CASSIS

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on behalf of the CASSIS team

Outline:

- CASSIS in a nutshell
- Interoperability in CASSIS
- Technical information

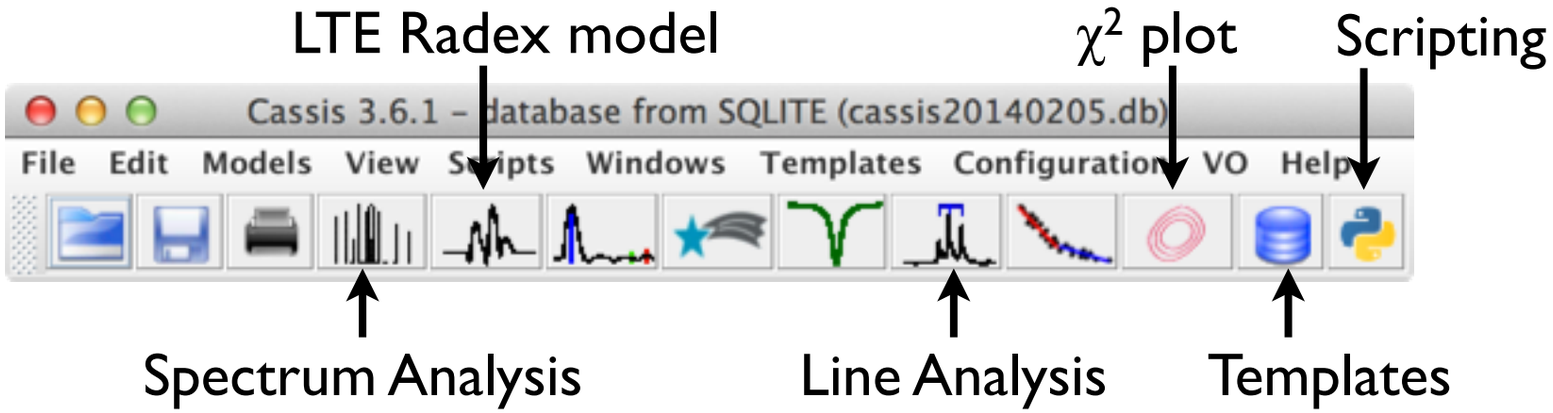
CASSIS is part of the OV-GSO (Observatoire Virtuel du Grand Sud-Ouest : Bordeaux-Toulouse-Montpellier - http://ov-gso.irap.omp.eu) : regional center for astrophysical data. Services: CDPP, Bass2000-CDAB, PolarBase, Pollux, KIDA, CASSIS, STORMS.

CASSIS

Centre d'Analyse Scientifique de Spectres Instrumentaux et Synthétiques

http://cassis.irap.omp.eu

- Free spectrum analysis software developed at IRAP since 2005
- Projects scientists: E. Caux (PI), S. Bottinelli, C. Vastel
- Developers: J.-M. Glorian (Project manager), M. Boiziot, D. Rabois
- Developed in Java
- Features: line identification (large datasets), synthetic spectra, scripting (Jython)
- Interoperability: HIPE (Herschel software) plug-in, SAMP, SSAP, VAMDC

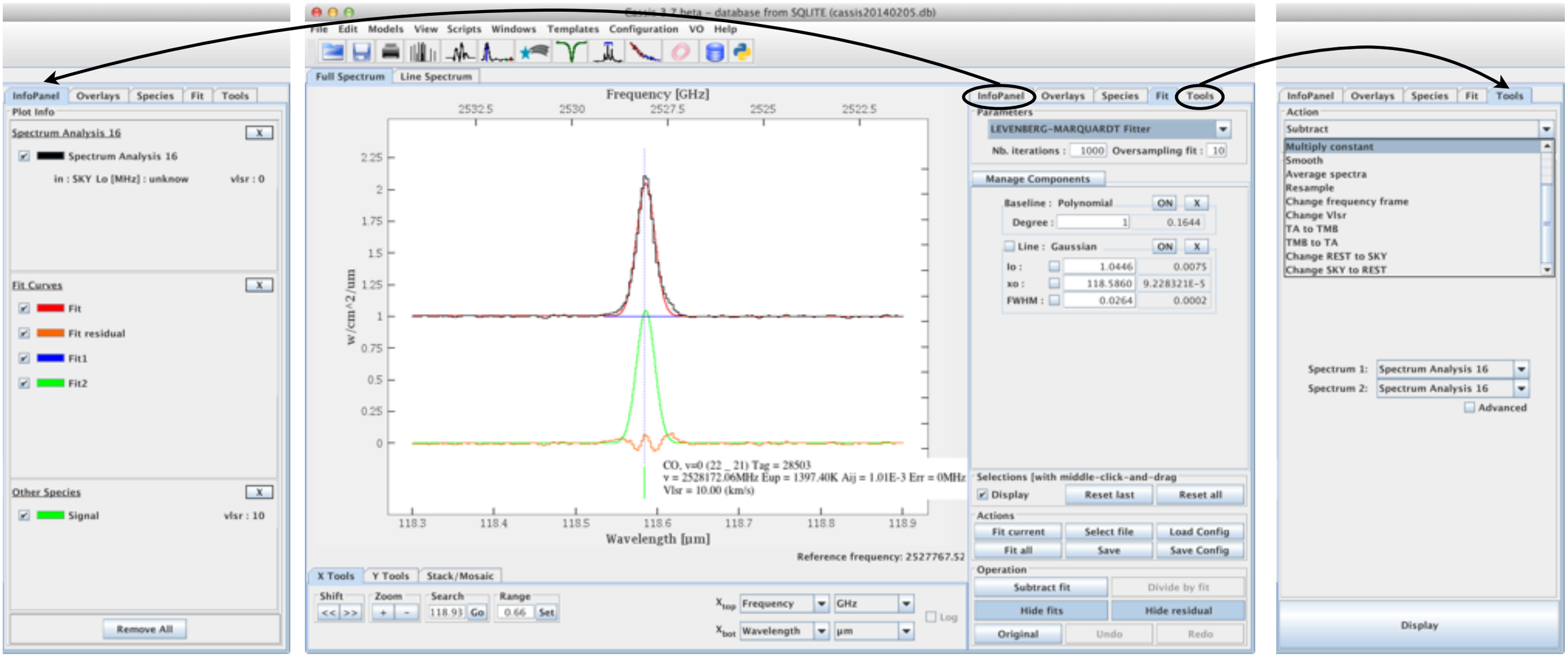


Why CASSIS?

