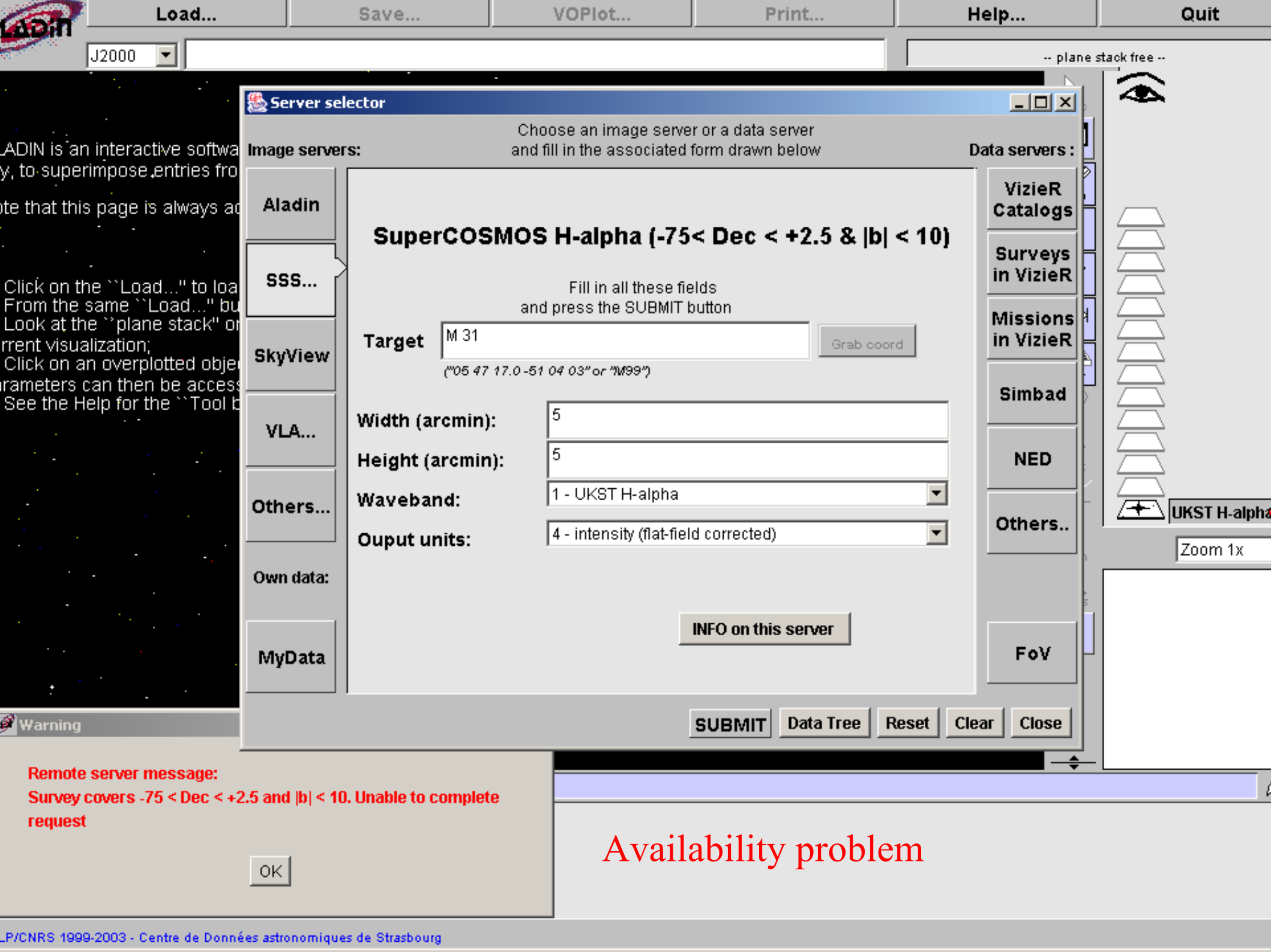
Vers une nouvelle génération de standards DAL et DM pour le VO

F.Bonnarel CDS,
M.Louys,ULP/LSIIT

Couche d'accès aux données

- Fonctions de la couche d'accès aux données dans le VO:
- ---> découverte des données (query phase)
- ----> récupération de données
- -----> accès asynchrone
- Génération actuelle: SIA 1.0, Cone search, SSA 0.1: utile, mais rudimentaire et hétérogène


Load...
Save...
VOPlot...
Print...
Help...
Quit
J2000
-- plane stack free --
Server selector
Choose an image server or a data server
and fill in the associated form drawn below
Image servers:
Data servers :
Aladin
SSS...
SkyView
VLA...
Others...
Own data:
MyData
VizieR Catalogs
Surveys in VizieR
Missions in VizieR
Simbad
NED
Others..
FoV
SuperCOSMOS H-alpha (-75< Dec < +2.5 & |b| < 10)
Fill in all these fields
and press the SUBMIT button
Target
M 31
Grab coord
("05 47 17.0 -51 04 03" or "M99")
Width (arcmin):
5
Height (arcmin):
5
Waveband:
1 - UKST H-alpha
Ouput units:
4 - intensity (flat-field corrected)
INFO on this server
SUBMIT
Data Tree
Reset
Clear
Close
UKST H-alpha
Zoom 1x
Warning
Remote server message:
Survey covers -75 < Dec < +2.5 and |b| < 10. Unable to complete request
OK
Availability problem
LP/CNRS 1999-2003 - Centre de Données astronomiques de Strasbourg

