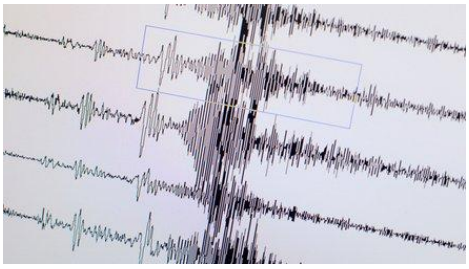
Japanese University Detects Atmospheric Precursor to 2011 Mega Quake

http://www.irishweatheronline.com/news/earth-science/geology/japanese-university-detects-atmospheric-precursor-to-2011-megaquake/42911.html
Oct 24, 2011

Note from Pastor Kevin Lea: Those who would like to research possible explanations for how the ionosphere can be affected minutes, hours, or days before a major earthquake should read Dr. Walt Brown's work on the origin of earth's radioactivity at: http://www.creationscience.com/onlinebook/Radioactivity.html



Seismic chart of the 11 March 2011 Japan earthquake

Most scientists believe that earthquakes are inherently unpredictable, and reports of various kinds of earthquake precursor signals have been difficult to verify. However, in a new study, a researcher from Hokkaido University in Sapporo has reported a possible ionospheric precursor to the devastating magnitude 9 Tohoku earthquake in Japan on 11 March, 2011.

Analysing data from the Japanese GPS network the team, Kosuke Heki from the University's Department of Natural History Sciences has detected an increase in the total electron content (TEC) in the ionosphere above the focal region of the earthquake beginning about 40 minutes before the quake.

The TEC enhancement reached about 8 percent above the background electron content. The increase in TEC was greatest above the earthquake epicentre and diminished with distance from the epicentre.

The researcher, whose report is published in the journal ***Geophysical Research Letters***, also analysed GPS records from previous earthquakes and found that similar ionospheric anomalies occurred before the 2010 magnitude 8.8 Chile earthquake, possibly the 2004 Sumatra magnitude 9.2 earthquake, and possibly the 1994 magnitude 8.3 Hokkaido earthquake. However, TEC enhancements were not seen before smaller earthquakes.

Although previous studies have shown that earthquakes could trigger atmospheric waves that travel upward and disturb the ionosphere, it is unclear how an ionospheric disturbance could occur before an earthquake begins. In addition, the ionosphere is highly variable, and solar storms can trigger large TEC changes, so non-earthquake causes of any TEC enhancement need to be ruled out.

Kosuke Heki states that, unlike previously suggested earthquake precursors, the TEC enhancement before the Tohoku quake had obvious spatial and temporal correlation between the quake and precursor signal as well as clear magnitude dependence.

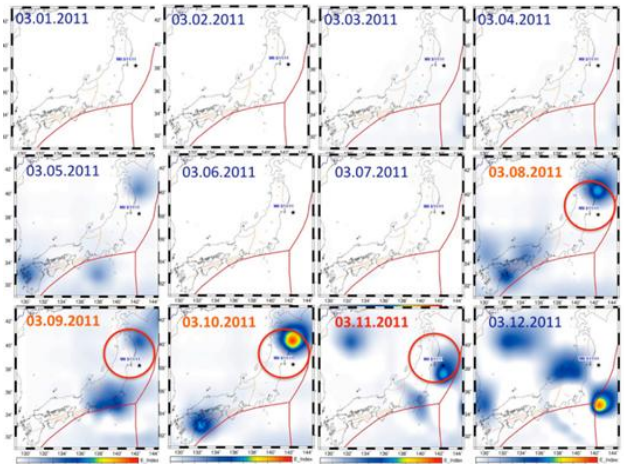
Scientists agree that further research is needed to verify that TEC enhancements can indeed be a precursor to large earthquakes.

The Physics arXiv Blog

Atmosphere Above Japan Heated Rapidly Before M9 Earthquake

http://www.technologyreview.com/blog/arxiv/26773/

Infrared emissions above the epicenter increased dramatically in the days before the devastating earthquake in Japan, say scientists.



05/18/2011. Geologists have long puzzled over anecdotal reports of strange atmospheric phenomena in the days before big earthquakes. But good data to back up these stories has been hard to come by.

In recent years, however, various teams have set up atmospheric monitoring stations in earthquake zones and a number of satellites are capable of sending back data about the state of the upper atmosphere and the ionosphere during an earthquake.

Last year, we looked at some fascinating data from the DEMETER spacecraft showing a significant increase in ultra-low frequency radio signals before the magnitude 7 Haiti earthquake in January 2010

Today, Dimitar Ouzounov at the NASA Goddard Space Flight Centre in Maryland and a few buddies present the data from the Great Tohoku earthquake which devastated Japan on 11 March. Their results, although preliminary, are eye-opening.

They say that before the M9 earthquake, the total electron content of the ionosphere increased dramatically over the epicentre, reaching a maximum three days before the quake struck.

At the same time, satellite observations showed a big increase in infrared emissions from above the epicentre, which peaked in the hours before the quake. In other words, the atmosphere was heating up.

These kinds of observations are consistent with an idea called the Lithosphere-Atmosphere-Ionosphere Coupling mechanism. The thinking is that in the days before an earthquake, the great stresses in a fault as it is about to give cause the releases large amounts of radon.

The radioactivity from this gas ionises the air on a large scale and this has a number of knock on effects. Since water molecules are attracted to ions in the air, ionisation triggers the large scale condensation of water.

But the process of condensation also releases heat and it is this that causes infrared emissions. "Our first results show that on March 8th a rapid increase of emitted infrared radiation was observed from the satellite data," say Ouzounov and co.

These emissions go on to effect the ionosphere and its total electron content.

It certainly makes sense that the lithosphere, atmosphere and ionosphere are coupled in a way that can be measured when one of them is perturbed. The question is to what extent the new evidence backs up this idea.

The Japan earthquake is the largest to have struck the island in modern times and will certainly turn out to be among the best studied. If good evidence of this relationship doesn't emerge from this data, other opportunities will be few and far between.

Ref: arxiv.org/abs/1105.2841: Atmosphere-Ionosphere Response to the M9 Tohoku Earthquake Revealed by Joined Satellite and Ground Observations. Preliminary Results.