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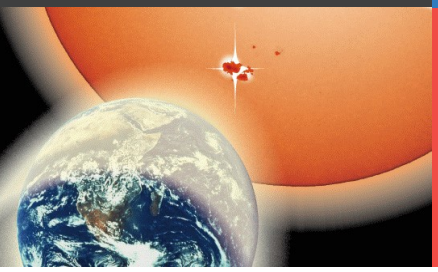


VarSITI Newsletter

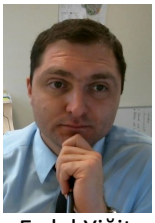
Inside this issue

Project ROSMIC

Article 1:

ROSMIC's Coupling by Dynamics-Working Group

[1]Erdal Yiğit, [2]Takuji Nakamura and [3]Claudia Stolle
[1]Department of Physics and Astronomy, George Mason University, USA
[2]National Institute of Polar Research, Japan
[3]Helmholtz Centre Potsdam, Germany


Erdal Yiğit


Takuji Nakamura


Claudia Stolle

The working group (WG) "Coupling by Dynamics" is one of VarSITI/ROSMIC project's working groups focusing on coupling processes in Earth's atmosphere-ionosphere system due to dynamical, chemical, and electrodynamical processes. This group is led by Erdal Yiğit, Takuji Nakamura, and Claudia Stolle as a joint international effort.

The primary mechanism for momentum and mechanical energy transfer in the neutral atmosphere from the ground to the thermosphere is through internal waves from below and solar and geomagnetic processes influence the structure of the thermosphere-ionosphere from above as illustrated in Figure 1 [Yiğit and Medvedev, 2015]. Internal waves are composed of a

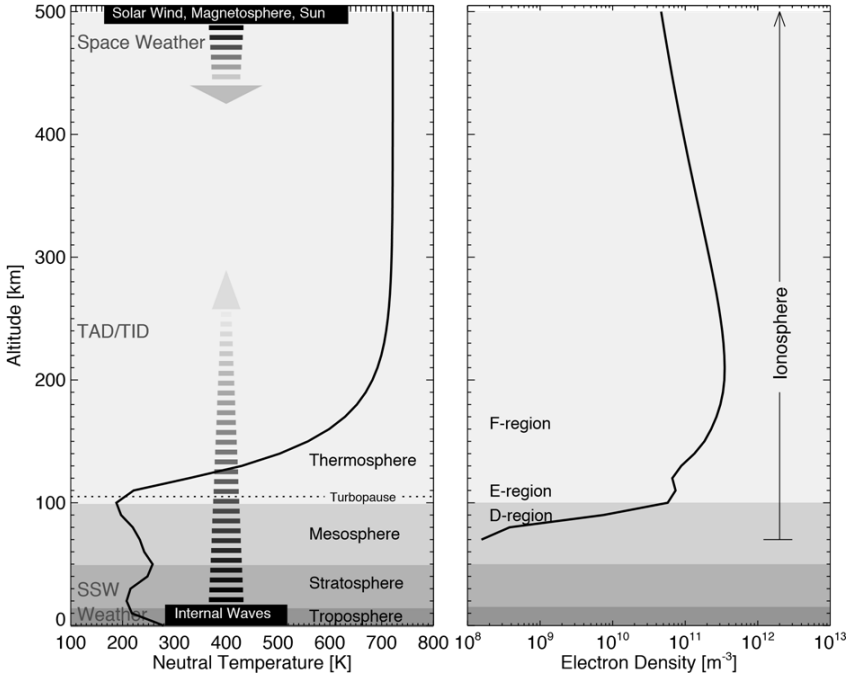


Figure 1: Vertical structure of the neutral atmosphere (left) and ionosphere (right). Adopted from Yiğit and Medvedev [Figure 1, 2015].

broad spectrum of waves of various spatiotemporal scaled, including small- and large-scale gravity waves (GWs), infrasound waves, tides, Kelvin waves, and Rossby-planetary waves. There are a variety of sources for these waves, such as convection, nonlinear processes, and frontogenesis. Their upward propagation is affected by the background atmospheric temperature and wind fields and in turn they interact with and significantly modify the background fields from the lower atmosphere to the upper thermosphere. It is essential to quantify the effects of these waves in order to better understand the coupling processes and the general circulation of the atmosphere.

At sufficiently high altitudes Earth's atmosphere is partially ionized due primarily to photoionization caused by Sun's electromagnetic energy input. This plasma region, the ionosphere, coexists with the thermosphere. The combined effects of internal waves from below and solar and geomagnetic processes from above make this region highly variable.

Ionospheric electrodynamics is mainly controlled by the geomagnetic field but internal wave processes also play an important role. The typical wind patterns together with increasing conductivity during daytime drives the ionospheric dynamos and is responsible, e.g., for the midlatitude Sq currents and the equatorial electrojet. In turn, these currents provide a valuable observational tool for global wave patterns and their variations.

The key science questions of the Coupling by Dynamics Working Group are

1. What are the influences of lower atmospheric waves on the state and evolution of the thermosphere/ ionosphere? – wave coupling
2. How atmospheric dynamics constrain electrodynamics in the ionosphere? – electrodynamic coupling
3. How can we characterize significance of small scale structures for the large-scale features in the upper atmosphere? – small scale dynamics

The underlying aspect of these three questions is that the combination of the internal wave effects with nonlinear electrodynamical effects produce a system that is highly variable and transient. In order to address these science questions, "Coupling by Dynamics" working group will initiate, among other approaches, data-model and model-model intercomparisons, involving international scientists.

Figure 2 shows the direct propagation of small-scale gravity waves from the lower atmosphere to the upper thermosphere during the different phases a minor sudden stratospheric warming (SSW) from the onset (a) to the peak phase (c). SSWs, modulate the circulation of the stratosphere and thus influence the upward propagation of GWs, which is clearly seen in the significant enhancement of GW activity and the resulting dynamical effects as the warming proceeds. Effects of lower atmospheric GWs on the thermosphere is a manifestation of how the small-scale processes can impact the large-scale. During the relatively weak current solar cycle 24, signatures of internal waves on the upper atmosphere are expected to become more prevalent.

