



## Wave Hub Directional Waverider Buoy

<b>Location</b>			
OS	142878 E 56036 N		
WGS84	Latitude: 50° 20.84' N Longitude: 05° 36.86' W		
<b>Instrument type</b>			
Datawell Directional Waverider Mk III			
<b>Water depth</b>	~50m CD	Example buoy in situ. Photo courtesy of Fugro EMU Limited	Location of buoy (Google mapping, image ©2016 DigitalGlobe)

## Data Quality

<b>Recovery rate (%)</b>	<b>Sample interval</b>
95	30 minutes

## Monthly averages - 2016

All times are GMT

Month	H <sub>s</sub> (m)	T <sub>p</sub> (s)	T <sub>z</sub> (s)	Dir. (°)	SST (°C)	Bimodal seas (%)	No. of days
January	3.36	11.7	7.0	274	11.1	14	31
February	3.11	12.5	6.9	275	10.3	24	29
March	2.41	11.8	6.5	281	9.8	21	30
April	1.76	9.4	5.5	262	10.2	17	29
May	1.25	9.5	5.4	264	11.4	9	30
June	1.44	8.9	6.0	269	13.2	5	29
July	1.49	8.7	5.5	276	14.6	6	31
August	1.70	9.0	5.7	270	15.6	5	31
September	2.09	10.7	6.5	277	15.4	16	30
October	1.49	11.0	5.7	258	14.5	21	25
November	2.02	9.1	5.5	241	13.3	21	25
December	2.31	12.4	7.1	266	12.2	9	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)
08-Feb-2016 10:30	10.12	18.2	11.1	284	-2.00	HW +5	6.54	0.79	1.01
02-Mar-2016 12:30	7.01	12.5	8.7	283	0.94	HW +2	3.39	-0.07	0.33
04-Jan-2016 05:00	6.88	16.7	9.5	276	~3.31	~HW +5	2.90	~0.30	0.52
09-Mar-2016 14:00	6.87	10.0	8.0	340	-1.27	HW -3	7.36	0.13	0.50

\* Tidal information is obtained from the step gauge at Port Isaac. 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.

## 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)
2015	-	-	-	5.26	4.54	4.01	29-Nov-2015 17:30	6.58
2016	9.11	6.10	5.53	5.02	4.29	3.65	08-Feb-2016 10:30	10.12

\*\* i.e. 5 % of the H<sub>s</sub> values measured in 2015 exceeded 4.54 m

## Distribution plots

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

- Annual time series of  $H_s$  (red line is 5m storm threshold)
- Incidence of storm waves for 2016. 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 2016
- 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 buoy was first deployed on 22 May 2015, at which time the magnetic declination at the site was  $2.65^\circ$  west, changing by  $0.15^\circ$  east per year.

