MEMO

To: The Files
Subject: SEISMIC WEATHER
Copy filed at: http://www.bosmin.com/SeismicWeather.pdf
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1. BACKGROUND

You may have heard arguments that tell us hot water from submarine activity does not reach the surface. A typical site posing this information is at http://www.science-at-school.com/4D/14folder/nested.html

However, the following work looks for a relationship between shallow marine seismic shocks possibly resulting in "hot sea" plumes and pronounced weather events. Two such events are now isolated and shown to have occurred in the Atlantic Ocean in 2005 and the North Pacific between 2001 and 2010.

This raises the question: If surface ocean heating happens spasmodically, why would it not result in higher and lower levels of CO_2 being recorded in the atmosphere, because the level of CO_2 in the atmosphere is directly linked to the temperature of the sea, as is known through Henry's gas Law? (See www.bosmin.com/HenrysLaw.pdf)

2. THEORY

Seismic records are created when slight movement or "tremors" occur in the Earth's mantel. There is a huge network of these recording stations (seismographs) around the world, and by comparing the various tremor recordings, it is possible to very accurately determine where the tremor originated - in surface location and depth. The recordings will also tell the strength of the tremor.

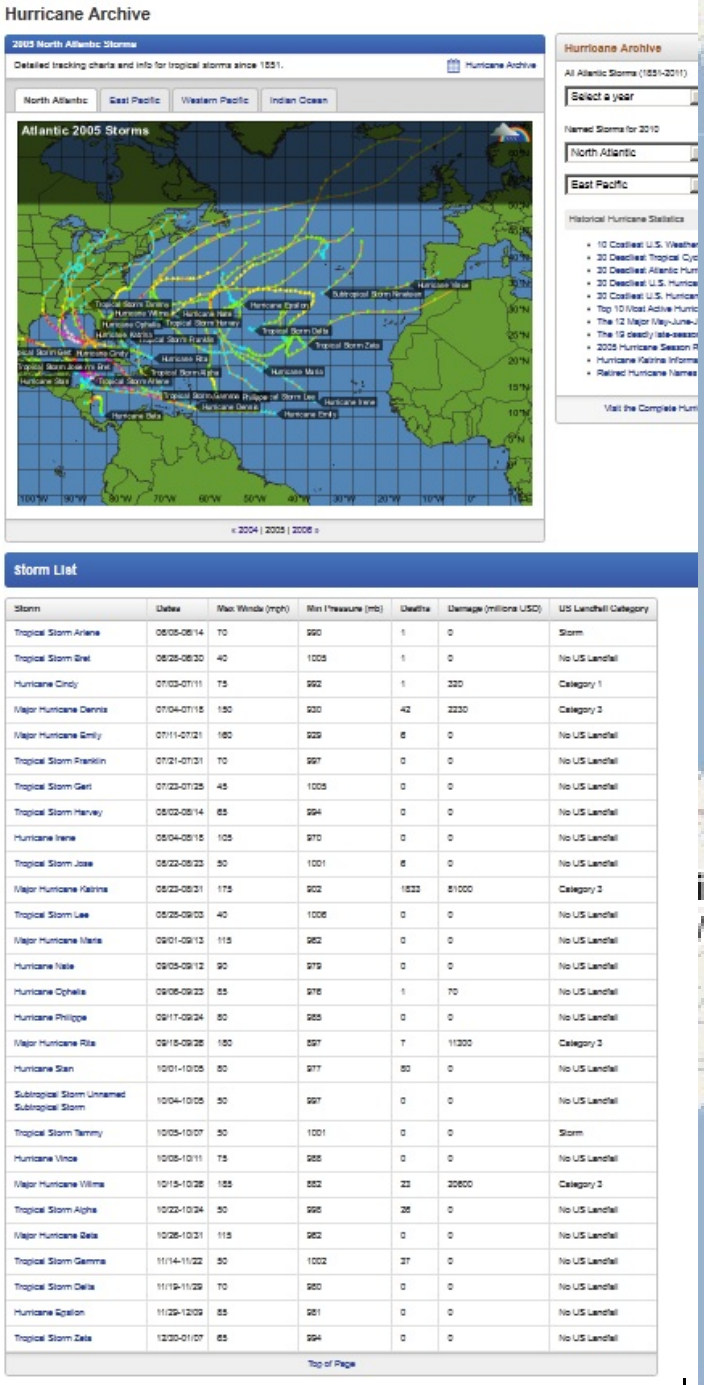
So what causes tremors? There are a variety of possible causes. Basically anything which shakes the Earth. This includes bombs, meteorite impacts, land slides, waves crashing on the shore, etc and more significantly movement along fault planes which join plates in the Earth's surface. Another significant cause of tremor is rising molten lava from below the earth's crust forcing its way up through cracks.

3. ANALYSIS

- It is well known that warmer sea surface temperatures are associated with increased storm activity.
- Submarine lava events and fault plane tremors liberate heat into the ocean.
- It is possible to track rising lava columns by measuring the level of shallow seismic (tremor) activity.
- This note looks for an association between shallow (<33km deep) submarine seismic activity and storms.

