



## Milford-on-Sea Directional Waverider Buoy

<b>Location</b>			
OS	427264 E 90398 N		
WGS84	Latitude: 50° 42.754' N Longitude: 01° 36.912' W		
<b>Instrument type</b>			
Datawell Directional Waverider Mk III			
<b>Water depth</b>	~10m CD	Buoy in situ off Milford on Sea. Photo courtesy of Fugro EMU Limited	Location of buoy (Google mapping)

### Data Quality

Recovery rate (%)	Sample interval
95	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	1.21	10.8	4.8	210	9.1	27
February	1.58	11.5	5.1	210	8.5	28
March	0.66	11.1	4.8	212	9.2	29
April	0.49	8.8	4.2	211	11.1	28
May	0.55	6.8	3.8	214	13.5	30
June	0.35	6.4	3.6	212	16.8	29
July	0.38	5.8	3.4	216	19.5	30
August	0.67	5.3	3.6	217	19.1	30
September	0.27	9.0	4.1	209	18.3	28
October	0.80	7.6	4.0	212	16.1	29
November	0.77	10.5	4.9	209	13.2	29
December	0.83	8.3	4.3	216	10.1	29

## 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)
14-Feb-2014 22:30	4.50	15.4	7.8	211	~2.6	HW	~3.0	-	~1.0
05-Feb-2014 13:00	4.03	18.2	7.8	211	0.96	HW -1	1.9	~0.5	~0.8
08-Feb-2014 15:00	3.77	18.2	7.4	214	0.36	HW -2	1.1	~0.4	~0.6
03-Jan-2014 22:00	3.71	14.3	7.3	205	0.39	HW -2	2.5	~0.3	~0.8
12-Dec-2014 03:30	3.24	10.0	6.7	215	-	HW	~1.7	-	-

## 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)
1996	-	-	-	-	-	-	28-Oct-1996 21:00	4.05
1997	3.08	2.39	2.15	1.97	1.59	1.20	24-Feb-1997 23:00	3.32
1998	2.89	2.47	2.28	2.00	1.66	1.37	27-Oct-1998 13:00	3.21
1999	3.01	2.32	2.11	1.85	1.56	1.29	24-Dec-1999 22:00	3.23
2000	3.90	2.85	2.50	2.19	1.74	1.41	31-Dec-2000 19:00	4.09
2001	3.71	2.63	2.24	1.91	1.52	1.20	01-Jan-2001 00:00	4.07
2002	3.54	2.92	2.61	2.35	1.96	1.62	15-Oct-2002 18:00	4.06
2003	2.82	2.20	2.02	1.76	1.37	1.12	14-Nov-2003 15:00	2.92
2004	3.21	2.49	2.29	2.05	1.69	1.42	31-Jan-2004 17:00	3.44
2005	3.09	1.86	1.72	1.56	1.28	1.05	02-Dec-2005 18:30	3.53
2006	2.89	2.46	2.31	2.10	1.73	1.41	03-Dec-2006 06:30	3.51
2007	3.21	2.53	2.25	2.04	1.74	1.46	18-Jan-2007 12:00	3.64
2008	3.09	2.40	2.16	1.96	1.70	1.42	10-Mar-2008 20:00	3.42
2009	3.26	2.60	2.36	2.05	1.69	1.39	14-Nov-2009 15:00	4.08
2010	2.68	2.17	1.91	1.59	1.29	1.04	31-Mar-2010 06:00	2.96
2011	2.85	2.21	2.03	1.84	1.53	1.30	13-Dec-2011 01:00	3.24
2012	3.39	2.33	2.14	1.93	1.61	1.31	03-Jan-2012 10:30	3.93
2013	3.48	2.58	2.35	2.07	1.67	1.32	28-Oct-2013 05:30	3.93
2014	4.04	3.12	2.73	2.25	1.81	1.49	14-Feb-2014 22:30	4.50

\* i.e. 5 % of the H<sub>s</sub> values measured in 2004 exceeded 1.69 m

\* Tidal information is obtained from the nearest recording tide gauge (the gauge on Royal Lympington Yacht Club starting platform). 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.