Couche d'accès aux données

- SSA 1.0, archétype des nouveaux protocoles DAL ? Caractéristiques:
  - s'appuie sur un modèle (spectrum et characterisation).
  - Listes de paramètres plus étendues...
  - Récupération sous divers formats (Spectrum data model)
- Discussion pour SIA, convergences entre protocoles d'accès aux données
  - Comme SSA, mais changements mineurs QR et QP.....
  - Question de la « base commune » à tous les protocoles: cubes ou IFU, TAP avec ADQL
  - - Questions des données complexes (voir Igor pour Spectro 3D)

Applications Raccourcis Système lun 8 oct, 20:27

Mozilla Firefox

Fichier Edition Affichage Aller à Marque-pages Outils Aide

http://www3.cadc-ccda.hia-iha.nrc-cnrc.gc.ca/cadcbin/cgps/aladin_cgps/MEV1

Getting Started Latest BBC Headlines

Firefox a empêché ce site d'ouvrir une fenêtre popup.

The Canadian Galactic Plane Survey Archiv

Navigation for Mosaic MEV1

Data Info Frame

Subsample Cube Preview at 1420 MHZ (HI line)

ObservationName	cgps_mev1
CentralPoint_longitude	172.755005
CentralPoint_latitude	-1.004
CentralPoint_RA	05:23:01.19
CentralPoint_DEC	+34:28:31.2
Naxes	3
Naxis	1024 1024 272
AngularPixelSize	18.0 " 18.0 "
OriginalCoding	image/fits
Location	http://www.cadc.hia.nrc.g
BandName	1420 MHZ (HI line)

Stick LOAD Close

Aladin Load... Save... Tools... Print... Help... Detach

Position ICRS 05:19:35.52 +33:10:45.3 Pixel full 3.4588

012 um.Image at 12 microns (IRAS)

Server selector

Others: File all VO FOV Sextracto

Images: Aladin images SkyView Sloan MAST CADC DSS... VLA... Others...

User data access (image/table/script/dir)

Specify a filename or an URL and press the SUBMIT button

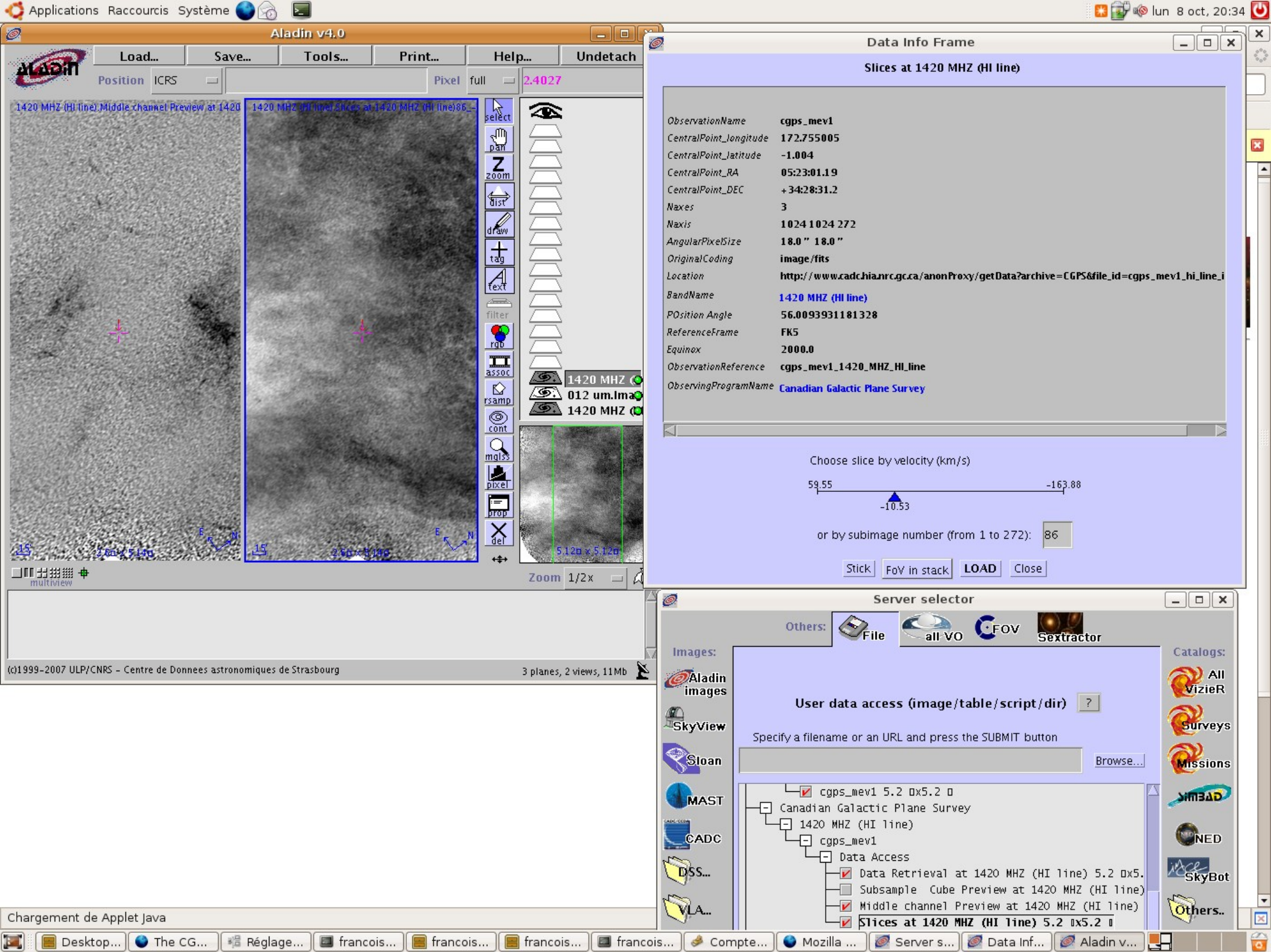
cgps_mev1 5.2 0x5.2 0
Canadian Galactic Plane Survey
1420 MHZ (HI line)
cgps_mev1
Data Access
Data Retrieval at 1420 MHZ (HI line)
Subsample Cube Preview at 1420 MHZ
Middle channel Preview at 1420 MHZ (H
Slices at 1420 MHZ (HI line) 5.2 0x5.
Canadian Galactic Plane Survey
1420 MHZ (Stokes I Continuum)
cgps_mev1

