# Programme Overview

| | Monday 14 Nov | Tuesday 15 Nov | Wednesday 16 Nov | Thursday 17 Nov | Friday 18 Nov |
|---|---|---|---|---|---|
| **09:00** | Registration | Keynotes 9:00-10:00 | Keynotes 9:00-10:00 | Keynotes 9:00-10:00 | Keynotes 9:00-10:00 |
| **09:30** | | | | | |
| **10:00** | Tutorial 10:00-12:00 & Working Meetings 10:30-12:00 | Live Forecast, Coffee, Posters 10:00-11:00 | Live Forecast, Coffee, Posters 10:00-11:00 | Live Forecast, Coffee, Posters 10:00-11:00 | Live Forecast, Coffee, Posters 10:00-11:00 |
| **10:30** | | | | | |
| **11:00** | | Session 4,5,6 11:00-13:00 | Session 5,7,8 11:00-13:00 | Session 9,10,11* 11:00-13:00/*13:30 | Session 12,13,14,15 11:00-13:00 |
| **11:30** | | | | | |
| **12:00** | Lunch 12:00-13:00 | | | | |
| **12:30** | | | | | |
| **13:00** | Opening Keynotes 13:00-14:30 | Lunch Free Style 13:00-15:00 | Lunch Free Style 13:00-15:00 | Lunch Free Style 13:00-15:00 | Lunch 13:00-15:00 |
| **13:30** | | | | | |
| **14:00** | | | | | |
| **14:30** | Session 1,2,3 14:30-16:00 | | | | |
| **15:00** | | Working Meetings 15:00-16:30 | SWWT 15:00-16:30 | Working Meetings 15:00-16:30 | Working Meetings 15:00-16:30 |
| **15:30** | | | | | |
| **16:00** | Posters 16:00-17:00 | | | | |
| **16:30** | | Coffee | Fair 16:30-18:00 Coffee 16:30-17:00 | Coffee | —- |
| **17:00** | Session 1,2,4 17:00-18:30 | Working Meetings 17:00-18:30 | | Working Meetings 17:00-18:30 | |
| **17:30** | | | | | |
| **18:00** | | | Beer after work 18:00-20:00 | | |
| **18:30** | — | — | | — | |
| **19:00** | Medal Ceremony 18:45-19:45 | | | | |
| **19:30** | | | | Dinner 19:30-00:00 | |
| **20:00** | Welcome Reception 19:45-21:15 | Music evening 20:00-22:00 | — | | |
| **20:30** | | | | | |
| **21:00** | | | | | |
| **21:30** | — | | | | |

# Monday, 14 November 2016

**09:00 Registration desk open**

**09:30 Welcome Coffee**

**10:00 Start Tutorial**
*Room: Delvaux*

**10:30-12:00 Working Meetings**

| Ridderzaal | Mercator |
|---|---|
| Which Radio observations and instrumentation for Space Weather?<br><br>*Christophe Marqué (Royal Observatory of Belgium); Karl-Ludwig Klein (Paris Observatory); Thierry Dudok de Wit (University of Orléans)* | Definition and Development Plan of the Expert Service Centre Ionospheric Weather<br><br>*Claudia Borries (German Aerospace Center)* |

**12:00 Lunch Break**

**13:00 Opening and welcome**
*Room: Delvaux*

## Keynotes

*Room: Delvaux*

13:10 Keynote session organised by ESA

14:00 Quantifying the daily economic impact of extreme space weather due to failure in electricity transmission infrastructure
*Edward Oughton*

## Session 1: Solar Energetic Particle Events: Measurement, Modelling, Forecasting and Impact (part 1)

*Chairs: Piers Jiggens (European Space Research And Technology Centre), Mark Dierckxsens (BIRA-IASB), Daniel Heyderickx (DH Consultancy), Mike Marsh (Met Office), Rami Vainio (University of Turku)*

*Room: Ridderzaal*

14:30 SEP modeling based on the ENLIL global heliospheric model - **Invited**
*M. L. Mays[1,2], J. G. Luhmann[3], D. Odstrcil[4], H. M. Bain[3], Y. Li[3], C. O. Lee[3], N. A. Schwadron[5], M. J. Gorby[5], Lan Jian[6,2], M. M. Kuznetsova[2]*
*[1]Catholic University of America; [2]NASA Goddard Space Flight Center; [3]Space Sciences Laboratory, University of California, Berkeley; [4]George Mason University; [5]University of New Hampshire; [6]University of Maryland*

14:55 Near realtime forecasting of MeV protons on the basis of sub relativistic electrons - **Invited**

*B. Heber[1], J. Labrenz[1], P. Kühl[1], J. Marquardt[1], C. Sarlanis[2], O. Malandraki[3], A. Posner[4]*

*[1] IEAP / CAU Kiel, Extraterrestrische Physik, Kiel, Germany; [2] ISNet, Athens, Greece; [3] National Observatory of Athens, IAASARS, Athens, Greece; [4] NASA Headquarters, Heliophysics, Washington DC, U.S.A.*

15:20 3D Modelling of Heavy Ion Solar Energetic Particle Propagation

*Silvia Dalla[1], Mike S. Marsh[2], Markus Battarbee[1] and Timo Laitinen[1]*

*[1] University of Central Lancashire, UK; [2] Met Office, UK*

15:40 Estimating the risk of SEPE: a service dedicated to spacecraft operations. Feedbacks from ATV and GAIA missions

*Philippe Yaya, Louis Hecker*

*[1] Hvar Observatory, Faculty of Geodesy, Kačićeva 26, HR-10000 Zagreb, Croatia; [2] Institute for Experimental and Applied Physics, Christian-Albrechts-University Kiel, Germany; [3] Institute of Physics, University of Graz, Universitätsplatz 5, A-8010 Graz, Austria*

**16:00 Coffee break and Posters Session 1, 2 & 3**

## Session 1: Solar Energetic Particle Events: Measurement, Modelling, Forecasting and Impact (part 2)

*Chairs:* *Piers Jiggens (European Space Research And Technology Centre), Mark Dierckxsens (BIRA-IASB), Daniel Heyderickx (DH Consultancy), Mike Marsh (Met Office), Rami Vainio (University of Turku)*

*Room:* *Ridderzaal*

17:00 NGRM Next Generation Radiation Monitor new standard instrument for ESA

*Wojtek Hajdas, Radoslaw Marcinkowski, Hualin Xiao, Alankrita Isha Mrigakshi*

*Paul Scherrer Institute (PSI), Villigen, Switzerland*

17:25 Modelling the SEP environment using the SAPPHIRE model

*Piers Jiggens[1], Daniel Heynderickx[2], Athina Varotsou[3], Pete Truscott[4], Fan Lei[5], Ingmar Sandberg[6], Rami Vainio[7], Osku Raukunen[7]*

*[1]ESA/ESTEC (NL); [2]DH Consultancy (BE); [3]TRAD Tests and Radiations (FR); [4]Kallisto Consultancy (UK); [5]RadMod Research (UK); [6]Institute for Accelerating Systems and Applications (GR); [7]University of Turku (FI)*

17:50 New approaches in SEP description and modelling

*Ingmar Sandberg[1], Sigiava A. Giamini[1], Constantinos Papadimitriou[1], Ioannis A. Daglis[1,2] and P. Jiggens[3]*

*[1]Institute of Accelerating Systems and Applications, Athens, Greece; [2]Department of Physics, National and Kapodistrian University of Athens, Athens, Greece.; [3]European Research and Technology Centre, European Space Agency, Noordwijk, The Netherlands.*

18:10 Extreme Atmospheric Radiation Environments and Effects

*Clive Dyer[1,2], Alex Hands[2], Keith Ryden[2], Fan Lei[3]*

*[1]CSDRadConsultancy; [2]University of Surrey Space Centre; [3]RADMOD Research*

**Session 2: SSA Space Weather Service Network (part 1)**

*Chairs:* *Erwin De Donder (BISA), Alexi Glover (ESOC), Michel Kruglanski (BISA), Norma Crosby (BISA), Jesse Andries (ROB), Claudia Borries (DLR), Daniel Martini (NOSWE-TGO), Chris Perry (RAL)*

*Room:* *Delvaux*

14:30 Introduction
*Alexi Glover*
*ESA*

14:40 SSA Space Weather Coordination Centre
*Sophie Chabanski*
*Royal Belgian Institute for Space Aeronomy, Brussels, Belgium*

14:50 P2-SWE-XII: Tailoring for Arctic Region users
*Per Høeg*
*Technical University of Denmark (DTU)*

15:00 Real-time H$\alpha$ observations and automatic flare detection at Kanzelhöhe Observatory within ESA SSA - **Invited**
*Astrid M. Veronig, Werner Pötzi*
*Kanzelhöhe Observatory / Institute of Physics, University of Graz, Austria*

15:10 The SSA SWE A-EFFort Service : Successes and Shortcomings of Operational Solar Flare Prediction - **Invited**
*Manolis K. Georgoulis, Kostas Tziotziou, Kostas Themelis, Margarita Magiati, Georgia Angelopoulou, Manolis Zoulias*
*RCAAM of the Academy of Athens, 11527 Athens, Greece*

15:20 SIDC products in ESA-SSA Space weather service network
*Jesse Andries*
*Royal Observatory of Belgium*

15:30 Automated Warnings of Earth arrivals (AWARE)
*Susanne Vennerstrom and Kristoffer Leer*
*DTU Space*

15:40 Met Office Services within the H-ESC
*Mike Marsh, Catherine Burnett, Mark Gibbs, David Jackson*
*Met Office*

15:50 The H-ESC UNIGRAZ tools: Empirical Solar Wind Forecasting (ESWF) and the drag-based model (DBM) for CME propagation
*Manuela Temmer[1], Tomislav Zic[2], Astrid M. Veronig[1], Martin A. Reiss[1], Roland Maderbacher[1]*
*[1]Institute of Physics, University of Graz, Austria; [2]Hvar Observatory, University of Zagreb, Croatia*

**16:00 Coffee break and Posters Session 1, 2 & 3**

**Session 2: SSA Space Weather Service Network (part 2)**

*Chairs: Erwin De Donder (BISA), Alexi Glover (ESOC), Michel Kruglanski (BISA), Norma Crosby (BISA), Jesse Andries (ROB), Claudia Borries (DLR), Daniel Martini (NOSWE-TGO), Chris Perry (RAL)*

*Room: Delvaux*

17:00 Space weather products based on Energetic Particle Telescope (EPT) data measured on-board PROBA-V
*Stanislav Borisov, Sylvie Benck, Mathias Cyamukungu*
*Center for Space Radiations, Earth and Life Institute, Université catholique de Louvain*

17:10 An empirical nowcast model of electron populations relevant to spacecraft charging
*Colin Forsyth, Jonathan Rae, Andrew Fazakerley*
*UCL Mullard Space Science Laboratory, Dorking, UK*

17:20 Space Weather services from a satellite manufacturer point of view
*Johan Ideström[1], Henning Wulf[1], Samantha Rason[2]*
*[1]OHB System AG, Bremen, Germany; [2]Antwerp Space, Hoboken (Antwerp), Belgium*

17:30 The European Ionosonde Service: current status, performance assessment and development needs

*Anna Belehaki, Ioanna Tsagouri and the EIS team*

*National Observatory of Athens, Greece; http://eis2.space.noa.gr/EIS/index.php/EISTeam*

17:40 Service and database of past values of solar and geomagnetic indices relevant to drag calculation

*Beata Dziak-Jankowska[1], Claudia Borries[2], Mariusz Pożoga[1], Łukasz Tomasik[1]*

*[1]Space Research Centre Polish academy of Sciences; [2]German Aerospace Center*

17:50 Contributions of the Ionosphere Monitoring and Prediction Center to the space weather services

*Claudia Borries*

*German Aerospace Center*

18:00 Swarm mission data products for space weather application

*Stolle Claudia[1], Olsen Nils[2], Martini Daniel[3], Berdermann Jens[4], Doornbos Eelco[5], Dunlop Malcom W.[6], Kervalishvili Guram[1], Heilig Balazs[7], Holmdahl Olsen Poul Erik[2], Langhans Mirjam[1], Marghitu Octav[8], Rauberg Jan[1], Thomson Alan W.P[9], Willer Anna Naemi[2]*

*[1]GFZ Potsdam, Germany; [2]DTU Space, Demnark; [3]TGO, University of Tromsø, Norway; [4]DLR Neustrelitz, Germany; [5]TU Delft, Netherlands; [6]RAL STFC, UK; [7]MFGI, Hungary; [8]ISS Romania; [9]NERC-BGS, UK*

18:10 The status of Danish Greenland magnetometer chain

*Behlke, Rico*

*Danish Technical University*

18:20 Kåre Rudsar: The end user requirements for service to power systems operators

*Daniel Martini*

*Norwegian Center for Space Weather - TGO*

## Session 3: Space Climate

*Chairs:* *Luke Barnard (University of Reading), Thierry Dudok de Wit (University of Orléans), Bernd Funke (Instituto de Astrofísica de Andalucía), Natasha Krivova (Max Planck Institute for Solar System Research), Kalevi Mursula (University of Oulu)*

*Room:* *Mercator*

14:30 Reconstructions of Solar Irradiance on the Millennial Timescale - **Invited**

*Chi-Ju Wu[1], Natalie Krivova[1], Sami K. Solanki[1,2], Ilya Usoskin[3]*

*[1]Max Planck Institute for Solar System Research, Germany; [2]Kyung Hee University, South Korea; [3]University of Oulu, Finland*

14:50 Drivers and Solar Cycles Trends of Extreme Space Weather Disturbances - **Invited**

*Emilia Kilpua*

*University of Helsinki*

15:10 Winds of winter: How solar wind driven energetic particles can affect northern winters - **Invited**

*Ville Maliniemi, Timo Asikainen, Kalevi Mursula*

*ReSoLVE Centre of Excellence, Space Climate Research Unit, University of Oulu, Finland*

15:30 Evolution of Research on Long-term Solar Wind Magnetic Field Strength - **Invited**

*Ed Cliver*

*National Solar Observatory, Boulder, CO USA*

15:50 Cyclic activity and grand minima in solar-like stars

*A.S. Brun[1], K. Augustson[1], M.S. Miesch[2], J. Toomre[3]*

*[1]AIM, CEA-Saclay, France; [2]HAO, NCAR, USA; [3]JILA, Univ. Colorado, USA*

**16:00 Coffee break and Posters Session 1, 2 & 3**

## Session 4: Flares, coronal mass ejections and solar energetic particles: Space Weather Impact (part 1)

*Chairs:* *Kamen Kozarev (Smithsonian Astrophysical Observatory), Luciano Rodriguez (ROB), Nicole Vilmer (LESIA), Neus Agueda (Universitat de Barcelona), Sergio Dasso (IAFE/UBA), Manolis Georgoulis (Academy of Athens), Olga Malandraki (National Observatory of Athens)*

