

Business Meeting CAWSES-II / Task Group 4 – What is the geospace response to variable waves from the lower atmosphere?

Agenda

1. Brief Overview of TG4 – Oberheide/Shiokawa
2. Update of general TG4 activities since the last business meeting in Sopron (IAGA 2009, Hungary) – Oberheide/Shiokawa
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4. Project status – project leaders
5. New projects – Yukihiro Takahashi; thunderstorms and geospace
6. Future activities, next business meeting, IAGA/ICMA/CAWSES-II-TG4 workshop in Feb 2011 – Oberheide, Shiokawa, Pancheva
7. Other business
8. Adjourn

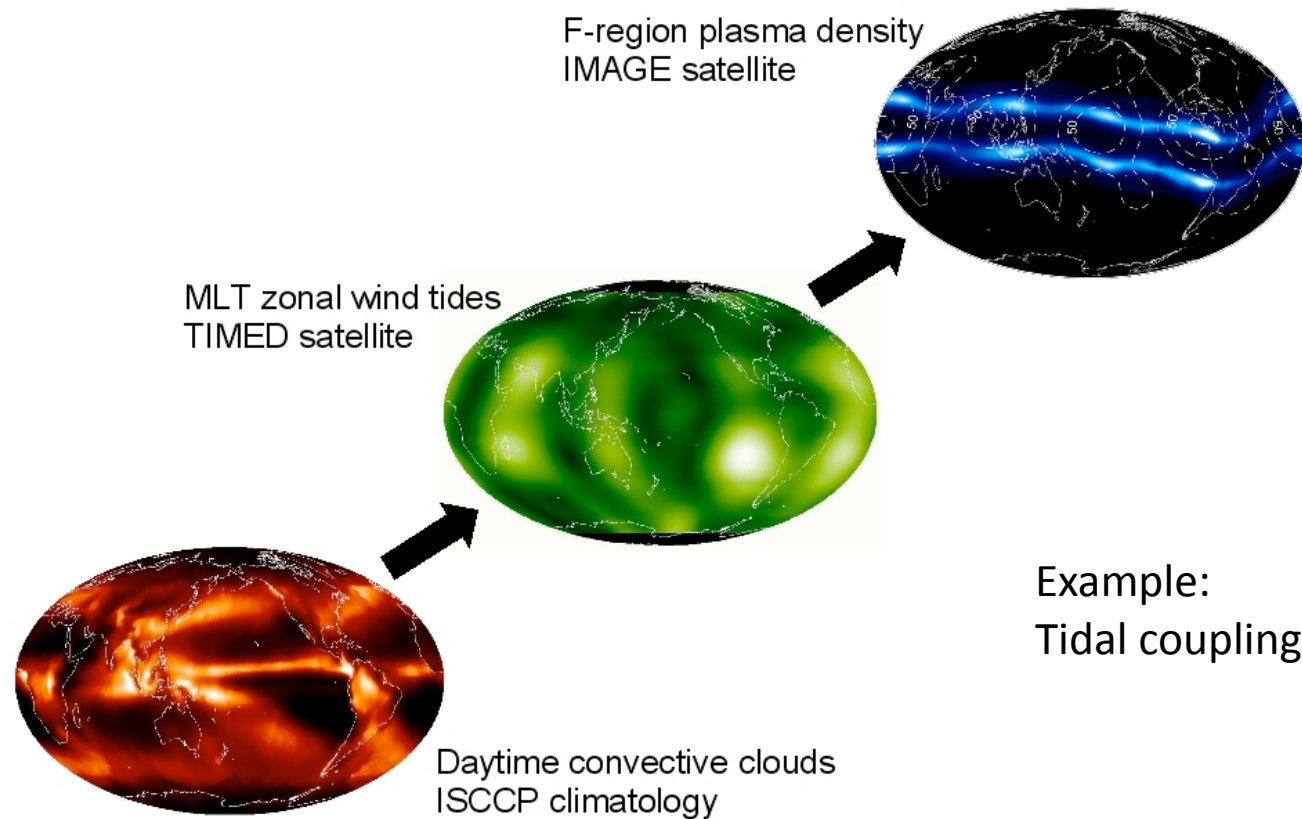
TG 4 – What is the geospace response to variable waves from the lower atmosphere?

Co-Leaders

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Nagoya University, Japan
- Jens Oberheide (joberbe@clemson.edu)
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TG 4 – Overall Objective

Understand the cause-and-effect chain that connects tropospheric (weather!) and strato-/mesospheric variability with geospace processes.



CAWSES-II TG4: What is the geospace response to variable inputs from the lower atmosphere?

