

Supplemental Table 1. Selected surface observations for Hurricane Irene, 21 -28 August 2011

Location	Minimum Sea Level Pressure		Maximum surface wind speed			Storm surge (m) ^c	Storm tide (m) ^d	Total rain (mm)
	Date/time (UTC)	Press. (mb)	Date/time (UTC) ^a	Sustained (kt) ^b	Gust (kt)			
Netherlands Antilles								
Saint Eustatius (TNCE)	21/1500	1004.1	21/1500	31	47			
Dominican Republic								
Puerto Plata (MDPP)	23/1200	991.2	23/0600	50				
Bahamas								
George Town (MYEG)	25/0259	974.0	25/0559	42	60			
Eleuthera	25/0900	952.4						
Nassau (MYNN)	25/1300	987.5	25/1000	36	54			
Marsh Harbor, Abacos	25/1700	950.4						
West End Grand Bahama	26/0000	995.9	26/0100	79				
United States								
Puerto Rico and the U.S. Virgin Islands								
ICAO Sites								
San Juan, PR (TJSJ)	22/0730	992.3	22/0611	39	51			
St. Thomas, VI (TIST)	21/2143	1004.4	21/2112	40	60			
St. Croix, VI (TISX)	23/0153	997.6	22/0038	38	44			
Roosevelt Roads, PR (TJNR)	22/0458	997.0	22/0054	34	49			
Marine Observations								
Christiansted Harbor, St. Croix, VI (CHSV3)	21/2218	996.5	21/2342	28	63	0.31	0.50	
Lime Tree Bay, St. Croix, VI (LTBV3)	21/2236	996.9	22/0006	37	49	0.24	0.47	
Charlotte Amalie, St. Thomas, VI (CHAV3)	21/2130	1003.7				0.29	0.43	
Lameshur Bay, St. John, VI (9751381)	21/2142	1004.5				0.18	0.40	
Culebra, PR (CLBP4)	22/0512	1004.5	22/0254	20	44	0.20	0.49	
Esperanza, Vieques, PR (ESPP4)	22/0412	996.0	22/0448	51	66	0.49	0.60	
Fajardo, PR (FRDP4)	22/0530	998.4	22/0406	35	53	0.49	0.79	
Yabucoa Harbor, PR (YABP4)			22/0648	26	44	0.29	0.40	
San Juan, PR (SJNP4)	22/0742	992.7	22/0654	35	48	0.26	0.55	

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	Date/time (UTC)	Press. (mb)	Date/time (UTC) ^a	Sustained (kt) ^b	Gust (kt)			
Public/Other								
Gurabo (GARP4) 18.25 N -65.98 W			22/0545		49			561.09
Canovanos (CNAP4) 18.37 N -65.91 W								525.78
Naguabo (NGHP4) 18.21 N -65.74 W								480.57
San Lorenzo (SLGP4) 18.19 N -65.97 W								457.71
Orocovis (OROP4) 18.22 N -66.39 W								453.14
Luquillo (MSCP4) 18.37 N -65.72 W								444.50
Carolina (TJSJ) 18.40 N -65.98 W								311.15
Ponce (IANP4) 17.98 N -66.61 W								256.29
Fajardo			22/0520		62			
Yubucoa			22/0655		56			
Las Mareas			22/0540		35			
Florida								
Marine Observations								
Mayport (Bar Pilots Dock) (MYPF1)	27/2248	1004.5	26/1212	28		0.42	2.06	
Fernandina Beach (FRDF1)	27/2248	1001.4				0.56	2.65	
Georgia								
Marine Observations								
Fort Pulaski (FPKG1)	27/2042	1000.9	26/1836	26	33	0.35	2.78	
South Carolina								
International Civil Aviation Organization (ICAO) Sites								
Myrtle Beach (KMYR)			26/2123	30	38			
North Myrtle Beach (KCRE)	27/0853	989.5	26/2059	28	43			
Marine Observations								
Clarendon Plantation (8667633)						0.49	3.03	
Charleston (8665530)	27/0724	998.6	26/1648	30	40	0.44	2.33	

