

Article

Atmospheric Drivers of Oceanic North Swells in the Eastern Caribbean

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Citation: Hawkins, T.W.; Gouirand, I.; Allen, T.; Belmadani, A. Atmospheric Drivers of Oceanic North Swells in the Eastern Caribbean. *J. Mar. Sci. Eng.* **2022**, *10*, 183. <https://doi.org/10.3390/jmse10020183>

Academic Editor: Alfredo L. Aretxabaleta

Received: 31 December 2021

Accepted: 27 January 2022

Published: 29 January 2022

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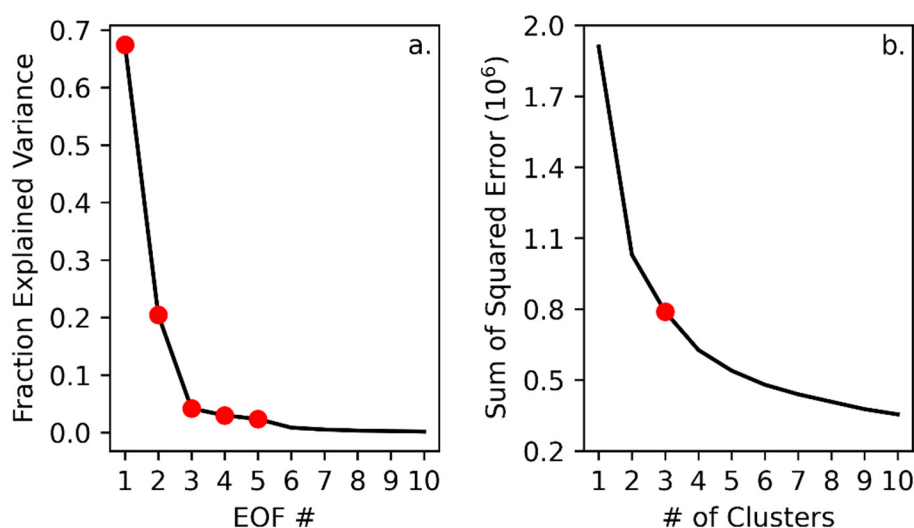


Figure S1. (a) Fraction of explained variance for each EOF. (b) Sum of squared error for each set of clusters. For both panels, red points represent the selected EOF's or number of clusters.

