ISWI Data Subcommittee Report

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Keith Groves, Boston College, USA

George Maeda, Kyushu Institute of Technology, Japan

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Terry Onsager, NOAA SWPC, USA

Babatunde Rabiu, NASRDA, Nigeria

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
  - COSPAR
  - 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
  - PDMP updates (3): Callisto, CHAIN, GNDM
  - PDMPs remain outstanding (4):
    - AMMA
    - CIDR
    - RENOIR
    - SCINDA

ISWI Instrument & Data Product Updates (1/2)

Instrument name: e.g., AWESOME

PI: Please indicate changes

Tech Lead/POC: Please indicate changes

Science objectives: Please indicate changes

Measurement objectives: Please indicate changes

Science Activity Updates

Instrument and Data Product Updates

Instrument updates:

Station updates:

Data product updates:

Capacity Building Activity Updates

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

Leverage existing data service infrastructure:

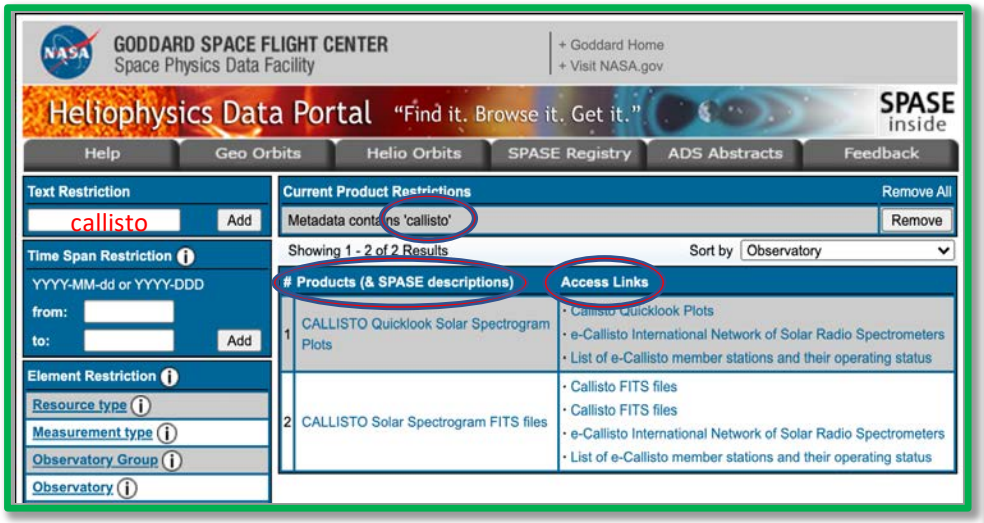
1) Adopt the SPASE metadata model for describing ISWI data
   - SPASE is now the COSPAR recommended metadata standard
2) Register ISWI metadata at the SPASE metadata registry
3) ISWI data becomes searchable and accessible by NASA Heliophysics Data Portal & the Virtual Wave Observatory
   - e-Callisto & AWESOME (in WALDO) data are now searchable and accessible from these facilities.

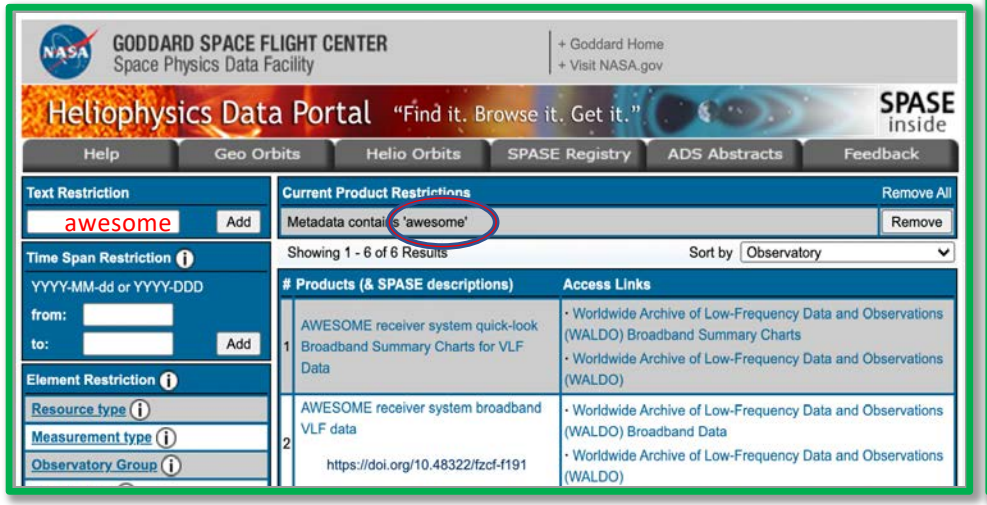
ISWI “Naming Authority” in SPASE Registry

