

Start Bay Directional Waverider Buoy

Location

OS: 284870E 44683N

WGS84: Latitude: 50° 17.542' N Longitude: 03° 36.948' W

Water Depth

~10 m CD

Instrument Type

Datawell Directional Waverider Mk III

Data Quality

Recovery rate (%)	Sample interval
99	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	0.74	9.1	4.7	166	10.5	31
February	0.62	9.3	4.6	159	8.6	28
March	0.49	9.8	4.4	162	9.4	31
April	0.82	8.4	4.5	155	10.1	30
May	0.52	6.7	4.1	148	11.6	31
June	0.70	7.7	4.1	162	13.2	30
July	0.40	6.2	3.8	163	14.7	31
August	0.63	7.5	4.3	165	16.1	31
September	0.45	7.7	4.1	161	16.2	30
October	0.86	7.4	4.3	150	14.7	31
November	0.78	8.4	4.7	163	12.7	30
December	0.99	9.8	5.1	174	11.0	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)
30-Apr-2012 03:00	4.36	9.1	7.0	148	-	HW +3	1.9	-	-
22-Nov-2012 15:30	3.28	10.0	6.1	183	0.84	HW +3	2.1	0.3	0.4
07-Jun-2012 19:30	3.10	11.8	6.8	184	2.24	HW -1	4.0	0.3	0.5
29-Dec-2012 08:00	2.98	9.1	5.9	176	-	HW +1	3.4	-	-

* Tidal information is obtained from the nearest recording tide gauge (the WaveRadar REX on Teignmouth Pier). 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	-	-	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

* 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 (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.

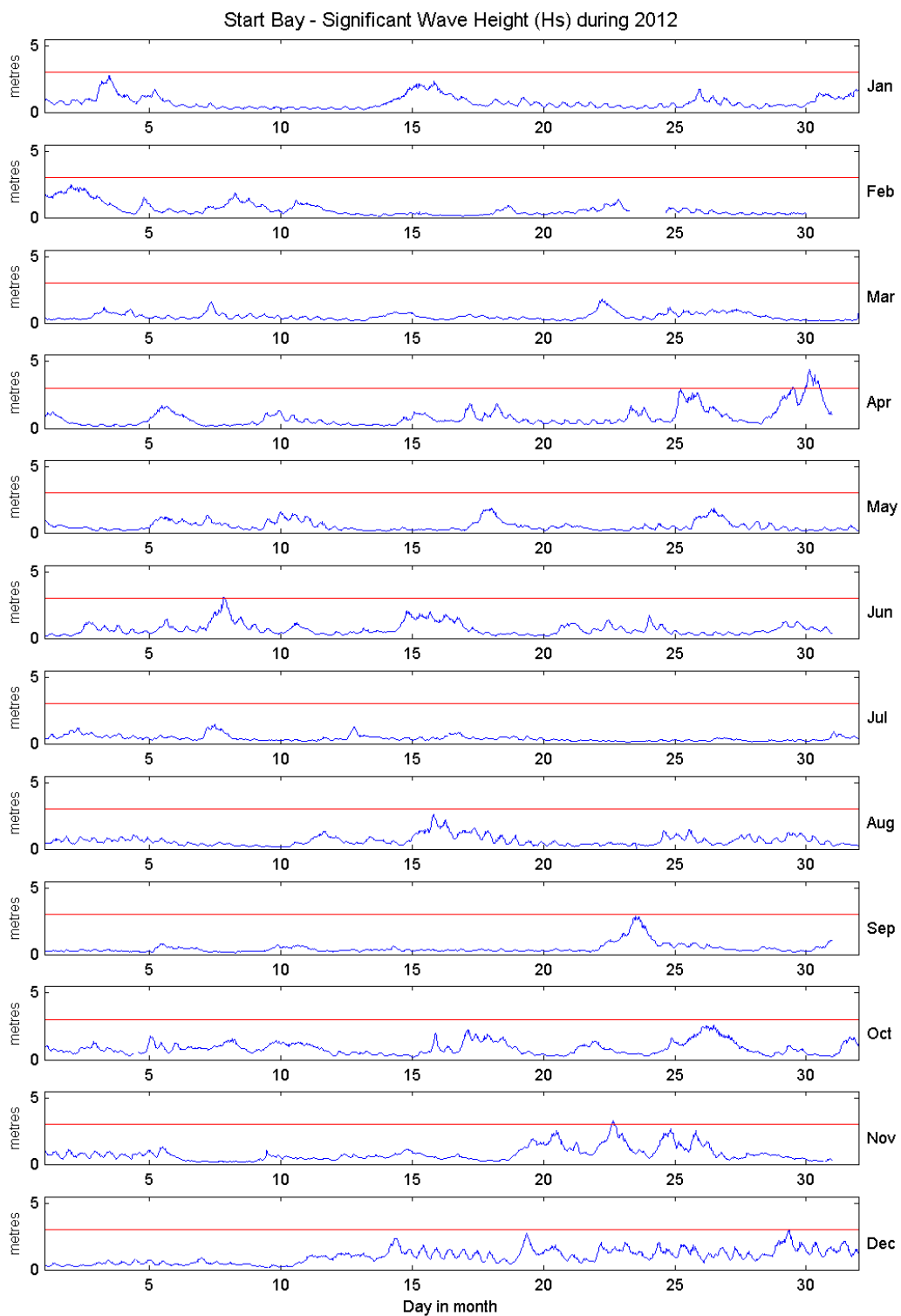
Return period (years)	Significant wave height (m)	Comments
1	3.7	No depth limitation
2	3.9	
5	4.2	
10	4.4	Depth-limited at MLWS
20	4.5	
50	4.8	

