



PRediction Of Geospace Radiation Environment and Solar wind parameterS

Work Package 8 Dissemination

Deliverable 8.2 Exploitation and Dissemination plan

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Summary

This report describes the current plan for the exploitation and dissemination of results from the Horizon 2020 funded project PROGRESS and outlines potential changes foreseen for the final year of the Project. During the first two years of the project, most effort has gone into the dissemination of results to peer scientists through the publication of papers and oral or poster presentations at scientific conferences. While most presentations have been aimed at the scientific community and presented at scientific conferences, a substantial effort has been made to engage those in the industrial space sector (e.g. satellite manufacturers and operators) through strong, visible attendances at meetings such as European Space Weather Week as well as with the project's Stakeholder Committee. These activities will continue into the final year of the project. In addition, a summer school for postgraduate level students will be organised, probably in collaboration with FLARECAST, a sister project also funded by the European Commission. This will provide the opportunity to present the main results of the project to the next generation of scientists working in the field of space plasma physics and space weather.

1 Introduction

Within the PROGRESS Grant Agreement special emphasis was placed on the dissemination of results obtained by the project. In particular several target audiences were identified and routes for dissemination defined. This report outlines the project activities to engage fellow scientists, colleagues from industry, and raise the awareness of the general public.

2 Scientific Dissemination

The two main methods for the dissemination of results obtained by PROGRESS are the publication of papers in peer reviewed journals and presentations at conferences, workshops, and summer schools.

The number of papers published by project members based on results obtained through PROGRESS is currently 12 with a further 3 accepted for publication. The journals, together with their impact factors are listed in Table 1. A complete list of journal papers is included in Appendix A and are included on the project web site (<https://sbg.group.shef.ac.uk/progress/html>) together with copies of the paper (as permitted by the publisher).

Table 1: Journals in which PROGRESS related publications appear.

Journal	# papers	Impact factor
Nature Communications	1	11.3
Journal of Geophysical research (Space Physics)	7	3.3
Geophysical Research Letters	1	4.2
Annales Geophysicae	1	1.7
Space Weather	1	2.4
Astrophysical Journal	3	5.9

Currently, the participants of PROGRESS have made more than 55 meeting presentations at major scientific conferences such as the American Geophysical Union Fall Meeting (the foremost conference in the field), European Geosciences Union General Assembly (the most important European meeting), and European Space Weather Week - a conference/workshop bringing together scientists working in the field of space weather, industrialists with interests in space weather (e.g. satellite builders and operators, power generation). Section B contains a complete list of PROGRESS related presentations.

These activities have been augmented by the organisation of specific sessions at the following conference and workshops:

European Space Weather Week 12

- Session 5 Geomagnetically Induced Current and Space Weather
E. Clarke, **P. Wintoft**, A. Viljanen, and A. Thomson
- Session 9 Progresses and challenges in coupling models for predicting space weather from the Sun to the Earth
N. Ganushkina, S. Poedts, A. Hilgers, **D. Pitchford**¹, B. van der Holst, and **P. Wintoft**.
- Working meeting Space Weather Metrics, Verification And Validation
A. Glover, M. Angling, P. Jiggins, S. Bingham, S. Elvidge, **P. Wintoft**
-

European Space Weather Week 13

- Session 5 Developing new space weather tools: Bridging between the fundamental science and operations
Misha Balikhin, D. Shaun Bloomfield, Juan V. Rodriguez, **Didier Mourenas**¹
- Session 7 Best practice in transitioning existing space science tools to operational SW prediction systems
David Jackson¹, Suzy Bingham, Giovanni Lapenta, Stefaan Poedts, Manolis Georgoulis, Mauro Messerotti, Daniel Matthiae
- Session 8 Space Systems Development and Operations: Dealing with Space Weather and Space Climate Effects
Eamonn Daly¹, **Dave Pitchford**¹, Hugh Evans
- Session 10 Spacecraft operations and space weather
Dave Pitchford¹, Richard Horne
- Working Meeting PROGRESS: Adopting models to stakeholder requirements
Yuri Shprits, Michail Balikhin
-

