



# SIAPV2 : Polarization, WCS Mapping and enhanced query response

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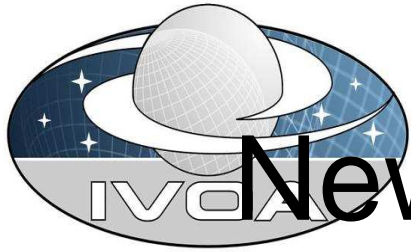




# The SLAV2 context

- DAL landscape strongly modified by SSA and TAP.
- UWS can be reused for asynchronous acces/staging
- Emerging Generic Dataset protocol / Observation Datamodel .
- Image = « simple » dataset where the spatial signature is non degenerate.
  - 2D images of whatever Observable
  - XYlambda or XYtime cubes
  - XYlambdaPol hypercubes
  - Non resampled IFUs are not Images (but bounded collection of spectra)





# New INPUT PARAMETERS

- POL (for Polarization)
  - Is there some ?
  - Cutout ?
- Mapping (regridding) (also for spectral and time axis)
- Cutout (geometry )
- Reduction
- POS, SIZE issue: Cone Search only ? Or boxes ...(--REGION + cutout generation)

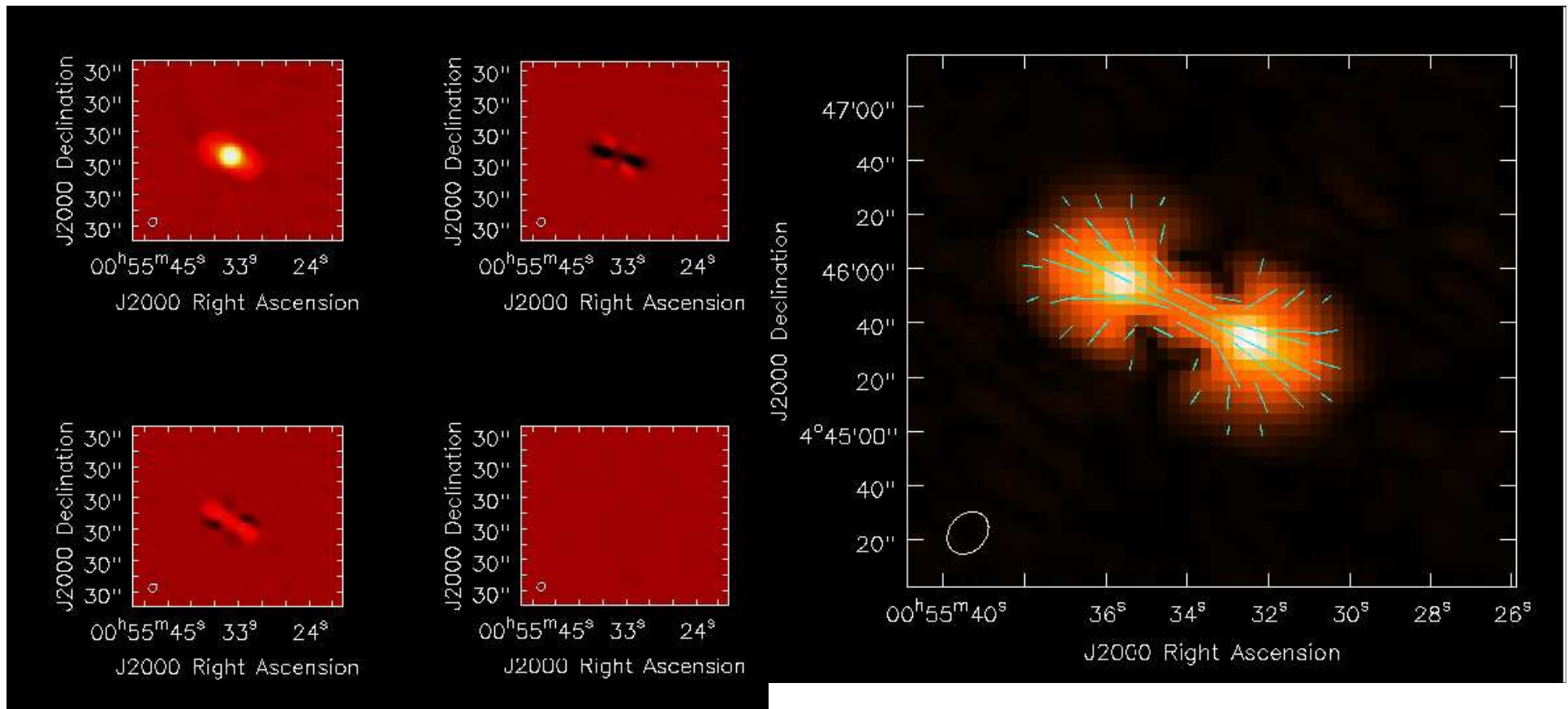
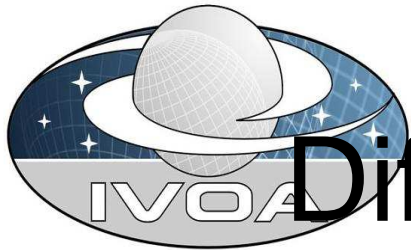
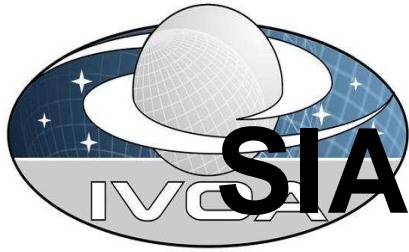


