



Perranporth Directional Waverider Buoy

Location			
OS	174305 E 55125 N		
WGS84	Latitude: 50° 21.160' N Longitude: 05° 10.445' W		
Instrument type			
Datawell Directional Waverider Mk III			
Water depth	~14m CD	Buoy in situ off Perranporth beach. Photo courtesy of Fugro EMU Limited	Location of buoy (Google mapping)

Data Quality

Recovery rate (%)	Sample interval
91	30 minutes

Monthly Averages - 2014

All times are GMT

Month	H _s (m)	T _p (s)	T _z (s)	Dir. (°)	SST (°C)	No. of days
January	2.81	13.5	7.1	285	10.1	30
February	3.36	13.9	7.5	284	9.3	7
March	1.75	12.2	6.5	282	9.4	19
April	1.18	11.4	6.0	279	10.6	30
May	1.33	9.4	5.5	286	12.5	31
June	0.79	8.2	4.7	288	14.6	30
July	0.91	7.8	4.8	278	17.2	31
August	1.29	7.6	4.8	279	17.1	31
September	0.75	10.4	5.7	286	16.5	30
October	1.75	11.1	6.0	283	15.8	31
November	1.84	12.3	6.7	281	13.2	30
December	2.29	10.8	6.0	285	11.4	31

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)
01-Feb-2014 18:30	7.28	20.0	9.1	283	-	HW	~8	-	-
08-Feb-2014 10:00	7.21	16.7	10.3	293	-	HW -2	~3	-	-
05-Feb-2014 19:00	6.47	15.4	9.1	284	-	HW -2	~5	-	-
11-Dec-2014 10:30	6.12	12.5	8.3	300	1.13	HW +2	5.1	-0.12	-
27-Jan-2014 10:00	6.02	12.5	8.7	294	-0.56	HW -2	~4	0.10	-

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	6.10	5.16	4.84	4.44	3.78	3.11	09-Dec-2007 13:30	6.90 ⁺
2008	6.21	4.57	4.18	3.84	3.27	2.86	12-Mar-2008 08:30	6.53 ⁺
2009	5.46	4.74	4.44	4.08	3.56	3.00	22-Nov-2009 21:00	5.69
2010	5.91	4.01	3.52	3.05	2.57	2.16	11-Nov-2010 20:30	6.30
2011	5.45	4.37	4.13	3.86	3.36	2.91	15-Dec-2011 04:30	6.75 ⁺
2012	5.59	4.63	4.23	3.76	3.18	2.70	18-Apr-2012 04:30	5.85
2013	6.02	4.82	4.50	4.14	3.55	2.97	02-Nov-2013 18:00	7.06 ⁺
2014	6.77	5.45	4.99	4.33	3.42	2.87	01-Feb-2014 18:30	7.28 ⁺

* i.e. 5 % of the H_s values measured in 2007 exceeded 3.78 m

⁺Note that waves were breaking at the buoy for several hours during this storm; where breaking waves were clearly present in the measured time series, the parameters have been omitted. Accordingly, there may have been short periods where measured significant wave heights exceeded this value.

Distribution plots

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

- Annual time series of H_s (red line is 5.25 m storm threshold)
- Wave roses (percentage of occurrence of direction vs. H_s) for all measured data
- Percentage of occurrence of H_s, T_p, T_z and Direction for 2014
- Incidence of storm waves for 2014. 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

* Tidal information is obtained from the nearest recording tide gauge (the step gauge at Port Isaac). 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.

