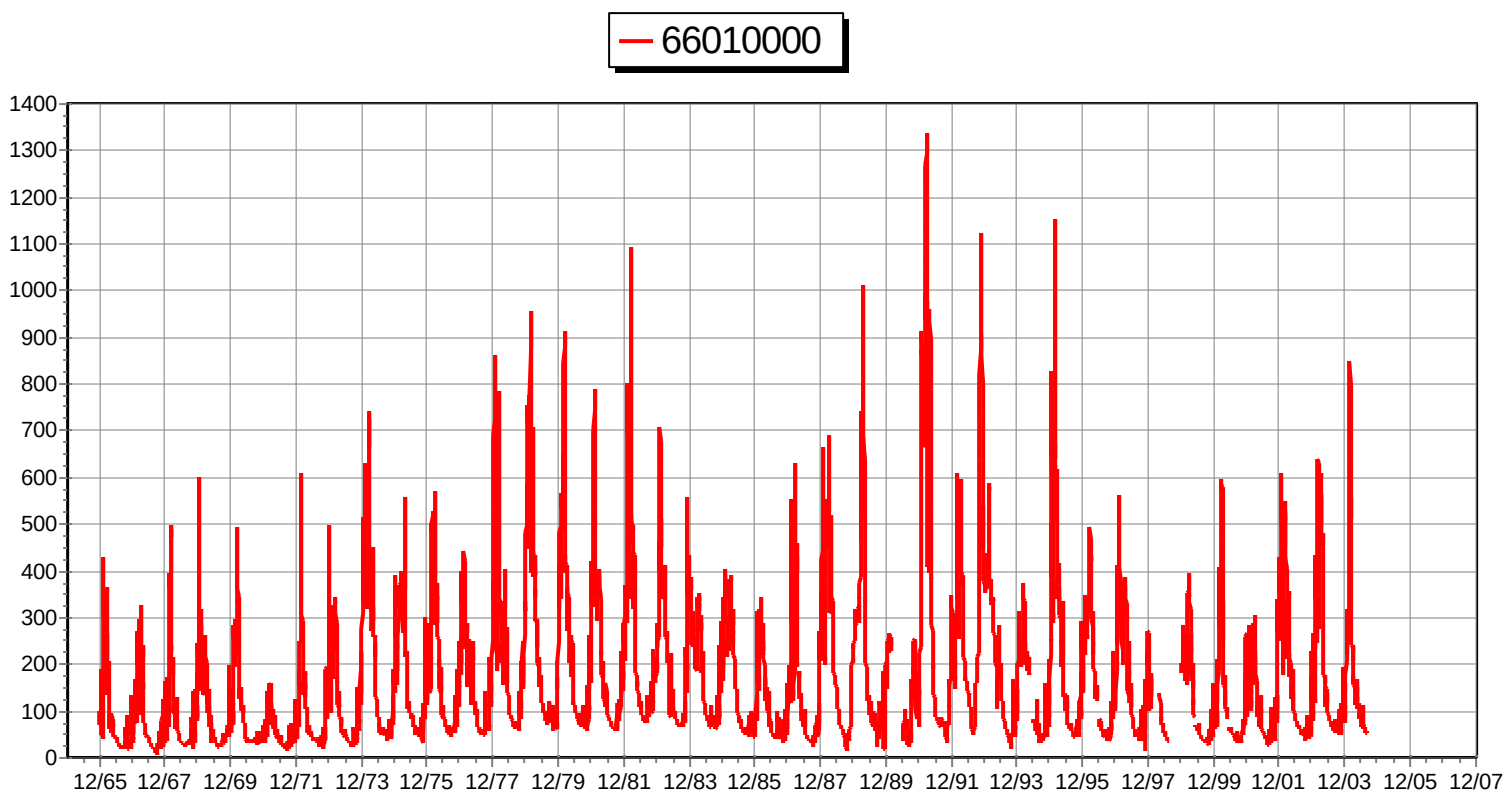


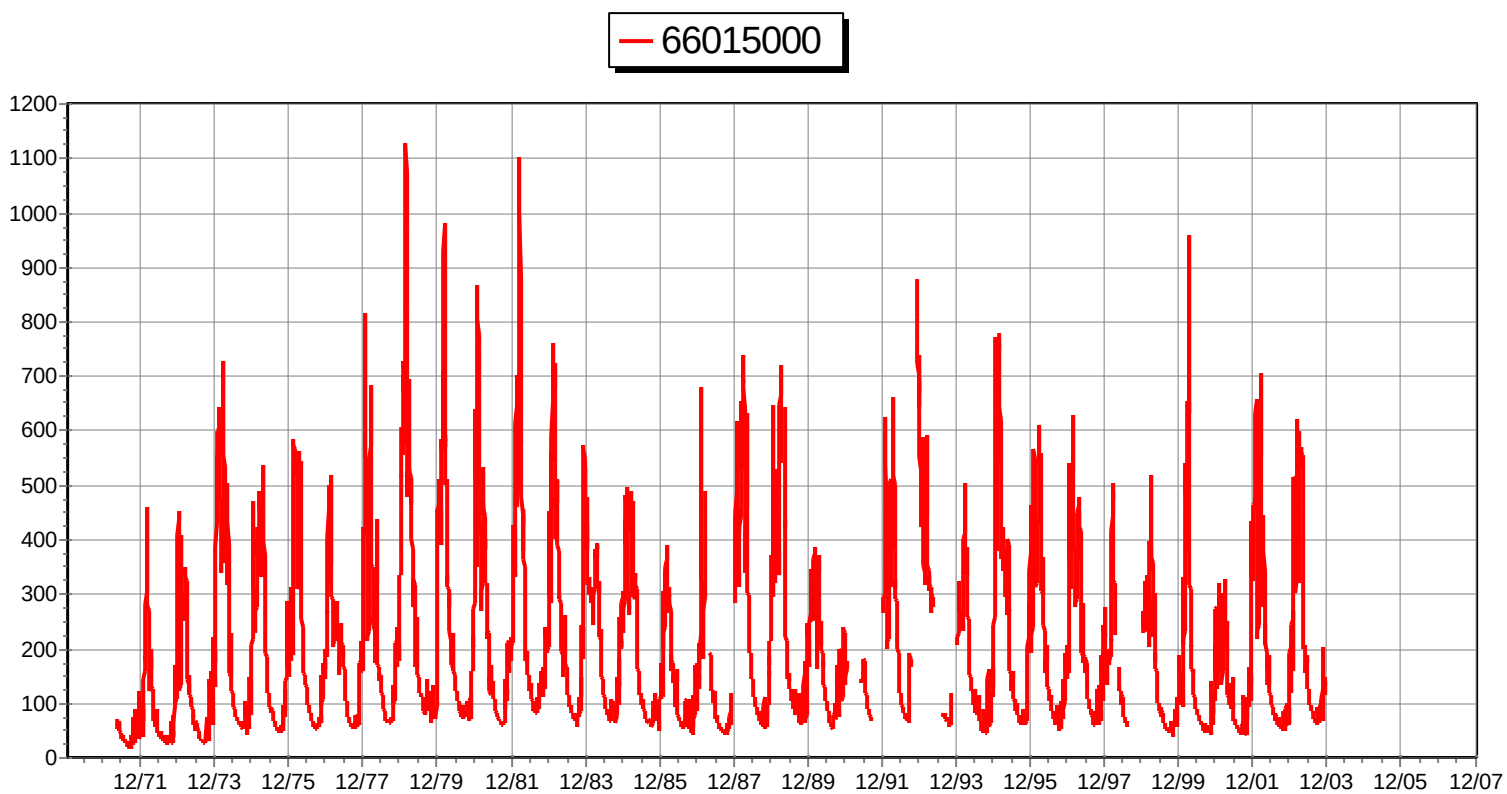


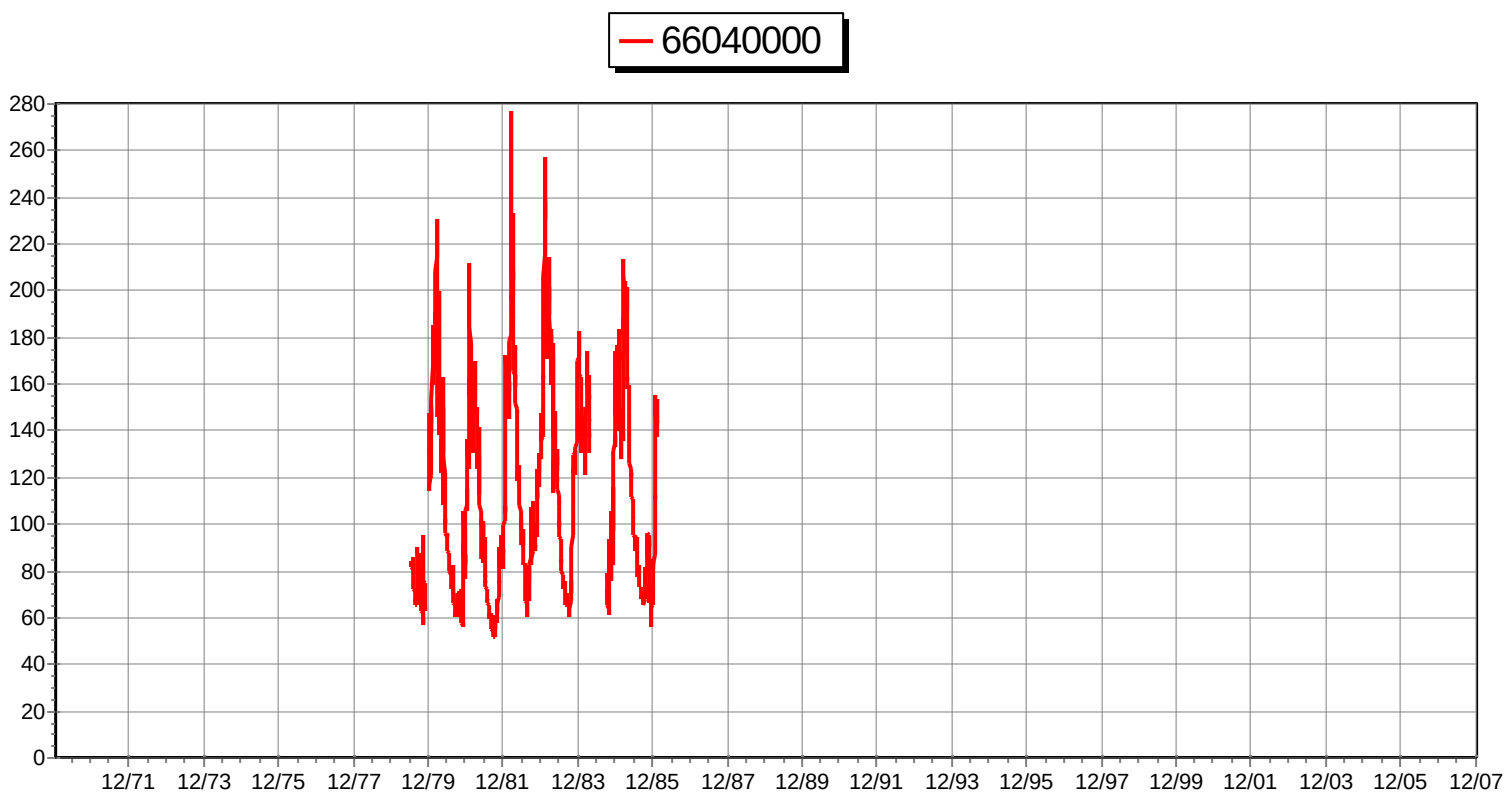


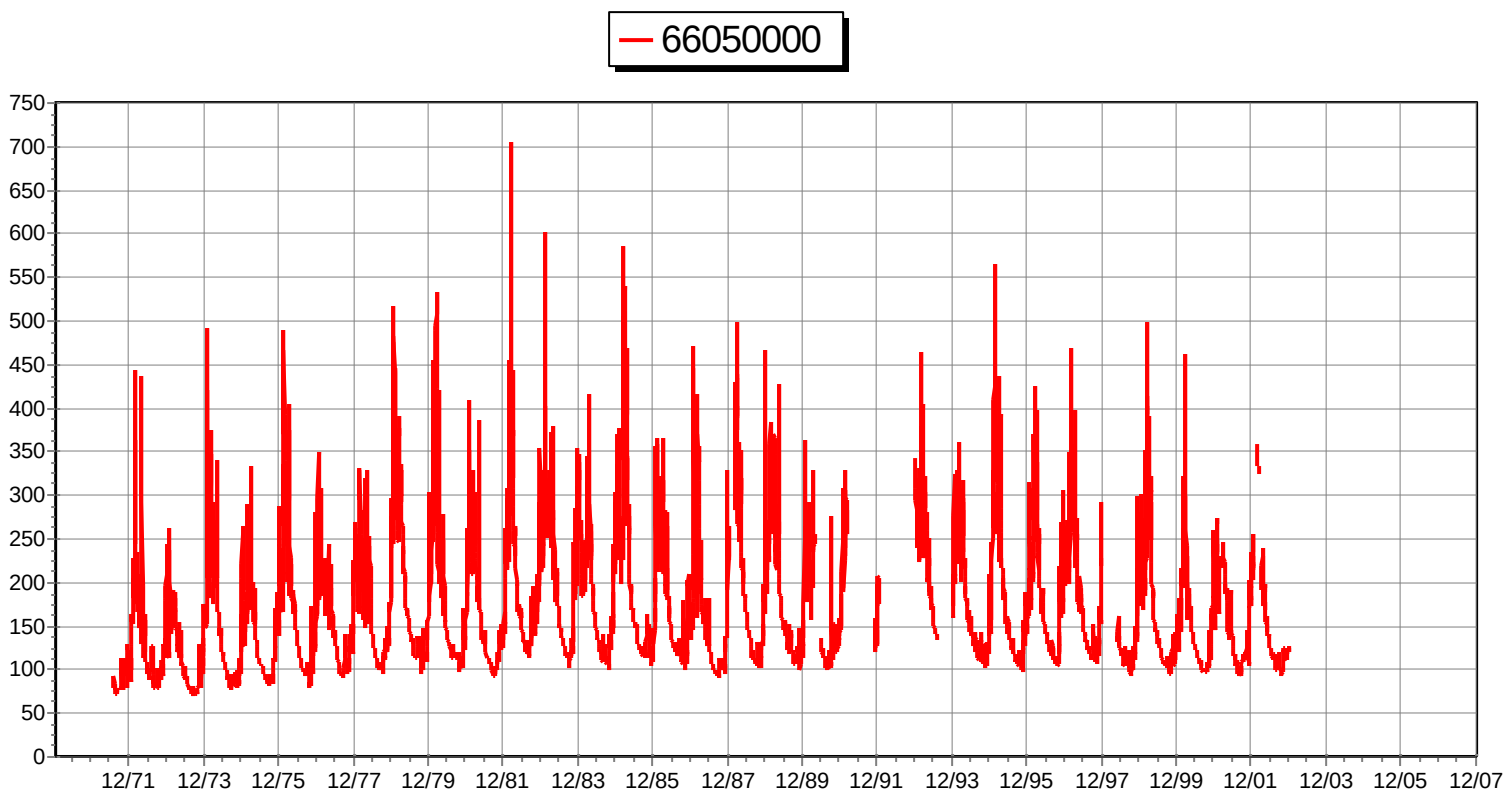


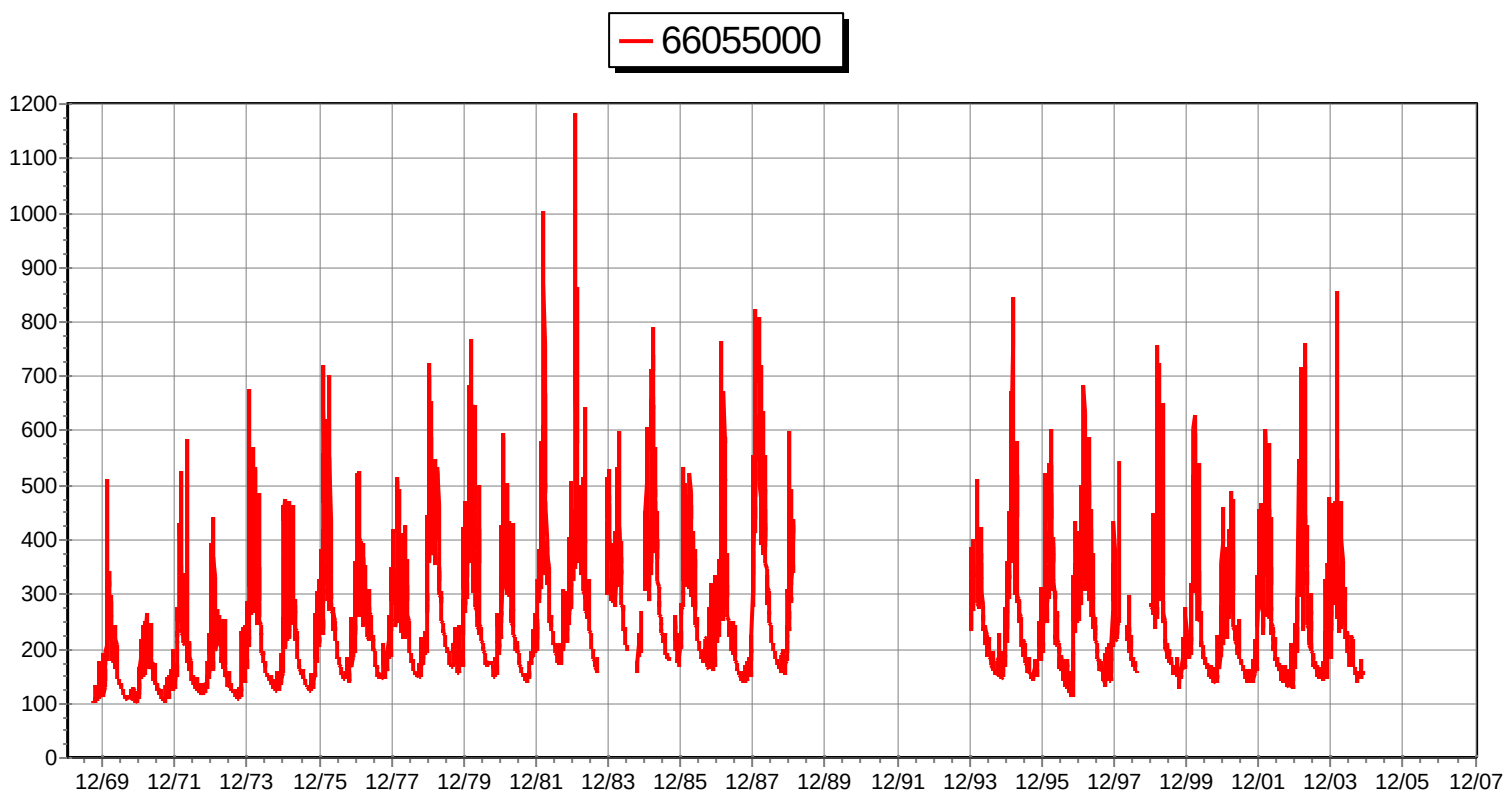


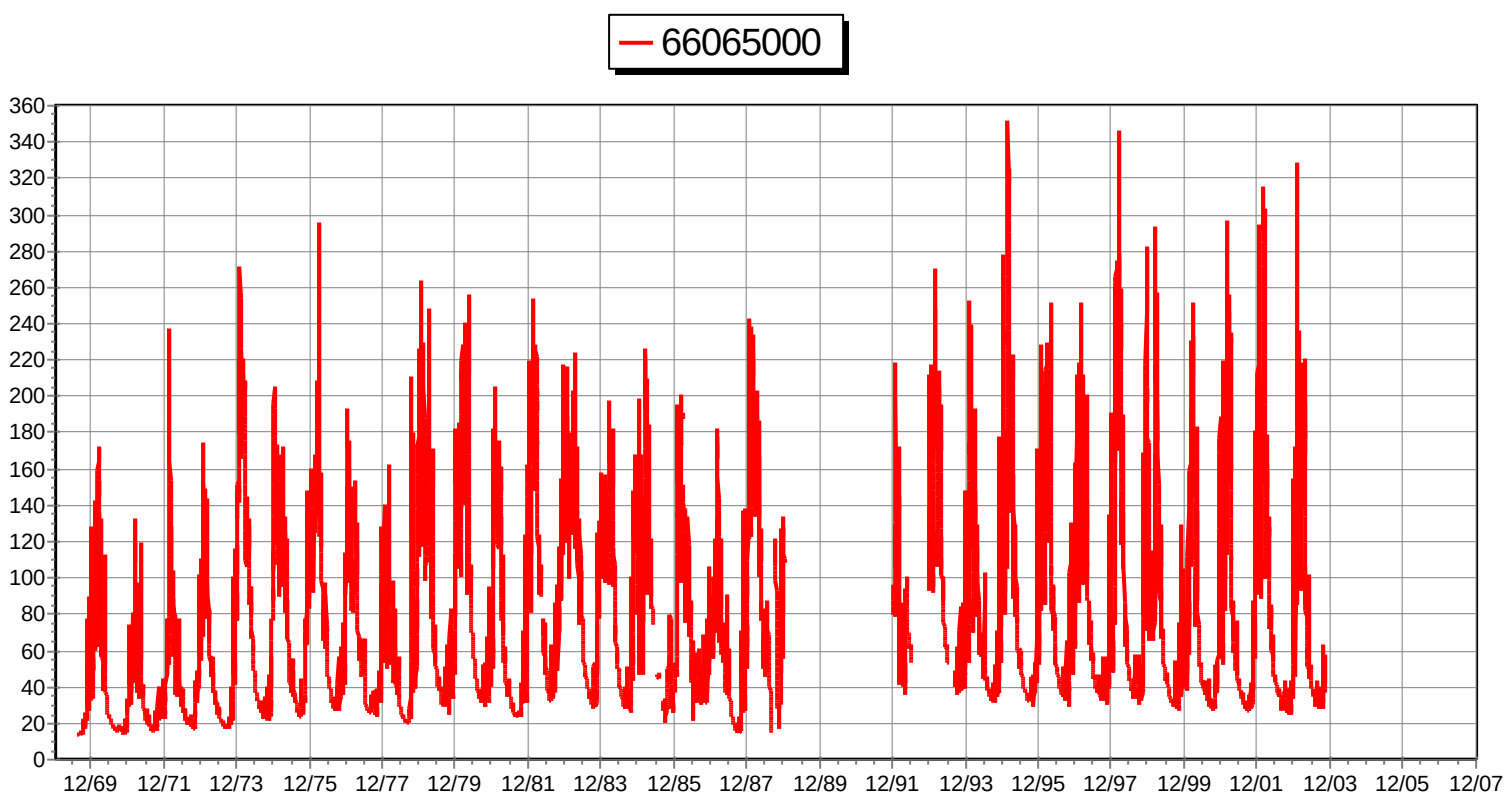


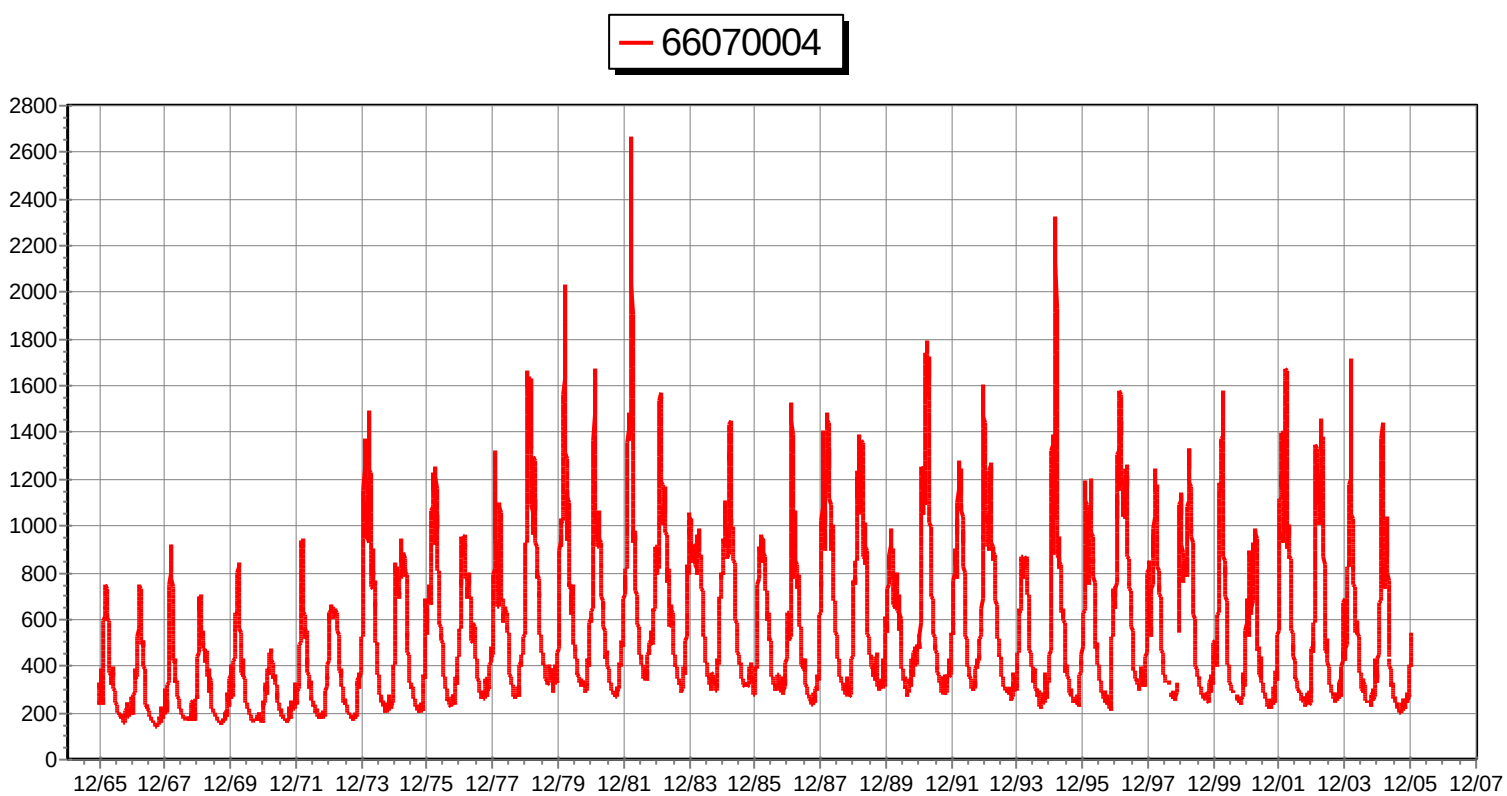


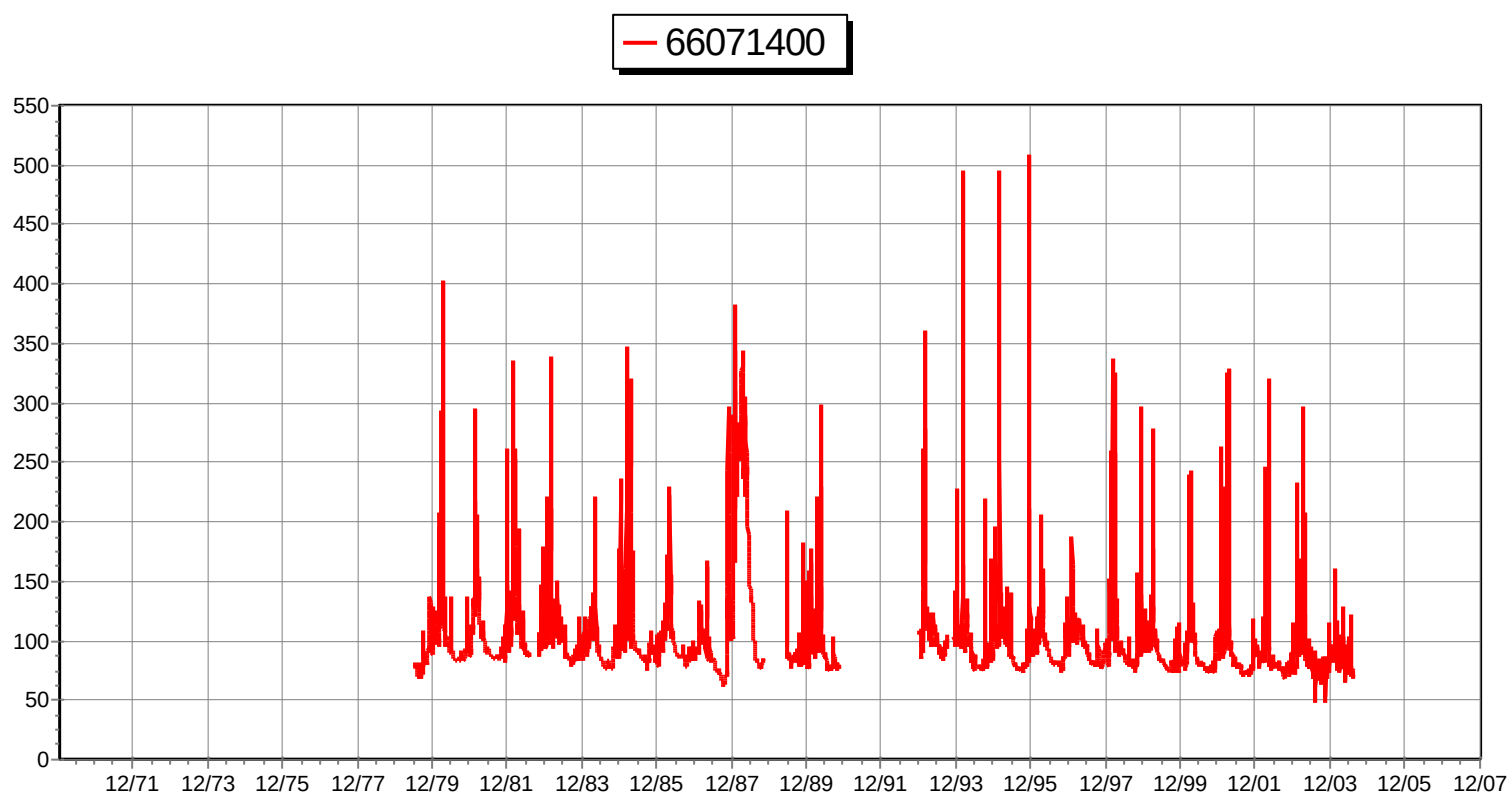


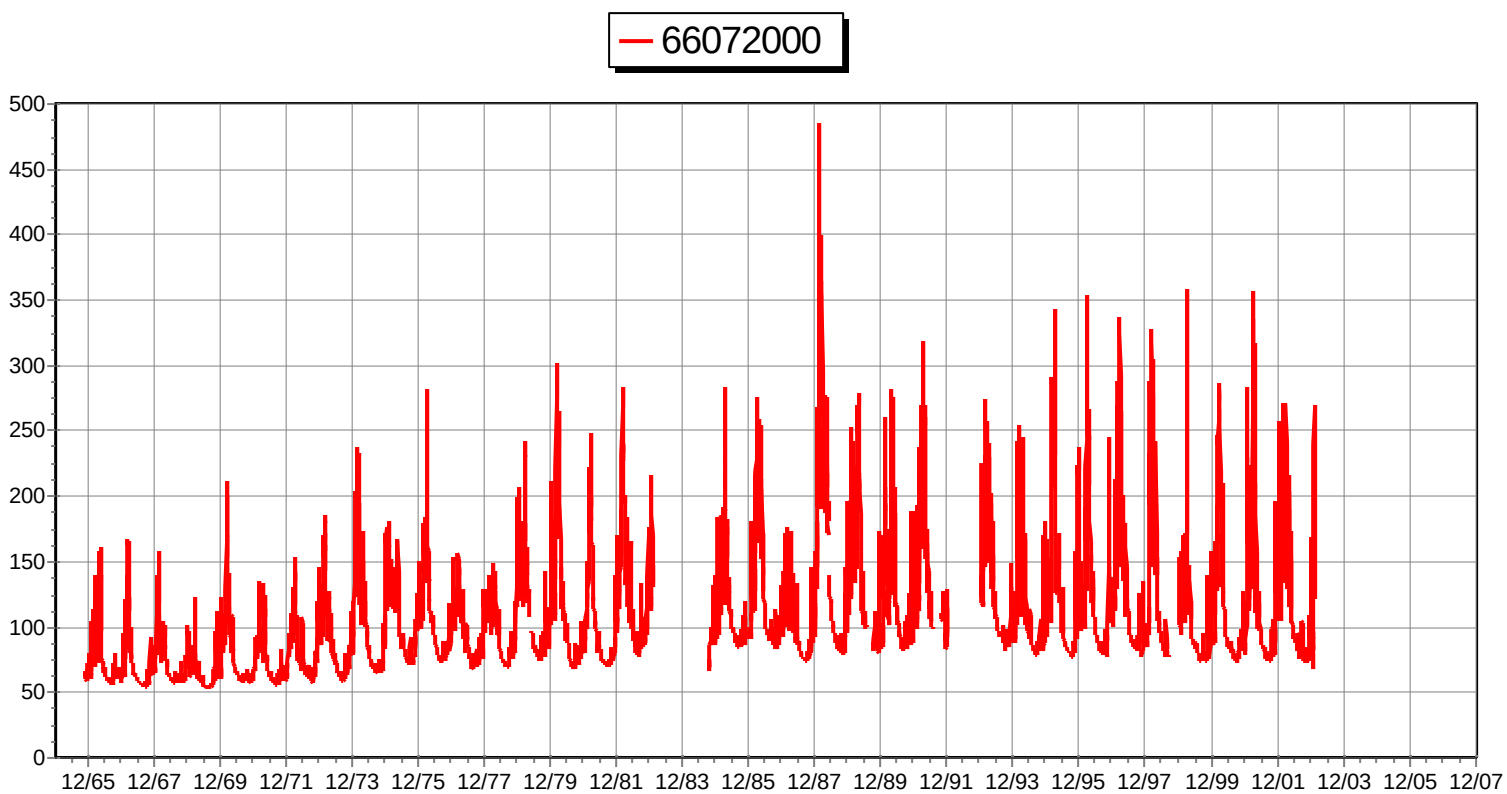


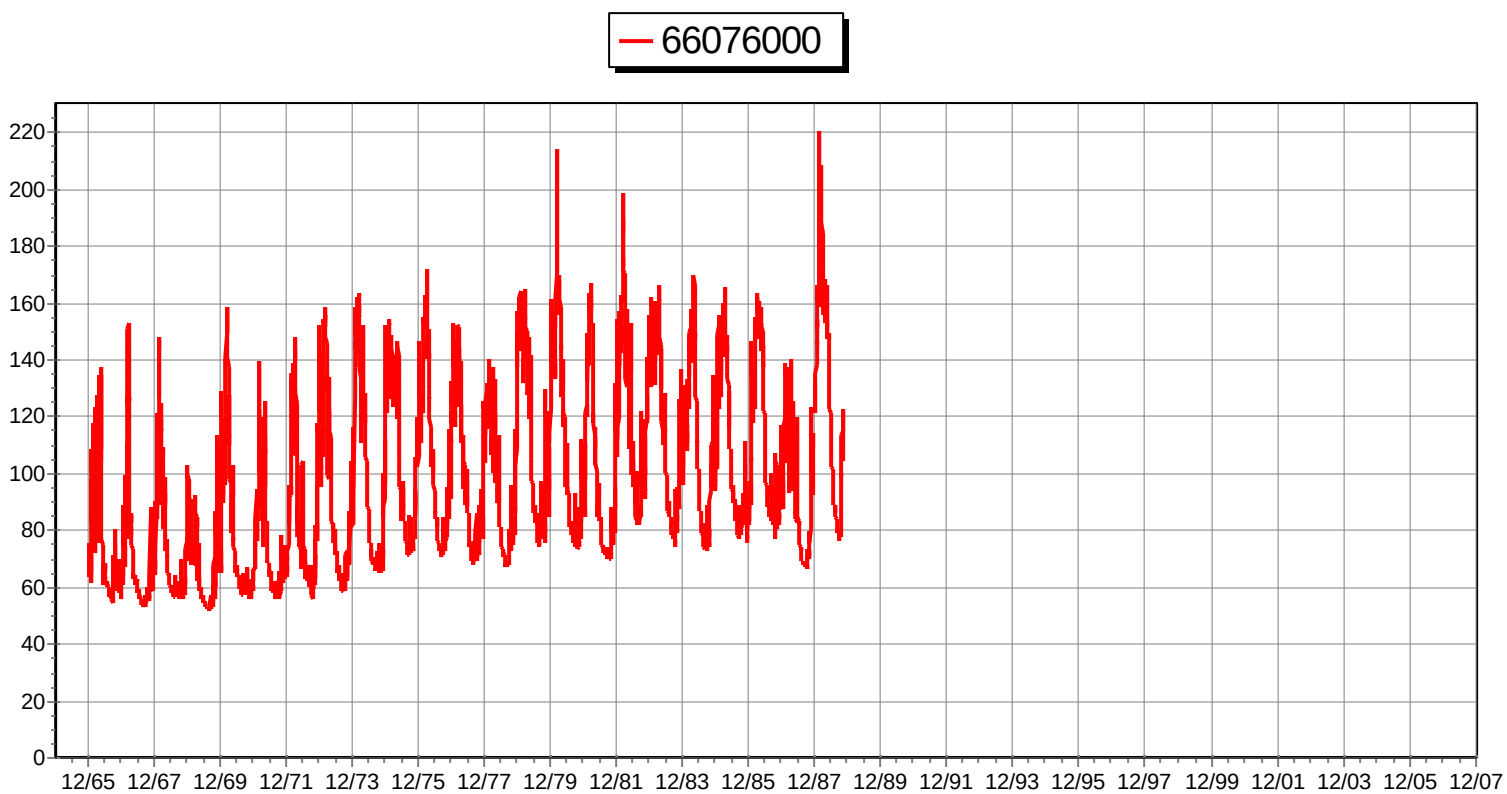


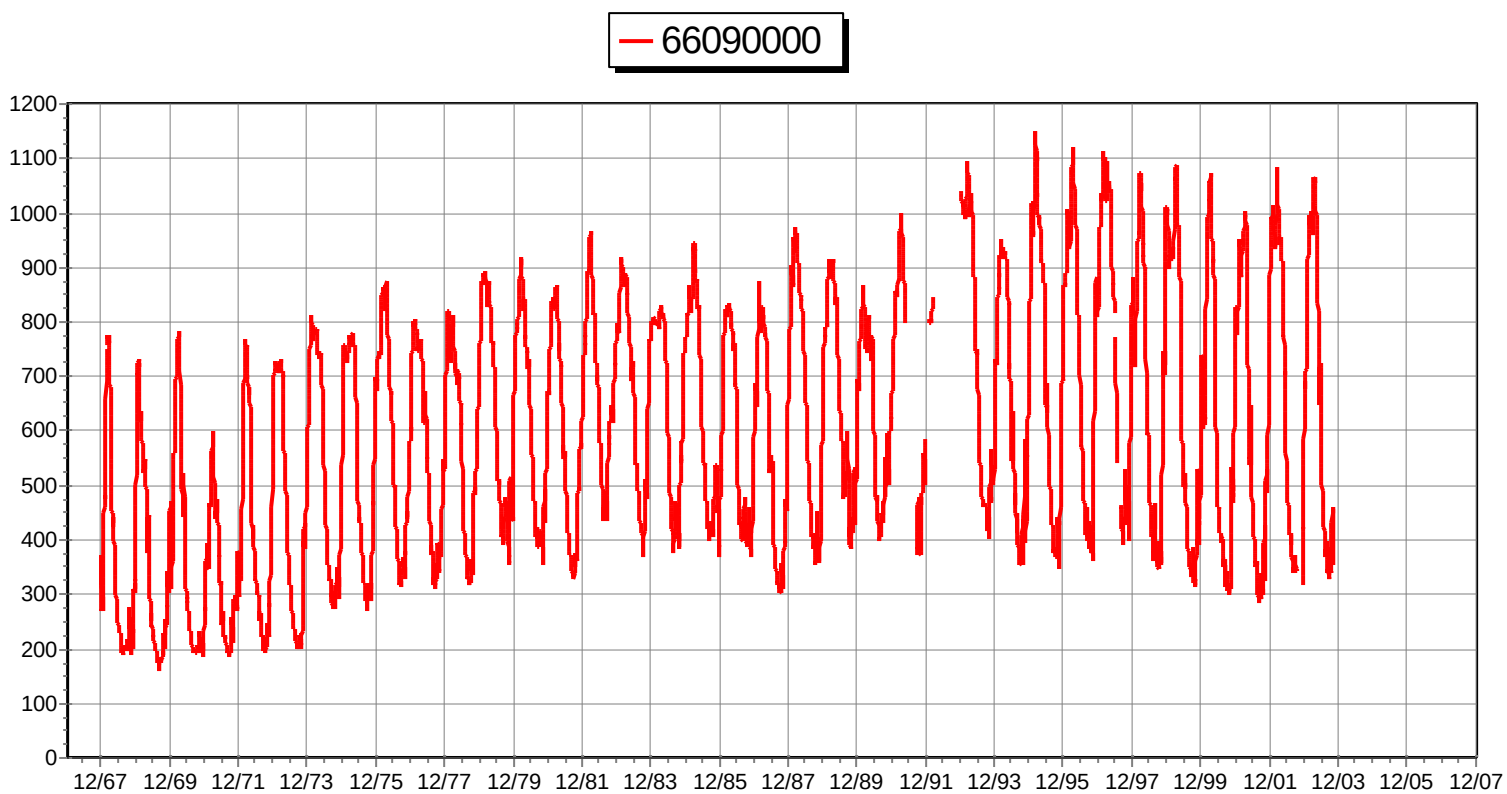


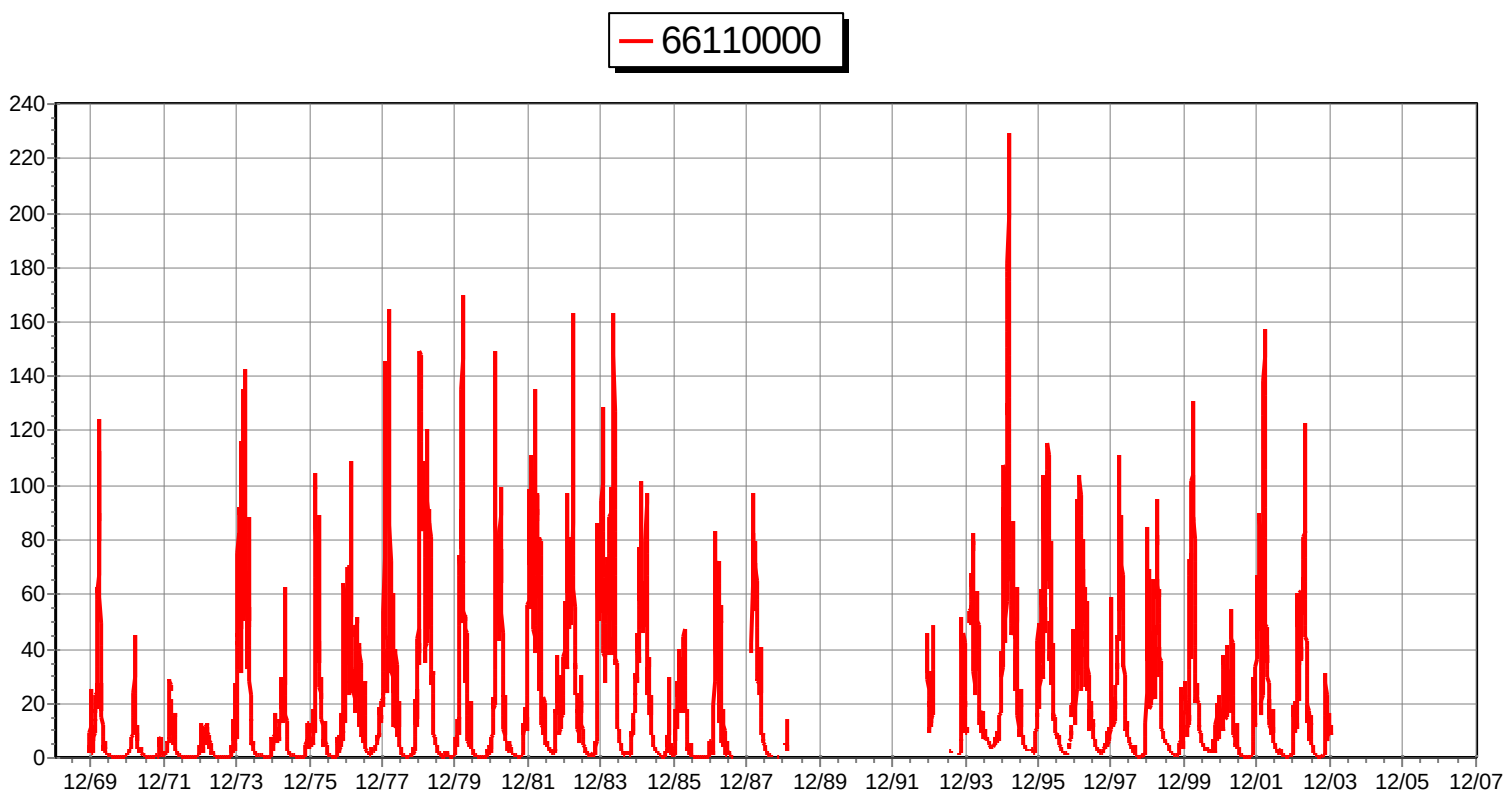


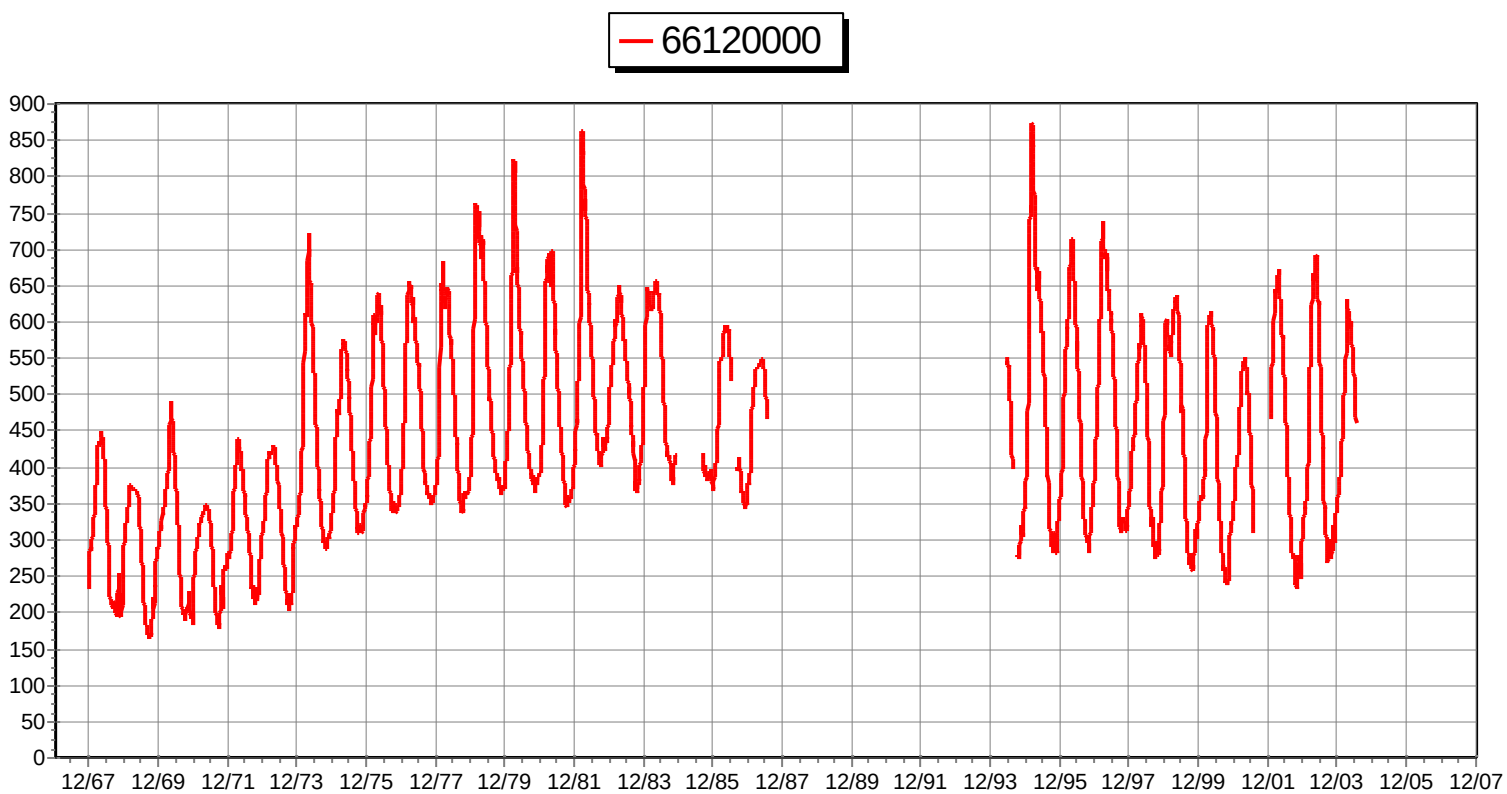


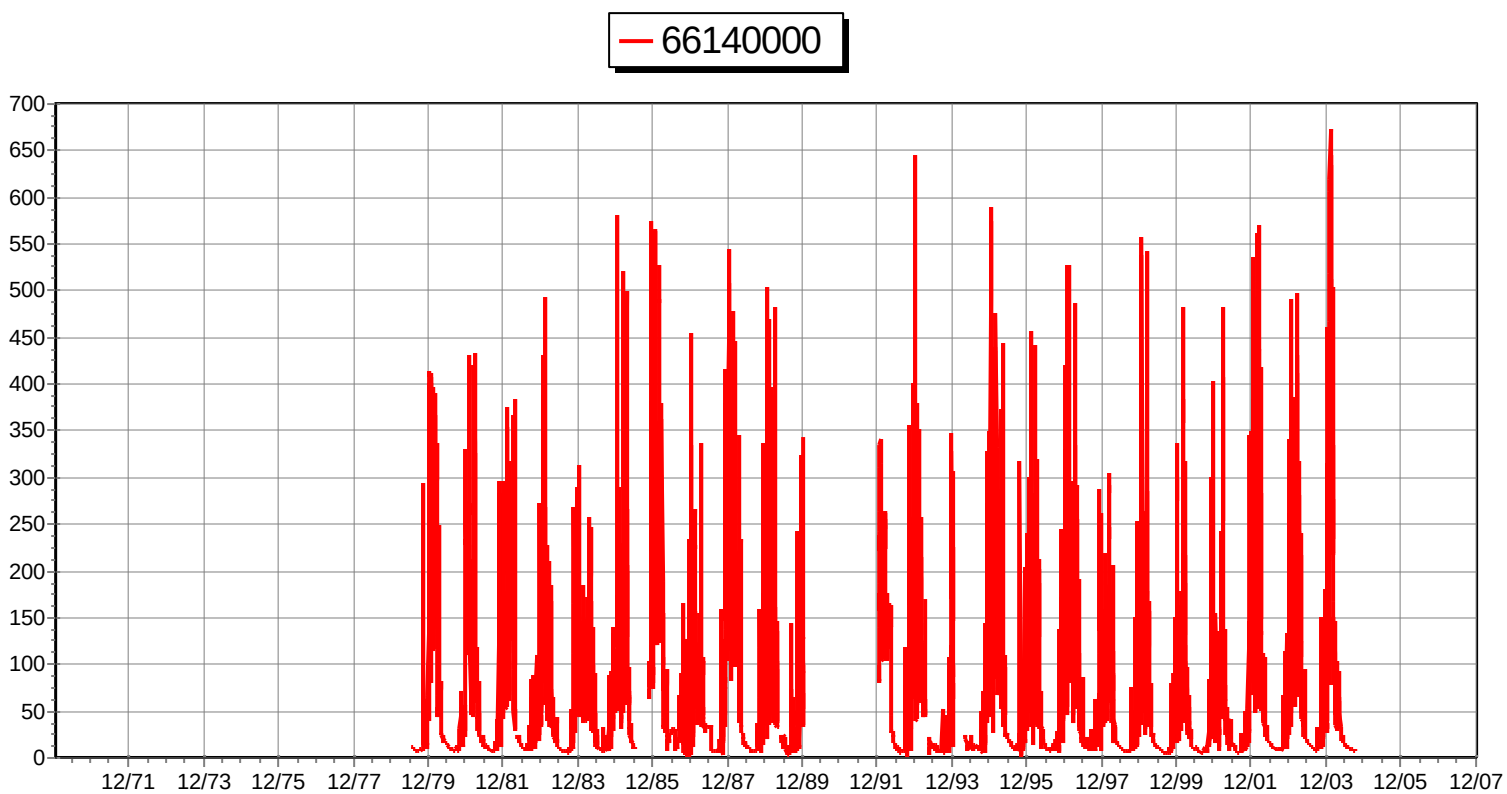


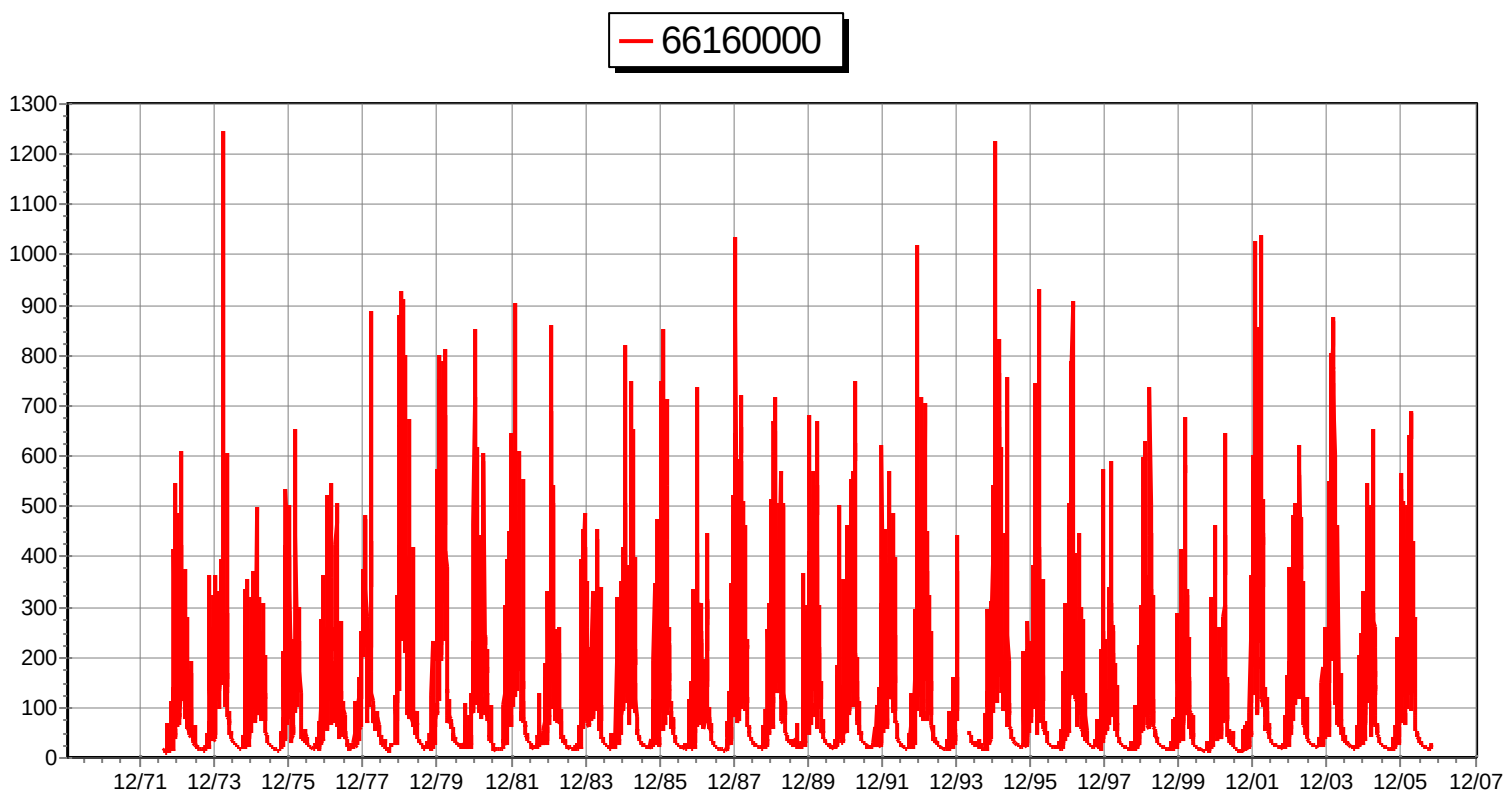


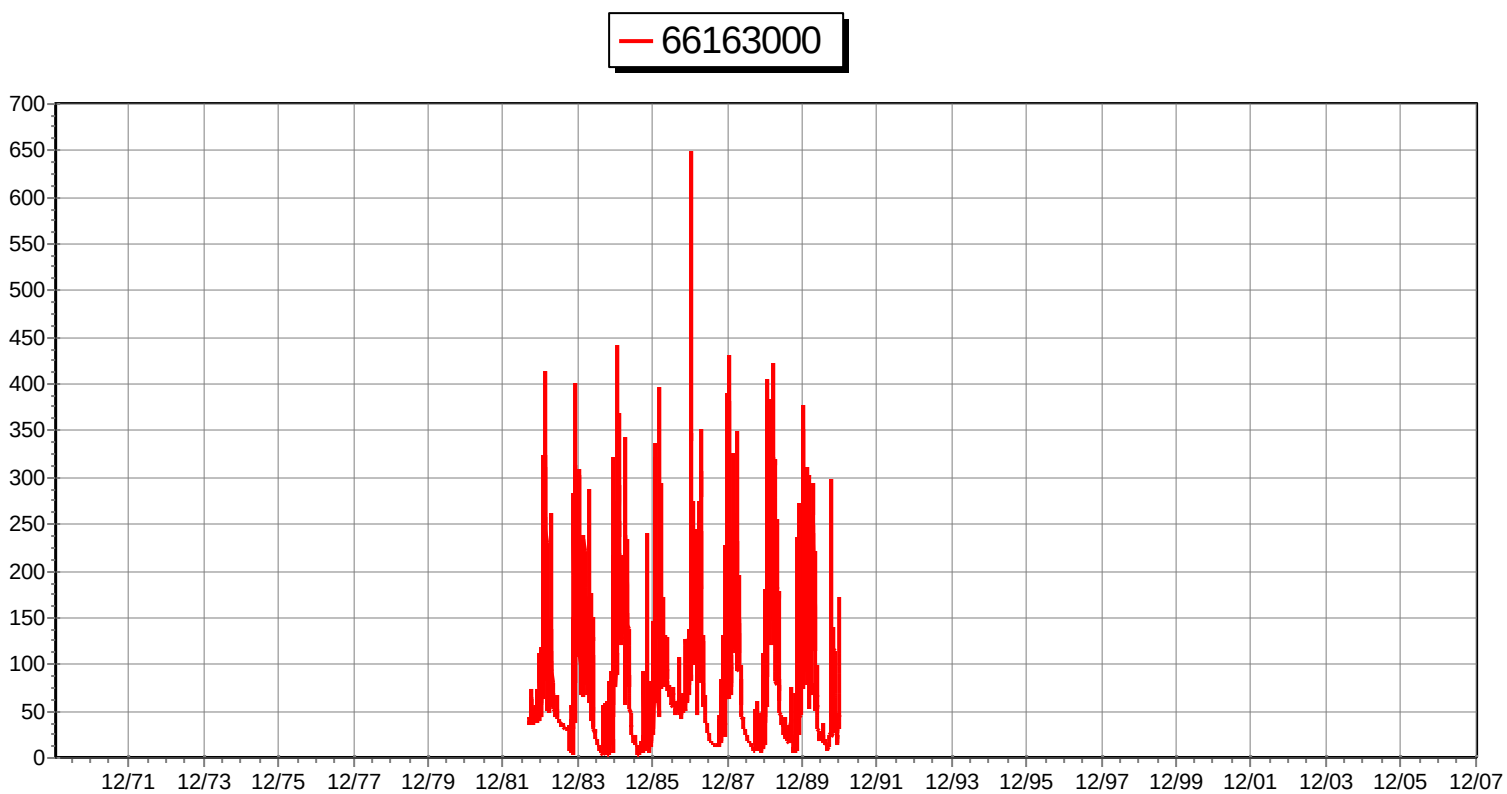


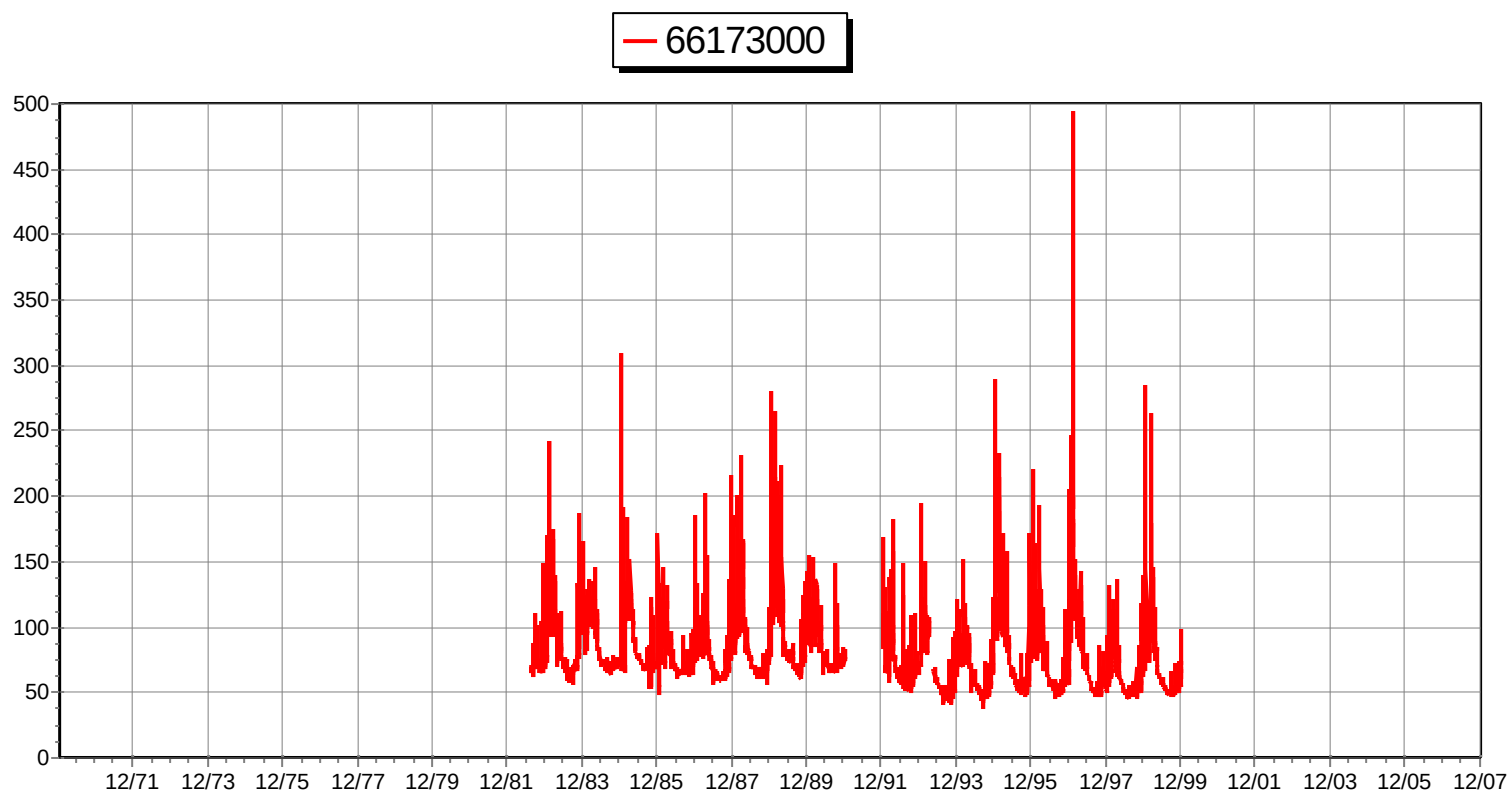


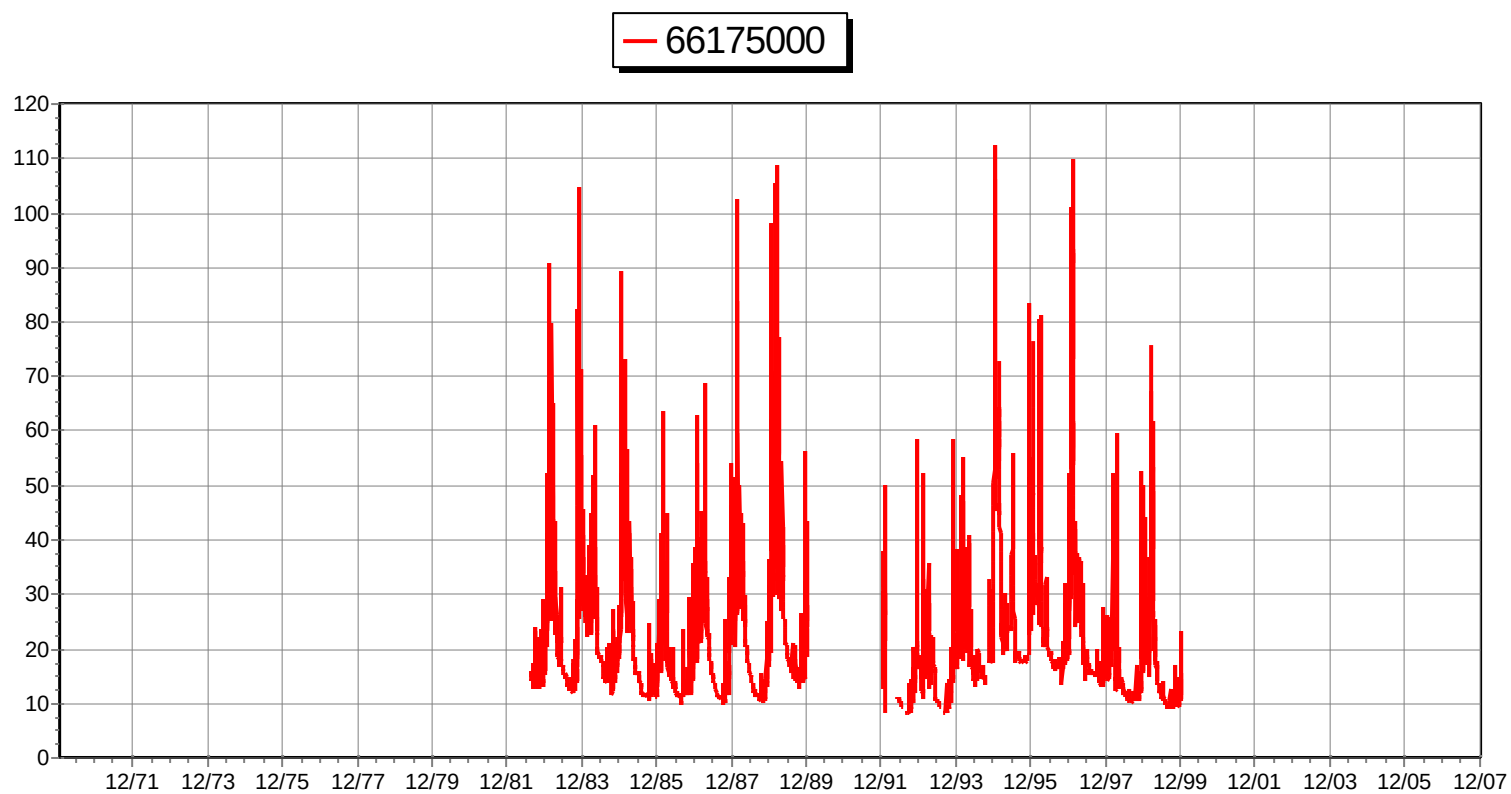


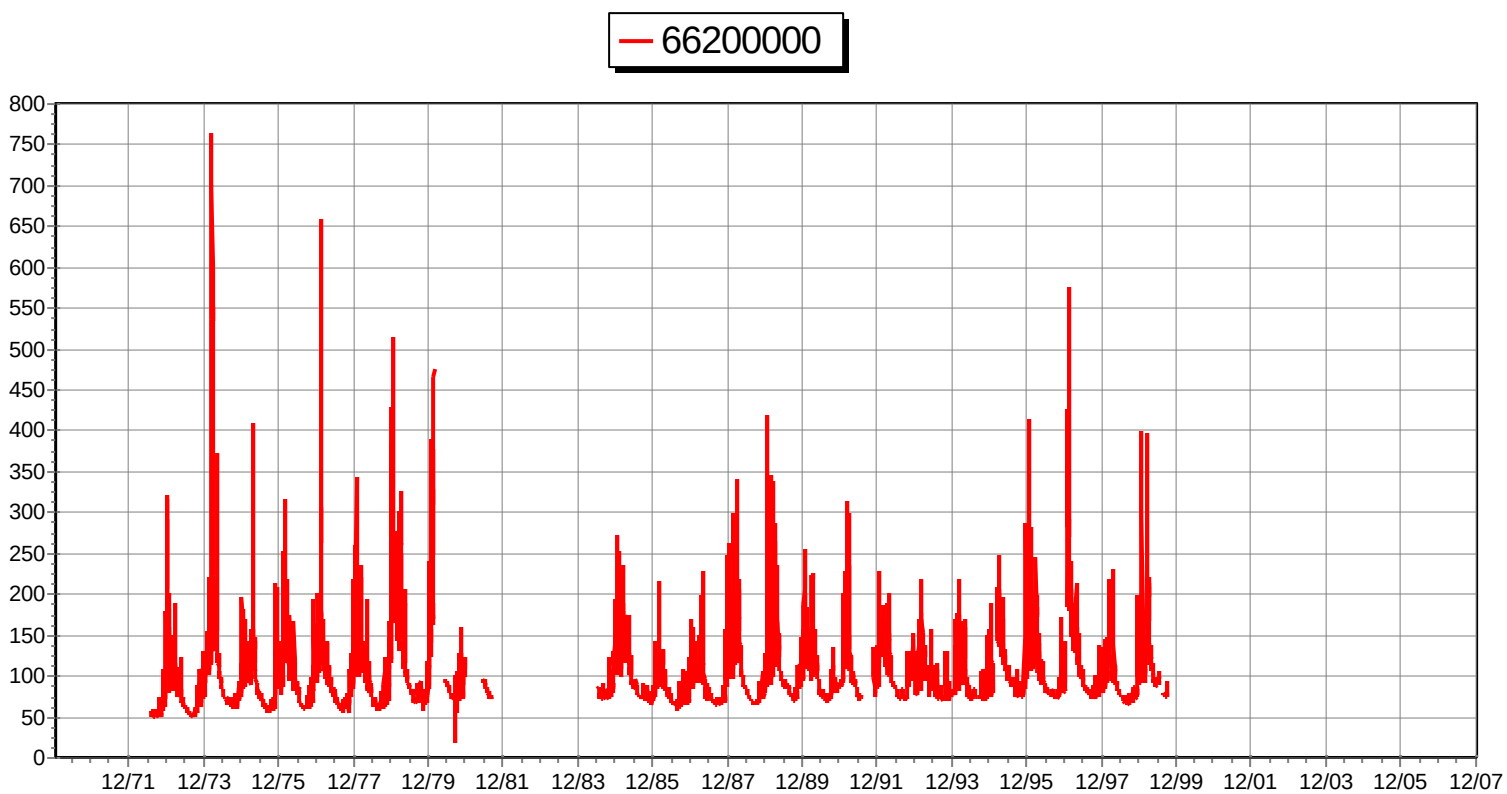


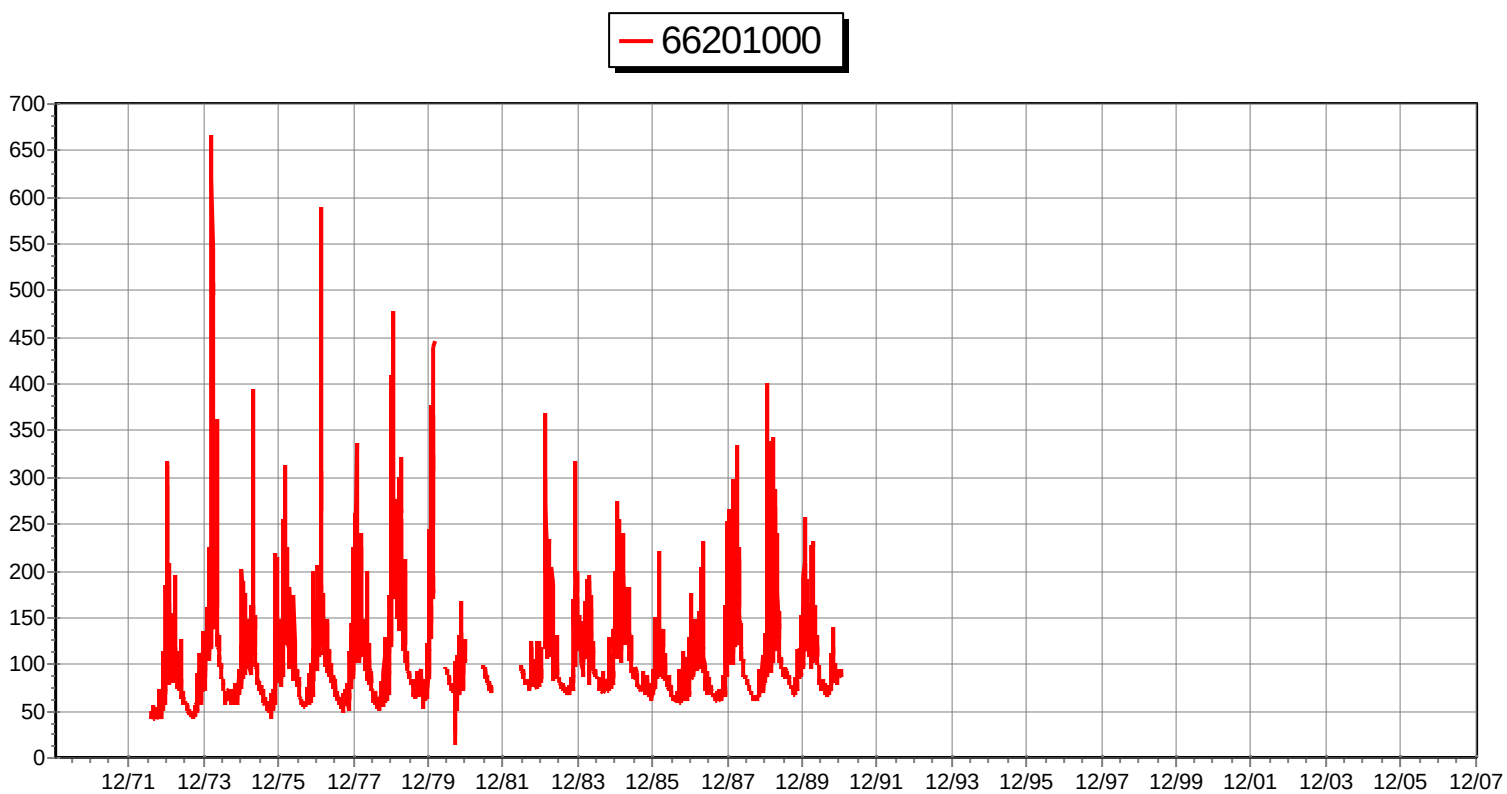


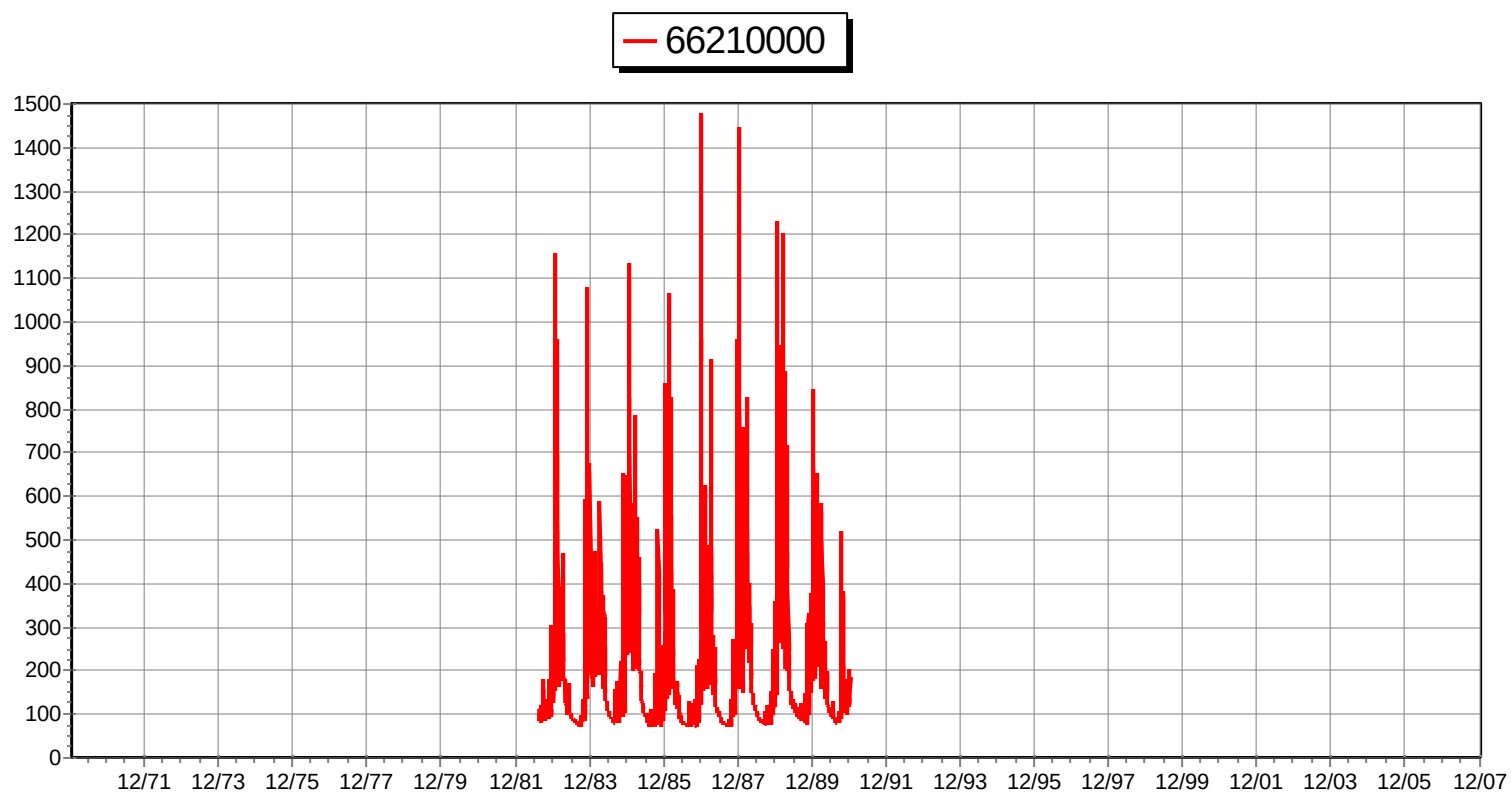


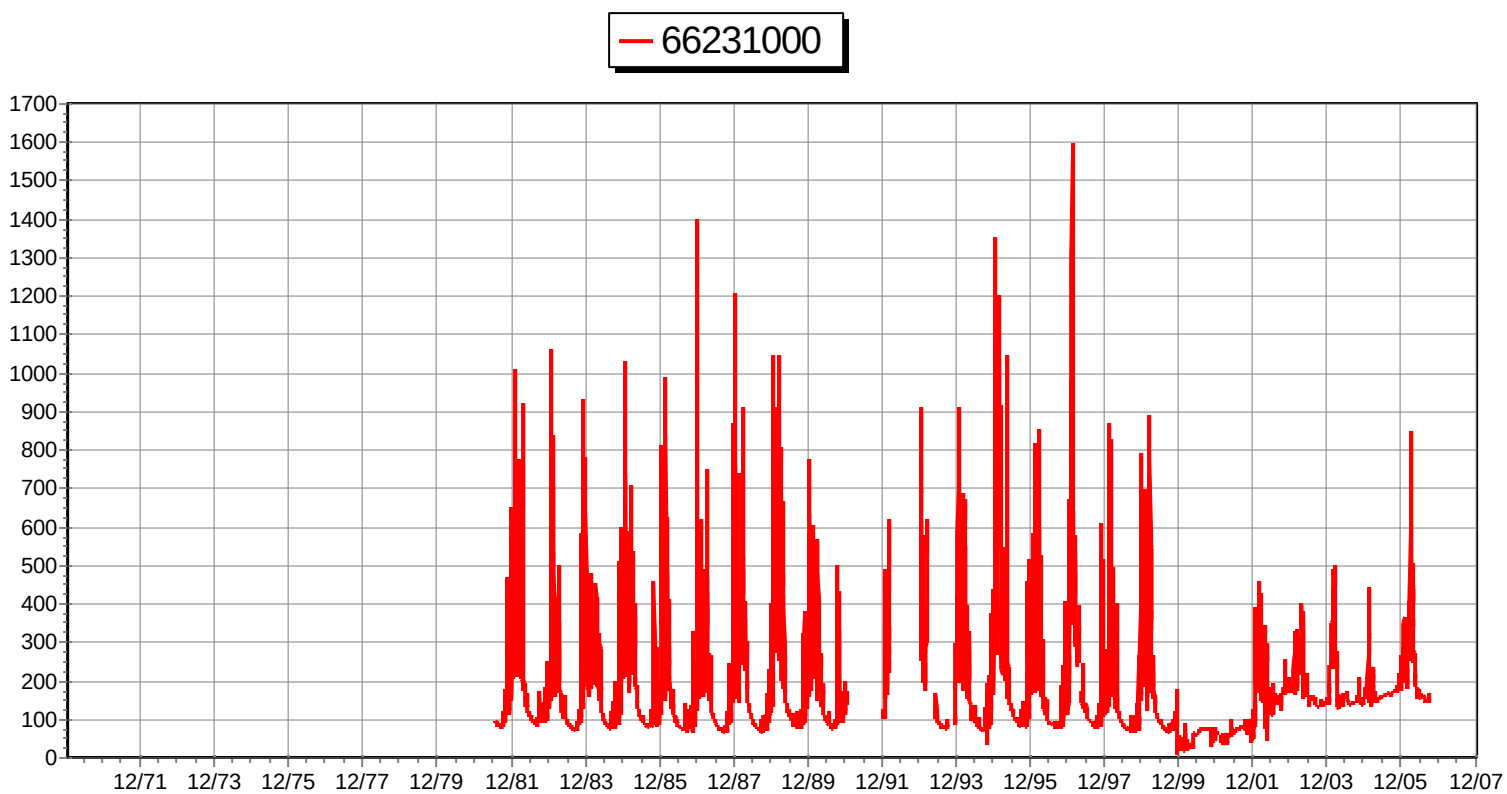


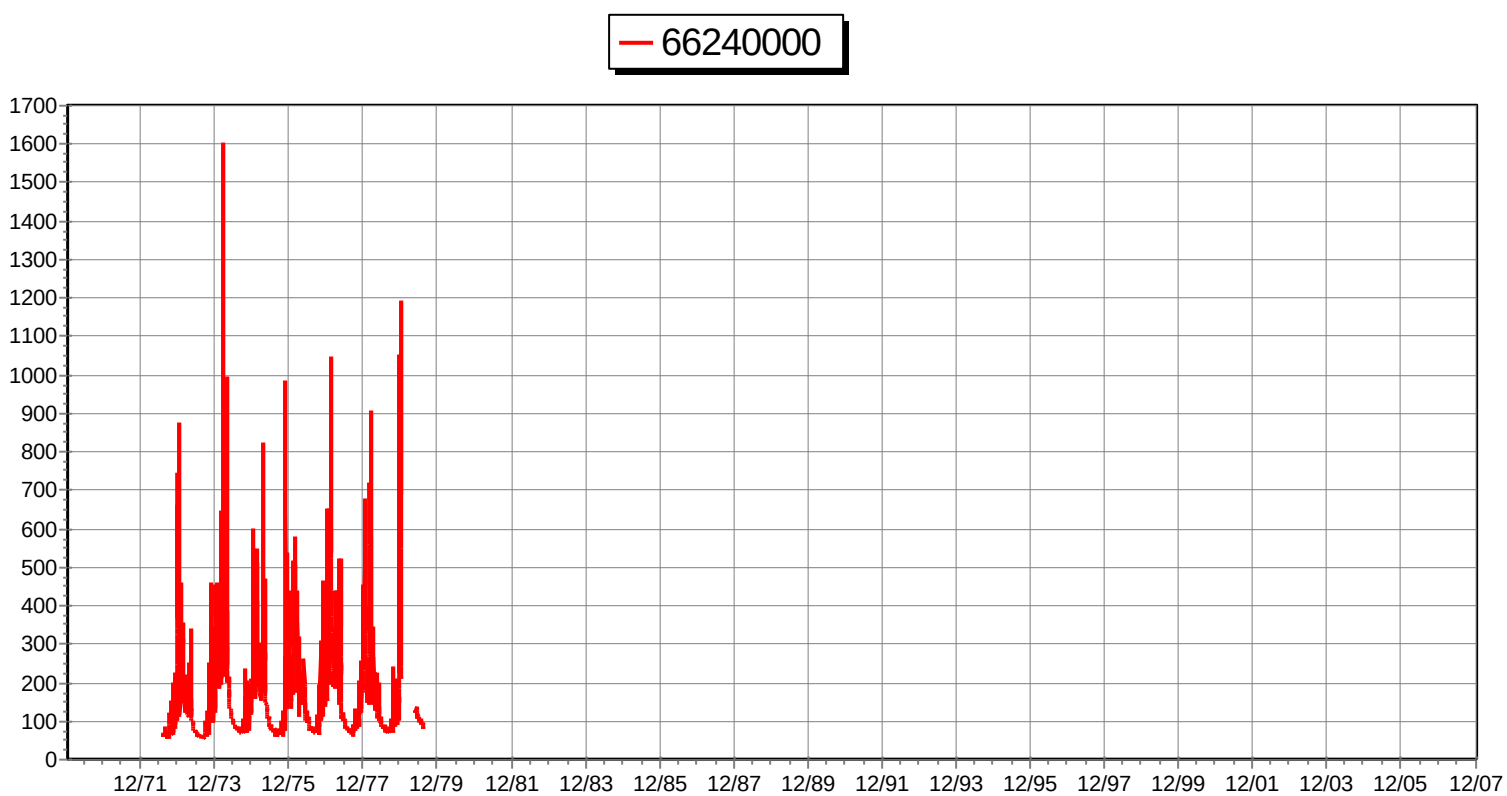


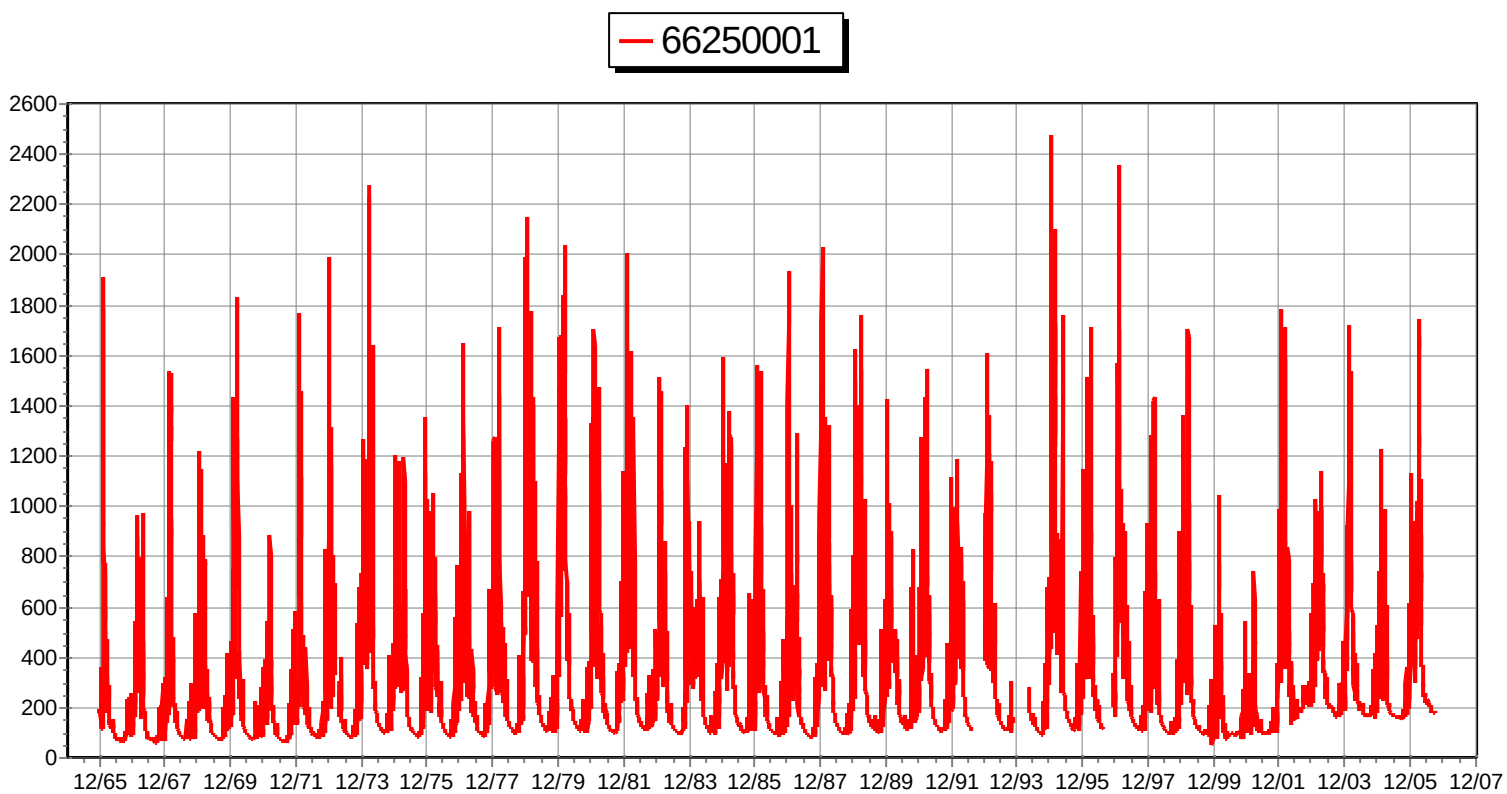


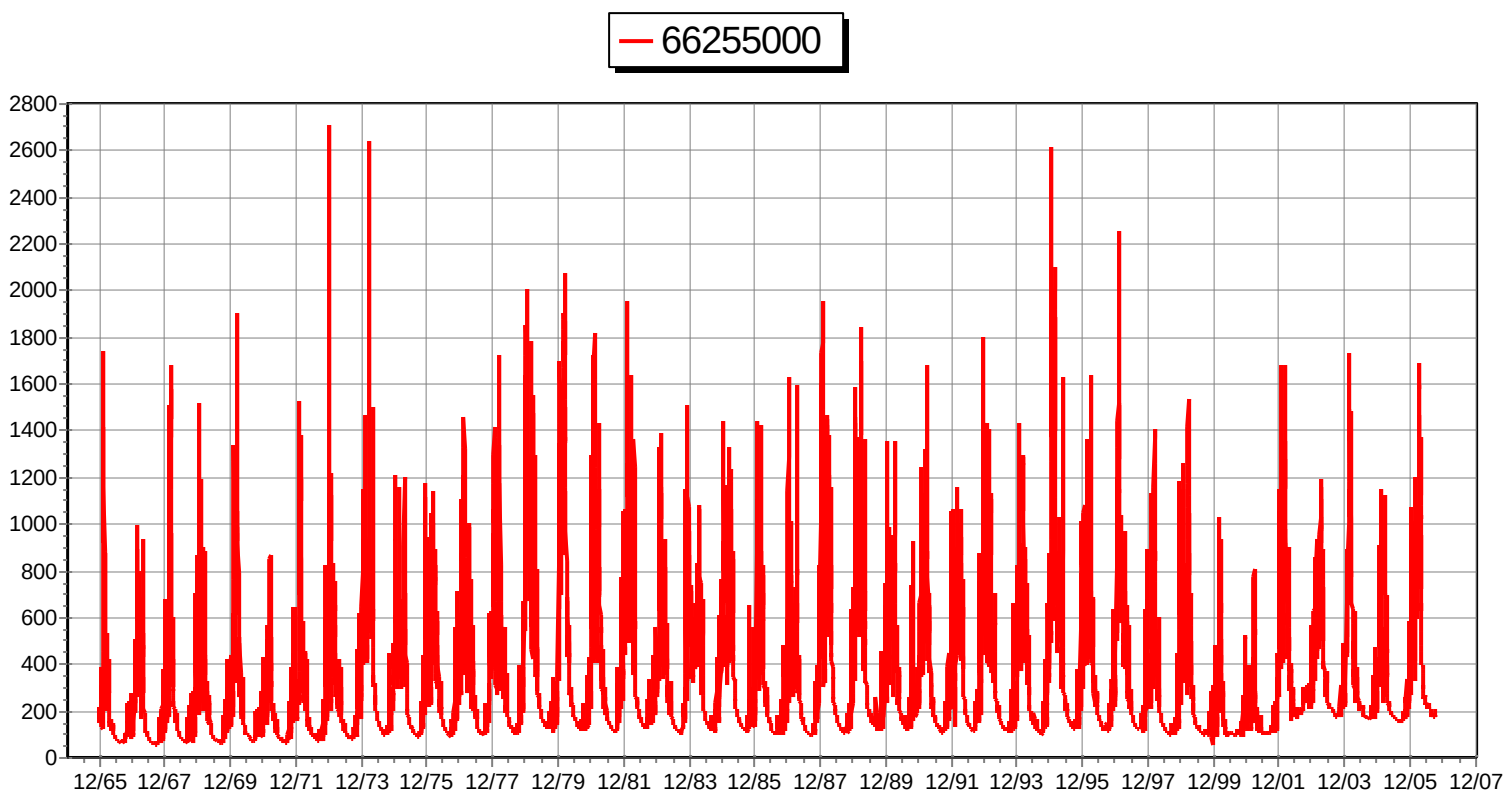


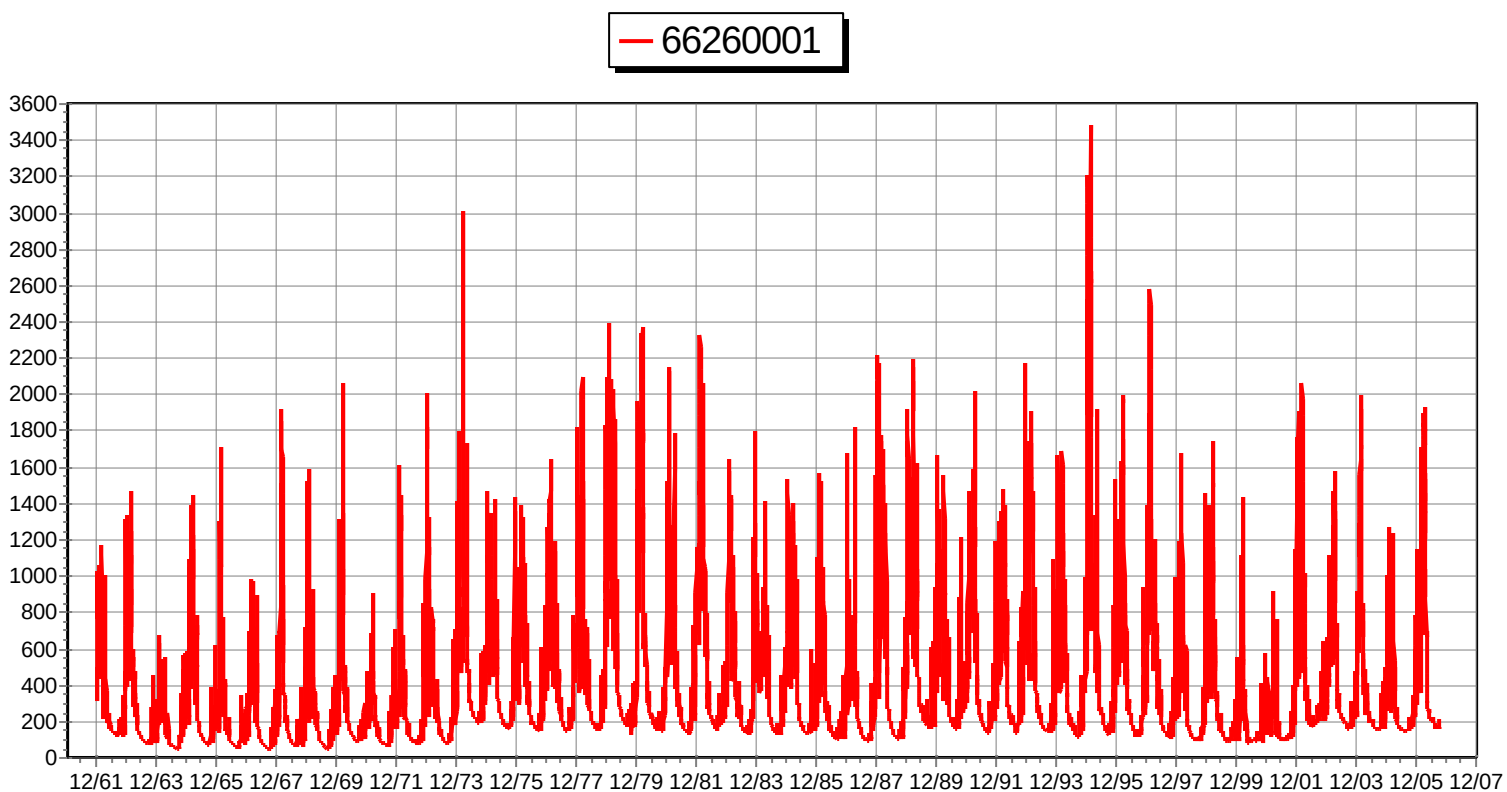


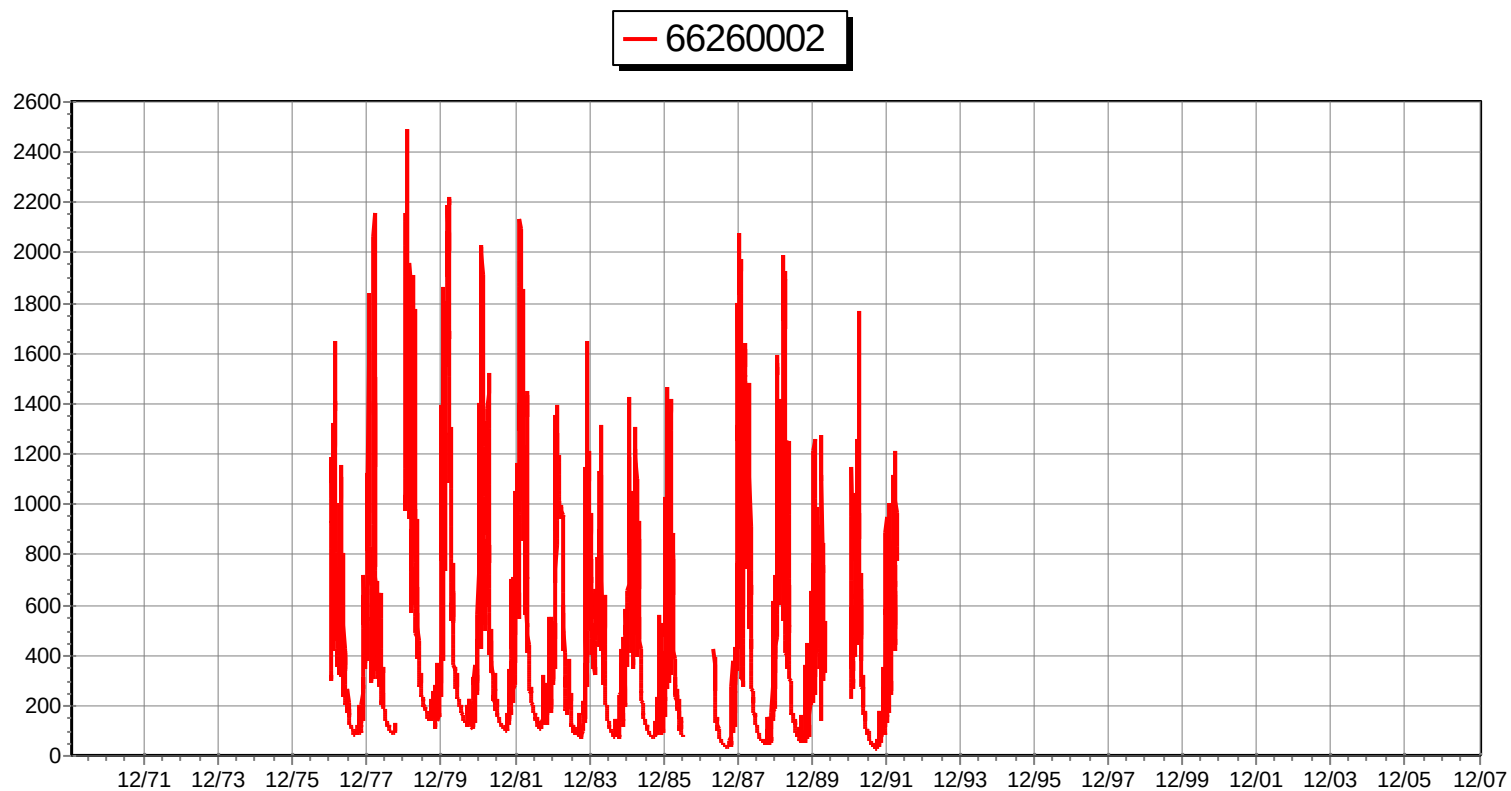


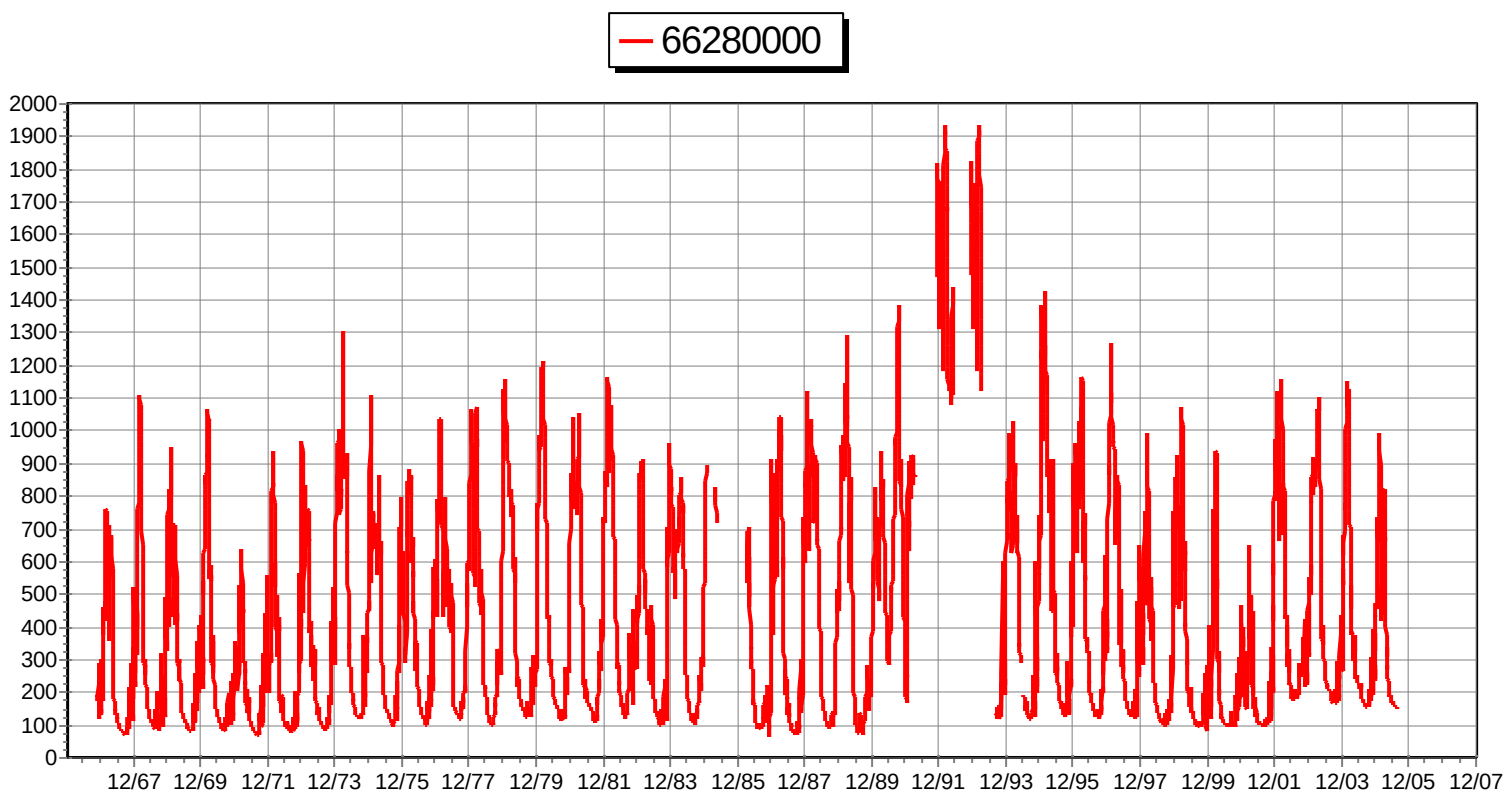


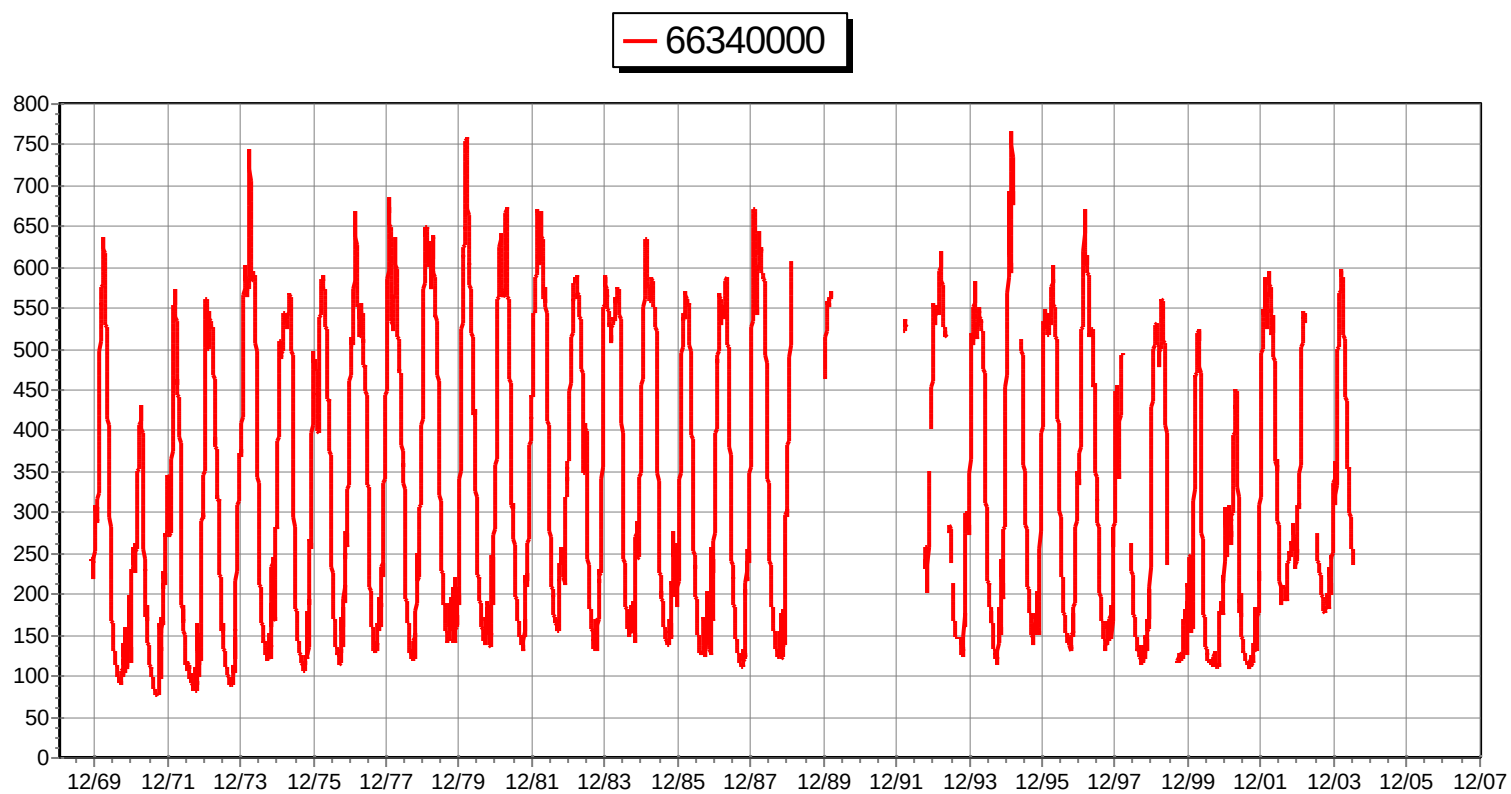


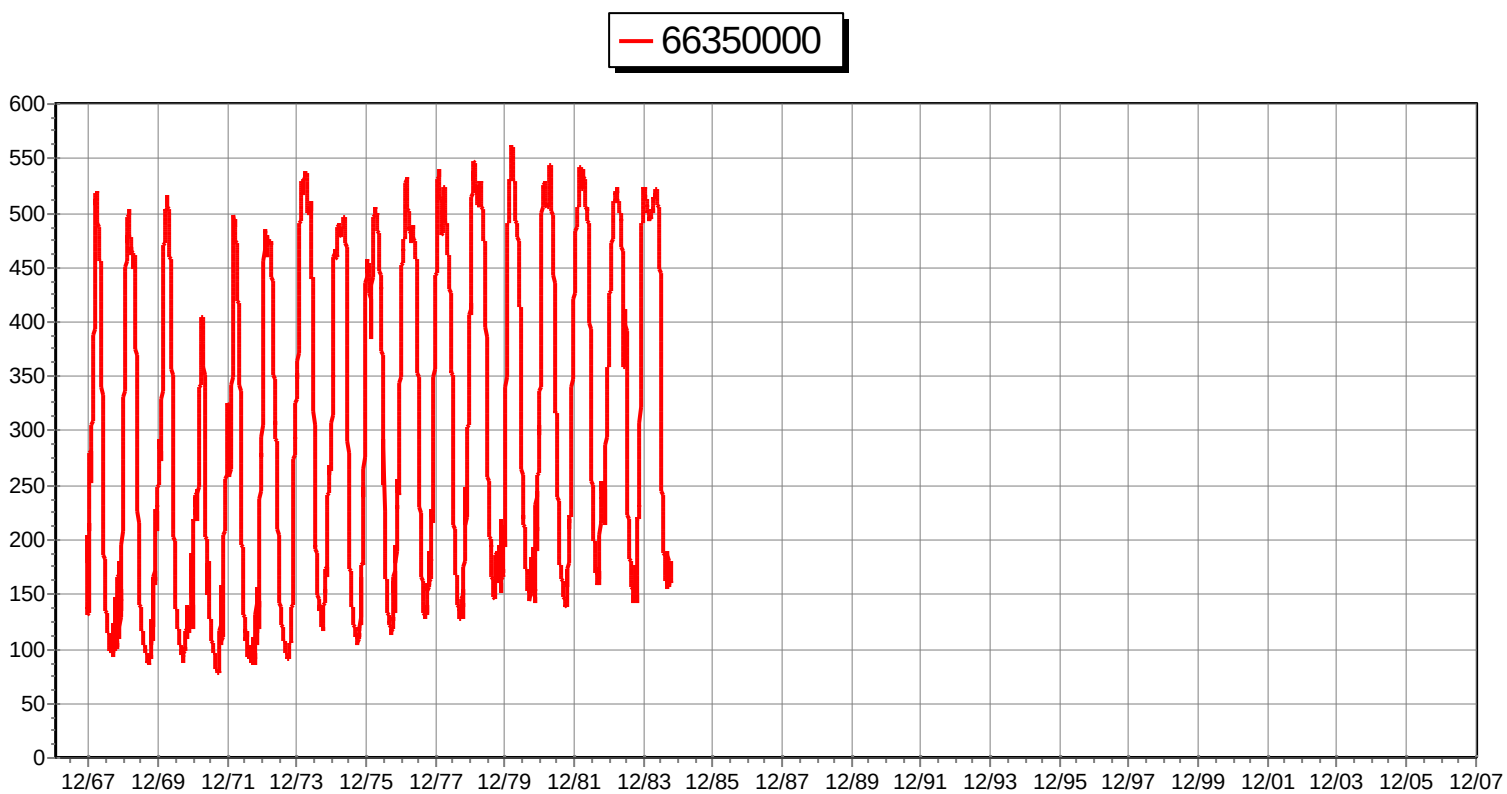


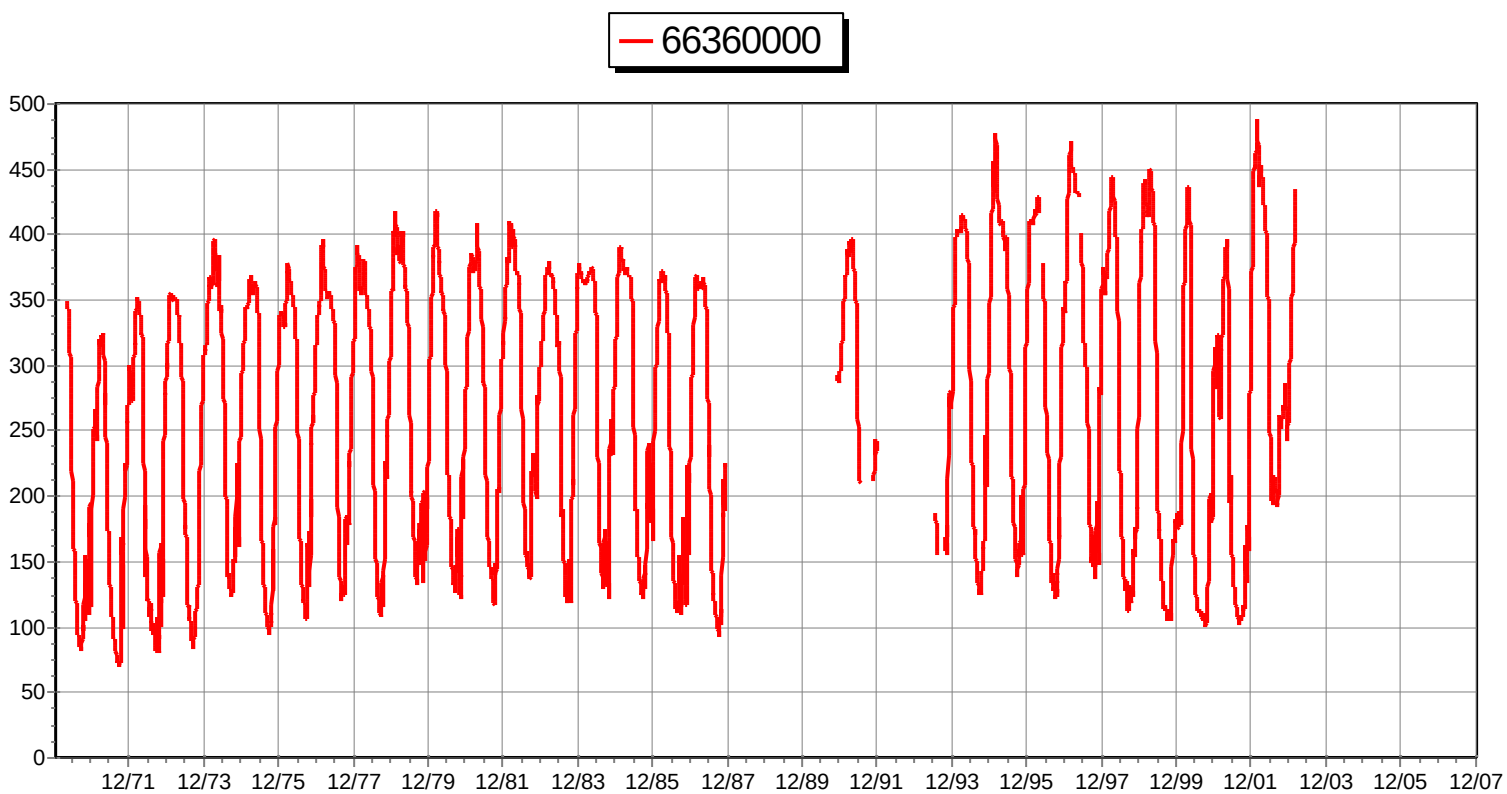


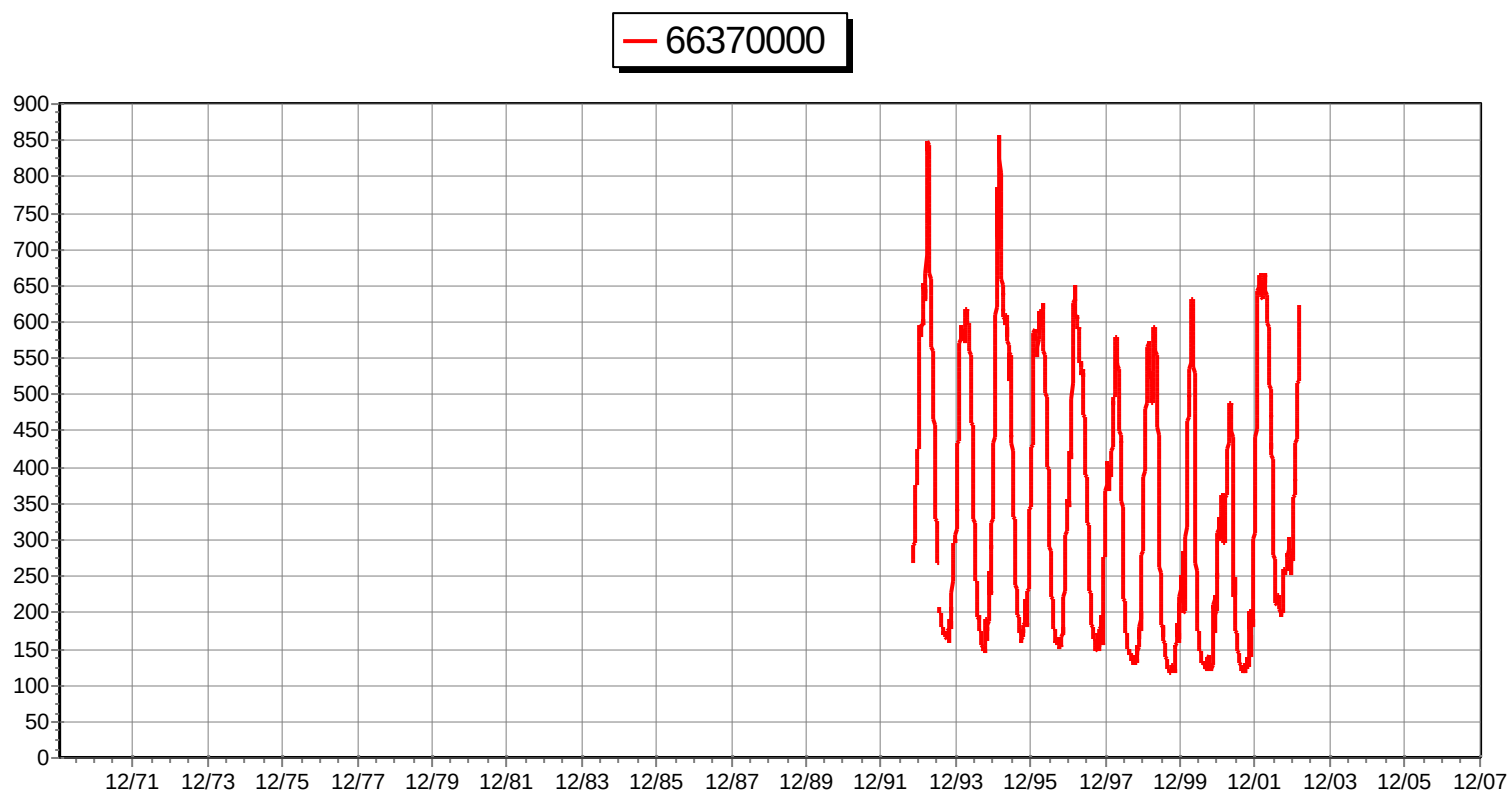


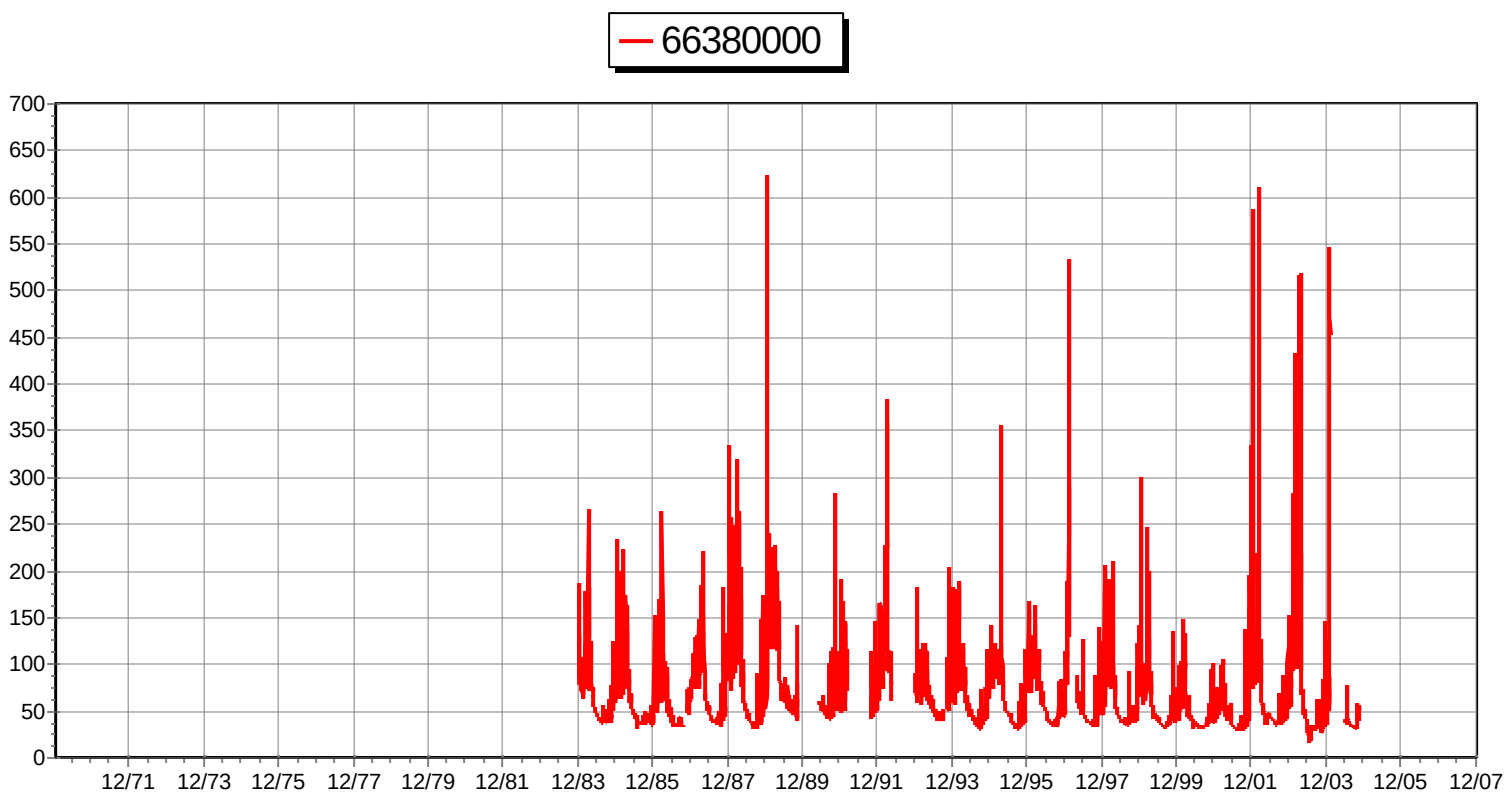


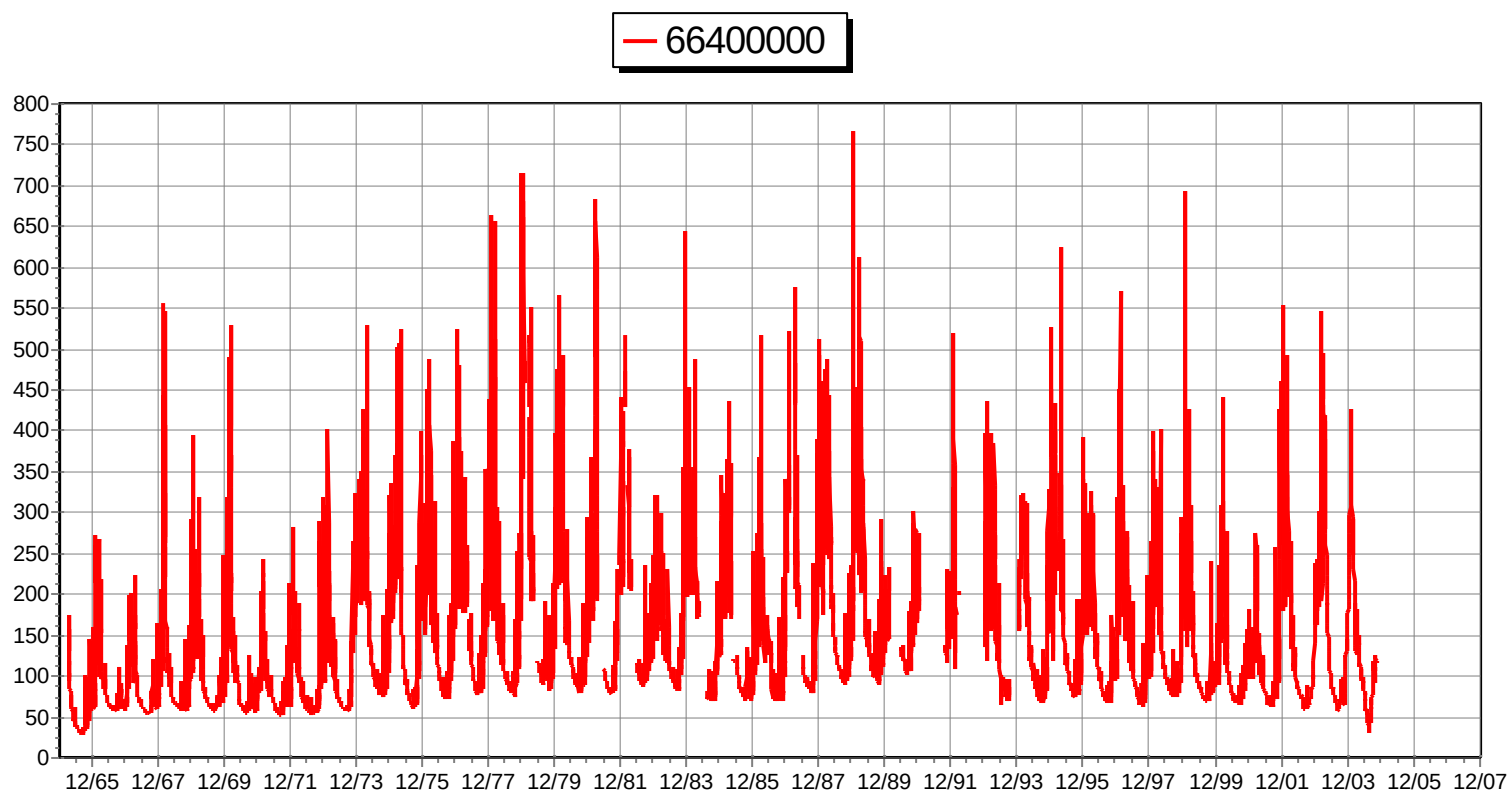


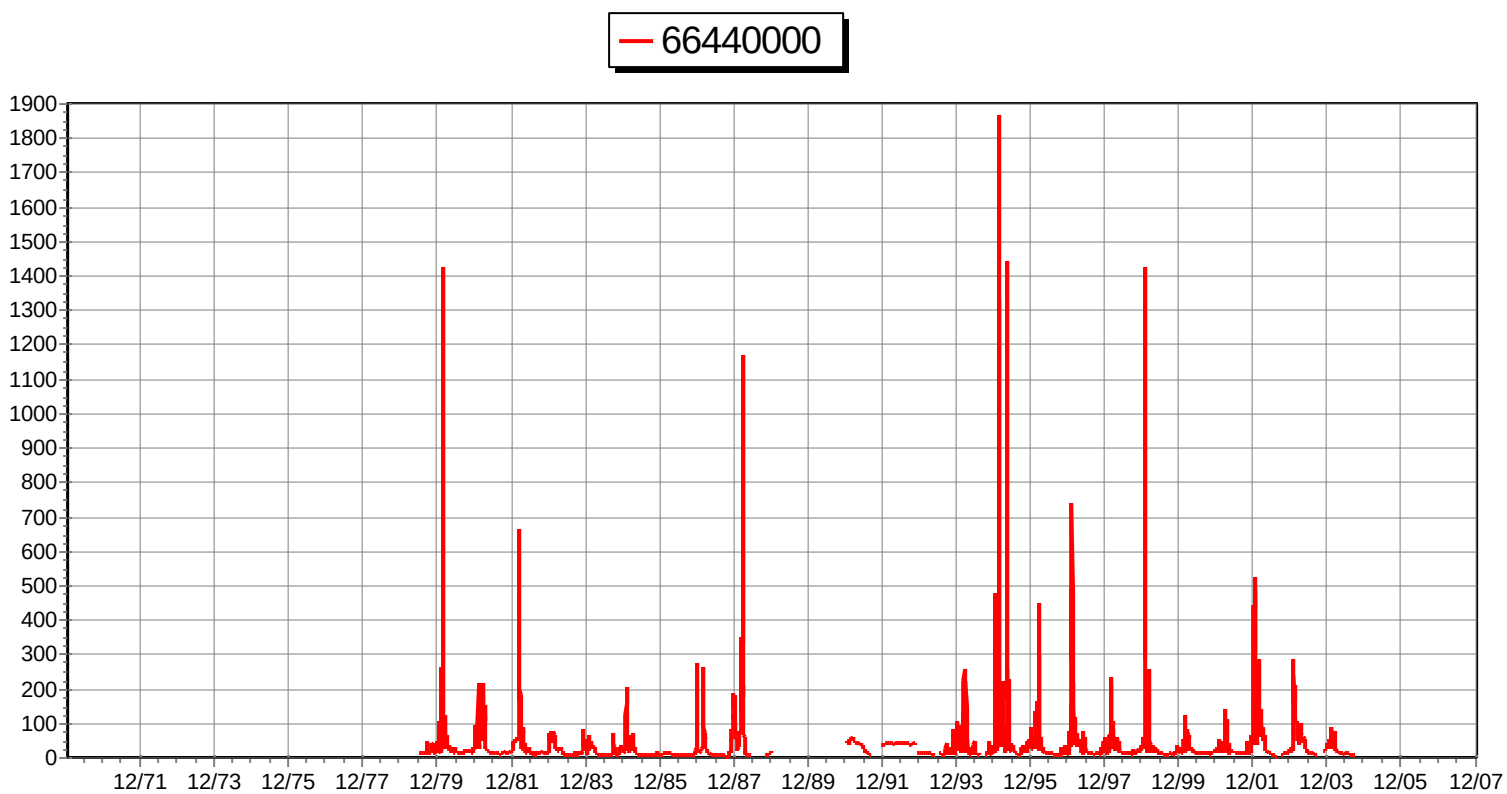


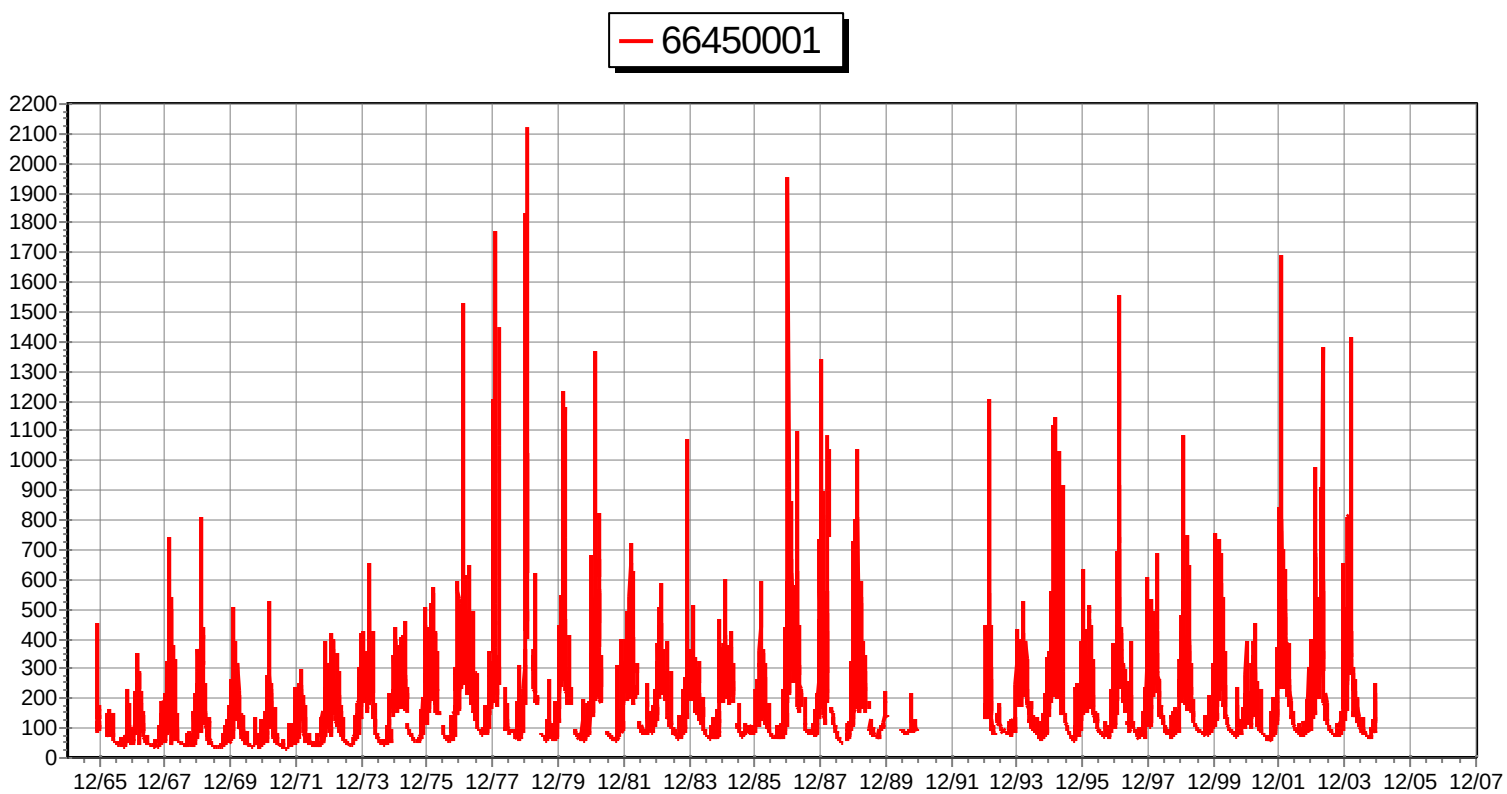


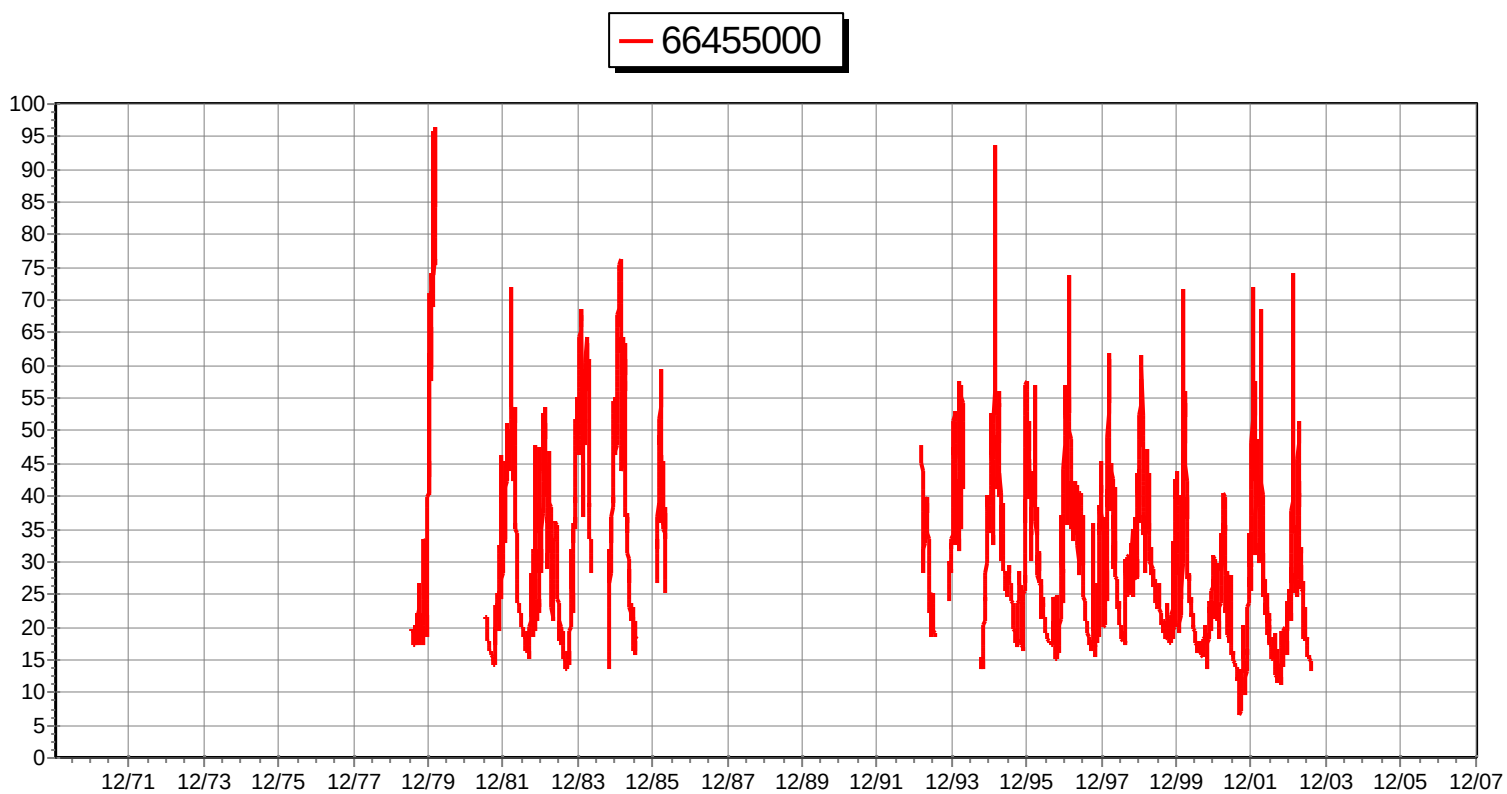


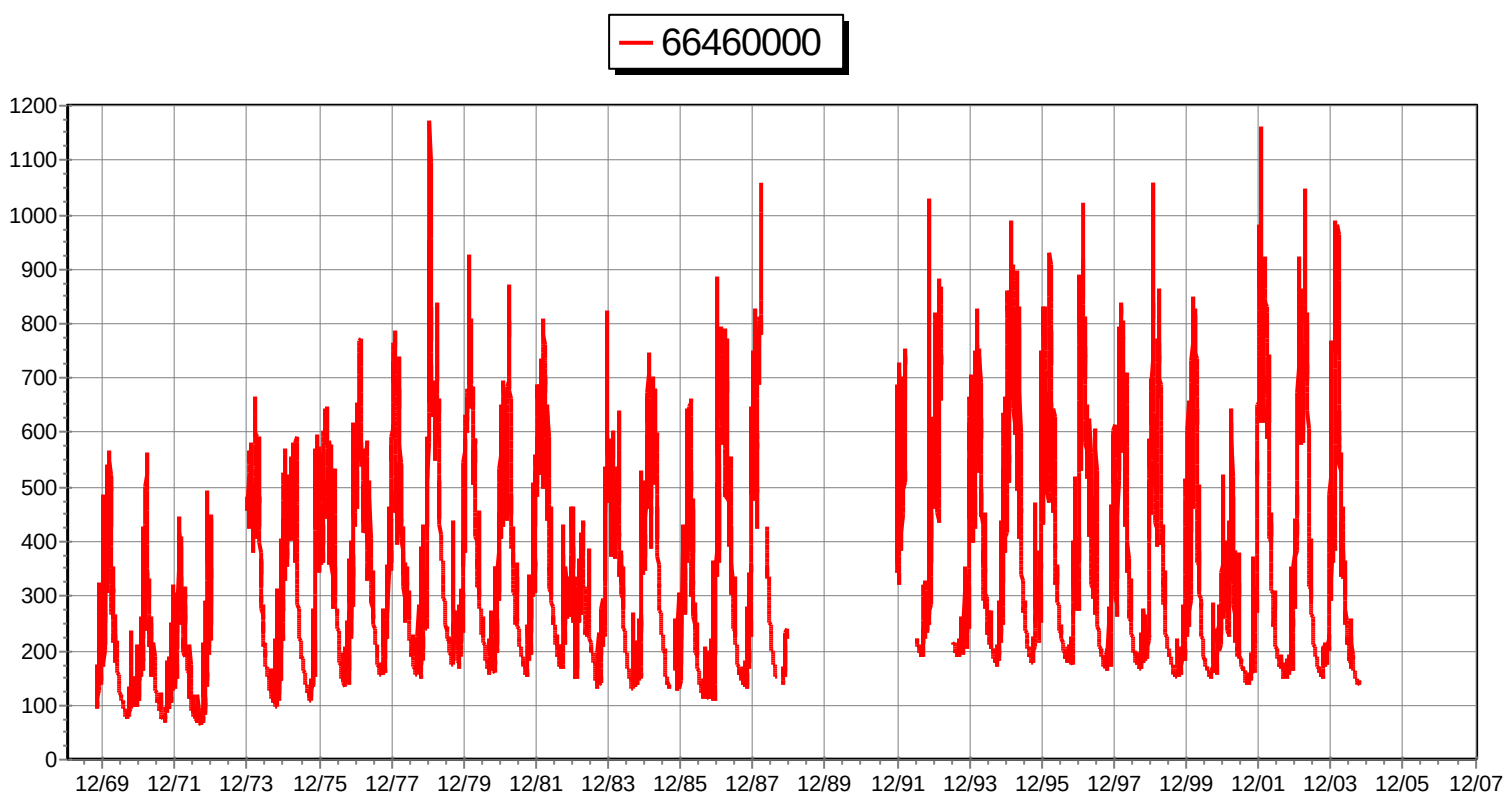


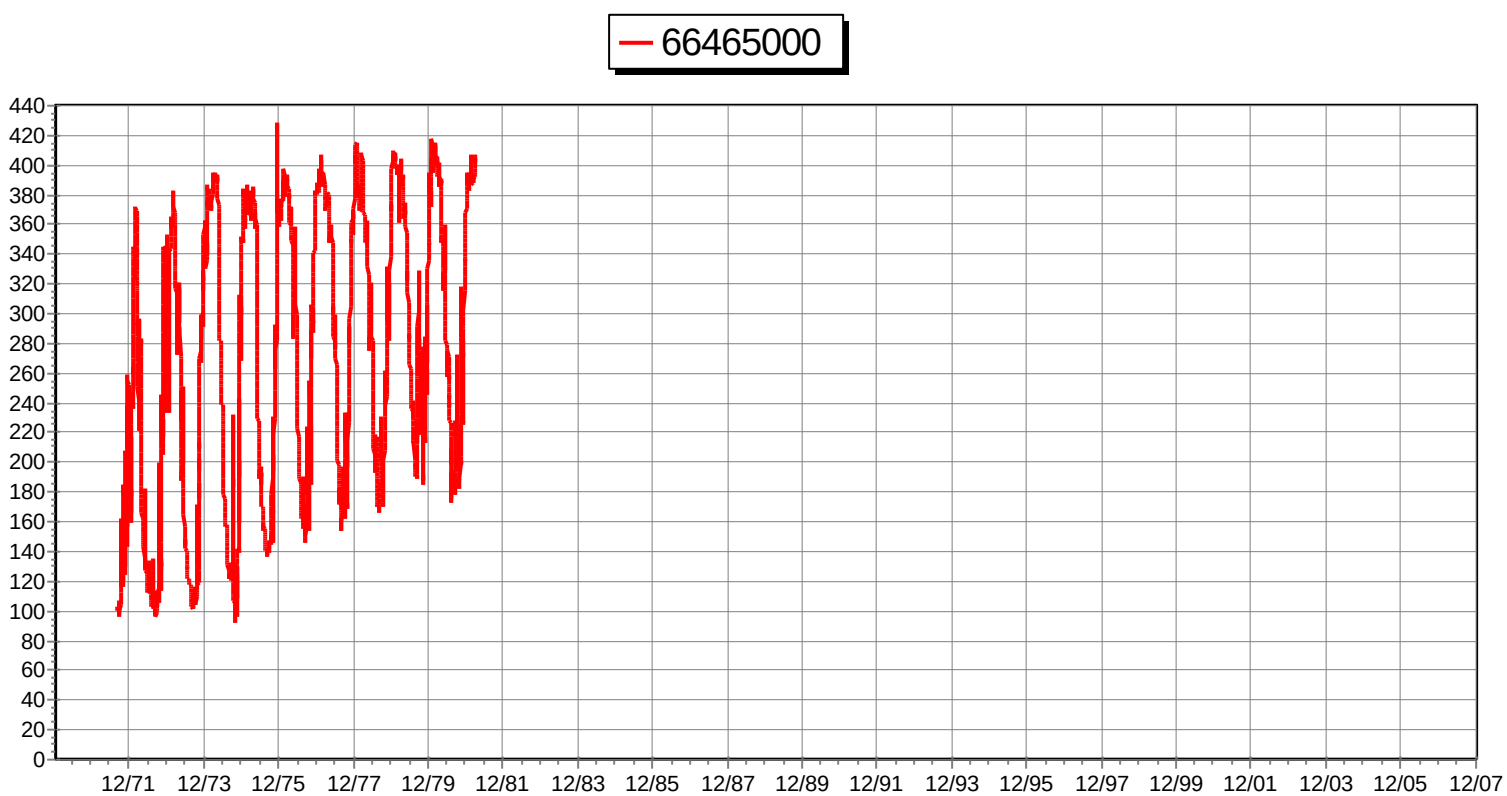


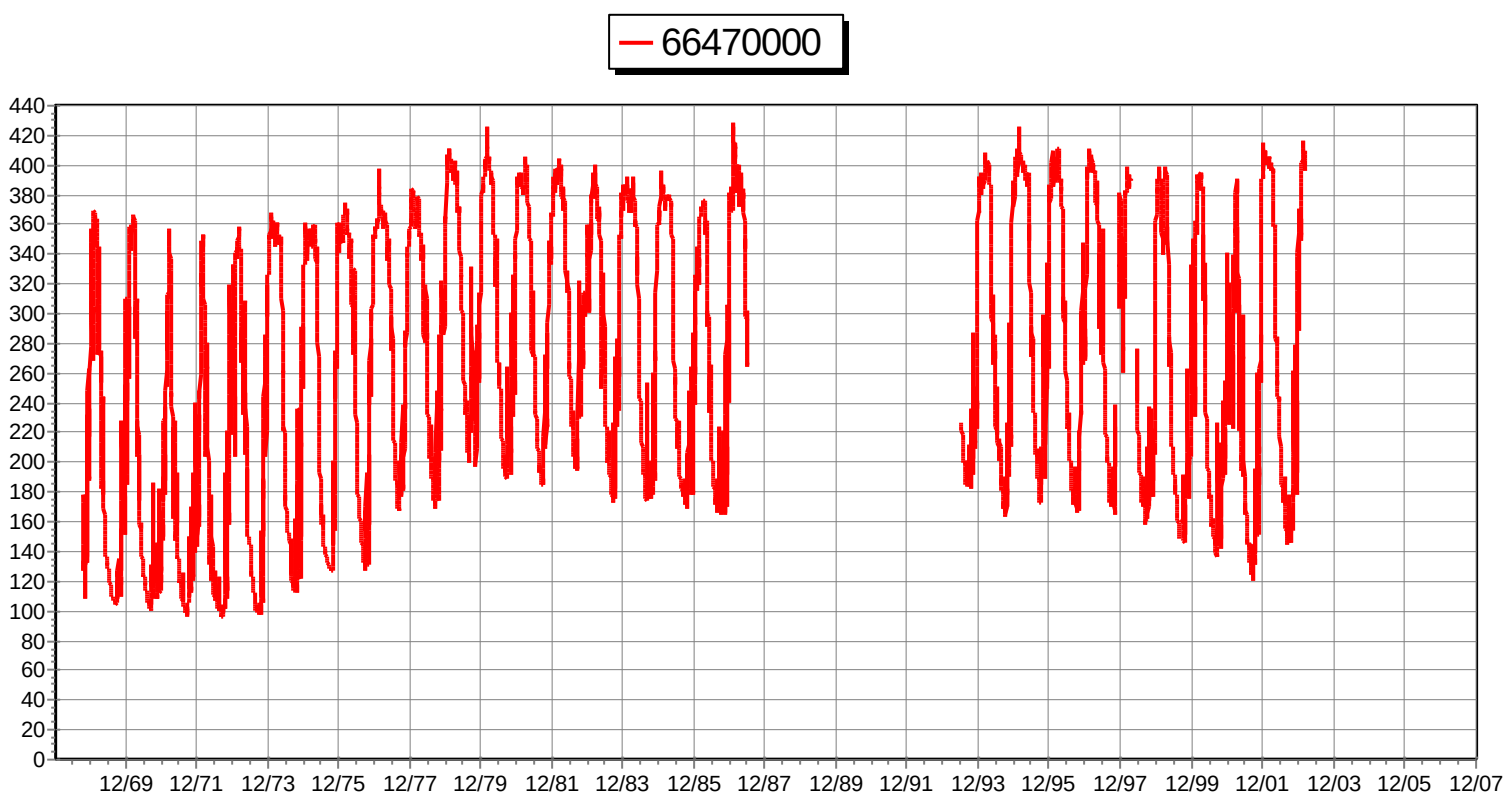


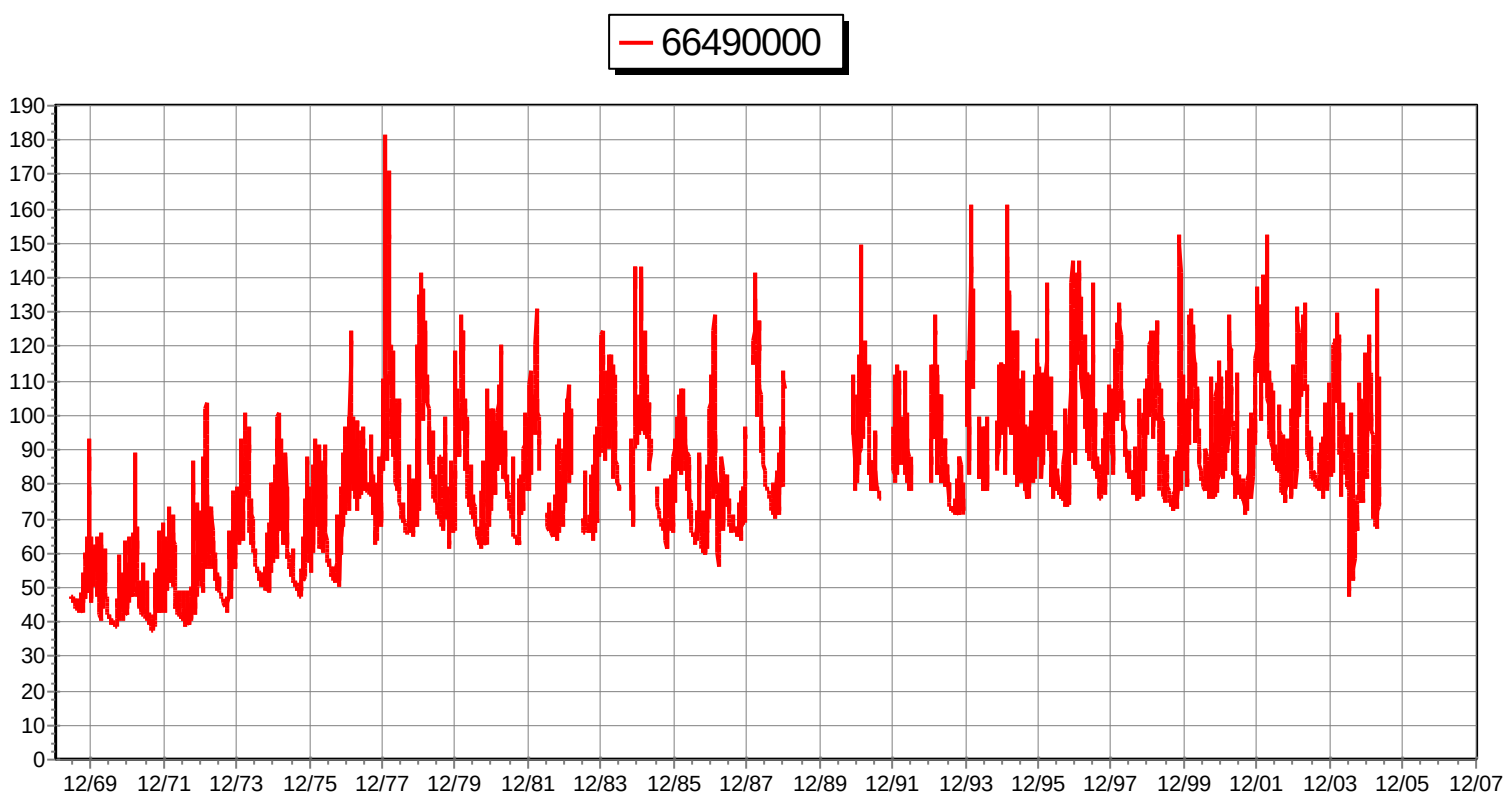


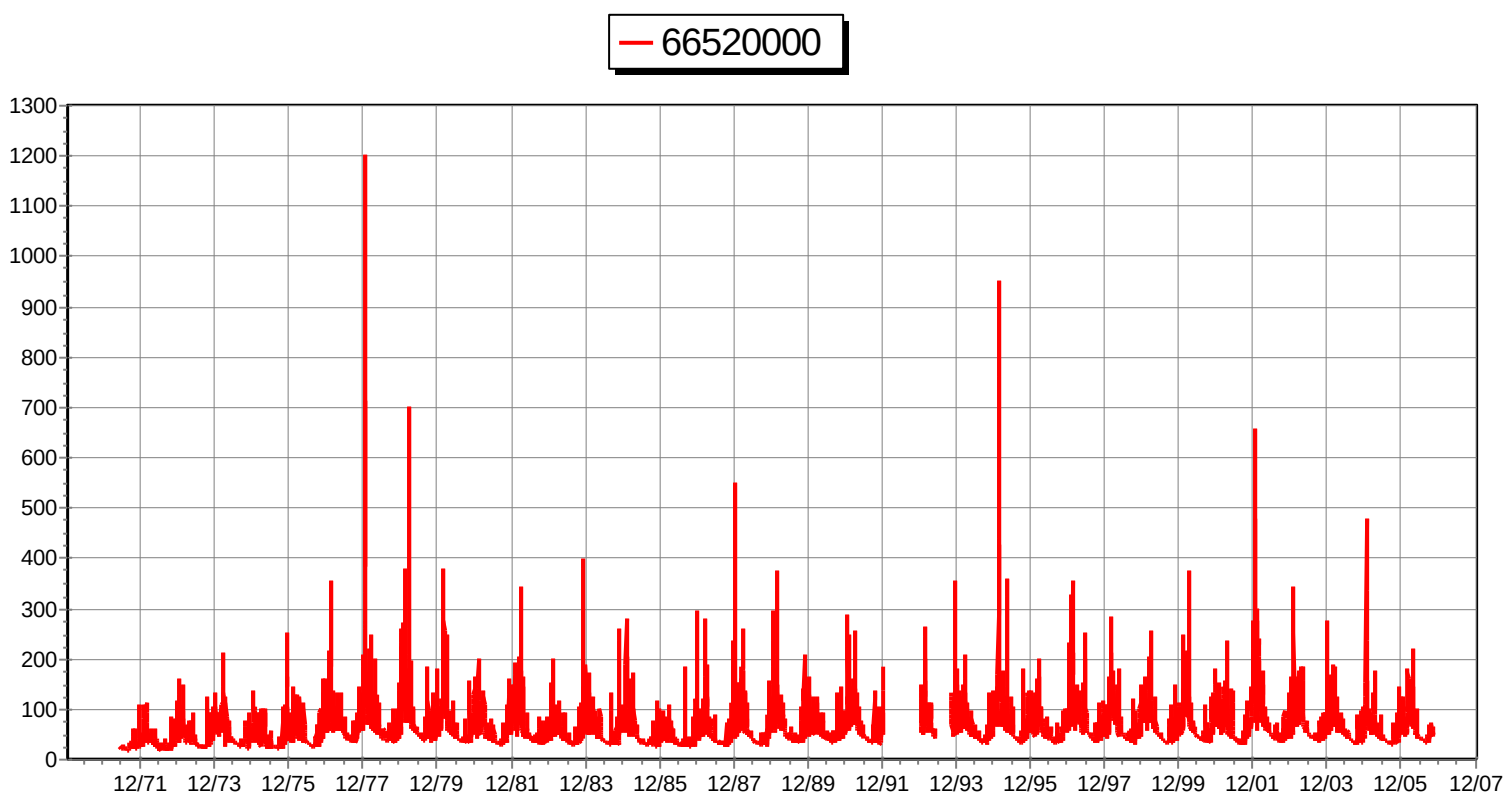


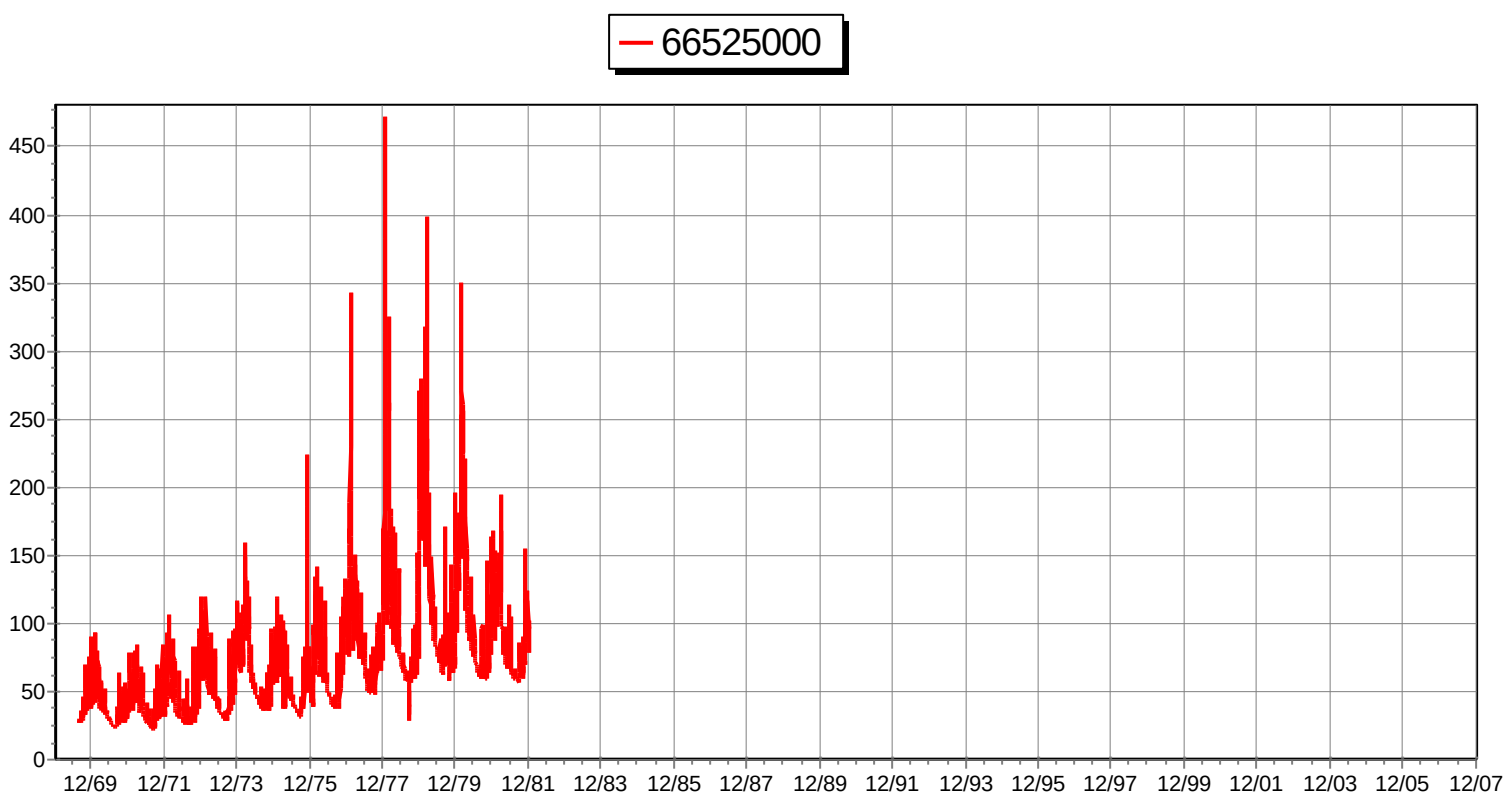


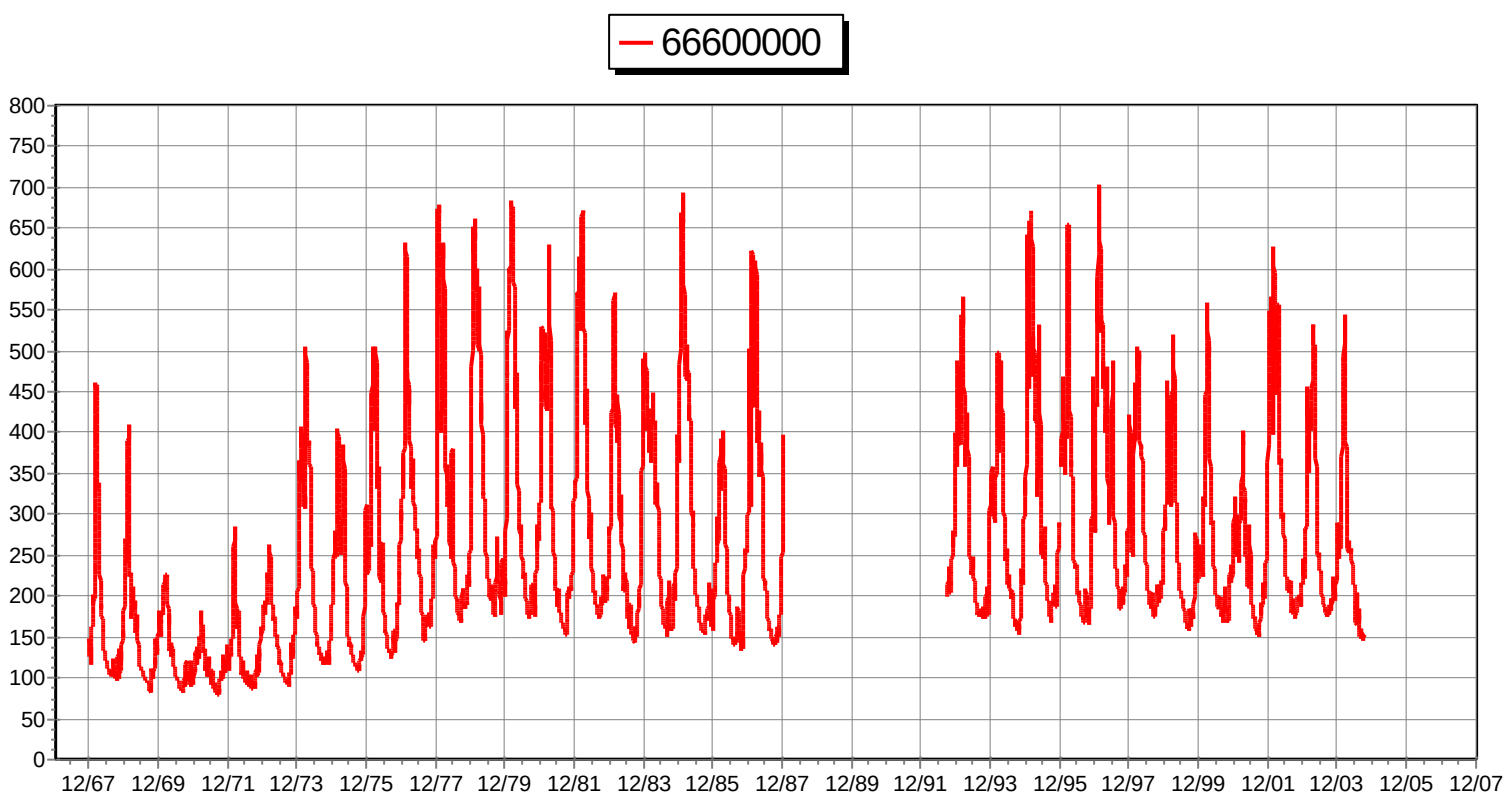


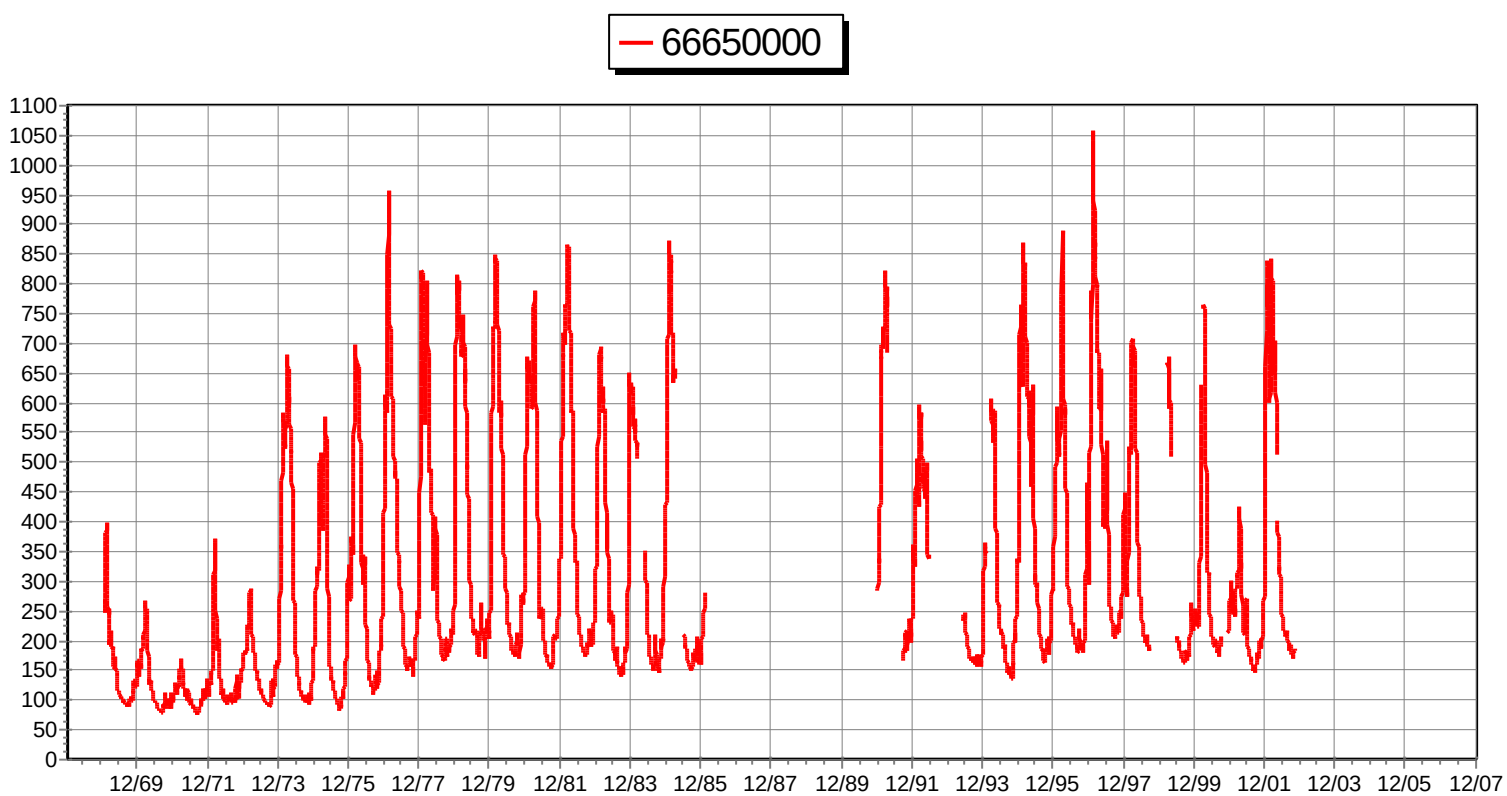












ANEXO II – ANÁLISE DE REGRESSÃO MULTIVARIADA PARA VAZÃO MÉDIA

SIGLAS:

GL	<i>Grau de Liberdade</i>	EAM	<i>Erro absoluto</i>
SQ	<i>Desvio Quadrático</i>	EPAM	<i>Erro percentual absoluto médio</i>
QM	<i>Quadrado Médio</i>	PRESS	<i>Soma dos quadrados dos erros residuais de previsão</i>
QMR	<i>Quadrado Médio da Regressão</i>	PRESS	<i>Press-percentual. Podem ser comparados</i>
		- AP	
QME	<i>Quadrado Médio do Resíduo</i>	DW	<i>Durbin-Watson. Resíduo</i>
F	<i>Teste F (Compara a variância explicada para modelo com a variância não explicada (erro) = QMR/QME)</i>	U de Theil	<i>Medida que considera os custos desproporcionais dos grandes erros em comparação com modelos ingênuos de previsão</i>
Valor dp	<i>Número de parâmetros estimados no modelo</i>	Q	<i>Estatística de Box-Pierre</i>
R²	<i>Coefficiente de correlação</i>	Q*	<i>Teste Ljung-Box</i>
SIC	<i>Critério Bayesiano de Schorwz</i>	Reset	<i>Teste de especificação do modelo de regressão</i>
AIC	<i>Critério de Informação de Akaike</i>	BP	<i>Teste Breusch-Pagan</i>
HQ	<i>Critério Hannan-Quinn – Medida escalar que serve para escolha de modelos alternativos, quando do processo de redução</i>	JB	<i>Resíduo</i>
S	<i>Resíduo</i>		

RMI

Análise de Variância											
Fonte	GL	SQ	QM	F	Valor de p						
Regressão	2	2,12	1,06	106,33	0,0000						
Resíduo	13	0,13	0,01								
TOTAL	15	2,25									
R ² =	0,9424			s(resíduo)	0,0999		DW resíduo	1,4890			
R ² _{ajust.} =	0,9335			EAM	0,0692		Q	10,0012	0,6159	12	
SIC=	-1,8656			EPAM	0,0314		Q*	21,0425	0,0498		
AIC=	-1,7163			PRESS	0,19		RESET	0,4676	0,6384	2	11
HQ=	-2,0611			PRESS-AP	0,0415		BP=	0,7113	0,3990		
				U de Theil	0,1686		JB(resíduo)	0,96			
Inferências sobre os parâmetros da regressão											
		b ₀	b ₁	b ₂							
Coef. de regressão		0,9124	2,9351	0,7545							
S(b)		0,1864	0,9398	0,0527							
teste t		4,8951	3,1231	14,3169							
nível de p		0,0003	0,0081	0,0000							
Obs.	Log Q	Constante	Log P	Log A	Log Q_EST	Residuo_Modelo	Res. pad_Mod	Qobs	Qcalc		
1	1,357935	1	0,13258	0,16295551	1,424462828	0,066527981	0,715570044	22,8	26,574		
2	2,225309	1	0,22583	0,88437389	2,242479381	0,017170099	0,184680321	168	174,78		
3	2,283301	1	0,21854	1,09377178	2,37907682	0,095775592	1,030155188	192	239,37		
4	1,872739	1	0,18724	0,55527829	1,880910077	0,00817125	0,08788936	74,6	76,017		
5	2,731589	1	0,21112	1,51362439	2,67410219	-0,057486575	-0,618321354	539	472,17		
6	1,984527	1	0,19783	0,47356871	1,850350116	-0,134177197	-1,443200019	96,5	70,852		
7	2,0086	1	0,17609	0,76437567	2,005960384	-0,002639788	-0,028393366	102	101,38		
8	1,993877	1	0,16227	0,96427802	2,116211733	0,122334818	1,315824261	98,6	130,68		