- Display spectra, *WHATEVER* their x- and y-axis units
- Manipulate and analyse

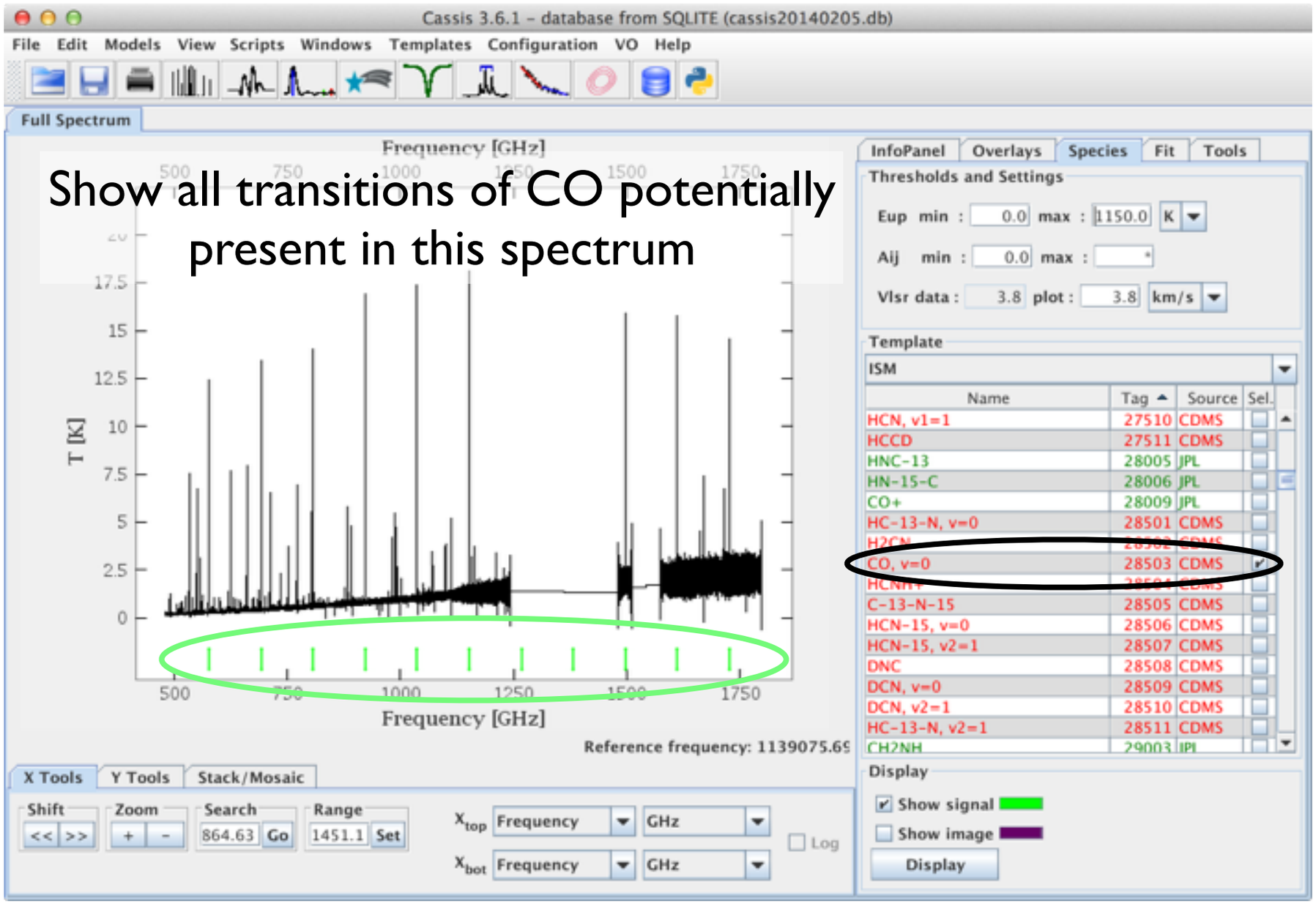
↓ re-sampling, average, operations, …

↓ Line identification, best model (χ^2)



Why CASSIS?

- Line identification : CASSIS especially useful when dealing with large datasets (more and more frequent with the increase in bandwidth and spectral resolution of recent receivers)



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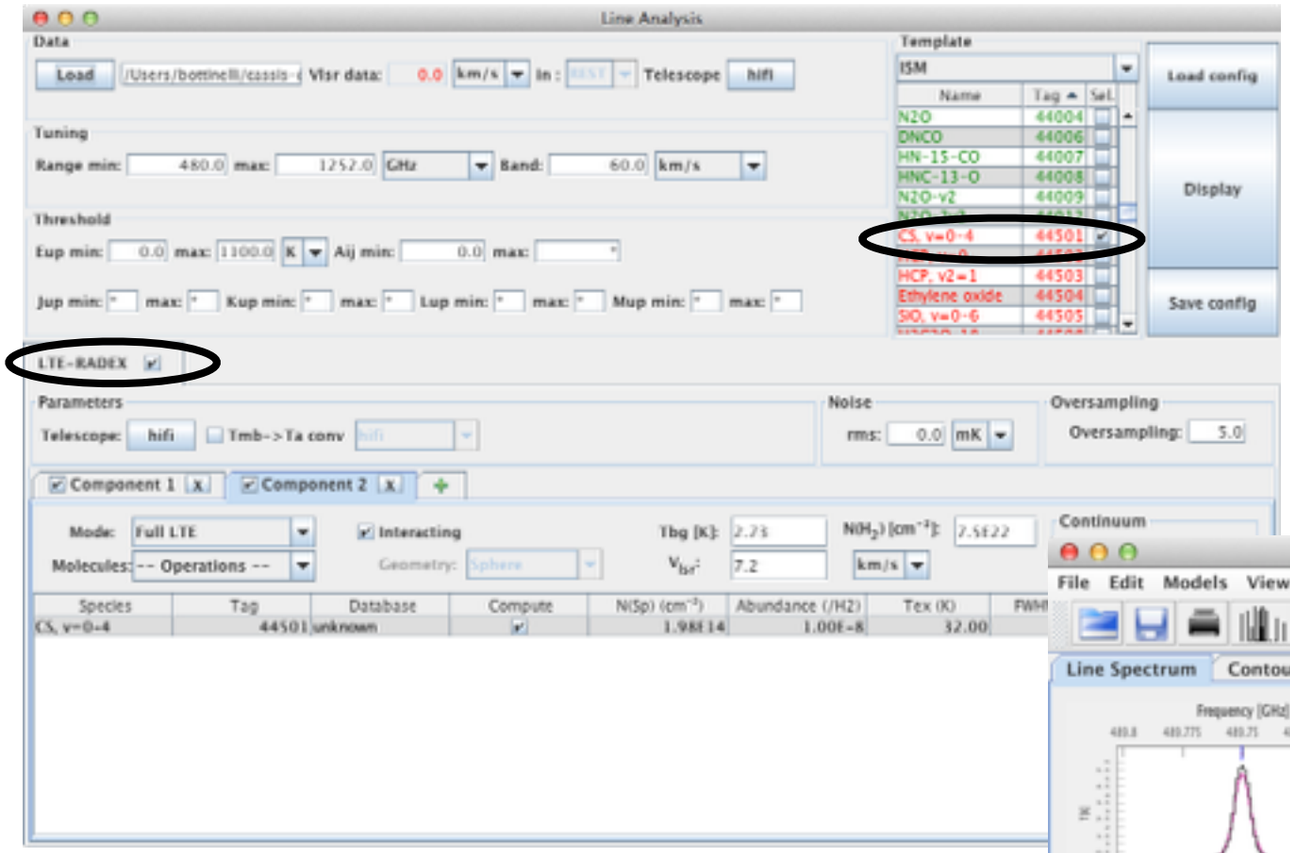
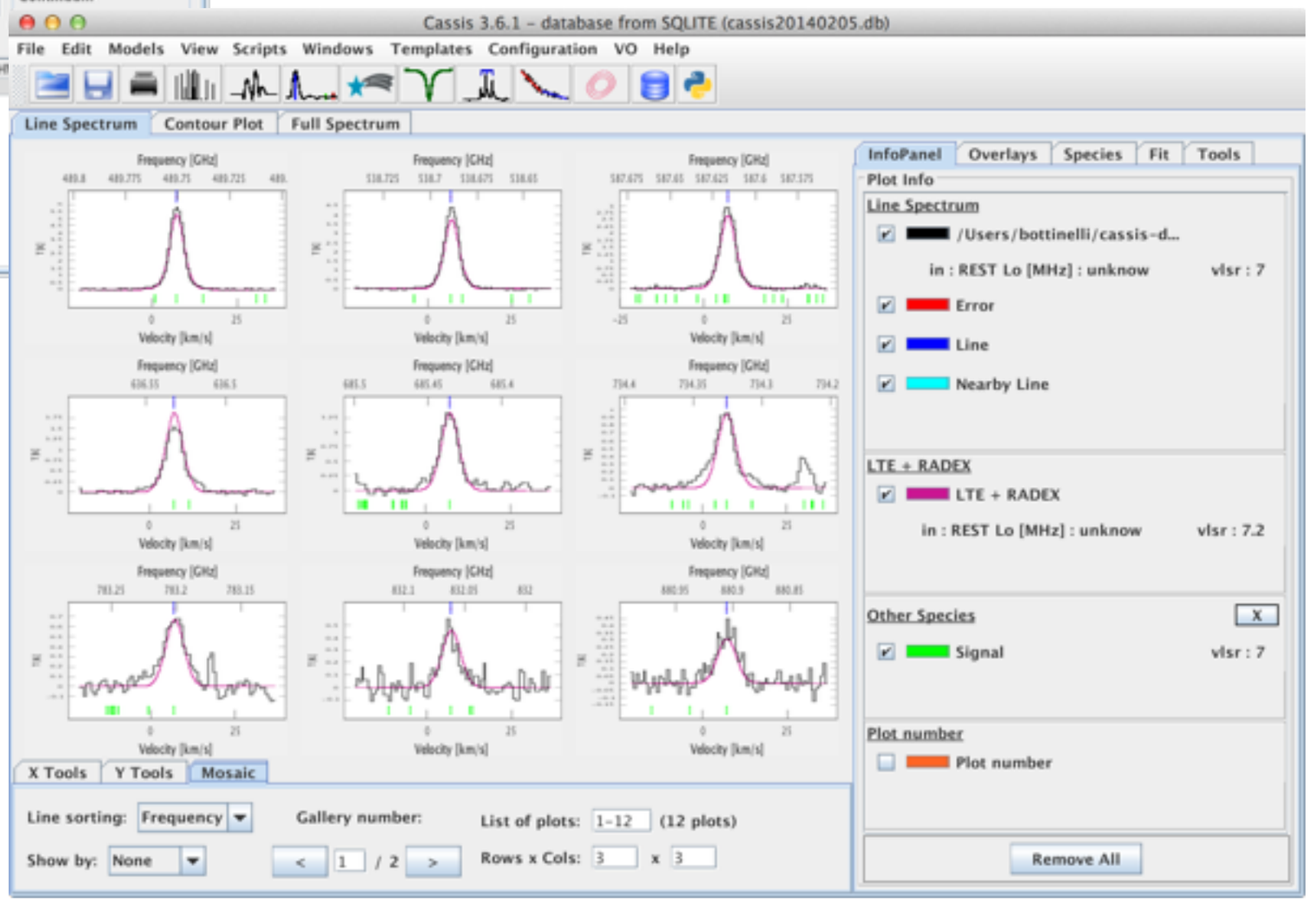




