

# IHDEA-2020 [October 19th (day 1)]

## IHDEA Introduction (S. Fung)

Heliophysics is a system science. Lot of data need to be used. collaborative environment.

IHDEA: group of people with many ideas (light-bulb logo) :-)

Sun + magnetospheres + ideas

COSPAR 2018: SPASE and HAPI are proposed as COSPAR standards.

1st IHDEA meeting in Madrid (ESA), in Oct. 2018. Extension of the HPDE.

Who is IHDEA: researchers, IT experts, developers.

Heliophysics = short hand to (see IHDEA charter). Includes Space weather, planetary plasma, solar wind...

Goal: use of common standards and services. Enhance science return. Interoperability.

Organisation: charter + bylaws of IHDEA (late 2019). Membership is open to any organisation and individuals working in heliophysics domain. Unanimous consensus by the EC.

Publish list of members?

Grass root organisation. Work done by everyone. Lots of collaborations. Working groups

- metadata standard = SPASE
- access protocol = HAPI
- DOI: NASA-ESA coordination
- Analys/display tools
- other ? (discussion Thursday)

So far: only email (+phone). Collaboration platform ? Email list for news.

Annual meetings: open meetings, anyone can join.

JF: more meetings?

JV: perhaps per group?

LB: metadata WG (SF: bi-weekly SMWT, anyone can join).

TK: SMWT => subgroup of IHDEA?

AR: SPASE is ~ HPDE meeting

send suggestions for website to Reine

## Update NASA/HPDE (A Roberts)

Data report: new missions (PSP, ICON, GOLD, SolO, ARASE)

Access through CDAWeb. International collaboration and with other agencies (e.g., NOAA). Long term archiving for SDO.

Data formats: CDF + FITS. NetCDF used in ITM, considered for ISTP.

Metadata: LB done most of the registration of NASA/HP data. Solar side a bit behind. Research based datasets (grant based research). Treated the same way as regular spacecraft data. DOI minting for SPASE resources (NASA/HPDE).

Access: Web browser, HAPI... several TB per month.

HAPI needs advertisement.

Services: tools (Helioviewer, SPEDAS, Autoplot...). PyHC for python tools. NASA HDEE sponsorship grants should be announced next week.

NASA HP Digital Resource Library (HPDL): bring all tools and data together. "internal NASA" version of IHDEA. FAIR principles, novel analysis methods, cloud storage, computing...

LB: ASCII as a data format ?

AR: still there, but more difficult to describe

RC: not on the list of allowed formats for new missions

BMerin (ESA): HPDL project, amount of resources, time scales, other initiative in NASA.

AR: HP is the least funded one among NASA (astro, planetary...). Hp can double, other can't.

TK: Expansion of existent archived resources

BC: cloud and computing for modelling?

AR: not only, also for data.

## CNES Highlights (D Boucon)

Data preservation expert. JC Malapert could not attend. Most of presentation will be detailed tomorrow.

- 21 mission archived at CNES/CDPP (oldest: GEOS from 1980).
- data format: native format for old mission, CDF/ISTP for recent archives
- new model: SPASE + DOI
- SIPAD archiving system. Datalake technology to replace cartridges

New CDPP archive datasets (MMS, VEx, GEOS, ISEE1, PSP, STEREO, ROSETTA) Old datasets = conversion to new CDF version

On AMDA database: new datasets (SolO, PSP, STEREO, Ulysses, Helios, AMPTE, Interball, Freja, Cluster, MMS, Phobos2, modelling data)

Strong increase in data volume this year.

Metadata: CDPP metadata => adoption of SPASE in progress. Mapping for most terms is possible in most cases, but not for all. Need for extra keywords for search. In new model: SPASE + Regards data models.

CDPP SPASE tree at Github/HPDE: resource trees, with homogeneous content. Not pushed on github repo yet.

Goal to improve interaction with tools. More options of queries on service. Better interoperability (such as HAPI).

LB: Data storage mainly CDF format?