European Geosciences Union 2015	
ST2.4	Radiation Belts: The balance of energization and loss processes Ioannis A. Daglis S. Bourdarie, Yuri Shprits
ST2.1	Open Session on the Magnetosphere (including Hannes Alfvén Medal Lecture) Natalia Ganushkina and Yulia Bogdanova
European Geosciences Union 2016	
ST1.8	Progress in Space Sciences Fostered by the European Commission Giovanni Lapenta, Olga Malandraki , Manolis Georgoulis , Richard Harrison , Natalia Ganushkina
ST2.1	Open Session on the Magnetosphere (including Julius Bartels Medal Lecture) Natalia Ganushkina , Yulia Bogdanova
PS5.1/ST2.2	Planetary Plasma Physics and Interactions in the Solar System Anna Milillo, Aikaterini Radioti, Natalia Ganushkina , Philippe Garnier
ST2.5	Identifying Dominant Acceleration, Loss, and Transport Processes Affecting The Dynamics of Electron and Proton Radiation Belts S. Bourdarie, Ioannis A. Daglis , Yuri Shprits
American Geophysical Union 2015	
SM007	Dynamics of ultra-relativistic electrons in the Earth's magnetosphere Maria Usanova and Yuri Shprits
American Geophysical Union 2016	
SM11	Interactions Across the Spectrum of Inner Magnetosphere Plasma Colby Lemon, Yiqun Yu, Michael Warren Liemohn , Jichun Zhang
Inner Magnetosphere Coupling III (IMC III) 2015	
Discussion leader	Plasmashet injections session Natalia Ganushkina

In addition to presentations at scientific conferences, members of the PROGRESS team have made contributions to the 2016 UK STFC Advanced Summer School in Solar System Science in which new Postgraduate students are introduced to the latest research ideas, methods, and projects in the field of solar system science which encompasses solar physics, space weather, space plasma physics, and planetary science.

¹Member of SAB

3 Industrial dissemination

Contact and liaison with representatives from industry has been achieved on two fronts. The first is the setting up of a Stakeholder Committee to oversee project activities and to provide feedback as to it's direction. The current members of the Stakeholder Committee are as follows:

Dave Pitchford (chair)	SES, Luxembourg
David Jackson	UK Met Office, UK
Didier Mourenas	CEA, France
Maria Kusnetsova	NASA CCMC
Jurgen Volpp	ESA/ESOC (ret)
Eamonn Daly	ESA/ESTEC

There has been one formal meeting of the Stakeholder Committee that took place as part of the previous review meeting. The minutes of this meeting formed Deliverable D1.2.

Secondly, contact has been made with industrialists during the European Space Weather Week meeting in Belgium. This conference/workshop is the foremost meeting devoted to space weather within Europe and attracts attendees from both academia and industry.

4 Public dissemination

On behalf of the Project, the Coordinator has made the following public presentations that contain material related to PROGRESS.

- International Year of Light (November 2016, ATOMKI, Hungary)
- Jigyasa (March 2015, IIT-BHU, India)
- Jigyasa (September 2016, IIT-BHU, India)

In addition, the Coordinator will make another at the 70th anniversary of the Ukranian Planetarium in January 2017.

5 Summer school

During the final year of the Project the participants will organise a Summer School. Aimed at postgraduate level students, the Summer School will present the results of the Project to a wider scientific audience. In order to increase the subject matter and to give students a wider feel for the subject of space weather research it is proposed to hold a joint event with another Horizon 2020 funded project, FLARECAST. The FLARECAST team have been contacted in this respect and are enthusiastic about the idea.

6 Project web site

A website, dedicated to the project, was created during the first months of the project. The contents have been evolving throughout the period of the project. As results from the project become available they will be added to the website to promote dissemination to the science, industrial, and public.

7 Feedback from previous review

At our Review Meeting in January 2016 the external reviewer suggested more effort should be placed on dissemination to the public, reaching out to various classes of audience including high schools and undergraduate levels. As mentioned above, some public lectures that contain material related to PROGRESS have been presented.

The external reviewer also suggested the procurement of items such as '... project T-shirts, bags, hats, coffee cups, pencils, papers etc. with project logo printed on them ...' . Whilst such items were not foreseen in the original budget, we are currently looking into the production of items such as pens and lanyards for distribution at workshops and conferences.

