



Coastal Protection and Restoration Authority  
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## 2017 Coastal Master Plan

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# Attachment C3-23.3: Model Performance - Flow



Report: Final

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## **Coastal Protection and Restoration Authority**

This document was prepared in support of the 2017 Coastal Master Plan being prepared by the Coastal Protection and Restoration Authority (CPRA). CPRA was established by the Louisiana Legislature in response to Hurricanes Katrina and Rita through Act 8 of the First Extraordinary Session of 2005. Act 8 of the First Extraordinary Session of 2005 expanded the membership, duties, and responsibilities of CPRA and charged the new authority to develop and implement a comprehensive coastal protection plan, consisting of a master plan (revised every five years) and annual plans. CPRA's mandate is to develop, implement, and enforce a comprehensive coastal protection and restoration master plan.

### **Suggested Citation:**

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**Table1: Summary of Modeled and Observed Mean Daily Flowrate (cms) for Calibration Period 2010-2013.**

ICM Link	Station	# Observations	Predicted					Observed				
			Mean	Median	StDev	Min	Max	Mean	Median	StDev	Min	Max
1364	07381000	1307	5	5	2	1	19	5	5	2	1	19
2	07381235	1351	-65	-63	17	-141	47	-33	-31	37	-149	259
1638	07381324	1423	1	1	1	-2	5	3	2	3	-11	20
1350	07381328	1405	107	105	51	-67	291	88	93	86	-462	401
1333	07381331	1428	62	62	23	-113	148	42	45	43	-211	154
1322	073814675	1272	65	54	68	-140	354	58	45	118	-434	555
1268	073815450	4	7409	7255	4816	1880	13247	6532	6499	4018	1832	11298
1295	07381590	1411	3098	2970	1538	815	7920	2892	2642	1593	121	8855
1272	07381600	1445	3351	2968	2204	551	15028	3405	3098	2175	-577	13821
1318	073816202	22	-38	-135	304	-207	1199	302	253	206	-138	889
1346	073816501	22	-262	-118	269	-1028	73	-224	-372	543	-983	699
1519	073816503	1298	103	95	45	32	192	98	84	74	-166	425
1326	073816505	22	195	174	80	58	367	155	179	144	-159	326
2925	07381670	1411	410	399	152	154	997	231	206	148	-8	843

**Table 2: Model Performance for Mean Daily Flowrate (cms) for Calibration Period 2010-2013.**

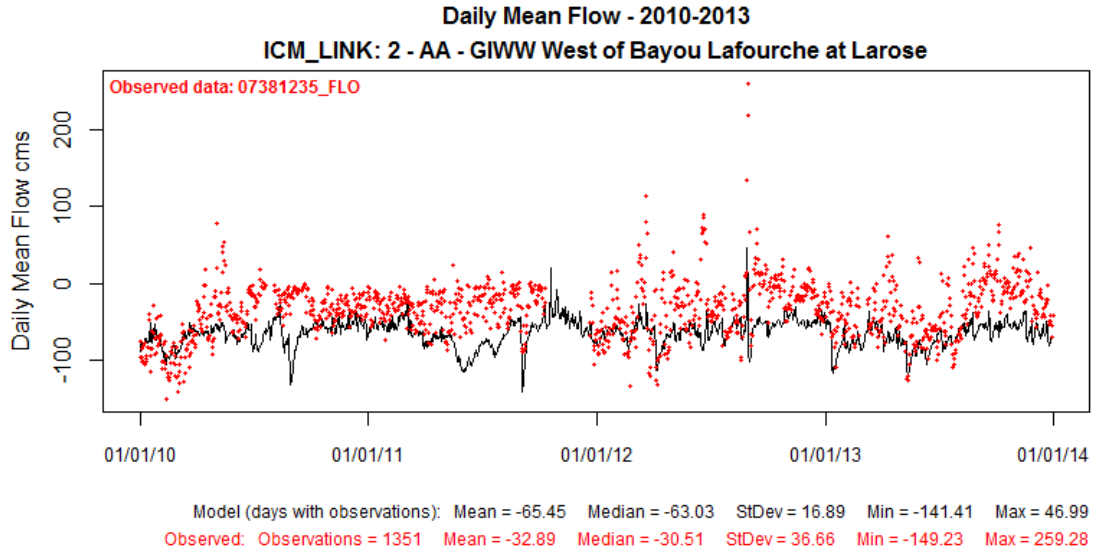
ICM Link	Station	# Observations	Daily RMSE	Daily Bias	Two-week RMSE	Two-week Bias	Monthly RMSE	Monthly Bias	Annual RMSE	Annual Bias
1364	07381000	1307	1	0	0	0	0	0	0	0
2	07381235	1351	47	-33	39	-31	38	-33	33	-33
1638	07381324	1423	3	-1	2	-1	2	-1	2	-1
1350	07381328	1405	63	19	32	19	28	19	21	19
1333	07381331	1428	40	20	30	20	28	19	20	20
1322	073814675	1272	97	7	44	8	29	7	9	8
1268	073815450	4	1122	877	1122	877	324	877	1122	877
1295	07381590	1411	275	206	261	205	247	204	209	205
1272	07381600	1445	324	-54	275	-60	219	-54	63	-54
1318	073816202	22	384	-339	384	-339	260	-339	348	-341
1346	073816501	22	401	-38	401	-38	272	-38	126	-37
1519	073816503	1298	41	4	38	7	32	3	11	3
1326	073816505	22	109	39	109	39	74	39	49	38
2925	07381670	1411	181	179	179	178	180	179	179	179

**Table 3: Summary of Modeled and Observed Mean Daily Flowrate (cms) for Validation Period 2006-2009.**

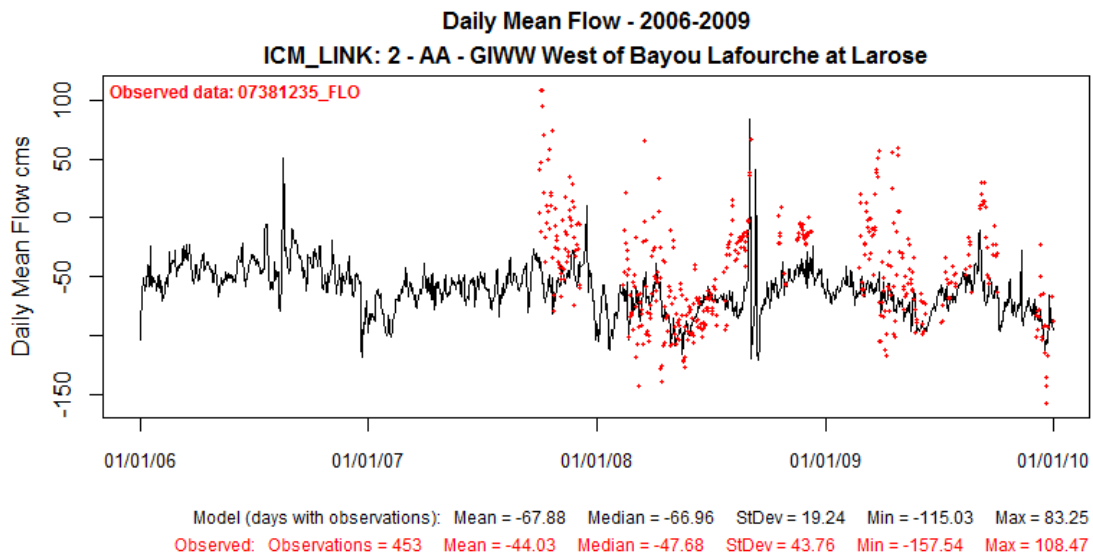
ICM Link	Station	# Observations	Predicted					Observed				
			Mean	Median	StDev	Min	Max	Mean	Median	StDev	Min	Max
1364	07381000	757	5	5	2	0	19	5	5	2	1	25
2	07381235	453	-68	-67	19	-115	83	-44	-48	44	-158	108
1638	07381324	795	1	1	1	-5	6	2	2	4	-30	40
1350	07381328	793	117	118	52	-107	246	114	124	91	-468	353
1333	07381331	733	71	71	23	-42	126	52	49	47	-107	183
1322	073814675	476	50	43	54	-134	246	58	57	147	-850	487
1268	073815450	8	8144	8171	2563	4443	12063	7161	7150	2231	3851	10704
1295	07381590	820	3552	3439	1484	905	6637	3317	3115	1568	479	7027
1272	07381600	823	3901	3383	2188	795	10882	4039	3646	2067	496	9923
1318	073816202	20	26	-185	391	-259	954	339	316	221	-33	728
1346	073816501	20	-326	-204	260	-876	26	-425	-450	581	-1730	589
1519	073816503	341	127	146	45	38	203	121	128	71	-59	279
1326	073816505	20	223	216	84	91	370	206	206	121	12	399
2925	07381670	508	455	437	157	163	846	287	281	150	-114	585

