SurgeWatch

STORM EVENT

10th-13th January 1993

High tides and gales cause flooding and coastal damage

Severity Ranking

		3			

Social	Loss of life	*
	Residential property	Properties were inundated in many locations along the south coast
	Evacuation & rescue	*
Economic	Cost	*
	Ports	*
	Transport	Many local roads were flooded along the south coast, including the A27 near Emsworth, Hampshire
	Energy	*
	Public services	*
	Water & wastewater	*
	Livestock	*
	Agricultural land	*
Environmental	Coastal erosion	*
	Natural environment	*
	Cultural heritage	*
	Coastal defences	*

**No known sources of information available*

Source	The 'Braer' storm developed over Nova Scotia, Canada on 8th January 1993 and moved east towards the UK. On 9th January, the storm approached Ireland and combined with, and was enhanced by, another low-pressure system located southwest of Iceland. On 11th January, the storm moved north of Scotland, where the central pressure dropped to a record-breaking 914 mbar (Met Office, 2011). In the northern North Sea, the storm slowed down and moved back on itself before dissipating. The highest wind speeds of 106 knots [55 m/s] were recorded on an ocean weather ship located southeast to the storm centre. In Shetland, wind speeds of up to 83 knots [43 m/s] were recorded (Met Office, 2011). The storm generated a skew surge of over 0.5 m at 32 of the tide gauge sites. Water levels exceeded the 1 in 5 year return level at 13 sites in the Irish Sea around Scotland and along the central south coast of England. This event was unique in that the 1 in 5 year return level was exceeded 24 times across these 13 sites, with multiple high waters exceeding this threshold at 7 sites. At Lerwick, 4 high waters (3 in succession) exceeded the 1 in 5 year threshold; this was because the storm remained almost stationary north of this site for nearly two days. The highest return period water level was at Lerwick and was 1 in 89 years. The second largest water level return period at Lerwick occurred on the previous high water and this had a return period of 1 in 78 years. The next largest return period of 1 in 32 years was at Wick. The highest skew surge was at Millport and was 1.03 m. We are unaware of any sources describing the wave conditions during this event.
Pathway	We are unaware of any specific information concerning the flood pathways during this event.
Receptor & Consequence	During 10th–11th January 1993, many locations along the UK south and west coasts were flooded during this event (Eden, 2008; Ruocco *et al*., 2011; Odell & Parkes, 2013). "Mountainuous" seas hit Old Portsmouth, where flood water reached 3 ft. [0.9 m] deep in places. In Titchfield, the overflowing river caused reportedly the worst flooding ever known, with an equivalent description of the conditions in Selsey. Residential properties were flooded in Portchester, Fareham, Wallington, Ryde, Cowes, and Wootton Bridge. Many roads were reportedly impassable in and around Fareham, and the A27 was closed nearby Portchester. Serious flooding and one death (of a canoeist) was reported in the Strathclyde Region of Scotland (Met Office, 2011). On the English south coast, in the city of Portsmouth during 10th January 1993 severe flooding was reported in Broad Street (of the Old Portsmouth area) (PCC, 2008; Pomeroy, 2012). The prolonged duration of this storm was associated with flooding on 13th January (possibly continuing from the previous days) on the Isle of Wight (Newport,) and Fareham (Portchester, Warsash and Wallington; Ruocco *et al*., 2011). Several local roads and some quayside property was inundated.

