

4th TWLWG Meeting – Fish Hoek, South Africa

8 – 10 May 2012

National Presentation: UK

The South Coast Tsunami, 27 – 29 June 2011

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Background

- June 27 - 28: UKHO receive numerous telephone calls about “unusual tidal activity” along south coast of UK.
- National press (newspapers and TV) also make enquiries
- Stories begin to emerge of a “mini-tsunami”
- Evidence begins to build that a definite tsunami had been experienced at several locations



St. Michael's Mount



- Accessed at LW by causeway
- Rapid increase in water level resulting in knee-deep water on the causeway
- Tide was predicted to continue falling at this time
- Reports of a high degree of static charge in the air (ladies hair standing on end!)



Classic Tsunami Behaviour

“One minute I was literally stood at the water's edge, then when I turned around the water had retreated around 50 yards.”

**Studland Bay 27 June 2011
1345 BST**



**Studland Bay 27 June 2011
1400 BST**



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**Studland Bay 27 June 2011
1415 BST**



- 5 rapid tidal cycles
- Duration about 2 minutes each
- Tide rose to approx. the normal spring high water level
- Each rise and high water generated significant tidal streams compared to what is normally experienced in the bay.



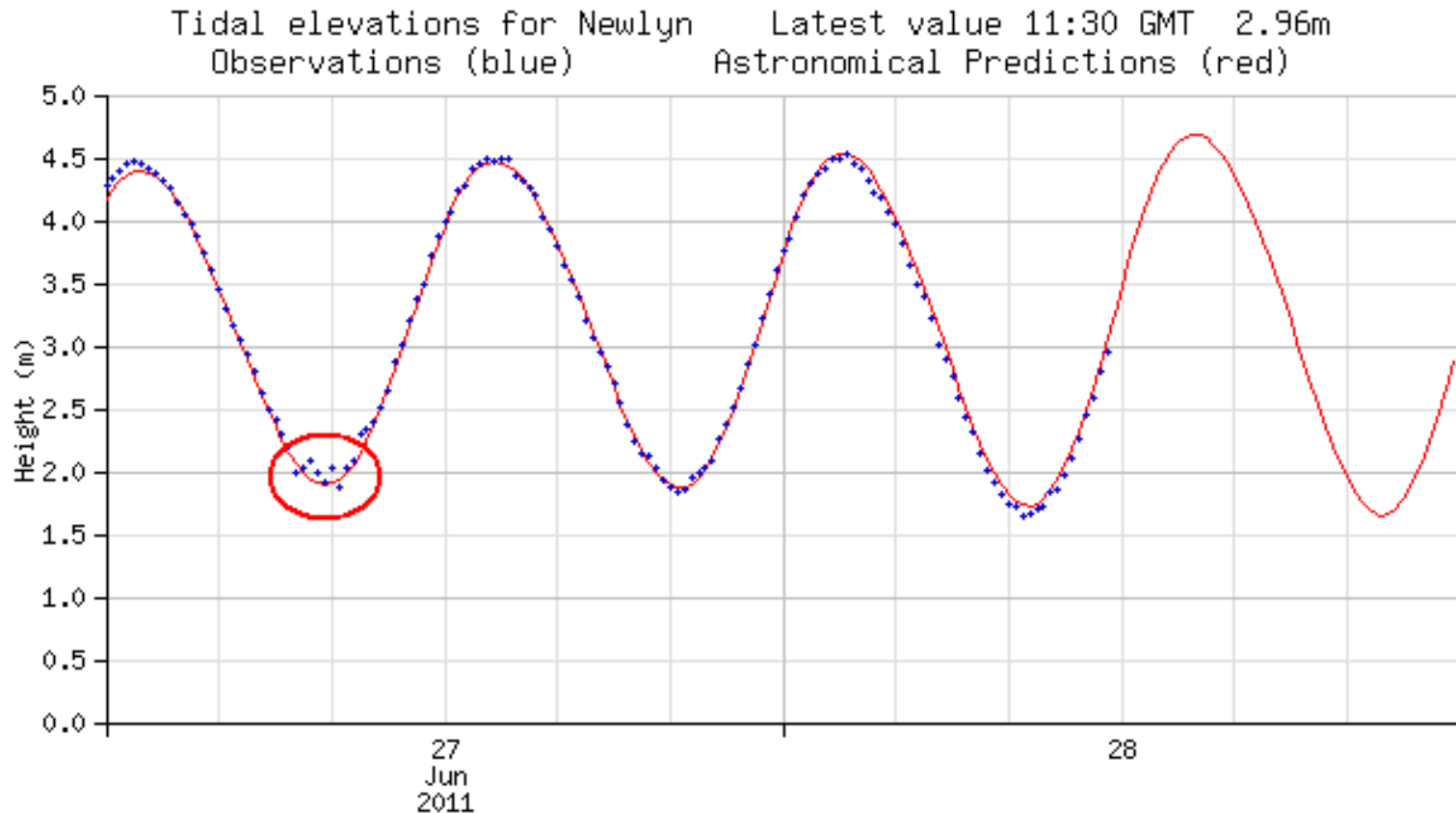
“It was surreal and I couldn't believe what had happened. I had no idea what had caused it, but I didn't really want to hang about and find out.