## 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 since 17 November 2005
- 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

## 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.

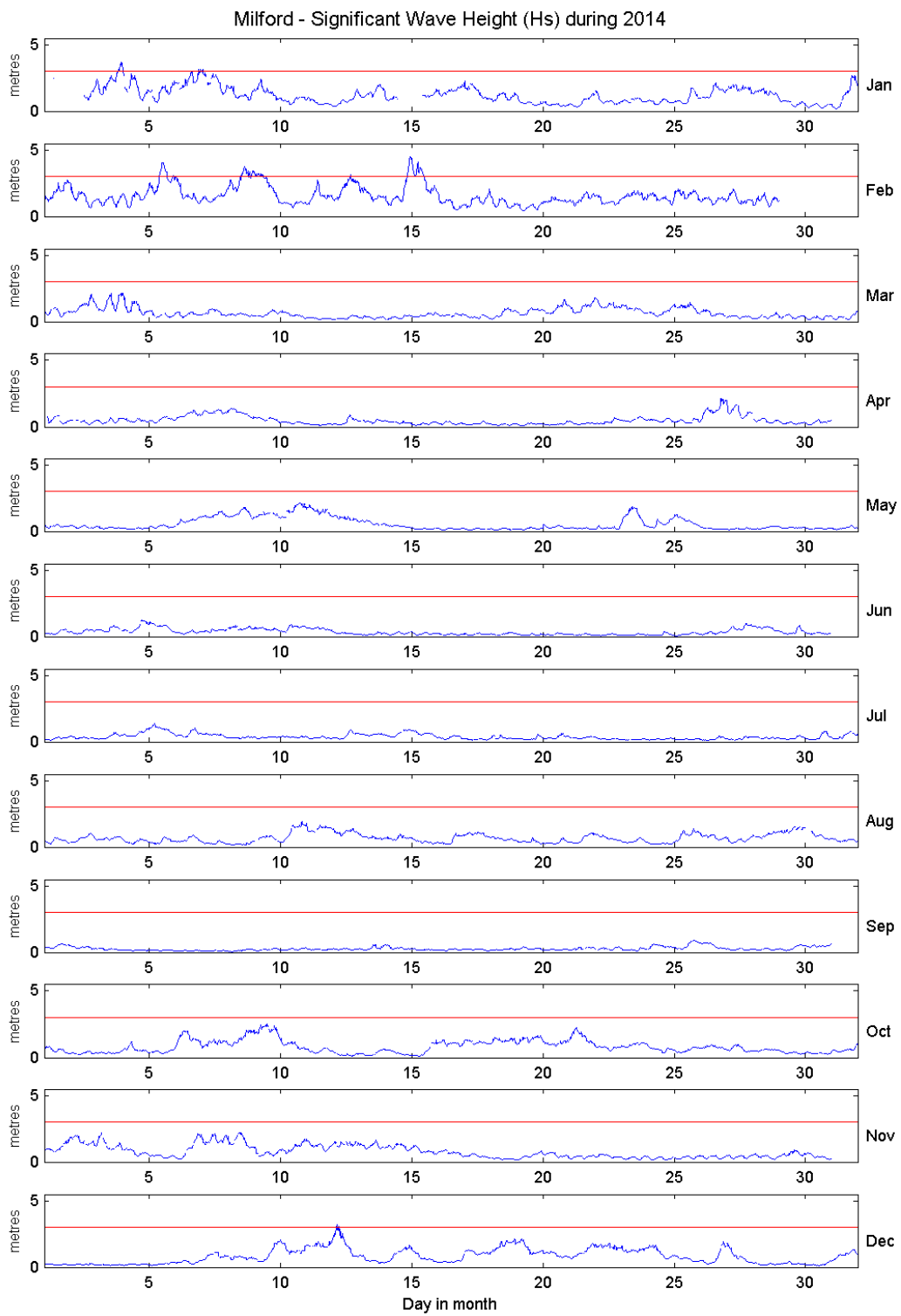
Return period (years)	Significant wave height (m)	Comments
1	3.7	No depth limitation
2	3.9	
5	4.2	
10	4.4	Depth-limited at MLWS
20	4.7	
50	5.0	
100	5.2	Depth-limited at HAT