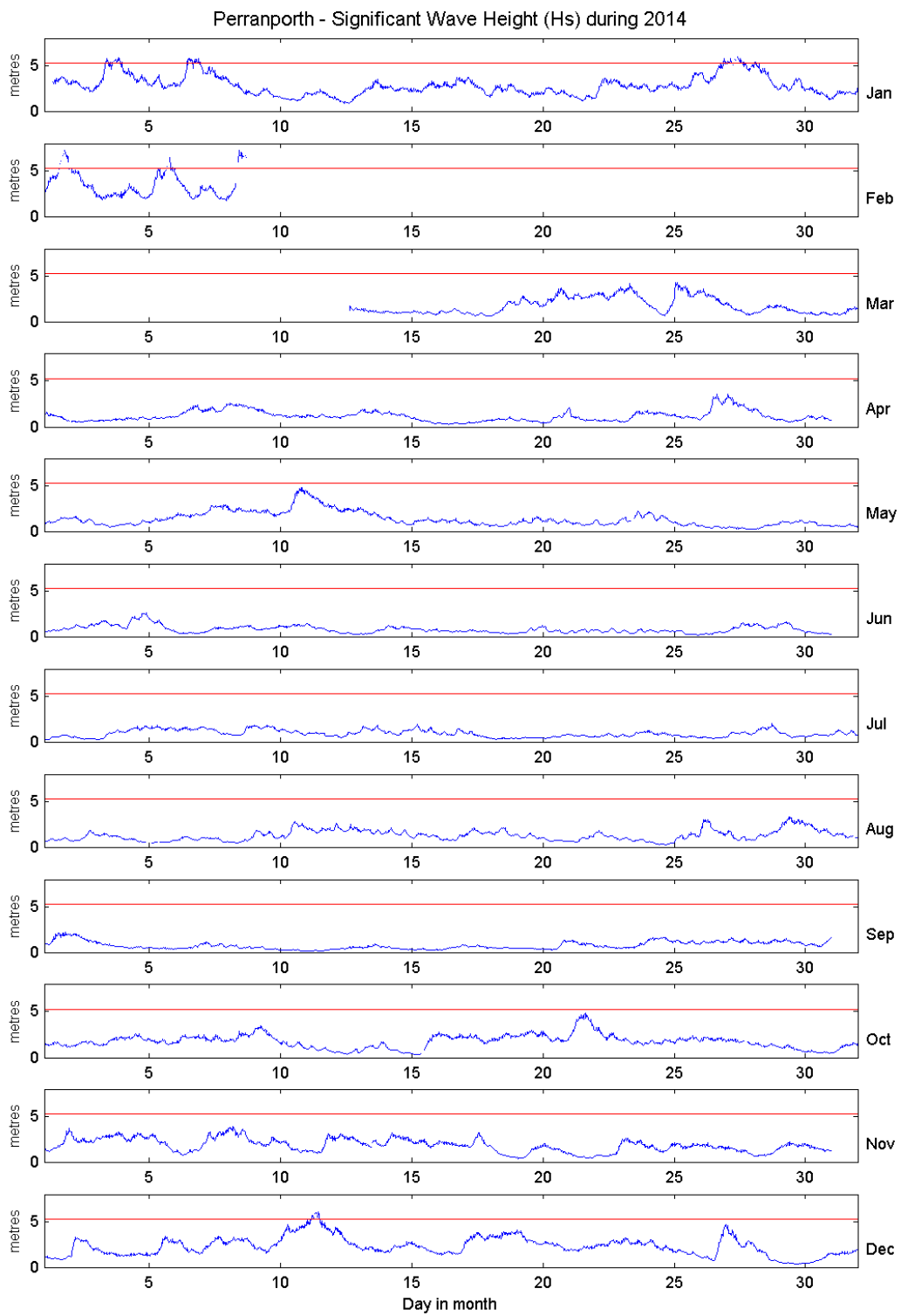
Return period (years)	Significant wave height (m)	Comments
1	6.3	Depth-limited at MLWS
2	6.6	
5	7.0	
10	7.3	
20	7.6	
50	7.9	

General

The buoy was first deployed on 18 December 2006, at which time the magnetic declination at the site was 3.9° west, changing by 0.15° east per year.

