

The United Nations/United States of America Workshop on the International Space Weather Initiative: The Decade after the International Heliophysical Year 2007

31 July – 4 August, 2017

Organised jointly by

the United Nations Office for Outer Space Affairs,
the National Aeronautics and Space Administration, and Boston College

Hosted by
Boston College
Chestnut Hill, Massachusetts, USA

PROGRAMME



This workshop marks the 10th anniversary of the International Heliophysical Year, which led to the genesis of the International Space Weather Initiative. It is organized jointly by the United Nations Office of Outer Space Affairs (UNOOSA), the National Aeronautics and Space Administration (NASA) and Boston College to highlight the achievements made over the past ten years and to show-case the worldwide development of science, capacity building and outreach.



Local Organising Committee:

We thank Boston College for their gracious and generous support as hosts of this workshop. We specifically thank the Local Organizing Committee for their tireless efforts.

| | |
|-------------------|-------------------|
| Patricia Doherty | Daneille Berzinis |
| Keith Groves | Andrea Murphy |
| Kathleen Kraemer | Sean O’Connell |
| David Webb | Susan Delay |
| Endawoke Yizengaw | |



Scientific Organizing Committee:

This workshop was designed and organized by an international group of space weather scientists:

| | | |
|-----------------------------|-----------|--|
| Nat Gopalswamy | USA | Chair, NASA/GSFC |
| Sharafat Gadimova | UN | Co-chair, UNOOSA |
| K.S. Balasubramaniam | USA | Air Force Research Laboratory |
| Christine Amory-Mazaudier | France | GPS Africa |
| Patricia Doherty | USA | ISWI Workshop Coordinator |
| Shing Fung | USA | NASA/GSFC |
| Katya Georgieva | Bulgaria | SCOSTEP/VarSITI |
| J. Americo Gonzalez-Esparza | Mexico | MEXART, Instituto Geofisica, UNAM |
| Keith Groves | USA | Scintillation Networks |
| Norbert Jakowski | Germany | SOFIE and GIFDs |
| Masha Kuznetsova | USA | CCMC, NASA |
| Ian Mann | Canada | University of Alberta |
| Richard Marshall | Australia | Australian Space Weather Services |
| Nariaki Nitta | USA | Lockheed Martin |
| Terry Onsager | USA | International Space Environment Center |
| Babatunde Rabiun | Nigeria | NASRDA |
| Jean-Pierre Raulin | Brazil | South American VLF NETWORK (SAVNET) |
| Kazunari Shibata | Japan | CHAIN Project |
| Elsayed R. Talaat | USA | NASA/HQ Heliophysics |
| Barbara Thompson | USA | IHY+10, NASA/GSFC |
| Chi Wang | China | Space Weather Meridian |
| Akimasa Yoshikawa | Japan | MAGDAS |

The organisers of the United Nations/United States of America
Workshop on the International Space Weather Initiative are grateful
to the following sponsors for their contribution:

Scientific Committee on Solar-Terrestrial Physics (SCOSTEP)

National Aeronautics and Space Administration (NASA)

International Committee on Global Navigation Satellite Systems (ICG)

National Science Foundation (NSF)

Boston College

Universities Space Research Association (USRA)



WORKSHOP LOGISTICS

Technical Sessions: All technical sessions will take place in the **Heights Room at Corcoran Commons** on Boston College's main Chestnut Hill lower campus. The Heights Room is on the second floor of Corcoran Commons. An elevator is available.

To get to Corcoran Commons by car or taxi: Navigate to St. Ignatius of Loyola Church, 28 Commonwealth Ave, Chestnut Hill, MA. Turn onto St. Thomas More Road or Fr. Herlihy Drive – passing in front of St. Ignatius Church. Enter the university via the gate next to the church. Corcoran Commons is the third building on the left.

To get to Corcoran Commons by public transportation: Take the Boston College branch of the MBTA's "Green Line" (B) to the last stop at Boston College on Commonwealth Avenue. Cross the street toward St. Ignatius Church. Take a right turn after the church onto the campus and continue walking to Corcoran Commons – it will be on your left.