Reset Clear History SUBMIT

[View B1] - 012 um.Image at 12 microns (IRAS) - Canadian Astronomy Data

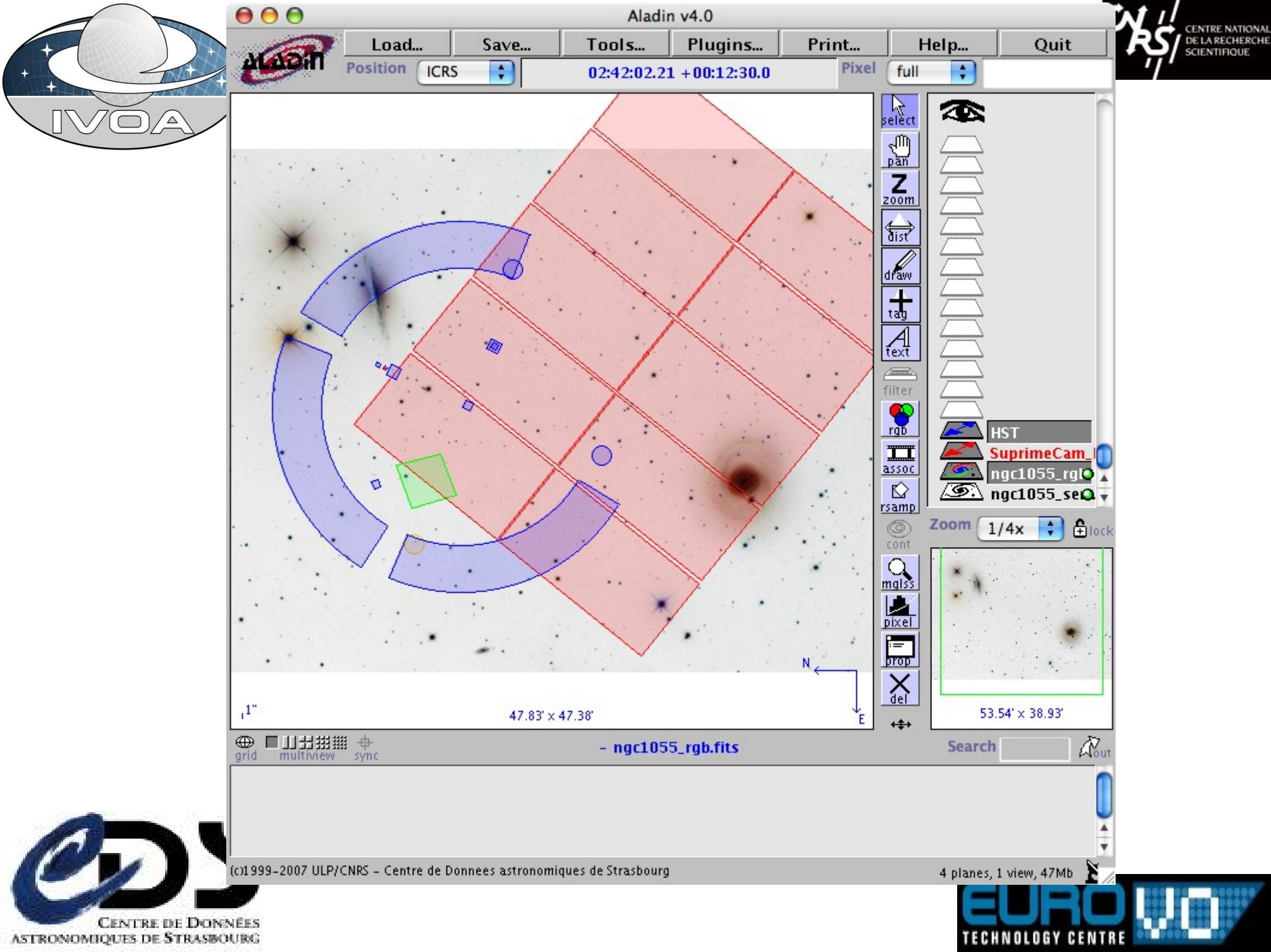
Applet cds.aladin.Aladin started

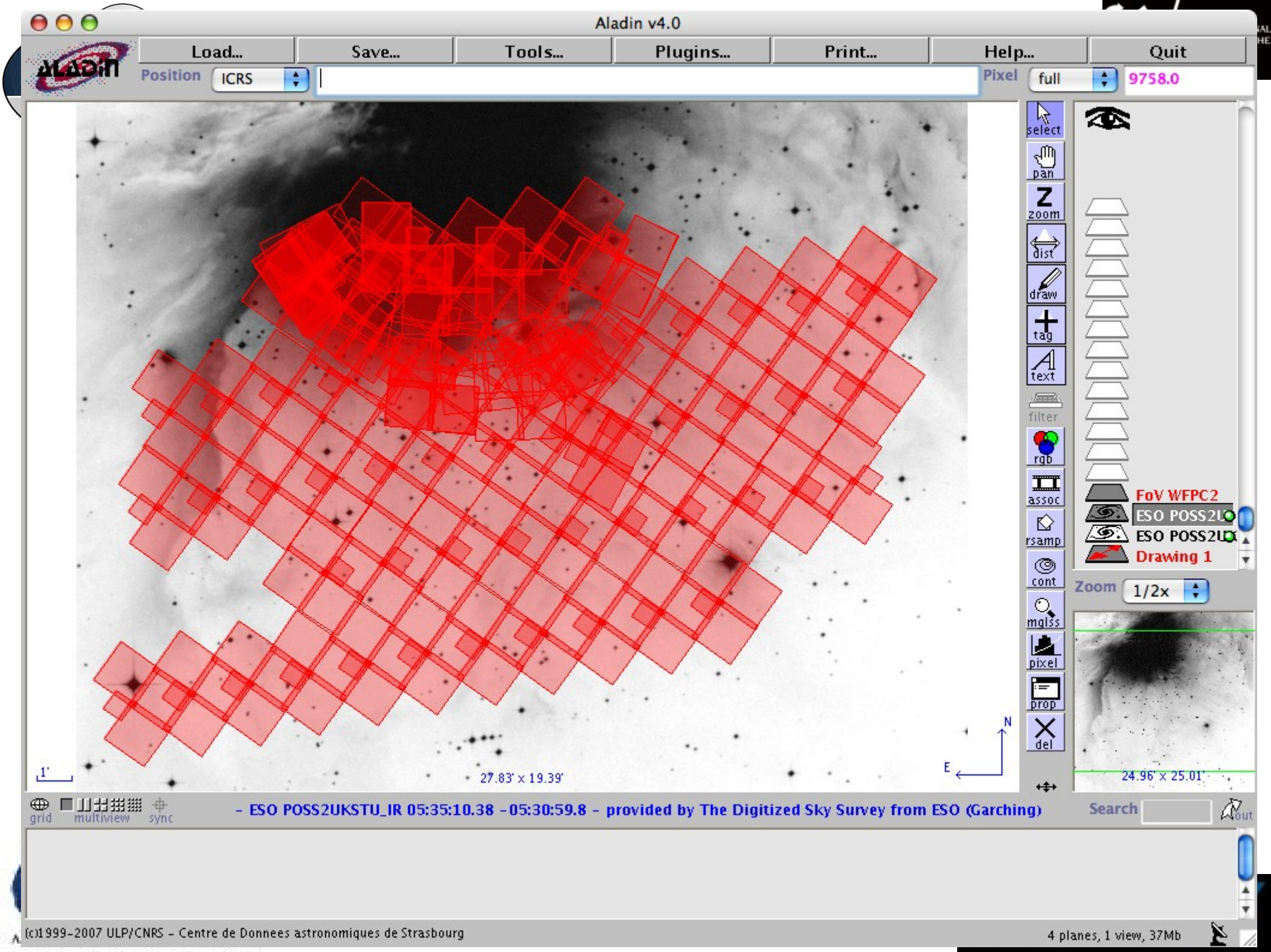
Desktop... The CG... Réglage... francois... francois... francois... francois... Compte... Mozilla ... Server s... Pixel ... Data Inf...


Applications Raccourcis Système
lun 8 oct, 20:34
Aladin v4.0
Load... Save... Tools... Print... Help... Undetach
Position ICRS
Pixel full 2.4027
1420 MHZ (HI line) Middle channel Preview at 1420
1420 MHZ (HI line) Slices at 1420 MHZ (HI line) 86
select pan zoom dist draw tag text filter rgb assoc rsamp cont mgl3s pixel prop del
1420 MHZ
012 um.Ima
1420 MHZ
Zoom 1/2x
multiview
(c)1999-2007 ULP/CNRS - Centre de Donnees astronomiques de Strasbourg
3 planes, 2 views, 11Mb
Chargement de Applet Java
Data Info Frame
Slices at 1420 MHZ (HI line)
ObservationName cgps_mev1
CentralPoint_longitude 172.755005
CentralPoint_latitude -1.004
CentralPoint_RA 05:23:01.19
CentralPoint_DEC +34:28:31.2
Naxes 3
Naxis 1024 1024 272
AngularPixelSize 18.0 " 18.0 "
OriginalCoding image/fits
