Using Jet Stream's Precursors to Make Earthquake Forecast

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ABSTRACT

Using *Jet stream's* precursors, seismic locations are identified. Our research indicates that an interruption of the velocity flow lines occurs just above the epicenter approximately 3 months prior to *Earthquake* events. The duration of this phenomenon is approximately 6 – 12 hours. The average distance between epicenters and *Jet stream's* precursors is about 100 km. We explain these relationships while reviewing 8 successful *Earthquake* forecasts recently. For example:

M8.3 Chile EQ on 2015/09/16;
M6.6 Taiwan EQ on 2016/02/05;
M7.0 Kumamoto, Japan EQ on 2016/04/15;
M6.2 Italy EQ on 2016/08/24;
M7.1Alaska EQ on 2018/11/30;
M6.7 Chile EQ on 2019/01/20;
M6.3 Japan EQ on 2019/01/08;
M7.1 LA EQ on 2019/07/06.

According to the hypothesis of Lithosphere-Atmosphere-*Ionosphere* Coupling (LAIC), when the *Jet streams* pass over the active epicenter region, the faults release radioactive material (ionized gases) to the atmosphere, causing a series of physical and chemical reactions, resulting in temperature and pressure changes in the atmosphere, *Jet streams*, and electric field effects in the ionosphere. A *Solar Induction* mechanism affecting the Eastern and Western Pacific Rims where most of the *Earthquakes* were successfully forecast is explored in electrical terms with a proposed *Plasma Tectonics* model.

Keywords: *Jet stream, Ionosphere, Earthquake, Solar Induction, Plasma Tectonics*

1. INTRODUCTION

Forecasting earthquakes has been difficult using conventional tectonic models. Review of Case Studies by Wu, [1, 2, 3, 4] and Pulinets hypothesis reveal Lithosphere-Atmosphere-Ionosphere-Coupling (LAIC) [5] can be used for earthquake forecasting. The coupling explains some earthquake phenomena associated with an electromagnetic solar induction process affecting Earth's plasma tectonic circuits. The release of ionized gas to the atmosphere occurs coupled to a series of physical and chemical reactions, corresponding with temperature and pressure changes in the atmosphere, along with changes in the Jet streams behavior (Figs. 1 thru 12). The associated electric field effects in the ionosphere are coupled to the mantle tectonic plasma circuits and deeper magnetic fields of the Earth's core and poles. The induction process is theorized to work much like a common step down energy transformer process. Field aligned currents in north-south mantle circuits (Fig. 13) are activated during a Stellar Transformer solar induction process [6, 7] affecting Jetstream behavior in most of the Case Studies outlined below.

2. METHODOLOGY

The tool: The 300mb jet stream meteorological maps. The forecast procedure: 1.) Finding for that Jet stream's uniform velocity streamline broke up or the anterior of jet stream stay at the same point for a certain time on 300 mb satellite map (Fig. 1). 2.) Checking whether the disruption in the front top of jet stream is located on the fault or not. If the location of objective is on the fault, the earthquake could occur.

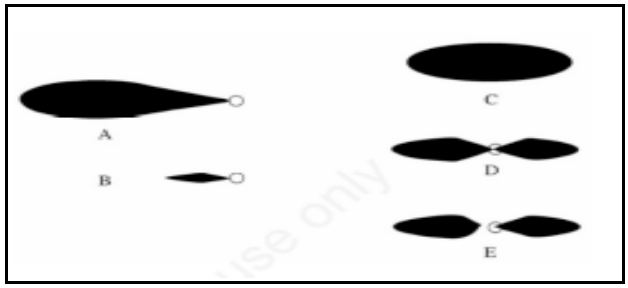

Fig. 1. Scheme of Two Types of Anomalous Jetstream Behavior. Consequent maps indicate the possible location of the future strong earthquake (circle). A and B is first type of precursor, when a front end of jet stream remains at the same place during 6 and more hours. Second type of precursor where C is inital state of jet stream; D is form of jet stream's area at next moment of time (intersection of wind speed contour at the point); E is division of jet stream in a certain time in two parts and its disappearance over the epicenter of preparing earthquake [1].

Example 1. 7.6M Pakistan Earthquake on 2005/10/08 (death toll more than 87300). Mixture of type1 and type2.

