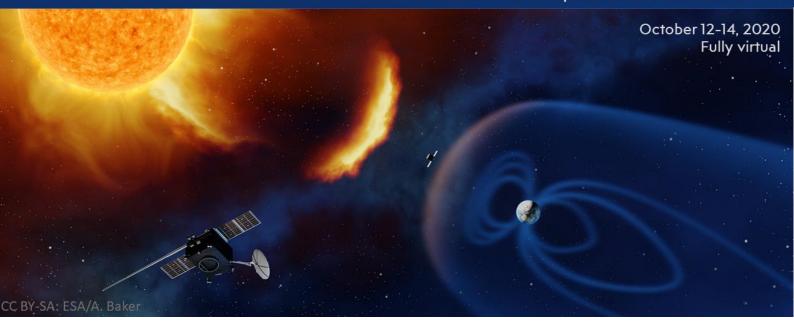
SPACE WEATHERWORKSHOP

IEEE WISEE 2020

8th Annual International Conference on Wireless for Space and Extreme Environments



GENERAL INFO

Space Weather is a natural hazard often exposing extreme environments in the near-Earth space and at ground to additional threats. These include:

- radiation effects affecting space, aviation and, under severe geospace conditions, even ground assets;
- disturbances to radio-navigation based on Global Navigation Satellite Systems (GNSSs) and to communication systems;
- increased satellite drag resulting into enhanced probability of collisions with space debris;
- geomagnetically induced currents (GICs) impacting power grids, transports and oil/gas pipelines.

At the same time, communication systems and wireless sensing offer a cheap and persistent tool to monitor short- and long-term Space Weather phenomena, contributing to the overall understanding of the complex Earth-space system.

The workshop aims at pin-pointing the state-of-the art technologies and initiative facing the Space Weather threats in extreme environments, with a particular focus on space and aviation domains.

Workshop chairs

Luca Spogli, *Istituto Nazionale di Geofisica e Vulcanologia (Italy*), <u>luca.spogli@ingv.it</u> Nicola Linty, *Finnish Geospatial Research Institute (Finland)*, <u>nicola.linty@nls.fi</u>

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FINAL PROGRAM

SLOT 1: SHORT INVITED TALKS

October 12, 12:30 – 14:00, EDT

12:30 Probabilistic Forecasts for the Occurrence of Extreme Space Weather Events

Pete Riley

Predictive Science Inc., USA

12:52 Machine Learning Approaches to Space Weather

Enrico Camporeale

CIRES, University of Colorado, USA; NOAA Space Weather Prediction Center, USA

13:15 Recent Advancements in the Modelling of Radiation Effects on Solar Cells for Future Missions to Mars

Fabiana Da Pieve, MSC individual fellowship winner Royal Belgian Institute for Space Aeronomy, Belgium

13:37 The Geodetic Detrending Technique: Enabling High-Accuracy Navigation Under Scintillation

Adrià Rovira-Garcia, MSC individual fellowship winner Universitat Politècnica de Catalunya, Spain

SLOT 2: REGULAR CONTRIBUTIONS

October 13, 12:30 – 14:00, EDT

- 12:30 Solar Radio Diagnostic for Space Weather with the Trieste Solar Radio System 2.0 Giovanna Jerse et al., *INAF, Italy*
- 12:35 Digital Controller for Capacitance Stabilized Etalons
 Luca Giovannelli et al., *University of Rome Tor Vergata, Italy*

12:40 Global Distribution and Evolution of Whistler Mode Chorus and Hiss Waves Studied by a Machine Learning Based Model Xiangning Chu, University of Colorado Boulder, USA

12:45 Climatology of high-latitude ionospheric scintillation in GPS signals

Anton Kashcheyev et al., *University of New Brunswick, Canada*

12:51 Occurrence Frequency of Moderate to Severe Level Space Weather Conditions Likely to Impact High Frequency Radio Wave Propagation and GNSS Robyn Fiori et al., Natural Resources Canada

- 12:56 Variability of Ionospheric Plasma Based on Swarm Satellite Data Wojciech J Miloch et al., *University of Oslo, Norway*
- 13:01 On the Latitude-Dependence of the GPS Phase Variation Index in the Polar Region Karim Meziane et al. *University of New Brunswick, Canada*
- 13:07 Impacts of Ionospheric Scintillation on GNSS Radio Navigation Accuracy Pierre J Cilliers et al., South African National Space Agency & University of Cape Town, South Africa

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13:12	Evaluation of Stability of GPS Satellite and Receiver Bias Tshimangadzo M. Matamba et al., <i>South African National Space Agency, South Africa</i>
13:17	Distinguishing Ionospheric Scintillation from Multipath in GNSS Signals Using Bagged Decision Trees Algorithm Rayan Imam et al., <i>Politecnico di Torino, Italy</i>
13:23	The SWIT-eSWua System: Managing, Preservation and Sharing of the Historical and near Real-Time Ionospheric Data at the INGV Carlo Marcocci et al., Istituto Nazionale di Geofisica e Vulcanologia, Italy
13:28	Proposed New Space Weather Product in Madrigal Database Brenna C Royersmith et al., University of Colorado at Boulder & MIT Haystack Observatory, USA
13:33	MUF(3000) Nowcast and Forecast Maps Developed at INGV for PECASUS Space Weather Services in the HF Domain Dario Sabbagh et al., Istituto Nazionale di Geofisica e Vulcanologia, Italy
13:38	The Influence of Space Weather on the Relationship Between the Parameters TEC and foF2 of the Ionosphere Olga Maltseva. Southern Federal University, Russian Federation
13:44	Regional Ionospheric TEC Data Assimilation and Forecasting During Geomagnetic Storm Conditions for 17th and 18th March 2015 Days Babu Sree Harsha Pasumarthi et al., <i>K L University, Greenfields, India</i>
13:49	Ionospheric Response to the Second Strongest Geomagnetic Storm of the Solar Cycle 24: First Results from the Arabian Peninsula Baiju Dayanandan et al., <i>University of Nizwa, Oman</i>
13:54	Solar Hard X-Ray Impact on Ionospheric D-Layer Srivani Inturi et al., <i>LESIA</i> , <i>Observatoire de Paris</i> , <i>Université PSL</i> , <i>CNRS</i> , <i>France</i>

SLOT 3: EXTENDED INVITED TALKS AND FINAL PANEL DISCUSSION

October 14, 12:30 – 14:00, EDT

12:30 PECASUS - A Partnership Supporting Civil Aviation with Space Weather Advisories Kirsti Kauristie,
Finnish Meteorological Institute, Finland

13:00 Quo Vadis European Space Weather?

Jean Lilensten, CNRS & IPAG, France

13:30 Panel discussion

A round table with all attendees, to bridge the efforts and the adopted solutions in the different domains.