Figure 2: VLA images of Jupiter at 1.4 GHz. From left to right: Top row, Stokes I (total intensity), Stokes Q. Middle row, Stokes U, V (no signal in V). Bottom, Polarized intensity, with polarization vectors overlaid.



# Different polarization ucds

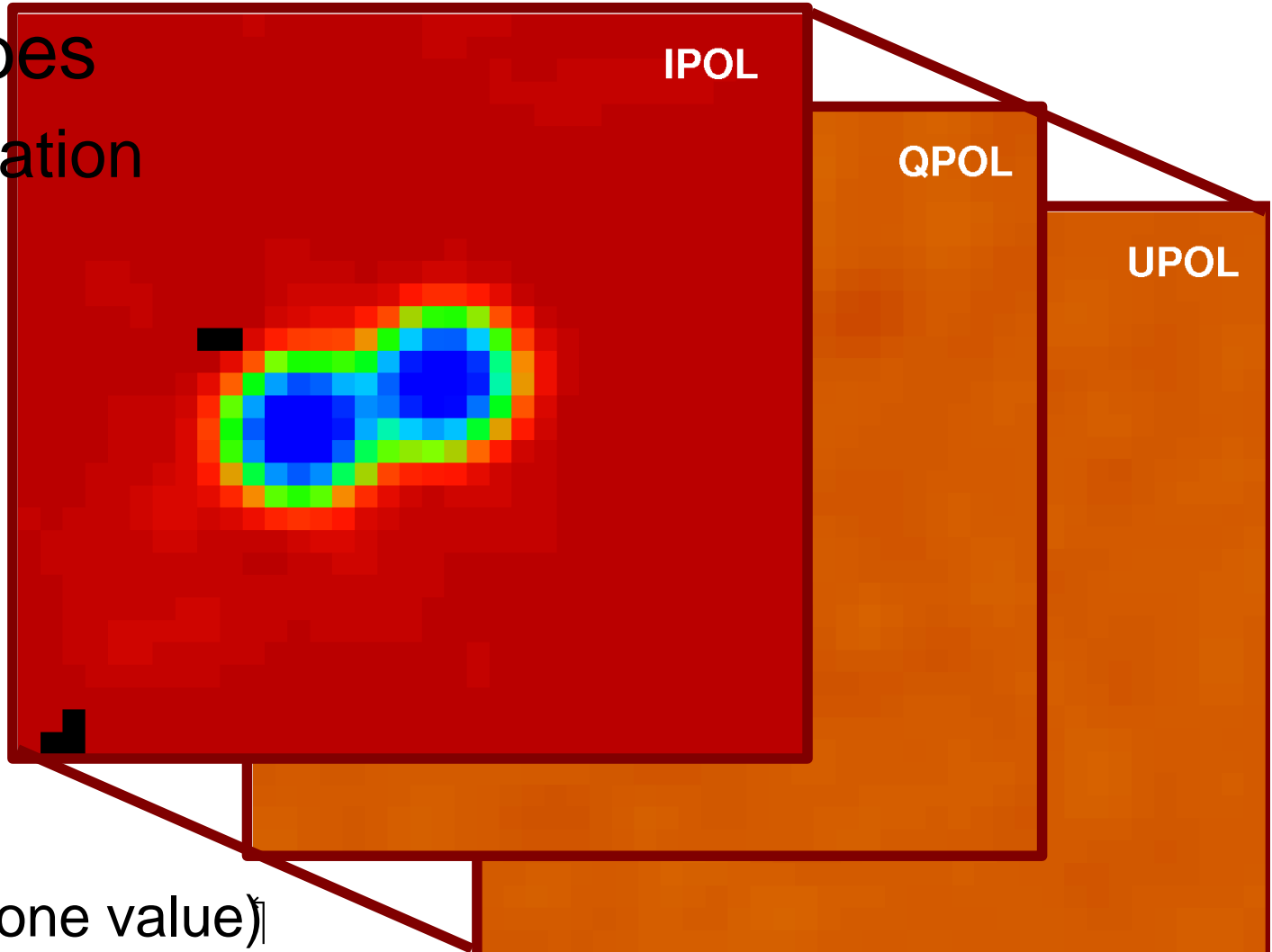
- phot.flux.density;phys.polarization.stokes.I
- phot.flux.density;phys.polarization.stokes.Q
- phot.flux.density;phys.polarization.stokes.U
- phot.flux.density;phys.polarization.stokes.V
  