Overall Objective

TG4 will elucidate the **dynamical coupling from the low and middle atmosphere to the geospace** including the upper atmosphere, ionosphere, and magnetosphere, for various frequencies and scales, such as **gravity waves, tides, and planetary waves, and for equatorial, middle, and high latitudes.**

The essential part of TG4 is to **encourage interaction between atmospheric scientists and plasma scientists!**

TG4 Goals: Gravity Waves

- **How the GWs penetrate into the thermosphere and ionosphere**
- **Is there significant gravity wave forcing to the thermosphere/ionosphere dynamics?**
- **Relation between gravity waves and various ionospheric instabilities**
 - **plasma bubbles MSTIDs, and E-region patches**

TG 4 Goals: tides, PWs

- What are the wave structures and variability in the ITM?
- How do they affect the thermosphere/exosphere?
 - density, composition, energy balance, ...
- Understand the cause-and-effect chain that couples tropical convection with the F-region (tides)
- Quantitative, first principle modeling; data analysis
- What is the role of tides/GW/PW in bubble seeding?
- Longitudinal and temporal modulation of GW propagation and/or GW-tidal interactions?
- How the stratospheric sudden warming affect the ionosphere?
- How does climate change affect the tides? (with TG2)

TG4 Goals: disturbances generated by auroral processes

- **How the auroral energy input changes the thermospheric dynamics in local and global scale?**
- **How the thermospheric wind affect the plasma convection in the magnetosphere?**
- **How does the thermospheric composition change occur and propagate on global scale to cause ionospheric disturbance?**

TG 4 – Projects

1. How do atmospheric waves connect tropospheric weather with ionosphere-thermosphere-mesosphere variability?
2. What is the relation between atmospheric waves and ionospheric instabilities?
3. How do the different types of waves interact as they propagate through the stratosphere to the ionosphere?
4. How do aurorally generated waves interact with the neutral and ionized atmosphere
5. How does climate change affect atmospheric waves in the ionosphere-thermosphere-mesosphere? – **Joint with TG 2 (lead: TG2)**

If you think that something is missing here, you're welcome to define (and lead) a new project!

Project Co-Leaders

Project 1 (weather and ITM variability)

William Ward, University of New Brunswick, Canada

Mangalathayil Abdu, INPE, Brazil

Jorge Chau, Jicamarca, Peru

Project 2 (waves and ionospheric instabilities)

Jonathan Makela, University of Illinois, USA

Hisao Takahashi, INPE, Brazil

Project 3 (wave-wave interaction)

Dora Pancheva, Bulgarian Academy of Sciences, Bulgaria

Mamoru Yamamoto, Kyoto University, Japan

Project 4 (aurorally generated waves)

Hitoshi Fujiwara, Tohoku University, Japan

Mike Kosch, Lancaster University, UK

CAWSES-II Task Group 4: A. Hertzog, Amit K. Patra, Alan Manson, Anasuya Aruliah, Anne Smith, Anthea Coster, Antonia Haser, Archana Bhattacharya, Art Richmond, Babatunde Rabiou, Barclay Clemesha, Bernd Funke, Bob Vincent, Carlos Martinis, Cesar La Hoz, Charles Lin, Chris Hall, Christian von Savigny, Christiano Garnett Marques Brum, Christina Arras, Christos Haldoupis, Duggirala Pallamraju, Damian Murphy, Dave Fritts, David Hysell, Dora Pancheva, Elsayed Talaat, Erich Becker, Esayas Shume, Esphan Alam Kherani, Gang Lu, Gerald Lehmacher, Guiping Liu, Hanli Liu, Hermann Luhr, Hiroyuki Shinagawa, Hisao Takahashi, Hitoshi Fujiwara, Huigen Yang, Huixin Liu, Inez S. Batista, Jorge L. Chau, Jeff Forbes, Jiang Guoying, Jiyao Xu, Joan Alexander, Jonathan Makela, Kaoru Sato, Larisa Goncharenko, Lee-Anne McKinnell, Libo Liu, Ludger Scherliess, Mark Conde, Mamoru Yamamoto, Manfred Ern, Mangalathayil A. Abdu, Manuel Lopez-Puertas, Markus Rapp, Maura Hagan, Michael Rietveld, Miguel Larsen, Mike Kosch, Mike Nicholls, Mike Taylor, Nanan Balan, Nikolai Gavrilov, Nick Mitchell, Peter Dyson, Peter Hoffmann, Peter Preusse, Petra Koucka Knizova (Sauli), Plamen Mukhtarov, Qian Wu, Ricardo Buriti, Ruiyuan Liu, Ruth Lieberman, S. Gurubaran, Satonori Nozawa, Shin-ichiro Oyama, Scott England, Scott Palo, Sean Bruinsma, Sergey Shalimov, Sheila Kirkwood, T. K. Ramkumar, Takuya Tsugawa, Takashi Maruyama, Takuji Nakamura, Tao Li, Tiger Liu, Tom Immel, Toshitaka Tsuda, Ulrich Achatz, Weixing Wan, Werner Singer, William Ward, Yuichi Otsuka, Yogeshwar Sahai, and Yue Deng

