ISWI Data Subcommittee Report

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ISWI Steering Committee Meeting, February 10, 2023

Discussion Topics

- ISWI open data policy update
- Enhancing ISWI data discoverability & accessibility
- Opportunities for International collaborations and coordination
  - SCOSTEP/PRESTO
  - COSPAR/ISWAT
  - International Heliophysics Data Environment Alliance (IHDEA)
  - NASA Geospace Dynamics Constellation (GDC) mission

Please indicate changes

ISWI Data Policy Update

- Established since November 2017, the Policy
  - Describes the ISWI open data policy for data exchange, access and use
  - Incorporates all ISWI instrument project data management plans (PDMPs)
  - Promotes international collaborations & coordination to facilitate space weather research and capacity building
- Latest version 1.3.9 revised on January 3, 2023
  - Posted on ISWI website (https://iswi-secretariat.org/) under both Steering Committee and Projects
  - PDMPs still needed from 4 instruments (AMMA, CIDR, RENOIR, SCINDA)

Enhancing ISWI Data Discoverability & Accessibility

By leveraging existing data services infrastructure

- NASA Heliophysics Data Portal
- NASA Heliophysics Digital Observatory

By using the SPASE metadata model for uniform data descriptions

- Now recommended by COSPAR Panel on Space Weather

By registering and sharing metadata on the SPASE registry

- AWESOME & e-Callisto are now registered
- Registering other instrument products will require collaborations from instrument teams and/or resources

Citing SPASE-registered datasets

- DOI can be minted and added to SPASE description of dataset
- DOI URL points to a landing page containing both the dataset citation and SPASE description, which can be updated/revised as needed
- DOI URL remains the permanent reference to the dataset

