



## Hayling Island Directional Waverider Buoy

<b>Location</b>			
OS	473700 E 93007 N		
WGS84	Latitude: 50° 43.920' N Longitude: 00° 57.424' W		
<b>Instrument type</b>			
Datawell Directional Waverider Mk III			
<b>Water depth</b>	~10m CD	Buoy in situ off Hayling Island. Photo courtesy of Fugro EMU Limited	Location of buoy (Google mapping)

### Data Quality

Recovery rate (%)	Sample interval
93	30 minutes

### Monthly Averages - 2014

All times are GMT

Month	H <sub>s</sub> (m)	T <sub>p</sub> (s)	T <sub>z</sub> (s)	Dir. (°)	SST (°C)	No. of days
January	1.09	10.8	4.5	183	8.9	20
February	1.58	11.9	5.2	183	8.3	27
March	0.68	11.2	4.3	188	9.2	29
April	0.52	8.7	3.7	182	11.3	29
May	0.57	6.4	3.3	188	13.5	30
June	0.37	6.0	3.2	179	16.7	29
July	0.39	4.7	3.0	201	19.3	30
August	0.61	5.1	3.2	206	19.2	30
September	0.38	7.6	3.3	172	18.3	29
October	0.81	8.2	3.9	187	16.3	30
November	0.97	9.6	4.3	177	13.3	29
December	0.81	8.4	3.8	194	10.1	30

## Storm Analysis

Date/Time	H <sub>s</sub> (m)	T <sub>p</sub> (s)	T <sub>z</sub> (s)	Dir. (°)	Water level elevation* (OD)	Tidal stage (hours re. HW)	Tidal range (m)	Tidal surge* (m)	Max. surge* (m)
05-Feb-2014 14:30	4.13	11.8	7.1	194	2.17	HW	3.3	0.55	0.83
15-Feb-2014 00:00	4.07	11.8	6.9	197	2.53	HW +1	3.8	0.83	1.21
12-Feb-2014 15:00	3.50	9.1	6.3	181	-0.47	HW +5	2.8	0.94	0.94
08-Feb-2014 15:30	3.49	16.7	7.1	183	0.65	HW -3	1.7	0.56	0.76
12-Dec-2014 03:30	3.08	10.0	6.2	196	1.83	HW +1	2.8	0.28	0.42

## Annual Statistics

Year	Annual H <sub>s</sub> exceedance* (m)						Annual Maximum H <sub>s</sub>	
	0.05%	0.5%	1%	2%	5%	10%	Date	A <sub>max</sub> (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

\* i.e. 5 % of the H<sub>s</sub> values measured in 2003 exceeded 1.41 m

## Distribution plots

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

- Annual time series of H<sub>s</sub> (red line is 3.0 m storm threshold)
- Wave rose (percentage of occurrence of Direction vs. H<sub>s</sub>) for all measured data
- Percentage of occurrence of H<sub>s</sub>, T<sub>p</sub>, T<sub>z</sub> and Direction for 2014
- Incidence of storm waves for 2014. Storm events are defined using the Peaks-over-Threshold method. The highest H<sub>s</sub> of each storm event is shown
- Joint distribution of all parameters for all measured data, given as percentage of occurrence

\* Tidal information is obtained from the nearest recording tide gauge (the National Network gauge at Portsmouth). The surge shown is the residual at the time of the highest H<sub>s</sub>. The maximum tidal surge is the largest positive surge during the storm event.

## 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 3-hourly records and are calculated for periods up to 10 times the record length, using a Weibull distribution.