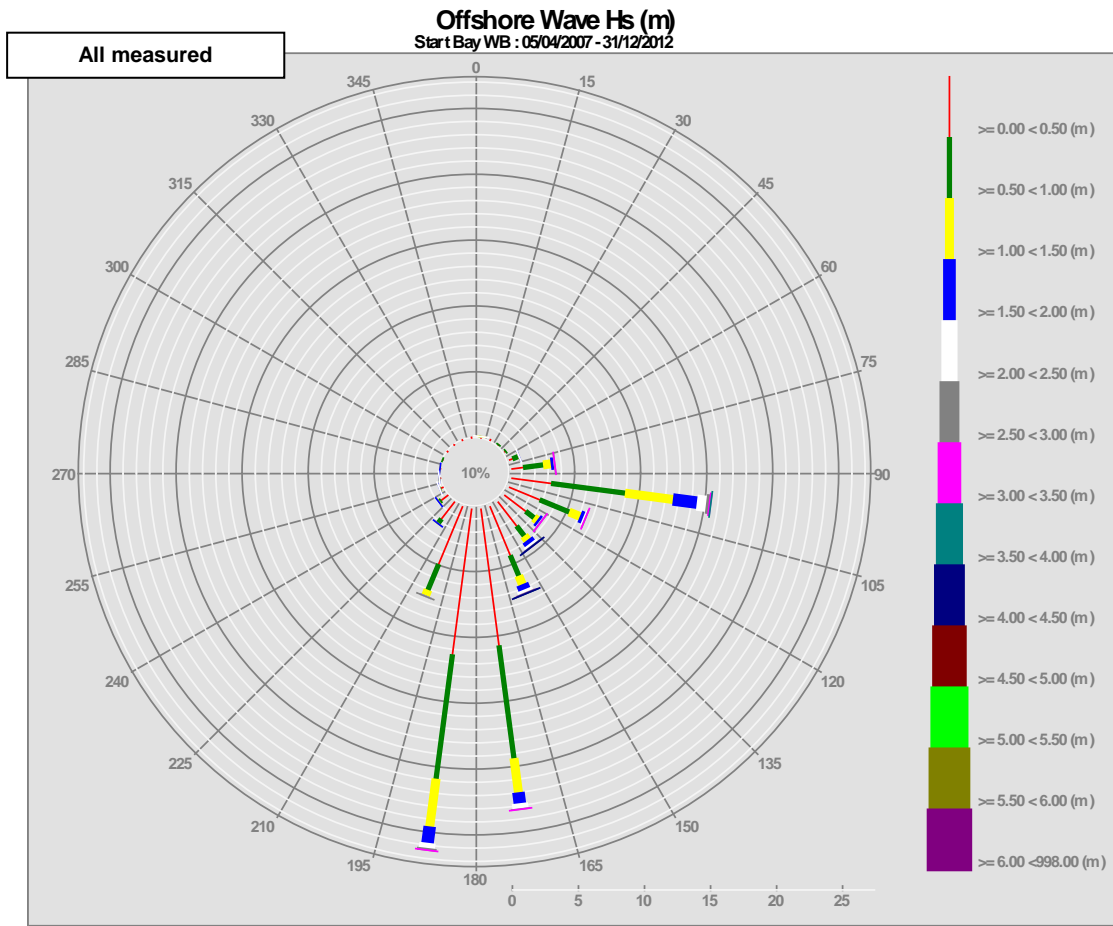
General

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.

