# The future direction of EMSEV, IUGG International Working Group

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EMSEV (Electromagnetic Studies of Earthquakes and Volcanoes) was established in 2001 as a mother foundation of IAGA, IAVCEI, and IASPEI under IUGG (International Union of Geodesy and Geophysics). At that time, many studies of electromagnetic precursory phenomena were reported in earthquake prediction research but never seemed to be recognized by the traditional seismology community. For this reason, the grassroots movement had been expanded for the necessity of promoting international research.

Therefore we urged the establishment of an organization to study earthquake prediction and volcanic eruption prediction based on the electromagnetics in IUGG. It was officially launched in 2001 and the first meeting was made during the IUGG Sapporo in 2003.

Professor emeritus of the University of Tokyo, Seiya Uyeda served as the first chair of EMSEV, then Dr. Jacques Zlotnicki of the French National Science Research Center took the chair till 2018. EMSEV meeting was held, which organizes every two years, in Potenza in Italy in 2018. During the meeting, Professor Toshiyasu Nagao was proposed to serve as the next chair. This proposal was approved through the discussion of the mailing list.

In the future EMSEV, we must show the statistical correlation between the ionospheric anomaly and the earthquake first, then we have to prove why the earthquake precursors phenomena appear in the ionosphere based on the lithosphere - atmosphere - ionosphere coupling hypothesis. In particular, from satellite observations, France launched the DEMETER satellite in 2004, showing the statistical significance of VLF band anomalies just before the earthquake. Inspired by this result, China launched the CSES (Chinese Seismo-Electromagnetic Satellite) in 2018.

We decided that the next meeting of EMSEV will be held in Taiwan in the fall of 2020.

Keywords: IUGG, EMSEV, Earthquake prediction