## General

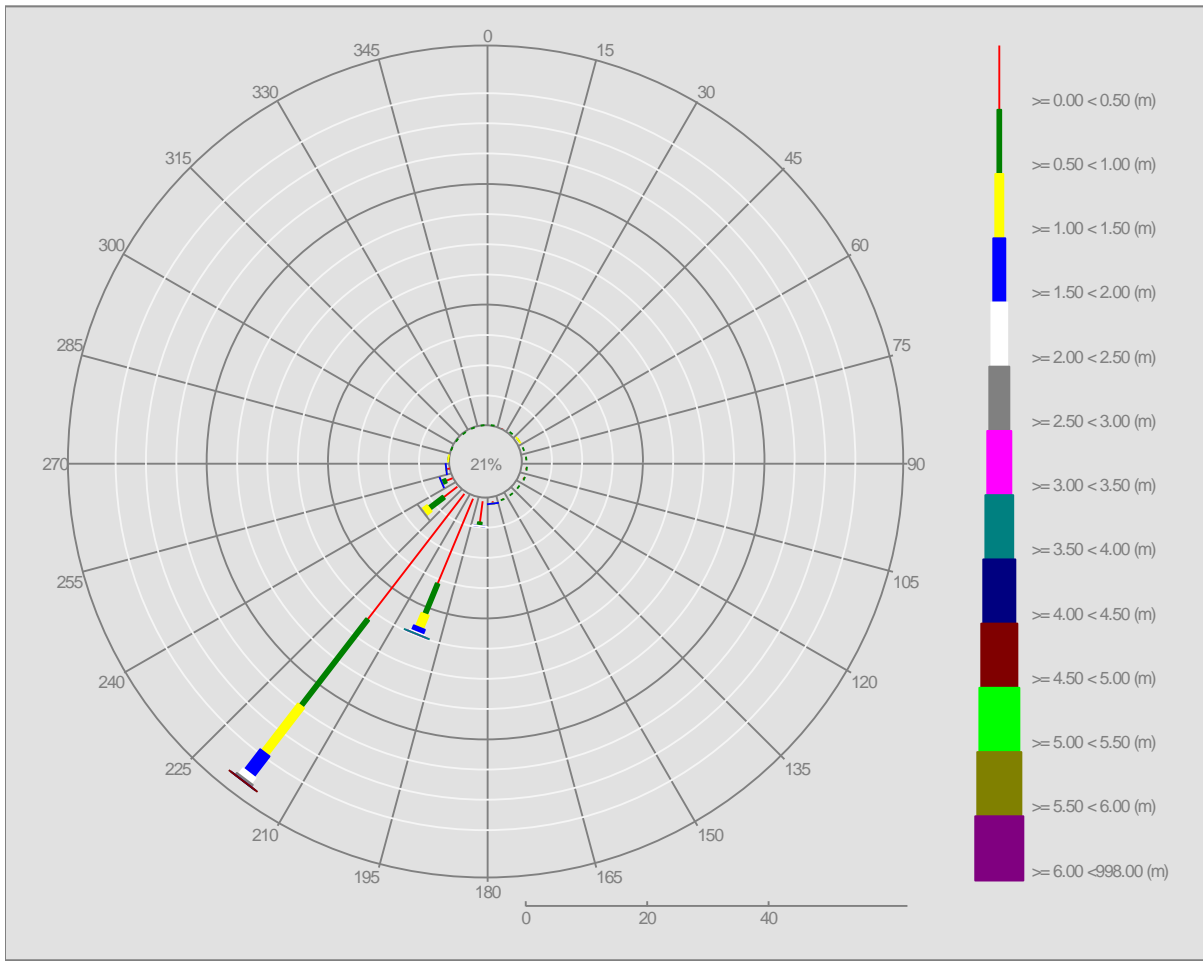
The buoy was first deployed on 20 May 1996. It was replaced with a Directional Waverider on 17 November 2005, at which time the magnetic declination at the site was 2.6° west, changing by 0.15° east per year.