8 Feedback from previous stakeholder meeting

No specific comments were received from the PROGRESS Stakeholder Committee regarding the dissemination of results.

9 Conclusions

The current plan for the dissemination of the results of the project PROGRESS has been outlined above. We feel that we have achieved a high level of dissemination at the scientific level with the publication of 12 papers in peer reviewed journals and more than 55 presentations at conferences and workshops. Steps have been taken to disseminate the results with industrialists through the formation of our Stakeholder committee and attendance at appropriate meetings.

A Publications in Peer Reviewed Journals

1. R. Ilie, M. W. Liemohn, G. Toth, N. Yu Ganushkina, and L. K. S. Daldorff, Assessing the role of oxygen on ring current formation and evolution through numerical experiments, *J. Geophys. Res. (Space Physics)* 120, 4656-4668, doi:10.1002/2015JA021157, 2015.
2. M. A. Balikhin, Y. Y. Shprits, S. N. Walker, L. Chen, N. Cornilleau-Wehrin, I. Dandouras, O. Santolik, C. Carr, K. H. Yearby, and B. Weiss, Observations of discrete harmonics emerging from equatorial noise, *Nature Communications*, 6:8807, doi:10.1038/ncomms8703, 2015.
3. N. Y. Ganushkina, M. W. Liemohn, S. Dubyagin, I. A. Daglis, I. Dandouras, D. L. De Zeeuw, Y. Ebihara, R. Ilie, R. Katus, M. Kubyshkina, S. E. Milan, S. Ohtani, N. Ostgaard, J. P. Reistad, P. Tenfjord, F. Toffoletto, S. Zaharia, and O. Amariutei, Defining and resolving current systems in geospace, *Ann. Geophys.* 33, 1369-1402, doi:10.5194/angeo-33-1369-2015, 2015.

4. Y. Y. Shprits, A. C. Kellerman, A. Y. Drozdov, H. E. Spence, G. D. Reeves, and D. N. Baker, Combined convective and diffusive simulations: VERB-4D comparison with 17 March 2013 Van Allen Probes observations, *Geophys. Res. Lett.* 42, 9600-9608, doi:10.1002/2015GL065230, 2015.
5. S. N. Walker, M. A. Balikhin, D. R. Shklyar, K. H. Yearby, P. Canu, C. M. Carr, and I. Dandouras, Experimental determination of the dispersion relation of magnetosonic waves, *J. Geophys. Res. (Space Physics)* 120, 9632-9650, doi:10.1002/2015JA021746, 2015.
6. S. Dubyagin, N. Ganushkina, M. Liemohn, and M. Kubyshkina, Can ring current stabilize magnetotail during steady magnetospheric convection?, *J. Geophys. Res. (Space Physics)* 120, 10528-10542, doi:10.1002/2015JA022003, 2015.
7. R. Ilie, N. Ganushkina, G. Toth, S. Dubyagin, and M. W. Liemohn, Testing the magnetotail configuration based on observations of low altitude isotropic boundaries during quiet times, *J. Geophys. Res. (Space Physics)* 120, 10557-10573, doi:10.1002/2015JA021858, 2015.
8. Michael W. Liemohn, Natalia Y. Ganushkina, Raluca Ilie, and Daniel T. Welling, Challenges associated with near-Earth nightside current, *J. Geophys. Res. (Space physics)* 121, 6763-6768, doi:10.1002/2016JA022948, 2016.
9. S. Dubyagin, N. Yu. Ganushkina, I. Sillanpää, A. Runov, Solar wind driven variations of electron plasma sheet densities and temperatures beyond geostationary orbit during storm times, *J. Geophys. Res. (Space Physics)* 121, 8343-8360, doi:10.1002/2016JA022947, 2016.
10. Simon N. Walker, Andrei G. Demekhov, Scott A. Boardsen, Natalia Y. Ganushkina, David G. Sibeck, and Michael A. Balikhin, Cluster observations of non-time-continuous magnetosonic waves, *J. Geophys. Res. (Space Physics)* 121, 9701-9716,

doi:10.1002/2016JA023287, 2016.