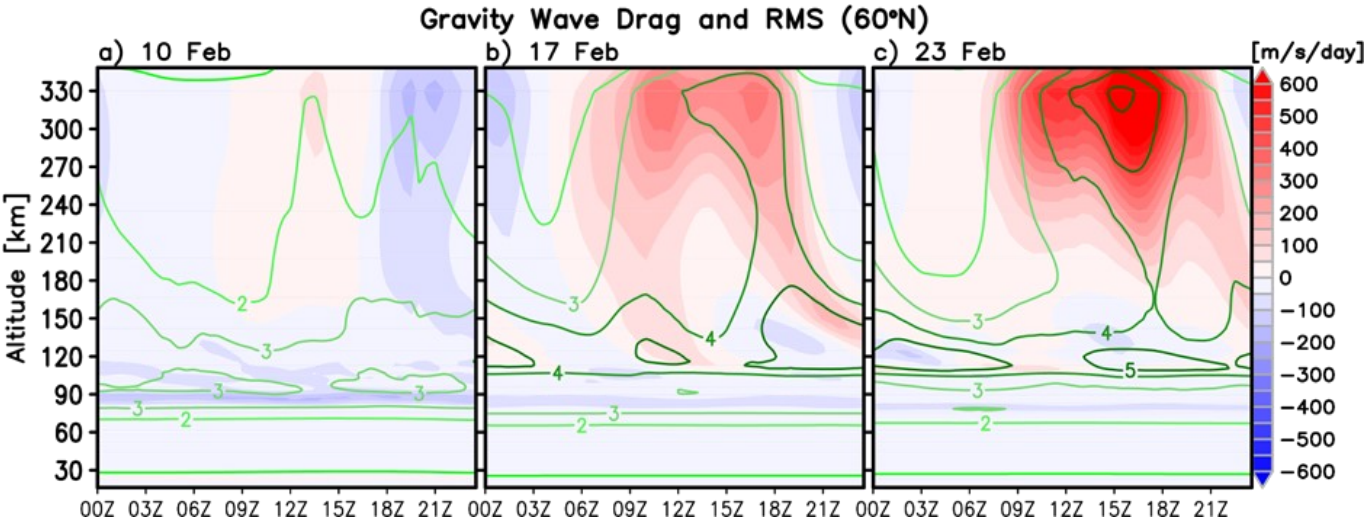


Figure 2: Altitude-Universal time cross sections of the gravity wave (GW) induced root-mean-square zonal mean wind fluctuations [m s^{-1}] (green contour lines) and GW zonal drag [m s^{-1} day^{-1}] (color shades) at 60◦ Nduring three different phases of a minor sudden stratospheric warming simulated by the CMAT2-GCM using the whole atmosphere nonlinear GW parameterization of Yiğit et al. [2008]: (a) 10 February (onset), (b) 17 February (midphase), and (c) 23 February (peak). Adopted from Yiğit et al. [Figure 2, 2014].

References:

Yiğit, E., A. D. Aylward, and A. S. Medvedev, 2008: Parameterization of the effects of vertically˘ propagating gravity waves for thermosphere general circulation models: Sensitivity study. J. Geophys. Res., 113, D19106, doi:10.1029/2008JD010135.

Yiğit, E., A. S. Medvedev, S. L. England, and T. J. Immel, 2014: Simulated variability of˘ the high-latitude thermosphere induced by small-scale gravity waves during a sudden stratospheric warming. J. Geophys. Res. Space Physics, 119, doi:10.1002/2013JA019283.

Yiğit, E., and A. S. Medvedev, 2015: Internal wave coupling processes in Earth's atmo-˘ sphere. Adv. Space Res., 55 (5), 983–1003, doi:10.1016/j.asr.2014.11.020, URL http://www. sciencedirect.com/science/article/pii/S0273117714007236.

Article 2:

New Funding Opportunity at NSF of Relevance to VarSITI

Ilia Iankov Roussev
Program Director, National Science Foundation, USA

Ilia Iankov Roussev

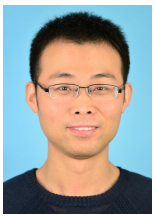
The Geospace Section (GS) within the Division of Atmospheric and Geospace Sciences (AGS) at the National Science Foundation (NSF) in the USA funds basic research in: (1) solar-heliospheric physics through the Solar-Terrestrial Research (STR) program; (2) magnetospheric physics through the Magnetospheric Physics (MAG) program; and, (3) physics of the upper atmosphere through the Aeronomy (AER) program. These three core programs of the GS (see http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=13531), namely STR, MAG, and AER, support research on the fundamental physical processes by which energy in diverse forms is generated by the Sun, transported to the Earth, and ultimately deposited in the terrestrial environment. All major research topics that are currently being investigated by the VarSITI community fall within the scope of these three programs. The individual programs accept proposals throughout the year, including cross-disciplinary projects that span multiple programs. Note, however, that prospective proposers are strongly encouraged to contact the corresponding program officers managing the programs to discuss their intended proposal submissions to the NSF.

