SurgeWatch

STORM EVENT

3rd February 2014

Coastal towns in southwest England are flooded again after being hit by strong winds, large waves and extreme water levels

Severity Ranking

		3			

Social	Loss of life	*
	Residential property	Properties in the Isle of Scilly were flooded
	Evacuation & rescue	*
Economic	Cost	*
	Ports	*
	Transport	Railway tracks between Penzance and St Erth were affected by flooding
	Energy	*
	Public services	*
	Water & wastewater	*
	Livestock	*
	Agricultural land	*
Environmental	Coastal erosion	Significant coastal erosion in many areas, altering beach profiles
	Natural environment	*
	Cultural heritage	*
	Coastal defences	*

**No known sources of information available*

Source	The storm developed between Canada and southwest Greenland on 1st February 2014 and moved eastwards towards the UK. South of Iceland the storm combined with, and was enhanced by, an earlier storm located north of the UK, which caused flooding on 1st February. The central pressure deepened to about 950 mbar. The storm turned northwards, then moved west towards Greenland before dissipating close to its area of origin. The storm generated very strong southerly winds reaching 70 knots [36 m/s] along the south coast of the UK (Met Office, 2014). This storm was part of a series of successive storms that moved across the UK, each separated by only a few days (Met Office, 2014). Skew surge values of between 0.25–1.0 m were recorded at many sites along the UK south and west coasts, where water levels also exceeded the 1 in 5 year return level at 9 sites. The highest return period water level of 1 in 37 years was recorded at Newlyn (which was the highest recorded water level at this site in the almost 100-year dataset). The next largest return period of 1 in 16 years was recorded at Fishguard, where the highest skew surge of 0.66 m was also recorded. At Newlyn, the skew surge was 0.47 m. The event occurred about 2 days after peak spring tides. Significant wave heights from 6 to 8 m were forecasted for the UK west and south coasts (The Weather Channel, 2014).
Pathway	Overtopping of sea defences was the primary mechanism for flooding during this event.
Receptor & Consequence	This event was associated with flooding around the south and southwest coasts, with impacts exacerbated due to the occurrence of several storms and consequent flooding during the preceding days (Haigh *et al*., 2015). Locations flooded in Cornwall included Looe, Fowey, Newlyn, Porthleven and Mevagissey (BBC, 2014b). The Harbour Master for Looe reported that flood water along nearby streets were too deep for the passage of vehicles (BBC, 2014b). In Devon, parts of Plymouth, Salcombe, Exmouth and Kingsbridge experienced flooding. Also, properties on the Isle of Scilly were reported to be flooded. Amateur video reports also showed coastal flooding at St Mawes (Cornwall), Somerset and Lahinch (Ireland), around 3rd February. Rail services between Penzance and St Erth were suspended due to flooding. In the afternoon of 3rd February, 21 properties remained flooded and 200 people were cut off in the villages of Muchelney, Thorney, Oath, Stathe and North Moor. Considerable flooding occurred in many parts of Bristol after the River Avon rose above its banks (Bristol Culture, 2014). The storms also caused significant coastal erosion in many areas, altering beach profiles.

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	03/02/14 01:15	<1	7.25	7.22	0.03
Portsmouth	03/02/14 13:45	<1	5.18	4.72	0.46
Weymouth	03/02/14 09:15	5	2.86	2.45	0.41
Devonport	03/02/14 08:15	8	6.37	5.91	0.46
Newlyn	03/02/14 07:00	37	6.44	5.97	0.47
St. Mary's	04/02/14 07:45	<1	5.96	5.7	0.26
Ilfracombe	03/02/14 08:15	8	10.4	9.94	0.46
Hinkley Point	03/02/14 09:15	3	13.13	12.59	0.54
Newport	02/02/14 22:45	<1	10.63	12.84	-2.2
Mumbles	03/02/14 08:45	5	10.65	10.15	0.51
Milford Haven	03/02/14 08:30	12	8.14	7.64	0.5
Fishguard	03/02/14 09:30	16	5.8	5.14	0.66
Barmouth	03/02/14 10:30	4	6.13	5.49	0.63
Holyhead	03/02/14 12:30	5	6.61	6.12	0.48
Llandudno	03/02/14 13:00	4	8.74	8.29	0.45
Liverpool	03/02/14 13:30	1	10.5	10.03	0.47
Heysham	03/02/14 13:30	1	10.81	10.33	0.48
Workington	03/02/14 13:45	4	9.53	8.95	0.58
Port Erin	03/02/14 13:30	5	6.35	5.78	0.57
Portpatrick	03/02/14 13:45	8	4.89	4.4	0.49
Millport	03/02/14 14:30	3	4.45	3.78	0.66
Tobermory	02/02/14 07:45	1	5.42	5.09	0.34
Stornoway	02/02/14 08:30	10	5.86	5.46	0.39
Ullapool	02/02/14 08:45	4	6.17	5.76	0.41
Kinlochbervie	02/02/14 08:45	4	5.9	5.44	0.46
Lerwick	02/02/14 12:45	<1	2.67	2.41	0.27
Wick	02/02/14 13:00	2	4.18	3.87	0.31
Aberdeen	02/02/14 14:45	<1	4.86	4.68	0.19
Leith	02/02/14 16:15	<1	6.18	6.1	0.08
North Shields	02/02/14 17:00	<1	5.68	5.58	0.1
Whitby	02/02/14 17:45	<1	6.23	6.14	0.09
Immingham	02/02/14 19:45	<1	7.76	7.69	0.07
Cromer	03/02/14 08:45	<1	5.02	4.9	0.12
Lowestoft	02/02/14 23:00	<1	2.86	2.78	0.08

