Novelties in user support with JMMC tools throughout the proposal preparation cycle

Laurent Bourgès JMMC / OSUG
& JMMC Working groups Grenoble / Lyon / Paris / Nice

Outline

- JMMC overview
- Observation preparation tools:
  - Retrieve and visualize all VLTI past observations
  - Explore astrophysical models
  - Send your OBs to ESO/P2
- CHARA specific topics:
  - PoPs + unified instrument (all 4T to 6T)
  - 7th telescope project (user config)
- Demo
- 2022 Roadmap
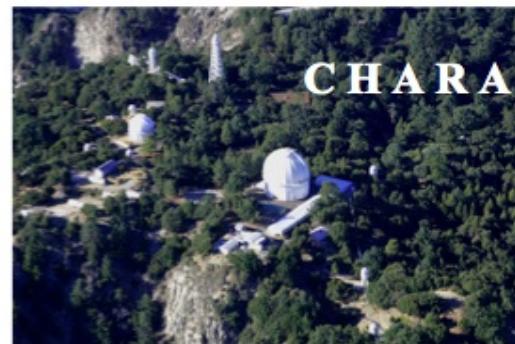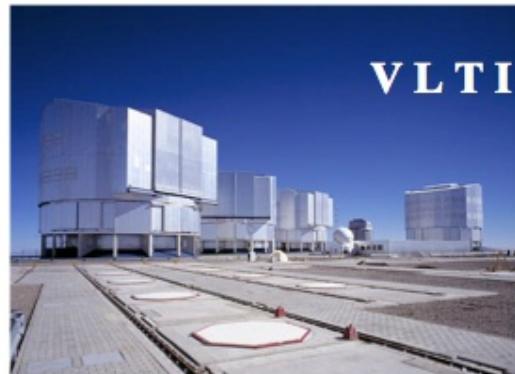
JMMC overview

The **Jean-Marie Mariotti Center** coordinates the efforts of French Partner Laboratories with interferometric expertise to offer all the potential users of interferometric facilities the best operational environment.

The mission of JMMC is threefold and consists in:

- develop, produce, document and maintain the software necessary for the exploitation and the follow-up of new interferometric equipments, especially the VLTI,
- stimulate and coordinate the academic formation of non specialists,
- participate to the prospective around new interferometric instruments.

JMMC Service overview

VLTI

CHARA

French Expertise Center

User Support

+ TRAINING
+ OLBIN Publications DB

CDS Catalogs

JSDC2
JMDC

OiDB

L0 to L3 DataBases

OImaging

SearchCal

Aspro2

Prepare Observations

a2p2

SAMP

AMHRA

Reduce data | amdlib pndrs

View Data

OIFits Explorer

Fit Models

LITpro

Reconstruct Images

See Ferreol's Next talk

Retrieve and visualize all VLTI past observations

Integrate (VLTI) observation records in ASPRO2
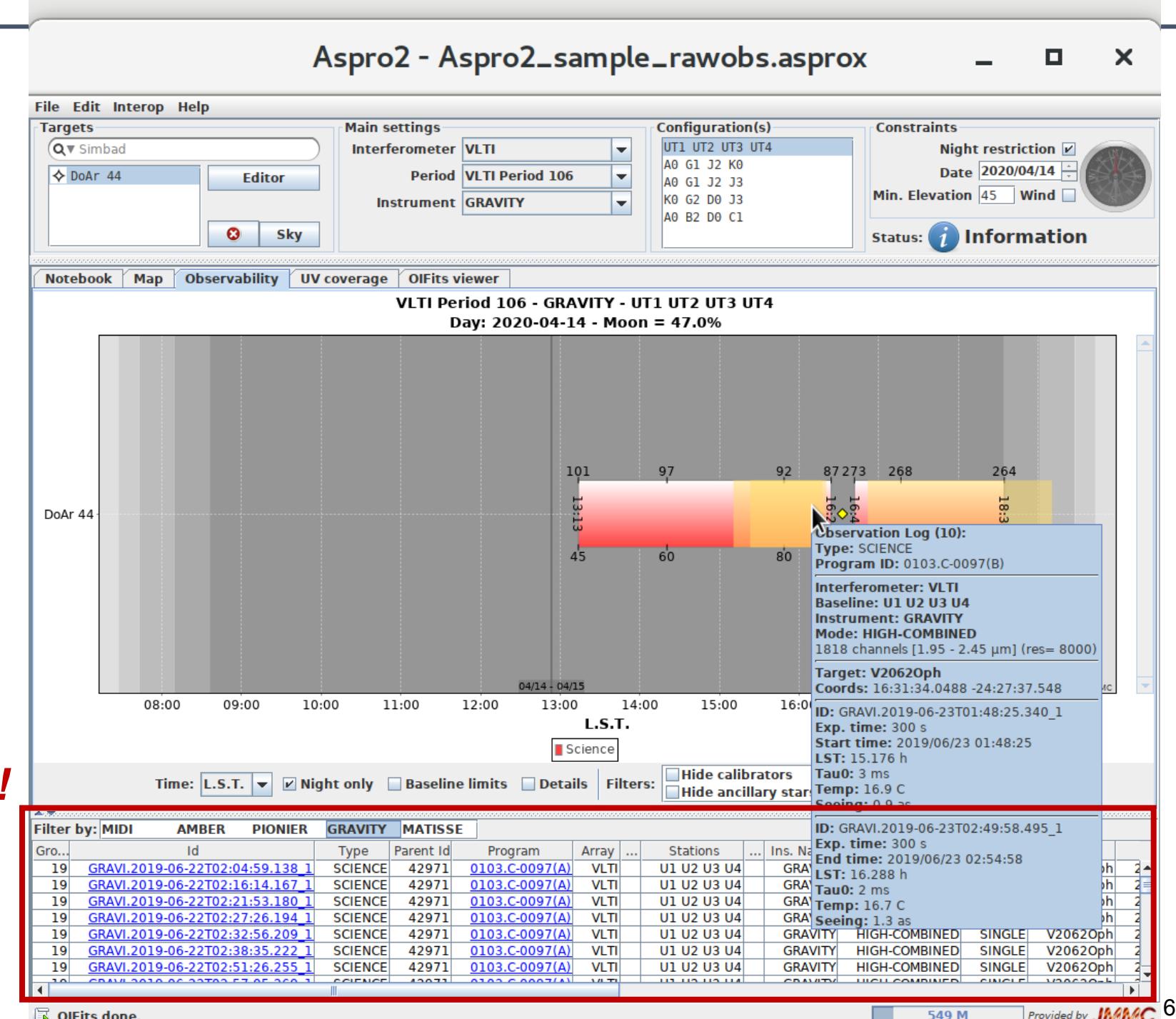
http://www.jmmc.fr/twiki/bin/view/Jmmc/Software/JmmcAspro2#Get_Information_about_past_obser