Location http://www.cadc.hia.nrc.gc.ca/anonProxy/getData?archive=CGPS&file_id=cgps_mev1_hi_line_i
BandName 1420 MHZ (HI line)
POsition Angle 56.0093931181328
ReferenceFrame FK5
Equinox 2000.0
ObservationReference cgps_mev1_1420_MHZ_HI_line
ObservingProgramName Canadian Galactic Plane Survey
Choose slice by velocity (km/s)
59.55
-163.88
-10.53
or by subimage number (from 1 to 272): 86
Stick FoV in stack LOAD Close
Server selector
Others: File all VO FOV Sextractor
Images: Aladin images SkyView Sloan MAST CADC DSS... VLA...
Catalogs: All VizieR Surveys Missions SIMBAD NED SkyBot Others..
User data access (image/table/script/dir) ?
Specify a filename or an URL and press the SUBMIT button
Browse...
cgps_mev1 5.2 0x5.2 0
Canadian Galactic Plane Survey
1420 MHZ (HI line)
cgps_mev1
Data Access
Data Retrieval at 1420 MHZ (HI line) 5.2 0x5.
Subsample Cube Preview at 1420 MHZ (HI line)
Middle channel Preview at 1420 MHZ (HI line)
Slices at 1420 MHZ (HI line) 5.2 0x5.2 0
Desktop... The CG... Réglage... francois... francois... francois... francois... Compte... Mozilla ... Server s... Data Inf... Aladin v...

