



Start Bay Directional Waverider Buoy

Location			
OS	285001 E 44852 N		
WGS84	Latitude: 50° 17.542' N Longitude: 03° 36.948' W		
Instrument type			
Datawell Directional Waverider Mk III			
Water depth	~10m CD	Buoy in situ in Start Bay. Photo courtesy of Fugro EMU Limited	Location of buoy (Google mapping)

Data Quality

Recovery rate (%)	Sample interval
99	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	1.14	10.3	5.3	178	10.3	31
February	1.51	10.9	5.6	180	9.3	28
March	0.70	9.9	4.7	164	9.5	31
April	0.64	9.7	4.7	164	10.6	29
May	0.44	7.4	3.9	155	12.2	31
June	0.42	7.1	3.9	142	14.9	29
July	0.33	7.2	4.0	153	16.9	30
August	0.43	7.3	4.1	169	16.8	31
September	0.52	7.8	3.9	140	17.4	30
October	0.71	8.6	4.4	169	16.1	31
November	1.04	8.5	4.8	155	13.9	30
December	0.68	9.2	4.8	167	11.7	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)
14-Feb-2014 21:30	5.25	14.3	8.3	158	-	-	-	-	1.08
04-Feb-2014 21:30	4.69	9.1	7.0	146	-	-	-	-	0.92
13-Nov-2014 12:00	3.62	7.7	6.0	146	-	-	-	-	0.78
12-Feb-2014 13:00	3.19	9.1	6.0	181	-	-	-	-	0.86
03-Jan-2014 20:30	3.02	11.8	6.8	190	-	HW	~4.4	-	0.72

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	-	-	1.93	1.71	1.43	1.15	17-Dec-2007 23:30	3.41
2008	3.60	2.98	2.66	2.34	1.78	1.38	17-Apr-2008 20:30	3.94
2009	3.19	2.67	2.44	2.21	1.83	1.47	01-Feb-2009 09:00	3.36
2010	3.53	2.5	2.21	2.05	1.72	1.43	16-Jan-2010 05:30	3.73
2011	2.87	2.36	2.17	1.94	1.61	1.29	24-Oct-2011 15:30	3.27
2012	3.84	2.64	2.36	2.1	1.65	1.32	30-Apr-2012 03:00	4.36
2013	3.58	2.95	2.67	2.38	1.90	1.57	11-Mar-2013 14:00	3.78
2014	4.57	2.95	2.60	2.27	1.80	1.40	14-Feb-2014 21:30	5.25

* i.e. 5 % of the H_s values measured in 2007 exceeded 1.43 m

Distribution plots

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

- Annual time series of H_s (red line is 3.0 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 was obtained from the WaveRadar REX on Teignmouth Pier until it was put out of action on 03 Feb 2014 by damage to the pier. The maximum tidal surge is the largest positive surge during the storm event and was taken from the next closest tide gauge (the National Network gauge at Devonport) after 03 Feb 2014.

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	4.0	No depth limitation
2	4.2	
5	4.6	Depth-limited at MLWS
10	4.8	
20	5.1	
50	5.4	

