



Possible generation mechanisms of the compressional ULF mode at low altitudes.

E. Fedorov (1), V. Pilipenko (1), B. Heilig (2), M.J. Engebretson (3), and N. Yagova (1).

(1) Institute of the Earth Physics, RAS, Bolshaya Gruzinskaya 10, Moscow, Russia, (2) Eotvos Lorand Geophysical Institute, Tihany, H-8237 Hungary, (3) Augsburg College, Minneapolis, MN (ENFedorov1@yandex.ru)..

The recent the low-orbiting observations at satellites with high-accuracy magnetic measurements (Orsted, CHAMP, ST-5) provided a detailed picture of the Pc3 wave structure in the topside ionosphere. The observations from space were compared to recordings of the ground based array. Pc3 waves were detected very clearly in the compressional component of the satellite magnetic field data, whereas on the ground, their signature was found in the H component. The following possibilities of the ULF compressional disturbance excitation are considered:

- the incident Alfvén wave upon interaction with the anisotropically conducting ionosphere generates an evanescent fast compressional mode;
- the transportation of the ULF wave energy from a distant source to the ionosphere predominantly occurs by a fast compressional mode.

We estimate quantitatively the expected relationship between the Pc3 wave magnetic components above the ionosphere and on the ground produced by different mechanisms. The results of this model are applied to the interpretation of the satellite observations of Pc3 waves in the upper ionosphere and by mid-latitude ground stations.