Couche d'accès aux données

- TAP protocol: pour les tables se substitue à l'ancien SkyNode, abandonné
  - Requête ADQL
  - Controverse sur les métadonnées: table vide ou métatables ???
  - N'inclut pas la caractérisation des tables, ni d'autres apports provenant d'observation
- Footprints: deux approches
  - STC en XML, regions codées comme intersection d'hémisphères...
  - VOTABLE, avec informations pour le rendu ....
  - harmonisation ou unification (en XML, of course)?


Aladin v4.0
Load...
Save...
Tools...
Plugins...
Print...
Help...
Quit
Position
ICRS
02:42:02.21 +00:12:30.0
Pixel
full
select
pan
zoom
dist
draw
tag
text
filter
rgb
assoc
rsamp
cont
mgISS
pixel
prop
del
HST
SuprimeCam_I
ngc1055_rgb
ngc1055_sel
Zoom
1/4x
lock
1"
47.83' x 47.38'
N
E
53.54' x 38.93'
grid
multiview
sync
- ngc1055_rgb.fits
Search
out
(c)1999-2007 ULP/CNRS - Centre de Donnees astronomiques de Strasbourg
4 planes, 1 view, 47Mb


Aladin v4.0
Load...
Save...
Tools...
Plugins...
Print...
Help...
Quit
Position
ICRS
Pixel
full
9758.0
select
pan
zoom
dist
draw
tag
text
filter
rgb
assoc
rsamp
cont
mglss
pixel
prop
del
FoV WFPC2
ESO POSS2UK
ESO POSS2UK
Drawing 1
Zoom
1/2x
24.96' x 25.01'
1'
27.83' x 19.39'
N
E
grid
multiview
sync
- ESO POSS2UKSTU_IR 05:35:10.38 -05:30:59.8 - provided by The Digitized Sky Survey from ESO (Garching)
Search
out
(c)1999-2007 ULP/CNRS - Centre de Donnees astronomiques de Strasbourg
4 planes, 1 view, 37Mb

Modèle de données

- Cas d'utilisations pour l'IVOA:
  - Pour l'interopérabilité: découverte, combinaison, comparaison, traitement conjoint.
  - Métadonnées : description des données ex: caractérisation, provenance
  - Données à échanger elles même: Spectre, SED
- STC, spectrum, characterization:
  - Comment coder un système de coordonnée, une coordonnée, une région
  - Comment décrire un spectre 1D, comment coder les valeurs...
  - Comment décrire une observation dans l'espace des données elles-même

Modèle de données

- Line data model :(voir Marie-Lise Dubernet)
- Nouvelle génération: Théorie, SNAP, Char 2 et Observation.Provenance, Photométrie, système d'unités. Produire ou upgrader des « drafts » IVOA.
  - Implanter: les standards = outils, workshops, solutions intermédiaires
  - Aller vers l'analyse et la description de la complexité. Surtout les métadonnées (données = standard pré VO comme FITS, et Euro3D)
  - Pour caractérisation: développer le niveau 4
    - Pour décrire les ouvertures et les fonctions d'appareil de la spectro par example

CORTESY OF ESAC!

Mapping ISO and CharDM

- ESAVO DMMapper
  - maps (both ways) data models to database table columns

```
<?xml version="1.0" encoding="UTF-8"?>
<TablesConfig xmlns="http://www.ivoa.net/wsdl/DMMapper/v0.1">
    <MetaTable>
        <Name>observations</Name>
        <Description></Description>
        <PrimaryKey>obsno</PrimaryKey>
        <Rows></Rows>
        <Rank></Rank>
        <Relations>
            <RelationShip>
                <ForeignKey>obsno</ForeignKey>
                <Table>iso_chardm</Table>
            </RelationShip>
            <RelationShip>
                <ForeignKey>obsno</ForeignKey>
                <Table>obs_pointing</Table>
            </RelationShip>
            <RelationShip>
```