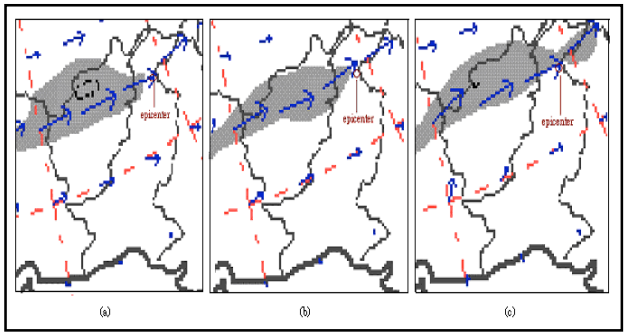

Fig 2. Type 1 & 2 Behavior. (a) Jet stream on 2005/09/19 at 00:00; (b) Jet stream on on 2005/9/19 06:00; (c) Jet stream on 2005/09/19 12:00 [2].

Example 2. 6.7M Bam earthquake in Iran in 2003/12/26 (Death toll = 26271) Type2.

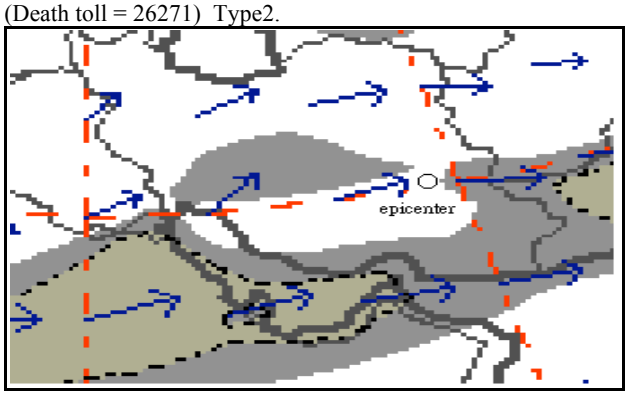

Fig. 3. Type 2. Jet stream's precursor on 2003/12/01 12:00 [3]. Predicted data:12/1 - 1/1 Eastern Iran (30.5N; 57.2E) M 6.5 > M 5.0. Actual data: 2003/12/26 Iran (29.01N; 58.27E) 33.0 M6.7.

Example 3. 9.0M Japan earthquake on 2011/03/11 (Death toll more than 18000) Type2.

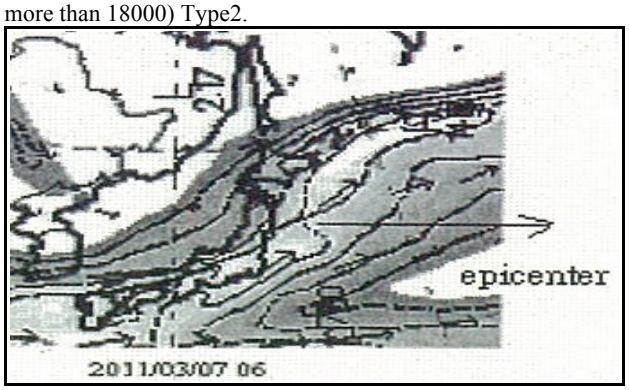

Fig. 4. Type 2. Jet stream's precursor on 2011/03/07 06:00. The abnormal map was sent to colleague at 2011/03/09 13:21 [4].

3. RESULTS

Earthquake forecast recently. **Case1:** M7.1, Ridgecrest earthquakes on 2019/07/06 (1 death).

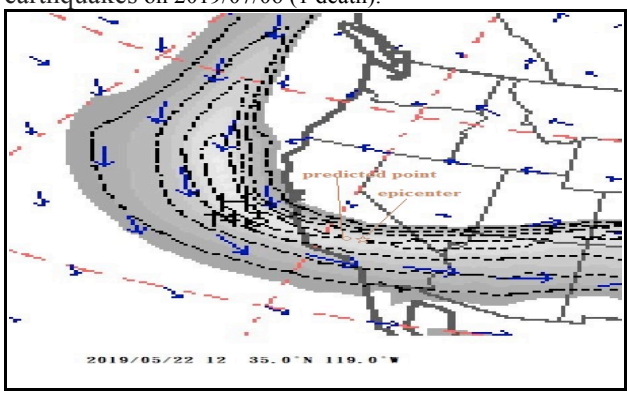

Fig. 5. Jetstream's Precursor on 2019/05/22 12:00. Forecast data: 2019/05/22~2019/08/22 near to L.A. 35.0N; 119.0W, M>6.0 posted on 2019/05/24. Actual data: M7.1 2019-07-06 03:19:53 (UTC) 35.770°N; 117.599°W, 8.0 km https://www.facebook.com/photo.php?fbid=2351411584910877&set=a.657516484300404&type=3&theater