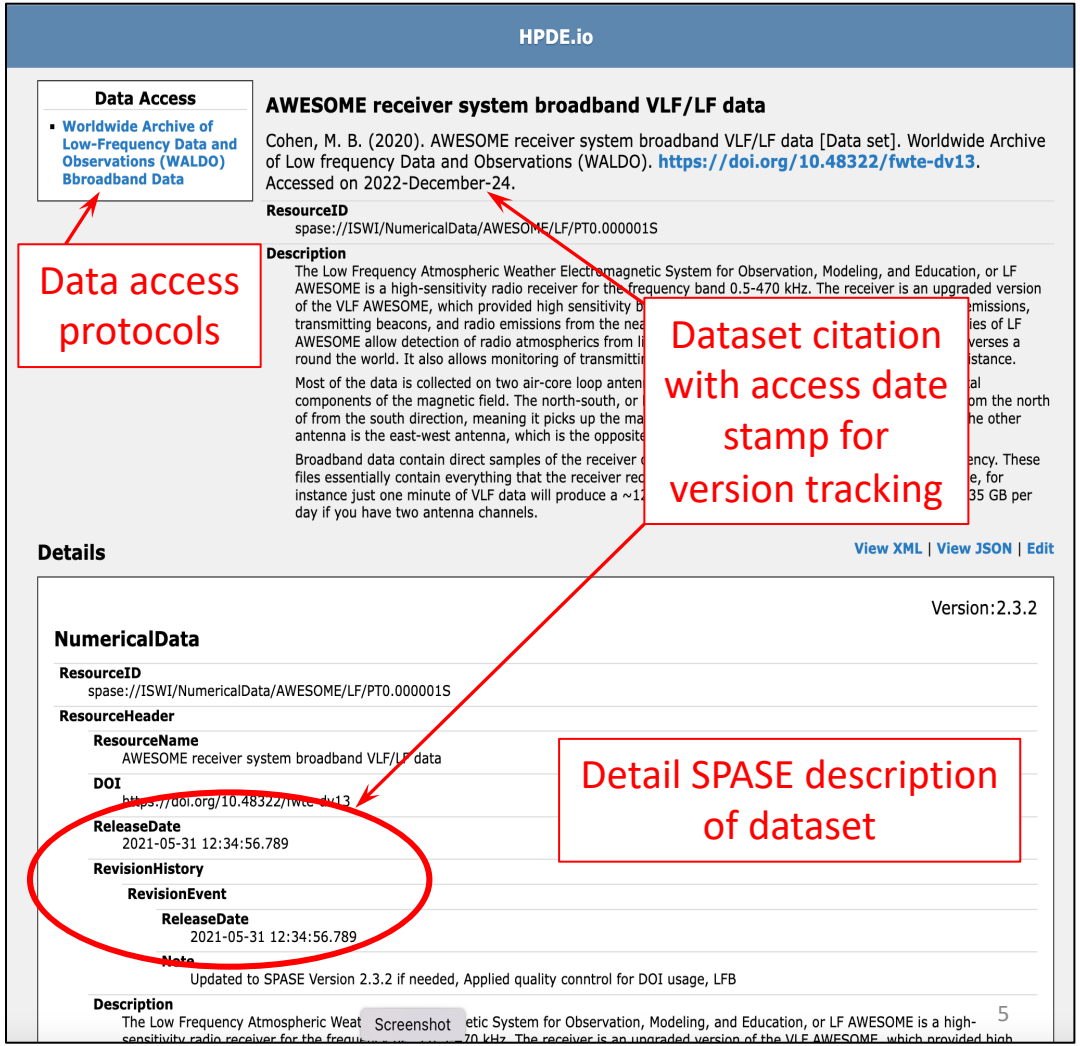
DOI Landing Page

AWESOME Example:
SPASE registry landing page,
https://hpde.io/ISWI/NumericalData/AWESOME/LF/PT0.000001S.html

DOI URL,
https://doi.org/10.48322/fwte-dv13

Effectively, both point to the same SPASE description page completes with dataset citation and DOI reference.

DOI landing page
= SPASE description + citation with DOI



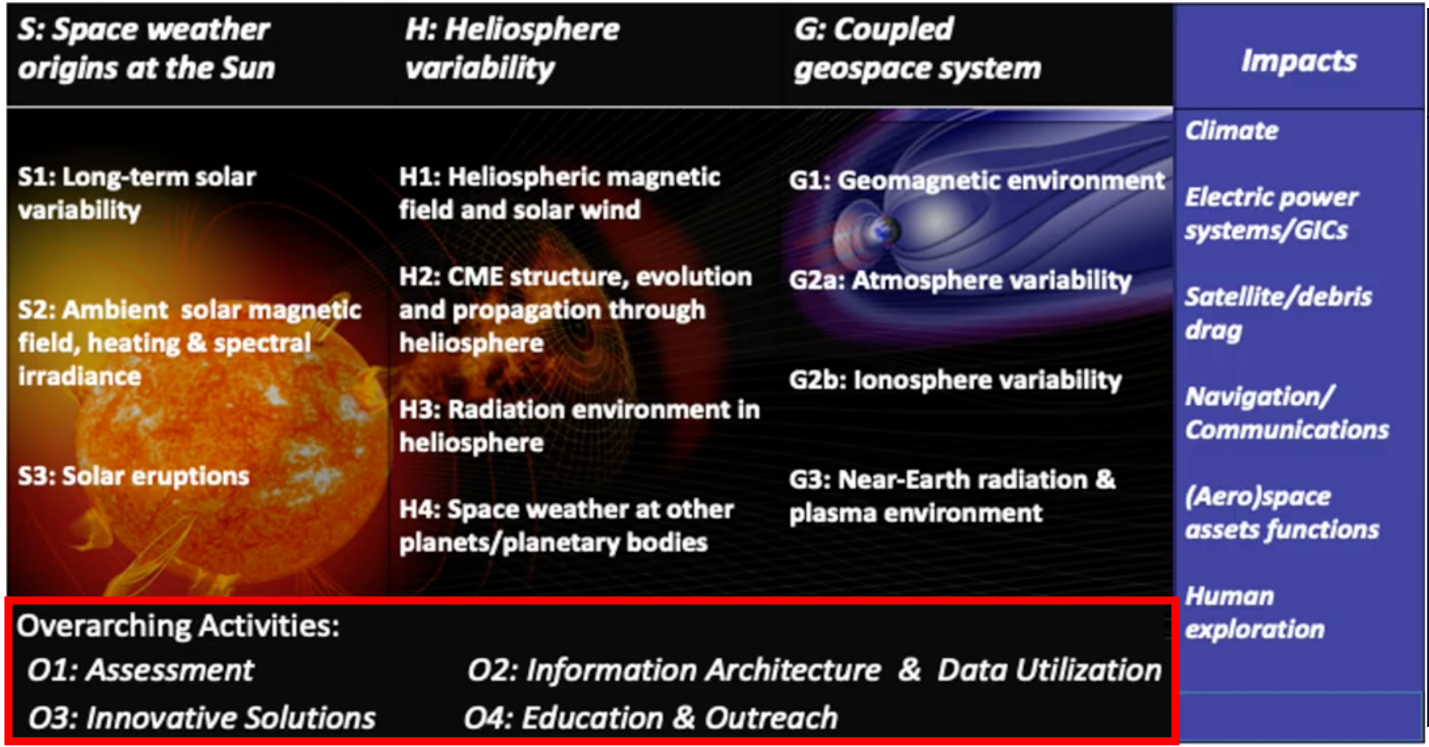
Collaboration and Coordination with SCOSTEP/PRESTO

