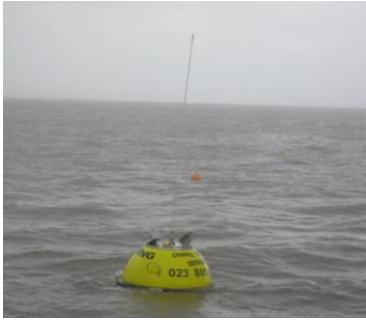



Minehead Directional Waverider Buoy

Location			
OS	297517 E 148580 N		
WGS84	Latitude: 51° 13.63' N Longitude: 03° 28.14' W		
Instrument type			
Datawell Directional Waverider Mk III			
Water depth	~10m CD	Buoy in situ off Minehead beach. Photo courtesy of Fugro EMU Limited	Location of buoy (Google mapping)

Data Quality

Recovery rate (%)	Sample interval
99	30 minutes

Monthly Averages - 2015

All times are GMT

Month	H _s (m)	T _p (s)	T _z (s)	Dir. (°)	SST (°C)	No. of days
January	0.86	7.3	4.5	305	8.2	31
February	0.57	6.9	4.0	253	6.4	28
March	0.60	8.1	4.3	285	7.6	27
April	0.45	7.6	3.9	250	10.1	30
May	0.60	5.7	3.9	240	12.3	31
June	0.51	5.8	3.7	221	15.0	30
July	0.55	6.3	3.9	211	17.3	31
August	0.43	6.2	3.9	227	17.7	31
September	0.49	5.0	3.5	221	16.5	29
October	0.46	5.7	3.5	199	14.6	31
November	0.88	7.6	4.5	297	12.9	30
December	0.73	9.3	4.8	305	11.1	31

Monthly Averages - All Years (December 2006 – December 2015)

Month	H _s (m)	T _p (s)	T _z (s)	Dir. (°)	SST (°C)
January	0.69	7.3	4.3	272	7.6
February	0.58	7.5	4.2	258	6.9
March	0.56	6.9	4.0	252	7.7
April	0.43	6.9	3.9	250	9.8
May	0.53	5.8	3.8	258	12.2
June	0.43	6.0	3.7	256	15.1
July	0.48	5.9	3.9	276	17.4
August	0.48	6.0	3.9	279	18.1
September	0.53	5.8	3.7	252	17.0
October	0.56	6.5	4.0	255	14.9
November	0.68	7.0	4.2	267	12.1
December	0.73	7.2	4.3	269	9.1

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)
30-Jan-2015 05:00	2.72	6.7	6.3	304	0.62	HW +3	5.1	0.45	0.51
31-Mar-2015 04:00	2.49	9.1	5.3	305	2.72	HW +1	5.5	0.22	0.47
28-Jan-2015 12:00	2.43	8.3	5.1	309	2.89	HW	5.1	0.04	0.27
17-Nov-2015 21:30	2.41	11.1	5.4	319	3.17	HW	5.5	0.00	0.45

Annual Statistics

Year	Annual H _s exceedance* (m)						Annual Maximum H _s	
	0.05%	0.5%	1%	2%	5%	10%	Date	A _{max} (m)
2007	2.36	2.00	1.84	1.67	1.38	1.09	02-Dec-2007 21:00	2.55
2008	2.70	2.17	2.01	1.78	1.50	1.27	10-Mar-2008 23:00	2.77
2009	2.13	1.81	1.65	1.50	1.23	1.02	14-Nov-2009 16:30	2.53
2010	2.36	1.66	1.47	1.29	1.03	0.84	31-Mar-2010 10:00	2.68
2011	2.33	1.98	1.85	1.66	1.36	1.12	15-Dec-2011 04:30	2.51
2012	2.49	2.00	1.77	1.52	1.24	1.01	05-Jan-2012 06:00	2.67
2013	2.23	1.80	1.70	1.51	1.21	1.01	02-Nov-2013 20:00	2.97
2014	2.26	1.94	1.77	1.53	1.20	0.98	21-Oct-2014 07:30	2.55
2015	2.41	1.95	1.77	1.61	1.35	1.11	30-Jan-2015 05:00	2.72

* i.e. 5 % of the H_s values measured in 2007 exceeded 1.38 m

Distribution plots

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

- Annual time series of H_s (red line is 2.3 m storm threshold)
- Incidence of storm waves for 2015. 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 2015
- 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

* Tidal information is obtained from the nearest recording tide gauge (the National Network gauge at Ilfracombe). The surge shown is the residual at the time of the highest H_s. 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.