Case 2: M8.3 Chile EQ on 2015/09/16 (16 deaths).

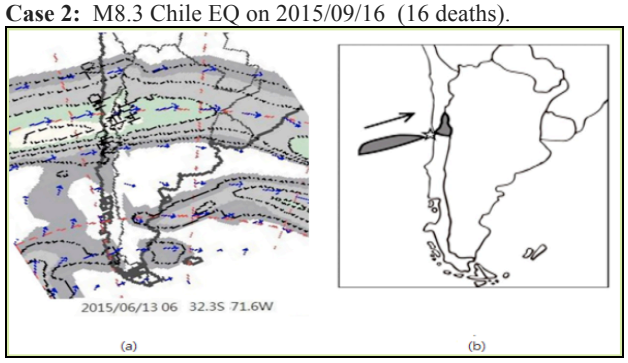

Fig. 6. Jetstream's Precursor on 2015/06/13 06:00. Forecast data: 2015/06/13~2015/07/13 Central Chile (32.3S, 71.6W), M>5.5 posted on 2019/05/24. Actual data: M8.3, 2015-09-16, 22:54:33 UTC, 31.570N, 71.654E, 25.0 km https://www.facebook.com/photo.php?fbid=933080650077318&set=pb.100001261760990.-2207520000.1443095759.&type=3&theater

Case 3: M6.6 Taiwan earthquake on 2016/02/05 (117 death, 551 injured).

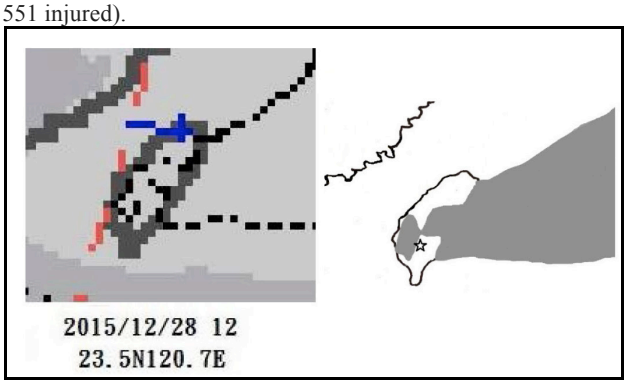

Fig. 7. Jetstream's Precursor on 2015/12/28 12:00 Forecast data: posted on 5 January 2016 2015/12/28~2016/01/28 western Taiwan (23.5N120.7E) M>6.0 Actual data: M6.6 2016-02-05 19:57:26 UTC 22.830N 120.625E 10.0 km https://www.facebook.com/photo.php?fbid=1032014433517272&set=pb.100001261760990.-2207520000.1462264459.&type=3&theater

Case 4: M7.0 Japan earthquake on 2016/04/15 (41death, 11missing, 3129 injured).

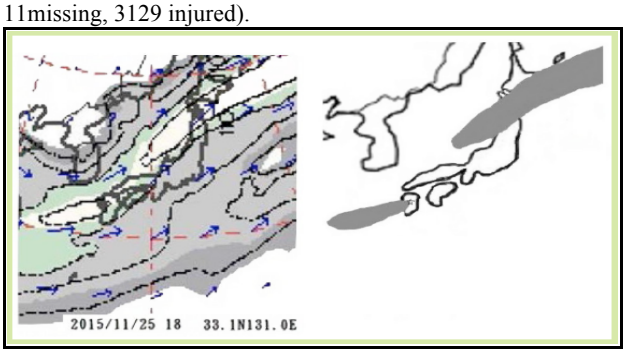

Fig. 8. Jetstream's Precursor on 2015/11/25 18:00. Forecast data: 2015/11/25~2015/12/25 Southern Japan (33.1N; 131.0E) M>6.0 posted on 2015/11/26. Actual events:
M6.4 2016-04-14 12:26:36 UTC 32.849N 130.635E 10.0 km
M7.3 2016-04-15 16:25:06 UTC 32.782N 130.726E 10.0 km
https://www.facebook.com/photo.php?fbid=1009833709068678&set=pb.100001261760990.-2207520000.1462264459.&type=3&theater

Case 5: M6.2 Italy EQ on 2016/08/24 (299 deaths).