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	11/01/93 13:00	2	7.41	6.97	0.43
Portsmouth	11/01/93 13:15	8	5.48	4.82	0.66
Weymouth	10/01/93 08:00	8	2.87	2.49	0.38
Devonport	11/01/93 07:45	<1	6.14	5.79	0.35
Newlyn	11/01/93 06:30	<1	6	5.78	0.22
Ilfracombe	10/01/93 19:30	<1	10	9.52	0.48
Hinkley Point	10/01/93 20:30	<1	12.81	12.18	0.63
Avonmouth	10/01/93 20:45	<1	14.43	13.68	0.75
Mumbles	10/01/93 19:45	<1	10.32	9.75	0.57
Milford Haven	11/01/93 08:15	<1	7.63	7.41	0.23
Fishguard	11/01/93 09:00	<1	5.41	5.19	0.22
Barmouth	12/01/93 10:45	3	6.05	5.46	0.59
Liverpool	11/01/93 12:45	<1	10.42	9.85	0.57
Heysham	11/01/93 13:00	2	10.89	10.25	0.64
Workington	10/01/93 12:30	16	9.69	9.02	0.67
Port Erin	10/01/93 12:30	6	6.31	5.72	0.59
Portpatrick	10/01/93 12:45	24	4.98	4.22	0.76
Millport	10/01/93 13:00	16	4.74	3.71	1.03
Port Ellen	10/01/93 18:30	<1	1.63	0.77	0.86
Stornoway	11/01/93 08:15	15	5.85	5.31	0.54
Ullapool	10/01/93 20:45	20	6.3	5.5	0.8
Kinlochbervie	10/01/93 21:00	20	6.07	5.14	0.93
Lerwick	11/01/93 12:30	89	3.04	2.49	0.55
Wick	11/01/93 00:45	32	4.42	3.65	0.77
Aberdeen	11/01/93 02:45	16	5.17	4.38	0.79
Leith	11/01/93 04:00	9	6.47	5.81	0.66
North Shields	11/01/93 05:00	3	5.88	5.28	0.6
Whitby	11/01/93 05:30	<1	6.23	5.69	0.54
Immingham	11/01/93 07:45	2	8.1	7.36	0.74
Cromer	11/01/93 08:15	<1	5.66	4.96	0.7
Lowestoft	11/01/93 11:30	<1	3.17	2.54	0.63
Sheerness	11/01/93 14:00	3	6.62	5.93	0.69
Dover	11/01/93 13:00	<1	7.22	6.88	0.34