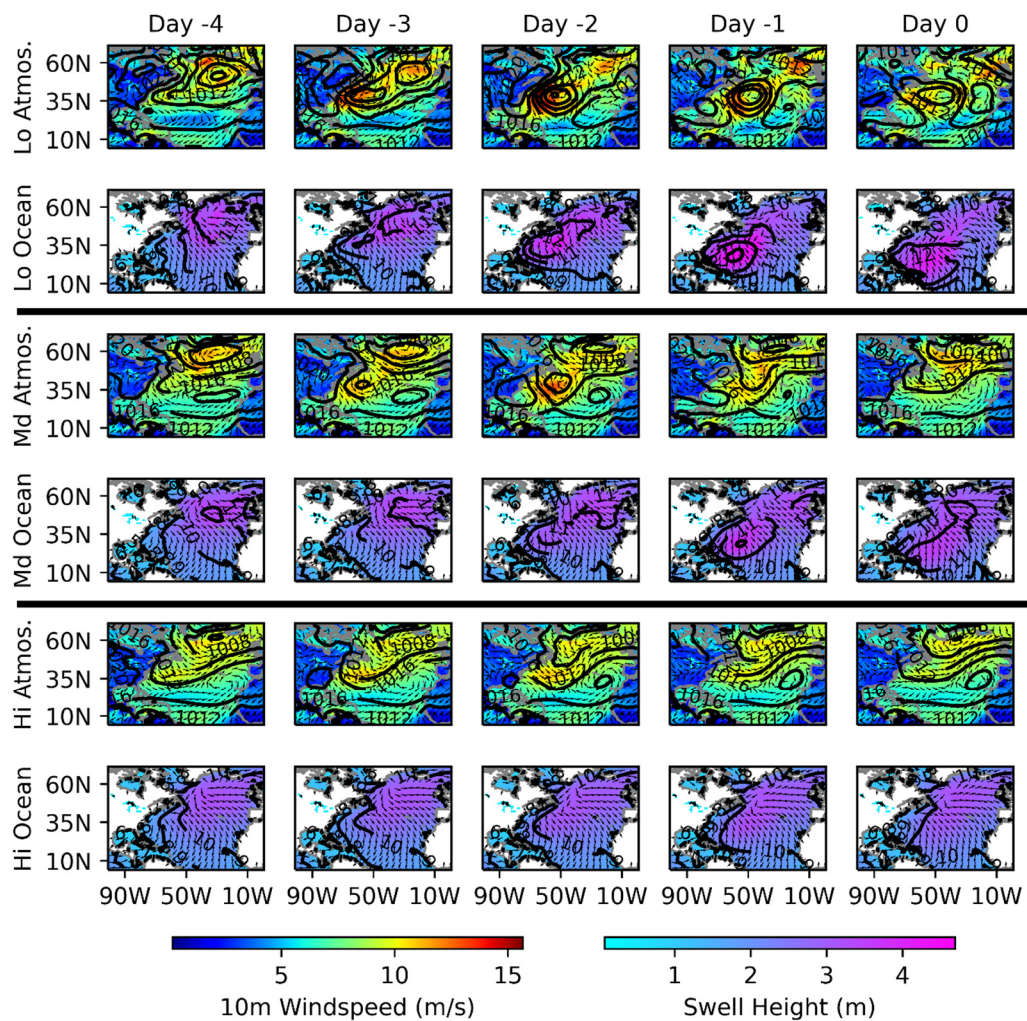


Figure S2. Atmosphere (rows 1, 3, and 5) and ocean swell (rows 2, 4, and 6) composite averages for low probability north swell events (Lo; rows 1–2; 12 days composited), medium probability north swell events (Md; rows 3–4; 73 days composited), and high probability north swell events (Hi; rows 5–6; 1007 days composited). Probabilities are defined as: Lo < 0.25, $0.25 \leq \text{Md} \leq 0.75$, Hi > 0.75. Shading is the surface wind speed or swell height. Contours are the sea level pressure or swell period. Vectors are the surface wind or swell direction. Day 0 is the day that was classified as belonging to one of the three swell probability groups. Days –1 to –4 represent the 4 days prior to Day 0. Anomalies in figure 11 are based on these composite averages.

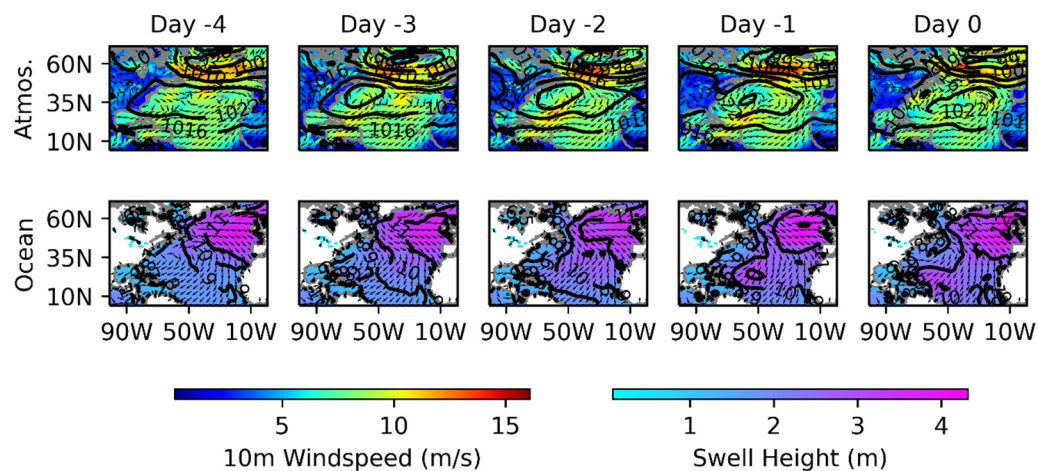


Figure S3. Same as Figure S2 except composite averages for high pressure induced, medium probability north swell events (10 days composited per map). Day 0 is the day that was classified as a north swell day. Anomalies in figure 14 are based on these composite averages.