9	2,770852	1	0,18639	1,6947752	2,738201428	-0,032650583	-0,35118726	590	547,27		
10	1,810233	1	0,23325	0,35527332	1,865050304	0,054817786	0,58961606	64,6	73,291		
11	2,593286	1	0,20575	1,43216727	2,596864509	0,003578442	0,038489458	392	395,24		
12	2,478566	1	0,16997	1,15130027	2,279932576	-0,19863392	-2,136491765	301	190,52		
13	2,418301	1	0,16227	1,2049197	2,297781832	-0,12051946	-1,296298403	262	198,51		
14	2,40654	1	0,17551	1,36016269	2,453795678	0,047255497	0,508276635	255	284,31		
15	2,477121	1	0,16524	1,42096649	2,469537349	-0,007583906	-0,08157193	300	294,81		
16	2,631444	1	0,16643	1,81391049	2,769503733	0,138059964	1,484962769	428	588,17		

RMII											
Análise de Variância											
Fonte	GL	SQ	QM	F	Valor de p						
Regressão	2	1,64	0,82	160,59	0,0000						
Resíduo	12	0,06	0,01								
TOTAL	14	1,70									
R ² =	0,9640			s(resíduo)	0,0715		DW resíduo	1,4949			
R ² _{ajust.} =	0,9580			EAM	0,0554		Q	5,1928	0,9215	11	
SIC=	-2,1529			EPAM	0,0295		Q*	11,2657	0,4213		
AIC=	-1,9881			PRESS	0,10		RESET	5,2097	0,0282	2	10
HQ=	-2,3600			PRESS-AP	0,0408		BP=	3,0099	0,0828		
				U de Theil	0,1902		JB(resíduo)	0,53			
Inferências sobre os parâmetros da regressão											
		b ₀	b ₁	b ₂							
Coef. de regressão		0,9757	1,6800	0,9740							
S(b)		0,1982	0,7364	0,0593							
teste t		4,9224	2,2815	16,4273							
nível de p		0,0004	0,0416	0,0000							
Obs.	Log Q	Constante	Log P	Log A	Log Q est	Residuo_Modelo	Residuo_padron_Modelo				
1	1,582063	1	0,273	0,2215942	1,6497404	0,067677	1,022181391	38,2	44,64167		
2	2,060698	1	0,284	0,6311433	2,067472	0,006774	0,102315286	115	116,8078		
3	2,222716	1	0,277	0,7599872	2,1807219	-0,04199	-0,634277654	167	151,6079		
4	2,356026	1	0,262	0,9129274	2,3049631	-0,05106	-0,771241542	227	201,8195		
5	1,810233	1	0,233	0,3552733	1,7135501	-0,09668	-1,460272088	64,6	51,70709		
6	2,017033	1	0,225	0,6357209	1,9733644	-0,04367	-0,659566554	104	94,05122		
7	1,91169	1	0,227	0,5158685	1,858797	-0,05289	-0,798888406	81,6	72,2432		
8	1,901458	1	0,227	0,4685821	1,8140381	-0,08742	-1,320378375	79,7	65,16855		
9	1,322219	1	0,238	0,0852906	1,4582237	0,136004	2,054183705	21	28,72259		
10	1,998695	1	0,217	0,712141	2,0346507	0,035956	0,543065113	99,7	108,3055		
11	2,287802	1	0,218	0,9768551	2,2938064	0,006005	0,090693375	194	196,7009		
12	2,245513	1	0,218	0,9800116	2,2964393	0,050927	0,769185798	176	197,897		
13	2,474216	1	0,171	1,2016156	2,4325559	-0,04166	-0,629230171	298	270,7422		
14	2,474216	1	0,217	1,2095533	2,5191282	0,044912	0,678340978	298	330,4671		
15	2,58995	1	0,203	1,3761119	2,6570777	0,067128	1,013889145	389	454,0228		

RMIII										
Análise de Variância										
Fonte	GL	SQ	QM	F	Valor de p					
Regressão	2	0,85	0,43	69,62	0,0031					
Resíduo	3	0,02	0,01							
TOTAL	5	0,87								
R ² =	0,9789			s(resíduo)	0,0783		DW resíduo	2,4654		
R ² _{ajust.} =	0,9648			EAM	0,0489		Q	2,4813	0,2892	2
SIC=	-2,1244			EPAM	0,0253		Q*	5,2061	0,0740	
AIC=	-1,5135			PRESS			RESET	0,0000	1,0000	2 1
HQ=	-2,6224			PRESS-AP	0,0408		BP=	0,2472	0,6191	
				U de Theil	0,0812		JB(resíduo)	0,11		
Inferências sobre os parâmetros da regressão										
		b ₀	b ₁	b ₂						
Coef. de regressão		0,8125	2,0604	0,9439						
S(b)		0,4211	2,0877	0,0803						
teste t		1,9294	0,9869	11,7502						
nível de p		0,1493	0,3964	0,0013						
Obs.	Log Q	Constante	Log P	Log A	Log Q_EST	Residuo Modelo(1)	Residuo padron Modelo(1)			
1	1,810233	1	0,226	0,6021121	1,8467267	0,036494	0,601704811	64,6	70,26299	
2	2,139879	1	0,21	0,8544123	2,0507409	-0,08914	-1,469684412	138	112,3934	
3	1,472756	1	0,2	0,2942391	1,5018677	0,029111	0,47997843	29,7	31,75907	
4	2,146128	1	0,188	1,0876057	2,2272831	0,081155	1,338060627	140	168,7653	
5	1,456366	1	0,178	0,2586373	1,4242643	-0,0321	-0,529283887	28,6	26,56222	
6	2,507856	1	0,194	1,3455999	2,4823353	-0,02552	-0,420775569	322	303,6235	

RMV											
Análise de Variância											
Fonte	GL	SQ	QM	F	Valor de p						
Regressão	2	4,73	2,37	439,58	0,0000						
Resíduo	9	0,05	0,01								
TOTAL	11	4,78									
R ² =	0,9899			s(resíduo)	0,0734		DW resíduo	1,2650			
R ² _{ajust.} =	0,9876			EAM	0,0495		Q	5,5930	0,6927	8	
SIC=	-2,1241			EPAM	0,0221		Q*	19,1681	0,0140		
AIC=	-1,8939			PRESS	0,08		RESET	1,4645	0,2942	2	7
HQ=	-2,3773			PRESS-AP	0,0323		BP=	1,5577	0,2120		
				U de Theil	0,0575		JB(resíduo)	0,78			
Inferências sobre os parâmetros da regressão											
		b ₀	b ₁	b ₂							
Coef. de regressão		0,6628	2,2150	1,0723							
S(b)		0,2042	0,6867	0,0376							
teste t		3,2461	3,2255	28,5219							
nível de p		0,0101	0,0104	0,0000							
