



Figure S1. Probability density functions of the mean shallow subsidence (SS) rate for a given number of RSET-MHs, calculated using a Monte Carlo simulation and 10,000 randomizations per analysis. Each panel shows a normal distribution curve based on the experimentally-produced histogram data.

Table S1. Information on 131 tide gauges in coastal Louisiana.

Station Name	Station Number	Operating Agency	Website	Latitude (°N)	Longitude (°E)	Record start date	Record end date	Years active	Number of Benchmarks	Benchmark setting type(s)	Depth of deepest known benchmark foundation (m)	Depth to Pleistocene surface (m)	Benchmark foundation height above Pleistocene surface (m)
Amerada Pass	8764227	NOAA	https://tidesandcurrents.noaa.gov/stationhome.html?id=8764227	29.4500	-91.3383	11/1/2005	6/29/2018	12.66	9	steel rod, concrete foundation	27.4	21	Set in Pleistocene
Bay Gardene	8761108	NOAA	https://tidesandcurrents.noaa.gov/stationhome.html?id=8761108	29.5983	-89.6183	10/16/1980	7/12/1988	7.74	5	steel rod	23.2	43	20
Bay Rambo, Texaco Dock	8761962	NOAA	https://tidesandcurrents.noaa.gov/stationhome.html?id=8761962	29.3617	-90.1400	10/29/1986	2/8/1988	1.28	5	steel rod	24.4	54	30
Bayou St. Denis, M.V. Petroleum Dock	8761799	NOAA	https://tidesandcurrents.noaa.gov/stationhome.html?id=8761799	29.4967	-90.0250	7/17/1985	9/4/1986	1.13	5	steel rod	23.2	44	21
Billet Bay	8761414	NOAA	https://tidesandcurrents.noaa.gov/stationhome.html?id=8761414	29.3717	-89.7517	7/20/1985	11/4/1986	1.29	5	steel rod	21.9	52	30
Breton Island	8760595	NOAA	https://tidesandcurrents.noaa.gov/stationhome.html?id=8760595	29.4933	-89.1733	3/17/1980	11/1/1980	0.63	6	steel rod, concrete monument	16.8	70	53
Calcasieu Pass	8768094	NOAA	https://tidesandcurrents.noaa.gov/stationhome.html?id=8768094	29.7683	-93.3433	8/11/2002	6/29/2018	15.88	5	steel rod, concrete fishing pier, large boulder, davit plate	25	18	Set in Pleistocene
Caminada Pass	8761826	NOAA	https://tidesandcurrents.noaa.gov/stationhome.html?id=8761826	29.2100	-90.0400	10/27/1986	2/2/1988	1.27	6	steel rod, retaining wall	21.9	55	33
Chef Menteur Pass	8761487	NOAA	https://tidesandcurrents.noaa.gov/stationhome.html?id=8761487	30.0650	-89.8000	11/25/1982	1/2/1991	8.10	6	steel rod, concrete bridge	35.1	13	Set in Pleistocene
Cocodrie	8762928	NOAA	https://tidesandcurrents.noaa.gov/stationhome.html?id=8762928	29.2450	-90.6617	1/1/1997	1/1/2000	3.00	0	N/A	N/A		
Comfort Island	8760742	NOAA	https://tidesandcurrents.noaa.gov/stationhome.html?id=8760742	29.8233	-89.2700	3/16/1980	3/3/1982	1.96	5	steel rod	16.8	38	21
Cypremort Point	8765251	NOAA	https://tidesandcurrents.noaa.gov/stationhome.html?id=8765251	29.7133	-91.8800	8/8/2005	11/11/2010	5.26	5	steel rod, unspecified pipe/rod, seawall	19.4	10	Set in Pleistocene
Deer Island	8764101	NOAA	https://tidesandcurrents.noaa.gov/stationhome.html?id=8764101	29.4733	-91.2667	3/18/1978	11/24/1978	0.69	0	N/A	N/A		
Devon Energy Facility, Pass A	8760417	NOAA	https://tidesandcurrents.noaa.gov/stationhome.html?id=8760417	29.2000	-89.0400	4/4/2008	2/10/2009	0.85	5	concrete support beam	unknown		