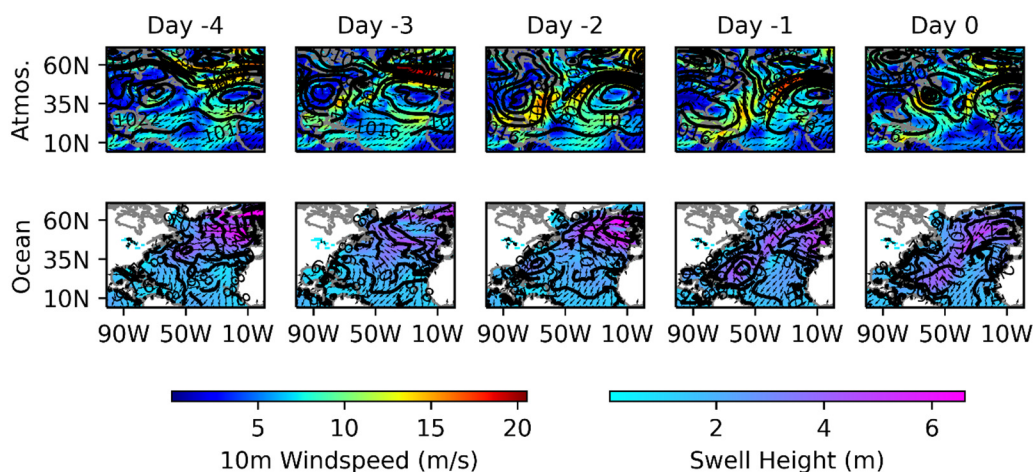


Figure S4. Same as Figure S2 except high pressure induced low probability north swell event (day 0 = 12/22/1991). Day 0 is the day that was classified as a north swell day. Anomalies in figure 15 are based on these composite averages.

Table S1. North swell events, ranked by maximum swell height in the eastern Caribbean for the 59 events with a probability less than 0.75. Max Height is the largest, daily, spatially averaged swell height during the event. Max Height Period and Dir. are the daily spatially averaged swell period and direction on the Max Height Date. Max Height Prob. is the GEV probability of the Max Height. Avg Height, Period and Dir. are the average of the daily spatially averaged values of swell height, period, and direction over the duration of the event. Table break separates low and medium probability events.

Rank	Start Date	End Date	Days	Max Height (m)	Max Height Date	Max Height Period (s)	Max Height Dir. (°)	Max Height Prob.	Avg Height (m)	Avg Period (s)	Avg Dir. (°)
1	3/19/2008	3/22/2008	4	4.5	3/20/2008	14.1	359	0.005	3.5	12.6	3
2	3/4/2018	3/9/2018	6	4.0	3/5/2018	13.4	336	0.035	3.1	12.3	354
3	2/2/1999	2/4/1999	3	3.7	2/3/1999	12.5	8	0.083	3.4	11.7	10
4	12/27/2009	12/31/2009	5	3.7	12/29/2009	13.8	29	0.095	2.9	11.9	26
*5	12/21/1991	12/25/1991	5	3.6	12/22/1991	11.3	357	0.112	2.7	10.7	1
6	1/13/2013	1/16/2013	4	3.5	1/14/2013	13.3	11	0.153	2.9	11.7	14
7	11/24/1980	11/28/1980	5	3.5	11/25/1980	12.9	3	0.161	2.7	11.5	19
8	11/27/1981	11/30/1981	4	3.4	11/28/1981	12.7	353	0.230	2.8	11.5	4
9	3/9/2013	3/16/2013	8	3.4	3/11/2013	12.9	359	0.238	2.7	11.8	9
10	2/12/2010	2/15/2010	4	3.4	2/13/2010	13.4	337	0.251	2.3	11.1	349
11	12/22/2010	12/25/2010	4	3.4	12/23/2010	12.8	346	0.253	2.7	11.5	355
12	1/11/2016	1/16/2016	6	3.4	1/13/2016	13.2	28	0.254	2.6	11.8	27
13	1/16/2000	1/19/2000	4	3.3	1/17/2000	10.9	352	0.277	2.8	10.6	3
14	11/1/1991	11/3/1991	3	3.3	11/1/1991	13.4	3	0.292	2.7	11.4	15
15	11/18/1996	11/21/1996	4	3.3	11/19/1996	12.4	5	0.318	2.7	11.1	12
16	2/22/2018	2/23/2018	2	3.3	2/22/2018	11.6	35	0.343	3.2	11.3	39
17	1/18/1988	1/20/1988	3	3.3	1/19/1988	11.9	4	0.349	2.9	11.1	6
**18	1/11/2017	1/15/2017	5	3.2	1/13/2017	11.0	10	0.360	2.8	10.3	13
**19	2/13/1981	2/14/1981	2	3.2	2/13/1981	11.1	54	0.369	3.1	10.9	59