In fiscal year (FY) 2017, the Directorate of Geosciences (GEO) at the NSF, which includes the AGS, is launching the Prediction of and Resilience against Extreme Events (PREEVENTS) program (see http://www.nsf.gov/pubs/2016/nsf16562/nsf16562.htm), which solicits (inter-)disciplinary research proposals that are aimed at better understanding of the risks posed by GEO-relevant natural hazards and extreme events, including space weather events, through basic geoscience research, in order to help increase resilience and reduce impacts on life, society, and the economy. The two primary targets of the PREEVENTS program are: (1) enhance understanding of the fundamental processes underlying natural hazards and extreme events on various scales, and variability inherent in such hazards/events; and, (2) improve capability to model and forecast such hazards and events. Subsidiary targets are to: (1) improve understanding of effects of natural hazards/extreme events; and, (2) enable development, with other support, of tools to enhance societal resilience. The Letters of Intent (LOI) for PREEVENTS are due on July 29, 2016, and the full proposals are due on Sep 19, 2016. Note that this program will solicit proposals every other year. Additionally, throughout FY 2017, the PREEVENTS program will also consider for co-funding PREEVENTS-relevant proposals submitted to any of the GEO core programs, including STR, MAG, and AER, that have the review process complete and are to be recommended for an award; such projects must address the two primary targets of the PREEVENTS program in order to be considered for co-funding. The VarSITI community based in the USA is strongly encouraged to take advantage of the PREEVENTS opportunity in FY 2017 as it fits nicely with the goals and objectives of the VarSITI program.

Highlight on Young Scientists 1:

Coronal mass ejections driven by magnetic flux ropes

Xin Cheng
School of Astronomy and Space Science, Nanjing University, China


Xin Cheng

Coronal mass ejections (CMEs) are among the most spectacular explosive phenomena in our solar system. They are able to release high-speed magnetized plasma and energetic particles and thus potentially impact on the safety of human activities in the outer space. A magnetic flux rope (MFR), a coherent magnetic structure with the field lines wrapping around the central axis more than once, has been proposed to be the fundamental structure underlying the phenomenon of CMEs. Nevertheless, the existence of MFRs has been elusive. Recently, taking advantage of EUV imaging of Solar Dynamics Observatory, we discovered that MFRs usually appear prior to the eruption and appear as a coherent channel-like hot structure. Once such a structure takes off, it quickly drives the formation of a CME and causes the flare emission. Afterwards, it will evolve smoothly into the outer corona taking on a coherent structure being cospatial with the dark cavity in the white-light observations.

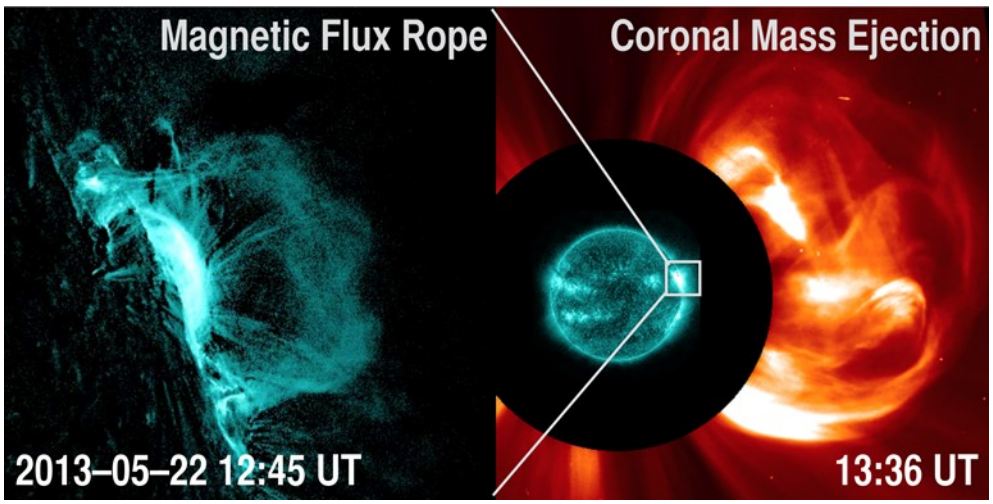


Figure 1: (left) SDO/AIA 131 Å passband image showing an MFR. (right) Composite image of SDO/AIA 131 Å passband (cyan) and SOHO/LASCO/C2 white-light passband (red) displaying the CME resulting from the eruption of the MFR.

References:

Cheng, X.; Ding, M. D.; Guo, Y.; Zhang, J.; Vourlidas, A.; Liu, Y. D.; Olmedo, O.; Sun, J. Q.; Li, C., Tracking the Evolution of a Coherent Magnetic Flux Rope Continuously from the Inner to the Outer Corona, ApJ 2014, 780 (1).

Cheng, X.; Zhang, J.; Ding, M. D.; Liu, Y.; Poomvises, W., The Driver of Coronal Mass Ejections in the Low Corona: A Flux Rope. ApJ 2013, 763 (1).

Zhang, J.; Cheng, X.; Ding, M. D., Observation of an evolving magnetic flux rope before and during a solar eruption. Nature Communications 2012, 3, 747.

Highlight on Young Scientists 2:

Low-latitude Pi2 pulsations in the topside ionosphere

Neethal Thomas
Indian Institute of Geomagnetism, India

Neethal Thomas

My research interest mainly includes investigation of the magnetic field measurements from polar Low Earth Orbiting (LEO) satellites like CHAMP and Swarm, and I have recently submitted my PhD thesis. The impulsive damped ultra low frequency oscillations in the frequency range 6.6-25 mHz are termed as Pi2 pulsations. The existence of daytime Pi2s in the topside ionosphere is one of the unsettled issues. Through our study we have addressed the question, whether daytime Pi2s can be observed by polar LEO satellites or not. If yes what are the characteristics of Pi2s at satellite and underneath ground. Our results demonstrate that daytime Pi2 pulsations do exist in the topside ionosphere, although their signatures are often masked (particularly Pi2s with frequencies <15 mHz) by the background frequencies present in polar LEO satellite. These background frequencies are found to have significant power during daytime and are attributed to daytime ionospheric currents. The daytime Pi2s observed simultaneously above and below the ionosphere were found to have different characteristics from that of night time Pi2s (Figure 1) suggesting different source mechanisms. We emphasize that the consideration of the background frequencies present at satellite is very vital while studying Pi2s using polar LEO observations.

