



Cleveleys Directional Waverider Buoy

Location			
OS	321487 E 445023 N		
WGS84	Latitude: 53° 53.73' N Longitude: 03° 11.77' W		
Instrument type			
Datawell Directional Waverider Mk III			
Water depth	~10 m CD	Example buoy in situ. Photo courtesy of Fugro EMU Limited	Location of buoy (Google mapping)

Data Quality

Recovery rate (%)	Sample interval
96	30 minutes

Monthly Averages - 2015

All times are GMT

Month	H _s (m)	T _p (s)	T _z (s)	Dir. (°)	SST (°C)	No. of days
January	1.64	6.1	4.4	259	6.2	31
February	0.91	5.1	3.7	261	5.3	28
March	1.06	5.5	3.8	238	6.1	30
April	0.65	4.9	3.3	246	8.5	29
May	0.97	4.7	3.6	245	10.8	30
June	0.71	4.3	3.3	254	13.7	27
July	0.85	4.4	3.4	250	16.3	30
August	0.74	4.3	3.3	243	16.7	30
September	0.63	3.9	3.1	229	15.7	30
October	0.58	4.5	3.1	206	13.6	31
November	1.59	6.0	4.3	253	11.1	30
December	1.59	6.3	4.4	246	8.8	31

Monthly Averages - All Years (June 2011 – December 2015)

Month	H _s (m)	T _p (s)	T _z (s)	Dir. (°)	SST (°C)
January	1.24	5.4	4.0	235	5.3
February	0.97	5.2	3.7	242	4.3
March	0.72	4.9	3.4	214	5.4
April	0.67	4.5	3.3	217	7.3
May	0.73	4.4	3.3	226	10.7
June	0.62	4.2	3.2	244	14.3
July	0.62	4.1	3.2	248	16.8
August	0.79	4.5	3.4	250	17.2
September	0.85	4.7	3.5	241	15.5
October	0.95	4.9	3.6	222	13.1
November	1.10	5.1	3.7	239	10.2
December	1.54	6.0	4.3	255	7.1

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)
29-Nov-2015 19:00	4.52	10.5	7.7	276	-	HW +6	~8.2	-	-
10-Jan-2015 11:30	4.26	8.3	6.2	286	1.48	HW -2	6.3	0.66	1.06
05-Dec-2015 18:00	4.03	8.3	6.3	262	-	HW -2	~6.0	-	-
28-Jan-2015 14:00	4.00	8.3	6.1	282	-0.23	HW -3	4.9	0.54	0.96
15-Jan-2015 17:30	3.99	9.1	6.2	266	3.42	HW -1	4.3	1.16	1.16

Annual Statistics

Year	Annual H _s exceedance* (m)						Annual Maximum H _s	
	0.05%	0.5%	1%	2%	5%	10%	Date	A _{max} (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
2015	4.00	3.51	3.30	3.05	2.57	2.10	29-Nov-2015 19:00	4.52

* i.e. 5 % of the H_s 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_s (red line is 3.75 m storm threshold)
- Incidence of storm waves for 2015. Storm events are defined using the Peaks-over-Threshold method. The highest H_s of each storm event is shown
- Wave height exceedance each year since deployment
- Percentage of occurrence of H_s, T_p, T_z and Direction for 2015
- Joint distribution of all parameters for all measured data, given as percentage of occurrence
- Wave rose (percentage of occurrence of direction vs. H_s) for all measured data