Obs logs

- Get latest obs from obs portal

  ·Show table + details in tooltips

  ·Filter records by instrument (more filters to come)

Looking forward having CHARA logs in ASPRO2 !

SPICA work in progress...
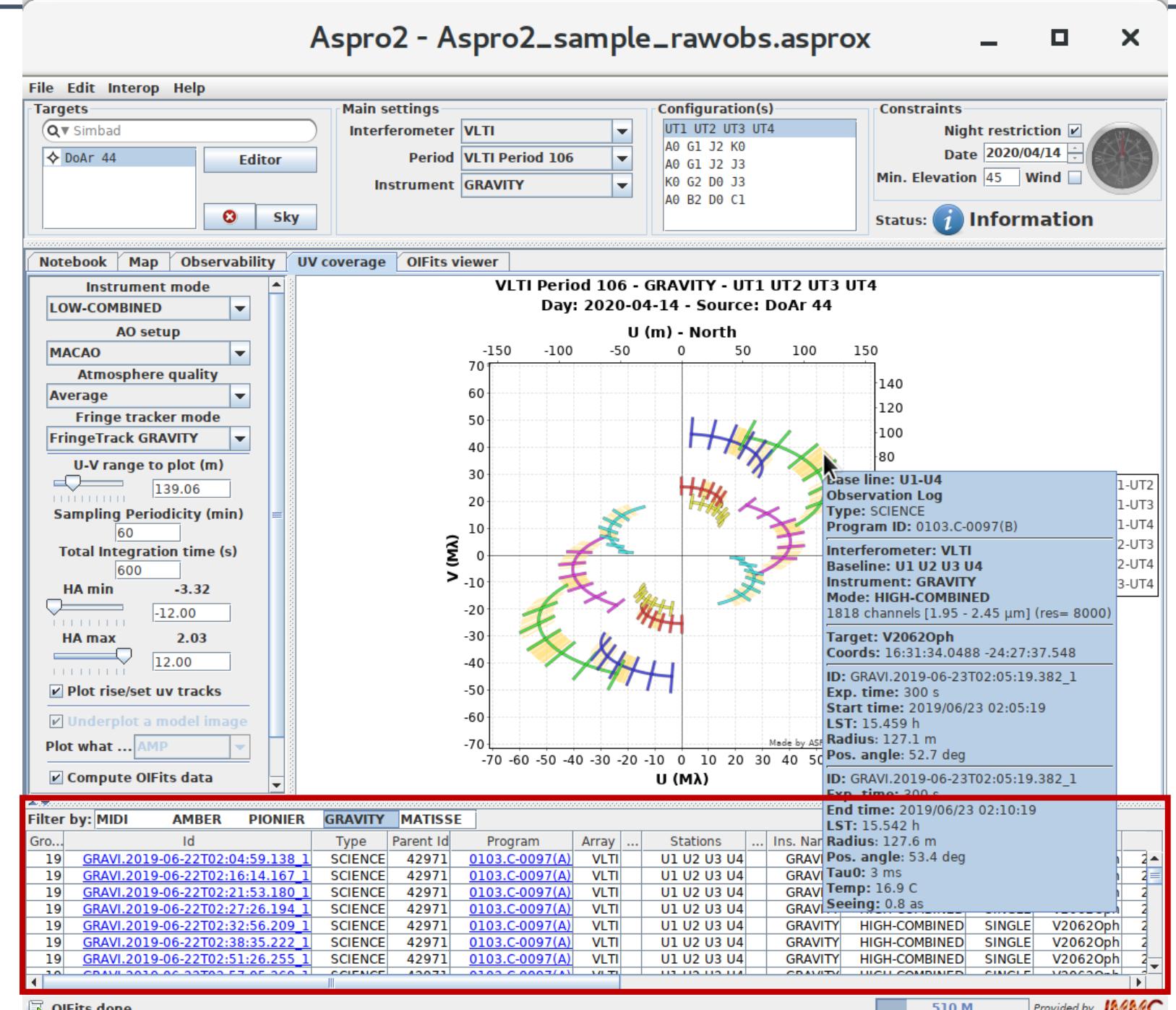
Obs logs

Show UV tracks of (filtered) past VLTI observation records

Note: each ESO O.B. gives projected baseline (radius + pa) + mjd times

Allows for an updated uv coverage monitoring!

