

**5th Meeting of IASPEI/IAGA/IAVCEI Inter-Association Working Group on
Electromagnetic Studies of Earthquakes and Volcanoes (EMSEV)**

September 8, Agelonde, La Londe les Maures France

Meeting started at 20:45 (Total Attendance – 31 people)

Participants:

EMSEV Bureau (Country Representatives):

Dumitru Stanica, Romania

Yoichi Sasai, Japan

Jacques Zlotnicki, France

Malcolm Johnston, USA

V. Spichak, Russia

V. Korepanov, Ukraine

J. Y. Liu, Taiwan

V. LaPenna, Italy

A. Meloni, Italy

M. Parrot, France

Sergy Pulinets, Mexico

B. Singh, India

Dumiyru Stanica, Romania

Toshiyasu Nagao, Japan

Seiya Uyeda, Japan

EMSEV Corresponding Members

Svetlana Byrdina, France

Vaclav Cerv, Czech ReP.

Gilda Currenti, Italy

M. Devi, India

Pyotr Djadkov, Russia

Y. Emoto, Japan

Sven Friedel, Switzerland

Katsumi Hattori, Japan

P. Kaporis, Greece

Toru Mogi, Japan

J. P. Makris, Greece

Toshunori Nishida, Japan

T. Ogawa, Japan/France

Dimitar Ouzounov, USA
Mikhail Shimelevich, Russia
Luciano Telesca, Italy

[1] Introduction and Background

This 3rd meeting of EMSEV was opened by Chairman Seiya Uyeda. where, following a general welcome and circulation of a attendance/email list, he summarized the primary purposes of EMSEV. These are to promote communication and mutual understanding between people working in electromagnetics (EM) under the umbrella of IUGG, IAGA, IASPEI and IAVCEI. A complete summary of objective and purposes of EMSEV is included in summaries of earlier meetings.

No new information was provided by the IAGA, IASPEI and IAVCEI liaison's other than to report that we are participating as equal and responsible working groups within these organizations. Funding is tight but we are able to get some support from all organizations.

[2] Present Status of EMSEV.

Nagao (Secretary) reported on the EMSEV membership and Web Page activity. He pointed out that we have two groups of members – Country Representatives restricted to about 35 people with about two representatives per country who hopefully reflect the distribution of countries working in this field and Corresponding Members that includes everyone else working actively in the EM field. Everyone is welcome. We now have 221 members representing 20 countries.

During the past year the WEB site has handled 142 email exchanges.

Messages can be submitted through

emsev@sml-z3.infoseek.co.jp

Text files only are handled at this time because of the worry about virus contamination in attachments. The web site can be found at

<http://yochi.iord.u-tokai.ac.jp>

Information other than text can be distributed through the EMSEV secretary (T. Nagao).

[3] Activity Report – 2003 and 2004.

3.1 23rd IUGG General Assembly, Sapporo Japan, 2003

At this meeting there were six related symposia with well over 200 contributions. EMSEV was well represented by member convenors at all of these symposia.

A special issue in *Surveys of Geophysics* should be edited (Editor in chief: Prof. Harinarayana Harry)

3.2 The 2nd EMSEV Business Meeting, Sapporo, Japan July 3 & 7, 2003

The report of this meeting is on the EMSEV Web page and was distributed in EMSEV#107

3.3 The First General Assembly of EGU, Nice, France, April 25-30, 2004

This meeting now exceeds the AGU in size. Three symposia were convened by EMSEV members with a total of 85 papers and posters accepted and presented.

3.4 Visit to International Research Center-Geodynamic Proving Ground in Bishkek, Kyrgys Republic.

Uyeda visited IRC - GPG in April, 2004 at the invitation of Director V. A. Zeigarnik. The center has conducted MHD current injection tests since the 1980's and is now conducting current injection of 600-800 Amps everyday for resistivity monitoring. They are finding pre-seismic resistivity changes and EQ triggering effects by electrical currents. tua@gdirc.ru

<http://www.gdirc.ru/irc>

Some concern was expressed about unexpected environmental effects.

3.5 1st International Workshop on Active Monitoring in the Solid Earth Geophysics (IWAMU04), June 30 - July 2, Mizunami City, Japan.