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	Date/time (UTC)	Press. (mb)	Date/time (UTC) ^a	Sustained (kt) ^b	Gust (kt)			
Springmaid Pier (MROS1)	27/0748	991.0	26/2130	40	54	0.50	2.33	
North Carolina								
ICAO Sites								
Beaufort (KMRH)	27/1256	951.9	27/1503	46	61			160.27
Frisco (KHSE)	27/1735	970.2	27/1251	51	76			171.96
Non-Metar Observations								
Cedar Island (CITN7)	27/1400	954.0	27/1050	63	78			
Cedar Island Ferry			27/1150		100			
Weatherflow Observations								
Fort Macon			27/1510		80			
Pamlico Sound			27/1135		74			
Marine Observations								
Oregon Inlet (ORIN7)	27/1954	965.5	27/2042	51	70	2.16	2.32	
Duck (DUKN7)	27/2112	950.6	27/2106	61	73	0.55	1.59	
Texas Tech University Tower Observations								
Tower 0103A 35.55 N 75.61 W	27/1100			71*				
Tower 0107A 34.69N 76.67 W	27/1000			69*				
Virginia								
ICAO Sites								
Richmond (KRIC)	27/2254	986.6	28/0254	35	61			136.40
James City/Williamsburg (KJGG)			27/2355	21	66			
Non-Metar Observations								
Reston (RSTFM)			28/0615		48			
Lorton (LORTN)			28/0559		43			
Weatherflow Observations								
Cape Henry	27/0036	963.0	27/1126	48	57			
Cobb			28/0110	58	64			
Marine Observations								
Chesapeake Light Tower (CHLV2)	28/0100	959.0	27/2200	51	64			

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	Date/time (UTC)	Press. (mb)	Date/time (UTC) ^a	Sustained (kt) ^b	Gust (kt)			
York River Range (YRKV2)	28/0106	972.6	27/1812	49	65			
Maryland								
ICAO Sites								
Salisbury (KSBY)	28/0554	971.1	27/2116	40	53			
Patuxent River NAS (KNHK)	28/0552	979.3	28/0231	36	56			
Non-Metar Observations								
Chesapeake Beach (CHSRL)			28/0215		63			
Gaithersburg (GTHNT)			28/0559		63			
Weatherflow Observations								
Herring Bay			28/0040	41	56			
Tolly Point			28/0220	45	60			
Marine Observations								
Thomas Point (TPLM2)	28/0800	979.6	28/0229	49	62			
Cove Point (COVM2)	28/0600	978.4	28/0024	51	63			
Delaware								
ICAO Sites								
Georgetown (KGED)	28/0654	971.1	27/2210	36	52			142.24
Wilmington (KILG)	28/0951	976.5	28/1651	31	49			176.28
Marine Observations								
Lewes (LWSD1)	28/0730	968.4	27/2206	41	57	0.91	2.50	
Brandywine Shoal Light (BRND1)	28/0754	968.9	28/1642	53	67	0.82	2.69	
New Jersey								
ICAO Sites								
Atlantic City (KACY)	28/0936	965.1	28/1812	35	50			149.35
Newark (KEWR)	28/1218	967.5	28/1954	39	53			226.57
Non-Metar Observations								
Perth Amboy Junction			28/0450		58			
Robbins Reef (ROBN4)			28/0800		61			
Marine Observations								
Cape May (CMAN4)	28/0806	967.1	28/1648	51	65	0.76	2.61	

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	Date/time (UTC)	Press. (mb)	Date/time (UTC) ^a	Sustained (kt) ^b	Gust (kt)			
Quonset Point (QPTR1)	28/1818	983.4	28/1642	44	56	0.73	2.10	
Conimicut Light (CPTR1)	28/1948	983.1	28/1330	55	72	0.75	2.31	
Massachusetts								
ICAO Sites								
Hyannis (KHYA)	28/2156	990.3	28/1814	38	57			1.78
Milton (KMQE)	28/1954	984.0	28/1654	37	70			50.55
Marine Observations								
Nantucket Island (NTKM3)	28/2024	991.1	28/1748	26	42	0.39	1.38	
Boston (BHBM3)	28/2112	983.3				0.52	3.64	
Vermont								
ICAO Sites								
Springfield (KVSF)	28/2054	979.5	28/2309		35			143.76
Burlington (KBTV)	28/2049	983.3	29/0038		43			85.85
ICAO Sites								
Nashua	28/2051	981.8	28/1353	28	45			77.22
Mt. Washington (KMWN) (elevation 6266 ft)			29/0655	86	97			
Marine Observations								
Fort Point (8423898)						0.17	3.33	
Maine								
ICAO Sites								
Augusta (KAUG)	29/0253	985.3	28/1934	32	49			
Bar Harbor (KBHB)	29/0255	985.1	29/2115	32	46			
Marine Observations								
Wells (WELM1)	29/0042	983.5	28/1736	29	38	0.24	3.42	
Eastport (PSBM1)	29/0724	991.9	29/0036	36	47	0.33	6.71	
Buoys								
41043 Southwest Atlantic	22/0750	1010.6	22/1336	37	45			
41046 Eastern Bahamas	24/0650	1010.3	23/0850	35	39			
41047 Southwest Atlantic	25/0850	1011.9	25/1846	35	39			
41009 E of Cape Canaveral	26/0720	1000.1	26/0350	31				
41010 Cape Canaveral	26/0720	982.2	26/0620	49				