Explore astrophysical models

User models in ASPRO2

http://www.jmmc.fr/twiki/bin/view/Jmmc/Software/JmmcAspro2#User_defined_model
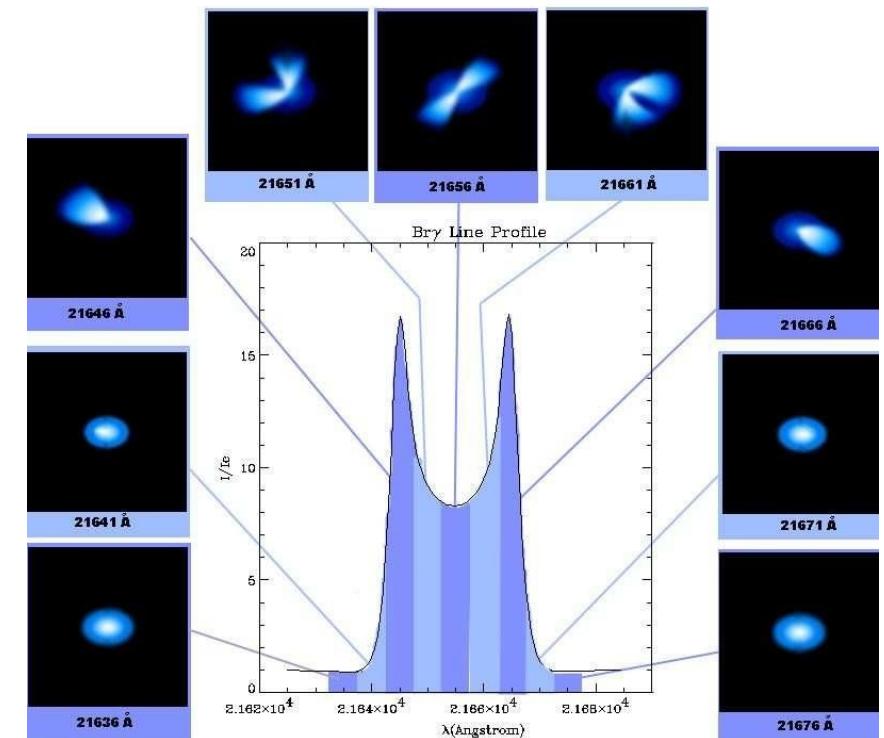
Importing FITS polychromatic cubes

ASPRO2 User models consist in providing FITS image (gray model) or FITS cubes (polychromatic models) instead of analytical models

Be careful:

– spatial sampling

– spectral sampling vs instrumental resolution
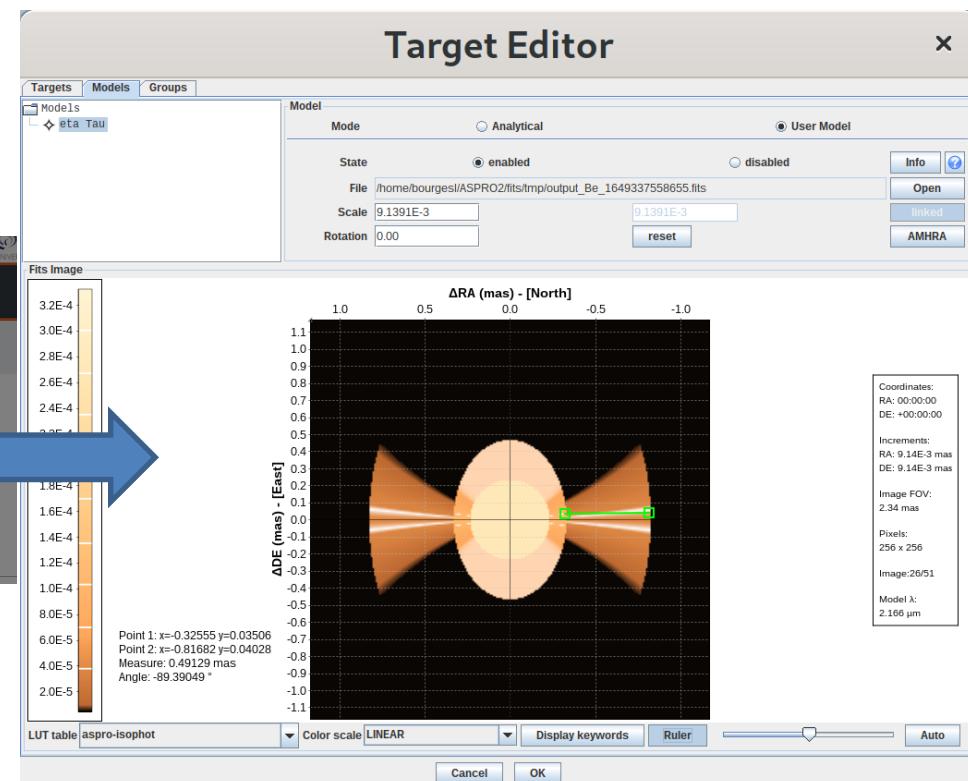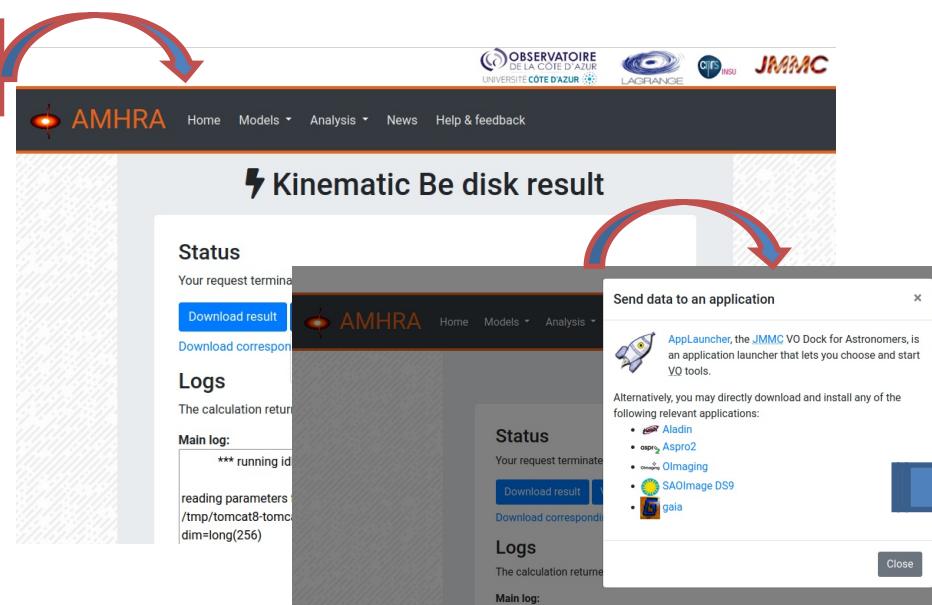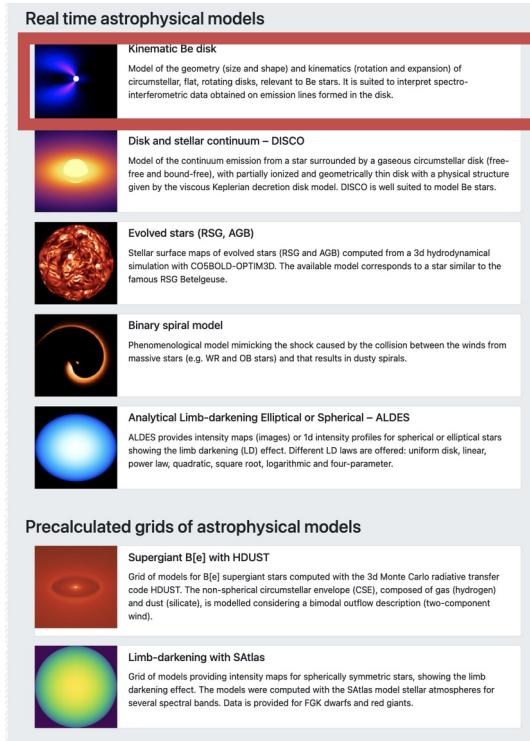
AMHRA Service
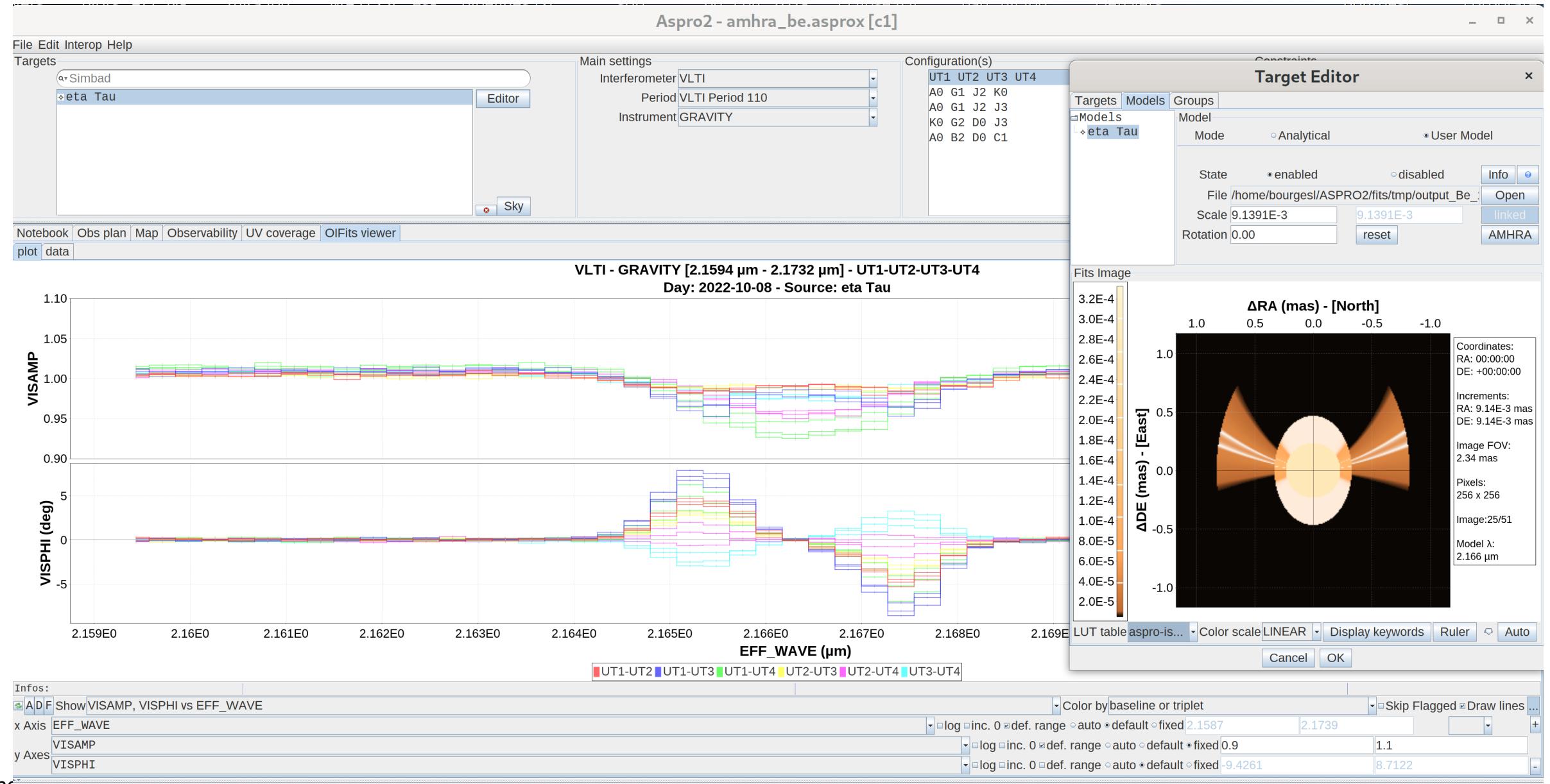
AMHRA develops and provides online astrophysical models and data analysis tools dedicated to the scientific exploitation of high angular and high spectral facilities such as ESO-VLTI