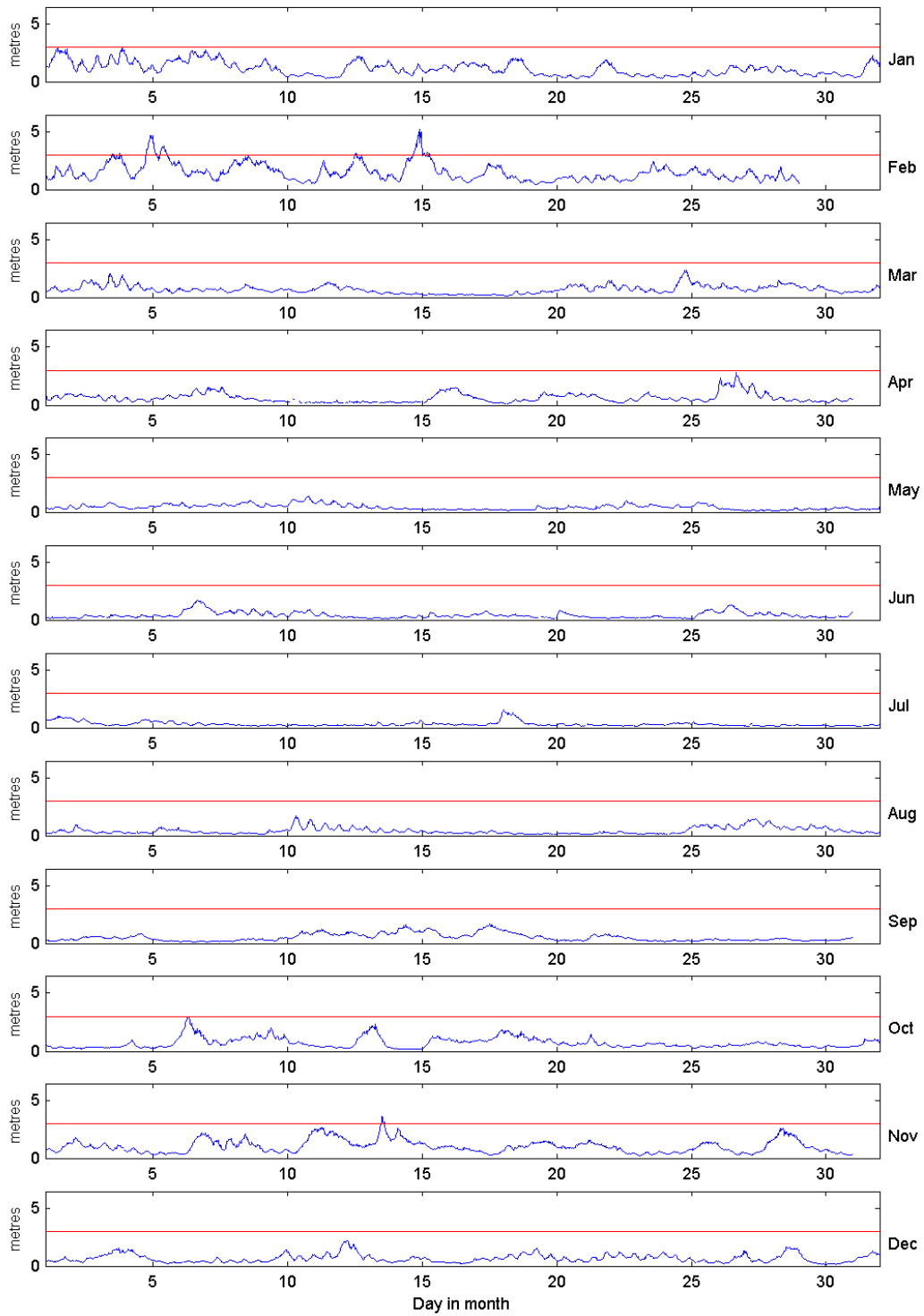
General

The buoy was first deployed on 5 April 2007, at which time the magnetic declination at the site was 3.2° west, changing by 0.15° east per year.

