



# VarsITI Newsletter

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Project ROSMIC

Article 1:

## CASSIOPE Enhanced Polar Outflow Probe (e-POP)

A. W. Yau<sup>1</sup> and H. G. James<sup>1</sup>

<sup>1</sup>Department of Physics and Astronomy, University of Calgary, Calgary, Canada



Andrew Yau



Gordon James

The Enhanced Polar Outflow Probe (e-POP) is sponsored by the Canadian Space Agency (CSA), and it is a part of CASSIOPE, a multi-purpose Canadian small satellite mission. E-POP has three primary scientific objectives: in-situ observations of micro-scale characteristics of plasma outflow and related micro- and meso-scale plasma processes in the polar

ionosphere, exploration of the occurrence morphology of neutral escape in the upper atmosphere, and the effects of auroral currents on plasma outflow and of plasma microstructures on radio propagation.

To achieve these objectives, the mission strategy of e-POP focusses on in-situ measurements of small-scale plasma,

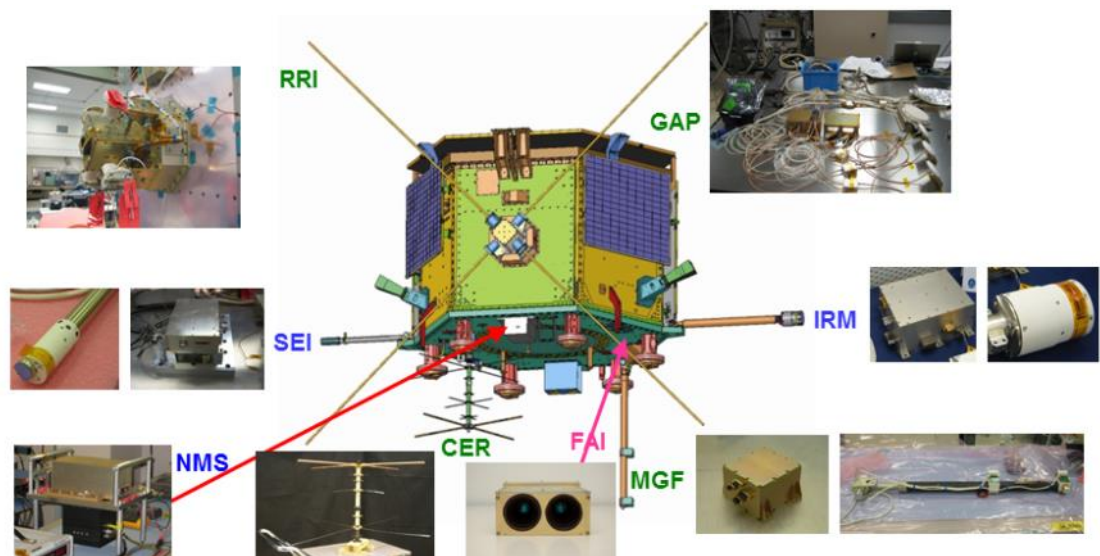


Figure 1. e-POP instrument payload layout on CASSIOPE.

waves, and fields, at the highest possible sampling resolution, and complementing the in-situ measurements with auroral and radio imaging measurements. In order to maximize the measurement and imaging resolution, and to optimize the altitude, local time, and seasonal sampling, the mission is achieved with instruments on a 3-axis stabilized spacecraft in an elliptical orbit at 81° inclination, 325 km perigee, and 1500 km apogee, which results in a precession period of 130 days for the perigee argument and 182 days for the local time, respectively. The e-POP operation plan seeks extensive collaborative observations by other ground and spacecraft facilities to broaden its scientific purview.

Figure 1 shows the layout of the 8 e-POP instruments on the CASSIOPE spacecraft. The imaging and rapid scanning ion mass spectrometer (IRM) and suprathermal electron imager (SEI) measure ion composition and electron distributions, respectively, at hundred-meter spatial resolution. The magnetic field instrument (MGF) consists of two magnetometers that measure field-aligned currents at comparable spatial resolution. The neutral mass and velocity spectrometer (NMS) measures the density and velocity of major neutral species, particularly O and N<sub>2</sub>. The fast auroral imager (FAI) images the aurora and airglow at 630 nm and at near infrared wavelengths in 0.5 and 0.1-s exposures, respectively. The radio receiver in-

strument (RRI) uses two pairs of monopoles to measure the electric field amplitude and polarization of spontaneously emitted very low frequency (VLF) and high frequency (HF) waves, as well as artificial electromagnetic radio waves in conjunction with ground transmitters. The Global Positioning System (GPS) receivers-based attitude, position and radio profiling experiment (GAP) consists of an array of GPS receivers and antennas, for radio occultation measurements in conjunction with the GPS constellation of satellites. The coherent electromagnetic radio (CER) transmits at up to 3 VHF/UHF frequencies to ground receiving stations for total electron content measurements.