Obs.	Log Q	Constante	Log P	Log A	Log Q EST	Residuo_Modelo(2)	Residuo_padron_Modelo(2)				
1	2,434569	1	0,26	1,02672974	2,3387221	-0,095847	-1,444213517	272	218,1334	0,246944	
2	2,545307	1	0,256	1,1357126	2,4481442	-0,097163	-1,464045395	351	280,6365	0,250728	
3	2,060698	1	0,259	0,74063818	2,0314271	-0,029271	-0,441049065	115	107,5046	0,069721	
4	2,91803	1	0,253	1,5389188	2,8729934	-0,045037	-0,678613794	828	746,4374	0,109269	
5	2,951338	1	0,259	1,6090113	2,9609629	0,009625	0,145034837	894	914,0352	-0,021919	
6	3,069298	1	0,27	1,71678204	3,1006107	0,031313	0,471817396	1173	1260,697	-0,069562	
7	1,482874	1	0,371	0,00072467	1,4854833	0,00261	0,039322776	30,4	30,58323	-0,005991	
8	3,301247	1	0,296	1,89800268	3,3540959	0,052849	0,796321948	2001	2259,935	-0,114576	
9	1,176091	1	0,276	-0,0566044	1,2144634	0,038372	0,578189542	15	16,38564	-0,084564	
10	1,897077	1	0,263	0,58040146	1,8675196	-0,029557	-0,445368622	78,9	73,70885	0,070428	
11	2,056905	1	0,234	0,94975047	2,1995147	0,14261	2,148836989	114	158,3123	-0,279904	
12	1,984977	1	0,256	0,72194245	2,0044733	0,019496	0,293766905	96,6	101,0353	-0,043899	

RMVI											
Análise de Variância											
Fonte	GL	SQ	QM	F	Valor de p				Juruena-Airipuranã		
Regressão	2	2,81	1,41	164,28	0,0000						
Resíduo	6	0,05	0,01								
TOTAL	8	2,86									
R ² =	0,9821			s(resíduo)	0,0925		DW resíduo	1,1388			
R ² _{ajust.} =	0,9761			EAM	0,0708		Q	6,6925	0,2445	5	
SIC=	-1,9259			EPAM	0,0279		Q*	14,3193	0,0137		
AIC=	-1,5773			PRESS			RESET	6,6340	0,0537	2	4
HQ=	-2,2575			PRESS-AP	0,0323		BP=	0,0319	0,8582		
				U de Theil	0,0897		JB(resíduo)	1,47			
Inferências sobre os parâmetros da regressão											
		b ₀	b ₁	b ₂							
Coef. de regressão		0,5283	4,1773	0,8056							
S(b)		0,1657	0,8014	0,0735							
teste t		3,1881	5,2127	10,9604							
nível de p		0,0189	0,0020	0,0000							
Obs.	Log Q	Constante	Log P	Log A	Log Q EST	Residuo Modelo	Residuo padron Modelo		Q calculado	Qobservado	
1	2,1673173	1	0,241	0,690507951	2,091538379	-0,075779	-0,94612422		123,5	147	0,1601126
2	3,1673173	1	0,2838	1,742957217	3,117826335	-0,049491	-0,617910774		1311,7	1470	0,1077039
3	2,7209857	1	0,2693	1,402331208	2,782942118	0,0619564	0,773544918		606,7	526	0,1533374
4	2,8585372	1	0,2749	1,569006301	2,940493687	0,0819565	1,023252685		872,0	722	0,2076928
5	2,5415792	1	0,2815	1,156930581	2,636236554	0,0946573	1,181826436		432,7	348	0,243533
6	3,0941216	1	0,2794	1,756669497	3,110850037	0,0167284	0,208859872				
7	3,6679197	1	0,2882	2,260798723	3,553800374	-0,1141193	-1,424815676				
8	1,7693773	1	0,1847	0,484395231	1,690065743	-0,0793116	-0,990230189		49,0	58,8	0,1669167
9	2,1038037	1	0,1471	1,271780522	2,167205956	0,0634022	0,791596948		147,0	127	0,1571835

ANEXO III – ANÁLISE DE REGRESSÃO MULTIVARIADA PARA VAZÃO MÁXIMA

RMI												
Log Qmax = + 5.02061757200367 -11.3661972003094Log P + 5.47676508336056E-02Log A												
Análise de Variância												Região 1
Fonte	GL	SQ	QM	F	Valor de p							
Regressão	2	0,27401804	0,13700902	81,3967717	0,00015328							
Resíduo	5	0,00841612	0,00168322									
TOTAL	7	0,28243416										
R2 =	0,97020148			s(resíduo)	0,04102712		DW resíduo	0,79447796				
R2ajust. =	0,95828207			EAM	0,02989364		Q	4,04482139	0,3999739	4		
SIC=	-2,6393193			EPAM	0,01083907		Q*	13,8676889	0,0077295			
AIC=	-2,227978			PRESS			RESET	0	1	2	3	
HQ=	-3,0111797			PRESS-AP	0,07940449		BP=	0,22372913	0,6362131			
				U de Theil	0,12728515		JB(resíduo)	1,44873105				
Inferências sobre os parâmetros da regressão												
		b0	b1	b2								
Coef. de regressão		5,02061757	-11,366197	0,05476765								
s(b)		0,3167544	1,39180081	0,04647273								
teste t		15,8501905	-8,1665401	1,17849009								
nível de p		1,8188E-05	0,00044746	0,29162623								
Obs.	Log Qmax	Constante	Log P	Log A	Log Qmax EST	Residuo_Modelo(2)	Residuo_padron_Modelo(2)			Q obs	Q Calc	Erro
1	2,95357686	1	0,18639122	1,6947752	2,99487711	0,04130025	1,19109311		66090000	898,621622	988,273418	-0,0997659
2	2,56405527	1	0,21748394	0,71214104	2,58765447	0,023599198	0,68059737		66201000	366,484211	386,949657	-0,0558426
3	2,46711459	1	0,22608412	0,6021121	2,48387719	0,016762602	0,48343097		66380000	293,166667	304,703324	-0,0393519
4	2,68015414	1	0,20951501	0,85441232	2,68602276	0,005868614	0,16924997		66400000	478,8	485,313929	-0,0136047
5	2,73423171	1	0,19975518	0,2942391	2,76627562	0,032043909	0,92414159		66440000	542,290143	583,815498	-0,0765741
6	2,98056547	1	0,18836593	1,08760575	2,93917892	-0,04138655	-1,193582		66450001	956,236842	869,318501	0,09089625
7	2,92426362	1	0,19395898	1,34559994	2,88973693	-0,034526692	-0,9957447		66460000	839,969697	775,777048	0,07642258