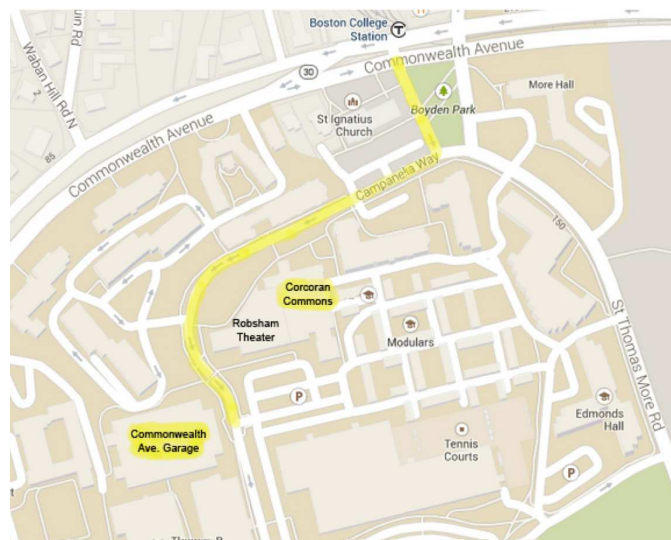
Registration: The Registration Desk will be open every day beginning at 8:00AM. Please note that all participants must have pre-registered for the workshop. We are not able to permit non-registered participants.

Catering: Continental Breakfast will be served each day beginning at 8:00 in a room adjacent to the Heights Room. Lunch and coffee break refreshments will also be provided for participants.

Parking: If you are bringing a car onto the campus, you may park in the BC Commonwealth Avenue garage for a fee of \$10/day.

Accommodations: For those staying on campus, accommodations will be in Stayer Hall, just a short walk from Corcoran Commons.

Directions: Please see our website for directions to the campus via all means of transportation (iswi2017.bc.edu).



Lower Campus Map showing location of Corcoran Commons, the Commonwealth Avenue Garage and Stayer Hall.

Monday, 31 July 2017 – International Framework for Space Weather Service

08:00 *Registration and Continental Breakfast*

09:00 **Opening Remarks**

Chair: Patricia DOHERTY, United States of America

- 09:00
- *Dr. Thomas CHILES*, Vice Provost for Research, Boston College, United States of America
 - *Dr. Nat GOPALSWAMY*, National Aeronautics and Space Administration, United States of America
 - *Mr. Kenneth HODGKINS*, Director of Space and Advanced Technology, Department of State, United States of America
 - *Ms. Simonetta DI PIPPO*, Director, United Nations Office for Outer Space Affairs (UNOOSA), United Nations Office at Vienna (UNOV)

09:30 **Introduction to the United Nations/United States of America Workshop**

Chair: Terry ONSAGER, NOAA, United States of America

- 09:30
- Keynote 1: Space Weather: Developments within the United Nations - *Simonetta DI PIPPO, United Nations Office for Outer Space Affairs (UNOOSA)*
- 09:50
- Keynote 2: UNISPACE+50 – *David KENDALL, Chair of the United Nations Committee on Peaceful Uses of Outer Space (UNCOPUOS)*
- 10:10
- Keynote 3: US National Space Weather Strategy and Action Plan – *William MURTAGH, National Weather Service (NWS)*

10:30 *Coffee Break*

11:00 **Session 1: International Recognition of Space Weather Risks**

Panel: Space Weather Risks and Mitigation Needs

Moderator: William MURTAGH, United States of America

- UK Risk Assessment and Economic Impact Study – *Mario BISI, Rutherford Appleton Laboratory (RAL), United Kingdom*
- ESA Cost Benefit Analysis – *Luca DEL MONTE, European Space Agency (ESA)*
- US Economic Impact Study – *Stacey WORMAN, Abt Associates*
- Civil Contingency Perspective – *Kenyetta BLUNT, US Department of Homeland Security*
- ICAO Proposed Aviation Service Requirements – *Raul ROMERO, International Civil Aviation Organization (ICAO)*

12:30 *Lunch Break – Lunch will be served just outside the meeting space.*

13:30 Session 2: Building on Today's Space Weather Foundation

Panel: Improving Research for Operational Services

Moderator: Siqing LIU, China

- US Research Programs to Improve Services – *Steven CLARKE, National Aeronautics and Space Administration (NASA), United States of America*
- National Science Foundation Space Weather Research – *Irfan AZEEM, National Science Foundation (NSF)*
- EU/ESA Research Programs to Improve Services (H2020, ESA SSA) – *Juha-Pekka LUNTAMA, European Space Agency (ESA)*
- Asia/Oceania Space Weather Alliance – *Mamoru ISHII, National Institute of Information and Communications Technology (NICT), Japan*
- African Research Programs and the African Geophysical Society – *Paul Baki OLANDE, Technical University of Kenya, Kenya*