- Show a mosaic of all CS transitions, overlaid with an LTE model and positions of other species.

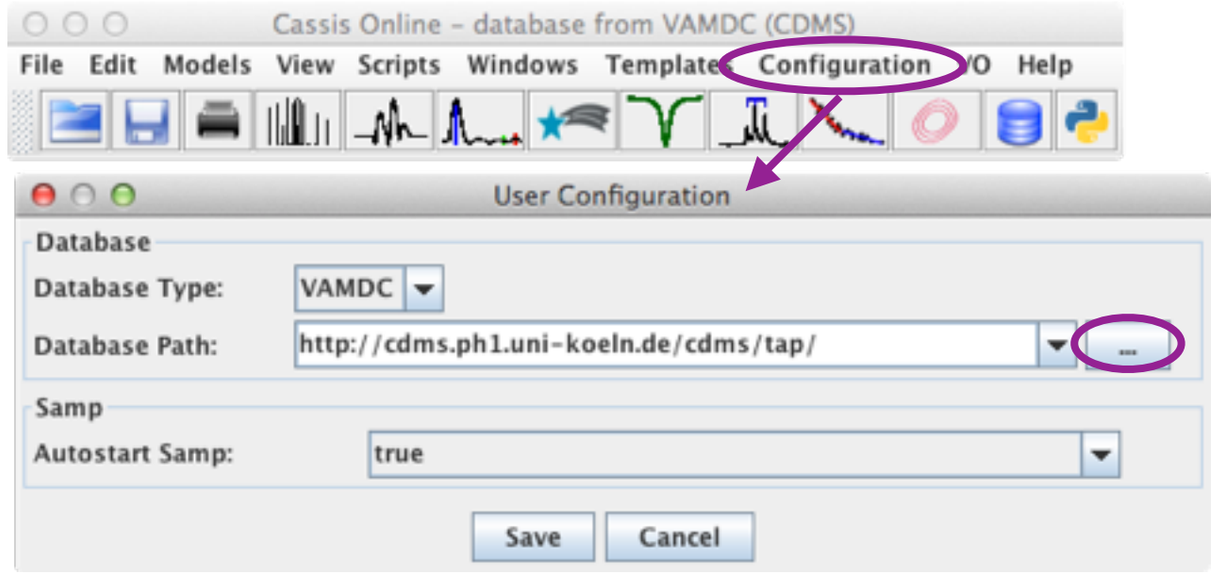
✦ Key point : CASSIS needs a spectroscopic database.

Databases and interoperability

- Our needs: molecular, atomic and collisional databases

- Local database: SQLite database (downloaded with CASSIS stand-alone) built from on-line databases (CDMS, JPL, NIST, etc : ascii files) and from contributed databases