About 50 orals and 30 poster papers were presented on acoustic and electromagnetic active monitoring. WS was organized by Task Group for Active Monitoring (TGAM, M. Kumazawa, Chair), IASPEI and Japanese consortium of the Earth's Active Monitoring (JCEAM, H. Higashihara, chair). The concern of the WS is to get a detailed knowledge of the structure and the time change as well. EM monitoring methods should be involved soon. EMSEV related participants included Nagao and several others because of the importance of cooperation.

3.6 1st Annual Meeting of Asia-Oceania Geoscience Society (AOGS), Singapore, 5-9 July 2004.

A large new meeting was held with about 2000 attendees. The plan is to continue this meeting next year also in Singapore. This meeting could become the counterpart of

EGU in Europe. Uyeda delivered the 1st Distinguished Lecture "Earthquake prediction: The present status" emphasizing EM importance. EMSEV symposium: (IWG2) Earthquake prediction, Earthquake and Volcanic eruption, Electromagnetic Phenomena, Lithosphere - Atmosphere - Ionosphere Coupling. (Conveners: M. Hayakawa, J.Y. Liu, T. Nagao, B Singh and K Hattori)

3.7 3rd International Conference on Continental Earthquakes (III ICCE), - Mechanism, Prediction, Emergency Management & Insurance -, Beijing, July 12 - 14, 2004. Organized by China Earthquake Administration (CEA. Former CSB). This meeting was postponed from 2003 because of the SARS outbreak. Some 600 participants were present. EMSEV was represented by about eight people. Session 3 concerned Recent Large EQs in Asia-Pacific Region, and Uyeda, Ramesh Singh, Gokhberg and Balassanian made presentations.

3.8 35th COSPAR General Assembly, Paris, July 18 - 25, 2004. There was a half-day session on Early Warning of Natural Hazards Using Space Technology (Conveners R.P. Singh and David Halpern).

<http://www.copernicus.org/COSPAR/COSPAR.html>

EMSEV was represented by Parrot and others. Next meeting is planned for Beijing in 2007 with more emphasis on earth science.

3.9 Asian Pacific Radio Science Conference (AP-RASC), August 24-28, Qingdao, China, Special Session A: Seismo-Electromagnetics (Conveners: M. Hayakawa, RN. Jiao, Q. Huang)

<http://www.ciechina.org/ap-rasc>

About 200 participants attended the meeting. EMSEV was represented by Hattori. There was one EM session with 8 papers mostly on ionospheric effects of earthquakes.

3.10 IV International Workshop on Magnetic, Electric and electromagnetic Methods in Seismology and Volcanology (MEEMSV 2004), La Londe les Maures, France, 5-9 September 2004. (J. Zlotnicki, Chair of LOC).

A vote of thanks to Jacques Zlotnicki for an exceptional well organized meeting was passed by all present.

3.11 5th Asian Seismological Commission (ASC, IASPEI) General Assembly, 18-21, October, 2004, Yerevan, Armenia, organized by ASC, IASPEI (Serguei Balassanian, President) and Armenian Association of Seismology and Physics of the Earth (AASPE). Uyeda served as co-chairman of Intl. Adv. Com. and convener of

Session 5. Maria L. Bautista is also a member of Intl. Adv. Com. Good EM work is being done.

3.12 General Assembly of IAVCEI, Pucon, Chile, 14-16 November, 2004.

There are several EMSEV related symposium: (see EMSEV 00119, 00122).

(8e): Integrated Electromagnetic monitoring and EM tomography of volcanoes (Conveners; J. Zlotnicki, Y. Sasai and V. V. Spichak)

A small EMSEV meeting may be held there for the benefit of South American colleagues. (Zlotnicki, Sasai, Spichak, and?). Information on how to develop EM monitoring techniques could be provided but we have no budget for equipment.

<http://www.sernageomin.cl/iavcei/iavcei.html>

3.13 France-Japan Workshop on Geological Hazards (GeoHazards 2004),

Shizuoka, Japan, Dec. 1-4, 2004. In this bilateral meeting, Uyeda, Nagao, Sasai, Zlotnicki, and many other EMSEV related members are deeply involved.

For topics will be developed in relation with natural hazards: Seismology, Volcanology, Geomorphology and hydrology.

3.14 EM Induction workshop (IAGA Working Group I, Hyderabad, India, Oct. 18-23, 2004. Spichak will attend. The need for closer interaction with this group was emphasized. Some attempt should be made to contact and coordinate with the MT group. Perhaps a joint meeting might be in order.

