Progress toward registering HiPS data collections

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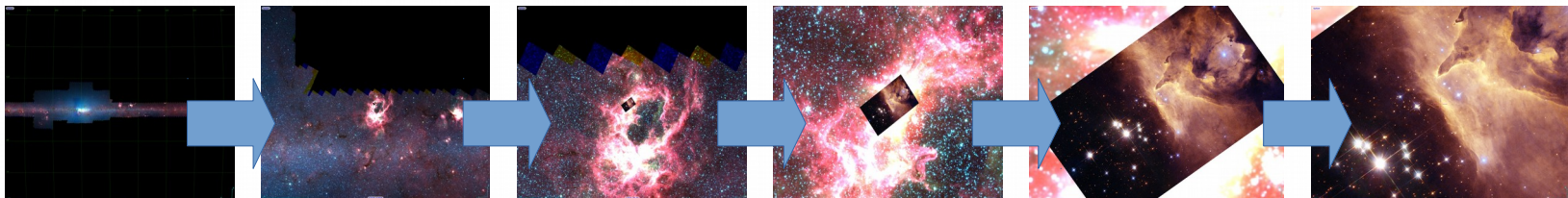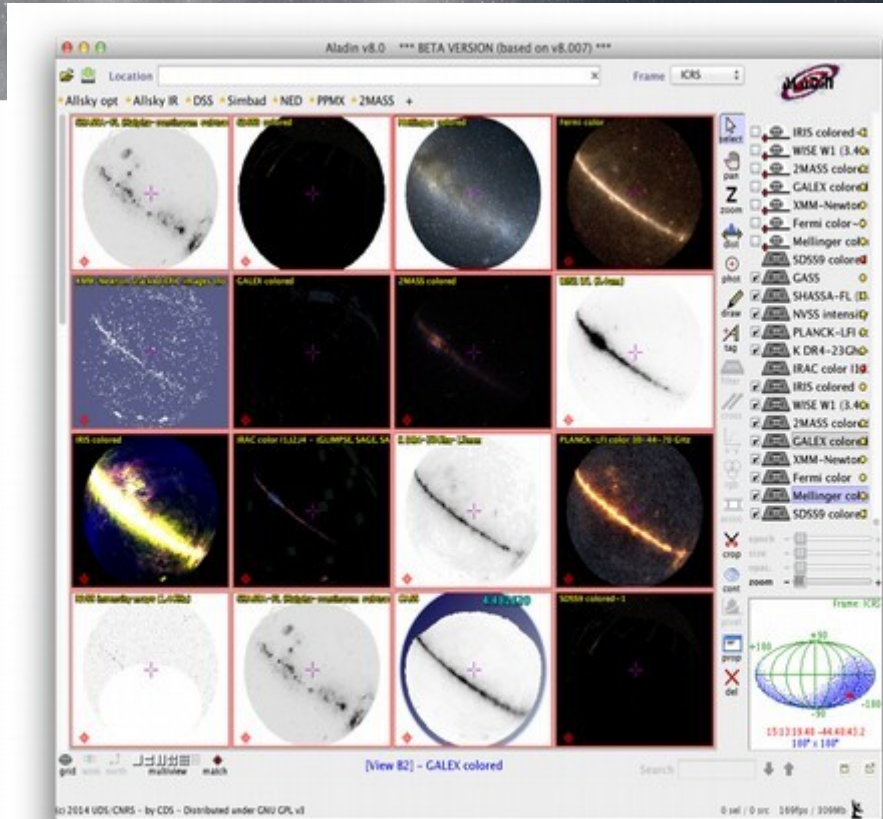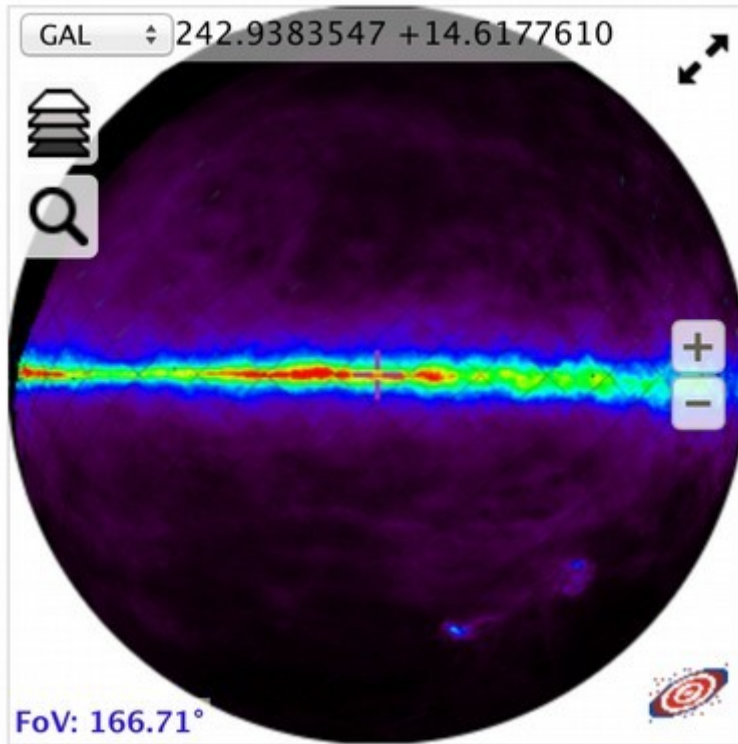
Hierachical Progressive Survey

