

STORM EVENT

— 29th September 1969 —

Extreme water levels along the east coast



Severity Ranking



Social	<u>Loss of life</u>	*
	<u>Residential property</u>	Many properties (both residential and non-residential) were reported to have flooded in Hull
	<u>Evacuation & rescue</u>	*
Economic	<u>Cost</u>	*
	<u>Ports</u>	*
	<u>Transport</u>	Two of the main bridges over the river Hull were impassable, causing much disruption to traffic
	<u>Energy</u>	In Hull, two electrical transformers caught fire when flood water caused short circuits
	<u>Public services</u>	*
	<u>Water & 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>	The sea wall was "swept away" at Whalsay

**No known sources of information available*

Source	<p>The storm developed offshore of the east coast of the US on 23rd September 1969 and moved northeast towards the UK. The storm approached the UK on 28th September and the central pressure deepened to around 970 mbar. The storm travelled north of Scotland, crossing Scandinavia on 29th September producing strong northerly winds in the North Sea. Meteorological observations showed gusts of 96 knots [50 m/s], 89 knots [46 m/s], and 88 knots [45 m/s] at Dounreay, Wick and Kirkwall, respectively (Eden, 2008).</p> <p>The storm generated a skew surge of between 0.5 and 1.5 m at many sites on the east coast of the UK. Water levels exceeded the 1 in 5-year return level at 6 sites along the east coast. The highest return period water level was at Immingham and was 43 years. The next largest return period of 39 years was at Holyhead. The highest skew surge was at Lowestoft and was 1.4 m. At Immingham the skew surge was 1.16 m.</p> <p>We are unaware of any sources describing the wave conditions during this event.</p>
Pathway	<p>Other than reports of the sea wall "swept away" at Whalsay, we are unaware of any further information regarding the flood pathways for this event.</p>
Receptor & Consequence	<p>The worst impacts during this event were experienced in several English east coast towns, from Hull to Great Yarmouth (Met Office, 1969; Hickey, 1997; Zong and Tooley, 2003). In Scotland, this event was associated with localised impacts, with reports focused on Whalsay where the sea wall was "swept away" and one residential property was "completely" destroyed (Hickey, 1997). According to Eden (2008), with a storm surge of between 2 and 2.5 m this was the worst flooding along the east coast since the 1953 disaster. <i>The Times</i> (1969) report the impacts of this event, describing that tides swept over river banks in Hull and inundated a large part of the city to a depth of 3 ft. [0.9 m]. Two of the main bridges over the river Hull were impassable, causing much disruption to traffic. Some non-residential properties were flooded to 2 ft, [0.6 m] and the old towns' commercial area was cut off entirely. Two electricity transformers caught fire when flood water caused short circuits. The sea level at Hull was reportedly 4 ft. 2 in. [1.2 m] above the predicted 33 ft. 6 in. [10.2 m]. Damage to the value of thousands of pounds was incurred at a fruit market. At Grimsby's Commercial and Royal docks the tide reached 31 ft. [9.5 m] – the highest since 1953.</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)
Newlyn	27/09/69 18:00	<1	5.66	5.7	-0.04
Ilfracombe	27/09/69 19:00	<1	9.75	9.76	-0.01
Milford Haven	27/09/69 19:00	<1	7.38	7.43	-0.05
Fishguard	27/09/69 20:00	<1	5	5.1	-0.1
Holyhead	27/09/69 23:00	<1	5.84	5.87	-0.04
Heysham	28/09/69 00:00	<1	10.06	10.02	0.04
Portpatrick	28/09/69 13:00	<1	4.14	3.7	0.44
Lerwick	28/09/69 00:00	<1	2.35	2.38	-0.03
Wick	29/09/69 01:00	<1	4.02	3.55	0.47
Aberdeen	29/09/69 03:00	10	5.1	4.46	0.64
North Shields	29/09/69 05:00	29	6.1	5.26	0.85
Immingham	29/09/69 07:00	43	8.56	7.4	1.16
Lowestoft	29/09/69 10:00	39	4.21	2.81	1.4
Harwich	29/09/69 14:00	8	4.96	4.13	0.83
Sheerness	29/09/69 14:00	3	6.58	5.86	0.72
Dover	29/09/69 13:00	8	7.68	6.86	0.83