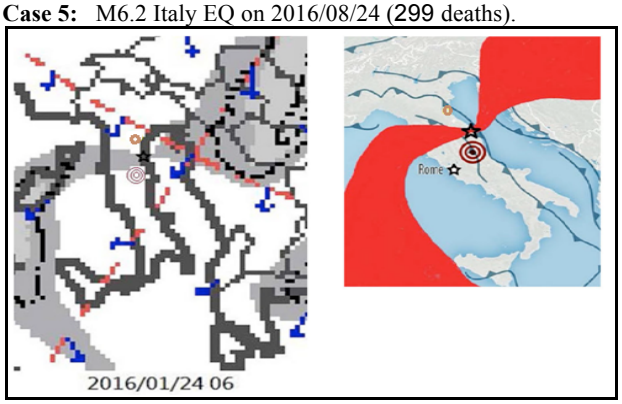

Fig.9. Jetstream's Precursor on 2016/01/24 06:00. Forecast data:2016/01/24~2016/02/24 Northern Italy(44.3N12.0E)M>6.0 posted on 2016/01/25. Actual events:M6.2 2016-08-24 01:36:33 (UTC) 42.714°N 13.172°E 10.0 km
https://www.facebook.com/photo.php?fbid=1042124835839565&set=pb.100001261760990.-2207520000.0.&type=3&theater

Case 6: M=7.0 Alaska EQ on 2018/11/30 (0 death).

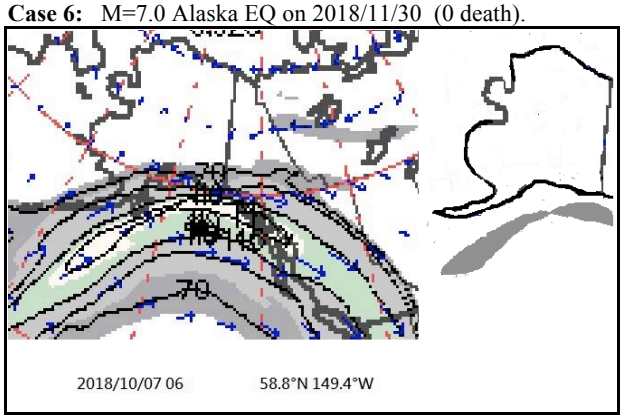

Fig. 10. Jetstream's Precursor on 2018/10/07 06:00. Forecast data: 2018/10/07~2018/12/07 (58.8N149.4W)M>6.0 posted on 2018/10/13. Actual data: M7.0 2018-11-30 17:29:28 (UTC)61.340°N 149.937°W40.9 km
https://www.facebook.com/photo.php?fbid=2020945884624117&set=a.657516484300404&type=3&theater

Case 7: M6.7 Chile EQ on 2019/01/20 (2 deaths).

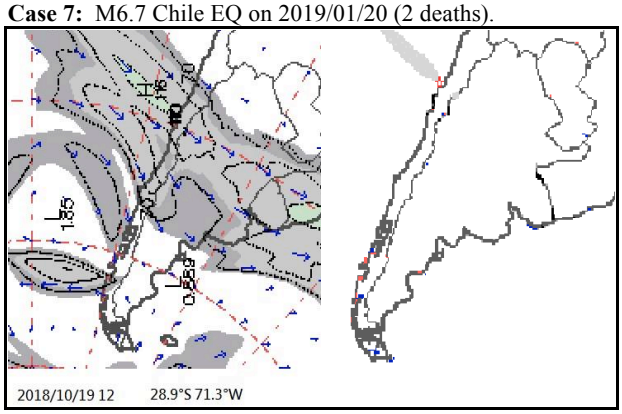

Fig. 11. Jetstream's Precursor on 2018/10/19 12:00. Forecast data: 2018/10/19~2018/12/19 Chile(28.9S71.3W)M>6.5 posted on 2018/10/20 Actual: M6.7 2019-01-20 01:32:52 (UTC) 30.040N 71.382W 63.0 km
https://www.facebook.com/photo.php?fbid=2030925946959444&set=pb.100001261760990.-2207520000.0.&type=3&theater

Case 8: M6.3 Japan EQ on 2019/01/08 (0 deaths).