*Room:* *Mercator*

17:00 Formation of Geoeffective Structures in Interplanetary Coronal Mass Ejections - **Invited**

*Emilia Kilpua*

*Department of Physics, University of Helsinki*

17:22 The physical mechanisms that trigger coronal mass ejections - **Invited**

*Francesco P. Zuccarello[1,2], Guillaume Aulanier[2]*

*[1]Centre for mathematical Plasma-Astrophyisc, KULeuven; [2]LESIA, Observatoire de Paris*

17:44 Analysis of coronal mass ejections propagating in different solar wind conditions

*Marilena Mierla[1,2], Andrea Verdini[3],Emilia Kilpua[4], Luciano Rodriguez[1], Matt West[1]*

*[1]Royal Observatory of Belgium; [2]Institute of Geodynamics of the Romanian Academy; [3]LESIA, Observatoire de Paris; [4]Department of Physics, University of Helsinki*

17:56 Combining Observations of Interplanetary Scintillation and Heliospheric Visible-Light Imaging for Space-Weather Purposes as part of the EU FP7 HELCATS Project: CMEs and SIRs

*Mario M. Bisi[1], David Barnes[1], Jonathan Eastwood[2], Vratislav Krupar[2], Jasmina Magdalenic[3], Richard A. Harrison[1], Jackie A. Davies[1], and Richard A. Fallows[4].*

*[1]STFC-RAL Space, UK; [2]Imperial College London, UK; [3]ROB, Belgium; [4]ASTRON, NL.*

18:08 Typical profiles and distributions of plasma and magnetic field parameters in magnetic clouds at 1 AU

*Luciano Rodriguez[1], Jimmy J. Masias-Meza[2], Sergio Dasso[2], Pascal Demoulin[3], Andrei Zhukov[1,4], Adriana Gulisano[2,5], Marilena Mierla[1,6],Emilia Kilpua[7], Matthew West[1], Dana Lacatus[6], Alin Razvan Paraschiv[6], Miho Janvier[8]*

*[1]Royal Observatory of Belgium; [2]Universidad de Buenos Aires; [3]Observatoire de Paris; [4]Skobeltsyn Institute of Nuclear Physics, Moscow State University; [5]Instituto Antártico Argentino; [6]Institute of Geodynamics of the Romanian Academy; [7]University of Helsinki; [8]Institut d'Astrophysique Spatiale*

18:20 Relating CME characteristics from remote-sensing image data to in-situ measurements for Earth-affecting events

*Manuela Temmer[1], Karin Dissauer[1], Julia K. Thalmann[1], Astrid M. Veronig[1], Luciano Rodriguez[2], Johannes Tschernitz[1], Jürgen Hinterreiter[1]*

*[1]Institute of Physics, University of Graz, Austria; [2]Royal Observatory of Belgium, Brussels, Belgium*

**18:45-19:45 Medal Ceremony**
*Room Delvaux*

**19:45-21:15 Welcome Reception**
*Ostend Queen @ Kursaal*

# Tuesday, 15 November 2016

## Keynotes

*Room: Delvaux*

09:00 CME properties and dynamic evolution in the inner heliosphere
*Manuela Temmer*

09:30 Contemporary observations of interplanetary disturbances at the Earth and in the Lagrange Point L1 with Lisa Pathfinder
*Catia Grimani*

**10:00 Live Forecast**
*by SIDC/ROB*

**10:10 Coffee break and Posters Session 4 & 6**

## Session 4: Flares, coronal mass ejections and solar energetic particles: Space Weather Impact (part 2)

*Chairs:* *Kamen Kozarev (Smithsonian Astrophysical Observatory), Luciano Rodriguez (ROB), Nicole Vilmer (LESIA), Neus Agueda (Universitat de Barcelona), Sergio Dasso (IAFE/UBA), Manolis Georgoulis (Academy of Athens), Olga Malandraki (National Observatory of Athens)*

*Room:* *Delvaux*

11:00 Observational Evidence for High-Mach Number Regime of Coronal Shock Waves During Powerful Solar Particle Events - **Invited**

*Rouillard, A.P.[1], Plotnikov, I.[1], Pinto, R.[1], Zucca, P.[2], Vainio, R.[3], Tylka, A.[4], Vourlidas, A.[5], Warmuth, A.[6], Mann, G.[6]*

*[1]Institut de Recherche en Astrophysique et Planétologie, Universitée de Toulouse III; [2]LESIA-UMR 8109 - Observatoire de Paris, CNRS, Univ. Paris; [3]University of Turku, Turku, Finland; [4]Emeritus, NASA Goddard Space Flight Center, Greenbelt; [5]Johns Hopkins Applied Physics Laboratory, Laurel, Maryland; [6]Leibniz-Institut fur Astrophysik Potsdam, Potsdam*

11:22 Peak intensities of solar energetic particle events at heliocentric distances $<$1 AU - **Invited**

*Angels Aran[1], Monica Laurenza[2], Giuseppe Consolini[2], David Lario[3], Raúl Gómez-Herrero[4], Javier Rodríguez-Pacheco[4], Juan José Blanco[4]*

*[1]Dep. de Físcia Quàntica i Astrofísica i Institut de Ciències del Cosmos, Universitat de Barcelona, Spain; [2]Istituto di Astrofisica e Planetologia Spaziali, National Institute for Astrophysics, Italy; [3]Applied Physics Laboratory, The Johns Hopkins University, USA; [4]Space Research Group, University of Alcalá, Spain*

11:44 Solar Flares, Coronal Mass Ejections and Solar Energetic Particle Event Characteristics - **Invited**

*A. Anastasiadis[1], A. Papaioannou[1], I. Sandberg[1], A. Kouloumvakos[2], M. K. Georgoulis[3], K. Tziotziou[1], G. Tsiropoula[1], P. Jiggens[4], A. Hilgers[4]*

*[1]IAASARS, National Observatory of Athens, Greece; [2]Depatment of Physics, University of Ioannina, Greece; [3]RCAAM, Academy of Athens, Greece; [4]ESA/ESTEC, The Netherlands*

12:06 Are protons accelerated by CME-driven shocks responsible for high-energy solar gamma-ray events?

*A. Afanasiev[1], R. Vainio[1], A. Aran[2], G. Share[3,4], A. Rouillard[5], R. Siipola[1], M. Battarbee[6], J. Pomoell[7], and B. Sanahuja[2]*

*[1]Department of Physics and Astronomy, University of Turku, Turku, Finland; [2]Departament de Física Quàntica i Astrofísica, Institut de Ciències del Cosmos, Universitat de Barcelona, Barcelona, Spain; [3]Department of Astronomy, University of Maryland, College Park, Maryland, USA; [4]National Observatory of Athens, Athens, Greece; [5]Institut de Recherche en Astrophysique et Planétologie, Université de Toulouse, Toulouse, France; [6]Jeremiah Horrocks Institute, University of Central Lancashire, Preston, UK; [7]Department of Physics, University of Helsinki, Helsinki, Finland*

12:18 Interplanetary transport of near-relativistic solar electron events under different solar wind conditions.

*D. Pacheco[1], R. Gómez-Herrero[2], N. Agueda[1], A. Aran[1]*

*[1]Dep. de Física Quàntica i Astrofísica i Institut de Ciències del Cosmos, Universitat de Barcelona, Spain; [2]SRG, Dpto. de Física y Matemáticas, Universidad de Alcalá, E-28871 Alcalá de Henares, Spain*

12:30 Plasma Diagnostics of a Moreton Wave

*A.M. Veronig[1], K. Vaninnathan[1], K. Dissauer[1], M. Temmer[1], N. Nitta[2], B. Vrsnak[3], P. Mesa Ortega[1]*

*[1]Institute of Physics / Kanzelhöhe Observatory, University of Graz, Austria; [2]Lockheed Martin Advanced Technology Center, CA, USA; [3]Hvar Observatory, Faculty of Geodesy, University of Zagreb, Croatia*

12:42 Radio Diagnostics of Electron Acceleration Sites During the Eruption of a Flux Rope in the Solar Corona

*Eoin Carley[1,2], Nicole Vilmer[2], Peter Gallagher[1]*

*[1]School of Physics, Trinity College Dublin; [2]LESIA, Paris Observatory.*

**Session 5: Developing new space weather tools: Bridging between the fundamental science and operations (part 1)**

*Chairs:* *Misha Balikhin (The University of Sheffield, UK), D. Shaun Bloomfield (Northumbria University, UK), Juan V. Rodriguez (University of Colorado CIRES), Didier Mourenas (CEA, DAM, DIF, Arpajon, France)*

*Room:* *Ridderzaal*

11:00 Requirements for "ideal" space weather forecasting tools - **Invited**

*David Jackson, Mike Marsh and Suzy Bingham*

*Met Office*

11:25 Requirements for the First U.S. National Weather Service Geospace Model - **Invited**

*Howard J. Singer[1], George Millward[1,2], Christopher Balch[1], Tom Berger[1], Terrance G. Onsager[1], Rodney Viereck[1], Gabor Toth[3], Daniel Welling[3], and Tamas Gombosi[3]*

*[1]NOAA Space Weather Prediction Center; [2]University of Colorado, Cooperative Institute for Research in Environmental Sciences (CIRES); [3]University of Michigan, Atmospheric, Oceanic and Space Sciences*

11:50 Forecasting the perfect storm - **Invited**

*Dave Pitchford*

*SES*

12:15 VNC: Application of Physics and Systems Science methodologies to Forecasting of the Radiation Belt Electron Environment

*Simon N. Walker[1], Ivan P. Pakhotin[1,2], Yuri Y. Shprits[3]*

*[1]ACSE, University of Sheffield, Sheffield, U.K.; [2]Now at University of Alberta, Canada; [3]GFZ, Potsdam, Germany.*

12:30 15 years of New Zealand Geomagnetically Induced Current observations - working towards operational hazard estimates

*Craig J. Rodger[1], Daniel H. Mac Manus[1], Michael Dalzell[2], Alan W. P. Thomson[3], Tim Divett[1], Ellen Clarke[3], Tanja Petersen[4] and Mark A. Clilverd[5]*

*[1]University of Otago, New Zealand; [2]Transpower New Zealand Limited, New Zealand; [3]British Geological Survey, United Kingdom; [4]GNS Science, New Zealand; [5]British Antarctic Survey, United Kingdom*

12:40 Nowcast and forecast of Kp index

*P. Wintoft[1], M. Wik[1], J. Katkalov[1], S.N. Walker[2], H.-L. Wei[2], J. Matzka[3]*

*[1]Swedish Institute of Space Physics; [2]University of Sheffield; [3]GFZ German Research Centre For Geosciences*

12:50 FLARECAST Development Infrastructure: A science-oriented data processing framework

*Marco Soldati[1], Samuel von Stachelski[1], Michele Piana[2], D. Shaun Bloomfield[3,4] and the FLARECAST team*

*[1]Institute of 4D Technologies, Fachhochschule Nordwestschweiz, Switzerland; [2]Dipartimento di Matematica, Università di Genova and CNR SPIN, Genova, Italy; [3]Trinity College Dublin, College Green, Dublin 2, Ireland; [4]Northumbria University, Newcastle Upon Tyne, NE1 8ST, UK*

## Session 6: Space Weather effects on GNSS and precise positioning

*Chairs:* *Claudia Borries, J. Berdermann (German Aerospace Center)*

*Room:* *Mercator*

11:00 Mitigation of ionospheric scintillation effects on GNSS positioning at low latitudes - **Invited**

*Sreeja Vadakke Veettil and Marcio Aquino*

*Nottingham Geospatial Institute, University of Nottingham, Nottingham, UK*

11:15 Regional forecast of ionospheric scintillation dedicated to offshore operators

*Philippe Yaya, Louis Hecker*

*CLS (Collecte Localisation Satellites), Ramonville Saint-Agne, France*

11:30 High-Latitude Scintillations and Electron Density Gradients Impact on GNSS Receiver Performance - **Invited**

*Per Høeg, Tibor Durgonics, Hans-Henrik von Benzon*

*Technical University of Denmark (DTU), DTU Space, 2800 Kgs. Lyngby, Denmark*

11:45 Data reduction techniques for Ionosphere anomaly characterization using multi-GNSS - **Invited**

*Ganesh Lalgudi Gopalakrishnan, Joachim Feltens*

*Telespazio VEGA Deutschland GmbH, Telespazio VEGA Deutschland GmbH c/o European Space Operations Centre (ESOC)*

12:00 Relation between the strength of ionospheric plasma density gradients and the loss of GPS signals onboard the Swarm satellites - **Invited**

*Claudia Stolle[1], Chao Xiong[1], Christian Siemes[2]*

*[1]GFZ Potsdam, Germany; [2]RHEA for ESA, ESTEC/Netherlands*

12:15 Near-real time detection of solar radio burst impacting the GNSS signal reception

*Jean-Marie Chevalier, Nicolas Bergeot, Christophe Marqué and Carine Bruyninx*

*Royal Observatory of Belgium*

12:30 The Ionospheric Disturbance IndeX (DIX)

*Volker Wilken, Martin Kriegel, Norbert Jakowski, Jens Berdermann*

*German Aerospace Center (DLR), Institute of Communications and Navigation*

12:45 Improving SBAS navigation performances under severe ionosphere weather conditions

*Franck Haddad, Sébastien Trilles*

*Thales Alenia Space*

**13:00-15:00 Lunch Break & Free Style**

**15:00-16:30 Working Meetings**

| **Delvaux** | **Ridderzaal** | **Mercator** | **Permeke** |
|---|---|---|---|
| Spacecraft aircraft and launcher environments | On the way to standardize ionospheric indices and scales | Coordinated upgrades of Sunspot Numbers | PROGRESS: Adopting models to stakeholder requirements |
| *S. McKenna-Lawlor, G. Reitz, F. di Marco* | *Norbert Jakowski (German Aerospace Center)* | *Frederic Clette (ROB); Laure Lefevre (ROB)* | *Yuri Shprits (GFZ/UCLA), Michail Balikhin (U. Sheffield)* |

