

# STORM EVENT

— 6<sup>th</sup> January 2014 —

*High spring tides, storm surge, and large waves*



## Severity Ranking



Social	<u>Loss of life</u>	*
	<u>Residential property</u>	Properties flooded in Aberystwyth, Wales
	<u>Evacuation &amp; rescue</u>	250 persons evacuated from their homes in Aberystwyth
Economic	<u>Cost</u>	*
	<u>Ports</u>	*
	<u>Transport</u>	Several roads closed due to flooding
	<u>Energy</u>	*
	<u>Public services</u>	*
	<u>Water &amp; wastewater</u>	*
	<u>Livestock</u>	*
	<u>Agricultural land</u>	*
Environmental	<u>Coastal erosion</u>	*
	<u>Natural environment</u>	*
	<u>Cultural heritage</u>	*
	<u>Coastal defences</u>	Overtopping at many locations including Aberystwyth

*\*No known sources of information available*

<b>Source</b>	<p>The storm developed southeast of Nova Scotia, Canada on 3<sup>rd</sup> January 2014 and moved northeastwards over the North Atlantic. This had followed a series of Atlantic depressions that crossed over the UK in previous weeks. On 6<sup>th</sup> January 2014, the depression was located about 500 km northwest of Ireland with a central pressure below 960 mbar. In the following days, the depression moved further northeastwards and slowly decayed. This generated strong southwesterly winds over the entire UK. At Capel Curig, Wales, gusts of up to 70 knots [36 m/s] were recorded (Met Office, 2014a). Force 7 winds were forecasted for the south coast of the UK.</p> <p>The storm generated a skew surge in the range 0.75 to 1 m at 8 sites on the UK west coast. Water levels exceeded the 1 in 5 year return period at only Portpatrick (1 in 18 years at this site, where there was a skew surge of 0.78 m). Other west coast sites experienced extreme water levels with return periods of 1 to 4 years. The storm coincided with large spring tides (Met Office, 2014b).</p> <p>Waves of up to 8 m high were measured off Land's End, Cornwall (BBC, 2014b).</p>
<b>Pathway</b>	<p>Spectacular wave overtopping in Aberystwyth was among the more notable pathways during this event, and there was overtopping in many other locations.</p>
<b>Receptor &amp; Consequence</b>	<p>This event was associated with coastal flooding in Wales, Pembrokeshire, Dorset, and Hampshire with impacts included damages sea defences, coastal erosion, inundated roads and subsequent disruption to traffic, and flooding to residential and non-residential properties (Haigh <i>et al.</i>, 2015). The sea front in Aberystwyth was damaged by large waves (Jinadu, 2014), and 250 persons were evacuated from their homes (BBC, 2014a). In Pembrokeshire, temporary shingle sea defences were shifted several metres, also by large waves. Coastal defences were overtopped at numerous locations, and car parks and roads were closed. Several roads, including Bournemouth's A338, were closed due to flooding. In Dorset, flooding was reported in Christchurch (ITV, 2014), with around six inches of water near Barrack Road in the afternoon (when levels were still rising), and the main road to Sandbanks, Poole was also flooded (Clarke, 2014).</p>

**Table 1:** High water levels (m CD) recorded at the UK National Tide Gauge sites that reached or exceeded a 1 in 5 year return level during the event.