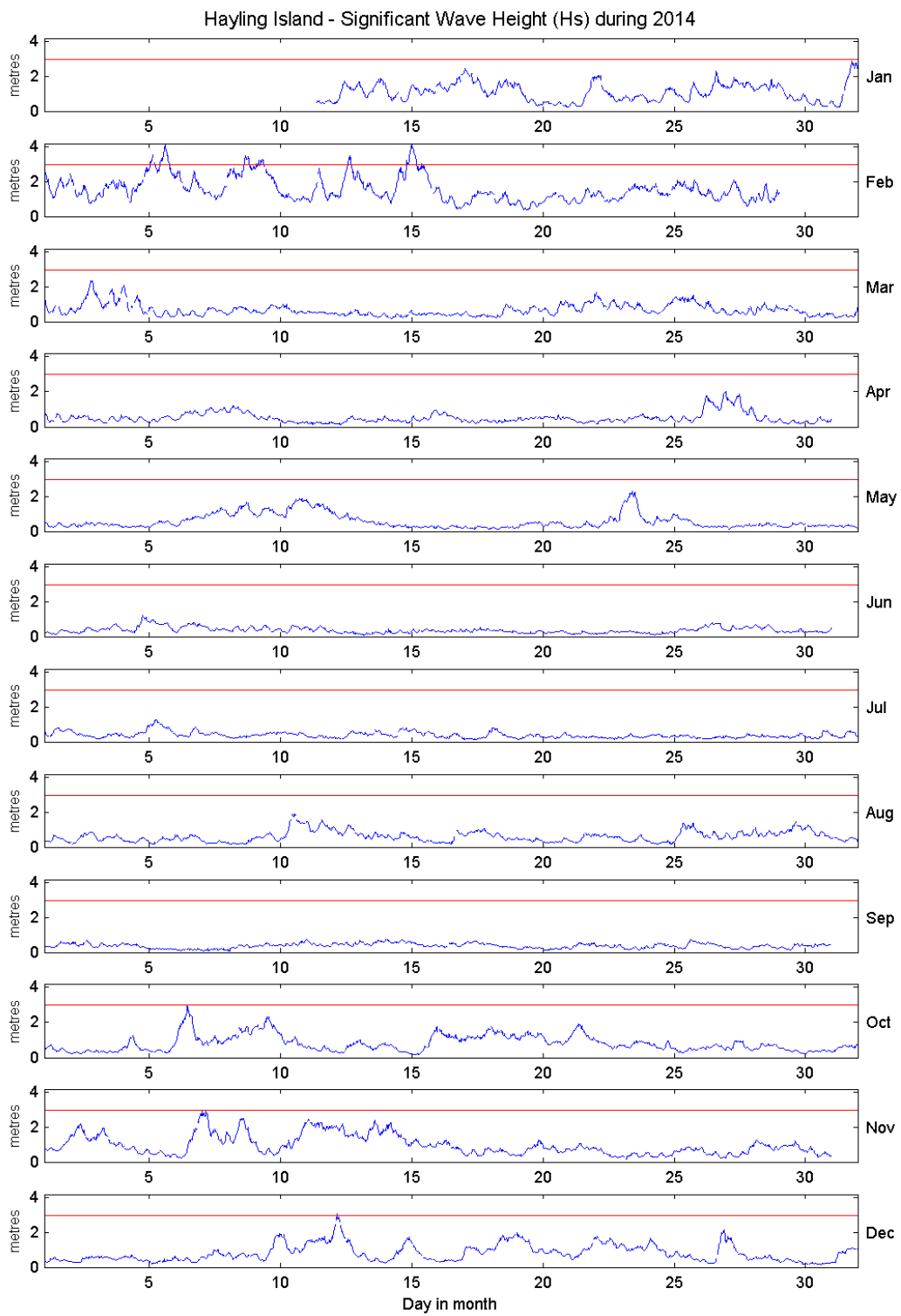
Return period (years)	Significant wave height (m)	Comments
1	3.3	No depth limitation
2	3.7	
5	4.0	
10	4.2	
20	4.3	Depth-limited at MLWS
50	4.6	
100	4.8	