**Table 4: Model Performance for Mean Daily Flowrate (cms) for Validation Period 2006-2009.**

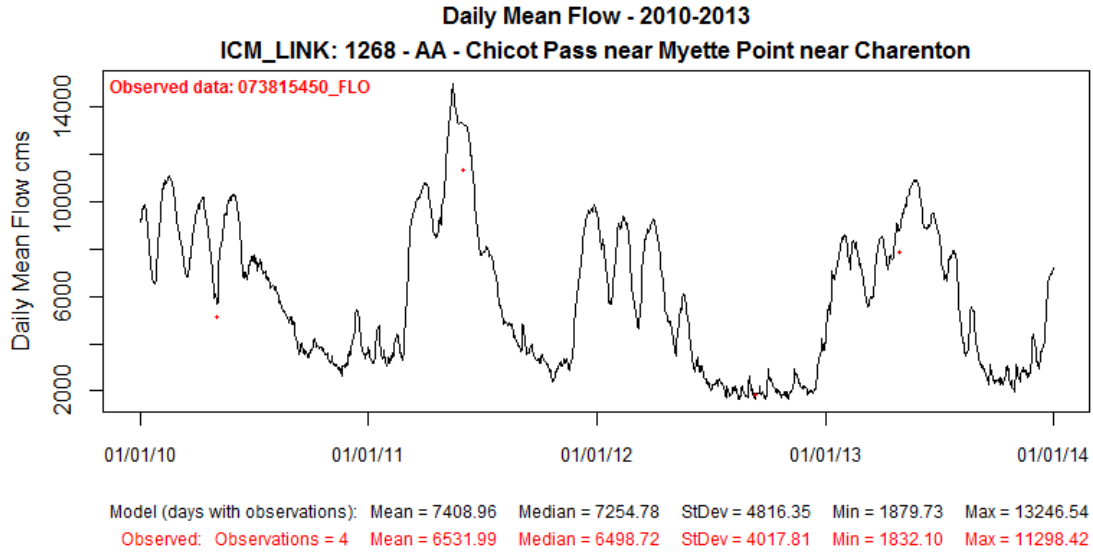
ICM Link	Station	# Observations	Daily RMSE	Daily Bias	Two-week RMSE	Two-week Bias	Monthly RMSE	Monthly Bias	Annual RMSE	Annual Bias
1364	07381000	757	1	0	0	0	0	0	0	0
2	07381235	453	43	-24	33	-24	21	-25	28	-29
1638	07381324	795	3	0	1	0	1	0	1	0
1350	07381328	793	59	2	25	3	13	2	12	7
1333	07381331	733	40	18	34	19	24	19	20	22
1322	073814675	476	116	-8	42	-7	18	-5	11	-10
1268	073815450	8	1081	984	1081	984	441	984	939	911
1295	07381590	820	288	235	276	236	200	235	220	251
1272	07381600	823	439	-138	382	-135	261	-138	135	-144
1318	073816202	20	386	-313	386	-313	249	-313	321	-313
1346	073816501	20	453	99	453	99	292	99	234	99
1519	073816503	341	41	6	33	11	19	10	20	10
1326	073816505	20	80	16	80	16	51	16	32	16
2925	07381670	508	174	169	170	167	112	167	140	161



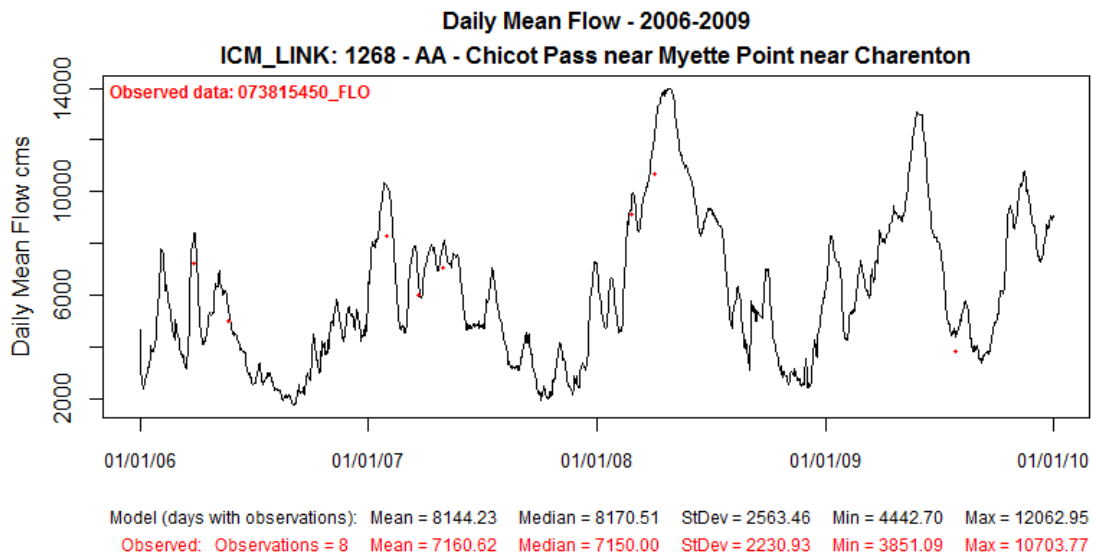
**Figure 1: Modeled Flowrate at ICM Link 2 (solid black line) Compared to Observed Data at USGS07381235 for Calibration Period 2010-2013.**



**Figure 2: Modeled Flowrate at ICM Link 2 (solid black line) Compared to Observed Data at USGS07381235 for Validation Period 2006-2009.**

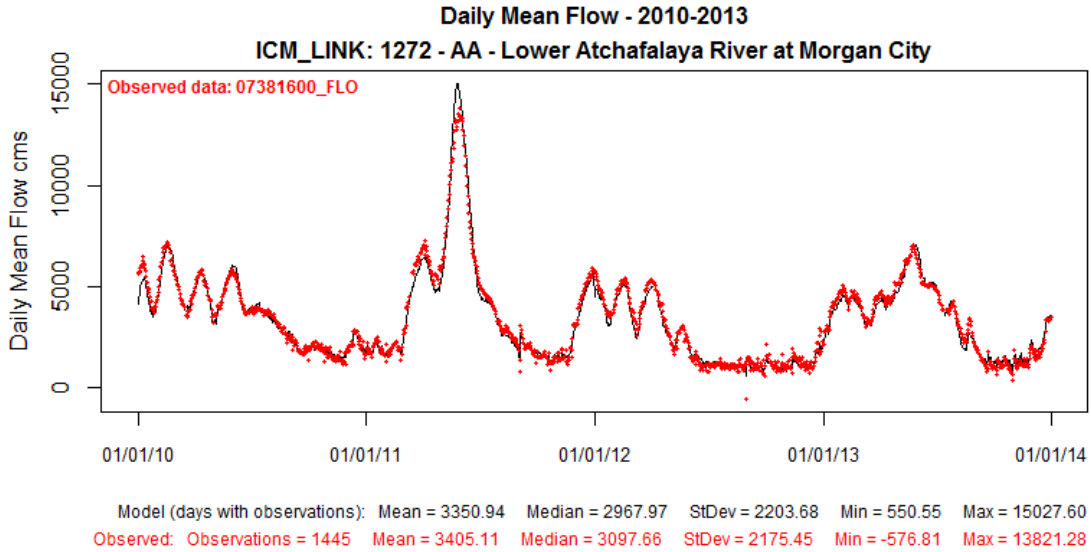


**Figure 3: Modeled Flowrate at ICM Link 1268 (solid black line) Compared to Observed Data at USGS073815450 for Calibration Period 2010-2013.**

