



4th VERSIM workshop

Prague, September 13-17, 2010

Final Report

We are grateful for the scientific sponsorship and financial support provided by the International Association of Geomagnetism and Aeronomy (IAGA) and by the Union Radio-Scientifique Internationale (URSI) for the 4th workshop of the URSI/IAGA Joint Working Group on VLF/ELF Remote Sensing of the Ionosphere and Magnetosphere (VERSIM).





Participants of the 4th VERSIM workshop. Photo taken on 16 September 2010 by A. Collier.

General information

The 4th workshop of the URSI/IAGA Joint Working Group on VLF/ELF Remote Sensing of the Ionosphere and Magnetosphere (VERSIM) took place in Prague, Czech Republic, on 13-17 September 2010. The workshop was organized by the Institute of Atmospheric Physics, Prague, Czech Republic and by Charles University, Faculty of Mathematics and Physics, Prague, Czech Republic. The scientific sponsorship and financial support for this workshop has been provided by the International Association of Geomagnetism and Aeronomy (IAGA) and by the Union Radio-Scientifique Internationale (URSI). More details can be found on the workshop website (<http://www.ufa.cas.cz/versim10/>).

Scientific committee

János Lichtenberger (Eötvös University, Budapest, Hungary), Jacob Bortnik (University of California, Los Angeles, USA), Jyrki Manninen (Sodankyla Geophysical Observatory, Sodankyla, Finland), Craig J. Rodger (University of Otago, Dunedin, New Zealand), Yoshiharu Omura (Kyoto University, Kyoto, Japan), David Shklyar (Institute of Space Research, Moscow, Russia), Michel Parrot (Laboratoire de Physique et Chimie de l'Environnement et de l'Espace, Orleans, France), Ondřej Santolík (Institute of Atmospheric Physics and Charles University, Prague, Czech Republic)

Local organizing committee

(Institute of Atmospheric Physics and/or Charles University, Prague, Czech Republic) Jaroslav Chum, Andrea Saglová, Jan Souček, František Hruška, František Jiříček, Pavel Tříška, Benjamin Grison, Mykhaylo Hayosh, Ondřej Santolík, Jiří Pavlů, Jana Šafránková

Topics

- ELF/VLF waves as diagnostic tools for key ionospheric and magnetospheric physical parameters. Wave propagation in magnetosphere and ionosphere and in Earth-ionosphere waveguide. Plasma structures and boundaries - morphology and dynamics.
- Triggered emissions and nonlinear wave phenomena. Wave-particle and nonlinear wave-wave interactions.
- ELF/VLF waves and the radiation belts - particle acceleration and loss. Wave-induced particle precipitation.
- Effects of ELF/VLF radiation on the atmosphere. Sprites and the effects of lightning on the ionosphere. Schumann resonances, world wide lightning activity and climate changes
- Instrumentation

Abstracts and sessions

47 abstracts were received. They are listed online on the workshop website (<http://www.ufa.cas.cz/versim10/list-prg.php>), together with an alphabetical list of authors (<http://www.ufa.cas.cz/versim10/list-author-index.php>). The scientific committee organized these abstracts in 7 oral sessions and one poster session.

- Session I – Triggered emissions and wave-particle interactions (1 invited + 4 contributed talks)
- Session II – Chorus and quasi-periodic emissions (5 contributed talks)

- Session III – Whistlers (7 contributed talks)
- Session IV – VLF data sets and campaigns (1 invited + 5 contributed talks)
- Session V – DEMETER (6 contributed talks)
- Session VI – Subionospheric VLF propagation (4 contributed talks)
- Session VII – Ionosphere, Martian ionosphere, meteors (4 contributed talks)
- Poster session (8 posters)

VERSIM business meeting has been also held as in the frame of the workshop.