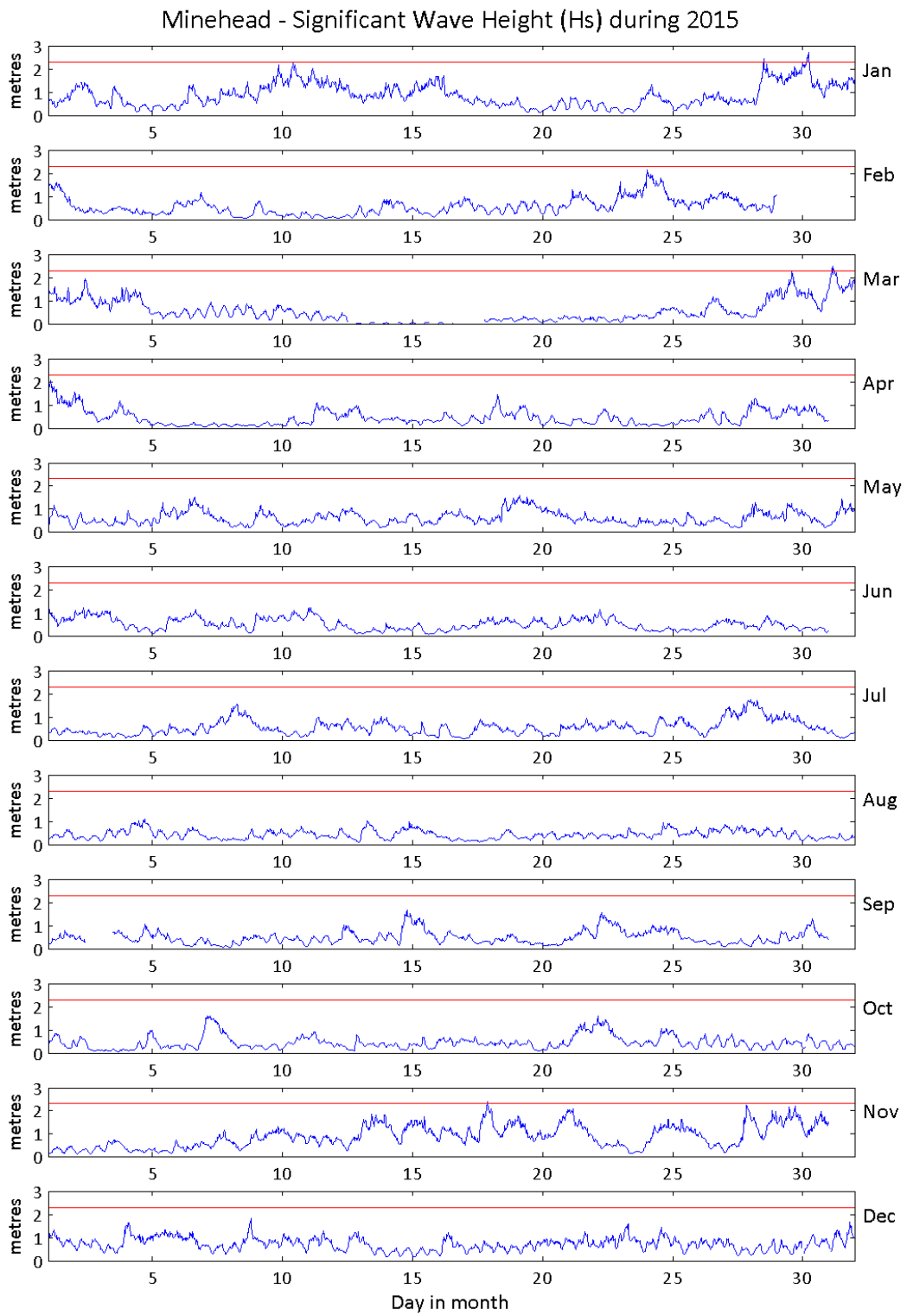
Return period (years)	Significant wave height (m)	Comments
1	2.5	No depth limitation
2	2.6	
5	2.8	
10	2.9	
20	3.0	
50	3.1	