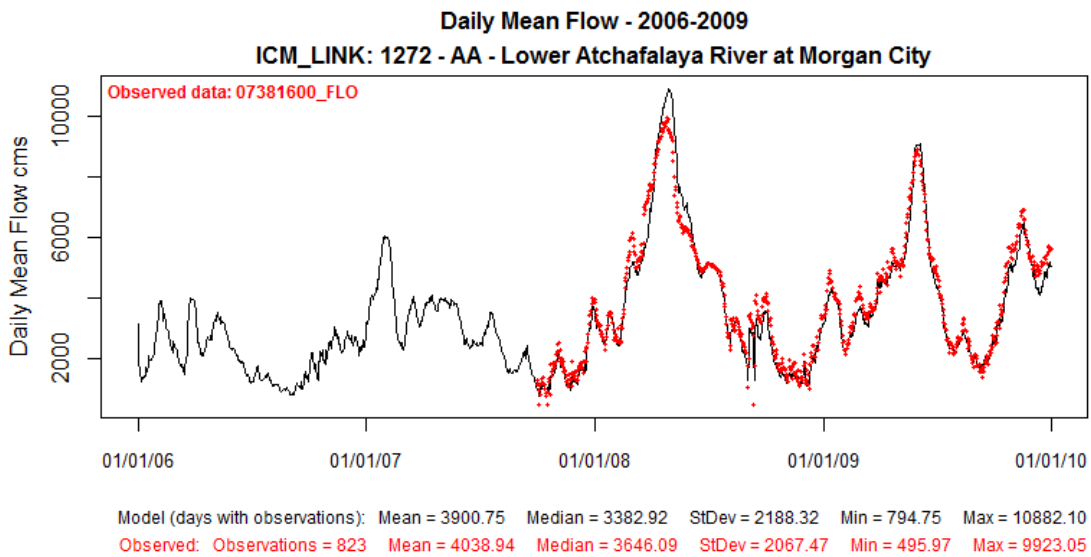


**Figure 4: Modeled Flowrate at ICM Link 1268 (solid black line) Compared to Observed Data at USGS073815450 for Validation Period 2006-2009.**

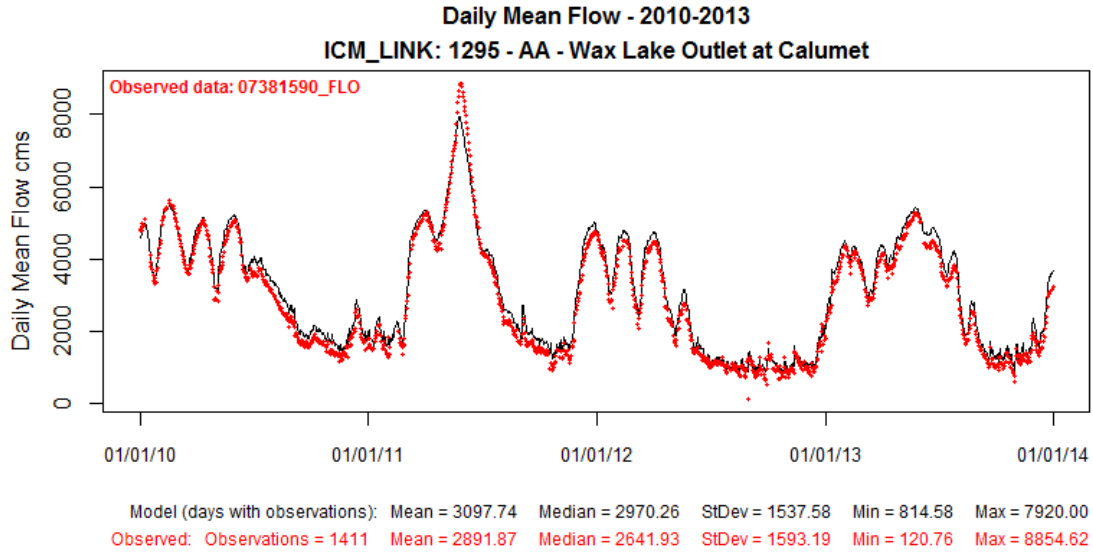




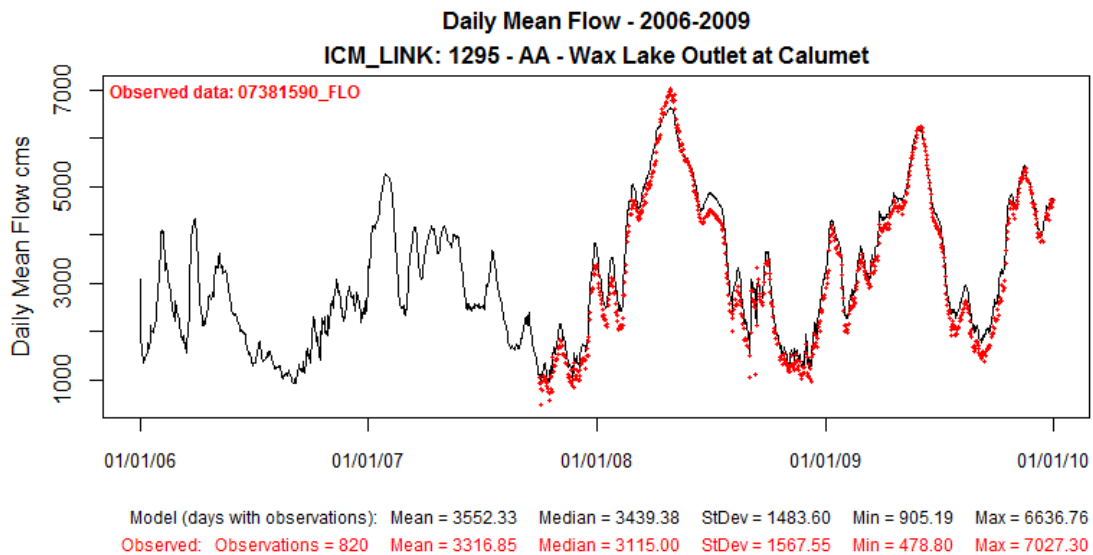
**Figure 5: Modeled Flowrate at ICM Link 1272 (solid black line) Compared to Observed Data at USGS07381600 for Calibration Period 2010-2013.**



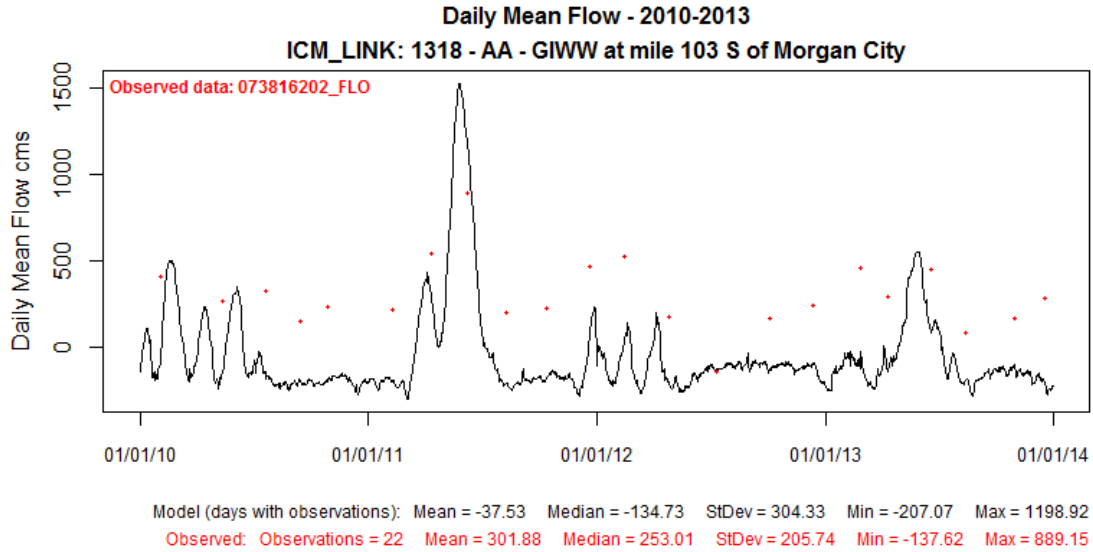
**Figure 6: Modeled Flowrate at ICM Link 1272 (solid black line) Compared to Observed Data at USGS07381600 for Validation Period 2006-2009.**



