



Perranporth Directional Waverider Buoy

Location			
OS	174266 E 55172 N		
WGS84	Latitude: 50° 21.18' N Longitude: 05° 10.48' 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
100	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	2.78	12.2	6.5	287	10.3	31
February	2.00	12.3	6.3	288	8.5	28
March	2.08	12.5	6.6	284	9.5	31
April	1.21	11.2	6.0	284	10.7	30
May	1.43	8.9	5.1	277	12.2	31
June	1.22	8.8	5.0	292	14.2	30
July	1.31	8.7	5.1	277	16.0	31
August	1.23	9.0	5.2	280	16.4	31
September	1.13	8.8	5.1	291	15.5	30
October	1.19	11.0	5.8	287	14.6	31
November	2.50	11.1	6.4	283	13.4	30
December	2.57	12.6	6.8	279	12.2	31

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

Month	H _s (m)	T _p (s)	T _z (s)	Dir. (°)	SST (°C)
January	2.26	12.5	6.7	285	9.7
February	1.92	12.6	6.6	282	9.0
March	1.65	11.6	6.2	271	9.3
April	1.29	10.8	5.9	284	10.5
May	1.30	9.4	5.4	284	12.2
June	1.09	8.9	5.1	281	14.3
July	1.19	8.5	5.1	278	16.0
August	1.24	8.5	5.1	280	16.7
September	1.24	9.7	5.5	285	16.0
October	1.49	10.6	5.9	284	14.8
November	2.02	11.0	6.1	286	12.7
December	2.14	11.8	6.3	285	10.7

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)
24-Feb-2015 05:00	6.75	12.5	9.1	294	-1.17	HW -4	~6.2	0.32	0.65
30-Jan-2015 05:00	6.07	11.8	8.0	291	0.19	HW +3	4.0	0.23	0.44
21-Nov-2015 06:00	5.37	9.1	7.4	321	-1.60	HW +5	4.0	-0.17	0.22
29-Nov-2015 16:00	5.36	11.1	7.8	285	-0.72	HW -4	6.1	0.04	0.25
31-Jan-2015 15:30	5.35	9.1	7.1	316	-	HW	~4.2	-	0.38

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 ⁺
2015	6.07	4.98	4.63	4.29	3.74	3.20	24-Feb-2015 05:00	6.75 ⁺

* 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.

* 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.

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)
- 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

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.

