

## Cleveleys Directional Waverider Buoy

<b>Location</b>			
OS	321514 E 444990 N		
WGS84	Latitude: 53° 53.708' N Longitude: 03° 11.750' W		
<b>Instrument type</b>			
Datawell Directional Waverider Mk III			
<b>Water depth</b>	~10 m CD	Buoy in situ off Cleveleys beach. Photo courtesy of Fugro EMU Limited	Location of buoy (Google mapping)

### Data Quality

Recovery rate (%)	Sample interval
96	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	1.17	5.1	3.9	228	3.8	31
February	1.49	5.9	4.3	245	3.6	28
March	0.73	5.1	3.5	214	4.7	23
April	0.60	4.7	3.3	217	6.9	30
May	0.58	4.1	3.1	207	13.3	31
June	0.46	3.9	3.0	248	15.3	28
July	0.56	4.0	3.1	247	17.7	31
August	1.04	4.7	3.7	245	17.3	29
September	0.42	4.2	3.0	228	16.6	29
October	1.10	5.1	3.8	226	13.9	30
November	0.72	4.2	3.2	203	11.0	30
December	1.47	5.8	4.3	266	8.2	30

## 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)
13-Feb-2014 00:00	4.87	11.1	7.3	270	-	HW +2	~6.3	-	-
10-Dec-2014 12:00	4.76	9.1	6.5	277	3.38	HW -1	7.0	0.18	0.72
21-Oct-2014 14:30	3.85	9.1	6.6	290	-1.68	HW +5	6.9	0.27	1.41
01-Feb-2014 17:30	3.80	11.1	7.3	273	-2.58	HW +5	~10.2	-	-

## 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)
2011	-	-	-	3.13	2.72	2.28	09-Dec-2011 01:00	4.32
2012	4.1	2.94	2.65	2.38	1.98	1.64	05-Jan-2012 00:30	5.03
2013	4.30	3.32	2.88	2.59	2.05	1.65	05-Dec-2013 13:30	4.71
2014	4.27	3.14	2.89	2.65	2.23	1.78	13-Feb-2014 00:00	4.87

\* i.e. 5 % of the H<sub>s</sub> values measured in 2011 exceeded 2.72 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 3.5 m storm threshold)
- Wave roses (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

## General

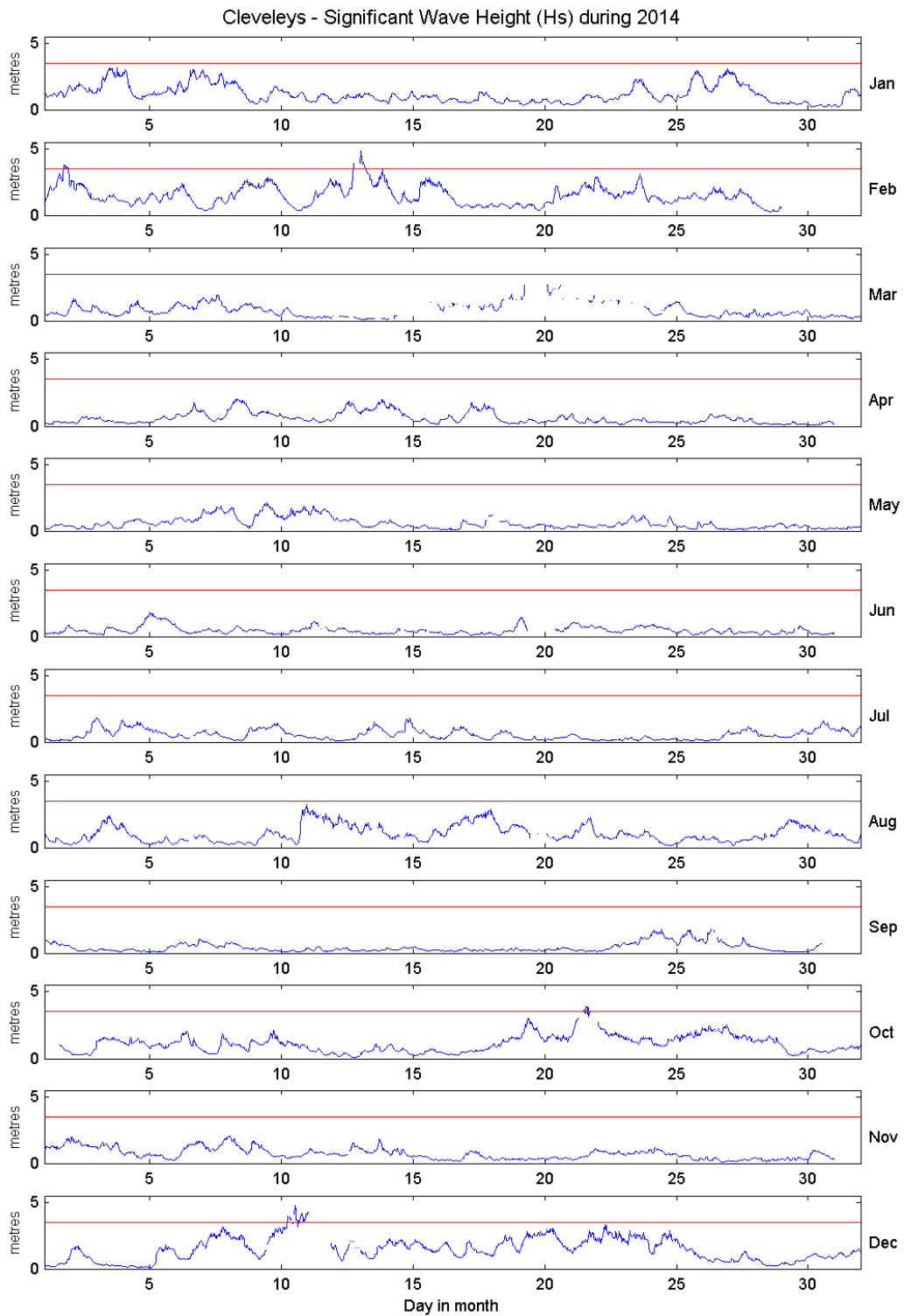
The wave buoy at Cleveleys was deployed on 29 June 2011, at which time the magnetic declination at the site was 3.0° west, changing by 0.16° east per year.