11. Jose Roberto Ayala Solares, Hua-Liang Wei, R. J. Boynton, Simon N. Walker, and Stephen A. Billings, Modelling and Prediction of Global Magnetic Disturbance in Near-Earth Space: a Case Study for Kp Index Using NARX Models, *Space Weather* 14, 899-916, doi:10.1002/2016SW001463, 2016.
12. E. E. Grigorenko, E. A. Kronberg, P. W. Daly, N. Y. Ganushkina, B. Lavraud, J.-A. Sauvaud, and L. M. Zelenyi, Origin of low proton-to-electron temperature ratio in the Earth's plasma sheet, *J. Geophys. Res. (Space Physics)* 121, 9985-10004, doi:10.1002/2016JA022874, 2016.

B Conference Presentations

1. M. Balikhin. System Science Approach to the Space Weather Forecast. European Space Operations Center, Darmstadt, Germany, 2015. Type: Oral presentation.
2. Simon Walker, Michael Balikhin, Patrick Canu, and Nicole Cornilleau-Wehrin, Investigation of the Chirikov resonance overlap criteria for equatorial magnetosonic waves, EGU General Assembly 2015, Vienna, Austria, 12-17 April 2015. Type: Oral presentation EGU2015-5578. Session: ST2.2 Multi-scale magnetospheric processes with multi-point observations and simulations.
3. Michael Balikhin, Tony Arber, Robertus Erdelyi, Natalya Ganushkina, Bart van der Holst, Vladimir Krasnoselskikh, Michael Liemohn, Ivan Pakhotin, Yuri Shprits, Simon Walker, Magnus Wik, Peter Wintoft, and Vitaliy Yatsenko, Prediction of Geospace Radiation Environment and Solar Wind Parameters, EGU General Assembly 2015, Vienna, Austria, 12-17 April 2015. Type: Poster presentation EGU2015-5448. Session: ST2.4 Radiation Belts: The balance of energization and loss processes.

4. Ganushkina, N. and S. Dubyagin, Magnetospheric current systems as inferred from SYM and ASY mid-latitude indices, EGU General Assembly 2015, Vienna, Austria, 12-17 April 2015. Type: Oral presentation EGU2015-2156. Session: ST2.3 Understanding the near-Earth space environment using highly accurate measurements of the geomagnetic field - A special session in honor of Hermann Lhr.
5. N. Ganushkina, S. Dubyagin, and I. Sillanpää, Recent revisions of the IMPTAM model, EGU General Assembly 2015, Vienna, Austria, 12-17 April 2015. Type: Invited oral presentation. Session: Splinter meeting SPM1.46 Radiation Belt Models (public).
6. B. van der Holst, MHD turbulence modeling of the solar wind, Solar Stellar Connection Workshop, Ann Arbor, MI, 18-19 May 2015. Type: Invited oral presentation.
7. B. van der Holst, Including Subgrid Physics in a Global MHD Solar Wind Model, ASTRONUM 2015, Avignon, France, 8-12 June 2015. Type: Invited oral presentation.
8. N. Ganushkina, S. Dubyagin, I. Sillanpää, Low energy electrons in the inner magnetosphere: Recent revisions of IMPTAM model, GEM 2015 Workshop, Snowmass CO, USA, 15-19 June 2015. Type: Oral presentation. Session: Focus Group: Quantitative Assessment of Radiation Belt Modeling.
9. S. Dubyagin and N. Ganushkina, Empirical model for plasma sheet electrons: Initial results, THEMIS data, GEM 2015 Workshop, Snowmass CO, USA, 15-19 June 2015. Type: Oral presentation. Session: Focus Group: Tail-Inner Magnetosphere Interactions.
10. M. Balikhin, R. Boynton, and J. Rodriguez, Comparison of REFM (NOAA) and SNB3GEO Forecasts, GEM 2015 Workshop, Snowmass CO, USA, 15-19 June 2015. Type: Oral presentation. Session: Focus Group: System Science.