TG4-related Campaigns

- **Longitudinal Campaign** (September 1–November 12, 2010)
(contact: Hisao Takahashi and Jon Makela)
- **Stratospheric Sudden Warming Campaign** (January–February, 2010)
(contact: Larisa Goncharenko)
- **CAWSES Tidal Campaign** (soon TBD)
(contact: William Ward)

TG4 Newsletter, Web page, and Mailing lists

“encourage interaction between atmospheric and plasma scientists!”

Web page: http://www.cawses.org/wiki/index.php/Task_4

mailing list: [cawses2tg4all @ stelab.nagoya-u.ac.jp](mailto:cawses2tg4all@stelab.nagoya-u.ac.jp)
(102 scientists are registered in this mailing list)

TG4 Newsletter (editor: Michi Nishioka@STEL)

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Update of general TG4 activities since the last business meeting in Sopron (IAGA 2009, Hungary)

- Project leaders/members assigned
- Project planning started (update later)
- TG4 mailing lists (project leaders, projects, general TG4) – managed by Nagoya University
- Wiki is running (please update your projects!)
- Collaborations with ISSI: Vertical Coupling during SSW (P. Hoffmann, Oberheide as TG4 representative, Project 3), Atmosphere-ionosphere coupling (Shiokawa as TG4 representative)
- CAWSES-II provides/provided financial support for 2 workshops through TG4: regional CAWSES-II meeting in Singapore (Iain Reid, March 2010); 4th IAGA/ICMA/CAWSES-II/TG4 workshop in Prague (Feb 2011, Petra Koucka Knizova, Dora Pancheva)
- TG4 newsletter; 1st issue in June 2010, new issues every ~4 months; by Kazuo Shiokawa, Michi Nishioka (editors); on wiki and via email, printed version available

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Summary of the SCOSTEP/CAWSES-II meeting last week in Berlin (at STP-12)

- Susan Avery, Alan Rodger (CAWSES-II co-chairs), TG leaders, SCOSTEP Bureau (Bob Vincent, SCOSTEP president;...)
- Marianna Shepherd new SCOSTEP scientific secretary, replacing Gang Lu; SCOSTEP office moved to Toronto
- Semiannual CAWSES-II newsletter soon (posted on the web, www.cawses.org)
- TG/project leaders: SCOSTEP is international, involve scientists from all regions!!! One mission of SCOSTEP (as part of ICSU) is capacity building!
- Virtual conference/workshop; CAWSES provides infrastructure, strongly encouraged; when?
- Meetings
 - IUGG Melbourne 2011; CAWSES joint session, 4x90 min + poster, 1 invited talk per task group (not necessarily the TG leaders!!!!), 27 June – 8 July 2011
 - 4th IAGA/ICMA/CAWSES-II/TG4 workshop in Prague (later)
 - URSI in Istanbul (summer 2011, Christian Hanuise)
 - COSPAR 2012 in Mysore, India; C22 strongly encourages TG4 activities
 - CAWSES symposium in Japan, 2013
 - STP-13 in 2014, China or Africa

Summary of the SCOSTEP/CAWSES-II meeting last week in Berlin (at STP-12)

- Funding through CAWSES-II, award typically \$3K - \$10K
- TG4 endorsed 2 workshops (Singapore, Prague), SCOSTEP/CAWSES-II provided financial support
- Note: Support not only for workshops BUT particularly to support the science and capacity building; i.e., to set-up a database (for projects) or seed money for nationally funded projects,...
- Must meet TG4 goals and demonstrate relevance to the TGs and projects within! What will be the outcome?
- Howto: Talk to the project leaders! Complete the form (soon on the web) circulated to the project leaders. Send it to the TG leaders for endorsement. S. Avery and A. Rodger will then make the decision.

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Future activities of TG4

- Input to Wiki! That's our main means to communicate!
- Additional email list to involve more young scientists and graduate students – ask every member for names and emails
- TG4 newsletter
- Virtual workshop/conference
- Prague workshop in Feb 2011 (pdf), special session for longitudinal campaign,...
- Next business meeting? Prague workshop!? IUGG 2011?

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Other activities

- Any?