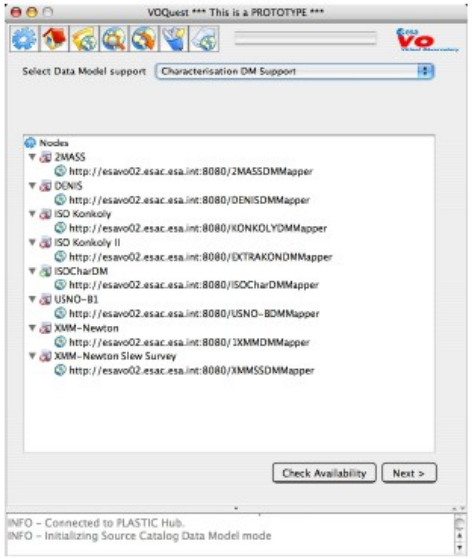
```
<?xml version="1.0" encoding="UTF-8"?>
<ColumnsConfig xmlns="http://www.ivoa.net/wsdl/DMMapper/v0.1">
    <Table name="iso_chardm">
        <MetaColumn>
            <Name>err_pos_ref</Name>
            <Unit>deg</Unit>
            <Description></Description>
            <UCD>pos.errorEllipse</UCD>
            <DataType>float</DataType>
            <Precision></Precision>
            <ByteSize></ByteSize>
            <Rank></Rank>
        </MetaColumn>
```

```
<?xml version="1.0" encoding="UTF-8"?>
<XPathQLConfig>
<property name="spatial.sampling.location.refval" value="iso_chardm.pos_sam_ref"/>
<property name="spectral.coverage.bounds.min"     value="iso_chardm.wav_cov_min"/>
<property name="spectral.coverage.bounds.max"     value="iso_chardm.wav_cov_max"/>
<property name="time.coverage.bounds.min"         value="observations;utc_start/86400 + 47527.0"/>
<property name="time.coverage.bounds.max"         value="observations;utc_end/86400 + 47527.0"/>
<property name="time.coverage.bounds.extent"      value="observations;(utc_end-utc_start)/86400."/>
```

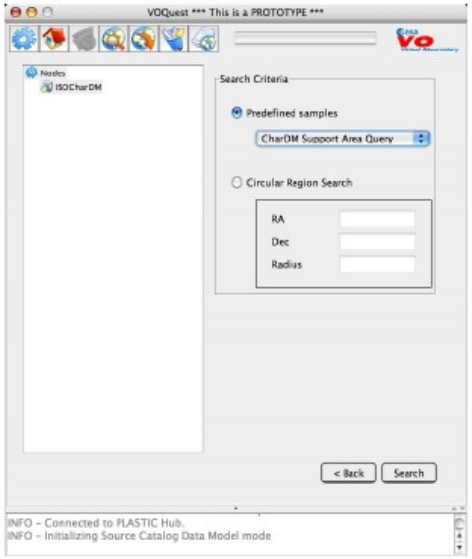
CORTESY OF ESAC!

Demo (part 1)

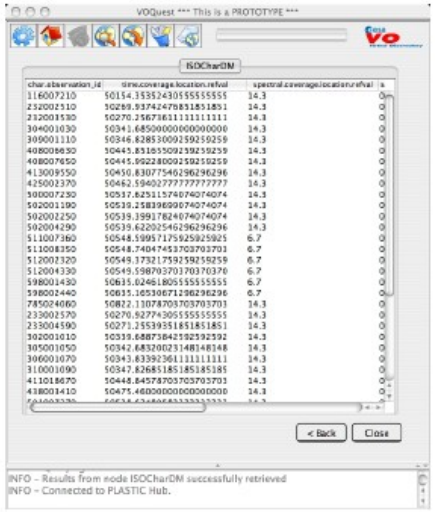
VOQuest prototype



a) Which of the various services does **support CharDM**? (query by utype)



b) The **ADQL** previously shown is hardcoded in the **VOQuest** prototype



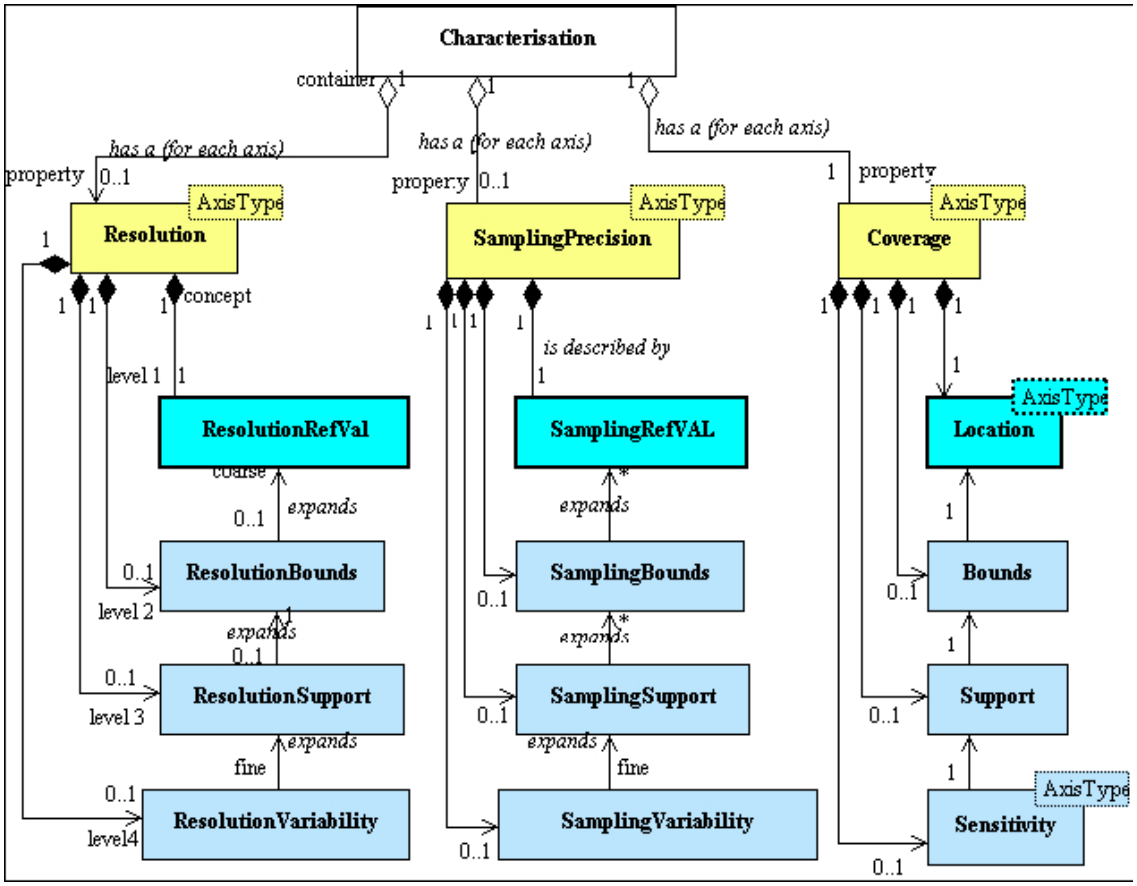
c) VOQuest sends the query to the **DMMapper**, which does the mapping and returns a **VOTable**