East Bay, Shell Oil	8760781	NOAA	https://tidesandcurrents.noaa.gov/stationhome.html?id=8760781	29.0533	-89.3050	1/8/1985	2/20/1986	1.12	6	steel rod, concrete platform, concrete pier, concrete foundation	14.6	106	91
East Isle Dernieres, Lake Pelto	8762888	NOAA	https://tidesandcurrents.noaa.gov/stationhome.html?id=8762888	29.0717	-90.6400	10/30/1986	9/9/1993	6.86	0	N/A	N/A		
East Timbalier Island	8762223	NOAA	https://tidesandcurrents.noaa.gov/stationhome.html?id=8762223#tides	29.0767	-90.2850	10/28/1986	1/6/1988	1.19	5	steel rod	28.8	46	17
Empire, Doullut Canal	8761207	NOAA	https://tidesandcurrents.noaa.gov/stationhome.html?id=8761207	29.3750	-89.6017	7/23/1985	1/2/1991	5.45	0	N/A	N/A		

Equitable Petroleum Dock, Turtle Bay	8761959	NOAA	https://tidesandcurrents.noaa.gov/stationhome.html?id=8761959	29.5200	-90.1383	10/29/1986	6/13/1987	0.62	0	N/A	N/A		
Eugene Island	8764311	NOAA	https://tidesandcurrents.noaa.gov/stationhome.html?id=8764311	29.3717	-91.3850	6/1/1939	8/16/2005	66.21	0	N/A	N/A		
Eugene Island, North of	8764314	NOAA	https://tidesandcurrents.noaa.gov/stationhome.html?id=8764314	29.3667	-91.3833	11/15/2014	6/29/2018	3.62	0	N/A	N/A		
Fourchon (LUMCON)	8762079	NOAA	https://tidesandcurrents.noaa.gov/stationhome.html?id=8762079	29.1133	-90.1850	10/10/1986	6/6/1988	1.66	0	N/A	N/A		
Freshwater Canal Locks	8766072	NOAA	https://tidesandcurrents.noaa.gov/stationhome.html?id=8766072	29.5517	-92.3050	8/3/2005	6/29/2018	12.90	4	steel rod, concrete structure, brass bolt set in support wall	17.1	15	Set in Pleistocene
Grand Isle	8761720	NOAA	https://tidesandcurrents.noaa.gov/stationhome.html?id=8761720	29.2550	-89.9683	8/2/1947	5/14/1980	32.78	0	N/A	N/A		
Grand Isle	8761724	NOAA	https://tidesandcurrents.noaa.gov/stationhome.html?id=8761724	29.2633	-89.9567	11/9/1979	6/29/2018	38.64	5	steel rod, concrete seawall, concrete bulkhead	19.8	57	37
Grand Pass	8760668	NOAA	https://tidesandcurrents.noaa.gov/stationhome.html?id=8760668	30.1267	-89.2217	12/10/1980	4/3/1996	15.31	5	steel rod	23.2	15	Set in Pleistocene
Greens Ditch	8761426	NOAA	https://tidesandcurrents.noaa.gov/stationhome.html?id=8761426	30.1117	-89.7600	11/25/1982	10/20/1983	0.90	6	steel rod, concrete monument	21.9	8	Set in Pleistocene
Hackberry Bay, Texaco Dock	8761819	NOAA	https://tidesandcurrents.noaa.gov/stationhome.html?id=8761819	29.4017	-90.0383	10/28/1986	11/13/1987	1.04	5	steel rod	30.5	52	22
I-10 Bonnet Carre Floodway Lafitte, Barataria	8762483	NOAA	https://tidesandcurrents.noaa.gov/stationhome.html?id=8762483	30.0683	-90.3900	4/8/2015	6/29/2018	3.23	0	N/A	N/A		
Waterway Lake Judge Perez, Hermatage Bayou	8761899	NOAA	https://tidesandcurrents.noaa.gov/stationhome.html?id=8761899	29.6667	-90.1117	6/29/1985	1/2/1991	5.51	7	steel rod, concrete foundation, concrete post	30.5	37	7
Leeville, Bayou Lafourche	8761602	NOAA	https://tidesandcurrents.noaa.gov/stationhome.html?id=8761602	29.5583	-89.8833	6/29/1985	10/1/1986	1.26	7	steel rod	24.4	39	15
