

Weymouth Directional Waverider Buoy

Location

OS: 370833E 80423N

WGS84: Latitude: 50° 37.366' N Longitude: 02° 24.820' W

Water Depth

~10 m CD

Instrument Type

Datawell Directional Waverider Mk III

Data Quality

Recovery rate (%)	Sample interval
91	30 minutes

Statistics - 2012

All times are GMT

Month	H _s (m)	T _p (s)	T _z (s)	Dir. (°)	SST (°C)	No. of days
January	0.52	6.4	3.9	161	9.7	30
February	0.39	7.3	4.1	154	7.8	29
March	0.31	7.7	3.8	156	8.9	31
April	0.58	6.4	4.0	154	9.8	29
May	0.34	5.4	3.6	153	11.7	31
June	0.52	5.6	3.6	158	14.0	30
July	0.35	5.2	3.5	166	15.8	30
August	0.45	5.7	3.6	159	17.4	31
September	0.35	5.4	3.6	163	16.9	30
October	0.59	6.5	3.9	153	14.6	31
November	0.53	6.0	3.9	160	12.2	22
December	0.86	7.5	4.0	164	10.0	10

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-Apr-2012 05:00	3.34	8.3	6.3	152	0.07	HW +5	0.7	0.26	0.29
25-Apr-2012 07:00	2.79	7.1	5.7	149	0.96	HW -1	1.7	0.41	0.64

* Tidal information is obtained from the nearest recording tide gauge (the National Network gauge at Weymouth). 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.

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	2.29	1.72	1.43	1.24	1.03	0.85	18-Nov-2007 13:30	2.56
2008	2.57	1.95	1.75	1.46	1.10	0.89	03-Feb-2008 13:00	2.74
2009	2.17	1.75	1.63	1.48	1.18	0.90	13-Nov-2009 23:30	2.62
2010	2.54	1.84	1.54	1.29	1.00	0.81	17-Nov-2010 10:00	2.81
2011	2.16	1.77	1.54	1.26	1.03	0.85	24-Oct-2011 00:00	2.30
2012	2.82	1.81	1.60	1.38	1.08	0.86	30-Apr-2012 05:00	3.34

* i.e. 5 % of the H_s values measured in 2007 exceeded 1.03 m

Distribution plots

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

- Annual time series of H_s (red line is 2.4 m storm threshold)
- Wave roses (Direction vs. H_s and vs. T_p) for all measured data
- Percentage of occurrence of H_s , T_p , T_z and Direction for 2012
- Incidence of storm waves for 2012. Storm events are defined using the Peaks-over-Threshold method. The highest H_s of each storm event is shown
- Joint distribution of all parameters for all measured data, given as percentage of occurrence

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.