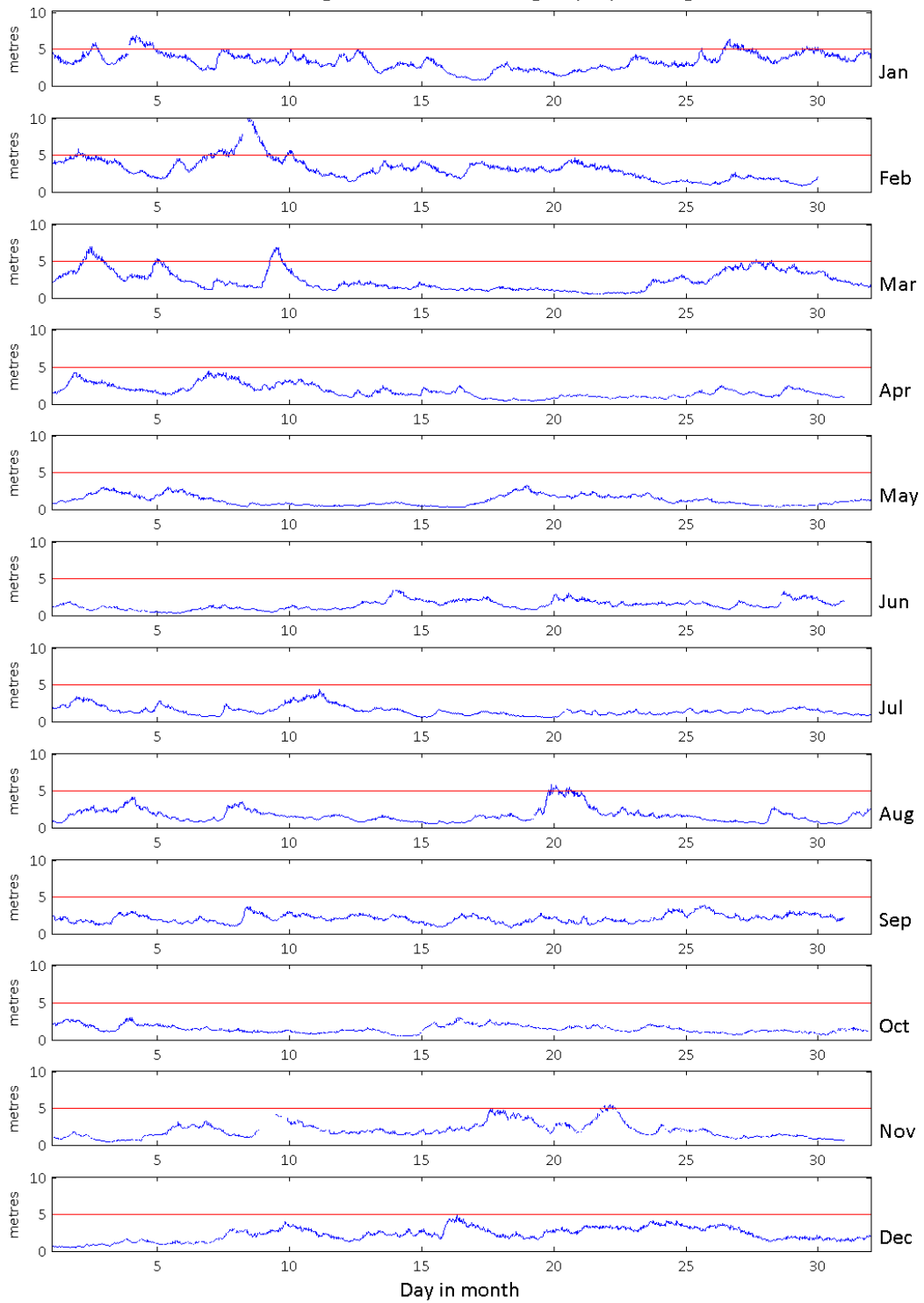
## Acknowledgements

The wave buoy is owned by Wave Hub Ltd., who have kindly agreed to make both real-time and archived data freely available under the Open Government Licence, via the Channel Coastal Observatory website.

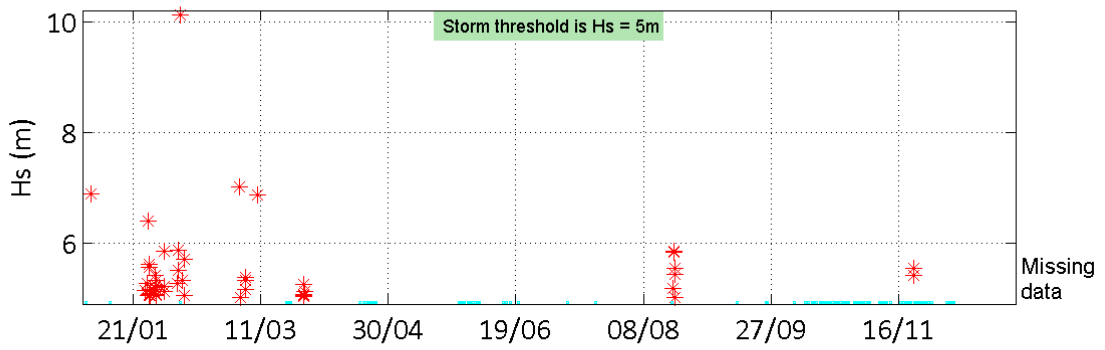
A backup shore station is kindly hosted by Perranporth Youth Hostel.

Tidal predictions were produced using the TASK windows edition software, kindly provided by the Marine Data Products team at the UK National Oceanography Centre (Liverpool).

