

ISWI Data Subcommittee Report

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ISWI Steering Committee Meeting, February 19, 2021

Discussion Topics

- ISWI (Open) Data Policy Status
- Quart chart for instrument update
- Enhancing ISWI Data Discoverability & Accessibility
- Opportunities for International collaboration and coordination
 - SCOSTEP/PRESTO
 - COSPAR/ISWAT
 - International Heliophysics Data Environment Alliance (IHDEA)

ISWI Data Policy Status

- The ISWI data policy has been established since November 2017
 - Facilitate ISWI data flow across geo-political & organizational boundaries
 - Promote international collaborations & coordination in data exchange to enable space weather research and capacity building
- Last updated on February 12, 2021 (version 1.3.8)
 - 19 ISWI instruments (see Projects under http://www.iswi-secretariat.org/)
 - PDMP updates (3): Callisto, CHAIN, GMDN
 - PDMPs remain outstanding (4):
 - O AMMA
 - o CIDR
 - **ORENOIR**
 - SCINDA

ISWI Instrument & Data Product Updates (1/2)

Instrument name: e.g., AWESOME	Science Activity Updates
PI: Please indicate changes	, .
Tech Lead/POC: Please indicate changes	
Science objectives: Please indicate changes	
Measurement objectives: Please indicate changes	
Instrument and Data Product Updates	Capacity Building Activity Updates
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ISWI Instrument & Data Product Updates (2/2)

- Continuation of Instrument and Data Product Updates (if needed)
- Continuation of Science Activity Updates (if needed)
- Continuation of Capacity Building Activity Updates (if needed)
- References

Enhancing ISWI Data Discoverability & Accessibility

Best supported by leveraging existing data service infrastructure:

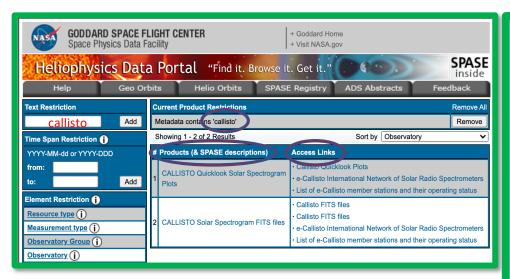
- Data from e-Callisto & AWESOME (in WALDO database) are now accessible and searchable from two NASA data services:
 - a. NASA Heliophysics Data Portal
 - b. Virtual Wave Observatory
- 2. Enabled by
 - a. Adopting the **SPASE** metadata model for describing ISWI data, and
 - b. Registering ISWI metadata on the **SPASE** metadata registry
- 3. SPASE is now the COSPAR recommended metadata standard

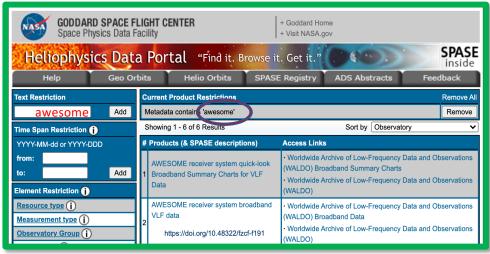
"Naming Authority" in SPASE Metadata Registry

- ISWI is now a <u>SPASE Metadata Registry</u> registered Naming Authority
 - All registered ISWI instrument data products will be attributed to ISWI at the highest level

Advantages to ISWI:

- 1) Data become more discoverable by broader user community
- 2) Searchable along with other related space-based & ground-based data resources







Collaboration and Coordination with SCOSTEP/PRESTO

- ISWI and SCOSTEP share similar goals in science, international coordination and collaboration, and capacity building.
- PRESTO, the current SCOSTEP 5-year project, has announced a call for the creation of solar-terrestrial databases to support their 3 pillars of science studies:
 - i. Sun, interplanetary space and geospace
 - ii. Space weather and the Earth's atmosphere
 - iii. Solar activity and its influence on the climate of the Earth System
- ISWI instruments should be valuable data resources for SCOSTEP/PRESTO.

Collaborating with COSPAR/ISWAT

- International Space Weather Action Teams (ISWAT; https://iswat-cospar.org/)
- Space weather
 - Multi-disciplinary
 - Cuts across all domains
 - Requires the global community to work together.
- Action Teams
 - Self-guided collaborative efforts
 - Organized into
 ISWAT Clusters.
- ISWI and ISWAT can collaborate to their mutual benefits.

The COSPAR ISWAT initiative is a global hub for collaborations addressing challenges across the field of space weather.

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

Collaboration and exchange of ideas. The sum is worth more than its parts.

2020 COSPAR Activities...cont.

- 43rd Scientific Assembly (https://www.cospar2020.org/)
 - Jan 28- Feb 04, 2021, Sydney, Australia
 - COSPAR-20-PSW.4: Space Weather Information Architecture and Its Roles in Enhancing Data Access and Utilization
 - o https://www.cospar-assembly.org/admin/session_cospar.php?session=968
 - o Panel discussion: Challenges of information architecture for space weather
 - 1. More (international) data sources with interoperability and accessibility.
 - > This means agreement on standards and open data access.
 - 2. Availability of raw data products to ensure that higher level data products can be created.
 - 3. Computational resources to enable AI/ML training & modeling, and ensemble forecasts.
 - 4. As many open-source models as possible to fix bugs which ultimately ensures better predictions.
 - 5. ...etc.

Collaborating with the International Heliophysics Data Environment Alliance (IHDEA; https://ihdea.net)

Established in December 2019 with vision:

"To enable the international heliophysics and space weather research community to seamlessly find, access, & use all electronically accessible HP/SW data sets in accordance with the FAIR principles (Findable, Accessible, Interoperable, and Reusable)."

IHDEA focuses are on:

- Enabling efficient exchange of and access to the diverse data products obtained from space missions, ground-based experiments, and models;
- Fostering coordinated development of existing and future heliophysics standards for data, metadata, and services to enable interoperability; and
- Promoting and assisting the adoption of the above standards (e.g. SPASE).
- Through its international collaboration and coordination, the IHDEA can help promote and distribute ISWI instrument data.