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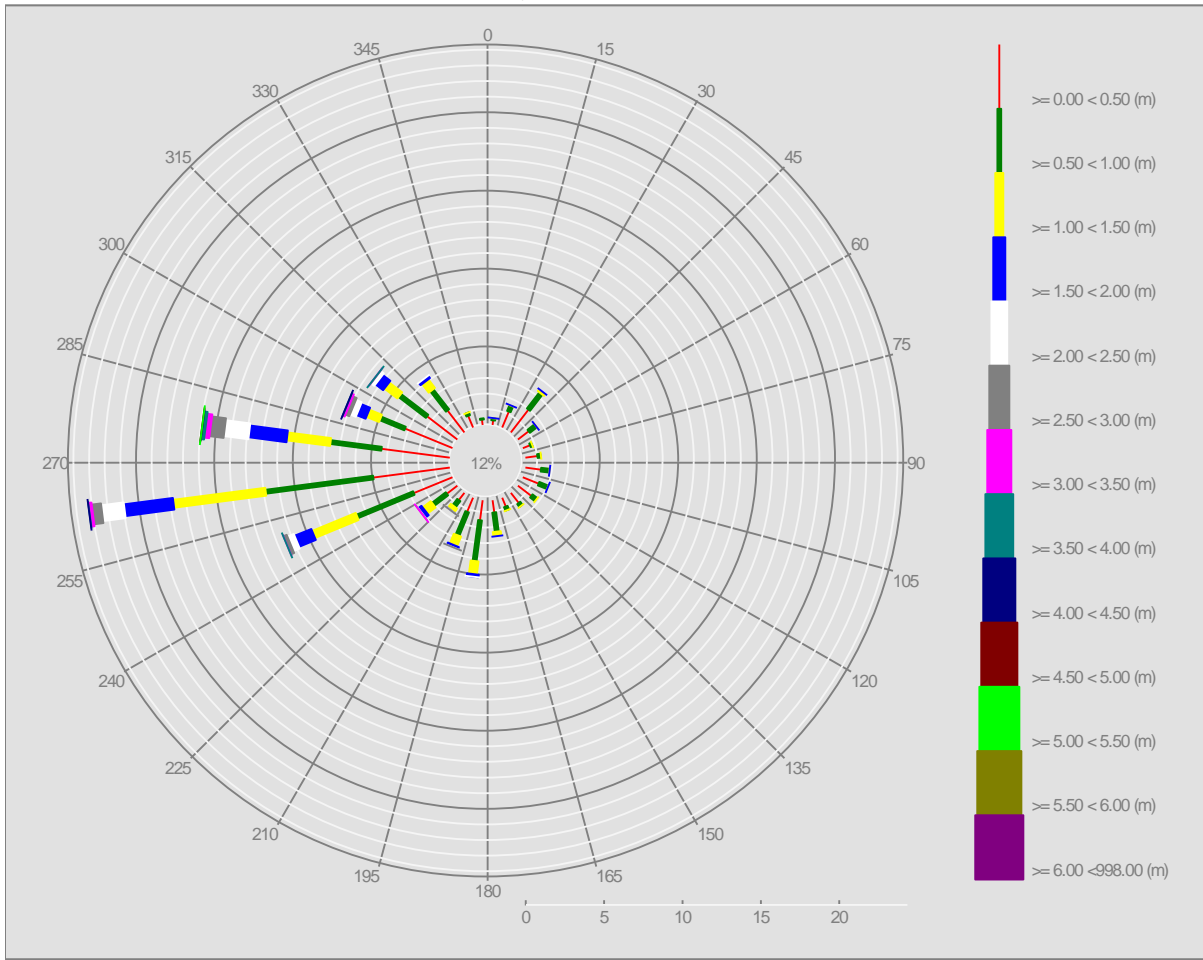
\* Tidal information is obtained from the nearest recording tide gauge (the National Network gauge at Heysham). The surge shown is the residual at the time of the highest H<sub>s</sub>. The maximum tidal surge is the largest surge during the storm event.