Marsh Island, Atchafalaya Bay	8762084	NOAA	https://tidesandcurrents.noaa.gov/stationhome.html?id=8762084	29.2483	-90.2117	11/1/1986	1/8/1991	4.19	10	steel rod, concrete monument	28	57	29
Martello Castle	8765026	NOAA	https://tidesandcurrents.noaa.gov/stationhome.html?id=8765026	29.4850	-91.7633	6/1/1960	10/27/1978	18.40	0	N/A	N/A		
Mendicant Island	8761529	NOAA	https://tidesandcurrents.noaa.gov/stationhome.html?id=8761529	29.9450	-89.8350	12/6/2006	6/6/2007	0.50	4	steel rod, concrete monument	19.51	19	Set in Pleistocene
North Pass Olga Compressor Station	8761742	NOAA	https://tidesandcurrents.noaa.gov/stationhome.html?id=8761742	29.3183	-89.9800	7/19/1985	9/4/1986	1.13	5	steel rod	24.4	55	31
Pass Manchac	8760412	NOAA	https://tidesandcurrents.noaa.gov/stationhome.html?id=8760412	29.2050	-89.0367	3/20/1980	11/1/1980	0.62	5	steel rod	15.2	142	127
Pelican Island, Chevron Station	8760889	NOAA	https://tidesandcurrents.noaa.gov/stationhome.html?id=8760889	29.3867	-89.3800	7/12/1985	2/1/2009	23.56	5	concrete platform	unknown		
	8762273	NOAA	https://tidesandcurrents.noaa.gov/stationhome.html?id=8762273	30.2967	-90.3117	11/23/1982	6/7/1988	5.54	4	steel rod	20.7	15	Set in Pleistocene
	8761198	NOAA	https://tidesandcurrents.noaa.gov/stationhome.html?id=8761198	29.2667	-89.5983	7/9/1985	9/3/1986	1.15	5	steel rod	21.9	64	42

Pilots Station East	8760922	NOAA	https://tidesandcurrents.noaa.gov/stationhome.html?id=8760922	28.9317	-89.4067	3/8/2004	6/29/2018	14.31	0	N/A	N/A			
Pilottown	8760721	NOAA	https://tidesandcurrents.noaa.gov/stationhome.html?id=8760721	29.1783	-89.2583	12/19/1980	6/29/2018	37.52	5	steel rod, concrete walkway, concrete helipad	32	88	56	
Point au Fer	8764256	NOAA	https://tidesandcurrents.noaa.gov/stationhome.html?id=8764256	29.3333	-91.3533	6/1/1960	11/17/1978	18.46	0	N/A	N/A			
Point Barre, Humble Canal	8762731	NOAA	https://tidesandcurrents.noaa.gov/stationhome.html?id=8762731	29.4283	-90.5567	10/25/1986	11/3/1987	1.02	0	N/A	N/A			
Pointe au Chien, Cut Off Canal	8762525	NOAA	https://tidesandcurrents.noaa.gov/stationhome.html?id=8762525	29.4167	-90.4467	4/30/1987	8/2/1988	1.26	0	N/A	N/A			
Pointe au Chien, St. Louis Canal	8762571	NOAA	https://tidesandcurrents.noaa.gov/stationhome.html?id=8762571	29.4567	-90.4717	10/7/1986	3/2/1988	1.40	0	N/A	N/A			
Port Fourchon, Belle Pass	8762075	NOAA	https://tidesandcurrents.noaa.gov/stationhome.html?id=8762075	29.1133	-90.1983	7/19/2003	6/29/2018	14.95	0	N/A	N/A			
Racoon Point, Isle Dernieres	8763506	NOAA	https://tidesandcurrents.noaa.gov/stationhome.html?id=8763506	29.0633	-90.9617	2/1/1979	5/10/1979	0.27	0	N/A	N/A			
The Rigolets	8761402	NOAA	https://tidesandcurrents.noaa.gov/stationhome.html?id=8761402	30.1667	-89.7367	12/4/1980	11/22/2014	33.97	5	concrete pad, concrete monument, concrete bridge abutment, concrete stair	unknown			
Salt Point	8764632	NOAA	https://tidesandcurrents.noaa.gov/stationhome.html?id=8764632	29.5733	-91.5367	5/15/1978	7/11/1978	0.16	0	N/A	N/A			