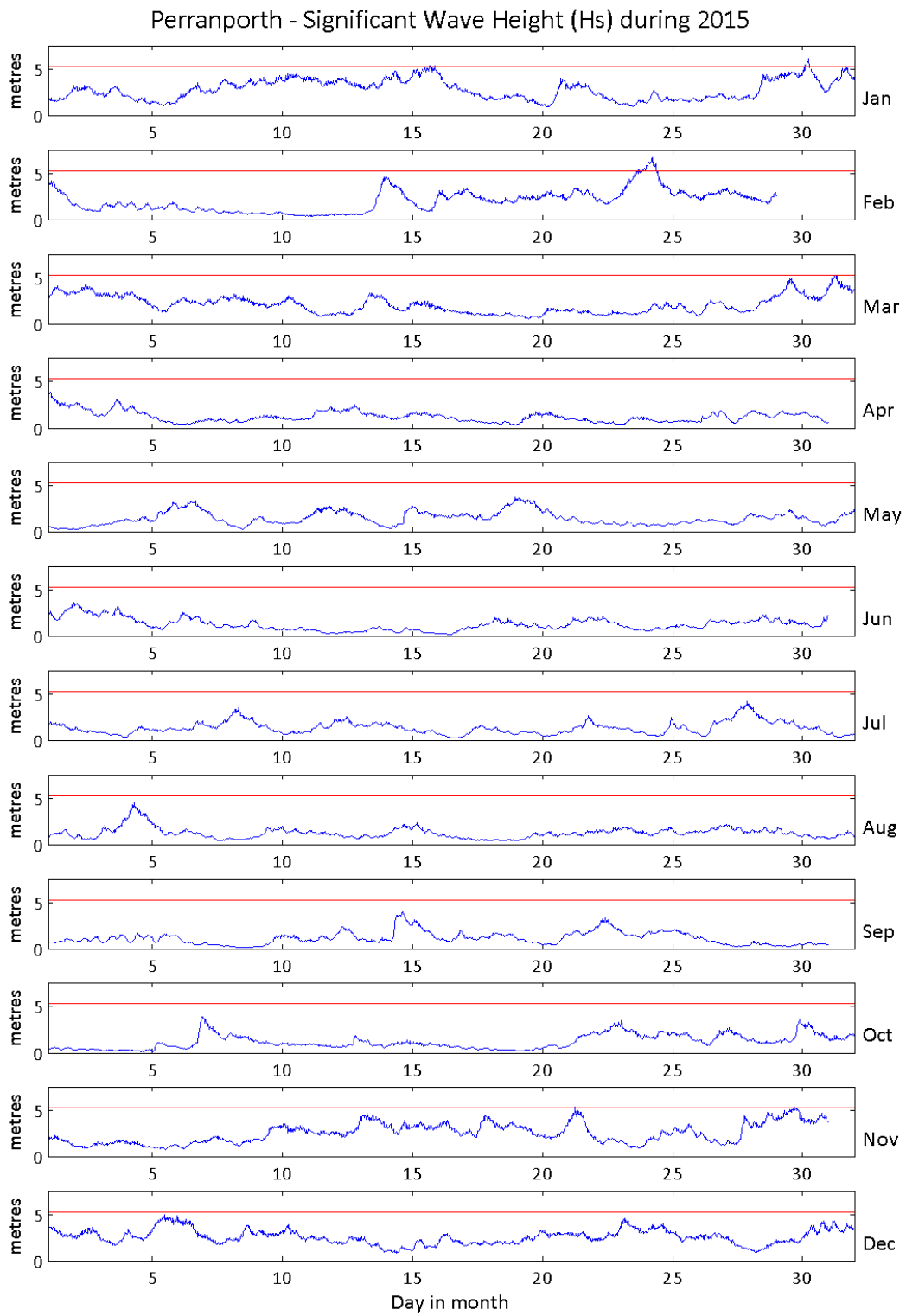
Return period (years)	Significant wave height (m)	Comments
1	6.3	Depth-limited at MLWS
2	6.6	
5	7.0	
10	7.2	
20	7.5	
50	7.9	

