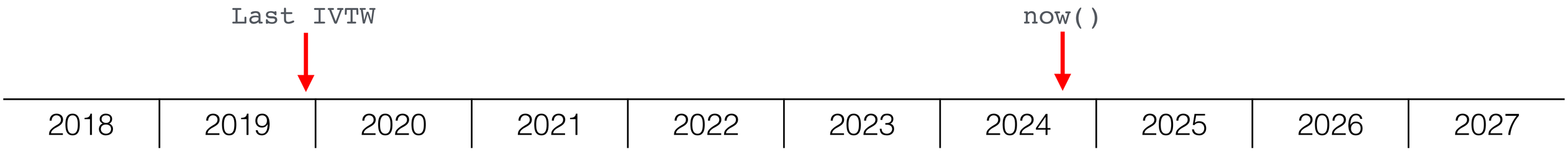
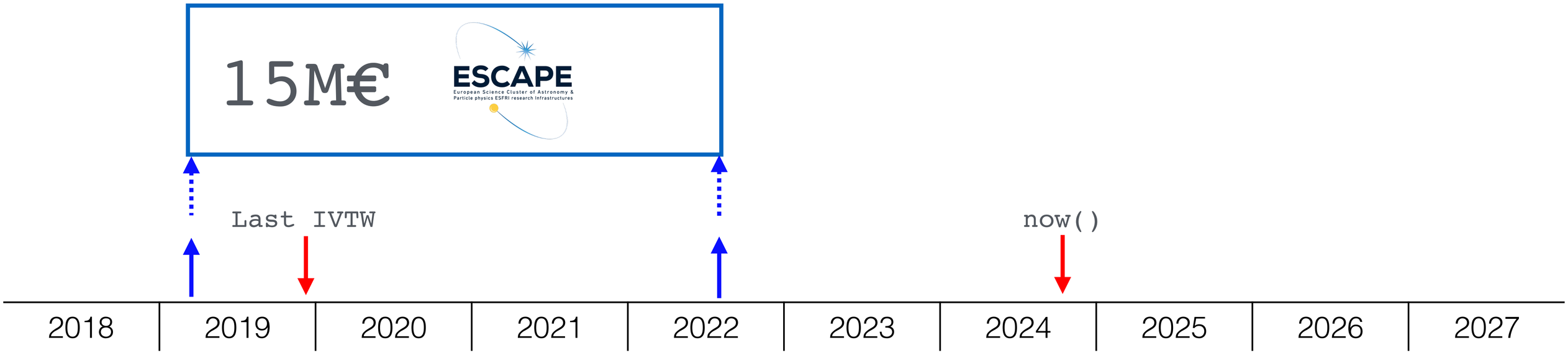
All credits to:

Aard Keimpema
Des Small
Mark Kettenis
Bob Eldering


Last IVTW
now()
2018
2019
2020
2021
2022
2023
2024
2025
2026
2027


15M€
ESCAPE
European Science Cluster of Astronomy &
Particle physics ESFRI research Infrastructures
Last IVTW
now()
2018
2019
2020
2021
2022
2023
2024
2025
2026
2027

ESCAPE

European Science Cluster of Astronomy &
Particle physics ESFRI research Infrastructures

ESCAPE - The European Science Cluster of Astronomy & Particle Physics ESFRI Research Infrastructures has received funding from the European Union's Horizon 2020 research and innovation programme under the Grant Agreement n° 824064.

Make astronomy data, tools and results FAIR

Findable

Accessible

Interoperable

Repeatable

WP1: MIND
WP2: DIOS
WP3: OSSR
WP4: CEVO
WP5: ESAP
WP6: ECO

WP3: OSSR
WP4: CEVO
WP5: ESAP

WP3: OSSR

Open-source scientific Software and Service Repository

"The aim of WP3 is to expose the tools of the ESCAPE ESFRI projects in a repository under the EOSC catalogue of services, ensuring compatibility with *FAIR* principles."

WP4 : CEVO

Connection ESFRI projects to EOSC through VO framework

"Assess and implement the connection of the ESFRI and other astronomy Research Infrastructures to the EOSC through the Virtual Observatory framework, stablish data stewardship practices for adding value to the scientific content of ESFRI data archives"

ESCAPE
European Science Cluster of Astronomy & Particle physics ESFRI research Infrastructures

WP5 : ESAP

ESFRI Science Analysis Platform

" … a high-performance, scalable science platform to provide users with an analysis environment close to the data collections, where they can run their own customized processing and share results and workflows with other researchers, …"

WP5: ESAP

ESFRI Science Analysis Platform

Goal is to provide a portal which links the tools from **WP3** with data found through **WP4** and deploy that on resources *you* have access to through e.g. EduGain or other scientific collaborations

Thu 24 Mar 2022

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Private

24 march 2022 front page

iptables - Fai...- Server Fault | SFXC Real-Time Fringe Plot | INFRA-TECH P...oogle Drive | ESCAPE plan... Documenten | Overview - ...REDMINE OSU | VLBI and PFB - Google Docs | Joint R&D an...Group topics | JIVE ZoomRoom#1 | JIVE ZoomRoom#2

Google

24 march 2022 front page

Sign in

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```python
# Import Virtual Observatory support modules
import pyvo
from   pyvo.registry import search as regsearch

# helper function to actually do the query once we have a service
def do_query(service):
    print("#############################################")
    print("Asking service '{0}'".format(service.res_title) )
    try:
        res = pyvo.dal.TAPService( service.access_url ).run_sync( """
                    SELECT TOP 20 *
                    FROM ivoa.obscore
                    ORDER BY t_min ASC""" )
        if res:
            print( res )
        else:
            print("No results")
    except Exception as e:
        print(e)
    print()

#################################
# Ask the Virtual Observatory for
#    all radio catalog services
#################################
for srv in regsearch(waveband='radio', datamodel='ObsCore'):
    do_query( srv )
```

<22/search_evn_archive.py [FORMAT=unix] [TYPE=PYTHON] [ASCII=035] [HEX=23] [POS=0001,0001][2%] [LEN=36]
"search_evn_archive.py" 36L, 878B

```
res = pyvo.dal.TAPService( service.access_url ).run_sync( """
            SELECT TOP 20 *
            FROM ivoa.obscore
            ORDER BY t_min ASC""" )
```

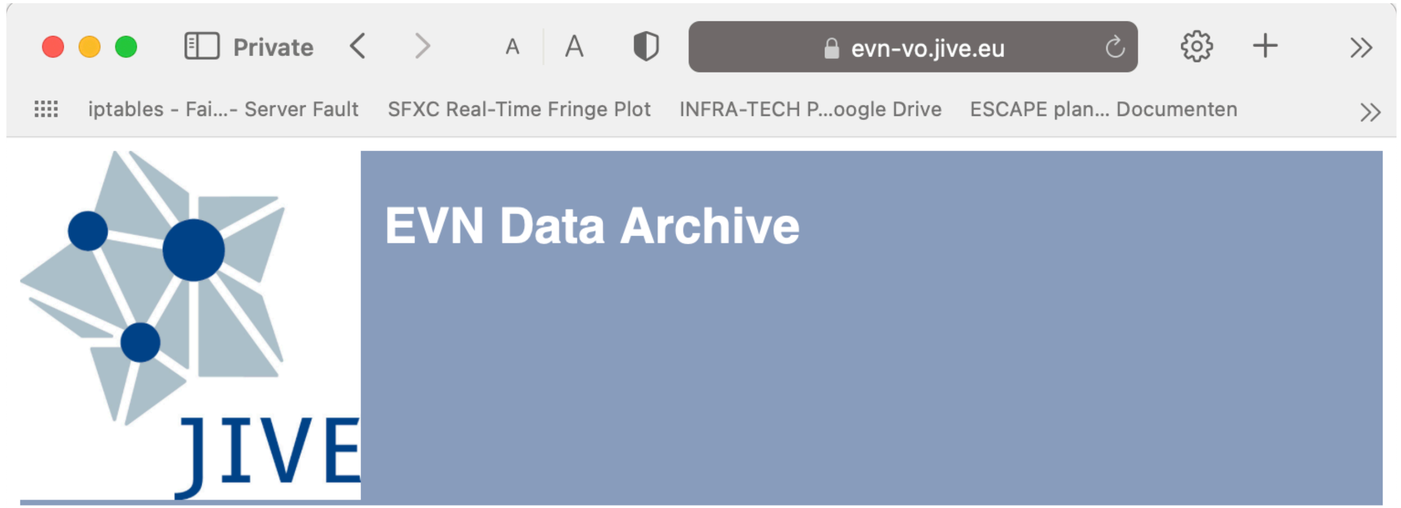
```
##################################
# Ask the Virtual Observatory for
#    all radio catalog services
##################################
for srv in regsearch(waveband='radio', datamodel='ObsCore'):
    do_query( srv )
```

```
##########################################
Asking service 'The VO @ ASTRON TAP service’

obs_id                          dataproduct_type calib_level  t_min    target_name       s_ra        s_dec    obs_freq_mhz
                                                                  d                          deg         deg             m
object                               object          int16     float64    object         float64     float64        float64
---------------------------------- ---------------   ----------- ----------    --------    ____     --------
sauron/ngc2549.Mom0.High.fits     image            2       53007.04466                 124.7450    57.80194        --



##########################################
Asking service 'EVN Data Archive TAP service'

obs_id dataproduct_type calib_level       t_min       target_name        s_ra              s_dec          obs_freq_mhz
                                            d                           deg               deg                m
object      object         int16         float64         object        float64           float64           float64
------ ---------------- ---------- ----------------- ---------- ----------------- ----------------- -----------------
 ES023       visibility           1 51139.81287326384    0016+731 4.940776791666668 73.45833816666666 4998.948305764251



##########################################
Asking service 'Nobeyama Radio Telescope FITS Archive'

   obs_id   dataproduct_type calib_level [1] t_min [1]  target_name       s_ra [1]    s_dec [1]    obs_freq_MHz [1]
                                                 d                                       deg           deg
   object        object           int32       float64     object          float64      float64       float64
----------- ---------------- -------------- --------- ----------------  _______ ------------ -----------------
FGN00000003      cube               3           0.0     01100+0000 (2x2) 272.45757353 -19.41493744 110314.4162485902
```

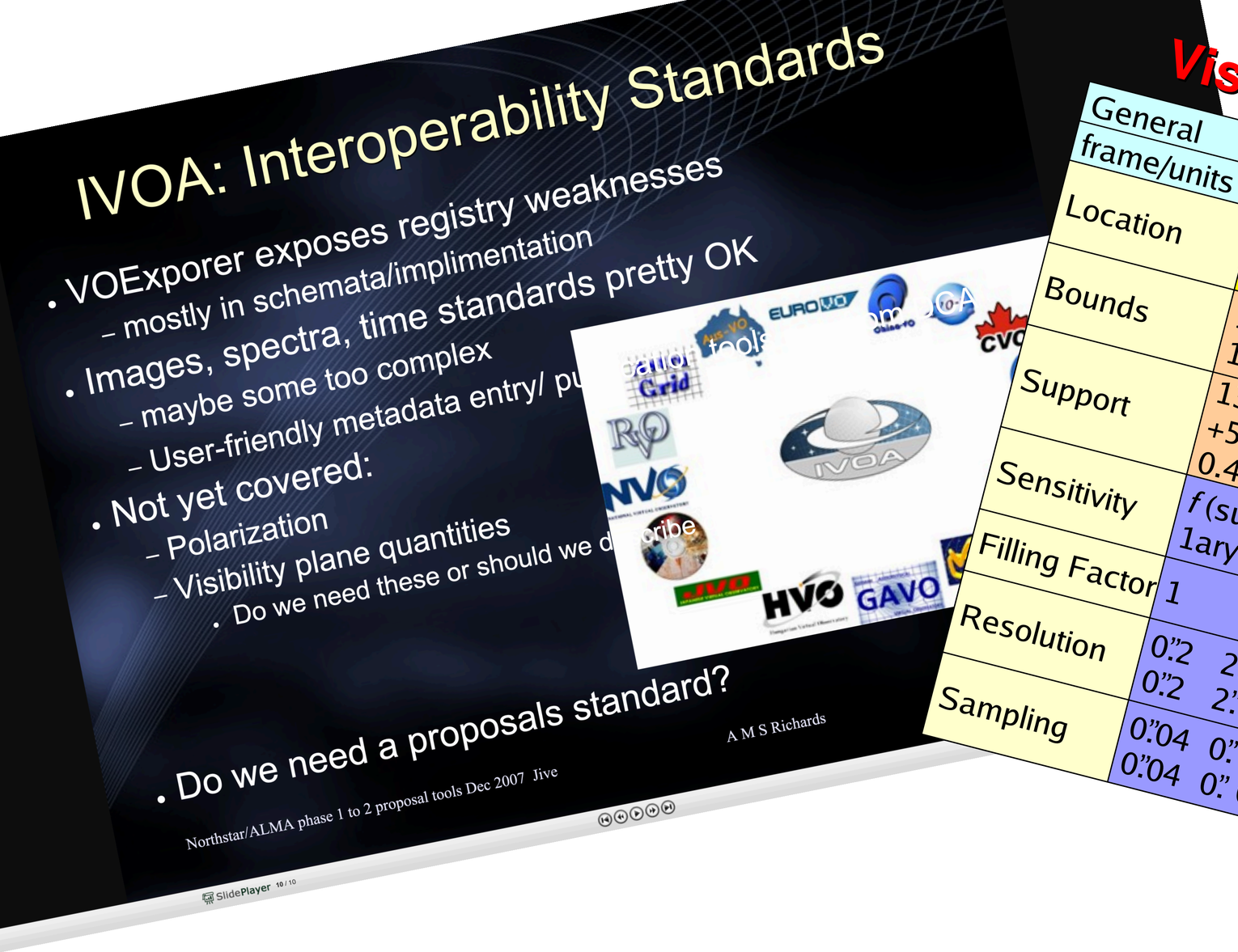
```
##########################################
Asking service 'The VO @ ASTRON TAP service'

obs_id                          dataproduct_type calib_level  t_min    target_name       s_ra        s_dec     obs_freq_mhz
                                                                  d                          deg         deg             m
object                                  object         int16     float64     object         float64     float64         float64
------------------------------------ ---------------   ----------- -----------    --------    -----     --------
sauron/ngc2549.Mom0.High.fits     image            2       53007.04466                124.7450    57.80194        --
```

```
##########################################
Asking service 'EVN Data Archive TAP service'

obs_id dataproduct_type calib_level       t_min       target_name        s_ra              s_dec          obs_freq_mhz
                                            d                            deg               deg              m
object      object          int16         float64         object        float64           float64          float64
------ ---------------- ----------- ----------------- ----------- ----------------- ----------------- -----------------
 ES023       visibility           1 51139.81287326384    0016+731 4.940776791666668 73.45833816666666 4998.948305764251
```

```
##########################################
Asking service 'Nobeyama Radio Telescope FITS Archive'

