



## Boscombe Directional Waverider Buoy

<b>Location</b>			
OS	411412 E 90204 N		
WGS84	Latitude: 50° 42.681' N Longitude: 01° 50.384' W		
<b>Instrument type</b>			
Datawell Directional Waverider Mk III			
<b>Water depth</b>	~10m CD	Buoy in situ off Boscombe beach. Photo courtesy of Fugro EMU Limited	Location of buoy (Google mapping)

### Data Quality

Recovery rate (%)	Sample interval
100	30 minutes

### Monthly Averages - 2014

*All times are GMT*

Month	H <sub>s</sub> (m)	T <sub>p</sub> (s)	T <sub>z</sub> (s)	Dir. (°)	SST (°C)	No. of days
January	1.05	10.4	4.5	183	9.2	31
February	1.27	11.0	4.6	184	8.6	28
March	0.54	9.8	4.3	182	9.2	31
April	0.43	7.6	3.9	180	11.0	30
May	0.47	5.4	3.5	178	13.5	31
June	0.32	5.5	3.3	176	16.7	30
July	0.31	5.2	3.5	181	19.4	31
August	0.50	5.0	3.4	188	19.1	31
September	0.33	6.7	3.6	170	18.3	30
October	0.66	7.0	3.8	183	16.2	31
November	0.83	8.3	4.4	173	13.3	30
December	0.58	8.5	4.3	185	10.4	31

## Storm Analysis

Date/Time	H <sub>s</sub> (m)	T <sub>p</sub> (s)	T <sub>z</sub> (s)	Dir. (°)	Water level elevation* (OD)	Tidal stage (hours re. HW)	Tidal range (m)	Tidal surge* (m)	Max. surge* (m)
05-Feb-2014 01:00	3.95	9.1	6.6	170	-	HW	~1.3	-	-
01-Jan-2014 16:30	3.81	8.3	6.5	177	-	HW -5	~1.5	-	-
14-Feb-2014 23:30	3.48	11.1	6.3	197	-	HW +2	~1.3	-	-
12-Feb-2014 14:30	3.47	8.3	6.0	184	-	HW +4	~1.0	-	-
06-Oct-2014 11:30	3.29	7.1	5.8	156	-	HW +4	~1.4	-	-

## Annual Statistics

Year	Annual H <sub>s</sub> exceedance* (m)						Annual Maximum H <sub>s</sub>	
	0.05%	0.5%	1%	2%	5%	10%	Date	A <sub>max</sub> (m)
2003	-	2.17	1.95	1.53	1.19	0.98	14-Nov-2003 11:00	2.79
2004	2.98	2.28	1.96	1.69	1.30	1.02	08-Jan-2004 09:30	3.62
2005	2.62	1.81	1.59	1.40	1.11	0.90	02-Nov-2005 01:00	2.84
2006	2.82	2.24	2.03	1.82	1.47	1.17	29-Dec-2006 23:00	3.14
2007	2.94	2.07	1.84	1.63	1.33	1.07	18-Nov-2007 14:00	3.19
2008	3.08	2.32	2.02	1.71	1.34	1.05	10-Mar-2008 07:00	3.84
2009	2.87	2.18	1.93	1.72	1.39	1.10	13-Nov-2009 23:30	3.10
2010	2.75	2.13	1.76	1.48	1.14	0.90	08-Nov-2010 08:30	3.21
2011	2.61	2.11	1.91	1.57	1.26	1.04	10-Jan-2011 22:30	2.88
2012	3.06	2.25	2.04	1.76	1.34	1.07	25-Apr-2012 10:30	3.31
2013	3.14	2.40	2.04	1.78	1.38	1.09	18-Dec-2013 20:00	3.35
2014	3.64	2.72	2.43	2.08	1.63	1.24	05-Feb-2014 01:00	3.95

\* i.e. 5 % of the H<sub>s</sub> values measured in 2003 exceeded 1.19 m

## Distribution plots

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

- Annual time series of H<sub>s</sub> (red line is 2.75m storm threshold)
- Wave rose (percentage of occurrence of Direction vs. H<sub>s</sub>) for all measured data
- Percentage of occurrence of H<sub>s</sub>, T<sub>p</sub>, T<sub>z</sub> and Direction for 2014
- Incidence of storm waves for 2014. Storm events are defined using the Peaks-over-Threshold method. The highest H<sub>s</sub> 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 National Network gauge on Bournemouth Pier). The surge shown is the residual at the time of the highest H<sub>s</sub>. 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.