11. B. van der Holst, Global Multi-fluid Solar Corona Model with Alfvén Wave Turbulence, 2015 SHINE Workshop, Stowe, VT, 6-10 July 2015. Type: Oral presentation. Session: Heavy Ion Composition in the Heliosphere.
12. N. Ganushkina, S. Dugyagin, I. Sillanpää, D. Pitchford, Substorm-associated effects in the variations of low energy electron fluxes in the inner magnetosphere: Does the substorm's strength matter?, Unsolved Problems in Magnetospheric Physics, Scarborough, UK, 6-12 September, 2015. Type: Invited oral presentation. Session: 8.
13. M. Balikhin, How the fusion between physics and systems science can help us to understand solar wind-magnetosphere coupling, Unsolved Problems in Magnetospheric Physics, Scarborough, UK, 6-12 September, 2015. Type: Oral presentation. Session: 6.
14. N. Ganushkina and S. Dugyagin, Near-Earth plasma sheet as a seed population for the outer radiation belt, Cluster 15th and Double Star 10th anniversary workshop, Venice, Italy, 12-16 October 2015. Type: Invited oral presentation. Session: Inner magnetosphere (radiation belts and plasmasphere).
15. S. N. Walker, M. A. Balikhin, and K. H. Yearby, The morphology and characteristics of Equatorial Magnetosonic Waves in the Terrestrial Inner Magnetosphere, Cluster 15th and Double Star 10th anniversary workshop, Venice, Italy, 12-16 October 2015. Type: Oral presentation. Session: Inner magnetosphere (radiation belts and plasmasphere).
16. M. A. Balikhin, S. N. Walker, R. Erdelyi, N. Ganushkina, I. Sillanpää, S. Dugyagin, B. van der Holst, M. Liemohn, V. Krasnoselskikh, V. Shastun, Y. Shprits, T. Arber, K. Bennett, P. Wintoft, M. Wik, and V. Yatsenko, PROGRESS - Prediction of Geospace Radiation Environment and Solar Wind Parameters, 12th European

- Space Weather Week, Oostende, Belgium, 23-27 November 2015. Type: Oral presentation. Session: 9: Progresses and challenges in coupling models for predicting space weather from the Sun to the Earth.
17. S. N. Walker, M. A. Balikhin, I. Pakhotin, and Y. Shprits, Modeling the Radiation Belt Electron Environment: Fusion of Physics and System Science Approaches, 12th European Space Weather Week, Oostende, Belgium, 23-27 November 2015. Type: Oral presentation. Session: 16: Space Weather Applications and Engineering Concerns.
 18. V. V. Krasnoselskikh, V. Shastun, O. A. Agapitov, S. N. Walker, R. J. Boynton, and M. A. Balikhin, Cluster contribution to the dynamics of plasma waves in the radiation belts: implications for radiation belts forecast, 12th European Space Weather Week, Oostende, Belgium, 23-27 November 2015. Type: Poster presentation. Session: 2: Recent Advances in Space Weather Science.
 19. Yuri Shprits, Adam Kellerman, Alexander Drozdov, and Tatiana Podladchikova, Data Assimilative Real Time Prediction of the Earth Radiation Belts, 12th European Space Weather Week, Oostende, Belgium, 23-27 November 2015. Type: Oral presentation. Session: 9: Progresses and challenges in coupling models for predicting space weather from the Sun to the Earth.
 20. N. Ganushkina, I. Sillanpää, J. V. Rodriguez, Metrics of model performance for electron fluxes (>200 keV) at geostationary orbit, 12th European Space Weather Week, Ostend, Belgium, 23-27 November, 2015. Type: Oral presentation. Session: 10: Model Metrics, Verification and Validation.
 21. N. Ganushkina, S. Dugyagin, I. Sillanpää, J.-C. Matéo Vélez, D. Pitchford, Advanced modeling of low energy electrons responsible for surface charging, 12th European Space Weather Week, November, 23-27, 2015, Ostend, Belgium, Ostend,