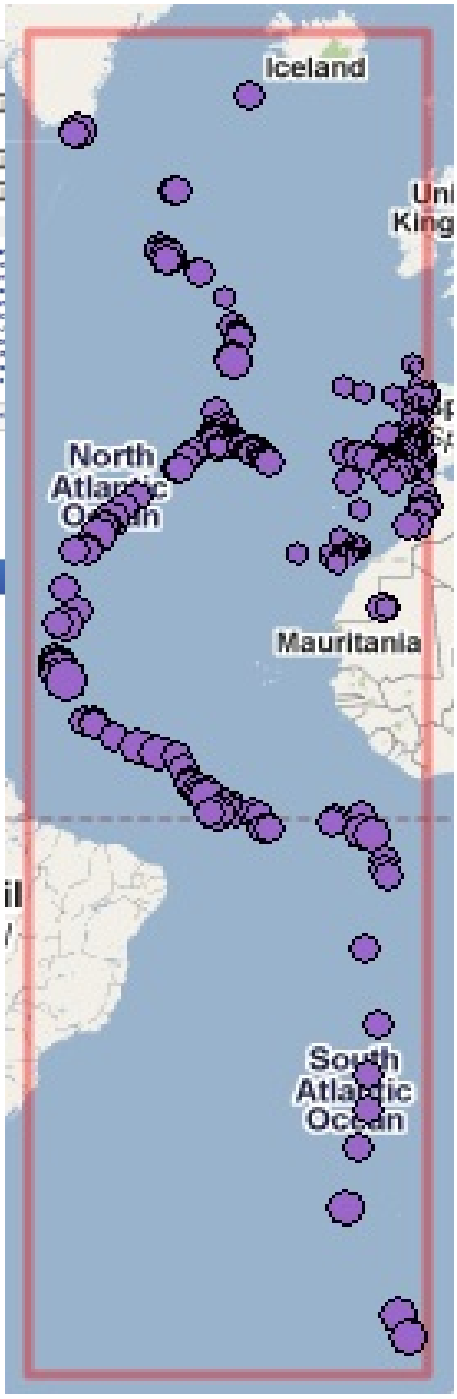
4. MID ATLANTIC RIDGE (MAR)

The Atlantic Ocean is divided by a spreading ridge (MAR) which runs between the Americas and Europe/Africa. The Atlantic Ocean was checked between 1979 and 2011 for a relationship between storm surges (Figure 1) and seismic activity along the Mid Atlantic Ridge (Figure 2).



Reference:
http://www.wunderground.com/hurricane/at2005.asp

Figure 1.



Reference:
http://www.iris.edu/servlet/eventserver/map.do

Figure 2.

5. RESULTS

Figure 3 records a time series of the same region and shows there is a gradual increase in seismic activity after 1995 accompanied by a general increase in storm activity.

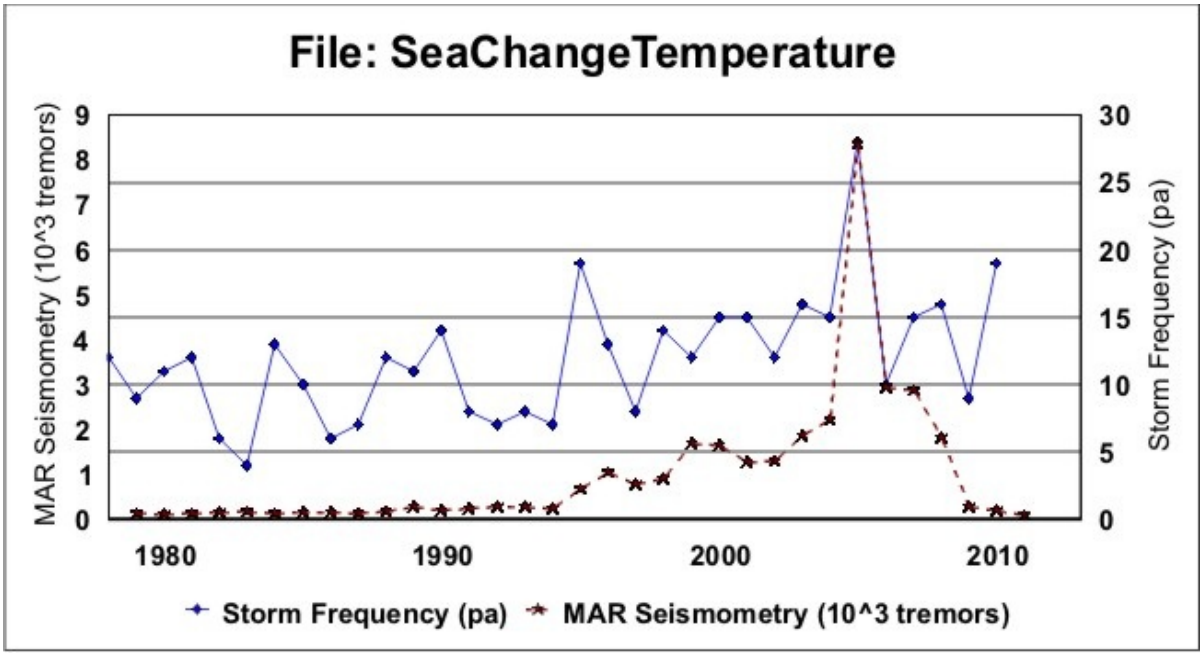


Figure 3.

