Variability of the Sun and Its Terrestrial Impact (VarSITI)
SEE / ISEST-Minimax24 / SPeCIMEN / ROSMIC
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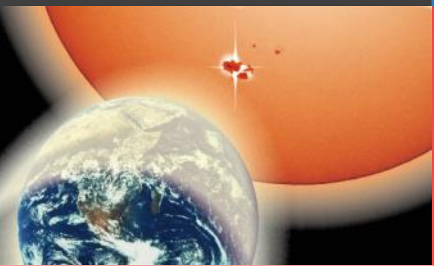

VarSITI Newsletter

Inside this issue

Project ISEST

Article 1:

Kanzelhöhe Observatory Austria: ESA-SSA Expert Service Center for Solar Weather – real-time detection of flares and filaments

M. Temmer[1], W. Pötzi[1] and A. M. Veronig[1]
[1]Kanzelhöhe Observatory/ Institute of Physics, University of Graz, Austria

Manuela Temmer

Werner Pötzi

Astrid M. Veronig

Kanzelhöhe Observatory for Solar and Environmental Research (KSO; www.kso.ac.at) is part of the Solar & Heliospheric Research Group of the Institute of Physics of the University of Graz (Austria). KSO regularly performs high-cadence full-disk imaging of the solar chromosphere in the Hα and Ca II K spectral lines as well as the solar photosphere in white light (see Figure 1). In the frame of the Space Situational Awareness (SSA) program of the European Space Agency (ESA), a new system for real-time Hα data provision and automatic detection of solar flares (Figure 2) and filaments was developed at KSO. The image recognition algorithm and its application to flare detection on real-time KSO Hα data is described in Pötzi et al. (2015, Solar Physics 290, p.951-977, DOI 10.1007/s11207-014-0640-5). The Hα images and events detected are published in near real- time at ESA's SSA Space Weather portal (http://swe.ssa.esa.int/web/guest/kso-federated).

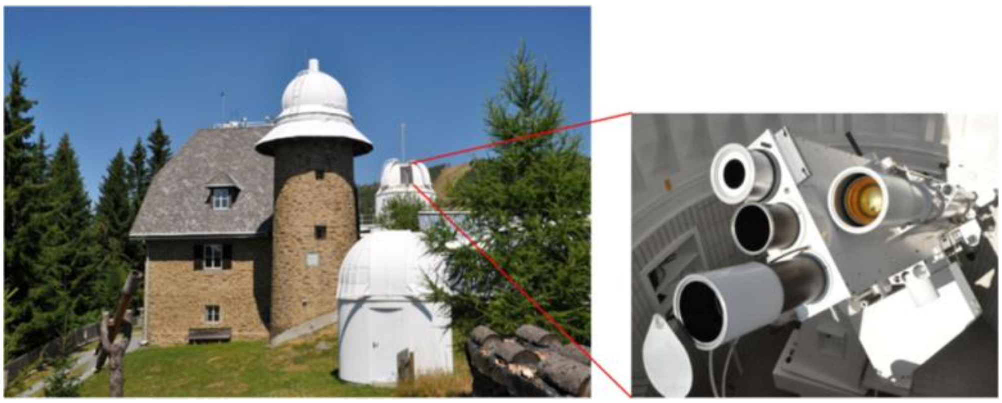

Figure 1. Kanzelhöhe Observatory (left) and its solar patrol telescope consisting of four refractors observing the Sun in Ha, Ca II K, and white light (right).

The ISEST working group „MiniMax24“ coordinates observations from a worldwide network of partner institutes and acts as a long-term campaign providing daily updates on solar and geospace events. It also serves as a "come-into-contact platform" with a broad range of experts. The daily updates, sent via email, cover information on potential high speed solar wind streams emanating from coronal holes (http://swe.uni-graz.at/solarwind/) as well as filaments which are likely to erupt and may have geoeffective consequences. During the

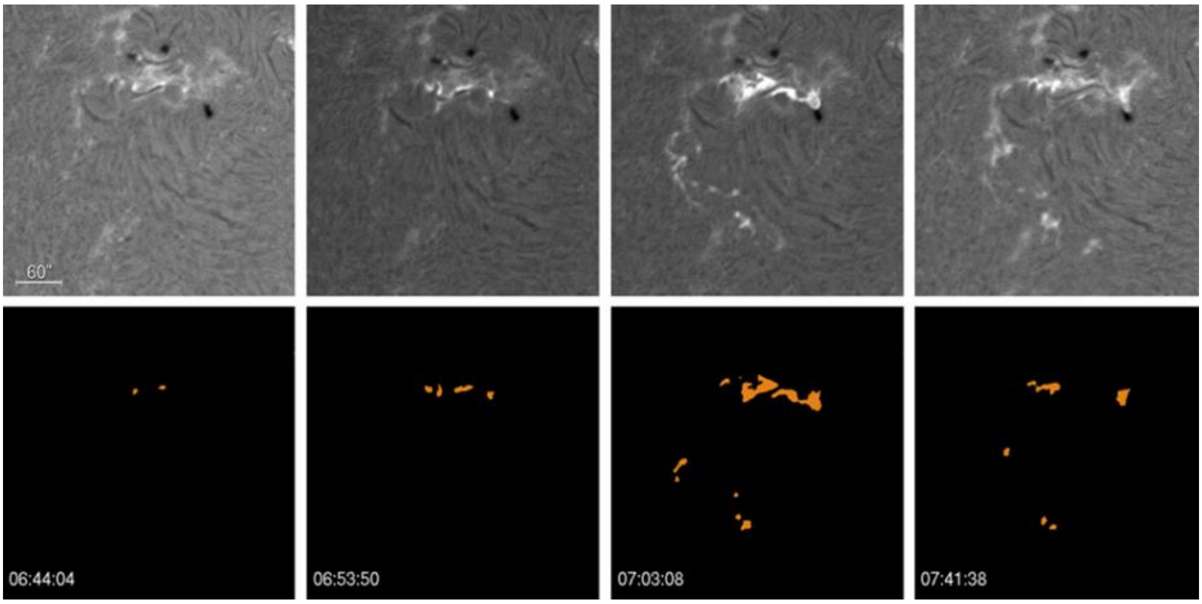

Figure 2. Top: Sequence of Hα images showing the evolution of a 2B flare that occurred on May 10, 2014. Bottom: segmented flare areas.