The only time I'd ever heard of anything like it was hearing about tsunamis – so I jumped in my car and got out of there.”

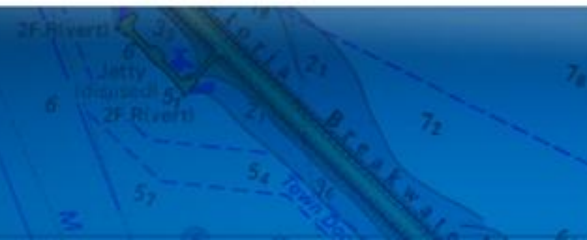


Tide Gauge Observations

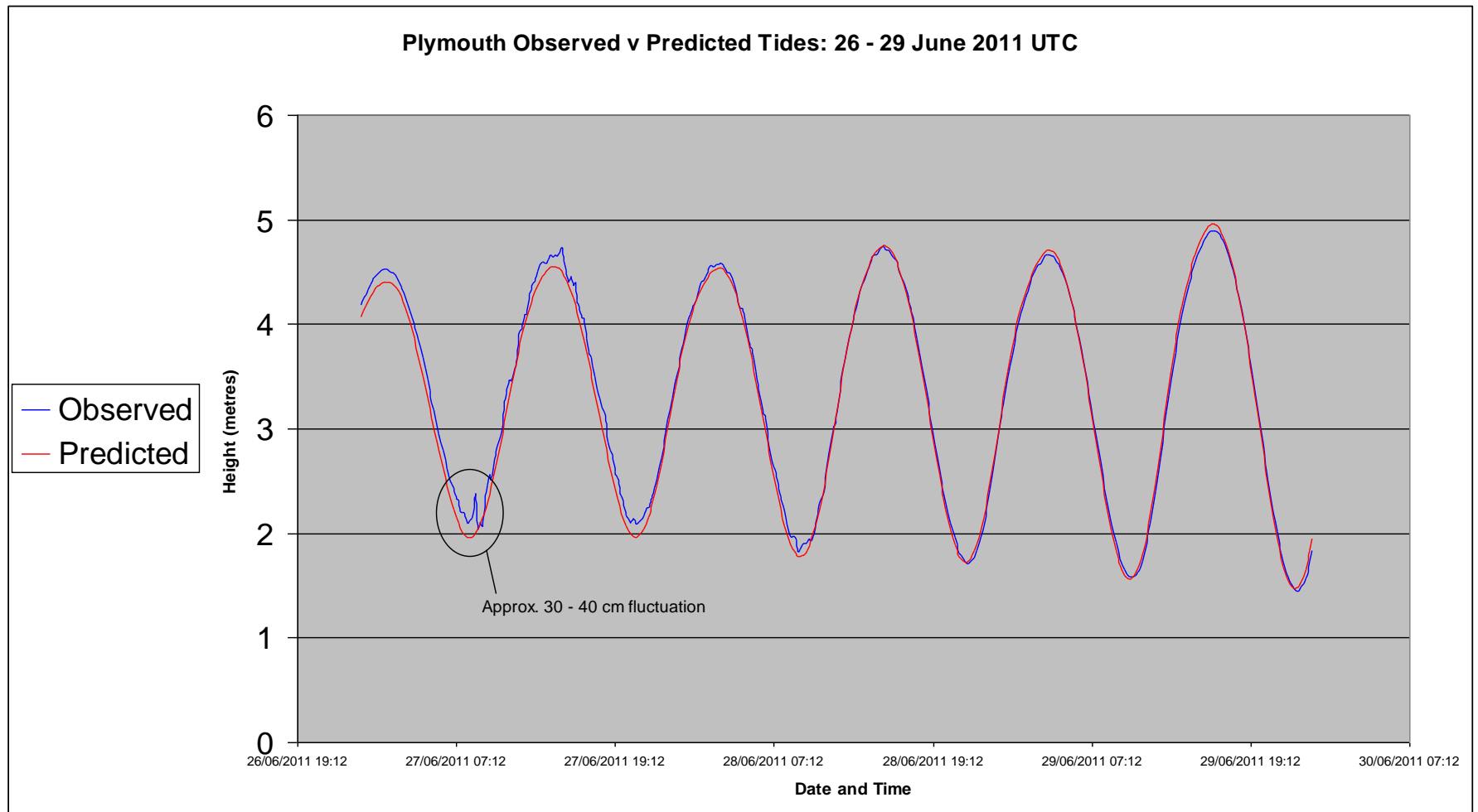
Newlyn; 20 – 30 cm water level fluctuations



