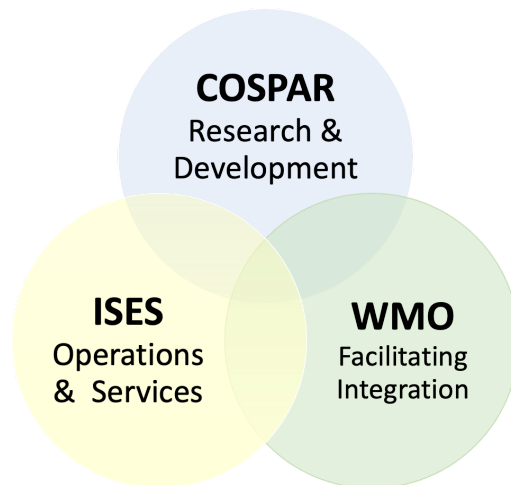


“The WMO-ISES-COSPAR Coimbra Declaration”

During meetings in Coimbra, Portugal, from 30th September to 1st October, 2022, two representatives of the leadership of each of the World Meteorological Organization (WMO), the International Space Environment Service (ISES), and the Committee on Space Research (COSPAR), met in response to the invitation letter from the United Nations Office for Outer Space Affairs (UNOOSA) dated 1 July 2022 inviting the three organizations WMO, COSPAR and ISES to lead efforts to improve the global coordination of space weather activities in consultation and collaboration with other relevant actors and international organizations, including the United Nations Committee on the Peaceful Uses of Outer Space (UN COPUOS). As an outcome of these meetings, the participants agreed in principle to the following “WMO-ISES-COSPAR Coimbra Declaration” in relation to facilitating improved future international coordination within the space weather ecosystem:

- 1) We agree to the Final Report from the Expert Group on Space Weather of the UN COPUOS ([A/AC.105/C.1/L.401](#)), and agreed to respond positively to the invitation from the UN COPUOS and to take a leadership role in delivering improved global coordination in the space weather domain, as equal partners;
- 2) We further agree with *Recommendation 1* from the Expert Group to proceed with developing international coordination, involving other national and international organizations as appropriate. Each of the WMO, ISES, and COSPAR agree to a leadership role in each of three distinct domains of activity (see Annex for Principal Roles):



We also agree to collaboratively define overarching activities to be undertaken in the areas of the overlap between these three domains.

- 3) We agreed that the three organizations would aim to add cross-membership between their organizations on the relevant committees/groups as appropriate (e.g., WMO and

ISES representatives at COSPAR/PSW; COSPAR and ISES ex-officio members at WMO, etc) to facilitate improved information flow between them. Participation by representatives from each organization in the working/planning meetings of the other partner organizations is also encouraged.

- 4) We agreed to work towards formalizing the partnership between the three organizations, and detailing roles and responsibilities. We would seek to define an appropriate approach which can achieve this, for example through a Memorandum of Understanding between the three organizations and which would codify the partnership.
- 5) We agreed to identify and define joint pilot projects which are to be implemented through collaborative activities by the three partner organizations.
- 6) We agreed that the three organizations will continue to meet together regularly, in order to make progress towards the goal of improved international space weather coordination and to discuss the status of on-going activities and action plans. These meetings would be held at least every six months, exploiting opportunities to meet in conjunction with, or on the margins of, other meetings, as appropriate. Such regular in-person meetings would be supplemented by additional intersessional virtual meetings. Discussions with the broader community at other space weather meetings/venues would also be undertaken as appropriate.
- 7) We agreed that we will jointly organize an international space weather round table, targeting a meeting date in 2023, including participation from appropriate international organizations dealing with space weather, through which future international space weather information exchange and coordination can be discussed with the broader community. It is anticipated that current and future space weather activities, concepts for improvements to current and new space weather research and services, and mechanisms for delivering improved international coordination of space weather activities would be discussed.
- 8) We agreed that a report on the international space weather coordination activities being undertaken will be communicated to the UN COPUOS Scientific and Technical Subcommittee (STSC), under the standing Space Weather agenda item, by a representative from COSPAR, the WMO, or the ISES.