Acknowledgements

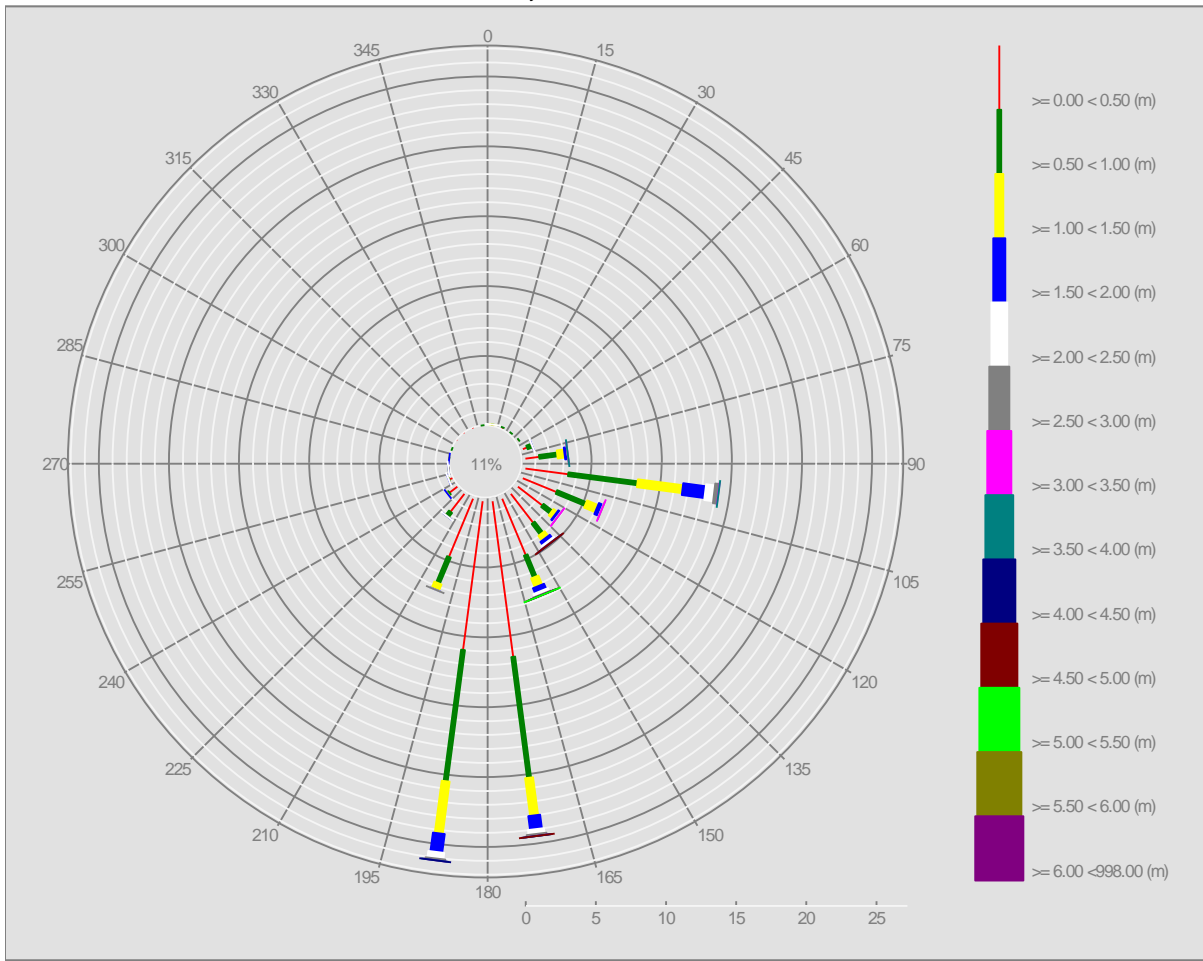
TASK2000 tidal prediction software was kindly provided by the Permanent Service for Mean Sea Level, Proudman Oceanographic Laboratory. Tidal data were supplied by the British Oceanographic Data Centre as part of the function of the National Tidal and Sea Level Facility, hosted by the Proudman Oceanographic Laboratory and funded by DEFRA and the Natural Environment Research Council.