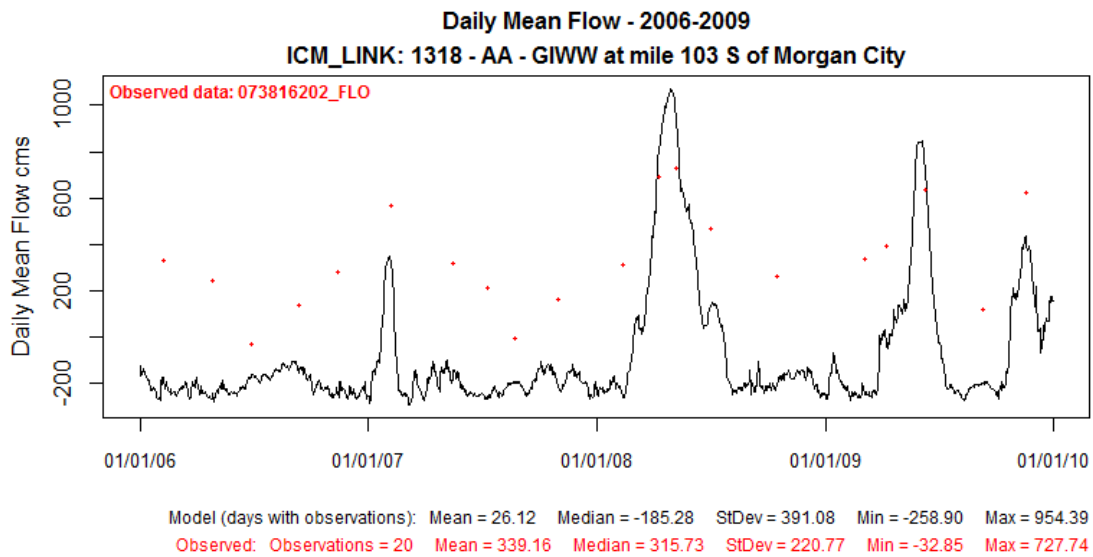
**Figure 7: Modeled Flowrate at ICM Link 1295 (solid black line) Compared to Observed Data at USGS07381590 for Calibration Period 2010-2013.**



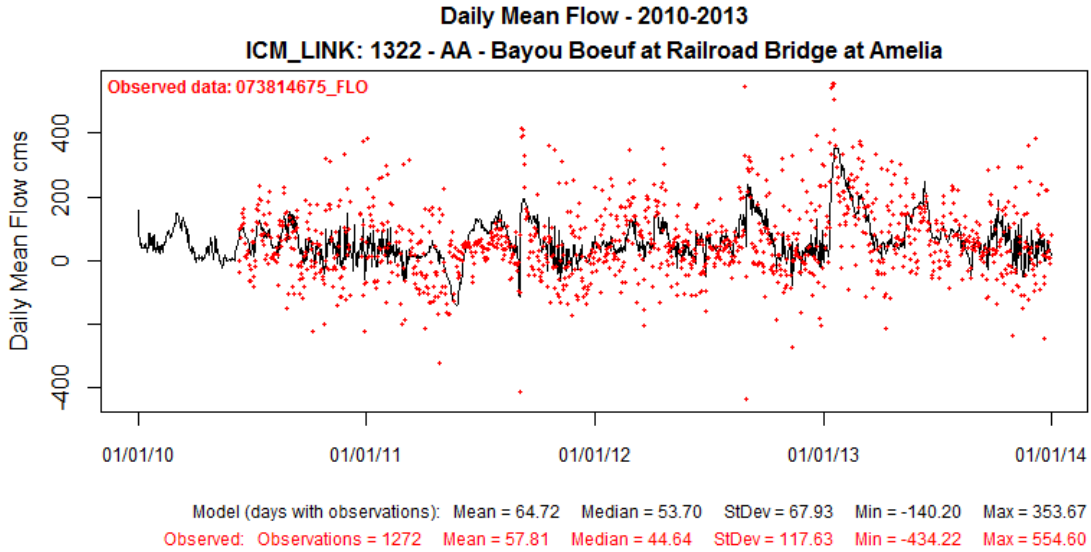
**Figure 8: Modeled Flowrate at ICM Link 1295 (solid black line) Compared to Observed Data at USGS07381590 for Validation Period 2006-2009.**



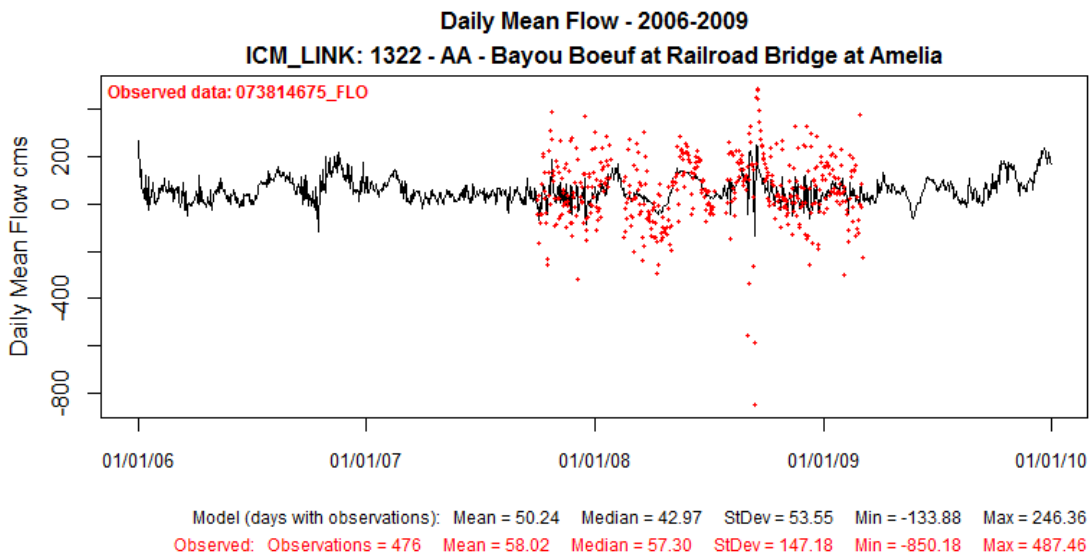
**Figure 9: Modeled Flowrate at ICM Link 1318 (solid black line) Compared to Observed Data at USGS073816202 for Calibration Period 2010-2013.**



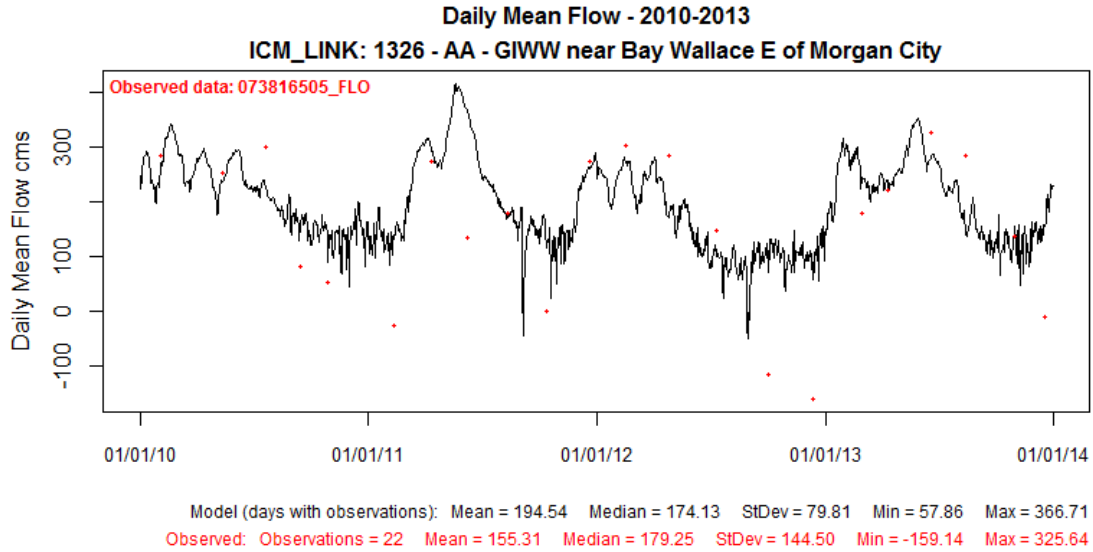
**Figure 10: Modeled Flowrate at ICM Link 1318 (solid black line) Compared to Observed Data at USGS073816202 for Validation Period 2006-2009.**



