



Hayling Island Directional Waverider Buoy

Location			
OS	473534 E 92991 N		
WGS84	Latitude: 50° 43.91' N Longitude: 00° 57.56' W		
Instrument type			
Datawell Directional Waverider Mk III			
Water depth	~10m CD	Buoy in situ off Hayling Island. Photo courtesy of Fugro GB Marine Limited	Location of buoy (Google mapping, image ©2016 TerraMetrics)

Data Quality

Recovery rate (%)	Sample interval
97	30 minutes

Monthly Averages - 2016

All times are GMT

Month	H _s (m)	T _p (s)	T _z (s)	Dir. (°)	SST (°C)	Bimodal seas (%)	No. of days
January	1.27	10.1	4.6	186	9.3	21	30
February	1.04	10.9	4.6	181	8.3	15	28
March	0.74	10.1	4.0	182	7.8	8	30
April	0.57	7.8	3.7	192	9.7	2	29
May	0.43	6.4	3.2	190	12.7	0	30
June	0.48	6.5	3.4	193	15.7	0	29
July	0.51	5.6	3.2	205	17.6	3	30
August	0.56	6.2	3.4	196	18.9	2	30
September	0.58	8.4	3.7	195	18.9	2	29
October	0.55	7.9	3.4	170	15.2	1	30
November	0.73	6.4	3.6	185	12.0	1	29
December	0.72	10.6	4.6	181	9.6	7	30

Monthly Averages - All Years (July 2003 – December 2015)

Month	H _s (m)	T _p (s)	T _z (s)	Dir. (°)	SST (°C)	Bimodal seas (%)
January	0.93	10.3	4.2	183	7.2	14
February	0.80	10.5	4.3	183	6.2	8
March	0.66	9.5	3.9	185	6.8	4
April	0.52	8.1	3.7	181	9.4	2
May	0.54	6.5	3.4	186	12.6	2
June	0.49	6.0	3.3	188	15.7	1
July	0.52	5.5	3.2	197	17.9	1
August	0.53	5.3	3.2	200	18.7	1
September	0.55	6.7	3.4	189	17.4	1
October	0.75	7.3	3.7	186	14.9	5
November	0.85	8.2	3.9	192	12.0	8
December	0.89	9.2	4.1	188	8.9	12

Storm Analysis

Date/Time	H _s (m)	T _p (s)	T _z (s)	Dir. (°)	Water level elevation* (OD)	Tidal stage (hours re. HW)	Tidal range (m)	Tidal surge* (m)	Max. surge* (m)
28-Mar-2016 03:00	4.40	9.1	6.9	169	2.07	HW +1	3.99	0.57	1.17
20-Nov-2016 05:00	3.73	9.1	6.5	165	2.52	HW	3.45	0.85	0.86
22-Nov-2016 02:30	3.50	7.7	6.1	183	0.77	HW -3	2.36	0.49	0.49
08-Feb-2016 12:30	3.43	12.5	6.7	193	1.93	HW +1	3.60	0.30	0.82
07-Feb-2016 23:00	3.21	9.1	6.3	196	2.14	HW	3.61	0.34	0.46
06-Feb-2016 22:00	3.07	7.1	5.9	183	2.08	HW	3.40	0.48	0.56

* Tidal information is obtained from the National Network gauge at Portsmouth. The surge shown is the residual at the time of the highest H_s. The maximum tidal surge is the largest surge during the storm event.

Annual Statistics

Year	Annual H _s exceedance** (m)						Annual Maximum H _s	
	0.05%	0.5%	1%	2%	5%	10%	Date	A _{max} (m)
2003	-	2.33	2.11	1.85	1.41	1.10	29-Nov-2003 10:00	2.68
2004	3.08	2.32	2.11	1.91	1.60	1.26	08-Jan-2004 10:30	3.64
2005	3.24	2.53	2.10	1.80	1.41	1.11	02-Dec-2005 17:00	3.53
2006	3.03	2.48	2.28	2.06	1.71	1.39	03-Dec-2006 08:00	3.42
2007	3.23	2.59	2.33	2.08	1.72	1.41	18-Jan-2007 13:00	3.58
2008	3.36	2.64	2.35	2.07	1.69	1.35	10-Mar-2008 08:00	3.79
2009	3.06	2.59	2.39	2.11	1.69	1.38	14-Nov-2009 13:30	3.36
2010	2.93	2.26	2.03	1.72	1.36	1.08	11-Nov-2010 08:30	3.25
2011	3.35	2.17	2.01	1.78	1.53	1.27	13-Dec-2011 01:00	3.77
2012	3.01	2.4	2.23	1.99	1.58	1.28	03-Jan-2012 08:30	3.32
2013	3.16	2.31	2.09	1.85	1.51	1.20	28-Oct-2013 06:00	3.73
2014	3.91	2.95	2.65	2.25	1.77	1.47	05-Feb-2014 14:30	4.13
2015	3.06	2.44	2.27	2.05	1.76	1.47	15-Jan-2015 03:00	3.37
2016	3.88	2.73	2.39	2.03	1.62	1.28	28-Mar-2016 03:00	4.40

** i.e. 5 % of the H_s values measured in 2003 exceeded 1.41 m

Significant wave height return periods

Return periods for significant wave height can be calculated since the buoy has been deployed for more than 5 years. The return periods are based on 0.5-hourly and 3-hourly records and are calculated for periods up to 10 times the record length, using a Weibull distribution.