   obs_id   dataproduct_type calib_level [1] t_min [1]  target_name       s_ra [1]    s_dec [1]    obs_freq_MHz [1]
                                                  d                                      deg          deg
   object        object           int32       float64     object          float64      float64       float64
----------- ---------------- --------------- --------- ----------------  _______ ------------ ------------------
FGN00000003      cube              3           0.0     01100+0000 (2x2) 272.45757353 -19.41493744 110314.4162485902
```



https://evn-vo.jive.eu



Visibility data for potential products

General	Spatial	Temporal	Spectral	Observable
frame/units	ICRF, deg	MJD	MHz	Jy/beam
Location	13.123456 +55.987654	50613.5	1658	0.001
Bounds	12.92, +55.58 13.32, +56.38	50613.0 50614.0	1650 1665	0.0002 0.5 (or function)
Support	13.123456 +55.987654 0.4	(on-source scan listing URL)	1650 1665	undef
Sensitivity	*f* (support, 1ary beam)	undef	(bandpass LUT URL)	1
Filling Factor	1	0.7	0.93	undef
Resolution	0.″2 2.″ 0 0.″2 2.″ 0	5 m	1000 kHz	50 100 μJy/beam
Sampling	0.″04 0.″ 0625 0.″04 0.″ 0625	16 s	1000 kHz	undef

From presentations by A.M. Richards, c. 2006, AVO+EuroVO workshops

Astrophysical Virtual Observatory project (AVO), European Commision funded: FP5 2002-2005
Euro-VO: successor 2006 -, European Commission funded: FP6, FP7, Horizon 2020

From presentations by A.M. Richards, c. 2006, AVO+EuroVO workshops

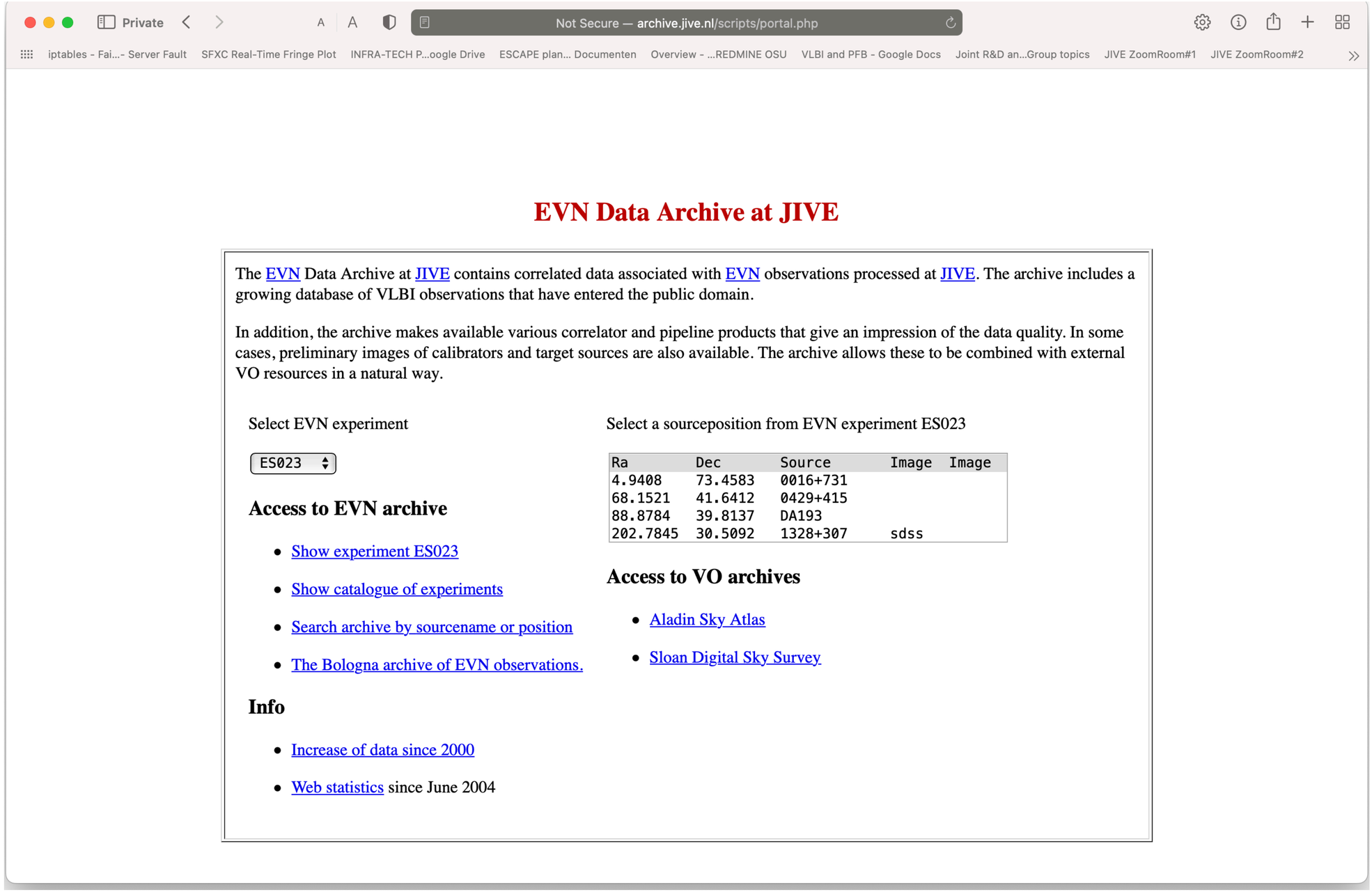
Astrophysical Virtual Observatory project (AVO), European Commision funded: FP5 2002-2005
Euro-VO: successor 2006 -, European Commission funded: FP6, FP7, Horizon 2020

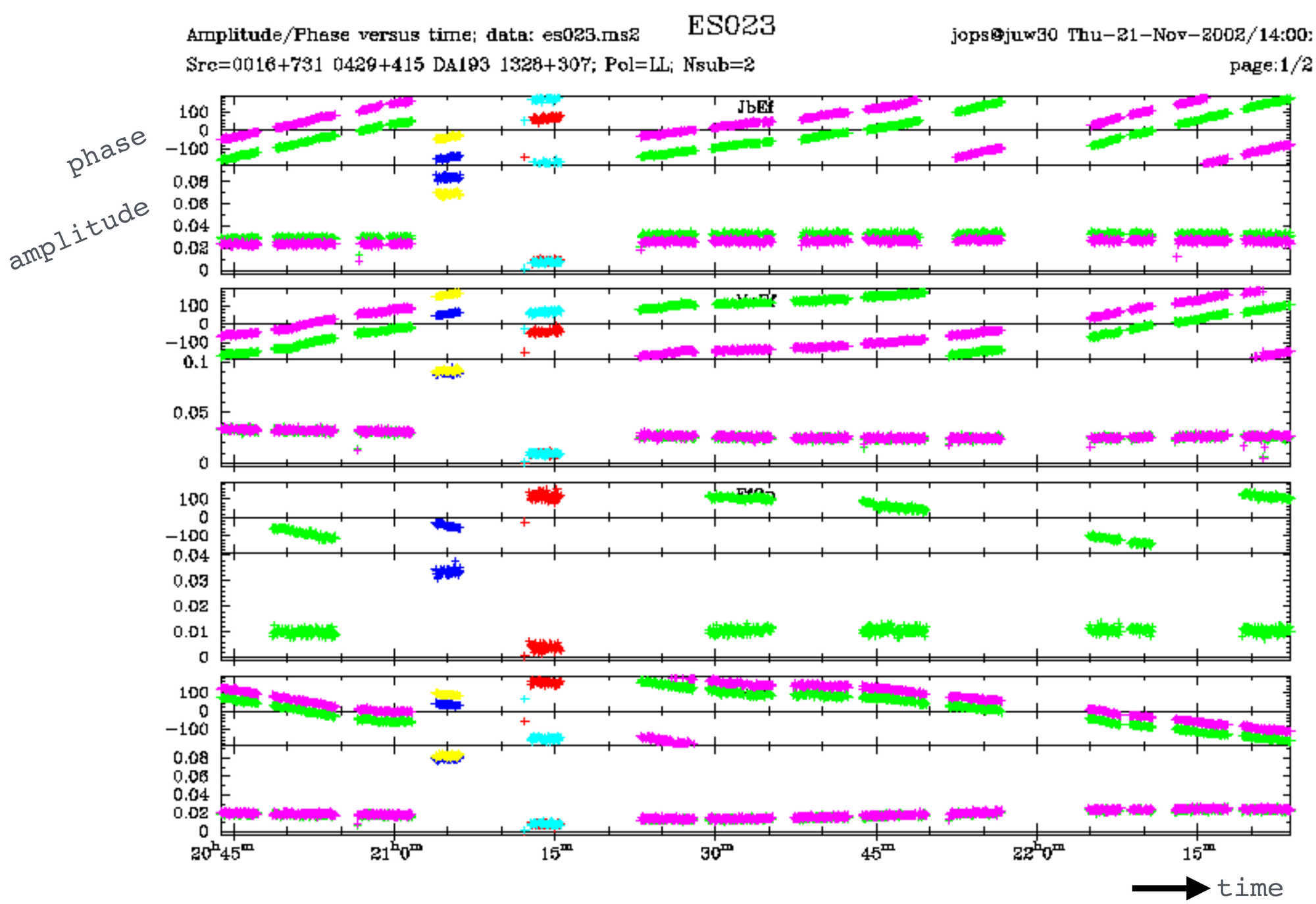
JIVE
Joint Institute for VLBI ERIC

VLBI into the VO

thanks to the ESCAPE project

verkouter@jive.eu


Private
Not Secure — archive.jive.nl/scripts/portal.php
iptables - Fai...- Server Fault
SFXC Real-Time Fringe Plot
INFRA-TECH P...oogle Drive
ESCAPE plan... Documenten
Overview - ...REDMINE OSU
VLBI and PFB - Google Docs
Joint R&D an...Group topics
JIVE ZoomRoom#1
JIVE ZoomRoom#2
EVN Data Archive at JIVE
The EVN Data Archive at JIVE contains correlated data associated with EVN observations processed at JIVE. The archive includes a growing database of VLBI observations that have entered the public domain.
In addition, the archive makes available various correlator and pipeline products that give an impression of the data quality. In some cases, preliminary images of calibrators and target sources are also available. The archive allows these to be combined with external VO resources in a natural way.
Select EVN experiment
ES023
Access to EVN archive
Show experiment ES023
Show catalogue of experiments
Search archive by sourcename or position
The Bologna archive of EVN observations.
Info
Increase of data since 2000
Web statistics since June 2004
Select a sourceposition from EVN experiment ES023
Ra Dec Source Image Image
4.9408 73.4583 0016+731
68.1521 41.6412 0429+415
88.8784 39.8137 DA193
202.7845 30.5092 1328+307 sdss
Access to VO archives
Aladin Sky Atlas
Sloan Digital Sky Survey

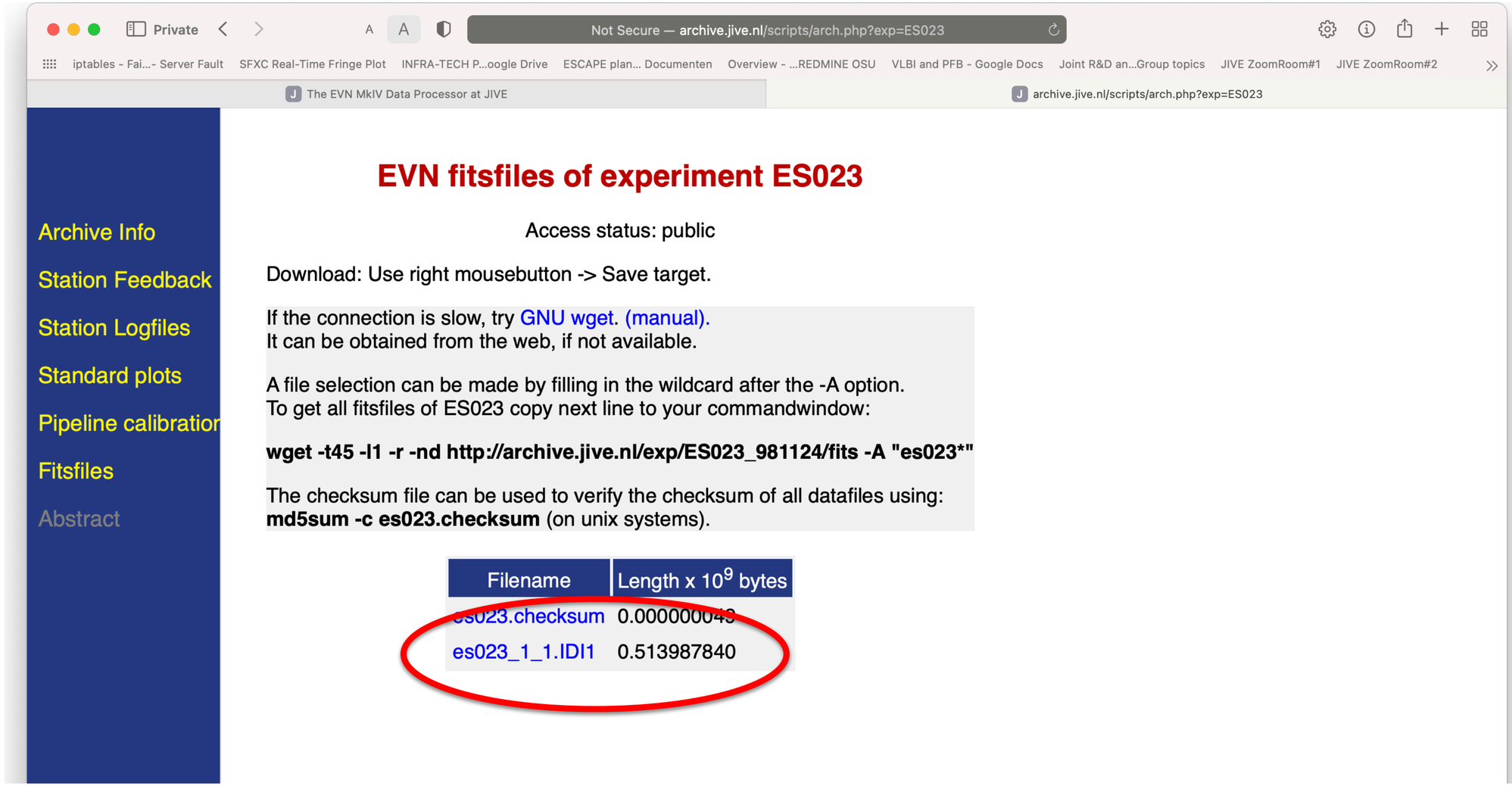

ES023
Amplitude/Phase versus time; data: es023.ms2
jops@juw30 Thu-21-Nov-2002/14:00:
Src=0016+731 0429+415 DA193 1328+307; Pol=LL; Nsub=2
page:1/2
JbEf
phase
amplitude
time
20h45m
21h0m
15m
30m
45m
22h0m
15m

```
##########################################
Asking service 'The VO @ ASTRON TAP service'

obs_id                          dataproduct_type calib_level  t_min    target_name       s_ra        s_dec     obs_freq_mhz
                                                               d                          deg         deg             m
object                          object           int16        float64  object            float64     float64         float64
------------------------------- ---------------- -----------  -------- ----------------  ----------  ----------  ------------
sauron/ngc2549.Mom0.High.fits   image                     2   53007.04466                124.7450    57.80194          --
```

```
##########################################
Asking service 'EVN Data Archive TAP service'

obs_id dataproduct_type calib_level  t_min       target_name
                                     d
object object          int16        float64     object
------ --------------- -----------  ----------  ---------
 ES023 visibilit                 1  1139.81287326384 0016+7
```

Level 0: Raw instrumental data
Level 1: Instrumental data in a standard format (FITS,
Level 2: Calibrated, science ready data with the instrum
Level 3: Enhanced data products like mosaics, resample
Level 4: Analysis data products generated after some ....

```
##########################################
Asking service 'Nobeyama Radio Telescope FITS Archive'