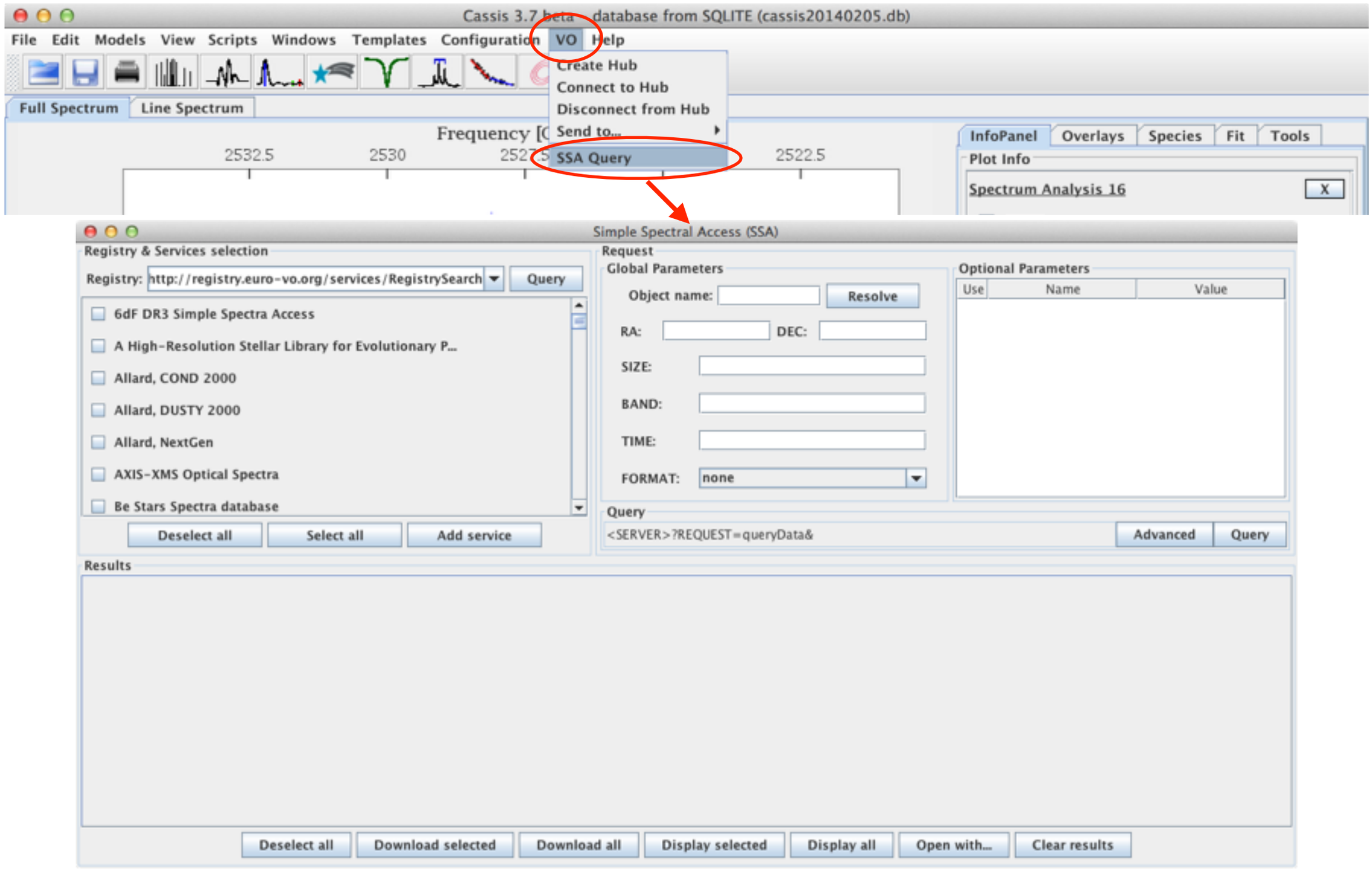
- VAMDC (atomic and molecular database with collisional coefficients):
  - default with CASSIS online release
  - only CDMS or JPL at the moment
  - VAMDC protocol :
    - → fully meets our needs : includes all needed keywords and collisional databases
    - → makes use of IVOA concepts/ philosophy



- Can easily switch between VAMDC and local database

Spectra and interoperability

CASSIS now includes a module for SSA queries!



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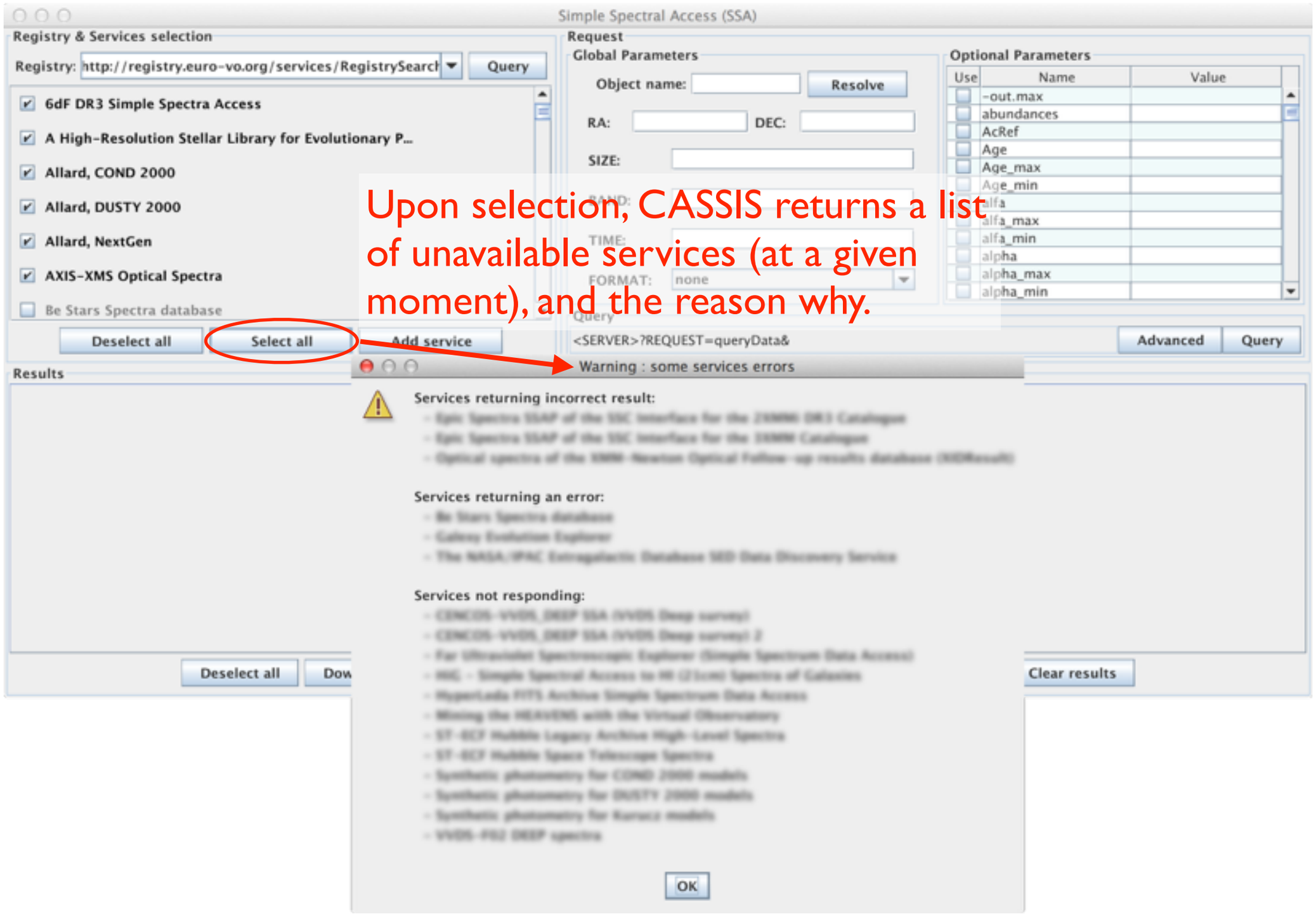

