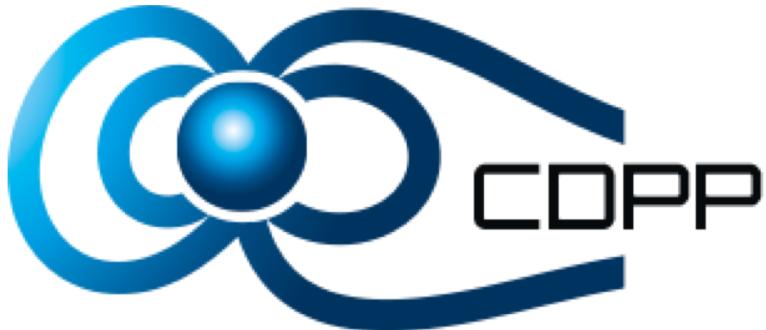




CNES with AMDA database & CNES archive

Jean-Christophe Malapert (jean-christophe.malapert@cnes.fr)

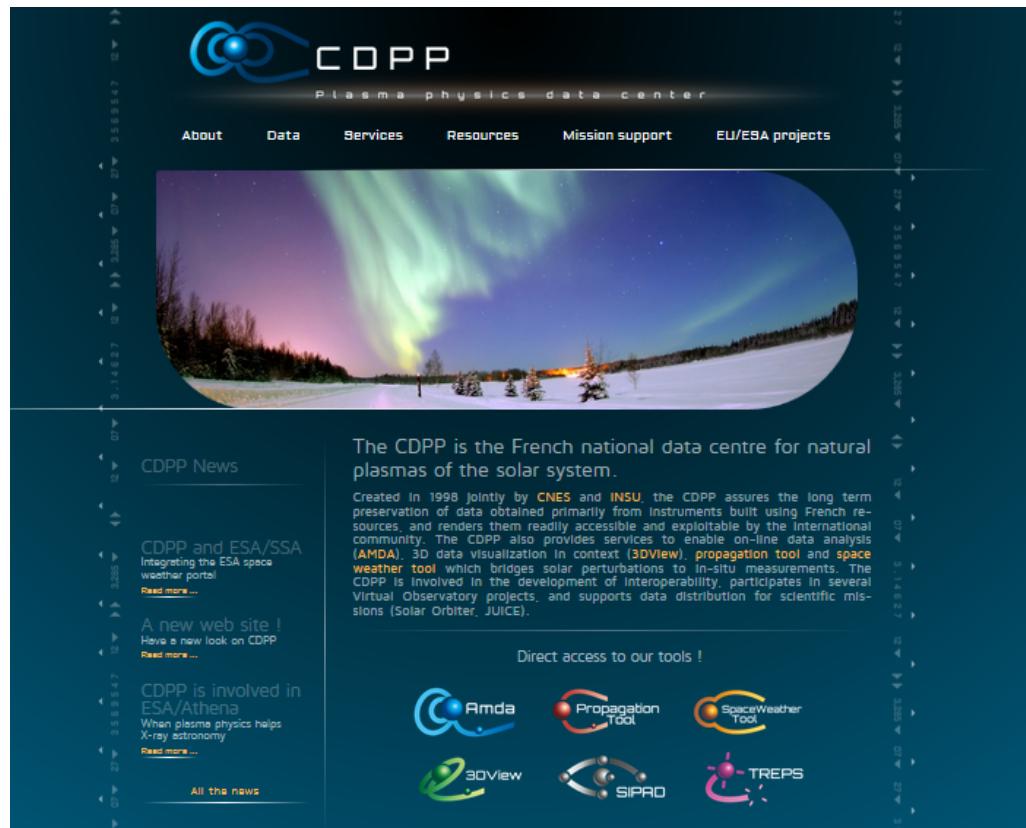




Summary

- CDPP in a nutshell
- Technological obsolescence
- Material obsolescence
- The next archive
-
-
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-

CDPP – Plasma Physique Data Centre



The screenshot shows the homepage of the CDPP (Plasma Physics Data Center) website. At the top, there is a navigation bar with links for "About", "Data", "Services", "Resources", "Mission support", and "EU/ESA projects". Below the navigation bar is a large image of the Aurora Borealis over a snowy landscape. To the left of the main content area, there is a sidebar with news items and links to other resources. The main content area contains text about the CDPP's mission and its involvement in various projects like AMDA, 3DView, Propagation Tool, and Space Weather Tool.

CDPP News

CDPP and ESA/SSA
Integrating the ESA space weather portal
[Read more ...](#)

A new web site !
Have a new look on CDPP
[Read more ...](#)

CDPP is involved in
ESA/Athena
When plasma physics helps X-ray astronomy
[Read more ...](#)

All the news

Direct access to our tools !