CASSIOPE was launched on September 29, 2013, and e-POP science operation began in late November 2013, after the completion of spacecraft commissioning. Science measurements are made primarily during polar passes and occasionally over facilities at lower latitudes, at various altitudes between the perigee and apogee. Reduced science data from an orbit pass is uploaded to the Canadian Space Science Data Portal (cssdp.ca) once it is validated, and made available online through the world-wide web. Extended operation beyond the initial 18-month science operation period (ending in June 2015) is currently under consideration by the CSA.

Article 2:



## A roadmap for better understanding of space weather to shield society

C.J. Schrijver<sup>1</sup> and K. Kauristie<sup>2</sup>

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Carolus J. Schrijver



Kirsti Kauristie

In the spring of 2013 the COSPAR Panel on Space Weather and the steering committee of the International Living With a Star (ILWS) program tasked an international team of 26 space weather scientists to develop a roadmap on research activities leading to demonstrable improvements in space weather services. During 2013-2014 the team had three face-to-face meetings and it conducted discussions in many telecons and by email. Input from the community was sought through presentations at meetings, notifications of an email input channel through community newsletters, and by discussions with the team. The roadmap was submitted to *Advances of Space Research (ASR)* in December 2014. Its Executive Summary is available at <http://tinyurl.com/swxrm/>, which includes a link to information on the team and its steering group.

The roadmap team makes recommendations in three key areas:

*Research: observational, computational, and theoretical needs*

- Advance the international Sun-Earth system observatory along with models to improve forecasts based on understanding of real-world events through the development of innovative approaches to data incorporation, including data-driving, data assimilation, and ensemble modeling;
- Understand space weather origins at the Sun and their propagation in the heliosphere, initially prioritizing post-event solar eruption modeling to develop multi-day forecasts of geomagnetic disturbance times and strengths, after propagation through the heliosphere;





Figure 1. Recommendations by the Roadmap Team on new/additional instrumentation to support space weather research.

- Understand the factors which control the generation of geomagnetically-induced currents (GICs) and of harsh radiation in geospace, involving the coupling of the solar wind disturbances to internal magnetospheric processes and the ionosphere below;
- Develop a comprehensive space environment specification, first to aid scientific research and engineering designs, later to support forecasts.

*Teaming: coordinated collaborative research environment*

- Quantify vulnerability of humans and of society’s infrastructure for space weather by partnering with user groups;
- Build test beds in which coordinated observing supports model development;
- Standardize (meta-)data and product metrics, and harmonize access to data and model archives;
- Optimize observational coverage of the Sun-society system.

*Collaboration between agencies and communities*

- Implement an open space-weather data and information policy;

- Provide access to quality education & information materials;
- Execute an international, inter-agency assessment of the state of the field on a 5-yr basis to adjust priorities and to guide international coordination;
- Develop settings to transition research models to operations;
- Partner with the weather and solid-Earth communities to share lessons learned.

The research recommendations are expanded in three pathways in order i) to obtain >12 hr forecasts of CMEs’ magnetic structure for improved storm forecasts, ii) to improve understanding of the particle environment for (aero)space assets, and iii) to enable pre-event forecasts of solar flares and CMEs and related SEPs. Recommendations within each pathway are grouped into actions that can be taken now, soon, or on a few-year timescale. These actions and associated top-priority new instrumentation (c.f. Figure 1) are introduced in the Executive Summary; more detailed descriptions, backgrounds, and implementation steps are presented in the ASR article.

