

SAIP 2011



Contribution ID : 75

Daytime modeling of VLF radio waves over land and sea, comparison to DEMETER satellite data.

Thursday 14 Jul 2011 at 17:00 (02h00')

Content :

Very Low Frequency (VLF) radio waves travel with little attenuation in the Earth-ionosphere waveguide. The waveguide propagation conditions are determined by a variety of factors including the surface of the Earth and the free electron density profile. Perturbations of the lower ionosphere modify the waveguide and the propagation conditions in it. A model based on Wait's mode theory is developed and used to investigate the propagation of VLF radio waves under different conditions. As the VLF radio waves reflect off the lower ionosphere, a portion of the energy leaks up into space, leaving a 'fingerprint' of the modal interference pattern of the waveguide modes. This idea is used to test the validity of the model by comparing simulation results with satellite data from DEMETER taken over the NWC transmitter in North-West Australia.

Level (Hons, MSc, PhD, other)? :

Msc

Consider for a student award (Yes / No)? :

Yes

Short Paper :

Yes

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