Established in 1998 from a CNES/CNRS collaboration for natural plasma **data distribution and archiving** from the ionosphere to the heliosphere; about 7 FTE, engineers and scientists, main base in Toulouse, south of France

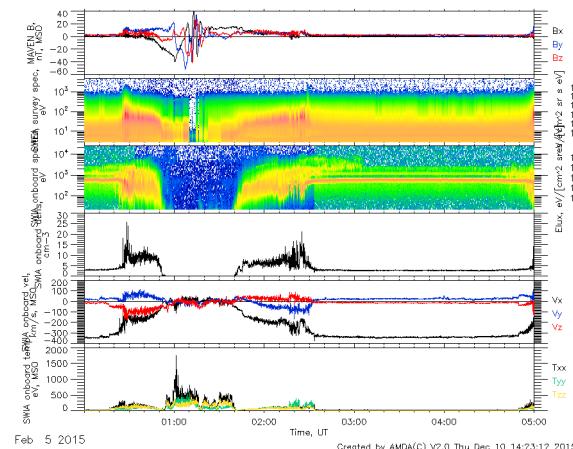
Since 2006, CDPP is strongly involved in the development of **data analysis and visualization tools** including simulations

CDPP expertise in data handling resulted in the participation to several **EU and ESA projects** aiming at enlarging data distribution via standards (Virtual Observatory concept) including simulations

Mission support activities : quicklook visualization tool for the Rosetta Plasma Consortium team, role in discussion for Solar Orbiter, Bepi-Colombo and JUICE.

These activities help **promoting science (papers)** and **education (hands-on, tutorials)**

CDPP in a nutshell



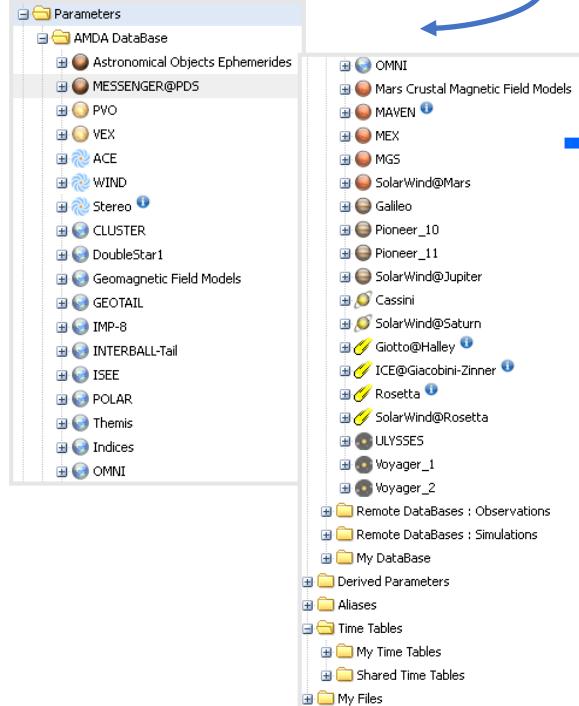
SIPAD

- Durable storage
- Catalogue archive
- Dataset is a set of files

AMDA

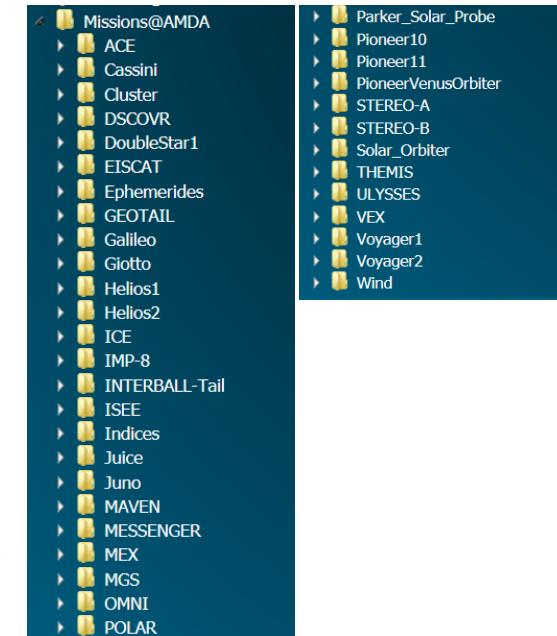
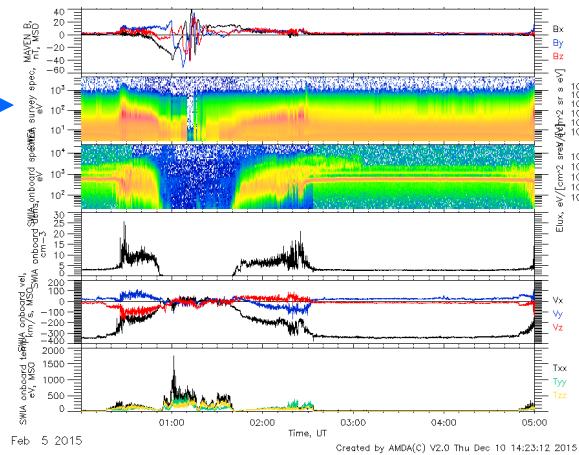
- Analysis tool
- Dataset is a parameter = f(t)