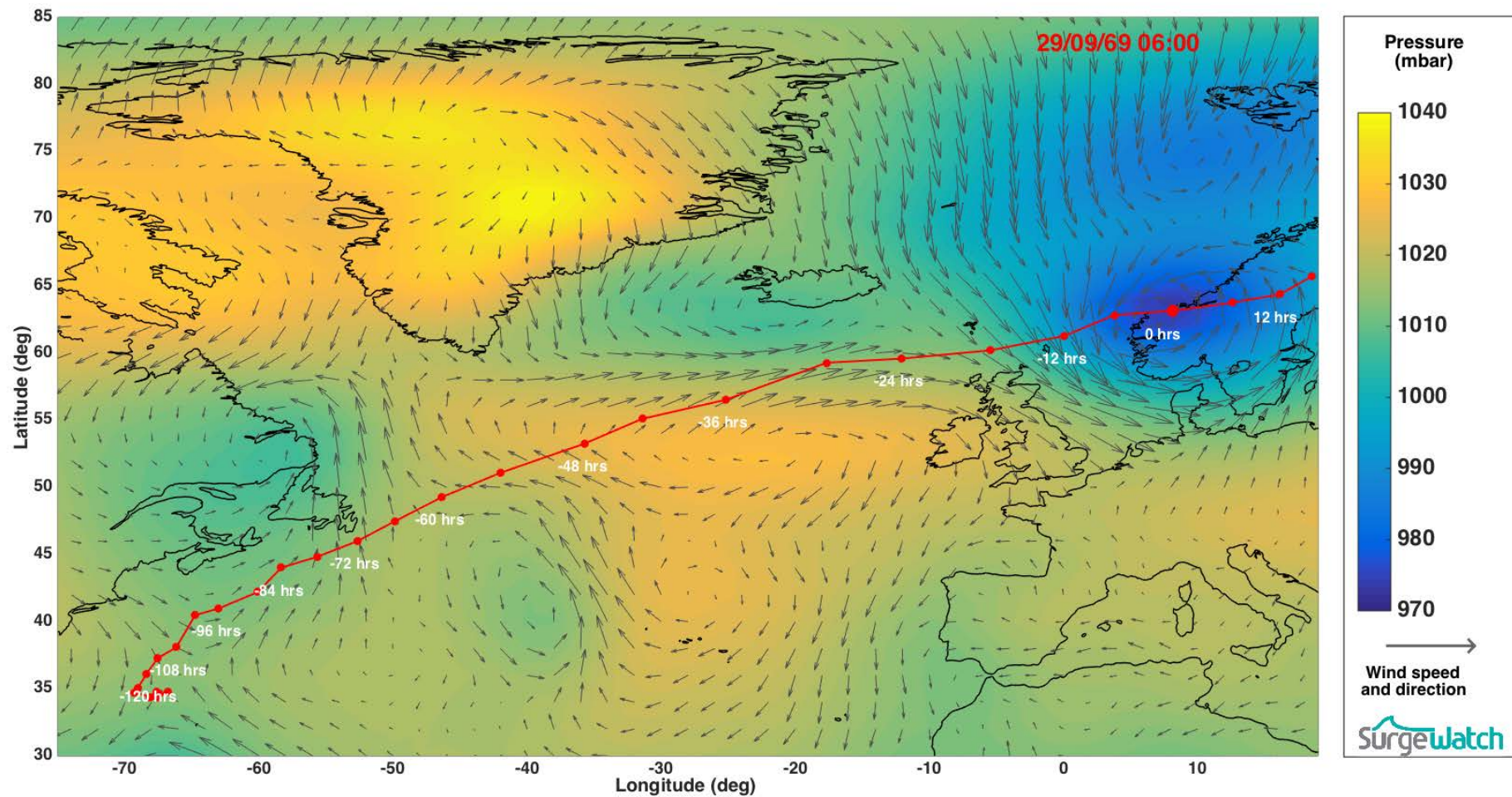


Figure 1: Meteorological conditions at time of maximum water level overlaid by the storm track