Article 3:

# Preliminary Observations of the Magnetometer Installed at Dar Es Salaam, Tanzania

E.D. Sulungu<sup>1,2</sup> and C.B. Uiso<sup>2</sup>

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<sup>2</sup>Department of Physics, University of Dar es Salaam, Dar es Salaam, Tanzania



Emmanuel D. Sulungu



Christian B. Uiso

A fluxgate-type magnetometer was installed at Dar es Salaam, Tanzania [(39°07'12"E and 6°24'00"S)] in September, 2008, by the Space Environment Research Center (SERC) of the Kyushu University through the MAGDAS project as part of the network in Africa along the 96° magnetic meridian (Figure 1). This magnetometer measures the variations in the vertical component ( $Z$ ), the variations in the horizontal component along the magnetic meridian ( $H$ ) and the variations in the horizontal component along the magnetic east-west direction ( $D$ ) of the earth's magnetic field.

The recorded magnetic data is automatically sent to a central server located at SERC (Currently known as International Centre for Space Weather Science and Education (ICSWSE)), Kyushu University through the inter-

net. Since its installation, there have been some challenges that face the system. These include the malfunction of the system components for a certain period of time and the frequent power outs within the area where this magnetometer is located.

**Diurnal Variations** of  $H$  component indicated rising in intensity at about sunrise, reach a peak at about local noon and progress into a gentle fall towards the sunset period. It then decreased at night until when it increased again. This is a normal trend for locations in low latitudes (figure 2).

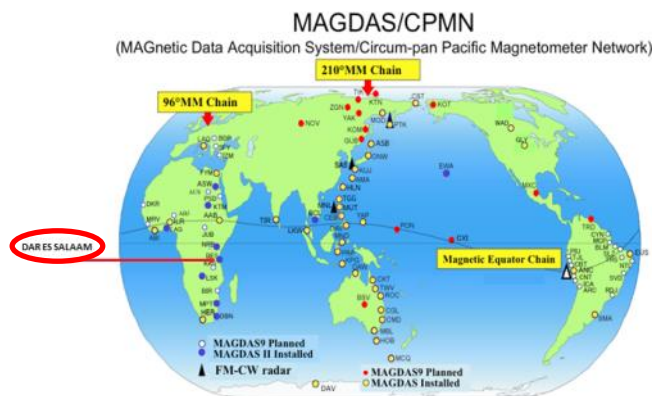


Figure 1. Location of Dar es Salaam MAGDAS station (above), Sensor house (middle) and Data Logging system (below).

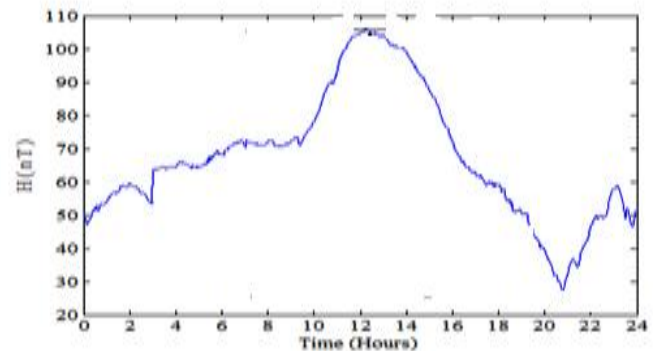


Figure 2. Diurnal variations for  $H$  component as occurred on 13th September, 2009.

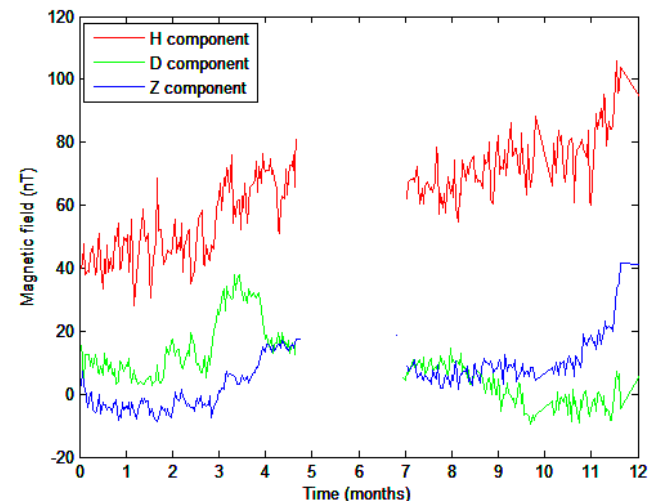


Figure 3. Seasonal variations of the Earth's magnetic field for 2009.