   obs_id   dataproduct_type calib_level [1] t_min [1]  target_name       s_ra [1]    s_dec [1]    obs_freq_MHz [1]
                                                  d                                      deg             deg
   object       object           int32        float64     object          float64     float64         float64
---------- ---------------- -------------- ---------- ----------------  ----------- ----------- ----------------
FGN00000003      cube                  3          0.0  01100+0000 (2x2) 272.45757353 -19.41493744 110314.4162485902
```



FITS Interferometry Data Interchange (FITS-IDI) Convention
https://fits.gsfc.nasa.gov/registry/fitsidi.html

wget -t45 -l1 -r -nd http://archive.jive.nl/exp/ES023_98112

Pipeline products of experiment ES023

- Pipeline plots
- AIPS calibration. tables (FITS Format)
- AIPS history file.
- Short summary of CL/SN table contents.
- Input parameters for script.
- Associated EVN calibration.
- Associated VLBA / VLA / GBT file. (Not available)
- UVFLG flagged data. (Not available)
- UVFLG Band-edge Flagging.
- The pipeline logfile. (Not available)
- Pipeline-calibrated UV FITS files. (Not available)

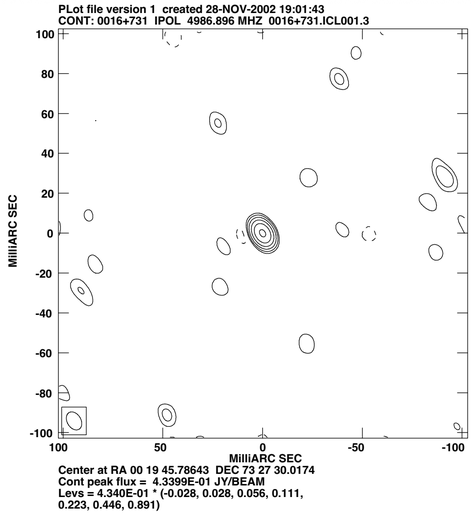
Archive Info
Station Feedba
Station Logfiles
Standard plots
Pipeline calibra
Fitsfiles
Abstract

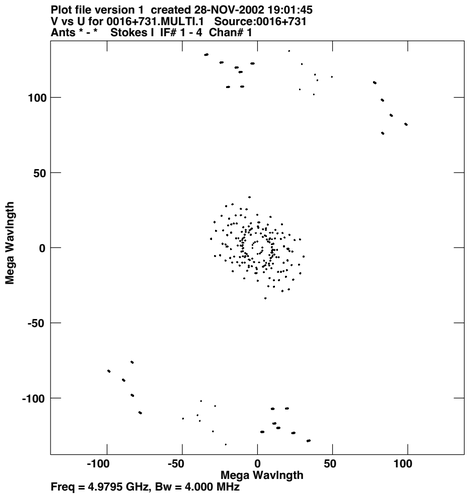
The target: Up to 250 Jy at 10M lambda. Detected up to 141M lambda.

---

u,v coverage for 0016+731.
u,v coverage for 1328+307.
u,v coverage for DA193.
Comments.
0016+731: A central condensation elongated in the NE-SW direction up to 35M lambda, and (u,v) data points in the north-south direction around 120M lambda.
1328+307: Sparse distribution up to 12M lambda.
DA193: A central condensation elongated in the north-south direction up to 40M lambda, and (u,v) data points in the NE-SW direction around 120M lambda.
The target: A central condensation elongated in the north-south direction up to 40M lambda, and (u,v) data points in the NE-SW direction at 110-130M lambda.

Crude map of 0016+731 from the pipeline.
Crude map of 1328+307 from the pipeline.
Crude map of DA193 from the pipeline.
Comments.
0016+731: An unresolved component.
1328+307: Out of the field of view.
DA193: An unresolved component. Bright side lobes still exist.
The target: A couple of components.





Why add VLBI to the VO then?

Virtual Observatory use cases

- Historic data (“before picture”) for high-res follow-up of:
  - Gravitational Wave events
  - Gamma Ray Bursts
  - Fast Radio Bursts
- Field-of-view in data set is larger than primary science goal
  - possibility to reprocess Level 1 data for other science
  - apply new(er) calibration algorithms to improve
- Standardized access to archive data for science platform
  - JupyterLab environment
  - both human and machine accessible
  - not just the Level 1 data

Applicable protocols:

ObsCore

“defines the core components of the Observation data model that are necessary to perform data discovery when querying data centers for astronomical observations of interest.”

https://ivoa.net/documents/ObsCore/20170509/index.html

DataLink

“linking of data discovery metadata to access to the data itself, further detailed metadata, related resources, and to services that perform operations on the data.”

https://ivoa.net/documents/DataLink/20150617/index.html

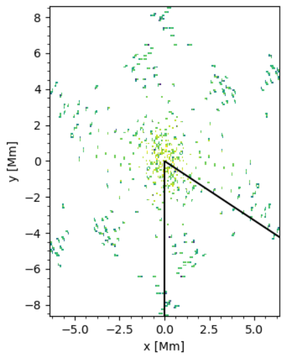
ESCAPE WP4 enabled:

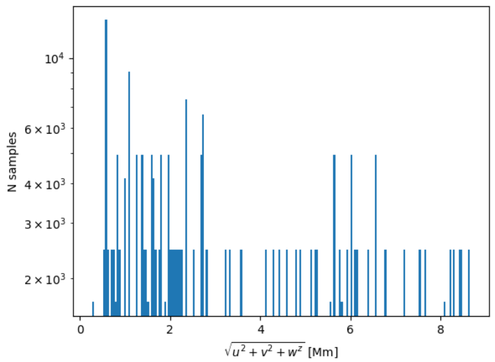
Visibility support in ObsCore

- JIVE participatation in IVOA Radio SIG
- extend ObsCore data model w/ u,v-plane values
- experimental u,v-plane characterisation

u,v-plane characterisation

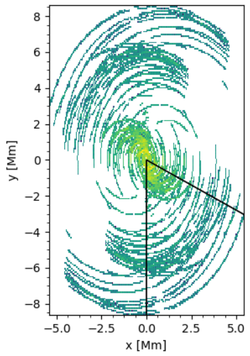
Plots derived from software developed by Mattia Mancini (ASTRON)

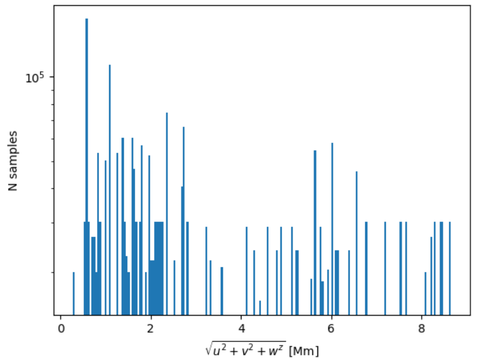




$e = 0.74$
$f = 0.03$

calibrator source





$e = 0.63$
$f = 0.25$

target source

e = ellipticity
f = filling factor

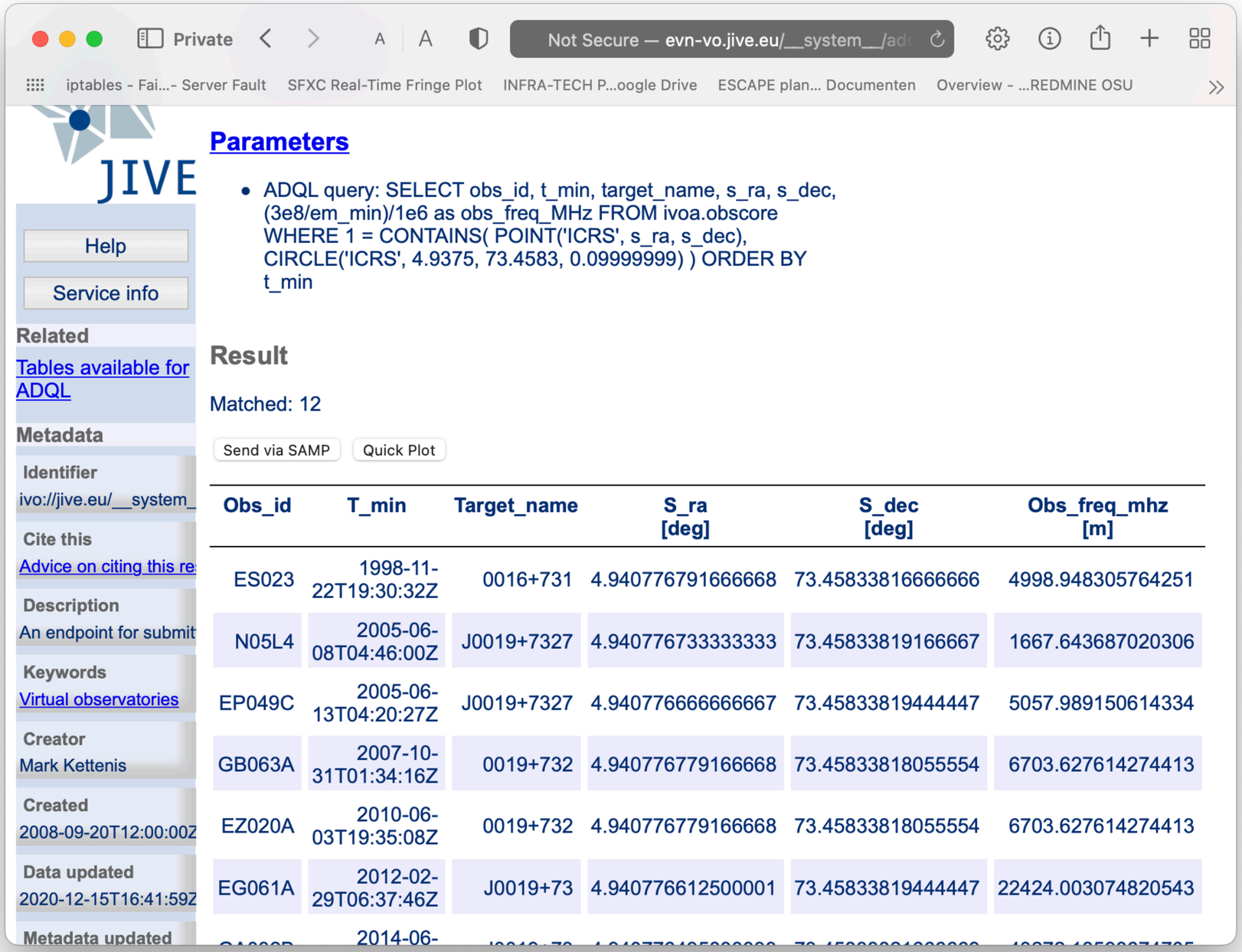
ESCAPE WP4 enabled:

Visibility support in ObsCore

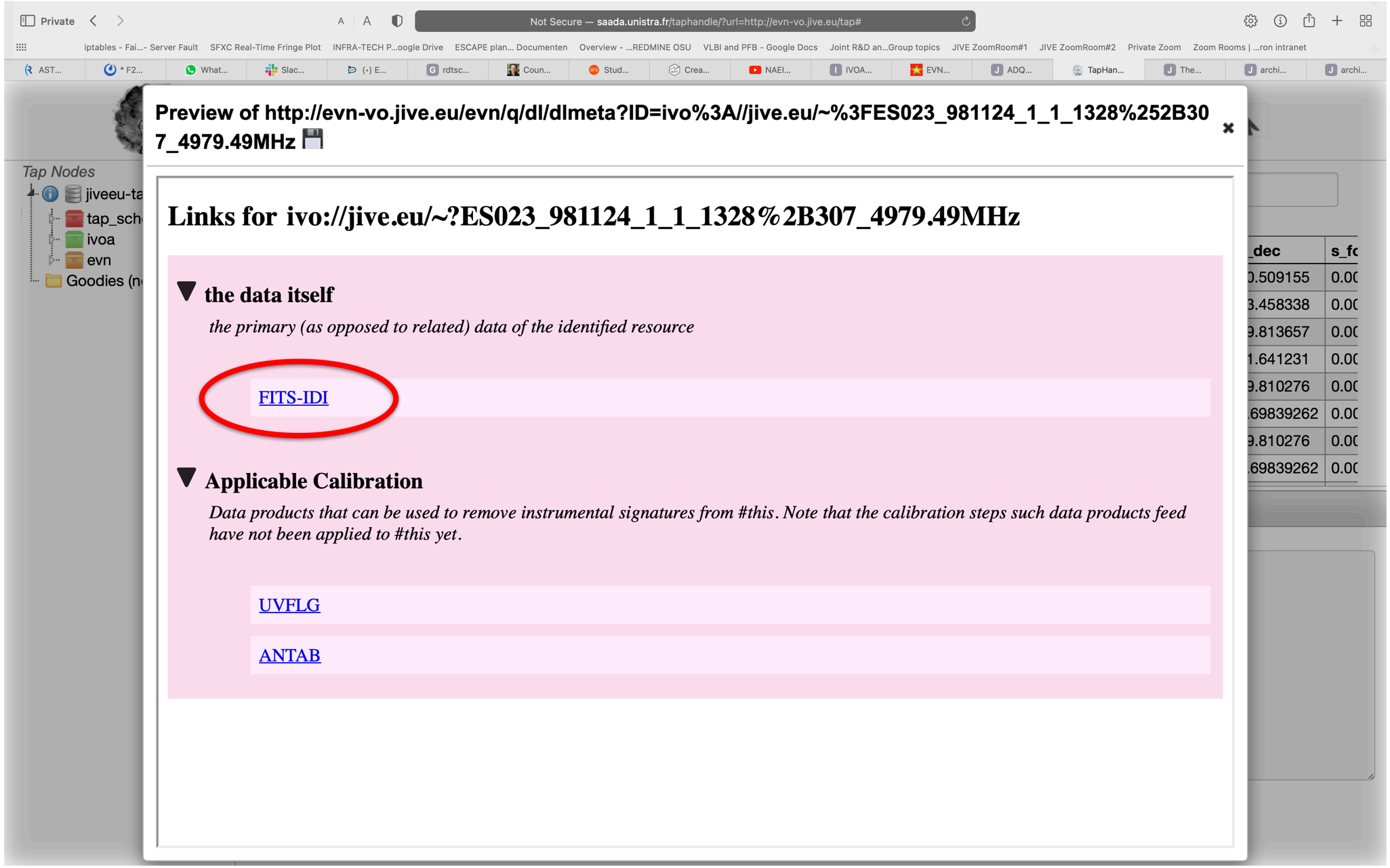
- JIVE participatation in IVOA Radio SIG
- extend data model
- experimental u,v-plane characterisation

ObsTAP service at JIVE:

- design mapping of FITS-IDI content to ObsCore
- develop s/w to analyse 100 TB of FITS-IDI
- hardware to host https://evn-vo.jive.eu



Astronomical Data Query Language - https://www.ivoa.net/documents/ADQL/


Private
Not Secure — saada.unistra.fr/taphandle/?url=http://evn-vo.jive.eu/tap#
Tap Nodes
jiveeu-ta
tap_sch
ivoa
evn
Goodies (n
Preview of http://evn-vo.jive.eu/evn/q/dl/dlmeta?ID=ivo%3A//jive.eu/~%3FES023_981124_1_1_1328%252B307_4979.49MHz
Links for ivo://jive.eu/~?ES023_981124_1_1_1328%2B307_4979.49MHz
the data itself
the primary (as opposed to related) data of the identified resource
FITS-IDI
Applicable Calibration
Data products that can be used to remove instrumental signatures from #this. Note that the calibration steps such data products feed have not been applied to #this yet.
UVFLG
ANTAB
_dec
s_fc

Tap Nodes

- jiveeu-tap SJAU
  - tap_schema
  - ivoa
  - evn
- Goodies (not used yet

Preview of http://evn-vo.jive.eu/evn/q/dl/dlmeta?ID=ivo%3A//jive.eu/~%3FES023_981124_1_1_0016%252B731_4979.49MHz