- New astrophysical models (parametric and grids) https://amhra.oca.eu

PI: Armando Domiciano de Souza

Simulated data - GRAVITY HIGH
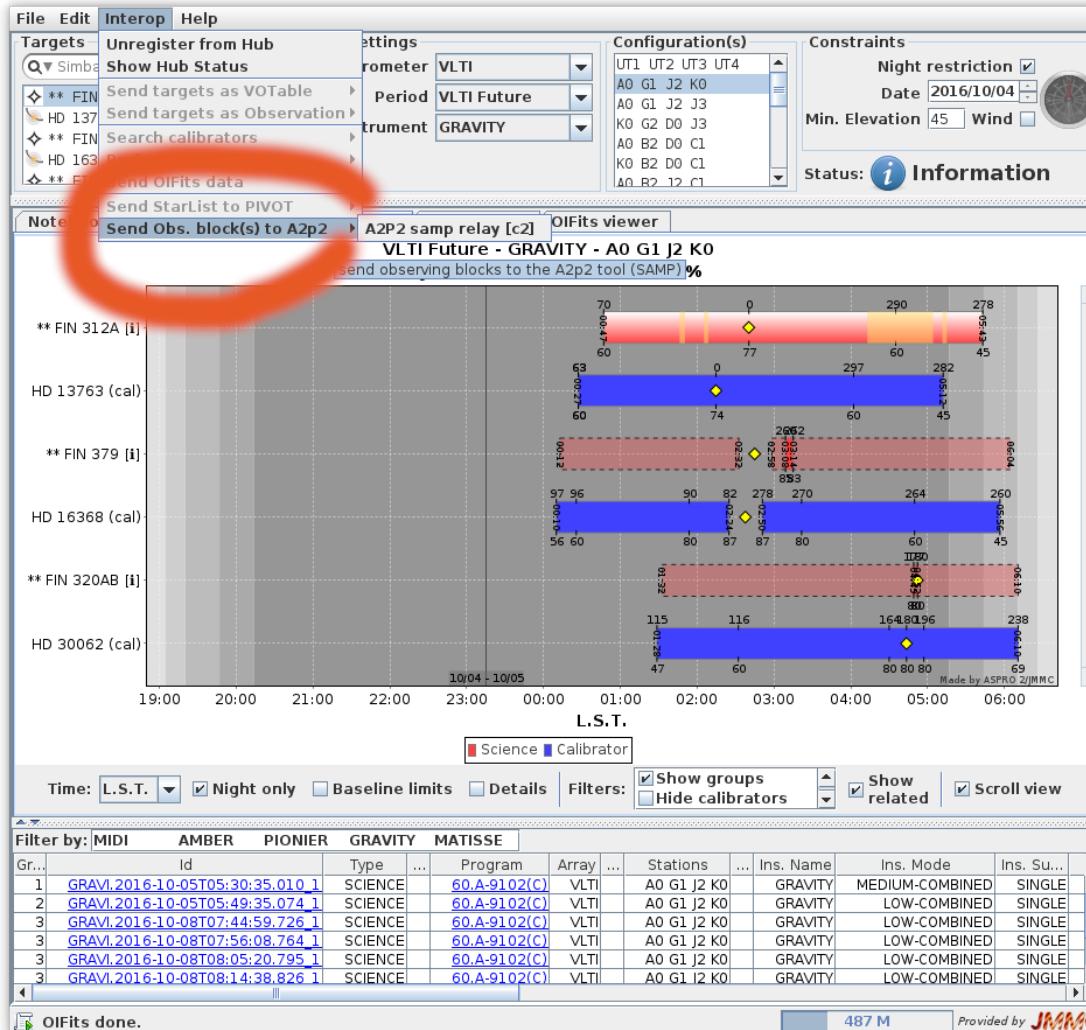
Send your OBs to ESO/P2

ASPRO2 + A2P2

https://github.com/JMMC-OpenDev/a2p2/wiki/ASPRO2-A2P2-Tutorial

A2P2, the ASPRO2 companion tool in Python

Send your VLTI OB from ASPRO2 to ESO p2: PIONIER, GRAVITY & MATISSE

https://www.eso.org/p2

Try A2P2:
`pip install a2p2`

Target Groups : AO / FT stars, custom

Create Custom Groups to arrange your targets (backup, priority ...)