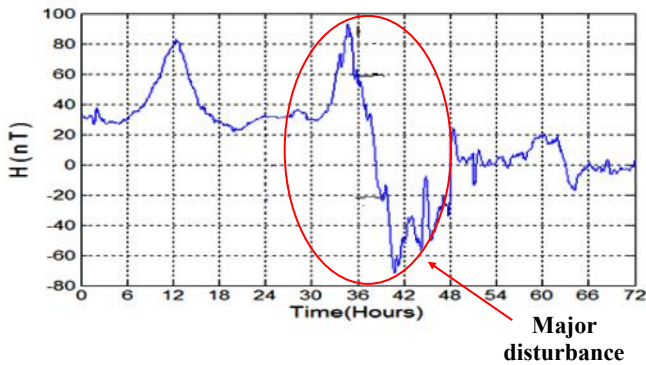


Figure 4. Geomagnetic disturbance occurred on 11th October, 2008.

**S**easonal Variations of the earth's magnetic field were studied by observing the behavior of the geomagnetic field at different months in the year 2009. The result is presented in figure 3. The result shows some gaps, and this is because the data during that time was unavailable; this might have been contributed by the malfunction of the instrument at that particular time.

**T**here were also some geomagnetic disturbances that were observed during the entire period of study. And this was clearly pronounced in the  $H$  component. The sample results is presented in figure 4.

Highlight on Young Scientists 1:



## Combining satellite and ground-based observations to determine energy limits for EMIC-driven electron precipitation

Aaron Hendry

Space Physics Group, Department of Physics  
University of Otago, Dunedin, New Zealand



Aaron Hendry

**M**y research is an investigation into the role of EMIC-driven electron precipitation in radiation belt dynamics, and the effect that this precipitation has on the ionosphere. As part of this work, I have investigated the database of EMIC events presented by Carson et al. [JGR 2013 doi:10.1029/2012JA017998] using the POES SEM-2 instrumentation. We found that EMIC-driven electron precipitation could occur for energies as low as 100 keV, much lower than previously thought. Figure 1 shows the distribution of lower-energy cutoffs determined from the Carson event database. [This work is currently under review.]

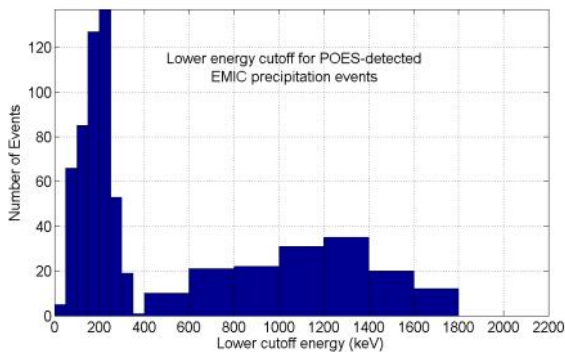


Figure 1. The distribution of the lower energy limits of EMIC-driven electron precipitation for the Carson et al. event database.

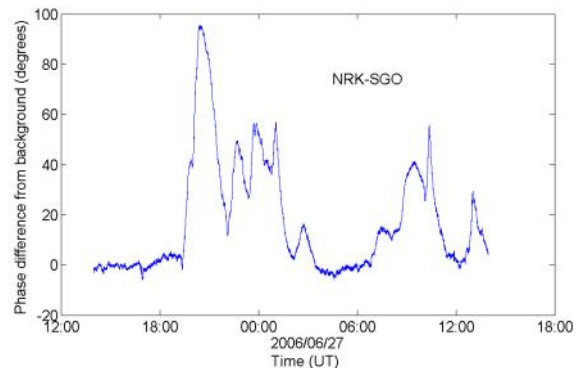


Figure 2. The enhancement in the phase of the NRK VLF signal measured at Sodankylä Geophysical Observatory due to EMIC-driven electron precipitation.

**I** am currently investigating a subset of events from the database, now taking a ground-based perspective. We are using a combination of riometers, magnetometers, and the AARDDVARK network of VLF receivers to measure the effect that EMIC-driven electron precipitation has on the ionosphere. Figure 2 shows an example of the effect of EMIC-driven precipitation seen on the NRK->SGO VLF path. Using these ground-based measurements in concert with modelling, for instance with the LWPC toolset, we will be able to enumerate the electron precipitation reaching the ionosphere. Combining this with our previous POES measurements, we will get a better understanding of the energy levels involved in EMIC-electron interactions.