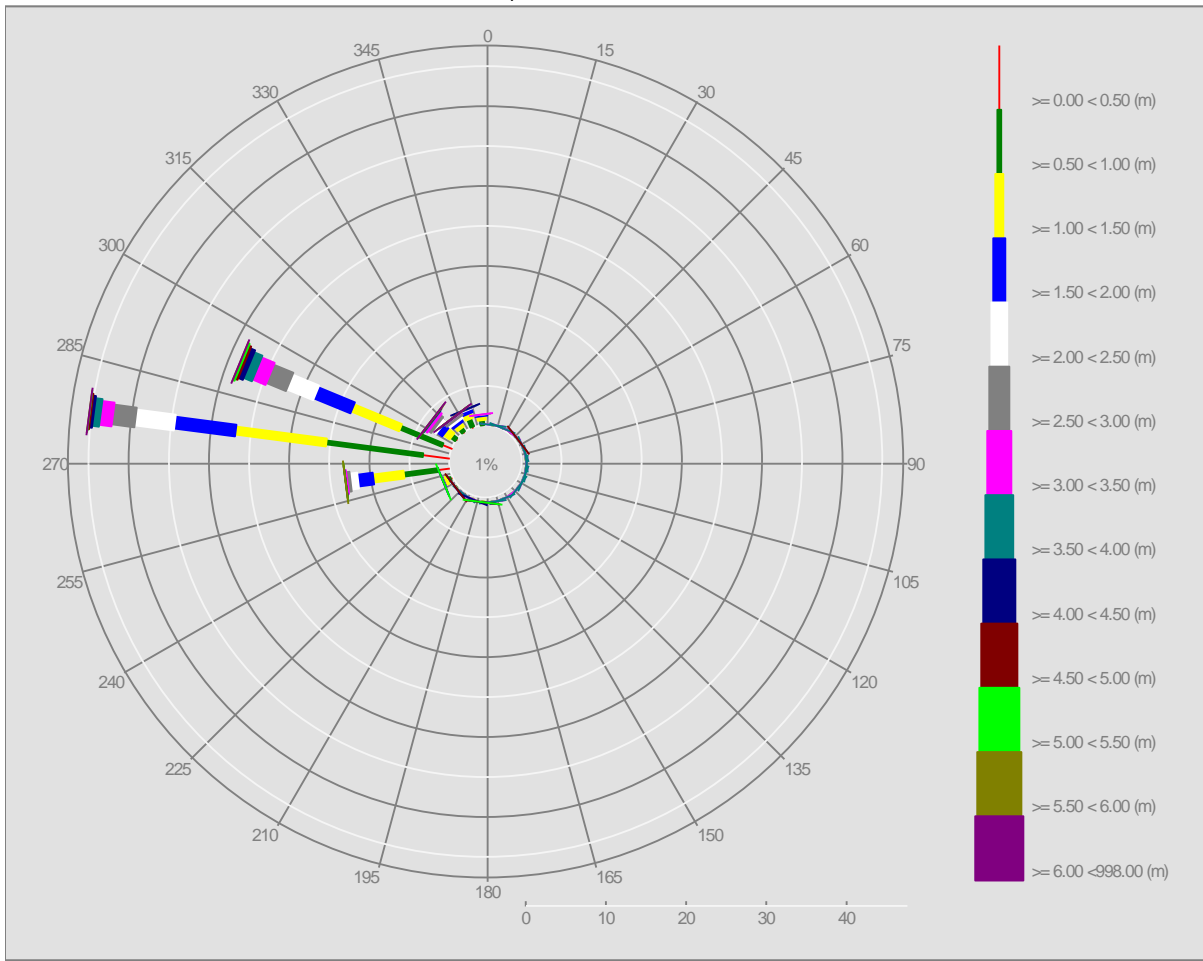
Acknowledgements

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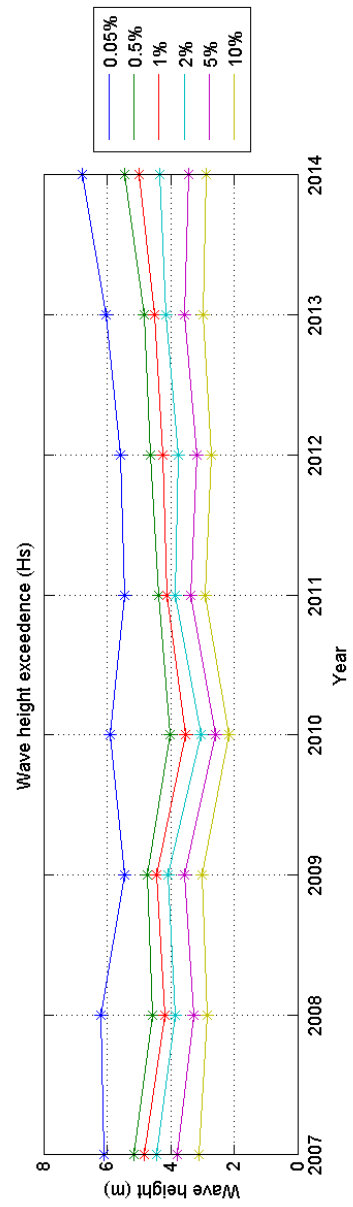