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	Date/time (UTC)	Press. (mb)	Date/time (UTC) ^a	Sustained (kt) ^b	Gust (kt)			
41012 St. Augustine	26/1050	1001.4	26/1430	32	41			
41008 Grays Reef	27/2150	1001.7	26/1640	31	43			
41004 Charleston	26/2350	991.6	26/2310	45	56			
41013 Frying Pan Shoals	27/0650	976.1	26/2210	47	60			
41036 Onslow Bay	27/1020	956.7	27/1620	49	64			
41001 Cape Hatteras	27/1850	997.3	27/1850	38	52			
44014 Virginia Beach	28/0050	969.5	27/2310	44	56			
44009 Cape May	28/0550	967.8	27/2140	42	54			
44065 Entrance to NY Harbor	19/1250	968.3	28/1220	47	52			
44008 Nantucket	28/1950	996.0	28/1750	36	47			
44018 Cape Cod	28/2050	994.1	29/0150	31	39			
44020 Nantucket Sound	28/2050	989.2	28/2350	41	50			
44013 Boston	28/2050	984.0	28/1550	36	49			
44005 Gulf of Maine			28//225	37				
44007 Gulf of Maine	29/0150	983.2	28/2250	32	45			

* Observation adjusted to 10 m by Dr. John Schroeder (program director)and colleagues from Texas Tech University Hurricane Research Team.

^a Date/time is for sustained wind when both sustained and gust are listed.

^b Except as noted, sustained wind averaging periods for C-MAN and land-based ASOS reports are 2 min; buoy averaging period is 8 min.

^c Storm surge is water height above normal astronomical tide level.

^d Storm tide is referenced above Mean Lower Low Water (MLLW). Bold numbers indicate that the maximum recorded water level exceeded historical maximum values.

^e Anemometer height 5 m.

^f Wind averaging period 10 min.

^g Sensor reached physical limit on measurements and did not record a maximum value.

^h Maximum storm tide/storm surge likely includes effects from freshwater runoff.

Supplemental Table 2. Selected minimum sea level pressure and wind speed observations for Tropical Storm Lee, 2-5 September 2011. Storm Surge data include observations during the extratropical portion of Lee's lifecycle.

Location (anemometer height if not 10 m and known)	Minimum Sea Level Pressure		Maximum Surface Wind Speed			Storm surge (m) ^c	Storm tide (m) ^d
	Date/ time (UTC)	Press. (mb)	Date/ time (UTC) ^a	Sustained (kt) ^b	Gust (kt)		
Country or State							
Texas							
International Civil Aviation Organization (ICAO) Sites							
Beaumont (KBPT)	04/0917	996.3	03/2101	27	36		
Galveston (KGLS)			04/0052	34	41		
Public/Other							
Texas Point 29.7°N 93.8°W	04/0900	996.3	03/2018	35	45		
High Island 29.7°N 94.4°W			03/1812	28	39		
National Ocean Service (NOS) Sites							
Sabine Pass North (SBPT2) 29.7°N 93.9°W 10m	04/0854	997.9	03/2006	36	50		
Louisiana							
ICAO Sites							
New Orleans- Lakefront Airport (KNEW)	04/0224	997.6	04/1128	40	50		
New Orleans- Armstrong Int'l Airport (KMSY)	04/0223	997.6	04/0838	32	43		
Remote Automated Weather Stations (RAWS)							
Lacassine (LACL1)			04/2243	24	37		
Louisiana Agriculture Information Mesonet							
Alexandria Dean Lee Research Station 31.2°N 92.4°W			04/2333	29	43		
NOS Sites							
Shell Beach (SHBL1) 29.9°N 89.7°W 10m	04/0012	1000.0	03/1300	38	48	1.21	1.65

Location (anemometer height if not 10 m and known)	Minimum Sea Level Pressure		Maximum Surface Wind Speed			Storm surge (m) ^c	Storm tide (m) ^d
	Date/ time (UTC)	Press. (mb)	Date/ time (UTC) ^a	Sustained (kt) ^b	Gust (kt)		
Pilots Station East (PSTL1) 28.9°N 89.40°W 24m	04/0048	999.9	03/0830	37	50	0.50	0.89
Coastal Studies Institute							
Marsh Island (MRSL1) 29.4°N 92.1°W 23m	04/1000	986.2	04/1100	35	46		
Louisiana Universities Marine Consortium (LUMCON)							
Terrebonne Bay (TRBL1) 29.2°N 90.6°W 14m	03/0300	1002.5	03/0400	29	43		
Western Lake Pontchartrain (LKPL1) 30.3°N 90.3°W 13m	03/0400	1004.4	03/0400	29	43		
Mississippi							
ICAO Sites							
Gulfport (KGPT)	05/0559	1000.7	03/0542	34	44		
Boothville (KBVE)	04/0051	999.6	04/1652	29	39		
NOS Sites							
Gulfport Outer Range (GPOM6) 30.2°N 89.0°W	03/2348	1001.4	04/1718	40°	58		
Gulfport West Pier (GWPM6) 30.3°N 89.0°W 14m	03/2342	1000.8	04/0142	35	45		
National Estuarine Research Reserve (NERRS)							
Grand Bay Reserve (GDXM6) 30.4°N 88.4°W 5m	03/2245	1000.2	03/2245	32			
Alabama							
ICAO Sites							
University of South Alabama (USA) Mesonet (10m anemometer heights)							