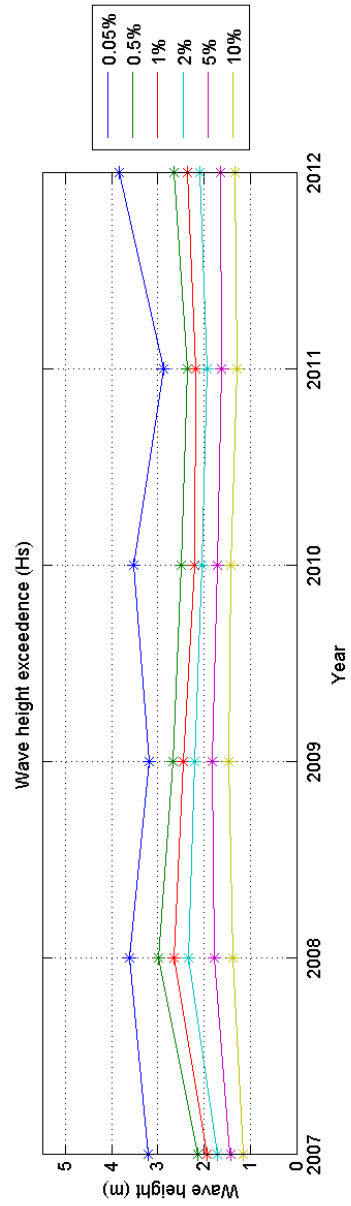
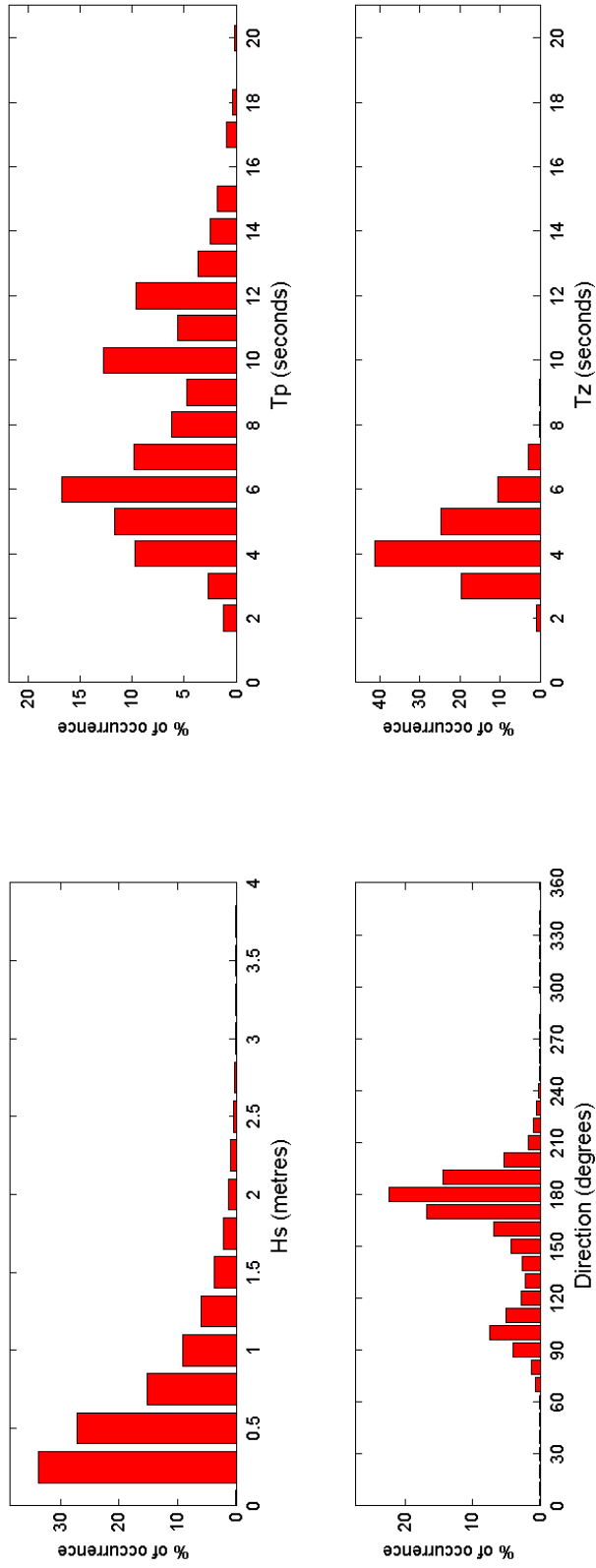
Acknowledgements

