

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 Rabiou	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.

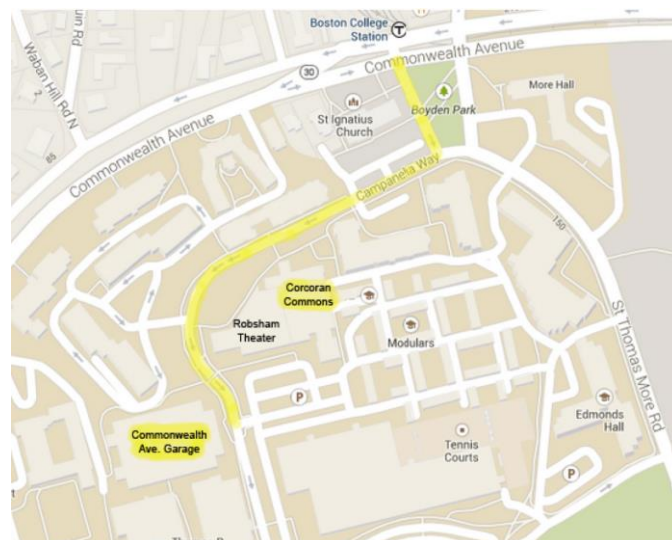
Registration: The Registration Desk will be open every day beginning at 8:00AM. Please note that all participants must have pre-registered for the workshop. We are not able to permit non-registered participants.

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 Liliana 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: Washington 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	IHY-ISWI Achievements in Egypt: Ten Years of Success	Ayman MAHROUS
13	Egypt	Space Weather Center Activities in Egypt (Space Weather Monitoring Center)	Nada ELLAHOUNY
14	Ethiopia	Space Science (Space Weather) activities in Ethiopia	Melessew NIGUSSIE
15	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
16	Germany	Space weather activities in Germany	Daniela WENZEL
17	Germany	The German ISWI Instruments SOFIE and GIFDS	Daniela WENZEL
18	Greece	Geospace Driver Effects on Electron Acceleration and Loss in the Outer Van Allen Belt	Ioannis A. DAGLIS
19	Hungary	Space Weather Activities in Hungary	Judit MURAKÖZY
20	Hungary	Impact of the solar hemispheric asymmetry on the variations of the interplanetary current sheet	Judit MURAKÖZY
21	India	Space Weather Activities in India	P.K. MANOHARAN
22	India / USA	On the Magnetic Connection between Solar Active Regions and Interplanetary Coronal Mass Ejections	Sanchita PAL
23	India / USA	Halo Coronal Mass Ejections and Type II Radio Bursts during the two peaks of Solar Cycle 24	Ashna VELLARAMPARA MALAYIL
24	Indonesia	Space Weather Program In Indonesia	Dhani HERDIWIJAYA
25	Italy	The Software Defined Radio Technology for GNSS Ionosphere Monitoring	Vincenzo ROMANO
26	Italy	Italian Contributions to SW Studies: Recent Progress	Vincenzo ROMANO

27	Kenya	Space Weather Research and Development in Kenya: 2008 - 2017	Paul Baki OLANDE
28	Kazakhstan	Kazakhstan's center for diagnostics of near-Earth space and forecast of space weather	Zh. ZHANTAYEV
29	Malaysia	Equatorial Plasma Bubbles for Space Weather Monitoring in Malaysia	Suhaila M. BUHARI
30	Mexico	Instrumentation for Space Weather Activities: The Mexican Experience	Ernesto AGUILAR-RODRIGUES
31	Mexico	Interplanetary scintillation observations at 140MHz toward near real-time monitoring of solar wind properties	Ernesto AGUILAR-RODRIGUES
32	Mexico	Mexican Space Weather Strategy	Gustavo ARRIAGA MENDEZ
33	Nepal	Space Weather Initiative and Its Application in Nepal	Krishna BHANDARI
34	Nigeria	Variability of TEC and ionospheric irregularities with phases of solar cycle over East and West African Regions	Rasheedat B. ABDULRAHIM
35	Nigeria	African Participation in IHY and ISWI (2007-2017): Benefits and Implications for Space Weather Research	Akeem Babatunde RABIU
36	Nigeria (representing the African Region)	Advances in Space Weather Research and Operations in Nigeria During IHY and ISWI (2007 - 2017)	Alkeem Babatunde RABIU
37	Pakistan	Particle-in-cell Modeling of CubeSat and Ionospheric Plasma Interaction	Nadia IMTIAZ
38	Peru	Space Weather Program in Peru: Preliminary Results	Fernanda Graciela FLOREZ HEREÑA
39	Philippines	Space Weather Activities in the Philippines (2007-2017)	Clint BENNETT
40	Poland	Geant4 simulations of STIX instrument response to the solar particle events and cosmic rays	Marek STESLICKI
41	Poland	Space Weather Activities in Poland	Marek STESLICKI
42	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
43	Rwanda	Characterization of CMEs from Associated Solar Radio Bursts detected with CALLISTO Spectrometers	Jean UWAMAHORO
44	Slovakia	Space weather research in Slovakia and related ISWI activities in the last decade	Ivan DOROTOVIC
45	Slovakia	Solar differential rotation profile estimation using coronal bright points data derived from SDO/AIA images	Ivan DOROTOVIC
46	Spain	Space weather activities in Spain	Consuelo CID
47	Sri Lanka	Type II Solar Radio Bursts detected by CALLISTO at ACCIMT	Saraj GUNASEKERA
48	Switzerland	The e-CALLISTO Network	Christian MONSTEIN
49	Tunisia	AWESOME and SuperSID space weather monitoring instruments: Outreach and research activities developed in Tunisia	Ahmed AMMAR
50	Ukraine	Operational Space Weather Services in Ukraine	Aleksei PARNOWSKI
51	USA / Nepal	In-situ and ground-based observations of equatorial ionospheric irregularities and implications for Spread F dynamics	Dev JOSHI

52	USA / Nepal	The Low-Latitude Ionospheric Electrodynamics and its Importance in Space Weather Prediction	Sovit KHADKA
53	USA	Space-Based Sentinels and Improved Modeling of Infrared Cooling for Extreme Space Weather Forecasting	Martin MLYNCZAK
54	USA	Synergic Combination of Ionosonde Data and GNSS-based TEC data for Monitoring Ionospheric Disturbances and Turbulent Structures	Rezy PRADIPTA
55	USA	The SID Space Weather Monitors - Educational Instruments of the ISWI	Deborah SCHERRER
56	USA	ULF Waves in the Ionospheric Alfvén Resonator: Observations and Simulations	Beket TULEGENOV
57	USA	USA-sponsored Space Instruments Deployed under the ISWI Umbrella	Endawoke YIZENGAW and David WEBB
58	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.



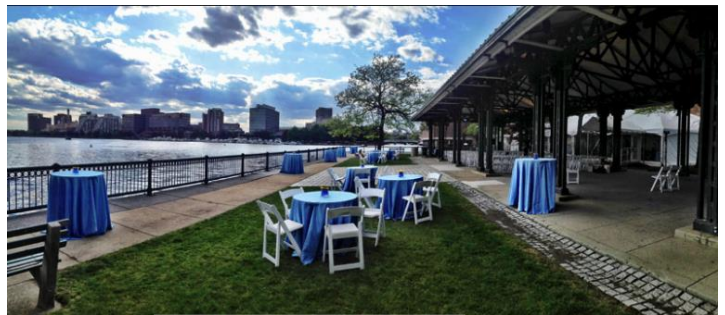
(www.mos.org)

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