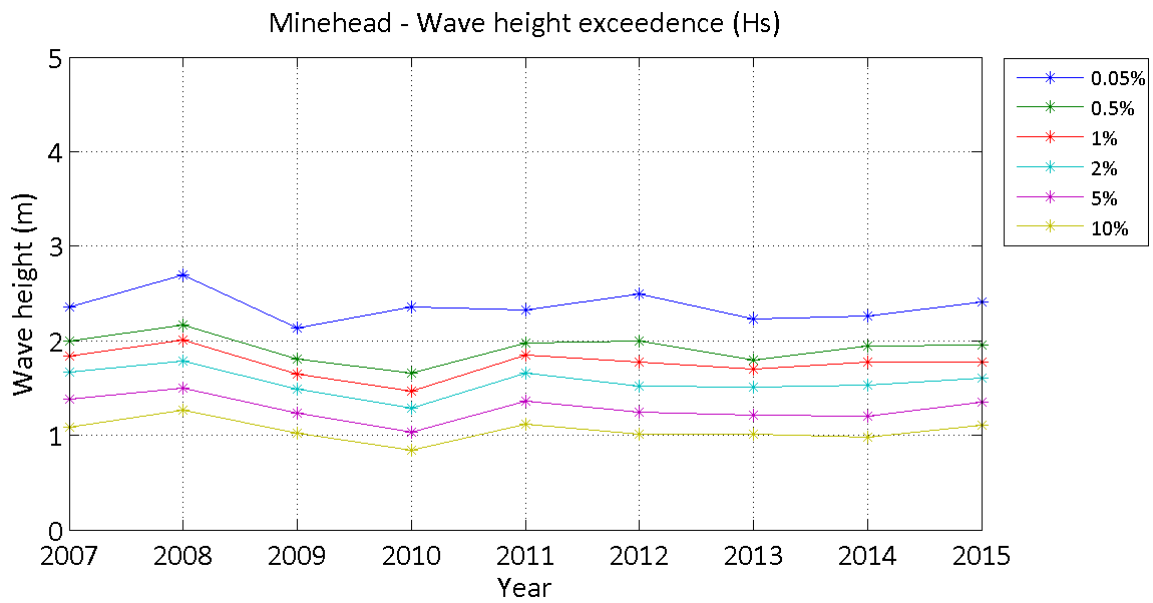
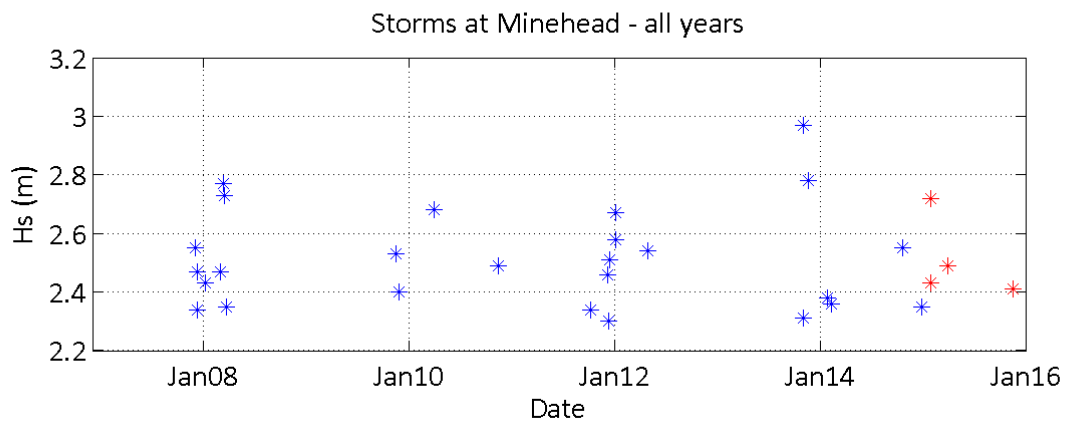
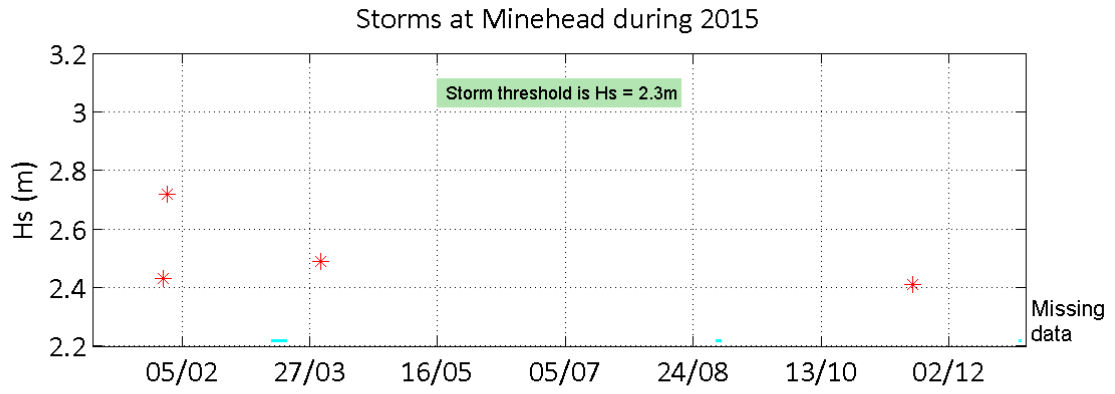
General