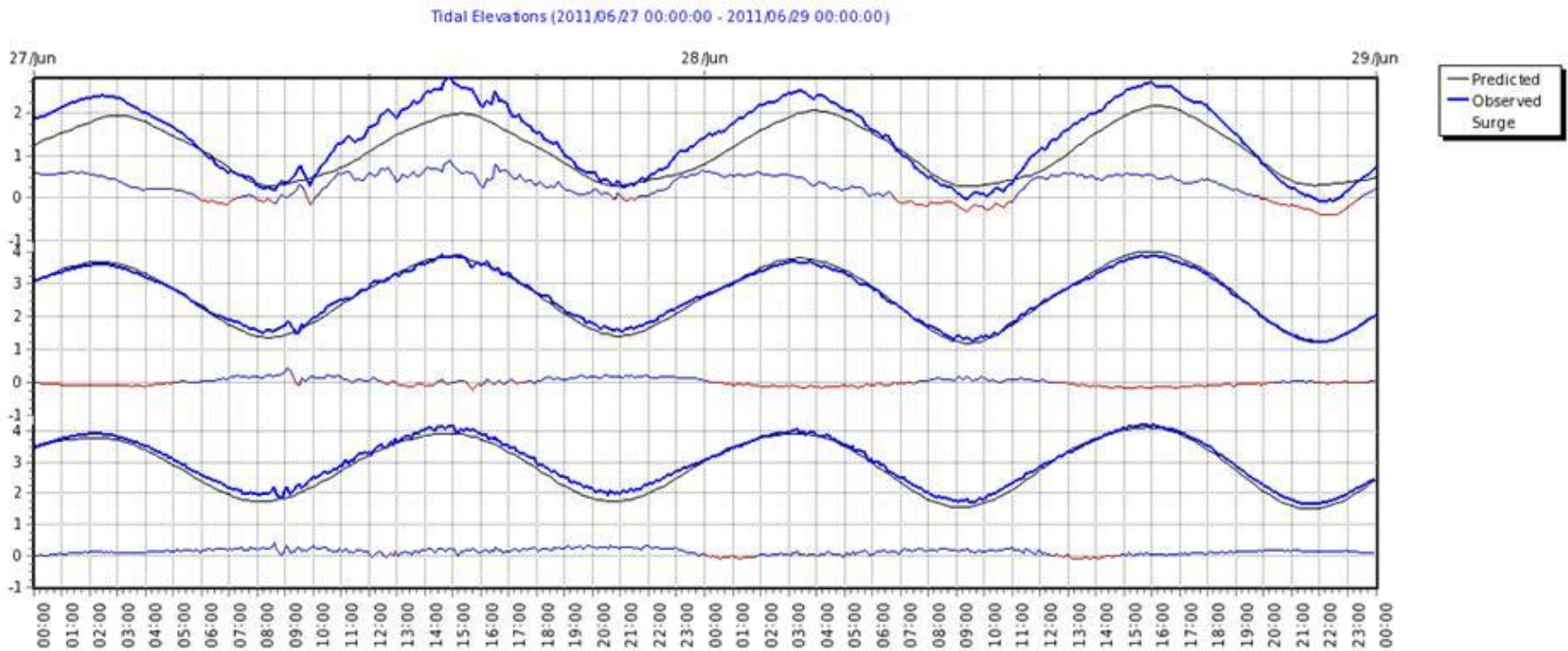
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Plymouth; 30 – 40cm water level fluctuations



