

## Recent activities of the IUGG-EMSEV working group and related scientific accomplishments and future direction of the research

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There had been many reports that electromagnetic anomalies were observed before impending large earthquakes for a long time. However, these reports were mostly ignored and the effectiveness of the electromagnetic method were not accepted by the general scientific community. Under such circumstances, Science and Technology Agency, Japan, in 1996, initiated Earthquake Frontier Research Programs just after the devastating Kobe Earthquake. The programs brought about a considerable progress in observational points of view. Similar activities were conducted in many countries also, so that a more continued international and interdisciplinary cooperative research was strongly wanted for further progress of seismo-electromagnetics.

To meet such an international momentum, IUGG established the Inter Association Working Group on Electromagnetic Studies of Earthquakes and Volcanoes (EMSEV) in April 2002 under the auspices of the three IUGG associations (IASPEI, IAVCEI and IAGA). The main purpose of EMSEV is a) To promote co-operation and collaboration between individuals and research groups, internationally, on observations and research into electric and magnetic effects associated with earthquakes and volcanoes and b) To promote the dissemination and discussion of relevant data and research results. The present EMSEV composition is: 35 working group members from 13 countries, 221 corresponding members (anyone is eligible by joining the EMSEV mailing list), S.Uyeda (chair), T. Nagao (secretary), J. Zlotnicki (IAGA), M. Johnston (IASPEI, IAVCEI) and Y.Ogawa (IAGA WC I-2).

After the initiation of the working group, following meetings/symposiums have been held. September 2002, Moscow, 1st business meeting (during MEEMSV 2002 meeting),

January 2003, Philippines, EMSEV school for developing country,

July 2003, IUGG-GA, Sapporo, EMSEV related session and business meeting

September 2004, France, joint hosting with MEEMSV 2004

July 2005, IAGA-GA, France, related session and business meeting

November 2005, EMSEV symposium and business meeting, Mexico

November 2006, EMSEV symposium and business meeting, India (planned).

As a part of the enlightening activity to the developing countries, EMSEV is introducing electromagnetic methods for monitoring the volcanic eruption in the Philippines. Concerning active fault monitoring, we have not yet made any practical field work at this moment. Near future we will select proper test sites for it.

Although many researchers are engaged with this field and publish many papers, seismo-electromagnetics is still not a main stream. We have to consider this point seriously. We think that some problems may exist on the researcher side. i. e., many of our papers are prepared not carefully enough to make understandable for non-experts, so that they tend to be rejected by journals and loose opportunity of being read widely, even when their contents may be worth publishing. The more fundamental problem is the lack of convincing generation and transmission mechanisms of electro-magnetic signals in a variety of frequencies. Furthermore, preseismic atmosphere/ionosphere anomalies are even harder for general readers to accept without plausible/understandable LAI coupling mechanism.

In short, we definitely have made a significant progress, but not to the extent of drawing enough interest of everyone. In the presentation, we would like to comment on how to overcome above mentioned points in the future investigation.