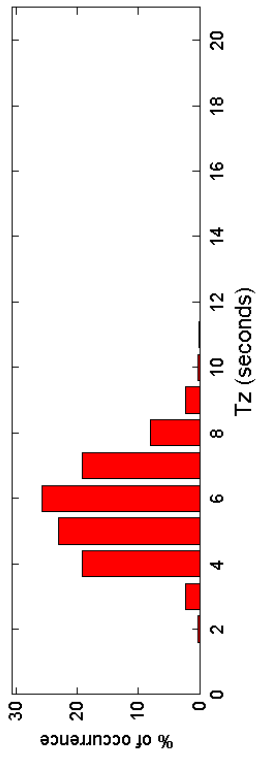
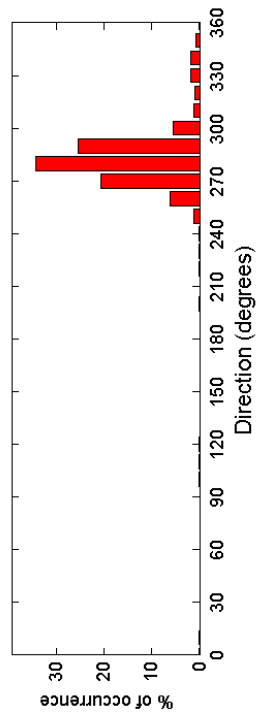
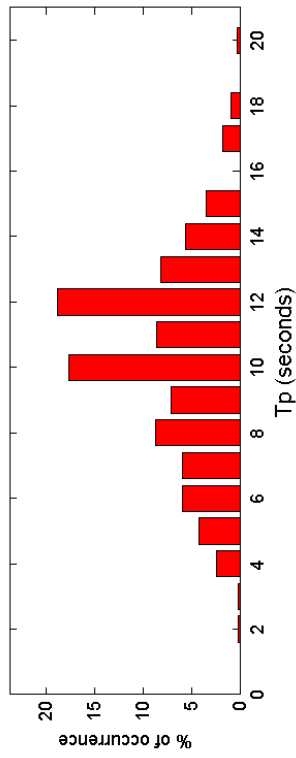
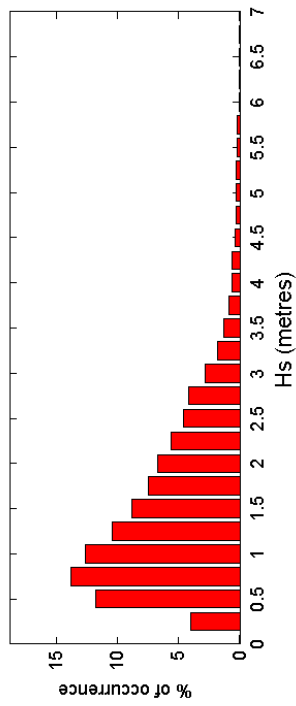