River Dart; 30 – 40cm water level fluctuations



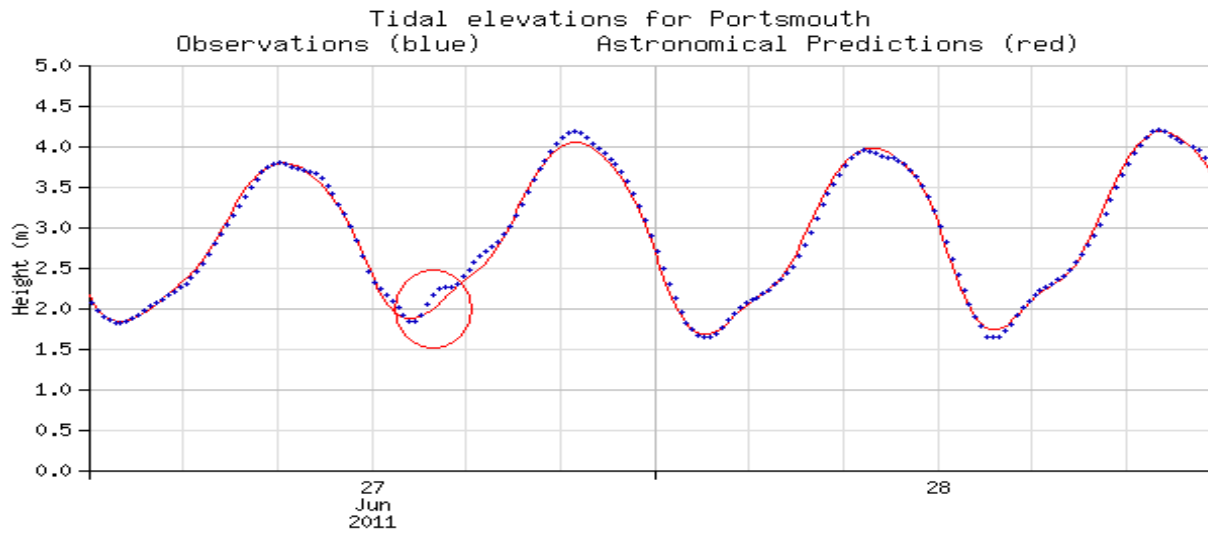
Top: Totnes (furthest up river)
Middle: Duncannon
Bottom: Dartmouth (river mouth)



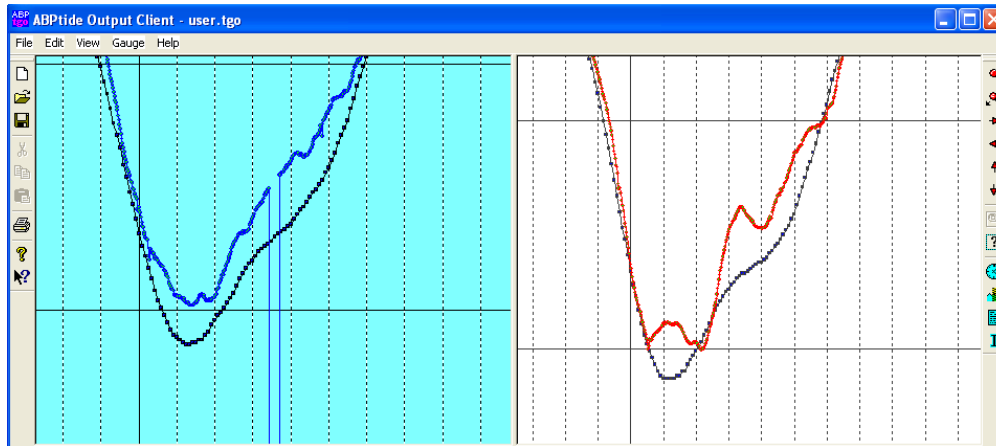
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Portsmouth



Southampton



Left: Calshot (towards the
“open-sea” end)

Right: further “up-river”

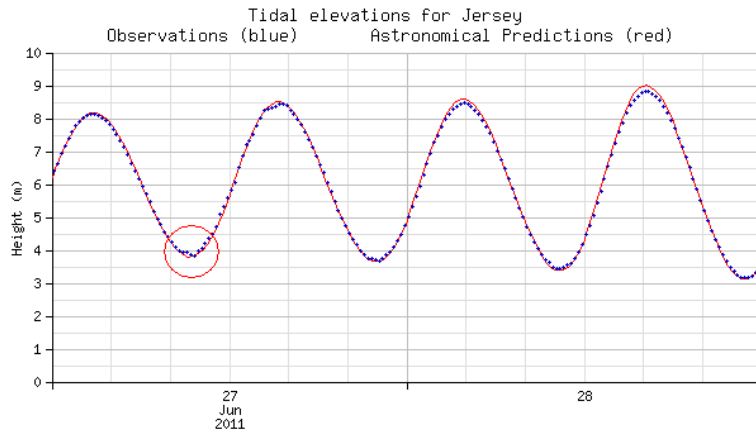
(Black line: predicted)