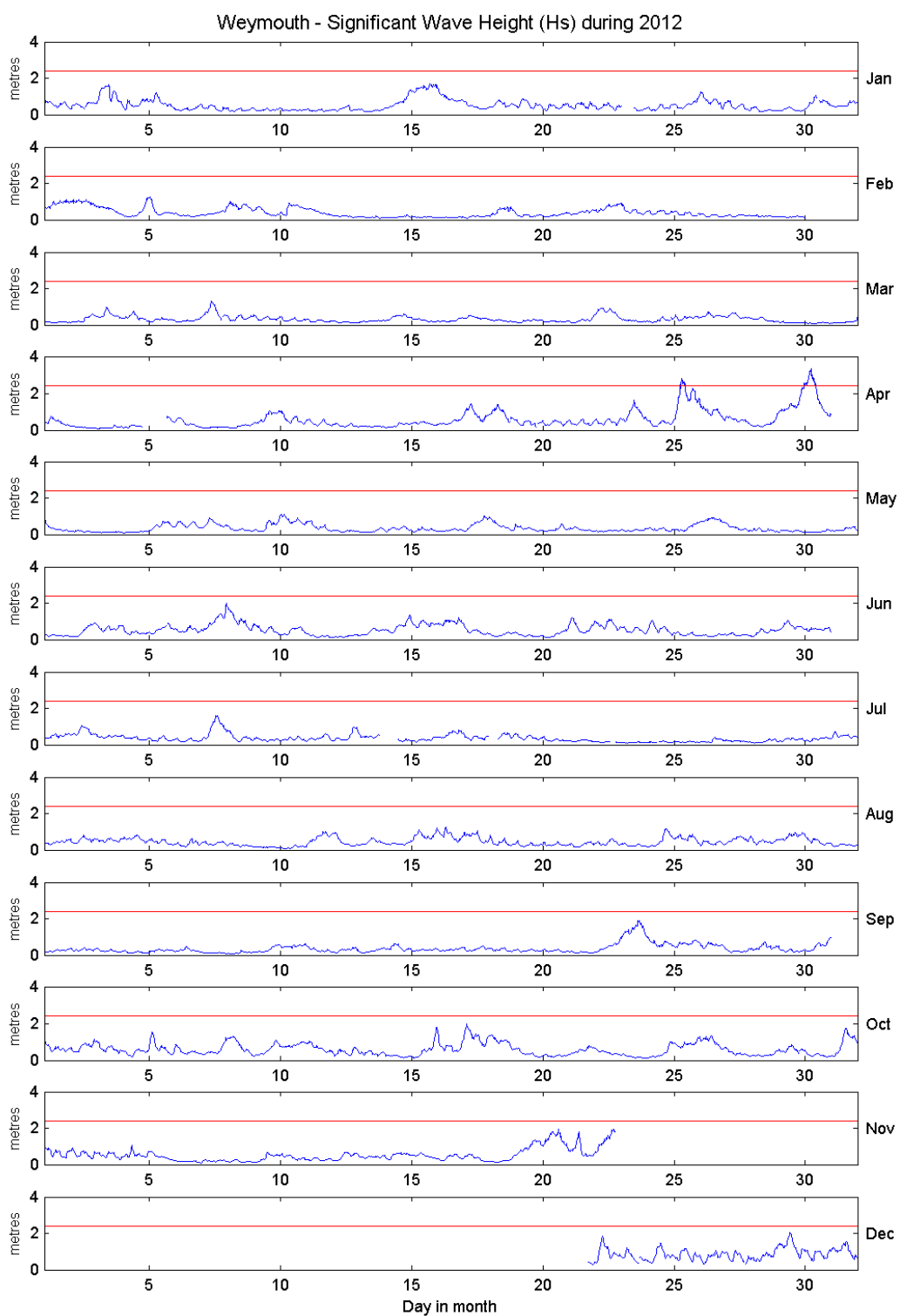
Return period (years)	Significant wave height (m)	Comments
1	2.8	No depth limitation
2	2.9	
5	3.1	
10	3.3	
20	3.4	
50	3.6	