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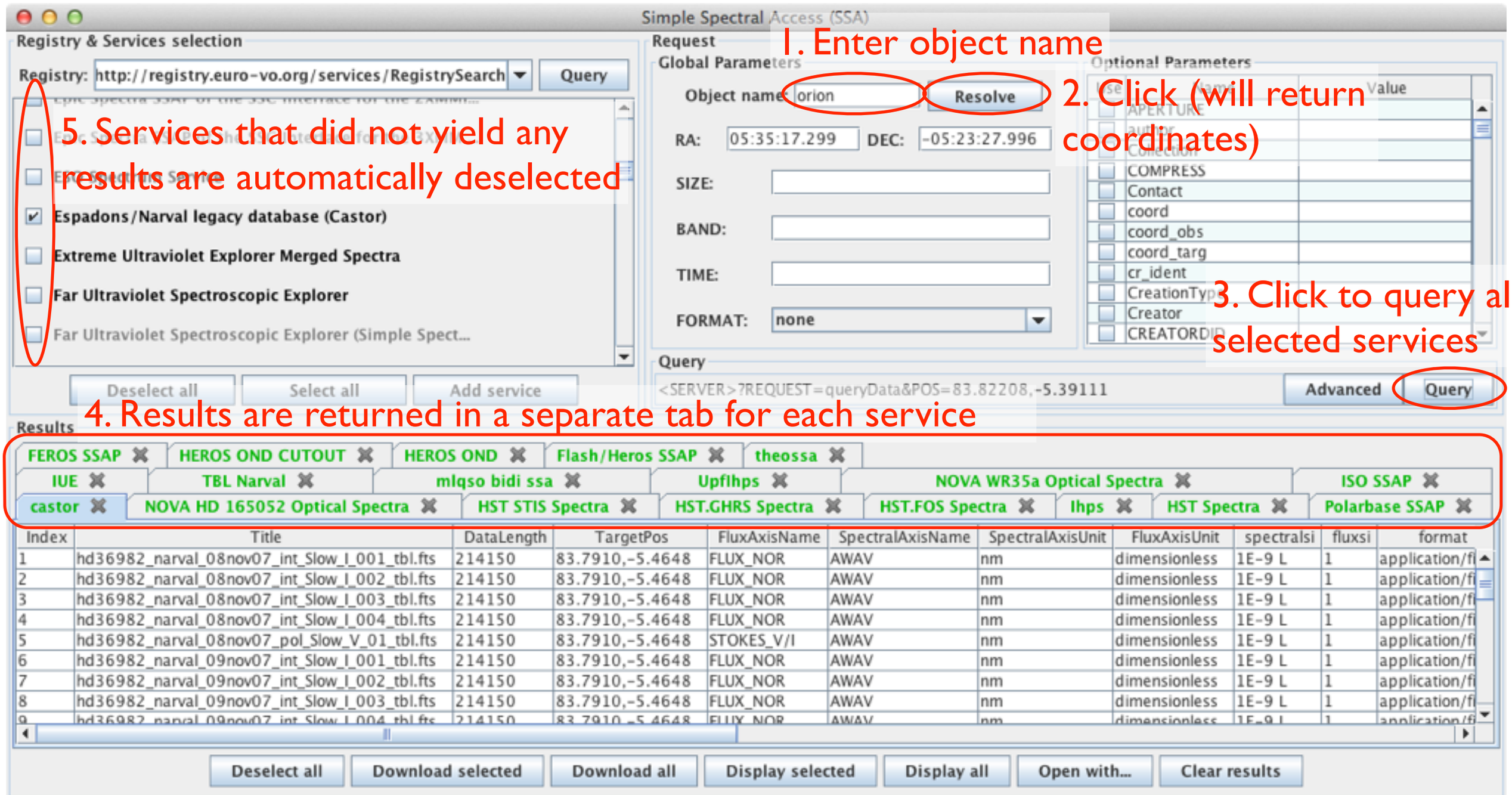

1. Enter object name
2. Click (will return coordinates)
3. Click to query all selected services
4. Results are returned in a separate tab for each service
5. Services that did not yield any results are automatically deselected

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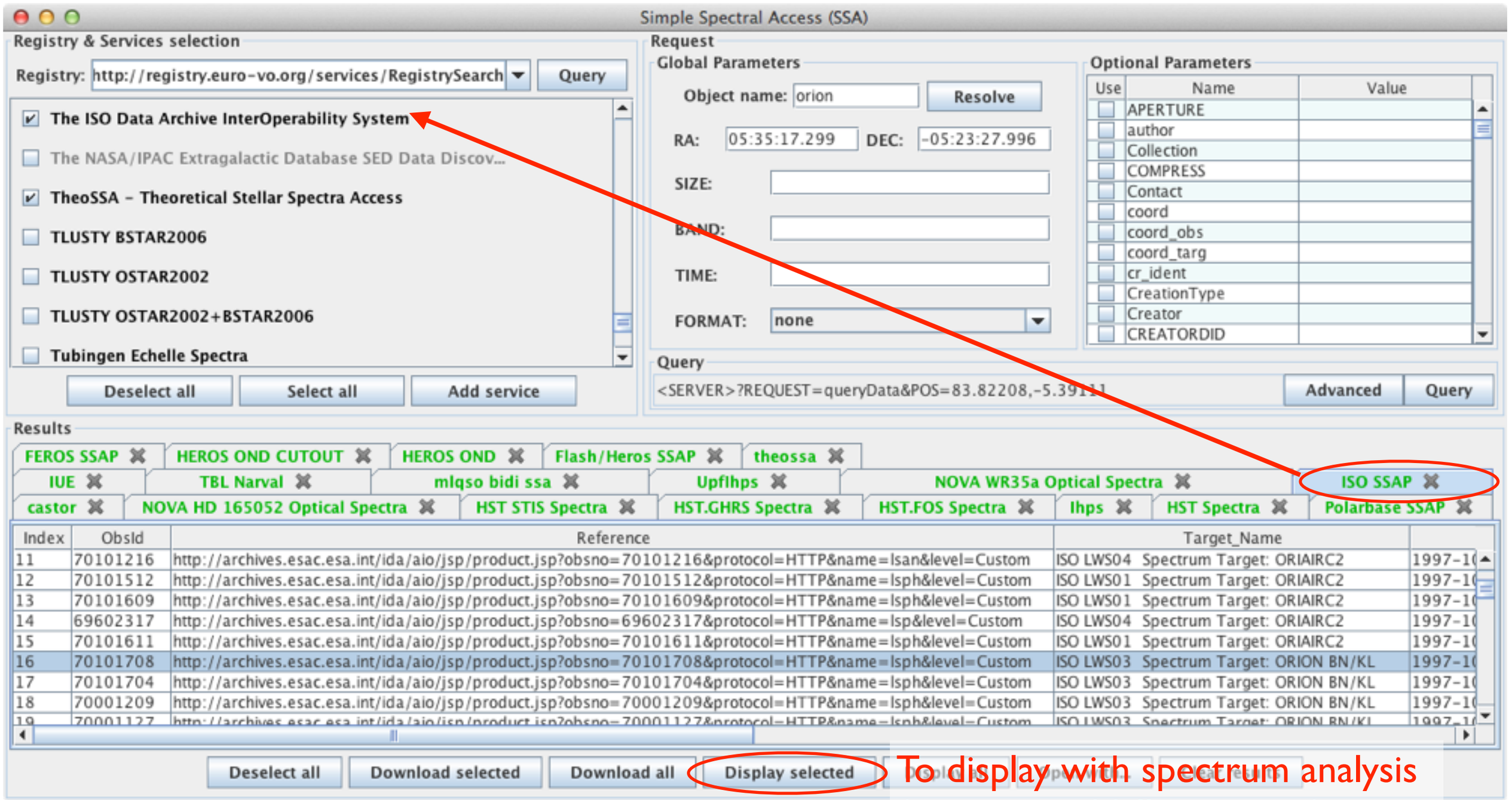

To display with spectrum analysis (overview of full spectrum)