0.5-hourly records July 2003 – December 2016		
Return period (years)	Significant wave height (m)	Comments
1	4.0	No depth limitation
2	4.2	Depth-limited at MLWS
5	4.4	
10	4.5	
20	4.7	
50	4.9	
100	5.0	

3-hourly records July 2003 – December 2016		
Return period (years)	Significant wave height (m)	Comments
1	3.6	No depth limitation
2	3.8	
5	4.1	
10	4.4	Depth-limited at MLWS
20	4.6	
50	4.8	
100	5.0	

Distribution plots

The distribution of wave parameters are shown in the accompanying graphs of:

- Annual time series of H_s (red line is 2.9 m storm threshold)
- Incidence of storm waves for 2016. Storm events are defined using the Peaks-over-Threshold method. The highest H_s of each storm event is shown
- Wave height exceedance each year since deployment
- Percentage of occurrence of H_s , T_p , T_z and Direction for 2016
- Joint distribution of all parameters for all measured data, given as percentage of occurrence
- Wave rose (percentage of occurrence of direction vs. H_s) for all measured data

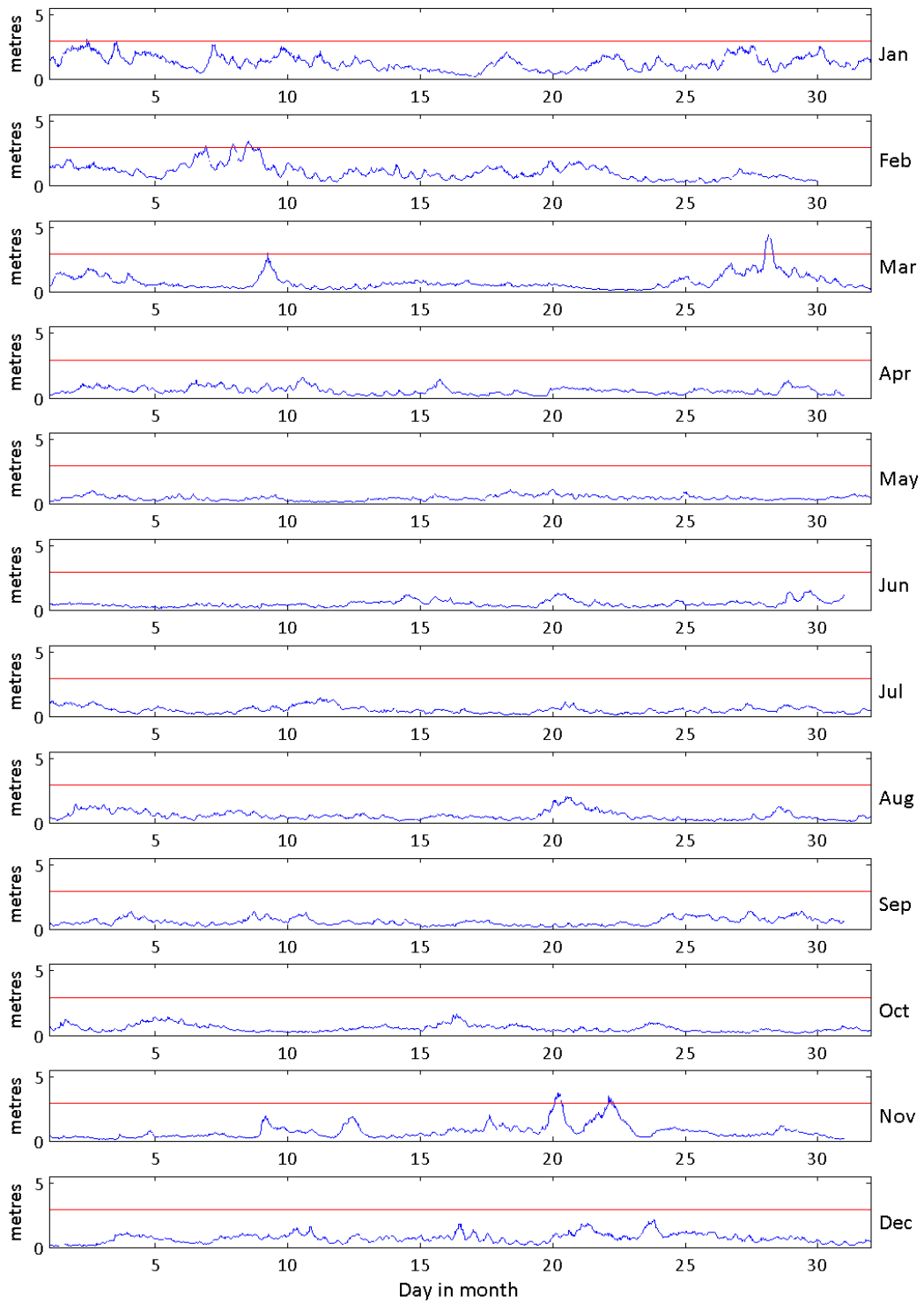
General

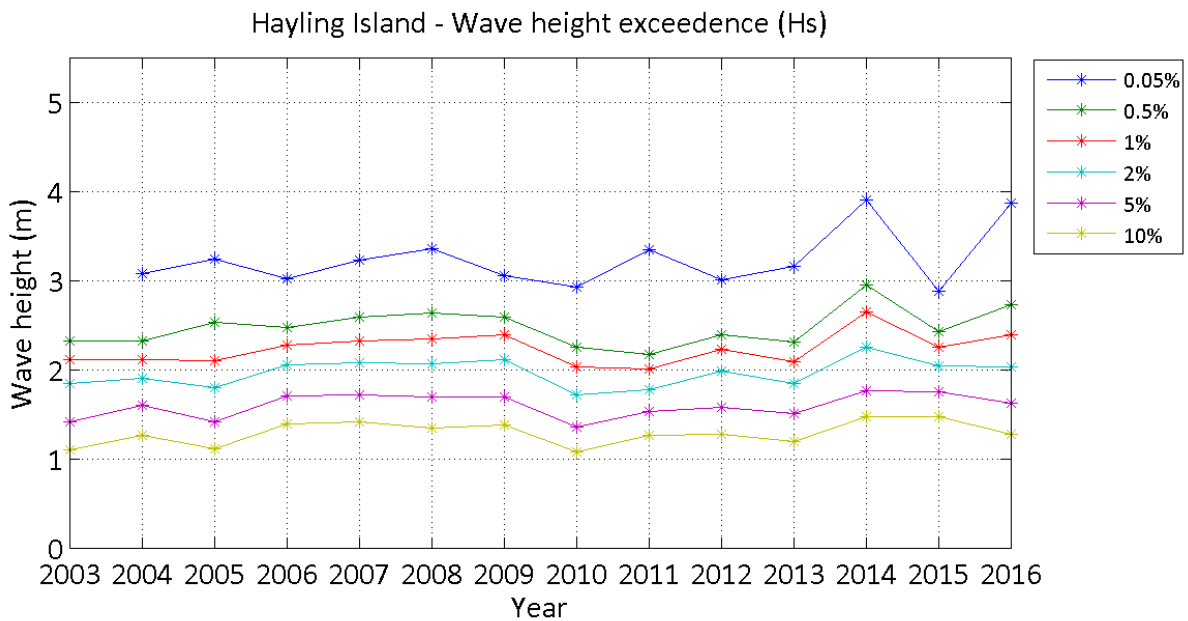
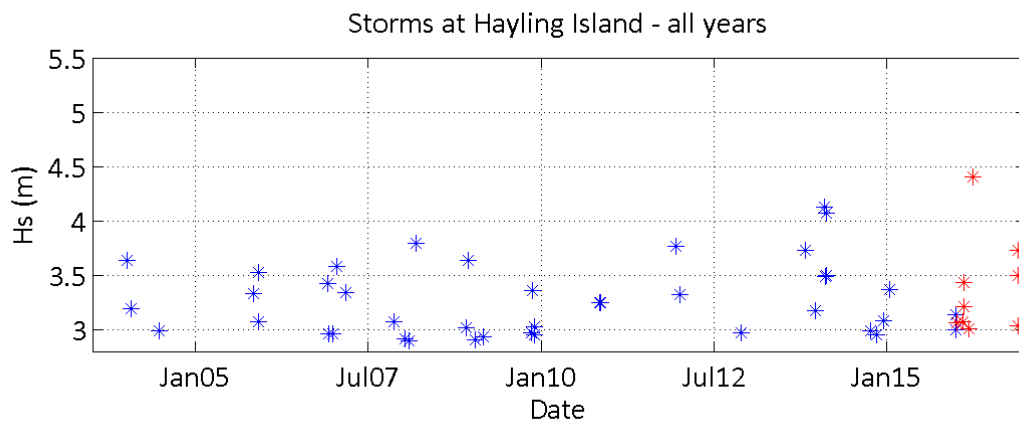
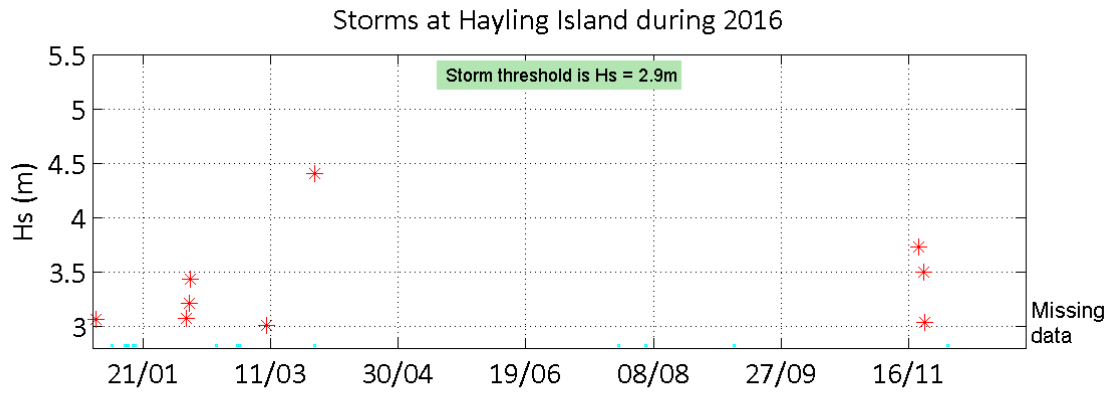
The buoy, owned by New Forest District Council, was first deployed on 10 July 2003, at which time the magnetic declination at the site was 2.9° west, changing by 0.14° east per year.