- ISWI and SCOSTEP share similar goals in science, international collaboration, and capacity building.
- PRESTO, the current SCOSTEP project (2020-2024), has 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
- ICTP-SCOSTEP-UN-ISWI Workshop on the Predictability of the Solar-Terrestrial Coupling (PRESTO), ICTP, Trieste, Italy, May 29-June 2, 2023 (https://indico.ictp.it/event/10176/).
- ISWI instruments should be valuable data resources to support SCOSTEP/PRESTO

COSPAR International Space Weather Action Teams (https://iswat-cospar.org/): Preparing for the Next COSPAR Space Weather Roadmap

- Space weather research
  - Multi-disciplinary
  - Cross all Heliophysics domains
  - Requires collaborations of global community
- Action Teams
  - Organized into ***ISWAT Clusters*** **(see chart)**
  - Community-driven, self-guided efforts
  - Results to be published in two special issues of Adv. in Space Research
- 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.



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

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 on:
  - Fostering **coordinated development of heliophysics standards** for (i) data formats, (ii) metadata model, (iii) data services and (iv) analysis tools;
  - Promoting and assisting the adoption of data standards and "best practices" to enable interoperability of data systems; and
  - Enabling efficient access, exchange, and use of diverse digital resources from space-based and ground-based experiments, and models.

- ISWI can benefit from the collaboration and coordination efforts of IHDEA.

Collaboration with the NASA GDC Mission

https://gdc.smce.nasa.gov/

- A NASA strategic mission for studying processes that govern the dynamics of Earth's upper atmosphere, mesosphere, thermosphere, and ionosphere (~80-450 km), such as
  - Driver processes from below, i.e., the lower atmosphere
  - Driver processes from above, i.e., the solar wind and magnetosphere
  - Thermospheric and ionospheric responses and feedback
- Makes multipoint observations of both the energy inputs and the ionosphere-thermosphere (IT) system response with sufficient spatial and temporal resolution to finally obtain system-level understanding
- Launch to be scheduled no earlier than 2029, GDC science team is forming a community group to plan coordinated science between GDC and the worldwide ground-based assets to form an "ITM Great Observatory."
  Use link to join group: https://forms.gle/2kC3SFt2d85M5AiZ8
- ISWI instruments can have significant contributions to GDC science.
  - First international ground-based observations coordination meeting, Feb 9, 2023.