**16:30-17:00 Coffee Break**

**17:00-18:30 Working Meetings**

| Delvaux | Mercator | Permeke | Leopold |
|---|---|---|---|
| Declining phase high speed stream events in 2015/2016 | Military operations and space weather - experience, activities and plans | MADAWG | Space Weather information for aviation |
| *Dave Pitchford (SES), Mark Seltzer (UK Met Office)* | *Mauro Messerotti (INAF-Astronomical Observatory of Trieste & Physics Dept.); Ulf-Peter Hoppe (UiT The Arctic University of Norway, NOR); Frank Jansen (DLR Institute of Space Systems Bremen); Bryn Jones (SolarMetrics Ltd)* | *Alexis Rouillard (IRAP)* | *Marcin Latocha (SL); Peter Beck (SL), Norma Crosby (BIRA-IASB), Erwin De Donder (BIRA-IASB)* |

**20:00-22:00 Music evening**

*Lounge Bar @ Kursaal*

# Wednesday, 16 November 2016

## Keynotes

*Room: Delvaux*

09:00 Radiation Hardness Assurance in Satellite Development
*Renaud Mangeret*

09:30 Modelling and Data Analysis in Preparation for Solar Orbiter
*Alexis Rouillard*

**10:00 Live Forecast**
*by BGS*

**10:10 Coffee break and Posters Session 5, 7 & 8**

## Session 5: Developing new space weather tools: Bridging between the fundamental science and operations (part 2)

*Chairs: Misha Balikhin (The University of Sheffield, UK), D. Shaun Bloomfield (Northumbria University, UK), Juan V. Rodriguez (University of Colorado CIRES), Didier Mourenas (CEA, DAM, DIF, Arpajon, France)*
*Room: Ridderzaal*

11:00 Space Weather Research at AFOSR - **Invited**
*Kent L. Miller*
*European Office of Scientific Research*

11:25 From studying electron motion in the electromagnetic fields in the inner magnetosphere to the operational nowcast model for low energy (<200 keV) electron fluxes responsible for surface charging - **Invited**

*Natalia Ganushkina[1,2], Stepan Dubyagin[1], Ilkka Sillanpää[1]*

*[1]Finnish Meteorological Institute, Helsinki, Finland; [2]University of Michigan, Ann Arbor MI, USA*

11:50 Data Assimilation for Prediction and Reanalysis of the Radiation Belts - **Invited**

*Yuri Shprits[1,2] and Adam Kellerman[2]*

*[1]GFZ, Potsdam; [2]UCLA*

12:10 FLARECAST Science: A comprehensive database of solar flare predictors

*Manolis K. Georgoulis[1], D. Shaun Bloomfield[2,3] and the FLARECAST team*

*[1]RCAAM of the Academy of Athens, 11527 Athens, Greece; [2]Trinity College Dublin, College Green, Dublin 2, Ireland; [3]Northumbria University, Newcastle Upon Tyne, NE1 8ST, UK*

12:25 Sunspot Group Evolution and Flare Forecasting

*Aoife E. McCloskey[1], Peter T. Gallagher[1], D. Shaun Bloomfield[1,2]*

*[1]Trinity College Dublin, College Green, Dublin 2, Ireland; [2]Northumbria University, Newcastle Upon Tyne, NE1 8ST, UK*

12:35 Inverting the solar meridional flow and predicting the 11-yr cycle using advanced variational data assimilation techniques

*Ching Pui Hung[1,2], Allan Sacha Brun[2], Alexandre Fournier[1], Laurène Jouve[2,3], Olivier Talagrand[4]*

*[1]IPGP; [2]AIM, CEA Saclay; [3]IRAP, Observatoire Midi-Pyrénées; [4]École normale supérieure, Paris*

12:45 Combining multiple observations into one single composite: toward new Total Solar Irradiance and MgII index composites

*T. Dudok de Wit[1], C. Fröhlich[2], M. Haberreiter[2], G. Kopp[3], M. Kretzschmar[1], M. Schöll[1,2], M. Weber[4]*

*[1]LPC2E, CNRS and University of Orléans, France; [2]PMOD/WRC, Davos, Switzerland; [3]LASP, University of Colorado, Boulder, USA; [4]IUP, University of Bremen, Germany*

12:55 Highlights and results from the FP7 HELCATS (Heliospheric Cataloguing, Analysis and Techniques Service) project

*Richard Harrison[1], Jackie Davies[1], David Barnes[1], Chris Perry[1], Christian Moestl[2], Alexis Rouillard[3], Volker Bothmer[4], Luciano Rodriguez[5], Jonathan Eastwood[6], Emilia Kilpua[7], Peter Gallagher[8], Dusan Odstrčil[9]*

*[1]RAL Space, United Kingdom; [2]University of Graz, Austria; [3]Paul Sabatier University, France; [4]University of Götingen, Germany; [5]Royal Observatory Belgium, Belgium; [6]Imperial College London, United Kingdom; [7]University of Helsinki, Finland; [8]Trinity College Dublin, Ireland; [9]George Mason University, USA.*

## Session 7: Best practice in transitioning existing space science tools to operational SW prediction systems

*Chairs:* *David Jackson (Met Office), Suzy Bingham (Met Office), Giovanni Lapenta (KUL), Stefaan Poedts (KUL), Manolis Georgoulis (Athens), Mauro Messerotti (Trieste), Daniel Matthiae (DLR)*

*Room:* *Delvaux*

11:00 Utilizing Scientific Advances in Operational Systems - **Invited**

*T. G. Onsager, T. E. Berger, H. J. Singer*

*NOAA Space Weather Prediction Center*

11:15 Assessment, dissemination and prototyping of space weather models, forecasting techniques and procedures at the Community Coordinated Modeling Center.

*M. Kuznetsova, L. Rastaetter, A. Taktakishvili, P. J. Macneice, M. L. Mays, A. Pulkkinen, J. Boblitt, R. Mullinix, J-S. Shim, C. Wiegand, and Y. Zheng*

*NASA Goddard Space Flight Center, Community Coordinated Modeling Center*

11:25 Aspects of operational climate and weather modelling - **Invited**

*Doris Folini*

*Institute for Atmospheric and Climate Science, ETH Zurich, Switzerland*

11:40 SOL-TERRA: A Roadmap for Operational Coupled Sun-to-Earth Space Weather Forecasting - **Invited**

*Alastair Pidgeon[1], Gareth Lawrence[1], Simon Reid[1], David Jackson[2], Mike Marsh[2], Mario M. Bisi[3], Yulia Bogdanova[3] and Mike Hapgood[3]*

*[1]RHEA TECH; [2]Met Office; [3]STFC RAL Space*

11:55 KSWC's space science tools to operational SW prediction systems - **Invited**

*KiChang Yoon, Jang Suk Choi, Dong Kyu Kim, Yeongoh Choi,*

*Korean Space Weather Center of Radio Research Agency*

12:10 Forecast Development at the Canadian Space Weather Forecast Centre

*Ljubomir Nikolic*

*Canadian Hazards Information Service, Natural Resources Canada*

12:20 Space Weather Operations in CMA - **Invited**

*Xiaoxin Zhang, Jianguang Guo*

*National Observatory for Space Weather, China Meteorological Administration*

12:35 The Significance of Operational Space Weather Practices in the South African region - **Invited**

*Lee-Anne McKinnell, Mpho Tshisaphungo*

*South African National Space Agency (SANSA)*

12:50 Utilisation and Further Development of Space Science Tools towards pre-Operational Services in the ESA SSA Programme Space Weather Service Network

*Alexi Glover[1,2], Juha-Pekka Luntama[1], Ralf Keil[1,2]*

*[1]ESA SSA Programme Office, ESA/ESOC, Germany; [2]RHEA System, Belgium*

## Session 8: Space Systems Development and Operations: Dealing with Space Weather and Space Climate Effects

*Chairs:* *Eamonn Daly (European Space Agency), Dave Pitchford (SES), Hugh Evans (ESA)*

*Room:* *Mercator*

11:00 Space Radiation and Plasma Effects on Spacecraft: Coping with Weather and Climate

*H. Evans[1], P. Jiggers[2], E. Daly[3]*

*[1]ESA/ESTEC (Rhea); [2]European Space Research And Technology Centre; [3]European Space Agency*

11:17 Space Radiation Environment and Situational Awareness (SSREA) Monitors

*J. Bernie Blake*

*Aerospace Corporation*

11:34 Space Environment Effects on ESA Science Missions

*T. Prod'homme and L. Duvet*

*European Space Agency*

11:51 Space radiation crew protection and operations for exploration missions

*Ramona Gaza[1], Kerry Lee[2], Dan Fry[2], Janet Barzilla[1], Steve Johnson[1], Nic Stoffle[1], John Keller[3], Robin Elgart[4], Edward J. Semones[2]*

*[1]Lockheed Martin/NASA Johnson Space Center, TX 77258-8487, USA; [2]NASA Johnson Space Center, Houston, TX 77058, USA; [3]KBRwyle, Houston TX 77058, USA; [4]University of Houston, Houston TX 77004, USA*

12:08 Single Event Effects Considerations for Spacecraft Design

*Justin Likar[1], Dave Pitchford[2]*

*[1]UTC Aerospace Systems; [2]SES*

12:25 Spacecraft charging related to low energy plasma environment at GEO and MEO

*Jean-Charles Matéo-Vélez[1], Angélica Sicard Piet[1], Thierry Paulmier[1], Denis Payan[2], Natalia Ganushkina[3]*

*[1]ONERA The French Aerospace Lab; [2]CNES French Space Agency; [3]FMI Finish Meteorological Institute*

12:42 Atomic Oxygen modelling and its impact on LEO spacecrafts design

*Bayrem Zitouni*

*OHB Systems*

**13:00-15:00 Lunch Break & Free Style**

**15:00-16:30 Working Meetings**

| **Delvaux** |
| --- |
| Space Weather Working Team : general meeting<br><br>*Stefaan Poedts* |

**16:30-18:00 Fair**

Coffee is served

*Poster area*

**18:00-20:00 Beer after work**

*Poster area*

# Thursday, 17 November 2016

### Keynotes

*Room: Delvaux*

09:00 The Van Allen Radiation Belts: What I'd Like Machines Learning to Learn
*Geoffrey Reeves*

09:30 Applications of complex systems-based methods for Space Weather forecasting
*Georgios Balasis*

**10:00 Live Forecast**
*by SWPC*

**10:10 Coffee break and Posters Session 9, 10 & 11**

### Session 9: Enhanced Space Weather Monitoring Systems

*Chair: Stefan Kraft (ESOC/ESA)*
*Room: Delvaux*

11:00 Using a Payload at L5 to enhance Space Weather Forecasting - **Invited**
*Robert Bentley, Lucie Green*
*Mullard Space Science Laboratory (UCL)*

11:15 Results of the Airbus DS led P2-SWE-X Phase 0 ESA study for an operational Space Weather Service in L5
*Emanuele Monchieri, Markos Trichas, Philipp Voigt*
*Airbus Defence and Space*

11:30 Results of the Airbus DS led P2-SWE-X Phase 0 ESA study for an operational Space Weather Service in L1

*Philipp Voigt, Emanuele Monchieri, Markos Trichas, Klaus Ergenzinger*

*Airbus Defence and Space*

11:45 Architectures for Space Weather monitoring missions to the Sun-Earth Lagrange points - **Invited**

*Alessandro Grasso[1], Marc Scheper[1], Yulia Bogdanova[2], Jackie Davies[2], Richard Harrison[2], Mike Hapgood[2], David Ryley[3], Reuben Wright[3], Oliver Turnbull[3], Aurelie Heritier[3]*

*[1]OHB System AG; [2]RAL Space; [3]Deimos Space*

12:00 Assessment of the payload for space weather monitoring missions situated at the L1 and L5 Lagrangian points. - **Invited**

*Yulia Bogdanova[1], Jackie Davies[1], Richard Harrison[1], Mario Bisi[1], Mike Hapgood[1], Mark Gibbs[2], David Jackson[2], Oliver Turnbull[3], David Riley[3], Reuben Wright[3], Alessandro Grasso[4], Marc Scheper[4]*

*[1]RAL Space, STFC, Harwell Oxford, Didcot, UK; [2]Met Office, Exeter, UK; [3]Deimos Space UK Ltd, Harwell Oxford, UK; [4]OHB System AG, Bremen, Germany*

12:15 Development of the SCOPE operational space weather coronagraph - **Invited**

*Jackie Davies[1], Kevin Middleton[1], Ian Tosh[1], Volker Bothmer[2], Klaus Ergenzinger[3], Piers Jiggens[4], Stefan Kraft[5], Etienne Renotte[6], Matthew West[7] and the rest of the SCOPE team*

*[1]STFC-RAL Space, UK; [2]University of Göttingen, Germany; [3]Airbus Defence and Space, Germany; [4]European Space Agency, ESA/ ESTEC, The Netherlands; [5]European Space Agency, ESA/ESOC, Germany; [6]Centre Spatial de Liège, Belgium; [7]Royal Observatory of Belgium, Belgium*

12:30 Development of an operational space weather heliospheric imager

*Jackie Davies, Richard Harrison, James Tappin, Chris Eyles*

*STFC-RAL Space, UK*

12:45 Developing a VLF transmitter for LEO satellites: Probing Of Plasmasphere and RADiation Belts - the POPRAD proposal

*János Lichtenberger[1,2], Ondrej Santolik[3], János Solymosi[4], Luděk Graclík[5], Fabien Darrouzet[6], Andrei Demekhov[7], Alexander Kudrin[8], Nikolai Lehtinen[9]*

*[1]Department of Geophysics and Space Sciences, Eötvös University, Budapest, Hungary; [2]Geodetic and Geophysical Institute, RCAES, Sopron, Hungary; [3]Institute of Atmospheric Physics of the Academy of Sciences of the Czech Republic, Prague, Czech Republic; [4]BHE Bonn Hungary Electronics Ltd., Budapest, Hungary; [5]G.L. Electronic Ltd, Brno-Medlánky, Czech Republic; [6]Royal Belgian Institute for Space Aeronomy, Brussels, Belgium; [7]Institute of Applied Physics of the Russian Academy of Sciences, Nizhny Novgorod, Russia; [8]Department of Radiophysics, University of Nizhny Novgorod, Nizhny Novgorod, Russia; [9]Norwegian Center of Excellence Birkeland Center for Space Sciences, University of Bergen, Bergen, Norway*

## Session 10: Spacecraft operations and space weather

*Chairs: Dave Pitchford (SES), Richard Horne (BAS)*
*Room: Ridderzaal*

11:00 Low energy electrons at MEO during observed surface charging events

*Natalia Ganushkina[1,2], Ilkka Sillanpää[1], Jean-Charles Matéo-Vélez[3], Stepan Dubyagin[1], Angélica Sicard Piet[3]*

*[1]Finnish Meteorological Institute, Helsinki, Finland; [2]University of Michigan, Ann Arbor MI, USA; [3]ONERA The French Aerospace Lab, Toulouse, France*

11:20 Validating long-term simulations with the BAS Radiation Belt Model using GIOVE-B data

*Sarah A Glauert, Richard B. Horne, Nigel P. Meredith*

*British Antarctic Survey, Cambridge, UK*

11:40 Extreme Internal Charging Currents in Medium Earth Orbit: Analysis of SURF Plate Currents on Giove-A

*Nigel Meredith[1], Richard Horne[1], John Isles[1], Keith Ryden[2], Alex Hands[2], Daniel Heynderickx[3]*

*[1]British Antarctic Survey; [2]Surrey Space Centre; [3]DHC Consultancy*

12:00 Energetic electron dynamics in the inner magnetosphere during the 2015 ”St Patrick’s Day” storm

*Steven Morley, John Sullivan, Thiago Brito, Michael Henderson, Jesse Woodroffe, Vania Jordanova*

*Los Alamos National Laboratory*

12:20 What Effect Do Substorms Have On The Content Of The Radiation Belts?