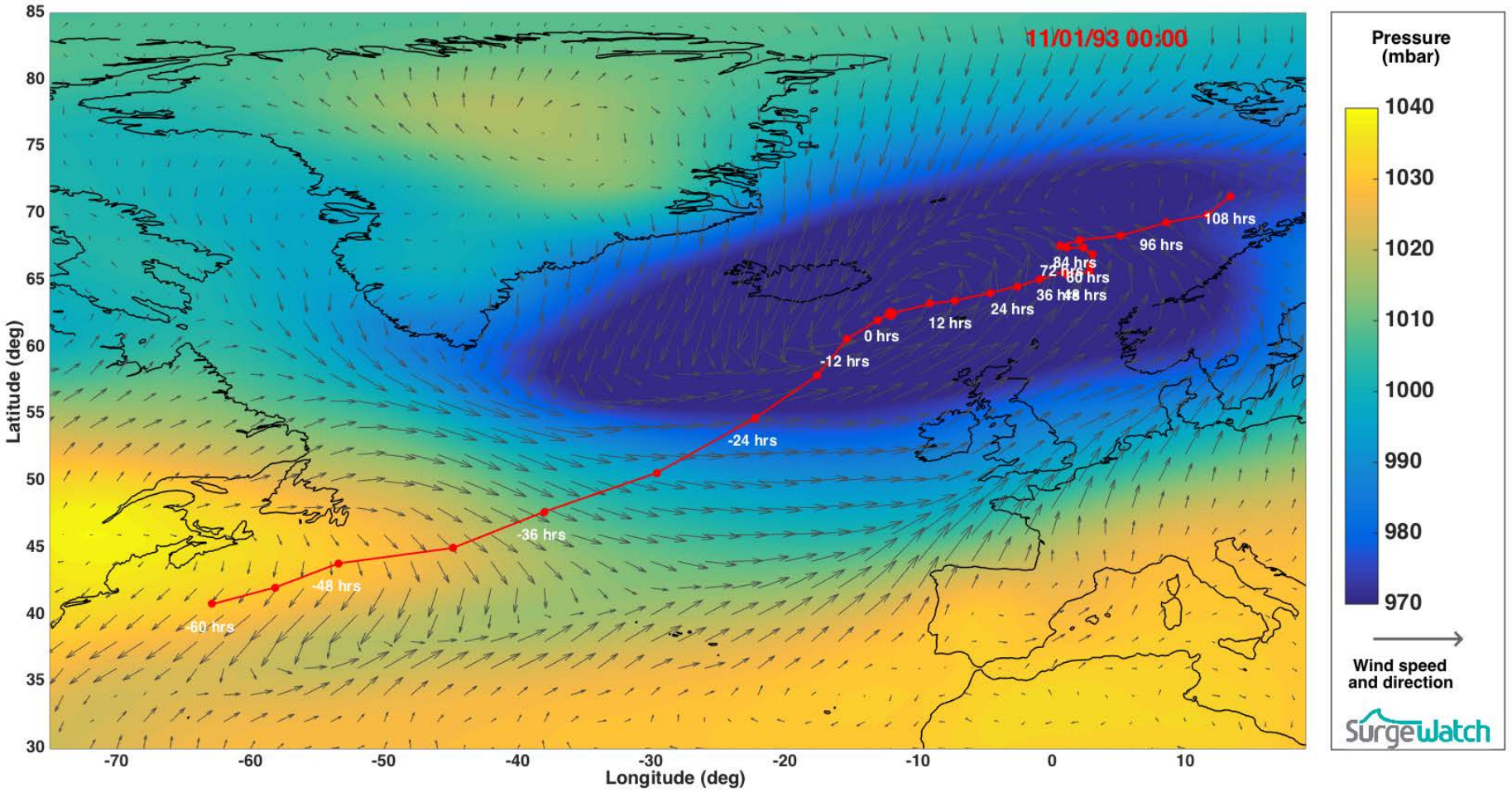

Figure 1: Meteorological conditions at time of maximum water level overlaid by the storm track