- Belgium, 23-27 November, 2015. Type: Oral presentation. Session: 2: Open session on Recent Advances in Space Weather Science.
22. B. van der Holst, B. Chandran, J. Kasper, J. Szente, I. Sokolov, G. Toth, T. Gombosi, Global Multi-Fluid Solar Corona Model with Temperature Anisotropy, AGU Fall Meeting, San Francisco, USA, December 14-18, 2015. Type: Poster presentation SH13C-2448. Session: SH13C: Status and Challenges in Coronal Heating: Theory, Observations, and Simulation of Physical Processes in Open Field Regions.
 23. N. Ganushkina, S. Dubyagin, I. Sillanpää, D. Pitchford, Forecasting keV-electrons in the inner Earth's magnetosphere responsible for surface charging, AGU Fall Meeting, San Francisco, CA USA, December 14 - 18, 2015. Type: Oral presentation SM13F-05. Session: Fifty Years of Space Weather Forecasting: Highlighting the Science, Behind the Societal Relevance I.
 24. J. Szente, G. Toth, W. Manchester, B. van der Holst, E. Landi, C.R. DeVore, T. Gombosi, Dynamics of Polar Jets from the Chromosphere to the Corona: Mass, Momentum and Energy Transfer, AGU Fall Meeting, San Francisco, USA, December 14-18, 2015. Type: Poster presentation SH23D-05. Session: SH23D: Mass and Energy Transfer between the Solar Photosphere and Corona I.
 25. R Boynton, M A Balikhin, D G Sibeck, S N Walker, and N Y Ganushkina, Electron Flux Models at GEO: 30 keV - 600 keV, AGU Fall Meeting, San Francisco, USA, December 14-18, 2015. Type: Poster presentation SM41A-2466. Session: SM41A: Advances in Space Weather Research II.
 26. S N Walker, M A Balikhin, S A Boardsen, and D G Sibeck, Cluster Observations of Non Time Continuous Magnetosonic Waves, AGU Fall Meeting, San Francisco, USA, December 14-18, 2015. Type: Poster presentation SM41H-2578. Session: SM41H: Waves and Particles at the Magnetic Equator I.

27. Yuri Shprits, Adam C Kellerman, Tatiana Podladchikova, Dmitri A Kondrashov and Michael Ghil, Data assimilation for real-time prediction and reanalysis, AGU Fall Meeting, San Francisco, CA USA, December 14 - 18, 2015. Type: Poster presentation SM41A-2468. Session: Advances in Space Weather Research II.
28. M A Balikhin, Y. Shprits, and S N Walker, The Cluster Inner Magnetosphere Campaign-Results of EMW waves study, AGU Fall Meeting, San Francisco, USA, December 14-18, 2015. Type: Oral presentation SM52B-01. Session: SM52B: Synergistic Studies of Global and Kinetic Magnetospheric Processes using Multipoint Space and Ground Assets II.
29. R Boynton and H Al Saadi, Comparison of Dst Index Coupling Functions, AGU Fall Meeting, San Francisco, USA, December 14-18, 2015. Type: Poster presentation SH51B-2448. Session: SH51B: Scientific Aspects of Space Weather Forecasting II.
30. Y Shprits, A C Kellerman, and A Drozdov, Simulations of the Dynamics of the Coupled Energetic and Relativistic Electrons Using VERB Code, AGU Fall Meeting, San Francisco, USA, December 14-18, 2015. Type: Oral presentation SM53A-01. Session: SM53A: Inner Magnetosphere Cross-Population Interactions II.
31. Tatiana Podladchikova and Yuri Shprits, Kalman Filtering and Smoothing of the Van Allen Probes Observations to Estimate the Radial, Energy and Pitch Angle Diffusion Rates, AGU Fall Meeting , San Francisco, CA USA, December 14 - 18, 2015. Type: Poster presentation SH51B-2449. Session: Scientific Aspects of Space Weather Forecasting II.
32. M. A. Balikhin, T. Arber, R. Erdelyi, N. Ganushkina, B. van der Holst, V. V. Krasnoselskikh, M. Liemohn, Y. Y. Shprits, S. N. Walker, M. Wik, P. Wintoft, and V. Yatsenko, PRediction Of Geospace Radiation Environment and Solar wind parameterS, Dynamical Processes in Space Plasmas, Ein Bokek, Israel, April 3-10, 2016. Type: Oral presentation.