15:00 *Coffee Break*

15:20 Panel: Observing Infrastructure

Moderator: Richard MARSHALL, Australia

- US Observing Infrastructure – *Larry ZANETTI, NOAA, United States of America*
- EU/ESA Observing Infrastructure – *Mario BISI, Rutherford Appleton Laboratory (RAL), United Kingdom*
- Meridian Project – *Chi WANG, National Space Science Center (NSSC), China*
- Africa Observing Infrastructure – *Babatunde RABIU, National Space Research and Development Agency (NASRDA), Nigeria*
- South American Observing Infrastructure – *Joaquim REZENDE COSTA, National Institute for Space Research (INPE), Brazil*

17:00 *Adjourn*

17:30 WELCOME RECEPTION

– *Venue: Gasson Hall 100 – The Irish Room (see Appendix)*

19:30

Tuesday, 1 August 2017 - The International Space Weather Initiative Workshop

08:00 *Registration and Continental Breakfast*

09:00 Summary of Previous Day and Workshop Goals – *Terry ONSAGER, National Oceanic and Atmospheric Administration (NOAA)*

09:15 Building on Today's Space Weather Foundation (Continued)

Panel: International Elements of a Coordination Framework

Moderator: Chris CANNIZZARO, United States of America

- WMO Four-Year Plan/International Space Environment Service – *Toshiyuki*

KURINO, World Meteorological Organization (WMO)

- International Space Environment Service – *Terry ONSAGER, National Weather Service (NWS), United States of America*
- Coordination Group for Meteorological Satellites – *Elsayed TALAAT, National Aeronautics and Space Administration (NASA), United States of America*
- COPUOS Space Weather Guidelines and Expert Team – *Ian MANN, University of Alberta, Canada*
- International Space Weather Initiative – *Nat GOPALSWAMY, National Aeronautics and Space Administration (NASA), United States of America*
- COSPAR Space Weather Roadmap – *Lennard FISK, Committee on Space Research (COSPAR)*

10:30 *Coffee Break*

11:00 Session 3: Developing an International Framework for Space Weather Services

Moderator: Ian MANN, Canada

- Summary of Draft Document for Framework
- Open Discussion of Current Capabilities and Recommended Actions
- Recommendations for UNISPACE+50 Thematic Priority 4

12:00 *Lunch Break*

13:00 IHY+10: The Origins of ISWI

Chair: Barbara THOMPSON, United States of America

- 13:05 • Beginnings of the International Heliophysical Year and the International Space Weather Initiative (Invited) – *Joseph DAVILA, National Aeronautics and Space Administration (NASA), United States of America*
- 13:25 • Balkan, Black Sea, and Caspian Sea Network for Space Weather Studies (Invited) – *Katya GEORGIEVA, Bulgarian Academy of Science, Bulgaria*
- 13:45 • Establishing the IHY Asia-Pacific Program (Invited) – *Akimasa YOSHIKAWA, Kyushu University, Japan*
- 14:05 • The IHY/ISWI Education and Public Outreach Programs and the SID Space Weather Monitors - A Retrospective (Invited) – *Deborah SCHERRER, Stanford University Solar Center, United States of America*
- 14:25 • From the IGY to the ISWI: A Perspective View of the Importance of International Cooperation in Geo-Heliophysics – *Sandro RADICELLA, The Abdus Salam International Centre for Theoretical Physics (ICTP), Italy*
- 14:40 • Africa and Space Weather Research: Review of Deployed Instruments and Scientific Results from IHY to ISWI (2007 - 2017) – *Akeem RABIU, National Space Research and Development Agency (NASRDA), Nigeria*
- 14:55 • Kristian Birkeland - The Almost Forgotten Scientist and Father of the Sun-Earth Connection – *Pal BREKKE, Norwegian Space Center, Norway*

15:10 Instruments Panel: Christine AMORY-MAZAUDIER, Keith GROVES, Jean-Pierre RAULIN, Deborah SCHERRER, Chi WANG, Endawoke YIZENGAW, Akimasa YOSHIKAWA