**20	11/22/1992	11/24/1992	3	3.2	11/23/1992	10.8	30	0.373	3.0	10.4	32
21	2/27/2001	3/2/2001	4	3.2	2/27/2001	11.7	11	0.373	2.7	11.4	10
**22	3/7/2009	3/10/2009	4	3.2	3/9/2009	10.9	25	0.374	2.7	10.1	27
23	12/24/1983	12/28/1983	5	3.2	12/24/1983	11.7	26	0.408	2.8	11.1	32
24	1/6/1989	1/8/1989	3	3.2	1/7/1989	11.8	357	0.417	2.9	11.4	3
25	4/18/2017	4/19/2017	2	3.2	4/18/2017	12.3	22	0.435	2.9	11.7	24
26	1/5/1982	1/8/1982	4	3.2	1/5/1982	12.3	14	0.455	2.9	11.5	23
27	12/29/2010	1/1/2011	4	3.2	12/30/2010	12.0	347	0.456	2.7	10.9	357
28	2/21/2016	2/23/2016	3	3.1	2/22/2016	11.3	40	0.467	2.8	10.8	45
29	11/10/1984	11/14/1984	5	3.1	11/12/1984	11.9	9	0.475	2.6	10.7	4
**30	12/29/1998	12/29/1998	1	3.1	12/29/1998	10.3	86	0.484	3.1	10.3	86
31	12/10/2014	12/14/2014	5	3.1	12/11/2014	12.0	25	0.501	2.6	11.2	36
32	2/19/1983	2/24/1983	6	3.1	2/23/1983	11.7	1	0.511	2.6	11.6	9
33	2/22/2011	2/23/2011	2	3.1	2/22/2011	12.0	357	0.537	2.8	11.2	2
34	3/9/1981	3/13/1981	5	3.1	3/10/1981	12.1	355	0.554	2.7	11.9	8
35	1/17/2006	1/19/2006	3	3.1	1/17/2006	11.2	7	0.561	2.8	10.8	24
36	2/19/2009	2/21/2009	3	3.0	2/20/2009	11.4	16	0.573	2.8	10.9	22
37	2/17/2015	2/19/2015	3	3.0	2/18/2015	11.9	357	0.578	2.6	10.8	13
38	3/28/2014	3/30/2014	3	3.0	3/29/2014	11.2	14	0.585	2.5	10.6	20
39	1/1/1988	1/2/1988	2	3.0	1/1/1988	11.4	0	0.590	3.0	11.1	9
40	1/6/2018	1/9/2018	4	3.0	1/7/2018	11.0	25	0.607	2.7	10.5	39
**41	1/16/2005	1/17/2005	2	3.0	1/17/2005	10.2	71	0.607	3.0	10.1	72
**42	2/27/2000	3/2/2000	5	3.0	2/29/2000	11.8	29	0.614	2.5	10.6	29
**43	11/7/1997	11/8/1997	2	3.0	11/7/1997	11.7	43	0.620	2.7	11.3	44
44	1/1/2010	1/2/2010	2	3.0	1/1/2010	11.3	7	0.622	2.9	11.0	17
45	11/26/2001	11/30/2001	5	3.0	11/27/2001	12.0	14	0.625	2.5	10.7	12
46	11/12/2004	11/16/2004	5	3.0	11/13/2004	10.9	19	0.635	2.6	10.3	24
47	2/4/1993	2/7/1993	4	3.0	2/5/1993	11.7	353	0.654	2.3	10.2	6
48	4/3/1997	4/6/1997	4	3.0	4/4/1997	12.3	340	0.656	2.6	11.2	351
**49	2/6/1982	2/7/1982	2	3.0	2/7/1982	10.5	66	0.657	2.9	10.5	65
**50	1/28/2018	1/31/2018	4	3.0	1/30/2018	10.3	45	0.683	2.7	10.3	35
51	3/3/2002	3/6/2002	4	2.9	3/5/2002	10.6	38	0.692	2.6	10.2	33
52	3/12/2009	3/15/2009	4	2.9	3/13/2009	11.4	9	0.703	2.5	10.4	20
53	1/25/2003	1/27/2003	3	2.9	1/26/2003	11.4	348	0.716	2.5	10.6	6
54	12/13/2001	12/15/2001	3	2.9	12/14/2001	11.6	41	0.717	2.9	11.1	48
55	11/4/1986	11/5/1986	2	2.9	11/4/1986	11.4	33	0.730	2.7	11.0	35
56	1/18/2004	1/20/2004	3	2.9	1/19/2004	12.0	352	0.730	2.6	11.5	356
57	3/6/1981	3/8/1981	3	2.9	3/6/1981	12.7	356	0.736	2.3	11.2	356
58	1/20/2007	1/24/2007	5	2.9	1/23/2007	11.6	358	0.739	2.3	10.3	16
59	2/10/1980	2/12/1980	3	2.9	2/10/1980	11.7	356	0.745	2.6	11.1	10

* Low probability event with no associated storm. ** Medium probability event with no associated storm.