



## **Ionospheric variability associated with seismic and magnetospheric activity**

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One of the main science goals of the DEMETER satellite is to investigate the relation between seismic activity and ionospheric disturbances. In order to make this connection and be able to effectively recognise seismic signatures from in situ ionospheric measurements, it is necessary to have a good understanding of the natural variability of the system, so as to be able to clearly distinguish between different sources of disturbances. In this study, we focus our attention on fluctuations in the density and temperature of different plasma species. The variability and effective dimensionality of fluctuations in actual measurements and in modelled results is analysed using a decomposition in empirical orthogonal functions (eof). Residual fluctuations; that is, bare signals minus their projections on the computed set of eofs are then considered as a possible means of identifying the origin and nature of the disturbances. In doing so, a modified version of the sami2 code (Huba, et al. 2000) is used, with prescribed sources of ionospheric perturbations. Two possible sources of disturbances are considered, having to do with large scale magnetospheric reconfiguration (storms or substorms), and atmospheric gravity waves associated with seismic events.