Chair: Barbara THOMPSON, United States of America

15:40 *Coffee Break*

16:00 Scientific Results on the Interplanetary Medium and Geospace

Chairs: David WEBB, United States of America and Katya Georgieva, Bulgaria

- 16:05 • A Report on Cube- and Small-Sats and the System Science of NASA's Living With a Star Program – *Madhulika GUHATHAKURTA, National Aeronautics and Space Administration (NASA), United States of America*
- 16:20 • Studies of Solar Eruptions Using Type II Bursts from Ground and CMEs from Space – *Nat GOPALSWAMY, National Aeronautics and Space Administration (NASA), United States of America*
- 16:35 • Current State of Reduced Solar Activity: Space Weather Events in the Inner Heliosphere – *Periasamy MANOHARAN, National Centre for Radio Astrophysics, India*
- 16:50 • Study of Space Weather Events of Solar Cycle 23 and 24 and their Geoeffectiveness – *Bhasakarapantula VEENADHARI, Indian Institute of Geomagnetism, India*
- 17:05 • Transportation, Acceleration and Loss of Electrons in the Slot Region Responsible for the Formation of New Radiation Belt During Big Magnetic Storm – *Takahiro OBARA, Tohoku University, Japan*
- 17:20 • Impulsive Energy Transfer via Joule Heating from the Magnetosphere to the Ionosphere During Geomagnetic Storm – *Larry ZANETTI, National Oceanic and Atmospheric Administration (NOAA), United States of America*

17:35 *Adjourn*

Wednesday, 2 August 2017 – The International Space Weather Initiative Workshop

08:00 *Registration and Continental Breakfast*

09:00 Scientific Results on the Ionosphere and Thermosphere

Chairs: Endawoke YIZENGAW, United States of America and Richard MARSHALL, Australia

- 09:05 • New Findings Using VLF Data from SAVNET and Kannuslehto Radio Receivers – *Edith Liliانا MACOTELA, Sodankyla Geophysical Observatory, Finland*
- 09:20 • Control of Gravity Waves on Equatorial Spread F Day-to-day Variability; an Empirical Approach – *Gopalapillai MANJU, Vikram Sarabhai Space Center, Kerala, India*
- 09:35 • Do Countries Under the Equatorial Electrojet Belt Should Worry About Geomagnetically Induced Currents? – *Endawoke YIZENGAW, Boston College, United States of America*
- 09:50 • Multi-Nation Coordinated Monitoring of Ionospheric Weather By Means of High Frequency Sounding – *Ivan GALKIN and Bodo REINISCH, UMass Lowell, United States of America*
- 10:05 • Early Results of Ionospheric Observations from LITES on the ISS – *Susanna FINN, UMass Lowell, United States of America*

- 10:20 • Evidence of Madden-Julian Oscillation Effects in the Mesosphere and Lower Thermosphere from GOCE and MERRA/TIME-GCM – *Federico GASPERINI, Utah State University, United States of America*

10:35 *Coffee Break*

- 11:00 • Latest scientific results of MAGDAS project – *Akiko FUJIMOTO, Kyushu University, Japan*
- 11:15 • Space Weather Effects on Critical Operations and Activity in the High North – *Pal BREKKE, Norwegian Space Center, Norway*

11:30 **Space Weather Instruments**

Chairs: Jean-Pierre RAULIN, Brazil and Keith GROVES, United States of America

- 11:40 • The AWESOME Program: VHF/LF Remote Sensing of the Ionosphere and Magnetosphere from IHY to ISWI and beyond – *Morris COHEN, Georgia Institute of Technology, United States of America*
- 11:55 • The South America VLF Network – SAVNET: Last results and new research perspectives – *Jean-Pierre RAULIN, Mackenzie Presbyterian University, Brazil*
- 12:05 • Future Solar and Interplanetary Radio Instrumentation for Space Weather Studies in China – *Yihua YAN, Chinese Academy of Sciences, China*
- 12:20 *Questions*
- 12:30 *Lunch Break*

13:30 **Space Weather Instruments (Continued)**

- 13:35 • Monitoring and investigation of geospace disturbances along the 120E/60W longitudes: International Meridian Circle Project – *S. ZHANG, MIT Haystack Lab, United States of America*
- 13:50 • The MAGDAS project the past and next 10 years – *Akimasa YOSHIKAWA, Kyushu University, Japan*
- 14:05 • The recent progress of CHAIN Project and the method for utilizing its data for space weather prediction – *K. SHIBATA, Kyoto University, Japan*
- 14:20 • Inner-Magnetospheric Array for Geospace Science, iMAGS – *Endawoke YIZENGAW, Boston College, United States of America*
- 14:35 • The AFINSA Network: Presentation, Scientific Objectives, First Results – *Jean-Pierre RAULIN, Mackenzie Presbyterian University, Brazil*
- 14:50 • The Low-Latitude Ionospheric Sensor Network: Recent Scientific Results – *Cesar VALLADARES, University of Texas, United States of America*
- 15:05 • SCINDA Scintillation Sensor Network: Sites, Systems and Science – *Keith GROVES, Boston College, United States of America*
- 15:20 • The Worldwide Interplanetary Scintillation (IPS) Stations (WIPSS) as a Potential Future ISWI Instrument – *Mario BISI, Rutherford Appleton Lab, United Kingdom*
- 15:35 • Impact and Modelling of the Solar Eclipse Effects of 20 March 2015 on VLF Measurements – *Daniela WENZEL, German Aerospace Center (DLR), Germany*