## Meeting Report 1:



## The 2nd International ANGWIN Workshop

M. J. Taylor<sup>1</sup>, Y. Zhao<sup>1</sup> and P.-D. Pautet<sup>1</sup>

<sup>1</sup>Center for Atmospheric and Space Sciences, Utah State University, Logan, UT, USA



Mike J. Taylor



Yucheng Zhao



P.-Dominique Pautet

**A**NGWIN (ANtartic Gravity Wave Instrument Network) is an international program utilizing instrumentation operated at established research stations around Antarctica to investigate dominant sources, propagation and impact of atmospheric gravity waves on continental-wide scales. The 2nd ANGWIN Workshop was held at Utah State University, USA (October 1-3, 2014) and attended by 24



**Figure 1. The 2nd ANGWIN Workshop Participants, Logan, Utah, USA, October 1-3, 2014.**

scientists and 12 graduate students encompassing a broad-range of expertise in polar aeronomy from the USA, Japan, U.K, Australia, Canada, Brazil and Germany. The workshop was very successful with 38 oral presentations bringing together new ground-based, aircraft and satellite measurements and modeling studies to further knowledge and understanding of gravity wave dynamics and coupling in the Antarctic and Arctic regions. The lively discussions between established scientists, young researchers and graduate students were most rewarding. The next workshop will be hosted by British Antarctic Survey, Cambridge, U.K, 2016. We thank SCOSTEP ROSMIC/VarSITI program and US National Science Foundation for support.

## Meeting Report 2:



## The 12th International Conference on Substorms (ICS-12)

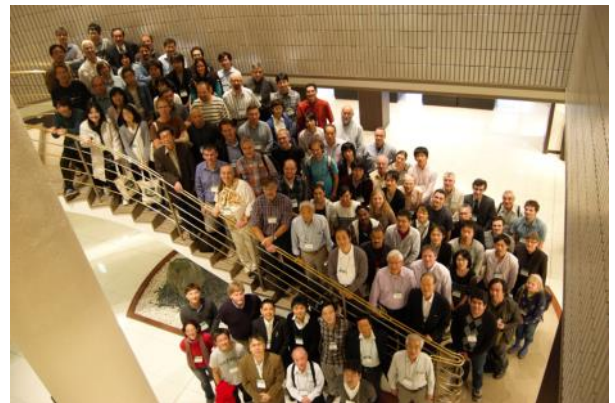
Kazuo Shiokawa

Solar-Terrestrial Environment Laboratory, Nagoya University, Nagoya, Japan



Kazuo Shiokawa

**T**he 12th International Conference on Substorms (ICS-12) was held at Ise-Shima Royal Hotel, Shima, Japan on 10-14 November 2014 in cooperation with SPeCIMEN/VarSITI (web site: <http://www.stelab.nagoya-u.ac.jp/ICS-12/>). The number of attendees was 125 including 68 from outside Japan. The ICS has been held every two years since 1992 to discuss substorm which is a fundamental global-scale disturbance in the earth's magnetosphere. This year (2014) is the 50th anniversary since the first substorm paper by Akasofu (PSS, 1964) was pub-



**Figure 1. Group photo of ICS-12.**

lished. We have three tutorial lecturers (Profs. S.-I. Akasofu, V. Angelopoulos, and D. Baker) as well as many international scientists to discuss substorm processes in the tail, their interaction with the inner magnetosphere and ionosphere, substorm currents and its dynamics and energetics, the role of MHD/kinetic instabilities, storm-substorm relationship, ULF/ELF/VLF waves, and non-Earth substorm-like features. Prof. Akasofu also made an evening talk about the history of auroral research since 19th century with a lot of photos and attracted young scientists and students. Some results presented at ICS-12 will be published in EPS and PEPS journal.

## Meeting Report 3:



## XVIII All-Russian Annual Conference

**Yury Nagovitsyn**

Department of Solar Physics,  
Pulkovo Observatory,  
Saint-Petersburg, Russia



Yury Nagovitsyn

**S**eries of annual Pulkovo all-Russian conferences on solar physics is traditionally held since 1997. The XVIII conference took place October 20-25, 2014. This year it took place on the occasion of the 175th anniversary of the Pulkovo observatory. The scientific committee is headed by Professor Valery Zaitsev and Corresponding Member of RAS Alexander Stepanov. The conference had a pronounced interdisciplinary character and its agenda covered a wide set of themes. It contributed to solutions of important problems of both solar physics and physics that studies influence of active solar processes to the weather and climate of the Earth.