```
SIMPLE  =                    T /Yep! It's a FITS file...                        BITPIX  =                    8
0                                                      EXTEND  =                    T                                                      GROUPS  =
GCOUNT  =                    0                                                  PCOUNT  =                    0
XTENSION= 'BINTABLE'                                                            BITPIX  =                    8
2 /A table is a matrix isn't it?                       NAXIS1  =                   64                                                      NAXIS2  =
PCOUNT  =                    0                                                  GCOUNT  =                    1
7 /Number of columns in each row                       EXTNAME = 'ARRAY_GEOMETRY'                                                      EXTVER  =
TTYPE1  = 'ANNAME  '           /The antennaname                                 TFORM1  = '8A      '
'                                                                 TFORM2  = '3D      '                                                                  TUNI
TTYPE3  = 'DERXYZ  '                                                            TFORM3  = '3E      '
'                                                                 TTYPE4  = 'ORBPARM '           /Orbital parameters                              TFOR
TTYPE5  = 'NOSTA   '           /Antenna number                                  TFORM5  = '1J      '
'           /Mount                                                TFORM6  = '1J      '                                                                  TTYP
offset                                          TFORM7  = '3E      '                                                 TUNIT7  = 'METERS
TABREV  =                    1                                                  OBSCODE = 'JIVE    '
4                                                      STK_1   =                   -1                                                      NO_BAND =
NO_CHAN =                   16                                                  REF_FREQ=   4.979490000000E+09
2.500000000000E+05                                                 REF_PIXL=        1.0000000E+00
FRAME   = 'GEOCENTRIC'                                                          ARRAYX  =   0.000000000000E+00
0.000000000000E+00                                                 ARRAYZ  =   0.000000000000E+00
DEGPDY  =   3.609856422982E+02                                                  FREQ    =   4.979490000000E+09
11-22'                                                    POLARX  =   4.931838513442E+00                                                                P
UT1UTC  =  -2.370471954346E-01                                                  IATUTC  =   3.100000000000E+01
'                                                                 ARRNAM  = 'EVN     '                                                                  END
JB      AM*□^s□ØÁ□ÆQû~'□ASg□z¹õZ□□□
```

More ESCAPE impact!

ESCAPE WP3 (open source repository)

- improve VLBI/radio data reduction tools*
- provide Jupyter kernel w/ data reduction s/w

** that means CASA*

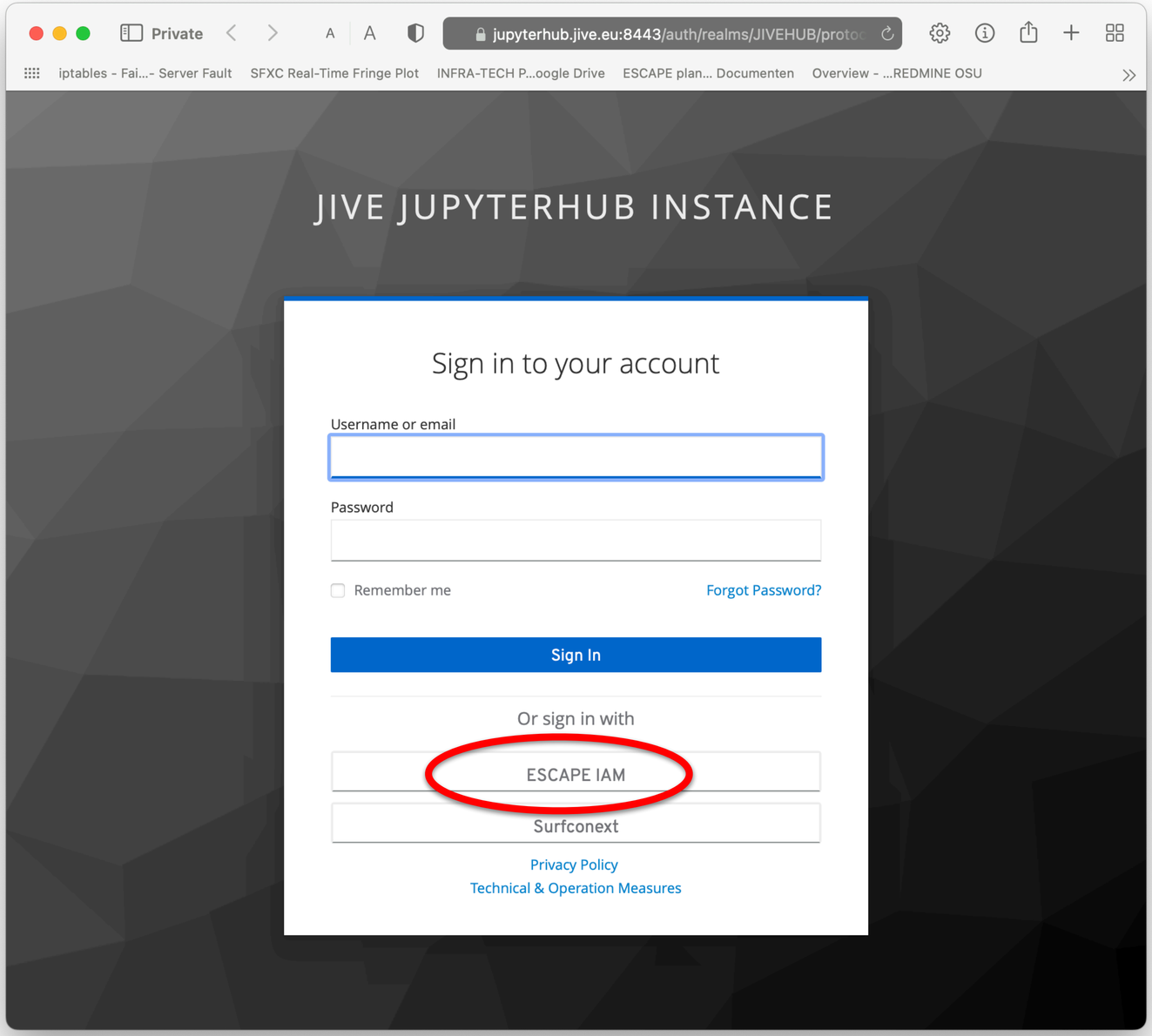
More ESCAPE impact!

ESCAPE WP3 (open source repository)

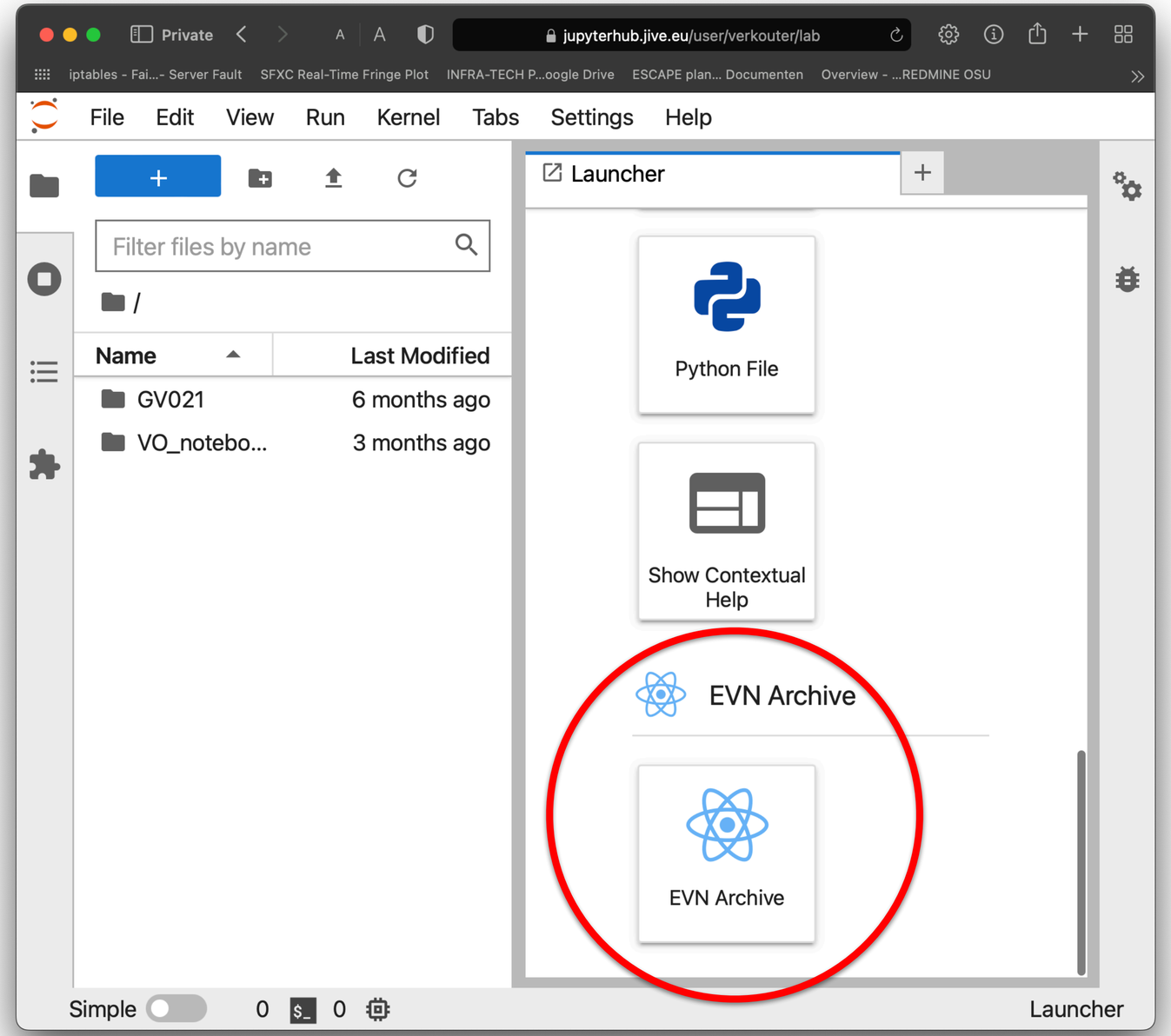
- improve CASA VLBI data reduction tools
- provide Jupyter kernel w/ data reduction s/w

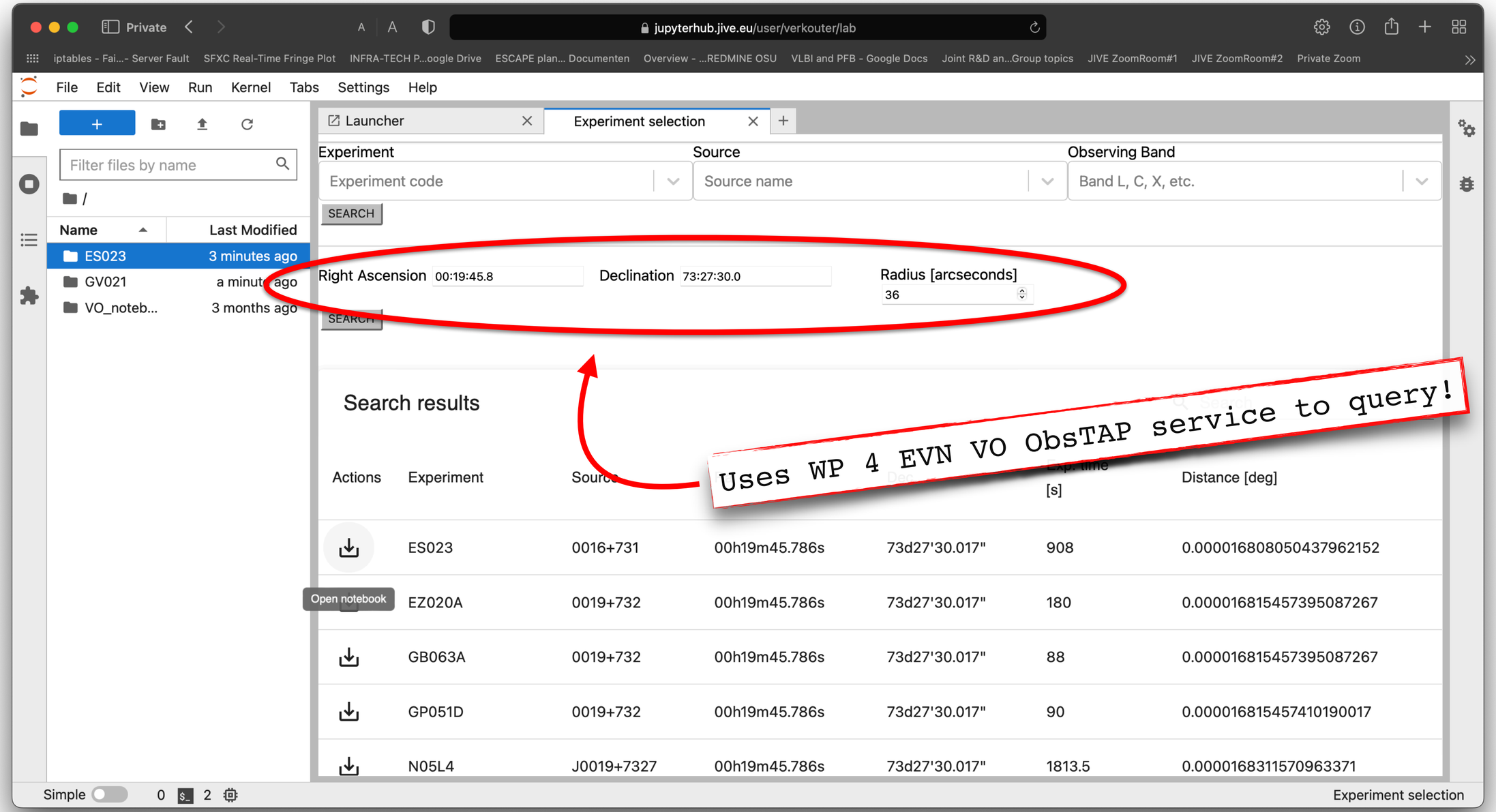
ESCAPE WP5 (science analysis platform)

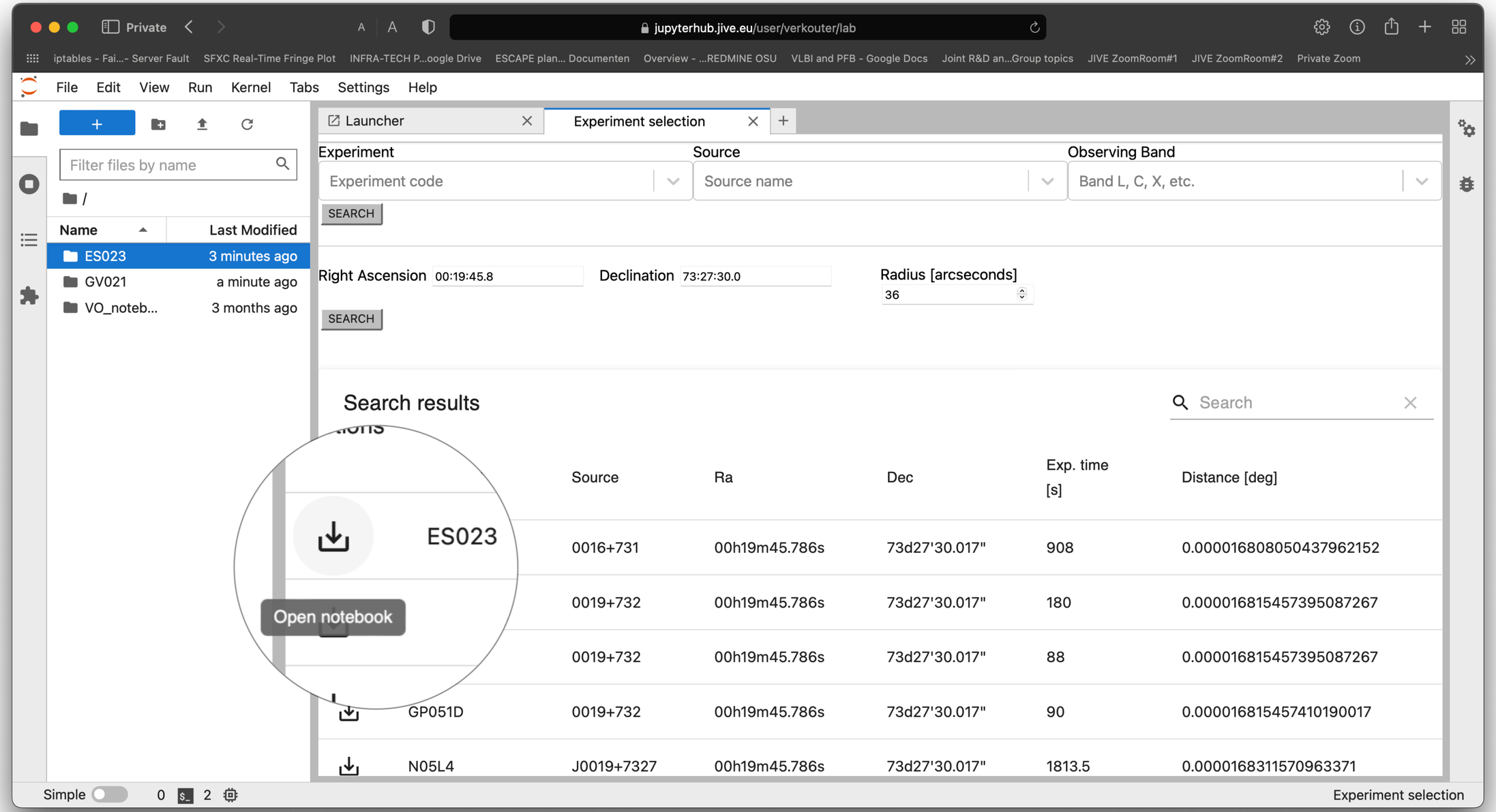
- provide Jupyterhub hardware (compute+storage)
- development of Jupyterhub plugins:
  - EVN archive search w/ notebook deployment
  - version controlled notebooks (provenance)

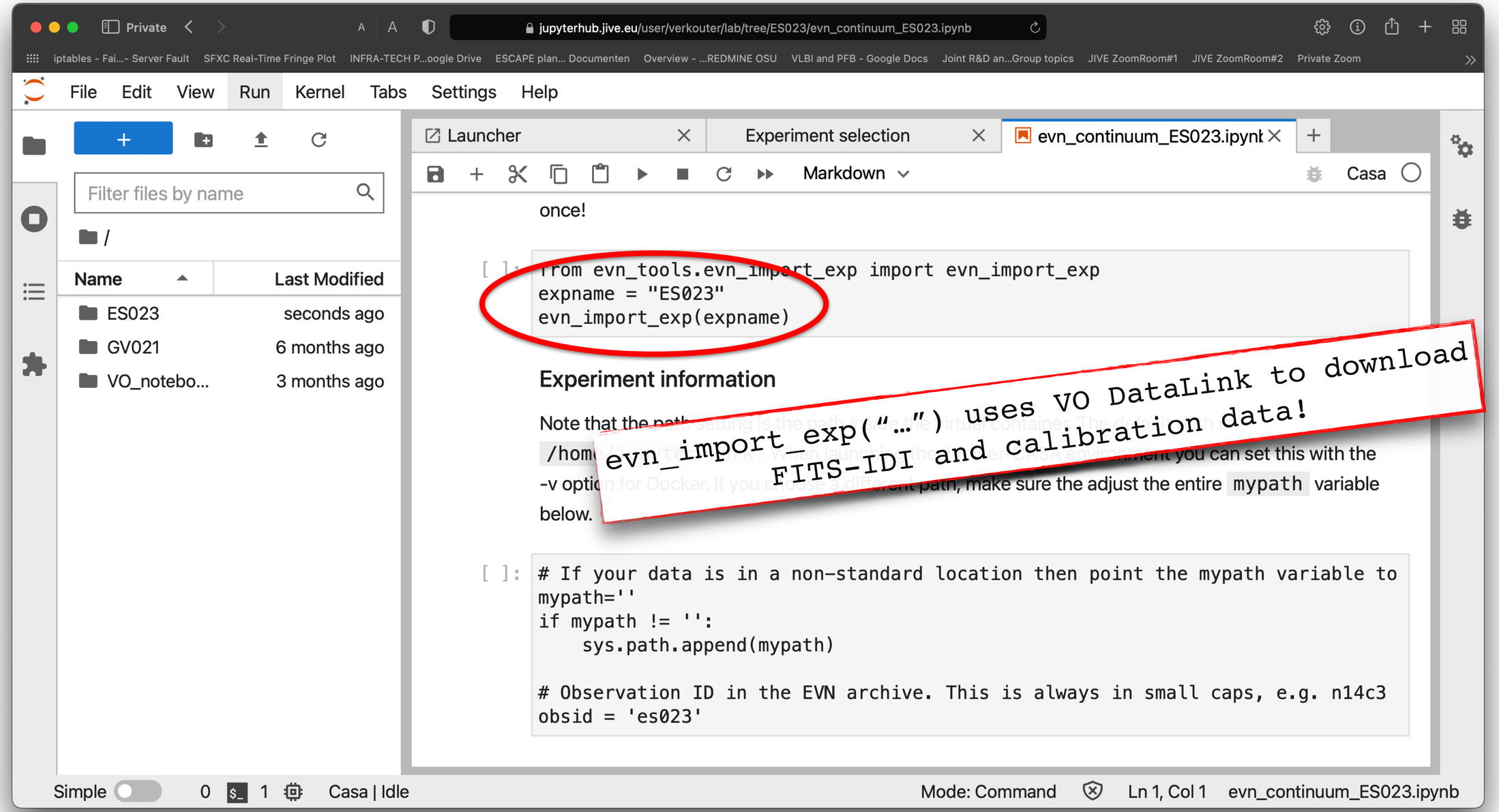


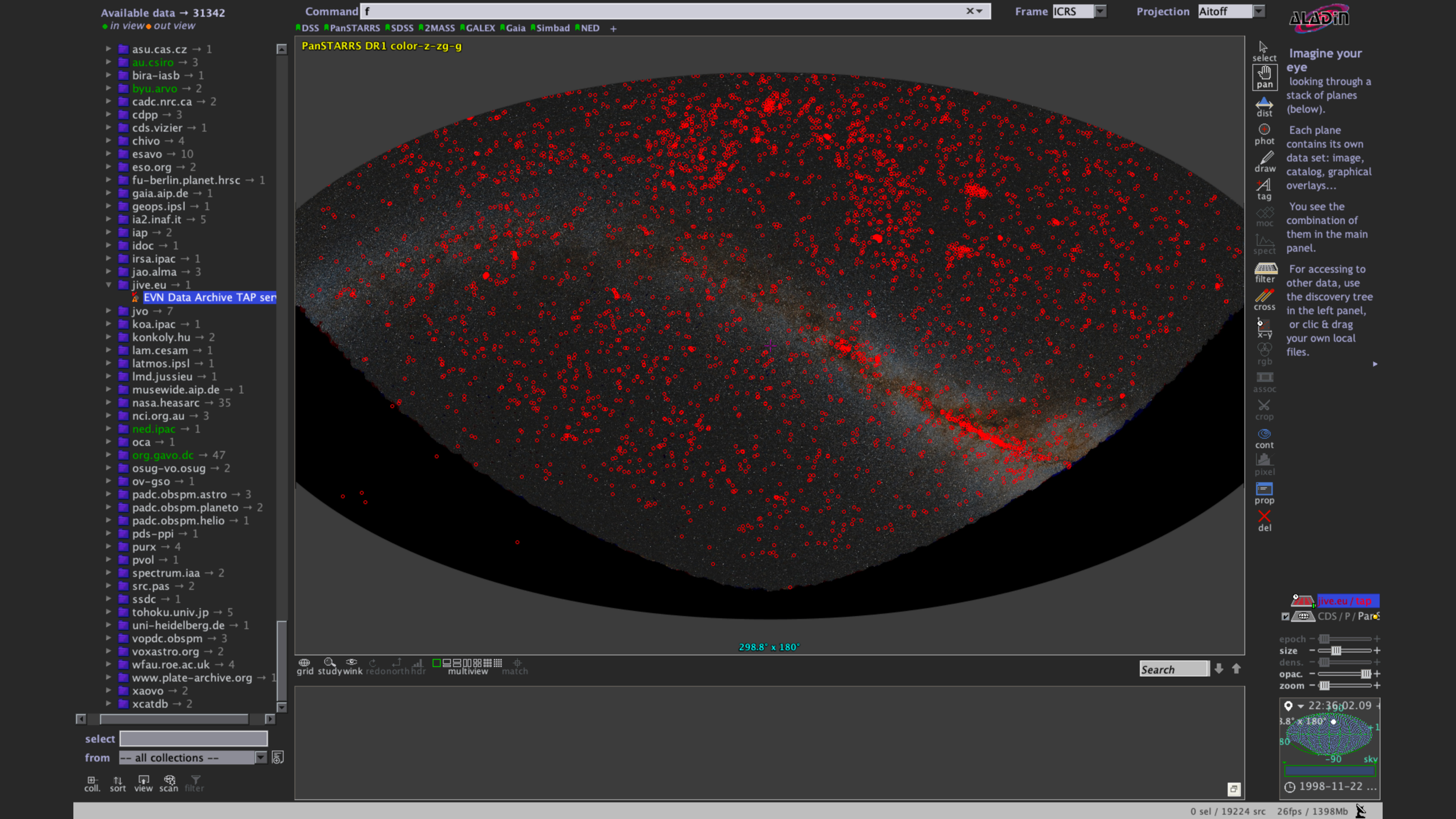
https://jupyterhub.jive.eu

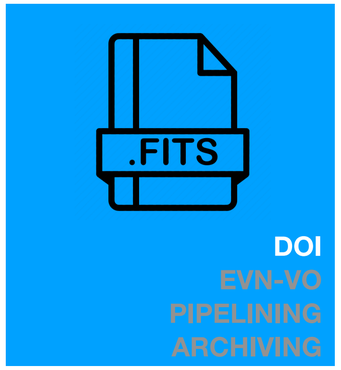

Private
jupyterhub.jive.eu/user/verkouter/lab
iptables - Fai...- Server Fault
SFXC Real-Time Fringe Plot
INFRA-TECH P...oogle Drive
ESCAPE plan... Documenten
Overview - ...REDMINE OSU
File
Edit
View
Run
Kernel
Tabs
Settings
Help
Launcher
Filter files by name
/
Name
Last Modified
GV021
6 months ago
VO_notebo...
3 months ago
Python File
Show Contextual Help
EVN Archive
EVN Archive
Simple
0
0
Launcher


jupyterhub.jive.eu/user/verkouter/lab
File Edit View Run Kernel Tabs Settings Help
Launcher
Experiment selection
Filter files by name
Name
Last Modified
ES023
3 minutes ago
GV021
a minute ago
VO_noteb...
3 months ago
Experiment
Source
Observing Band
Experiment code
Source name
Band L, C, X, etc.
SEARCH
Right Ascension 00:19:45.8
Declination 73:27:30.0
Radius [arcseconds]
36
SEARCH
Search results
Actions
Experiment
Source
Dec
Expt. time [s]
Distance [deg]
ES023 0016+731 00h19m45.786s 73d27'30.017" 908 0.000016808050437962152
Open notebook
EZ020A 0019+732 00h19m45.786s 73d27'30.017" 180 0.00001615457395087267
GB063A 0019+732 00h19m45.786s 73d27'30.017" 88 0.00001615457395087267
GP051D 0019+732 00h19m45.786s 73d27'30.017" 90 0.00001615457410190017
N05L4 J0019+7327 00h19m45.786s 73d27'30.017" 1813.5 0.000016831157096337