## General

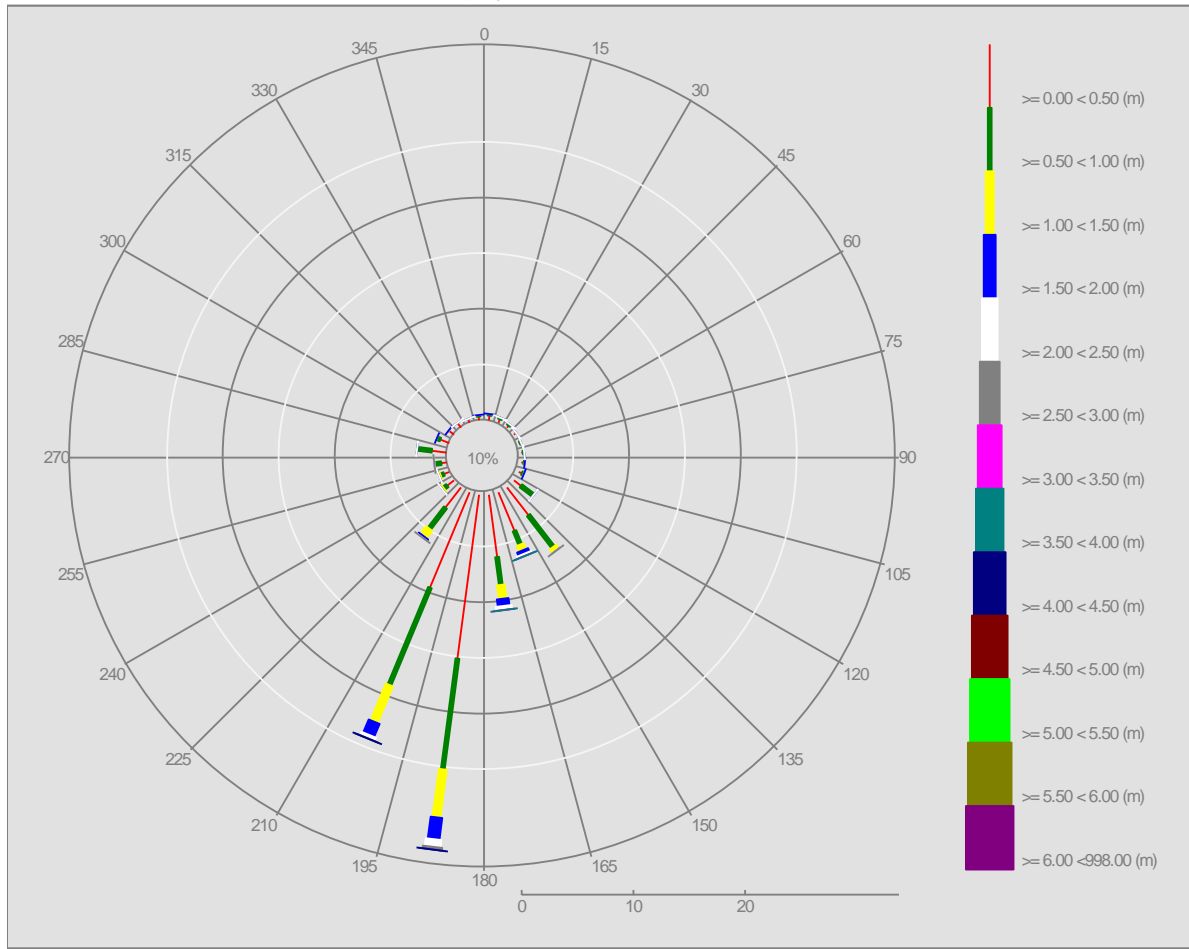
The buoy was first deployed on 10 July 2003, at which time the magnetic declination at the site was 2.9° west, changing by 0.14° east per year.