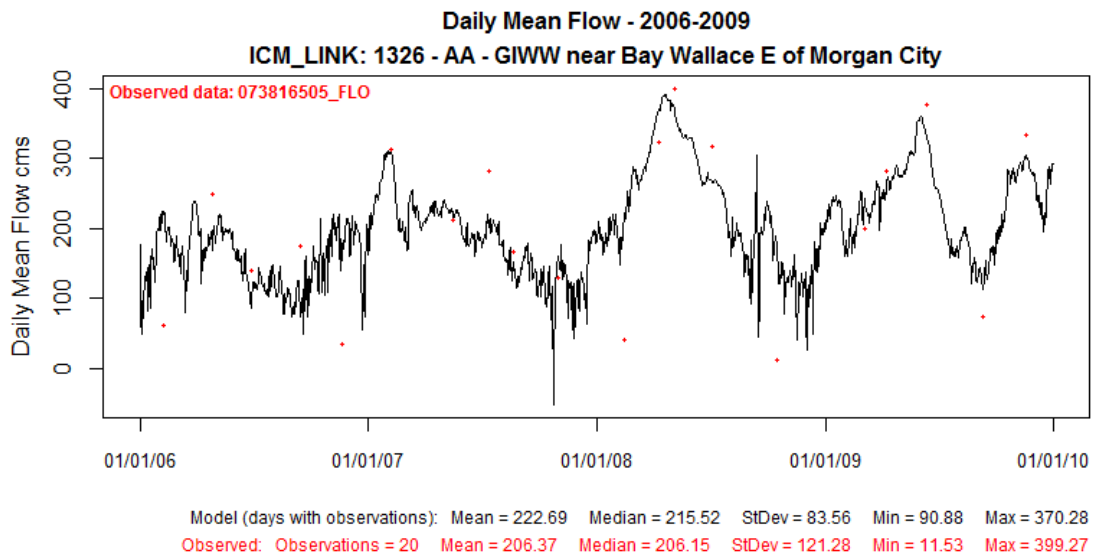
**Figure 11: Modeled Flowrate at ICM Link 1322 (solid black line) Compared to Observed Data at USGS073814675 for Calibration Period 2010-2013.**



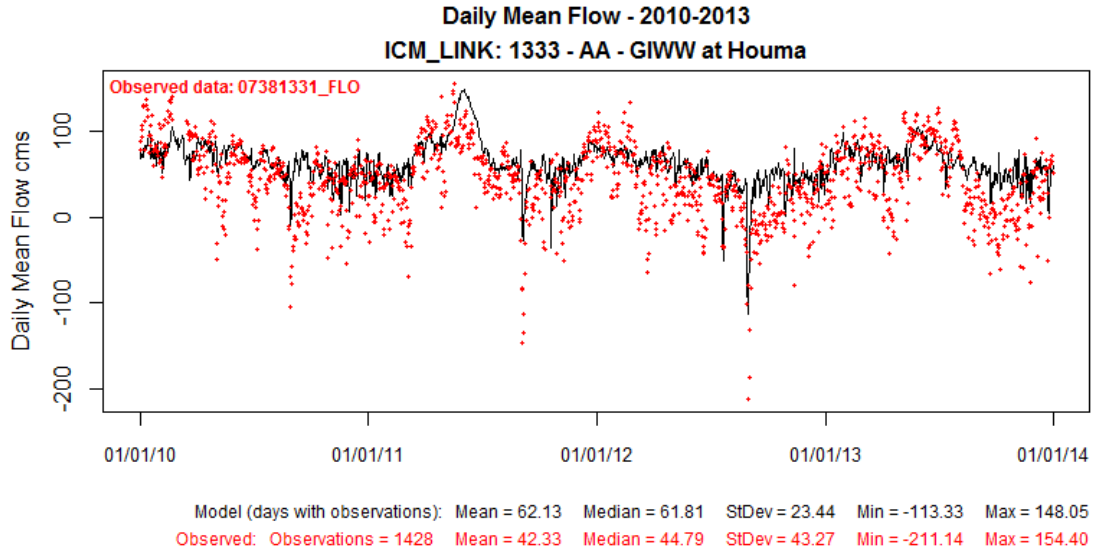
**Figure 12: Modeled Flowrate at ICM Link 1322 (solid black line) Compared to Observed Data at USGS073814675 for Validation Period 2006-2009.**



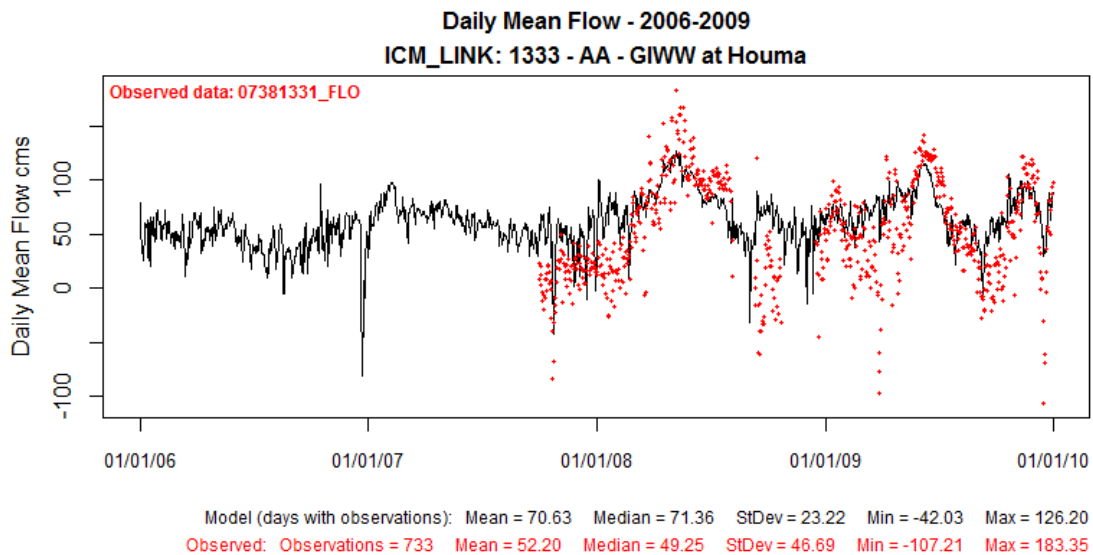
**Figure 13: Modeled Flowrate at ICM Link 1326 (solid black line) Compared to Observed Data at USGS073816505 for Calibration Period 2010-2013.**



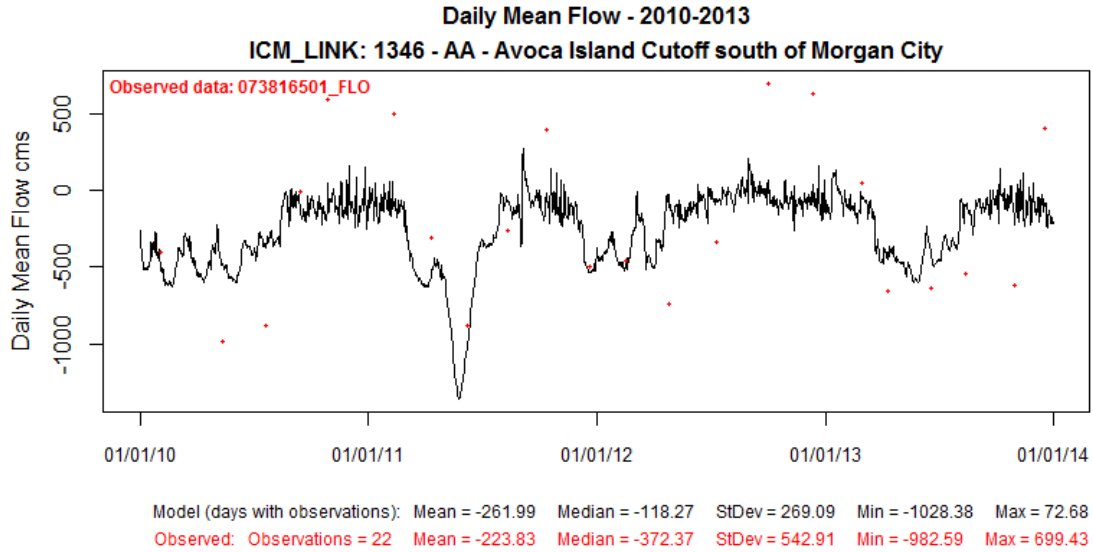
**Figure 14: Modeled Flowrate at ICM Link 1326 (solid black line) Compared to Observed Data at USGS073816505 for Validation Period 2006-2009.**