Uses WP 4 EVN VO ObsTAP service to query!
Simple
Experiment selection


jupyterhub.jive.eu/user/verkouter/lab
File Edit View Run Kernel Tabs Settings Help
Launcher
Experiment selection
Filter files by name
/
Name
Last Modified
ES023 3 minutes ago
GV021 a minute ago
VO_noteb... 3 months ago
Experiment
Experiment code
Source
Source name
Observing Band
Band L, C, X, etc.
SEARCH
Right Ascension 00:19:45.8
Declination 73:27:30.0
Radius [arcseconds]
36
SEARCH
Search results
Search
Source
Ra
Dec
Exp. time [s]
Distance [deg]
ES023
Open notebook
0016+731 00h19m45.786s 73d27'30.017" 908 0.000016808050437962152
0019+732 00h19m45.786s 73d27'30.017" 180 0.00001615457395087267
0019+732 00h19m45.786s 73d27'30.017" 88 0.00001615457395087267
GP051D 0019+732 00h19m45.786s 73d27'30.017" 90 0.00001615457410190017
N05L4 J0019+7327 00h19m45.786s 73d27'30.017" 1813.5 0.0000168311570963371
Simple
Experiment selection


jupyterhub.jive.eu/user/verkouter/lab/tree/ES023/evn_continuum_ES023.ipynb
File Edit View Run Kernel Tabs Settings Help
Launcher
Experiment selection
evn_continuum_ES023.ipynb
Markdown
Casa
Filter files by name
/
Name
Last Modified
ES023 seconds ago
GV021 6 months ago
VO_notebo... 3 months ago
once!
[ ]:
from evn_tools.evn_import_exp import evn_import_exp
expname = "ES023"
evn_import_exp(expname)
Experiment information
Note that the path
/hom
-v optio
below.
mypath
variable
evn_import_exp("…") uses VO DataLink to download FITS-IDI and calibration data!
[ ]:
# If your data is in a non-standard location then point the mypath variable to
mypath=''
if mypath != '':
sys.path.append(mypath)
# Observation ID in the EVN archive. This is always in small caps, e.g. n14c3
obsid = 'es023'
Simple
0
1
Casa | Idle
Mode: Command
Ln 1, Col 1
evn_continuum_ES023.ipynb


Available data → 31342
in view out view
asu.cas.cz → 1
au.csiro → 3
bira-iasb → 1
byu.arvo → 2
cadc.nrc.ca → 2
cdpp → 3
cds.vizier → 1
chivo → 4
esavo → 10
eso.org → 2
fu-berlin.planet.hrsc → 1
gaia.aip.de → 1
geops.ipsl → 1
ia2.inaf.it → 5
iap → 2
idoc → 1
irsa.ipac → 1
jao.alma → 3
jive.eu → 1
EVN Data Archive TAP ser
jvo → 7
koa.ipac → 1
konkoly.hu → 2
lam.cesam → 1
latmos.ipsl → 1
lmd.jussieu → 1
musewide.aip.de → 1
nasa.heasarc → 35
nci.org.au → 3
ned.ipac → 1
oca → 1
org.gavo.dc → 47
osug-vo.osug → 2
ov-gso → 1
padc.obspm.astro → 3
padc.obspm.planeto → 2
padc.obspm.helio → 1
pds-ppi → 1
purx → 4
pvol → 1
spectrum.iaa → 2
src.pas → 2
ssdc → 1
tohoku.univ.jp → 5
uni-heidelberg.de → 1
vopdc.obspm → 3
voxastro.org → 2
wfau.roe.ac.uk → 4
www.plate-archive.org → 1
xaovo → 2
xcatdb → 2
select
from
-- all collections --
coll.
sort
view
scan
filter
Command
f
Frame
ICRS
Projection
Aitoff
DSS
PanSTARRS
SDSS
2MASS
GALEX
Gaia
Simbad
NED
PanSTARRS DR1 color-z-zg-g
298.8° x 180°
grid
study
wink
redo
north
hdr
multiview
match
Search
select
pan
dist
phot
draw
tag
moc
spect
filter
cross
x-y
rgb
assoc
crop
cont
pixel
prop
del
Imagine your eye
looking through a stack of planes (below).
Each plane contains its own data set: image, catalog, graphical overlays...
You see the combination of them in the main panel.
For accessing to other data, use the discovery tree in the left panel, or clic & drag your own local files.
jive.eu / tap
CDS / P / Pan
epoch
size
dens.
opac.
zoom
22:36:02.09
sky
1998-11-22 ...
0 sel / 19224 src
26fps / 1398Mb



https://doi.org/10.48717/21qn-4a40

DataCite

https://datacite.org/

TU Delft

TU Delft DOI Consortium

Landing page for ES023

DOI

https://doi.org/10.48717/21qn-4a40

Project

ES023

Title

The CCS Quasar 3C119

▶ Details

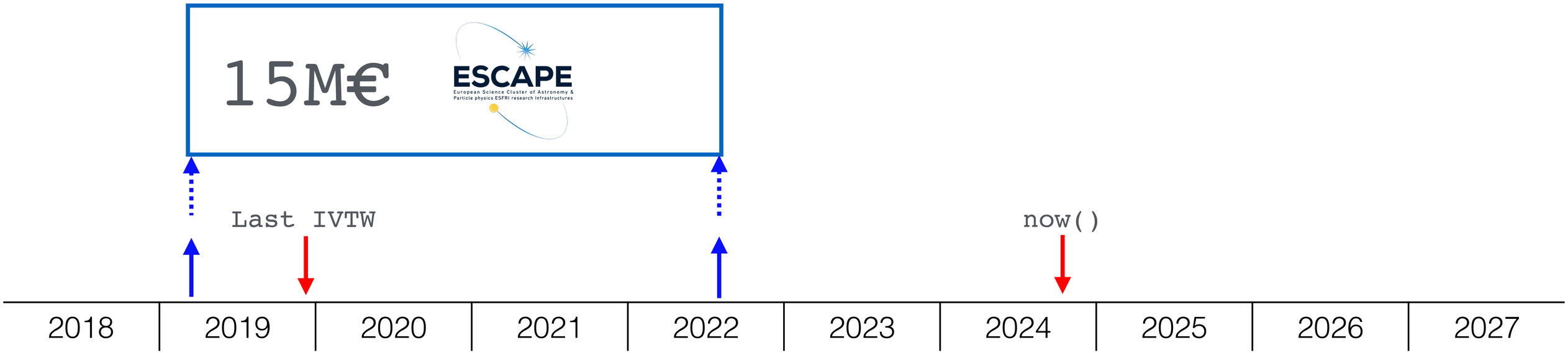
Data

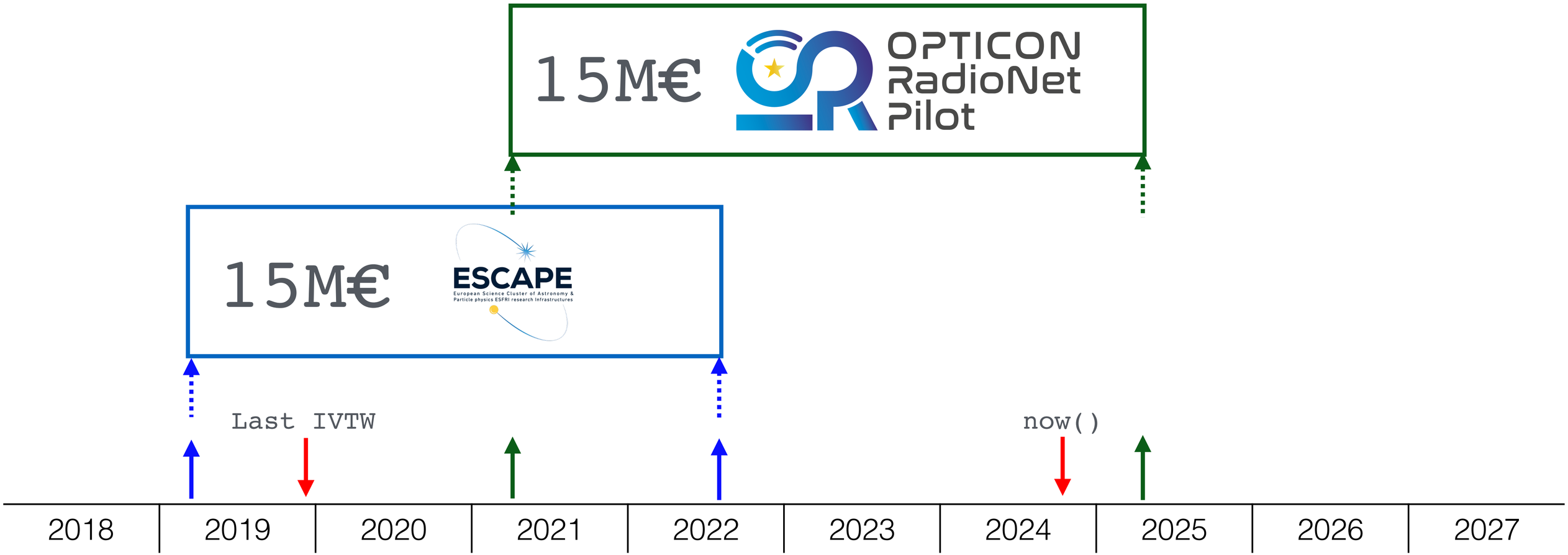
Pages for individual experiments for ES023 at the EVN archive:

- ES023 (https://doi.org/10.48717/xfbj-m707)
- ES023B (https://doi.org/10.48717/cs68-tk75)

Context

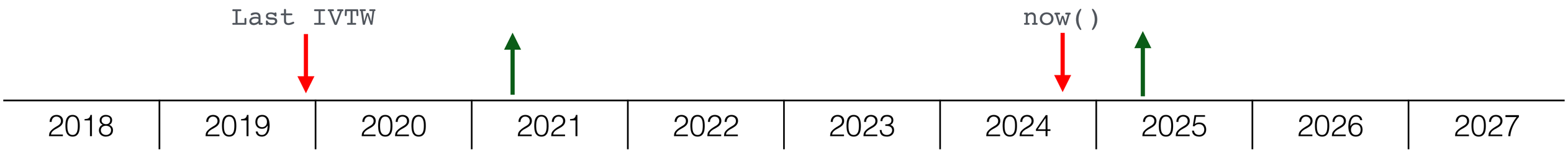
This data is part of the archive of VLBI data maintained by JIVE on behalf of the EVN, a network of radio telescopes located primarily in Europe and Asia. The EVN archive itself has the DOI https://doi.org/10.17616/R3Z197


15M€
ESCAPE
European Science Cluster of Astronomy &
Particle physics ESFRI research Infrastructures
Last IVTW
now()
2018
2019
2020
2021
2022
2023
2024
2025
2026
2027


15M€
OPTICON
RadioNet
Pilot
15M€
ESCAPE
European Science Cluster of Astronomy &
Particle physics ESFRI research Infrastructures
Last IVTW
now()
2018
2019
2020
2021
2022
2023
2024
2025
2026
2027

15M€

OPTICON
RadioNet
Pilot



OPTICON RadioNet Pilot

Horizon2020
European Union Funding
for Research & Innovation

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 101004719

OPTICON RadioNet Pilot

OPTical
Infrared
COordination
Network for
Astronomy

2001 - 2021

https://arxiv.org/pdf/astro-ph/0105562

RadioNet
Infrastructure
Cooperation
Network in
Radio Astronomy

1999 - 2021

https://www.radionet-eu.org/index.html

1998-2002	**RadioNet**	VLBI schools EVN symposium Coordination meetings (TOG, CBD)
2002-2006	**RadioNet**	ParselTongue
	EXPReS	Production e-VLBI Distributed SFXC
2007-2013	**RadioNet**	Basic CASA VLBI improvements
	NEXPReS	UniBoard FPGA hardware FGPA VLBI correlator FlexBuff