CDPP in a nutshell (AMDA's content and data volume)



Also accessible from CNES archive

<http://amda.cdpp.eu/>

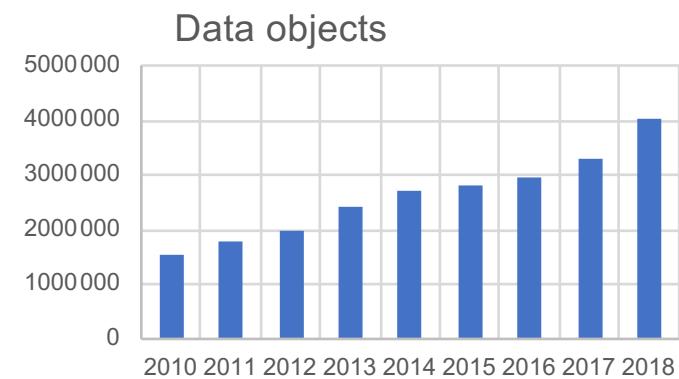
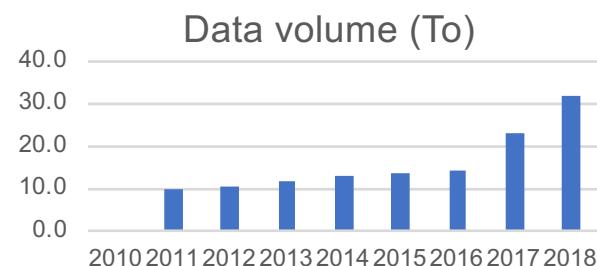
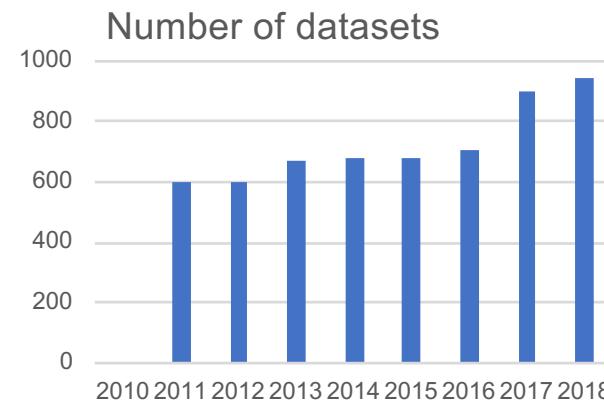


- Plot
- Data mining and combination
- Cataloguing (event lists)
- Upload / download
- Statistics (long term analysis)

Quelques chiffres AMDA. 1,3 To, 4794 sessions interactives
AMDA en 2018 (+ accès via webservice)

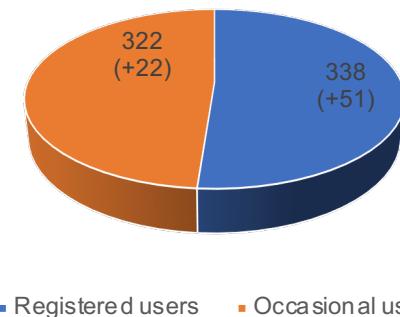
CDPP in a nutshell (Archive/SIPAD's content and data volume)

- 4 Missions@Archive
 - ▶ ARCAD-3 Mission
 - ▶ CASSINI Mission
 - ▶ CLUSTER Mission
 - ▶ DEMETER Mission
 - ▶ DOUBLE STAR Mission
 - ▶ European GEOS Mission
 - ▶ INTERBALL Auroral and Tail Mission
 - ▶ ISEE1 Mission
 - ▶ ISEE3/ICE Mission
 - ▶ MMS Mission
 - ▶ STEREO Mission
 - ▶ THEMIS Mission
 - ▶ ULYSSES Mission
 - ▶ Swedish VIKING Mission
 - ▶ WIND Mission
 - ▶ EISCAT Radars
 - ▶ Geomagnetic Indices
 - ▶ Other data missions
 - ▶ GALILEO Mission

