IHDEA Agency Report CNRS/INSU

Institut National des Sciences de l'Univers
National Institute of the Sciences of the Universe

B. Cecconi – IHDEA 2024

INSU supported Services
focus on Heliophysics

- INSU = all astrophysics/planetary/heliophysics at national level.

- French Heliophysics labs are all co-managed with INSU

- National Observation Services (SNO):
  activities certified by INSU for community services.

SNO related to Heliophysics:
- APIS (auroral imaging and spectroscopy): http://apis.obspm.fr
- CLIMSO (solar): https://climso.fr
- CDPP (space plasma): http://www.cdpp.eu (see CNES/CDPP report)
- ISGI (geomagnetic indices): http://isgi.unistra.fr
- MASER (radio astronomy): https://maser.lesia.obspm.fr
- MEDOC (solar): https://idoc-medoc.ias.u-psud.fr/
- STORMS (space weather): http://storms-service.irap.omp.eu
- 3Soleil (solar): https://observations-solaires.obspm.fr

Open Science Context
in France

- **Open Science activities** at national and institutional levels:
  - Increasing implication into the European Open Science Cloud (EOSC)
  - Data center certification (Core Trust Seal) is recommended
  - Citation of data collection, DOIs on data collection…
  - Better data management required for most funding calls

- **Recherche.Data.Gouv** (French national research data repository)
  - generic data repository (based on Dataverse)
  - physical infrastructure managed at national level
  - content curated at local level
  - sub-repositories per institutions

- **Data Factory**: university level « one-stop shop » for open data preparation, management and curation.

- NB: Not yet fully deployed in all research institutions

EOSC related EU projects
semantics and science knowledge graphs

- **FAIR-IMPACT** project (https://fair-impact.eu/)

  - Goal: use semantics to improve discoverability in EOSC
    ObsParis:
    - representing astronomy community
    - gathering semantic artefacts from astro/helio/planetary

- **OSTrails** project (https://ostrails.eu/)

  - Goal: data life cyle Plan-Track-Assess
    (machine actionable DMP, Science Knowledge Graphs, FAIR
    assessment)
    ObsParis leads *Astronomy thematic pilot*:
    - MASER = low frequency radio astronomy pilot
    - CTA (Cherenkov Telescope Array): cosmic ray showers telescope
    pilot

EOSC related EU projects
Joining astro + planets + helio + particle physics

- **OSCARS** cascading grants (https://oscars-project.eu/)

  - **OPAL** (Ontology Portal for Astronomy Linked-data)
    - offshoot of FAIR-IMPACT project
    - collaboration with OntoPortal developer team
    - knowledge designer to be hired
    - all astronomy domains (incl. heliophysics)
    - 2 years project

  - **Astro-CC** (Astronomy Competence Center)
    - follow up of ESCAPE project
    - collaboration with ESO, CDS, etc.
    - community workshops and tutorials for virtual observatory
    - all astronomy domains (incl. heliophysics)
    - 2 years project

FAIRization of datasets
focus onto Heliophysics

- **Findable** VESPA infrastructure for generic data discovery:
  *Data products from CDPP, MASER, APIS, MEDOC, CLIMSO & 3Soleil are findable through EPN-TAP
  (also including heliophysics services from Belgium, Czech Rep, Ireland, Japan, Poland…)*

- **Accessible** All datasets are open access (CC-BY-4.0)

- **Interoperable** Most of the services are proposing standard data formats (CDF, FITS, TFCat…), standards metadata (EPNcore, ISTP, SPASE, SolarNet, WCS…) and standard interfaces (Das2, HAPI).

- **Reusable** Most datasets are citable (DOI). Documentation also available. Software library for non-standard formats.

FAIRization of datasets
Examples

APIS

APIS/HST data collection

The APIS primary database consists of an internal base of HST FUV planetary auroral observations acquired by the STIS, ACS/SBC (and WFPC2) instruments since 1997. These include >12500 individual images and spectra, obtained with different instrumental configurations (filters, slits, gratings), for each of which is derived a set of higher level data.

Reference :

- *Title* : APIS/HST data collection
- *Abstract* : The APIS/HST data collection is composed of 3 data levels built from original omages and spectra of solar systems planets and satellites acquired by the Hubble Space Telescope (HST) in the Far-Ultraviolet range (100-180 nm) since 1997 (Lamy et al., Astronomy & Computing, 2015).
- *DOI* : https://doi.org/10.25935/T184-3B87
- *Publisher* : PADC, Observatoire de Paris
- *License* : CC-BY 4.0
- *Citation* : Lamy, L., & Henry, F. (2021). APIS/HST data collection (Version 1.0). PADC. https://doi.org/10.25935/T184-3B87

MASER

Catalogue of Jupiter radio emissions identified in the Juno/Waves observations

Wednesday 27 October 2021, by Baptiste Cecconi, Corentin Louis, Philippe Zarka

This data set contains the catalogue of Jupiter radio emissions identified in the Juno/Waves observations, and published in Louis et al (2021, doi: 10.1029/2021JA029435)

- DOI: https://doi.org/10.25935/nhb2-wy29
- Publisher: PADC/MASER
- License: CC-BY 4.0
- Citation: C. K. Louis, P. Zarka and B. Cecconi (2021). *Catalogue of Jupiter radio emissions identified in the Juno/Waves observations* (Version 1.0) [Data set], PADC, https://doi.org/10.25935/nhb2-wy29

Link to data repository

- Link to the catalogue

The data is available in TFCat format and can be loaded

ORN NDA NewRoutine Jupiter EDR FITS Dataset Specification

Monday 29 August 2022, by Baptiste Cecconi

This documents describes the ORN NDA NewRoutine Jupiter EDR FITS data collection.

- **DOI**: https://doi.org/10.25935/mpf0-v756
- **Publisher**: PADC/CDN
- **Citation**: Duchêne. A., L. Lamy, A. Loh, B. Cecconi, C. Viou & P. Renaud. (**2022**). *ORN NDA NewRoutine Jupiter EDR FITS Dataset Specification*. Version 1.1. PADC/CDN. https://doi.org/10.25935/MPF0-V756
- **License**: CC-BY-4.0

Link to document

ne Jupiter EDR FITS Dataset Specification, version 1.1

Wind/Waves/RAD1 LESIA L3 DF Data Collection V01

Thursday 6 July 2023, by Baptiste Cecconi

This collection is composed of Wind/Waves/RAD1 daily L3 DF files.

A new version of this dataset is available at: https://doi.org/10.25935/hegh-1r24

- **DOI**: https://doi.org/10.25935/h5np-2m47
- **Publisher**: PADC
- **Citation**: Bonnin, X., Hoang, S., Cecconi, B. & Issautier, K. (2022). *Wind/Waves/RAD1 LESIA L3 DF Data Collection* (Version 01) [Data set]. PADC. https://doi.org/10.25935/h5np-2m47

This collection is part of the Wind/Waves LESIA Collection (TBD).

Link to data repository

The files are available from the LESIA/Wind data repository (link below). The repository file hierarchy and the link with the other LESIA/Wind collection are described in TBD.

- **This dataset is not available anymore. Use the new version instead.**