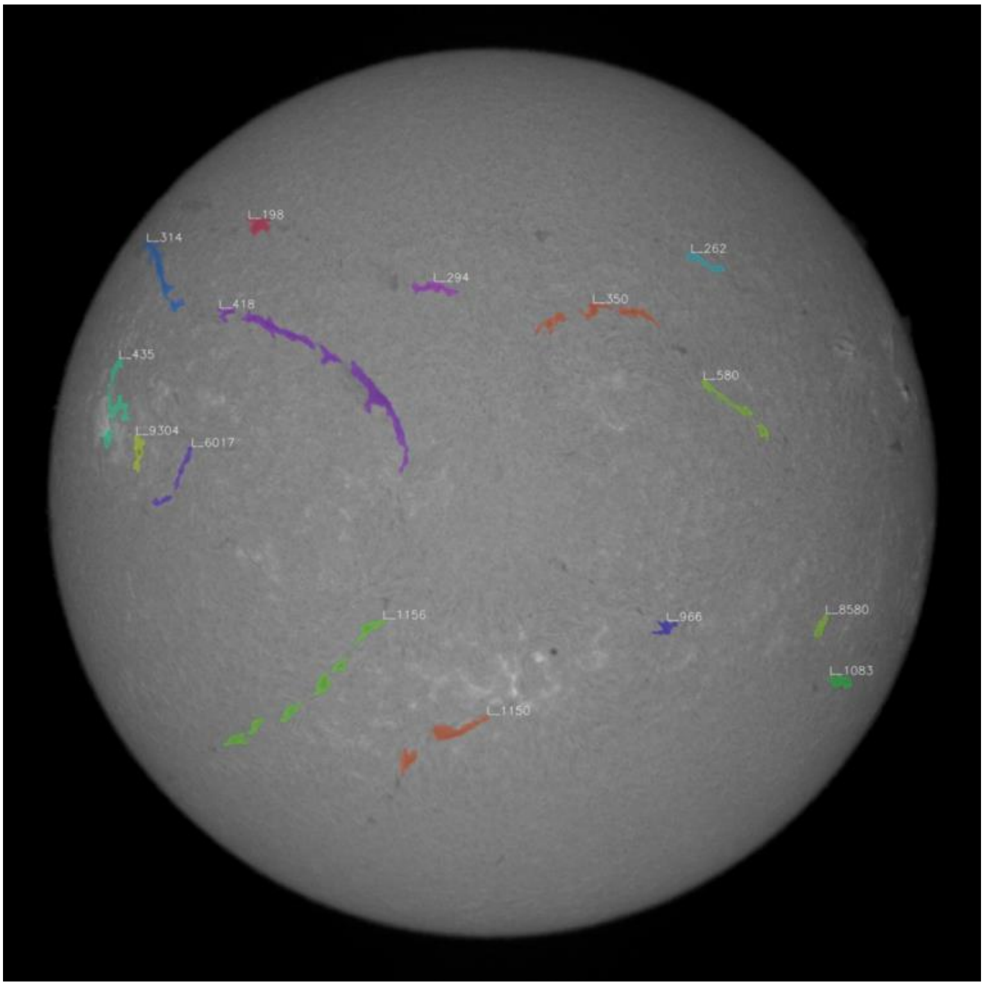

Figure 3. Sample KSO Hα image from July 14, 2015 together with the filament detections. Each filament is assigned and tracked by its unique ID (annotated close to each filament).

MiniMax24 campaign in 2013, we visually identified 79 single filament targets potentially erupting within the next 24 hours. From these filament targets 16 actually erupted. Statistically, our ability to forecast filament eruptions located within ±30° from central meridian was around 20%. To forecast eruptions in a time window of 24 hours was successful for only 6% of the events.

Since summer 2015, KSO provides (if weather permits) the automated positions of filaments extracted from real-time Hα data for MiniMax24. Figure 3 shows an example Hα image together with the filaments identified and labeled. Those filaments chosen as target for MiniMax24, are located within ±30° from central meridian and exceed a size of 10° in either north-south or east-west direction. With the aim to statistically monitor the performance of the automated method, we also will prepare a catalogue of filaments and filament eruptions (Pötzi et al., 2015, in preparation).

Article 2:

RESULTS OF WG1 ACTIVITY IN 2015 INSIDE ROSMIC PROJECT

"Solar cycle in UV radiation and its non-zonal temperature response in the atmosphere of the Earth"

A. Krivolutsky[1], B. Funke[2] and T. Woods[3]
[1]Laboratory for Atmospheric Chemistry and Dynamics, Central Aerological Observatory, Moscow, Russia
[2]Instituto de Astrofísica de Andalucía, CSIC, Granada, Spain
[3]Laboratory For Atmospheric and Space Physics, University of Colorado-Boulder, Boulder, CO, USA


Alexei Krivolutsky


Bernd Funke


Tom Woods

ABSTRACT

Global circulation model of the Troposphere-Middle Atmosphere-Lower Thermosphere ARM (Atmospheric Research Model [Krivolutsky et al., 2015a] is used to simulate the thermal and wind response to solar cycle-induced UV variations. ARM covers altitudes from 1 to 135 km and has corresponding spatial resolution: 1 km in altitude; 11.25° in longitude; 5° in latitude. Internal Gravity Waves parameterization [Lindzen, 1981] and planetary waves (PWs) structure on the basis of observations are determined at the lower boundary of the model. Changes in UV radiation, which is absorbed by ozone and molecular oxygen, are introduced into the model to find the corresponding global wind and temperature response. Stationary PWs with zonal wave numbers 1, 2, 3 are included at lower boundary in model runs. The simulations show that atmospheric response to solar cycle has a visible non-zonal character with the amplitude of about 5 K in the troposphere for the winter season. The effect is rather smaller for summer due to the trapping PWs at lower altitudes. So, in accordance with the results of simulations, the link between the solar UV variability and the middle and low atmosphere strongly depends on the ozone and PWs activity.