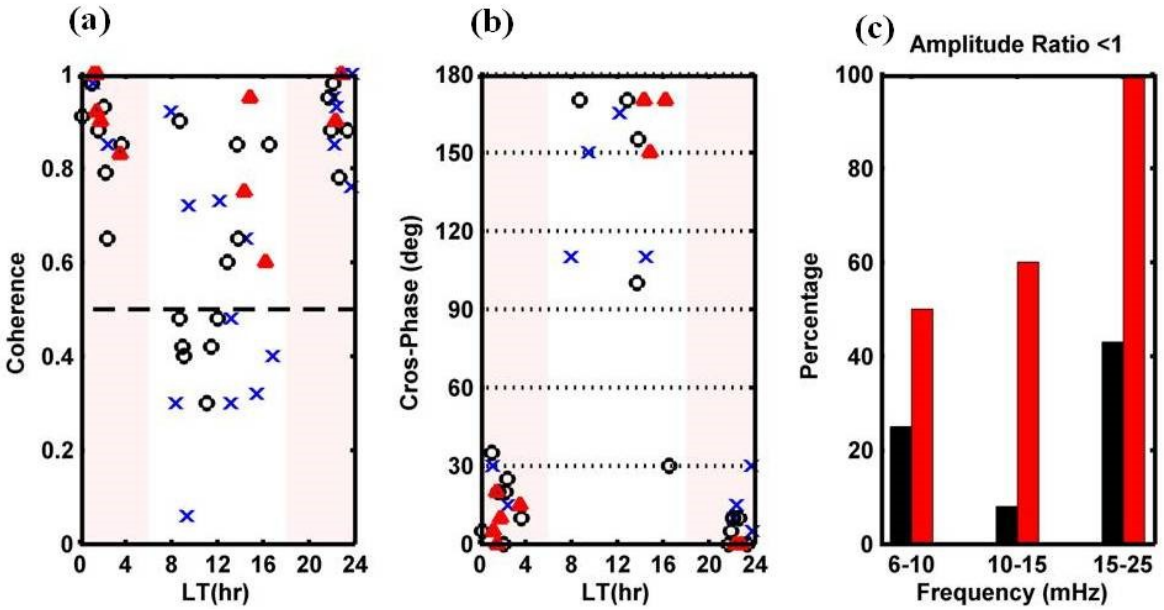


Figure 1: Statistical results of the characteristics of Pi2 oscillations in the frequency bands 5–10mHz (crosses), 10–15mHz (circles), and 15–25mHz (solid triangles). Local time (LT) dependence of (a) coherence and (b) cross-phase angle between satellite and underneath ground station. (c) Bar plot showing the percentage of events with satellite to ground amplitude ratio less than 1 for day (red bar) and night (black bar). Events with coherence >0.5 are used in Figures 1b and 1c.

References:

Thomas, N., G. Vichare, A. K. Sinha, and R. Rawat (2015), Low-latitude Pi2 oscillations observed by polar Low Earth Orbiting satellite, J. Geophys. Res. Space Physics, 120, doi:10.1002/2014JA020958.

Thomas, N., G. Vichare and A. K. Sinha (2016), Spatial frequencies associated with the latitudinal structures of ionospheric currents seen by CHAMP satellite Astrophys Space Sci., 361: 205, doi:10.1007/s10509-016-2787-z.

Project ROSMIC

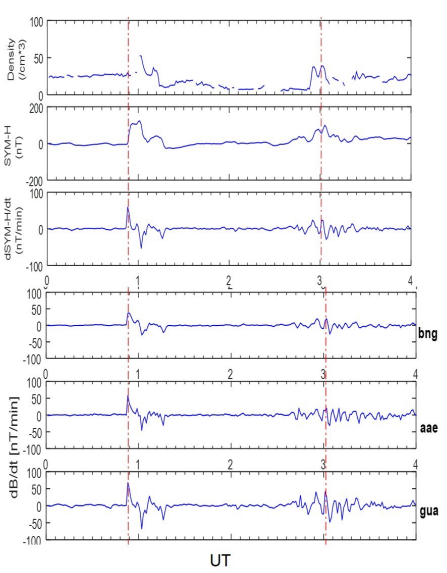
Highlight on Young Scientists 3:

Extreme *dB/dt* Perturbations at Equatorial Locations

B. Olufemi Adebesin
Department of Physical Sciences, Landmark University, Nigeria
NASA Goddard Space Flight Center, Code 674, Greenbelt, Maryland, USA

B. Olufemi Adebesin

Improved understanding of the physical processes behind the extreme space weather events is the key for hazard assessments and mitigation of possibly damaging effects. Geomagnetically induced currents (GICs) is a major space weather effect that could be observed on ground, and are generated through electric currents in the Earth's near-space environment arising from the complex plasma dynamics in the Sun-Earth's system. These currents produce magnetic field variations that can be detected using space-borne and ground-based measurements. GICs are specified by the geoelectric field conditions, which is proportional to the time derivatives of the ground magnetic field variation (*dB/dt*). While most GIC works had concentrated on the aurora region, little had been investigated in the equatorial-region, probably assuming a little significance at the latter region. By considering both observational and simulation (SWMF/BATS-R-US+RCM model) analysis of high-resolution geomagnetic data from some equatorial stations during 4 extreme geomagnetic activities, we observed that the appearance time of the extreme *dB/dt* perturbations at equatorial stations is instantaneous and equitable to those experienced at auroral regions yielding time lags of the order of few seconds. The results indicate that solar proton density variations could be used as a predictor of extreme *dB/dt* enhancement at equatorial-latitudes.