CHARA enhancements in ASPRO 2

Unified instruments, fixed PoPs, custom Configuration (7T)

CHARA configuration : unified instruments

No more MIRC_4T, MIRC_6T => all merged

So all possible configurations gathered and can be compared

Added MYSTIC as K modes in renamed MIRCX_MYSTIC instrument !

New CHARA instrument list:

CLASSIC
CLIMB
FRIEND
JOUFLU
MIRC
MIRCX-MYSTIC
PAVO
SPICA
VEGA
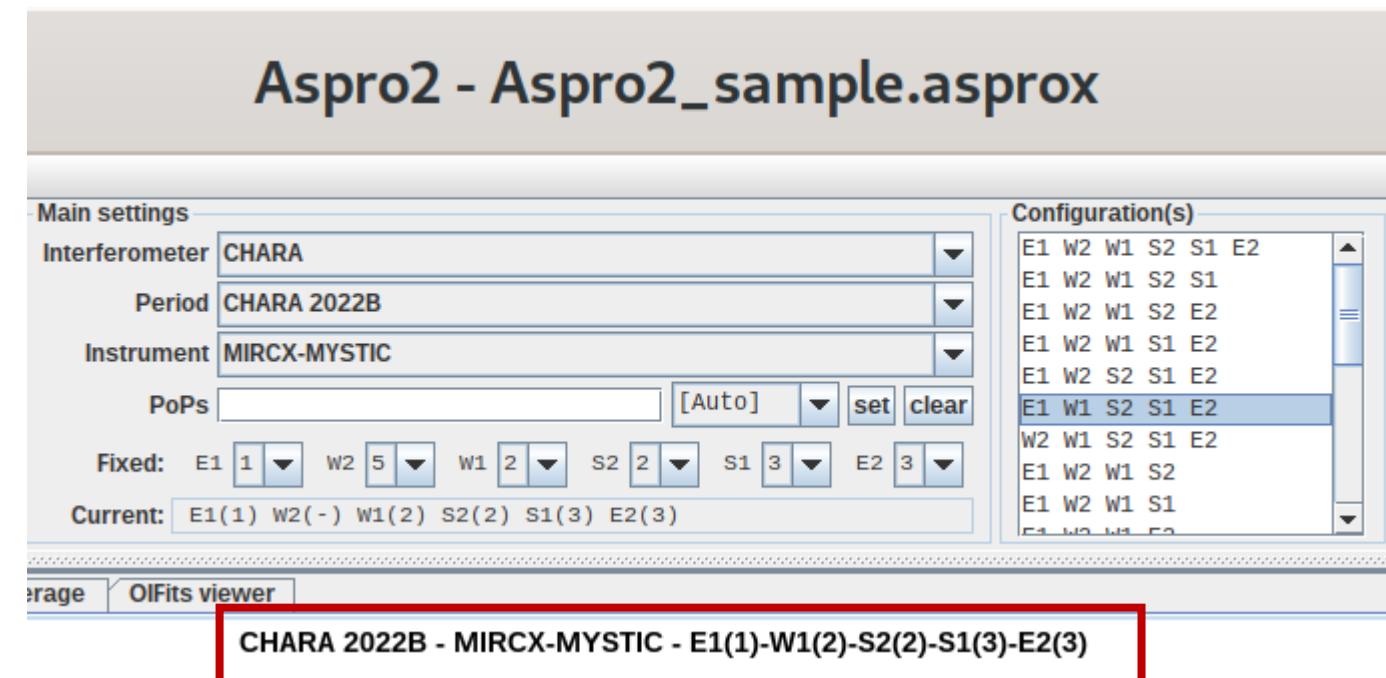
CHARA fixed Pops

