

Space Environment Impacts Expert Group (SEIEG) – Minutes and Actions
Tuesday 9 July, 10:00-16:30

No.	Item
1.	Welcome, Apologies, Review Agenda

Key Points

1. Attendees:

Prof Richard Horne	Chair, British Antarctic Survey	Mr David Gibbs (DG)	Civil Aviation Authority
Dr Mike Hapgood	Rutherford Appleton Lab.	Ft Lt Bryn Jones (BJ)	
Dr Mario Bisi	Rutherford Appleton Lab.	Dr Graham Routledge	Defence, Science and Lab
Dr Jonathan Eastwood	Imperial College London	Dr Sean Elvidge	University of Birmingham
Mr Mark Gibbs	Met Office	Dr Lucie Green	University College Lon
Simon Machin	Met Office	Prof Cathryn Mitchell	University of Bath
Prof David Jackson	Met Office	Prof Huw Morgan	Aberystwyth University
Prof Jim Wild	Lancaster University	Prof Keith Ryden	University of Surrey
Mathew Hofton	ESO	Dr Gemma Attrill	Defence, Science and Lab
Dr Ellen Clarke	British Geological Survey	Dr Rick Tanner (RT)	UK Health Security Agency
Prof Clive Dyer	University of Surrey	Dr Sangha Harneet	UK Space Agency
Alex Tibble	British Antarctic Survey	UK Government Representation	DESNZ
Dr Matthew Angling	In-Space Missions Ltd		DSIT
			DfT

1. The Chair welcomed everyone to the meeting and introduced new attendees. He highlighted the focus of today's meeting will be on the 10/11 May events. The Chair reminded everyone that the committee and its views are independent of Government.

2. The Chair announced that the Department for Energy Security and Net Zero would be taking the minutes of the meeting and would circulate them after.

2.	Items arising from the last meeting
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Key Points

3. The Chair confirmed the SEIEG minutes will be published on the SEIEG Website. The group accepted the minutes from the last meeting.

4. Most actions are now closed, updates provided from action leads.

Action	Description	Progress
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012024/01	SEIEG to discuss MOR forms offline with DfT/CA	Complete – CAA/DfT to provide further update to SEIEG at next meeting
012024/02	Recent SSW Event slides to be published on SEIEG website.	Complete
012024/03	The Chair to arrange for someone within the Space Based Solar Power team to present at a SEIEG meeting.	Ongoing – deferred to next meeting, or standalone virtual meeting if required.
012024/04	Mike Hapgood to lead a sub-group to produce a space weather requirements document for ground-based observations.	Update on agenda
012024/05		Update on agenda

3. The May 2024 Storms

Key Points

5. The May 2024 event is being referred to the Gannon Event (or the Mother Days Storm). Met Office provided an overview of the event from a forecasting perspective, highlighting the products produced by MOSWOC in the run up to, during and following the storm.
6. The May 2024 event was well below the threshold for the Reasonable Worst-Case Scenario as set out in the National Risk Register.
7. Government Departments asked by the group to consider what sector specific products they need from MOSWOC.
8. It was noted that SEIEG members speaking to media outlets with consistent messaging to the Met Office about the event was particularly helpful in managing the event and supporting MOSWOC.
9. ESO confirmed that there was no damage on the electricity transmission network. However, they are investing any impacts on assets as a result of the storm. No heating effects have been confirmed. Discussions on going between UK and New Zealand to compare impacts and response. BGS gave overview of their assessment of the event and noted the difficulty in ranking events. They noted that GIC in UK power grid were greatest further south. Work is ongoing with sectors to explore anomalies during the storm.
10. Impacts were noted to satellites, including increase in speed of re-entry and increase to collision risk. Change in altitude of observation satellites due to atmosphere drag. There were some limitations/degradations in tracking of objects during the storm. The group discussed the potential benefit in comparing tracking capabilities now verses historic, using this event as a case study.

11. There was not a large impact on GNSS from this event. More impact was seen in United States compared to Europe. Some increases in radiation doses were noted during the event. These doses were very small.

12. The group agreed the response to the event went well and agreed to use of the new SEIEG mailing list. All members confirmed they were receiving emails from the mailing list.