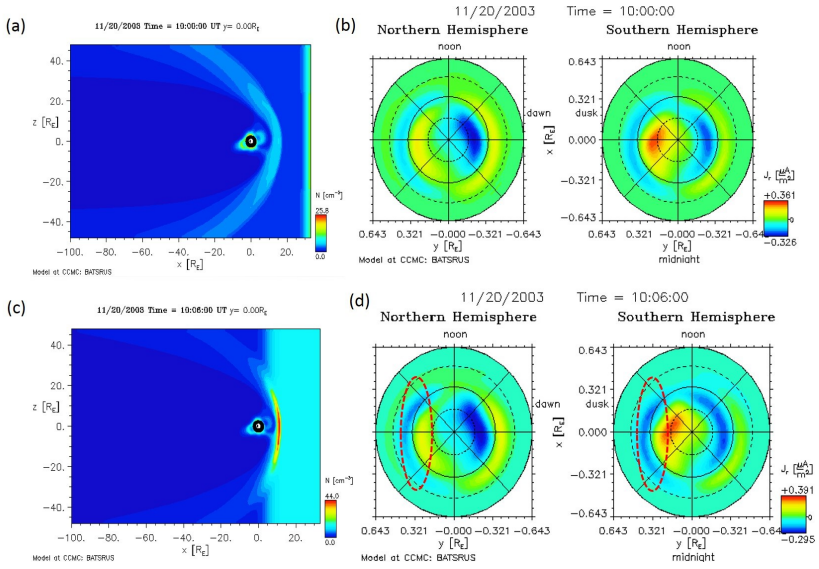


Figure 1: (left) Proton density, magnetic activity index, and ground-based dB/dt response at some selected equatorial stations of Bangui (bng), Addis-Ababa (aae), and Huancayo (hua). The figure indicates simultaneous perturbation in dB/dt variations relative to observational change in the proton density (indicated by the two vertical dashed lines.)
Figure 2: (right) Respective simulated magnetospheric and ionospheric response due to change in proton density at initial stage (a) and (b), and 6 minutes after (c) and (d). The dashed ovals on (d) indicates the appearance of type-2 field aligned currents.

References:

Ngwira, C. M., A. Pulkkinen, F. D. Wilder, and G. Crowley (2013): Extended study of extreme geoelectric field event scenarios for geomagnetically induced current applications. Space Weather, 11, 121-131. doi:10.1002/swe.20021.

Pulkkinen, A., E. Bernabeu, J. Eichner, C. Beggan, and A. W. P. Thomson (2012), Generation of 100 -year geomagnetically induced current scenarios, Space Weather, 10, S04003, doi:10.1029/2011SW000750.

Pulkkinen A., E. Bernabeu, J. Eichner, A. Viljanen, and C. Ngwira (2015): Regional-scale high-latitude extreme geoelectric fields pertaining to geomagnetically induced currents. Earth, Planets and Space. 67:93. doi: 10.1186/s40623-015-0255-6.

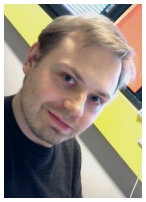
VarSITI

Meeting Report 1:

Space Climate School and Space Climate Symposium 30 March - 7 April 2016, Levi, Finland

Kalevi Mursula and Timo Asikainen
University of Oulu, Finland

Kalevi Mursula



Timo Asikainen

Figure 1. Group photo of participants.

The 2nd Space Climate School and the 6th Space Climate Symposium were organized in 30.3.-7.4.2016 in Levi, Finnish Lapland, under the leadership of the ReSoLVE Centre of Excellence of the Academy of Finland. The School was targeted for PhD students and young researchers of solar-terrestrial sciences, and covered a unique selection of topics relevant for space climate studies, including several long-term datasets and various data analysis and statistical methods. The school had also several hands-on computer exercise sessions, where students practiced to use different online databases and analysis methods. The School had 18 internationally recognized experts as lecturers, and 50 students of 20 nationalities from 4 continents, a truly international setting. The school also offered excellent possibilities for networking between students and lecturers. The 6th Space Climate Symposium gathered 120 attendees of 35 nationalities to discuss the recent developments of space climate. The Symposium gave an extensive overview of a versatile selection of space climate topics, including solar dynamo, long-term solar activity, solar asymmetries, extreme events, solar corona and solar wind, the Earth's magnetosphere and ionosphere, as well as solar influence on climate. In total there were 58 talks and 56 posters. A topical debate on sunspot numbers was organized, which sparked a lively discussion on different aspects of sunspot observations, and initiated a community action on homogenizing the sunspot number series into a physical parameter with time-varying error estimate. The program and presentations of the Space Climate School and Symposium are available at http://www.spaceclimate.fi

Project ROSMIC

Meeting Report 2:

3rd International ANtarctic Gravity Wave Instrument Network (ANGWIN) Science Workshop

Tracy Moffat-Griffin
British Antarctic Survey,
United Kingdom

Tracy Moffat-Griffin

Figure 1. The workshop photo.

The 3rd ANGWIN science workshop was organised by the British Antarctic Survey and held in Cambridge 12th-14th April 2016. We had 33 delegates at the meeting from 10 different countries. VarSITI were co-sponsors of the meeting and their sponsorship contributed to the provision of partial funding for 8 early career scientists to attend the workshop. We had a range of topics covered by presentations at the workshop; modelling studies of gravity waves in the Polar Regions, observational results from all regions of the atmosphere and also future instrumentation that will be deployed in the coming year. We had two fruitful discussion sessions where content for the new ANGWIN website (www.bas.ac.uk/projects/angwin) was discussed, future ANGWIN related publications planned and also future collaborative projects devised. It was a successful workshop and we are grateful to VarSITI for their support.

Project ROSMIC

Meeting Report 3:

Session of Extreme Space Weather Events EGU 2016

Christine Amory-Mazaudier
Collaborator UMPC/Paris VI, Staff Associate Abdus Salam ICTP, France

Christine Amory-Mazaudier

The EGU General Assembly brought together 13,350 participants from 109 countries. Several session of EGU were merged in the Extreme Space Weather Event with six main communications and 16 posters were presented on Wednesday 20, 2016.