8	2,54889809	1	0,22349594	0,45497894	2,50523676	-0,043661332	-1,2591864		66520000	353,914286	320,06395	0,09564558

RMII											
Log Qmax = + 3.8873282749946 -8.54642355501207Log P + .208833065700761Log A											
Análise de Variância											Região 2
Fonte	GL	SQ	QM	F	Valor de p						
Regressão	2	0,394624	0,19731216	23,6723338	0,01454627						
Resíduo	3	0,025005	0,00833514								
TOTAL	5	0,41963									
R2 =	0,940411			s(resíduo)	0,09129697		DW resíduo	1,672277			
R2ajust. =	0,900685			EAM	0,0580151		Q	0,922304	0,6305569	2	
SIC=	-1,99104			EPAM	0,02399516		Q*	2,47501	0,2901071		
AIC=	-1,38012			PRESS			RESET	0	1	2	1
HQ=	-2,48905			PRESS-AP	0,07940449		BP=	1,306191	0,2530856		
				U de Theil	0,17257421		JB(resíduo)	0,41544			
Inferências sobre os parâmetros da regressão											
		b0	b1	b2							
Coef. de regressão		3,887328	-8,5464236	0,20883307							
s(b)		0,793289	3,52798787	0,14379085							
teste t		4,900269	-2,422464	1,45233901							
nível de p		0,016265	0,09396137	0,24234093							
Obs.	Log Qmax	Constante	Log P	Log A	Log Qmax EST	Residuo Modelo(1)	Residuo padron. Modelo(1)		Q obs	Q Calc	Erro
1	2,38258	1	0,18723862	0,55527829	2,40306819	0,02048837	0,289717983		241,3125	252,97	-0,048307
2	2,781823	1	0,16643011	1,81391049	2,84375052	0,06192785	0,875697273		605,0938	697,831	-0,153262
3	2,103424	1	0,21245396	0,59112251	2,19505266	0,09162907	1,295690476		126,8889	156,694	-0,234892
4	2,32643	1	0,2116544	0,72475906	2,22979378	-0,0966366	-1,366500306		212,0462	169,744	0,1994962
5	2,706918	1	0,17551181	1,36016269	2,67137692	-0,0355416	-0,502579334		509,2353	469,22	0,0785783
6	2,813692	1	0,16524433	1,42096649	2,77182506	-0,0418671	-0,592026092		651,1667	591,323	0,0919016

RMIII											
Log Qmax = + 1.11282153795754 + 5.6304793586242Log P + .443711900631395Log A											
Análise de Variância											Região 3
Fonte	GL	SQ	QM	F	Valor de p						
Regressão	2	0,16767762	0,08383881	27,6227413	0,0116893						
Resíduo	3	0,00910541	0,00303514								
TOTAL	5	0,17678303									
R ² =	0,948494			s(resíduo)	0,05509208		DW				
R ² _{ajust.} =	0,914156			EAM	0,03644468		resíduo	3,162116			
SIC=	2,429776			EPAM	0,01444554		Q	3,291777	0,192841	2	
AIC=	1,818852			PRESS			Q*	6,204908	0,044939		
HQ=	2,927788			PRESS-AP	0,0667405		RESET	0	1	2	1
				U de Theil	0,19169473		BP=	0,461981	0,4967		
							JB(resíduo)	1,026043			
Inferências sobre os parâmetros da regressão											
		b ₀	b ₁	b ₂							
Coef. de regressão		1,11282154	5,63047936	0,4437119							
S(b)		0,21334593	1,00736686	0,08515623							
teste t		5,21604306	5,58930371	5,21056292							
nível de p		0,01370162	0,01131059	0,01374143							
Obs.	Log Qmax	Constante	Log P	Log A	Log Qmax_EST	Residuo_Modelo(2)	Residuo_padron_Modelo(2)	Q obs	Q Calc	Erro	
1	2,79278	1	0,22582599	0,88437389	2,77673734	-0,016043	-0,375942621	620,555128	598,049787	0,03626646	
2	2,801744	1	0,21853551	1,09377178	2,82860075	0,02685724	0,629356354	633,495455	673,908207	-0,0637933	
3	2,38258	1	0,18723862	0,55527829	2,41344831	0,03086849	0,723353465	241,3125	259,088602	-0,0736642	
4	2,492394	1	0,19783169	0,47356871	2,43683688	-0,0555572	-1,301892723	310,73776	273,424154	0,1200807	
5	2,391854	1	0,17609126	0,76437567	2,44346232	0,0516083	1,209357757	246,521053	277,627395	-0,1261813	
6	2,598826	1	0,16226561	1,2049197	2,56109194	-0,0377339	-0,884232233	397,032258	363,992087	0,08321785	

RMIV											
Log Qmax = + 1.03986328310764 + 8.02888942708217Log P + .228865546897452Log A											
Análise de Variância											Região 4
Fonte	GL	SQ	QM	F	Valor de p						
Regressão	2	0,62836711	0,31418356	17,7797518	0,00300914						
Resíduo	6	0,10602518	0,01767086								
TOTAL	8	0,73439229									
R2 =	0,85562869			s(resíduo)	0,1329318		DW				
R2ajust. =	0,80750492			EAM	0,0747407		resíduo	2,16188221			
SIC=	-1,6107527			EPAM	0,02995595		Q	2,11333765	0,83325081	5	
AIC=	-1,2621668			PRESS	0,38735628		Q*	6,58044186	0,253759028		
HQ=	-1,9423943			PRESS-AP	0,0667405		RESET	1,36370298	0,353528728	2	4
				U de Theil	0,21400854		BP=	1,44962966	0,228587507		
							JB(resíduo)	12,701429			
Inferências sobre os parâmetros da regressão											
		b0	b1	b2							
Coef. de regressão		1,03986328	8,02888943	0,22886555							
s(b)		0,38182155	2,70843871	0,13146232							
teste t		2,72342742	2,96439768	1,74092128							
nível de p		0,0344855	0,02513927	0,1323417							
Obs.	Log Qmax	Constante	Log P	Log A	Log Qmax EST	Residuo_Modelo(1)	Residuo_padron_Modelo(1)		Q obs	Q Calc	Erro
1	2,24232323	1	0,13257985	0,16295551	2,14162712	-0,1006961	-0,874688003		174,712199	138,55657	0,20694393