2014-2020	**RadioNet**	White Rabbit T&F transfer CASA fringefit e-transfer pySCHED

OPTical
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https://arxiv.org/pdf/astro-ph/0105562

RadioNet

RadioNet
Infrastructure
Cooperation
Network in
Radio Astronomy

1999 - 2021

https://www.radionet-eu.org/index.html

Opticon
RadioNet
PILOT

JA2 - *Seamless Performance*

2.1 Common-Access to Research Infrastructures

2.2 Time-Domain, Multi-Facility & Multi-Frequency access to Research Infrastructures

2.3 Common frameworks for Data access and processing procedures

2.4 Synergies between emerging and established interferometric communities

2.5 Preserving the sky for future generations

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2.5 Preserving the sky for future generations

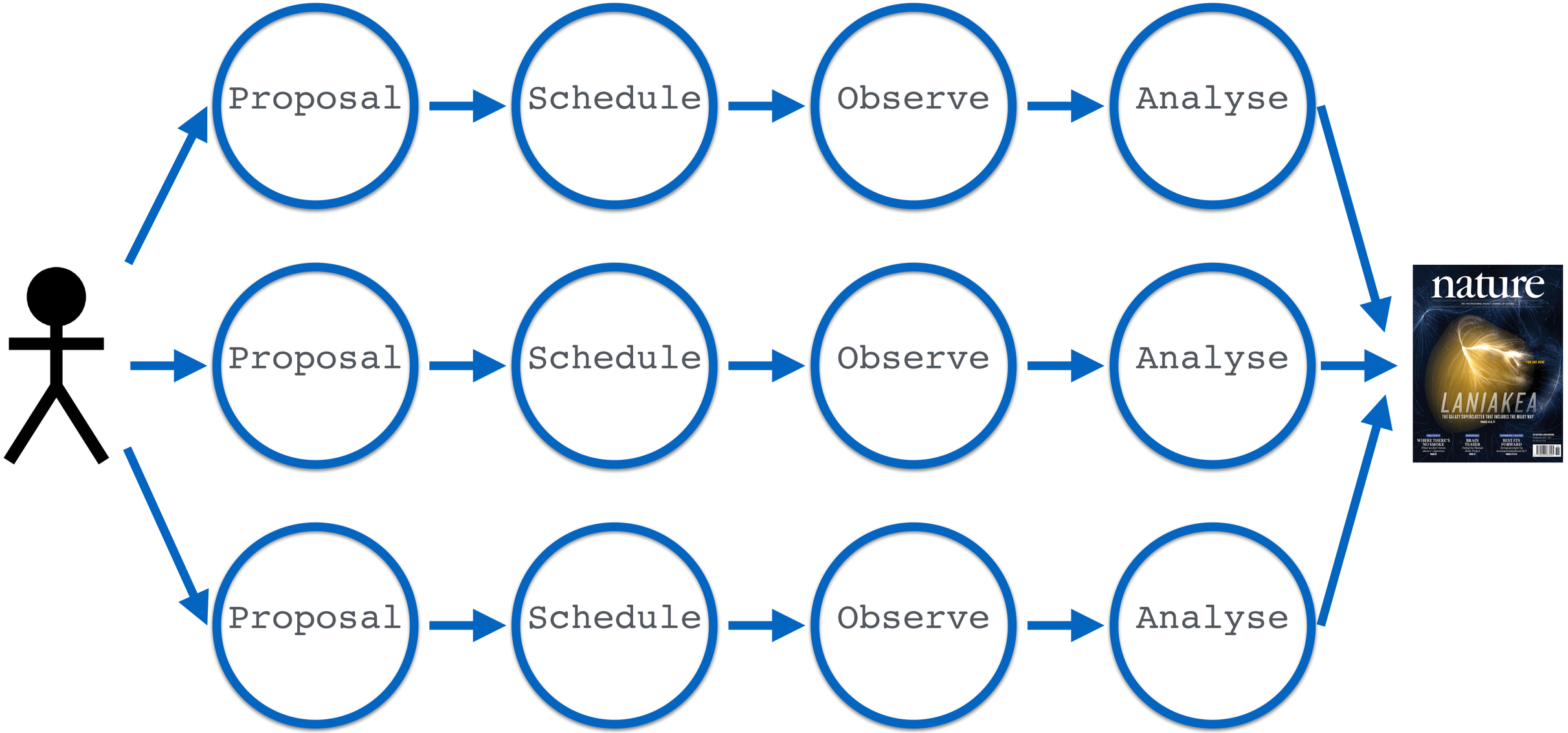
JA2.2 - *Access to:*

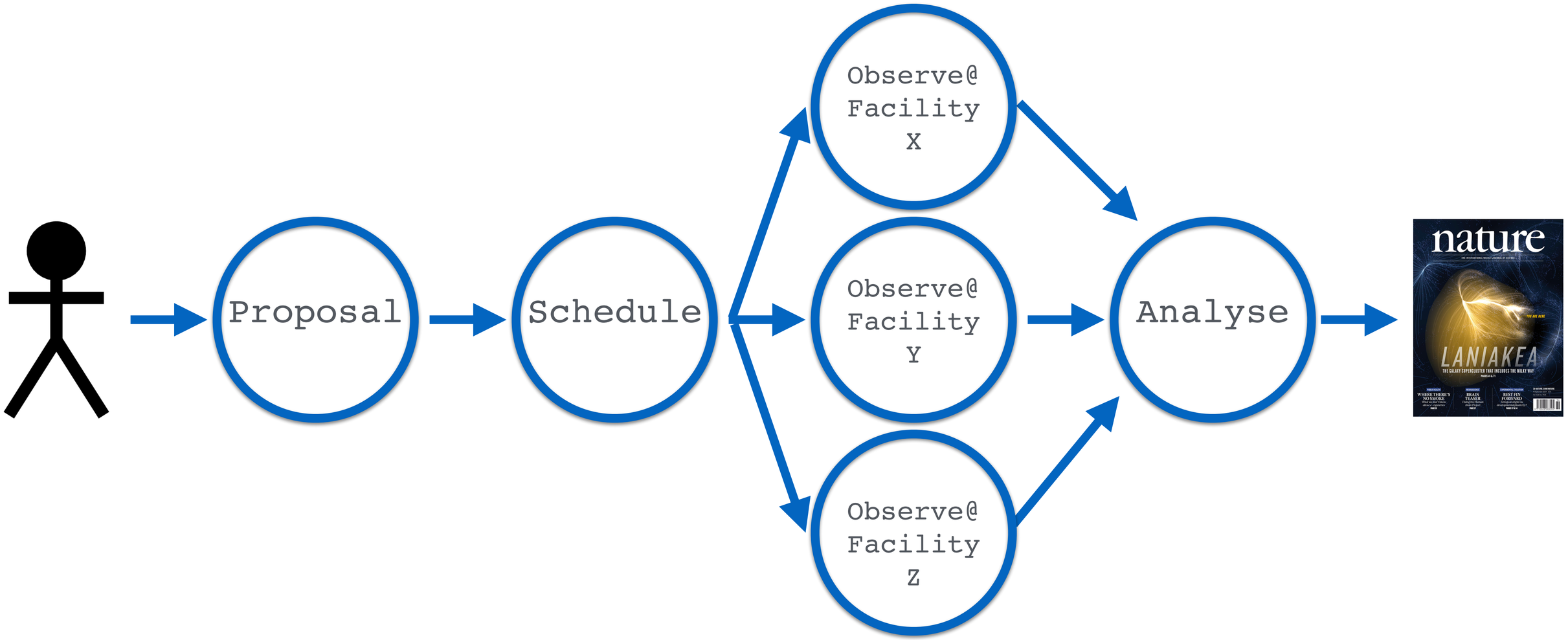
multi-wavelength
multi-facility
time domain
astronomy

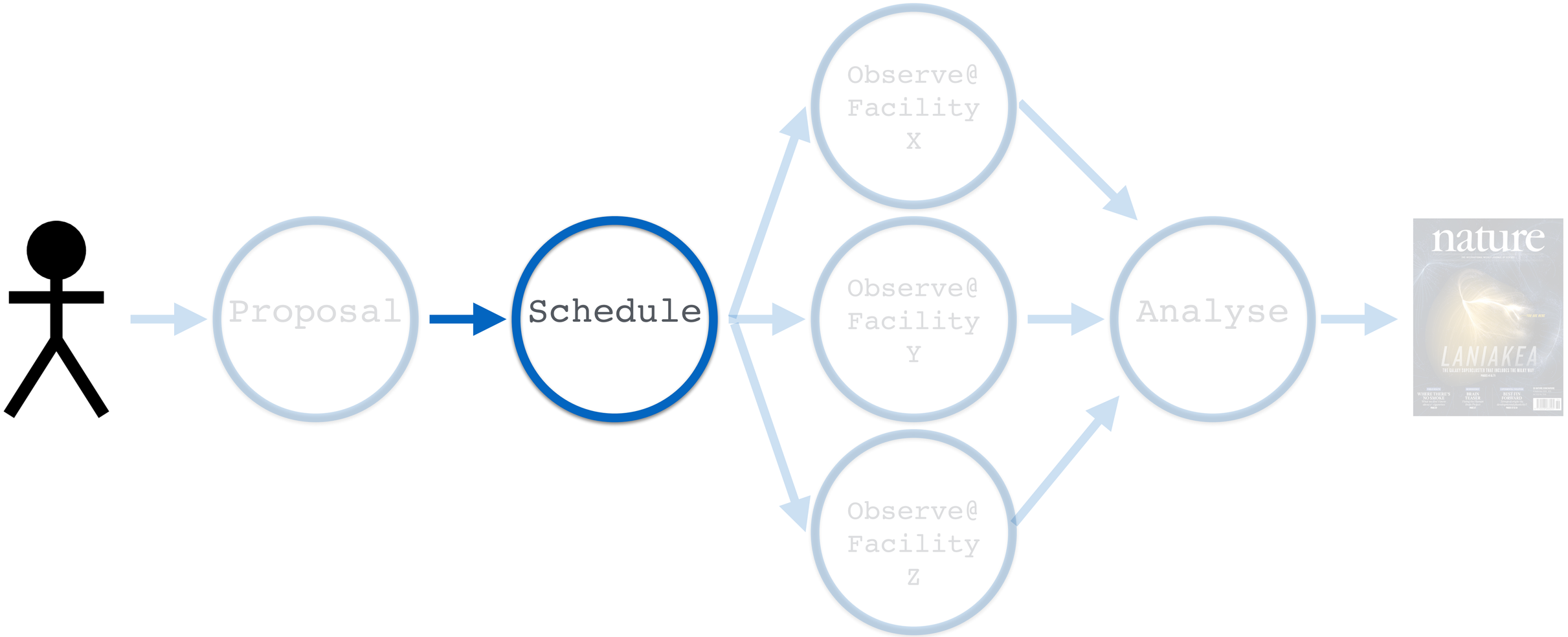
JA2.2 - *Access to:*

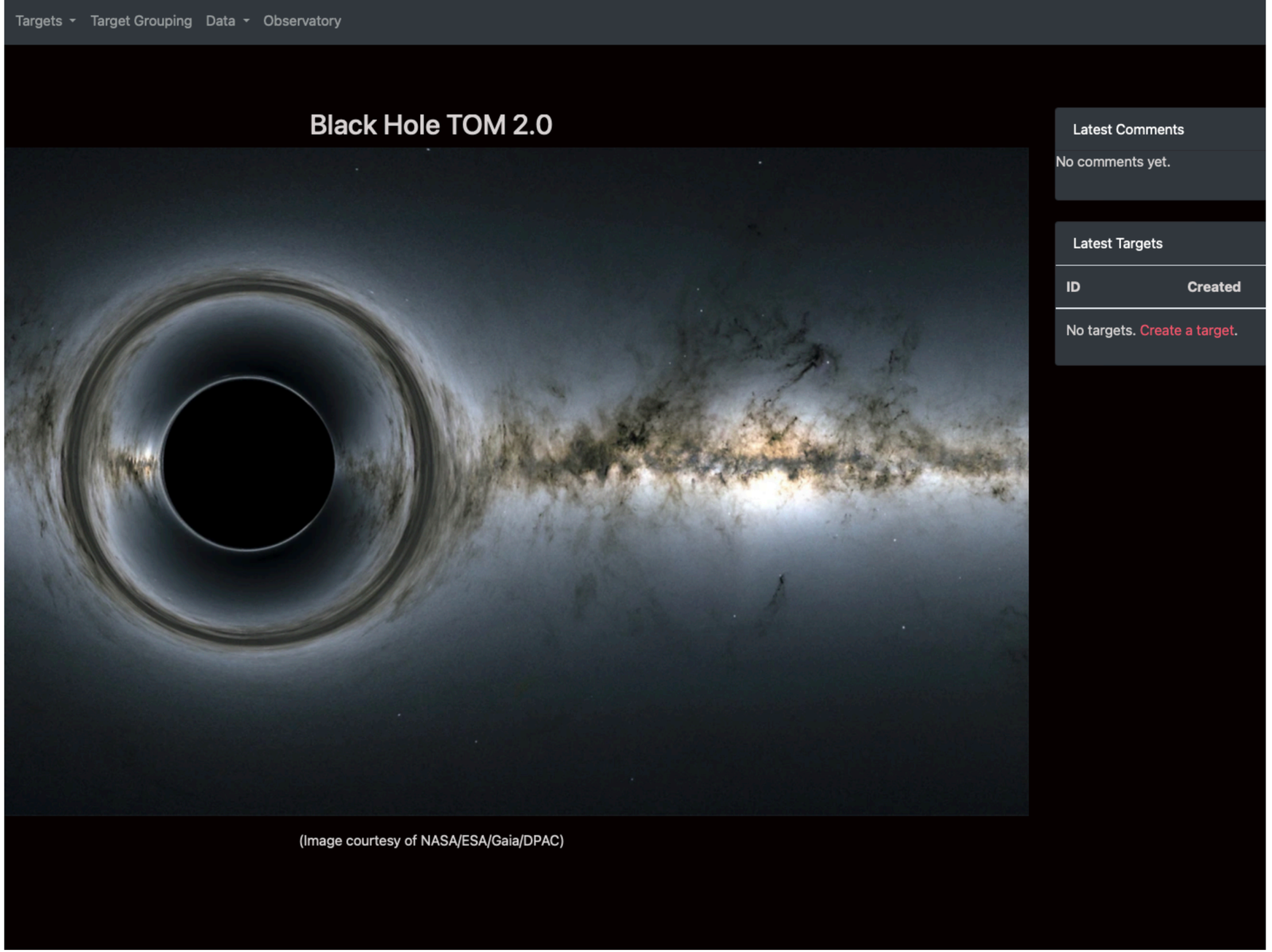
multi-facility*
time domain
astronomy

(*) multi-wavelength can be implicit through a judicious choice of facilities


Proposal
Schedule
Observe
Analyse
Proposal
Schedule
Observe
Analyse
Proposal
Schedule
Observe
Analyse
nature
LANIAKEA

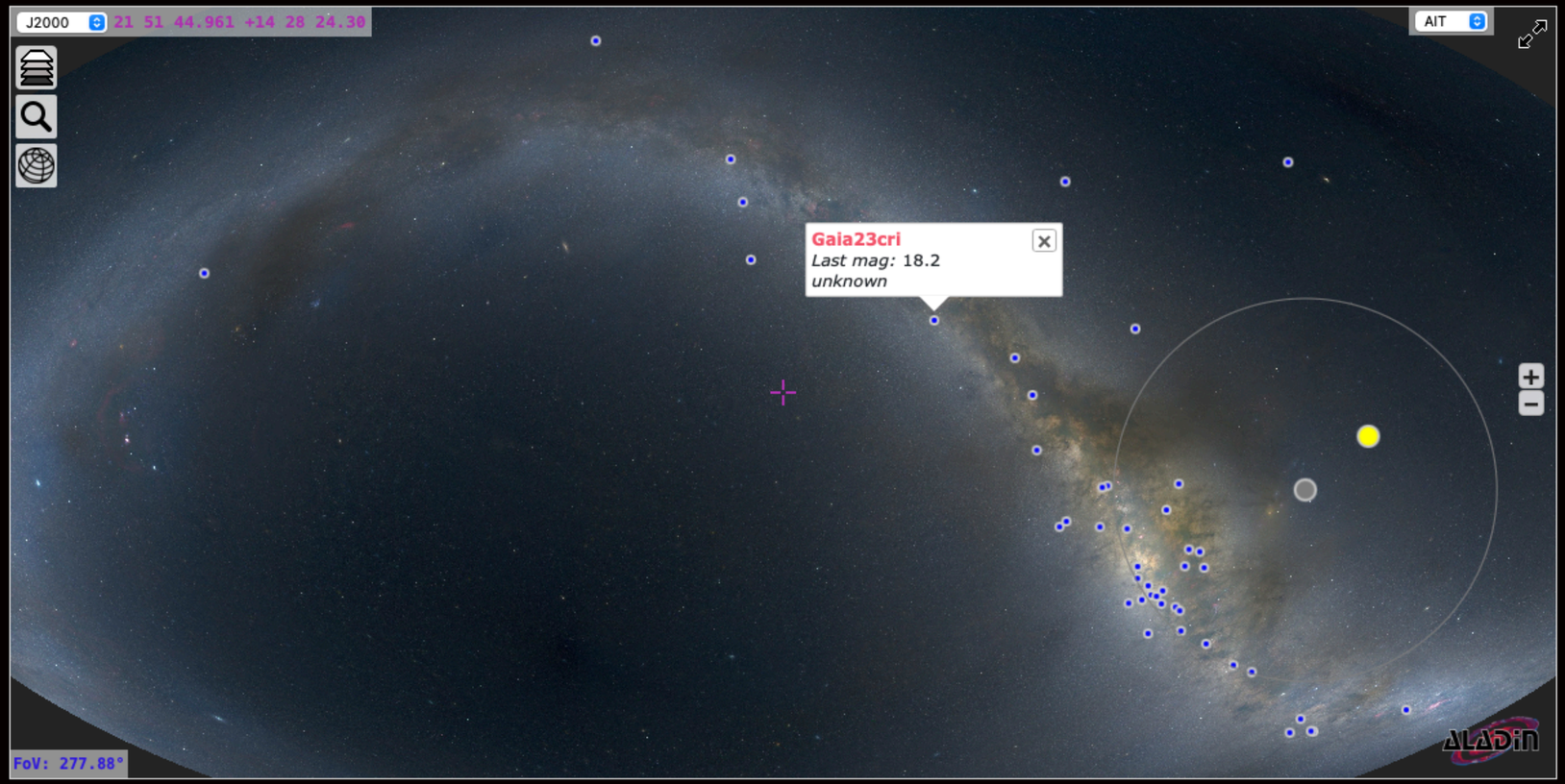

Proposal
Schedule
Observe@ Facility X
Observe@ Facility Y
Observe@ Facility Z
Analyse
nature
LANIAKEA


Proposal
Schedule
Observe@ Facility X
Observe@ Facility Y
Observe@ Facility Z
Analyse
nature
LANIAKEA



https://bh-tom2.astrolabs.pl/

51 Targets Create Targets Export Filtered Targets

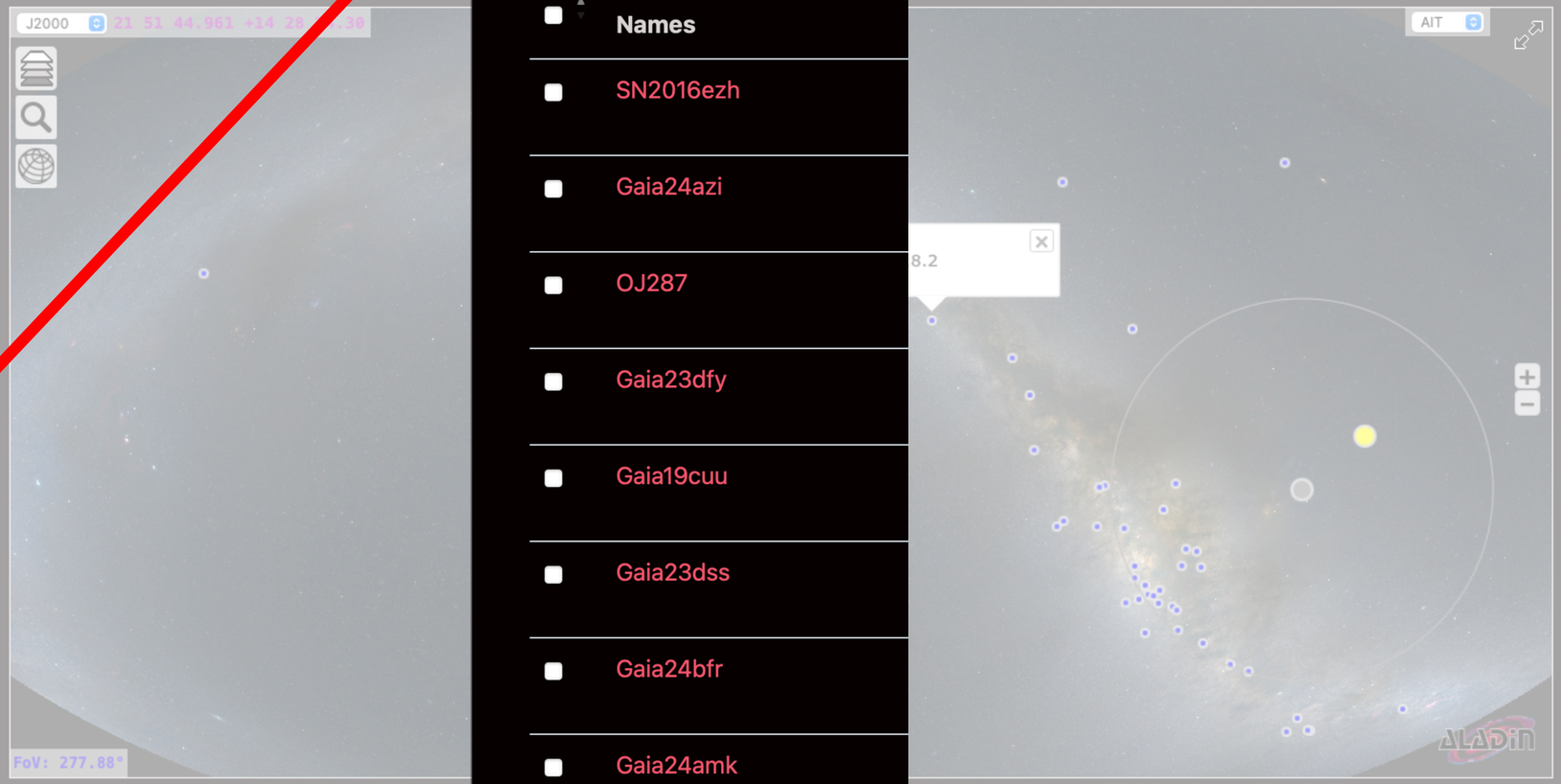


Add/Remove from grouping old targets not for observing Add Move Remove

Show 10 entries

Names	RA	Dec	Nobs	Last Gmag	Last Filter	Importance	Created	Priority	Sun	Class
Gaia21fkl	07:46:28.378	-21:52:32.016	4757	14.5	I(GaiaSP)	1.0	2023-10-03 02:10:39	0.0	102	Microlensing Event
Gaia23ckg	17:43:04.003	-35:15:32.400	377	17.9	~G	1.0	2023-10-25 17:10:19	7.5	38	Microlensing Event
B1721+343	17:23:20.809	+34:17:58.480	1520	15.4	~G	1.0	2023-11-13 15:11:28	95.5	61	Quasar(QSO)

51 Targets Create Targets Export Filtered Targets



Show 10 entries

Names
SN2016ezh
Gaia24azi
OJ287
Gaia23dfy
Gaia19cuu
Gaia23dss
Gaia24bfr
Gaia24amk
Gaia23dnm
Gaia24alm

move from grouping old targets not for observing Add Move Remove

Show 10 entries

Names	RA	Dec	Nobs			portance	Created	Priority	Sun	Class
Gaia21fkl	07:46:28.378	-21:52:32.016	4757				2023-10-03 02:10:39	0.0	102	Microlensing Event
Gaia23ckg	17:43:04.003	-35:15:32.400	377		~G	1.0	2023-10-25 17:10:19	7.5	38	Microlensing Event
B1721+343		+34:17:58.480	1520	15.4	~G	1.0	2023-11-13 15:11:28	95.5	61	Quasar(QSO)

Gaia24

Name	
Ra,Dec	
Galactic (l,b)	
Constellation	Aquila
Discovered	2024-03-14 05:15:40
Class	Microlensing Event
Description	candidate binary microlensing event, now gone
Phot.Class	YSO 47.8%
Last MJD	60591.39382756
Last Mag/Filter	21.3 mag [~G]
Target importance (0-10)	1.0
Cadence requested (d)	5.0
Observing priority	0.3
Sun Separation (deg)	92.0

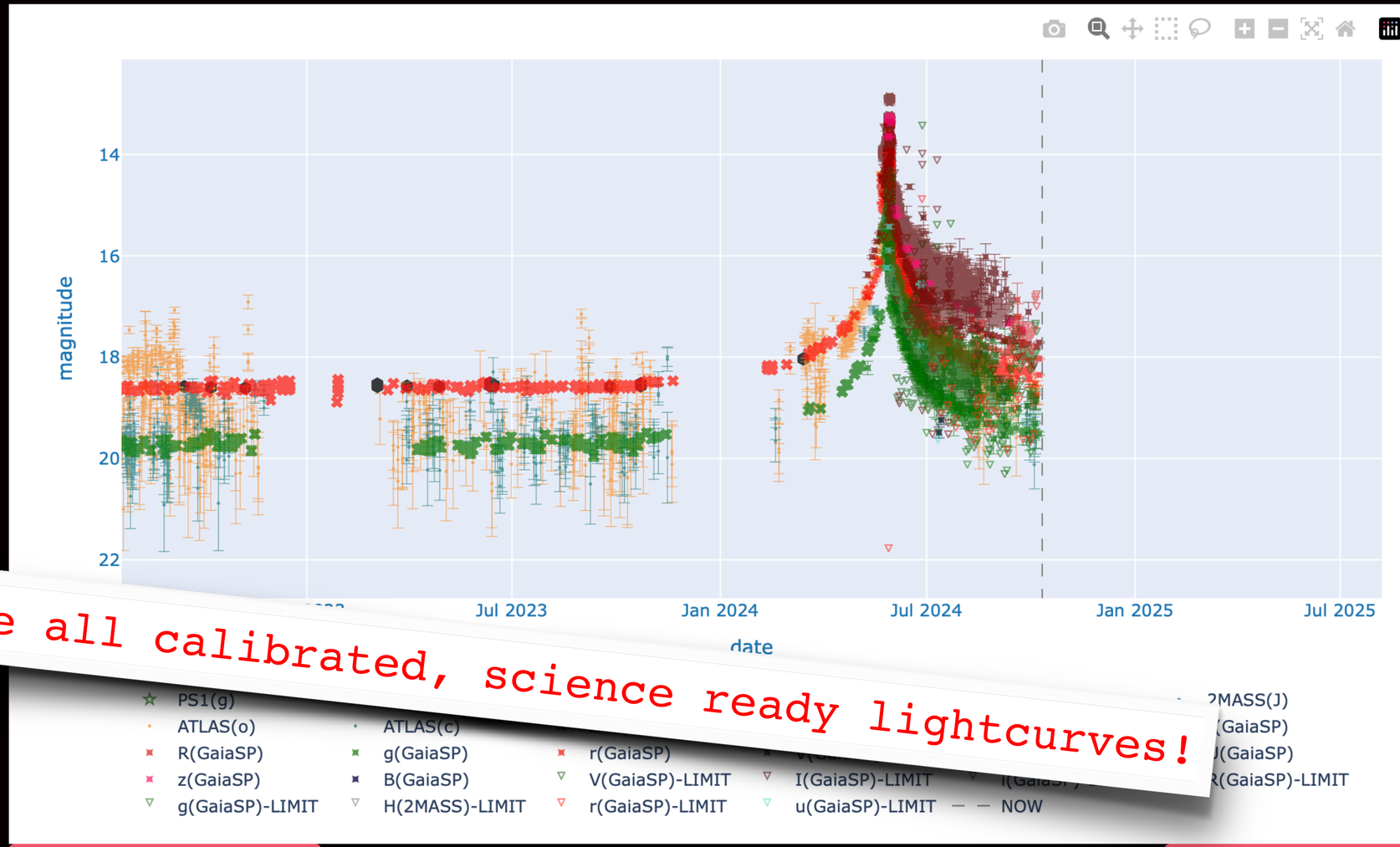
Other names:

ANTARES

ZTF

Photometry | Models | Spectroscopy | Publication | Manage Data | Manage Groups

Photometry



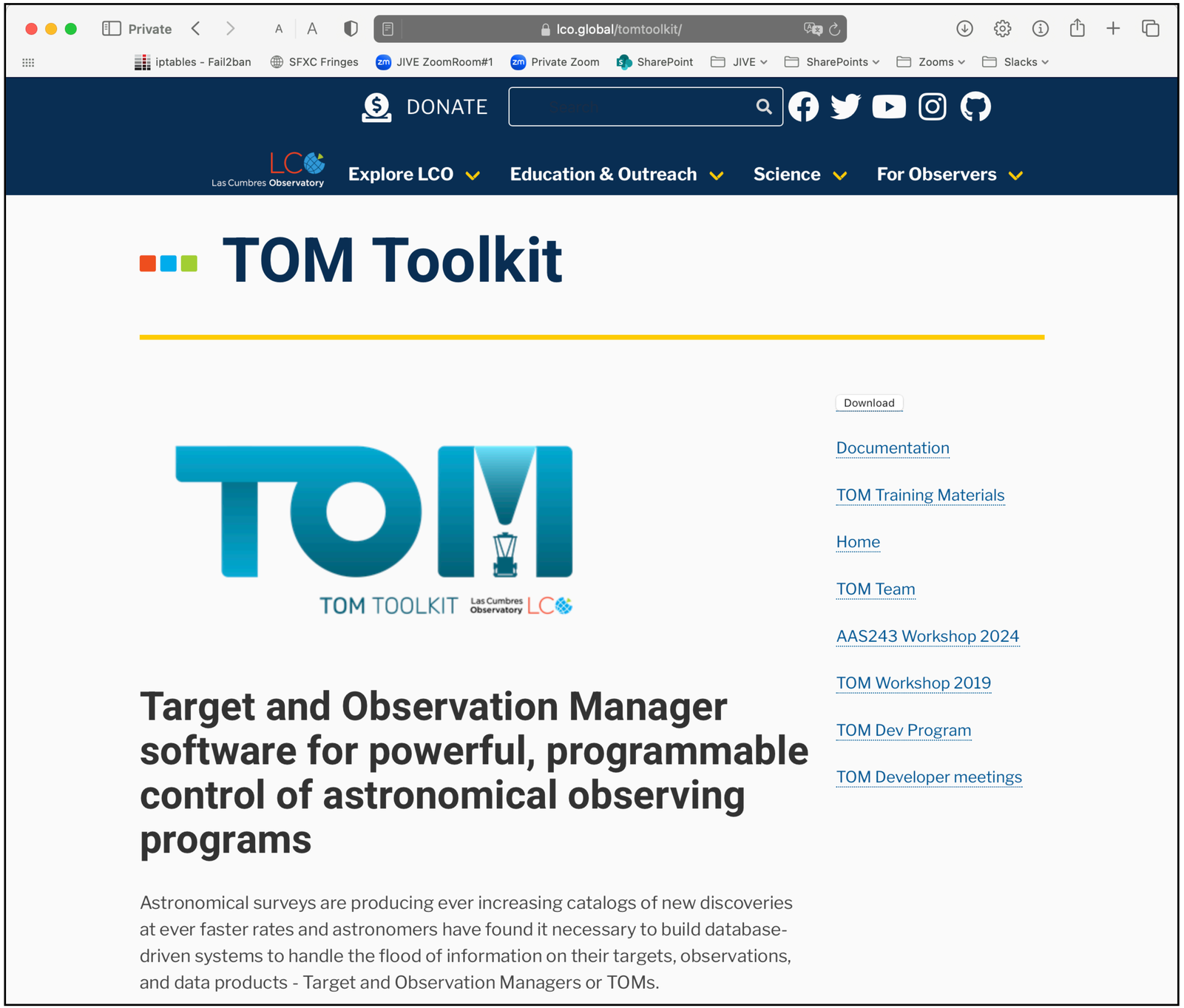
These are all calibrated, science ready lightcurves!

Download photometry data

Download radio data

Photometry (per facility)

Las Cumbres Observatory



https://lco.global/tomtoolkit/

#PB - C4KTY82

RequestGroup # 1127853

State	Updated	Submitted	Proposal	Submitter	IPP	Observation Type
✔ COMPLETED	2021-01-13 14:09:39	2021-01-12 22:57:05	FTPEPO2014A-004	paul_breitenstein1	1.050000	NORMAL

Options

Sub-requests #2355340

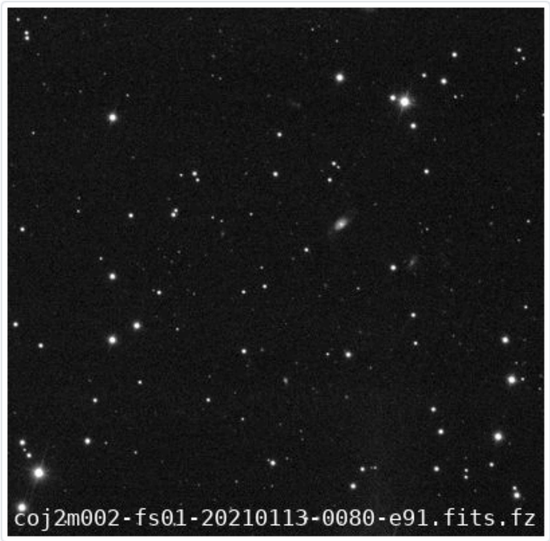
2355340
Duration: 672 seconds
Instrument: 2.0 meter Spectral

✔ COMPLETED
Acceptability Threshold: 60.0%
2021-01-13 14:09:39

View in API | Download

Details | Scheduling | Visibility | Data

Click a row in the data table to preview the file below. Click preview for a larger version.

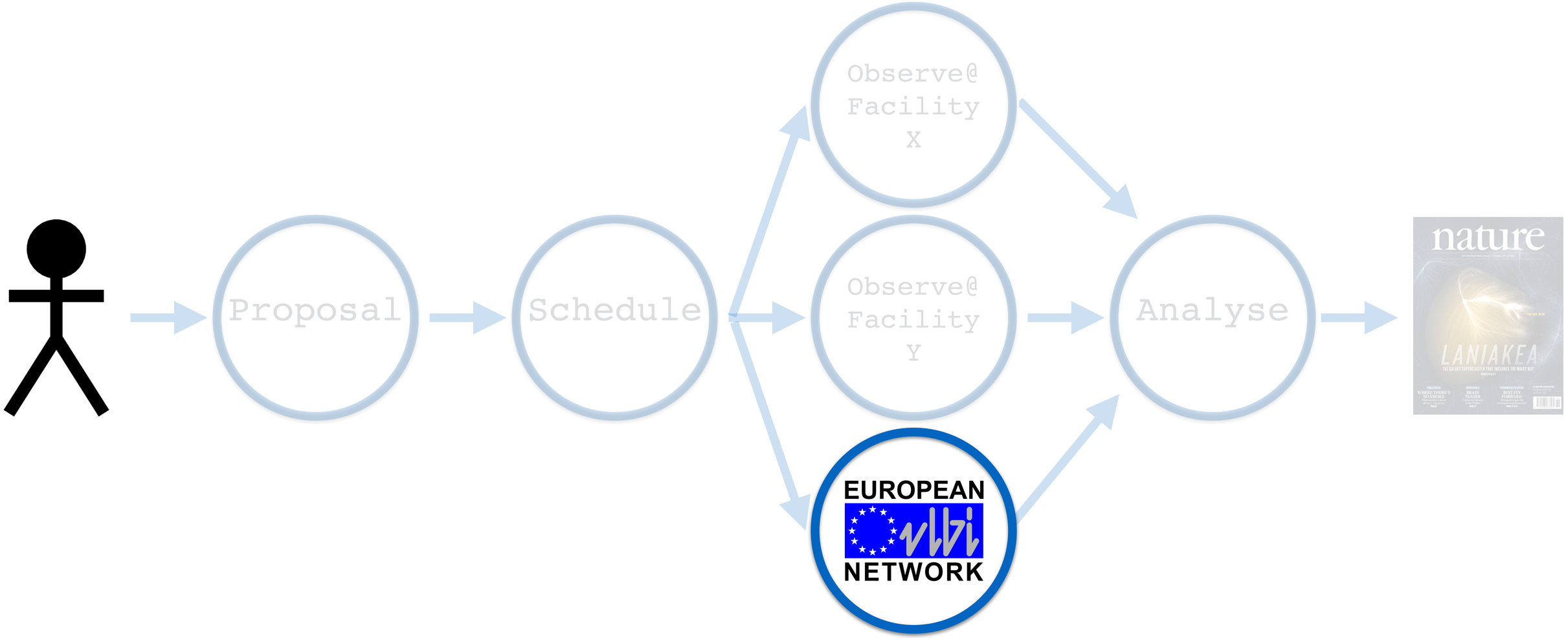


Download Selected | Download All | View on Archive

	filename	DATE_OBS	filter	obstype	Reduction
☐	coj2m002-fs01-20210113-0075-e00.fits.fz	2021-01-13 14:01:57	R	EXPOSE	raw
☐	coj2m002-fs01-20210113-0075-e91.fits.fz	2021-01-13 14:01:57	R	EXPOSE	reduced
☐	coj2m002-fs01-20210113-0076-e00.fits.fz	2021-01-13 14:03:14	R	EXPOSE	raw
☐	coj2m002-fs01-20210113-0076-e91.fits.fz	2021-01-13 14:03:14	R	EXPOSE	reduced
☐	coj2m002-fs01-20210113-0077-e00.fits.fz	2021-01-13 14:04:30	R	EXPOSE	raw
☐	coj2m002-fs01-20210113-0077-e91.fits.fz	2021-01-13 14:04:30	R	EXPOSE	reduced
☐	coj2m002-fs01-20210113-0078-e00.fits.fz	2021-01-13 14:05:47	R	EXPOSE	raw
☐	coj2m002-fs01-20210113-0078-e91.fits.fz	2021-01-13 14:05:47	R	EXPOSE	reduced
☐	coj2m002-fs01-20210113-0079-e00.fits.fz	2021-01-13 14:07:05	R	EXPOSE	raw
☐	coj2m002-fs01-20210113-0079-e91.fits.fz	2021-01-13 14:07:05	R	EXPOSE	reduced

Showing 1 to 10 of 12 rows 10 rows per page

‹ 1 2 ›


Proposal
Schedule
Observe@ Facility X
Observe@ Facility Y
EUROPEAN VLBI NETWORK
Analyse
nature
LANIAKEA

$> cat SIMPLE_CONT.KEY