- ISWI is now a registered Naming Authority (NA) in the SPASE Metadata Registry.
  - All ISWI instrument data products will be attributed at the highest level to ISWI
- SPASE metadata of additional ISWI instrument products will be registered under the ISWI Naming Authority.

Advantages to ISWI:

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


GODDARD SPACE FLIGHT CENTER
Space Physics Data Facility
+ Goddard Home
+ Visit NASA.gov
Heliophysics Data Portal "Find it. Browse it. Get it."
SPASE inside
Help
Geo Orbits
Helio Orbits
SPASE Registry
ADS Abstracts
Feedback
Text Restriction
callisto
Add
Time Span Restriction
YYYY-MM-dd or YYYY-DDD
from:
to:
Add
Element Restriction
Resource type
Measurement type
Observatory Group
Observatory
Current Product Restrictions
Remove All
Metadata contains 'callisto'
Remove
Showing 1 - 2 of 2 Results
Sort by Observatory
Products (& SPASE descriptions)
Access Links
1 CALLISTO Quicklook Solar Spectrogram Plots
· Callisto Quicklook Plots
· e-Callisto International Network of Solar Radio Spectrometers
· List of e-Callisto member stations and their operating status
2 CALLISTO Solar Spectrogram FITS files
· Callisto FITS files
· Callisto FITS files
· e-Callisto International Network of Solar Radio Spectrometers
· List of e-Callisto member stations and their operating status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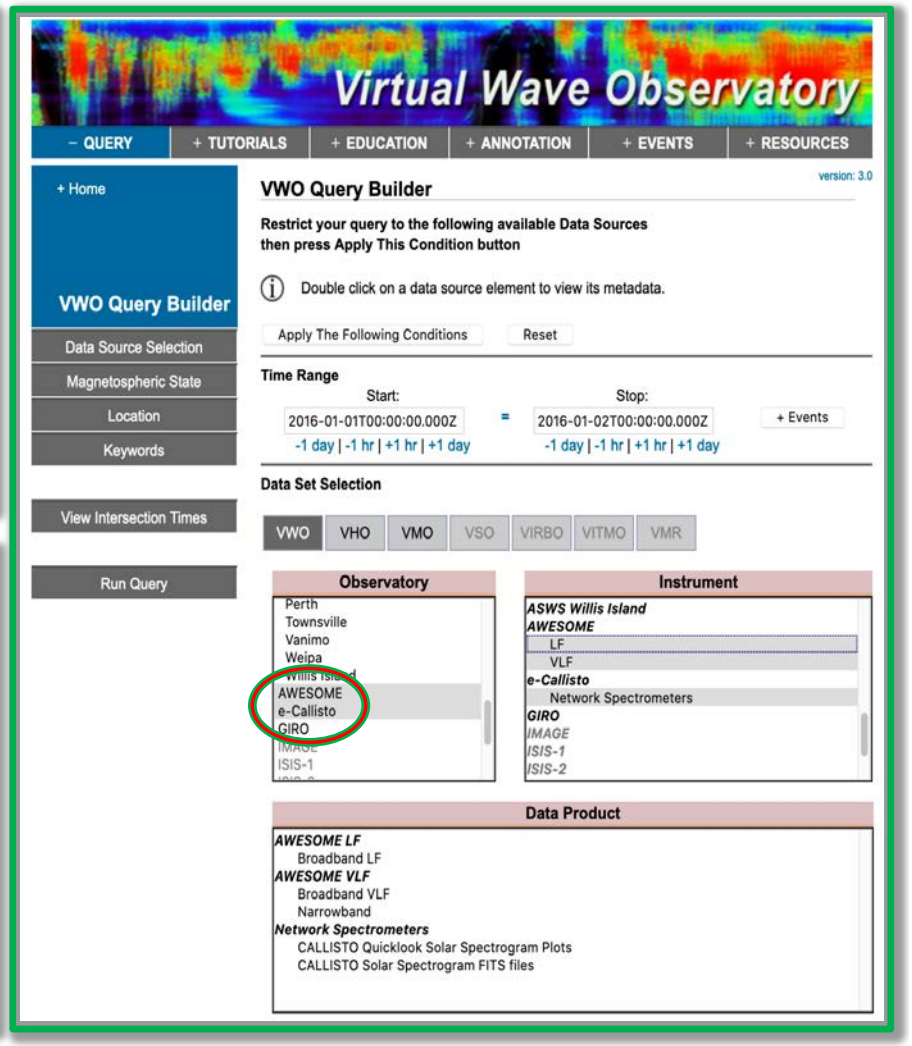
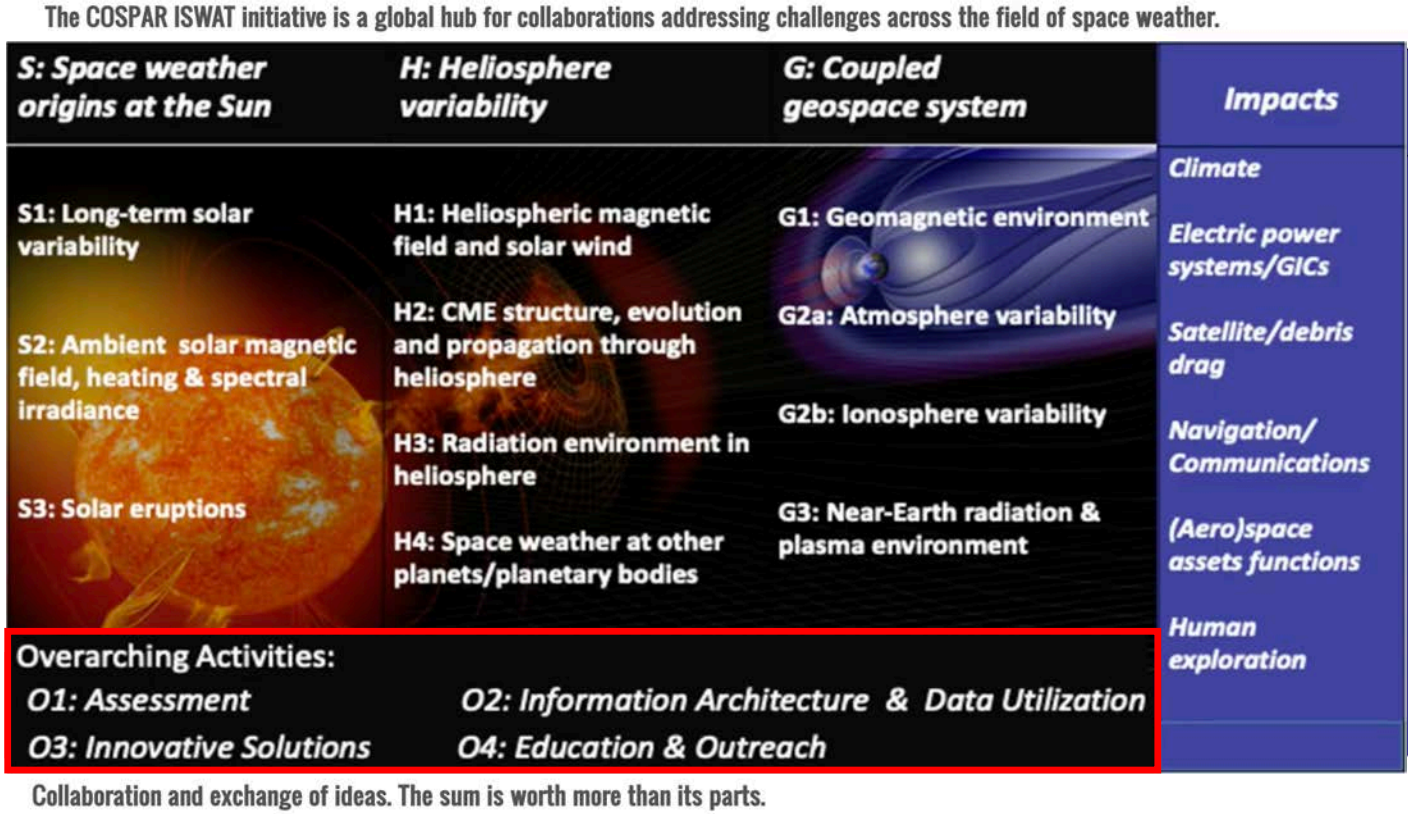
from:
to:
Add
Element Restriction
Resource type
Measurement type
Observatory Group
Current Product Restrictions
Remove All
Metadata contains 'awesome'
Remove
Showing 1 - 6 of 6 Results
Sort by Observatory
Products (& SPASE descriptions)
Access Links
1 AWESOME receiver system quick-look Broadband Summary Charts for VLF Data
· Worldwide Archive of Low-Frequency Data and Observations (WALDO) Broadband Summary Charts
· Worldwide Archive of Low-Frequency Data and Observations (WALDO)
2 AWESOME receiver system broadband VLF data
https://doi.org/10.48322/fzcf-f191
· Worldwide Archive of Low-Frequency Data and Observations (WALDO) Broadband Data
· Worldwide Archive of Low-Frequency Data and Observations (WALDO)