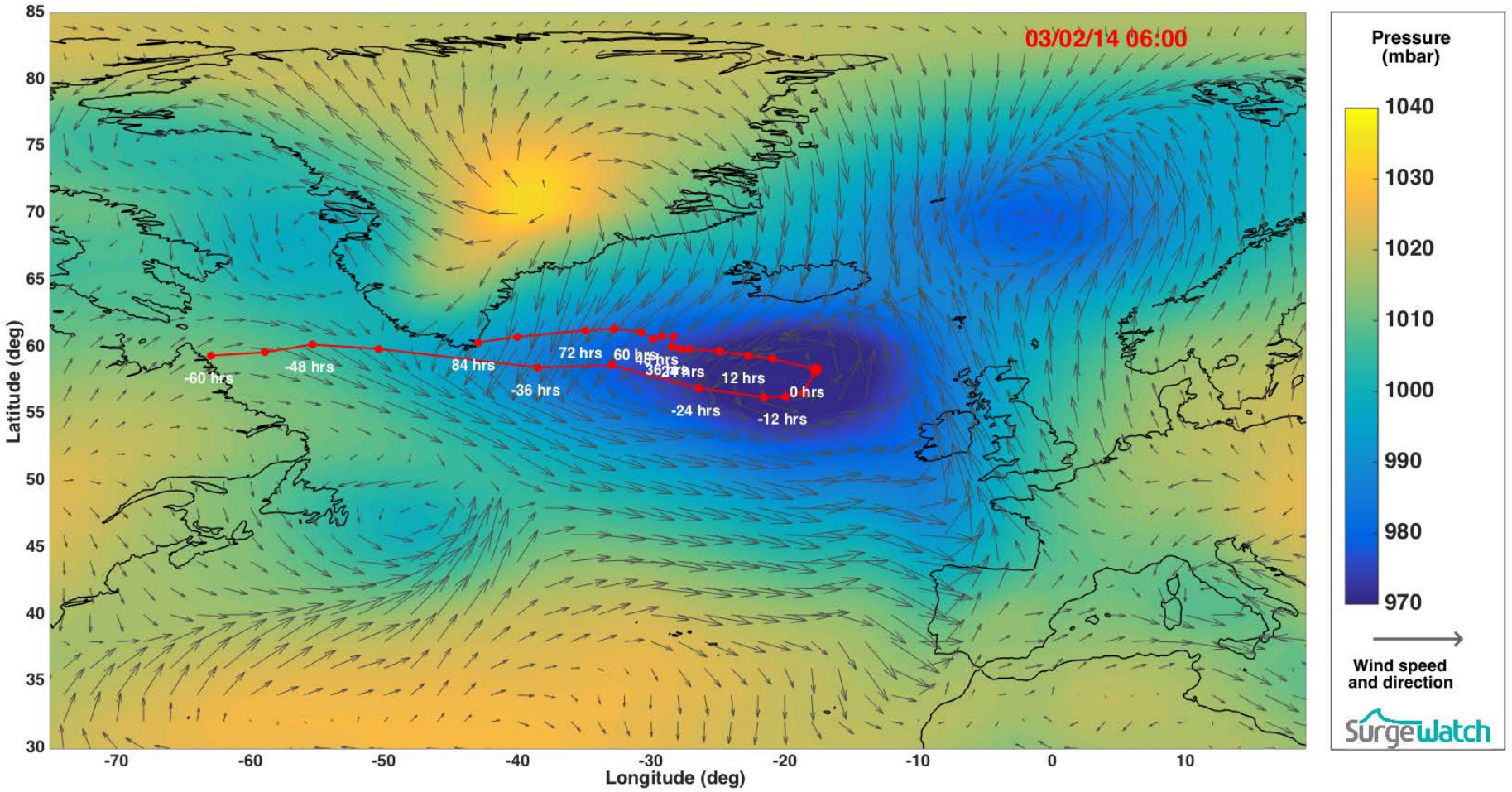

Figure 1: Meteorological conditions at time of maximum water level overlaid by the storm track