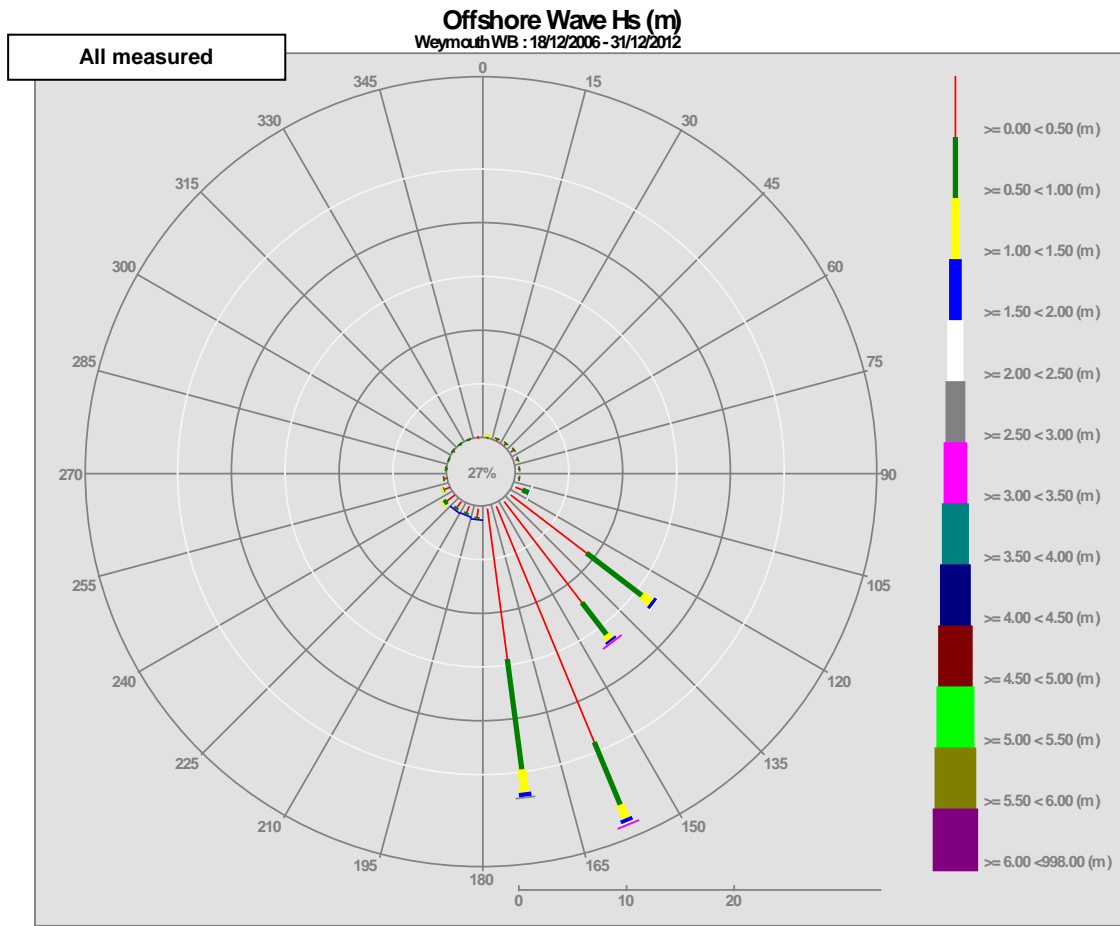
General

The buoy was first deployed on 18 December 2006, at which time the magnetic declination at the site was 2.9° west, changing by 0.15° east per year.