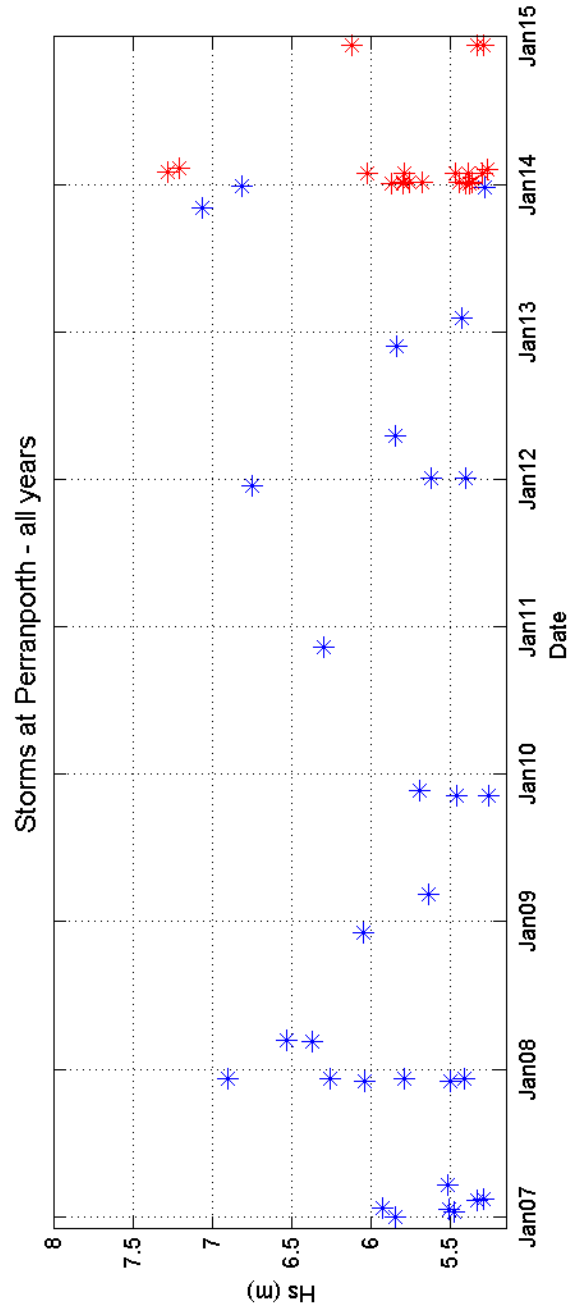
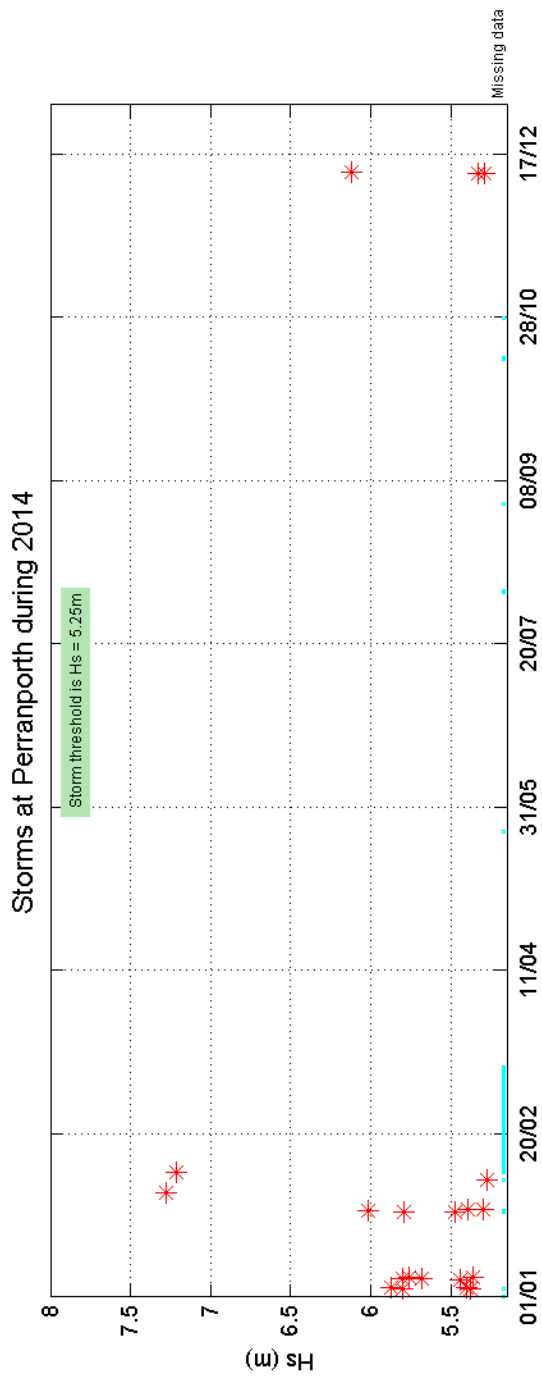
Offshore Wave Hs (m)

Perranporth WB : 18/12/2006 - 31/12/2014



Perranporth 2014





Perranporth 2006 to 2014 - Joint distribution (% of occurrence)