"*The more you zoom in on a particular area,the more details show up*"

- ## Multi-resolution HEALPix data structure
  for Images, Catalogues, 3-dimensional data cubes, …

- ## Conserves scientific data properties alongside visualisation considerations

- ## No databases or servers, just HTTP

☐ Demonstration

- http://aladin.unistra.fr/hips

HiPS – State of art (oct 15)

- 250+ HiPS for 50TB data

- 6+ institutional clients:

  → Aladin Desktop (CDS), Aladin Lite (CDS), MIZAR (CNES) + AL extensions: MMI (ESAC), JUDO2, Akari-Viewer (JAXA)

- 9+ HiPS providers:

  → CDS, SSC-XMM, CADC, IAS, IRAP/CADE, IPAC, ADS, ESAC, JAXA

- 2 HiPS generators:

  → Aladin/Hipsgen (image & cubes), Hipsgen-cat (catalogs)

- 1 paper → 2015A&A...578A.114F

Hips, hips, hips ...

- Fermi
- EGRET
- XMM
- INTEGRAL
- RASS
- GALEX
- DSS
- SDSS
- CFHTLS
- HST
- 2MASS

- ULTRAVISTA
- WISE
- ALLWISE
- DIRBE
- IRIS
- GLIMPSE360
- SPITZER
- AKARI
- SCUBA
- BGPS
- WMAP

- PLANCK
- NVSS
- CHIPASS
- SUMSS
- DWINGELOO
- HASLAM408
- VLSSR
- WENSS
- SHS
- SHASSA
- VTSS

- GASS
- CGPS
- GALFA
- CALIFA
- MUSE
- HARP/JCMT
- Gaia GUMS
- SIMBAD
- GOODS
- PHAT

Observations

- HiPS fulfils real needs (adapted to astronomical big data, Lite web clients, …)
  - → rapid expansion, great success
- Already used by several institutes, presently only driven by CDS, outside any consortium or official protocol (not an IVOA standard, …)

➡ The risks: divergences, duplications, weakness...

☐ Our answer

- We need to ensure:
    - Unique HiPS identification
    - Meta data: description, copyright, ...
    - Web localisation
    - Mirror management (performance, robustness, strategical policy, ...)

☐ Proposal

→ Build the "*HiPS NETWORK*"

- Approach: simple & efficient
- Only 3 (new) basic notions:
  - HiPS list
  - HiPS node
  - HiPS registry

In details

- HiPS list = ASCII file: concatenation of the property file (associated to each HiPS) distributed by the HiPS node

- A HiPS node = *a HTTP server distributing HiPS (tile = classic file)* + its HiPS list

- HiPS registry = the list of HiPS nodes provided by a HTTP server (a simple ASCII file)