= Pops set per stations whatever configurations are selected

Easier comparison in case of switching from 6T to 5T (loss of 1 scope)
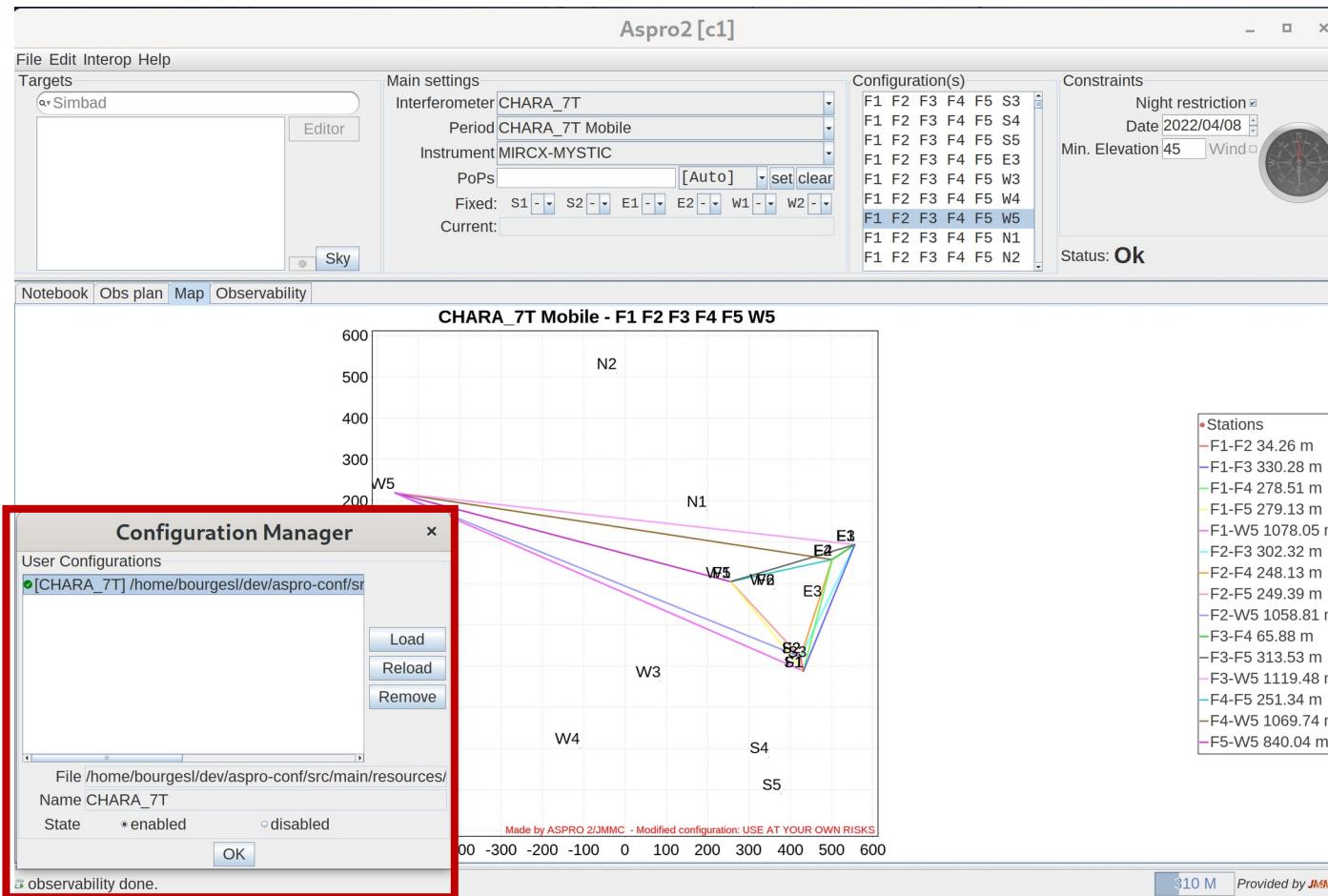
Used on

baseline limits too

Improved conf. label

(Station + Pops)

Aspro2 - Aspro2_sample.asprox

Main settings
Interferometer CHARA
Period CHARA 2022B
Instrument MIRCX-MYSTIC
PoPs [Auto] set clear
Fixed: E1 1 W2 5 W1 2 S2 2 S1 3 E2 3
Current: E1(1) W2(-) W1(2) S2(2) S1(3) E2(3)

Configuration(s)
E1 W2 W1 S2 S1 E2
E1 W2 W1 S2 S1
E1 W2 W1 S2 E2
E1 W2 W1 S1 E2
E1 W2 S2 S1 E2
E1 W1 S2 S1 E2
W2 W1 S2 S1 E2
E1 W2 W1 S2
E1 W2 W1 S1

erage | OIFits viewer

CHARA 2022B - MIRCX-MYSTIC - E1(1)-W1(2)-S2(2)-S1(3)-E2(3)

CHARA upgrade in ASPRO2: 7th telescope project
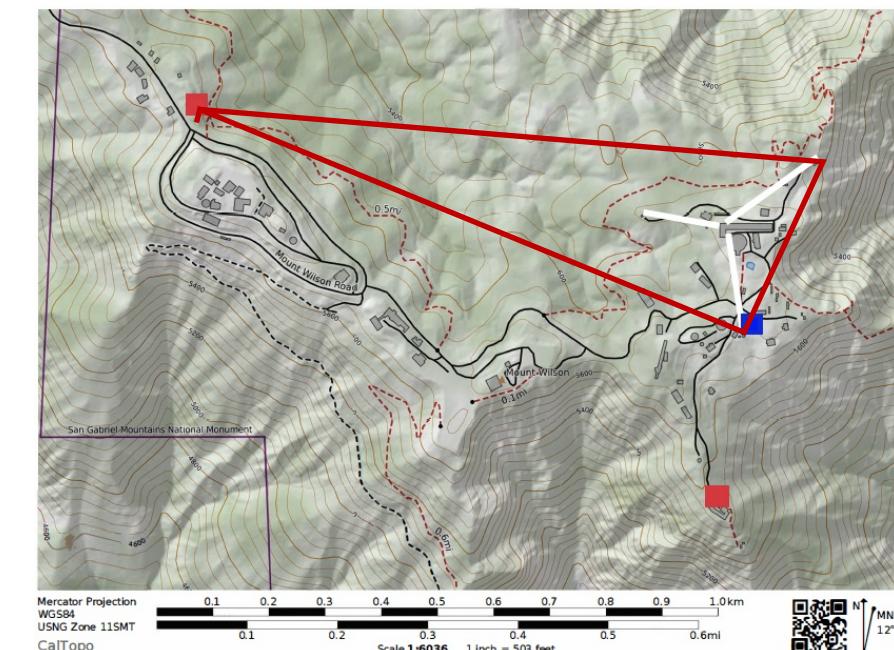
7th fibered telescope coming in 2022 => Custom configuration CHARA_7T

- all mobile stations
- configurations: 5 fixed + 1 mobile
- instruments in H band

Work in progress...

Expert mode

Demo

2022 roadmap

- On-going projects :
  - SPICA-DB @ JMMC
  - Oimaging enhancements
- Coming OIFitsExplorer enhancements: filtering
- Later JSDC3 / SearchCal in 2022

- More codes opened:

  - https://github.com/JMMC-OpenDev/

  - https://gricad-gitlab.univ-grenoble-alpes.fr/OSUG/JMMC

Final words

Please submit your published data into OiDB

Please report any problem or question to the JMMC User Support (SUV team) at

[*www.jmmc.fr/support*](www.jmmc.fr/support)

Feedback always appreciated and useful !