Spectra and interoperability

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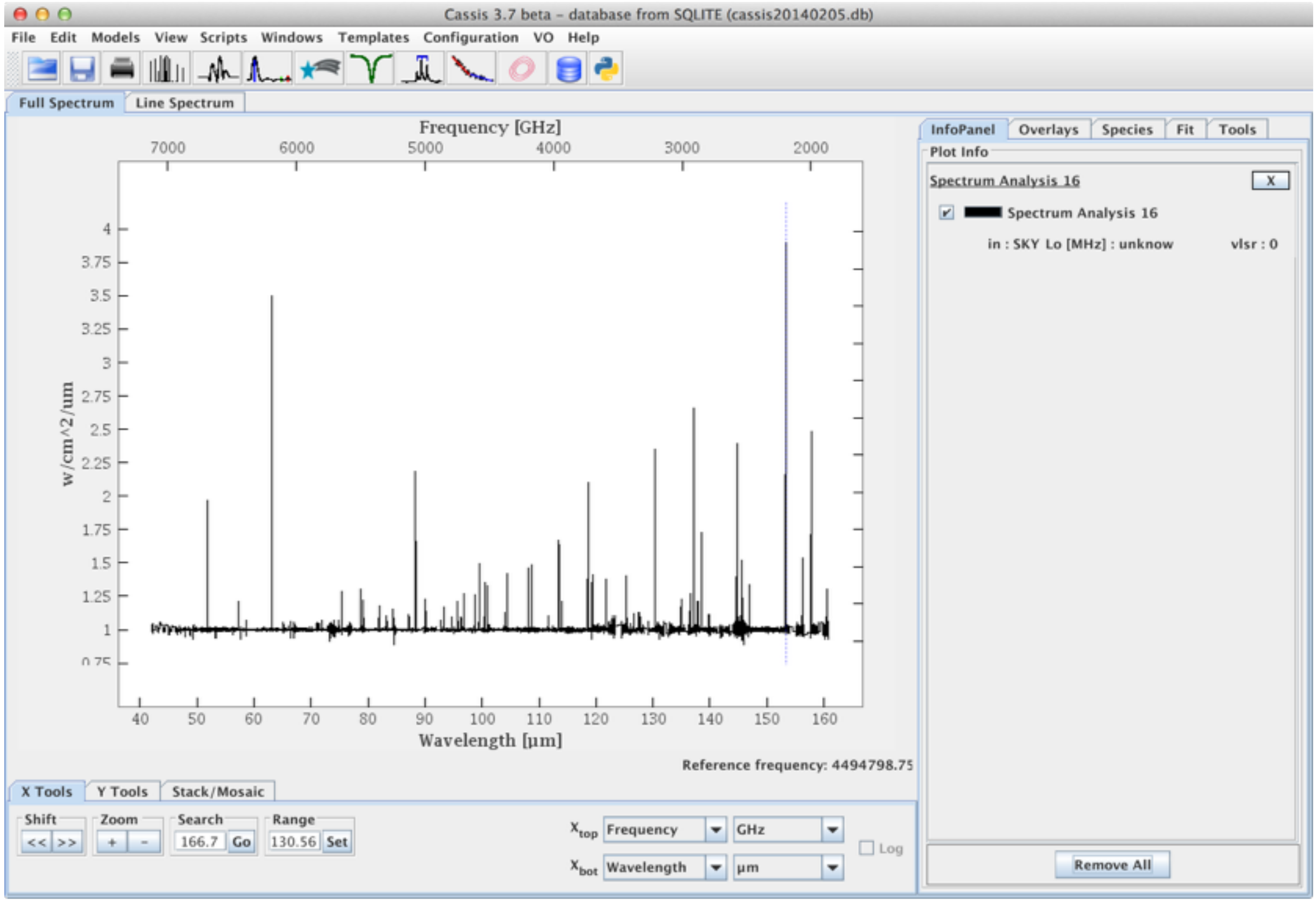

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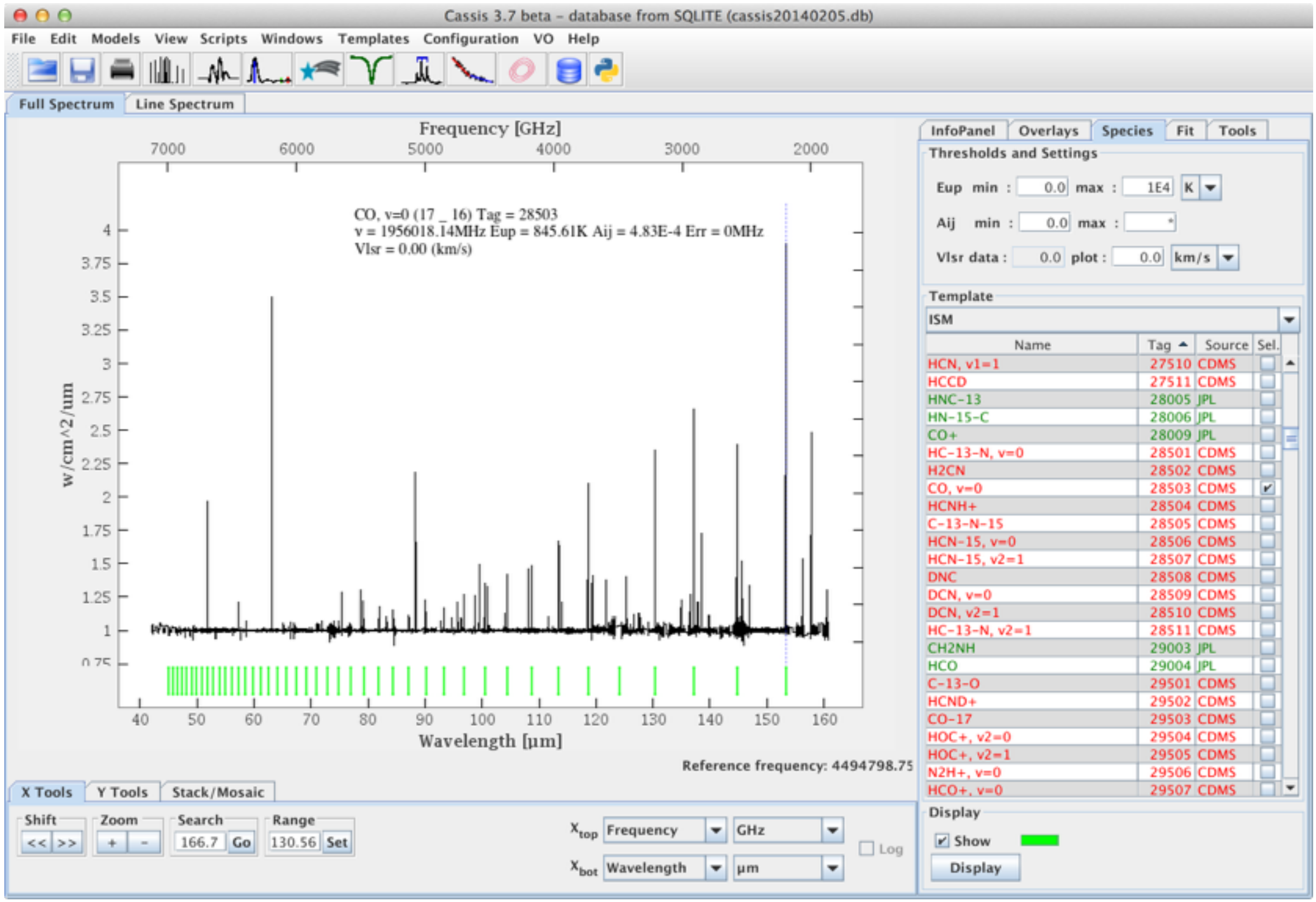