Shell Beach	8761305	NOAA	https://tidesandcurrents.noaa.gov/stationhome.html?id=8761305	29.8683	-89.6733	11/7/1979	6/29/2018	38.64	11	steel rod, concrete foundation, raised platform, davit plate	27.4	27	Set in Pleistocene	
Shell Island, Atchafalaya Bay	8764165	NOAA	https://tidesandcurrents.noaa.gov/stationhome.html?id=8764165	29.4733	-91.3050	6/1/1960	6/1/1961	1.00	0	N/A	N/A			
South Pass	8760550	NOAA	https://tidesandcurrents.noaa.gov/stationhome.html?id=8760550	28.9917	-89.1400	3/8/1981	10/15/1984	3.61	0	N/A	N/A			
South Pass	8760551	NOAA	https://tidesandcurrents.noaa.gov/stationhome.html?id=8760551	28.9900	-89.1400	11/8/1977	9/26/2000	22.88	0	N/A	N/A			
Southwest Pass	8760943	NOAA	https://tidesandcurrents.noaa.gov/stationhome.html?id=8760943	28.9250	-89.4183	5/27/1996	3/8/2004	7.78	4	steel rod	24.4	109	85	
St. Mary's Point Superior Oil, Four Island	8761679	NOAA	https://tidesandcurrents.noaa.gov/stationhome.html?id=8761679	29.4317	-89.9383	7/18/1985	1/6/1987	1.47	5	steel rod	24.4	50	26	
Bayou Texaco Gas Platform, Caillou Bay	8763153	NOAA	https://tidesandcurrents.noaa.gov/stationhome.html?id=8763153	29.2350	-90.7800	10/30/1986	11/19/1987	1.05	0	N/A	N/A			
Texaco TB#3, Bayou Petit Caillou	8763535	NOAA	https://tidesandcurrents.noaa.gov/stationhome.html?id=8763535	29.1750	-90.9767	10/11/2008	12/18/2012	4.19	5	concrete platform, concrete pier	unknown			
Timbalier Island	8762938	NOAA	https://tidesandcurrents.noaa.gov/stationhome.html?id=8762938	29.1867	-90.6667	10/22/1986	4/7/1988	1.46	0	N/A	N/A			
Vicinity of UNO Chef Menteur	8762582	NOAA	https://tidesandcurrents.noaa.gov/stationhome.html?id=8762582	29.0667	-90.4767	10/29/1986	3/1/1988	1.34	0	N/A	N/A			
	8761385	NOAA	https://tidesandcurrents.noaa.gov/stationhome.html?id=8761385	30.0683	-89.8017	9/26/2014	11/21/2014	0.15	5	concrete bridge abutment, concrete seawall cap, concrete monument	unknown			

Wax Lake Outlet	8764361	NOAA	https://tidesandcurrents.noaa.gov/stationhome.html?id=8764361	29.5733	-91.4200	4/4/1978	11/24/1978	0.64	0	N/A	N/A		
Weeks Bay	8765148	NOAA	https://tidesandcurrents.noaa.gov/stationhome.html?id=8765148	29.8367	-91.8367	8/19/2001	9/19/2001	0.08	3	steel rod	14.3	5	Set in Pleistocene
Mermentau River at Grand Chenier (<i>sic</i>)	70900	USACE	http://rivergages.mvr.usace.army.mil/WaterControl/stationinfo2.cfm?sid=70900&fid=&dt=S	29.7704	-93.0135	2/24/2012	6/29/2018	6.34	at least 1	steel rod	1.5	6	5
Barataria Waterway at Lafitte	82875	USACE	http://rivergages.mvr.usace.army.mil/WaterControl/stationinfo2.cfm?sid=82875&fid=&dt=S	29.6694	-90.1106	2/18/2003	6/29/2018	15.36	at least 2	steel rod	7.4	36	29
Bayou Petit Caillou at Cocodrie	76305	USACE	http://rivergages.mvr.usace.army.mil/WaterControl/stationinfo2.cfm?sid=76305&fid=&dt=S	29.2543	-90.6635	3/5/1969	12/31/2014	45.82	at least 1	steel rod	24.4	57	33
East Cote Blanche Bay at Luke's Landing	88800	USACE	http://rivergages.mvr.usace.army.mil/WaterControl/stationinfo2.cfm?sid=88800&fid=&dt=S	-91.5400	-91.5400	2/22/1957	10/2/2002	45.61	0	N/A	N/A		