Tide gauge Site	Date and time (GMT)	Return period (years)	Water level (m CD)	Astronomical tide (m CD)	Skew surge (m)
Newhaven	05/01/14 01:45	<1	7.35	7.12	0.23
Portsmouth	05/01/14 01:45	1	5.33	4.85	0.48
Weymouth	06/01/14 10:30	<1	2.55	2.18	0.37
Devonport	06/01/14 09:15	<1	6.05	5.57	0.49
Newlyn	05/01/14 07:15	<1	6.09	5.83	0.26
Ilfracombe	05/01/14 08:45	<1	9.88	9.7	0.17
Hinkley Point	05/01/14 09:30	<1	12.54	12.29	0.25
Newport	05/01/14 09:45	<1	12.98	12.65	0.34
Mumbles	06/01/14 09:30	<1	10.18	9.49	0.69
Milford Haven	05/01/14 09:00	<1	7.75	7.46	0.29
Fishguard	06/01/14 11:00	<1	5.48	4.84	0.64
Barmouth	06/01/14 11:30	2	5.99	5.11	0.88
Holyhead	06/01/14 14:00	4	6.56	5.78	0.78
Llandudno	06/01/14 14:15	<1	8.46	7.78	0.67
Liverpool	06/01/14 14:30	<1	10.29	9.49	0.8
Heysham	06/01/14 14:30	<1	10.6	9.71	0.89
Workington	06/01/14 14:45	1	9.33	8.43	0.9
Port Erin	06/01/14 14:45	4	6.3	5.48	0.82
Portpatrick	06/01/14 15:00	18	4.99	4.21	0.77
Millport	06/01/14 15:30	4	4.53	3.69	0.83
Tobermory	06/01/14 09:30	<1	5.15	4.57	0.58
Stornoway	06/01/14 10:45	<1	5.4	4.96	0.44
Ullapool	05/01/14 09:45	<1	5.69	5.51	0.18
Kinlochbervie	06/01/14 11:15	<1	5.47	4.97	0.5
Lerwick	06/01/14 14:45	<1	2.61	2.28	0.34
Wick	06/01/14 13:30	<1	3.86	3.62	0.24
Aberdeen	06/01/14 16:45	<1	4.72	4.37	0.35
Leith	05/01/14 17:15	<1	6.03	5.88	0.15
North Shields	05/01/14 18:00	<1	5.42	5.41	0.02
Whitby	05/01/14 06:30	<1	5.88	5.69	0.19
Immingham	06/01/14 21:30	<1	7.24	7.13	0.11
Cromer	05/01/14 09:15	<1	5.14	4.87	0.27
Lowestoft	07/01/14 01:00	<1	2.73	2.69	0.05
Harwich	05/01/14 02:00	<1	4.54	4.22	0.32
Dover	05/01/14 01:15	<1	7.37	6.96	0.42
Hinkley Point	05/01/14 09:30	<1	12.54	12.29	0.25
Newport	05/01/14 09:45	<1	12.98	12.65	0.34
Mumbles	06/01/14 09:30	<1	10.18	9.49	0.69
Dover	03/01/98 01:45	<1	7.15	6.76	0.39