16:00- POSTER SESSION WITH REFRESHMENTS

18:30 *On the balcony just outside the meeting space. (See Appendix for details)*

Please have posters up today before the afternoon coffee break.

Whiteboards, pins, and tape will be provided.

Whiteboards will be numbered according to the poster list.

White board size is 36" x 48" on a horizontal landscape.

Thursday, 3 August 2017 – The International Space Weather Initiative Workshop

08:00 *Registration and Continental Breakfast*

09:00 Space Weather Modeling 1: From Sun to Geospace

Chairs: Renato FILJAR, Croatia and Maria KUZNETSOVA, United States of America

- 09:05 • Challenges and Opportunities in Solar-Heliospheric Modeling for Space Weather Prediction (Invited) – *Judy KARPEN, National Aeronautics and Space Administration (NASA), United States of America*
- 09:25 • Modeling and Forecasting the Geospace Environment (Invited) – *Tamas GOMBOSI, University of Michigan, United States of America*
- 09:45 • Norwegian contributions to the ISWI program – *Karl LAUNDAL, University of Bergen, Norway*

Extreme Space Weather

- 10:00 • Predictability of Extreme Space Weather – *Surjalal SHARMA, University of Maryland, United States of America*
- 10:15 • On the Energetics of Large Geomagnetic Storms – *William BURKE, Boston College, United States of America*

10:30 *Coffee Break*

10:55 Space Weather Modelling 2: Near-Earth Radiation and Plasma Environment

Chairs: Maria KUZNETSOVA, United States of America and Renato FILJAR, Croatia

- 11:00 • Long Term and Short Term Forecasts of the Radiation and Plasma Environment Near Earth: Identifying Needs And Delivering Value (Invited) – *T. Paul O'BRIEN, The Aerospace Corporation, United States of America*
- 11:20 • Space Hazards Induced near Earth by Large Dynamic Storms (SHIELDS) – *Reinhard FRIEDEL, Los Alamos National Laboratory, United States of America*

Ionosphere-Thermosphere Variability

- 11:35 • From Discovery to Operations: Whole Atmosphere-Ionosphere Physical Models for Space Weather Applications (Invited) – *Tim FULLER-ROWELL, University of Colorado, United States of America*
- 11:55 • An IGS-Based Simulator of Ionospheric Conditions for GNSS Positioning Quality Assessment – *Renato FILJAR, University of Rijeka, Croatia*
- 12:10 • Local Ionosphere Modelling Using GNSS Reference Stations Network – *Mourad BOUZIANI, Department of Geodesy, Rabat, Morocco*

12:25 Closing Remarks

12:30 Lunch Break

13:30 International Outreach and Capacity Building

Chairs: Sharafat GADIMOVA, United Nations Office for Outer Space Affairs, and Patricia DOHERTY, United States of America

13:35 • ICG and Its Programme on GNSS Applications – *Sharafat GADIMOVA, United Nations Office for Outer Space Affairs (UNOOSA)*

13:50 • ISWI Outreach and Capacity Building Activities – *Nat GOPALSWAMY, National Aeronautics and Space Administration (NASA), United States of America*

14:05 • The Need for Training Integrating Knowledge from the Sun to the Earth – *Christine AMORY-MAZAUDIÉ, LPP Polytechnique, France and International Centre for Theoretical Physics (ICTP), Italy*

14:20 • The Boston College/Abdus Salam International Centre for Theoretical Physics Collaboration and Outreach Workshops – *Patricia DOHERTY, Boston College, United States of America*

14:35 • Girls InSpace Project: A New Space Physics Outreach Initiative – *Alessandra ABE PACINI, InSpace, LLC, United States of America*

14:50 • A Collaborative Approach at Building Capacity in Space Weather at the Undergraduate Student Level – *M. Chantale DAMAS, CUNY, Queensborough Community College, United States of America*