Space Weather events and Statistics:

D. Baker presented the extreme Space Weather Event of July 23, 2012 (Dst ~- 300nT). He noticed that the main factors that must be taken into account are the Solar wind speed and the Bz component of the Interplanetary Magnetic Field (IMF). With the ACE satellite it is possible to know one hour before the impact of a solar perturbation, its solar wind speed and its IMF Bz. D. Baker informed us also that in USA there is the SWAP: Space Weather Action Plan to prevent the possible damages on new technologies. Nikitina et al., presented a statistics of the extreme events for geomagnetic and geoelectric variations in Canada based on more than 40 years of magnetic data (1972-2013), with a time resolution of one minute. In this data set there is the extreme event of March 13, 1989, which was largely reported by the media and drew the attention of the population on Space Weather. Another communication by Rami Vainio et al., has focused on the extreme SEP (Solar Energetic Particles) events. Two events, those of October 1989 and July 2012 have been qualified as extreme space weather event. And again, the period of July 2012 was noticed.

Long term variations:

Two other communications were interested in understanding the variations of spots cycle. Popova using an alpha omega dynamo model to interpret the long term oscillations of solar activity predicted large minima every few hundred of years. Yndestad and Solheim have interpreted some solar minima by the influence of gravity between the large planets of the solar system. They have explained the minimum of Dalton by the influence of Uranus and Neptune. Finally, Thomas et al. have proposed a study on the Cosmic Rays. 90% of the Cosmic rays are protons of energy from 100 MeV to 100 GeV. The Cosmic Ray fluxes are modulated by the heliospheric magnetic field and have a 22 years cycle. The polarity + or – of the heliospheric magnetic field defines the trajectories o the CR.

Project ROSMIC

Meeting Report 4:

German Research Program ROMIC in Külungsborn

Franz-Josef Lübken
Chairman of the local and science organizing committees, Germany

Franz-Josef Lübken

Within the German research program ROMIC (Role Of the Middle atmosphere In Climate) a status seminar took place on 2/3 May 2016 at the Leibniz Institute of Atmospheric Physics (IAP) in Külungsborn. ROMIC is closely related to ROSMIC and is funded by the German Federal Ministry of Education and Research (BMBF). It consists of 18 projects at 15 institutes in Germany with a total budget of 8 million Euro for a period of three years.

Figure 1. Group photo of participants.

A total of approximately 80 scientists and students participated in the meeting and reported about recent progress being made regarding measurements and modeling for a better understanding of climate effects in the middle atmosphere and its impact on the troposphere. Several science topics was covered including the variation of solar spectral irradiance and its impact on the middle atmosphere, long term variability and trends of temperatures, dynamics, mesospheric ice clouds, hydroxyl emissions, and stratospheric aerosols, as well as various coupling mechanisms. The German ROMIC program will Terminate in the near term future. Therefore, some ideas and plans to initiate a second phase were discussed. More information about ROMIC including science objectives and results can be found on the ROMIC wegpage at https://romic.iap-kborn.de/index.php?id=9.

Meeting Report 5:

JpGU2016 Space Weather, Space Climate and VarSITI session, 22-23 May, Makuhari, Japan

Ryuho Kataoka
National Institute of Polar Research, Japan

Ryuho Kataoka

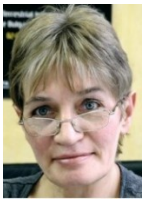
Figure 1. Photos from the session.

JpGU2016 Space Weather, Space Climate, and VarSITI session was held on May 22-23 at Makuhari, Chiba, Japan. "Past, Present, and Future of Solar-Terrestrial Environment" is the keynote of this session. We shared the latest scientific papers to understand how the solar-terrestrial environment changes in various time scales, and discussed the necessary international collaboration projects associated with VarSITI. This session was cooperated with Project for Solar-Terrestrial Environment Prediction (PSTEP, PI: K. Kusano, Nagoya University). Further, this is the first trial of JpGU and AGU joint-session, and Dr. Antti Pulkkinen (NASA/GSFC) was invited as AGU-counterpart convener, thanks to the travel support from VarSITI fund. There were 33 talks and 32 posters, including the latest reports from PSTEP activities on Japanese space weather researches and operations, additional to NASA and NOAA activities.

Meeting Report 6:

The First VarSITI General Symposium, 6-10 June 2016, Albena, Bulgaria

K. Georgieva
Space Research and Technologies Institute, Bulgarian Academy of Sciences, Bulgaria



K. Georgieva

Figure 1. Group photo of participants.

More than 100 scientists from 24 countries gathered in Albena, Bulgaria for the first VarSITI General Symposium (June 6-10, 2016), to overview the progress of various activities in the four VarSITI projects at the midpoint of the five-year program. 114 oral and poster scientific papers were presented in the 7 symposium sessions: Solar and Heliospheric Drivers of Earth-Affecting Events; Long-term Variation of the Sun and Climate; Understanding the Earth's space environment and its connection to space weather; Sun to Mud Campaign Study of March 15-17, 2015 Event and other significant events; Modeling the connection from Sun to Mud (and all steps in between); Data archiving; Special session on Heliospheric Cataloguing, Analysis and Technique Service (HELCATS). Many presentations are available online at http://newserver.stil.bas.bg/VarSITI2016/. A special issue of JASTP will be published with papers based on the Symposium presentations, with promotional access (free for the authors, 9 months free to download).

Meeting Report 7:

The 6th International HEPPA-SOLARIS Workshop

P.T. Verronen
Finnish Meteorological Institute, Finland

Figure 1. Group photo of participants.