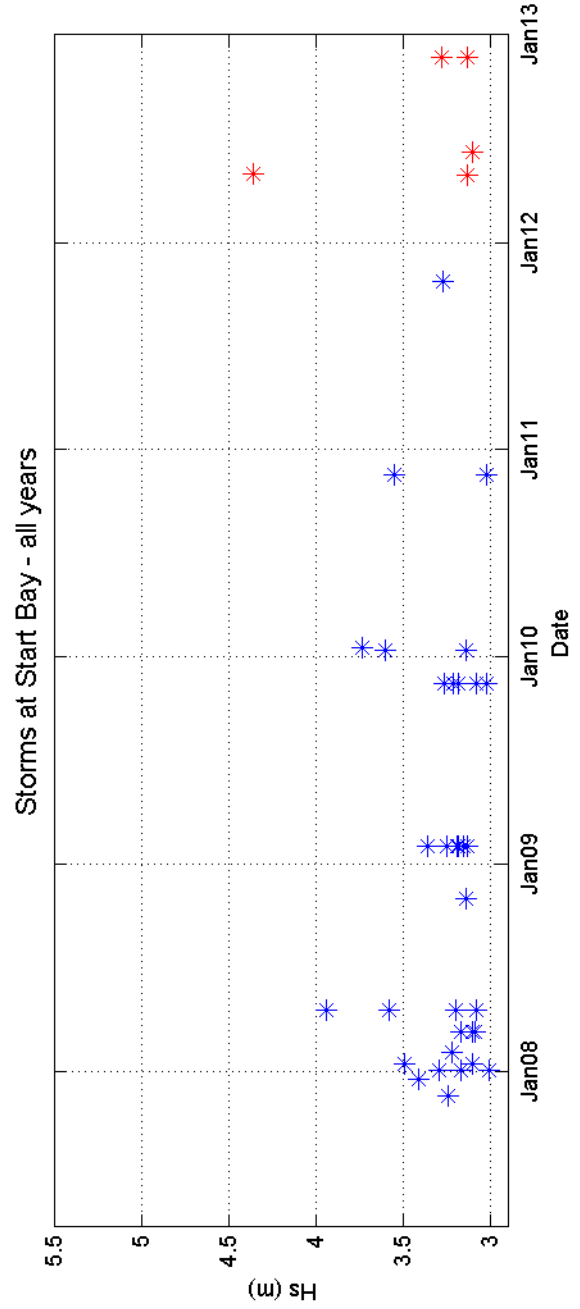
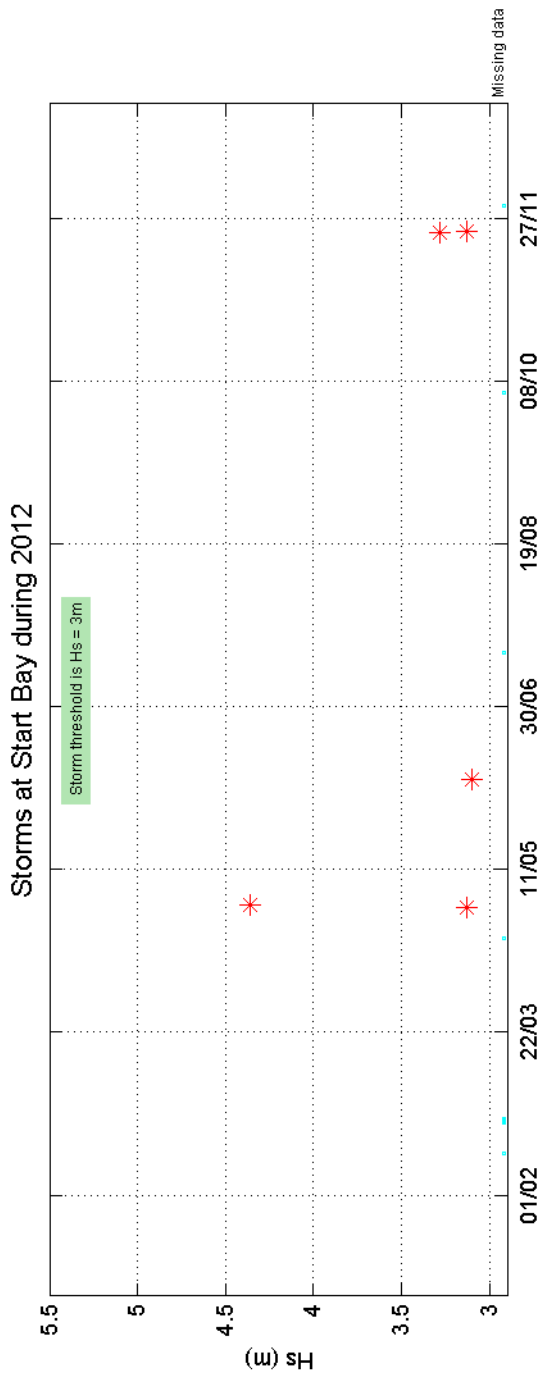
TASK2000 tidal prediction software was kindly provided by the Permanent Service for Mean Sea Level, Proudman Oceanographic Laboratory.





Start Bay 2012





Start Bay 2007 to 2012 - Joint distribution (% of occurrence)