## Acknowledgements

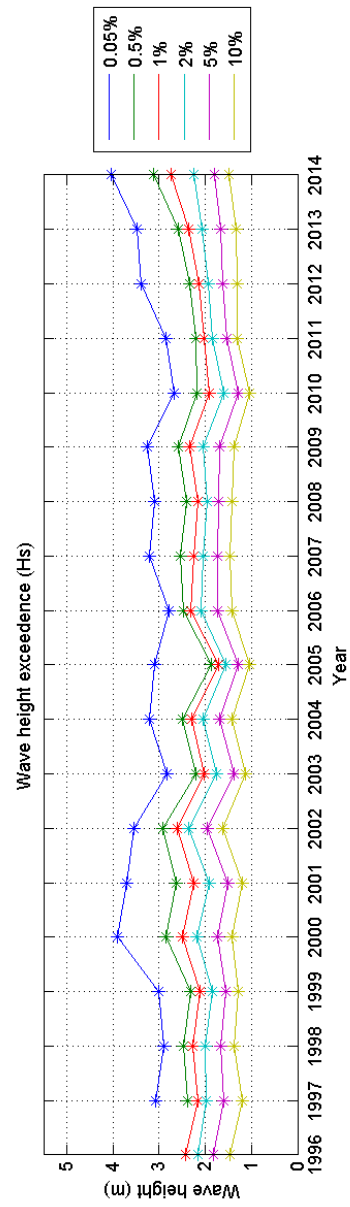
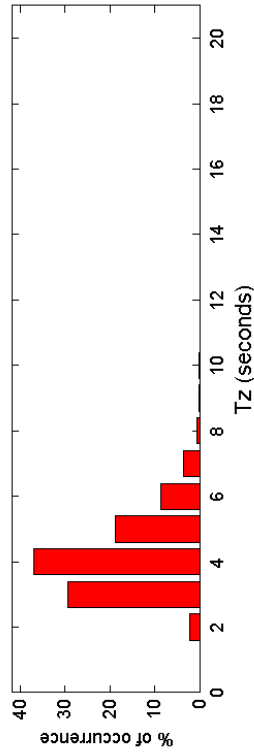
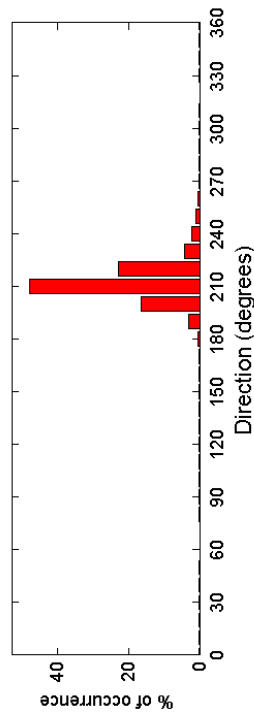
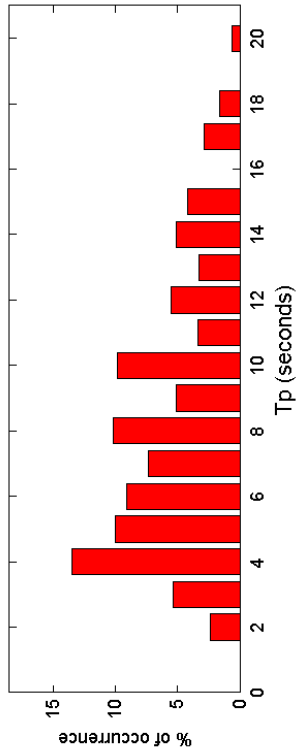
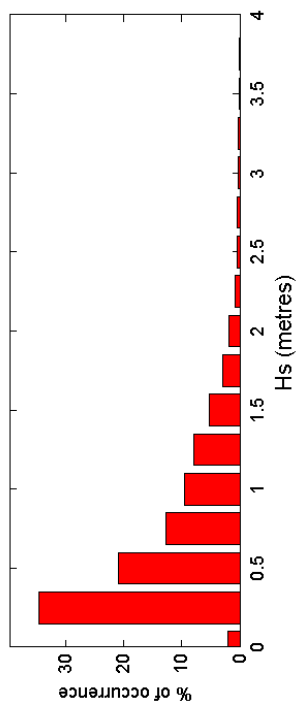
Tidal predictions for Lymington were supplied by EMU Limited.