NUMERICAL SCENARIO

We have in mind the observations of UV flux in different spectral bands, including the last observations which showed deep minima in the 23rd solar cycle [Haigh et al., 2010; DeLand and Cebula, 2012]. At the same time we didn't include full mentioned depletion in UV flux in 2007 and took it into account partly (twice more reduction than in "usual" solar minima). We used also the increased UV during solar cycle maxima similar to 2000. So, the UV difference between solar max and solar min was larger than for "usual" cycle, but less than the possible difference between 2000 and 2007.

Corresponding values of changes in the UF flow (%) of solar radiation between the maximum (2000) and minimum (2007) of the 23rd solar activity cycle that are used in the calculations look as follows:

the Schumann-Runge continuum	<175 nm	21%
the Schumann-Runge band	175–200 nm	15%
the Herzberg continuum	200–242 nm	9%
the Hartley bands	242–310 nm	4.5%
the Huggins bands	310–400 nm	3%
the Chappuis bands	400–850 nm	1.5%

The model's lower boundary included spatial structure of planetary waves activity (specific for each season of the year) with wave numbers 1, 2, and 3 according to empirical data [Hurrell et al., 1998].

RESULTS OF SIMULATIONS

We begin with planetary wave response. It was found in simulations that the most sensitive to solar cycle mode is s=2. Figure 1 shows global wave structure for maximal and minimal activity of the Sun and for this mode.

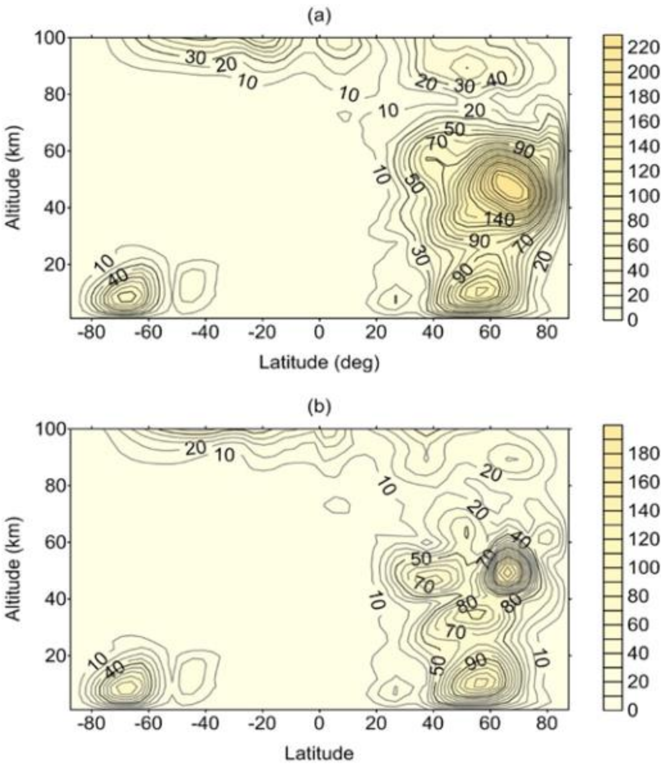

Figure 1. Planetary wave amplitude (dam) with wave-number s=2 for maximal (a) and minimal (b) solar activity in January (ARM simulations).

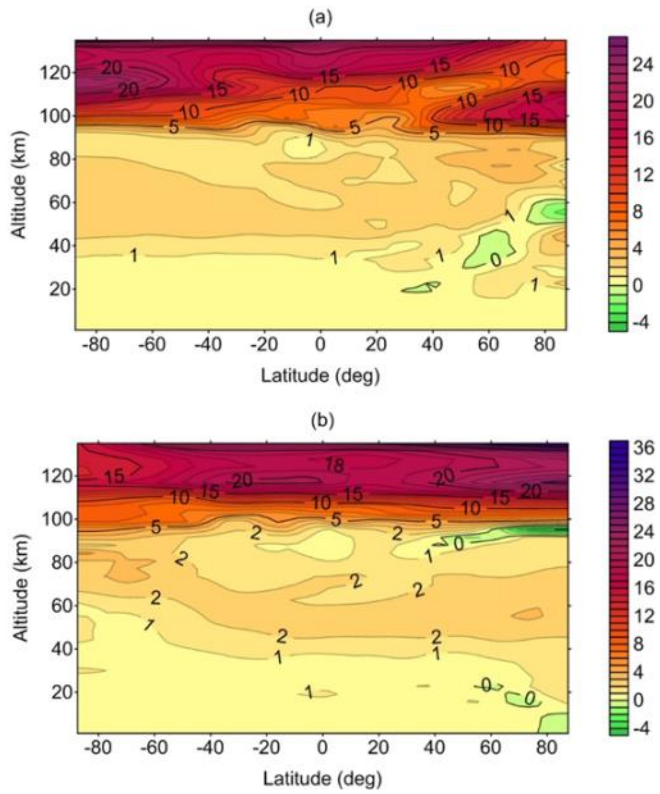

Figure 2. Changes in temperature caused by solar cycle in January (a) and July (b) (simulations with ARM).

Figure 2 illustrates temperature changes between maxima and minima of solar cycle. Figure 2 shows that the effect of the solar cycle (zonally - averaged values) at the altitudes of the ozone layer is about 2 K what is similar to satellite data analysis results in Soukharev and Hood [2006]. The effect becomes stronger (more than 10 K) in the lower thermosphere where the amplitude of radiation variations absorbed by molecular oxygen increases. One can see the increased temperature effect in January in the Southern Hemisphere which has seasonal nature. We see also unusual negative effect of solar cycle in the summer polar mesosphere. Authors suppose that it is a consequence of upward motions.

Figures 3, 4 and 5 present latitudinal–longitudinal sections of the temperature effects at 70 km, 30 km and 5 km altitude respectively. The figures show the wave structure of the temperature response to the solar cycle on all the calculated altitude levels in the lower and middle atmosphere whereas averaging by latitude circle registers a significant response only in the thermosphere and hides the wave structure below 90 km. The wave structure is evidently governed by the presence of stationary waves which transfer the disturbance from higher levels to the troposphere and the lower stratosphere.

