SCOSTEP Scientific Committee on Solar-Terrestrial Physics
PRESTO

SCOSTEP/PRESTO NEWSLETTER

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Article 1:

Croatian Activities in Solar-Terrestrial Physics

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Dragan Rosa

Mateja Dumbović

The solar-terrestrial research in Croatia covers the full Sun-to-Earth chain and encompass both long-term and short-term effects, i.e. space climate and space weather alike.

Regular solar observations are performed at Hvar Observatory in white light and H-alpha using a double solar telescope (Figure 1). Studies of phenomena in the lower solar atmosphere and the long-term solar activity as well as empirics-based solar cycle prediction are performed in a close collaboration with the Department of Physics of the University of Rijeka.

Figure 1. Double solar (white-light and H-alpha) telescope of the Hvar Observatory.

Hvar Observatory researchers in addition study properties of solar eruptions and interplanetary transients. The group uses an observational approach as well as empirical and analytical modelling, which resulted in several space weather tools available at their website http://oh.geof.unizg.hr, as well as other space weather services such as NASA's Community Coordinated Modelling Centre (CCMC) and ESA's Space Situational Awareness (SSA) portal. Most of these tools are a result of a particularly strong collaboration with the solar and heliospheric group at the University of Graz. Moreover, the tools are regularly used in the space weather forecasts through services such as CCMC's CME Scoreboard and VarSITI/ISEST/MiniMax24. Hvar Observatory was very active in the previous SCOSTEP program VarSITI and organized two VarSITI/ISEST workshops (Figure 2).

Figure 2. A group photo from the VarSITI/ISEST workshop at Hvar 2018.

Figure 3. SEVAN Particle Detector for Solar Physics and Space Weather research placed on Zagreb Astronomical Obsevatory.

Hvar Observatory has a strong collaboration with Zagreb Astronomical Observatory (ZAO) jointly studying interplanetary disturbances and their galactic cosmic ray imprints – Forbush decreases. Scientists from ZAO focus on the study of morphology and kinematics of interplanetary coronal mass ejections (ICMEs) and solar wind high speed streams. They are also active in the theoretical research of Solar differential rotation and Solar dynamo.

ZAO maintains two instruments used for space weather research: one of the Space Environmental Viewing and Analysis Network (SEVAN) particle detectors (Figure 3) and a Sudden Ionospheric Disturbance (SID) monitor. SEVAN detector is also used for research of new high-energy phenomena originated in terrestrial atmosphere – Thunderstorm Ground Enhancements (TGEs).

ZAO has a strong collaboration with Kanzelhöhe Observatory from Austria and Aragats Space Environmental Center (ASEC) of the Alikhanyan Physics Institute, Armenia. A strong collaboration exists also with the Geophysics department of the Faculty of Science at the University of Zagreb, especially regarding the research on the response of the Earths magnetosphere to different conditions at the Sun and in the interplanetary space. Scientific cooperation with the Faculty of Electrical Engineering and Computing of the University of Zagreb has recently been established regrding the detection and data analysis of the SEVAN and SID detectors. ZAO is also active in organization of solar-terrestrial related meetings such as IHY-ISWI Regional Meeting Heliophysical phenomena and Earth's environment, Sibenik, Croatia 2009, as well as smaller scientific workshops (Figure 4).

Figure 4. Austro-Croatian workshop held at Zagreb Observatory in December 2018 with participants from Hvar Observatory, Zagreb Observatory, University of Graz, University of Zagreb-Faculty of Science/ Geophysics department and SKOLTECH (Russia).

Article 2:

Space Weather Data from FORMOSAT-7/COSMIC-2 mission

Charles Lin[1], P.K. Rajesh[1] and Chi-Yen Lin[2]
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[2]Center for Astronautical Physics and Engineering, National Central University, Taoyuan, Taiwan


Charles Lin


P.K. Rajesh


Chi-Yen Lin

FORMOSAT-7/COMISC-2 (F7/C2) is a joint Taiwan (National Space Organization, NSPO) and United States (National Oceanic and Atmospheric Administration, NOAA) space program, consisting of six identical micro-satellites in 24° low-inclination orbits. This follow-on mission of FORMOSAT-3/COSMIC was launched on 25 June 2019, and provides unprecedented three-dimensional observations of the low-latitude atmosphere and ionosphere to achieve the mission goals of operational weather forecast, space weather monitoring, and meteorological and ionospheric research.

The main payloads are Tri-band GNSS Receiver System (TGRS), RF beacon, and Ion Velocity Meter (IVM) (Fig-1). TGRS includes precise orbit determination (POD) and radio occultation (RO) antennas, supporting GPS CA, L1, L2, and L5 signal receptions, with capability of tracking Galileo and GLONASS. The satellites were launched to an initial orbit of 720 km altitude followed by sequential descending to mission orbit at 550 km for constellation separation. Currently five satellites have descended to 550 km and more than 4000 occultation daily soundings have achieved. RF beacon antenna transmits 400, 965, and 2200 MHz signals for ground receivers worldwide to monitor ionosphere scintillation and total electron content (TEC). The IVM includes a retarding potential analyzer (RPA) and ion drift meter (DM), providing in-situ observations of ion density, composition, temperature and velocity.