*Colin Forsyth[1], Jonathan Rae[1], Kyle Murphy[2], Mervyn Freeman[3], Chia-Lin Huang[4], Harlan Spence[4], Alexander Boyd[4], John Coxon[5], Caitriona Jackman[5], Nadine Kalmoni[1], Clare Watt[6]*

*[1]UCL Mullard Space Science Laboratory, Dorking, UK; [2]NASA Goddard Space Flight Centre, Maryland, USA; [3]British Antarctic Survey, Cambridge, UK; [4]University of New Hampshire, Durham, USA; [5]University of Southampton, Southampton, UK; [6]University of Reading, Reading, UK*

12:40 Space Weather Situational Awareness Training and Operational Readiness

*Ewan Haggarty*

*Airbus Defence and Space*

## Session 11: Machine learning and statistical inference techniques

*Chairs:* *Enrico Camporeale (CWI, The Netherlands), Simon Wing (JHUAPL, USA & CWI, The Netherlands), Jay Johnson (PPPL, USA), Jacob Bortnik (UCLA, USA)*

*Room:* *Mercator*

11:00 Blind source separation for better tailored space weather products

*T. Dudok de Wit*

*LPC2E, University of Orléans*

11:10 FLARECAST Prediction Algorithms: Machine-learning methods for flare prediction and feature selection

*Anna Maria Massone[1], Federico Benvenuto[2], Annalisa Perasso[1], Michele Piana[1,2], Kostas Florios[3], D Shaun Bloomfield[4,5] and the FLARECAST Team*

*[1]CNR - SPIN, Genova, Italy; [2]Dipartimento di Matematica, Università di Genova, Italy; [3]Academy of Athens, Greece; [4]Trinity College Dublin, Ireland; [5]Northumbria University, Newcastle Upon Tyne, UK*

11:20 Characterization of active regions' time evolution in view of solar flare prediction

*Raphael Attie[1], Ruben De Visscher[2], Veronique Delouille[1]*

*[1]Royal Observatory of Belgium; [2]Awingu NV*

11:30 Solar Flare Forecasting from Magnetic Feature Properties Generated by the SMART Algorithm

*D. Shaun Bloomfield[1,2], Katarina Domijan[3], Peter T. Gallagher[1]*

*[1]Trinity College Dublin, College Green, Dublin 2, Ireland; [2]Northumbria University, Newcastle Upon Tyne, NE1 8ST, UK; [3]National University of Ireland Maynooth, Maynooth, Co. Kildare, Ireland*

11:40 Application of data assimilation techniques to heliospheric modelling: two preliminary studies - **Invited**

*M. E. Innocenti[1], G. Lapenta[1], B. Vrsnak[2], C. Skandrani[3], M. Temmer[4], A. Veronig[4], L. Bettarini[5], S. Markidis[6] and M. Skender[7]*

*[1]Center for mathematical Plasma Astrophysics, University of Leuven (KULeuven), Leuven, Belgium; [2]Faculty of Geodesy, Hvar Observatory, Zagreb, Croatia; [3]Noveltis, Ramonville-Saint-Agne, France; [4]Institute of Physics, University of Graz, Graz, Austria; [5]Solar-Terrestrial Center of Excellence-SIDC, Royal Observatory of Belgium, Brussels, Belgium; [6]Department of Computational Science and Technologies, KTH Royal Institute of Technology, Stockholm, Sweden; [7]Istituto Nazionale di Astrofisica, Osservatorio Astronomico di Capodimonte, Napoli*

11:50 Solar wind types from a machine learning point of view

*Verena Heidrich-Meisner, Robert F. Wimmer-Schweingruber*

*Department of Extraterrestrial Physics, Christian-Albrechts Universität zu Kiel*

12:00 5’ Break

12:05 NARMAX approach to the Space Weather forecast: results and capabilities - **Invited**

*Michael A. Balikhin, Richard J. Boynton, Simon N. Walker*

*The University of Sheffield, UK*

12:20 Information theoretical approach to discovering solar wind drivers of the outer radiation belt

*Simon Wing[1], Enrico Camporeale[2], Jay Johnson[3], Geoffrey Reeves[4]*

*[1]The Johns Hopkins University; [2]Center for Mathematics and Computer Science (CWI); [3]Princeton University; [4]Los Alamos National Laboratory*

12:30 Machine Learning in Radiation Belt Physics - **Invited**

*Yuri Shprits[1,2], Irina Zhelavskaya[1,2], Maria Spasojevic[3]*

*[1]GFZ, Potsdam; [2]UCLA; [3]Stanford University*

12:45 On the use of the local ensemble transform Kalman filter (LETKF) for ionospheric data assimilation

*M J Angling, S Elvidge*

*Space Environment and Radio Engineering Group, University of Birmingham, UK*

12:55 Development of new geomagnetic index forecasts using the Markov Chain method

*Edward Pope[1], David Stephenson[2], David Jackson[1] and Suzy Bingham[1]*

*[1]Met Office; [2]University of Exeter*

13:05 An application of machine learning to geomagnetic index prediction: aiding human space weather forecasting

*Laurence Billingham, Gemma Kelly*

*British Geological Survey*

13:15 Gaussian Process Models for Prediction of the Dst Index.

*Mandar Chandorkar[1], Enrico Camporeale[1], Simon Wing[2]*

*[1]Center for Mathematics and Computer Science (CWI), Amsterdam; [2]Johns Hopkins University, Applied Physics Lab*

## 13:00-15:00 Lunch Break & Free Style

## 15:00-16:30 Working Meetings

| Delvaux | Ridderzaal | Mercator |
|---|---|---|
| Planetary Space Weather Services | Community-wide space weather scoreboards: research assessment of real-time forecasting models and techniques | Neutron Monitors and NMDB |
| *M Grande (Aberystwyth) , N Andre (IRAP)* | *M. Leila Mays (CUA/GSFC), Jesse Andries (ROB), Shaun Bloomfield (Northumbria University), Mark Dierckxsens (BIRA), Jordan Guerra (TCD), Mike Marsh (UK Met Office), Sophie Murray (TCD), Masha Kuznetsova (GSFC)* | *Christian Steigies (IEAP, CAU Kiel)* |

## 16:30-17:00 Coffee Break

**17:00-18:30 Working Meetings**

| **Delvaux** | **Ridderzaal** | **Mercator** | **Permeke** |
|---|---|---|---|
| Dialogue on improving situational awareness for satellite operators, owners and designers using SPACESTORM model outputs | Discussion of the cooperation with PSTEP project | Comparison of Ground-level Measurements, Models and Impacts of the St Patrick's Day 2015 Geomagnetic Storm | Space Weather Forecaster Forum |
| *Daniel Heynderickx (DH Consultancy), K. Ryden, R. Horne, N. Meredith* | *Mamoru Ishii (National Institute of Information and Communica-tions Technology)* | *Ellen Clarke (BGS); Ari Viljanen (FMI); Alan Thomson (BGS)* | *D. Shaun Bloomfield (Northumbria University, UK); Larisa Trichtchenko (NRCan); Ljubomir Nikolic (NRCan)* |

19:00 Walk to the Hippodrome

**19:30-23:30 Dinner @ Hippodroom**
*Koningin Astridlaan, 10*
*8400 Oostende*

# Friday, 18 November 2016

## Keynotes

*Room: Delvaux*

09:00 NOAA Satellite and Information Service (NESDIS)

09:30 NASA Heliophysics and the Science of Space Weather
*Steven Clarke*

**10:00 Live Forecast**
*by MOSWOC*

**10:10 Coffee break and Posters Session 12, 13, 14 & 15**

## Session 12: Space weather needs and opportunities from upcoming space missions

*Chairs: David Berghmans (ROB), Francis Verbeeck (ROB)*
*Room: Delvaux*

11:00 PROBA2: Science Mission and Space Weather Tool
*Matthew West[1], Elke D'Huys[1], Katrien Bonte[1], Marie Dominique[1], Marilena Mierla[1], Robbe Vansintjan[1], Daniel Seaton[2,3]*
*[1]Royal Observatory Belgium; [2]CIRES; [3]NOAA*

11:20 PROBA-3: a Formation Flying Solar Coronagraph Mission - **Invited**
*Andrei Zhukov[1,2]*
*[1]Solar-Terrestrial Center of Excellence - SIDC, Royal Observatory of Belgium; [2]Skobeltsyn Institute of Nuclear Physics, Moscow State University, Russia*

11:40 The New SUVI and EXIS Instruments on GOES-R: Bridging Solar Observations from Space Weather to Space Climate - **Invited**

*Daniel B. Seaton[1, 2], Jonathan Darnel[1, 2], Janet Machol[1, 2]*

*[1]Cooperative Institute for Research in Environmental Sciences, University of Colorado, Boulder, Colorado, USA; [2]National Centers for Environmental Information, National Oceanic and Atmospheric Administration, Boulder, Colorado, USA*

12:00 Discovering the Heliosphere with new eyes: future opportunities from Solar Orbiter and PROBA3 missions - **Invited**

*Alessandro Bemporad*

*INAF-Turin Astrophysical Observatory*

12:20 Update on ADAPT Model Development and Applications - **Invited**

*C. Nick Arge[1], Carl J. Henney[1], Kathleen Shurkin[2], Kyle Hickmann[3] and Humberto C. Godinez[3]*

*[1]AFRL/Space Vehicles Directorate, Kirtland AFB, NM, USA; [2]Boston College and AFRL, Kirtland AFB, NM, USA; [3]Los Alamos National Laboratory, Los Alamos, NM, USA*

12:40 THOR-CSW beam tracking strategies: taking solar wind prediction to the extreme

*Johan De Keyser[1], Benoit Lavraud[2], Eddy Neefs[1], Sophie Berkenbosch[1], Michel Anciaux[1], Romain Maggiolo[1], Bram Beeckman[1], Carine Amoros[2], Andrei Fedorov[2], Ritu Baruah[2], Romain Mathon[2], Vincent Génot[2], Lubomir Prech[3]*

*[1]Royal Belgian Institute for Space Aeronomy, Brussels, Belgium; [2]Institut de Recherche en Astrophysique et Planétologie, Toulouse, France; [3]Charles University, Faculty of Mathematics and Physics, Prague, Czech Republic*

## Session 13: Model Metrics, Verification and Validation

*Chairs:* *Alexi Glover (ESA), Piers Jiggens (European Space Research And Technology Centre), Suzy Bingham (Met Office, UK)*

*Room:* *Ridderzaal*

11:00 Investigating the impact of the ENLIL solar wind model boundary conditions on solar wind metrics - **Invited**

*Francois-Xavier Bocquet[1], Mario Bisi[2]*

*[1]Met Office; [2]RAL space*

11:13 Coordinated community-wide model validation initiatives: Quantifying storm impact on geospace - **Invited**

*M. Kuznetsova, L. Rastaetter, J-S. Shim, A. Pulkkinen, Y. Zheng, C. Wiegan, J. Boblitt, M.L. Mays*

*NASA Goddard Space Flight Center, Community Coordinated Modeling Center*

11:26 Evaluating the use of geomagnetic indices for predicting potential damage to power grids - **Invited**

*Gemma Kelly, Alan Thomson*

*British Geological Survey*

11:39 Model evaluation with low-altitude GOCE densities

*Sean Bruinsma[1], Daniel Arnold[2], Adrian Jaeggi[2], Noelia Sanchez-Ortiz[3]*

*[1]CNES, Toulouse, France; [2]AIUB, Bern, Switzerland; [3]Elecnor Deimos, Tres Cantos, Spain*

11:52 Comparing Different Solar Flare Prediction Methods: Where Are We, and How Far Can We Go? - **Invited**

*Manolis K. Georgoulis[1], Rami Qahwaji[2]*

*[1]RCAAM of the Academy of Athens, 11527 Athens, Greece; [2]School of Electrical Engineering and Computer Science, University of Bradford, Bradford, United Kingdom*

12:08 Comparing SEP Forecast Performances with the SEP Scoreboard - **Invited**

*M. Dierckxsens[1], M. Marsh[2], L. Mays[3,4], N. Crosby[1], M. Kuznetsova[4]*

*[1]Royal Belgian Institute for Space Aeronomy, Belgium; [2]Met Office, UK; [3]Catholic University of America, USA; [4]NASA Goddard Space Flight Center, USA*

12:21 FORSPEF tool: On the Validation and Verification of the nowcasting mode

*A. Anastasiadis[1], A. Papaioannou[1], I. Sandberg[1], D. Paronis[1], P. Jiggens[2]*

*[1]IAASARS, National Observatory of Athens, Greece; [2]ESTEC/ESA, The Netherlands*

12:34 IMPTAM verification and validation on GOES MAGED data for long-term variations of electron fluxes at geostationary orbit

*Ilkka Sillanpää[1], Natalia Ganushkina[1,2], Stepan Dubyagin[1], Juan Rodriguez[3]*

*[1]Finnish Meteorological Institute, Helsinki, Finland; [2]University of Michigan, Ann Arbor MI, USA; [3]NOAA, Boulder CO, USA*

