

## Report of Commission H Business Meetings at URSI GA 2008

**Commission H Business meetings** were held three times during the GA on the following three occasions.

- Business Meeting 1: Monday 11 August 17:20 – 18:40 in room Grand F, chaired by Richard Horne
- Joint Business Meeting G & H: Wednesday 13 August 17:20 – 18:40 in room Grand E, chaired by Paul Cannon and Richard Horne
- Business Meeting 3: Friday 15 August 17:20 – 19:00 in room Grand F, chaired by Yoshiharu Omura

The chair of Commission H, Richard Horne appointed the vice-chair Yoshiharu Omura as the new Chair. Ondrej Santolik was appointed as the new vice-chair after voting from the member committees. The details of the votes are the followings: Ondrej Santolik (Czech Republic) 25, David Nunn (UK) 7; Meers Oppenheim (USA) 6, Craig Rodger (New Zealand) 9. The vice-chair has been confirmed to become an Associate Editor of Radio Science Bulletin.

**Terms of reference of Commission H:** No change required.

**Abstract:** The current form of abstract up to 1 page summary, optional 4 page paper was supported by the majority. The abstracts should be published in the form of CD and online.

### Working Groups

Activities of the working groups related to Commission H were reviewed and their organization has been renewed as in the following.

- *Joint Working Groups*
  - *ABDFGHJK: An inter-commission working Group on Solar Power Satellites:* Co-chair for Commission H: K. Hashimoto (Japan), Co-chair for Commission G: K. Schlegel.
  - *EGH: Seismo-Electromagnetics.* Co-chair for Commission G: S. Pulinets (Russia), H: M Parrot (France)
  - *GHI Active experiments in Space Plasmas:* Co-Chair for Commission G: Keith Groves (USA) (USA), Co-Chair for Commission H: B Thide (Sweden)
  - *HEJ: Computer Simulations in Space Plasmas* (Co-chair for Commission H: Y. Omura (Japan), B. Lembege (France)

- *Inter-Union WG*
  - URSI/IAGA VLF/ELF remote Sensing of the Ionosphere and Magnetosphere (VERSIM), URSI Rep: H. Janos Lichtenberger

### **Science Session Proposals for 2011**

- H1 Nonlinear waves and turbulence in plasmas, M. Oppenheim (USA), H. Usui (Japan) (TBC), and David Shklyar (Russia)
- H2: Wave-particle interactions and their effects on planetary radiation belts: Jacob Bortnik (USA), Craig Rodger (New Zealand), and Richard Horne (UK)
- H3: Micro/macro-scale kinetic processes at boundary layers in terrestrial and planetary environments: B. Lembège (France), G. Lakhina (India), and I. Shinohara (Japan)
- H4: Laboratory simulation of space and dust-related phenomena William Amatucci (USA) and Toshiro Kaneko (Japan)
- H5: Waves as signatures of neutral-plasma interactions in the environment of solar system bodies", Christian Mazelle (France), (USA)TBC
- H6: Plasma waves and ion thrusters ( R. Horne)
- H7: Open session (Y. Omura and O. Santolik) \*

Note: Because of the limited time slots for oral sessions at the next GA, the commission will decide later on reduction of the number of sessions.

### **Science Session Proposals for 2011 (joint with other commissions)**

- HG1: Space-borne sounding and remote sensing of structures in the plasmasphere (active & passive)" (B. Reinisch (G), R. Benson (H))
- HGB: Active experiments in plasmas with electric antennas and other means (Gordon James and Vikas Sonwalkar)
- GHE1: Lightning induced effects in the ionosphere and magnetosphere Com H. Victor Pasko
- GH1: Ionospheric modification, K. Groves(Com G: USA) and B. Thide (Com. H: Sweden)
- GHE2 Seismo-electromagnetics, Com G: S. Pulinets, and Com H: M. Parrot
- HBDGJK: Solar Power Satellites Com H Kozo Hashimoto

### **Proposed Meetings sponsored by URSI Commission H**

- ISSS-9, near Paris, France, July 3rd-10th 2009  
Bertram Lembege (Mode B)
- International Chorus Workshop,

- California, Feb, 2009 , Bruce Tsurutani
- VERSIM, Hungary, September, 2008 (Mode B)
  - Janos Lichtenberger
- 2nd International Workshop on Radio Methods for Studying Turbulence
  - 2009, Warsaw, Poland A. W. Wernik (Mode B)
- The International Heliophysical Year (IHY) Africa 2009 workshop,
  - Livingstone, Zambia, Lee-Anne McKinnell (Mode B)

### **Commission H Tutorial**

Gordon James will give a tutorial at the next GA.

“Review of wave excitation, propagation, and detection, and new observation by E-POP satellite mission”

### **Discussion - Emerging Scientific Issues**

- Possible areas for new emphasis
  - New Frontiers
    - Turbulence - Satellite constellations to measure wave properties
    - Plasma waves at the planets
    - Nonlinear waves in radiation belts
    - Export knowledge to solar and astrophysical plasmas
  - Space Weather
    - Satellites, man in space – particle acceleration and loss by waves
  - Ionosphere
    - Canadian E-POP Satellite Mission and ground-based observation “Back-to-Ionosphere”
    - Coupling of waves in the magnetosphere with the upper ionosphere
    - Microwave interaction with the ionosphere regarding future SPS
  - Climate
    - Particle precipitation by waves and atmospheric chemistry
  - Energy
    - Solar power satellites – propagation and instabilities
    - Fusion – wave heating of plasmas
  - Satellite propulsion
    - Ion propulsion for space travel
    - Plasma thrusters – wave acceleration, nonlinear wave-particle interaction

- Measurement techniques of waves
  - Calibration of electric field antenna
- Ground observations
  - Multiple ground observations as discussed at VERSIM workshop
  - Encourage Long-term continuous monitoring in space and from the ground
- Numerical simulations
  - Simulation studies on inhomogeneous plasmas with massively parallel codes
  - Combination of wave-particle interaction and wave propagation in 3D model
- Database
  - NASA's virtual wave observatory will be evolving over the next two to three years as the one website to go to for information about and access to wave data obtained around earth, other planets and the sun, with initial emphasis on IMAGE and Cluster data.
  - Automatic event identification and derivation of electromagnetic plasma environment for huge wave data sets

### **Summary of raised problems**

(1) Emerging new area: (session for next GA)

Plasma waves and ion thrusters

(2) Joint Working Groups

a) HJE: “Supercomputing in space radio science”

The title of the working group should be changed to the more general one:

“Computer simulations in space plasmas”

b) *ABDFGHJK: An inter-commission working Group on Solar Power Satellites*: Co-chair for Commission H: K. Hashimoto (Japan), Co-chair for Commission G: K. Schlegel.

(3) Joint Sessions: HBDGJK: Solar Power Satellites Com H. Kozo Hashimoto. The session is led by H, but the oral session should be taken as a separate session from Commission H time slots.

(4) Program Book: Identification of invited papers is necessary.

(5) Encouragement for young people: It is necessary to encourage young people to participate in the URSI GA. Since we only have a finite number of oral sessions, everyone should go to the poster sessions to discuss with young people.