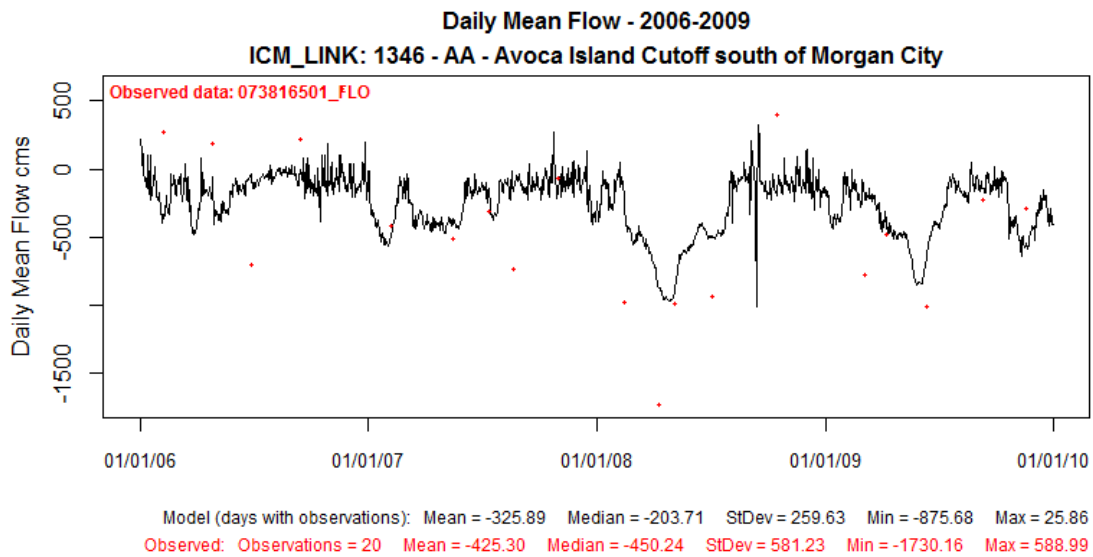
**Figure 15: Modeled Flowrate at ICM Link 1333 (solid black line) Compared to Observed Data at USGS07381331 for Calibration Period 2010-2013.**



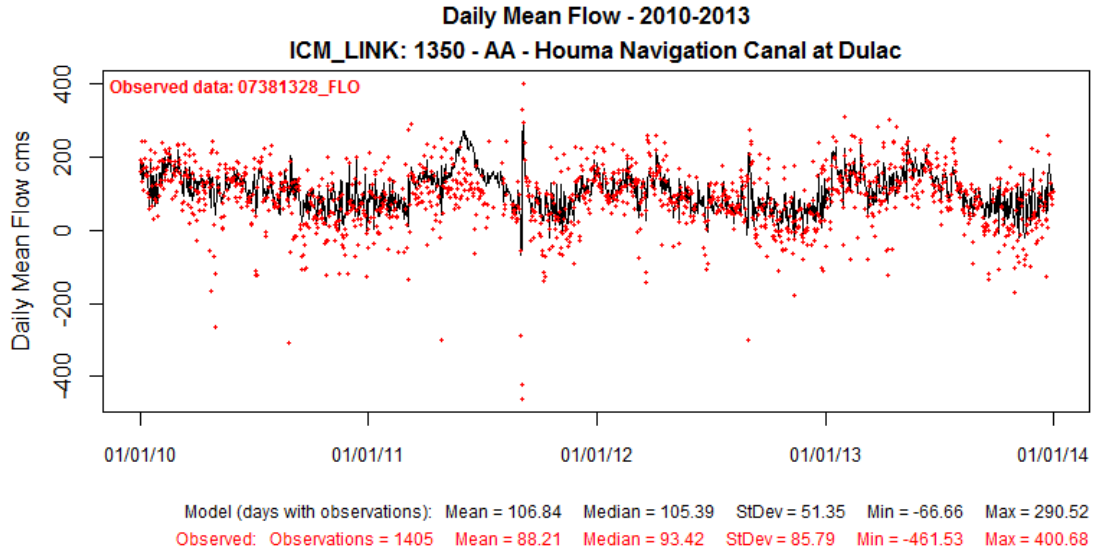
**Figure 16: Modeled Flowrate at ICM Link 1333 (solid black line) Compared to Observed Data at USGS07381331 for Validation Period 2006-2009.**



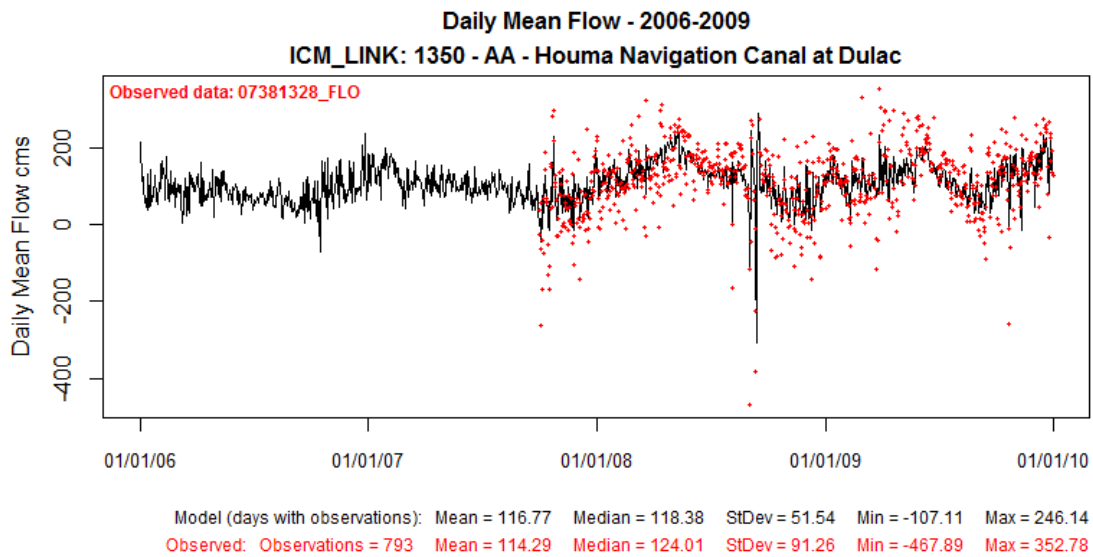
**Figure 17: Modeled Flowrate at ICM Link 1346 (solid black line) Compared to Observed Data at USGS073816501 for Calibration Period 2010-2013.**



**Figure 18: Modeled Flowrate at ICM Link 1346 (solid black line) Compared to Observed Data at USGS073816501 for Validation Period 2006-2009.**

