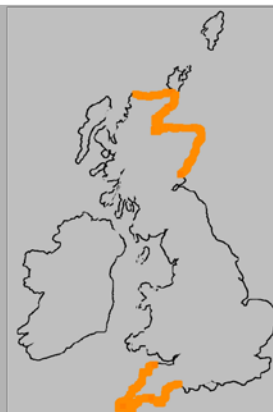


STORM EVENT

—— 14th December 2012 ——

Strong gales cause widespread coastal damages at opposite ends of the country



Severity Ranking



Social	<u>Loss of life</u>	*
	<u>Residential property</u>	Several dozen properties were flooded in the southwest
	<u>Evacuation & rescue</u>	Around 60 persons were evacuated in northeast Scotland
Economic	<u>Cost</u>	Damages to coastal defences in northeast Scotland were estimated at approximately £2.5 million
	<u>Ports</u>	*
	<u>Transport</u>	Train services at Dawlish were delayed due to flooding
	<u>Energy</u>	*
	<u>Public services</u>	*
	<u>Water & wastewater</u>	*
	<u>Livestock</u>	*
	<u>Agricultural land</u>	*
Environmental	<u>Coastal erosion</u>	There was some coastal erosion at Scrabster, and a land slip at Portskerra
	<u>Natural environment</u>	*
	<u>Cultural heritage</u>	*
	<u>Coastal defences</u>	There was much damage to defences during this event, most notably in northeast Scotland

**No known sources of information available*

Source	<p>The storm devolved from an existing low-pressure system situated south of Greenland on 13th December 2012. On 14th December, low pressure extended across much of the northern North Atlantic, with a sharp pressure gradient and consequently strong winds over the British Isles. The wind field was characterised by strong southerly to south-westerly winds over the English Channel early on 14th December, and easterly to south-easterly winds over the North Sea through to 15th December.</p> <p>Sea levels were relatively low and this event appears to have been more wave dominated.</p> <p>We are unaware of any sources describing the wave conditions during this event.</p>
Pathway	<p>This event was notable for the serious damages to defences around Scotland, which failed due to a combination of overtopping and breaching.</p>
Receptor & Consequence	<p>This event was associated with flooding in parts of southwest England and Scotland (Met Office, 2012). Thirty properties were inundated in Looe, Cornwall while around sixty persons were evacuated in northwest Scotland. In Lossiemouth, the harbour wall was partially demolished by waves. This event was also notable for serious wave damages and coastal flooding along parts of southwest England and northeast Scotland. In Lossiemouth, (Scotland) a 15 m section of the harbour wall collapsed (BBC, 2012), and flooding of nearby Shore Street led to the temporary disruption of traffic (Crowther, 2012). Widespread impacts on coastal defences were reported for northeast Scotland, with a total estimated cost £2.5 million (The Highland Council, 2013). Approximately 60 people were evacuated in northeast Scotland, and around 30 properties were flooded in Looe, Cornwall (Met Office, 2012). Train services at Dawlish were suspended after flooding led to several cancellations (Doherty, 2012). There was some coastal erosion at Scrabster, and a land slip at Portskerra was also reported (The Highland Council, 2013).</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	14/12/12 11:30	<1	7.19	7.11	0.08
Portsmouth	14/12/12 11:15	<1	5.28	4.97	0.31
Bournemouth	14/12/12 09:00	3	2.92	2.57	0.35
Weymouth	14/12/12 07:45	5	2.87	2.52	0.34
Devonport	14/12/12 06:00	2	6.24	5.89	0.35
Newlyn	14/12/12 04:45	5	6.26	5.92	0.34
St. Mary's	14/12/12 04:45	2	6.38	6.09	0.29
Ilfracombe	14/12/12 06:15	<1	10.02	9.84	0.18
Hinkley Point	15/12/12 07:45	<1	12.67	12.36	0.31
Newport	15/12/12 08:00	<1	13.08	12.91	0.17
Mumbles	15/12/12 07:15	<1	10.22	10.12	0.11
Fishguard	14/12/12 07:30	<1	5.46	5.27	0.19
Barmouth	14/12/12 20:45	<1	5.81	5.15	0.66
Holyhead	15/12/12 11:15	<1	6.34	6.01	0.33
Llandudno	15/12/12 11:45	<1	8.43	8.35	0.09
Liverpool	14/12/12 23:45	<1	10.36	9.83	0.53
Heysham	14/12/12 23:45	<1	10.64	10.05	0.59
Workington	15/12/12 00:15	<1	9.18	8.72	0.47
Port Erin	15/12/12 00:00	<1	6.01	5.61	0.4
Portpatrick	15/12/12 00:15	<1	4.52	4.12	0.4
Millport	15/12/12 13:30	<1	3.94	3.79	0.15
Tobermory	15/12/12 07:00	<1	5.33	5.07	0.25
Stornoway	15/12/12 08:00	1	5.66	5.41	0.25
Ullapool	15/12/12 07:45	1	6	5.71	0.28
Kinlochbervie	15/12/12 08:30	<1	5.65	5.4	0.25
Lerwick	15/12/12 12:00	<1	2.71	2.45	0.26
Wick	15/12/12 00:15	2	4.2	3.74	0.46
Leith	15/12/12 15:45	<1	6.11	5.94	0.17
North Shields	15/12/12 16:30	<1	5.51	5.45	0.06
Whitby	15/12/12 17:00	<1	6.07	6	0.07
Immingham	15/12/12 19:15	<1	7.56	7.37	0.19
Cromer	15/12/12 18:30	<1	4.98	5.3	-0.32
Lowestoft	15/12/12 22:30	<1	2.85	2.7	0.15
Harwich	14/12/12 12:00	<1	4.31	4.23	0.08