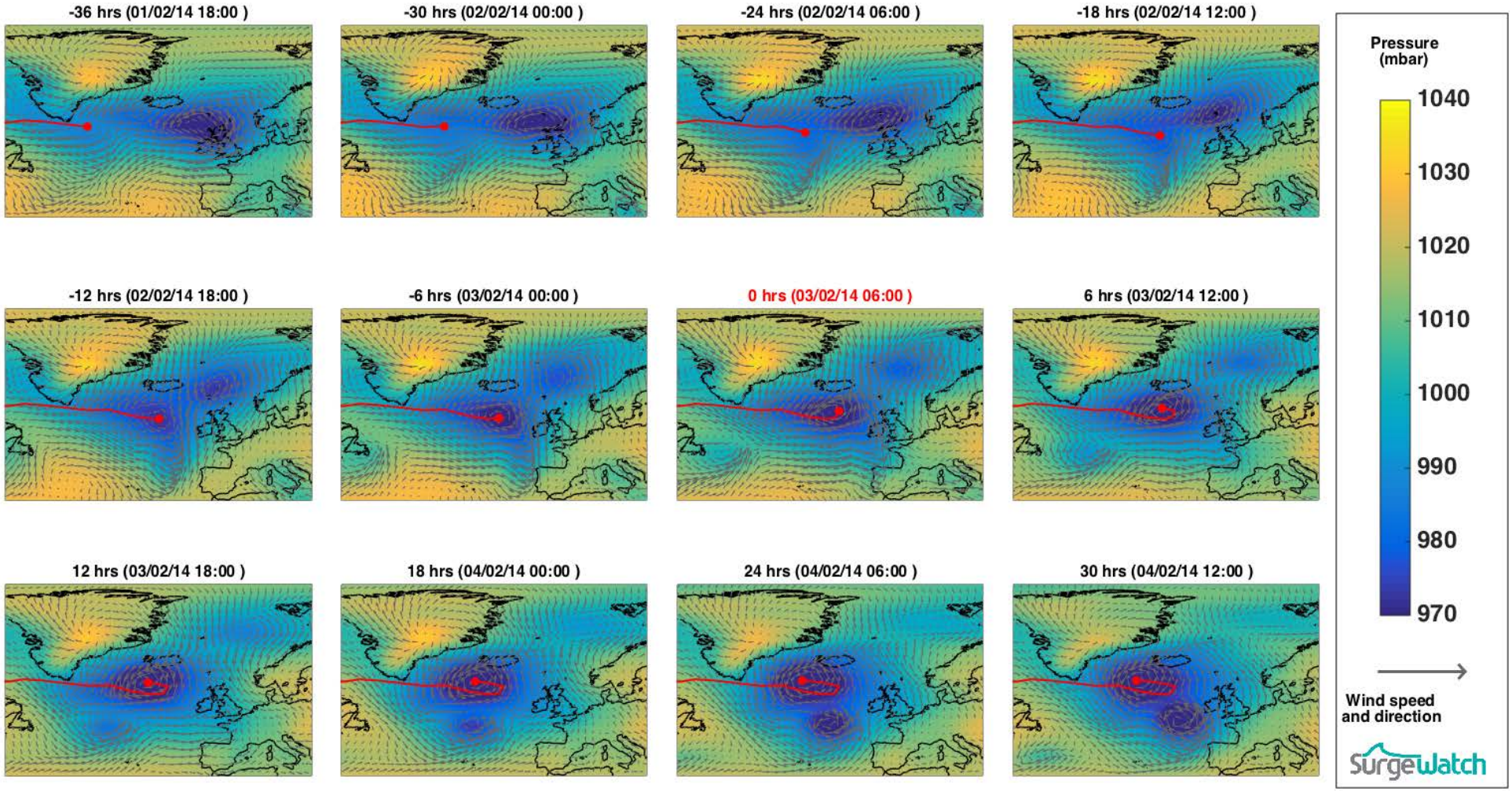

Figure 2: Meteorological conditions during event

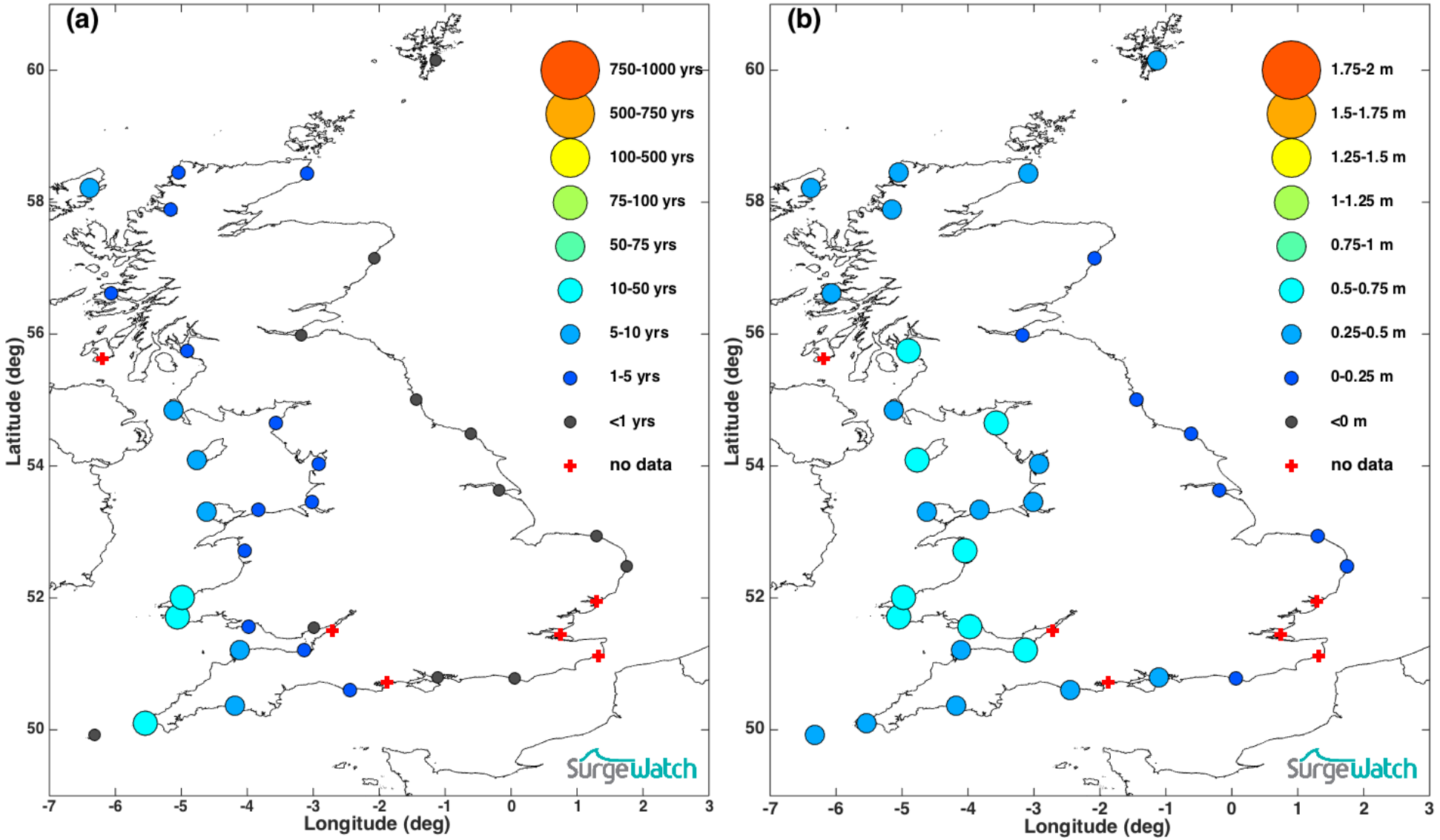

Figure 3: (a) Water level return period; (b) Skew surge levels

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