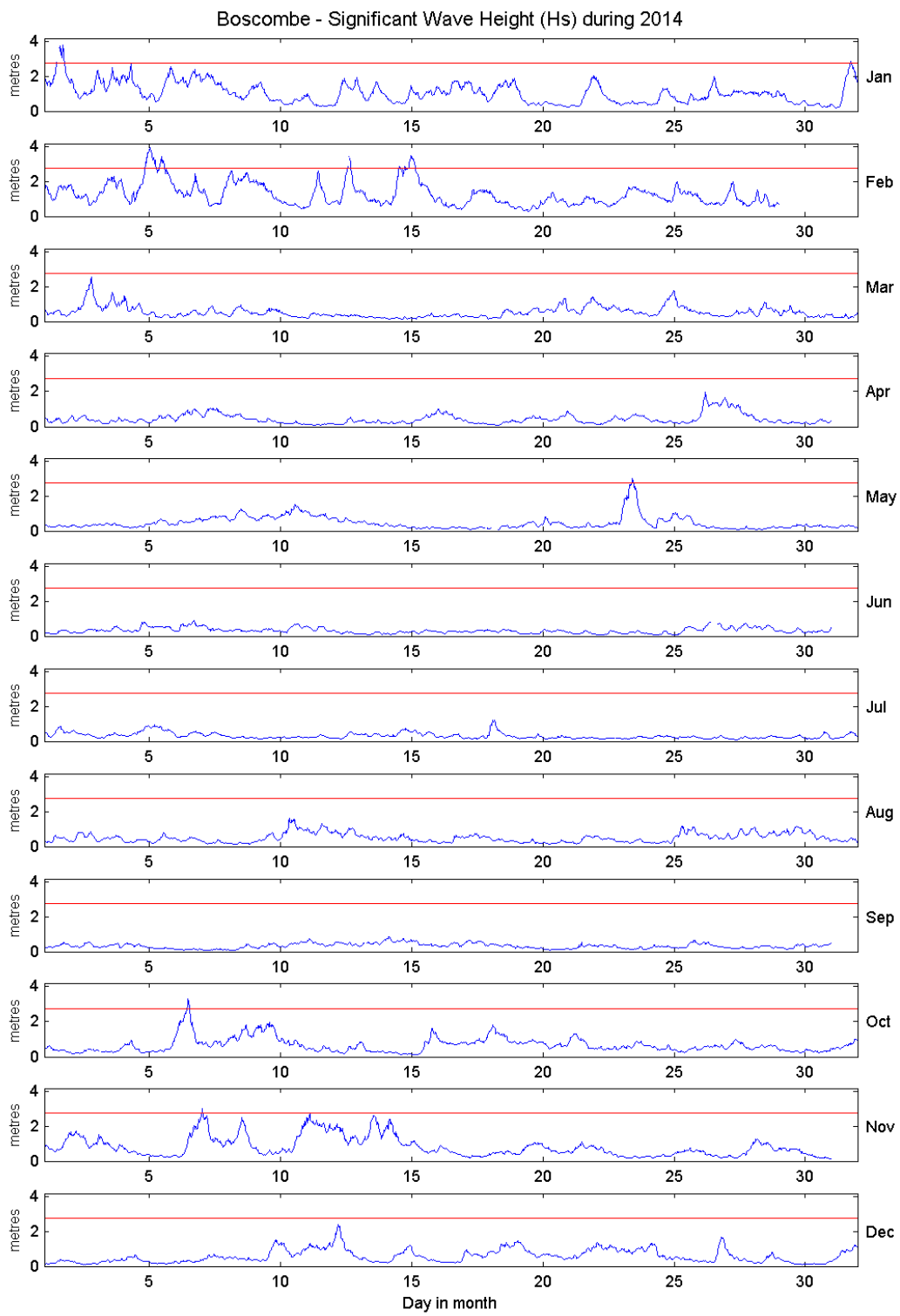
Return period (years)	Significant wave height (m)	Comments
1	3.3	No depth limitation
2	3.5	
5	3.8	
10	4.0	Depth-limited at MLWS
20	4.1	
50	4.4	
100	4.6	