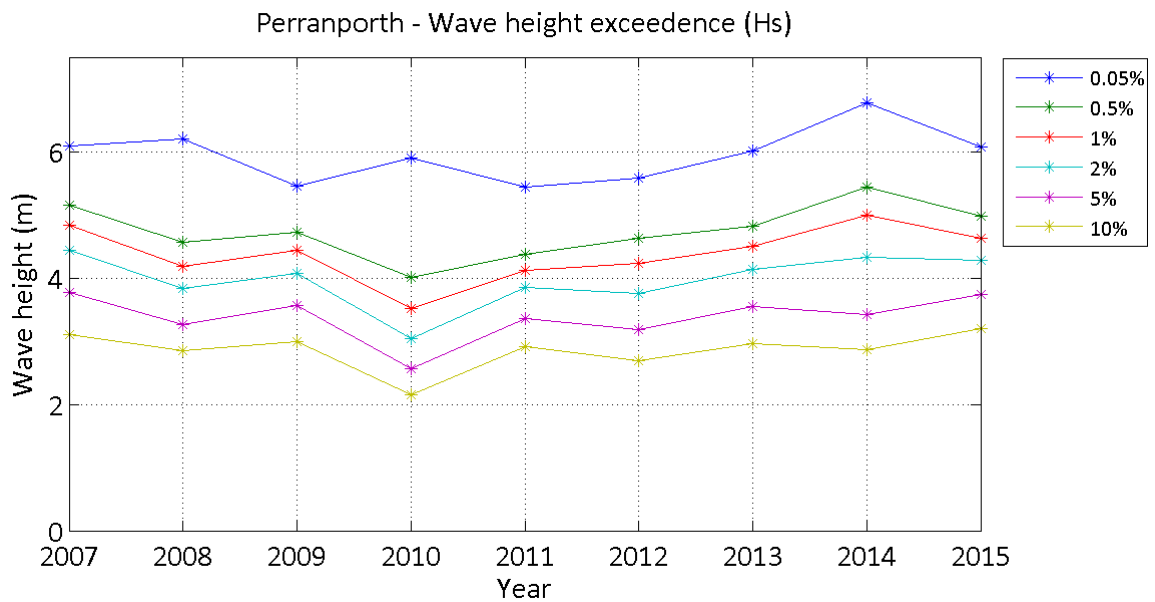
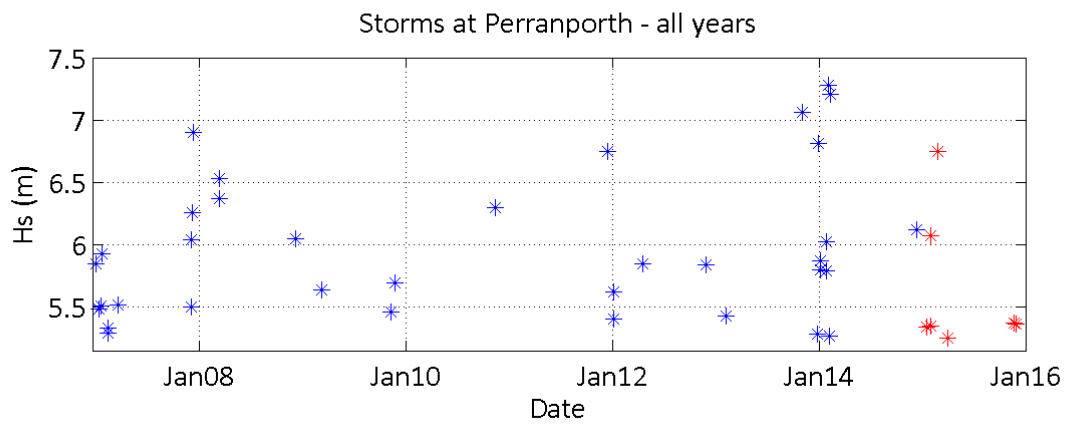
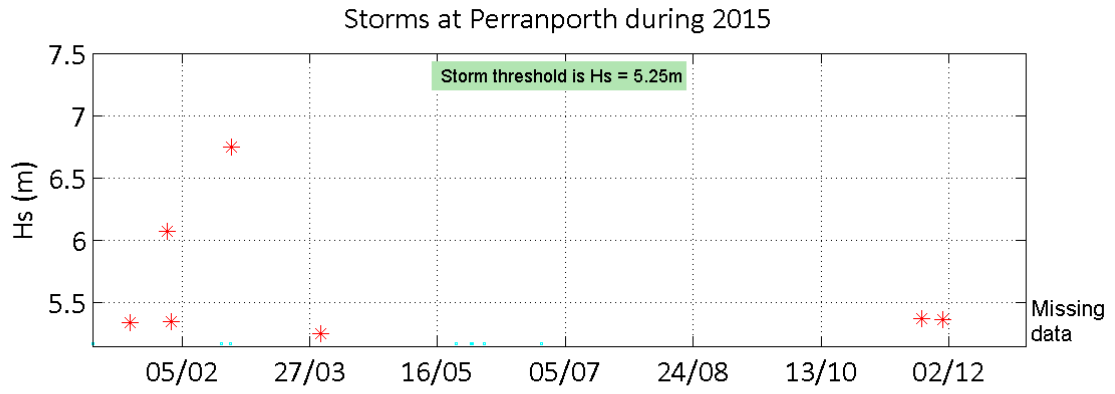
General

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.

