

Commission Report on GASS Commission Business Meetings

Commission G

prepared by Iwona Stanislawska (Chairperson 2014–2017)

The Commission G business meetings were held on Monday, August 18, 2014; Wednesday, August 20, 2014 (together with Commission H); and Friday, August 22, 2014.

1. Results of Election of Vice-Chair

At the Monday meeting, Patricia Doherty was elected as the new Commission Vice Chair.

2. Results of Election of Early Career Representative

At the Monday meeting, Seebany Datta-Barua was elected as the Early Career Representative.

3. Appointment of Associate Editor for *Radio Science Bulletin*

The Vice Chair confirmed her willingness to be an Associate Editor of the *Radio Science Bulletin*. John Mathews agreed to assist as History Editor of the *Radio Science Bulletin*. The Chair requested an *RSB* contribution from the tutorial lecturer.

4. Updates/Status of Working Groups

4.1 G1: *Ionosonde Network Advisory Group*

The Chair is I. A. Galkin (USA), the Vice Chair is J. B. Habarulema (RSA), the *INAG Bulletin* Editor is P. Wilkinson (Australia). (Just after the GASS, Prof. Dr. Baigi Ning from Chinese Academy of Sciences Institute of Geophysics became the Vice Chair.)

4.2 G2: *Studies of the Ionosphere Using Beacon Satellites*

The Vice Chairs are P. Doherty (USA) with another Vice Chair to be determined, and the Honorary Chair is R. Leitinger (Austria).

4.3 G3: *Incoherent Scatter Working Group*

The Chair is M. McCready (USA), and the Vice Chair is I. McCrea (UK).

4.4 *URSI/COSPAR on International Reference Ionosphere (IRI)*

The Chair is David Altadill (Spain), the Vice Chair for COSPAR is Shigeto Watanabe (Japan), the Vice Chair for URSI is Vladimir Truhlik (Czech Republic), and the Secretary is Dieter Bilitza (USA).

4.5 *Inter-Commission Working Groups*

4.5.1 GF: Middle Atmosphere

The acting Co-Chairs for Commission G are Jorge L. Chau and Erhan Kudeki. There is no Co-Chair for Commission F.

4.5.2 GH: Active Experiments in Space Plasmas

The Co-Chair for Commission G is Todd R. Pedersen, and the Co-Chair for Commission H is M. Kosch.

4.5.3 EGH: Seismo-Electromagnetics (Lithosphere-Atmosphere-Ionosphere Coupling)

The Chairs are Y. Hobara (E), S. Pulinets (G), and H. Rothkaehl (H).

Different kinds of electromagnetic precursors have been accumulated during the last few decades. In particular, geoelectric signals, ULF (ultra-low-frequency) and ELF (extremely low-frequency) electromagnetic emissions are the direct signatures of seismic activity. There have also been observed perturbations in the atmosphere and ionosphere in possible association with earthquakes. The final goal is to understand different kinds of electromagnetic phenomena in the context of lithosphere-atmosphere-ionosphere coupling.

4.5.4 JHG: Inter-Commission Working Group on Characterization and Mitigation of Radio Interference

The Chairs are Terry Bullet (G), Willem Baan (J), and Hanna Rothkaehl (H).

Motivation: Increased commercial and public use of the radio spectrum increasingly affect the scientific use of the spectrum, which is of concern for all URSI Commissions using direct spectral measurements. The higher sensitivity of the scientific detection systems and the observations outside allocated bands will further increase the vulnerability of scientific observations in the rapidly changing spectrum environment.

The presence of interference in scientific data requires the implementation of active mitigation measures to reduce the effects on the measurements. Different science applications and different spectral characteristics of the interference require a variety of mitigation schemes and methodologies.

Purpose: The purpose of the Inter-Commission Working Group (ICWG) is to utilize the interdisciplinary nature of the URSI Commissions in dealing with interference issues, and to capitalize on the different experiences of each of the disciplines. An ICWG will facilitate the discussion of spectral characteristics of interference and applicable mitigation methodologies in order to find new and improved solutions for interference problems. In particular, the interference-rejection experience of commercial usage may provide lessons for the passive users of the spectrum. Exchanging experiences and learning from each other will be a primary objective of the ICWG.

ICWG activities: The ICWG will be used to identify active players in RFI issues in the various URSI Commissions, and to establish a network for exchanging ideas and experience. In addition, dedicated sessions will be facilitated at future URSI meetings, starting with AT-RASC 2015.

4.5.5 Inter-Commission Working Group on Solar Power Satellites

The Chair is Prof. H. Matsumoto (Japan), the Co-Chairs for Commission E are Z. Kawasaki (Japan) and J. Gavan (Israel), the Co-Chair for Commission H is K. Hashimoto (Japan), and the Co-Chair for Commission G is K. Schlegel (Germany).

4.5.6 URSI/IAGA VLF/ELF Remote Sensing of the Ionospheric and Magnetosphere (VERSIM)

The Co-Chair for IAGA Commissions 2 and 3 is C. J. Rodger (New Zealand), the Co-Chair for URSI Commission H is J. Lichtenberger (Hungary), the Co-Chair for URSI Commission G is to be determined.

5. Updates to the Terms of Reference of the Commission

New terms of reference were widely discussed (including discussion on the Internet). The following were agreed to and later ratified by Council.

Commission G on Ionospheric Radio and Propagation (including ionospheric communications and remote sensing of ionized media).