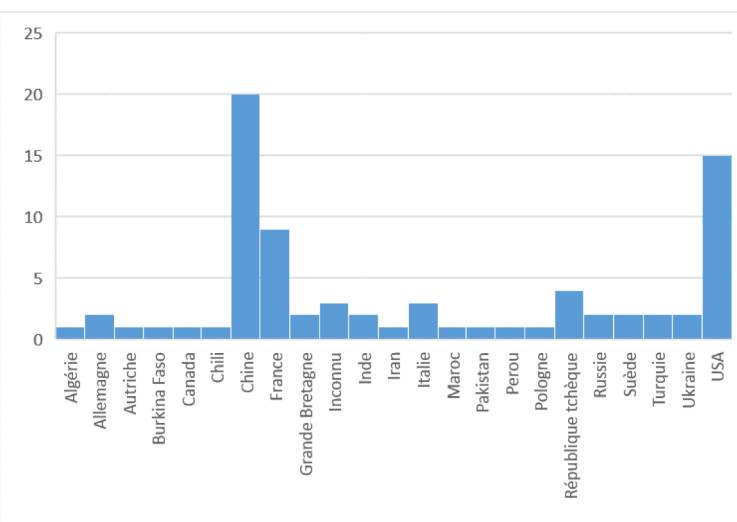
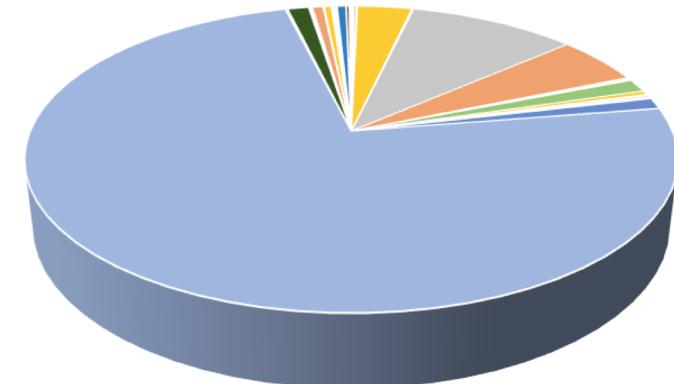


CDPP in a nutshell (users)