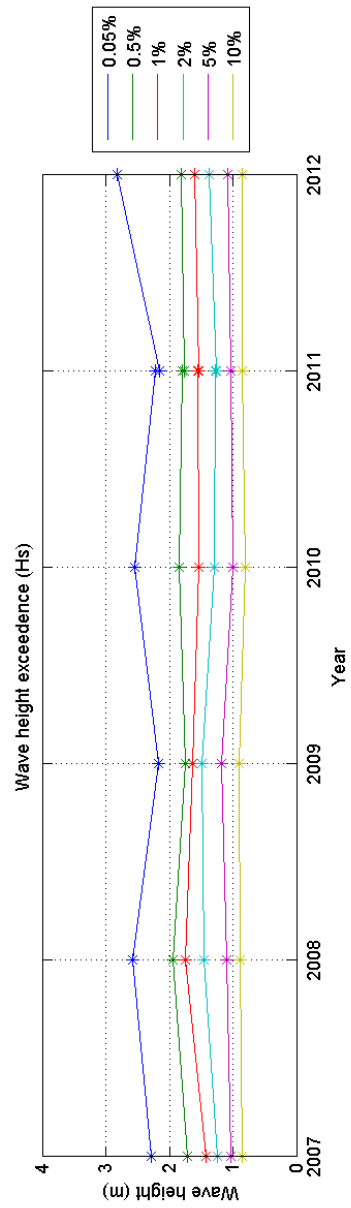
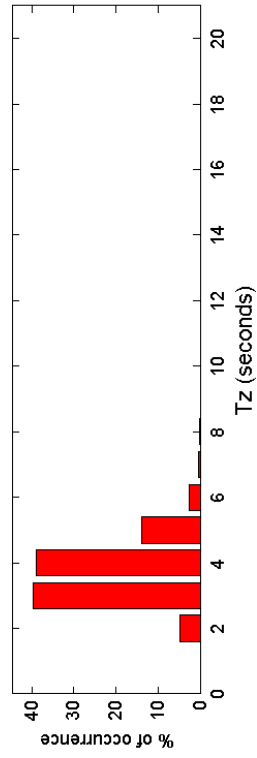
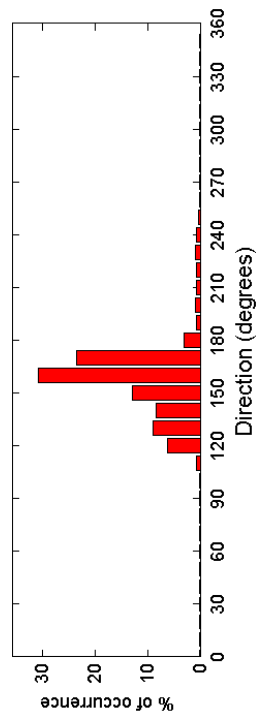
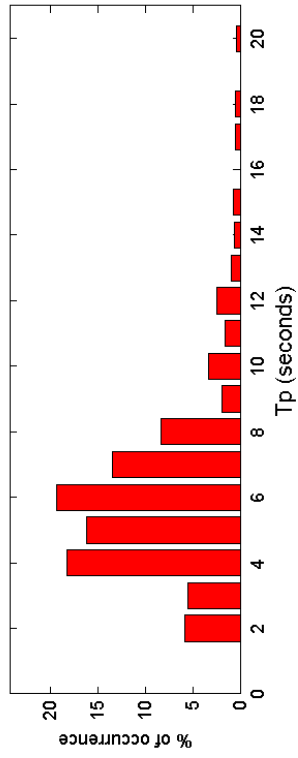
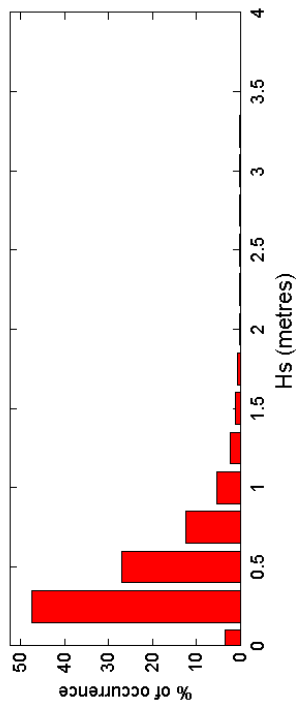
Acknowledgements