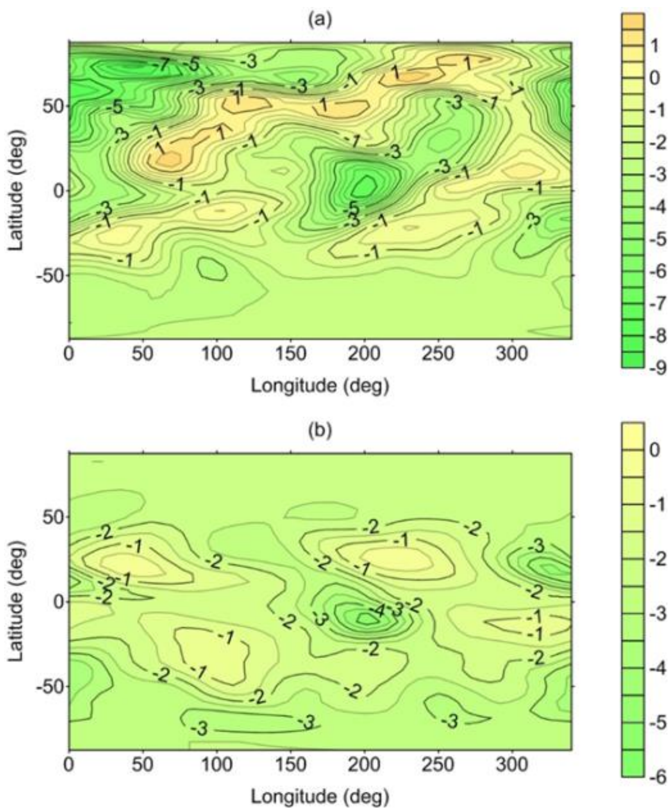

Figure 3. Changes in temperature at 70 km caused by solar cycle in January (a) and July (b) (simulations with ARM).

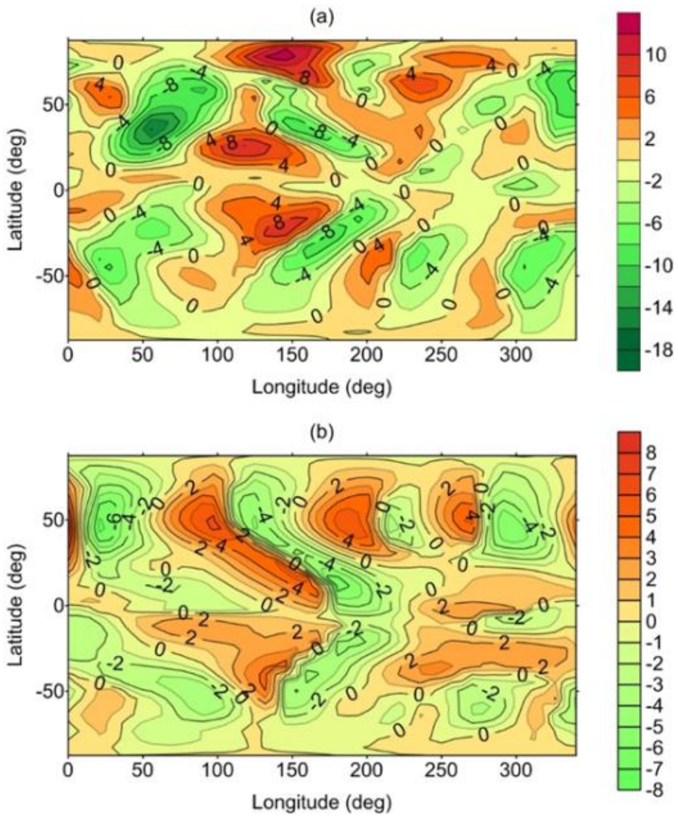

Figure 4. Changes in temperature at 30 km caused by solar cycle in January (a) and July (b) (simulations with ARM).

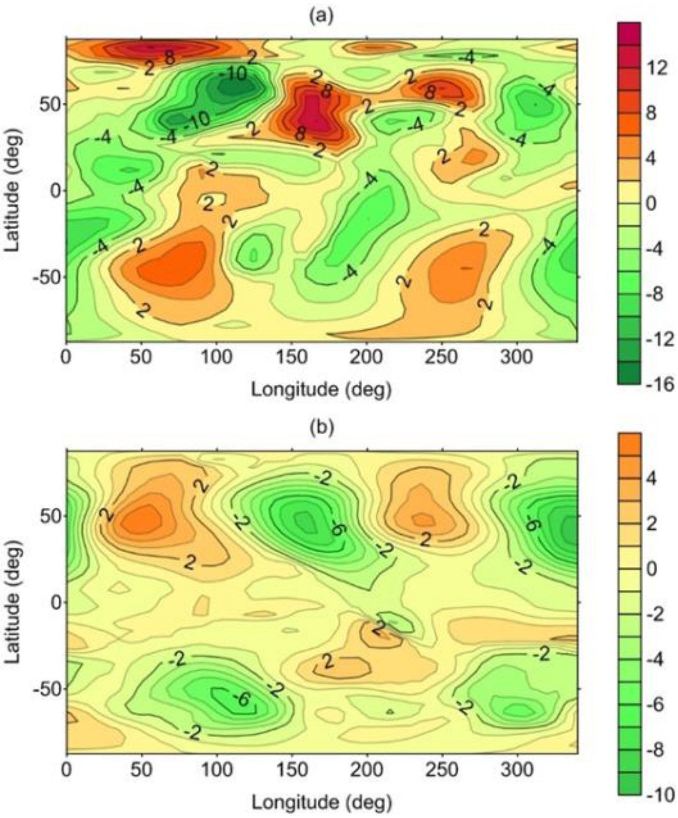

Figure 5. Changes in temperature at 5 km caused by solar cycle in January (a) and July (b) (simulations with ARM).