2	3,11063076	1	0,21112054	1,51362439	3,08134324	-0,0292875	-0,25440355		1290,12195	1205,9887	0,06521341
3	2,28986815	1	0,16226561	0,96427802	2,56336597	0,27349783	2,375715161		194,925272	365,903004	-0,877145
4	2,95357686	1	0,18639122	1,6947752	2,9242534	-0,0293235	-0,254715755		898,621622	839,949927	0,06529077
5	2,78182267	1	0,16643011	1,81391049	2,79125388	0,00943121	0,081923414		605,09375	618,377786	-0,0219537
6	3,04218159	1	0,20574554	1,43216727	3,01954523	-0,0226364	-0,196628846		1102	1046,03262	0,0507871
7	2,70051142	1	0,16996817	1,15130027	2,66801192	-0,0324995	-0,282304083		501,777778	465,598877	0,07210144
8	2,7069185	1	0,17551181	1,36016269	2,7603226	0,05340411	0,463890155		509,235294	575,867546	-0,1308477
9	2,81369216	1	0,16524433	1,42096649	2,69180198	-0,1218902	-1,058788492		651,166667	491,815237	0,24471681

RM IV												
Log Qmax = + 3.62611302701592 -5.12235849363757Log P + .485691319365541Log A												
Análise de Variância											Região 5	
Fonte	GL	SQ	QM	F	Valor de p							
Regressão	2	1,02667266	0,51333633	39,2446176	0,00015709							
Resíduo	7	0,09156298	0,01308043									
TOTAL	9	1,11823565										
R2 =	0,91811835			S(resíduo)	0,11436969		DW resíduo	1,63571111				
R2ajust. =	0,89472359			EAM	0,08712025		Q	4,26313534	0,641114612	6		
SIC=	1,73828006			EPAM	0,03187315		Q*	9,28046537	0,158408409			
AIC=	1,43828006			PRESS	0,24451982		RESET	2,0944761	0,218403719	2	5	
HQ=	2,03828006			PRESS-AP	0,05567923		BP=	0,03842683	0,844588552			
				U de Theil	0,56174045		JB(resíduo)	1,32926995				
Inferências sobre os parâmetros da regressão												
		b0	b1	b2								
Coef. de regressão		3,62611303	-5,1223585	0,48569132								
s(b)		0,4045418	1,36583088	0,13263913								
teste t		8,96350651	-3,7503607	3,66175002								
nível de p		4,3799E-05	0,00716477	0,00805165								
Obs.	Log Qmax	Constante	Log P	Log A	Log Qmax EST	Residuo_Modelo(1)	Residuo_padron_Modelo(1)			Q obs	Q Calc	Erro
1	2,26046055	1	0,27276959	0,22159418	2,33651579	0,07605524	0,75403314			182,163158	217,02801	0,19139354
2	2,31992805	1	0,28397928	0,63114331	2,47801016	0,15808211	1,56727069			208,895	300,61466	0,43907063
3	2,62917934	1	0,27669153	0,75998722	2,57791902	-0,0512603	-0,5082093			425,774194	378,372024	0,11133171
4	2,80509713	1	0,26197619	0,91292741	2,72757798	-0,0775192	-0,7685468			638,40625	534,045152	0,1634713
5	2,69244298	1	0,23325001	0,35527332	2,60387603	-0,0885669	-0,8780777			492,541667	401,676133	0,18448294
6	2,89147374	1	0,22530928	0,63572094	2,78076225	-0,1107115	-1,0976249			778,885714	603,6181	0,22502353
7	2,91434316	1	0,21801004	0,98001156	2,98537054	0,07102738	0,70418551			821	966,87546	0,17768022
8	3,2056466	1	0,17055506	1,20161558	3,33608313	0,13043654	1,29318465			1605,63415	2168,11908	0,35031949
9	3,19919994	1	0,21748394	1,20955335	3,09955186	-0,0996481	-0,9879392			1581,97619	1257,62702	0,20502785
10	3,2623667	1	0,20303289	1,37611194	3,25447142	-0,0078953	-0,0782761					

RMVI												
Log Qmax = + 1.62640493449401 + 1.45408731943952Log P + .823786167625734Log A												
Análise de Variância												Região 6
Fonte	GL	SQ	QM	F	Valor de p							
Regressão	2	1,97307693	0,98653846	879,190986	0,00113612							
Resíduo	2	0,0022442	0,0011221									
TOTAL	4	1,97532112										
R2 =	0,99886388			s(resíduo)	0,03349773		DW resíduo	1,7183872				
R2ajust. =	0,99772777			EAM	0,01568961		Q	2,2692404	0,1319646	1		
SIC=	-2,9285272			EPAM	0,00433676		Q*	5,8653113	0,0154421			
AIC=	-2,1479092			PRESS			RESET	0	#NÚM!	2	0	
HQ=	-3,534559			PRESS-AP	0,05567923		BP=	0,6117127	0,4341437			
				U de Theil	0,02208292		JB(resíduo)	3,0083686				
Inferências sobre os parâmetros da regressão												
		b0	b1	b2								
Coef. de regressão		1,62640493	1,45408732	0,82378617								
s(b)		0,22900184	0,62633227	0,02617221								
teste t		7,10214792	2,32159093	31,4756077								
nível de p		0,0192546	0,14597652	0,00100785								
Obs.	Log Qmax	Constante	Log P	Log A	Log Qmax_EST	Residuo_Modelo	Residuo_padron_Modelo	CÓDIGO	Q obs	Q Calc	Erro	
1	3,41302195	1	0,26951294	1,71678204	3,43256158	0,01953963	0,82492782	17340000	2588,34375	2707,4571	-0,0460191	
2	2,16599722	1	0,37106786	0,00072467	2,16656698	0,00056976	0,02405414	17350000	146,553846	146,746239	-0,0013128	
3	3,6599162	1	0,29622629	1,89800268	3,62069217	-0,039224	-1,6559674	17380000	4570	4175,34314	0,08635817	
4	3,8394225	1	0,31993844	2,12308013	3,84058741	0,0011649	0,04918016	17410000	6909,11632	6927,67346	-0,0026859	
5	3,8394225	1	0,32139128	2,14089091	3,85737224	0,01794973	0,75780527	17420000	6909,11632	7200,6589	-0,0421968	