DB: new datasets in CDF. Translation of older data into CDF (opportunities, not planned for all)

LB: tools to prepare SPASE from CDF

JV: access rights on CDPP ?

LB: open after registration

AR: any plan for changing

LB: strategy at CNES is to keep track who is interested

JF: (see email)

BC: webservice API with token is available (registration is still needed)

## ESA highlights (A Masson)

Solar Orbiter archive now public. Calibrated science data (3 months after measurement). Web interface and also TAP (SAMP compliant). Open access. Interoperable with Autoplot. Access through HelioPy. SolarOrbiter through EPN-TAP to come.

Implementation of Cluster on SPEDAS. REST API (no credentials). HAPI implementation on-going

BepiColombo/JUICE: requires SPASE ID. What about TM and HK products? Improvement of SPASE to include HK as support quantity. PDS4 and PDS3 "formats" have been included.

DOIs at ESAC: 47 records for "experiment". Json-schema metadata in landing pages to publish data in Google Dataset Search.

ESDC within VSO: access through VSO in progress. Via TAP server.

TK: comment on schema.org: same as HPDE.io.

BC: TAP client in VSO ? other solar data available then !

JJ: yes, list of services ?

BC: see TAP+EPN-TAP presentation tomorrow

## JAXA/Nagoya highlights (Y. Miyoshi)

Japanese colleagues from current JAXA space missions are attending meeting.

Hinode / Solar-C and ERG / BepiColombo-Mio Science Centers.

Extension of science centre system. Standard format (CDF + FITS). Solarsoft and SPEDAS.

- data available with 1 year latency. L2/3 in CDF.
- data citation should include CDF version number
- ERG-SC registered in re3data
- DOIs through JaLC (Datacite member).
- United science centre ? (ERG + Hinode + Mio + Solar-C)

Update Hinode-SolarC

- Solar part of science centre
- Data flow: ground data processing at JAXA => FITS, transfer to Nagoya University (Hinode science center). combination with modelling data

Update ERG:

- satellite + ground base stations + simulation. All archived in CDF format in science centre
- analysis tool developed as part of SPEDAS
- BP/Mio arrives in 2025 at Mercury. Instruments very similar à ERG instruments. data sharing with ESA. PDS4
- traceability: version number of data in acknowledgment

LB: all version are saved ?

YM: depend on project. older version may be removed (disk space). Old version can be reproduced.

## Obs. de Paris - Cecconi

instr. activity and data management; support from CNRS and CNES

lead on multiple instruments: space and ground; new activity in Meudon - SID antenna

Open Science Policy - 2 data centers in Paris and Nancy; DOIs and open APIs; European Open Science Cloud participant

new SPASE resources - re-org. OBs / Instr, etc

MASER - sci. tool for Lo-Freq Radio astronomy; data from S/C and ground; modeling tools; interfaces are VESPA (discovery) and access (das2 and HAPI); Python based

VESPA - EU project for data access, focused on discovery; one line per data product; metadata describes coverage; provenance and access also described; search based on these parameters; many Heliophys. data available this way - more to come

VESPA on the cloud - prototyping now; meant to support small providers - uses EOSC

Solar Data - BASS2000 has images, reference spectrum, etc

Radio Data Nancy Data Center (CDN) has Radio Heliograph (updating now) and Decameter Array (operating) and NenuFAR (new); connects to Autoplot

Data Volume total is 216 TB; large ones are NDA (90 TB), MASER (35 TB); all will be available with standard APIs

## Tools for IHDEA

Public access IHDEA wiki space (Confluence based)

<https://issues.cosmos.esa.int/socciwiki/display/HELIOPHYSICSEXT1/IHDEA>

Private access possible for working groups, and intermediate documents.

Ok to have users from IHDEA.

Nick Murphy: Another example is the Matrix chat room for PyHC which is hosted on Element:

<https://app.element.io/#/room/#heliopython:openastronomy.org>

Beatriz Martinez: we can publish pages to a website.

BC: active document space.

JV: Naming authorities discussion could go on a page.

BC: 1 (or a few) editor(s) and comments to suggest modifications