33. N. Ganushkina, S. Dubyagin, I. Sillanpää, J. V. Rodriguez, J.-C. Matéo, and D. Pitchford, Low energy electrons in the Earth's magnetosphere, Dynamical Processes in Space Plasmas, Ein Bokek, Israel, April 3-10, 2016. Type: Oral presentation.
34. Mike Liemohn, Darren De Zeeuw, Jeff Kopmanis, Natasha Ganushkina, Dan Welling, Gabor Toth, Aaron Ridley, Raluca Ilie, Tamas Gombosi, Masha Kuznetsova, Lutz Rastätter, CCMC's Experimental Real-time Runs: SWMF Geospace 8th CCMC Community Workshop, Annapolis, Maryland, USA, April 11-15, 2016. Type: Oral presentation. Session: Space weather effects on the ground, Radiation effects.
35. Ilkka Sillanpää, N. Ganushkina, S. Dubyagin IMPTAM Runs at CCMC 8th CCMC Workshop, Annapolis, MD, USA, 11-15 April, 2016. Type: Invited oral presentation. Session: Models at CCMC. Collaborations with model developers.
36. Michael W. Liemohn, Natasha Ganushkina, Darren De Zeeuw, Dan Welling, Gabor Toth, Raluca Ilie, Tamas Gombosi, Bart van der Holst, Masha Kuznetsova, Marlo Maddox, Lutz Rastätter, Quantitative Assessment of the CCMC's Experimental Real-time SWMF-Geospace Results, EGU General Assembly, Vienna, Austria, April 18-22, 2016. Type: Poster presentation EGU2016-11420. Session: Space Weather and its Effects on Terrestrial and Geo-Space Environments: Science and Application.
37. S. Walker, R. Erdelyi, T. Arber, N. Ganushkina, P. Wintoft, M. Liemohn, Yu. Shprits, V. Krasnoselskikh, M. Balikhin, Aims and Advances of the PROGRESS, EGU General Assembly 2016, Vienna, Austria, April 18-22, 2016. Type: Invited oral presentation EGU2016-14416. Session: Progress in Space Sciences Fostered by the European Commission.
38. N. Ganushkina, S. Dubyagin, I. Sillanpää, A. Runov, J. V. Rodriguez, J.-C. Matéo Vélez, and D. Pitchford, Low energy electrons in the Earth's magnetosphere, EGU General Assembly, 2016, Vienna, Austria, April 18-22, 2016. Type: Invited oral

- presentation EGU2016-3939. Session: Identifying Dominant Acceleration, Loss, and Transport Processes Affecting The Dynamics of Electron and Proton Radiation Belts.
39. M. Balikhin, SNB3GEO model of energetic electrons at GEO and forecast of radiation belt environment in framework of HORIZON 2020 PROGRESS project, SSA Space Weather Service Network Thematic Workshop, May 10, 2016. Type: Oral presentation. Session: R-ESC Meeting.
 40. Natalia Ganushkina, Stepan Dubyagin, Ilkka Sillanpää, A. Runov, J. V. Rodriguez, J.-C. Matéo Vélez, D. Pitchford, Forecasting the keV-electrons in the inner Earth's magnetosphere responsible for surface charging, ISROSES III, Golden Sands, Bulgaria, 11-16 September 2016. Type: Invited oral presentation.
 41. Stepan Dubyagin, Natalia Ganushkina, Andrei Runov, Solar Wind Control of Plasma Sheet Thermal Electrons at $r = 6-11R_E$: Empirical Model, ISROSES Conference, Golden Sands, Bulgaria, 11-16 September, 2016. Type: Oral presentation.
 42. S. N. Walker, K. H. Yearby, S. A. Boardsen, D. G. Sibeck, and M. A. Balikhin, Cluster observations of magnetosonic waves in the inner magnetosphere, 4th Cluster and THEMIS workshop, Palm Springs, California, USA, 7-12 November, 2016. Type: Invited oral presentation. Session: The Inner Magnetosphere.
 43. Simon N. Walker, Michel A. Balikhin, Ivan P. Pakhotin, and Yuri Y. Shprits, VNC: Application of Physics and Systems Science methodologies to Forecasting of the Radiation Belt Electron Environment, 13th European Space Weather Week, Oostende, Belgium, 14-18 November, 2016. Type: Oral presentation. Session: Session 5: Developing new space weather tools: Bridging between the fundamental science and operations.
 44. Michael A. Balikhin, Richard J. Boynton, Simon N. Walker, NARMAX approach to