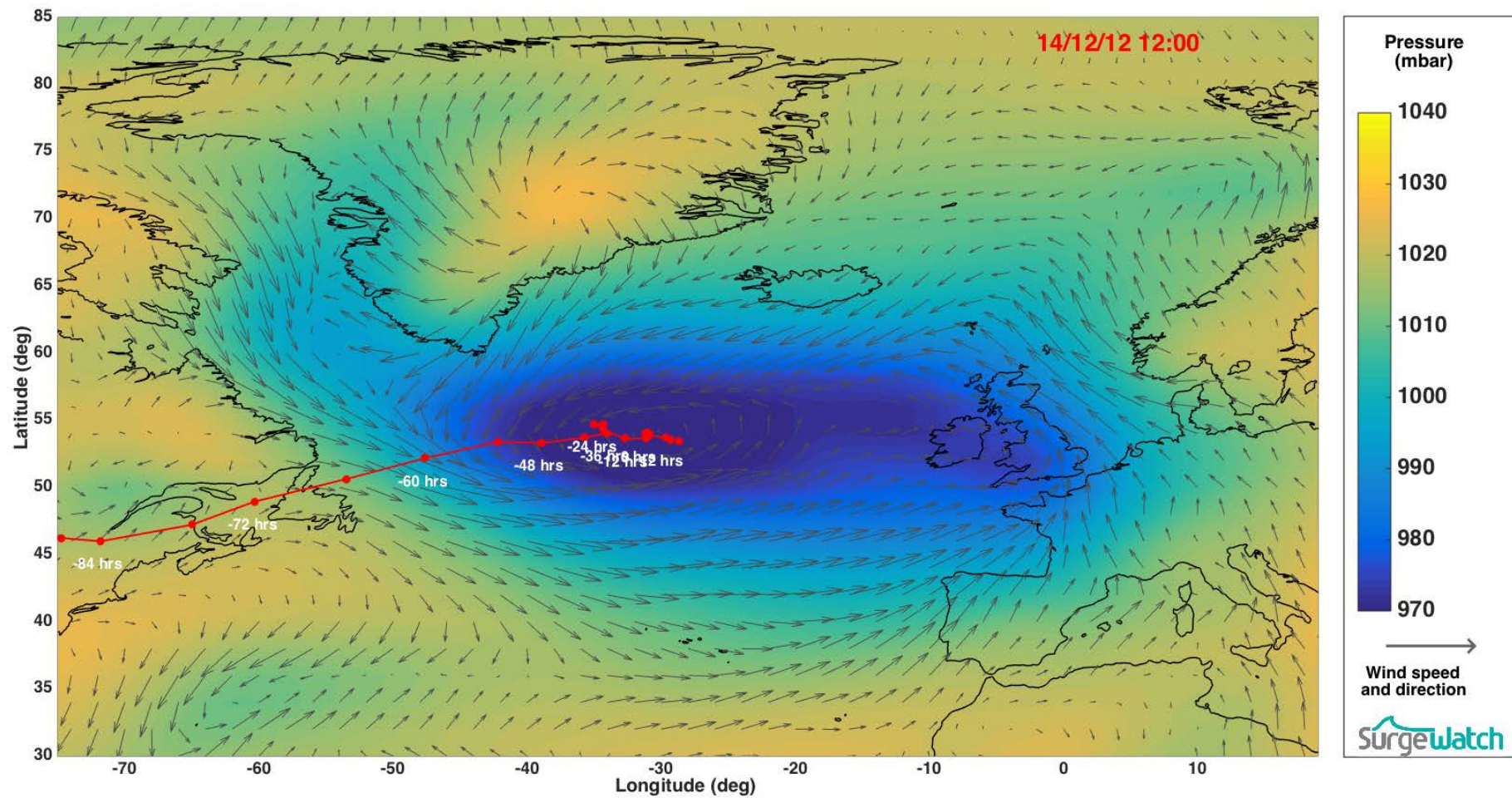


Figure 1: Meteorological conditions at time of maximum water level overlaid by the storm track