Complementary slides

SearchFTT

Search **F**ringe **T**racker **T**argets within 1'
(K < 17.5) for GRAVITY WIDE / VLTI

- Dynamic queries to get candidates:

  - Simbad

  - crossmatch GAIA : GAVO & ESAC

- Display table results & FOV image
  (AladinLite)

https://searchftt.jmmc.fr

JMMC Obs Portal

http://obs.jmmc.fr/

(Python / postgresql web app)

- VLTI Observation records
  - all instruments
  - Hourly ESO sync (TAP)
- OiDB sync => L0 ESO

- Future:
  - Better filtering in ASPRO2
  - VO TAP interface
  - Improved target identification (few as)
  - **Ingest CHARA & SPICA logs**

ObsPortal

The JMMC ObsPortal service provides both a web interface and a cone-search service (TAP in the future) on its database containing raw optical interferometry observations (L0):

- **ESO archive** provides VLTI observations (observing blocks &s exposures). Supported instruments are MIDI, AMBER, PIONIER, GRAVITY, MATISSE.
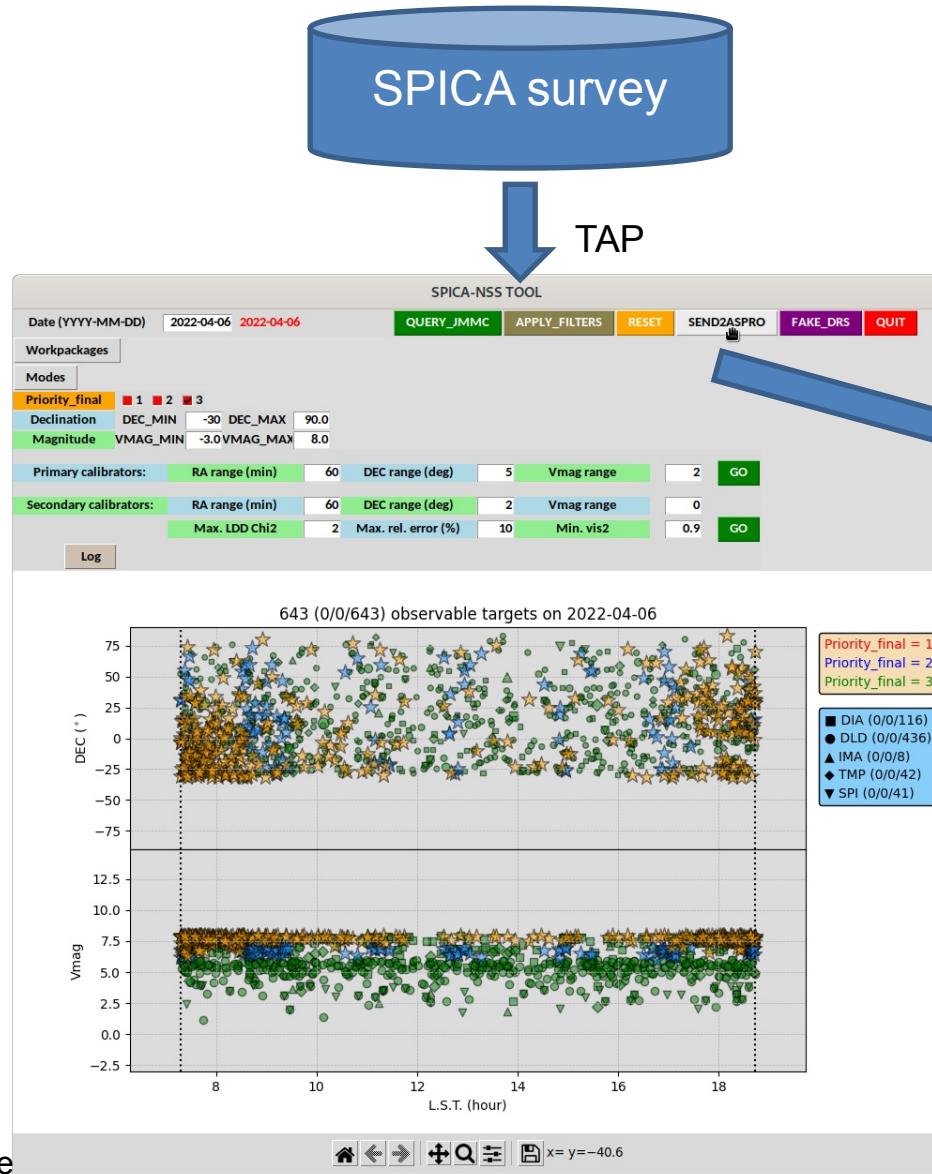
The JMMC also provides the OiDB service that contains published & science-ready datasets (L2, L3) in the OIFITS file format.

Please contact the JMMC user support for any remark or issue on this service.

Change log

- 2020.05.05: Release 20.05:
  - Automatic synchronization (ESO TAP)
  - Added UV points per baseline and atmospheric conditions
  - Improved performance: indexes + rewritten VOTable writer
  - Improved header validation
- 2020.02.25: First release, integrated in ASPRO2 20.03

Database statistics	
Header count	1131493
Target count	37564
Observation count	50484
Exposure count	381082
Valid exposure count	374330 (98.23%)
Exposure Date min	2003-06-14 07:13:36.000
Exposure Date max	2022-04-12 23:40:16.781
Header last ModificationDate	2022-04-15 10:36:21

SPICA-DB in action