Crewboat Channel at Wax Lake Outlet near Calumet	03830	USACE	http://rivergages.mvr.usace.army.mil/WaterControl/stationinfo2.cfm?sid=03830&fid=&dt=S&pcode=HG	29.5400	-91.4356	4/14/1973	6/29/2018	45.21	0	N/A	N/A		
Avoca Island Cutoff south of Morgan City	03820	USACE	http://rivergages.mvr.usace.army.mil/WaterControl/stationinfo2.cfm?sid=03820&fid=&dt=S&pcode=HG	29.5333	-91.2494	2/29/1956	3/12/2015	59.03	at least 1	regular concrete	N/A		
Golden Meadow Floodgate (North)	82250	USACE	http://rivergages.mvr.usace.army.mil/WaterControl/stationinfo2.cfm?sid=82250&fid=&dt=S&pcode=HG	29.3442	-90.2464	3/16/2004	5/8/2014	10.14	at least 1	concrete headwall	N/A		
Golden Meadow Floodgate (South)	82260	USACE	http://rivergages.mvr.usace.army.mil/WaterControl/stationinfo2.cfm?sid=82260&fid=&dt=S&pcode=HG	29.3425	-90.2464	3/16/2004	5/8/2014	10.14	at least 1	concrete headwall	N/A		
Bayou Des Allemands at Des Allemands	82700	USACE	http://rivergages.mvr.usace.army.mil/WaterControl/stationinfo2.cfm?sid=82700&fid=&dt=S&pcode=HG	29.8239	-90.4767	5/22/2009	6/29/2018	9.10	at least 1	concrete monument	N/A		
Mississippi River South Pass at Port Eads	01850	USACE	http://rivergages.mvr.usace.army.mil/WaterControl/stationinfo2.cfm?sid=01850&fid=&dt=S	28.9323	-89.4071	1/1/1950	7/7/2015	65.51	at least 2	steel rod	0.9	128	127
Lake Pontchartrain at Frenier	85550	USACE	http://rivergages.mvr.usace.army.mil/WaterControl/stationinfo2.cfm?sid=85550&fid=&dt=S&pcode=HG	30.1061	-90.4214	1/26/1950	6/4/2005	55.35	0	N/A	N/A		
Calcasieu River and Pass near Cameron Freshwater Canal at Freshwater Bayou Lock - North	73650	USACE	http://rivergages.mvr.usace.army.mil/WaterControl/stationinfo2.cfm?sid=73650&fid=&dt=S	29.7758	-93.3479	1/1/1955	8/14/2005	50.62	unknown				
	76592	USACE	http://rivergages.mvr.usace.army.mil/WaterControl/stationinfo2.cfm?sid=76592&fid=&dt=S	29.5547	-92.3046	3/15/2004	6/29/2018	14.29	unknown				

Freshwater Canal at Freshwater Bayou Lock - South Schooner Bayou Control Structure - West	76593	USACE	http://rivergages.mvr.usace.army.mil/WaterControl/stationinfo2.cfm?sid=76593&fid=&dt=S	29.5524	-92.3050	7/28/1968	10/21/2012	44.23	unknown
Schooner Bayou Control Structure - West	76680	USACE	http://rivergages.mvr.usace.army.mil/WaterControl/stationinfo2.cfm?sid=76680&fid=&dt=S	29.7578	-92.2642	1/1/1961	1/27/2015	54.07	unknown
Schooner Bayou Control Structure - East	76600	USACE	http://rivergages.mvr.usace.army.mil/WaterControl/stationinfo2.cfm?sid=76600&fid=&dt=S	29.7578	-92.2638	1/1/1955	5/21/2014	59.38	unknown
IWW at Leland Bowman Lock - West	76800	USACE	http://rivergages.mvr.usace.army.mil/WaterControl/stationinfo2.cfm?sid=76800&fid=&dt=S	29.7870	-92.2093	1/1/1951	7/7/2013	62.51	unknown
IWW at Leland Bowman Lock - East	76720	USACE	http://rivergages.mvr.usace.army.mil/WaterControl/stationinfo2.cfm?sid=76720&fid=&dt=S	29.7852	-92.2041	1/1/1959	11/18/2014	55.88	unknown
Atchafalaya Bay at Eugene Island	88600	USACE	http://rivergages.mvr.usace.army.mil/WaterControl/stationinfo2.cfm?sid=88600&fid=&dt=S	29.3791	-91.3818	9/30/2008	6/29/2018	9.74	unknown