## Acknowledgements

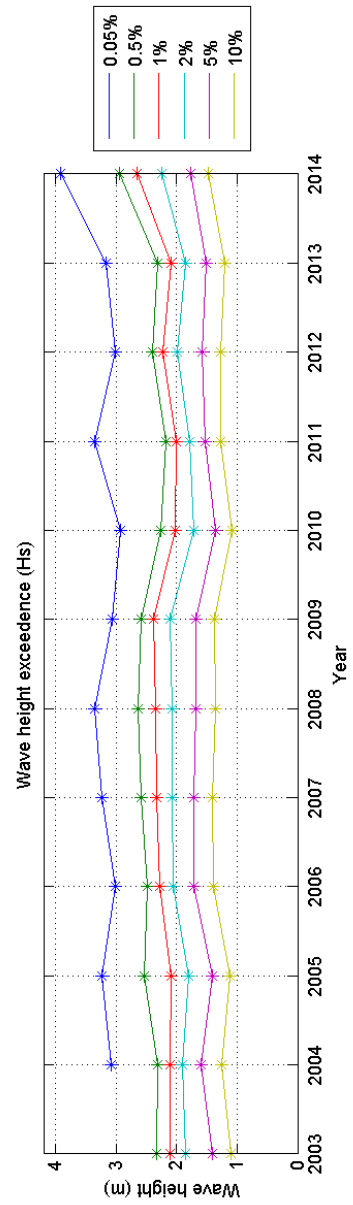
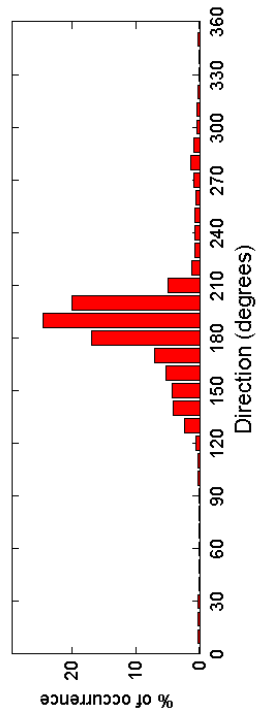
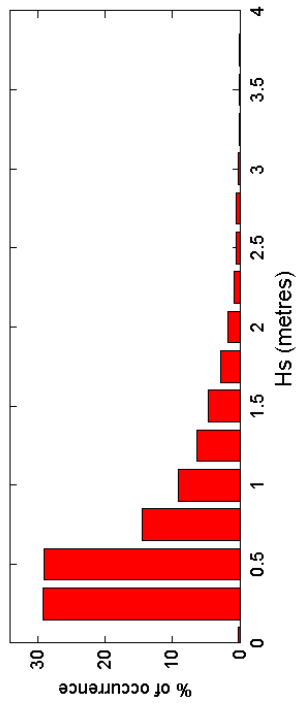
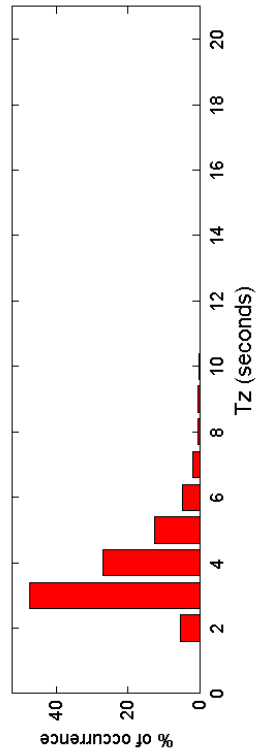
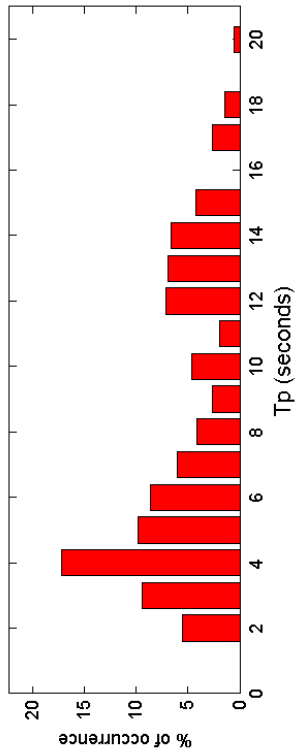
Tidal data were supplied by the British Oceanographic Data Centre as part of the function of the National Tidal and Sea Level Facility, hosted by the Proudman Oceanographic Laboratory and funded by DEFRA and the Natural Environment Research Council.