CONCLUSIONS

Summarizing the presented model results obtained with ARM, we can conclude that new features in the response of the atmosphere to solar cycle have been found – latitudinal dependence of temperature response. This effect (butterfly-like in the stratosphere) really exists in the results of model runs at all altitudes between troposphere and mesosphere. It should be underlined that really we have large scale areas with positive and negative response on the globe at the same time and such effect disappears when we look at zonally-averaged temperature fields. The amplitude of temperature deviations in the troposphere (at 5 km) caused by solar cycle equals 5K approximately and it is obviously, the manifestation of PWs determined at lower boundary of the model. These waves penetrate to higher altitudes where the UV solar radiation is absorbed. Presented results illustrate that the link between the Sun and the atmosphere depends strongly on the sensitivity of PWs to UV variations, which disturb temperature and wind due to the absorption by ozone and molecular oxygen (at higher altitudes). These results are from the paper [Krivolutsky et al., 2015b].

This work was supported by Russian Science Foundation for Basic Research (grant № № 13-05-01052-a).

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Highlight on Young Scientists

Project SPeCIMEN

Highlight on Young Scientists 1:

Particle injections throughout the magnetotail

Christine Gabrielse
Department of Earth, Planetary and Space Sciences,
University of California, Los Angeles, CA, USA

Christine Gabrielse

Observed as a sudden increase in particle flux across several energy channels (10s-100s keV), injections are signatures of particle transport and energization in the magnetosphere. By transporting convecting particles to within the Alfvén layer, injections provide a seed population to the inner magnetosphere that can be further energized to relativistic energies, creating a spacecraft hazard. Knowing the physical process behind injections is therefore important both for predicting space weather in the inner magnetosphere and for understanding how particles are transported and energized throughout the magnetotail.

Because the focus of injection analysis was previously at geosynchronous orbit, I used the Time History of Events and Macroscale Interactions during Substorms (THEMIS) satellites to extend statistical observations from geosynchronous to ~30RE. We found injections are prevalent in the pre-midnight sector, and are correlated with earthward

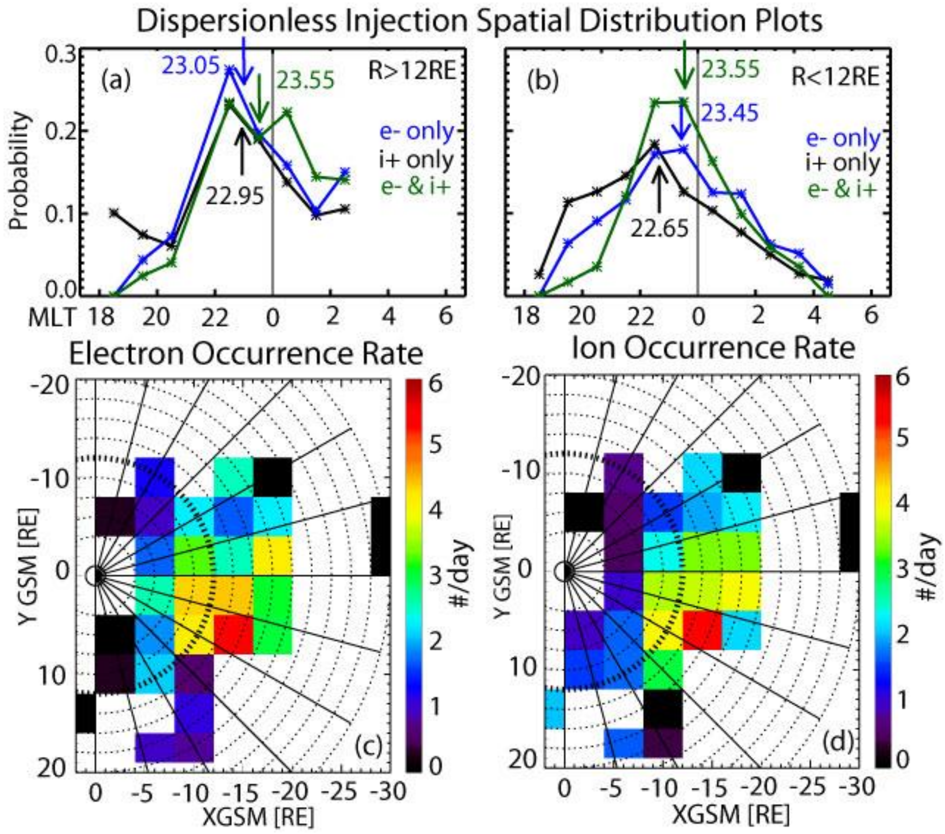

Figure 1. Adapted from Gabrielse et al. [2014]. Dawn-dusk asymmetry of injections throughout the magnetotail, similar to observations of reconnection, fast flows, and dipolarizing flux bundles. Injection probability plotted per 1 h MLT bin (a) beyond and (b) within 12 RE. Medians noted with arrows. Probability defined as the occurrence rate for that MLT sector normalized by the total occurrence rate for that species. Electron-only and ion-only events are offset due to grad-B drift. (c) Electron and (d) ion dispersionless injection occurrence rates plotted per 4 × 4 RE bin. The heavy circle marks R=12 RE. The bins in which the spacecraft spent <20 h were not included.

