

Perranporth Directional Waverider Buoy

Location

OS: 174304E 55125N

WGS84: Latitude: 50° 21.160' N Longitude: 05° 10.445' W

Water Depth

~14 m CD

Instrument Type

Datawell Directional Waverider Mk III

Data Quality

Recovery rate (%)	Sample interval
98	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	2.24	11.7	6.3	283	10.4	28
February	1.59	10.8	6.2	287	9.0	26
March	1.42	11.8	6.8	285	10.2	31
April	1.64	10.0	5.3	291	10.6	30
May	0.75	8.0	4.7	285	12.0	31
June	1.24	8.8	5.2	271	13.8	30
July	1.17	7.8	4.9	279	15.1	31
August	1.22	9.0	5.4	274	16.1	31
September	1.32	9.2	5.1	283	16.1	30
October	1.47	10.4	5.8	285	13.9	31
November	1.96	10.4	6.1	286	12.0	30
December	2.32	12.0	6.5	283	10.4	30

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)
18-Apr-2012 04:30	5.85	18.2	8.5	281	2.54	HW +1	5.2	0.01	0.31
26-Nov-2012 16:30	5.84	10.0	7.8	322	2.81	HW +1	0.9	-0.06	0.38
05-Jan-2012 05:00	5.62	13.3	8.2	284	0.61	HW +3	3.5	0.01	0.23

* 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.

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

* 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 5.6 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.

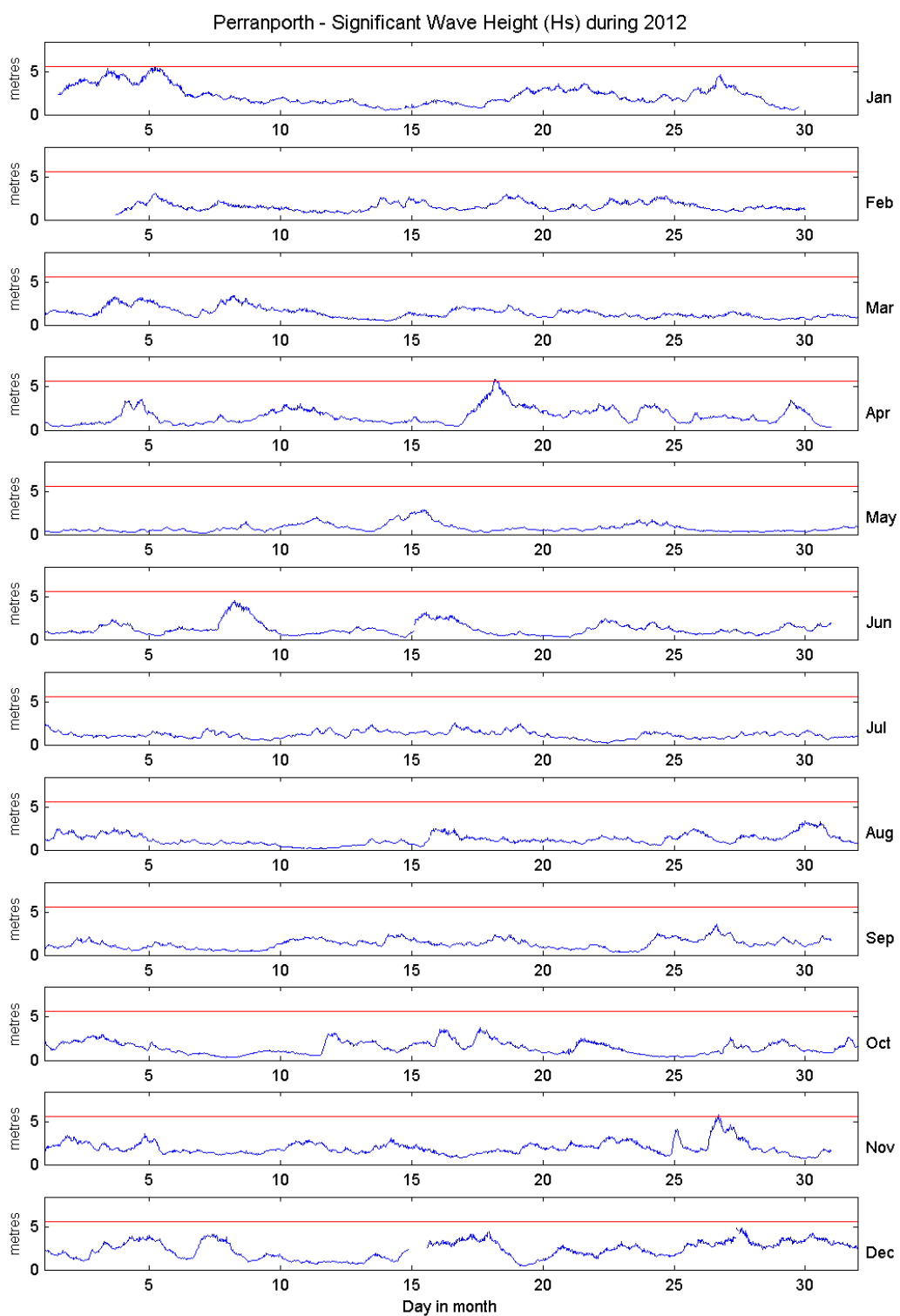
Return period (years)	Significant wave height (m)	Comments
1	6.1	Depth-limited at MLWS
2	6.3	
5	6.6	
10	6.8	
20	6.9	
50	7.2	