```
setini = {SETINI SETUP NAME} /
    band   = '{BAND}'
    nchan  = {NUMBER CHANNELS}
    bits   = {NUMBER BITS}
    bbfilter = {BANDWIDTH}
    pol    = {POLARIZATION PRODUCTS}
    pcal   = 'off'
    freqref = {4966.49}
    freqoff = {0,0,0,0, 16,16,16,16, 32,32,32,32, 48,48,48,48}
    netside = {L,L,U,U,  L, L, U, U,  L, L, U, U,  L, L, U, U}
    /
endset
/

setup = {SETINI SETUP NAME}
{SCANS}

!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
! Simple continuum observation

source={FRINGE-FINDER} gap=0:00 dur={5:00} /

source={TARGET} gap={3:00} dur={3:00} /
group 1 rep {X}
   source={TARGET} gap={0:30} dur={14:30} /

source={FRINGE-FINDER} gap={3:00} dur={5:00} /
```

$> pySCHED -f SIMPLE_CONT.KEY

…

$> cat SIMPLE_CONT.KEY

```
setini = {SETINI SETUP NAME} /
    band   = '{BAND}'
    nchan  = {NUMBER CHANNELS}
    bits   = {NUMBER BITS}
    bbfilter = {BANDWIDTH}
    pol    = {POLARIZATION PRODUCTS}
    pcal   = 'off'
    freqref = {4966.49}
    freqoff = {0,0,0,0, 16,16,16,16, 32,32,32,32, 48,48,48,48}
    netside = {L,L,U,U,  L, L, U, U,  L, L, U, U,  L, L, U, U}
    /
endset
/

setup = {SETINI SETUP NAME}
{SCANS}

!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
! Simple continuum observation

source={FRINGE-FINDER} gap=0:00 dur={5:00} /

source={TARGET} gap={3:00} dur={3:00} /
group 1 rep {X}
   source={TARGET} gap={0:30} dur={14:30} /

source={FRINGE-FINDER} gap={3:00} dur={5:00} /
```

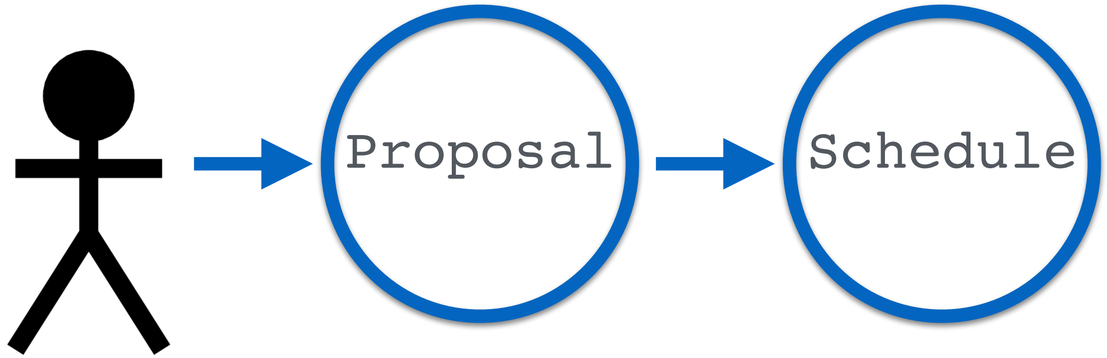
{this} means it is a "Template variable"

$> pySCHED -f SIMPLE_CONT.KEY

…

https://github.com/jive-vlbi/sched

JIVE
Joint Institute for VLBI ERIC



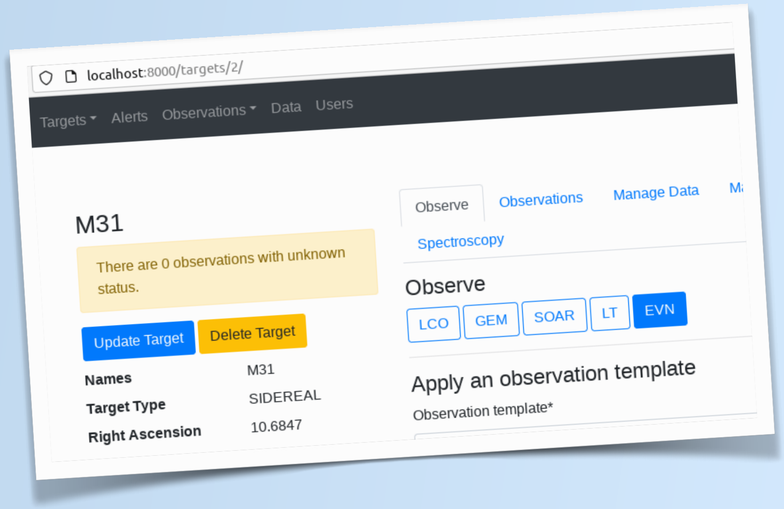
TOM TOOLKIT Las Cumbres Observatory LCO

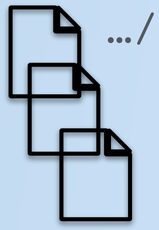
EVN-TOM