## **Acknowledgements**

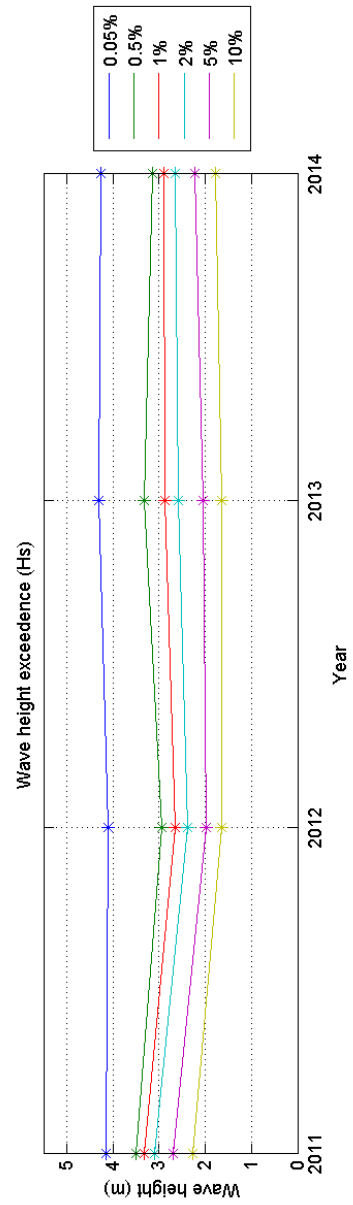
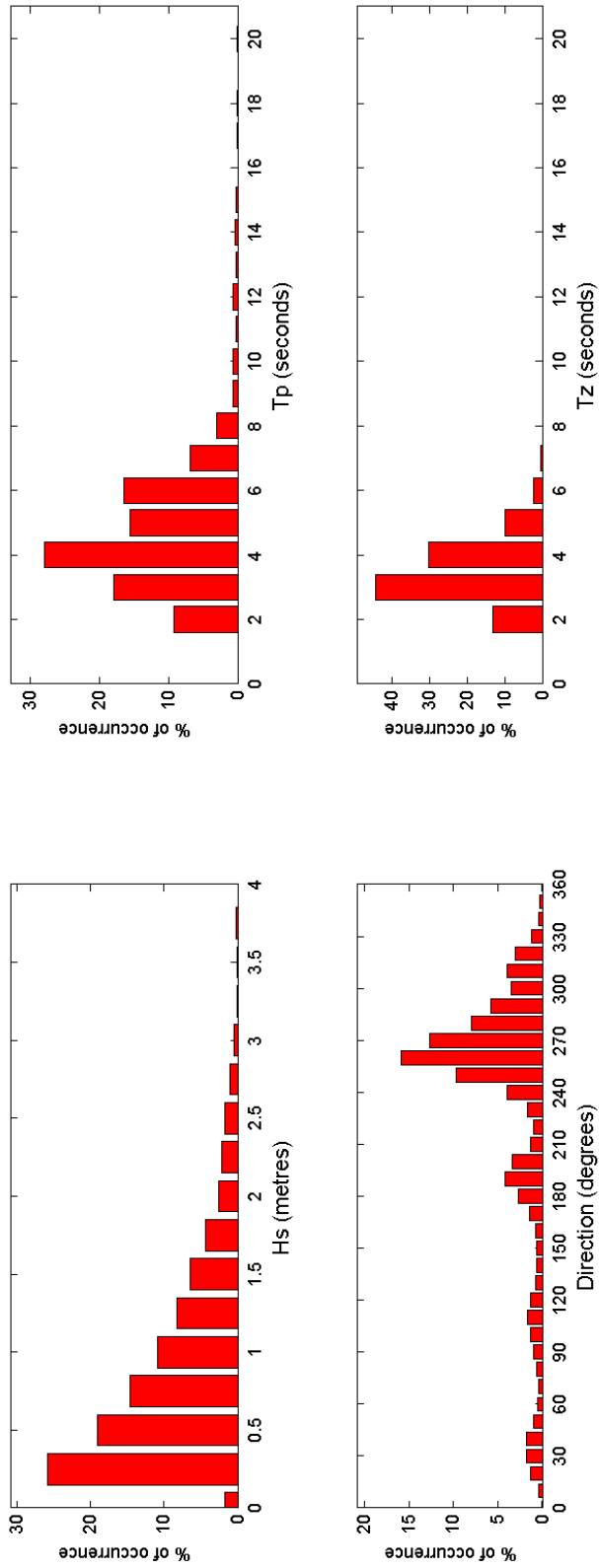
The shore station is kindly hosted by Café Cove, Cleveleys. Tidal data were supplied by the British Oceanographic Data Centre as part of the function of the National Tidal and Sea Level Facility, hosted by the Proudman Oceanographic Laboratory and funded by DEFRA and the Natural Environment Research Council.