The neutral atmosphere data and part of the ionospheric data are available for users at Taiwan Analysis Center for COSMIC (TACC) and U.S. COSMIC Data Analysis and Archive Center (CDAAC). The ionospheric data include the Abel inversion electron density profiles from RO-TEC, with currently about 4000-5000 profiles per day spread over equatorial and low-latitude regions. Despite such larger number of occultations it is often necessary to combine multiple days of F7/C2 measurements to examine global ionospheric features. To improve the spatial coverage, an operational data assimilation system called Global Ionospheric Specification (GIS) has been developed making use of the F7/C2 RO and ground based GNSS slant TECs, adopting Gauss-Markov Kalman filter approach (Lin et al., 2017). GIS provides hourly global electron density profiles with 2.5° by 5° horizontal (in latitude/longitude) and 20 km vertical resolution. An example GIS map at 2000 UT on 23 August 2020 at 300 km altitude is given in Fig-2. It displays global variations of ionosphere, showing the equatorial ionization anomaly (EIA) peaks over the sunlit longitudes. An initial validation of the

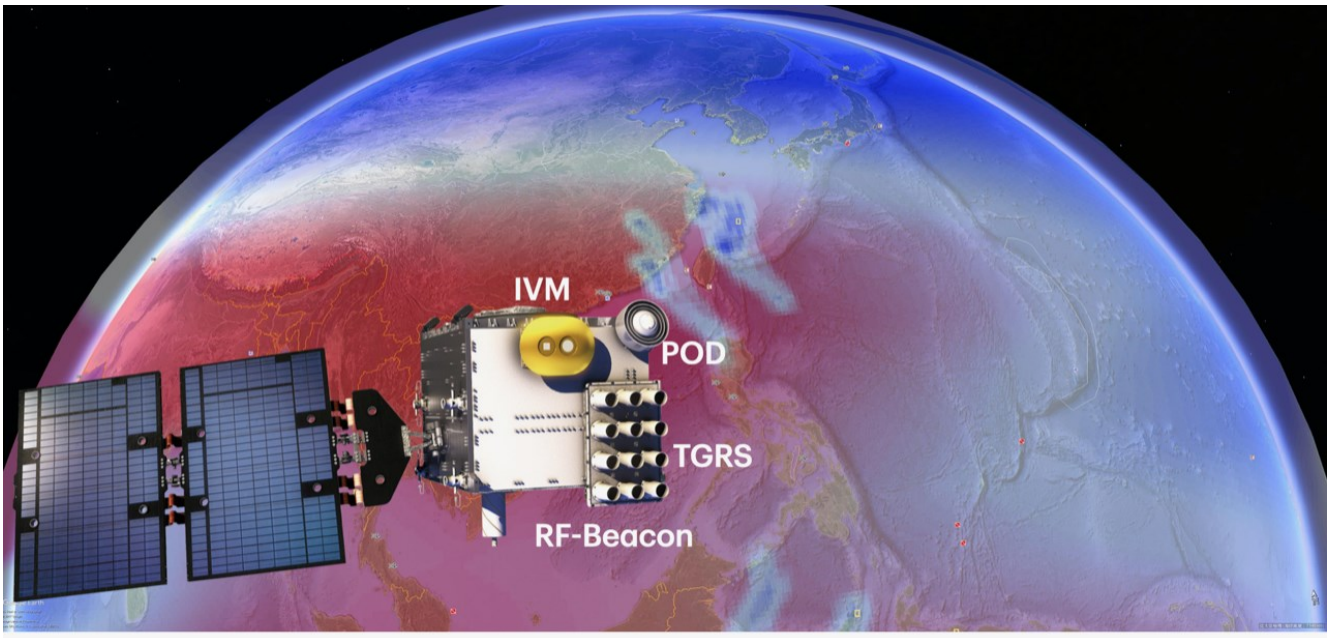

Figure 1. Artistic view of FORMOSAT-7/COSMIC-2 in space.

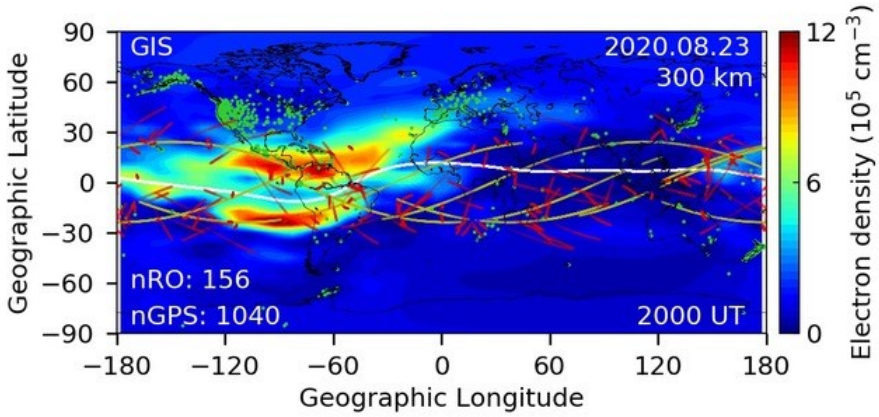

Figure 2. GIS electron density at 2000 UT on 23 August 2020 at 300 km. The white dotted line denotes magnetic equator. F7/C2 track (solid yellow line), and RO tangent locations (red lines) and GPS stations (green dots) are over plotted. nRO gives the number of RO events during the 1-hour period, and nGPS denotes the number GPS stations used.