- phot.flux.density;phys.polarization.circular.RR
- phot.flux.density;phys.polarization.circular.LL
  
- phot.flux.density;phys.polarization.linear.POLI
- phot.flux.density;phys.polarization.linear.POLA
  
- phot.flux.density;phys.polarization.stokes.V.fraction
- phot.flux.density;phys.polarization.circular
- phot.flux.density;phys.polarization.circular.percent
- phot.flux.density;phys.polarization.linear.fraction
- phot.flux.density;phys.polarization.linear.percent



# SIAP polarization use cases

AIDA comments (AMSR)

- NVSS cubes
  - 3 polarization planes
    - I
    - Q
    - U
  - 4 Axes
    - RA
    - Dec
    - Stokes
    - Freq. (one value)



- image servers
- Aladin images
- kyView
- Sloan
- MAST
- CADC
- erSIA2
- iaadaSI
- ISS...
- LA...
- hers...

○ Experimental SIA2 Aladin Server ?

Target.....	<input type="text"/>	Grab coord
SIZE .....	0.0deg	
COLLECTION .....	ALL	
BAND .....	ALL	
TIME .....	<input type="text"/>	
POL .....	<input type="text"/>	
FORMAT .....	<input type="text"/>	
SPATCRPIX .....	<input type="text"/>	
SPATCRVAL .....	<input type="text"/>	
SPATCD .....	<input type="text"/>	
SPECRPIX .....	<input type="text"/>	
SPECRVAL .....	<input type="text"/>	
SPEC .....	<input type="text"/>	
Reduction .....	mean	
CUTOUT .....	<input type="text"/>	

- Catalog servers
- VizieR Catalogs
  - Surveys
  - Missions
  - IMBΔD
  - NED
  - SkyBot
  - Others..



# Query response

- Curation, DatasetID, Access as in SSA (part of GenericDataset protocol / Observation Datamodel)
- Characterization:
  - more on spatial and time axis than in SSA: see demo.
  - Also Polarization (as enumeration)
- Mapping : spatial, time and spectral Now (see demo)







# MAPPING records

- **Spatial**
  - CTYPE projection `sia:Mapping.Spatial.Projection`
  - CTYPE coordinates `sia:Mapping.Spatial.Ctype`
  - Coordys of Mapping Ref pos `sia:Mapping.Spatial.coordsys`
  - Pixel REFERENCE `sia:Mapping.Spatial.crpix`
  - Reference position `sia:Mapping.Spatial.crval`
  - MappingSpatialCdMatrix `sia:Mapping.Spatial.cdMatrix`
- **Spectral**
  - Coordsys `sia:Mapping.Spectral.Coordsys`
  - CTYPE projection `sia:Mapping.Spectral.Projection`
  - CTYPE coordinate `sia:Mapping.Spectral.Ctype`
  - Coordsys `sia:Mapping.Spectral.Coordsys`
  - Reference position `sia:Mapping.Spectral.crval`
  - Reference Pixel `sia:Mapping.Spectral.crpix`
  - Scale `sia:Mapping.Spectral.cd`
- **Time**
  - TimeSys `sia:Mapping.Time.TimeSys` UT, TT, etc ...
  - Reference Time `sia:Mapping.Time.crval` Time in JD,MJD,etc...
  - Reference internal time `sia:Mapping.time.crpix`
  - Scale `sia:Mapping.Time.cd`
- **Polarization :maybe in char ?**
  - `sia:Mapping.Polarization.enum` I Q U V LL(as in STC)
  - `sia:char.PolarizationAxis.enum` I Q U V LL , etc ...