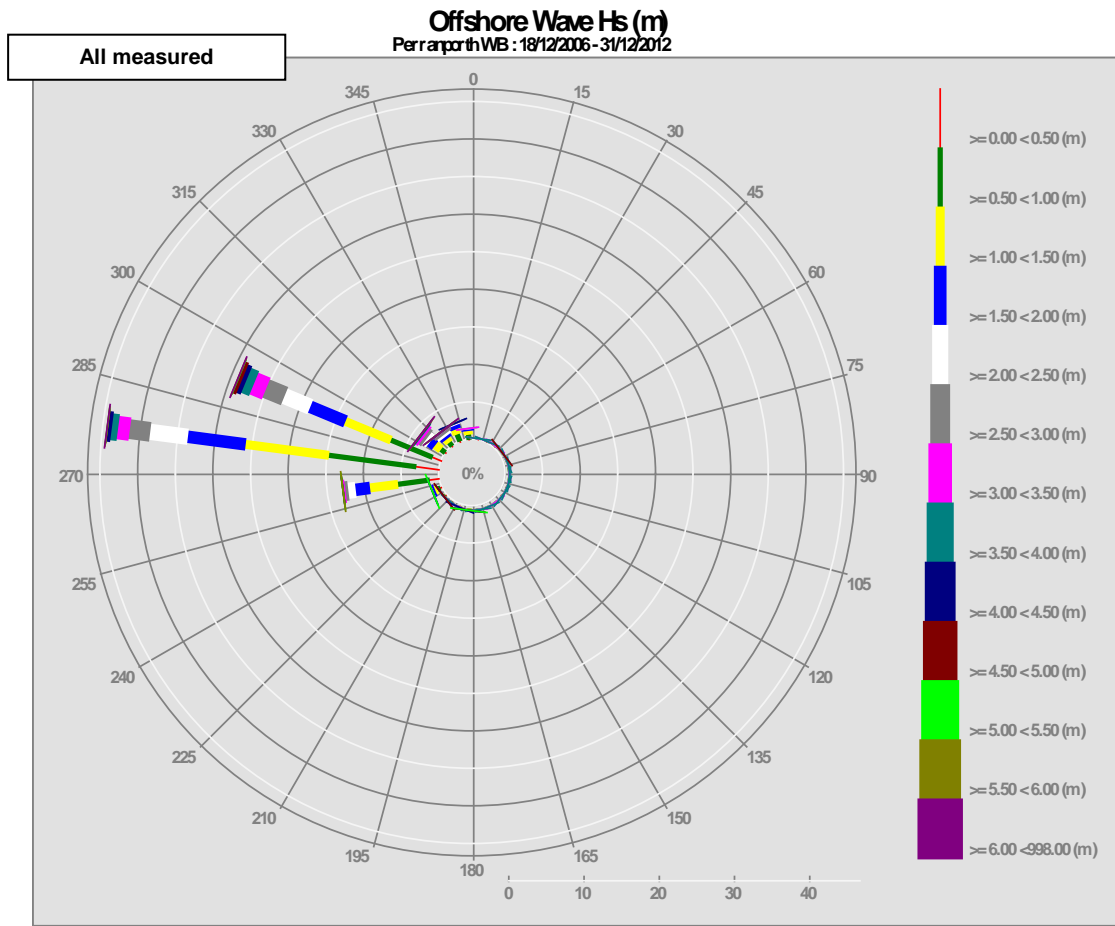
General

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.