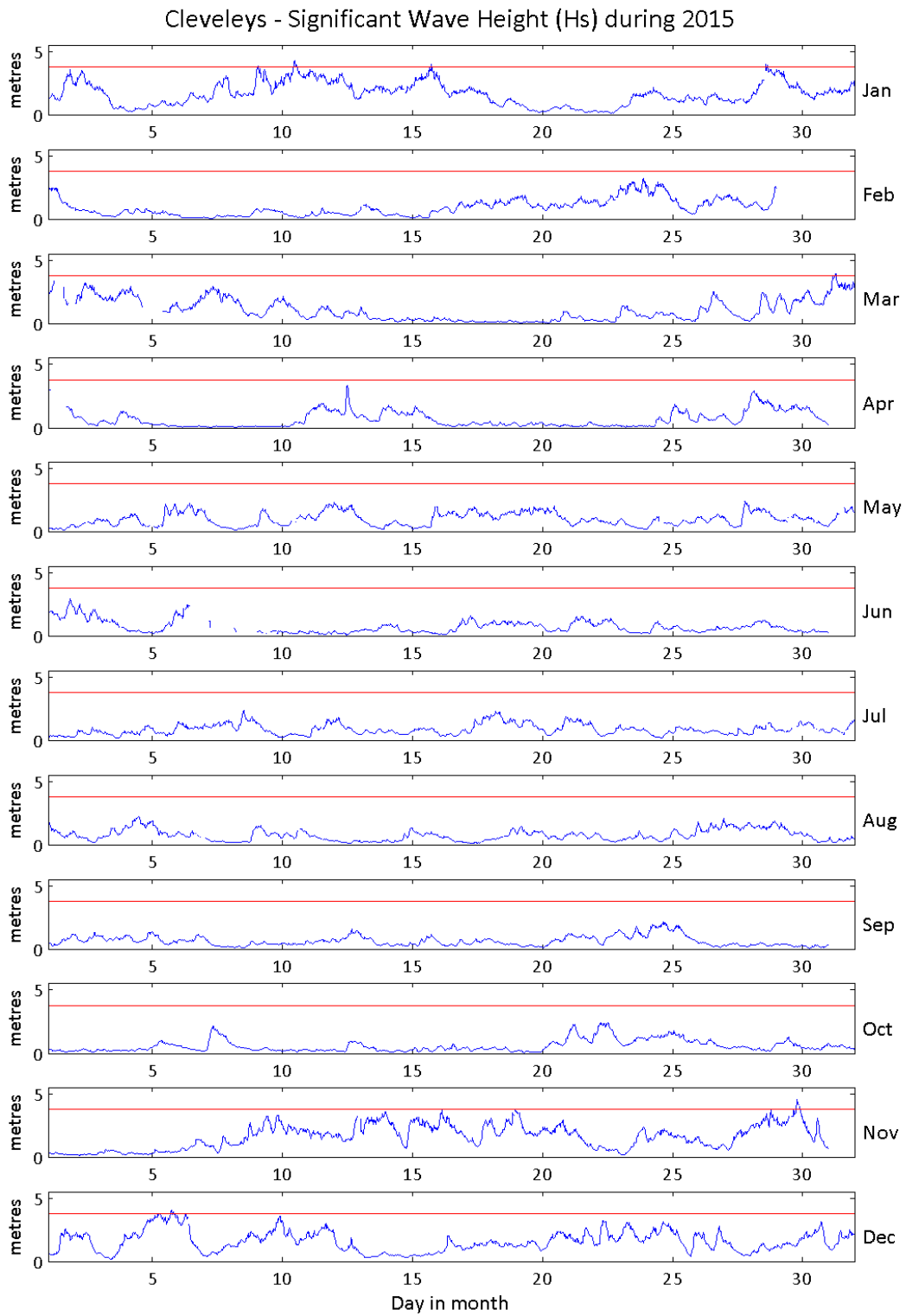
General

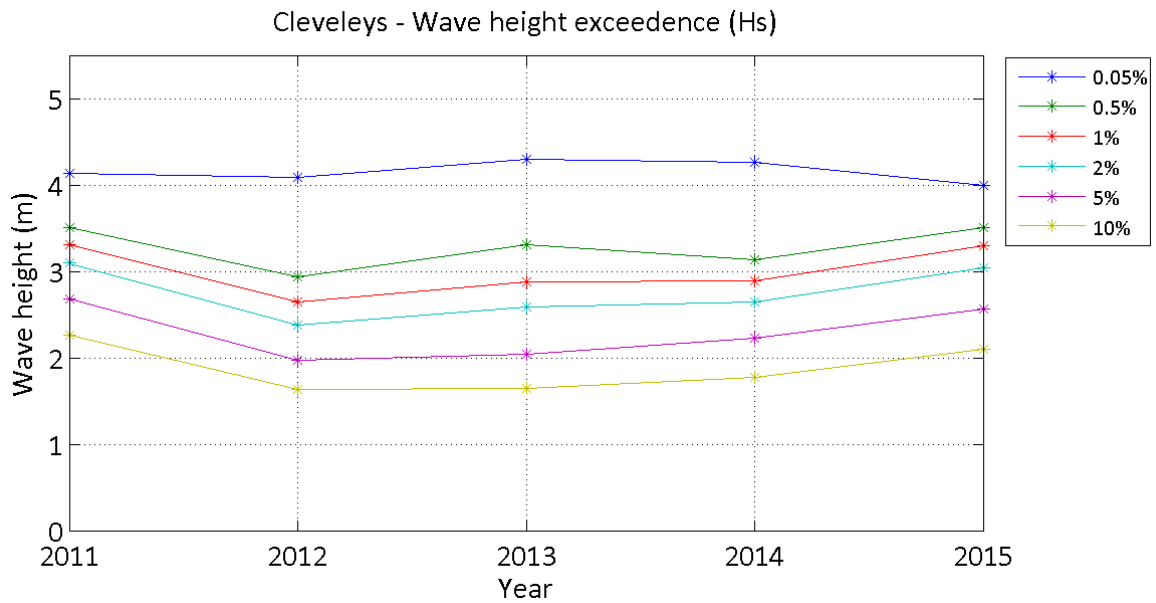
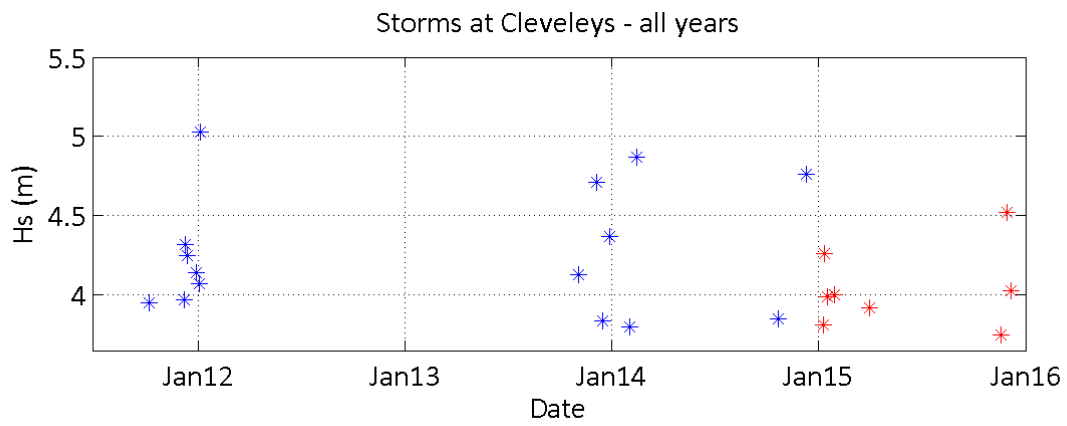
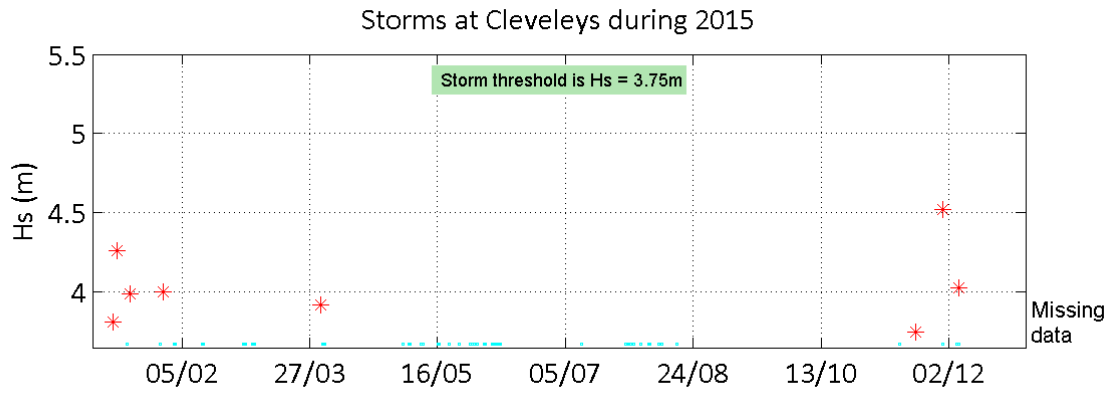
The wave buoy at Cleveleys was deployed on 29 June 2011, at which time the magnetic declination at the site was 3.0° west, changing by 0.16° east per year.