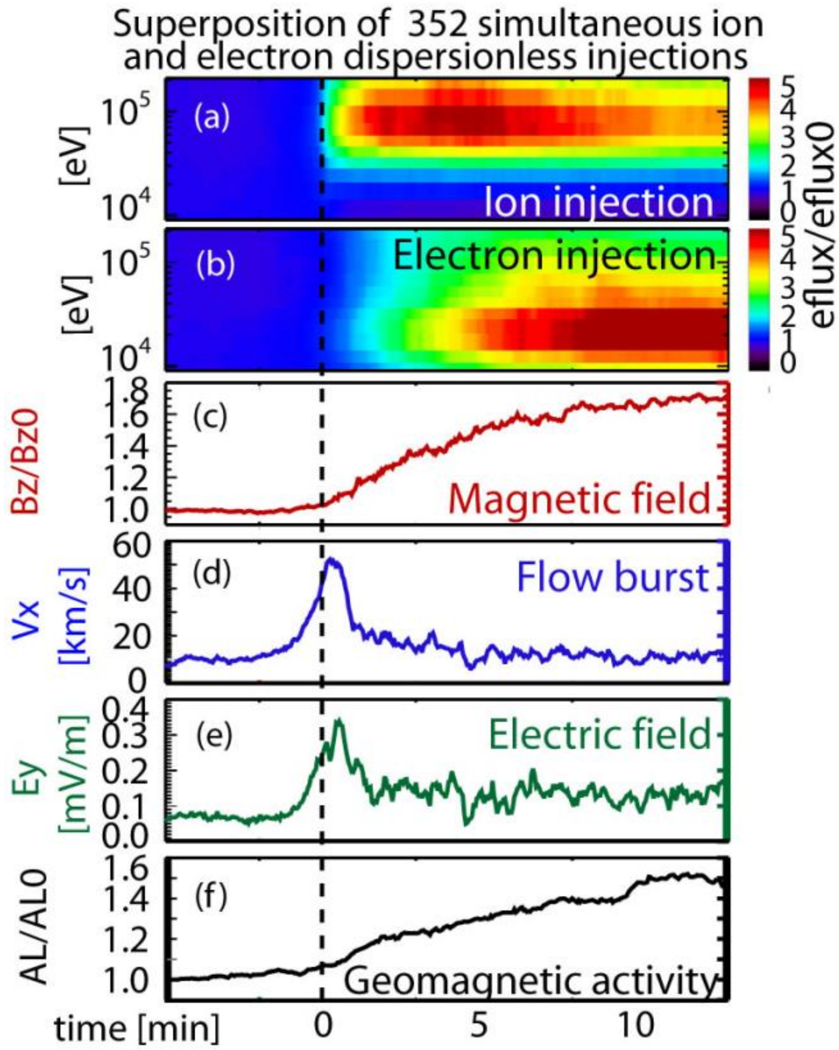

Figure 2. Superposed epoch analysis of simultaneously observed electron and ion injections, assumed to be observed at the acceleration region. Adapted from Figure 13 in Gabrielse et al. [2014]. Ion injections' onset is t0. (a) Median change in ion energy flux. (b) Median change in electron energy flux. (c) Median change in Bz. (d) Median Vx. (e) Median EY. (f) Median change in |AL|.

flows, dipolarization, enhanced dawn-dusk electric field, and enhanced AL. My ongoing work is further characterizing injections through observations and with an analytical model of the earthward-traveling dipolarizing flux bundle, which allows us to determine electron trajectories and sources.

Having studied substorms as an undergraduate at Florida Institute of Technology, I was ecstatic to join the THEMIS team at UCLA, where I continue to enjoy the stimulating atmosphere as a researcher after graduating with my Ph.D. last year.

Reference

Gabrielse, C., V. Angelopoulos, A. Runov, and D. L. Turner (2014), Statistical characteristics of particle injections throughout the equatorial magnetotail, J. Geophys. Res. Space Physics, 119, 2512–2535, doi:10.1002/2013JA019638.

Project SPeCIMEN

Meeting Report 1:

Unsolved Problems of Magnetospheric Physics Workshop

Mick Denton[1,2]
[1]Space Science Institute, Boulder, CO, USA
[2]New Mexico Consortium, Los Alamos, NM, USA

Mick Denton

Figure 1. The workshop combined formal talks and discussions sessions in order to address unsolved problems in magnetospheric physics.

The "Unsolved Problems of Magnetospheric Physics Workshop" (sponsored by SCOSTEP/VarSITI) was held in Scarborough, UK from 6-12th September, 2015. The meeting was convened to assess our current state of knowledge regarding magnetospheric physics and solar-wind/magnetosphere interactions. 57 scientists attended the workshop. Over six days discussions centred on what we don't know about the magnetosphere, rather than what we already do know. A Special Section of the JGR Space Physics on "Unsolved Problems in Magnetospheric Physics" will be open for paper submission from 1st October 2015 to 1st February 2016. More information regarding the meeting can be found at http://spacescience.org/upmpw/.

The workshop is the fourth in a series of meetings previously held in Chile and the USA. We are already looking forward to the next meeting in the series - to be held in Chile in the autumn of 2017!

VarSITI

Meeting Report 2:

Report on the 2015 African Geophysical Society Conference

B. Rabiu[1] and P. Baki[2]
[1]Centre for Atmospheric Research (CAR), National Space Research & Development Agency (NASRDA), Anyigba, Nigeria
[2]School of Physical Sciences and Technology, Technical University of Kenya, Nairobi, Kenya

Figure 1. Participants of 2015 AGS Conference.

Babatunde Rabiu

Paul Baki

The 2015 Annual Conference of AGS took place at the Kenya Institute of Curriculum Development, Nairobi, Kenya, between 21st and 25th September 2015. The conference featured conferment of AGS fellowship award on six (6) eminent scientists for their enormous contributions to the development of Earth and Space Science in Africa. Twenty two (22) participants attended the 2015 AGS conference from 3 African Countries (Nigeria, Kenya and South Africa), France and India. 22 papers were presented as follows: 5 plenary papers; 15 orals and 2 posters. Technical sessions covered in the conference were: Solid Earth & Ocean Sciences; Atmospheric Science; Astronomy and Planetary Science; Solar and Terrestrial Science (Equatorial ionospheric dynamics, Space weather, VarSITI: SCOSTEP new scientific activity); Hydrological Science, Space weather effects on GNSS application at equatorial latitudes ; Earth & Space Science Informatics ESSI; and Science/Applications of SBAS/EGNOS in Africa. Participants had close interaction and exchange ideas during the Conference which was supported by the Centre for Atmospheric Research, National Space Research & Development, Nigeria and SCOSTEP/VarSITI. The 2016 AGS conference is scheduled for Abidjan, Cote D'Ivoire in November 2016. Check www.afgps.org for details.