RMVII											
Log Qmax = -.194382881425427 + 10.4443145068877Log P + .515744674707055Log A											
Análise de Variância						Região 7					
Fonte	GL	SQ	QM	F	Valor de p						
Regressão	2	0,05846185	0,02923093	661,8596	0,02747502						
Resíduo	1	4,4165E-05	4,4165E-05								
TOTAL	3	0,05850602									
R ² =	0,99924512			s(resíduo)	0,00664566	DW resíduo	3,15982928				
R ² _{ajust.} =	0,99773537			EAM	0,00307609	Q	2,7850958	#NÚM!	0		
SIC=	-4,5054383			EPAM	0,00098475	Q*	6,27717528	#NÚM!			
AIC=	-3,4569833			PRESS		RESET	0	#NÚM!	2	-1	
HQ=	-5,2875236			PRESS-AP	0,05567923	BP=	0	1			
				U de Theil	0,02761919	JB(resíduo)	1,04102059				
Inferências sobre os parâmetros da regressão											
		b ₀	b ₁	b ₂							
Coef. de regressão		-0,1943829	10,4443145	0,51574467							
s _(b)		0,36650316	1,39518724	0,01448453							
teste t		-0,5303716	7,48595903	35,6065898							
nível de p		0,68955321	0,08454135	0,01787457							
Obs.	Log Qmax	Constante	Log P	Log A	Log Qmax_EST	Residuo_Modelo(1)	Residuo_padron_Modelo(1)	CÓDIGO	Q obs	Q Calc	Erro
1	3,05000392	1	0,25959388	1,02672974	3,04642763	-0,0035763	-0,9320831	17200000	1122,02857	1112,82693	0,0082009
2	3,06278854	1	0,25623653	1,1357126	3,06756978	0,00478125	1,24612972	17210000	1155,54945	1168,34145	-0,0110701
3	3,24275877	1	0,25285303	1,5389188	3,24018287	-0,0025759	-0,6713526	17280000	1748,875	1738,53273	0,00591367
4	3,33537431	1	0,25863728	1,6090113	3,33674525	0,00137094	0,35730596	17300000	2164,58333	2171,42708	-0,0031617

RMVIII											
Log Qmax = -2.06695251455794 + 14.0857065472978Log P + 1.05460790858541Log A											
Análise de Variância											Região 8
Fonte	GL	SQ	QM	F	Valor de p						
Regressão	2	0,18557773	0,09278887	322,910097	0,03931952						
Resíduo	1	0,00028735	0,00028735								
TOTAL	3	0,18586508									
R2 =	0,99845398			s(resíduo)	0,01695146		DW resíduo	1,60467389			
R2ajust. =	0,99536193			EAM	0,00682023		Q	1,02582845	#NÚM!	0	
SIC=	-3,6921008			EPAM	0,00304756		Q*	3,10777866	#NÚM!		
AIC=	-2,6436457			PRESS			RESET	0	#NÚM!	2	-1
HQ=	-4,4741861			PRESS-AP	0,05567923		BP=	0	1		
				U de Theil	0,03389017		JB(resíduo)	0,1486028			
Inferências sobre os parâmetros da regressão											
		b0	b1	b2							
Coef. de regressão		-2,0669525	14,0857065	1,05460791							
s(b)		0,3770383	1,35516244	0,05567604							
teste t		-5,4820757	10,3941093	18,941864							
nível de p		0,1148646	0,0610602	0,03357797							
Obs.	Log Qmax	Constante	Log P	Log A	Log Qmax EST	Residuo Modelo(2)	Residuo padron. Modelo(2)	CÓDIGO	Q obs	Q Calc	Erro
1	1,76604086	1	0,2764618	-0,0566044	1,76751186	0,001471	0,15030224	18409000	58,35	58,5479722	-0,0033928
2	2,26014836	1	0,26292547	0,58040146	2,24863445	-0,0115139	-1,1764569	18420000	182,032258	177,269678	0,02616339
3	2,23299611	1	0,23401082	0,94975047	2,23086955	-0,0021266	-0,2172862	18423000	171	170,164729	0,00488463
4	2,29151685	1	0,25623653	0,72194245	2,30368632	0,01216947	1,24344085	18435000	195,666667	201,227029	-0,0284175

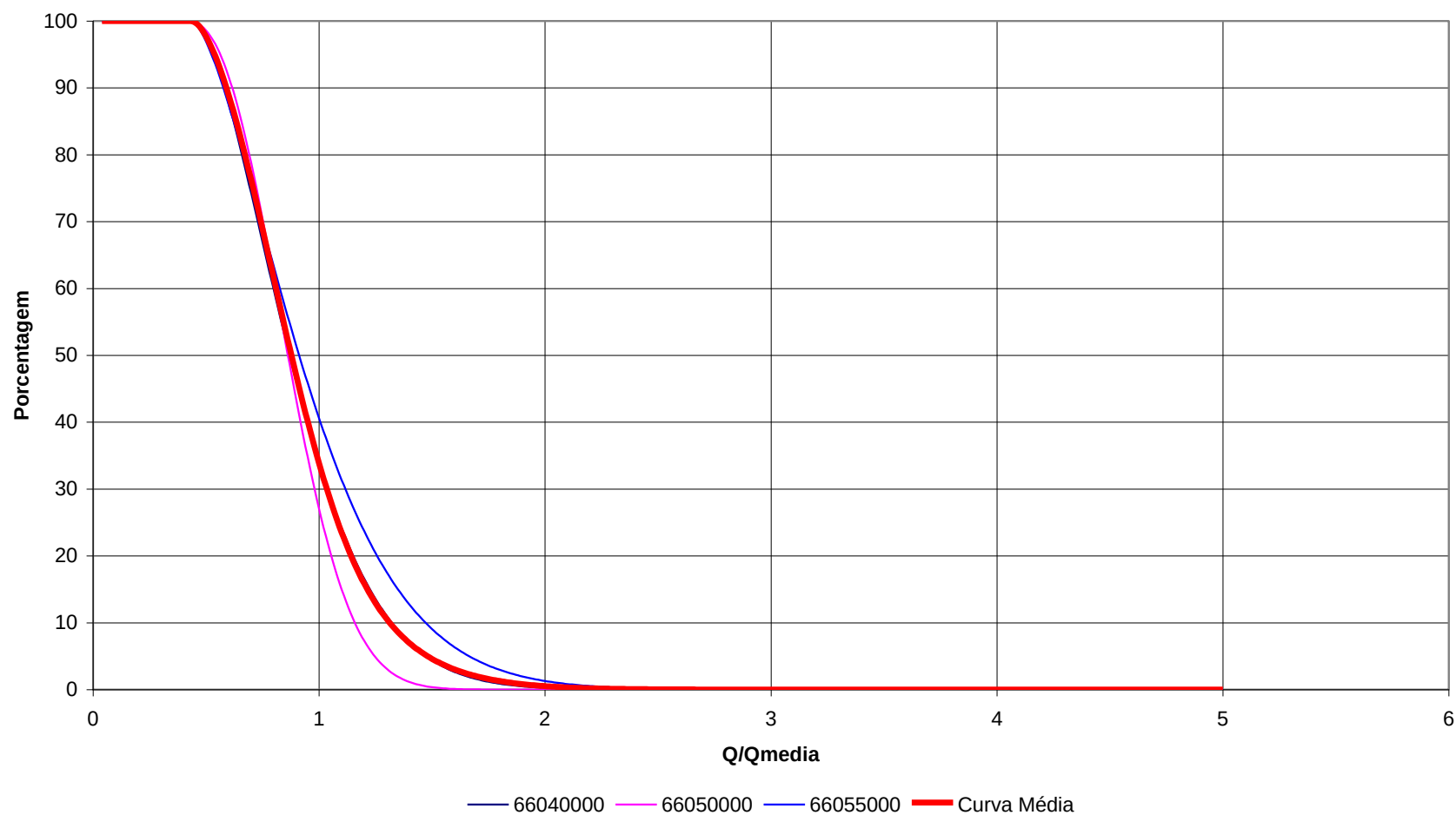
RM IX											
Log Qmax = + 1.07745185558453 + 2.84132200288946Log P + .854734664855049Log A											
Análise de Variância											Região 9
Fonte	GL	SQ	QM	F	Valor de p						
Regressão	2	2,59757029	1,29878514	92,0938648	3,0023E-06						
Resíduo	8	0,11282273	0,01410284								
TOTAL	10	2,71039302									
R ² =	0,95837403			s(resíduo)	0,11875538		DW resíduo	2,22054982			
R ² _{ajust.} =	0,94796754			EAM	0,08981408		Q	1,89875584	0,965230737	7	
SIC=	-1,7049799			EPAM	0,03099212		Q*	5,23252009	0,631611104		
AIC=	-1,4435415			PRESS	0,21764089		RESET	0,64257266	0,558649087	2	6
HQ=	-1,9793882			PRESS-AP	0,04728269		BP=	1,25430944	0,262731196		
				U de Theil	0,18396384		JB(resíduo)	0,63032582			
Inferências sobre os parâmetros da regressão											
		b ₀	b ₁	b ₂							
Coef. de regressão		1,07745186	2,841322	0,85473466							
S(b)		0,19411578	0,82708454	0,08594254							
teste t		5,55056289	3,43534652	9,94542018							
nível de p		0,00054062	0,00888453	8,8421E-06							
Obs.	Log Qmax	Constante	Log P	Log A	Log Qmax EST	Residuo_Modelo	Residuo_padron_Modelo	CÓDIGO	Q obs	Q Calc	Erro
1	2,11623761	1	0,18469143	0,48439523	2,01624908	-0,0999885	-0,9413517	15050000	130,688571	103,812363	0,20565079
2	2,57307283	1	0,14705767	1,27178052	2,58232495	0,00925212	0,08710495	15120001	374,173333	382,230158	-0,0215323
3	2,95844	1	0,30297994	1,39346324	3,12935675	0,17091675	1,6091122	15750000	908,740741	1346,96636	-0,4822339
4	3,15195457	1	0,31848073	1,17751688	2,98882264	-0,1631319	-1,5358213	15820000	1418,90909	974,591548	0,31314025
5	2,25687803	1	0,24104815	0,69050795	2,35254835	0,09567032	0,90069744	17091000	180,666667	225,189612	-0,246437
6	3,31907829	1	0,28375338	1,74295722	3,37345254	0,05437425	0,51191164	17093000	2084,86667	2362,93916	-0,1333766
7	2,93592691	1	0,26927939	1,40233121	3,04118241	0,10525549	0,99093795	17095000	862,833333	1099,46752	-0,2742525
8	3,14096571	1	0,27485032	1,5690063	3,19947419	0,05850848	0,55083374	17120000	1383,45714	1582,9755	-0,1442172
9	2,95036485	1	0,28148789	1,15693058	2,86611826	-0,0842466	-0,7931477	17122000	892	734,713903	0,17632971
10	3,41115655	1	0,27943879	1,7566695	3,37291375	-0,0382428	-0,3600405	17123000	2577,25	2360,00948	0,0842916
11	3,93721131	1	0,28824923	2,26079872	3,82884376	-0,1083676	-1,0202368	17.130.000	8653,88889	6742,85408	22,08%

RM X											
Log Qmax = -9.51232332775132 + 51.1275839213314Log P + 1.69112764341264Log A											
Análise de Variância											Região 10
Fonte	GL	SQ	QM	F	Valor de p						
Regressão	2	1,13680433	0,5684022	11,8896819	0,07758143						
Resíduo	2	0,09561268	0,0478063								
TOTAL	4	1,23241701									
R ² =	0,92241857			s(resíduo)	0,21864661		DW resíduo	1,21645599			
R ² _{ajust.} =	0,84483713			EAM	0,09951244		Q	1,27236435	0,25932	1	
SIC=	-1,2990725			EPAM	0,04358539		Q*	8,54165422	0,00347		
AIC=	-0,5184545			PRESS			RESET	0	#NÚM!	2	0
HQ=	-1,9051043			PRESS-AP	0,12150217		BP=	0	1		
				U de Theil	0,16302115		JB(resíduo)	0,53265274			
Inferências sobre os parâmetros da regressão											
		b ₀	b ₁	b ₂							
Coef. de regressão		-9,5123233	51,127584	1,69112764							
S _(b)		6,50165703	29,068614	0,38691135							
teste t		-1,4630614	1,7588587	4,37084006							
nível de p		0,2809922	0,2206739	0,04856302							
Obs.	Log Qmax	Constante	Log P	Log A	Log Qmax EST	Residuo Modelo(2)	Residuo padron Modelo(2)	CÓDIGO	Q obs	Q Calc	Erro
1	1,99332343	1	0,2172207	0,36138215	2,20478732	0,21146389	1,367756	2,4E+07	98,4744	160,246	-0,627286
2	3,22459399	1	0,2153732	1,02030326	3,22464867	5,4674E-05	0,000354	2,4E+07	1677,24	1677,446	-0,0001259
3	3,28113168	1	0,2076344	1,27107895	3,25307696	-0,0280547	-0,181459	2,4E+07	1910,43	1790,923	0,06255612
4	2,98726289	1	0,2224563	0,68782136	3,02452542	0,03726253	0,241015	2,5E+07	971,098	1058,097	-0,0895885
5	2,43091315	1	0,2193225	0,30103	2,21018677	-0,2207264	-1,427666	2,5E+07	269,72	162,2508	0,39844738

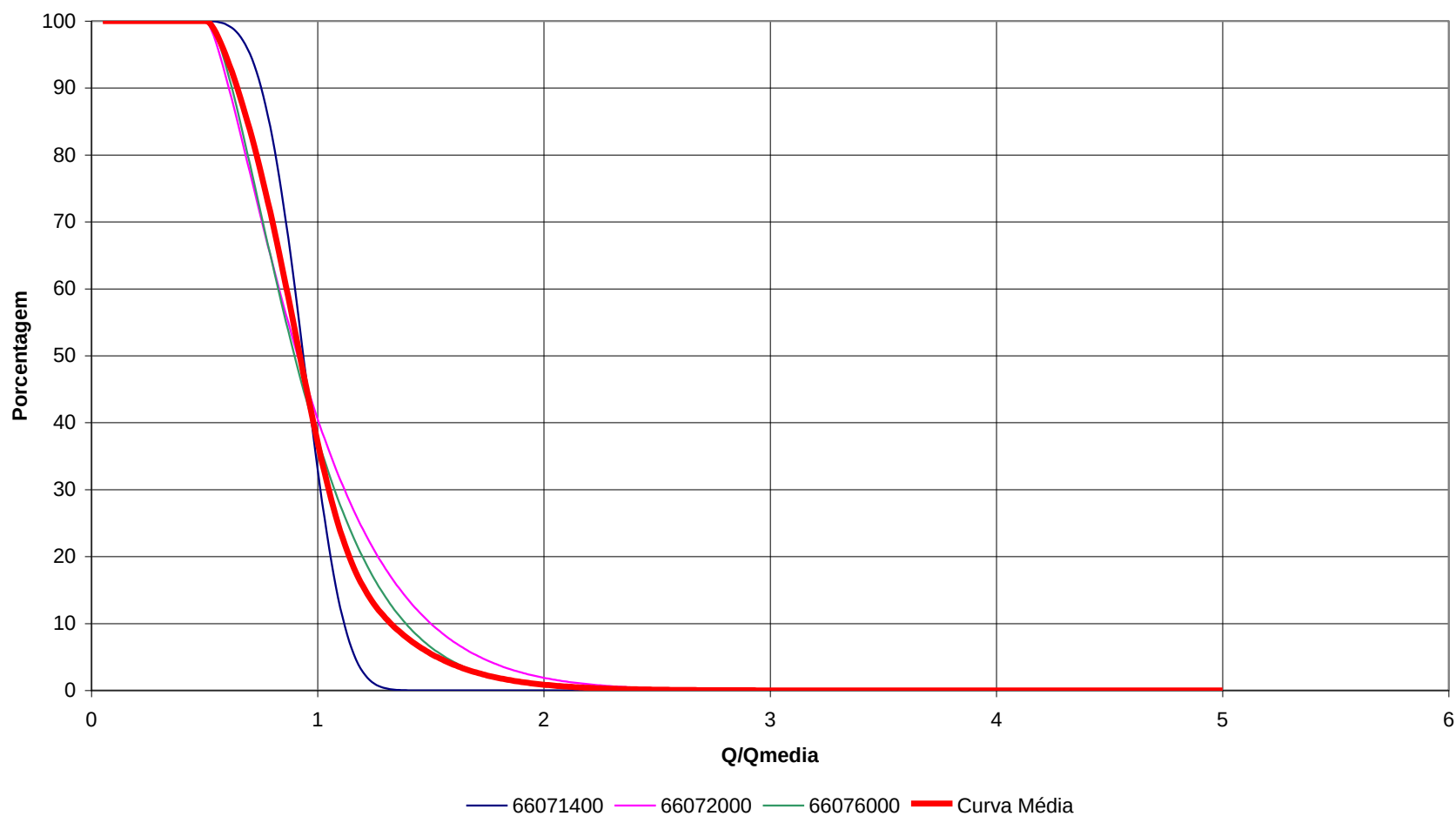
RM XI											
Log Qmax = + 1.32036582699353 + 2.6196065822346Log P + .820294539404335Log A											
Análise de Variância											Região 11
Fonte	GL	SQ	QM	F	Valor de p						
Regressão	2	2,08139243	1,04069622	63,6761651	0,00092735						
Resíduo	4	0,0653743	0,01634358								
TOTAL	6	2,14676673									
R2 =	0,96954755			s(resíduo)	0,12784199		DW resíduo	2,40652945			
R2ajust. =	0,95432133			EAM	0,07585886		Q	1,23460383	0,744717408	3	
SIC=	-1,6675061			EPAM	0,03100285		Q*	3,16117835	0,367435916		
AIC=	-1,1725481			PRESS			RESET	14,8951281	0,062912359	2	2
HQ=	-2,092342			PRESS-AP	0,12150217		BP=	0,76190858	0,3827319		
				U de Theil	0,18411209		JB(resíduo)	2,01847606			
Inferências sobre os parâmetros da regressão											
		b0	b1	b2							
Coef. de regressão		1,32036583	2,61960658	0,82029454							
s(b)		0,5562848	2,45941191	0,07270026							
teste t		2,37354288	1,06513536	11,2832408							
nível de p		0,07652511	0,34683903	0,00035157							
Obs.	Log Qmax	Constante	Log P	Log A	Log Qmax EST	Residuo_Modelo(3)	Residuo_padron_Modelo(3)	CÓDIGO	Q obs	Q Calc	Erro
1	2,48428042	1	0,17638069	0,88813623	2,51094715	0,02666673	0,25547113	26015000	304,986364	324,30015	-0,0633267
2	2,33871347	1	0,23223352	0,73998904	2,53573525	0,19702178	1,88749726	26040000	218,129032	343,348578	-0,5740618
3	1,72754126	1	0,23044892	-0,3577829	1,630564	-0,0969773	-0,9290562	26045000	53,4	42,7133863	0,20012385
4	2,92372314	1	0,23879856	1,23778922	2,96127585	0,03755271	0,35976043	26050000	838,925	914,694038	-0,0903168
5	3,14274338	1	0,23325001	1,39856477	3,07862413	-0,0641193	-0,6142718	26100000	1389,13158	1198,46162	0,13725839
6	3,3271015	1	0,22063102	1,61449288	3,22269199	-0,1044095	-1,0002582	26200000	2123,74074	1669,90587	0,21369598
7	3,33672299	1	0,2143139	1,77887794	3,34098778	0,00426479	0,04085734	26300000	2171,31579	2192,74326	-0,0098684

ANEXO IV – CURVAS DE PERMANÊNCIA MÉDIAS

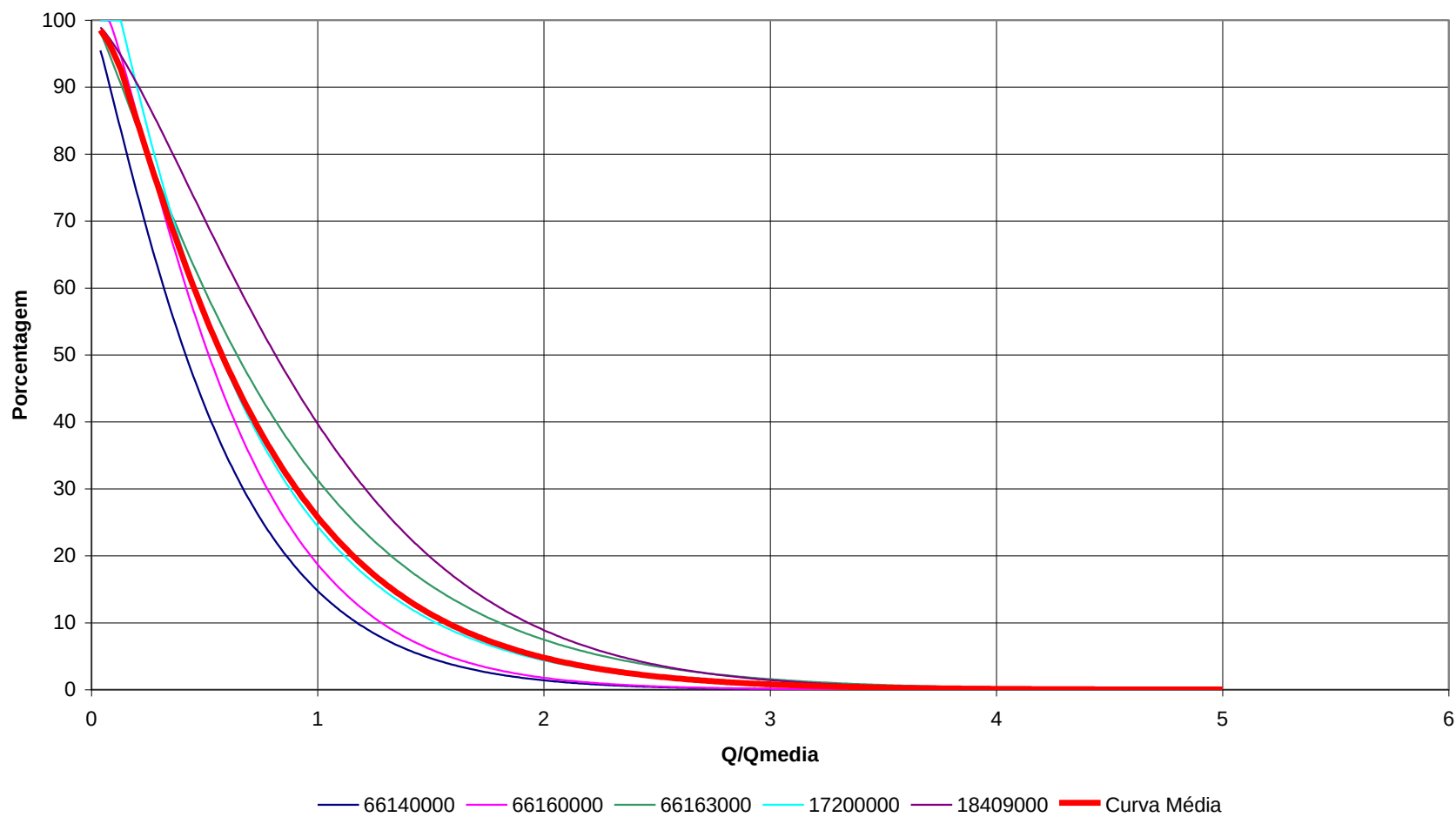
Curvas de permanência adimensionais (Q/Qm)- RCP-1



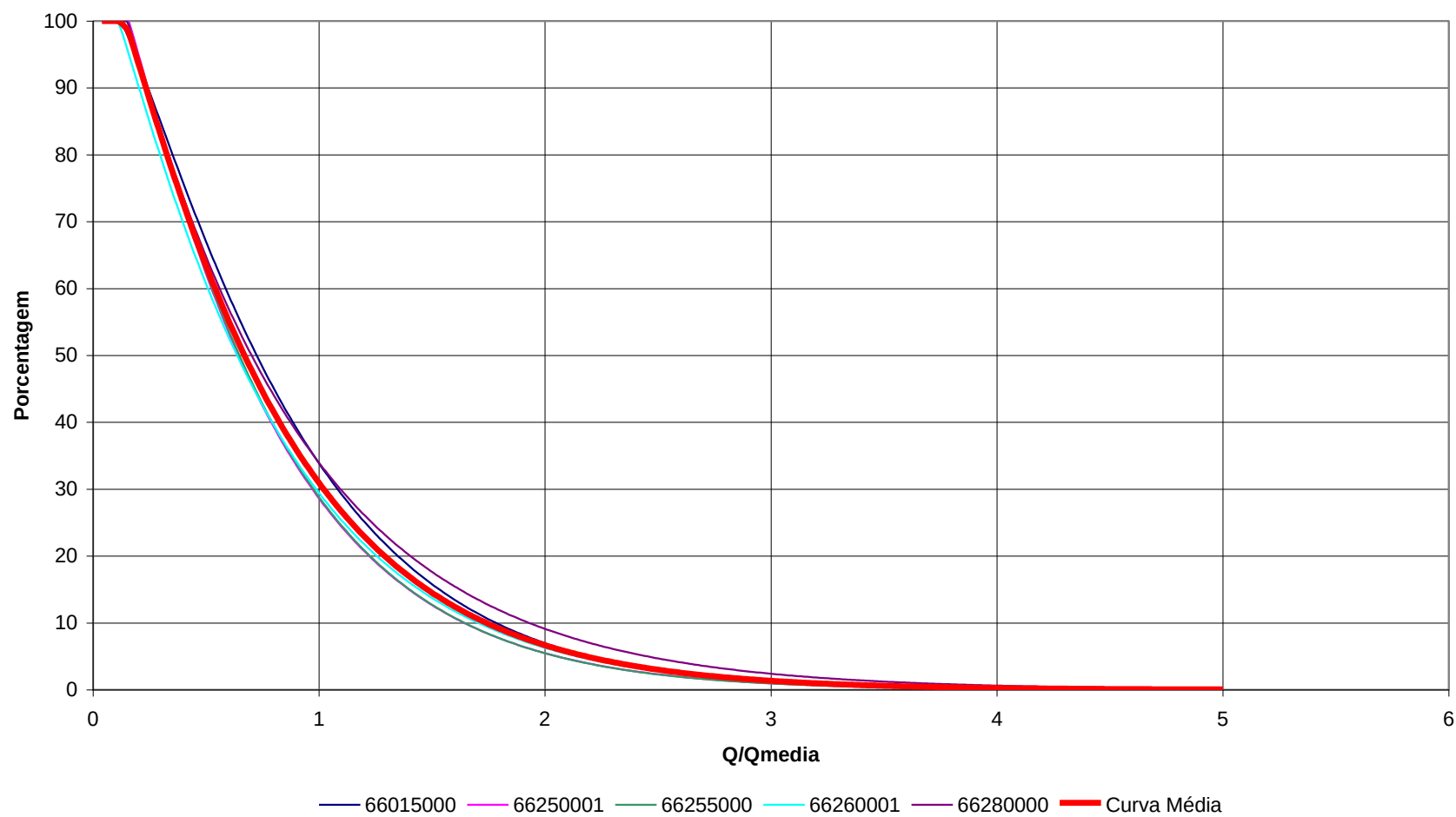
Curva de permanência adimensional (Q/Qm)- RCP2



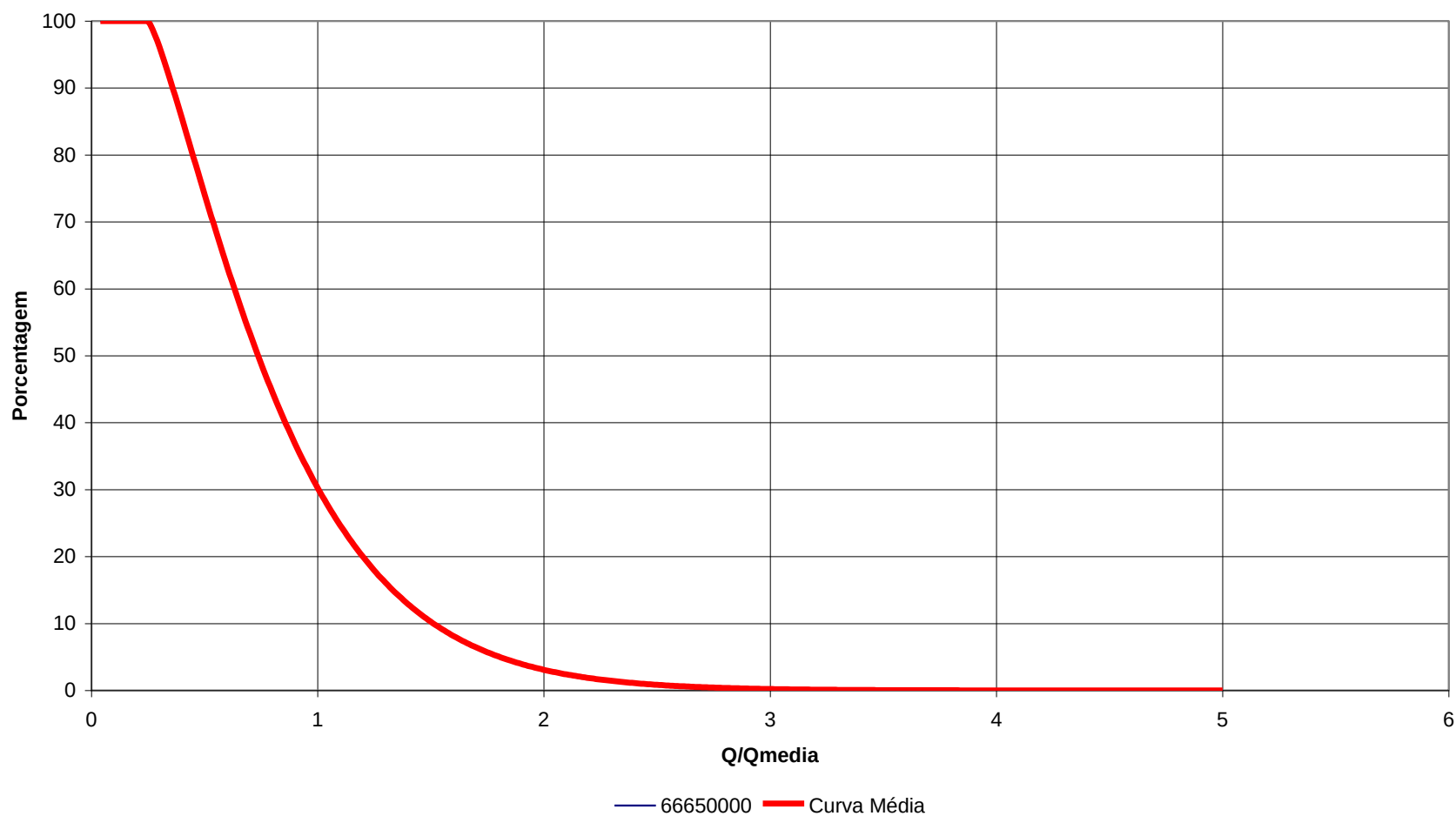
Curva de permanência adimensional (Q/Q_m) - RCP3



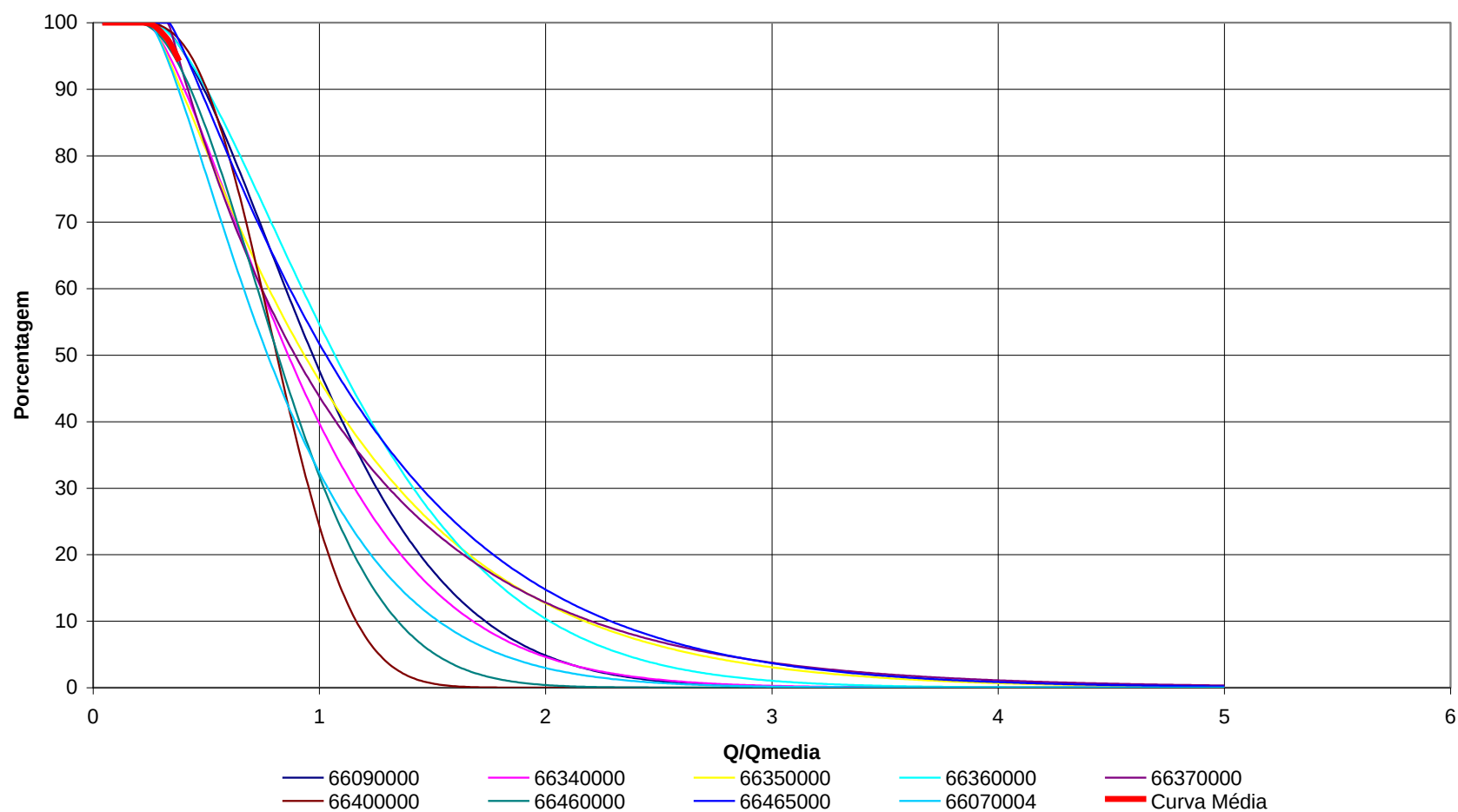
Curva de permanência adimensional (Q/Q_m) - RCP4



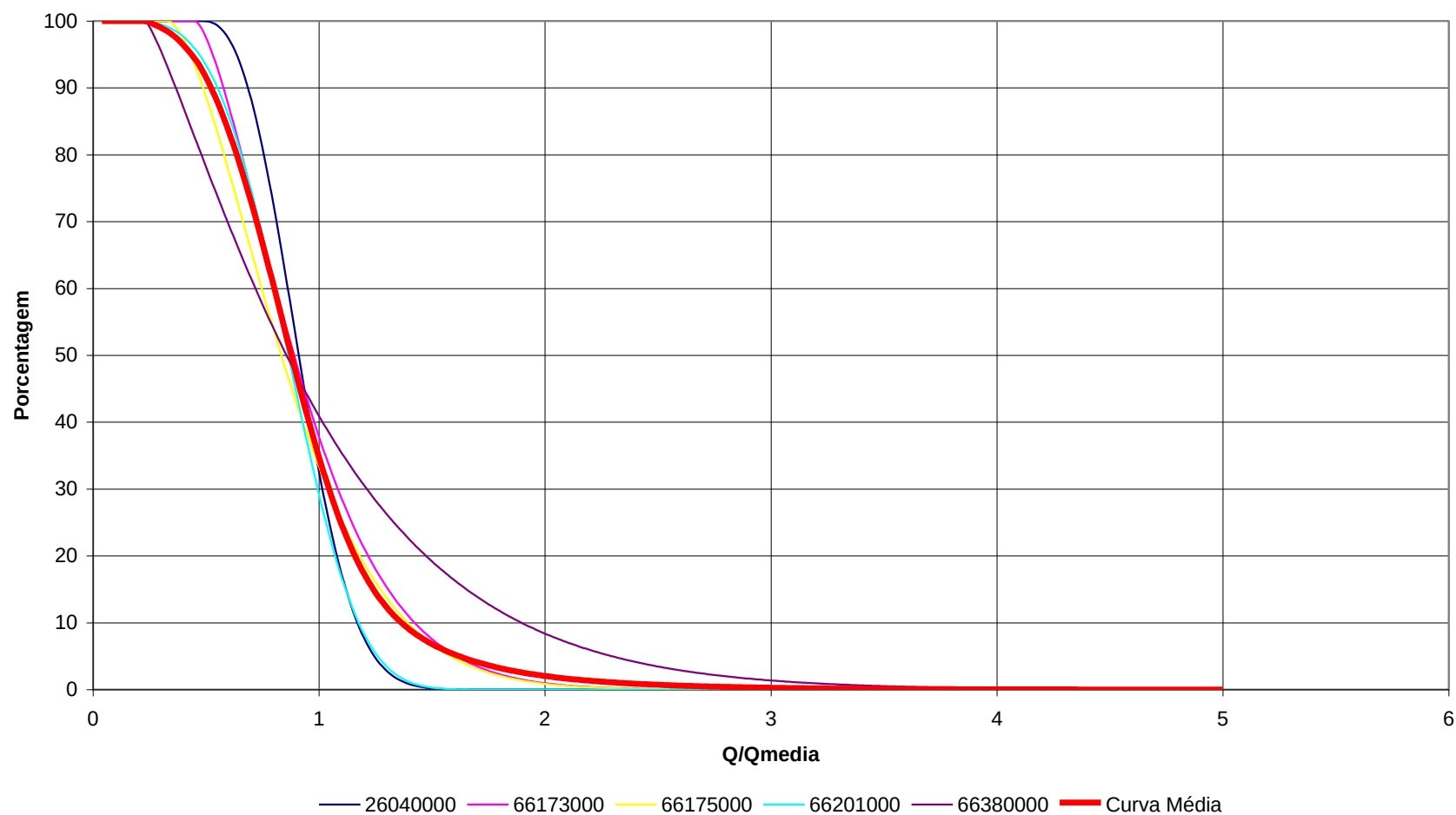
Curva de permanência adimensional (Q/Q_m -) RCP5



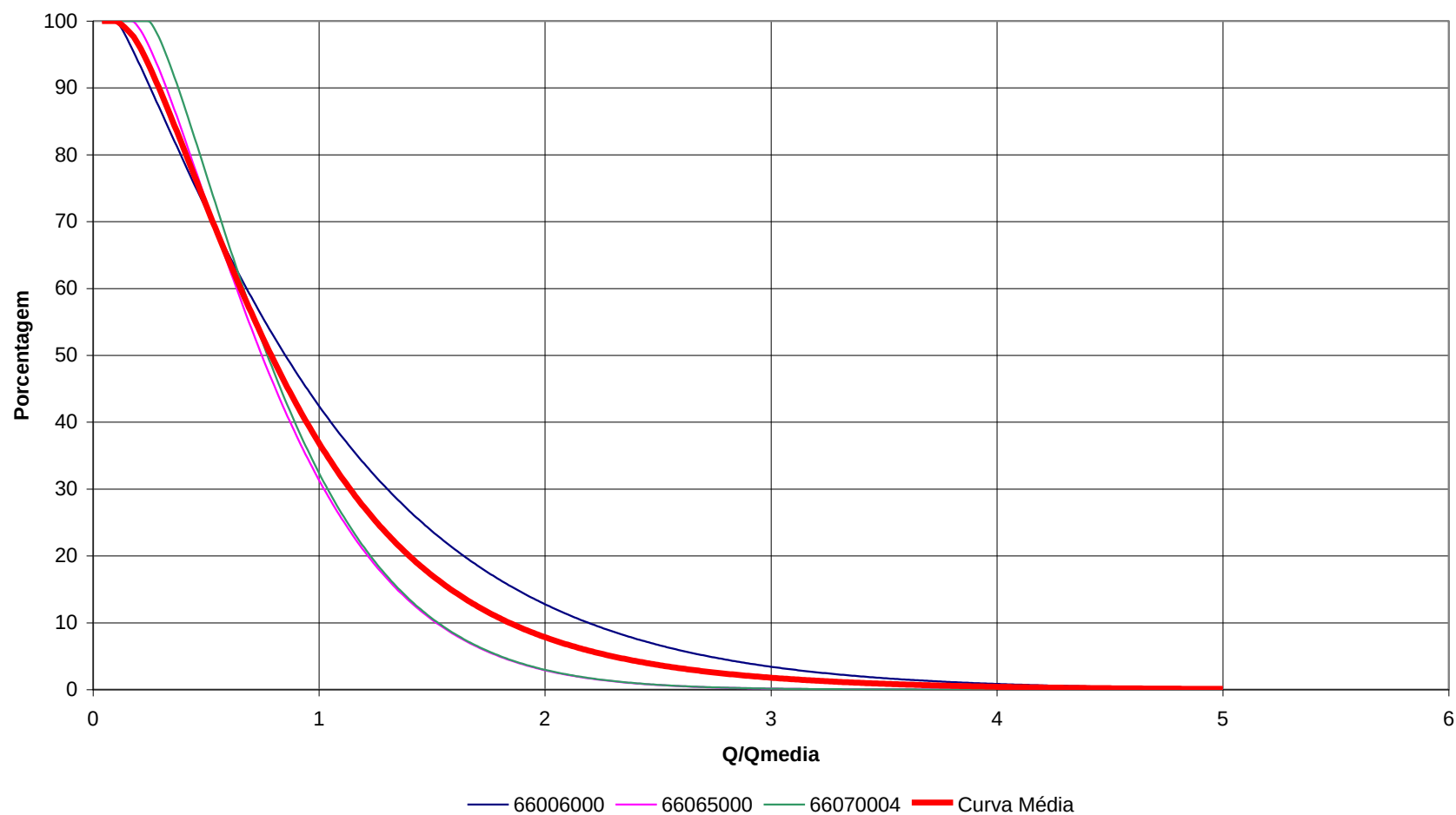
Curva de permanência adimensional (Q/Qm) - RCP6