13. Agreement by members to write a short paper to be used by government and CNI sectors, which sets out what the event was but also what it was not, using the RWCS as a comparison.

Action 072024/01: DESNZ to circulate email to Severe Space Weather Steering Group members for the OGDs to contact Met Office with requests for specific products, or discussion on what can be achieved.

Action 072024/02: Draft paper on the May 2024 event to be completed by SEIEG members by UK Space Weather Week, Exeter September 2024.

4.	Update on SWIMMR S6 Report
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14. Group agreed that meeting to take place at Exeter, September 2024 to progress.

5.	Update on SW policy
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Key Points

15. DESNZ gave update on Government work since the last meeting and requested input from SEIEG members science priorities for a potential SWIMMR follow on programme.

16. SEIEG members suggest that impacts should be the focus of any future R&D programme and the scope of any programme should be considered carefully. The group highlighted the importance of the continuing development and operation of the SWIMMR models.

17. The group agreed to have a have further conversation in September around SEIEG input, following the completion of **Action 072024/02**.

6.	Funding opportunities
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18. Presentation on UKRI cross council research pilot scheme funding process to member for consideration. SEIEG members to consider opportunity in their own organisations.

7.	Update on Ground-based requirements
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19. Group agreed meeting to take place at Exeter, September 2024 to progress this topic ahead of the next meeting. MH will organise a sub meeting at UK Space Weather Week at Exeter to discuss the issues.

8.	Early Solar warning
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20. Update given to the group on the development of checklist for forecasters to use to provide early warning of space weather. Huge amount of research in this area which is being considered as part of a literacy survey.

21. The team held a workshop to discuss and agreed to have a checklist on when a region is likely to have a CME and when a region has a CME. They are considering adding an additional section on fast CMEs/when is it likely to be and impactful CME.
22. Identified the reviews they want to do and the research they want to consider. Jobs are expected to be delegated by end of July and initial ideas by end of September.

10. New research papers summaries

23. May storm paper published by INGV. Link: <https://www.annalsofgeophysics.eu/index.php/annals/article/view/9117>
24. HP30 paper in reference to May Space Weather Storm – message is HP 30 is useful but wasn't useful in the storm as didn't work properly in high KP values.
25. Satellites largely made of aluminium so de orbit can cause chemical reaction which can drop down to the atmosphere. First step paper flagging the reaction. Link: <https://agupubs.onlinelibrary.wiley.com/doi/10.1029/2024GL109280>

9. Any other business and next meeting

26. Request from chair for additional core SEIEG members to join the monthly meeting to expand the expertise of the core group.
27. Time of CME arrival was noted as an important factor and group agreed that Matt Owens would be invited to join wider SEIEG membership.
28. Request from Met Office for SEIEG members to review the technical assessment for the RWCS for the NSRA by end of 2024.
29. It was agreed that the next meeting will take place in January 2024.

Action 072024/03: SEIEG Chair to issue email invites to relevant SEIEG members to attend the core group.

Action 072024/04: SEIEG members to meet to review NRSA technical assessment by late November. A virtual meeting to be scheduled by the chair.

Action 072024/05: Mike Hapgood to circulate email summarising expectation around what needs to be update in the NRSA technical assessment to account for new research.

10. Open actions

Action	Description	Progress
012024/03	The Chair to arrange for someone within the Space Based Solar Power team to present at a SEIEG meeting.	Ongoing – deferred to next meeting, or standalone

		virtual meeting if required.
072024/01	DESNZ to circulate email to Severe Space Weather Steering Group members for the OGDs to contact Met Office with requests for specific products, or discussion on what can be achieved.	Not Started
072024/02	Draft paper on the May 2024 event to be completed by SEIEG members by UK Space Weather Week, Exeter September 2024.	Not Started
072024/03	SEIEG Chair to issue email invites to relevant SEIEG members to attend the core group.	Not Started
072024/04	SEIEG members to review NRSA technical assessment by late November. A virtual meeting to be scheduled by the chair.	Not Started
072024/05	Mike Hapgood to circulate email summarising expectation around what needs to be update in the NRSA technical assessment to account for new research.	Not Started