**T**he scientific program of the conference was divided into seven sections:

- (1) the cycle of solar activity: observational and theoretical aspects;
- (2) modeling of active solar formations, processes and phenomena;
- (3) helioseismology;
- (4) solar wind and space weather;
- (5) space and terrestrial climate;
- (6) forecasting of solar activity and their geoeffective manifestations;
- (7) solar-star analogies, star cycles of activity.

**T**otal number of reports on the conference was 97 oral (including 8 plenary) and 44 poster ones. Scientists from Russia, Bulgaria, Ukraine, Kazakhstan, Scotland, Japan, Finland and USA participated in the conference as authors or coauthors of reports.



**Figure 1. Photograph of the beginning for XVIII All-Russian Annual Conference with International Participation "Solar and Solar-Terrestrial Physics – 2014."**

## Meeting Report 4:



## 2<sup>nd</sup> TOSCA Training School

**Ilaria Ermolli**

INAF Astronomical Observatory  
of Rome, Rome, Italy



Ilaria Ermolli

**T**he 2<sup>nd</sup> TOSCA training school on "Solar variability and climate response" was held at ICTP, Trieste, Italy, from 13 to 17 October 2014. The school was organized by COST Action ES1005 TOSCA (Towards a more complete assessment of the impact of solar variability on the Earth's climate), the FP7 collaborative project SOLID, and the Abdus Salam International Centre for Theoretical Physics. It aimed at providing young scientists with a global understanding of the role of solar variability in climate change.



**Figure 1. Group photo of the participants.**

**2**8 students attended the school from 16 countries. The program included lectures, computer classes, and team work. Various topics were covered, including the basics properties (solar, heliospheric, and atmospheric physics), diagnostic techniques, errors and uncertainties, needed research, socio-economic aspects.

**A**fter the school end, the participants were asked to complete an online and anonymous evaluation form. The general pattern is a high degree of satisfaction. In particular, the lectures and team work activities were very well received.

**T**he SCOSTEP/VARISTI financial support contributed to make the school possible.



## Meeting Report 5:



## International school on Space Weather, GNSS, GIS internet and data base

**Christine Amory-Mazaudier**<sup>1,2</sup>

<sup>1</sup>Sorbonne Paris, UPMC Univ. Paris VI, LPP, Paris, France

<sup>2</sup>T/ICT4D, International Centre for Theoretical Physics, Trieste, Italy



Christine Amory-Mazaudier

In the framework of the ISWI project ([www.iswi-secretariat.org](http://www.iswi-secretariat.org)), the GIRGEA ([www.girgea.org](http://www.girgea.org)) organized a Space Weather school, planned from November 10 to 21, 2014.

The main sponsors were Ministers of Burkina Faso, VarSITI program/ SCOSTEP, PNST program/ CNRS (Centre National de la Recherche Scientifique), ICG (International Committee for Global Navigation Satellite System).

The objective of this school was to increase the level of expertise of the West African students in order for them to participate and contribute to international programs.

To fulfil this objective in the school we propose the following topics:

- 1) the network of GPS/GNSS stations, radars and other tools installed in Africa:
  - a) to study the ionosphere and the impact of the sun on the ionised Earth's environment (IHY International Heliophysical Year and ISWI);
  - b) to study troposphere : An estimate of the integrated water vapor content (CIVE) in the atmosphere can be obtained from GPS data using specific treatments.
- 2) the geographic information system (GIS)
- 3) the development of local data bases, the use of existing data bases via internet and the initiation to the new technologies.

Due to political problems, it was decided to postpone the school a few days before the beginning of the school. This school will be held at Rabat Morocco on 16-21 February 2015 ([www.girgea.org](http://www.girgea.org)).