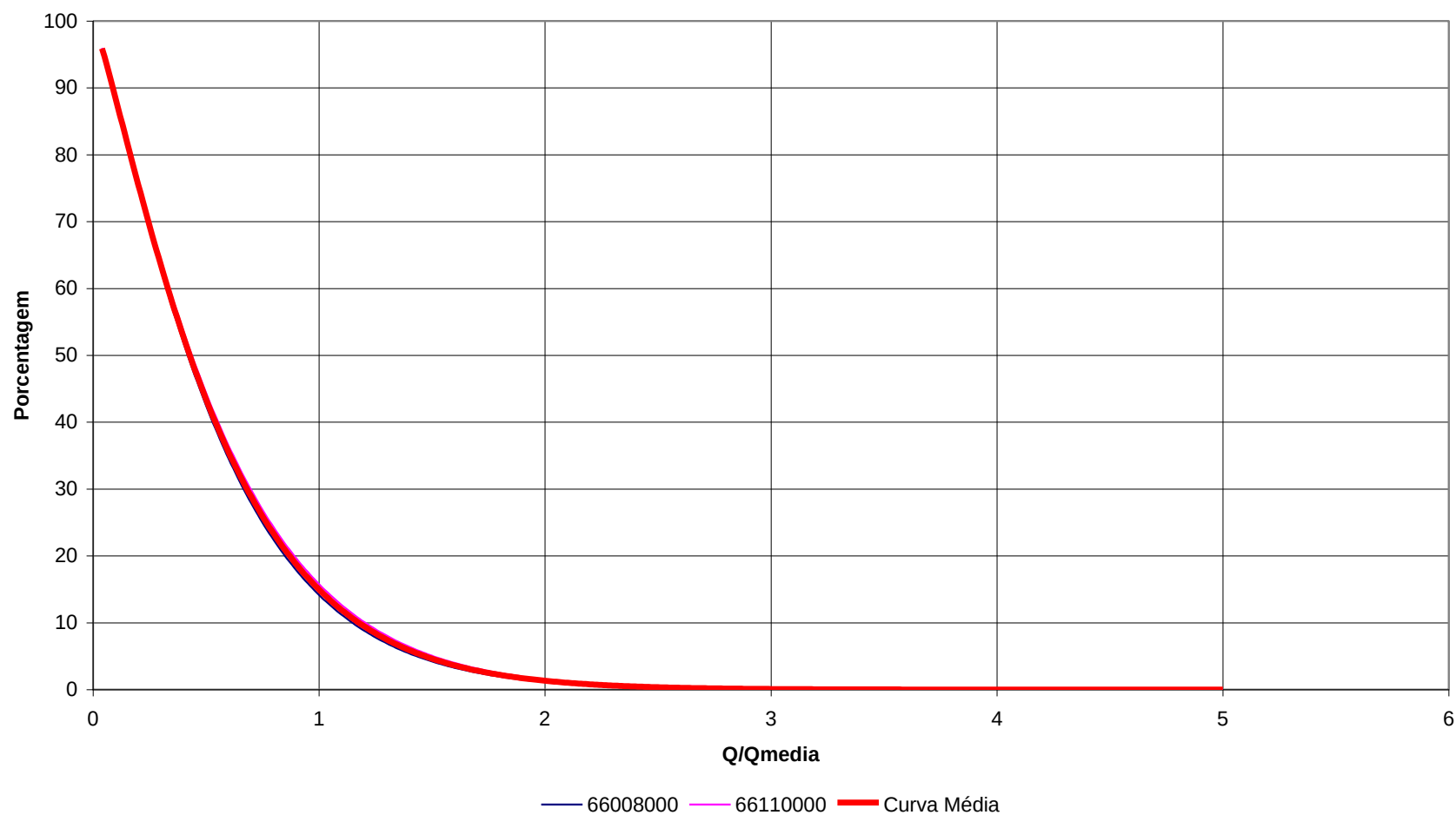
Curva de permanência adimensional (Q/Qm) -RCP8



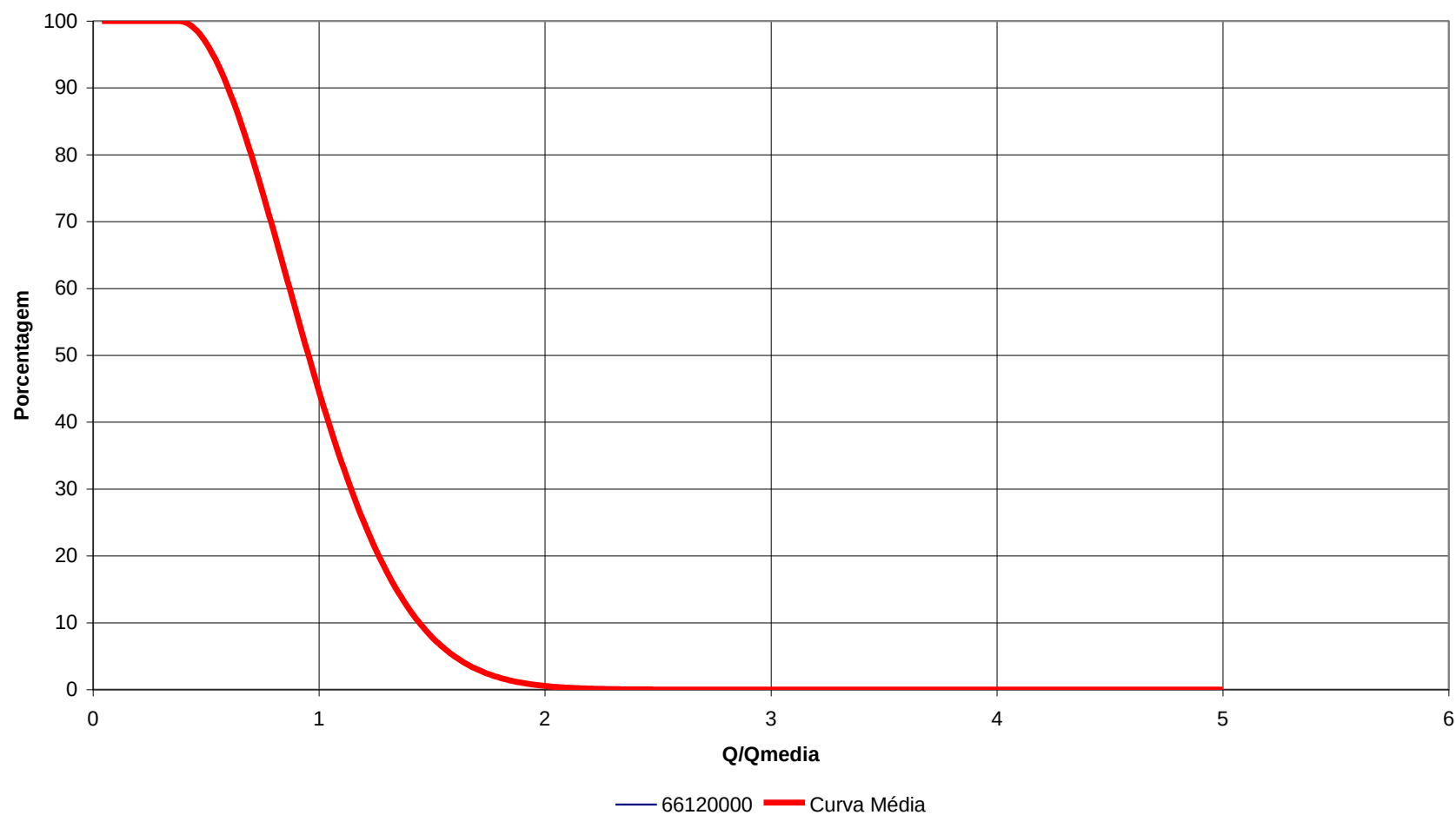
Curva de permanência adimensional (Q/Qm) - RCP9



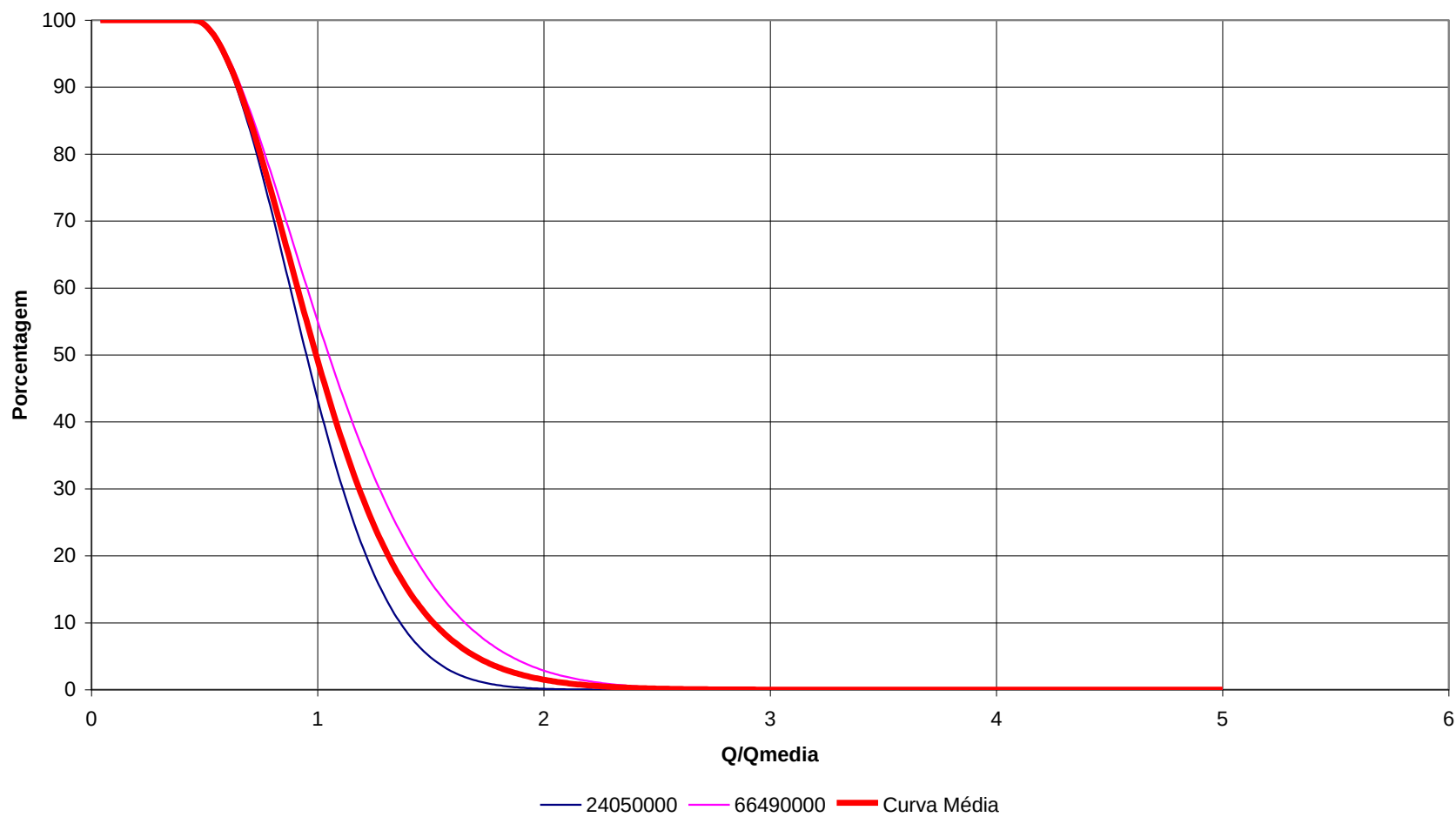
Curva de permanência adimensional (Q/Qm) - RCP10



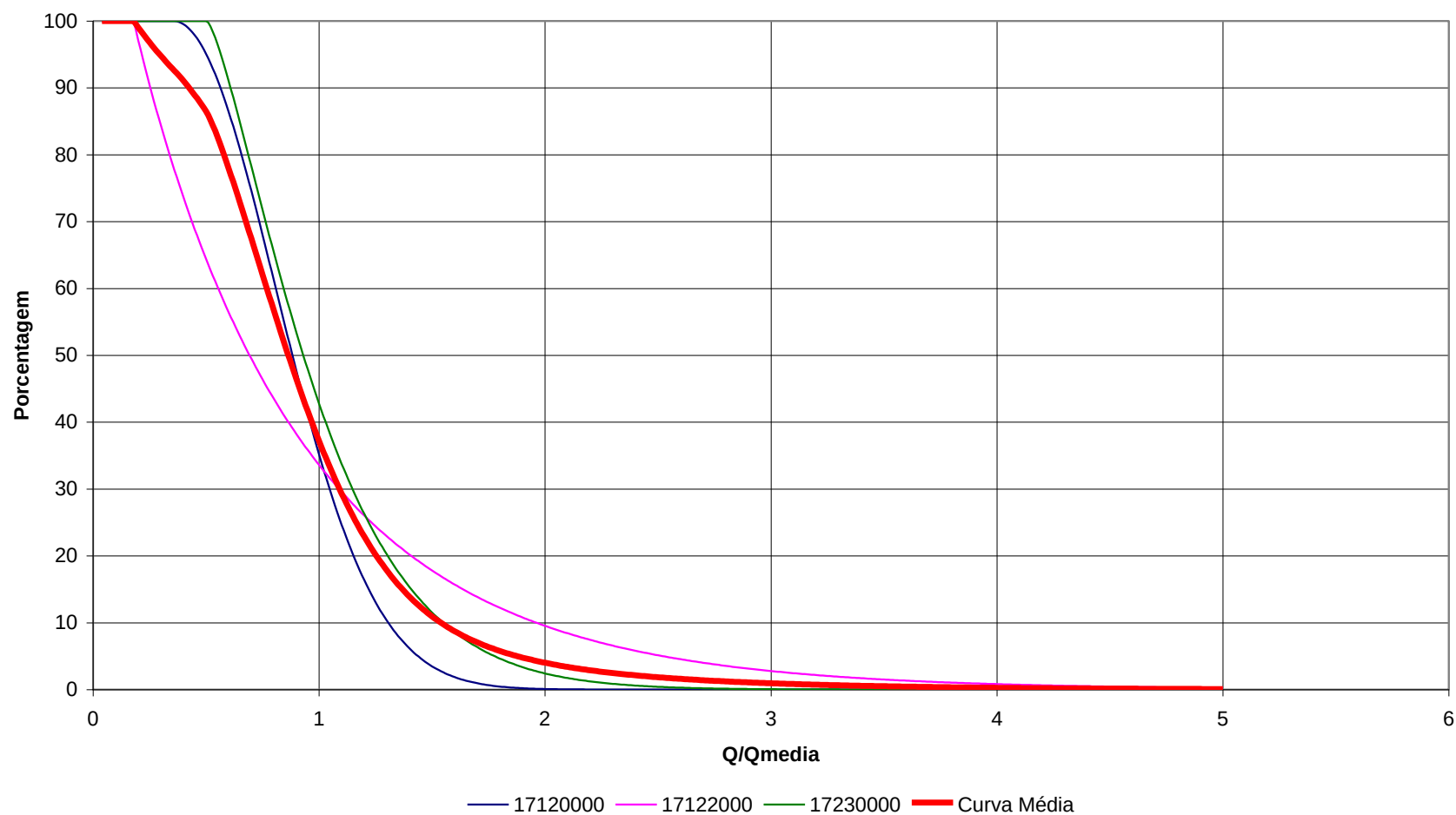
Curva de permanência adimensional (Q/Qm) - RCP11



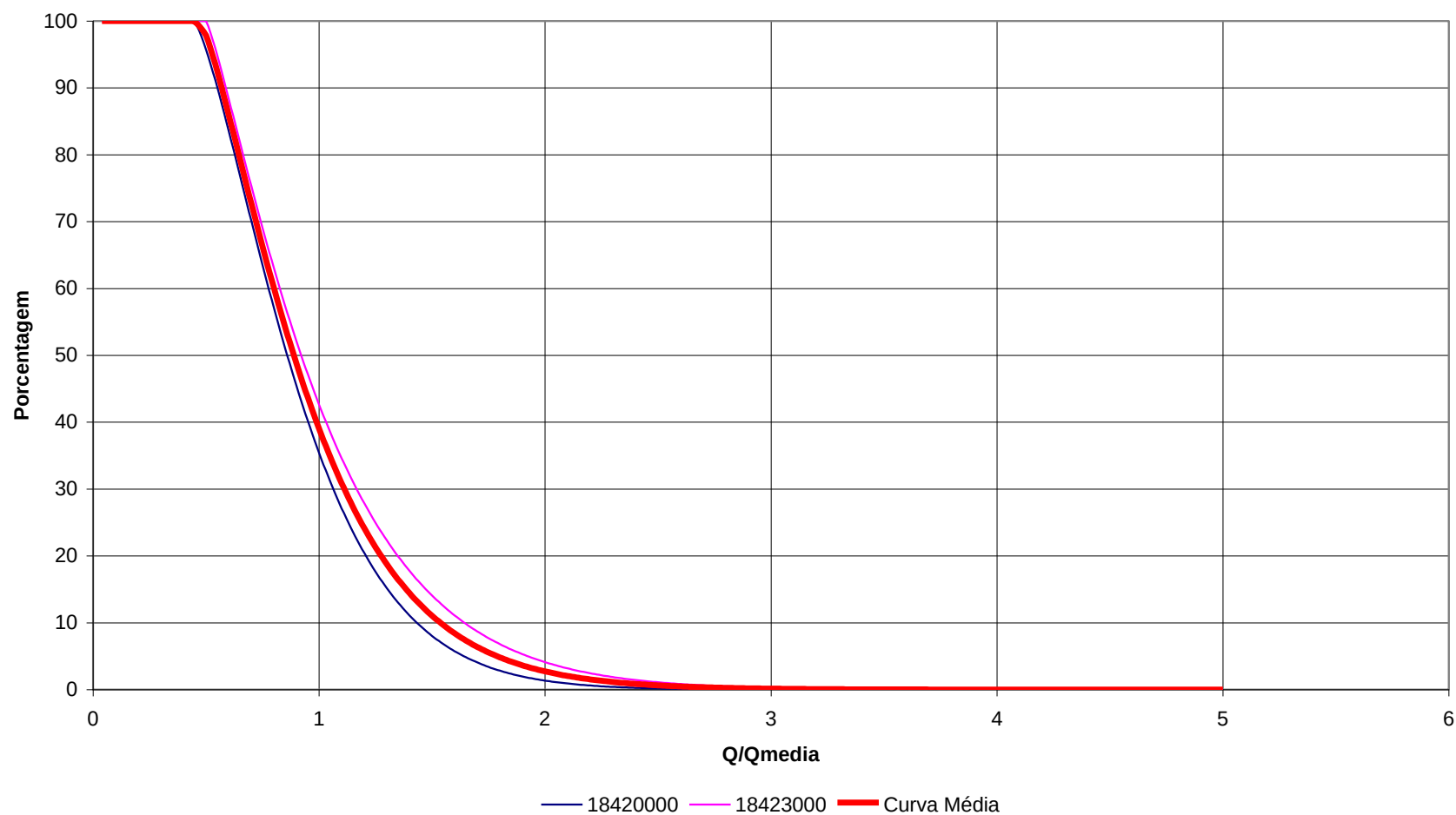
Curva de permanência adimensional (Q/Q_m) - RCP12



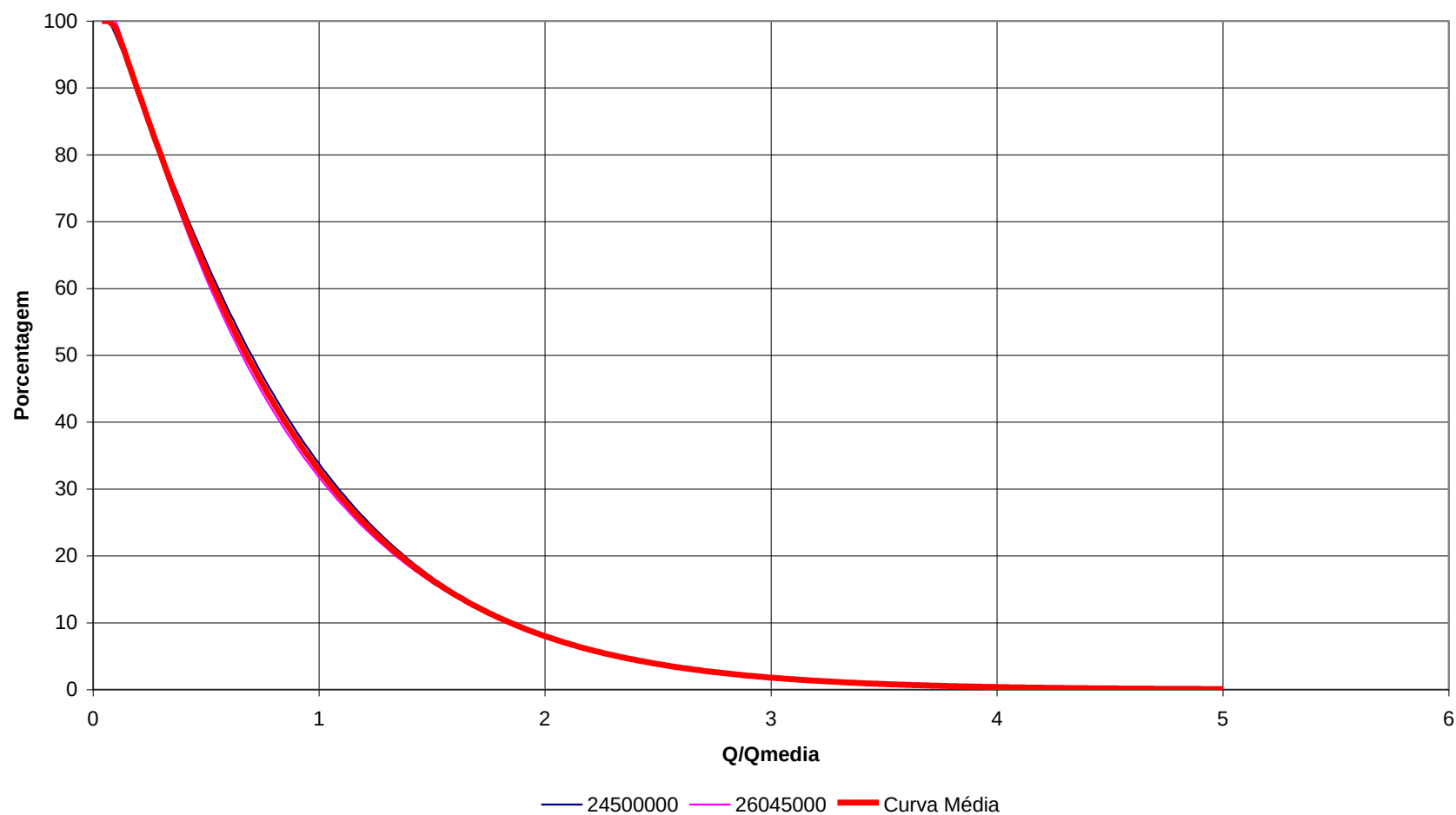
Curva de permanência adimensional (Q/Qm) - RCP14



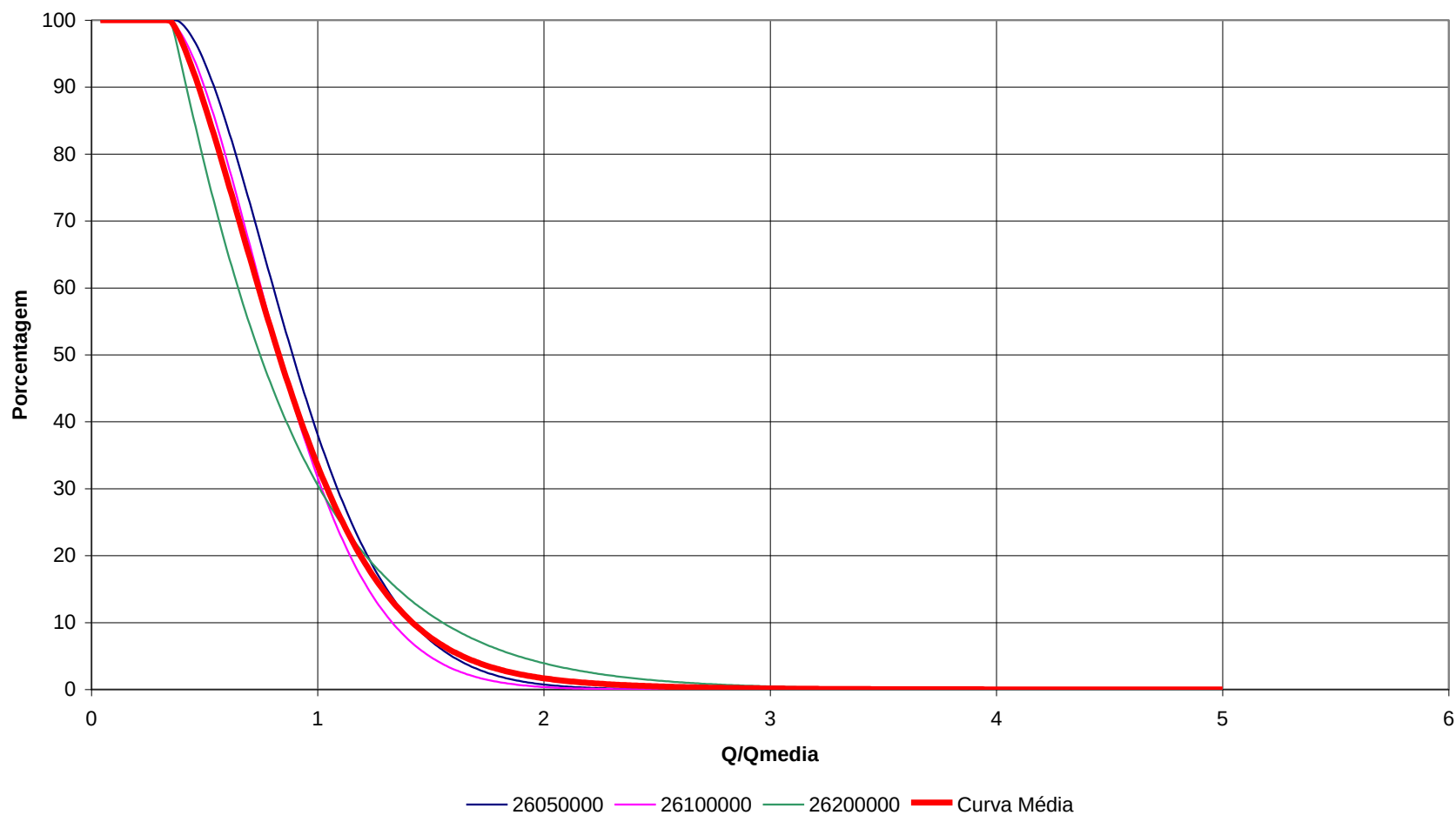
Curva de permanência adimensional (Q/Qm) - RCP15



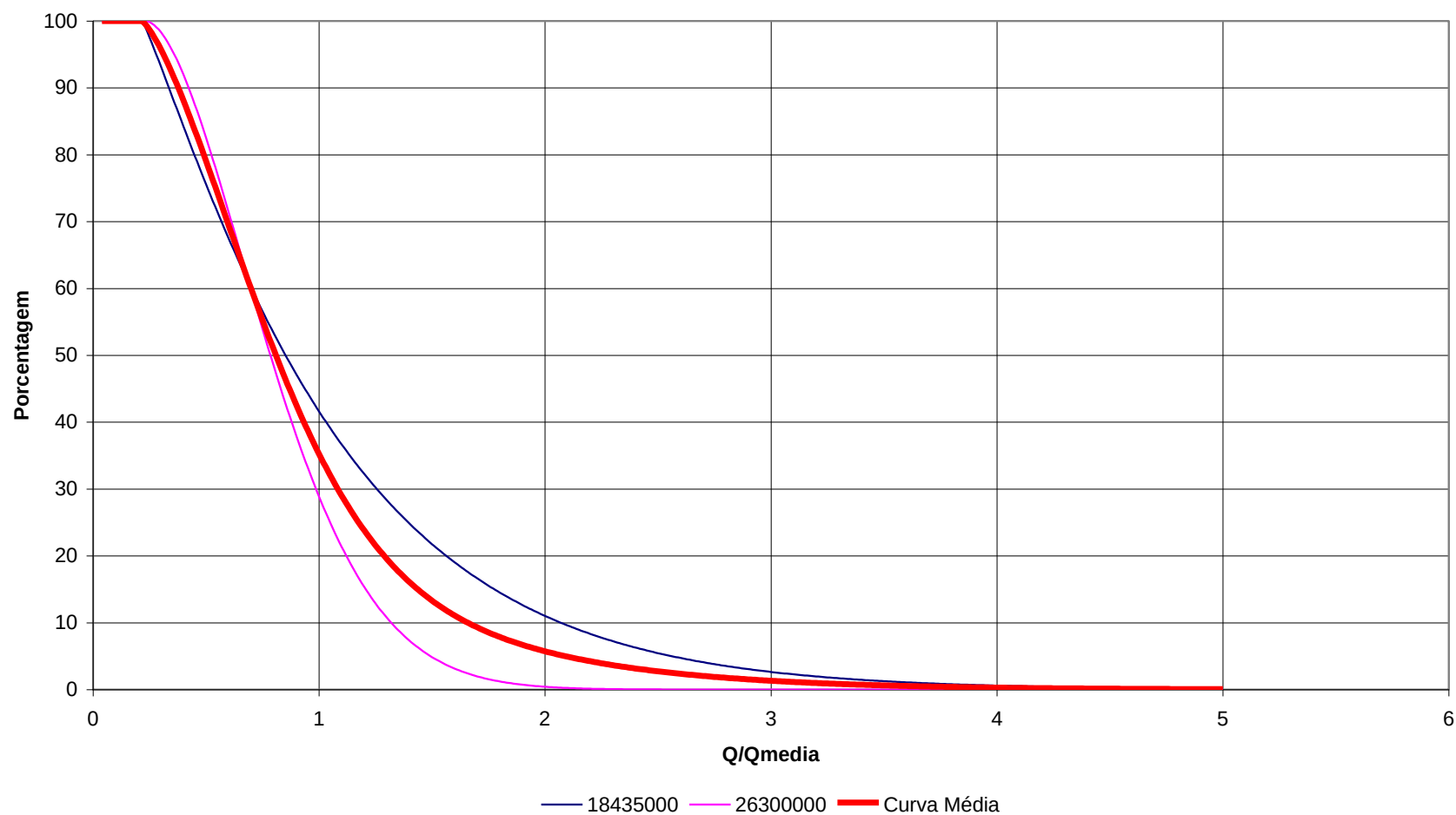
Curva de permanência adimensional (Q/Qm)- RCP16



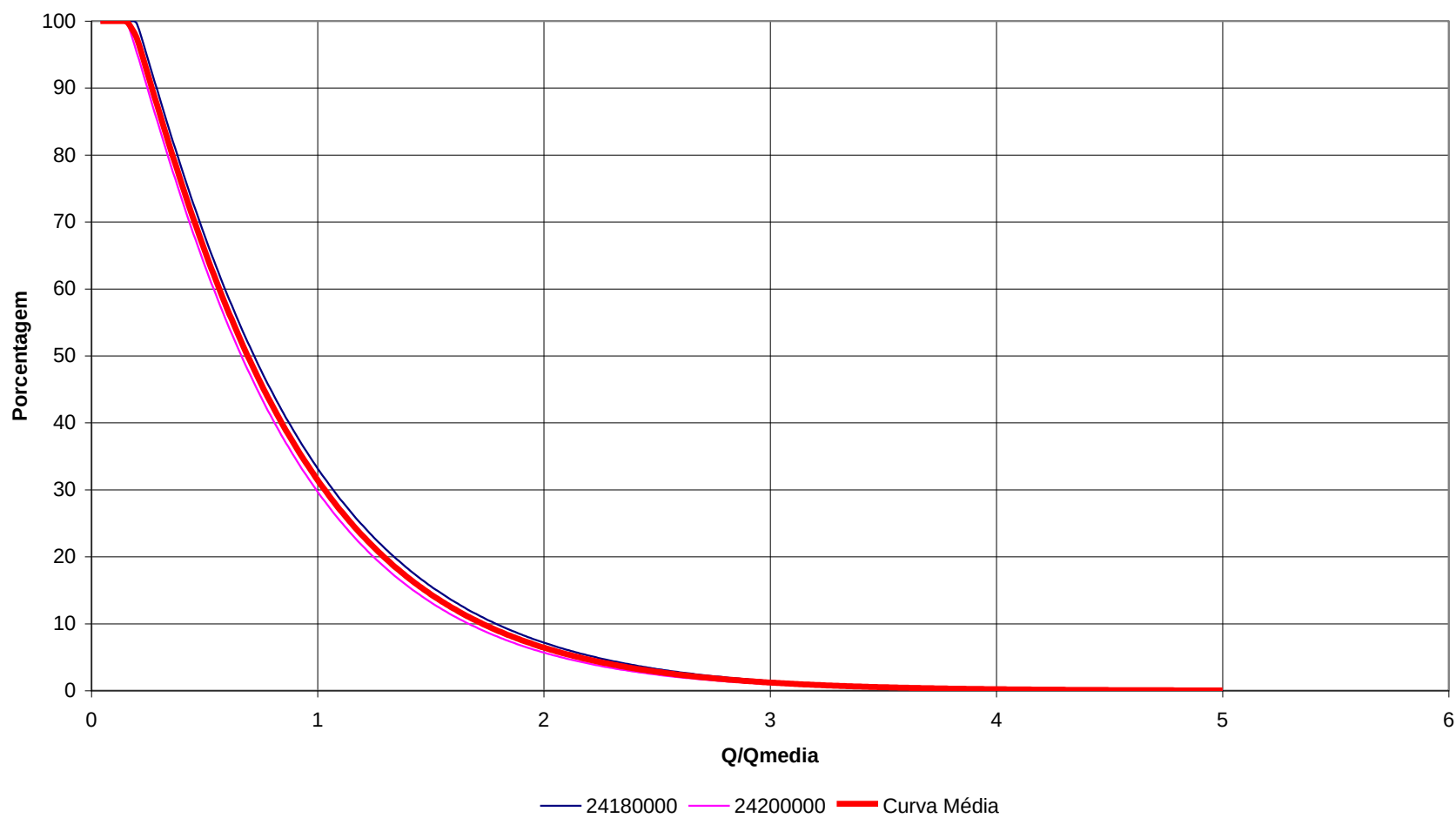
Curva de permanência adimensional (Q/Qm) - RCP17



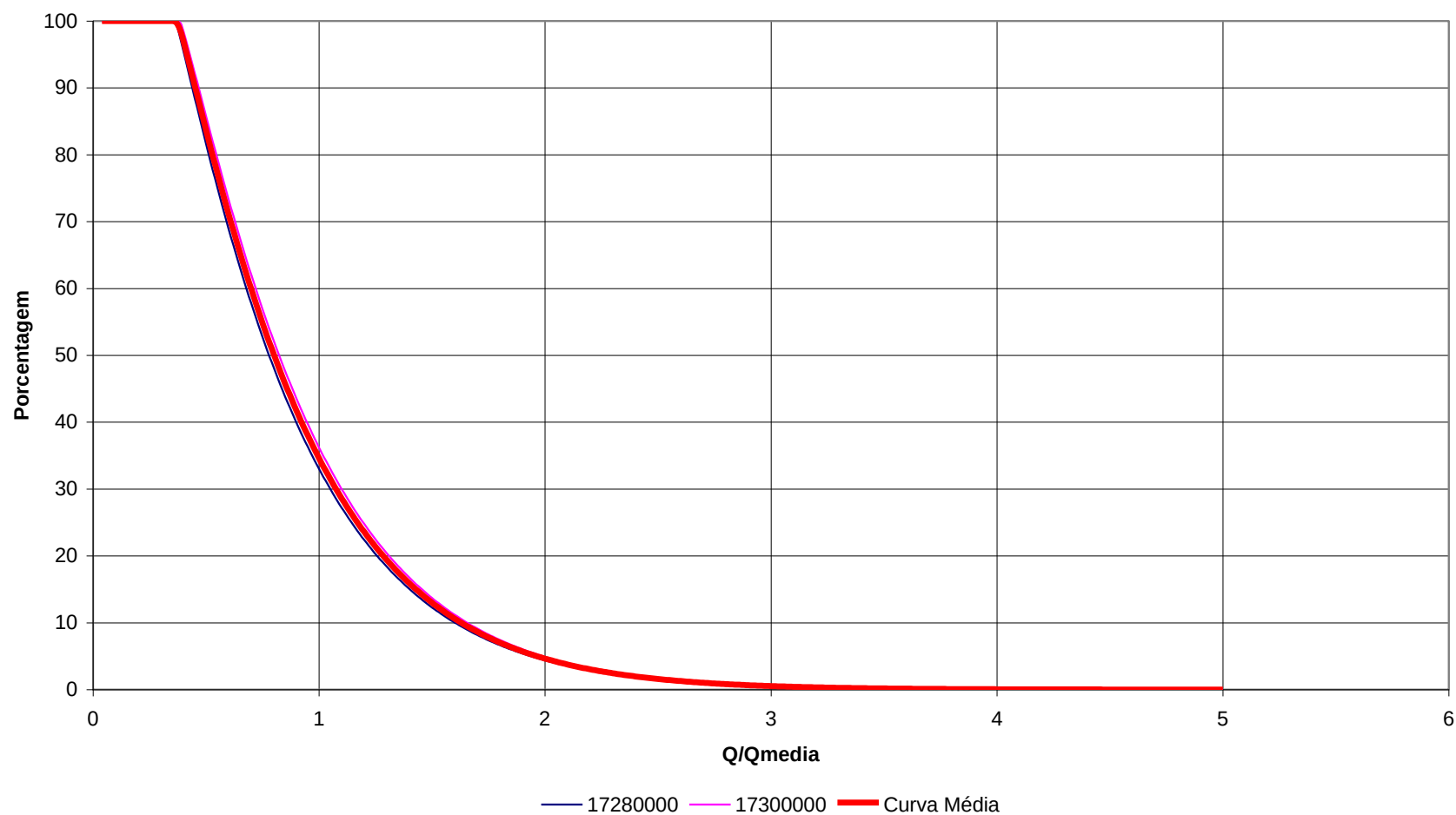
Curva de permanência adimensional (Q/Q_m) - RCP18