Modèle de données

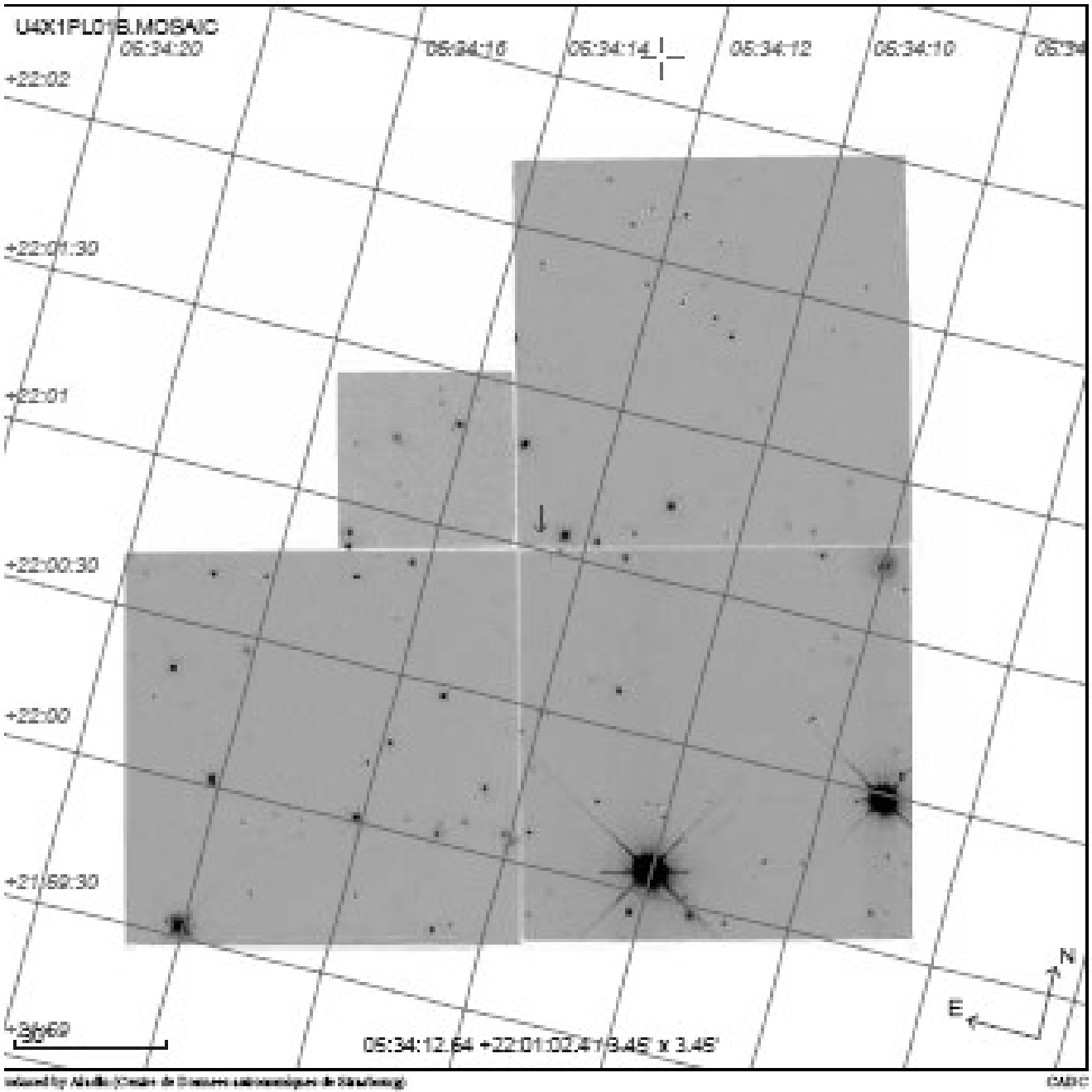
- Pour une description statistique à postériori (datasets théoriques).

