



Ionospheric response to seismic events and gravity wave impulses

R. Marchand (1,2) and J.-J. Berthelier (1)

(1) CETP, France, (2) University of Alberta, Canada

A model is presented to account for gravity waves resulting from seismic events, and assess their effect on Earth ionosphere. For simplicity, gravity waves associated with seismic activity are assumed to lead to given relative perturbations in atmospheric neutral density rising vertically at the local sound speed. The perturbation is assumed to have a Gaussian profile in latitude and longitude, with a half width of approximately 3° . The distribution of the perturbation in height is also assumed to be Gaussian, with a half width of 60km , corresponding to a pulse duration of approximately 200s . Computer simulations of the ionosphere are made with a modified version of the *sami2* code (Huba, et al. JGR 2000). This model is used to calculate perturbations in physical quantities such as the density and temperature of different plasma species, available from the in situ DEMETER measurements. These perturbations, in turn, are compared with the natural variability in DEMETER measurements in order to assess the feasibility of identifying the signature of seismic events from satellite observations.