- the Space Weather forecast: results and capabilities, 13th European Space Weather Week, Oostende, Belgium, 14-18 November, 2016. Type: Invited oral presentation. Session: Session 11: Machine learning and statistical inference techniques.
45. R. J. Boynton, M. A. Balikhin, D. G. Sibeck, S. N. Walker, N. Y. Ganushkina, and O. A. Amariutei, Electron Flux Models at GEO for GOES MAGED Energies, 13th European Space Weather Week, Oostende, Belgium, 14-18 November, 2016. Type: Poster presentation. Session: Session 5: Developing new space weather tools: Bridging between the fundamental science and operations.
 46. P. Wintoft, M. Wik, J. Katkalov, S.N. Walker, H.-L. Wei, and J. Matzka, Nowcast and forecast of Kp index, 13th European Space Weather Week, Oostende, Belgium, 14-18 November, 2016. Type: Oral presentation. Session: Session 5: Developing new space weather tools: Bridging between the fundamental science and operations.
 47. Yuri Shprits and Adam Kellerman, Data Assimilation for Prediction and Reanalysis of the Radiation Belts, 13th European Space Weather Week, Oostende, Belgium, 14-18 November, 2016. Type: Invited oral presentation. Session: Session 5: Developing new space weather tools: Bridging between the fundamental science and operations.
 48. Vitaliy Yatsenko, Space weather prediction using robust dynamical models: identification, optimization, and risk analysis, 13th European Space Weather Week, Oostende, Belgium, 14-18 November, 2016. Type: Poster presentation. Session: Session 5: Developing new space weather tools: Bridging between the fundamental science and operations.
 49. Y. Shprits, VERB 4D code development, 13th European Space Weather Week, Oostende, Belgium, 14-18 November, 2016. Type: Oral presentation. Session: Working Meeting: PROGRESS: Adopting models to stakeholder requirements.
 50. Natalia Ganushkina, Stepan Dubyagin, Ilkka Sillanp, 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, 13th European Space Weather Week, Oostende, Belgium, 14-18 November, 2016. Type: Invited oral presentation. Session: Session 5: Developing new space weather tools: Bridging between the fundamental science and operations.
51. Natalia Ganushkina, Ilkka Sillanpää, Jean-Charles Matéo-Vélez, Stepan Dubyagin, Angélica Sicard Piet, Low energy electrons at MEO during observed surface charging events, 13th European Space Weather Week, Oostende, Belgium, 14-18 November, 2016. Type: Oral presentation. Session: Session 10: Spacecraft operations and space weather.
 52. Ilkka Sillanpää, Natalia Ganushkina, Stepan Dubyagin, Juan Rodriguez, IMPTAM verification and validation on GOES MAGED data for long-term variations of electron fluxes at geostationary orbit, 13th European Space Weather Week, Oostende, Belgium, 14-18 November, 2016. Type: Oral presentation. Session: Session 13: Model Metrics, Verification and Validation.
 53. S. Dubyagin, N. Ganushkina, I. Sillanpää, A. Runov, Solar Wind Driven Empirical Model of Electron Plasma Sheet Densities and Temperatures beyond Geostationary Orbit During Storm Times' 13th European Space Weather Week, Oostende, Belgium, 14-18 November, 2016. Type: Poster presentation. Session: Session 5: Developing new space weather tools: Bridging between the fundamental science and operations.
 54. Vitaliy Yatsenko, System Identification , Lyapunov Dimension, and NARMAX forecast of Geomagnetic Indices, Dynamical Processes in Space Plasmas, Ein Bokek, Israel, 3-10 April, 2016. Type: Oral presentation.
 55. Vitaliy Yatsenko, Space Weather Influence on Power Systems: Prediction, Risk

Analysis, and Modeing, EGU General Assembly, Vienna, Austria, 18-22 April, 2016.

Type: Poster presentation EGU2016-6145.