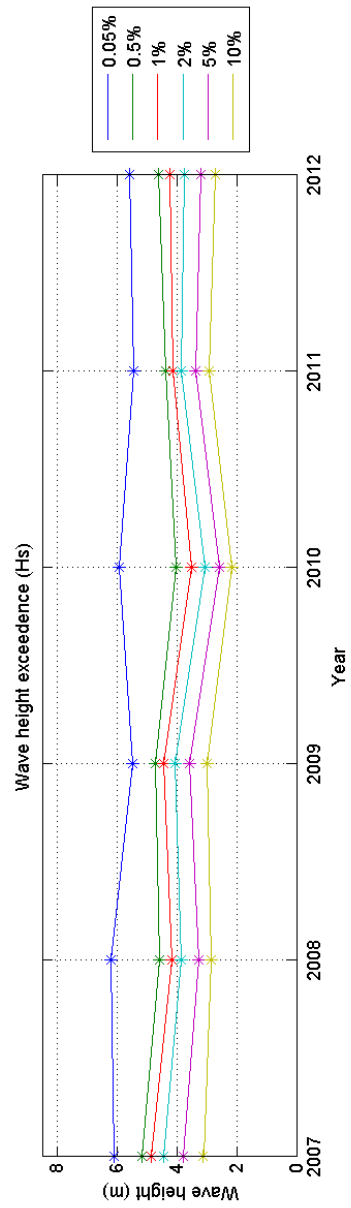
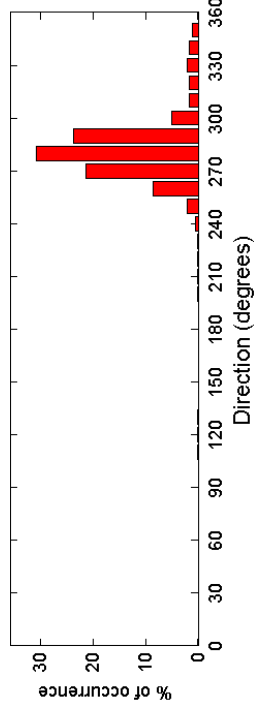
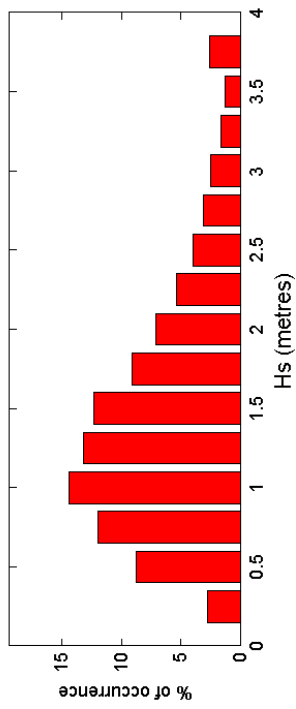
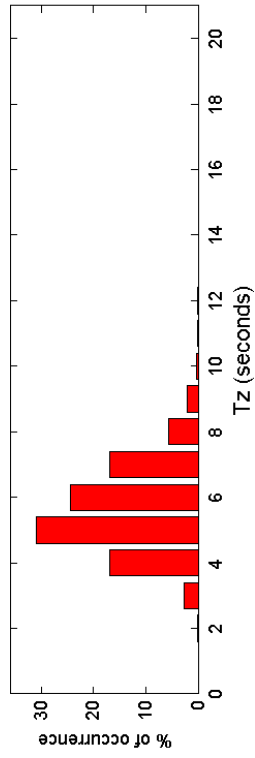
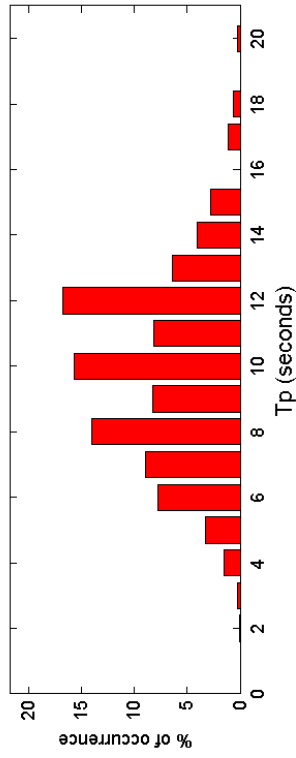
Acknowledgements