12:47 Harmonisation of Validation and Verification procedures within the Space Weather Network in the framework of the Space Situation Awareness Programme

*C. Borries[1], C. Perry[2], A. Devos[3], M. Dierckxsens[4], J. Matzka[5], A. Belehaki[6], A. Glover[7]*

*[1]German Aerospace Center; [2]Rutherford Appleton Laboratory; [3]Royal Observatory of Belgium; [4]Belgian Institute for Space Aeronomy; [5]GFZ German Research Centre for Geosciences; [6]National Observatory of Athens; [7]ESA SSA Programme Office, European Space Operation Center*

## Session 14: Space weather applications of global neutron monitor network

*Chair:* *Alexander Mishev (ReSolve University of Oulu)*
*Room:* *Mercator*

11:00 Current status and perspectives of NMs for space weather - **Invited**

*Rolf Bütikofer*

*Physikalisches Institut, University of Bern and High Altitude Research Stations Jungfraujoch and Gornergrat*

11:15 Studying the SEP-GLE coupling through Neutron Monitor data modeling (invited) - **Invited**

*C. Plainaki[1,2], M. Laurenza[1], H. Mavromichalaki[2], M. Storini[1]*

*[1]INAF-IAPS, Via del Fosso del Cavaliere, 00133, Rome, Italy; [2]Nuclear and Particle Physics Section, Physics Dpt., National and Kapodistrian University of Athens, Greece*

11:30 NMDB: current status and perspectives - **Invited**

*Christian T. Steigies*

*IEAP, CAU Kiel, Germany*

11:40 Vector anisotropy of the cosmic rays in the beginning of the Forbush decreases for space weather forecasting - **Invited**

*Maria Abunina, Anatoliy Belov, Artem Abunin, Evgeniya Eroshenko, Victoria Oleneva, Victor Yanke*

*Pushkov Institute of Terrestrial Magnetism, Ionosphere and Radio Wave Propagation (IZMIRAN)*

11:50 The not so standard Neutron Monitor: An initiative for standardization and the PHENOMENON Package

*Christian Steigies, Christos Sarlanis*

*Christian-Albrechts-Universität Kiel (CAU), ISNet Co*

## Session 15: Space environment effects on humans in Space and on Earth

*Chairs:* *Yury Gurfinkel (The Research Clinical Center of JSC "Russian Railways" Moscow Russia), Tamara Breus (Space research Institute RAS Moscow Russia), Norma B. Crosby (Royal Belgian Institute for Space Aeronomy)*

*Room:* *Mercator*

12:00 A Physical Mechanism for Biological Effects of Weak Magnetic Fields - **Invited**

*Vladimir Binhi*

*A.M. Prokhorov General Physics Institute of the Russian Academy of Sciences*

12:20 The Equilibrium Paradigm-15 Years Later. - **Invited**

*Stoupel Eliyahu*

*Division of Cardiology, Rabin Medical Center, Petah Tiqwa, Sackler Faculty of Medicine,Tel Aviv University,Israel*

12:40 Radiation dosimetry in space by means of compact passive luminescent detectors

*Olivier Van Hoey, Filip Vanhavere, Werner Schoonjans, Alessio Parisi, DOSIS 3D team*

*The Belgian Nuclear Research Center SCK-CEN, Mol, Belgium*

12:50 An automated method for the detection and classification of major solar disturbances in dynamic radio spectra

*Houssam Salmane[1],Rodolphe Weber[1,2],Karim Abed-Meraim[1],Karl-Ludwig Klein[3],Xavier Bonnin[3]*

*[1]Laboratoire PRISME, Université d'Orléans; [2]Station de radioastronomie de Nançay; [3]LESIA-UMR 8109, Observatoire de Paris, CNRS, Universités Paris 6 et 7*

**13:00-15:00 Lunch Break & Free Style**

### 15:00-16:30 Working Meetings

| Delvaux | Ridderzaal | Mercator |
|---|---|---|
| Harmonisation of SEP Data Calibrations (HSDC) | Real-time identification of travelling ionospheric disturbances | Accomplishing Basic and Applied SW Research for the benefit of better SWx predictions and reliable warnings |
| *Piers Jiggens (European Space Research And Technology Centre); Daniel Heynderickx (DH Consultancy); Juan Rodriguez (NOAA)* | *Anna Belehaki (National Observatory of Athens)* | *Terry Onsager (NOAA), Hermann Opgenoorth (IRFU) and Jean Lilensten (CNRS-IPAG)* |

**End of meeting**

**Thank you for participating.**
**We hope to see you again next year!**

# POSTERS

## Monday, 14 November 2016

### Session 1: Solar Energetic Particle Events: Measurement, Modelling, Forecasting and Impact

1.e01 Database of Ground Level Enhancements (GLE) of High Energy Solar Proton Events

*Ilya Usoskin[1,2], Stepan Poluianov[2], Askar Ibragimov[3]*

*[1]ReSoLVE, University of Oulu, Finland; [2]Sodankylä Geophysical Observatory, University of Oulu, Finland; [3]University of Helsinki, Finland*

1.e02 SOHO/ERNE measurements of solar heavy ions during solar cycles 23 and 24

*Osku Raukunen, Eino Valtonen, Rami Vainio*

*Department of Physics and Astronomy, University of Turku, Finland*

1.e03 Foretelling Flares and Solar Energetic Particle Events: the FORSPEF tool

*A. Anastasiadis[1], A. Papaioannou[1], I. Sandberg[1], M. K. Georgoulis[2], K. Tziotziou[1], D. Paronis[1], P. Jiggens[3], A. Hilgers[3]*

*[1]IAASARS, National Observatory of Athens, Greece; [2]RCAAM, Academy of Athens, Greece; [3]ESA/ESTEC, The Netherlands*

1.p04 Correlation between Spacecraft Anomalies and Solar Energetic Proton

*Harim Lee, KiChang Yoon, JangSuk Choi, Dong-Kyu Kim, Yeongoh Choi*

*RRA Korean Space Weather Center, Jeju, Korea*

1.p05 Characterization of solar energetic H and He spectra measured by the Energetic Particle Telescope (EPT) on-board PROBA-V during the January 2014 SEP event

*Sylvie Benck[1], Stanislav Borisov[1], Mathias Cyamukungu[1], Hugh Evans[2], Petteri Nieminen[2]*

*[1]Center for Space Radiations, Earth and Life Institute, Université catholique de Louvain, (UCL/CSR); [2]European Space Agency (ESA)*

1.p06 ZENITH: A Rapid-release balloon-mounted radiation probe to validate Space Weather warnings for Aircraft

*Alexander Dyer, Keith Ryden, Catherine Burnett, Mark Gibbs*

*University of Surrey, University of Surrey, Met Office, Met Office*

1.p07 Error Propagation for Proton and Heavy Ion Statistical Modelling in the SEPEM System

*Pete Truscott[1], Fan Lei[2], Daniel Heynderickx[3], Athina Varotsou[4], Ingmar Sandberg[5], Piers Jiggens[6], Hugh Evans[6]*

*[1]Kallisto Consultancy, UK; [2]RadMod Research, UK; [3]DH Consultancy, Belgium; [4]TRAD, France; [5]IASA, Greece; [6]ESA/ESTEC, The Netherlands*

1.p08 SEP acceleration and the choice of the simulation methods to model them

*Giovanni Lapenta, Elisabetta Boella, Diego Gonzalez*

*KU Leuven*

1.p09 The updated SEPEM/SOLPENCO2 tool: application to an interplanetary mission.

*Angels Aran[1], Daniel Pacheco[1], Piers Jiggens[2], Daniel Heynderickx[3], N. Agueda[1], Blai Sanahuja[1]*

*[1]Dep. de Física Quàntica i Astrofísica i Institut de Ciències del Cosmos, Universitat de Barcelona, Spain; [2]European Space Research and Technology Centre, ESA, The Netherlands; [3]DH Consultancy, Leuven, Belgium*

1.p10 Solar Energetic Particle propagation within and near a heliospheric current sheet

*Markus Battarbee[1], Silvia Dalla[1], Mike Marsh[2]*

*[1]University of Central Lancashire, UK; [2]Met Office, UK*

1.p11 Acceleration, Transport, Forecasting and Impact of solar energetic particles in the framework of the 'HESPERIA' HORIZON 2020 project

*O. E. Malandraki[1], K. Tsinganos[1*], K.-L. Klein[2], R. Vainio[3], N. Agueda[4], M. Nunez[5], B. Heber[6], R. Buetikofer[7], C. Sarlanis[8], N. Crosby[9], G. Share[1], R. Murphy[10], A. J. Tylka[11], V. Bindi[12], J. Rodriguez[13], A. Afanasiev[3], A. Aran[4], M. Battarbee[3], E. Christia[1], M. Dierckxsens[9], J. Dimitroulakos[8], D. Galsdorf[6], C. Hamadache[2], K. Herbst[6], J. Kiener[2], P. Kuehl[6], J. Labrenz[6], J. Marquardt[6], N. Milas[1], A. Papaioannou[8], E. G. Pavlos[1], P. Reyes[5], B. Sanahuja[4], D. Sfakianakis[8], G. Souvazoglou[8], C. Steigies[6], V. Tatischeff[2], G. Tsiropoula, K. Tziotziou[1], E. Valtonen[3], N. Vilmer[2], P. Zucca[2]*

*[1]IAASARS, National Observatory of Athens, GR-15236 Penteli, Greece; [1*]National Observatory of Athens, Athens Greece; [2]Observatoire de Paris, Meudon, France; [3]University of Turku, Finland; [4]University of Barcelona, Spain; [5]University of Malaga, Spain; [6]Christian-Albrechts-Universitaet zu Kiel, Germany; [7]University of Bern, Switzerland; [8]ISNet Co, Athens, Greece; [9]Royal Belgian Institute for Space Aeronomy, Brussels, Belgium; [10]Naval Research Laboratory, Washington DC, USA; [11]Emeritus, NASA Goddard Space Flight Center, Greenbelt, Maryland, USA; [12]University of Hawai at Manoa, Honolulu, USA; [13]NOAA, USA*

1.p12 PAMELA's Measurements of Solar Energetic Particles

*Alessandro Bruno, on behalf of the PAMELA collaboration*

*INFN and University of Bari, Italy*

1.p13 False Alarms in the Forecasting of Solar Energetic Particle Events

*Bill Swalwell, Silvia Dalla, Robert Walsh*

*Jeremiah Horrocks Institute, University of Central Lancashire, Preston, PR1 2HE*

1.p14 Microwave observations for forecasting energetic particles from the Sun

*Pietro Zucca, K.-Ludwig Klein, Marlon Núñez, Rositsa Miteva*

*[1]Observatoire de Paris, LESIA - CNRS UMR 8109, 92195 Meudon; [2]Departamento de Lenguajes y Ciencias de la Computación, Universidad de Málaga, Málaga, Spain; [3]Bulgarian Academy of Sciences (SRTI-BAS), Academia georgy Bonchev Str. bl.1. , 1113 Sofia*

1.p15 Quantitative comparison between KREAM (Korean Radiation Exposure Assessment Model for aviation route dose) and NAIRAS

*Gyeongbok Jo[1,2], Junga Hwang[2,3], Kyunghwan Dokgo[4], Eunjin Choi[5], Sung-Jun Noh[2,6], and W. Kent Tobiska[7]*

*[1]Chungnam National University (CNU), South Korea; [2]Solar and Space Weather group, Korea Astronomy and Space Science Institute (KASI), South Korea; [3]Department of Astronomy and Space Science, University of Science and Technology (UST), South Korea; [4]Department of Physics, Korea Advanced Institute of Science and Technology (KAIST), South Korea; [5]Goddard Space Flight Center/NASA, USA; [6]Chungbuk National University (CBNU), South Korea; [7]Space Environment Technologies, USA*

## Session 2: SSA Space Weather Service Network

2.e01 SOHO/ERNE catalogue of 55-80 MeV solar proton events for 1996-2014

*Rami Vainio[1], Miikka Paassilta[1], Eino Valtonen[1], Osku Raukunen[1], Timo Eronen[1], Athanasios Papaioannou[2]*

*[1]University of Turku, Finland; [2]National Observatory of Athens, Greece*

2.p02 Forecasting of Space Weather in IZMIRAN

*Sergey Gaidash, Maria Abunina, Anatoliy Belov, Artem Abunin, Evgeniya Eroshenko, Victoria Oleneva, Victor Yanke*

*Pushkov Institute of Terrestrial Magnetism, Ionosphere and Radio Wave Propagation (IZMIRAN)*

2.p03 Services in Support of Atmospheric Drag Calculation (P2-SWE-II)

*Mike Marsh[1], David Jackson[1], Daniel Heynderickx[2], Eugeniu Mihnea Popescu[3], Reuben Wright[4]*

*[1]Met Office; [2]DH Consultancy; [3]Institute of Space Science; [4]DEIMOS Space UK Ltd.*

2.p04 Forecasting and Nowcasting of Radiation Exposure On-Board Aircraft with AVIDOS

*Marcin Latocha, Peter Beck*

*Seibersdorf Laboratories, Forschungszentrum Seibersdorf, 2444 Seibersdorf, Austria*

2.p05 SSA SWE RTIM – Real-Time Ionospheric Monitoring service for high latitudes

*Knut Stanley Jacobsen and Yngvild Linnea Andalsvik*

*Norwegian Mapping Authority*

2.p06 VSWMC Phase 2 Customer Requirements

*Johan De Keyser[1,3], Erwin De Donder[1], Marius Echim[1], Norma Crosby[1], Luciano Rodriguez[2], Andy Devos[2], David Berghmans[2], Stefaan Poedts[3], Ralf Keil[4], Piers Jiggens[5]*

*[1]Royal Belgian Institute for Space Aeronomy; [2]Royal Observatory of Belgium; [3]Center for mathematical Plasma Astrophysics, KULeuven; [4]ESA/ESOC; [5]ESA/ESTEC*

2.p07 The ANeMoS federated products to the SSA Space Radiation Expert Service Centre (R-ESC)

*H. Mavromichalaki, M. Gerontidou, P. Paschalis, E. Paouris*

*Faculty of Physics, National and Kapodistrian University of Athens, 15784 Athens, Greece*

2.p08 Monitoring the plasmapause at LEO by Swarm

*Balazs Heilig[1], Hermann Lühr[2]*

*[1]MFGI, Tihany, Hungary; [2]GFZ Potsdam, Germany*

2.p09 Rescaled PROBA2/LYRA data used as GOES X-ray flux proxy

*Ingolf E. Dammasch[1], Marie Dominique[1], Janet Machol[2]*

*[1]ROB/SIDC; [2]NOAA*

## Session 3: Space Climate

3.p01 Uncertainties in the sunspot numbers: what do they tell us ?