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St. Helier, Channel Islands



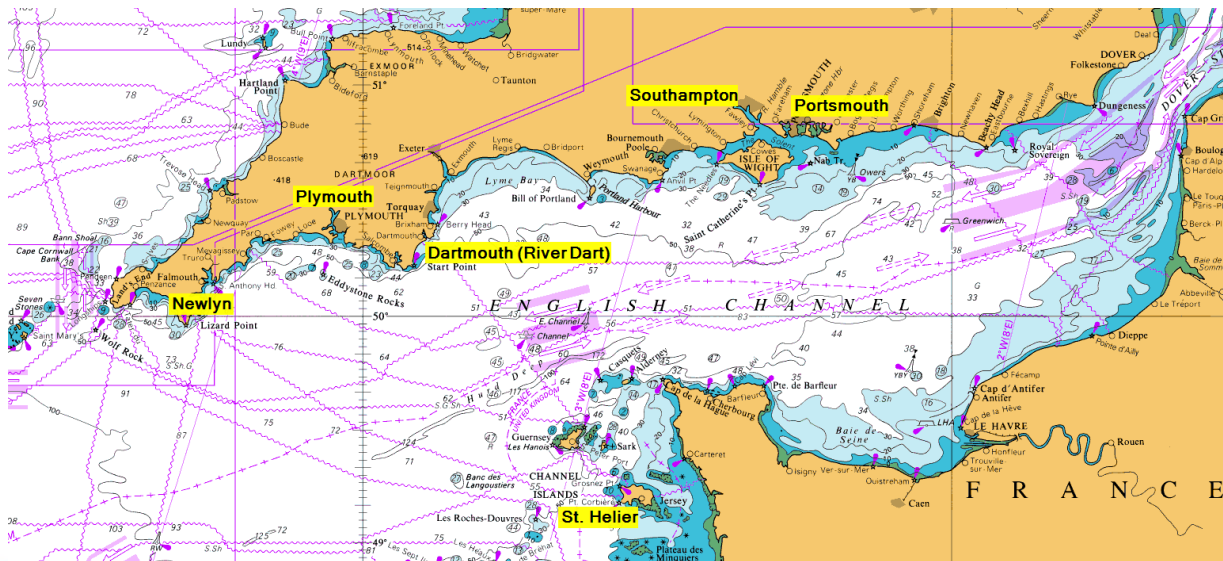
- French coast tidal stations also apparently recorded the event:

- Le Conquet at 0700 British Summer Time

- 5 hours later at St Jean de Luz a distance of 350 miles (~600 km).

- Also at Calais

Tide Gauge Sites, English Channel



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“Bore-like” tsunami surge on the River Yealm



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The Cause?

- Event has been investigated by the British Geological Survey [BGS]
- No seismic activity recorded or reported on the day
- Initial cause though to be submarine landslide on the south west continental slope
- Now thought that the cause is due to meteorological conditions



“Meteotsunami”

- Not fully understood
- Most likely caused by intense local weather pattern (“squall”)
- Cause a rapid ‘forcing’ downward motion of the water level and subsequent rebound
- Thunderstorms did occur on the day towards the east of the country (London)
- Witnesses at St. Michaels Mount described “static charged air” and “hair standing on end” which would support the theory.



Historical Evidence: UK South Coast

18 August 1892

- Yealm (Devon) and Fowey estuaries (Cornwall)
- Thunderstorms reported
- Newspaper report of “there was a rapid rise in the River Fowey as a great tidal wave, but this immediately subsided”

20 July 1929

- Folkestone (Kent) and Brighton (Sussex)
- Large tsunami-like wave struck areas busy with tourists
- 2 people drowned
- Sudden downpours of rain and high winds in some areas
- But in other areas the weather was clear and the unexpected wave was estimated to be about 3.5 and 6 m high respectively.
- Thought that the wave was caused by a squall-line travelling up the English Channel, coincident with thunderstorms



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References

- <http://www.bgs.ac.uk/research/highlights/2011/tsunamiSWEEngland2011.html?src=sfb>
- Haslett, S K, Mellor, H E and Bryant, E A. 2009. Meteotsunami hazard associated with summer thunderstorms in the United Kingdom. *Physics and Chemistry of the Earth, Parts A/B/C*, 34(17–18): 1016–1022.
- Davison, C. 1924. *A History of British Earthquakes*. Cambridge University Press, Cambridge.
- Douglas, C K M. 1929. The line-squall and channel wave of July 20th, 1929. *Meteorological Magazine* 64, 187–189.