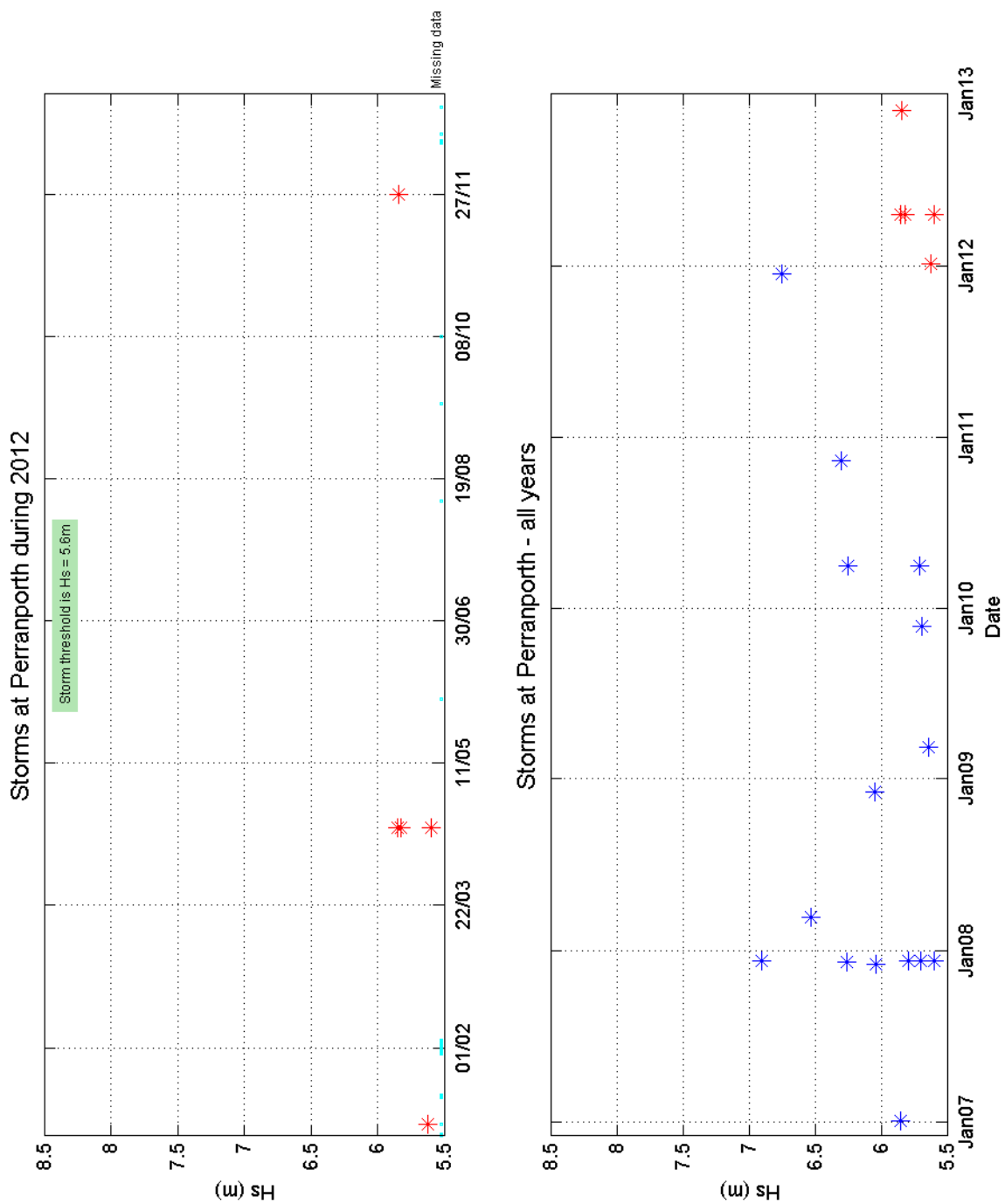
The shore station is kindly hosted by Perranporth Youth Hostel. TASK2000 tidal prediction software was kindly provided by the Permanent Service for Mean Sea Level, Proudman Oceanographic Laboratory.





Perranporth 2012





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