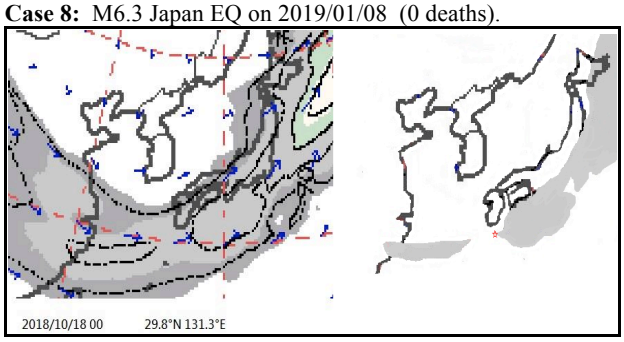

Fig. 12. Jetstream's Precursor on 2018/10/18 00:00. Forecast data: 2018/10/18~2018/12/18 (29.8N131.3E)M>6.0 posted on 2018/10/20. Actual event: M6.3 2019-01-08 12:39:31 (UTC) (30.593N 131.037E) 35.0 km
https://www.facebook.com/photo.php?fbid=2030336613685044&set=pb.100001261760990.-2207520000.0.&type=3&theater

Results from Jetstream analysis in Figs. 1 -12 exhibit the techniques used to develop forecasts based on Jetstream behavior. These forecasts are broadcast via email to a group of IEVPC Associate Scientist. The larger group uses a variety of earthquake analysis methods discussed in published papers (See: http://ievpc.org/earthquake-papers.html) independently cross correlating their data looking for improvements for their various forecasting methodologies. Wu [1, 2, 3, 4] has consistently forecast earthquakes within a 3 month window with fairly accurate magnitudes and generally within the ballpark on geographic locations, i.e. within 0.5 to 1 degree of the geographic lattitude/longitude positions. While these forecasts are generally limited to earthquakes associated with Earth's large global axial induction circuits [6], understanding the links to solar activity and historically mapping the global patterns and implementing Electromagnetic (EM) monitoring techniques, should eventually lead to more accurate and useful forecasts for most earthquakes driven by induction processes. A larger global effort involving govenrment agencies and civil authorites is necessary to implement these forecasting improvents.

4. SOLAR INDUCTION CIRCUITS

Jetstream behavior changes from zonal to meridional patterns from Lithosphere-Atmosphere-Ionosphere-Coupling (LAIC) [5] triggered by a solar inducton process along circuits outlined by mantle gravity signatures from GRACE Geodesy satellite data (Fig. 13).

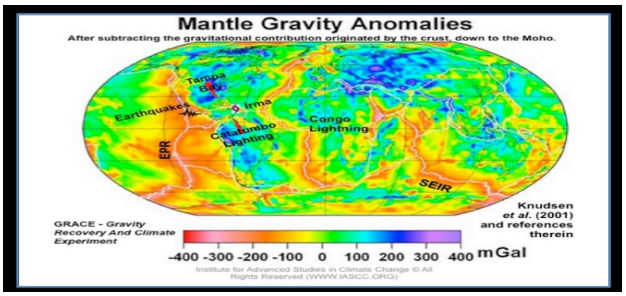

Fig. 13. Mantle Gravity Anomalies from GRACE satellite mission data [8] indicate East Pacific Rise (EPR) polar and continental circuit connections to Catatumbo, Tampa Bay *Lightning* anomalies, and Southeast Indian Rise (SEIR) connections to the African Rift/Congo global lighting anomalies.