The 6th International HEPPA-SOLARIS Workshop was held on 13-17 June, 2016, at the Finnish Meteorological Institute in Helsinki, Finland. The workshop continued the series of meetings organized since 2008 and focused on observational and modeling studies of the influences of solar radiation (SR) and energetic particle precipitation (EPP) on the atmosphere and climate. A total of 57 scientists participated from the following countries: Finland 14, USA 9, Germany 9, Norway 6, UK 5, Sweden 3, Greece 2, Spain 2, Switzerland 2, Czech Republic 1, Egypt 1, France 1, Japan 1, New Zealand 1. A total of 65 presentations were given: 7 invited oral, 35 oral, 23 posters. The workshop was scientifically and financially sponsored by VarSITI/SCOSTEP, IAMAS/IUGG, and SPARC. The workshop web pages at http://heppa-solaris-2016.fmi.fi provide more information.

Upcoming meetings related to VarSITI

Conference	Date	Location	Contact Information
6th IAGA/ICMA/CAWSES Workshop on Vertical Coupling in the Atmosphere-Ionosphere System	Jul. 25-29, 2016	Tainan, Taiwan	http://www.ss.ncu.edu.tw/~vcais6/
41st COSPAR Scientific Assembly	Jul. 30-Aug. 7, 2016	Istanbul, Turkey	http://www.cospar-assembly.org
AOGS 13th Annual Meeting	Jul. 31-Aug. 5, 2016	Beijing, China	http://www.asiaoceania.org/aogs2016/
HESPERIA Summer School	Aug. 29-Sep. 2, 2016	Kiel, Germany	http://hesperia-space.eu/
International Symposium on Recent Observations and Simulations of the Sun-Earth System III	Sep. 12-16, 2016	Golden Sand, Bulgaria	http://www.isroses.lanl.gov/
International Symposium on the Whole Atmosphere (ISWA)	Sep. 14-16, 2016	Tokyo, Japan	http://pansy.eps.s.u-tokyo.ac.jp/iswa/
ROSMIC/IAGA workshop on trends and long term variations	Sep. 19-23, 2016	Kühlungsborn, Germany	https://www.iap-kborn.de/1/trends2016/
7th workshop of the VLF/ELF Remote Sensing of Ionospheres and Magnetospheres (VERSIM) working group	Sep. 19-23, 2016	Hermanus, South Africa	http://events.sansa.org.za/versim-information
14th Hvar Astrophysical Colloquium	Sep. 25-30, 2016	Zagreb, Croatia	http://oh.geof.unizg.hr/index.php/en/xivth-hac
International Astronomical Union Symposium 328: Living around Active Stars	Oct. 17-21, 2016	Maresias, SP, Brazil	http://www.sab-astro.org.br/IAUS328
European Space Weather Week	Nov. 14-18, 2016	Oostende, Belgium	http://www.stce.be/esww13/
EGU General Assembly	Apr. 23-28, 2017	Vienna, Austria	http://www.egu2017.eu/
2017 International Conference on Space Science and Communication	May 3-5, 2017	Kuala Lumpur, Malaysia	http://www.ukm.my/iconspace/
JPGU-AGU Joint Meeting 2017	May 20-25, 2017	Makuhari, Japan	http://www.jpgu.org/
2nd VarSITI General Symposium	Jul. 10-15, 2017	Irkutsk, Russia	
2017 IAU Symposium "Space Weather of the Heliosphere"	Jul. 17-21, 2017	Devon, UK	http://www.exeter.ac.uk/iaus335
IAPSO-IAMAS-IAGA joint Assembly	Aug. 27-Sep. 1, 2017	Cape Town, South Africa	http://www.iapso-iamas-iaga2017.com

Short News 1:

Request for Information: Future Directions in Solar Terrestrial Physics

Nat Gopalswamy
NASA Goddard Space Flight Center, USA


Nat Gopalswamy

SCOSTEP has initiated an effort to develop community consensus in defining its future activities based on surveys of (i) current status, (ii) knowledge gap, (iii) future directions in observations and modeling to fill the gaps. As a first step, a COSPAR-SCOSTEP Joint Session on Solar Terrestrial Physics has been organized during the 41st COSPAR scientific assembly in Istanbul on two days (August 5-6, 2016). SCOSTEP scientific discipline representatives (SDRs), COSPAR Main Scientific Organizers (MSOs) and SCOSTEP/VarSITI leaders will be official delegates to this joint session and contribute to the discussion. All participants of the COSPAR scientific assembly are also invited to attend the session.

SCOSTEP solicits input from the community on the key issues that need to be addressed in making progress in solar terrestrial physics. In particular, the community is requested to send their input to the following invited speakers, who will incorporate the community input in preparing their presentations.

Solar Dynamo and the Solar Cycle (Dibyendu Nandi)
Solar Activity in the Coming Decades (Robert Cameron)
Solar electromagnetic emission and climate (Sami Solanki)
Solar mass emission and climate (Kalevi Mursula)
Solar Flares and their Geospace impact (Nicole Vilmer)
CMEs and their Geospace Impact (Sarah Gibson)
Coronal Holes and their Geospace impact (Bojan Vrsnak)
Energetic particles in the inner heliosphere (Olga Malandraki)
Geospace and Atmospheric Impact of Energetic Particles (Bernd Funke)
New Developments in Magntetospheric Studies (Qiugang Zong)
Space Weather (Ian Mann)
Terrestrial Weather – Space Weather Connection (Jens Oberheide)

We anticipate that these inputs will be compiled and developed into a document that will be used in defining future SCOSTEP scientific programs. Please send a copy of your input to the SCOSTEP scientific secretary (mshepher [at] yorku.ca).