Acknowledgements

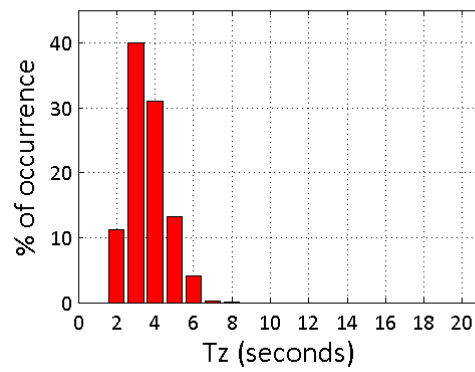
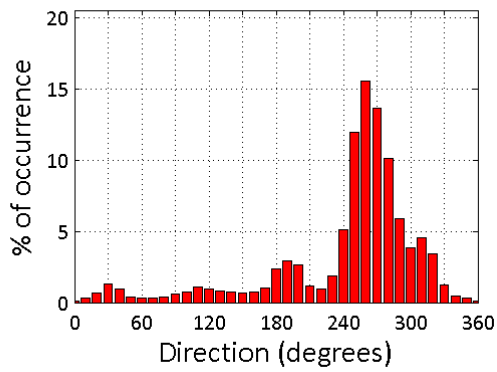
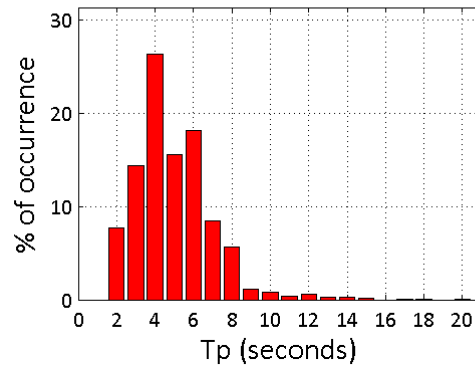
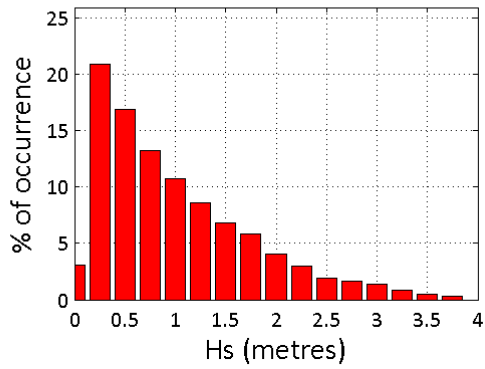
The shore station is kindly hosted by Café Cove, Cleveleys. Tidal data were supplied by the British Oceanographic Data Centre as part of the function of the National Tidal and Sea Level Facility, hosted by the Proudman Oceanographic Laboratory and funded by DEFRA and the Natural Environment Research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

* 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_s. The maximum tidal surge is the largest surge during the storm event.

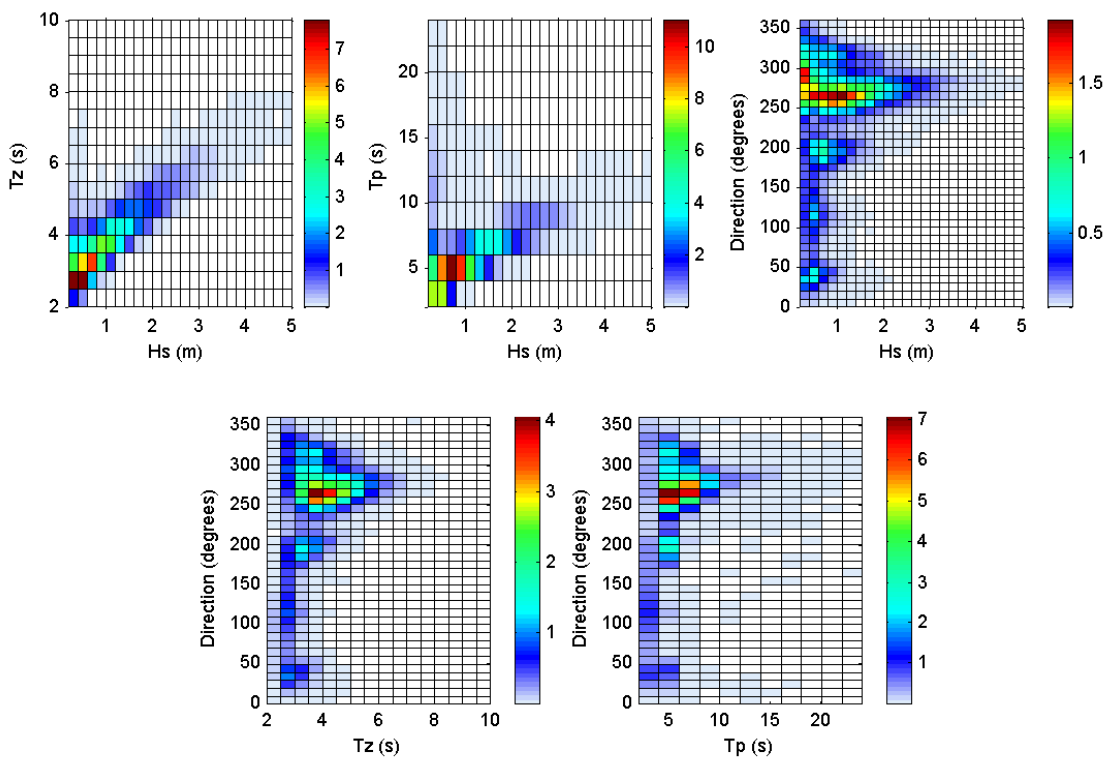




Cleveleys 2015



Cleveleys 2011 to 2015 - Joint distribution (% of occurrence)



Offshore Wave Hs (m) Cleveleys WB : 30/06/2011 - 31/12/2015