*T. Dudok de Wit[1], F. Clette[2], L. Lefèvre[2]*

*[1]LPC2E, CNRS and University of Orléans, France; [2]Royal Observatory of Belgium*

3.p02 Short-term variations of the sunspot number second differences as a predictor of the next cycle strength

*Tatiana Podladchikova[1], Ronald Van der Linden[2]*

*[1]Skolkovo Institute of Science and Technology, Moscow, Russia; [2]Solar-Terrestrial Center of Excellence, ROB, Uccle, Belgium*

3.p03 Contribution of the geomagnetic activity monitoring by the Athens Space Weather Forecasting Center to the Hellenic National Meteorological Service

*Evangelos Paouris[1], Maria Gerontidou[1], Helen Mavromichalaki[1], Theodoros Kolydas[2], Ioannis Kouroutzoglou[2]*

*[1] Faculty of Physics, National and Kapodistrian University of Athens, Athens, Greece; [2] Hellenic National Meteorological Service, Athens, Greece*

3.p04 Solar activity forecasting on decadal and longer timescales

*Luke Barnard[1], Thierry Dudok de Wit[2]*

*[1] University of Reading; [2] LPC2E, CNRS and University of Orléans*

3.p05 LYRA Mid-Term Periodicities

*Wauters L., Dominique M., Dammasch I.E.*

*Royal Observatory of Belgium*

# Tuesday, 15 November 2016

## Session 4: Flares, coronal mass ejections and solar energetic particles: Space Weather Impact

4.e01 Solar Energetic Particle Event Forecasting

*Lisa Winter, Valerie Bernstein, Rick Quinn*

*AER, Villanova University, AER*

4.e02 Searching for relationships between the solar regular daily magnetic variation at mid latitude and the solar irradiance at different ionizing wavelengths

*Elena Saiz, Judith Palacios, Antonio Guerrero, Consuelo Cid, Yolanda Cerrato*

*Space Research Group-Space Weather, University of Alcala (SPAIN)*

4.e03 A New Methodology to Predict the Axial ICME Magnetic Field at 1 AU

*Manolis K. Georgoulis[1], Spiros Patsourakos[2]*

*[1]RCAAM of the Academy of Athens, Athens, Greece; [2]Department of Physics, University of Ioannina, Ioannina, Greece*

4.e04 The relationship between the intensity of X-ray flares and their effects in the horizontal component of the geomagnetic magnetic field

*María Jesús Rivas[1,2] and Consuelo Cid[1]*

*[1]Universidad de Alcalá; [2]Instituto Nacional de Técnica Aeroespacial*

4.e05 Examining the relationship between flare occurrence and the Hale sector boundary

*Konstantina Loumou[1], Iain. G. Hannah[1], Hugh S. Hudson[1,2]*

*[1]University of Glasgow; [2]University of California, Berkeley*

4.e06 The Coronal Automated Analysis of SHocks and Waves (CASHeW) Framework

*Kamen Kozarev, Alisdair Davey, Alexander Kendrick, Michael Hammer, Celeste Keith*

*[1]Smithsonian Astrophysical Observatory; [2]Smithsonian Astrophysical Observatory; [3]Stanford University; [4]University of Arizona; [5]University of Wisconsin-Madison*

4.e07 The influence of environmental parameters on the 3D Kelvin-Helmholtz instability at the magnetopause

*M. Leroy, R. Keppens*

*Centre for mathematical Plasma-Astrophysics KU Leuven, Leuven, Belgium*

4.p08 Joint Ne/O and Fe/O analysis as a new diagnostic tool of flare suprathermal fraction in large solar energetic particle events

*Olga E. Malandraki, Lun C. Tan*

*IAASARS, National Observatory of Athens, Athens, Greece*

4.p09 Release History and Transport Parameters of Relativistic Solar Electrons Inferred from Near-the-Sun In-situ Observations

*Neus Agueda[1], David Lario[2]*

*[1]Institut de Ciències del Cosmos, University of Barcelona, Spain; [2]The Johns Hopkins University, Applied Physics Laboratory, USA*

4.p10 Modeling of proton acceleration in application to the 17 May 2012 GLE event

*A. Afanasiev[1], R. Vainio[1], A. Rouillard[2], and M. Battarbee[3]*

*[1]Department of Physics and Astronomy, University of Turku, Turku, Finland; [2]Institut de Recherche en Astrophysique et Planétologie, Université de Toulouse, Toulouse, France; [3]Jeremiah Horrocks Institute, University of Central Lancashire, Preston, UK*

4.p11 A new way to estimate the solar wind geoefficiency and its impact on the radiation belts

*S. Rochel Grimald, D. Boscher, R. Benacquista*

*Onera*

4.p12 Study of interplanetary coronal mass ejections with ESA SREM monitors aboard Integral, Herschel, Planck and Rosetta spacecraft

*Dimitra Intzekara, Lucile Turc, Olivier Witasse, Erik Kuulkers, Yannis Zouganelis, Hugh Evans and Petteri Nieminen*

*European Space Agency, ESA, Noordwijk, NL*

4.p13 Comparison of 3-D CME Parameters Derived from Single and Multi-view Observations

*Harim Lee[1,2], Y.-J. Moon[1], Hyeonock Na[1], Soojeong Jang[1,3] and Jae-Ok Lee[1]*

*[1]School of Space Research, Kyung Hee University, Yongin, South Korea; [2]RRA Korean Space Weather Center, Jeju, South Korea; [3]Korea Astronomy and Space Science Institute, Yuseong, South Korea*

4.p14 An Aerodynamic Drag Analysis of CMEs from In Situ Measurements and Multipoint Space Observations

*Niclas Mrotzek, Malte Venzmer, Volker Bothmer, Adam Pluta*

*Institute for Astrophysics at the University of Goettingen*

4.p15 Comparative analysis of the CME- and CIR/HSS-related storm effects on ionosphere

*Dalia Buresova[1], Jaroslav Urbar[1], John Bosco Habarulema[2], Jaroslav Chum[1], Daniel Kouba[1], Zama Thobeka Katamzi[2]*

*[1]Institute of Atmospheric Physics, CAS, Prague, Czech Republic; [2]SANSA Space Sciences, Hermanus, South Africa*

4.p16 HELCATS: Catalogue of slow drifting radio emissons observed by STEREO/Waves

*V. Krupar[1,2], J. P. Eastwood[1], J. Magdalenic[3], M. M. Bisi[4], J. A. Davies[4], R. A. Harrison[4], D. Barnes[4]*

*[1]Imperial College London, UK; [2]Institute of Atmospheric Physics CAS, Czech Republic; [3]Royal Observatory of Belgium, Belgium; [4]Rutherford Appleton Laboratory, UK*

4.p17 A Raspberry Pi magnetometer for measuring the effects of space weather

*Lucia Calverley[1], Jennifer Haskell[1], Jacqueline Pitts[1], John Puddy[1], Callum Roberts[1], Sharon Strawbridge[1], Suzy Bingham[2], Ciaran Beggan[3], Steve Marple[4], Iain Grant[5]*

*[1]University of Exeter; [2]Met Office; [3]British Geological Survey; [4]University of Lancaster; [5]Norman Lockyer Observatory.*

4.p18 The mid-latitude geomagnetic field and ionospheric response to solar and interplanetary triggers of St. Patrick's 2013 and 2015 events as seen from Spanish records

*A.Guerrero[1], J.Palacios[1], M.Rodríguez-Bouza[2], I. Rodríguez-Bilbao[2], A. Aran[5], C. Cid[1], G. Rodríguez-Caderot[2,4], E. Saiz[1], M.Herraiz[2,3], Y.Cerrato[1]*

*[1]Universidad de Alcalá (UAH), Physics and Mathematics Department, Alcalá de Henares, Spain; [2]Departamento de Física de la Tierra, Astronomía y Astrofísica I (Geofísica y Meteorología), Facultad de Ciencias Físicas, Universidad Complutense de Madrid (UCM), Madrid, Spain; [3]Instituto de Geociencias (UCM,CSIC), Madrid, Spain; [4]Instituto de Matemáticas Interdisciplinar (UCM), Madrid, Spain; [5]Department de Física Quàntica i Astrofísica i Institut de Ciències del Cosmos, Universitat de Barcelona, Barcelona, Spain*

4.p19 Interplanetary coronal mass ejection observed at STEREO-A, Mars, comet 67P/Churyumov-Gerasimenko, Saturn, and New Horizons.

*O. Witasse[1], B. Sánchez-Cano[2], L. Mays[3] et al. (40 other authors)*

*[1]European Space Agency, Noordwijk, The Netherlands; [2]Radio and Space Plasma Physics Group, Department of Physics and Astronomy, University of Leicester, University Road, Leicester LE1 7RH, United Kingdom.; [3]Catholic University of America, Washington, DC, USA and Heliophysics Science Division, NASA Goddard Space Flight Center, Greenbelt, MD, USA*

4.p20 Redefining the boundaries of interplanetary coronal mass ejections from observations at the ecliptic plane

*Consuelo Cid, Judith Palacios, Elena Saiz, and A. Guerrero*

*Universidad de Alcala*

4.p21 Eruptive and confined flare topological conditions

*Brigitte Schmieder[1], Francesco Zucarello[2], Guillaume Aulanier[1], Ramesh Chandra[3]*

*[1]LESIA, Observatoire de Paris; [2]CPA, Leuven; [3]Kumaun University, Nainital, India*

4.p22 Linking stellar dynamo action to flux emergence and flares

*A.S. Brun[1], A. Strugarek[2]*

*[1]AIM, CEA-Saclay, France; [2]University of Montreal, Canada*

4.p23 Investigating the reliability of photospheric eruptivity proxies

*C. Guennou[1], E. Pariat[1], N. Vilmer[1] and the flarecast team[2]*

*[1]LESIA, Observatoire de Paris, PSL Research University, CNRS, Sorbonne Universites, UPMC Univ. Paris 06, Univ. Paris Diderot, Sorbonne Paris Cite; [2]AA (GR), TCD (IE), UNIGE (IT), CNR (IT), CNRS (FR), UPSud (FR), FHNW (CH), Met Office (UK)*

4.p24 Exploring the solar-flare predictive potential of non-neutralized currents and Ising energy in solar active regions

*Ioannis Kontogiannis[1], Manolis Georgoulis[1], Kostas Florios[1], Sung-Hong Park[2]*

*[1]Research Center for Astornomy and Applied Mathematics, Academy of Athens; [2]Trinity College Dublin*

4.p25 Comparative Analysis of Flaring and Non-Flaring Active Regions

*Jordan A. Guerra[1], D. Shaun Bloomfield[1,2], Sung-Hong Park[1], Peter T. Gallagher[1], Antti Pulkkinen[3], Vadim Uritsky[4]*

*[1]Trinity College Dublin, College Green, Dublin 2, Ireland; [2]Northumbria University, Newcastle Upon Tyne, NE1 8ST, UK; [3]Space Weather Lab. NASA GSFC, Greenbelt MD, USA; [4]The Catholic University of America, Washington DC, USA*

4.p26 Parameterization of Solar Active Region Magnetic Fields and Flows for Flare Forecasting

*Sung-Hong Park[1], Jordan A. Guerra[1], Peter T. Gallagher[1], D. Shaun Bloomfield[1,2] and the FLARECAST team*

*[1]Trinity College Dublin, College Green, Dublin 2, Ireland; [2]Northumbria University, Newcastle Upon Tyne, NE1 8ST, UK*

4.p27 CME kinematics and solar source region characteristics – HELCATS results

*V. Bothmer[1], N. Mrotzek[1], S. Murray[2], P. Gallagher[2], A. Pluta[1], D. Barnes[3], J. Davies[3], R.A. Harrison[3]*

*[1]Institute for Astrophysics, University of Göttingen, Göttingen, Germany; [2]Astrophysics Research Group, Trinity College Dublin, Dublin, Ireland; [3]STFC, Rutherford Appleton Laboratory, Didcot, Chilton, UK*

4.p28 EUV and X-ray emission in simulations of flaring coronal loops

*R. F. Pinto[1,2], N. Vilmer[3], K. Kentheswaran[1,2]*

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4.p29 The discovery of an electron current at Earth's McIlwain L=6

*Thanassis Katsiyannis[1], Marie Dominique[1], Viviane Pierrard[2], Kris Borremans[2], Johan De Keyser[2], David Berghmans[1], Michel Kruglanski[2], Ingolf Dammasch[1], Erwin De Donder[2]*

*[1]Royal Observatory of Belgium, SIDC [2]Royal Belgian Institute for Space Aeronomy, SIDC*

4.p30 The presence of Active Longitude form photosphere to interplanetary space

*N. Gyenge[1,2], M. Dósa[3], G. Erdős[3], R. Erdélyi[1,2]*

*[1]Solar Physics and Space Plasmas Research Centre (SP2RC), School of Mathematics and Statistics, University of Sheffield Hounsfield Road, Hicks Building, Sheffield S3 7RH, UK; [2]Debrecen Heliophysical Observatory (DHO), Konkoly Observatory, Research Centre for Astronomy and Earth Sciences Hungarian Academy of Sciences, Debrecen, P.O.Box 30, H-4010, Hungary; [3]MTA Wigner FK RMI, Department of Space Physics, Budapest, Hungary*

4.p31 Dimmings as a magnetic footprint of coronal mass ejections

*Barbara Thompson[1], Joel C. Allred[1], Christina D. Kay[1], Emil Kraaikamp[2], Larisza D. Krista[3], James P. Mason[3], M. Leila Mays[1,4], Teresa Nieves-Chinchilla[1,4], Alysha A. Reinard[3], Cis Verbeeck[2], David F. Webb[5]*

*[1]NASA GSFC; [2]Observatoire royal de Belgique; [3]University of Colorado; [4]Catholic University of America; [5]Boston College*

4.p32 Forecasting of Corotating Interaction Regions geoeffectiveness

*Jaša Čalogović[1], Mateja Dumbović[1], Bojan Vršnak[1], Bernd Heber[2], P. Kühl[2], Manuela Temmer[3], Astrid Veronig[3]*