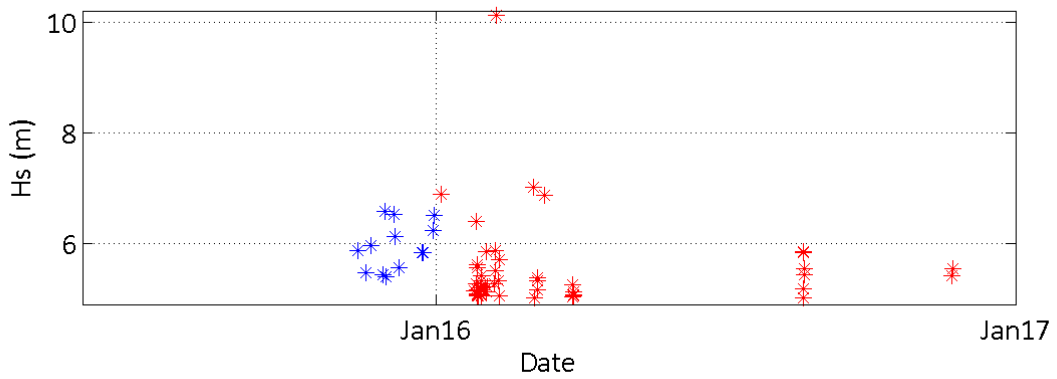
### Wave Hub - Significant Wave Height (Hs) during 2016



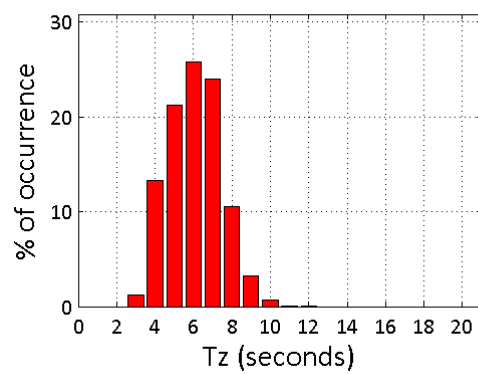
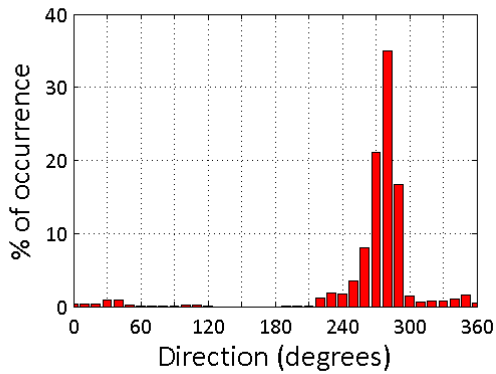
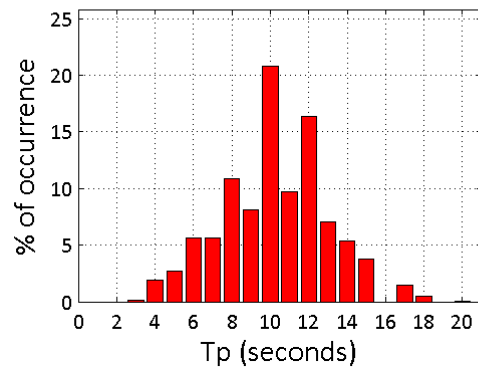
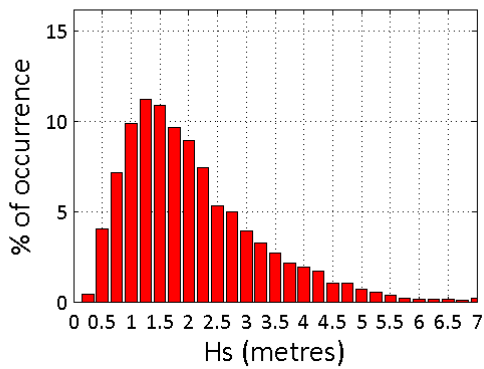
Storms at Wave Hub during 2016



Storms at Wave Hub - all years



Wave Hub 2016



Wave Hub 2015 to 2016 - Joint distribution (% of occurrence)