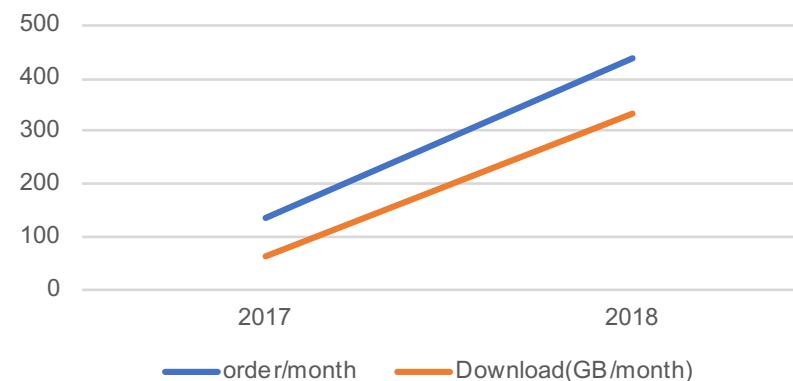
CDPP users



Command by user

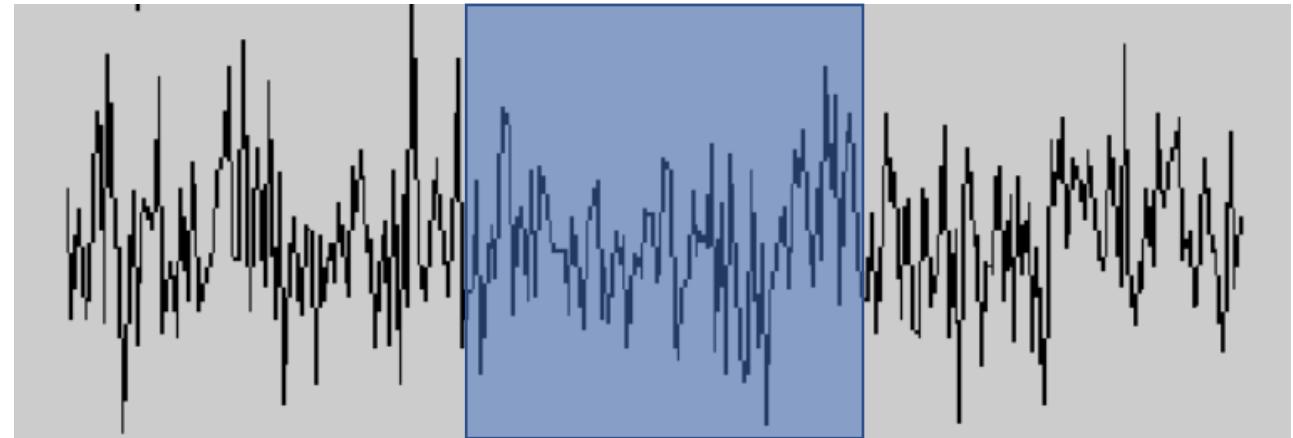


Download evolution

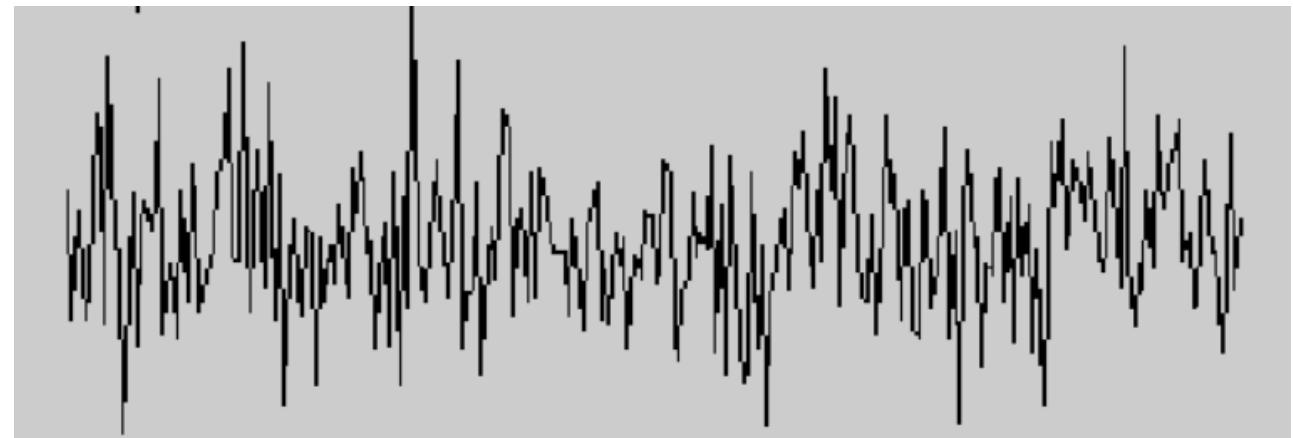


CDPP in a nutshell (users profile)

