



**COSPAR PSW  
&  
ISWAT**

# **COSPAR Space Weather Roadmap & International Space Weather Action Teams (ISWAT) Activities**

Masha Kuznetsova (USA), Chair of PSW, Coordinator of ISWAT

*with COSPAR PSW Appointed Members, ISWAT Moderators and Team Leads*

**GLOBAL  
COMMUNITY  
FORUM**

**February 10, 2023**

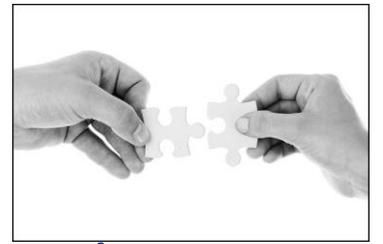
**GLOBAL  
COMMUNITY  
VOICE**



# COSPAR ISWAT

## International Space Weather Action Teams

*takes all of us working together to build space weather predictive capabilities based on science*



- ISWAT was established by international community members ***with a sense of urgency*** to enable ***Space Weather Without Borders***
  - to join forces and to act beyond domain-focused communities and beyond other borders
  - to build a platform for effective self-organised collaborations addressing challenges across the field of space weather
- COSPAR ***Panel on Space Weather (PSW)*** was proposed as a perfect neutral platform for ISWAT
  - ISWAT was introduced in ***COSPAR PSW*** Terms of References in 2018:  
<https://iswat-cospar.org/ToR>
  - COSPAR also established a ***Forum for ~ 50 appointed PSW members*** representing national agencies, international bodies (UN COPUOS, WMO, ISWI, ISES, SCOSTEP, IAGA, URSI), and major space weather research organizations world-wide:  
[https://iswat-cospar.org/PSW\\_appointed\\_members](https://iswat-cospar.org/PSW_appointed_members)

# Portal to ISWAT Activities: <https://iswat-cospar.org>

<i><b>S: Space weather origins at the Sun</b></i>	<i><b>H: Heliosphere variability</b></i>	<i><b>G: Coupled geospace system</b></i>	<i><b>Impacts</b></i>
 <p><b>S1: Long-term solar variability</b></p> <p><b>S2: Ambient solar magnetic field, heating &amp; spectral irradiance</b></p> <p><b>S3: Solar eruptions</b></p>	<p><b>H1: Heliospheric magnetic field and solar wind</b></p> <p><b>H2: CME structure, evolution and propagation through heliosphere</b></p> <p><b>H3: Radiation environment in heliosphere</b></p> <p><b>H4: Space weather at other planets/planetary bodies</b></p>	<p><b>G1: Geomagnetic environment</b></p> <p><b>G2a: Atmosphere variability</b></p> <p><b>G2b: Ionosphere variability</b></p> <p><b>G3: Near-Earth radiation &amp; plasma environment</b></p>	<p><i><b>Climate</b></i></p> <p><i><b>Electric power systems/GICs</b></i></p> <p><i><b>Satellite/debris drag</b></i></p> <p><i><b>Navigation/Communications</b></i></p> <p><i><b>(Aero)space assets functions</b></i></p> <p><i><b>Human exploration</b></i></p>
<p><b>Overarching Activities:</b></p> <p><i><b>O1: Assessment</b></i>                      <i><b>O2: Information Architecture &amp; Data Utilization</b></i></p> <p><i><b>O3: Innovative Solutions</b></i>        <i><b>O4: Education &amp; Outreach</b></i></p>			

- The building blocks of the ISWAT initiative are **Action Teams** focused on specific space weather projects.
- **Action Teams** are organised into **ISWAT Clusters** by domains, phenomena, or overarching activity.
- **Action Teams** can be grouped into **Source-to-Impact Pathways**.
- Status: 56 Action Teams, 15 Clusters, 450+ active members, 40 countries, 240 affiliations.



# Community-Driven Space Weather Roadmap:

*Where are we now? Where are we going? Where we want to be?*

[https://www.iswat-cospar.org/roadmap\\_update-pathway](https://www.iswat-cospar.org/roadmap_update-pathway)

COSPAR PSW  
&  
ISWAT

- Set of two Roadmap Special Issues in COSPAR ‘*Advances in Space Research*’
  - *ASR-SI-1 : Science Research and Applications*
  - *ASR-SI-2 : Achievements and Future Goals*
- ISWAT initiative is forming the backbone for the Roadmap with
  - a set of science papers for *ASR-SI-1* coordinated by Action Team Leads (**accepted: > 30**)
  - a set of review papers mirroring the ISWAT Cluster structure for *ASR-SI-2* coordinated by ISWAT Cluster Moderators (**submitted: 12, final preparation: 3**)
- PSW appointed members are leading papers on *Interfacing with Users, International Space Weather Landscape and Road to Coordination* (to be submitted to *ASR-SI-2*)
- Everyone was given an opportunity to participate in this peer reviewed endeavor by submitting papers to Roadmap Special Issues and contributing to review papers.
- ***COSPAR-ILWS Roadmap [Schrijver et al, 2015] is used as a point of reference***
- The Roadmap is planned to be a LIVING DOCUMENT updated on regular basis.



# Next Steps

COSPAR PSW  
&  
ISWAT

- **Finalise Roadmap review papers and Roadmap Summary**
- Next ISWAT Working Meetings (all Clusters and Teams): Feb-Mar 2024
- Mini-ISWATs (virtual or in-person) focused on Cluster/Team work plan including addressing Roadmap recommendations.
- In-person mini-ISWAT Sat-Sun prior to the ESWW 2023 (post Roadmap)
- Engage more next generation scientists in ISWAT leadership (Team Leads, Cluster Moderators)
- Support COSPAR-WMO-ISES Pilot Projects