Declared by:

Kenneth Holmlund (Head of Space Systems and Utilization, WMO),
Kirsti Kauristie (WMO Expert Team on Space Weather Co-Chair),
Jesse Andries (Director of ISES),
Mamoru Ishii (Deputy Director of ISES),
Masha Kuznetsova (COSPAR PSW Chair),
Hermann Opgenoorth (COSPAR PSW Vice-Chair).

28th November 2022

Annex: Principal Roles of Partnering Organizations

COSPAR: Research and development

COSPAR's role is to provide expert knowledge on physical mechanisms responsible for the variability of the space environment, in particular about processes and impacts which could potentially be harmful for both humans and advanced technological systems in space and on the ground.

A direct consequence of this role is development, continuous updates and validation of space environment models, advancing understanding of space environment processes and the demonstration of the potential of new understanding and models to improve space weather predictive capabilities.

COSPAR facilitates science and space and ground-based observations gap analysis and communicates research community findings to national and regional space weather program leads through global Roadmaps and national or regional strategic planning documents.

In partnership with WMO and ISES, such expert knowledge, model development and gap analysis will encourage deployment of new space and ground-based instrumentation and enable the development of new data products, predictive techniques and applications capable of forecasting of potentially harmful changes in solar, heliospheric, magnetospheric, ionospheric, and atmospheric environments, at Earth and other planets.

To encourage collaborations in space weather and to facilitate synergy between top-down and bottom-up approaches COSPAR is hosting a community coordinated International Space Weather Action Teams (ISWAT) initiative. ISWAT brings together cross-domain and cross-disciplinary expertise and serves as a global hub for effective self-organized collaborations addressing challenges across the field of space weather.

ISES: Operations and Services

ISES Members operate Space Weather Services for end-users, thereby providing actual direct value to society. ISES Members engage with their user community to increase their understanding of user needs with the aim to provide the best possible services based on the current scientific capabilities.

ISES stimulates and enables data and knowledge exchange between its Members. It helps Members improve their services by providing a forum for exchange of best practices and for stimulating the uptake of new data, models and developments.

Through collaboration with COSPAR, ISES stimulates and assists its Members in defining and addressing the research questions that can improve models and scientific insight and hence the services to their user community (=R2O).

Through collaboration with COSPAR, ISES also strives to assure that the services by its Members can be maximally employed within Space Weather Research. This includes

stimulating both the structural preservation and provision of the outputs of their day-to-day services as well as to expand and share their knowledge of end-user requirements (=O2R).

In collaboration with WMO, ISES will ensure that its activities are carried out taking maximal advantage of existing international coordination tools, standards, infrastructure and programs.

WMO: Facilitating Integration

In its role as Facilitator of Integration WMO will drive the discussions for standards and best practices in space weather activities in partnership with ISES and COSPAR. In addition, WMO will advocate space weather matters in the WMO agenda and encourage its Members to find solutions for sustained space weather observations and services. Through their activities in Capacity Building WMO, ISES and COSPAR will strive for equality among all countries in the capabilities to conduct operational space weather monitoring and research. WMO will ensure that the Space Weather Community can utilize and benefit from the infrastructure and work programs already developed in the meteorological services community, while recognizing that in many countries national space weather services are not provided by the national meteorological institutes. WMO together with ISES will advocate arrangements to ensure optimal and cost-effective use of the expertise of both the meteorological services and that of ISES Regional Warning Centers.

In partnership with ISES and COSPAR, and supported by UNCOPUOS, WMO will promote information exchange and collaboration with space agencies and other international organizations that have expressed interest towards space weather matters. Furthermore WMO will support the advancement and implementation of sustained operational services that engage, as required, with national, or regional, emergency response functions in a similar fashion as is done e.g. for Early Warning Systems in weather services. The basis for these networking activities will be laid in the round table discussions described in point 7) of this Declaration.

The WMO Expert Team on Space Weather (ET-SWx) was established in 2022 to lead the delivery of space weather related research to operations and stakeholder engagement activities of WMO, in coordination with the relevant WMO bodies. The ET-SWx follows work done by the WMO Inter-Programme Coordination Team on Space Weather (ICTSW) and Inter-Programme Team on Space Weather Information, Systems and Services (IPT-SWeISS). The ET-SWx develops Technical Regulations and guidance and other WMO documents on all aspects related to space weather. The overall goal is to enhance visibility of space weather activities in the WMO long term Strategic Plans.