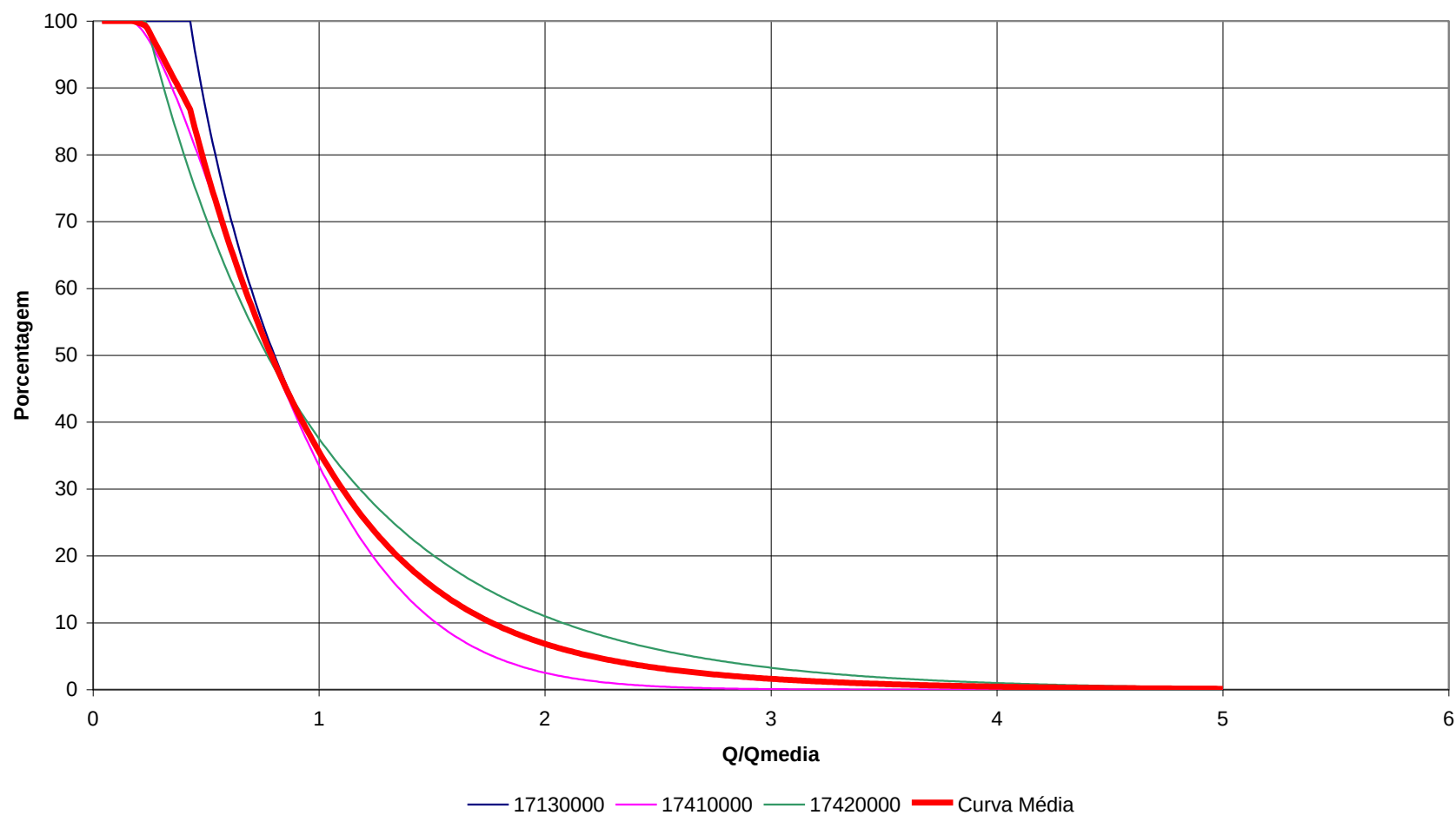
Curva de permanência adimensional (Q/Qm) - RCP19



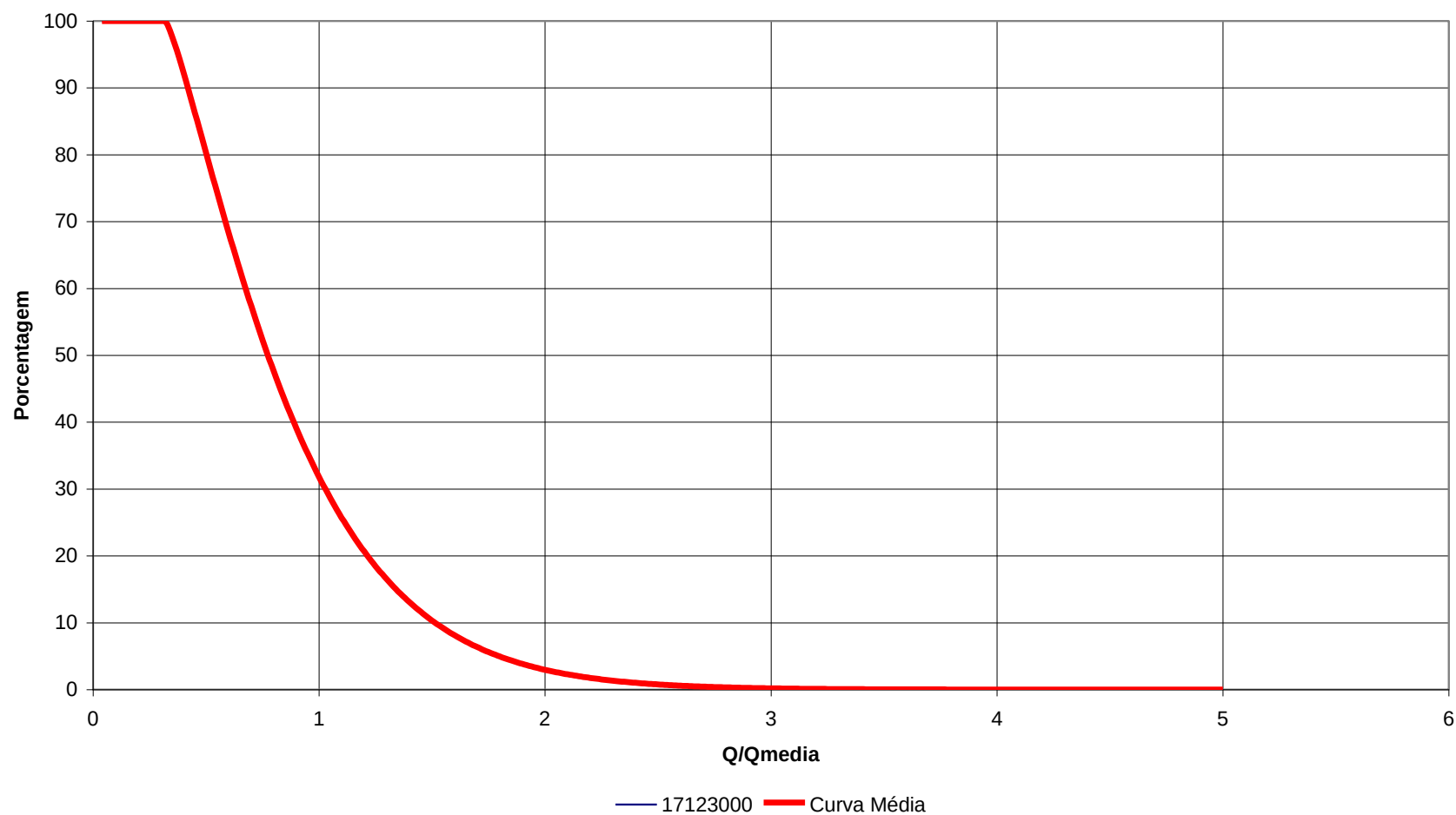
Curva de permanência adimensional (Q/Qm) - RCP20



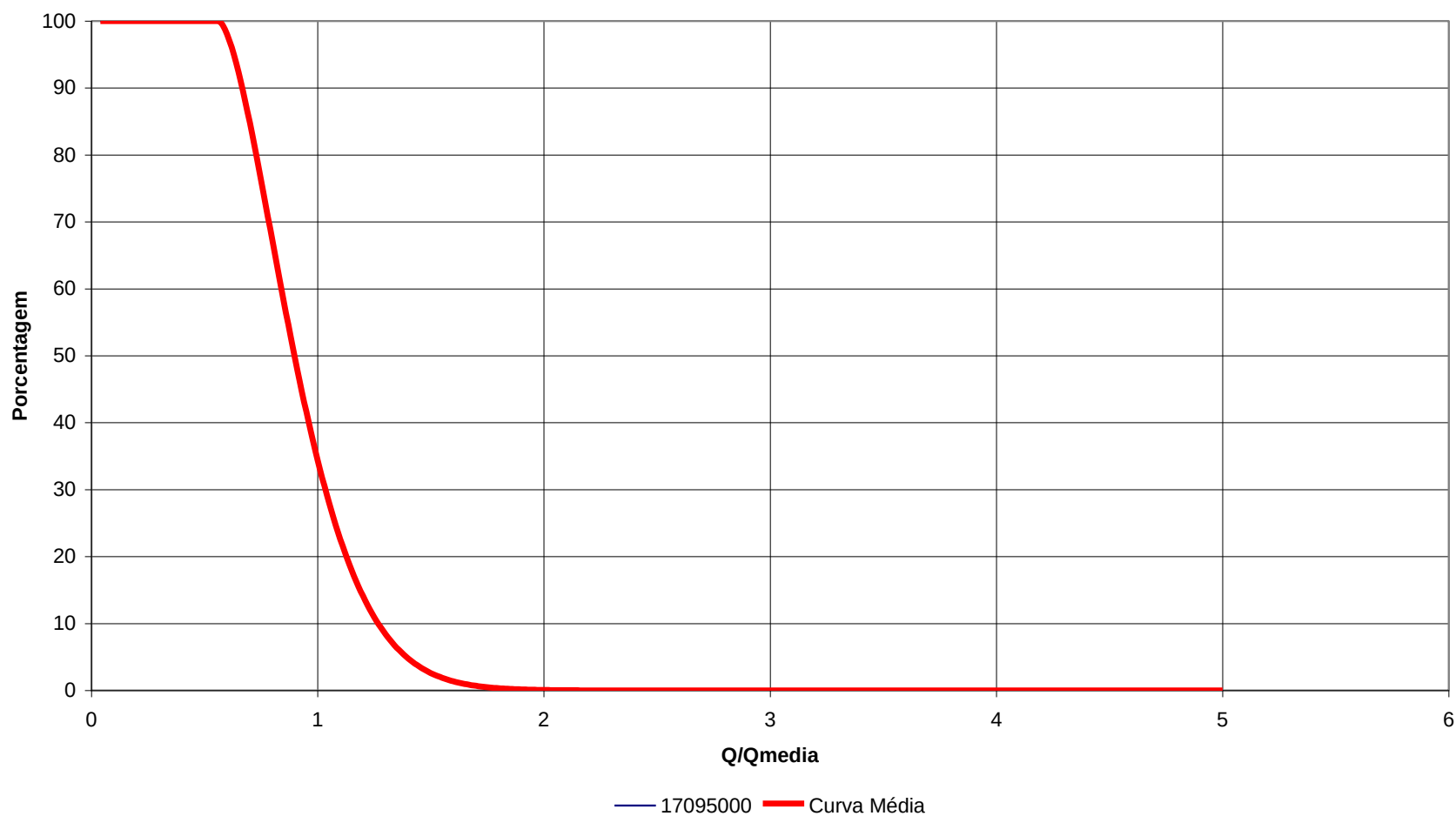
Curva de permanência adimensional (Q/Q_m) - RCP21



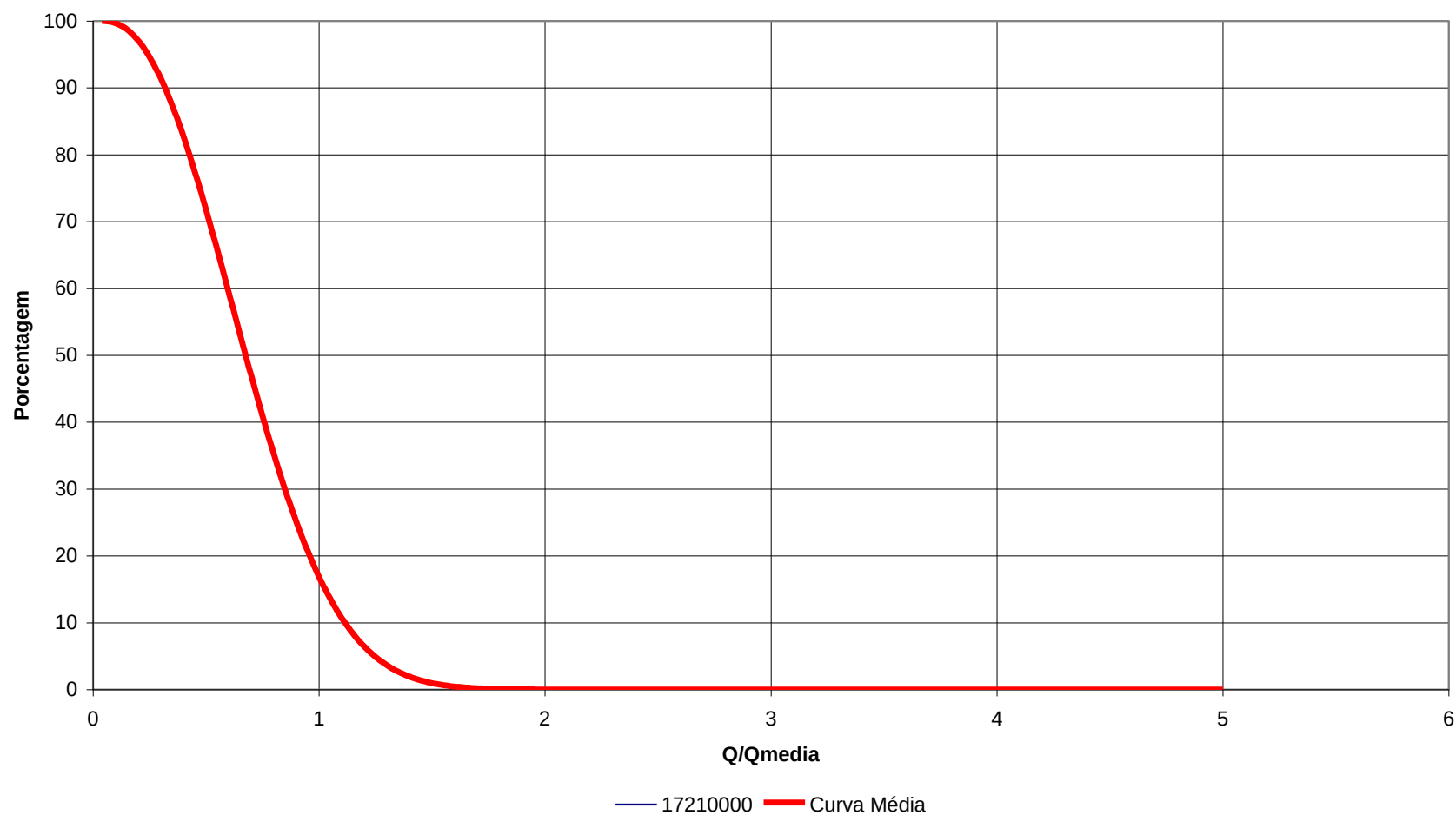
Curva de permanência adimensional (Q/Qm) - RCP22



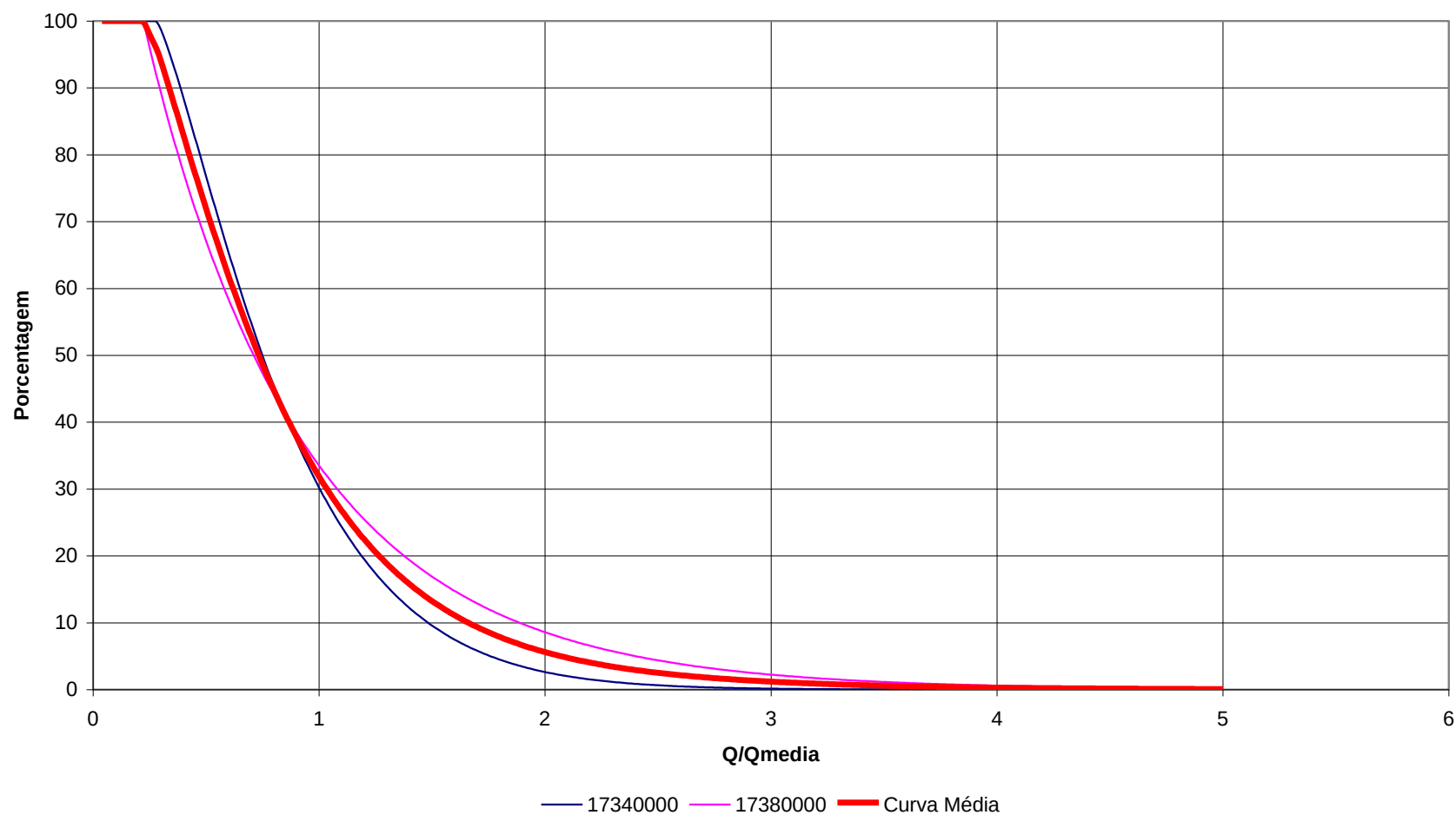
Curva de permanência adimensional (Q/Qm) - RCP23



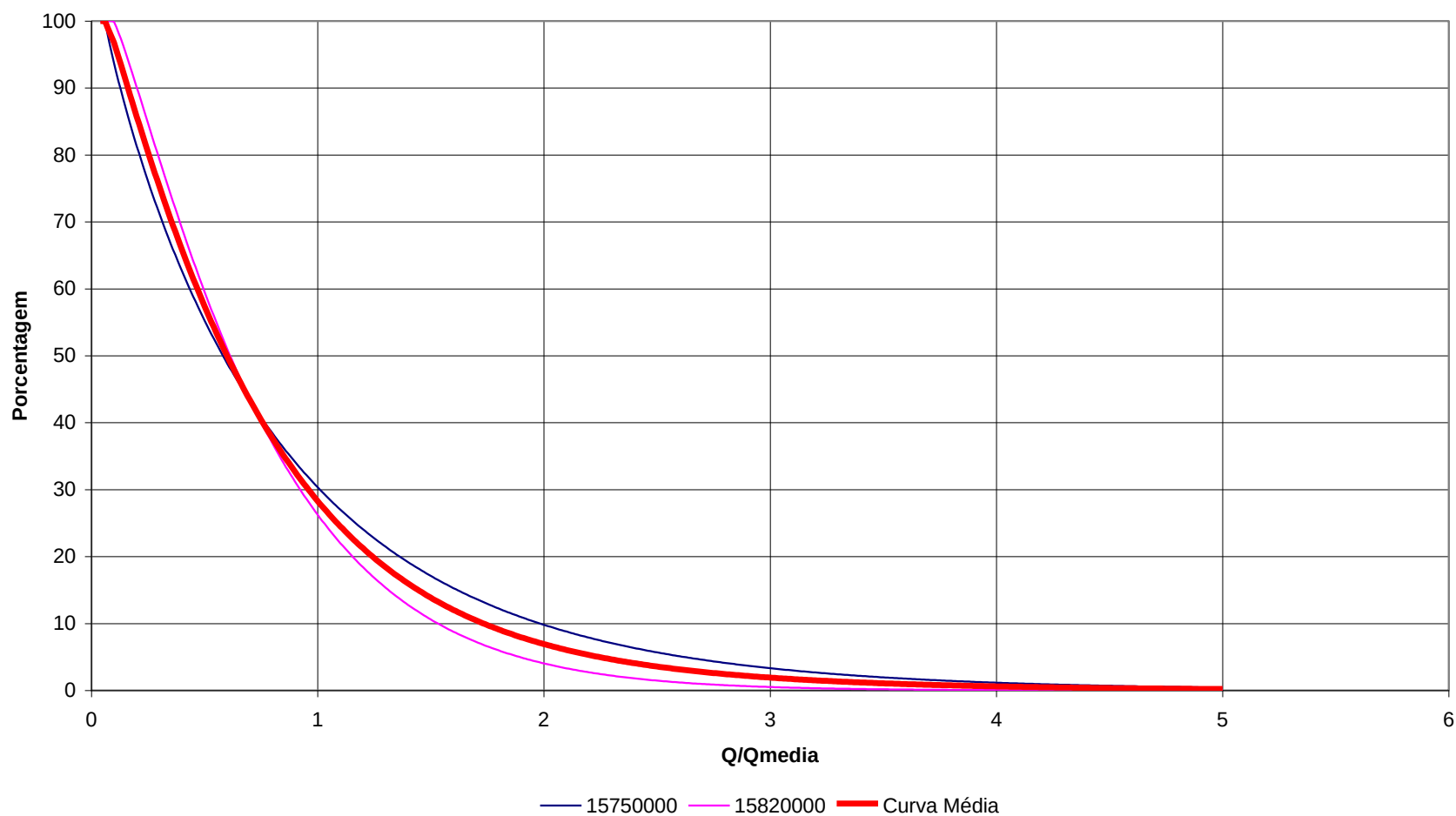
Curva de permanência adimensional (Q/Qm) - RCP24



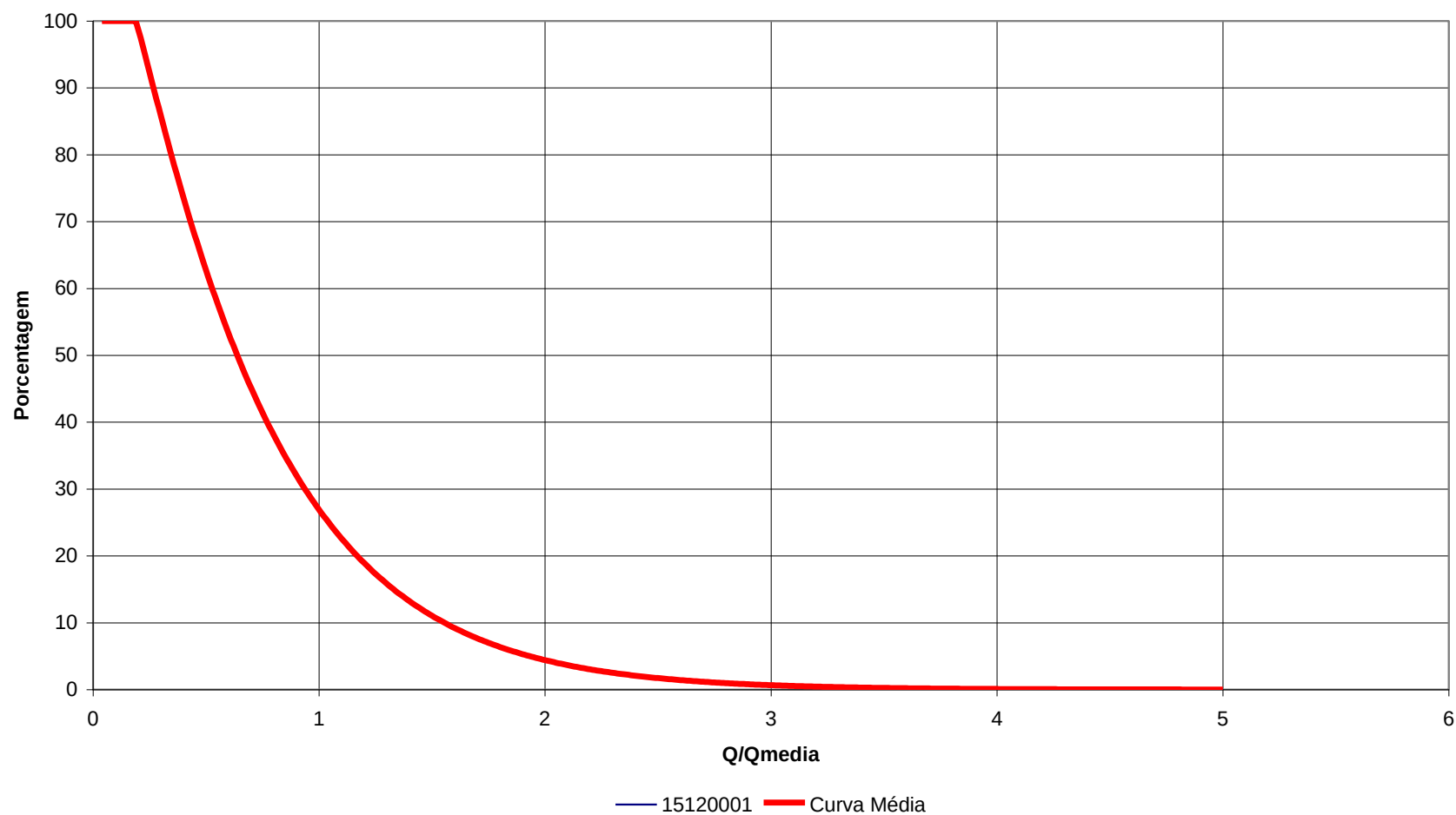
Curva de permanência adimensional (Q/Q_m) - RCP25



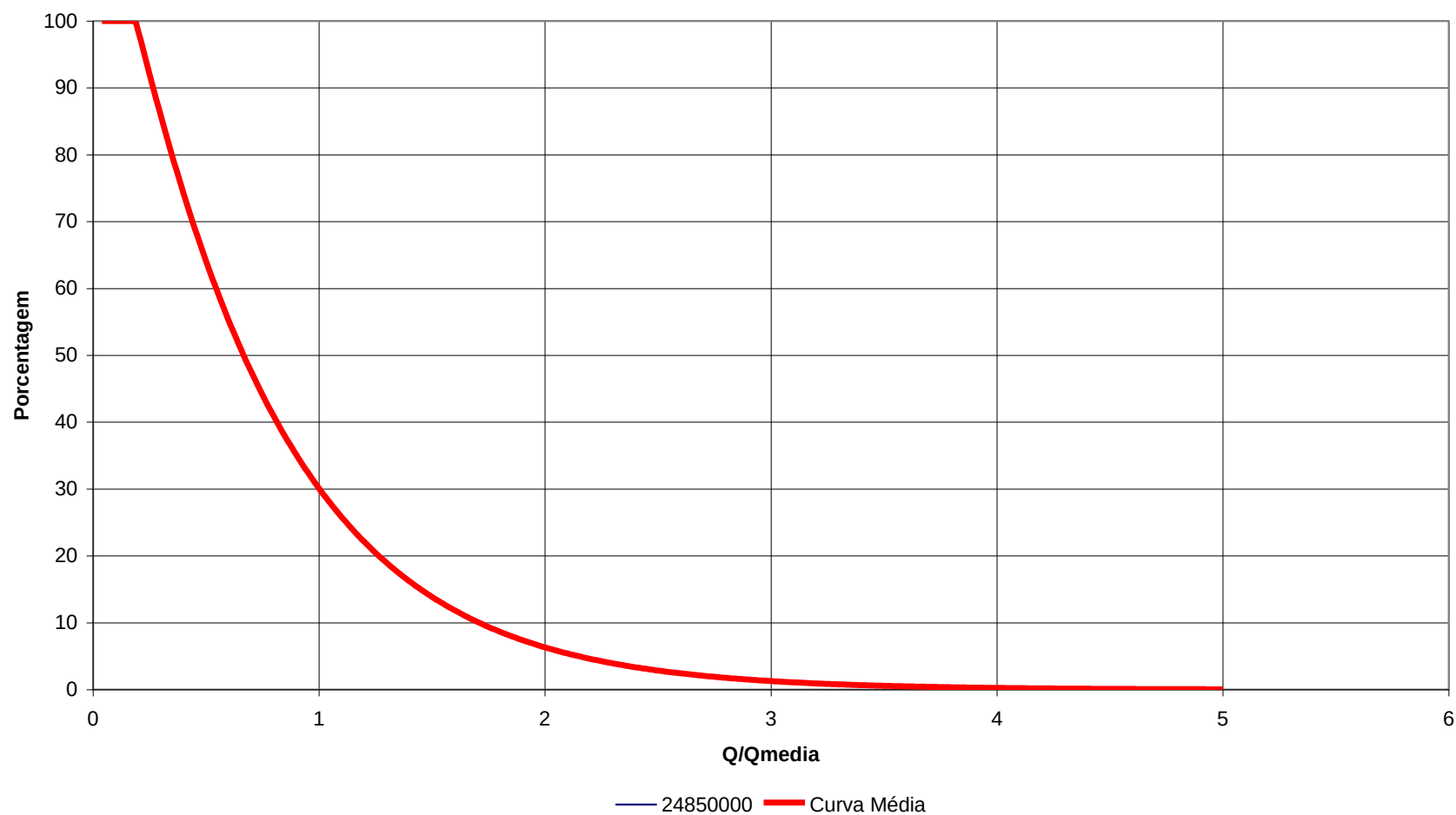
Curva de permanência adimensional (Q/Qm) - RCP 26



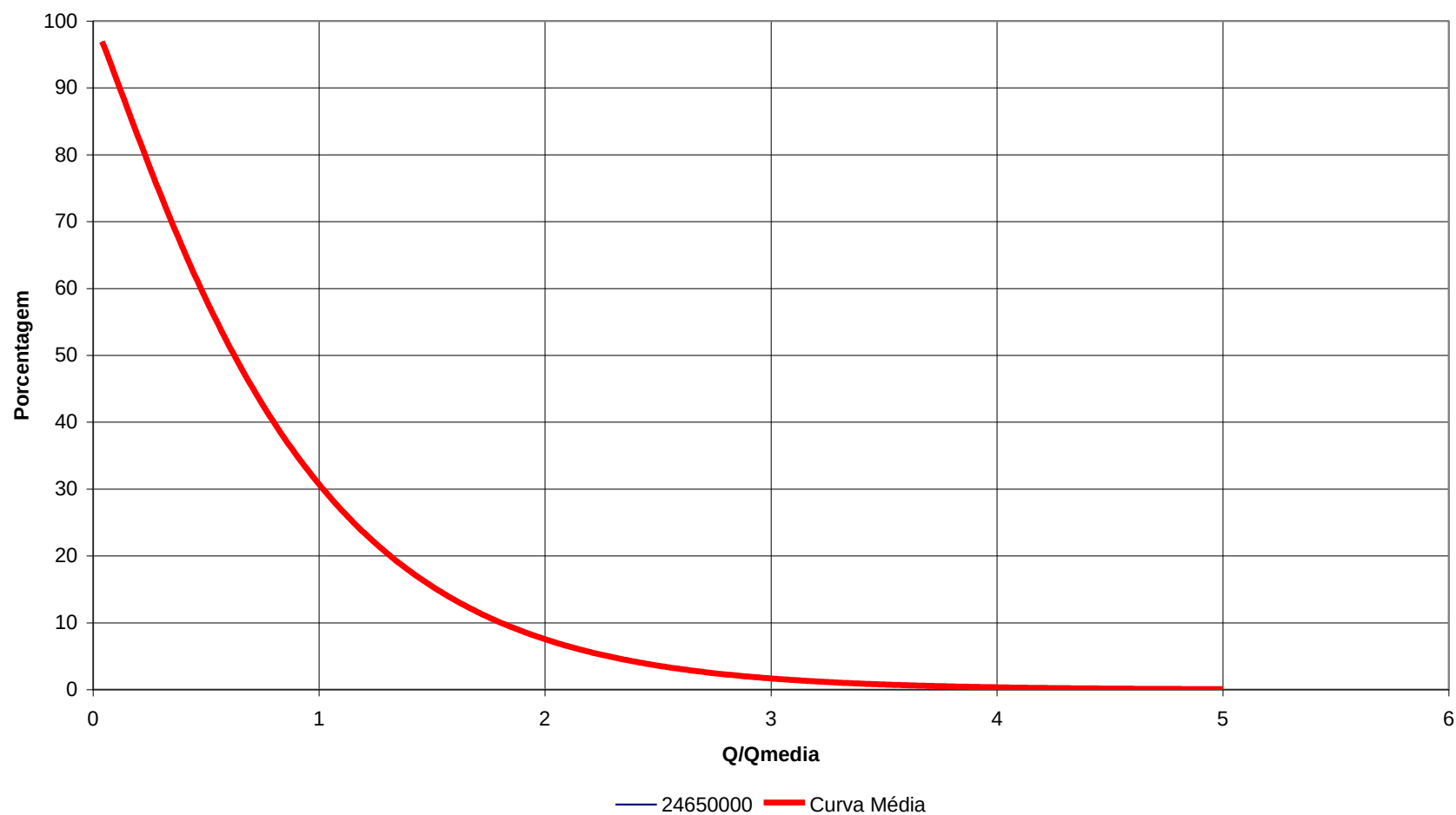
Curva de permanência adimensional (Q/Qm) - RCP27



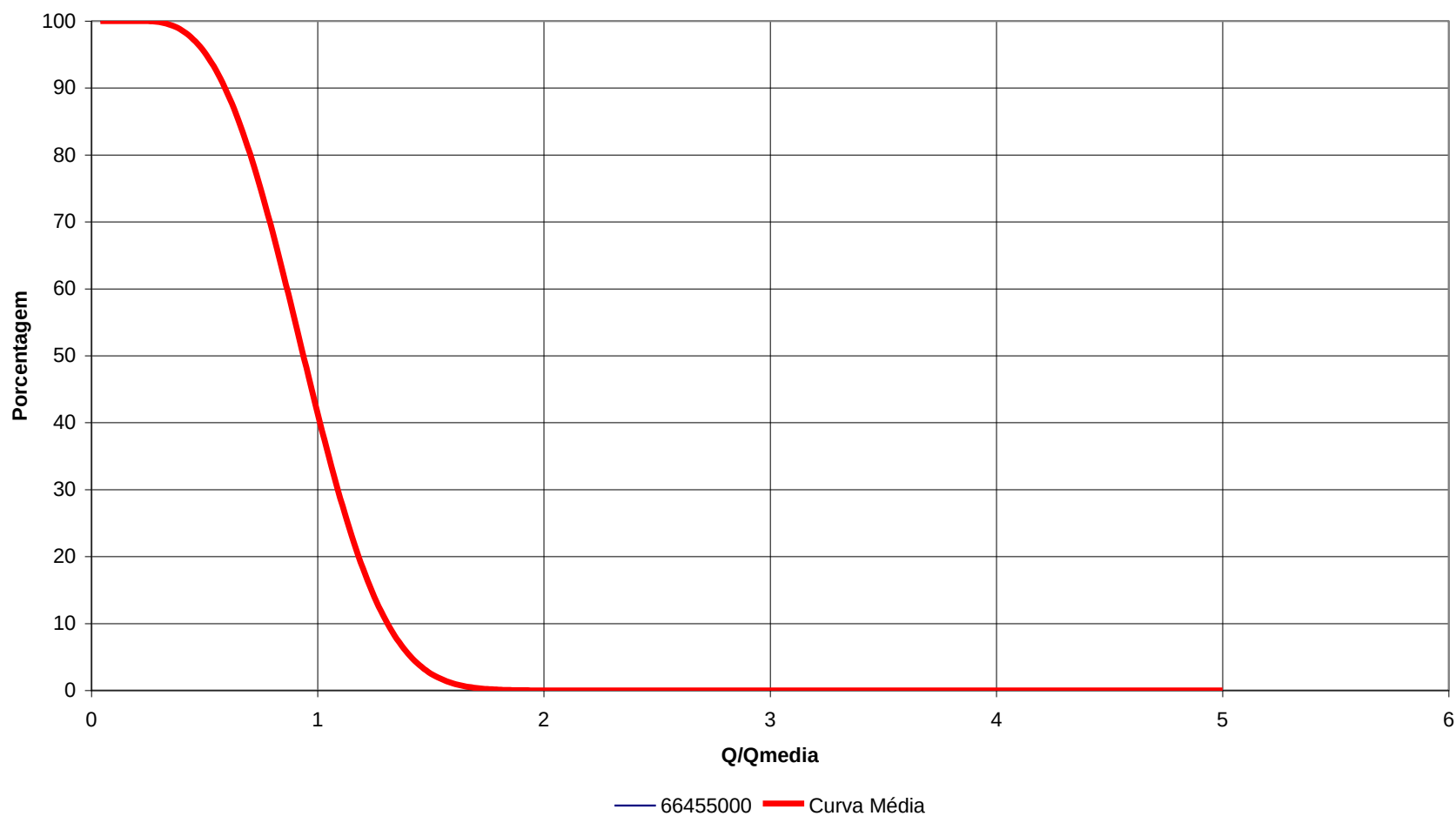
Curva de permanência adimensional (Q/Q_m) - RCP



Curva de permanência adimensional (Q/Qm) - RCP29



Curva de permanência adimensional (Q/Qm) - RCP 30



Resumo das características das regiões de regionalização da curva de
permanência

Região	k	Beta	Q95/Qm
RCP1	5.5066	0.9357	0.5435
RCP2	5.9884	0.9795	0.5946
RCP3	1.5273	0.7330	0.1005
RCP4	2.1821	0.7891	0.1986
RCP5	3.0932	0.8271	0.3135
RCP6	5.3388	0.6482	0.3695
RCP7	3.9612	0.6112	0.2861
RCP8	3.7534	0.9671	0.4356
RCP9	2.3885	0.9118	0.2594
RCP10	1.2416	0.5762	0.0481
RCP11	4.4826	1.0339	0.5306
RCP12	5.0940	1.0664	0.5930
RCP13	6.2210	1.1360	0.7028
RCP14	2.4424	1.0051	0.2944
RCP15	5.3256	0.9478	0.5405
RCP16	1.7202	0.8394	0.1452
RCP17	3.9102	0.9073	0.4218
RCP18	2.7679	0.9217	0.3119
RCP19	2.3742	0.8065	0.2272
RCP20	4.1503	0.8750	0.4252
RCP21	2.7528	0.8981	0.3020
RCP22	3.7679	0.8515	0.3844
RCP23	7.8257	0.9372	0.6396
RCP24	2.5843	0.7785	0.2433
RCP25	2.9633	0.8289	0.3010
RCP26	1.6704	0.7445	0.1216
RCP27	2.7594	0.7252	0.2439
RCP28	2.5773	0.7657	0.2384
RCP29	1.1667	0.8569	0.0626
RCP30	4.2932	1.0201	0.5082