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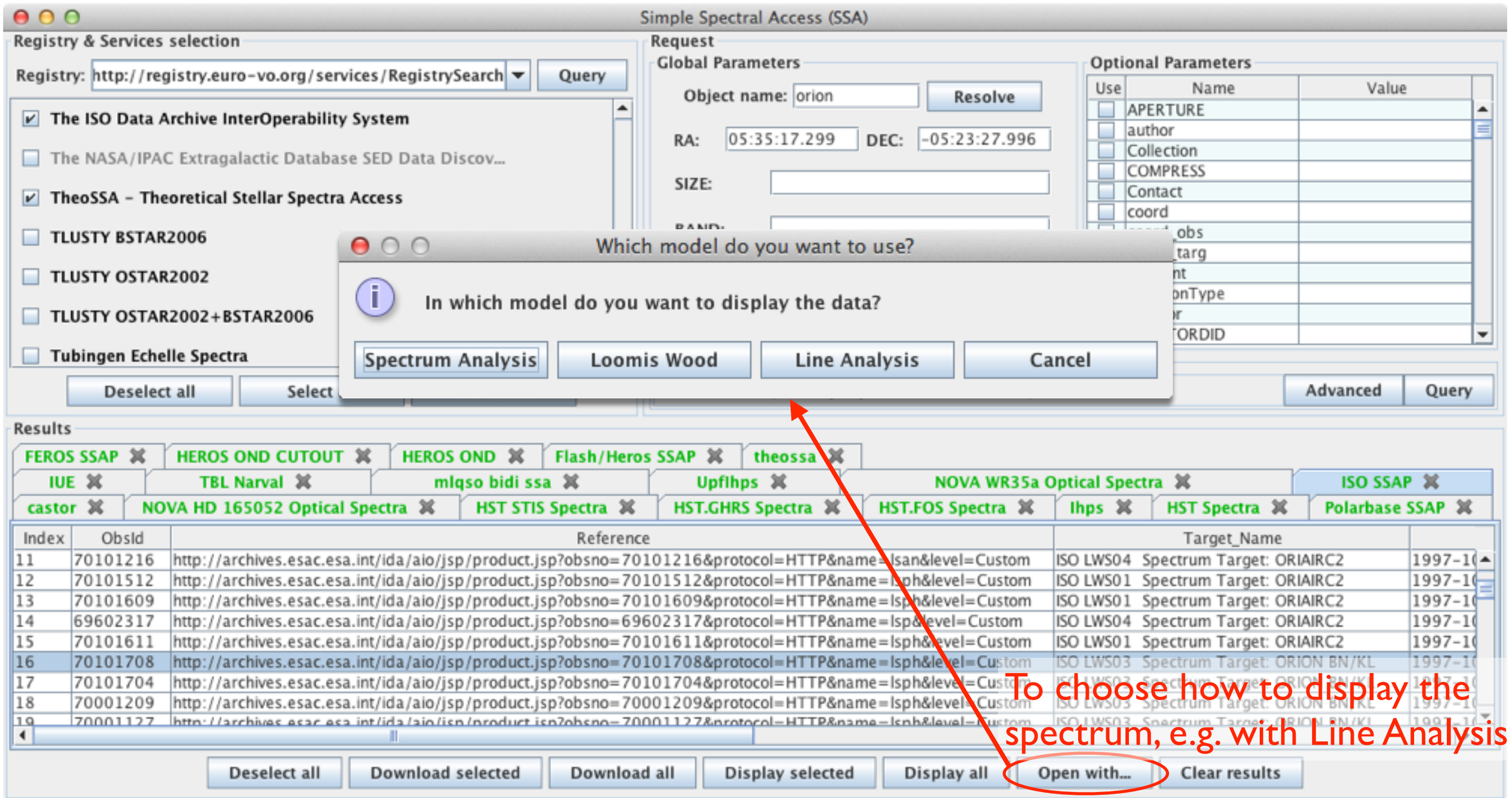

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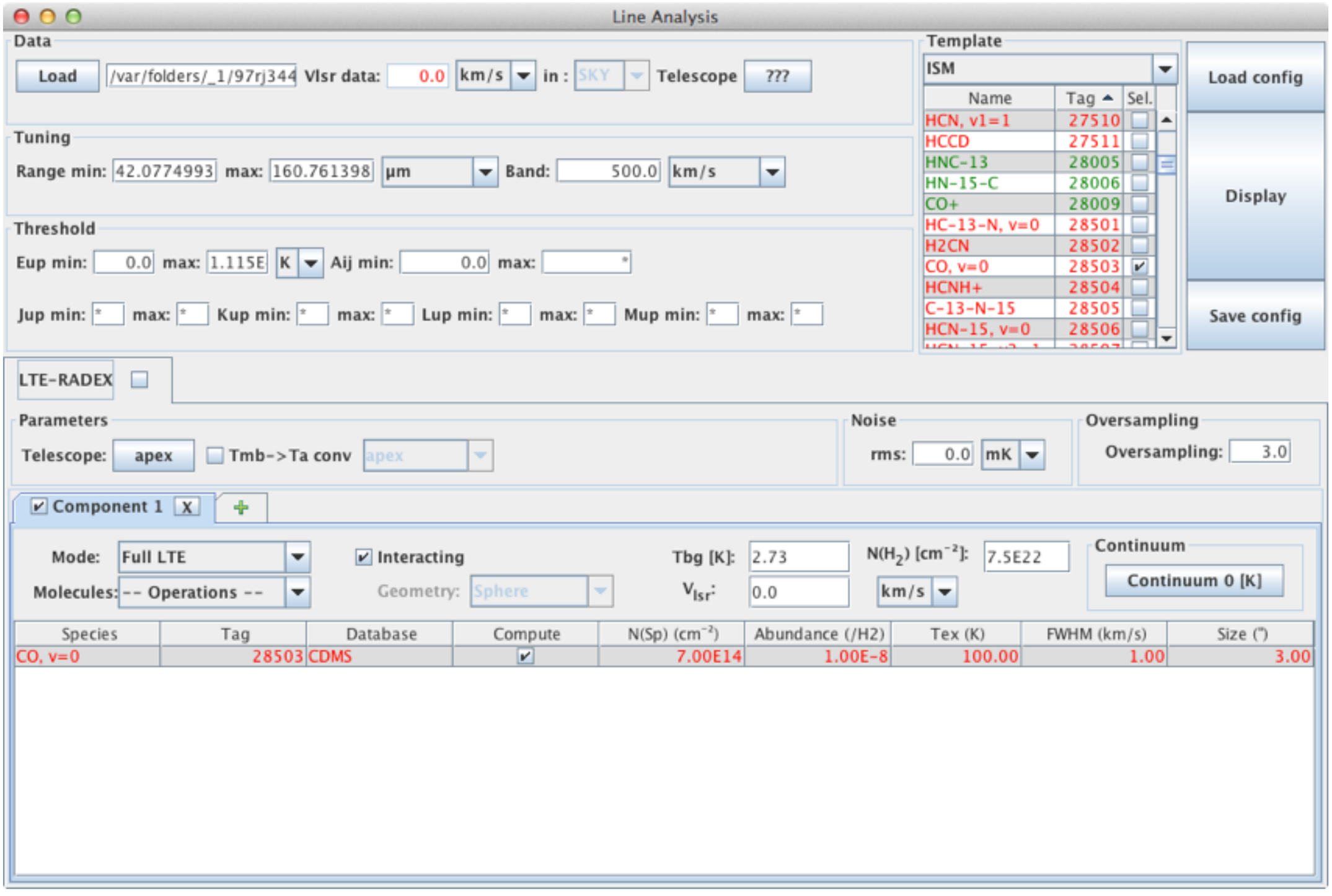

