



## **A Review of Seismo-Electromagnetic Satellite Missions**

### **— Recent Results and Prospects —**

Tetsuya Kodama

*Earth Observation Research Center, Japan Aerospace Exploration Agency, Tsukuba, JAPAN*

Seismo-electromagnetic research by satellite observation started in Soviet Union in the 1980. After the collapse of USSR, France took over the initiative and its small satellite: DEMETER has already clarified, by statistical analysis of 9000 cases, that night-time attenuation of VLF range electromagnetic emission occurs 4 hours before earthquakes larger than M4.8 that would have required some 100 years for it by ground observation <sup>1)</sup>. Recently, satellite observation has followed in Ukraine, Italy, Taiwan, etc. and similar projects are being planned in China, Russia, UK, Mexico, Kazakhstan, India, Peru, South Korea and Iran <sup>2)</sup>.

The advantage of observation from space is that statistical research on the correlation between precursory phenomena and earthquakes is possible in a dramatically short-time compared with ground observation which is limited in the spatial coverage. Beyond this, the studies on the mechanism of observed phenomena will be facilitated by adoption of various instruments.

In other words, interdisciplinary research is necessary and helpful for pre-earthquake atmospheric/ionospheric phenomena. It is therefore a logical conclusion that we should conduct comprehensive observations of space-time variations of the lithosphere, atmosphere and ionosphere by satellite constellation <sup>3, 4)</sup>.

**Keywords:** Seismo-electromagnetics, Electron density, Electron temperature, GPS occultation, Small satellite constellation

### **References**

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