The goal of the Commission is to study the ionosphere and provide its broad understanding to support the use of radio by society on Earth and in space.

Specific areas of focus include:

- Observation of ionospheric structure, variability, coupling, and trends at all relevant scales.
- Modeling of the ionosphere to enable understanding and prediction of its properties.
- Development of the tools, techniques, and instruments necessary to measure ionospheric properties.
- Theory and practice of ionospheric radio propagation and scattering.
- Applications to radio systems, global navigation, communications, space weather, and situations of global concern.

To further these objectives, the Commission collaborates within URSI and with other concerned organizations and scientific unions.

6. Meetings Proposed to be Supported in the Coming Triennium

None provided.

7. Report and Comments on the Scientific Program of the Commission for the Current GASS

None provided.

8. Proposed Sessions for the Next GASS

8.1 "Modeling Geospace Environment"

Conveners: A. A. Namgaladze, e-mail: namgaladzeaa@mstu.edu.ru; M. Foerster, e-mail: mfo@gfz-potsdam.de; O. Martynenko, e-mail: Oleg.Marttinen@google.com.

Abstract

This session will be devoted to the latest achievements in the area of modeling the system consisting of the Earth's atmosphere, ionosphere, plasmasphere, and magnetosphere, including its electrodynamics. The coupling processes of interactions between various regions of the geospace environment will be considered using modern first-principle physical-numerical models. The problems of the inputs and initial and boundary conditions of the models will be discussed, as well as results of their validation via comparisons among the models and both ground-based and satellite observations. This session will foster collaboration among modelers, data providers, and research communities in order to improve mutual understanding and state-of-the-art data analyses of geospace missions.

8.2 HGE: "Atmospheric, Ionospheric, Magnetospheric and High-Energy Effects of Lightning Discharges"

Conveners: Sebastien Celestin (H), e-mail: sebastien.celestin@cnrs-orleans.fr; Ningyu Liu (G), e-mail: nliu@fit.edu; Martin Fullekrug (E), e-mail: M.Fullekrug@bath.ac.uk.

Abstract

The recent discovery that lightning discharges can cause energetic radiation, relativistic particles, and transient luminous events has marked a profound advance in our understanding of the Earth's atmospheric electrodynamic behavior. This session will explore these novel processes and their impact on the atmosphere and the near-Earth environment. The session solicits contributions that advance knowledge in the areas of the global atmospheric electric circuit, lightning physics, transient luminous events, energetic radiation, relativistic particles, and their impact on the Earth's atmosphere, ionosphere, and magnetosphere. One key focus of the session will be novel observations onboard space platforms, such as the lightning imagers on geostationary satellites, the TARANIS satellite, the ASIM payload on the International Space Station, and related ground-based observations and their modeling. Interdisciplinary studies that emphasize the connection between atmospheric layers and the relationship between atmospheric electricity and climate change are particularly welcome.

8.3 Other Proposed Sessions

“Assimilative Modeling and Global Ionosphere Observations”

Chairs: Ivan Galkin and Dieter Bilitza (G)

“Transient Ionospheric Phenomena”

Chairs: John Mathews (G) and TBD (H)

“Plasmo/iono Weather Applications”

Chairs: Matthew Angling and TBD (G)

“Beacon Satellites”

Chairs: Patricia Doherty and TBD (G)

“Plasma Instabilities and Irregularities”

Chairs: Frank Lind (G) and Robert Pfaff (H)

“Algorithms and Methods”

Chairs: Sean Elvidge and TBD (G)

“Modeling Geospace Environment”

Chair: A. A. Namgaladze, M. Foerster (G), O. Martynenko

“Active Experiments”

Chair: Natasha Jackson-Booth (G), and V. Sonwalkar and Robert Moore (H)

“Latest Results”

Chairs: IS, PD, JM (G) (presentations about 10 min)

“Inter-Commission Working Group on Characterization and Mitigation of Radio Interference”

Proposed by Commission J to E, F, G, and H

Chairs: Terry Bullet (G), Willem Baan (J), Hanna Rothkaehl (H)

“Inter-Commission Working Group on Seismo-Electromagnetics (Lithosphere-Atmosphere-Ionosphere Coupling)”

Proposed by Commissions E, G, and H

Chairs: Y. Hobara (E), S. Pulinetz (G), H. Rothkaehl (H)

“Ionospheric, Magnetospheric and High Energy Effects of Lightning”

Chairs: V. Pasko (G), S. Celestin (H), M. Fullekrug (E)

The final list of the sessions will be presented during AT-RASC 2015.

8.4 Commission G Tutorial for the 2017 GASS

Timothy J. Fuller-Rowell will give a tutorial at the next GASS, title to be confirmed.

9. Proposed Sessions for the AT-RASC

We invite you to submit papers (500 words) for this meeting. The deadline for submission of papers is December 15, 2014.

10. Other Business

10.1 Commission G Memberships

An update of the list of Commission G Representatives was identified.

10.2 Other issues

The number of submitted papers and author attendance at the 2014 GASS have to be encouraged, particularly poster papers.

For the next meeting, poster papers should be submitted on topics relevant to each session, and properly marked.

Initiatives to improve URSI meeting attendance and session leadership amongst young scientists were discussed.

Chair: Iwona M. Stanislawska

E-mail: stanis@cbk.waw.pl

Vice Chair: Patricia H. Doherty

E-mail: Patricia.Doherty@bc.edu

Early Career Representative: Seebany Datta-Barua

E-mail: sdattabarua@gmail.com