The workshop program and abstract book can be downloaded from <http://www.ufa.cas.cz/versim10/program.pdf>

Participants

The workshop attracted 40 participants from 15 countries, ranging from New Zealand to Russia (ordered by latitude) including 9 students and young scientists under 35 from 5 countries. The final list of participants from each country can be downloaded from http://www.ufa.cas.cz/versim10/participants_final.pdf

The updated workshop program including all last-minute changes can be downloaded from http://www.ufa.cas.cz/versim10/program_final.pdf

Scientific highlights

VERSIM workshops are now a strong feature of the VERSIM community, which were well supported by the membership and included many very strong presentations. In his invited talk, Yoshiharu Omura described an exciting theory and simulations of VLF triggered emissions. His talk was followed by a session containing theoretical and experimental papers on triggered emissions and chorus with clear implications for the currently high-profile subject of acceleration and losses of energetic particles in the Earth's radiation belts. Another exciting invited talk was given by Andy Smith on extending continuous quantitative measurements of ELF/VLF noise at the Halley station in Antarctica.

Generally, much progress there has been since the first workshop in 2004. For example, data from the DEMETER satellite, which was newly launched in 2004, is now being used in a very large percentage of the talks at the 4th workshop (including a dedicated session). Janos Lichtenberger reported on the auto-detection of tens of millions of whistlers, and his successes in developing an automatic whistler scaling technique. SAVNET (South American VLF Network) was being used to study solar flares and gamma ray bursts occurring thousands of light years distant. Another example is the WWLLN lightning location network. Craig Rodger reported that this network has over 50 operating stations, reporting 115.4 million lightning strokes in 2009. Many of the talks presented in this workshop used WWLLN data. Through the VERSIM workshops there is increasing collaboration in our community, strengthening the scientific quality and overall "force" of the community.

IAGA financial support

The Executive Committee of IAGA decided to sponsor the 4th VERSIM workshop with an amount of USD 1000. The money was used by the local organizing committee of the 4th VERSIM workshop to partially support participants from countries with limited possibilities to obtain their own funding for the travel to the workshop.

IAGA Young Researcher Award

There were 8 candidates for nomination for the IAGA Young Researcher Award, provided by IAGA as part of their support for the VERSIM Workshop. The IAGA award is subject of the final decision by the IAGA Executive Committee. It consists of support to participate in the next Assembly (in Melbourne, Australia, in 2011): a low-cost air ticket, waiving of the registration fee, and USD 200 as a contribution to cover hotel and subsistence costs. The Award is for a young scientist (not more than 30 years old in 2010) who contributes the best paper to the meeting. The young scientist nominated shall have made a major contribution to the study reported and have been the first author of the paper presented, besides having given a very good presentation at the meeting. The 4th VERSIM workshop Scientific Committee recommended to the IAGA Executive Committee that Eva Macůšová (Czech Republic) should receive this award, on the basis of her presentation "The Banded Structure of the Whistler-mode Chorus Emissions".

URSI financial support

Commission H of URSI decided to sponsor the 4th VERSIM workshop with an amount of EUR 1300. The money was used by the local organizing committee of the 4th VERSIM workshop to partially support young scientist and students under 35 years of age at the time of the meeting and to partially support other deserving participants judged by the local organizing committee of the 4th VERSIM workshop to be in need of financial support.

Next workshop

It has been widely accepted that following the strengths of our previous VERSIM workshops, there would be real value in a 5th VERSIM workshop. At this point it seems sensible to have this in 2012, as neither IAGA or URSI will meet that year. Jean-Pierre Raulin (Brazil) has invited the VERSIM community to meet in the state of Sao Paulo, Brazil in September 2012. He gave a presentation on this concept – at this point the suggestion is to hold the meeting in a hotel ~60 km away from the city of Sao Paulo, in a comparatively quiet region near to their main observatory site. The observatory site would provide a potential excursion during the meeting, and also has student-level accommodation for approximately 12 people. Another excursion would be to an INPE space research centre some 1 hours drive away. Jean-Pierre outlined the various Brazilian organisations who would be expected to support the meeting (logistics, administration and financial support), and indicated that he hoped quite a few participants could be assisted to attend – considerably more than in previous VERSIM workshops.