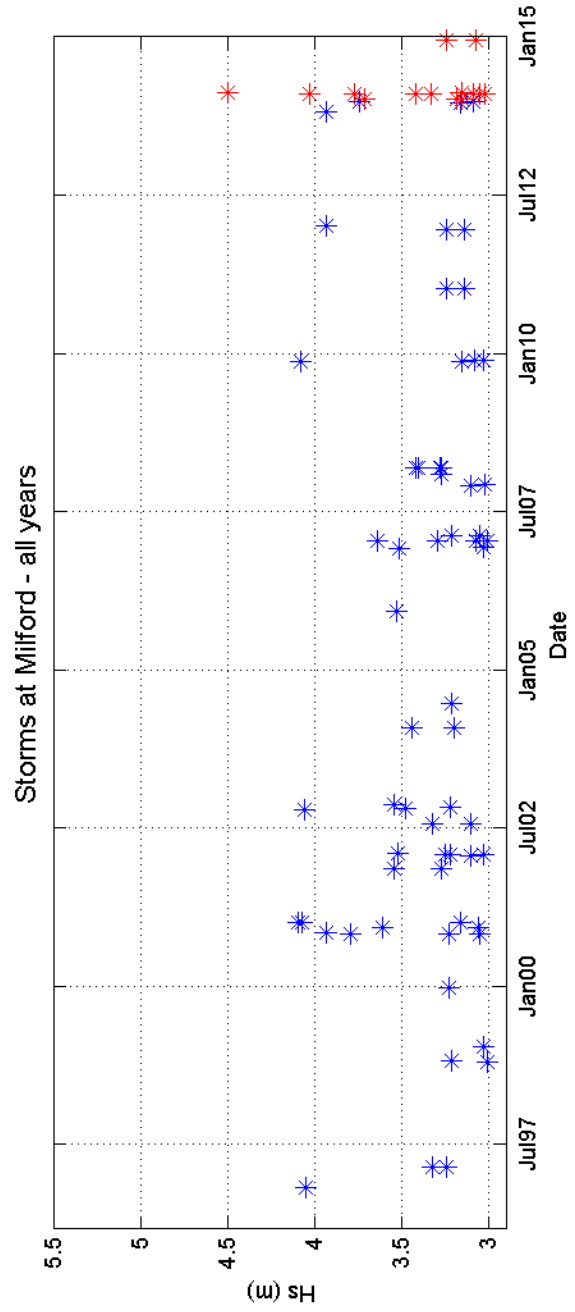
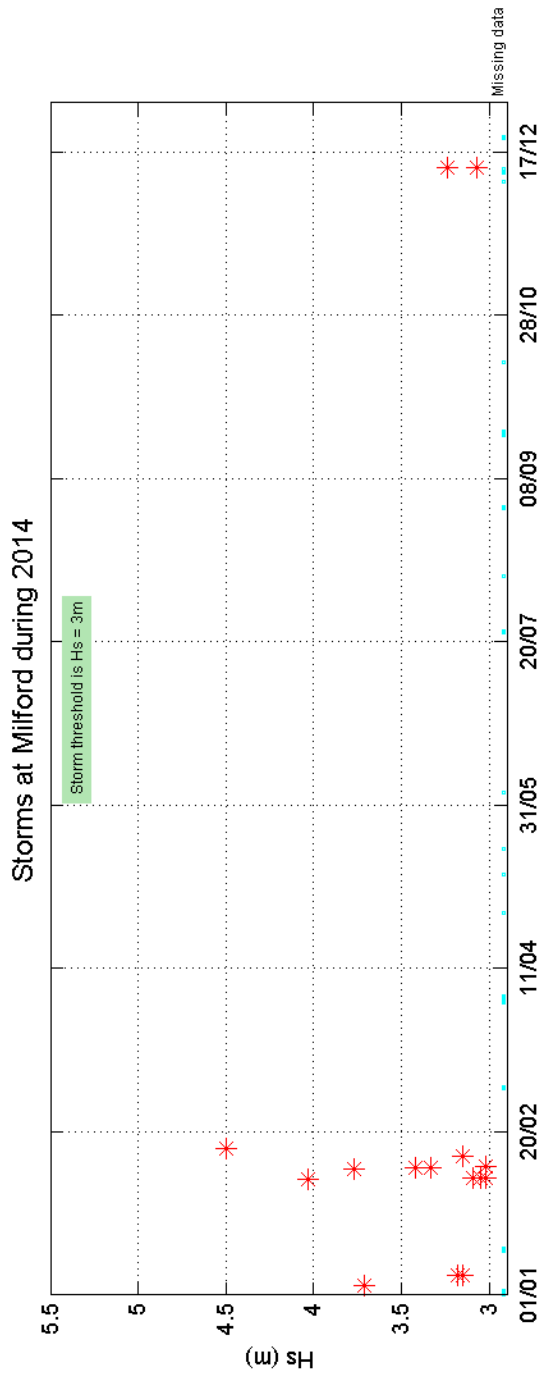


### Offshore Wave Hs (m) Milford WB : 20/05/1996 - 31/12/2014



Milford 2014





Milford 1996 to 2014 - Joint distribution (% of occurrence)