Location (anemometer height if not 10 m and known)	Minimum Sea Level Pressure		Maximum Surface Wind Speed			Storm surge (m) ^c	Storm tide (m) ^d
	Date/ time (UTC)	Press. (mb)	Date/ time (UTC) ^a	Sustained (kt) ^b	Gust (kt)		
Dauphin Island 30.2°N 88.1°W			03/1944	43	47		
Grand Bay 30.5°N 88.4W			03/2352	28	39		
NOS Sites							
Dauphin Island 30.3°N 88.1°W			04/0006	40	54	0.60	1.05
Fort Morgan (FMOA1) 30.2°N 88.0°W 33m			3/1942	45	51		
Florida							
NOS Sites							
Panama City (PACF1) 30.2°N 85.7°W						0.59	0.90
Pensacola (PCLF1) 30.4°N 87.2°W						0.58	1.03
Offshore Observations							
Oil Platforms							
Mississippi Canyon 311a (KMDJ) 28.6°N 89.8°W 90m			03/0855	51 (42 ^h)	58		
Louisiana Offshore Oil Port (LOPL1) 28.9°N 90.0°W 58m	04/0034	996.1	03/0939	46	63		
Viosca Knoll 936 (42364) 29.1°N 88.1°W 122m	4/0245	1005.4	03/1800	47			

^a Date/time is for sustained wind when both sustained and gust are listed.

^b Except as noted, sustained wind averaging periods for C-MAN and land-based ASOS reports are 2 min; buoy averaging periods are 8 min.

^c Storm surge is water height above normal astronomical tide level.

^d NOS values are relative to Mean Lower Low Water (MLLW). USACOE and USGS observations are above National Geodetic Vertical Datum (1988 mean sea level), except as noted.

^c Peak wind occurred during a short-lived squall and is not representative of the overall intensity of the cyclone.

^f Anemometer height is 3 m above sea level but data are adjusted to 10 m by the owner of the buoy.

^g Above National Geodetic Vertical Datum (1929 mean sea level).

^h Wind after a reduction to a standard height of 10 m using the mean hurricane dropwindsonde profile.

Supplemental Table 3. Selected minimum pressure and maximum wind observations from land stations associated with post-tropical cyclone Lee, 5 September 2011.

Location	Minimum Sea Level Pressure		Maximum Surface Wind Speed		
	Date/ time (UTC)	Press. (mb)	Date/ time (UTC) ^a	Sustained (kt) ^b	Gust (kt)
Louisiana					
Boothville (KBVE)	05/1323	998.0	05/0921	34	46
New Orleans (KNEW)	05/1341	995.6	05/1455	42	49
Mississippi					
ICAO Sites					
Meridian (KMEI)	05/0737	998.6	05/0810	32	43
Greenville (KGLH)			05/1401	36	45
Alabama					
ICAO Sites					
Mobile Regional (KMOB)	05/1733	996.6	05/1301	30	42
Mobile Brookley (KBFM)	05/1746	997.0	05/2143	36	48
University of South Alabama (USA) Mesonet (10m anemometer heights)					
Dauphin Island 30.2°N 88.1°W			05/1316	44	48
Elberta 30.4°N 87.6°W			05/1029	33	39
Loxley 30.6°N 87.7°W			05/1812	31	38
NOS Sites					

Location	Minimum Sea Level Pressure		Maximum Surface Wind Speed		
	Date/ time (UTC)	Press. (mb)	Date/ time (UTC) ^a	Sustained (kt) ^b	Gust (kt)
Fort Morgan (FMOA1) 30.2°N 88.0°W 33m			05/1700	44	51
Florida					
ICAO Sites					
Pensacola Regional (KPNS)	05/2057	997.6	05/1647	37	51
Milton (KNSE)	05/2056	995.6	05/1732	29	51
USA Mesonet					
Jay 30.9°N 87.2°W			05/1817	36	49
Walnut Hill 30.9°N 87.5°W			05/1811	32	42

^a Date/time is for sustained wind when both sustained and gust are listed.

^b Except as noted, sustained wind averaging periods for C-MAN and land-based ASOS reports are 2 min; buoy averaging periods are 8 min.