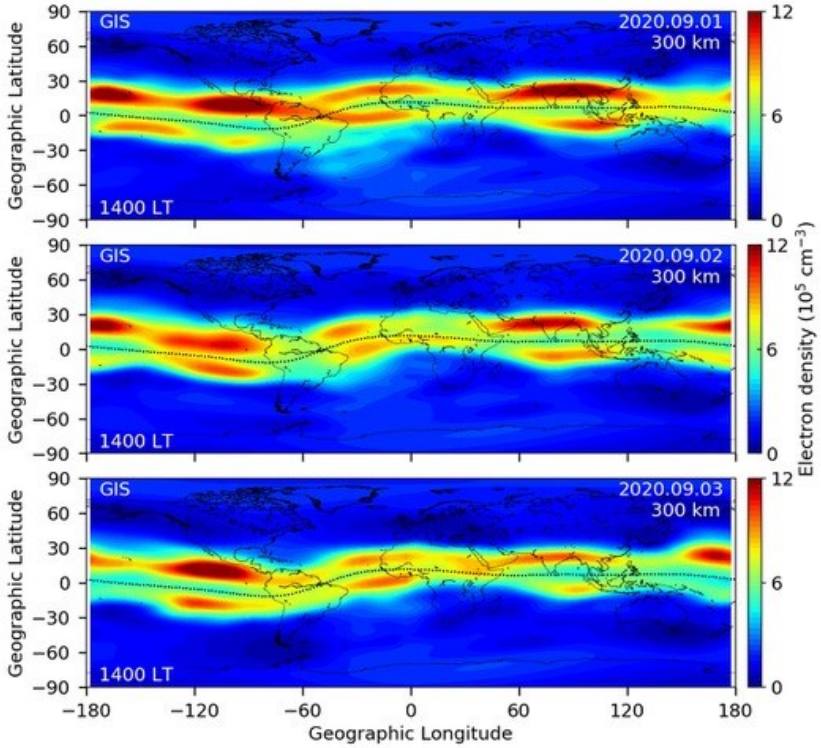

Figure 3. GIS map at global constant local time frame on consecutive days of 1-3 September 2020. The black line denotes the magnetic equator.

RO electron density and GIS have been carried out by Lin et al. (2020).

Fig-3 displays global constant local time maps of electron density at 300 km altitude at 1400 LT, on consecutive days of 1-3, September 2020. Distinct longitudinal wave-4 structure could be noted approximately centered over 120°W, 30°W, 80°E, and 175°E longitudes showing clear day-to-day variability driven by the lower atmospheric forcing. Such global density maps revealing the longitudinal variability previously required 20-45 days combination of RO data.

The RO aided product with hourly latency could be applied for studies of space weather effects and the vertical coupling of atmosphere-ionosphere. GIS data are available for community at National Cheng Kung University web-platform (http://formosat7.earth.ncku.edu.tw) and Taiwan Radio Occultation Process System (http://tacc.cwb.gov.tw/v2/en/trops_download.html).

References

Lin, C. Y., Matsuo, T., Liu, J. Y., Lin, C. H., Huba, J. D., Tsai, H. F., & Chen, C. Y. (2017). Data assimilation of ground-based GPS and radio occultation total electron content for global ionospheric specification. Journal of Geophysical Research: Space Physics, 122, 10,876–10,886. https://doi.org/10.1002/2017JA024185.

Lin, C. Y., Lin, C. H., Liu, J. Y., Rajesh, P. K., Matsuo, T., Chou, M. Y., Tsai, H. F., & Yeh, W. H. (2020). The Early Results and Validation of FORMOSAT-7/COSMIC-2 Space Weather Products: Global Ionospheric Specification and Ne-Aided Abel Electron Density Profile. Journal of Geophysical Research: Space Physics. https://doi.org/10.1029/2020JA028028.

Highlight on Young Scientists 1:

Whole Atmosphere Coupling Embodied by Trace Species Variability during Atmospheric Dynamical Disturbances

McArthur Jones Jr.

McArthur (Mack) Jones Jr.
Space Science Division, U.S. Naval Research Laboratory, Washington, D.C., USA

An important source of meteorological variability in the middle atmosphere is the sudden stratospheric warming (SSW) whereby the polar stratosphere can dramatically warm in mid-winter. It is known that these SSW events are accompanied by coolings in the mesosphere (mesospheric coolings: MC) and other perturbations even higher in altitude. It has only recently been appreciated that these perturbations in temperature are accompanied by perturbations in composition, and using data from the Sounding of the Atmosphere with Broadband Emission Radiometry (SABER) instrument on the Thermosphere Ionosphere Mesosphere Energetics and Dynamics (TIMED) satellite, coupled with model simulations by the NCAR Thermosphere-Ionosphere-Mesosphere-Electrodynamics General Circulation Model (TIME-GCM) a new model of atomic hydrogen (H) variability in response to SSWs/MCs emerged. The advantage of employing TIME-GCM is that it can be constrained to the meteorological forcing from below, but also extends up through the thermosphere to the edge of the exosphere (exobase), allowing one to probe almost the entire atmospheric column. Figure 1 presents TIME-