# Upcoming meetings related to VarSITI

Conference	Date	Location	Contact Information
Plasma Physics in Solar System	Feb. 16-20, 2015	Moscow, Russia	<a href="http://plasma2015.cosmos.ru/">http://plasma2015.cosmos.ru/</a>
School of Space Weather ISWI Maghreb 2015	Feb. 16-25, 2015	Rabat, Morocco	<a href="http://www.girgea.org/">http://www.girgea.org/</a>
The 3rd AOSWA Workshop/ 2015 UN/Japan Workshop on Space Weather	Mar. 2-5, 2015	Fukuoka, Japan	<a href="http://aoswa.nict.go.jp/workshop_3/index.html">http://aoswa.nict.go.jp/workshop_3/index.html</a>
Conference on Sun-Climate Connections	Mar. 16-19, 2015	Kiel, Germany	<a href="http://scc.geomar.de/">http://scc.geomar.de/</a>
Meeting on The Role of the earth and its atmosphere on our technology (2nd annual conference of	Mar. 17-20, 2015	Covenant University, Ota, Nigeria	
Inner Magnetosphere Coupling III (IMC III)	Mar. 23-27, 2015	Los Angeles, CA, USA	<a href="http://www.i-mp.org/conference/i-mp_2015/">http://www.i-mp.org/conference/i-mp_2015/</a>
EGU General Assembly 2015	Apr. 12-17, 2015	Vienna, Austria	<a href="http://www.egu2015.eu/home.html">http://www.egu2015.eu/home.html</a>
International Symposium on Arctic Research-4 (ISAR-4)	Apr. 27-30, 2015	Toyama, Japan	<a href="http://isar-4.jp/">http://isar-4.jp/</a>
Meeting on Superflares and Activity of the Sun in the Cycle Formation Epoch	Apr. 28-May 1, 2015	Kazrin-Tel Aviv, Israel	
2015 African Geophysical Society Conference	Jun. 1-5, 2015	Nairobi, Kenya	<a href="http://www.afgps.org/">http://www.afgps.org/</a>
Geospace Environment Modeling (GEM) workshop	Jun. 15-19, 2015	Snowmass, CO, USA	<a href="http://aten.igpp.ucla.edu/gemwiki/index.php/Main_Page">http://aten.igpp.ucla.edu/gemwiki/index.php/Main_Page</a>
26th General Assembly of the International Union of Geodesy and Geophysics (IUGG) 2015	Jun. 22-Jul. 2, 2015	Prague, Czech Republic	<a href="http://www.iugg2015prague.com/">http://www.iugg2015prague.com/</a>
Climate, Space Climate, and Couplings Between NCAR Advanced Study Program (ASP) Summer Col-	Jul. 6-17, 2015	Boulder, CO, USA	<a href="http://www.asp.ucar.edu/colloquium/2015/">http://www.asp.ucar.edu/colloquium/2015/</a>
Asia Oceania Geosciences Society (AOGS) 12th Annual Meeting	Aug. 2-7, 2015	Suntec City, Singapore	<a href="http://www.asiaoceania.org/society/index.asp">http://www.asiaoceania.org/society/index.asp</a>
12th International Workshop on Layered Phenomena in the Mesopause Region (LPMR) 2015	Aug. 10-13	Boulder, CO, USA	<a href="http://cires.colorado.edu/events/lpmr/">http://cires.colorado.edu/events/lpmr/</a>
Unsolved Problems in Magnetospheric Physics (UPMP) Workshop	Sep. 6-11, 2015	Scarborough, UK	<a href="http://spacescience.org/upmpw/">http://spacescience.org/upmpw/</a>
SCOSTEP-WDS Workshop	Sep. 28-30, 2015	Tokyo, Japan	<a href="http://isds.nict.go.jp/scostep-wds.2015.org/">http://isds.nict.go.jp/scostep-wds.2015.org/</a>
The Coimbra Solar Physics Meeting	Oct. 5-9, 2015	Coimbra, Portugal	
International Symposium on Equatorial Aeronomy	Oct. 19-23, 2015	Bahir Dar, Ethiopia	<a href="http://www.bdu.edu.et/isea14/">http://www.bdu.edu.et/isea14/</a>
International Study of Earth-affecting Solar Transients (ISEST/MiniMax24) Workshop	Nov. 2-5, 2015	National Autonomous University,	
Meeting on Solar Variability and its Heliospheric Effect	Nov. 2-6, 2015	Athens, Greece	

## Short News 1:



## The EGU General Assembly 2015

**Manuela Temmer**  
Institute of Physics,  
University of Graz, Styria,  
Austria



Manuela Temmer

The European Geosciences Union (EGU) covers scientific fields of Earth, planetary and space sciences. This interdisciplinary approach perfectly reflects the spirit of VarSITI. The EGU General Assembly 2015 will take place in Vienna, Austria, from April 12-17, 2015. Sessions which may interest you can be found under <http://meetingorganizer.copernicus.org/egu2015/sessionprogramme> (ST–Solar Terrestrial Sciences and PS–Planetary and Solar System Sciences). The sessions will cover observations, theory as well as simulations.