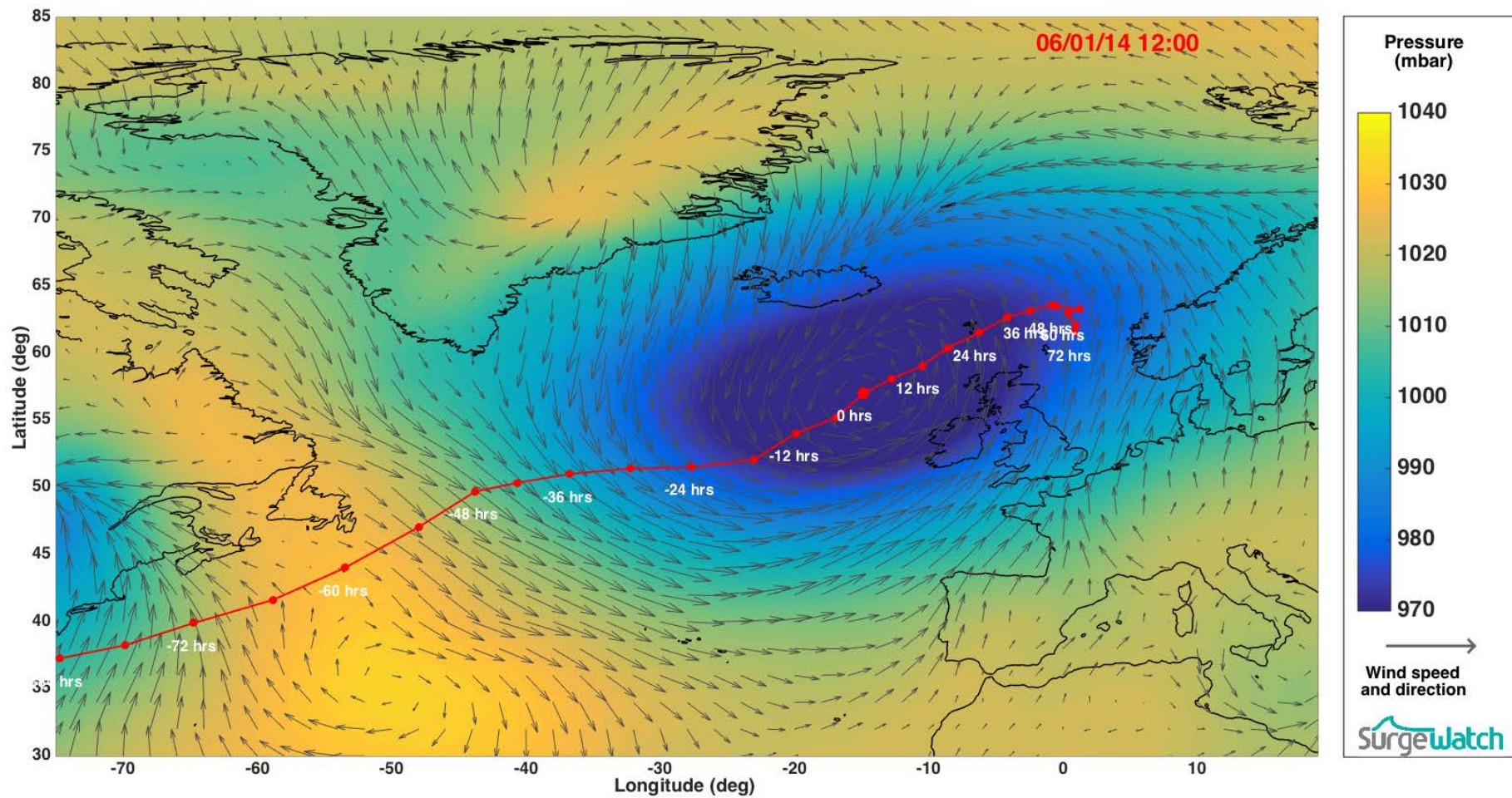


Figure 1: Meteorological conditions at time of maximum water level overlaid by the storm track