Meeting Report 3:

CSPM-2015 "Ground-based Solar Observations in the Space Instrumentation Era"

I. Dorotovič[1] and J. Fernandes[2]
[1]Slovak Central Observatory, Hurbanovo, Slovakia
[2]Observatório Geofísico e Astronómico da Universidade de Coimbra (OGAUC), Coimbra, Portugal


Ivan Dorotovič


João Fernandes

The second Coimbra Solar Physics Meeting was held in the University of Coimbra (Portugal) during 5 – 9 October, 2015, for discussing the state-


Figure 1. Group photo of participants.

of-art solar ground-based and space-based observing techniques and related topics. Total of 56 oral contributions (including 21 invited) and 42 posters were presented at this well-attended meeting (91 participants) co-sponsored by the SCOSTEP/VarSITI. The LOC partially supported from this sponsorship 13 mostly young participants. The CSPM-2015 scientific meeting (http://www.mat.uc.pt/~cspm2015/overview.html) covered various aspects of solar dynamic and magnetic phenomena which are observed over the entire electromagnetic spectrum. Emphasis was placed on instrumentation, observing techniques, and solar image processing techniques, as well as theory and modelling through detailed radiative transfer in increasingly realistic MHD models. Many young scientists are familiar with ground based instruments and data, so this was an opportunity for them to participate in international efforts for mutual scientific benefit.

Meeting Report 4:

International School on Equatorial and Low-Latitude Ionosphere (ISELLI)

K. Shiokawa[1] and B. Rabiu[2]
[1]Institute for Space-Earth Environmental Research (ISEE), Nagoya University, Nagoya, Japan
[2]Centre for Atmospheric Research (CAR), National Space Research & Development Agency (NASRDA), Anyigba, Nigeria


Kazuo Shiokawa


Babatunde Rabiu

The International School on Equatorial and Low-Latitude Ionosphere (ISELLI) was held at Abuja, Nigeria on 14-18 September 2015. Participants are 65 students from 7 countries from Nigeria,

Figure 1. Participants of ISELLI.

Rwanda, Kenya, Egypt, Cote D'Ivore, Tanzania, and Brazil. Thirteen (13) lecturers from Japan and Nigeria introduced ionospheric dynamics, measurement techniques, Spread-F/plasma bubbles, and space weather. A visit of observatory to see a MAGDAS fluxgate magnetometer and an OMTI all-sky airglow imager was held on Thursday. Participants enjoyed lively discussions with the lecturers and mutual communications during this one-week school. This school was supported by Centre for Atmospheric Research (CAR), Solar-Terrestrial Environment Laboratory (reorganized to ISEE from Oct. 1, 2015) of Nagoya University, JSPS core-to-core program B. Asia-Africa Science Platforms, Japan, International Center for Space Weather Science and Education (ICSWSE) of Kyushu University, and SCOSTEP's Capacity Building program.

Meeting Report 5:

SCOSTEP-WDS Workshop on Global Data Activities for the Research of Solar-Terrestrial Variability

T. Watanabe[1,2,3], K. Shiokawa[3] and J. Zhang[4]

[1]ICSU-WDS International Programme Office, Tokyo, Japan

[2]National Institute of Information and Communications Technology, Tokyo, Japan

[3]Institute for Space-Earth Environmental Research (ISEE), Nagoya University, Nagoya, Japan

[4]School of Physics, Astronomy and Computational Sciences, George Mason University, Fairfax, VA, USA


Takashi Watanabe


Kazuo Shiokawa


Jie Zhang

This Workshop was held in Tokyo at the National Institute of Information and Communications Technology (NICT) from 28 to 30 September 2015. In total, 51 papers (36 oral and 15 poster papers) were presented. Among these, 29 papers dealt with data-oriented activities (data systems, metadata networks, databases, data-oriented information technologies), and 20 data-analysis papers were presented to discuss solar-terrestrial phenomena with various time scales, including the St. Patrick's Day 2015and the Summer Solstice 2015 Events. Presenting materials (PDF) of these papers have been linked to the final programme posted on the Workshop Web page*. As an initial step of collaborations between SCOSTEP and WDS on data activities of VarSITI, a Letter of Agreements (LoA) was signed during the Workshop by which SCOSTEP becomes a formal Partner Member of the World Data System (WDS)†. Papers relevant to this Workshop will be published in a special issue of the Earth, Planets and Space††.

*http://isds.nict.go.jp/scostep-wds.2015.org/index.html

†https://www.icsu-wds.org/news/news-archive/scostep-becomes-wds-partner-member

††http://www.earth-planets-space.org/

Figure 1. Top: Group photo on 29 September 2015. Bottom: Signing LoA by the SCOSTEP President (N. Gopalswamy, right) and the WDS-IPO Executive Director (M. Mokrane, left).

Upcoming meetings related to VarSITI

Conference	Date	Location	Contact Information
International Study of Earth-affecting Solar Transients (ISEST/MiniMax24) Workshop	Oct. 26-30, 2015	National Autonomous University, Mexico City, Mexico	http://cintli.geofisica.unam.mx/congreso/
Solar Variability and its Heliospheric Effects	Nov. 2-6, 2015	Athens, Greece	http://bbc-sws.astro.noa.gr/
International Reference Ionosphere 2015 Workshop	Nov. 2-13, 2015	Bangkok, Thailand	http://www.iri2015.kmitl.ac.th
2nd Symposium of the Committee on Space Research (COSPAR): Water and Life in the Universe COSPAR 2015	Nov. 9-13, 2015	Foz do Iguacu, Brazil	http://cosparbrazil2015.org/
2015 Sun-Climate Symposium	Nov. 10-13, 2015	Savannah, GA, USA	http://lasp.colorado.edu/home/sorce/news-events/meetings/2015-sun-climate-symposium/
AGU Fall Meeting	Dec. 14-18, 2015	San Francisco, CA, USA	http://fallmeeting.agu.org/2015/
2016 ILWSWorkshop “Science for Space Weather”	Jan. 24-29, 2016	Goa, India	http://www.cessi.in/ssw/
The First VarSITI General Symposium	Jun. 6-10, 2016	Albena, Bulgaria	VarSITI co-chair
6th International HEPPA-SOLARIS Workshop	Jun. 13-17, 2016	Helsinki, Finland	http://heppa-solaris-2016.fmi.fi/