The buoy was first deployed on 19 December 2006, at which time the magnetic declination at the site was 3.4° west, changing by 0.15° east per year.

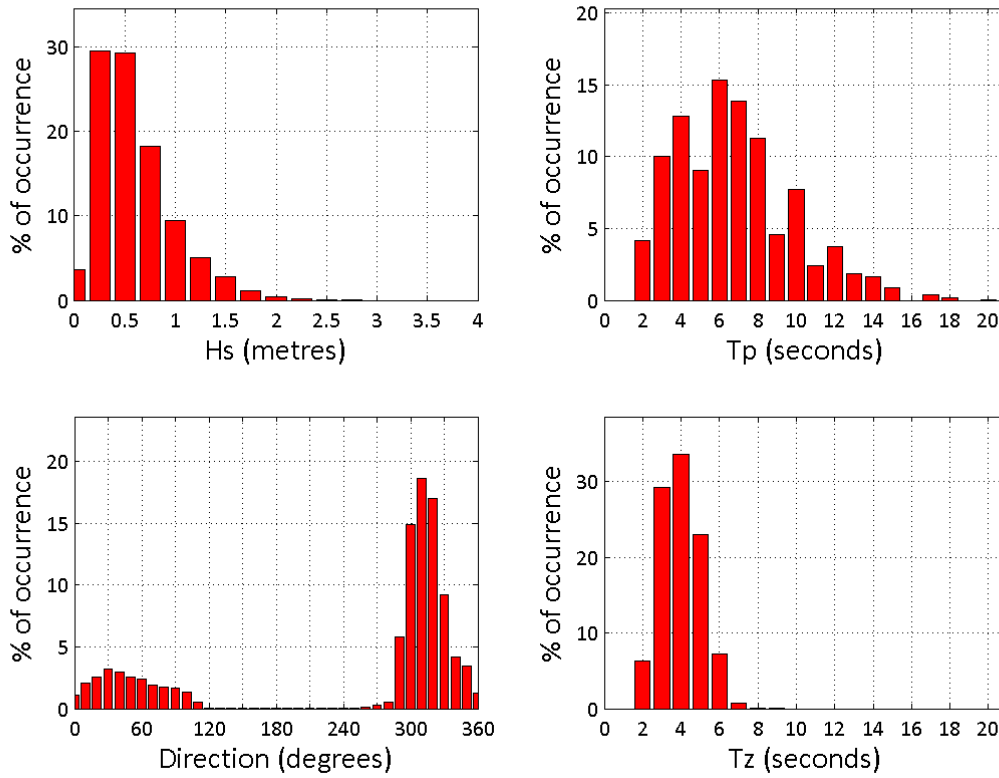
Acknowledgements

The shore station is kindly hosted by Minehead Harbourmaster. 