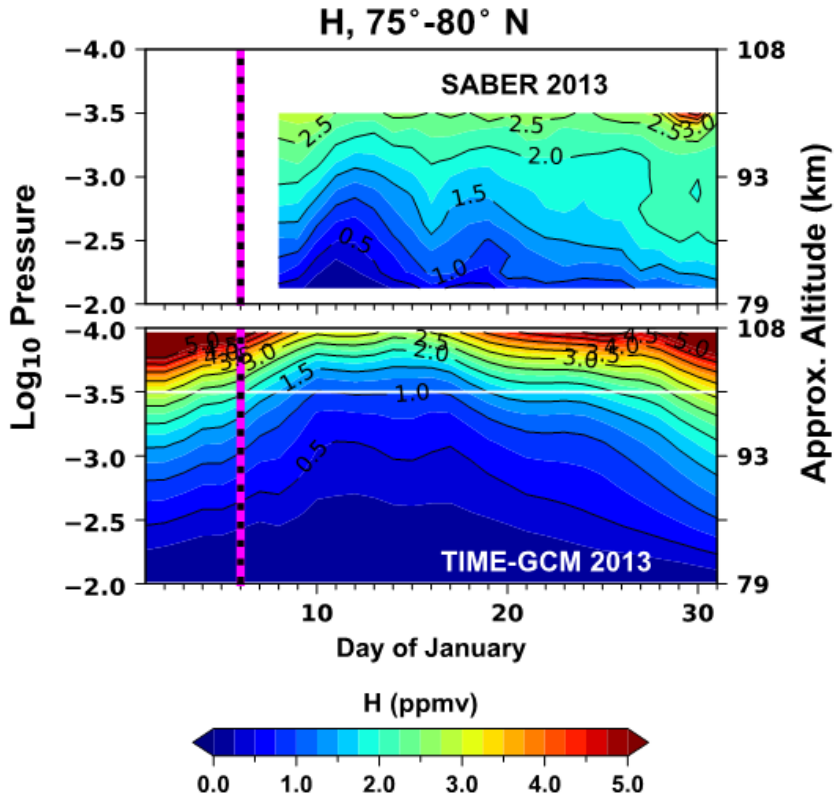

Figure 1. Comparison of SABER zonal mean atomic hydrogen (TOP) mixing ratio in January 2013 with the TIME-GCM (BOTTOM) for the same period. The TIME-GCM was constrained by a numerical weather prediction model in the stratosphere and mesosphere and exhibits a sudden stratospheric warming, the onset of which is indicated by the black vertical line, while the magenta vertical line indicates the onset of the mesospheric cooling. The contour lines in both data and model buckle upwards indicating reductions in H. The horizontal wide line in the bottom panel is simply a fiducial.

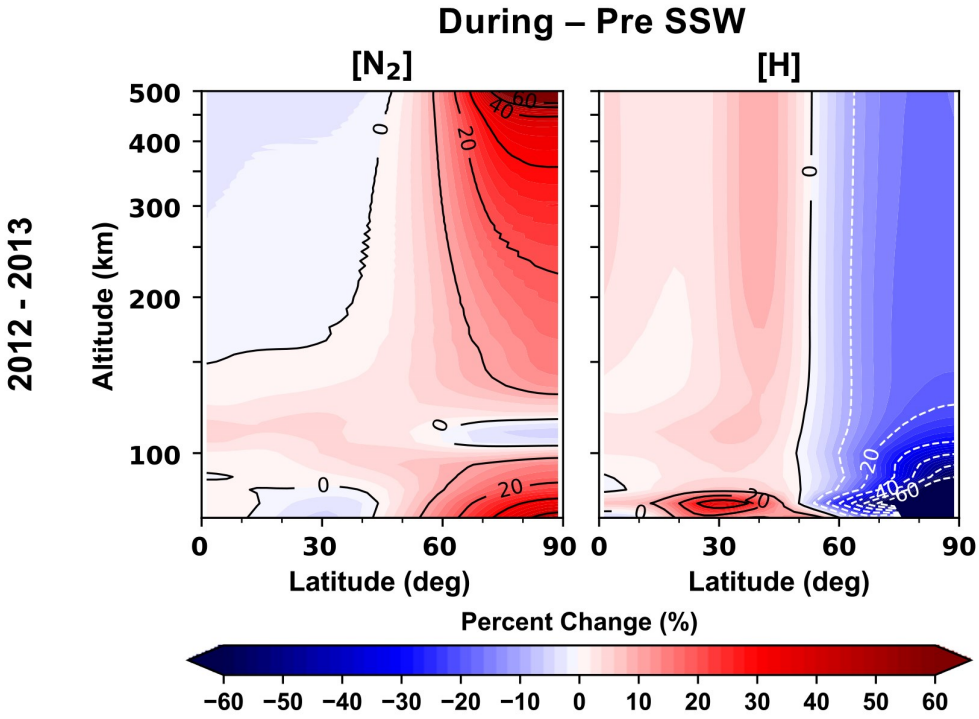

Figure 2. Change in the neutral constituents during the warming compared with before the warming calculated by TIME-GCM. The composition data represent calculated zonal and diurnal averages for the results averaged for January 8th – 22nd (during, defined by the existence of easterlies in the stratosphere) minus the preceding 16 day period ending January 5th (pre SSW). The contour interval is every 10% with decreases (such as with the H at 100 km at 60-90N) indicated by dashed white lines. The figure shows the polar depletions in H (RIGHT) and enhancements in molecular nitrogen (LEFT) are mirrored by opposite changes at mid and low latitudes.

GCM simulations showing that the model can reproduce the observed depletions in polar mesospheric H. SABER also observed similar H depletions occurred with the other SSWs (e.g., 2006 and 2009), but were not seen in a meteorologically quiet year such as 2014. Figure 2 shows that the perturbations associated with the SSW/MC composition variations extend both equatorward and up throughout the full vertical domain of the model. Additional, diagnostic runs of the TIME-GCM show that these variations in light trace species are due to both changes in small scale gravity waves and also changes in large scale semidiurnal tidal oscillations of the thermosphere driven during SSW/MC events. A more detailed discussion on SSW/MC effects on light chemical species, including depletions in atomic oxygen and helium, and ionospheric effects please ready our article published in *JGR: Space Physics* (https://agupubs.onlinelibrary.wiley.com/doi/abs/10.1029/2020JA028331)

Reference:

Jones, M., Siskind, D. E., Drob, D. P., McCormack, J. P., Emmert, J. T., Dhadly, M. S., et al. (2020). Coupling from the middle atmosphere to the exobase: Dynamical disturbance effects on light chemical species. *Journal of Geophysical Research: Space Physics*, 125, e2020JA028331. https://doi.org/10.1029/2020JA028331.

