



Report on behalf of the SWWT Topical Group Spacecraft, Aircraft and Launcher Environments (2014)

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SWWT Plenary Meeting Report 2014

*Palais de Congrès, Liege, Belgium
19 November 2014*

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Members



Working Group Chair/spokesperson

Susan McKenna-Lawlor (STIL)
E mail; stil@nuim.ie

Working Group Co-Chairs

Federico di Marco (VEGA)
E. Mail; Federico.Di.Marco@esa.int

Guenther Reitz (DLR)
E. Mail; Guenther.Reitz@dlr.de

There are ~30 general members of the group

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Mission Statement



The Group was formed to act as a conduit between the space weather community and ESA, providing in particular inputs on matters concerning Space Situational Awareness (SSA).

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Activities



- Annual meetings of the Topical Group take place during Space Weather Week. These occasions provide an opportunity for all attending Members to meet and for new members to join the Group.
- Annual reports are provided to the SWWT.
- The Executive Members communicate via telecon and e-mail.

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Ongoing Activity



Space Weather can potentially strongly affect the cometary environment of comet 67P/Churyumov-Gerasimenko (67P/C-G) and, thereby, certain scientific measurements made aboard the Rosetta spacecraft which is presently tracking this object as it swings around the Sun.

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Ongoing Activity



Thus, SMcKL approached the distinguished theoretician and modeler Dr. Bernard V. Jackson of the University of California in San Diego to carry out analysis and forecasting using remotely-sensed solar wind at the comet in association with a small SEP recorded aboard Rosetta in February, 2014.

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Ongoing Activity contd.



The match between the prediction and the onboard response was sufficiently encouraging to warrant mounting ongoing predictions of solar related disturbances at the location of Rosetta and, in this regard, SMcKL requested at the last SSWT that Dr. Jackson be sponsored to attend Space Weather Week and deliver a keynote talk at SALE on this activity. This sponsorship was agreed and Dr. Jackson made plans to come.

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Ongoing Activity contd.



As the work continued Dr. Dushan Odricil (father of the ENLIL model) applied this model independently to predict shock arrivals at the Rosetta spacecraft and he wrote to SMcKL offering to provide a presentation at the SALE meeting concerning several shock related solar events that occurred in September/October which might be related to onboard Rosetta responses.

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Ongoing Activity contd.



A SALE Splinter Meeting was convened on Tuesday 18 November, 2014 during Space Weather Week at Liege and it attracted a huge attendance (2.5-3 times normal). SMcKL introduced Rosetta/Philae (spacecraft/lander) and their scientific objectives and Drs. Jackson and Odricil provided presentations as to where we are now in predicting space weather at Rosetta 67P/C-G.

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Ongoing Activity contd.



In order to determine if populations recorded during active solar episodes aboard Rosetta might include particles sputtered from the comet nucleus, the international comet expert Prof. Wing Ip has joined the SALE activity and it is planned that a paper will ultimately be submitted by the overall team to a special issue entitled 'Active Cometary Atmospheres' in the refereed Springer Journal *Earth, Moon and Planets*.

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Study Duration



It is noted that the SALE study extends from the time of the initial reconnaissance phase of Rosetta about the nucleus (mid August – 12 November 2014) until the end of the mission. The nominal mission is scheduled to end in December 2015, after the comet has passed its closest point to the Sun (August 2015) and continued out along its trajectory to about 2 AU.

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Agenda of the SALE Splinter Meeting at Liege



In addition to the presentations regarding space weather at 67P/C-G the SALE Splinter Agenda (Appendix A) included a presentation by Dr. G. Reitz (DLR) providing the latest news regarding measurements made at Mars by the RAD instrument aboard the Curiosity Rover and a presentation by Dr. F. di Marco (ESA) on the practical consequences for the Gaia Mission of the occurrence of solar related activity at the time of a critical spacecraft maneuver.

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**Splinter Meeting - Spacecraft Aircraft
and Launcher Environments
Palais des Congrès
Room: Mosane 150pax
18 November 2014 (17.30 – 19.00)**

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Agenda



1. Opening Remarks (S. McKenna-Lawlor).
2. Account of the Rosetta Mission and its Lander Philae on the nucleus of comet 67P Churyumov-Gerasimenko 67P/C-G. (S.McKenna-Lawlor / STIL total 15 mins).
3. Account of Space Weather at Comet 67P/C-G. (B. Jackson / UCL San Diego, 30 mins).
4. ENLIL 3D-MHD modeling support (D. Odstreil / NASA GSFC 15 mins).

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Agenda contd.



5. Update on measurements made by the RAD/MSL instrument on Mars (G. Reitz / DLR 15 mins).
6. GAIA Ground Monitoring Strategy for L2 insertion maneuver (F. Di Marco / ESA, 15 mins).
7. Wrap-up (S McKenna-Lawlor).

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Go raibh maith agaibh go léir

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