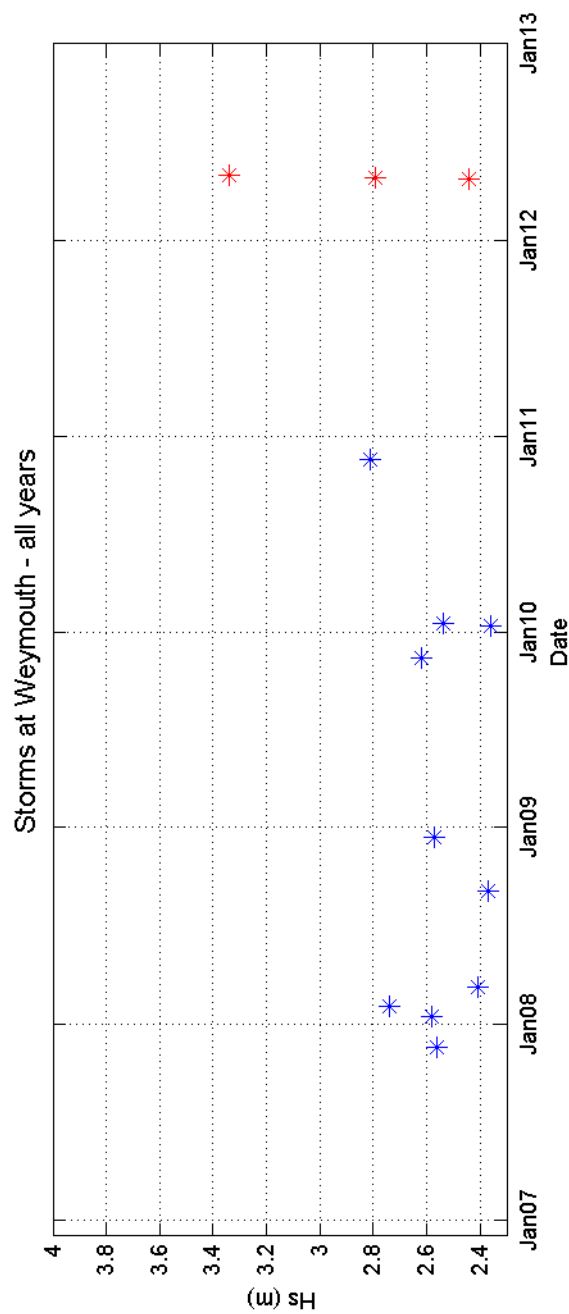
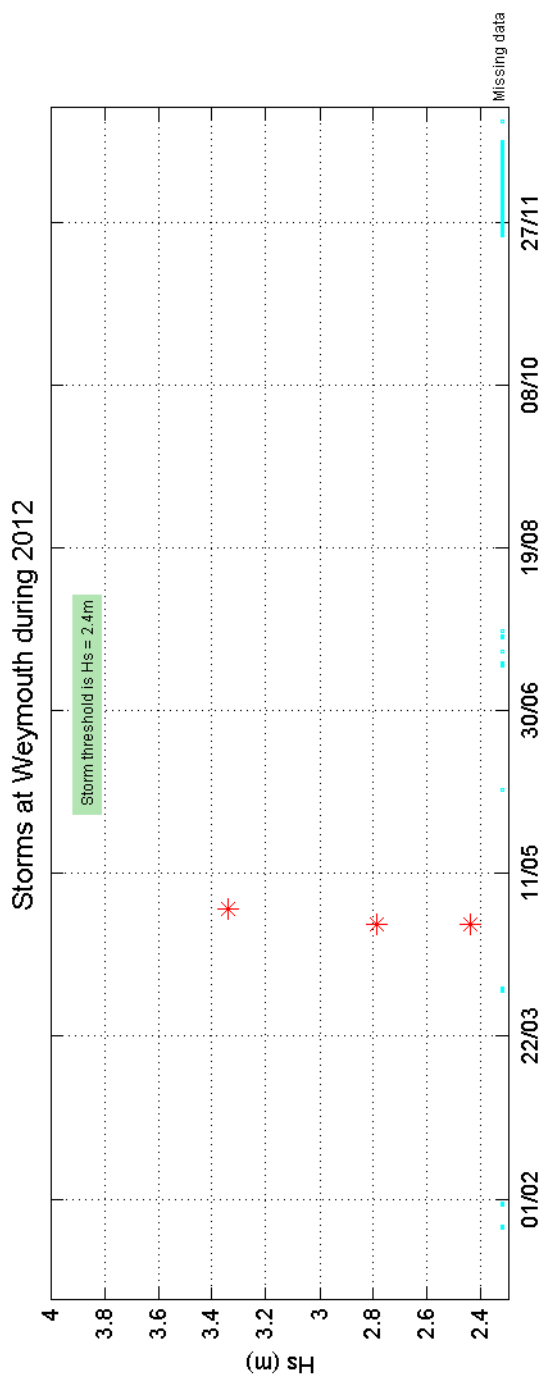
The shore station is kindly hosted by the Weymouth and Portland National Sailing Academy. Tidal data were supplied by the British Oceanographic Data Centre as part of the function of the National Tidal and Sea Level Facility, hosted by the Proudman Oceanographic Laboratory and funded by DEFRA and the Natural Environment Research Council.





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Weymouth 2006 to 2012 - Joint distribution (% of occurrence)