Upcoming meetings related to SCOSTEP

Conference	Date	Location	Contact Information
AGU Fall Meeting 2020 (mostly virtual)	Dec. 7-11, 2020	San Francisco, CA, USA	https://www.agu.org/fall-meeting
43rd COSPAR Scientific Assembly	Jan. 28-Feb. 4, 2021	Sydney, Australia	https://www.cospar2020.org/
School on Describing and Analyzing Solar Data for a better prediction of Space Weather	Feb. 14-18, 2021	Kigali, Rwanda	https://ur.ac.rw/?School-on-Describing-and-Analyzing-Solar-Data-for-a-better-prediction-of-Space
EGU General Assembly 2021	Apr. 25-30, 2021	Vienna, Austria	https://www.egu2021.eu/
AOGS 2021	Aug. 1-6, 2021	Suntec, Singapore	https://www.asiaoceania.org/aogs2021/public.asp?page=home.html
IAU 2021 General Assembly	Aug. 16-27, 2021	Busan, Korea	http://www.iauga2021.org/
IAGA 2021	Aug. 22-27, 2021	Hyderabad, India	http://www.iaga-iaspei-india2021.in/
The 30th IUPAP General Assembly	Oct. 20-22, 2021	Beijing, China	
AGU Fall Meeting 2021	Dec. 13-17, 2021	New Orleans, LA, USA	https://www.agu.org/fall-meeting
SCOSTEP's 15th Quadrennial Solar-Terrestrial Physics Symposium (STP-15)	Feb. 21-25, 2022	Alibag, India	
EGU General Assembly 2022	Apr. 3-8, 2022	Vienna, Austria	
COSPAR 2022	Jul. 16-24, 2022	Athens, Greece	http://www.cosparathens2022.org/
AOGS 2022	Aug. 14-19, 2022	Melbourne, Australia	
AGU Fall Meeting 2022	Dec. 12-16, 2022	Chicago, IL, USA	https://www.agu.org/fall-meeting
IUGG 2023	In July, 2023	Berlin, Germany	
AGU Fall Meeting 2023	Dec. 11-15, 2023	San Francisco, CA, USA	https://www.agu.org/fall-meeting

Please send the information of upcoming meetings to the newsletter editors.

Announcement 1:

SCOSTEP/PRESTO Grants for Year 2021 - Guidelines for application for campaigns -

Ramon E. Lopez[1] and Patricia Doherty[2]
[1]PRESTO chair, University of Texas at Arlington, Arlington, TX, USA
[2]PRESRO Scientific Secretary, Institute for Scientific Research (ISR), Boston College, Boston, MA, USA


Ramon E. Lopez


Patricia Doherty

SCOSTEP/PRESTO provides support for organizing international scientific campaigns which could be either:

- coordinated observations during a specified period, or
- coordinated investigations of specified past events or periods.

These campaign activities should **be strictly related to one or more PRESTO Pillars** and contribute to PRESTO activities. The campaign activity should be international and interdisciplinary.

SCOSTEP/PRESTO funding for campaigns is typically up to $5K. **It is assumed that the instrumentation and equipment necessary for the campaign is already present.** This grant can be used to cover, fully or partially, the following expenses:

- in case of **campaign observations**: organization and logistics of the observations, travel expenses of the observational team.
- in case of **coordinated investigations** (e.g., campaign data analysis for past events): communications, software, travel expenses for a meeting to summarize the results (either stand-alone or a dedicated session in a related meeting), cost for online meetings

How to prepare and submit your proposal

1) Proposals can only be submitted by SCOSTEP members included in SCOSTEP-all mailing list. To join the SCOSTEP-all mailing list, please contact the SCOSTEP Secretariat, Ms. Patricia Doherty (patricia.doherty at bc.edu).

2) Proposal should include the following information:

a) description of the planned activity

b) how the activity is related to the PRESTO and its Pillars

c) how it furthers capacity building

d) when and where the campaign observations will be carried, participating observers, coordinator, and point of contact information

e) period when the coordinated investigations will be performed, participating institutions, coordinator, and point of contact information.

f) anticipated participation and demographics of the participants

g) requested funding amount and how the funding will be used.

h) list of other confirmed or addressed sponsors, and their approved or expected contribution.

i) The length of the proposal should be no more than 2 pages.

3) Please contact relevant PRESTO Pillar co-leaders on your proposal and explain the relevance of your proposal to the PRESTO activity. Proposals for markedly interdisciplinary activities can be explained directly to PRESTO chair/co-chairs.

4) Send your proposal to the SCOSTEP Secretariat, Ms. Patricia Doherty (patricia.doherty at bc.edu) by **December 1, 2020**.

Conditions associated with a successful grant application are

1) After the deadline, the **decision of acceptance/ rejection** of the proposal will be made by the PRESTO chair/co-chairs and the PRESTO Pillar co-leaders.

2) A final **scientific report** on the activity to be submitted to the appropriate Pillar co-leaders as well as the chairs of PRESTO within 30 days of completion of the activity. The final report will eventually appear on the SCOSTEP/PRESTO website and newsletters.

3) A **financial report** including the breakdown of expenses and the names of the supported participants to be submitted to the SCOSTEP Secretariat, Ms. Patricia Doherty (patricia.doherty at bc.edu).

4) **Links to materials** to be added to the SCOSTEP website and to be then freely available to all in the SCOSTEP/PRESTO community (e.g. data, models, virtual observatories, presentations, press releases, publications, etc.).

5) The support by SCOSTEP/PRESTO **to be acknowledged** in the related presentations, publications, etc.

Announcement 2:

SCOSTEP/PRESTO Grants for Year 2021 - Guidelines for application for meetings -

Ramon E. Lopez[1] and Patricia Doherty[2]
[1]PRESTO chair, University of Texas at Arlington, Arlington, TX, USA
[2]SCOSTEP Scientific Secretary, Institute for Scientific Research (ISR), Boston College, Boston, MA, USA


Ramon E. Lopez


Patricia Doherty

SCOSTEP/PRESTO provides support for organizing **international scientific meetings** (*conferences, symposia, workshops*) which are strictly related to one or more PRESTO Pillars and contribute to PRESTO activities. *Since SCOSTEP has dedicated funding for capacity building activity, please send requests for supporting schools directly to SCOSTEP President and Secretariat.*

SCOSTEP/PRESTO funding for one meeting is typically $3K, but no more than $5K. We urge candidates to raise additional funding for their meetings from other sources. This grant is limited to the usage of covering, fully or partially, the following expenses:

- Cost for preparation of online meeting, such as zoom license, archiving recorded presentations, etc.
- registration fee waivers
- travel expenses, visa payment, accommodation and per diem of selected participants.