Lightning hotspot anomalies exist where mantle circuits in Fig. 13, interfinger beneath the continents and Jetsteam patterns shift directly over these mantle induction circuits [6]. Earth's axial dipole induction effects of the poloidal **(E)** electric field primarily induce energy into polar connected North-South circuits of the Mid-Ocean Ridges (MORs), Western Pacific Rim, and inner core [7]. In the 8 Case Studies above, earthquakes in Chile, Los Angeles (LA), and Alaska are linked to plasma tectonic induction affects along the N-S East Pacific Rise (EPR) and it's extension into the North Amrican continent north through Alaska. The earthquakes in Japan and Tiawain are linked to Western Pacific Rim tectonic induction affects, while the earthquake in Italy is linked to Mediterranean and African Rift tectoinc circuits influenced by MOR's in the Indian Ocean, primarily links to the South East Indian Ridge (SEIR).

Solar – Lightning - Earthquake – Jetstream Links

Prediction for M ≥ 6.0 earthquake epicenters results in less than 70 km deviation, using shock wave jet stream precursor method determined by Wu. (Patent -1999). The recent Case Study in Fig. 5, forecast the 2019 July 4th earthquake near Los Angeles and was email broadcast by Wu as outlined below on Facebook.

This is prediction message for southern CA EQ predicted data: 2019/05/22~2019/08/22 near to L.A. (35.0N119.0W) M > 6.5 Posted on 2019/05/24.[1]

Best Regards, Hong-Chun Wu

Actual earthquake data: M6.4 2019-07-04 17:33:49 (UTC) 35.705°N 117.506°W 10.7 km

Ben Davidson reported in his daily 05 July 2019 pod-cast the relationships in Fig. 14, the day after the earthquake (mid-inset) showing the coronal hole configuration (left inset) and corresponding lightning (right inset) on the U.S. east coast.

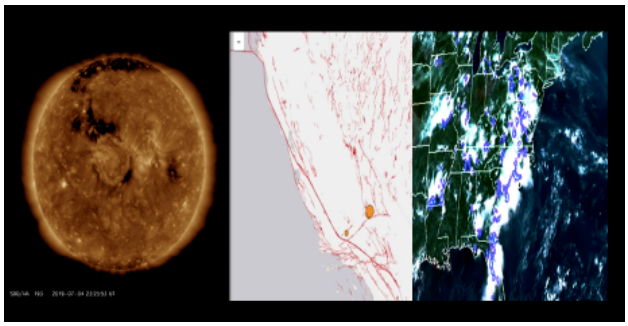

Fig. 14. Jet Stream Anomaly Forecast (upper**)** Wu used on 22 May 2019 to forecast the July 4th earthquake near L.A. (Below Left to Right) Coronal Hole Configuration, Fault Zone with Earthquake, and East Coast Lightning in Ben Davidson's Suspicious 0bservers, 05 July, 2019, Daily 5min Broadcast. https://suspicious0bservers.org/ [9].

The relationships between the solar induction affects, coronal holes, lightning, earthquakes and Jet streams are complex, but can be understood in terms of an induction energy transfer between transformer circuits on the Earth and Sun, manifest on Earth as charging and discharging relationships between lightning and earthquakes [6, 7].

[1] https://www.facebook.com/photo.php?fbid=2351411584910877&set=a.657516484300404&type=3&theater

5. CONCLUSION

Jetstream precursors may indentify the location of M > 6.0 earthquakes within less than 100km, however the time window of most forecasts was about 3 months [1, 2, 3, 4]. The shock wave hypothesis is related to Lithosphere-Atmosphere-Ionosphere-Coupling (LAIC), and a corresponding release of radioactive material (ionized gases) to the atmosphere [5]. For example, ionization of air produced by an increase emanation of radon at epicenter creates latent heat release along with a series of physical and chemical reactions corresponding with atmospheric temperature, and Jet stream pressure changes. Solar induction affects on tectonic plasma circuits in the Pacific and Indian Ocean Basins may correlate with these ionization events and electrical field affects [6, 7] such as lightning at other locales. While these forecasts are generally limited to earthquakes associated with Earth's large global axial induction circuits, understanding the links to solar activity and historically mapping the other global data patterns should lead to more accurate and useful forecasts. Wu's use of these short to medium-term Jetstream precursors is currently one of the most reliable forecasting techniques known to IEVPC. A larger global effort involving govenrment agencies and civil authorites is necessary to implement these forecasting improvents.

6. REFERENCES

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