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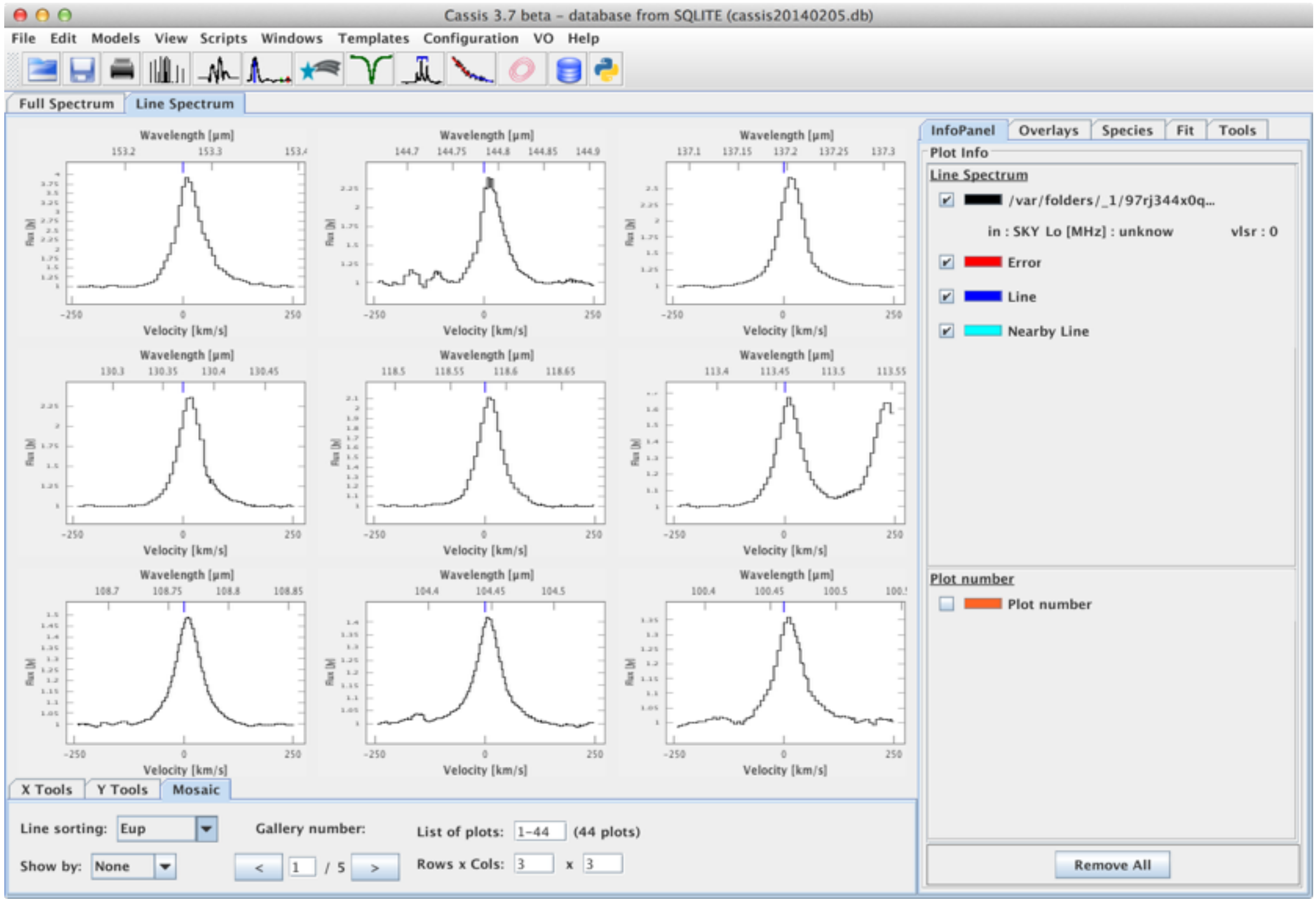


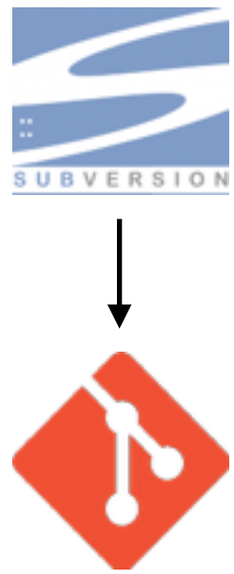
Questions / Issues

1. Update of registries needed : too many services are constantly unavailable.
2. Problem with validation/compliance of protocole : we had to implement several exceptions to be able to retrieve/display data from certain services.
   - For example, in the same service, have x-axis in ‘um’ or in ‘microns’!!! → unify and impose?
   - Some fits files are not "self-contained"
3. Evolution of registry : implement filter for services based on, e.g., keyword, wavelength? how to make this standard?

Tools for the development

Platform of development :

- Version Control Systems :
  SVN → GIT : use Gitlab to manage the repository



- Test :
  Unit test : Junit
  Graphic test : Fest

- Continuous integration :
  Jenkins

- Metrics and Control quality :
  SONAR

- Build systems :
  ANT → Maven

Future plans ...

- Divide CASSIS into independent modules and provided them separately
  - Jython, Database Access
  - Line Analysis, Synthetic model
  - ...
  - Already doable for SSA Module:
    - developed independently of CASSIS
    - only two external librairies : regclient (M. Taylor) and ivoaregistry (R. Plante)

- Open the access to a part of the platform
  - Maven and Git repositories
  - Jenkins and sonar reporting

Collaborations

Several collaborations :

- CASSIS is now part of the applications available in Specflow (project part of OV-GSO) http://bass2000.bagn.obs-mip.fr/specflow/

- CASSIS will be included in the next version of AppLauncher (provided by JMMC)

- On-going: use JMCS (library provided by JMMC) https://github.com/JMMC-OpenDev/jMCS

- Visualise spectrum from EuroPlanet TAP client

Who will be the next ?

Conclusions

- CASSIS useful to astronomers outside FIR/submm/mm field
- Working hard on interoperability ; since september, we have implemented:
  - CASSIS online (java web start / JNLP) with VAMDC
  - SSAP : search all services based on source name
- Need for : update of registries, validation/compliance of protocoles, filter services, other tools/apps to display Kelvins
- What's next : interface to select/combine different databases (VAMDC, sqlite, user-owned)
- Feedback much needed/appreciated! Comments, suggestions, ... :
  bug report page : http://cassis.irap.omp.eu/?page=bugsreport
  or send us an email : cassis-team@irap.omp.eu

Links

http://ov-gso.irap.omp.eu/
(see this page for links to all OV-GSO services)
http://www.vamdc.eu/
http://portal.vamdc.eu/vamdc_portal/home.seam
http://www.jmmc.fr/applauncher_page
http://bass2000.bagn.obs-mip.fr/specflow/