Start Bay - Significant Wave Height (Hs) during 2014

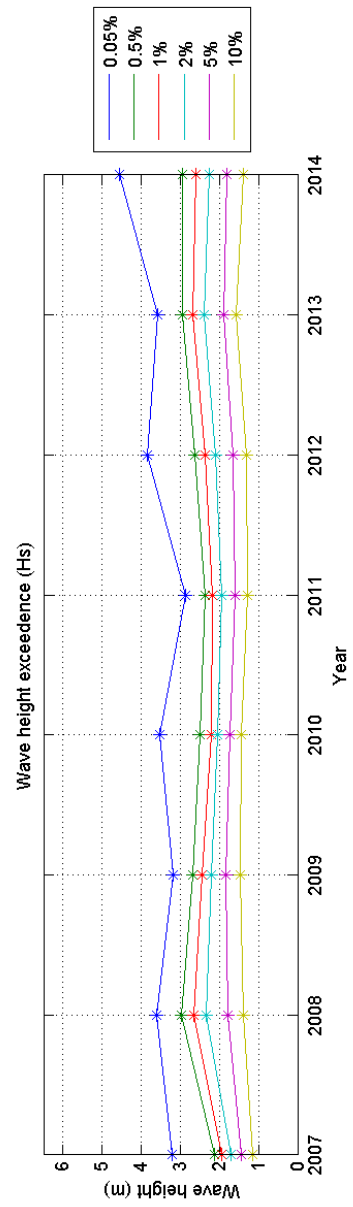
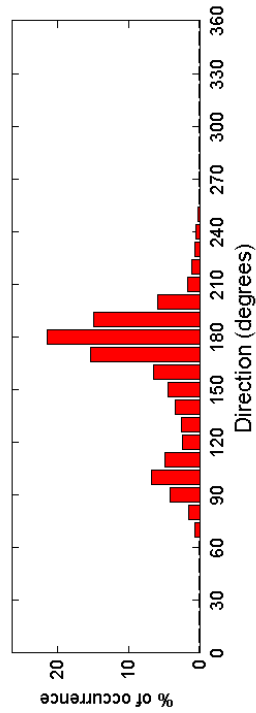
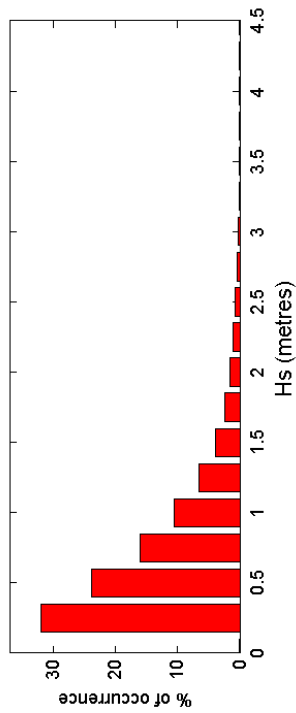
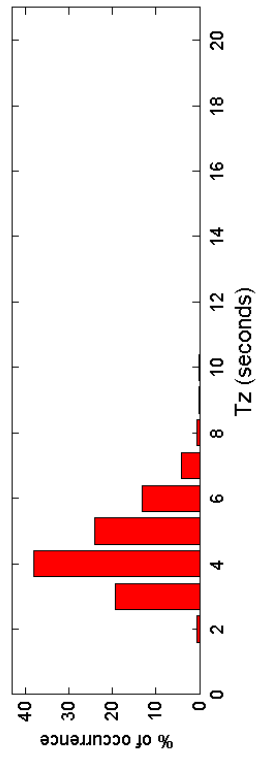
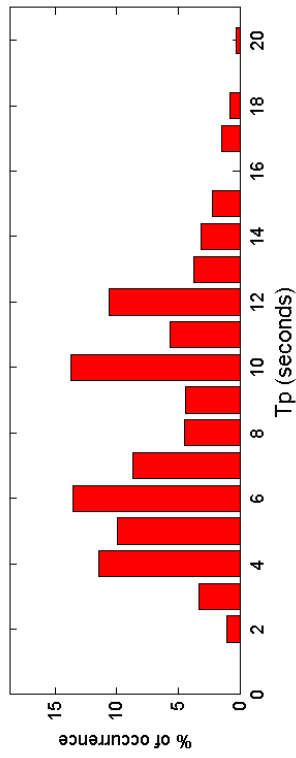