Short News 2:

SCOSTEP Awards 2016

Nat Gopalswamy
NASA Goddard Space Flight Center, USA

Nat Gopalswamy

SCOSTEP congratulates the recipients of the 2016 SCOSTEP awards. The Awards Selection Committee unanimously decided on the following awardees: (i) Dr. Brett Anthony Carter (Space Research Centre, RMIT University, Melbourne, Australia) and Dr. Nicholas Michael Pedatella (University Corporation for Atmospheric Research - UCAR, Boulder, CO, USA) for the SCOSTEP Distinguished Young Scientist Award. Dr. Xin Cheng (School of Astronomy and Space Science in Nanjing University, China) receives an Honorable Mention. (ii) Professor Sami Khan Solanki (Max Plank Institute for Solar System Research, Germany) for the SCOSTEP Distinguished Science Award. The SCOSTEP awards were presented at the Awards ceremony held during the inaugural session of the 1st VarSITI General Symposium (Albena, Bulgaria) on June 6, 2016. The awards include a medal and the expenses involved in participating in the symposium and highlighting their research work during the awards ceremony.

Dr. Brett Carter received the 2016 SCOSTEP Distinguished Young Scientist Award for his innovative approach in the study of the occurrence of equatorial plasma bubbles and of geomagnetically induced currents producing results of considerable importance for the understanding of the origin and manifestation of these phenomena.

Dr. Nicholas Pedatella received the 2016 SCOSTEP Distinguished Young Scientist Award for his work on the atmospheric variability and data assimilation and ground-breaking contributions to our understanding of the influence of lower atmospheric waves on the spatial and temporal variability of the mesosphere, ionosphere, and thermosphere.

Professor Dr. Sami Solanki received the 2016 SCOSTEP Distinguished Scientist Award for his profound contributions to all aspects of the influence of solar variability on Earth's climate, including development of physics-based irradiance models, which provide a basis for understanding the spectral solar irradiance variability, as well as to a broader understanding of solar magnetism.

Congratulations to all the three SCOSTEP awardees!

Figure 1. 2016 SCOSTEP Awardees with SCOSTEP Executives: (from left to right) F.-J. Lübken (SCOSTEP Vice President), M. G. Sheppherd (SCOSTEP Scientific Secretary), Nick Pedatella (SCOSTEP Distinguished Young Scientist), S. K. Solanki (SCOSTEP Distinguished Scientist), Brett Carter (SCOSTEP Distinguished Young Scientist), and N. Gopalswamy (SCOSTEP President).

The purpose of the VarSITI newsletter is to promote communication among scientists related to the four VarSITI Projects (SEE, ISEST/MiniMax24, SPeCIMEN, and ROSMIC).

The editors would like to ask you to submit the following articles to the VarSITI newsletter.

Our newsletter has five categories of the articles:

1. Articles— Each article has a maximum of 500 words length and four figures/photos (at least two figures/photos). With the writer's approval, the small face photo will be also added.

   On campaign, ground observations, satellite observations, modeling, etc.

2. Meeting reports—Each meeting report has a maximum of 150 words length and one photo from the meeting. With the writer's approval, the small face photo will be also added.

   On workshop/conference/ symposium report related to VarSITI

3. Highlights on young scientists— Each highlight has a maximum of 200 words length and two figures. With the writer's approval, the small face photo will be also added.

   On the young scientist's own work related to VarSITI

4. Short news— Each short news has a maximum of 100 words length.

   Announcements of campaign, workshop, etc.

5. Meeting schedule

Category 3 (Highlights on young scientists) helps both young scientists and VarSITI members to know each other. Please contact the editors if you know any recommended young scientists who are willing to write an article on this category.

TO SUBMIT AN ARTICLE

Articles/figures/photos can be emailed to the Newsletter Secretary, Ms. Miwa Fukuichi (fukuichi_at_isee.nagoya-u.ac.jp). If you have any questions or problem, please do not hesitate to ask us.

SUBSCRIPTION - VarSITI MAILING LIST

The PDF version of the VarSITI Newsletter is distributed through the VarSITI mailing list. The mailing list is created for each of the four Projects with an integrated list for all Projects. If you want to be included in the mailing list to receive future information of VarSITI, please send e-mail to "fukuichi_at_isee.nagoya-u.ac.jp" (replace "_at_" by "@") with your full name, country, e-mail address to be included, and the name of the Project you are interested.

Editors:

Kazuo Shiokawa (shiokawa_at_nagoya-u.jp)
Center for International Collaborative Research (CICR),
Institute for Space-Earth Environmental Research (ISEE), Nagoya University,
Nagoya, Japan
Tel: +81-52-747-6419, Fax: +81-52-747-6323

Katya Georgieva (kgeorg_at_bas.bg)
Space Research and Technologies Institute, Bulgarian Academy of Sciences,
Sofia, Bulgaria
Tel: +359-2-979-23-28

Newsletter Secretary:

Miwa Fukuichi (fukuichi_at_isee.nagoya-u.ac.jp)
Center for International Collaborative Research (CICR),
Institute for Space-Earth Environmental Research (ISEE), Nagoya University,
Nagoya, Japan
Tel: +81-52-747-6417, Fax: +81-52-747-6323

VarSITI Project co-leaders:

Piet Martens (SEE), Dibyendu Nandi (SEE), Vladimir Obridko (SEE), Nat Gopalswamy (ISEST/Minimax24), Manuela Temmer (ISEST/Minimax24), Jie Zhang (ISEST/Minimax24), Jacob Bortnik (SPeCIMEN), Craig Rodger (SPeCIMEN), Franz-Josef Lübken (ROSMIC), Annika Seppälä (ROSMIC), William Ward (ROSMIC)

SCOSTEP Bureau:

Nat Gopalswamy (President), Franz-Josef Lübken (Vice President), Marianna Shepherd (Scientific Secretary), Vladimir Kuznetsov (IUGG/IAGA), Mark Lester (IUPAP), Takuji Nakamura (COSPAR), Annika Seppälä (SCAR), Craig Rodger (URSI), Dan Marsh (IAMAS), Kyung-suk Cho (IAU)
web site: www.yorku.ca/scostep