How to prepare and submit your proposal

1) Proposals can only be submitted by SCOSTEP members included in SCOSTEP-all mailing list. To join the SCOSTEP-all mailing list, please contact the SCOSTEP Secretariat, Ms. Patricia Doherty (patricia.doherty at bc.edu).

2) Proposal should include the following information:

a) description of the planned activity

b) when and where it will occur and point of contact information

c) meeting's web page (if any).

d) how the activity is related to PRESTO and its Pillar(s)

e) anticipated attendance and demographics of the participants

f) how it will enhance capacity building

g) requested funding amount and how the funding will be used.

h) list of other confirmed or addressed sponsors, and their approved or expected contribution.

i) The length of the proposal should be no more than 2 pages.

3) Please contact relevant PRESTO Pillar co-leaders on your proposal and explain the relevance of your proposal to the PRESTO Pillar activity. Proposals of markedly interdisciplinary activities can be explained directly to PRESTO chair/co-chairs.

4) Send your proposal to the SCOSTEP Secretariat, Ms. Patricia Doherty (patricia.doherty at bc.edu) by **December 1, 2020**.

Conditions associated with a successful grant application are:

1) After the deadline, the **decision of acceptance/ rejection** of the proposal will be made by the PRESTO chair/co-chairs and the PRESTO Pillar co-leaders.

2) A final **scientific report** on the activity to be submitted to the appropriate Pillar co-leaders as well as to the chairs of PRESTO within 30 days of completion of the activity. The final report will eventually appear on the SCOSTEP/PRESTO website and newsletters.

3) A **financial report** including the breakdown of expenses and the names of the supported participants to be submitted to the SCOSTEP Secretariat, Ms. Patricia Doherty (patricia.doherty at bc.edu).

4) **Links to materials** to be added to the SCOSTEP website and to be then freely available to all in the PRESTO community (e.g. presentations, virtual observatories, press releases, publications, etc.).

5) The support by SCOSTEP/PRESTO **to be acknowledged** in the meeting announcement, sign boards, program book, etc.

Contact address of PRESTO Officers

PRESTO chair/co-chairs		
chair	Ramon Edgardo Lopez	relopez at uta.edu
co-chair	Eugene Rozanov	eugene.rozanov at pmodwrc.ch
co-chair	Jie Zhang	jzhang7 at gmu.edu
Pillar 1. Sun, interplanetary space and geospace		
co-leader	Allison Jaynes	allison-n-Jaynes at uiowa.edu
co-leader	Emilia Kilpua	emilia.kilpua at helsinki.fi
co-leader	Spiros Patsourakos	spatsourakos at gmail.com, spatsour at cc.uoi.gr
Pillar 2. Space weather and the Earth's atmosphere		
co-leader	Loren Chang	loren at ncu.edu.tw
co-leader	Duggirala Pallamraju	raju at prl.res.in
co-leader	Nick Pedatella	nickp at ucar.edu
Pillar 3. Solar activity and its influence on the climate of the Earth System		
co-leader	Odele Coddington	Odele.Coddington at lasp.colorado.edu
co-leader	Jie Jiang	jiejiang at buaa.edu.cn
co-leader	Stergios Misios	smisios at noa.gr
SCOSTEP headquarters		
President	Kazuo Shiokawa	shiokawa at nagoya-u.jp
Vice President	Daniel Marsh	marsh at ucar.edu
Vice President	Nat Gopalswamy	Nat.Gopalswamy at nasa.gov
Scientific Secretary	Patricia Doherty	patricia.doherty at bc.edu

Announcement 3:

Application guidelines for SCOSTEP capacity building funds

Kazuo Shiokawa[1] and Patricia Doherty[2]
[1]SCOSTEP President, Center for International Collaborative Research (CICR), Institute for Space-Earth Environmental Research (ISEE), Nagoya University, Nagoya, Japan
[2]SCOSTEP Scientific Secretary, Institute for Scientific Research (ISR), Boston College, Boston, MA, USA


Kazuo Shiokawa


Patricia Doherty

SCOSTEP provides support for organizing schools for capacity building of students and young scientists in solar-terrestrial physics by (1) providing small funding for the participants and by (2) endorsing lecturers for the school from SCOSTEP Science Disciplinary Representatives, National Adherents, and other SCOSTEP-related officers. SCOSTEP capacity building funds for school is typically up to US$5000. This grant can be used to cover, fully or partially, the following expenses:

- travel expenses, visa payment, accommodation and per diem of selected participants.
- registration fee waivers

How to submit a proposal

1) Proposals can only be submitted by scientists registered in the SCOSTEP-all mailing lists. To join the SCOSTEP-all mailing list, please contact to the SCOSTEP Secretariat.

2) Send your request to SCOSTEP President and SCOSTEP Secretariat.

SCOSTEP President: Dr. Kazuo Shiokawa (shiokawa at nagoya-u.jp)

SCOSTEP Secretariat: Ms. Patricia Doherty (patricia.doherty at bc.edu)

The proposal should include the following information in no more than 2 pages

a) description of the planned school, including when and where it will occur and point of contact information, as well as, the school's web page (if any).

b) how the activity is related to SCOSTEP

c) anticipated attendance and their countries of affiliation

d) requested funding amount and how the funding will be used

e) request of endorsement of lecturers in SCOSTEP (if any)

f) list of other confirmed or addressed sponsors

Conditions associated with a successful grant application are:

1) A final **scientific report** on the activity to be submitted to the SCOSTEP President and Science Secretariat within 30 days of completion of the activity. The final report will eventually appear on the SCOSTEP website and newsletters.

2) A **financial report** including the breakdown of expenses and the names of the supported participants to be submitted to the SCOSTEP Secretariat.