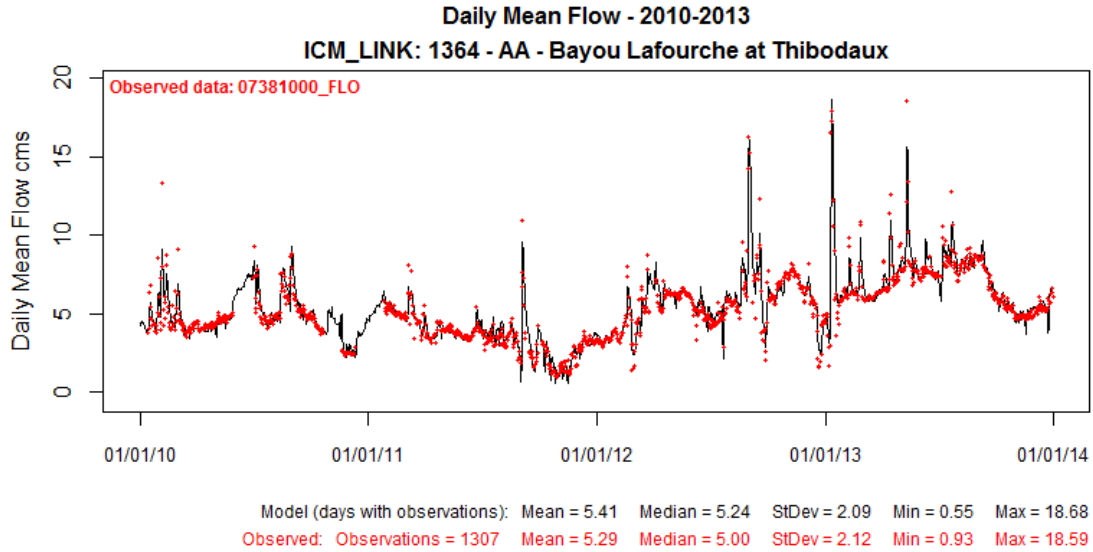


**Figure 19: Modeled Flowrate at ICM Link 1350 (solid black line) Compared to Observed Data at USGS07381328 for Calibration Period 2010-2013.**

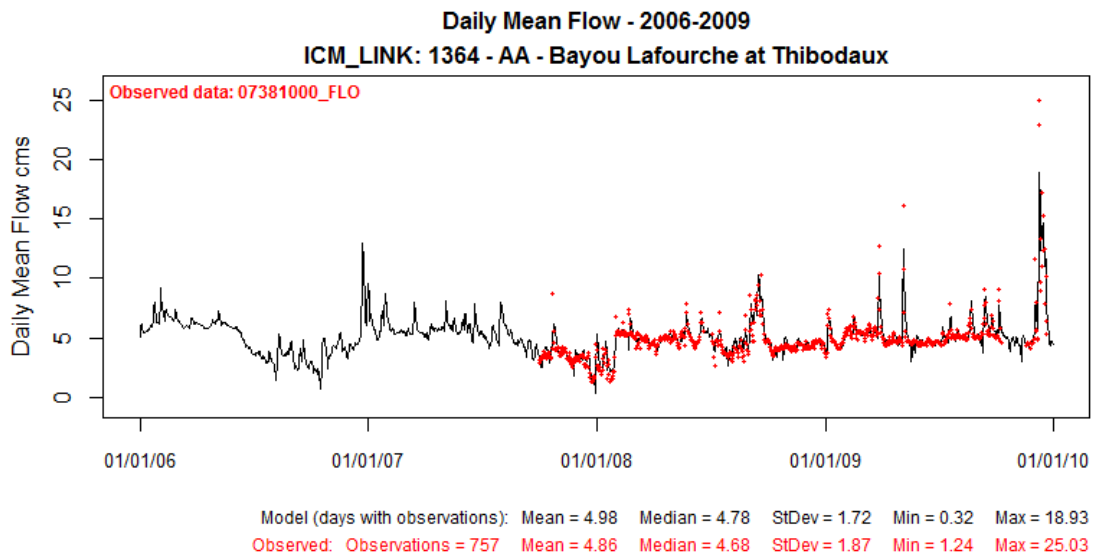


**Figure 20: Modeled Flowrate at ICM Link 1350 (solid black line) Compared to Observed Data at USGS07381328 for Validation Period 2006-2009.**

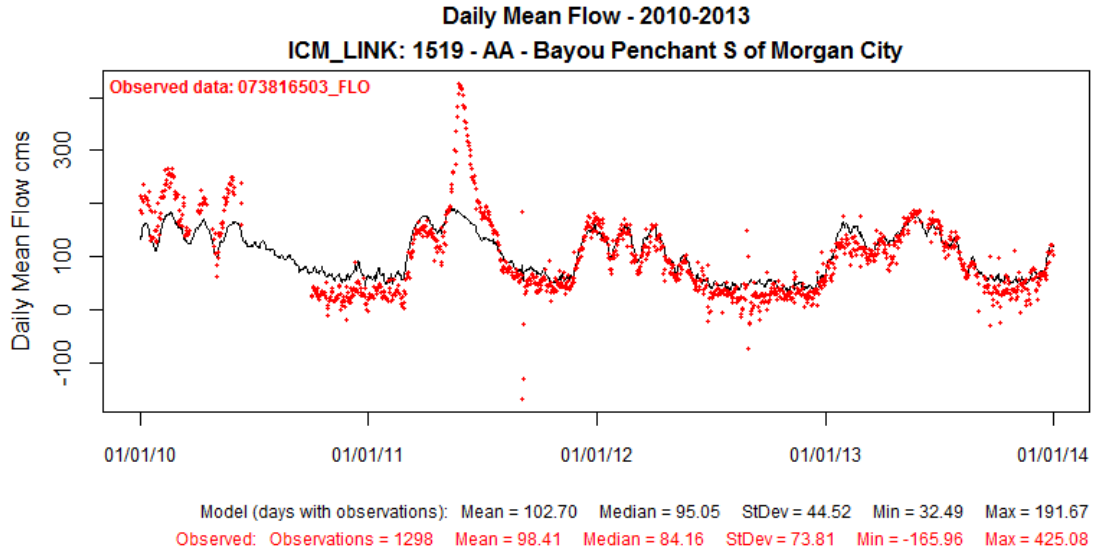




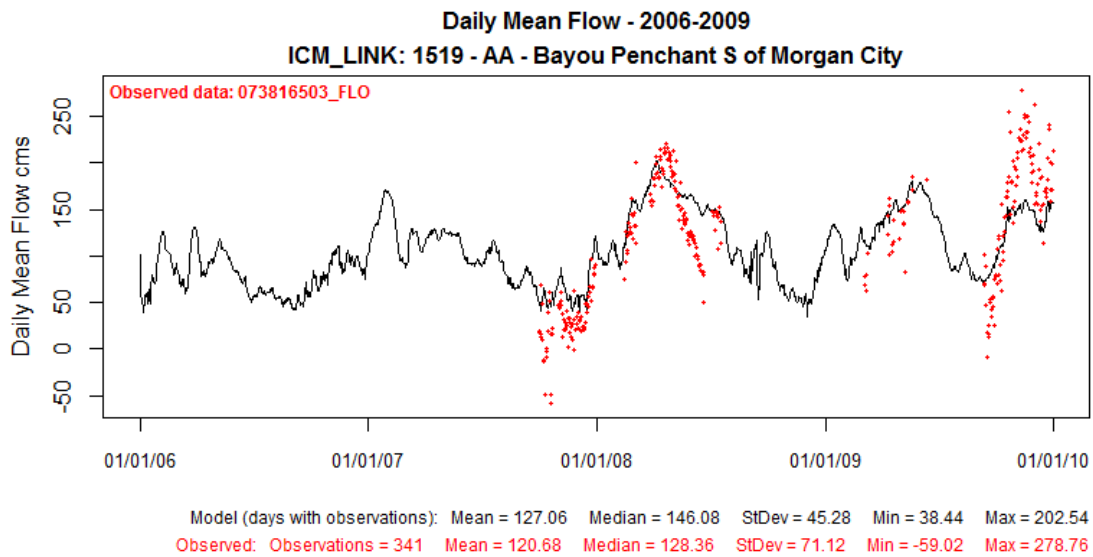
**Figure 21: Modeled Flowrate at ICM Link 1364 (solid black line) Compared to Observed Data at USGS07381000 for Calibration Period 2010-2013.**