## General

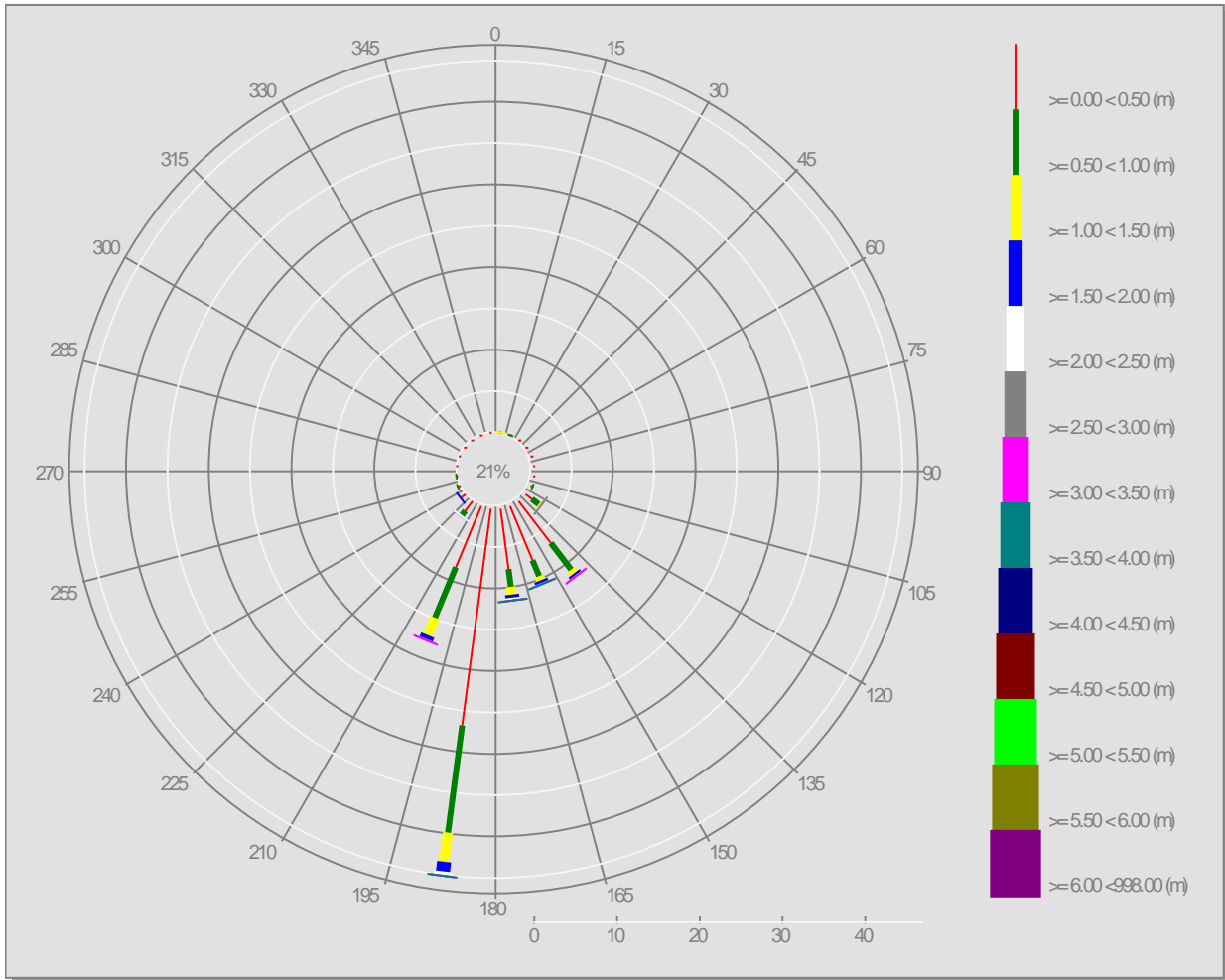
The buoy was first deployed on 11 July 2003, at which time the magnetic declination at the site was 3.2° west, changing by 0.15° east per year.