Short News 1:

SCOSTEP
Scientific Committee on Solar-Terrestrial Physics

NASA Living with a Star (LWS) Program Announces the Selection of Proposals Related to SCOSTEP/VarSITI Projects

Nat Gopalswamy

Nat Gopalswamy
NASA Goddard Space Flight Center, Greenbelt, MD, USA

NASA's Living with a Star (LWS) program solicited proposals addressing its goals overlapping with those of SCOSTEP/VarSITI program. A total of 8 proposals were selected under this program: SPeCIMEN (4), ROSMIC (3), and SEE (1). Proposals were judged for compliance based on their relevance to the SEE, SPeCIMEN or ROSMIC themes apart from the scientific merit and feasibility. ISEST/MiniMax24 proposals were not considered because of existing investigations relevant to this project. It is anticipated that selected teams will collaborate and share their models and results with each other and the international VarSITI project leaders. The total funding exceeds $2.5 million over a three-year period. The performance period of the proposals starts on October 1, 2015. A brief summary of the selected proposals is given below.

SPeCIMEN

Joe Borovsky (PI), Mick Denton, Giuseppe Consolini, and Nikolai Østgaard will use a systems-approach to increase understanding of the connections, time lags, feedback loops, and hysteresis in the reaction of the inner-magnetosphere system to the solar wind. The mathematical technique of canonical correlation analysis (CCA) will be used to simultaneously analyze a global data set (millions of points) comprised of multiple measures of the solar wind and multiple measures of the inner magnetosphere. Specific objectives are (1) To determine and assess the dominant correlations and time lags between the multiple variables of the solar wind and the multiple measures of the inner magnetosphere, (2) To determine the important hysteresis terms in the reaction of the inner magnetosphere to driving by the solar wind, (3) To identify correlations with known physical processes and to highlight unexplained correlations, and (4) To exploit CCA methods to gain information about causality and information flow in the web of correlations.

Naomi Maruyama (PI) and her team will investigate the source and mechanisms of long-lived plasmaspheric drainage plumes that have been observed at geosynchronous orbit lasting for 11 days. They will investigate the ionosphere source mechanism for the observed fast refilling rates, and also the possible role of radial plasma transport in the plasmasphere. State-of-the-art physics-based models of the ionosphere, plasmasphere and magnetosphere and the expanded observations will be used for this investigation. The existence of these long-lived plumes has important implications for the dayside reconnection and ring current dynamics.

Mikhail Sitnov (PI) and his team aim to provide a high-accuracy specification of the inner magnetosphere magnetic field and to determine key factors of the solar wind driving that control the storm-time variations of that field. This investigation will use a new generation of empirical geomagnetic field models that reduce the number of ad hoc distortions, characteristic of the past custom-tailored models; these models are capable of resolving the key morphological features of the inner magnetosphere, and responding to multiform variations of solar wind driving, including its trends and memory effects.

Vyacheslav Merkin (PI) and his team is concerned with the specification and prediction of the storm-time magnetosphere using a global MHD model with empirical ring current pressure. They will extract the equilibrium magnetic pressure from the empirical TS07D model and use it to augment their global MHD model thus yielding a predictive global model of the storm-time geospace environment. The observational information from the empirical models is critical in in supplying the missing physics to global magnetospheric models, in particular, the hot plasma pressure in the inner magnetosphere.

ROSMIC

Hanli Liu (PI), Matthias Rempel, and Stan Solomon will constrain the lower limits of solar irradiance and create a grand minimum scenario based on a well-characterized photospheric magnetic field distribution using a small-scale dynamo MHD simulation, and to apply these constraints on the solar spectral irradiance to study the whole atmosphere climate state using the NCAR Whole Atmosphere Community Climate Model with thermosphere and ionosphere extension (WACCM-X). They also propose to elucidate the mechanisms by which the middle and upper atmosphere influence tropospheric climate, and estimate the global and regional climate response to Grand Minimum conditions.

Gavin A. Schmidt (PI) and his team will investigate the impact of various solar-related mechanisms on climate, including total and spectral irradiance change, photochemical effects and cosmic-ray-related ionization effects in the state-of-the-art GISS coupled climate model with high stratospheric vertical resolution, self-generated QBOs, whole atmospheric chemistry, and aerosol microphysics. Their focus will be on the attribution of solar impacts since 1850 and potential changes related to any future grand minima.

Shuhui Wang (PI) and her team will examine the current uncertainties in solar spectral irradiance (SSI) and their implications to model predictions for Sun-climate interaction with particular emphasis on middle atmospheric O3. They propose to: (1) Establish/quantify the correlations of solar-induced variability in the HOx-NOx-O3 system by analyzing long-term datasets of key species and their variabilities with solar parameters. (2) Understand the spatial dependence of the variabilities and assess the agreement among observations or between models and observations. (3) Validate chemical modules by quantifying chemical uncertainties in the HOx-NOx–O3 system during 27-day solar cycles (with little SSI uncertainty). (4) Provide insights for current SSI debates and thus implications for climate models by utilizing the optimized/validated chemical module to investigate variabilities during 11-year cycles (with large SSI uncertainty).

SEE

Andres Munoz-Jaramillo (PI) and his team is concerned with the prediction of Solar Cycle 25 by interfacing 3D kinematic dynamo, MHD solar wind, and galactic cosmic ray transport simulations. They propose to predict the background solar wind speeds and cosmic ray flux on earth for solar cycle 25. This method goes beyond the traditional solar cycle predictions using the sunspot number.

This report is based on the input received from the PIs of the selected proposals.

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. Mai Asakura (asakura_at_stelab.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 "asakura_at_stelab.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_stelab.nagoya-u.ac.jp)
Center for International Collaborative Research (CICR),
Institute for Space-Earth Environmental Research (ISEE), Nagoya University,
Nagoya, Japan
Tel: +81-52-747-6419, 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:

Mai Asakura (asakura_at_stelab.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