*[1]Hvar Observatory, Faculty of Geodesy, Kačićeva 26, HR-10000 Zagreb, Croatia; [2]Institute for Experimental and Applied Physics, Christian-Albrechts-University Kiel, Germany; [3]Institute of Physics, University of Graz, Universitätsplatz 5, A-8010 Graz, Austria*

4.p33 A new ICMEs catalogue: Tracking a CME from Sun to the Earth

*Evangelos Paouris, Helen Mavromichalaki*

*Faculty of Physics, National and Kapodistrian University of Athens, Athens, Greece*

4.p34 On the evolution of pre-flare patterns in a 3-dimensional solar Active Region

*Korsos, Marianna[1,2], Gyenge, Norbert[1], Ruderman, M.S.[1], Fedun, V. and Erdelyi, R.[1,2]*

*[1]University of Sheffield; [2]Debrecen Heliophysical Observatory,Hungarian Academy of Sciences Research Centre for Astronomy and Earth Sciences Konkoly Thege Miklós Astronomical Institute*

4.p35 Helical Kink Instability: From a Confined Solar Eruption to a CME

*Alshaimaa Hassanin[1], Bernhard Kliem[2]*

*University of Potsdam, Institute of Physics and Astronomy*

4.p36 Hall-MHD simulations of the Kelvin-Helmholtz instability at the magnetopause: reconnection and transport of the northward solar-wind

*M. Leroy, R. Keppens*

*Centre for mathematical Plasma-Astrophysics KU Leuven, Leuven, Belgium*

4.p37 Halo CMEs During Solar Cycle 24: Reconstruction of the Global Scenario and Study of Their Geoeffectiveness

*Camilla Scolini[1], Mauro Messerotti[1,2]*

*[1]Department of Physics, University of Trieste, Italy; [2]INAF-Astronomical Observatory of Trieste, Italy*

4.p38 Effect of a magnetic field on Rayleigh-Benard convection in a Solar Tachocline: quasi-geostrophic approximation

*M.Sh.Pirguliyev[1], N.S. Dzhalilov[1], E.S. Babayev[1], B.M. Shergelashvili[2] and S. Poedts[3]*

*[1]Shamakhy Astrophysical Observatory of the Azerbaijan Academy of Sciences, Baku, Azerbaijan; [2]Space Research Institute, Austrian Academy of Sciences, Graz, Austria; [3]Centre for Mathematical Plasma Astrophysics, KU Leuven, Leuven, Belgium*

4.p39 Kelvin-Helmholtz instability features in the solar winds

*Rajab Ismayilli[1], Namig Dzhalilov[1], Bidzina Shergelashvili[2,3], Stefaan Poedts[4]*

*[1]Shamakhy Astrophysical Observatory of the Academy of Sciences (ShAO), Azerbaijan; [2]Abastumani Astrophysical Observatory, Ilia State University, Tbilisi, Georgia; [3]Space Research Institute Austrian Academy of Sciences, Graz, Austria; [4]Dept. of Mathematics, Centre for mathematical Plasma Astrophysics, KU Leuven, Leuven, Belgium*

4.p40 The D-region Ionospheric Perturbations Caused by Solar Flares: Inferred from Very Low Frequency (VLF) Waves observations in Mid-latitude region

*Famil Mustafa[1], Elchin S. Babayev[1],Namig Dzhalilov[1], Stefaan Poedts[2], Rajesh Singh[3], Ajeet K. Maurya[4], Ilgar Alakbarov[1]*

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4.p41 Estimating the CMEs speed from ground detected type II solar radio bursts

*Jean Uwamahoro[1], Sarathiel Tuyizere[2], Christian Monstein[3]*

*[1]University of Rwanda, College of Education, Kigali, Rwanda; [2]University of Rwanda, College of Science and Technology, Kigali, Rwanda; [3]Institute for Astronomy- ETH Zurich- Switzerland*

4.e42 Radio signatures of the shock waves and their association with coronal structures seen by the SWAP and coronagraph observations

*V. Krupar[1], J. Magdalenic[2], M. West[2], E. D'Huys[2], L. Prech[3], O. Kruparova[4]*

*[1] Imperial College London; [2] Royal Observatory of Belgium; [3] Charles University, Faculty of Mathematics and Physics, Czech Republic; [4] Institute of Atmospheric Physics CAS, Prague, Czech Republic*

4.p44 MHD simulation of ICMEs

*Skralan Hosteaux, Stefaan Poedts, Emmanuel Chané*

*KULeuven*

## Session 6: Space Weather effects on GNSS and precise positioning

6.p01 Influence of space weather effects on the global and regional ionospheric VTEC-levels - **Invited**

*Johannes Hinrichs[1], Volker Bothmer[1], Niclas Mrotzek[1], Malte Venzmer[1], Michael Schmidt[2], Denise Dettmering[2], Eren Erdogan[2], Andreas Goss[2], Florian Seitz[2], Klaus Börger[3], Sylvia Brandert[3], Barbara Görres[4], Wilhelm F. Kersten[4]*

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6.p02 Estimates of ionospheric higher order effects during quiet and perturbed ionospheric condition

*M Mainul Hoque, Norbert Jakowski and Jens Berdermann*

*German Aerospace Center (DLR), Institute of Communications and Navigation, Kalkhorstweg 53, D-17235 Neustrelitz, Germany*

6.p03 Midlatitude Ionospheric density depletion and its impacts on GNSS during geomagnetic storm

*Hiroatsu Sato, Ivan Herrera Pinzon*

*German Aerospace Center*

6.p04 Ground-based measurements of ionospheric dynamics

*Daniel Kouba, Jaroslav Chum*

*Institute of Atmospheric Physics, Czech Academy of Sciences*

6.p05 The Impact of the Thermosphere on Plasma Structures in the High-Latitude Ionosphere

*Amy Ronksley[1], Alan Wood[1] and Anasuya Aruliah[2]*

*[1]School of Science and Technology, Nottingham Trent University, Nottingham, UK; [2]Atmospheric Physics Laboratory, Astrophysics Department, University College London, London, UK.*

6.p06 Space Weather effects on GNSS and precise positioning

*Ercha Aa, Siqing Liu, and Wengeng Huang*

*National Space Science Center, Chinese Academy of Sciences*

# Wednesday, 16 November 2016

## Session 5: Developing new space weather tools: Bridging between the fundamental science and operations

5.e01 Spatial and temporal properties of chorus emissions observed by THEMIS

*V. Shastun[1], V. Krasnoselskikh[1], O. Agapitov[2]*

*[1]LPC2E CNRS, University of Orleans; [2]Space Science Laboratory, the University of California*

5.e02 Modelling GIC Flow in the South Island Electrical Transmission Grid of New Zealand

*Tim Divett[1], Alan Thomson[2], Malcolm Ingham[3], Craig J. Rodger[1], Ciaran Beggan[2], Gemma Kelly[2]*

*[1]University of Otago, New Zealand; [2]British Geological Survey, United Kingdom; [3]Victoria University of Wellington, New Zealand*

5.e03 A mid-latitude local geomagnetic index new scaling

*J. Palacios, A.Guerrero, C.Cid, E. Saiz, Y. Cerrato*

*Dpt. of Physics and Mathematics, Universidad de Alcala (UAH)*

5.e04 Refining AWDANet performance: a decade of whistlers

*Dávid Koronczay[1,2], János Lichtenberger[2,1], Lilla Juhász[2], Péter Steinbach[3,2], Csaba Ferencz[2], Mark Clilverd[4], Craig Rodger[5], Dmitry Sannikov[6], Nina Cherneva[6]*

*[1]Geodetic and Geophysical Institute, Hungarian Academy of Sciences, Sopron, Hungary; [2]Department of Geophysics and Space Sciences, Eötvös University, Budapest, Hungary; [3]MTA-ELTE Research Group for Geology, Geophysics and Space Sciences, Hungarian Academy of Sciences, Eötvös University, Budapest, Hungary; [4]British Antarctic Survey (NERC), Cambridge, UK; [5]Department of Physics, University of Otago, Dunedin, New Zealand; [6]Institute of Cosmophysical Research and Radio Wave Propagation, FEB RAS, Paratunka, Russia*

5.e05 Simulating, cataloguing and forecasting the background solar wind conditions.

*R. F. Pinto[1,2], A. Rouillard[1,2]*

*[1]Université de Toulouse; UPS-OMP; IRAP; Toulouse, France; [2]CNRS; IRAP; 9 Av. colonel Roche, BP 44346, F-31028 Toulouse cedex 4, France*

5.e06 Observations of Heliospheric Faraday Rotation of a CME Using LOFAR and Space-Based Imaging

*Mario M. Bisi[1], Elizabeth A. Jensen[2], Charlotte Sobey[3,4,5], Richard A. Fallows[3], Bernard V. Jackson[6], David Barnes[1], Alessandra Giunta[1], P. Paul L. Hick[7,6], Tarraneh Eftekhari[8], Hsiu-Shan Yu[6], Dusan Odstrcil[9,10] and Munetoshi Tokumaru[11].*

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5.e07 Development of an Ionospheric Storm-time Index over South African Region

*Mpho Tshisaphungo, Lee-Anne McKinnell, John Bosco Habarulema*

*South African National Space Agency (SANSA) Space Science, Hermanus, South Africa*

5.p08 Solar wind driven empirical model of electron plasma sheet densities and temperatures beyond geostationary orbit during storm times

*Stepan Dubyagin[1], Natalia Ganushkina[1,2], Andrei Runov[3]*

*[1]Finnish Meteorological Institute, Helsinki, Finland; [2]University of Michigan, Ann Arbor MI, USA; [3]Institute of Geophysics and Planetary Physics, University of California, Los Angeles, USA.*

5.p09 Transparent Predictive Models for Geomagnetic Indices: NARMAX Methods with a Case Study for Kp Index Modelling

*Hua-Liang Wei*

*University of Sheffield*

5.p10 Electron Flux Models at GEO for GOES MAGED Energies

*Richard Boynton, Simon Walker*

*University of Sheffield*

5.p11 Propagation of the solar wind from the Sun to L1

*Tony Arber[1], Keith Bennett[1], Bart van der Holst[2]*

*[1]University of Warwick, UK; [2]University of Michigan, USA*

5.p12 Overview on the Brazilian Space Weather (Embrace) Program

*Alisson Dal Lago, Jose R. Cecatto, Joaquim E. R. Costa, Ligia A. da Silva, Marlos Rockenbach, Carlos R. Braga, Rafael R. S. de Mendonça, Odim Mendes Jr., Daiki Koga, Livia R. Alves, Fabio Becker-Guedes, Cristiano Max Wrasse, Hisao Takahashi, Marcelo Banik de Padua, Clezio M. De Nardin*

*INPE - National Institute for Space Research, Sao Jose dos Campos, SP, Brazil*

5.p13 Predicting AE indices using empirical models

*M Wik, P Wintoft, J Katkalov*

*Swedish Institute of Space Physics*

5.p14 Multi-thermal Segmentation of Coronal Holes

*Tadhg M. Garton and Peter T. Gallagher*

*Astrophysics Research Group, School of Physics, Trinity College Dublin, Dublin 2, Ireland*

5.p15 A Catalogue of Geometrically-Modelled Coronal Mass Ejections Observed by the STEREO Heliospheric Imagers

*David Barnes[1], Jackie Davies[1], Richard Harrison[1], Chris Perry[1], Christian Möstl[2], Alexis Rouillard[3], Volker Bothmer[4], Luciano Rodriguez[5], Jonathan Eastwood[6], Emilia Kilpua[7], Peter Gallagher[8]*

*[1]STFC-Rutherford Appleton Laboratory; [2]University Graz; [3]Paul Sabatier Université; [4]University of Göttingen; [5]Royal Observatory of Belgium; [6]Imperial College London; [7]University of Helsinki; [8]Trinity College Dublin*

5.p16 Space weather prediction using roubast dynamical models: identification, optimization, and risk analysis

*Vitaliy Yatsenko*

*Space Research Institute of NASU-SSAU*

5.p17 New discoveries in the auroral polarisation, steps toward an operational space weather tool.

*Mathieu Barthélémy[1], Jean Lilensten[1], Hervé Lamy[2], Anais James[1], Magnar Johnsen[3], Joran Moen[4], Gérard Besson[5].*

*[1]Institut de Planetologie et d'Astrophysique de Grenoble (UGA-CNRS), France; [2]BIRA (Brussels); [3]Tromsø Geophysical Observatory (Norway); [4]Department of Physics, University of Oslo (Norway); [5]Institut Fourier (France)*

5.p18 Monitoring geomagnetic disturbances: the relevance of temporal and spatial resolution

*Antonio Guerrero, Consuelo Cid, Elena Saiz, Judith Palacios and Yolanda Cerrato*

*Universidad de Alcalá (UAH), Physics and Mathematics Department, Alcalá de Henares, Spain*

5.p19 Results of the application of INGV Oblique Ionograms Automatic Scaling Algorithm to the ionograms recorded by Ebro Observatory ionosonde

*A. Ippolito[1], C. Scotto[1], D. Altadill[2], E. Blanch[2], D. Sabbagh[1,3], V. Sgrigna[3]*

*[1]Istituto Nazionale di geofisica e Vulcanologia, Via di Vigna Murata 605, Rome, ITALY; [2]Observatori de l'Ebre, (OE), CSIC - Universitat Ramon Llull, Roquetes, SPAIN; [3]Università Roma Tre, Dipartimento di matematica e Fisica, Via della Vasca Navale 84, Rome*

5.p20 Ionospheric forecasting tools and services: comparative studies of foF2 and TEC storm-time response for further developments

*Ioanna Tsagouri, Anna Belehaki and Panagiotis Elias*

*National Observatory of Athens, Greece*

5.p21 Modelling and monitoring the plasmasphere: towards an operational Space Weather tool - advances in the PLASMON project

*János Lichtenberger[1,2], Anders Jorgensen[3], Balazs Heilig[4],David Koronczay[1,2], Csaba Ferencz[1], Péter Steinbach[5], Mark Clilverd[6], Craig Rodger[7], Dmitry Sannikov[8] and Nina Cherneva[8]*

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5.p22 A NeQuick-based topside electron density profile estimation for Autoscala program

*Carlo Scotto[1], Bruno Nava[2], Loredana Perrone[1], Marco Pietrella[1], Alessandro Ippolito[1], Dario Sabbagh[1,3], Vittorio Sgrigna[3], Anton Kashcheyev[2], Muhammad Mubasshir Shaikh[2], Yenca Migoya Orue[2], Katy Alazo-Cuartas[2]*

*[1]Istituto Nazionale di Geofisica e Vulcanologia, Rome, Italy; [2]The Abdus Salam International Centre for Theoretical Physics, Trieste, Italy; [3]Università Roma Tre, Dipartimento di matematica e Fisica, Via della Vasca Navale 84, Rome ITALY*

5.p23 Geomagnetically Induced Currents in the Irish Power Network during Geomagnetic Storms

*Sean Blake [1], Peter Gallagher [1], Joseph McCauley [1], Alan Jones [2], Colin Hogg [3], Joan Campanya [3], Ciaran Beggan [4], Alan Thomson [4], Gemma Kelly [4], David Bell [5]*

*[1]Trinity College Dublin, Ireland, [2]Complete MT Solutions, Ireland, [3]Dublin Institute for Advanced Studies, Ireland, [4]British Geological Survey, UK, [5]EirGrid Plc, Ireland*

## Session 7: Best practice in transitioning existing space science tools to operational SW prediction systems

7.e01 The ESA / SSA SWE A-EFFort Service: Results and Outlook

*Manolis K. Georgoulis and the A-EFFort Team*

*RCAAM of the Academy of Athens, Athens, Greece*

7.e02 Application of PC indices in forecasts of severe space weather conditions.