Mississippi River at Venice	01480	USACE	http://rivergages.mvr.usace.army.mil/WaterControl/stationinfo2.cfm?sid=01480&fid=&dt=S	29.2758	-89.3528	1/15/1953	12/31/2014	61.96	unknown
Mississippi River at West Bay	01515	USACE	http://rivergages.mvr.usace.army.mil/WaterControl/stationinfo2.cfm?sid=01515&fid=&dt=S	29.2401	-89.2984	2/20/2009	6/29/2018	9.35	unknown
West Bay Receiving Area - Outflow	01516	USACE	http://rivergages.mvr.usace.army.mil/WaterControl/stationinfo2.cfm?sid=01516&fid=&dt=S	29.2192	-89.3151	8/14/2008	6/29/2018	9.87	unknown
Mississippi River at Head of Passes	01545	USACE	http://rivergages.mvr.usace.army.mil/WaterControl/stationinfo2.cfm?sid=01545&fid=&dt=S	29.1338	-89.2465	4/11/2008	6/29/2018	10.21	unknown
Mississippi River Southwest Pass Mile 7.5 BHP	01575	USACE	http://rivergages.mvr.usace.army.mil/WaterControl/stationinfo2.cfm?sid=01575&fid=&dt=S	29.0564	-89.3086	12/3/2010	6/29/2018	7.57	unknown
Mississippi River Southwest Pass at East Jetty Bayou Dupre Sector Gate - West/Protected Side	01670	USACE	http://rivergages.mvr.usace.army.mil/WaterControl/stationinfo2.cfm?sid=01670&fid=&dt=S	28.9323	-89.4071	1/1/1953	7/7/2015	62.51	unknown
Bayou Dupre Sector Gate - West/Protected Side	76005	USACE	http://rivergages.mvr.usace.army.mil/WaterControl/stationinfo2.cfm?sid=76005&fid=&dt=S	29.9346	-89.8372	4/29/2008	6/29/2018	10.17	unknown
Bayou Dupre Sector Gate - East/Flood Side Bayou Bienvenue Floodgate - West/Protected Side	76010	USACE	http://rivergages.mvr.usace.army.mil/WaterControl/stationinfo2.cfm?sid=76010&fid=&dt=S	29.9352	-89.8366	4/29/2008	6/29/2018	10.17	unknown
Bayou Bienvenue Floodgate - West/Protected Side	76024	USACE	http://rivergages.mvr.usace.army.mil/WaterControl/stationinfo2.cfm?sid=76024&fid=&dt=S	29.9978	-89.9165	4/29/2008	6/29/2018	10.17	unknown

Bayou Bienvenue Floodgate - East/Flood Side	76025	USACE	http://rivergages.mvr.usace.army.mil/WaterControl/stationinfo2.cfm?sid=76025&fid=&dt=S	29.9987	-89.9153	1/1/2007	6/29/2018	11.49	unknown
IHNC Surge Barrier West / Protected Side	76032	USACE	http://rivergages.mvr.usace.army.mil/WaterControl/stationinfo2.cfm?sid=76032&fid=&dt=S	30.0124	-89.9006	2/17/2010	6/29/2018	8.36	unknown
IHNC Surge Barrier East / Flood Side	76030	USACE	http://rivergages.mvr.usace.army.mil/WaterControl/stationinfo2.cfm?sid=76030&fid=&dt=S	30.0124	-89.9005	10/15/2010	6/29/2018	7.70	unknown
Chef Menteur Pass nr Lake Borgne	85750	USACE	http://rivergages.mvr.usace.army.mil/WaterControl/stationinfo2.cfm?sid=85750&fid=&dt=S	30.0667	-89.8010	10/9/2007	6/29/2018	10.72	unknown
Rigolets near Lake Pontchartrain	85700	USACE	http://rivergages.mvr.usace.army.mil/WaterControl/stationinfo2.cfm?sid=85700&fid=&dt=S	30.1634	-89.7379	1/1/1950	8/6/2001	51.59	unknown
Lake Pontchartrain at Mandeville Lake	85575	USACE	http://rivergages.mvr.usace.army.mil/WaterControl/stationinfo2.cfm?sid=85575&fid=&dt=S	30.3658	-90.0923	8/2/1957	7/26/2002	44.98	unknown