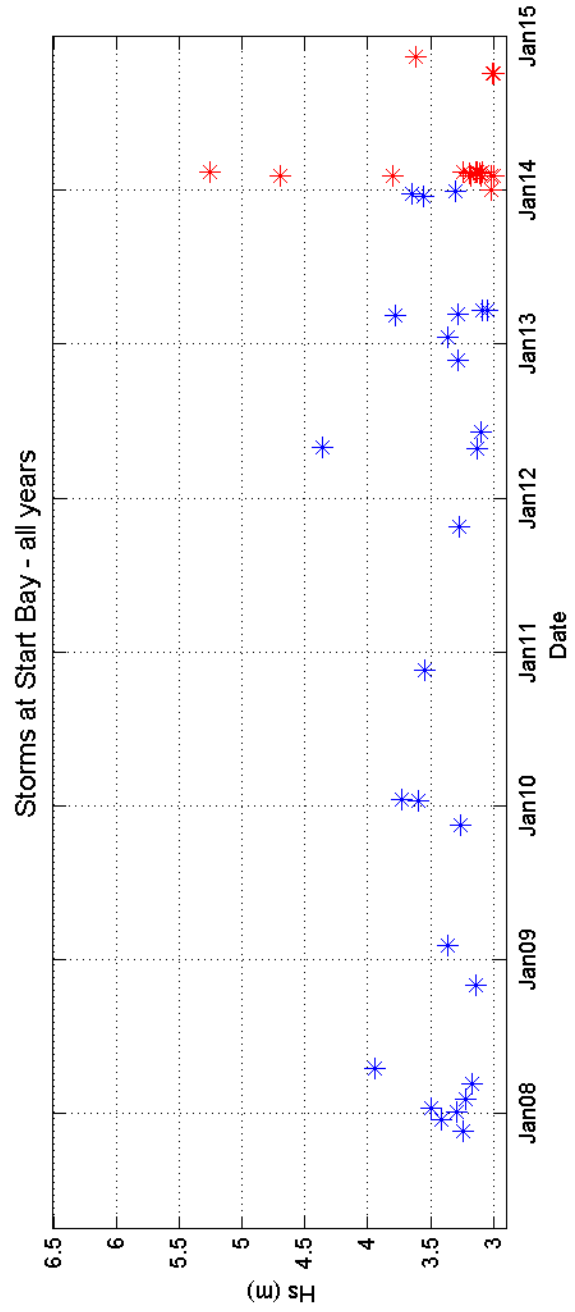
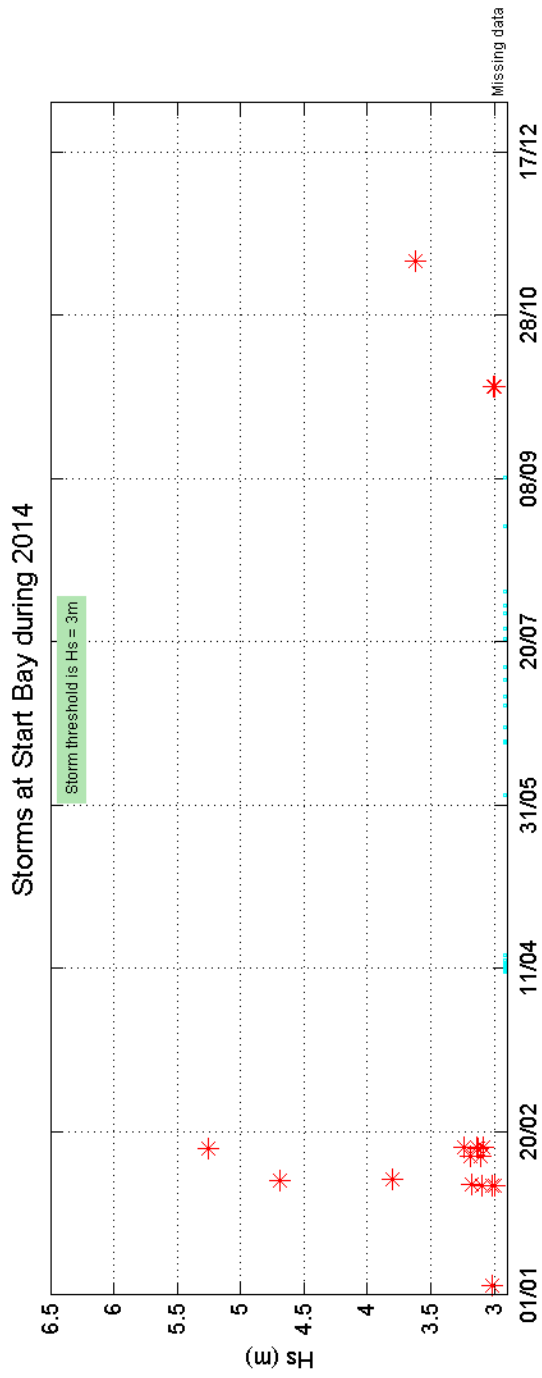
Offshore Wave Hs (m)

Start Bay WB : 05/04/2007 - 31/12/2014



Start Bay 2014





Start Bay 2007 to 2014 - Joint distribution (% of occurrence)