3) The support by SCOSTEP **should be acknowledged** in the school announcements, sign boards, web pages, program book, etc.

Announcement 4:

2020 SCOSTEP Awards Announcements

Kazuo Shiokawa[1] and Patricia Doherty[2]
[1]SCOSTEP President, Center for International Collaborative Research (CICR), Institute for Space-Earth Environmental Research (ISEE), Nagoya University, Nagoya, Japan
[2]SCOSTEP Scientific Secretary, Institute for Scientific Research (ISR), Boston College, Boston, MA, USA


Kazuo Shiokawa


Patricia Doherty

SCOSTEP is pleased to announce the winners of the Distinguished Scientist, Distinguished Young Scientist and Distinguished Service Awards for 2020. These awards recognize the societal importance of studies in the field of solar-terrestrial physics and give credit to scientists who contribute significantly to these studies and to SCOSTEP activities. The awards include:

SCOSTEP Distinguished Scientist Award

This award is given to recognize an outstanding contribution of a scientist to solar-terrestrial physics

SCOSTEP Distinguished Young Scientist Award

This award is given to young scientists who have achieved considerable success in solar-terrestrial physics and have taken an active part in SCOSTEP-related activities

SCOSTEP Distinguished Service Award

This award is given to recognize unique contributions to SCOSTEP-related activities, to realization of its programs and events. This award is nominally made in odd years. Since no award was made in 2019, it may be made retroactively in 2020.

The SCOSTEP awards are given biennially. The first Distinguished Science Awards were awarded in 2014. The first Distinguished Service Award was given in 2013. The Award Statutes and Procedures are placed on the SCOSTEP web site section "Awards" (http://www.bc.edu/scostep/programs/awards).

Award nomination packages (nomination letters and nominee's curriculum vitae) were received for a number of nominees. After careful consideration, the SCOSTEP Awards Committee selected the following finalists:

SCOSTEP Distinguished Scientist Award:
Professor Qiugang Zong, Peking University

SCOSTEP Distinguished Young Scientist Award:
Dr. Mateja Dumbović, University of Zagreb

SCOSTEP Distinguished Service Award:
Dr. Sunanda Basu, NSF (retired)

Congratulations to the award winners!

SCOSTEP 2020 Distinguished Scientist Award

SCOSTEP is pleased to announce that the
2020 Distinguished Scientist Award is given to

Professor Qiugang Zong
Peking University, Beijing, China


Qiugang Zong

Citation: For breakthroughs in identifying particle acceleration mechanisms and in unifying fundamental magnetic structures in space plasmas, and for many significant contributions to space physics for over 25 years.

Professor Qiugang Zong's contributions to space science are widely known in the international space science community and evident through his extensive publication record in AGU scientific journals. Professor Zong's scientific findings demonstrate exceptional physical insight into the behavior of energetic particles and ultra-low-frequency (ULF) wave-particle interactions in Earth's magnetosphere and radiation belts. A specialty of Professor Zong is the analysis of multi-spacecraft data, a notoriously difficult endeavor in which practical experience in the design and exploitation of spacecraft instrumentation are required to significantly advanced basic knowledge of geospace. Professor Zong is at the forefront of science through his co-investigator status on the Geotail, Cluster and Double Star missions. His science has been recognized through international awards such as the European Space Agency (ESA) "Outstanding Scientist Award," the "Special Cluster Award," and the NASA–Cluster science team "Group Achievement Award." At the EGU meeting in Vienna in May 2020, Professor Zong received the prestigious "Hannes Alfvén Award" in recognition of his twenty-five years record of excellence in space science.

As well as his many scientific contributions, Professor Zong has been instrumental in recruiting and training a young, vibrant team of students who have gone on to become faculty members at major universities, e.g., UCLA, UC Berkeley, U Michigan. As a result of Professor Zong's leadership, the space science group at Peking University (PKU) has emerged as one of the leading research groups worldwide in space physics, especially in energetic particle measurements and the design and building of energetic particle detectors. At PKU Professor Zong is the consummate professional, fully committed to the pursuit of scientific excellence, and advancing the careers of the many highly qualified people under his wing. Professor Zong's knowledge and experience are, without a doubt, crucial to the future success of China's emergence as a major space-faring nation.

Professor Zong is also very active in service to the space science community and has organized AGU Chapman conferences and sessions for workshops hosted by the AGU, EGU, and AOGS. He has also served as a Guest Editor of JASTP, and as an editor of Geoscience Letters and Earth & Planetary Physics. He has also served as an Associate Editor for JGR and President of the Solar & Planetary Section of AOGS.

Professor Zong has impeccable scientific credentials and he is internationally recognized and renowned for his contributions to space physics for over 25 years. His role in planning and participating in space science missions in China and Europe is widely recognized. Outside of China, in his area of specialization, Professor Zong is one of the most respected space physicists of his generation. It is an esteemed honor to present the 2020 SCOSTEP Distinguished Scientist Award to Professor Qiugang Zong.

SCOSTEP 2020 Distinguished Young Scientist Award

SCOSTEP is pleased to announce that the

2020 Distinguished Young Scientist Award is given to

Dr. Mateja Dumbović

Hvar Observatory, University of Zagreb, Croatia

Mateja Dumbović

Citation: For outstanding contributions to solar, solar-terrestrial and space weather physics; and for ambitious efforts and services for the scientific community.

Dr. Mateja Dumbović has performed significant scientific studies on different aspects of solar-terrestrial sciences, covering both observational and theoretical approaches. Her most important contributions are on the modeling and observational study of cosmic ray modulations and Forbush decreases caused by coronal mass ejections (CMEs) and co-rotating interacting regions (CIRs), on drag-based modeling of the interplanetary CME propagation and on their geo-effectivity. These various important aspects of solar and space weather physics have been addressed by Dr. Dumbović in thorough and multi-variant approaches, including observations analysis and in-situ and remote sensing data by theoretical modeling, and by developing tools relevant for space weather forecasting. In her young career, she has already published 26 papers (8 as first author) in high-impact international peer-reviewed journals.