15:05 • The National Space Weather Program: Two Decades of Interagency Partnership and Accomplishments – *Michael BONADONNA, National Oceanic and Atmospheric Administration (NOAA), United States of America*

15:20 Short Break before the Excursion

16:00 EXCURSION

- *Boston's Museum of Science (<http://www.mos.org>)*

18:00

18:00 WORKSHOP BANQUET

- *Venue: Washburn Pavilion (See Appendix for details)*

21:00

Friday, 4 August 2017 – The International Space Weather Initiative Workshop

08:00 *Registration and Continental Breakfast*

09:00 Coordination of Space- and Ground-Based Data Resources and ISWI

Chairs: Shing FUNG, United States of America and Terry ONSAGER, United States of America

09:05 • NASA and International Open Standards and the Future of Space Weather Studies (Invited) – *D. Aaron ROBERTS, National Aeronautics and Space Administration (NASA), United States of America*

09:25 • NASA Data Resources and the International Space Weather Initiative (Invited) – *Robert McGUIRE, National Aeronautics and Space Administration (NASA), United States of America*

- 09:45 • ESA Heliophysics Archives: a Key Asset for ISWI (Invited) – *Arnaud MASSON, European Space Agency (ESA), France*
- 10:05 • JAXA's Contribution to Space Weather: Arase and Other Satellites (Invited) – *Nana HIGASHIO, Japan Aerospace Exploration Agency (JAXA), Japan*
- 10:25 *Coffee Break*
- 10:55 • Geophysics Using the Hubble Space Telescope – *Gonzalo TANCREDI, University de la Republica, Uruguay*
- 11:10 • Imaging Science Contributions to Space Weather Research Using Geomagnetic Conjugate Point Observations: Latitude Coupling - North & South America/Europe and Africa (Invited) – *Michael MENDILLO, Boston University, United States of America*
- 11:30 • Space Weather Resources Available Through MIT Haystack's Madrigal Database (Invited) – *Anthea COSTER, MIT Haystack Laboratory, United States of America*
- 11:50 • Report on the "L5 in Tandem with L1: Future Space-weather Missions Workshop" – Working Towards a L5 Operational Swx Mission – *Mario BISI, Rutherford Appleton Lab, United Kingdom*
- 12:05 • The Los Alamos Laboratory: Space Weather Research and Data (Invited) – *Reinhard FRIEDEL, Los Alamos National Laboratory, United States of America*
- 12:20 • Ionospheric TEC Assimilation and Now-Casting System Over China – *Ercha A, Chinese Academy of Sciences, China*
- 12:35 *Lunch Break*
- 13:35 Coordination of Space- and Ground-Based Data Resources and ISWI – Continued**
Chairs: Shing FUNG, United States of America and Terry ONSAGER, United States of America
- 13:40 • Ionospheric prediction tools in IPS-EU Project – *Vincenzo ROMANO, Istituto Nazionale di Geofisica e Vulcanologia (INGV), Italy*
- 13:55 • The Requirement Analysis for User-Oriented Space Weather Products and Services – *Siqing LIU, Chinese Academy of Sciences, China*
- 14:10 • Space Weather Activities in Mexico – *J. Americo GONZALES-ESPARZA, SCIESMEX, Unidad Michoacan, Mexico*
- 14:25 • ISWI Open Data Policy: An Instrument of International Cooperation – *Shing FUNG, NASA, United States of America*
- 14:25 Final Discussion: Observations, Recommendations and the Way Forward**
Chairs: Nat GOPALSWAMY and Patricia DOHERTY, United States of America, Sharafat GADIMOVA, United Nations Office for Outer Space Affairs
- 15:30 *Adjourn*