Users interested in temporal range



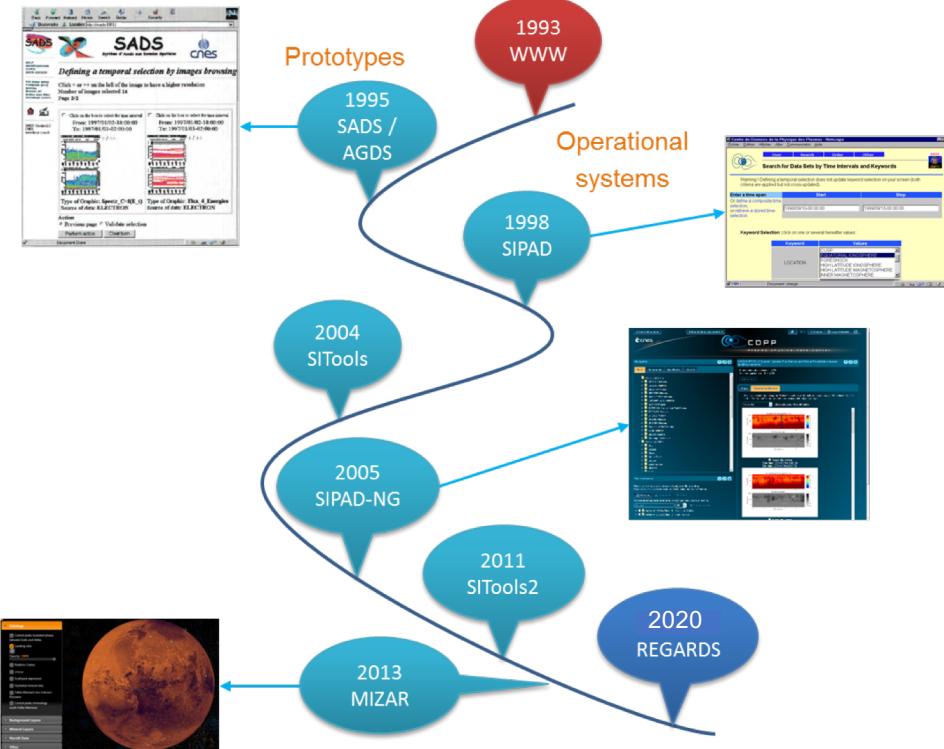
Users interested in the whole dataset



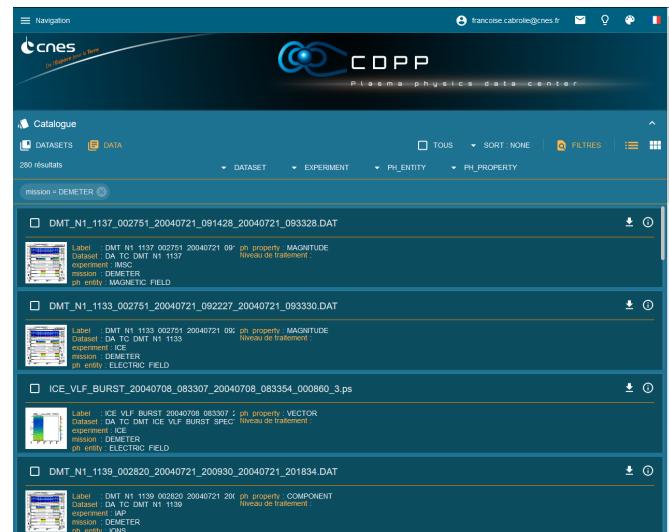
Technological obsolescence



Migration towards new technologies

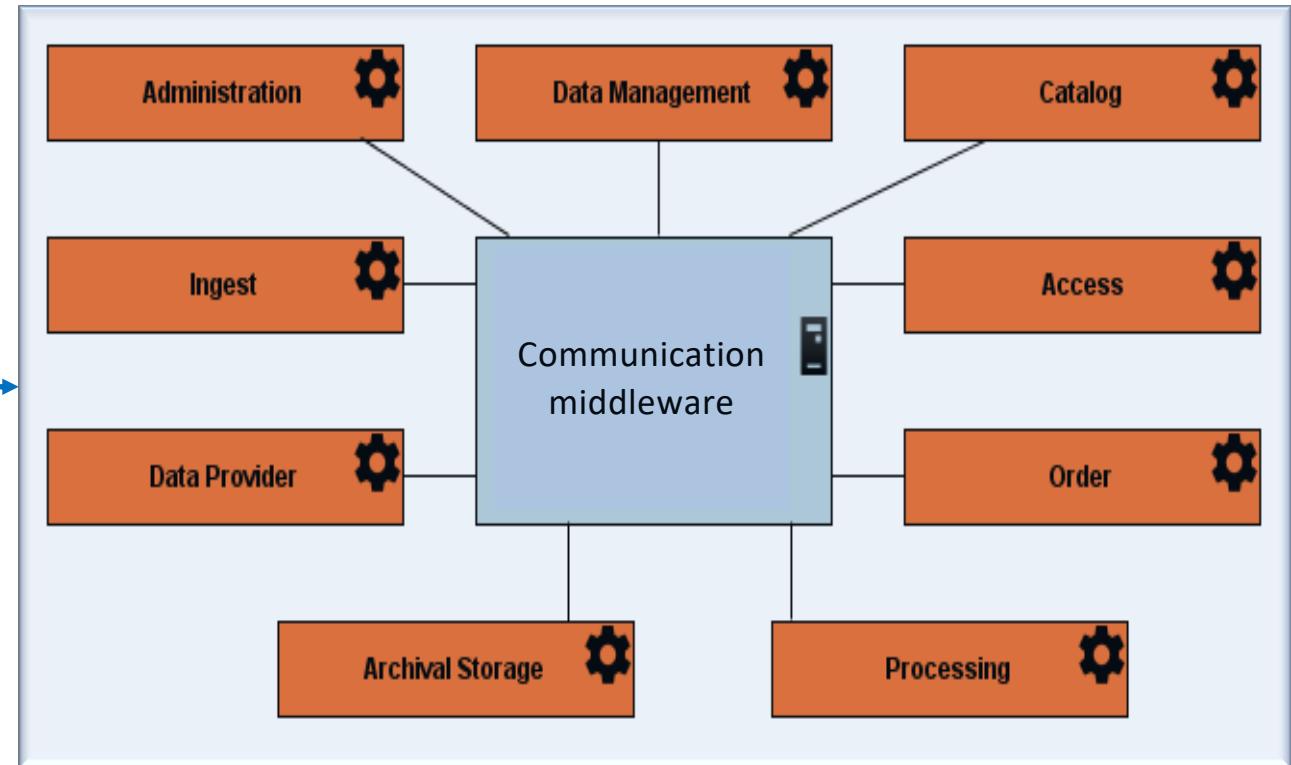


Migration to Regards in progress



Frontend

REST
HTTPS



Backend : micro-services

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Regards could add end-user services but we need to develop them



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Recherche de données

Platform Name Texte... Instrument Name Texte...