Dr. Dumbović did her undergraduate and PhD studies at the University of Zagreb under the supervision of Prof. Bojan Vršnak. Within her PhD study, which she defended in 2015, she was closely involved in the EU project COMESEP (COronal Mass Ejections and Solar Energetic Particles: forecasting the space weather impact), where she provided important scientific contributions on statistically modelling the geo-effectivity of coronal mass ejections, and implementing these results as one of the COMESEP warning tools. Based on her PhD, she was awarded the L'Oréal-UNESCO national fellowship "For Women in Science". She was co-developer of the drag-based model (DBM) for the interplanetary propagation of CMEs, which she later enhanced toward ensemble modeling (DBEM). The DBEM model is now implemented and running as an online forecast tool within ESA's Space Situational Awareness Space Weather Program.

After her PhD, Dr. Dumbović was awarded a prestigious Marie Sklodowska Curie Actions individual fellowship of the EU H2020 program, to perform a project on "Forbush decrease model for expanding CMEs affecting Earth and Mars (ForbMod) at the University of Graz, Austria.

In addition to her scientific contributions, Dr. Dumbović is active in community engagement in the field of solar-terrestrial sciences as a frequent peer-reviewer in a number of prestigious journals and as a member of 3 NASA review panels. The community engagement efforts are also evident in her activities to organize various international conferences as a member of the LOC and SOC, including the SCOSTEP/VarSITI/ISEST Workshops (International Study of Earth-affecting Solar Transients) in Hvar in the years 2013 and 2018. She was also an observing scientist of the day for the Mini-Max24/ISEST campaign of the SCOSTEP VarSITI (2014-2018) and PRESTO (2020-2024) scientific programs. It is with admiration and honor that we present the 2020 SCOSTEP Distinguished Young Scientist Award to Dr. Mateja Dumbović.

SCOSTEP 2020 Distinguished Service Award

SCOSTEP is pleased to announce that the

2020 Distinguished Service Award is given to

Sunanda Basu

Dr. Sunanda Basu

National Science Foundation (Retired)
Visiting Research Scholar, Boston College

Citation: For selfless service over nearly three decades towards promoting SCOSTEP science, together with promoting, encouraging, and recognizing the talent in solar terrestrial sciences across the globe.

Dr. Sunanda Basu is recognized for her selfless service, over a period of thirty years, rendered for the benefit of the scientific community working in sciences related to SCOSTEP. Over these years, Dr. Basu participated passionately in several roles, such as (i) active researcher working on several topics of SCOSTEP science, (ii) leader of working groups wherein she led the researchers on focused solar-terrestrial problems, (iii) science management wherein she interfaced with various working groups, (iv) fundraiser for the success of major SCOSTEP programs, (v) encouragement of human resources in SCOSTEP sciences (with a special emphasis on gender balance and global participation), and (vi) outreach and popularization of SCOSTEP science. She has been a true champion in promoting, encouraging, and recognizing the talent in solar terrestrial sciences across the globe. Some aspects of her contributions are briefly mentioned below to highlight her commitment, dedication, care, concern, and service to the SCOSTEP science and SCOSTEP programs.

Dr. Basu has served SCOSTEP in various programs and in various roles since 1990. In the STEP program, she chaired one of the working groups and served as guest editor of papers that this group produced. 1n 1998, she served on the steering committee to develop the S-RAMP program and spearheaded an international campaign in 1999 called Space Weather Month which brought together ground-based facilities worldwide to draw a global picture of space weather activity. Sunanda was a member of the Long-Range Planning Committee that created CAWSES program and then served as Chair of the Science Steering Committee. As part of CAWSES in 2006, Sunanda supported a first ever worldwide virtual conference in Sun-Earth system science to kick off an international investigation of extreme space weather, promote science capacity building in developing countries, provide a resource for students worldwide, and celebrate the spirit of exploration and collaboration in science that fueled the International Geophysical Year 50 years prior. By the final day, the conference had logged 272 registered participants from 20 countries and more than 120,000 total hits.

Finally, Dr. Basu's efforts in building capacity for science worldwide were focused on inspiring and supporting scientific talent) our greatest asset for scientific progress.

As the examples above demonstrate, Dr. Basu has contributed tirelessly to SCOTEP programs over the past 30 years recognizing that space weather is experienced worldwide and that scientific talent knows no geophysical boundaries. It is with gratitude and honor that we present the 2020 SCOSTEP Service Award to Dr. Sunanda Basu.

The purpose of the The purpose of the SCOSTEP/PRESTO newsletter is to promote communication among scientists related to solar-terrestrial physics and the SCOSTEP's PRESTO program.

The editors would like to ask you to submit the following articles to the SCOSTEP/PRESTO 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 SCOSTEP/PRESTO
3. Highlights on young scientists— Each highlight has a maximum of 300 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 SCOSTEP/PRESTO
4. Announcement— Each announcement has a maximum of 200 words length.
   Announcements of campaign, workshop, etc.
5. Meeting schedule

Category 3 (Highlights on young scientists) helps both young scientists and SCOSTEP/PRESTO 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_isee.nagoya-u.ac.jp). If you have any questions or problem, please do not hesitate to ask us.

SUBSCRIPTION - SCOSTEP MAILING LIST

The PDF version of the SCOSTEP/PRESTO Newsletter is distributed through the SCOSTEP-all mailing list. If you want to be included in the mailing list to receive future information of SCOSTEP/PRESTO, please send e-mail to "patricia.doherty_at_bc.edu" or "sean.oconnell.2 at bc.edu" (replace "_at_" by "@") with your name, affiliation, and topic of interest to be included.