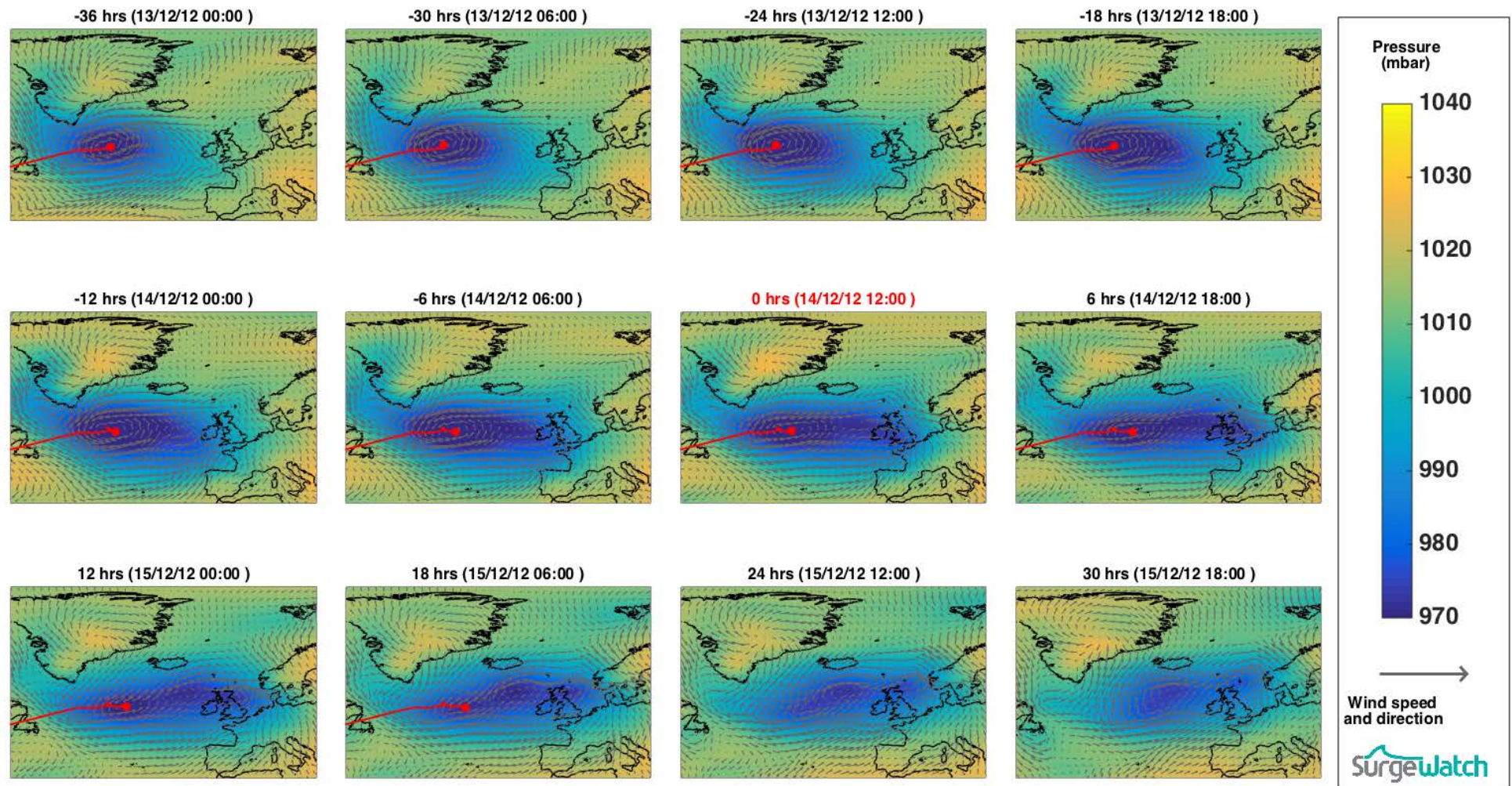


Figure 2: Meteorological conditions during event

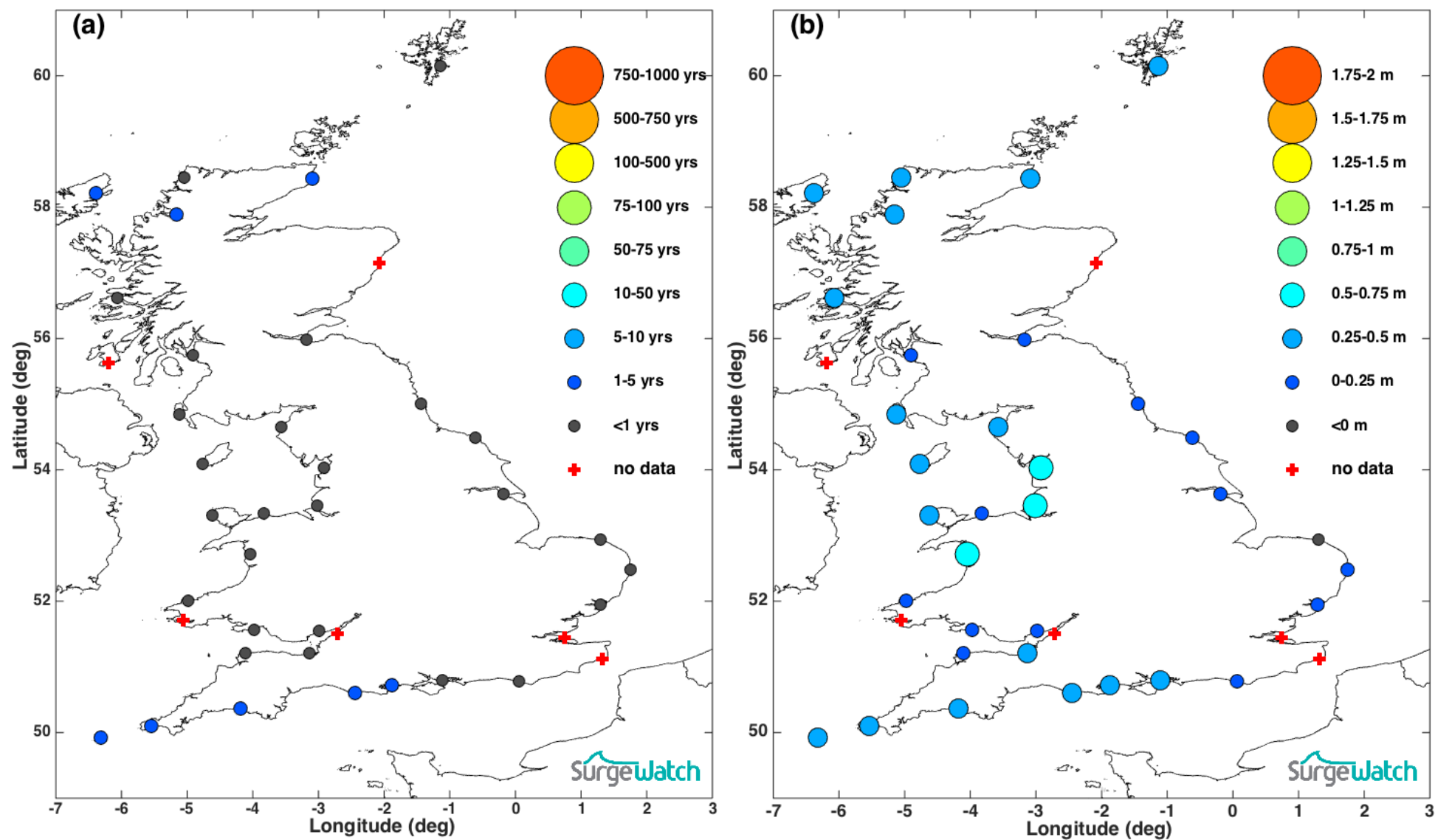


Figure 3: (a) Water level return period; (b) Skew surge levels

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Additional sources of information