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The Ionospheric disturbances observed prior to/during Sumatra tsunami and their possible association with the lithosphere-Atmosphere-Ionosphere coupling

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In this work, the results from CHAMP satellite measurements of ionospheric density and electromagnetic disturbances registered before and during Sumatra Tsunami (26 Dec 2004, 00:58:53 UT, Mw=9.1, 3.31N, 95.85E) will be presented. In the first step, disturbances registered during the tsunami are examined. In particular, their time-spatial scale and spectral distributions are studied. Knowing these aspects, similar features, though in much reduced magnitudes and possibly in much slower time-scale, are searched in the satellite data prior to the tsunami. In this way, we may be able to find the disturbances which may be possibly associated with pre-tsunami activities. Based on the Lithosphere-Atmosphere-Ionosphere coupling mechanism, possible excitation of Acoustic gravity waves in the atmosphere and subsequent coupling with the ionosphere are also studied using the numerical simulation of acoustic gravity waves in the atmosphere and the hydro-magnetic simulation of ionosphere.