Pontchartrain at Lakefront Airport Seabrook Floodgate Closure Structure - Lake Side Seabrook Floodgate Closure Structure - IHNC Side Seabrook Bridge - Inner Harbor Nav Canal	85670	USACE	http://rivergages.mvr.usace.army.mil/WaterControl/stationinfo2.cfm?sid=85670&fid=&dt=S	30.0399	-90.0188	1/1/2007	6/29/2018	11.49	unknown
Bayou St John at Lake Pontchartrain	85634	USACE	http://rivergages.mvr.usace.army.mil/WaterControl/stationinfo2.cfm?sid=85634&fid=&dt=S	30.0243	-90.0827	4/29/2011	6/29/2018	7.17	unknown
Lake Pontchartrain at West End Lake Pontchartrain at Bonnet Carre Spillway	85625	USACE	http://rivergages.mvr.usace.army.mil/WaterControl/stationinfo2.cfm?sid=85625&fid=&dt=S	30.0222	-90.1156	3/10/1949	12/31/2014	65.81	unknown
Pass Manchac near Pontchatoula Catfish Point Control Structure - North	85555	USACE	http://rivergages.mvr.usace.army.mil/WaterControl/stationinfo2.cfm?sid=85555&fid=&dt=S	30.0559	-90.3722	1/1/2007	5/20/2011	4.38	unknown
	85420	USACE	http://rivergages.mvr.usace.army.mil/WaterControl/stationinfo2.cfm?sid=85420&fid=&dt=S	30.2814	-90.4003	4/17/2009	6/29/2018	9.20	unknown
	70675	USACE	http://rivergages.mvr.usace.army.mil/WaterControl/stationinfo2.cfm?sid=70675&fid=&dt=S	29.8636	-92.8484	1/1/1955	3/12/2015	60.19	unknown

Cattfish Point Control Structure - South Inner Harbor Navigation Canal (IHNC Lock) New Orleans	70750	USACE	http://rivergages.mvr.usace.army.mil/WaterControl/stationinfo2.cfm?sid=70750&fid=&dt=S	29.8629	-92.8492	1/1/1955	3/12/2015	60.19	unknown
Bayou Boeuf Lock - East	76360	USACE	http://rivergages.mvr.usace.army.mil/WaterControl/stationinfo2.cfm?sid=76360&fid=&dt=S	29.9665	-90.0268	1/1/1945	3/12/2015	70.19	unknown
IWW at Calcasieu Lock - West	76960	USACE	http://rivergages.mvr.usace.army.mil/WaterControl/stationinfo2.cfm?sid=76960&fid=&dt=S	30.0887	-93.2949	1/1/1951	8/27/2014	63.65	unknown
Mississippi River at New Orleans (Carrollton)	01300	USACE	http://rivergages.mvr.usace.army.mil/WaterControl/stationinfo2.cfm?sid=01300&fid=&dt=S	29.9347	-90.1361	1/1/1950	1/1/2015	65.00	unknown
Mississippi River at IHNC Lock	01340	USACE	http://rivergages.mvr.usace.army.mil/WaterControl/stationinfo2.cfm?sid=01340&fid=&dt=S	29.9644	-90.0274	1/1/1945	1/27/2015	70.07	unknown
Mississippi River at West Pointe a la Hache	01400	USACE	http://rivergages.mvr.usace.army.mil/WaterControl/stationinfo2.cfm?sid=01400&fid=&dt=S	29.5711	-89.7969	1/1/1950	12/31/2014	65.00	unknown
Calcasieu River & Pass at Lake Charles	73550	USACE	http://rivergages.mvr.usace.army.mil/WaterControl/stationinfo2.cfm?sid=73550&fid=&dt=S	30.2131	-93.2569	1/1/1950	7/7/2003	53.51	unknown
GIWW at Houma Bayou Lafourche at Leeville	76320	USACE	http://rivergages.mvr.usace.army.mil/WaterControl/stationinfo2.cfm?sid=76320&fid=&dt=S	29.5981	-90.7100	1/1/1959	11/17/2008	49.88	unknown
Bayou Barataria at Barataria	82750	USACE		29.2478	-90.2089	11/4/1955	4/8/2000	44.43	unknown
Bayou Terre Aux Boeufs at Delacroix, La. MRGO at Shell Beach	85780	USACE	http://rivergages.mvr.usace.army.mil/WaterControl/stationinfo2.cfm?sid=85780&fid=&dt=S	29.7414	-90.1322	1/6/1950	11/12/1992	42.85	unknown