☐ HiPS properties

key = val

…

Example


```
publisher_did          =                          ivo://CDS/P/DSS2/color
obs_collection         = DSS colored
obs_title              = DSS2 optical HEALPix survey, color (R=red[~0.6um]/G
obs_description         = Color composition generated by CDS. This HiPS surve
obs_copyright          = Digitized Sky Survey - STScI/NASA, Colored & Healpi
obs_copyright_url       = http://archive.stsci.edu/dss/acknowledging.html
client_category         = Image/Optical/DSS
client_sort_key         = 03-00
hips_builder           = Aladin/HipsGen v8.149
hips_builder           = Aladin/HipsGen v8.133
hips_creation_date      = 2010-05-01T19:05Z
hips_release_date       = 2015-05-11T08:45Z
hips_publisher          = CDS (A.Oberto, P.Fernique)
hips_version           = 1.3
hips_order             = 9
hips_frame             = equatorial
hips_tile_width         = 512
hips_tile_format        = jpeg
dataproduct_type        = image
dataproduct_subtype     = color
hips_glu_tag           = P-DSS2-color.hpx
client_application      = AladinLite
client_application      = 
moc_access_url          =              http://alasky.u-strasbg.fr/DSS/DSSColor
hips_service_url        =
hips_status            =               public master clonable
hips_rgb_red           =                                        Linear]
hips_rgb_blue          = DSS2-blue-XJ-S [4286.0 12122.5 19959.0 Linear]
hips_hierarchy         = median
hips_pixel_scale        = 2.236E-4
moc_sky_fraction        = 1
hips_service_url_1      = http://alaskybis.u-strasbg.fr/DSS/DSSColor
hips_status_1          = public mirror clonable
moc_order              = 9
obs_initial_ra          = 0
obs_initial_dec         = +0
obs_initial_fov         = 0.11451621372724685
```
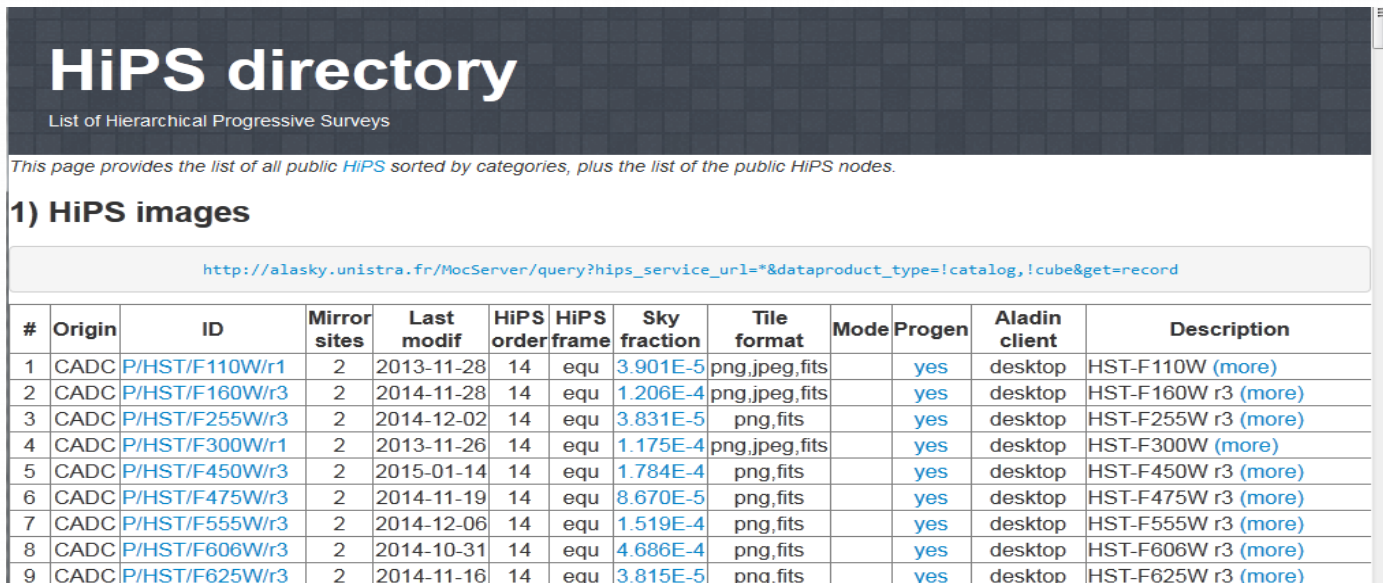
Prototype platform

- Deployed in June 2015

- With some partners: CDS, SSC-XMM, IRAP, *and soon IAS, ESAC*

- Technical documentation:
http://aladin.unistra.fr/hips/hipsdoc.pdf

- It is already working

→ http://aladin.unistra.fr/hips/registry

☐ Derived tools

- HiPS metadata aggregator: MocServer

→ http://alasky.unistra.fr/MocServer/query

→ http://aladin.unistra.fr/hips/list

☐ Next steps

1) Extend the prototyped HiPS NETWORK to all partners

2) Toward an IVOA endorsement ?

→ Rewrite HiPS technical doc in IVOA note ?

→ VOSI interface to HiPS node ?

→ HiPS registration in IVOA registry ?
(individually or at HiPS node level ?)

Questions ?