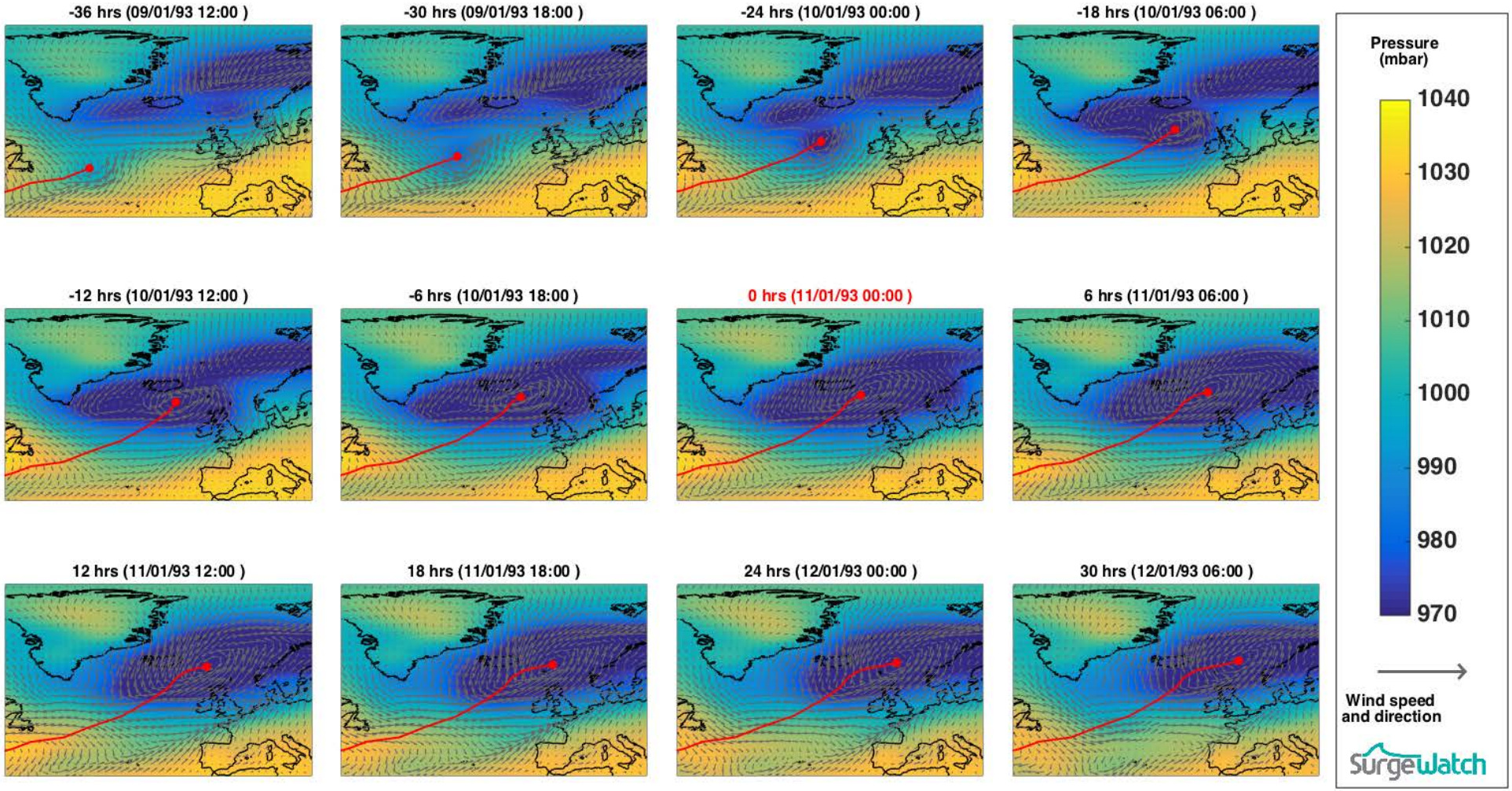

Figure 2: Meteorological conditions during event

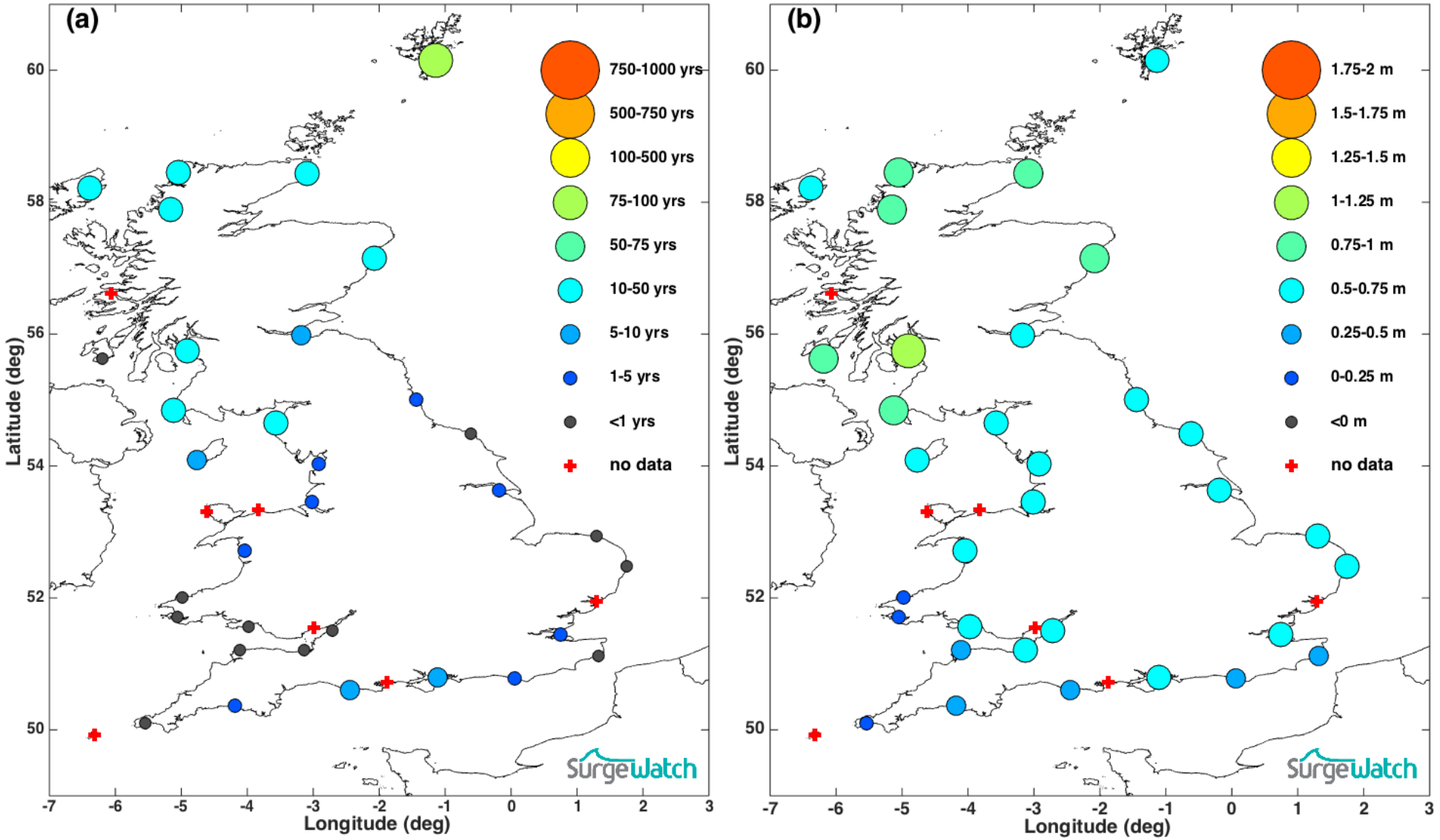

Figure 3: (a) Water level return period; (b) Skew surge levels

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Additional sources of information

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