	85800	USACE		29.7639	-89.7922	5/15/1975	8/28/2005	30.29	unknown
Calcasieu River	08017118	USGS	http://nwis.waterdata.usgs.gov/nwis/inventory/?site_no=08017118&agency_cd=USGS	29.8500	-89.6833	6/30/1961	12/16/2002	41.46	unknown
Caillou Bay	073813498	USGS	http://waterdata.usgs.gov/la/nwis/uv/?site_no=073813498&agency_cd=USGS	29.8156	-93.3489	10/1/2007	6/29/2018	10.74	unknown
Black Bay	073745275	USGS	http://waterdata.usgs.gov/nwis/uv/?site_no=073745275&agency_cd=USGS	29.0781	-90.8714	10/1/2007	6/29/2018	10.74	unknown
Crooked Bayou	073745257	USGS	http://waterdata.usgs.gov/nwis/uv/?site_no=073745257&agency_cd=USGS	29.5693	-89.5122	5/21/2014	6/29/2018	4.11	unknown
	073745257	USGS		29.7081	-89.7194	10/1/2007	6/29/2018	10.74	unknown

Cow Bayou at American Bay	073745258	USGS	http://waterdata.usgs.gov/nwis/inventory/?site_no=073745258	29.5706	-89.7039	1/28/1999	6/29/2018	19.42	unknown		
Barataria Pass at Grand Isle	073802516	USGS	http://waterdata.usgs.gov/nwis/uv/?site_no=073802516&agency_cd=USGS	29.2728	-89.9468	10/1/2008	6/29/2018	9.74	at least 1	concrete retaining wall	N/A
Mouth of Atchafalaya River	073816525	USGS	http://waterdata.usgs.gov/nwis/uv/?site_no=073816525&agency_cd=USGS	29.4303	-91.3339	5/21/2015	6/29/2018	3.11	unknown		
Crewboat Channel at Wax Lake Outlet	073815925	USGS	http://waterdata.usgs.gov/nwis/inventory/?site_no=073815925&agency_cd=USGS	29.5400	-91.4356	10/1/2002	6/29/2018	15.74	unknown		
Vermilion Bay	07387040	USGS	http://waterdata.usgs.gov/nwis/uv/?site_no=07387040&agency_cd=USGS	29.7131	-91.8803	10/23/1997	6/29/2018	20.68	unknown		
Vermilion Bay Bayou Fearman Lower	07387050	USGS	http://waterdata.usgs.gov/nwis/dv/?site_no=07387050&agency_cd=USGS&app=referred_module=sw	29.6744	-92.1356	10/1/1999	6/29/2018	18.74	unknown		
Atchafalaya River at Morgan City	07381600	USGS	http://waterdata.usgs.gov/nwis/uv/?site_no=07381600&agency_cd=USGS	29.6926	-91.2118	10/1/1992	9/30/2015	23.00	unknown		
Calumet (Wax Lake Outlet)	07381590	USGS	http://waterdata.usgs.gov/nwis/uv/?site_no=07381590	29.6978	-91.3728	10/1/1995	9/30/2015	20.00	unknown		
North Calcasieu Lake (Hackberry)	08017095	USGS	http://waterdata.usgs.gov/la/nwis/uv/?site_no=08017095&PARAMeter_cd=00065,72020,63160,00060	30.0317	-93.2994	7/26/1997	6/29/2018	20.93	unknown		

Table S2. Information on 17 GPS stations in coastal Louisiana.

Station ID	Latitude	Longitude	Foundation Depth (m)	Depth to Pleistocene surface (m)	Benchmark foundation height above Pleistocene surface (m)
AWES	30.10	-90.98	1	29	28
BVHS	29.34	-89.41	>20	62	<42
CAMR	29.80	-93.33	unknown		
DSTR	29.96	-90.38	unknown		
ENG1	29.88	-89.94	~3	27	~24
ENG2	29.88	-89.94	~3	27	~24
FRAN	29.80	-91.53	14.7	10	Set in Pleistocene
FSHS	29.81	-91.50	1	15	14
GRIS	29.27	-89.96	unknown		
HOMA	29.57	-90.76	18.3	40	21.7
HOUM	29.59	-90.72	>15	40	<25
LAFR	29.79	-91.50	unknown		
LMCN	29.25	-90.66	36.5	57	20.5
LWES	29.90	-90.35	unknown		
MSSC	30.38	-89.61	unknown		
NDBC	30.36	-89.61	unknown		
VENI	29.28	-89.36	30.5	78	47.5