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.

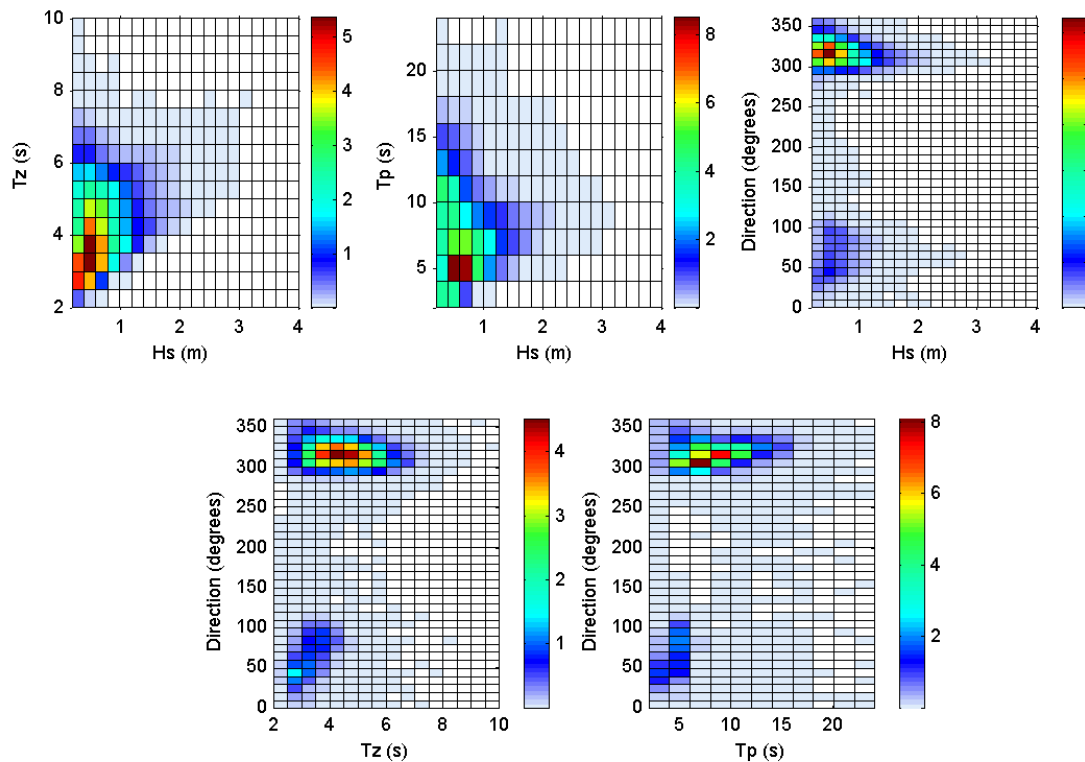




Minehead 2015



Minehead 2006 to 2015 - Joint distribution (% of occurrence)



Offshore Wave Hs (m)

Minehead WB : 19/12/2006 - 31/12/2015