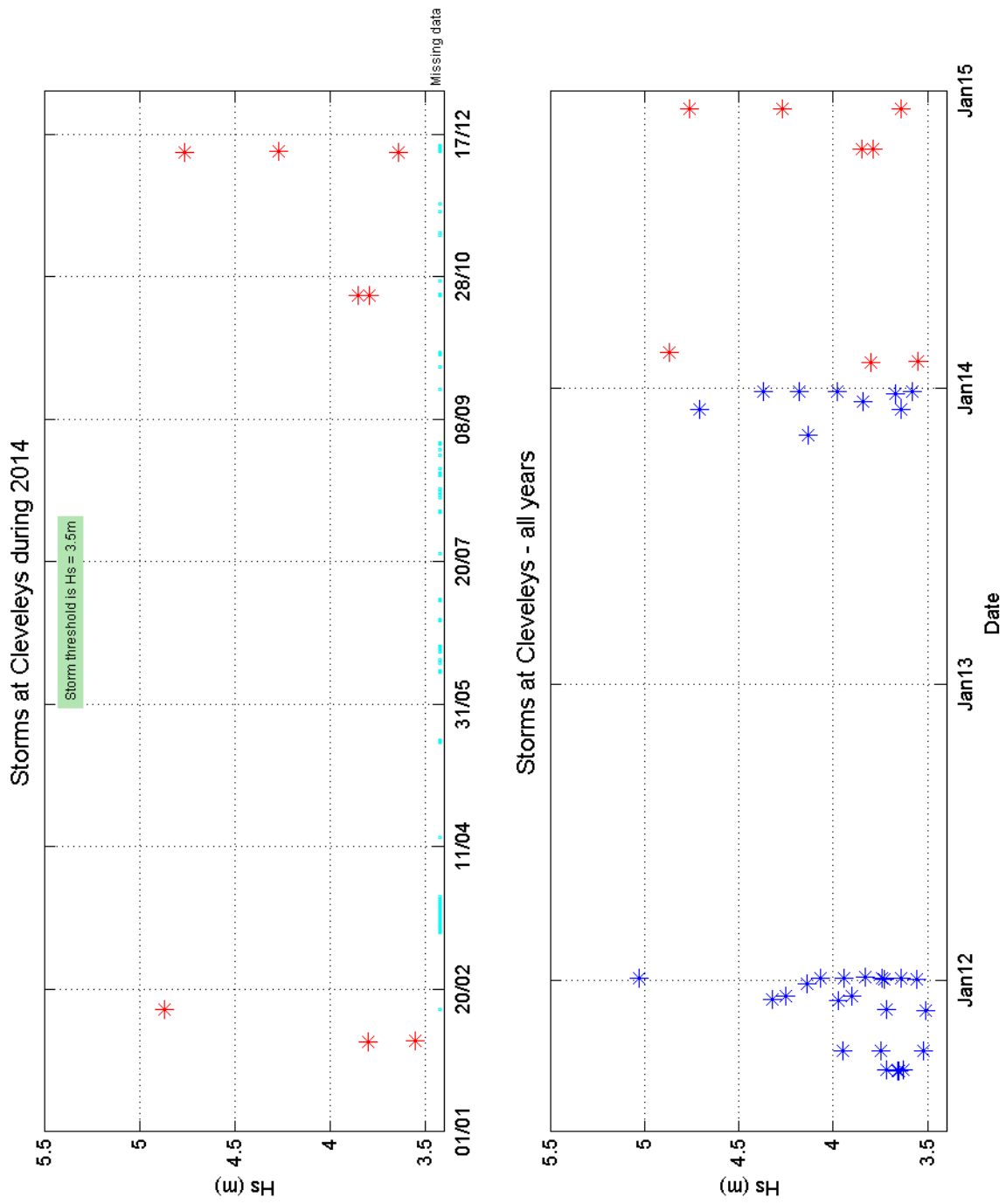


### Offshore Wave Hs (m) Cleveleys WB : 30/06/2011 - 31/12/2014



Cleveleys 2014





Cleveleys 2011 to 2014 - Joint distribution (% of occurrence)

