



The effect of the ionosphere on VLF wave propagation by LEO (Demeter and Compass) satellite measurements

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The effect of the ionosphere on the VLF electromagnetic wave is an important part of the whistler propagation. VLF broadband data recording have been conducted on board of LEO satellites (Demeter, Compass-SAS2) and simultaneously on ground stations (Tihany, Nagycenk in Hungary). Whistlers selected from synchronic data set were analyzed with high accuracy applying our matched filtering technique developed previously for signal analysis. The comparison of the detailed fine structure of the whistlers measured on board and on the ground made it possible to select corresponding impulse pairs propagated across the ionosphere. The differences between the fine structure of signals with the same origin measured on board and on the ground station can be resulted by the effects of the ionosphere by wave medium interactions.

References: Ferencz Cs., Ferencz O. E., Hamar D. and Lichtenberger, J., (2001) Whistler Phenomena, Short Impulse Propagation; Kluwer Academic Publisher, ISBN 0-7923-6995-5, Netherlands Lichtenberger, J., Hamar D. and Ferencz Cs.,(2003) Methods for analyzing the structure and propagation characteristics of whistlers, in: Very Low Frequency (VLF) Phenomena, Narosa Publishing House, New Delhi, p. 88-107.