



COSPAR Contributions to the International Framework for Space Weather Services

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Boston MA, 31-July - 4 August 2017

UN/USA Workshop on the International Space
Weather Initiative



The Committee on Space Research COSPAR

- **COSPAR, for which I am the President, was chartered in 1958 by the International Council for Science, for the purpose of promoting international cooperation in space research.**
- **The national scientific organizations of 43 nations are members of COSPAR. Thirteen international scientific unions, with overlapping interests, are members of COSPAR. 10,000 scientists from around the world participate in COSPAR Assemblies, Symposia, other sponsored meetings and studies, and publish in our journals.**
- **COSPAR considers that its mission is not only to promote and facilitate international cooperation among scientists. It is also to assist the space agencies on which the scientists depend. And particularly important for today's discussion, we consider part of our mission is to mobilize and make available the international science community, to assist the mission of the UN Office of Outer Space Affairs**



The UNOOSA and COSPAR Coordination Meeting in Support of Preparations for UNISPACE+50

22-23 May 2017

- **COSPAR and UNOOSA held a coordination meeting in May of this year to discuss and plan for how COSPAR can contribute to several of the Thematic Priorities for UNISPACE +50, one of which is Thematic Priority on International Framework for Space Weather Services.**
- **I want to tell you today what about the outcome of our coordination meeting and COSPAR's plans for contributing to the development of an International Framework for Space Weather Services.**



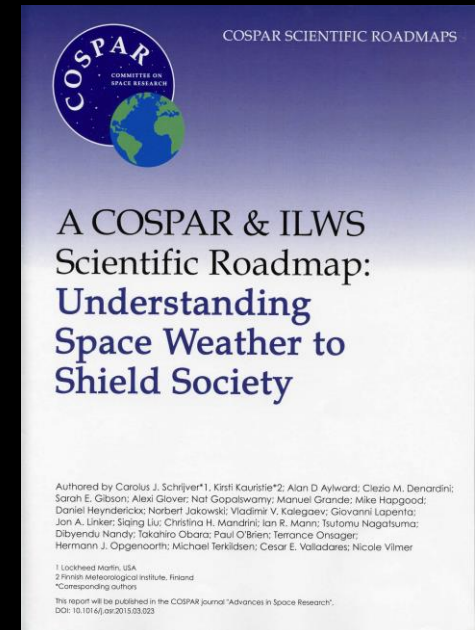
The UNISPACE+50 Thematic Priority on International Framework for Space Weather Services

- **The UNISPACE+50 thematic priority on *International Framework for Space Weather Services* has the following objectives:**
 - Strengthening the reliability of space systems and their ability to respond to the impact of adverse space weather.
 - Develop a space weather roadmap for international coordination and information exchange on space weather events and their mitigation, through risk analysis and assessment of user needs.
 - Recognize space weather as a global challenge and the need to address the vulnerability of society as a whole.
 - Increase awareness through developed communication, capacity-building and outreach.
 - Identify governance and cooperation mechanisms to support this objective.
- **The issues being addressed in the space weather thematic theme are a complex mixture of scientific, technical, institutional and infrastructural issues. The science community needs to be an integral part of the dialogue. This workshop is a way in which the science community can have its input. COSPAR, which is organized to provide a coherent input from the international research community, can also contribute, and we are determined to do so.**



The COSPAR & ILWS Scientific Roadmap: Understanding Space Weather to Shield Society

- Perhaps COSPAR's most important contribution to date for improving space weather forecasts has been the COSPAR/ILWS roadmap on space weather published in 2015, which has been a reference document for much of the international dialogue on space weather.
- However, it should be recognized that by strictly following the COSPAR/ILWS space weather roadmap, progress may not be sufficiently rapid to serve the needs of the ever increasing user community of space weather services. Thus, we should carry out a gap analysis in particular on what missions and instruments are needed, and seek “low hanging” fruits; for example through data mining and coordinated analysis of data from current multi-satellite missions. And we should plan to continuously update the COSPAR/ILWS roadmap, acknowledging that both the science and the user needs are evolving, and we should ever seek more ambitious goals for a space weather global network.





Improving Communications and Coordinate Between Research and Operations

- **One of our most important goals should be to improve the communications between research and operational communities: Better requirement definitions to give guidance to the governing science questions, increased abilities to identify, advise and coordinate research activities that ultimately lead to improved knowledge. The ultimate goal is of course improved forecasts for the user community.**
- **There should also be coordination between research and operations in satellite mission planning. Defined goals to make both the science and operational communities work together, including coordination also at the instrumentation level. Such coordination should also include the requirements for space-based and ground-based assets.**



The Importance of Numerical Models

- **We need to recognize the importance of numerical models, which provide the connecting tissues between different aspects of the space weather problem. After all, it is a reliable space weather forecast model that we require.**
- **But models are only as good as the data that is ingested into them, and here we need to share near real time/science data, under transparent data policies, with sufficient quality controls in place, and of course, there must be defined metrics for model validation.**



Reconstituting the COSPAR Panel on Space Weather

- **COSPAR performs some of its targeted functions through Panels and we have a Panel on Space Weather. Under normal circumstances a Panel is a fairly loose structure, with the business conducted by whoever is available for the business meeting of the Panel at the COSPAR Assemblies.**
- **However, when we have a responsibility to an external organization on a problem of international importance, we reconstitute the Panel into a more organized structure, with a well-defined terms of reference and access to whatever assistance the COSPAR leadership can provide.**
- **This reconstitution of the Panel on Space Weather is underway.**



Capacity Building and Awareness Raising

- **The scientific foundation for the Thematic Priority on space weather, as for all Thematic Priorities, must be secured through capacity-building and awareness-raising on a global scale.**
- **Cooperation and coordination of the COSPAR Panels on Space Weather and on Capacity Building, teaming up with SCOSTEP, WMO, ISES, IUGG, IAU, and the Office for Outer Space Affairs, should be pursued to promote adequate scientific knowledge worldwide.**
- **The science community, which COSPAR represents, is also an essential communication conduit, between the scientific and operational pursuits of space weather, and the funding agencies that support these pursuits.**



Summary

- **The coordination meeting that we held between COSPAR and UNOOSA concluded that in order to secure adequate scientific information in support of a possible international coordination group on space weather, and in establishing an international cooperation mechanism for space weather awareness and mitigation, there should be reliance upon:**
 - The dedicated function of the present Expert Group of the Scientific and Technical Subcommittee, in its role of bringing the science and service provider communities together;
 - COSPAR, as coordinator and facilitator on the science side; and
 - UNOOSA, as the entity connecting the various relevant communities to the COPUOS, the General Assembly, and relevant United Nations system entities.
- **And that for COSPAR, and the science community it represents, to best contribute to the Thematic Priority on space weather, COSPAR should be given an *ex officio* role in whatever future international coordination group on space weather results.**



Space Weather – the Global Challenge

- **Space weather is a global challenge and there is a need to address the vulnerability of society as a whole in this context. The everyday life of all people around the world is considerably and rapidly becoming dependent on space-based technology and services increasingly exposed to space weather events.**
- **Indeed, I would comment, from my long experience in advocating major space science programs, I have never seen a time with more promise for being able to initiate a major world-wide program, dedicated to protecting our society against the threat of space weather.**
- **We would be remiss if we did not seize this opportunity, through coordination and cooperation, to put in place a truly reliable space weather forecasting system, and enable the protection of our technological society.**