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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)*, luca.spogli@ingv.it

Nicola Linty, *Finnish Geospatial Research Institute (Finland)*, nicola.linty@nls.fi

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*

- 13:12 Evaluation of Stability of GPS Satellite and Receiver Bias**
Tshimangadzo M. Matamba et al., *South African National Space Agency, South Africa*
- 13:17 Distinguishing Ionospheric Scintillation from Multipath in GNSS Signals Using Bagged Decision Trees Algorithm**
Rayan Imam et al., *Politecnico di Torino, Italy*
- 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., *KL University, Greenfields, India*
- 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., *University of Nizwa, Oman*
- 13:54 Solar Hard X-Ray Impact on Ionospheric D-Layer**
Srivani Inturi et al., *LESIA, Observatoire de Paris, Université PSL, CNRS, France*

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.