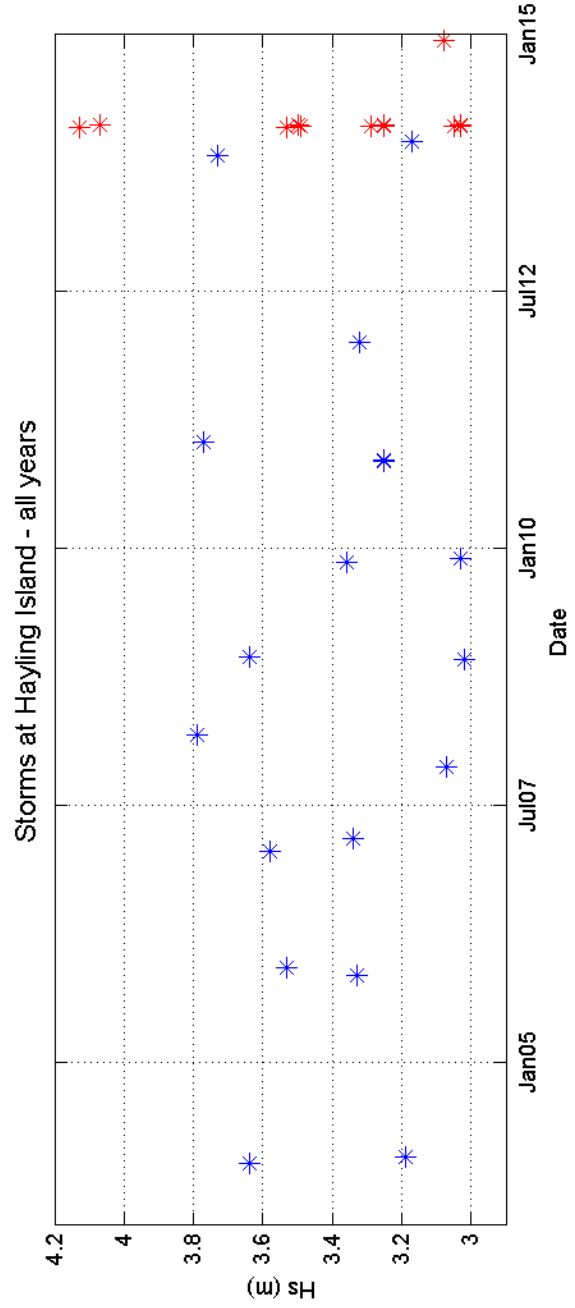
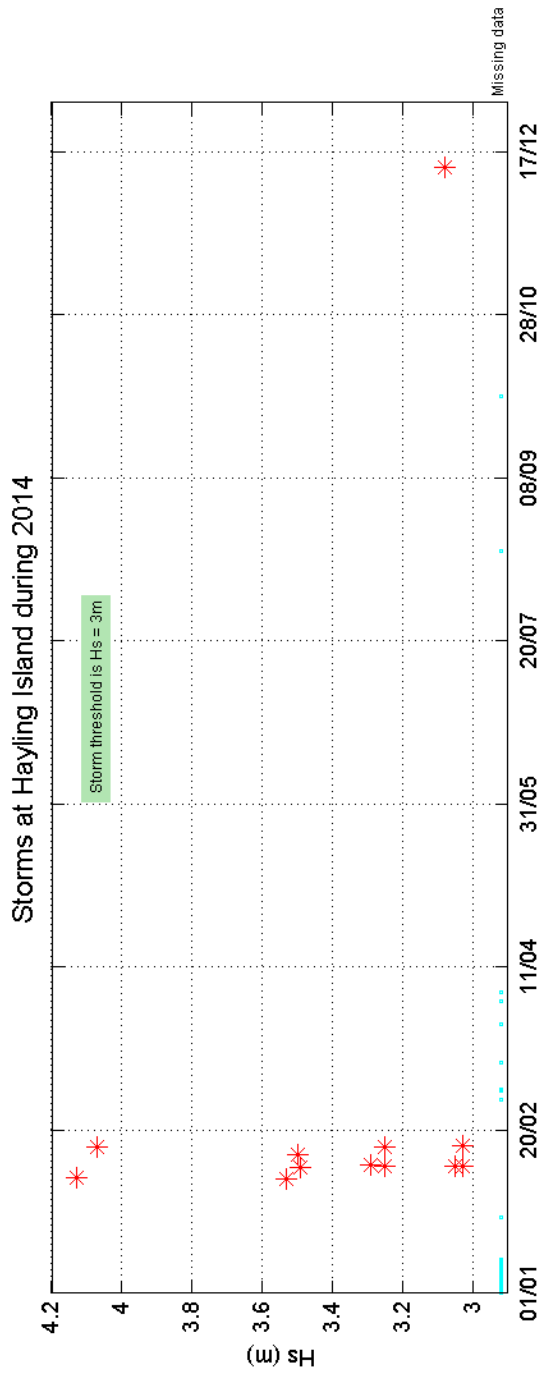


### Offshore Wave Hs (m) Hayling Island WB : 10/07/2003 - 31/12/2014



Hayling Island 2014





Hayling Island 2003 to 2014 - Joint distribution (% of occurrence)