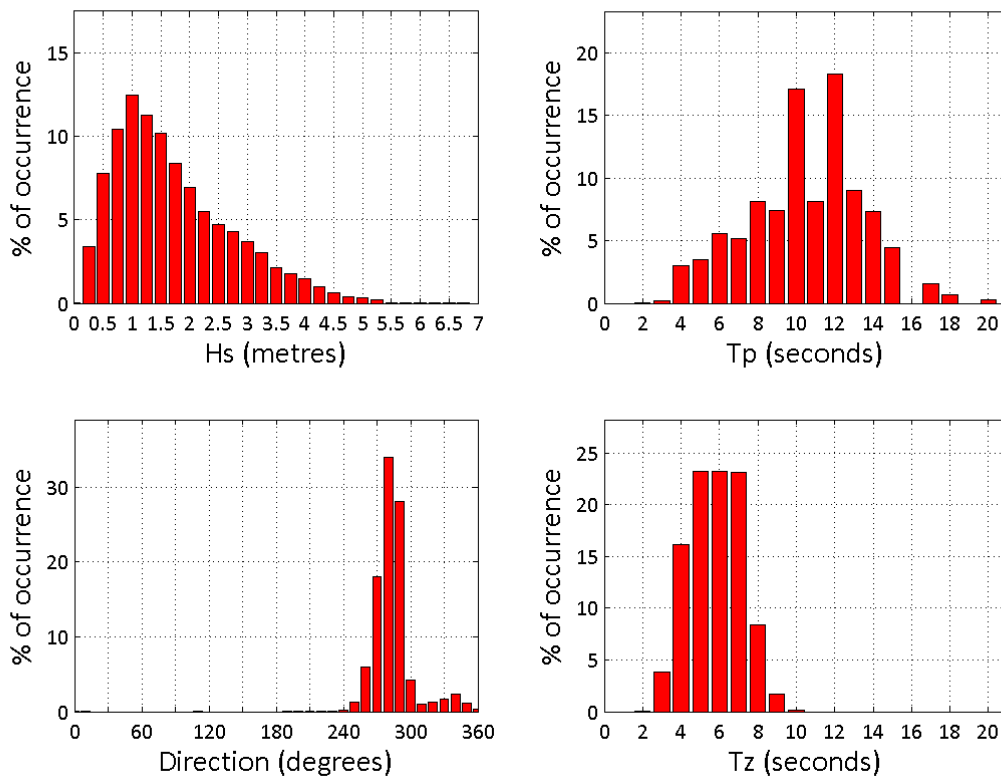
Acknowledgements

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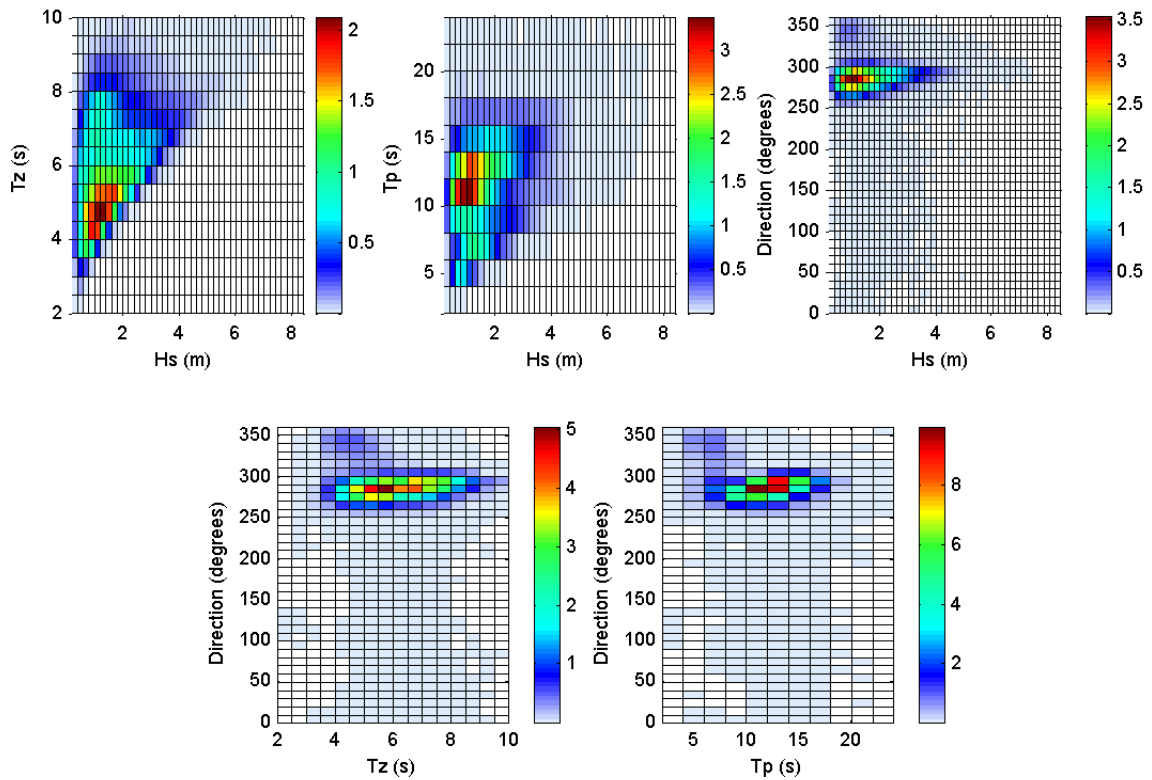




Perranporth 2015



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



Offshore Wave Hs (m)

Perranporth WB : 18/12/2006 - 31/12/2015