*Peter Stauning*

*Danish Meteorological Institute*

7.p03 CME initiation with Slurm, fluid particle-in-pell solver for space weather

*Vyacheslav Olshevsky, Fabio Bacchini, Stefaan Poedts, Giovanni Lapenta*

*Center for Plasma Astrophysics, KU Leuven*

7.p04 Modelling plasma structures in the high-latitude ionosphere

*Alan Wood, Golnaz Shahtahmassebi, Amy Ronksley, Benjamin Halls, Martin Campbell and Shaun Atherton*

*School of Science and Technology, Nottingham Trent University, Clifton Lane, Nottingham, UK.*

7.p05 Transitioning CME auto-detection and interplanetary propagation tools into operational services

*Bingxian Luo, Jingjing Wang, Wengeng Huang, Siqing Liu*

*National Space Science Center, Chinese Academy of Sciences*

7.p06 Three-Fluid collisional and reactive magnetic reconnection with radiative effects in chromospheric conditions

*Alejandro Alvarez Laguna, Yana Maneva, Nataly Ozak, Andrea Lani and Stefaan Poedts*

*Centre for Mathematical Plasma-Astrophysics, KU-Leuven, Belgium.*

## Session 8: Space Systems Development and Operations: Dealing with Space Weather and Space Climate Effects

8.p01 New capabilities of SPENVIS Next Generation and their benefits for spacecraft designers and operators

*Neophytos Messios[1], Stijn Calders[1], Erwin De Donder[1], Michel Kruglanski[1], Edith Botek[1], Fabiana Da Pieve[1], Daniel Heynderickx[2], Benjamin Bode[3], Pablo Beltrami[3], Ignacio Grande[4], Eugenio Rodríguez-Moreno[4], Noelia Sánchez Ortiz[4], Ngoc-Diep Ho[5], Hugh Evans[6], Eamonn Daly[6], David Rodgers[6]*

*[1]BIRA-IASB; [2]DHConsultancy BVBA; [3]etamax space GmbH; [4]Deimos Space; [5]Space Application Services NV/SA; [6]ESA/ESTEC*

8.p02 The electrostatic cleanliness programme to cope with spacecraft charging on Solar Orbiter mission

*A. Hilgers[1], F. Cipriani[2], S. Guillemant[1], P. Laget[1], S. Strandmoe[1], P. Marliani[1]*

*[1]ESA; [2]RHEA/ESA*

8.p03 Solar particle events and evaluation of their effects during spacecraft design

*Piers Jiggens*

*European Space Agency*

8.p04 Radiation belt environment and effects evaluation during design

*Hugh Evans*

*Rhea System BV, ESA*

# Thursday, 17 November 2016

## Session 9: Enhanced Space Weather Monitoring Systems

9.e01 The Worldwide Interplanetary Scintillation (IPS) Stations (WIPSS) Network

*Mario M. Bisi[1], J. Americo Gonzalez-Esparza[2,3,4], Ernesto Aguilar-Rodriguez[2,3,4], Oyuki Chang[4], Bernard V. Jackson[5], Hsiu-Shan Yu[5], Munetoshi Tokumaru[6], Igor Chashei[7], Sergey Tyul'bashev[7], Richard A. Fallows[8], Periasamy K. Manoharan[9] and Dusan Odstrcil[10,11].*

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9.p02 The US/UK L1/L5 Operational Space Weather Monitoring System

*Markos Trichas[1], Thomas Berger[2], Doug Biesecker[2], Emanuele Monchieri[1]*

*[1]Airbus Defence and Space; [2]National Oceanic and Atmospheric Administration*

9.p03 Analysis of Straylight and Signal-to-Noise Requirements for an Operational Coronagraph SCOPE

*Johannes Hinrichs[1], Matthew West[2], Jackie Davies[3], Volker Bothmer[1], Klaus Ergenzinger[4], Jean-Philippe Halain[5], Piers Jiggens[6], Kevin Middleton[3], and the rest of the SCOPE team*

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9.p04 E-Callisto antenna on Greenland

*Kristoffer Leer[1], Christian Monstein[2]*

*[1]DTU Space, Technical University of Denmark, Lyngby, Denmark. [2]Institute for Astronomy ETH Zürich, Switzerland*

9.p05 Forecast of future geomagnetic storm strength: 5 years online

*[1] T.V.Podladchikova,[2] A.A.Petrukovich*

*[1]Skolkovo Institute of Science and Technology, Russia; [2]Space Research Institute, Russia*

9.p06 Analysis of methods for estimating westward auroral electrojet current with meridian magnetometer chain data

*Evdokimova M.A. , Petrukovich A.A.*

*Space Research Institute of the Russian Academy of Sciences*

9.p07 Next Generation Radiation Monitoring (NGRM)

*A. Lupi[1], P. Nieminen[2], T. Watterton[2], E. Jaramillo[3], F. Chastellain[3], U. Dose[3]*

*[1]RHEA c/o ESA-ESOC, SSA Programme Office; [2]European Space Agency, ESA-ESTEC, The Netherlands; [3]RUAG Space, Switzerland*

## Session 10: Spacecraft operations and space weather

10.p01 Long-term and Short-term Variation of Absorbed Dose Values on the Medium Earth Orbit.

*Vasily S. Anashin[1], Grigory A. Protopopov[1], Olga S. Kozyukova[1], Igor A. Lyakhov[1], Sergey G. Rukavichnikov[1], Pavel V. Shatov[2]*

*[1]Branch of JSC URSC-ISDE; [2]FSBI Fedorov Institute of Applied Geophysics*

10.p02 The behavior of high-energy magnetospheric electrons during solar cycles 22 and 23

*Anatoly Belov[1], Olga Kryakunova[2], Artem Abunin[1], Maria Abunina[1], Sergei Gaidash[1], Irina Tsepakina[2]*

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10.p03 Risk index of spacecraft surfacing charging effects in auroral region

*Xuejie Meng, Dong Chen, Liqin Shi*

*National Space Science Center, Chinese Academy of Sciences*

10.p04 Radiation Effects on Satellites during Extreme Space Weather Events

*Alex Hands[1], Keith Ryden[1], Nigel Meredith[2], Sarah Glauert[2], Richard Horne[2]*

*[1]University of Surrey; [2]British Antarctic Survey*

## Session 11: Machine learning and statistical inference techniques

11.e01 Detecting and tracking ARs emergence with Magnetic Balltracking

*Raphael Attie*

*Royal Observatory of Belgium*

11.p02 Neural network identification of relevant events in time series and preliminary forecast application

*Vlad Constantinescu[1,2], Octav Marghitu[1]*

*Institute of Space Science[1], University Politehnica of Bucharest[2]*

11.p03 Neural networks and Am predictions, a preliminary study

*Marina Gruet[1],Nathalie Bartoli[1], Sandrine Rochel[1], Aurélie Marchaudon[2], Pierre-Louis Blelly[2], Guy Rolland[3]*

*[1]ONERA; [2]CNRS; [3]CNES*

# Friday, 18 November 2016

## Session 13: Model Metrics, Verification and Validation

13.p01 Validation of the Dynamic Radiation Environment Assimilation Model (DREAM): Metrics and model comparisons

*Steven Morley, Michael Henderson, Geoffrey Reeves, Gregory Cunningham, Andrew Walker, Brian Larsen*

*Los Alamos National Laboratory*

13.p02 Comparison of Empirical Magnetopause Location Models with Geosynchronous Data from 1996 to 2010

*Eunsu Park, Yong-Jae Moon*

*School of Space Research, Kyung Hee University*

13.p03 Operational solar flare forecast verification in NICT - **Invited**

*Yûki Kubo, Mitsue Den, Mamoru Ishii*

*National Institute of Information and Communications Technology*

13.p04 Validation of the Swarm plasmapause index PPi

*Balazs Heilig[1], Hermann Lühr[2], Massimo Vellante[3]*

*[1]MFGI, Tihany, Hungary; [2]GFZ Potsdam, Germany; [3]University of L'Aquila, Italy*

13.p05 Model Metrics, verification and validation within the Heliospheric Weather Expert Service Centre - **Invited**

*Chris Perry[1], Mark Gibbs[2], Manuela Temmer[3], Volker Bothmer[4], Vincent Genot[5], Daniel Heynderickx[6], Stefaan Poedts[7], Susanne Vennerstrom[8]*

*[1]STFC Rutherford Appleton Lab; [2]UK Met Office; [3]Institute of Physics University of Graz; [4]University of Goettingen; [5]CDPP/IRAP; [6]DHConsultancy; [7]KU Leuven; [8]Technical University of Denmark*

13.p06 Validation studies of the Solar Wing driven autoregressive model for Ionospheric short-term Forecast (SWIF) for future improvements

*Ioanna Tsagouri*

*National Observatory of Athens, Greece*

13.p07 Nowcast and forecast of the F30 solar index for orbit prediction needs

*Philippe Yaya[1], Sean Bruinsma[3], Thierry Dudok de Wit[2], Louis Hecker[1], Clémence Le Fèvre[3], Pascal Perrachon[3]*

*[1]CLS (Collecte Localisation Satellites), Ramonville Saint-Agne, France; [2]LPC2E (Laboratoire de Physique et Chimie de l'Environnement et de l'Espace), Orléans, France; [3]CNES (Centre Nationale d'Etudes Spatiales), Toulouse, France*

13.p08 Verification of geomagnetic storm forecasts at the UK Met Office

*Michael Sharpe, Suzy Bingham, David Jackson, Edward Pope*

*UK Met Office*

13.p09 Flare forecast verification at the UK Met Office

*Sophie Murray, Suzy Bingham, Edward Pope, David Jackson*

*UK Met Office*

13.p10 CME arrival-time validation of real-time WSA-ENLIL+Cone simulations at the CCMC/SWRC

*Alexandra M. Wold[1], M. Leila Mays[2,3], A.Taktakishvili[2,3], L. Jian[4,3], D.Odstrcil[2,5] , P. MacNeice[3]*

*[1]American University; [2]Catholic University of America; [3]NASA Goddard Space Flight Center; [4]University of Maryland College Park; [5]George Mason University*

13.e11 From the NEAR EARTH SPACE / SPACE WHEATHER Window the BIG DATA ERA

*Yurdanur Tulunay[1], Ersin Tulunay[2]*

*[1]METU Dept of Aerospace Engineering, Ankara; [2]METU Dept. of Electrical Engineering, Ankara*

## Session 14: Space weather applications of global neutron monitor network

14.p01 Present status and modernisation of the Dourbes Cosmic Ray Observatory for improved space weather research and forecasting - **Invited**

*Danislav Sapundjiev[1,2], Stanimir M. Stankov[1,2]*

*[1]Solar-Terrestrial Centre of Excellence (STCE); [2]Royal Meteorological Institute of Belgium*

14.p02 A Mini Neutron Monitor in Central Antarctica (Dome Concordia) - **Invited**

*Stepan Poluianov[1], Ilya Usoskin[1,2], Harm Moraal (deceased)[3], Helena Krueger[3], Giampietro Casasanta[4], Rita Traversi[5], Roberto Udisti[5]*

*[1]Sodankylä Geophysical Observatory, University of Oulu, Finland; [2]ReSoLVE, University of Oulu, Finland; [3]North-West University, Potchefstroom, South Africa; [4]Institute of Atmospheric Sciences and Climate, CNR, Rome, Italy; [5]Department of Chemistry "Ugo Schiff", University of Florence, Italy*

14.e03 Application of neutron monitor data for space weather

*Alexander Mishev[1], Ilya Usoskin[1,2]*

*[1]Space Climate research group, University of Oulu, Finland; [2]Sodankyla Geophysical Observatory (Oulu unit), University of Oulu, Finland*

14.e04 Application of NM derived spectra for computation of ionization effect during major GLE events of solar cycle 23

*Alexander Mishev[1], Peter Velinov[2]*

*[1]Space Climate research group, University of Oulu, Finland; [2]Institute for Space Research and Technology, Bulgarian Academy of Sciences*

14.p05 A study on precursors of Forbush decreases and their common features

*Dimitra Lingri[1], Maria Papailiou[1], Helen Mavromichalaki[1], Anatoly Belov[2], Eugenia Eroshenko[2], Maria Abunina[2], Artem Abunin[2]*

*[1]Faculty of Physics, National and Kapodistrian University of Athens, Athens, Greece; [2]Pushkov Institute of Terrestrial Magnetism, Ionosphere and Radio Wave Propagation (IZMIRAN) of the Russian Academy of Sciences, Moscow, Russia*

## Session 15: Space environment effects on humans in Space and on Earth

15.e01 Long-term observation of cardiovascular system parameters under variation of geomagnetic condition

*Sasonko M.L., Gurfinkel Yu. I., Ozheredov V.A., Breus T.C.*

*Space Research Institute of Russian Academy of Science (RAS)*

15.e02 Geomagnetic storm in laboratory conditions

*Yury Gurfinkel[1,2], Oleg Atkov[2], Andrey Vasin[2], Maria Sasonko[2], Ruslan Sarimov[2,3]*

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15.e03 Influence of space weather on heart rate and heart rate variability

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15.e04 Factors of space weather and Biosphere: the dynamics in 23 - 26 cycles of solar activity

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15.p05 Possible relation of the cardiac arrhythmias occurrence to the solar magnetic field polarity reversal during the solar cycle 23

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