The extreme events of 2005 indicates that a plume of heat was released into the ocean during that year of high seismic activity (8368 cw average 1018) which increased the incidence of surface storms (28 cw average 12).

6. THE GALLOPING GLACIER

In the case of the Alaskan Hubbard Glacier (Figure 4), the adjacent Pacific coast is where two of the world's more important plates meet, the North American and the Pacific Plates (Figure 5)

Figure 4.

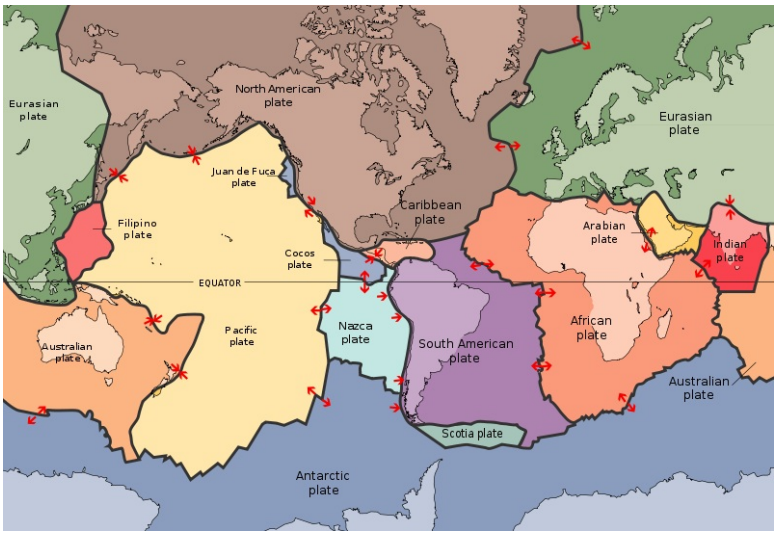


Figure 5.

As these plates move (or magma rises between them) it cause tremors which are shown as a series of circles on the map, Figure 6. Some circles are on the land while most of them report in lines below the sea surface. Only the shallow tremors (<30km depth) are selected to show on this map as they are the ones which most immediately affect the ocean.

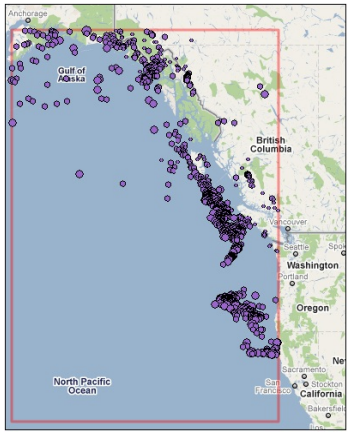


Figure 6.

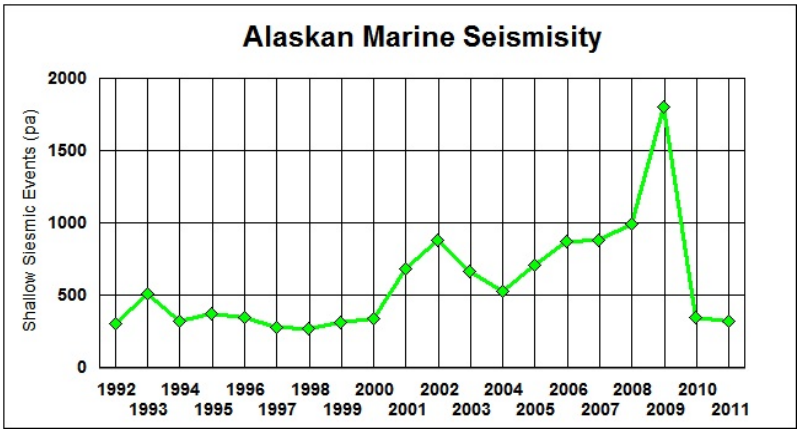


Figure 7.

The important point to remember here is that tremors record fault movement and/or lava flow events - which both result in heat being liberated into the ocean. Figure 7 shows increased activity from 2001 through 2009.

Once the hotter, less dense, sea water floats to the surface, it easily evaporates, and the Hubbard Glacier is directly down wind of that moisture laden air. As the air rises up over the Yukon, it deposits its snow load at the head of the glacier in such large quantities that it has earned the title of "The Galloping Glacier."

7. CONCLUSIONS

1) Submarine igneous activity does influence the climate cycle.
2) Small temperature changes in the oceans will also influence the level of carbon dioxide concentration in the atmosphere, as discussed at www.bosmin.com/SeaChange.pdf (pp18) and www.bosmin.com/HenrysLaw.pdf