ISEST/MiniMax will be represented in the session ST1.4/PS5.5 “Preconditioning of interplanetary space – a Space Weather parameter”.

## Short News 2:



## NCAR Advanced Study Program Summer Colloquium: Climate, Space Climate, and Couplings Between

**Daniel Marsh**  
Atmospheric Chemistry Division,  
National Center for Atmospheric  
Research, Boulder, CO, USA



Daniel Marsh

This Summer Colloquium (July 6-17, 2015) will bring together graduate students from Atmospheric Science and Solar & Space Physics programs to study the interrelated subjects of terrestrial and space climate, in particular, how they respond to long-term solar variability and anthropogenic climate change. The program will include basic subject tutorials, synthesis lectures, and talks on current hot topics in climate/space climate research. Students will engage in hands-on exercises and work on a week-long collaborative project. For more information and details on how to apply, please see <http://www.asp.ucar.edu/colloquium/2015>.

## Short News 3:



## NASA Living with a Star (LWS) Program Announces Support for SCOSTEP/VarSITI Projects

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



Nat Gopalswamy

NASA/LWS program has announced a proposal opportunity for US scientists to participate in SCOSTEP/VarSITI projects under ROSES 2015 on December 15, 2014 (Solicitation: NNH14ZDA001N-LWS, Heliophysics Living With a Star Science, Appendix B.6). The maximum duration of awards will be three years to coincide with the 2014-2018 timeframe of VarSITI. Proposals will be judged for compliance based on their (demonstrated) relevance to the SEE, SPeCIMEN or ROSMIC themes. It is anticipated that selected PIs will collaborate and share their models and results with each other and the international VarSITI project leaders. Details of the announcement can be found in <http://nspires.nasaprs.com/>.

## Short News 4:



## UN/COPUOS Space Weather Report is available

**T. Obara<sup>1</sup> and I. Mann<sup>2</sup>**

<sup>1</sup>Planetary Plasma and Atmospheric Research Center of Tohoku University, Sendai, Japan

<sup>2</sup>Department of Physics of the University of Alberta, Edmonton, Canada



Takahiro Obara



Iann Mann

In 2010, the Committee on the Peaceful Uses of Outer Space (COPUOS) of the United Nations (UN) established the Long-Term Sustainability (of outer space activity) Working Group (LTSWG) under the Science and Technology Subcommittee. The LTSWG immediately created a space weather expert group (SWEG); T. Obara and I. Mann were elected as co-chairs of SWEG.

To date, SWEG has compiled 50 pages of a working report (A/AC.105/C.1/2014/CRP.13, UN COPUOS, 2014). This report contains: identification of risks, observations, models, prediction tools, and recommended guidelines. In addition, it has explanations of: space weather services, coordination on data and services, and engineering approaches to mitigate space environment effects.

If you are interested in this report, please contact T. Obara at [T.Obara\\_at\\_pparc.gp.tohoku.ac.jp](mailto:T.Obara_at_pparc.gp.tohoku.ac.jp).

## Short News 5:



## Workshop on 'Global Data Activities for the Study of Solar-Terrestrial Variability'

**Takashi Watanabe<sup>1,2,3</sup>**

<sup>1</sup>ICSU-WDS International Programme Office, Tokyo, Japan

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Takashi Watanabe

This joint workshop of SCOSTEP and the ICSU World Data System (WDS) on 'data' will be held on 28–30 September 2015 at the National Institute of Information and Communications Technology, Tokyo, Japan. Principal topics are: (1) application of information technologies to mutual data activities, (2) data systems for VarSITI (data centres, data networks, data analysis systems, etc.), (3) data analysis (VarSITI Campaign Intervals and others), and (4) data-oriented collaborations between SCOSTEP and WDS. Limited travel support will be available. Registration and abstract submission will be initiated by the end of March 2015, and information updates will be posted on the workshop webpage: <http://ids.nict.go.jp/scostep-wds.2015.org/>.



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.  
On workshop/conference/ symposium report related to VarSITI  
With the writer's approval, the small face photo will be also added.
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.

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