## Acknowledgements

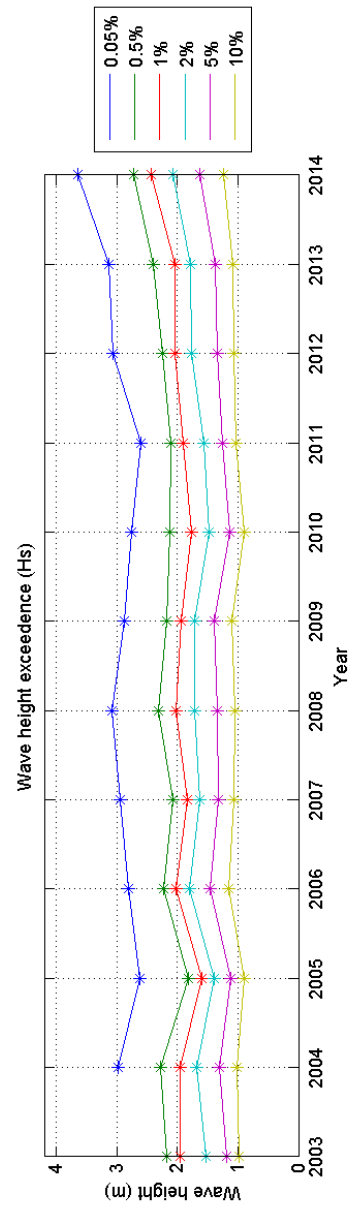
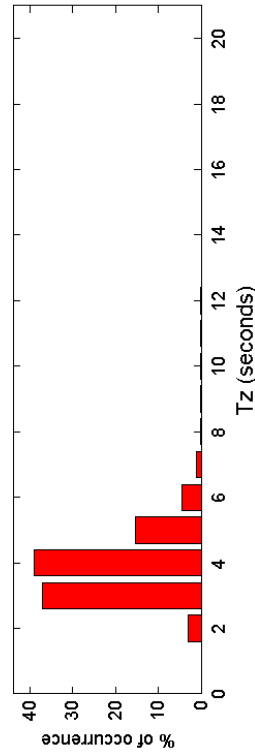
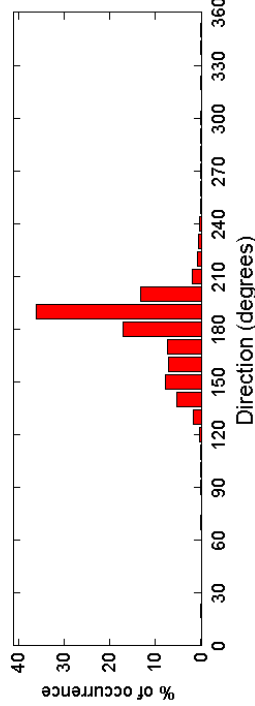
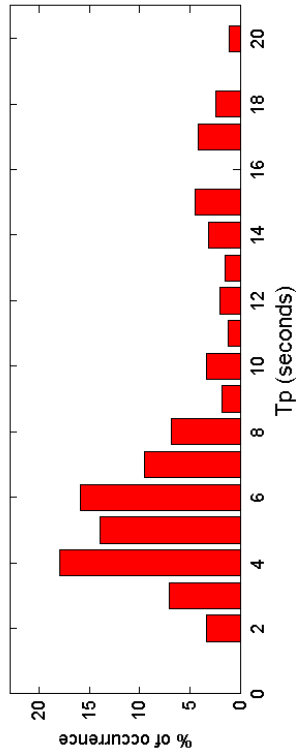
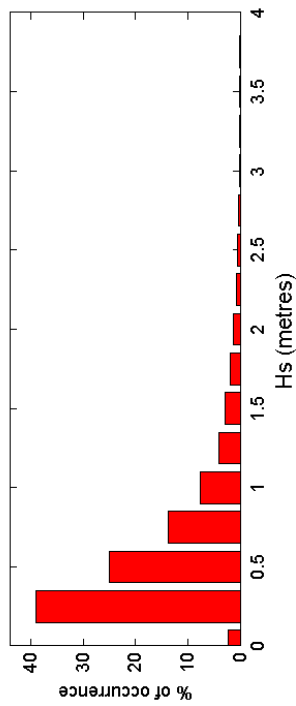
Tidal data were supplied by the British Oceanographic Data Centre as part of the function of the National Tidal and Sea Level Facility, hosted by the Proudman Oceanographic Laboratory and funded by DEFRA and the Natural Environment Research Council.