Acknowledgements

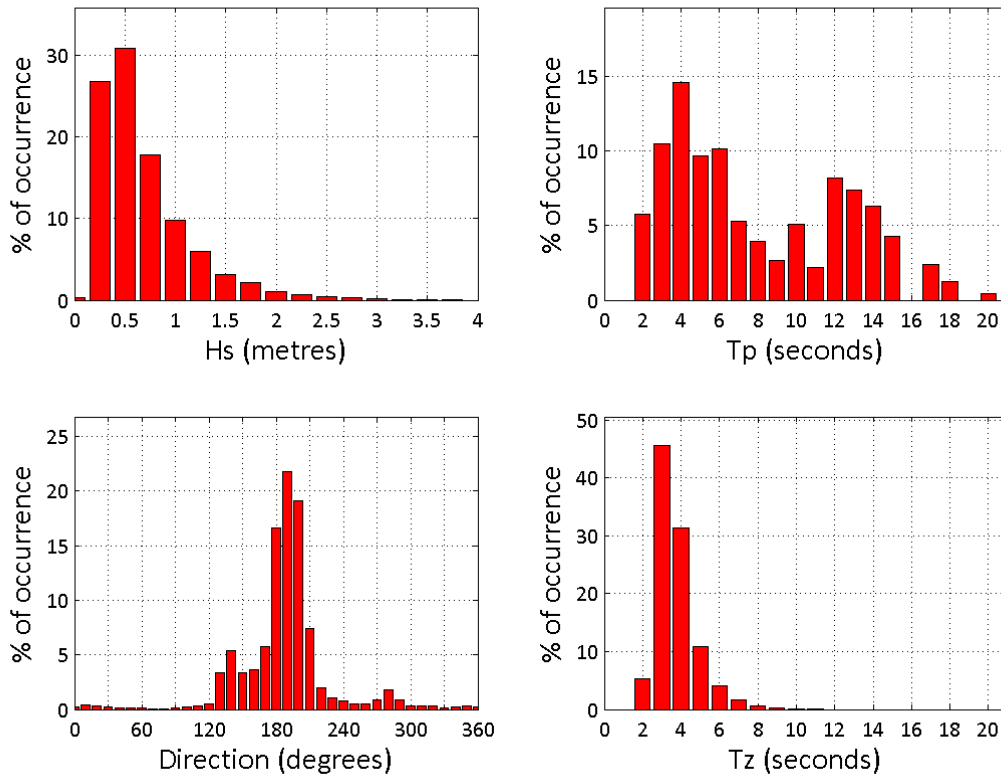
Tidal data were supplied by the British Oceanographic Data Centre as part of the function of the National Tidal and Sea Level Facility, hosted by the Proudman Oceanographic Laboratory and funded by DEFRA and the Natural Environment Research Council.

Hayling Island - Significant Wave Height (Hs) during 2016





Hayling Island 2016



Hayling Island 2003 to 2016 - Joint distribution (% of occurrence)