Posters

| Poster# | Country | Title | Presenter |
|---------|---------------|--|----------------------------|
| 1 | Australia | Space Weather Activities in Australia | Richard MARSHALL |
| 2 | Austria | Space Weather Activities in Austria | Manuela TEMMER |
| 3 | Argentina | National Space Weather Activities of Argentina | Ana ELIAS |
| 4 | Armenia | Worldwide network of particle detectors SEVAN: 10 years of operation | Valeri BABAYAN |
| 5 | Brazil | Brazilian Space Weather Program with New Developments | Joaquim E. COSTA |
| 6 | Brazil | On the temporal variation of Atmospheric electric field in South America | Jose TACZA ANAYA |
| 7 | Bulgaria | Space Research and Technology Institute, Bulgarian Academy of Sciences | Katya GEORGIEVA |
| 8 | Cameroon | The first results on Sq Solar Variation at Yaounde-Cameroon AMBER Station | Honore MESSENGA ETOUNDI |
| 9 | Cote d'Ivoire | Geomagnetic induction effects related to impulsive space weather events at low latitudes | Doumbia VAFI |
| 10 | Croatia | A comparative study of forecasting methods for space weather-caused GNSS positioning performance deterioration | Mia FILIC |
| 11 | Ecuador | Ecuadorian Geomagnetic Station (MAGDAS equipment): Equatorial Electrojet Study | Ericson LOPEZ |
| 12 | Egypt | Space Weather Center Activities in Egypt (Space Weather Monitoring Center) | Nada ELLAHOUNY |
| 13 | Ethiopia | Space Science (Space Weather) activities in Ethiopia | Melessew NIGUSSIE |
| 14 | Georgia | On the development of thermosphere-ionosphere coupling study in Georgia under various helio-geophysical condition by TEC data obtained with GNSS receivers | Goderdzi DIDEBULIDZE |
| 15 | Germany | Space weather activities in Germany | Daniela WENZEL |
| 16 | Germany | The German ISWI Instruments SOFIE and GIFDS | Daniela WENZEL |
| 17 | Greece | Geospace Driver Effects on Electron Acceleration and Loss in the Outer Van Allen Belt | Ioannis A. DAGLIS |
| 18 | Hungary | Space Weather Activities in Hungary | Judit MURAKÖZY |
| 19 | Hungary | Impact of the solar hemispheric asymmetry on the variations of the interplanetary current sheet | Judit MURAKÖZY |
| 20 | India | Space Weather Activities in India | P.K. MANOHARAN |
| 21 | India / USA | On the Magnetic Connection between Solar Active Regions and Interplanetary Coronal Mass Ejections | Sanchita PAL |
| 22 | India / USA | Halo Coronal Mass Ejections and Type II Radio Bursts during the two peaks of Solar Cycle 24 | Ashna VELLARAMPARA MALAYIL |
| 23 | Indonesia | Space Weather Program In Indonesia | Dhani HERDIWIJAYA |
| 24 | Italy | The Software Defined Radio Technology for GNSS Ionosphere Monitoring | Vincenzo ROMANO |
| 25 | Italy | Italian Contributions to SW Studies: Recent Progress | Vincenzo ROMANO |
| 26 | Kenya | Space Weather Research and Development in Kenya: 2008 - 2017 | Paul Baki OLANDE |

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| 27 | Kazakhstan | Kazakhstan's center for diagnostics of near-Earth space and forecast of space weather | Zh. ZHANTAYEV |
| 28 | Malaysia | Equatorial Plasma Bubbles for Space Weather Monitoring in Malaysia | Suhaila M. BUHARI |
| 29 | Mexico | Instrumentation for Space Weather Activities: The Mexican Experience | Ernesto AGUILAR-RODRIGUES |
| 30 | Mexico | Interplanetary scintillation observations at 140MHz toward near real-time monitoring of solar wind properties | Ernesto AGUILAR-RODRIGUES |
| 31 | Mexico | Mexican Space Weather Strategy | Gustavo ARRIAGA MENDEZ |
| 32 | Nepal | Space Weather Initiative and Its Application in Nepal | Krishna BHANDARI |
| 33 | Nigeria | Variability of TEC and ionospheric irregularities with phases of solar cycle over East and West African Regions | Rasheedat B. ABDULRAHIM |
| 34 | Nigeria | African Participation in IHY and ISWI (2007-2017): Benefits and Implications for Space Weather Research | Akeem Babatunde RABIU |
| 35 | Nigeria (representing the African Region) | Advances in Space Weather Research and Operations in Nigeria During IHY and ISWI (2007 - 2017) | Alkeem Babatunde RABIU |
| 36 | Pakistan | Particle-in-cell Modeling of CubeSat and Ionospheric Plasma Interaction | Nadia IMTIAZ |
| 37 | Peru | Space Weather Program in Peru: Preliminary Results | Fernanda Graciela FLOREZ HEREÑA |
| 38 | Philippines | Space Weather Activities in the Philippines (2007-2017) | Clint BENNETT |
| 39 | Poland | Geant4 simulations of STIX instrument response to the solar particle events and cosmic rays | Marek STESLICKI |
| 40 | Poland | Space Weather Activities in Poland | Marek STESLICKI |
| 41 | Republic of Congo | Estimated impacts induced by the magnetic activity index (Dst) on Local Total Electron Content (TEC) in the Equatorial area | Jean Bienvenu DINGA |
| 42 | Rwanda | Characterization of CMEs from Associated Solar Radio Bursts detected with CALLISTO Spectrometers | Jean UWAMAHORO |
| 43 | Slovakia | Space weather research in Slovakia and related ISWI activities in the last decade | Ivan DOROTOVIC |
| 44 | Slovakia | Solar differential rotation profile estimation using coronal bright points data derived from SDO/AIA images | Ivan DOROTOVIC |
| 45 | Spain | Space weather activities in Spain | Consuelo CID |
| 46 | Sri Lanka | Type II Solar Radio Bursts detected by CALLISTO at ACCIMT | Saraj GUNASEKERA |
| 47 | Switzerland | The e-CALLISTO Network | Christian MONSTEIN |
| 48 | Tunisia | AWESOME and SuperSID space weather monitoring instruments: Outreach and research activities developed in Tunisia | Ahmed AMMAR |
| 49 | Ukraine | Operational Space Weather Services in Ukraine | Aleksei PARNOWSKI |
| 50 | USA / Nepal | In-situ and ground-based observations of equatorial ionospheric irregularities and implications for Spread F dynamics | Dev JOSHI |