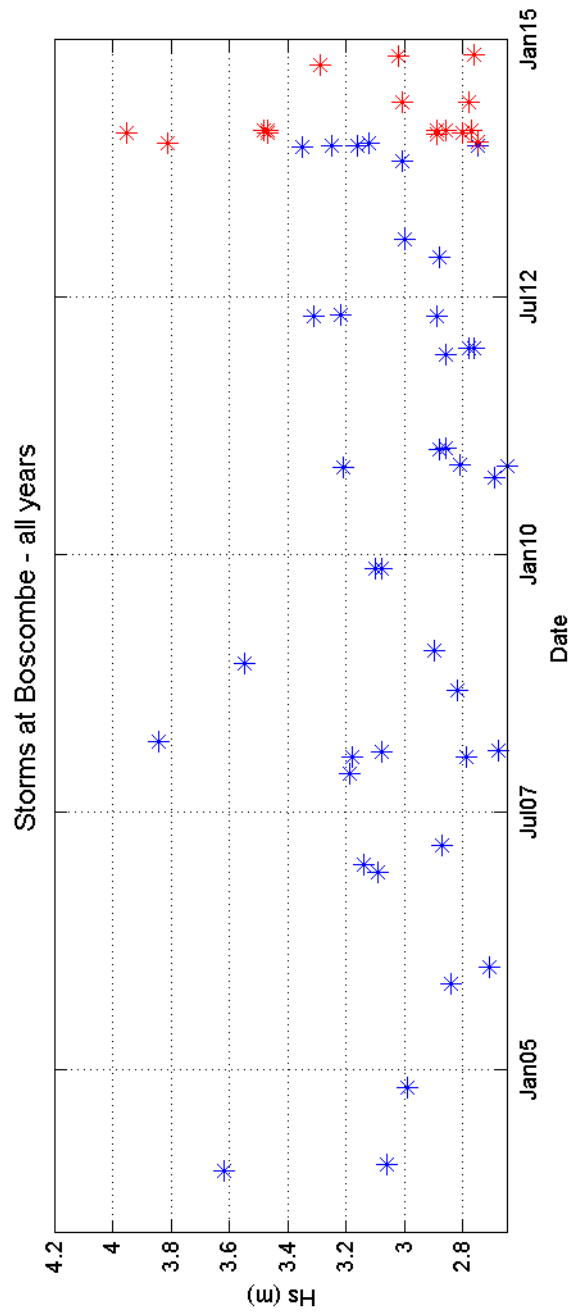
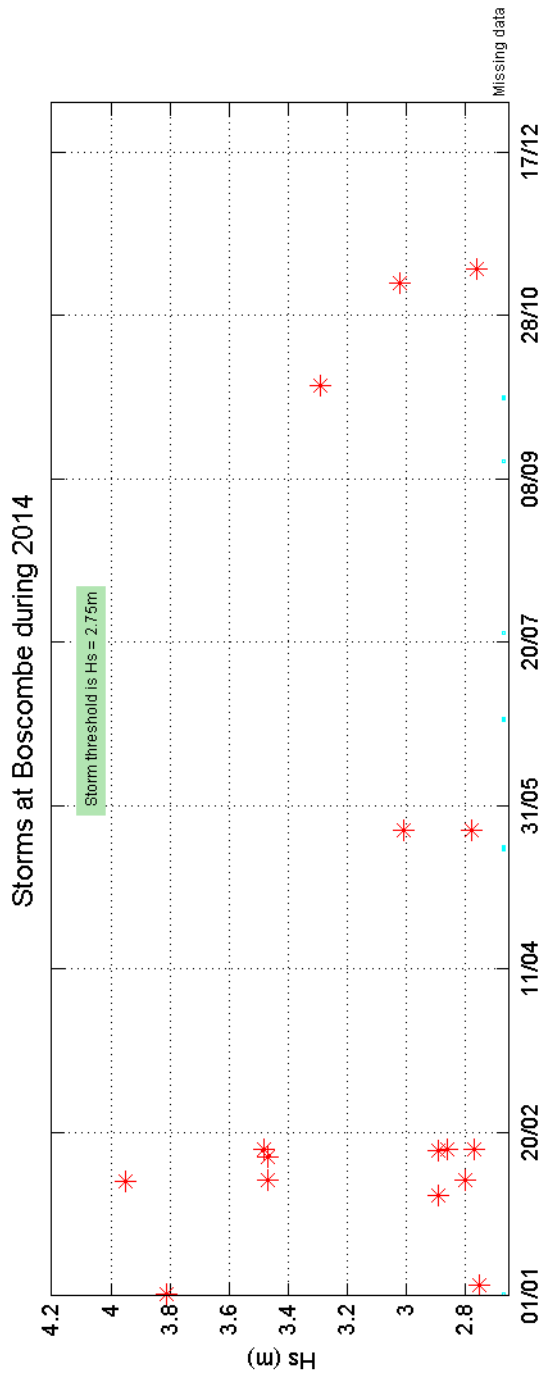


### Offshore Wave Hs (m) Boscombe WB: 11/07/2003 - 31/12/2014



Boscombe 2014





Boscombe 2003 to 2014 - Joint distribution (% of occurrence)