3.15 AGU Fall Meeting, 13-17, December 2004, San Francisco (Abstract deadline 9 Sept. 2004), Convenors: D. Ouzounov and F. Freund have a session under Tectonophysics covering laboratory, remote sensing and space monitoring. 20 abstracts are submitted.

[4] Support. from IUGG bodies 2004:

- a) \$2,000 from IUGG for general activity (every year until 2007)
- b) \$1,500 from IUGG for MEEMSV in France
- c) \$3,000 from IUGG for Philippine field work
- d) \$1,000 from IASPEI
- e) \$ 700 from IAVCEI
- f) \$2,000 from IAGA

Total: \$10,200

We plan to use the money as follows: (Subject to adjustment if necessary):

- 1) \$2,500 for MEEMSV and EMSEV business meeting in France to assist participation of country-in-need and young scientists. (Zlonicki in charge)
- 2) \$3,000 for the Philippine field work as earmarked. (Sasai in charge)
- 3) \$1,700 for IAVCEI GA in Chile. (Zlotnicki in charge)
- 4) \$2,000 for IASPEI Asian Seismological Commission Mtg in Armenia. (Uyeda in charge)
- 5) \$1000: reserve

Total: \$10,200

Discussion of Support:

Some lively discussion ensued on how we might increase the EMSEV operating budget. Suggested options were:

[1] B. Singh suggested approaching some of the many countries with a serious earthquake and volcanic hazard problem. Direct discussion with Science and Technology Dept's might be fruitful.

[2] Approaching the United Nations. Possibilities exist in UN ~~UNESCO~~ which has a pool of experts on Hazards under IGOS (Integrated Global Observing Strategy). EMSEV could give some talks on EM methods related to natural hazards, and then proposed some expertise.

A workshop is organized every month during which some private companies are involved.

Dimitar Ouzounov is familiar with this group and could pass on a letter written perhaps by Uyeda. The group meets frequently in different parts of the world.

5) Publications

a) Proceedings

It was agreed that the Proceeding of this MEEMSV meeting in Agelonde should be published in either Annals of Geophysics or Elsevier publications such as PEPI. Annals of Geophysics (represented by Meloni) would not need a Special Editor and would choose reviewers as for normal submissions.

Authors provided tentative titles at the meeting. About 20 papers were proposed during MEEMSV meeting. The due date for submission is tentatively set for January 2005.

b) The Proceedings of the previous Moscow MEEMSV meeting have been published in *Annals of Geophysics* (vol 47, N1, Feb. 2004). Details were provided by Slava Spichak.

c) Recent Related publications.

The following is a list of recent related publications in the field of EM, earthquakes and volcanoes:

[1] *Physics and Chemistry of the Earth Special issue, "Seismo Electromagnetics and Related Phenomena"*,

Guest editors, M. Hayakawa, O.A. Molchanov, P. Biagi and F. Vallianatos

Parts A/B/C, Vol.29, issues 4-9, 2004 pp.287-65, consisting of 41 papers covering the topics of lithospheric emissions, seismo - atmospheric and - ionospheric perturbations, satellite observation of Earth's surface temperature, lithosphere - atmosphere-ionosphere coupling, etc

[2] Motoji Ikeya: *Earthquakes and Animals - from folk legends to science*, World Scientific, 2004.

[3] Pulinets, S., & K. Boyarchuk: *Ionosphere Precursors of Earthquakes*, 2004, 289pp. Springer IBSN 3540208399

[4] *Terrestrial, Atmospheric and Oceanic Sciences (TAO, Special Issue on Earthquake Precursors*, Vol. 15, No. 3, 2004 September. This volume contains [14 papers] on researches related to the integrated Search for Taiwan Earthquake Precursors (iSTEP). There are 7 contributions by international EMSEV members. <http://tao.gcc.ntu.edu.tw>

[5] Varotsos, P.: *Physics of Seismic Electric Signals*, Terrapub Tokyo, 2004 A monumental monograph on the physics of the VAN method, now at proof- reading stage.