Virtual Wave Observatory
− QUERY
+ TUTORIALS
+ EDUCATION
+ ANNOTATION
+ EVENTS
+ RESOURCES
+ Home
VWO Query Builder
Data Source Selection
Magnetospheric State
Location
Keywords
View Intersection Times
Run Query
version: 3.0
VWO Query Builder
Restrict your query to the following available Data Sources
then press Apply This Condition button
Double click on a data source element to view its metadata.
Apply The Following Conditions
Reset
Time Range
Start:
2016-01-01T00:00:00.000Z
-1 day | -1 hr | +1 hr | +1 day
Stop:
2016-01-02T00:00:00.000Z
-1 day | -1 hr | +1 hr | +1 day
+ Events
Data Set Selection
VWO
VHO
VMO
VSO
VIRBO
VITMO
VMR
Observatory
Perth
Townsville
Vanimo
Weipa
AWESOME
e-Callisto
GIRO
ISIS-1
Instrument
ASWS Willis Island
AWESOME
LF
VLF
e-Callisto
Network Spectrometers
GIRO
IMAGE
ISIS-1
ISIS-2
Data Product
AWESOME LF
Broadband LF
AWESOME VLF
Broadband VLF
Narrowband
Network Spectrometers
CALLISTO Quicklook Solar Spectrogram Plots
CALLISTO Solar Spectrogram FITS files

Collaborating with COSPAR

- 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.



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
    - *https://www.cospar-assembly.org/admin/session_cospar.php?session=968*
    - Panel discussion: *Challenges of information architecture for space weather*
      1. More (international) data sources with interoperability and accessibility.
         - This means agreement on standards and their correct implementation.
      2. Availability of raw data products to ensure that higher level data products can be created.
      3. Computational resources to enable AI training and ensemble forecasts.
      4. As many open-source models as possible to fix bugs which ultimately ensures better predictions.

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.
- Through its international collaboration and coordination, the IHDEA can help promote and distribute ISWI instrument data.