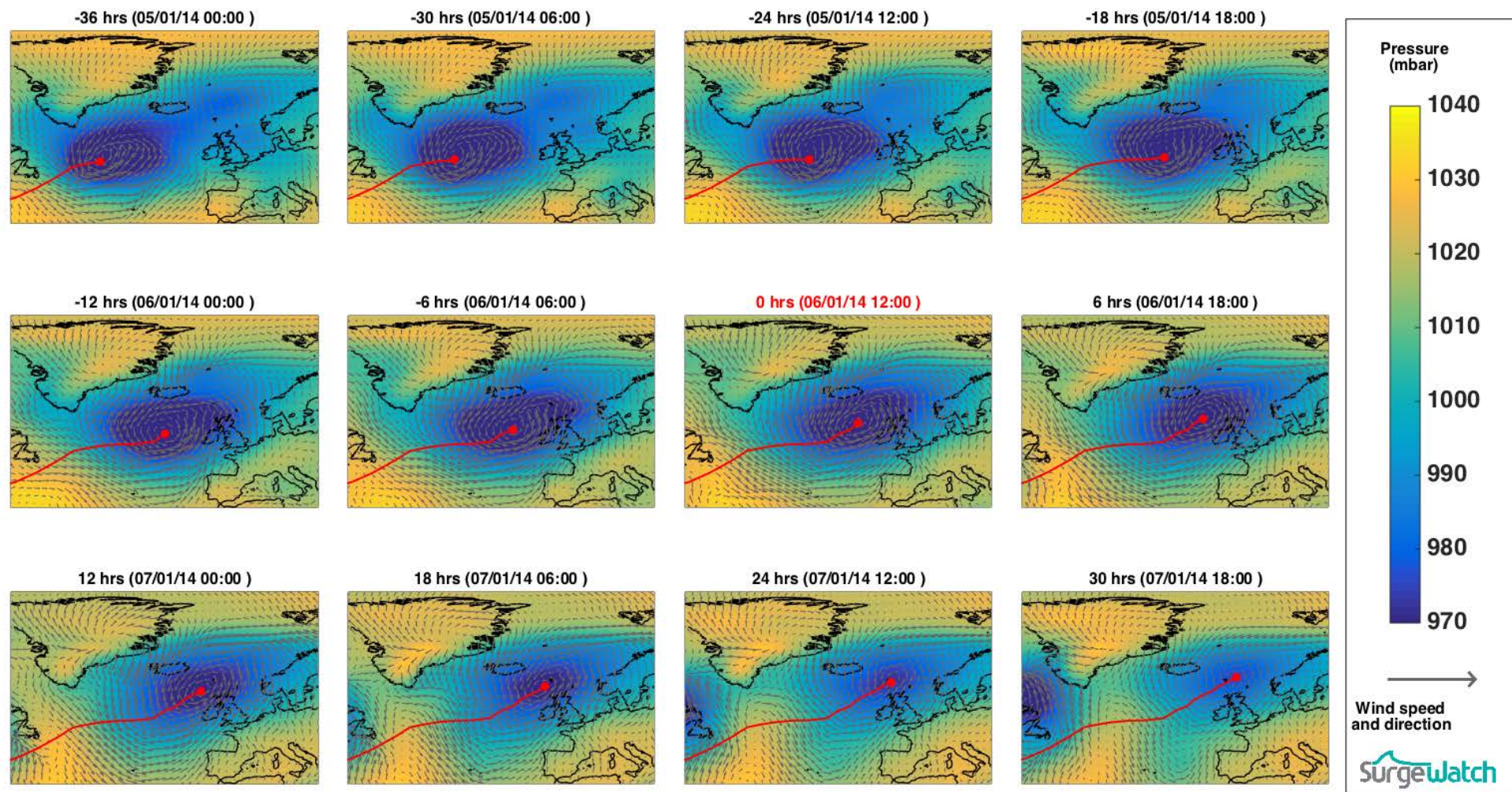


Figure 2: Meteorological conditions during event

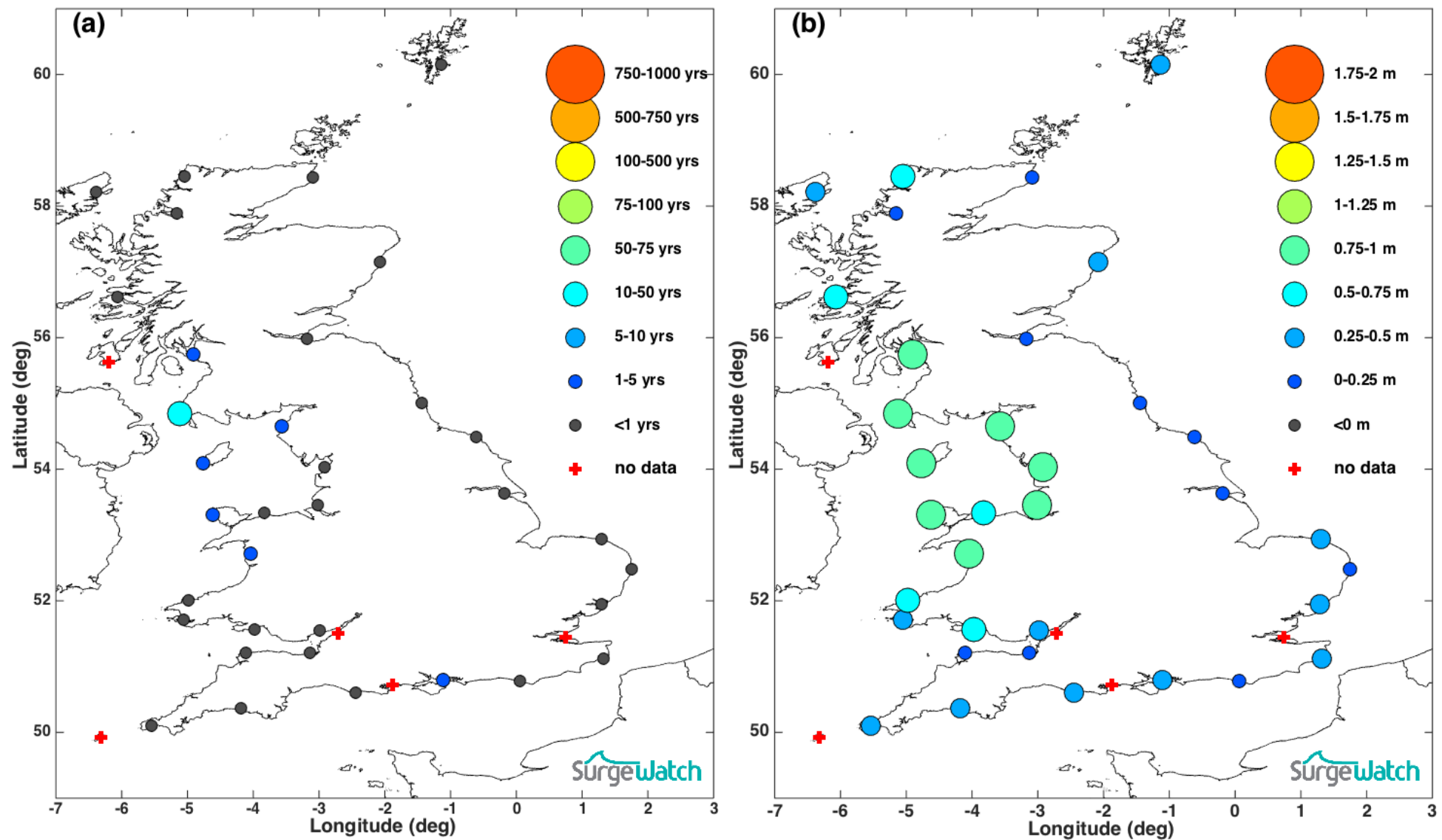


Figure 3: (a) Water level return period; (b) Skew surge levels

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## Additional sources of information

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