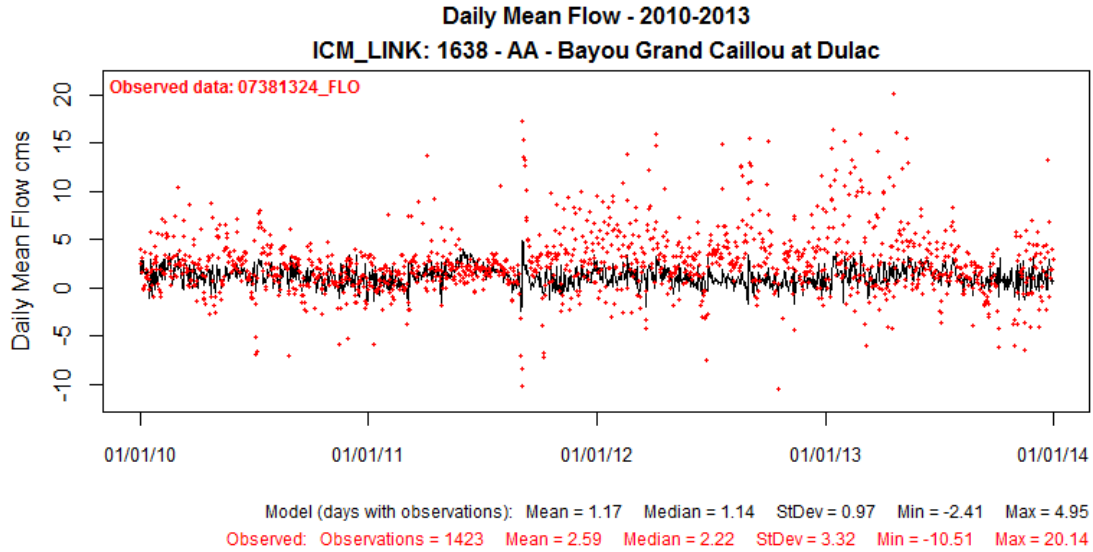
**Figure 22: Modeled Flowrate at ICM Link 1364 (solid black line) Compared to Observed Data at USGS07381000 for Validation Period 2006-2009.**



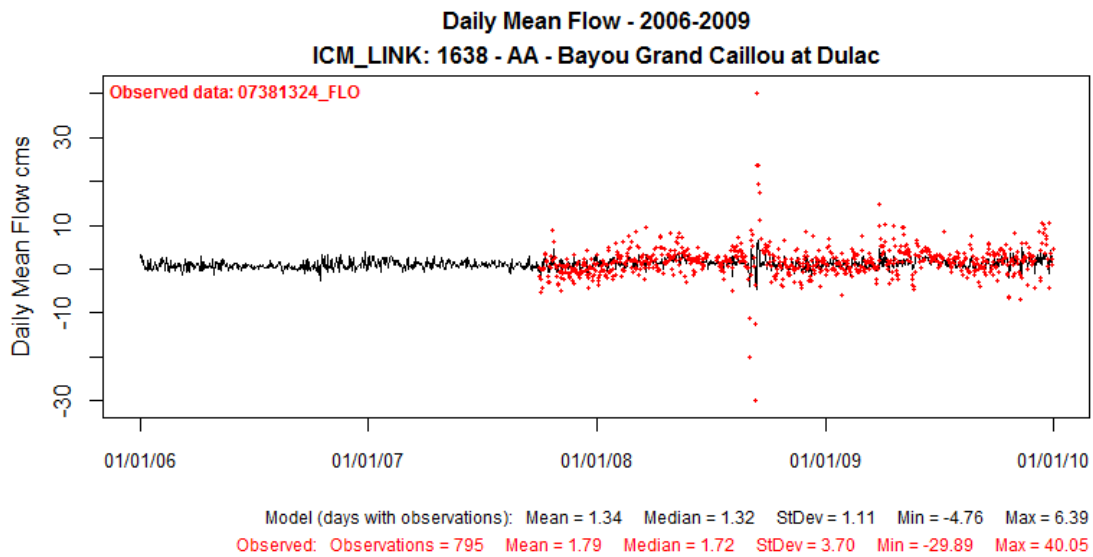
**Figure 23: Modeled Flowrate at ICM Link 1519 (solid black line) Compared to Observed Data at USGS073816503 for Calibration Period 2010-2013.**



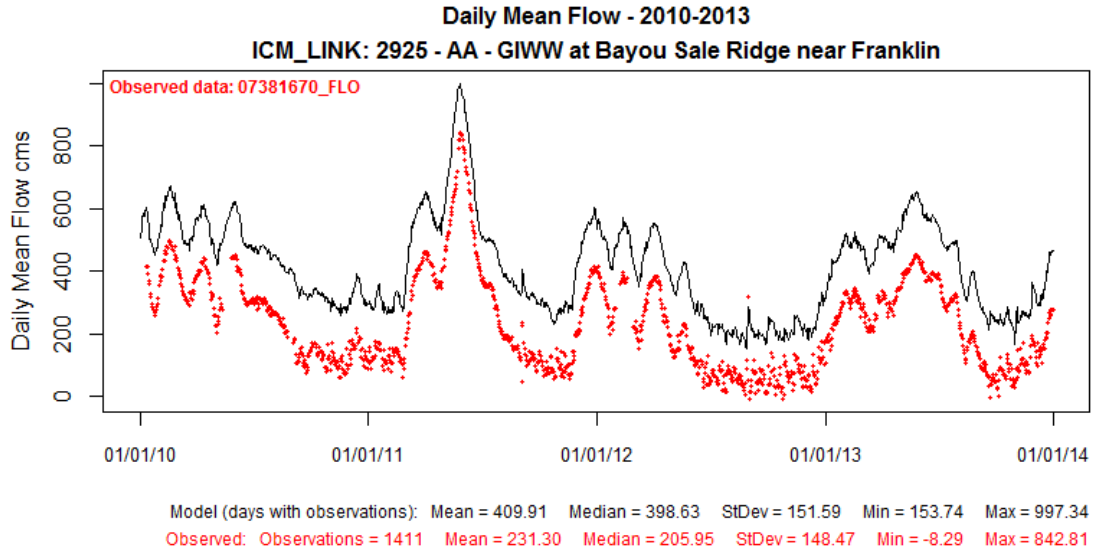
**Figure 24: Modeled Flowrate at ICM Link 1519 (solid black line) Compared to Observed Data at USGS073816503 for Validation Period 2006-2009.**



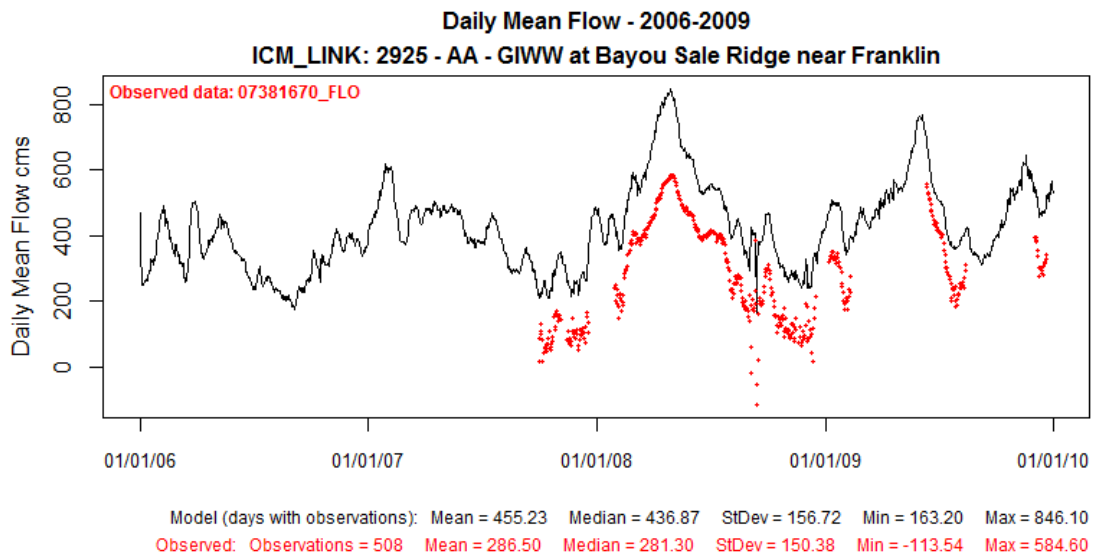
**Figure 25: Modeled Flowrate at ICM Link 1638 (solid black line) Compared to Observed Data at USGS07381324 for Calibration Period 2010-2013.**



**Figure 26: Modeled Flowrate at ICM Link 1638 (solid black line) Compared to Observed Data at USGS07381324 for Validation Period 2006-2009.**



**Figure 27: Modeled Flowrate at ICM Link 2925 (solid black line) Compared to Observed Data at USGS07381670 for Calibration Period 2010-2013.**



**Figure 28: Modeled Flowrate at ICM Link 2925 (solid black line) Compared to Observed Data at USGS07381670 for Validation Period 2006-2009.**