Sensor Code Texte... Free Cloud Percent = [0; 100]...

Data Date 29/03/1986 14:26 → 23/06/2013 12:47

RÉINITIALISER RECHERCHER

Résultats

IMAGETTES UNIQUEMENT FILTRES MODES COUPLAGES

| Scene ID | Date | Satellite | Instrument | Cloud Free % |
|-------------------------------|------------------|-----------|------------|--------------|
| 10993148603310912341X_S1V1... | 31/03/1986 09:12 | SPOT-1 | HRV1 | 88 |
| 12653378604060355451P_S1V1... | 06/04/1986 03:55 | SPOT-1 | HRV1 | 66 |
| 12653408604060356101P_S1V1... | 06/04/1986 03:56 | SPOT-1 | HRV1 | 50 |

Powered by Regards v0.4.1

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Recherche de données

Platform Name Texte... Instrument Name Texte...

Sensor Code Texte... Free Cloud Percent = [0; 100]...

Data Date 29/03/1986 14:26 → 23/06/2013 12:47

RÉINITIALISER RECHERCHER

Résultats

IMAGETTES UNIQUEMENT FILTRES TRI: INITIAL

100/220 résultats

Powered by Regards v0.4.1

Page d'accueil Recherche de données Documents Panier Commandes Aide dominique.heulet@cnes.fr

Recherche de données

Platform Name Texte... Instrument Name Texte...

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RÉINITIALISER RECHERCHER

Résultats

IMAGETTES UNIQUEMENT FILTRES TRI: INITIAL

100/220 résultats

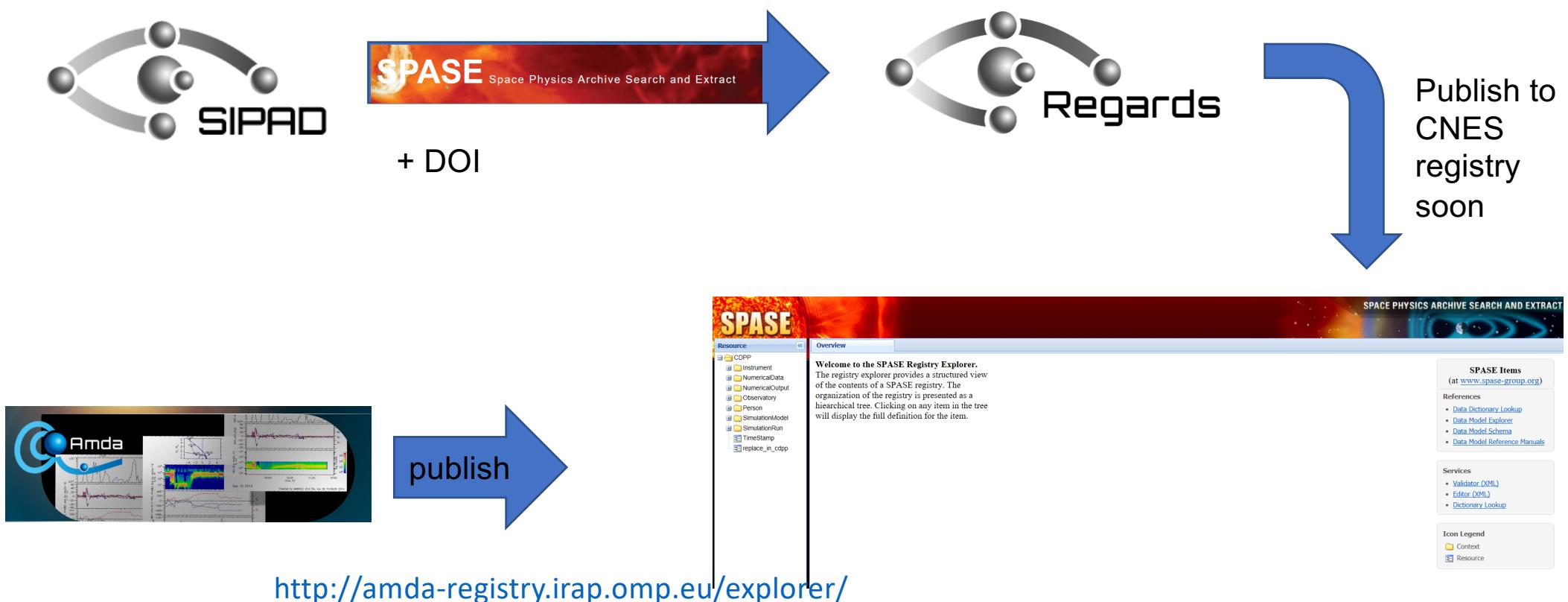
| Scene ID | Date | Satellite | Instrument | Cloud Free % |
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| 12653408604060356101P_S1V1... | 06/04/1986 03:56 | SPOT-1 | HRV1 | 50 |

Chargement du contenu

Powered by Regards v0.4.1

Currently, no Tool to display time series

Migration SIPAD data model to SPACE (Regards data model)



Feedbacks about SPASE migration

The problem : we need to transform a data model (SIPAD, defined in 2005) to SPASE data model.