6) Activity planned for near future (2005)

6-1.Philippine campaign

Following up the Manila Workshop in 2003, both EMSEV and PHIVOLCS are anxious to start monitoring work on Taal Volcano. Japanese proposal to JICA for this aim was not selected because the program had too research oriented for ODA. In 2004, French Embassy had very small budget for cooperation, but they will grant a flight ticket for the campaign. IUGG new initiative grant of \$3,000 was given to us. This is not a large

amount, but something worthwhile may be initiated. Through communication with Dr. Renato U. Solidum, Jr, PHIVOLCS Director, we now plan the following. Sasai and Zlotnicki will visit the Philippines in January 2005 with field devices to conduct, with Philippino scientists, self-potential, magnetic and rapid GPS surveys over the volcano. The results by themselves are expected to have considerable scientific values and will serve as necessary basic information for further monitoring. Magnetic and resistivity surveys are desirable but the possibility is only open now.

6-2 4th International Workshop on Seismo Electromagnetics (IWSE2005), Tokyo, 16- 17, March, 2005 (Chair; M. Hayakawa)

Abstract deadline 1, October, 2004.

<http://www.iwse.ee.uec.ac.jp>

6-3 2nd EGU General Meeting will be held in Vienna, Austria at about the same time as in 2004. EMSEV session similar to 2004 is scheduled.

<http://www.copernicus.org/EGU/ga/egu05/index.htm>

6-4 IAGA Scientific Assembly, Toulouse, France, 18 -29, July, 2005

EMSEV related symposia are planned and are listed below: (Visit IAGA home page)

GAIO1 Monitoring earthquakes and volcanic activity by magnetic, electric and electromagnetic methods. (Convenors : Zlotnicki, Johnston, Sasai)

GAIO2 EM imaging of volcanoes and active faults (Conveners: M. Ingham, Y. Ogawa)

GAIO3 EM modelling and inversion with applications (Conveners: J. Ledo, S. Hautot)

GAIO4 The electric continental lithosphere: geodynamical implications (Conveners: A. Junge, A. Jones)

GAIO5 EM studies of intraplate collisional zones (Conveners: T. Korja, I. Varentsov)

6-5 AOGS Meeting in Singapore, June, 2005

Liu will attend. Need a Special Session and convenor. Urgent.

7) Discussion Issues

7-1 Demeter The Demeter satellite mission was reported by M. Parrot to be operating successfully. The possibility exists for collaborative projects and new proposals.

7-2 Next EMSEV meeting. There are invitations for 2005 EMSEV Mtg from India (Oct/Dec at Hyderabad, Harinarayana & MEEMSV and EMSEV in December at Agra, B. Singh) and Mexico (in December after AGU, at Pacific coast (Acapulco, Puerte Vallarta), S. Pulinets). It was decided that the next meeting should be in Mexico with perhaps the following one in Agra, India. The primary reason is that Pulinets has funding only for 2005. B. Singh would also like to have a meeting as soon as possible.

7.3 Relationship between EMSEV and MEEMSV

Zlotnicki explained the problem which exists between the relationship between MEEMSV and EMSEV. MEEMSV has been a series of informal grassroots meetings not related to any international organization whereas EMSEV is an IUGG working group under IAGA, IASPEI and IAVCEI. This situation has caused some confusion. The assembly decided that the MEEMSV should be merged within EMSEV under the international IUGG/IASPEI/IAVCEI/IAGA umbrellas. A regular 2 years MEEMSV meeting could be organized under EMSEV responsibility.

7.4 Relationship between EMSEV and MT group

It was decided that some discussion should be attempted with P. Tarits to find ways to work more closely with the MT group in the future.

8) Free discussion

8.1 EMSEV meeting in Romania

Dimitru Stanica enthusiastically discussed the next MEEMSV meeting in Romania in 2006. Financial support for this meeting might be possible from the EU but apparently it is difficult and bureaucratically complex to get such funds.

8.2 Abstract quality

Slava Spichak suggested tougher review criteria for abstracts at future conferences. Perhaps authors should send longer abstracts (2 pages) and each should be independently reviewed before acceptance.

8.3 Poster Discussion and Discussion of Papers

It was suggested that more feedback, interaction and stimulation would occur at future meeting if both oral talks and posters (2-5 minutes) were discussed in a general discussion session.

Ouzounov proposed to put on the Web the abstracts in a pdf format before the meeting.

9) Conclusion

The meeting was closed by Chairman Uyeda at 22:30 who thanked everyone for a very successful meeting.