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TITLE: Validating of Atmospheric Signals Associated with some of the Major Earthquakes in Asia (2003-2009) Ouzounov,

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ABSTRACT: The recent catastrophic earthquake in Haiti (January 2010) has provided and renewed interest in the important question of the existence of precursory signals related to strong earthquakes. Latest studies (VESTO workshop in Japan 2009) have shown that there were precursory atmospheric signals observed on the ground and in space associated with several recent earthquakes. The major question, still widely debated in the scientific community is whether such signals systematically precede major earthquakes. To address this problem we have started to validate the anomalous atmospheric signals during the occurrence of large earthquakes. Our approach is based on integration analysis of several physical and environmental parameters (thermal infrared radiation, electron concentration in the ionosphere, Radon/ ion activities, air temperature and seismicity) that were found to be associated with earthquakes. We performed hind-cast detection over three different regions with high seismicity- Taiwan, Japan and Kamchatka for the period of 2003-2009. We are using existing thermal satellite data (Aqua and POES); in situ atmospheric data (NOAA/NCEP); and ionospheric variability data (GPS/TEC and DEMETER). The first part of this validation included 42 major earthquakes ($M > 5.9$): 10 events in Taiwan, 15 events in Japan, 15 events in Kamchatka and four most recent events for M8.0 Wenchuan earthquake (May 2008) in China and M7.9 Samoa earthquakes (Sep 2009). Our initial results suggest a systematic appearance of atmospheric anomalies near the epicentral area, 1 to 5 days prior to the largest earthquakes, that could be explained by a coupling process between the observed physical parameters, and the earthquake preparation processes.