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SATELLITE CONSTELLATIONS OBSERVATORIES FOR GEOHAZARDS MONITORING AND  
EARLY WARNING APPLICATIONS

**Abstract**

In the last two decades, the effort of the scientific community to clarify the coupling between the lithosphere, the atmosphere, the ionosphere and the magnetosphere has greatly progressed thanks to the increasing number of data coming from networks of ground stations and satellites. This led to the discovery of several atmospheric and ionospheric anomalies directly related to seismic activities affecting both solid earth and the ocean surface, such as ionospheric plasma density perturbations triggered by atmospheric temperature and pressure changes in the form of gravity-acoustic waves. To effectively address these phenomena and develop early warning capabilities it is necessary to combine multitemporal observations from different sources both on earth and in space. I will review the results obtained from the analysis China Seismo-Electromagnetic Satellite (CSES-01) data, jointly with data from POES and ERA-5 satellites and ground based magnetic and GNSS observatories, which clarify the lithosphere-ionosphere coupling mechanisms. I will review the implications of these results on the perspectives of multipoint satellite observations of geohazards (tsunamis, earthquakes) for monitoring and early warning applications.