After analysis :

- One part can be done in an automatic way
- Another must be done manually , from a scientist that knows the experiment

To build the REGARDS data model = SPASE+ specific metadata from CDPP archive and metadata from AMDA. This catalog must offer a unified view of CNES archive and the AMDA database : much better than this one currently with more possibility of research and services

Material obsolescence



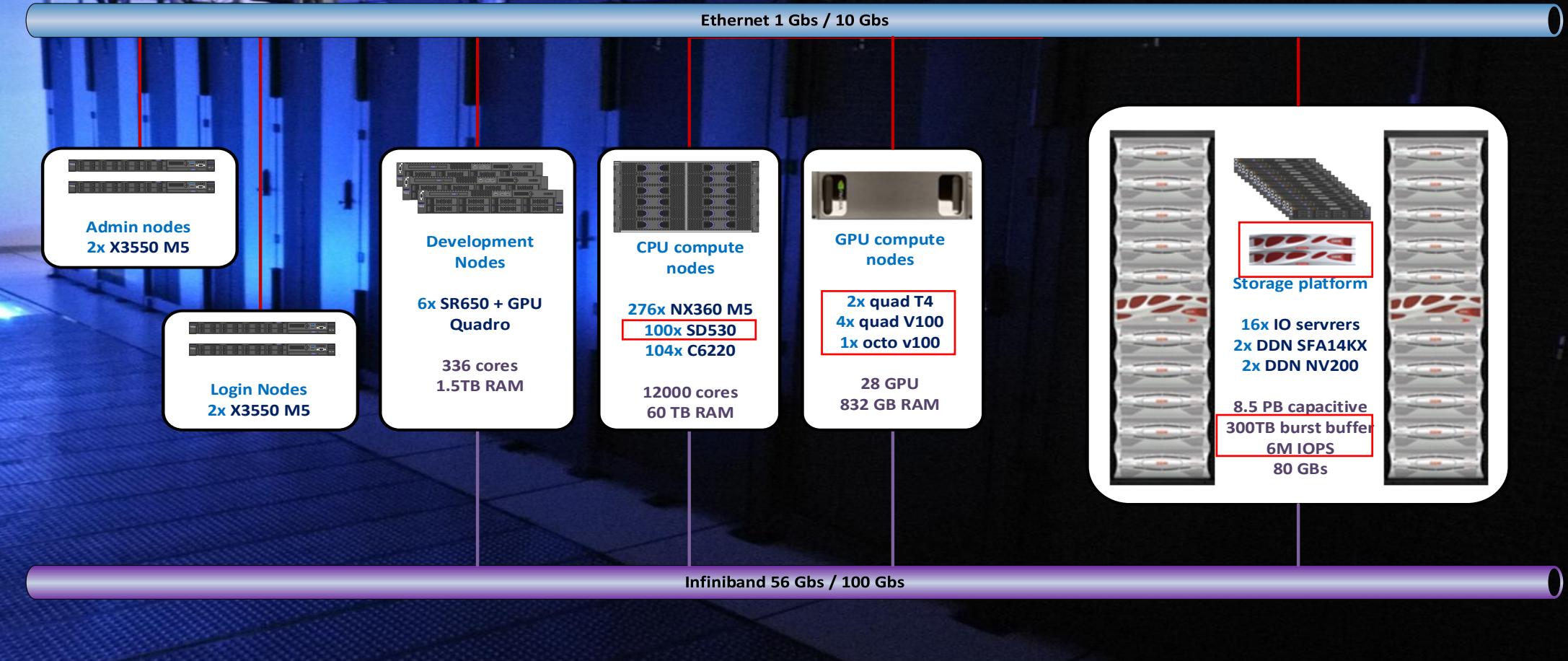
History of the media storage



HAL

- CPU : 500 Tflops CPU
- GPU : 240 Tflops GPGPU / 2 Pflops Deep Learning
- 480 batch servers / 12000 cores
- 8 interactive servers pre/post processing w/ GPU
- 8.5 PB GPFS / 300TB burst buffer/ 100GBs bandwidth

Extension 2019





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The next CDPP archive @CNES



Interoperable
clients