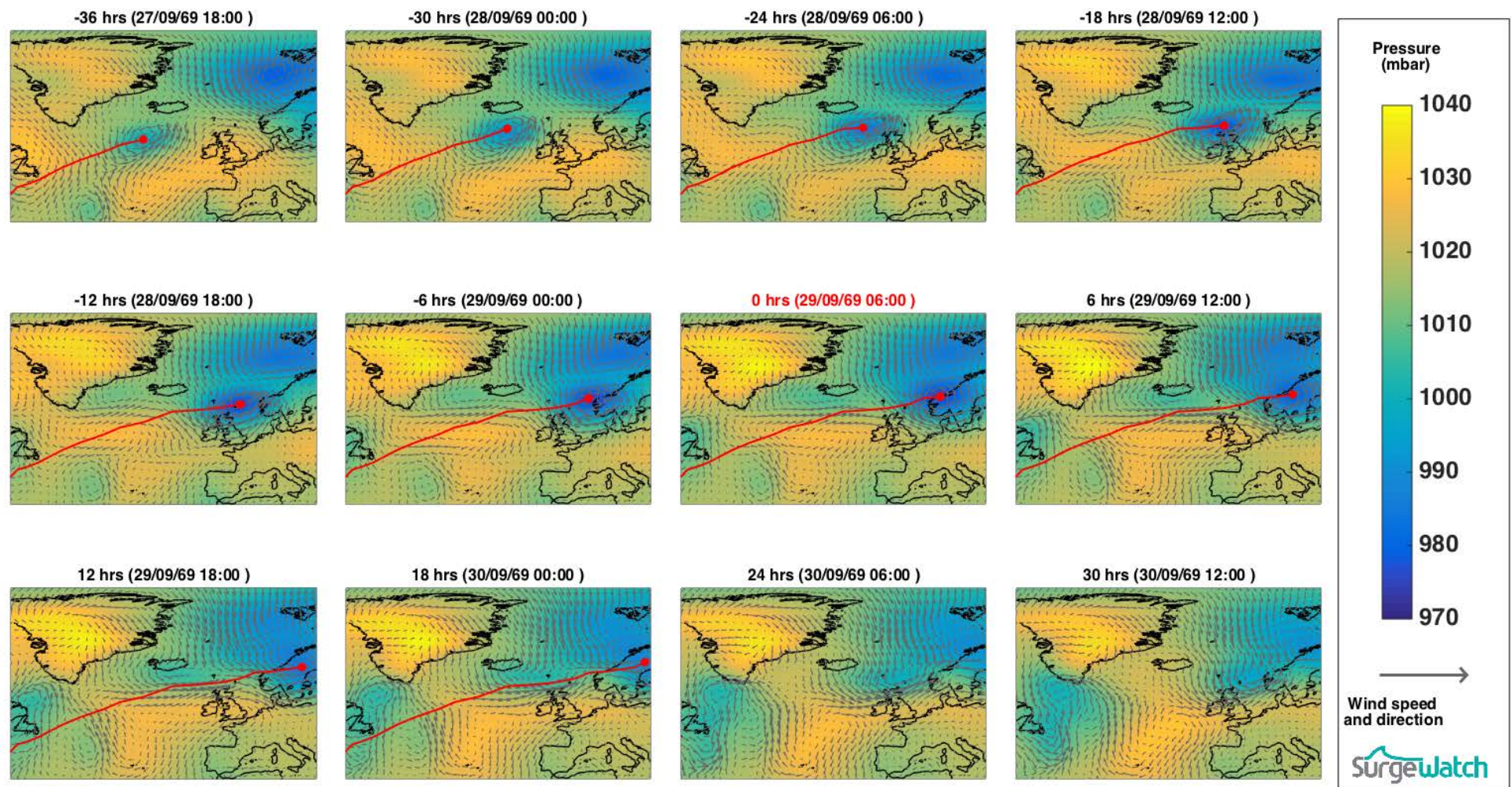


Figure 2: Meteorological conditions during event

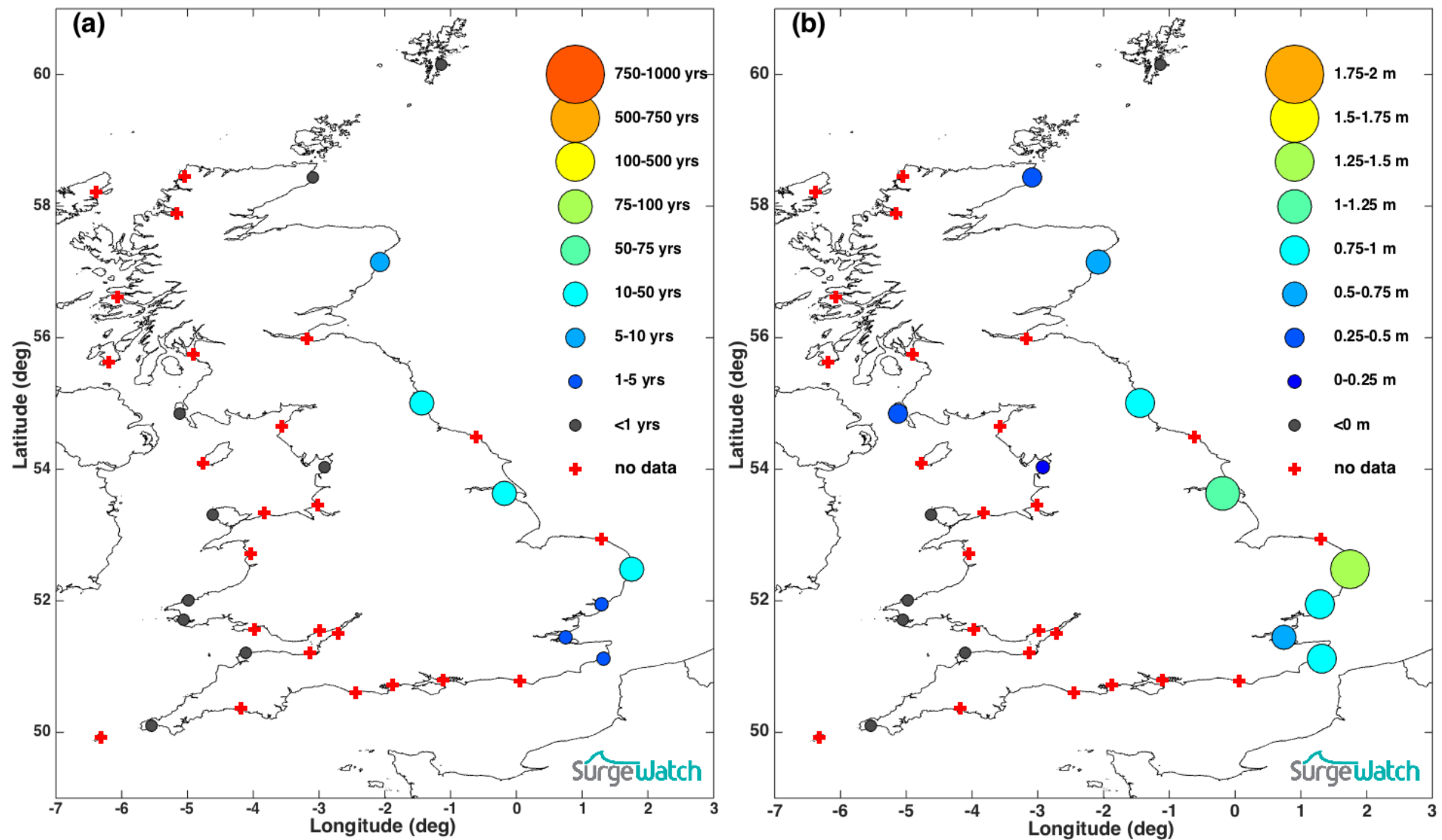


Figure 3: (a) Water level return period; (b) Skew surge levels

References

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Additional sources of information

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