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| 51 | USA / Nepal | The Low-Latitude Ionospheric Electrodynamics and its Importance in Space Weather Prediction | Sovit KHADKA |
| 52 | USA | Space-Based Sentinels and Improved Modeling of Infrared Cooling for Extreme Space Weather Forecasting | Martin MLYNCZAK |
| 53 | USA | Synergic Combination of Ionosonde Data and GNSS-based TEC data for Monitoring Ionospheric Disturbances and Turbulent Structures | Rezy PRADIPTA |
| 54 | USA | The SID Space Weather Monitors - Educational Instruments of the ISWI | Deborah SCHERRER |
| 55 | USA | ULF Waves in the Ionospheric Alfvén Resonator: Observations and Simulations | Beket TULEGENOV |
| 56 | USA | USA-sponsored Space Instruments Deployed under the ISWI Umbrella | Endawoke YIZENGAW and David WEBB |
| 57 | Viet Nam | NAVINET: An Experimental Portal for Low-latitude Ionosphere Study in South East Asia | Tung TA HAI |

Appendix

1. Venue of the Workshop:

The Workshop will be held at:

Heights Room at Corcoran Commons, Boston College

Address:

**140 Commonwealth Avenue
Chestnut Hill, MA 02467**

Telephone:

+(1) 617-552-8000

Web:

<https://iswi2017.bc.edu/>

All technical sessions will take place in the **Heights Room at Corcoran Commons on Boston College's main Chestnut Hill lower campus**. The Heights Room is on the second floor of Corcoran Commons. An elevator is available.

2. Welcome Reception

Please join us for a Welcome Reception on 31 July from 17:30 to 19:30 at Boston College's Gasson Hall 100 – The Irish Room



3. Poster Session

16:00 – 18:30 POSTER SESSION WITH REFRESHMENTS

On the balcony just outside the meeting space.

Please have posters up today before the afternoon coffee break.

Whiteboards, pins and tape will be provided.

Whiteboards will be numbered according to the poster list.

Whiteboard size is 36" x 48" on a horizontal landscape.



Refreshments will be served.

List of posters are at the end of the program (Please see pages 14 and 15).

4. Excursion and Banquet

Please join our excursion to Boston's Museum of Science (<http://www.mos.org>). Participants will have free time to roam the museum and then meet in the Washburn Pavilion at 18:00 PM for a Workshop Banquet.



(www.mos.org)

The **Museum of Science (MoS)** is a science museum and indoor zoo in Boston, Massachusetts. Along with over 700 interactive exhibits, the museum features a number of live presentations throughout the building every day, along with shows at the Charles Hayden Planetarium and the Mugar Omni Theater, the only domed IMAX screen in New England. The museum is also an accredited member of the Association of Zoos and Aquariums (AZA) and is home to over 100 animals, many of which have been rescued and rehabilitated from various dangerous situations.

The Workshop Banquet will take place in the Museum's Washburn Pavilion beginning at 6:00PM. This open-air pavilion is located directly on the Charles River with views of the Boston and Cambridge skylines. With refreshing breezes, cooling shade trees, and beautiful views, it's the perfect spot to socialize and dine under a protective tent.



Van de Graaff Generator



Washburn Pavilion