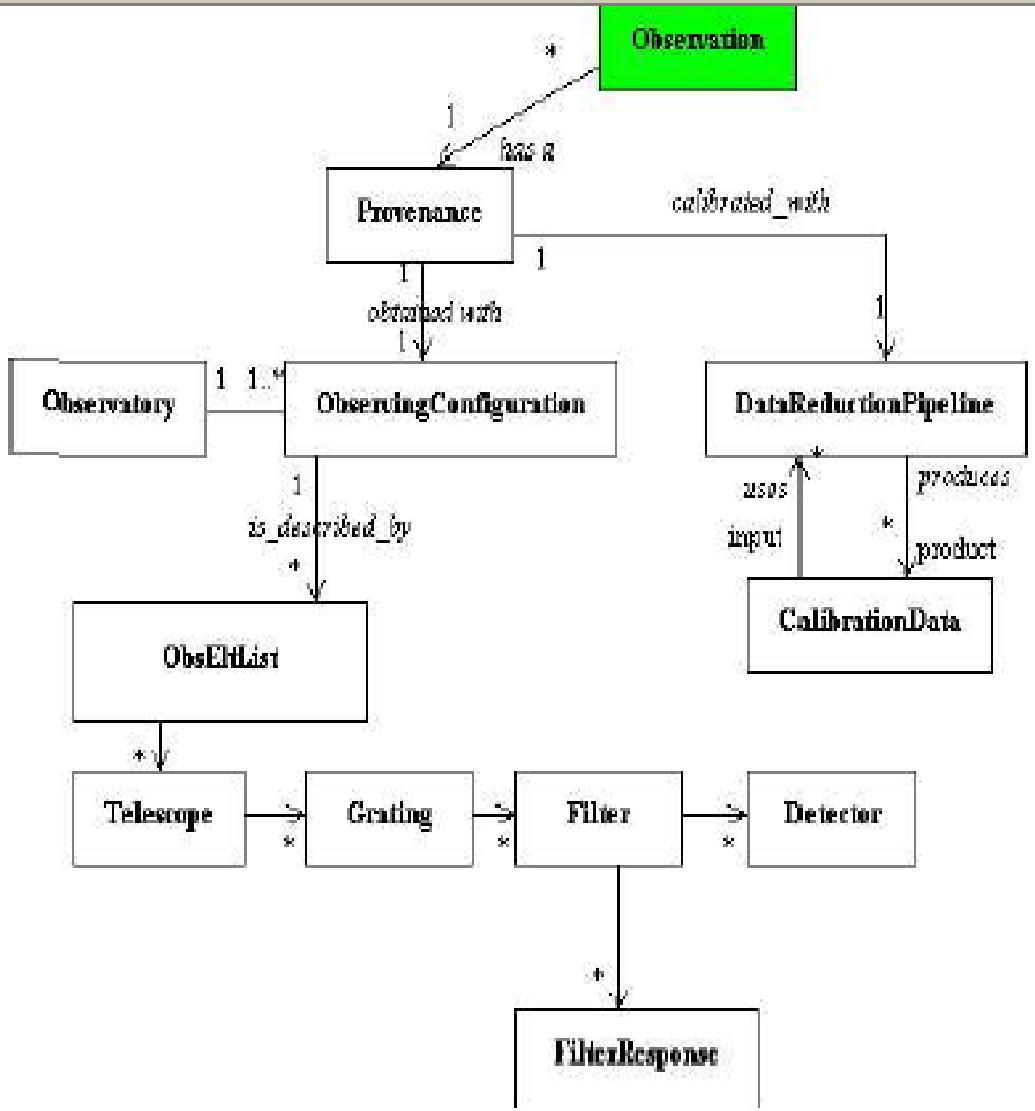
– Caracterisation: Combinaison d'observations
  - Associations de types coadditions
  - Camera multi CCD
– Provenance: liaisons entre diverses phases du flot de données.

- Question des utypes (STC, Characterization)
  – chaîne de caractères unique désignant un élément
  – comment les construire, les combiner: C1.C2.C3.A1
  – relations avec les identificateurs uniques de champ (UFI)...


Characterisation
container
1
1
1
has a (for each axis)
has a (for each axis)
has a (for each axis)
property
0..1
property
0..1
1
property
AxisType
Resolution
AxisType
SamplingPrecision
AxisType
Coverage
1
1
1
concept
1
1
1
1
1
1
1
1
1
1
1
is described by
level 1
1
AxisType
Location
ResolutionRefVal
SamplingRefVAL
coarse
*
*
0..1
expands
expands
1
ResolutionBounds
SamplingBounds
Bounds
0..1
0..1
0..1
level 2
expands
expands
1
1
1
0..1
0..1
0..1
ResolutionSupport
SamplingSupport
Support
level 3
0..1
0..1
expands
expands
fine
fine
1
AxisType
0..1
ResolutionVariability
SamplingVariability
Sensitivity
level4
0..1
0..1
0..1

U4X1PL01B.MOSAIC





Concluding remarks
(A Boselli ESAC Spectroscopy Workshop)

Filter response: this is crucial for transforming observed magnitudes in monochromatic fluxes (necessary for the construction of SED), and for comparing fluxes with models (synthetic magnitudes) for all photometric systems

Coordinates, PSF, Apertures….: to avoid confusion for unresolved sources or extended objects and in crowded regions

Applied corrections: extrapolation to total values; extinction corrections…; we choose to present uncorrected data to leave to the astronomer the possibility of choosing is own method

References: should be available for the definition of each variable, units,… (prefer only published data checked by a referee)

Keep any possible information on the quality of the data

Collaborations

-
  - Charac: M.Louys, A.Richards, F.Bonnarel, A.Micol, I.Chilingarian, JmcDowell +B.Gassmann (CAMEA)+ G.Lemson (discussion)
  - DAL standards: T.Boch, F.Bonnarel, P.Fernique, M.Louys, P.Osuna, J.Salagado + D.Durand (CADC) +D.Tody (NVO)
  - Format footprint: T.Boch, F.Bonnarel, F.Chereau, M.Dolensky, T.Donaldson, P.Fernique, J.Malapert, F.Pierfederici
  -