```
$> cat INPUT.KEY
setini = {SETINI SETUP NAME} /
    band   = '{BAND}'
    nchan  = {NUMBER CHANNELS}
    bits   = {NUMBER BITS}
    bbfilter = {BANDWIDTH}
    pol    = {POLARIZATION
PRODUCTS}
    pcal   = 'off'
    freqref = {4966.49}
    freqoff = {0,0,0,0,
16,16,16,16, 32,32,32,32,
48,48,48,48}
    netside = {L,L,U,U,  L, L, U,
U,  L, L, U, U,  L, L, U, U}
    /
endset
/

setup = {SETINI SETUP NAME}
{SCANS}


$> sched -f INPUT.KEY
```

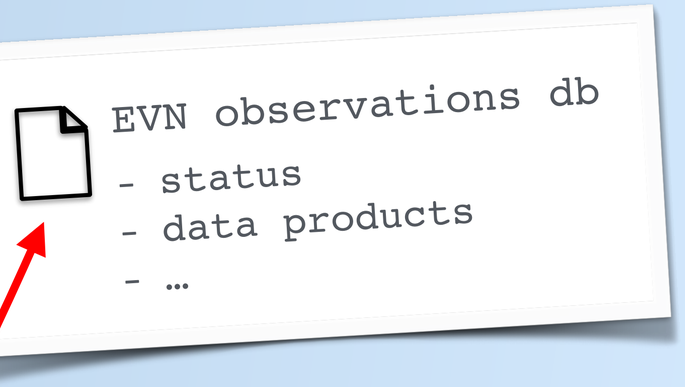
webserver running TOM e.g.

`https://bh-tom.astrolabs.pl/`



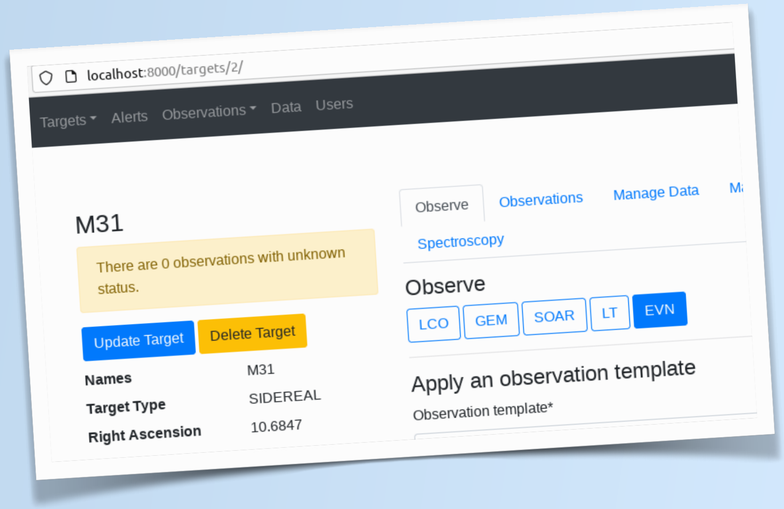


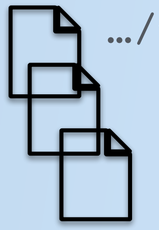
…/tom/facilities/lco.py
/soar.py
/**evn.py**



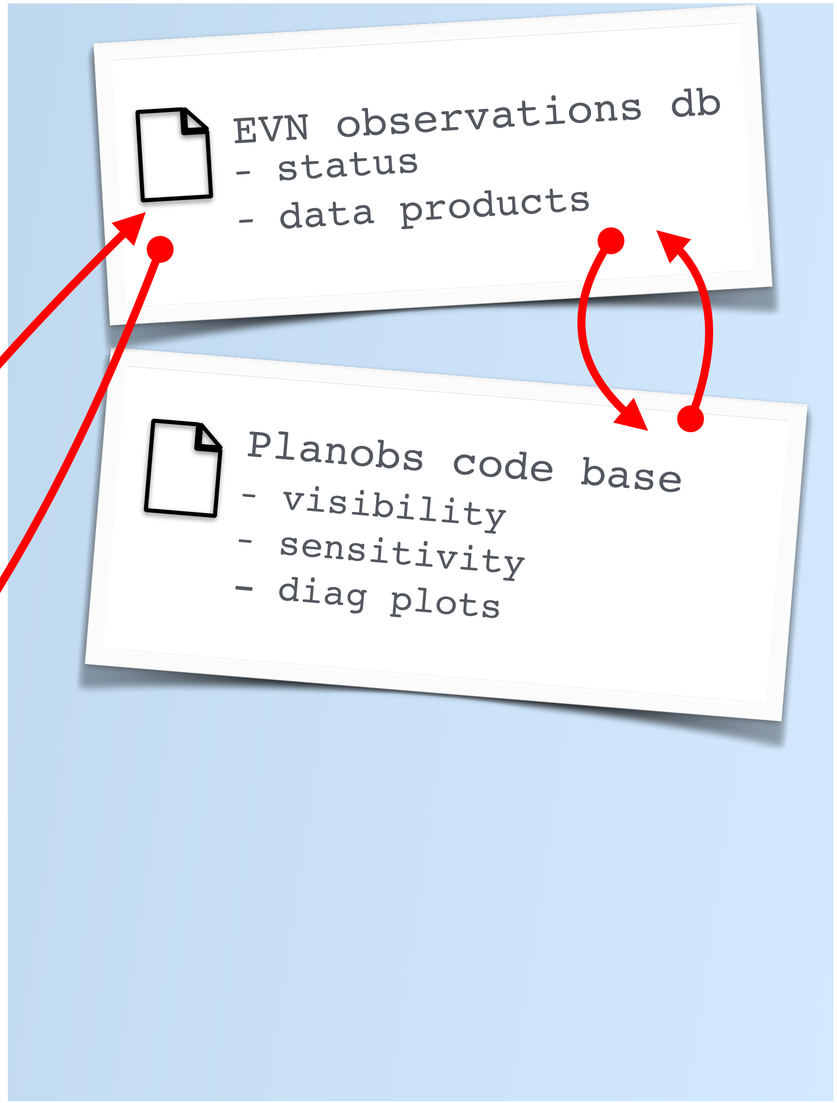
webserver running TOM e.g.
https://bh-tom.astrolabs.pl/

server running EVN backend
https://tom-backend.jive.eu/





…/tom/facilities/lco.py
/soar.py
/**evn.py**



webserver running TOM e.g.

https://bh-tom.astrolabs.pl/

server running EVN backend

https://tom-backend.jive.eu/

Antenna Selection | Summary | Elevations | UV Coverage | Documentation

COMPUTE OBSERVATION

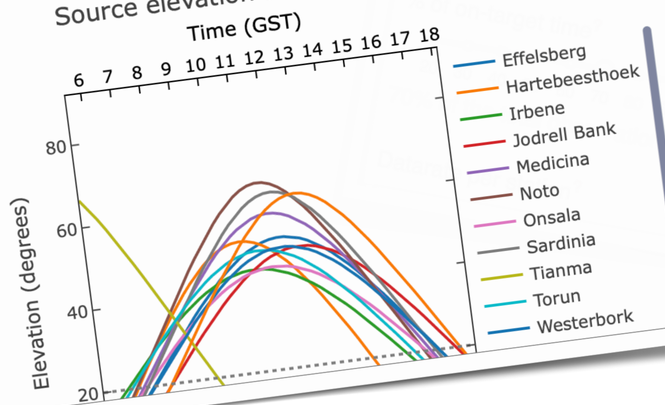
When is your source visible?

Interactive plots

A single click on one station in the legend will hide/show it. Double-click will hide/show all other antennas. You can also save the plot as png.

The following plot shows the source elevation for the different antennas during the proposed observation. The horizontal solid and dashed lines represent the elevation of 20 and 10 degrees, respectively.

Source elevation during the observation



Serving Band?

cm or 6 GHz

eal-time correlation??

e-EVN mode

Source and Epoch

Do not specify source nor epoch

Find epoch for given source

Define source and epoch

Both the target source and the observing epoch must be specified.

Source (name or coordinates)?

m87

12h30m49.4233823s

+12d23m28.0438581s

% of on-target time?

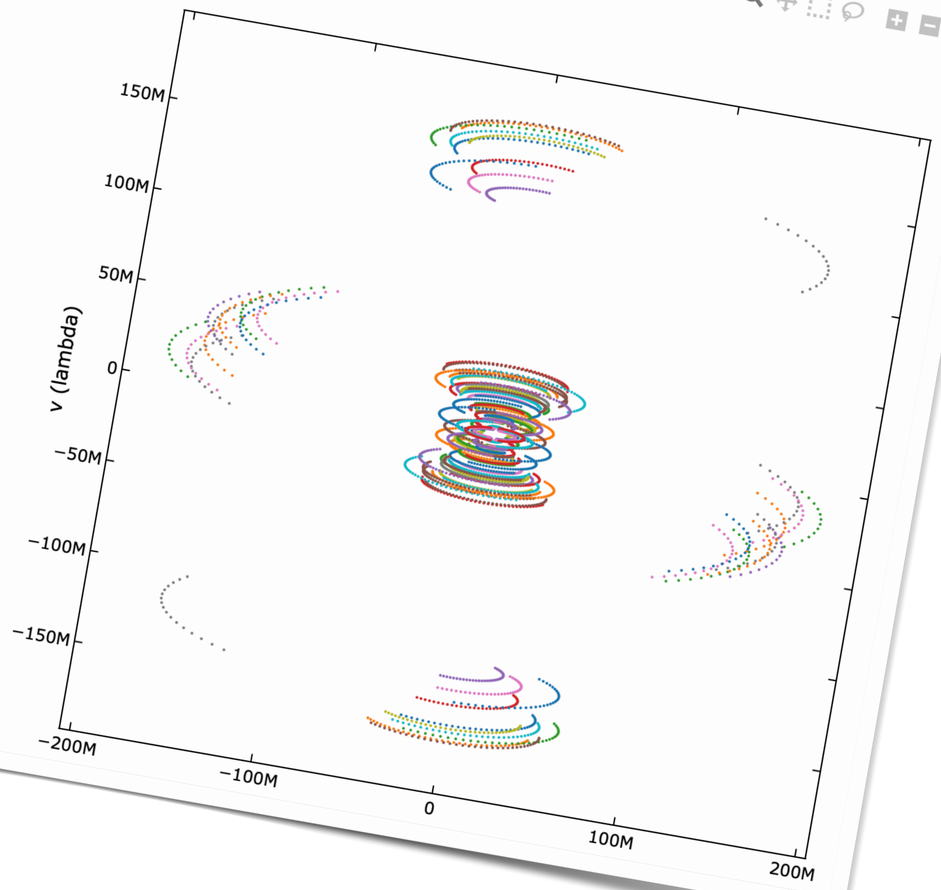
20 30 40 50 60 70 80 90 100

70% of the total observation.

Datarate per station?

Antenna Selection | Summary | Elevations | UV Coverage | Documenta

Resulting (u,v) coverage



https://planobs.jive.eu/

Upload

Saved Data Products

--------- Add to group Manage groups

Filename	Type	Created	Delete
No saved data for this observation.			

Unsaved data products

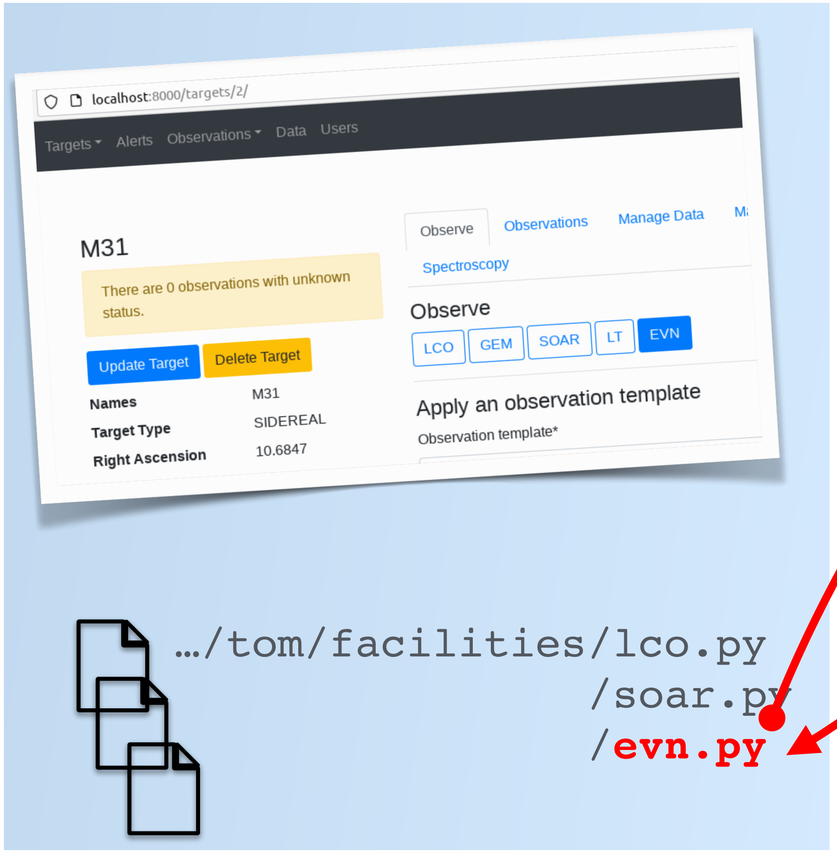
Save Selected Save All

Created	Filename	Save
	planobs_33.pdf	☐

Request Parameters

Create template from request

cadence_strategy	
facility	EVN
observation_type	IMAGING
stations	['Ef', 'Hh', 'Ir', 'Jb', 'Mc', 'Nt', 'On', 'Tr', 'Ys']
band	21cm
start_time	2022-05-26T12:00
end_time	2022-05-26T16:00



…/tom/facilities/lco.py
/soar.py
/**evn.py**

EVN observations db
- status
- data products

Planobs code base
- visibility
- sensitivity
- diag plots

pySCHED scheduling
- basic schedule
- auto calib select
- non-optimal …

webserver running TOM e.g.

https://bh-tom.astrolabs.pl/

server running EVN backend

https://tom-backend.jive.eu/

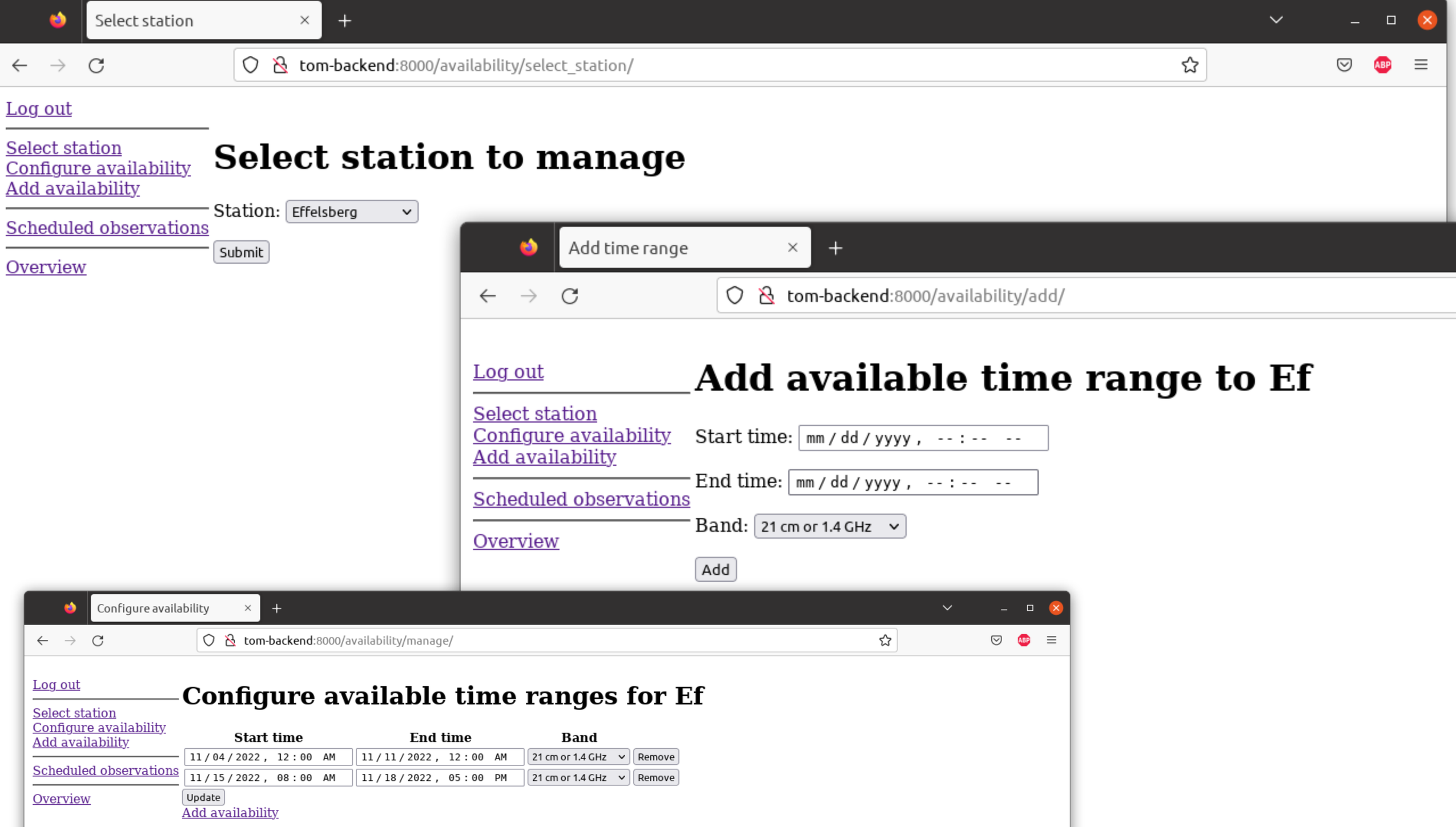
The EVN array fineprint #1

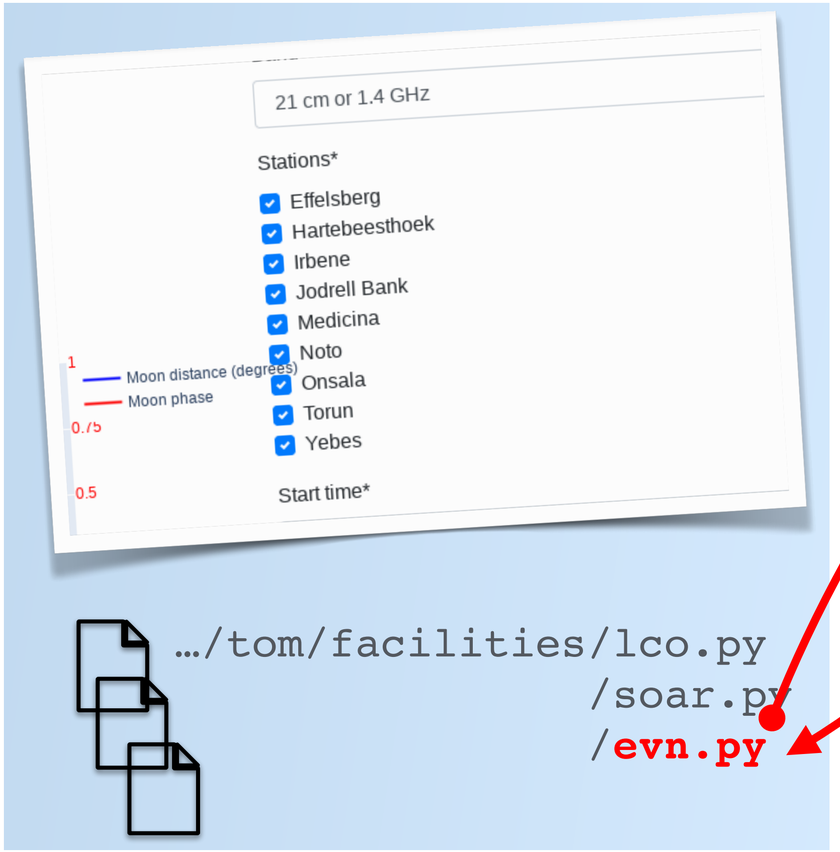
"interferometric array"

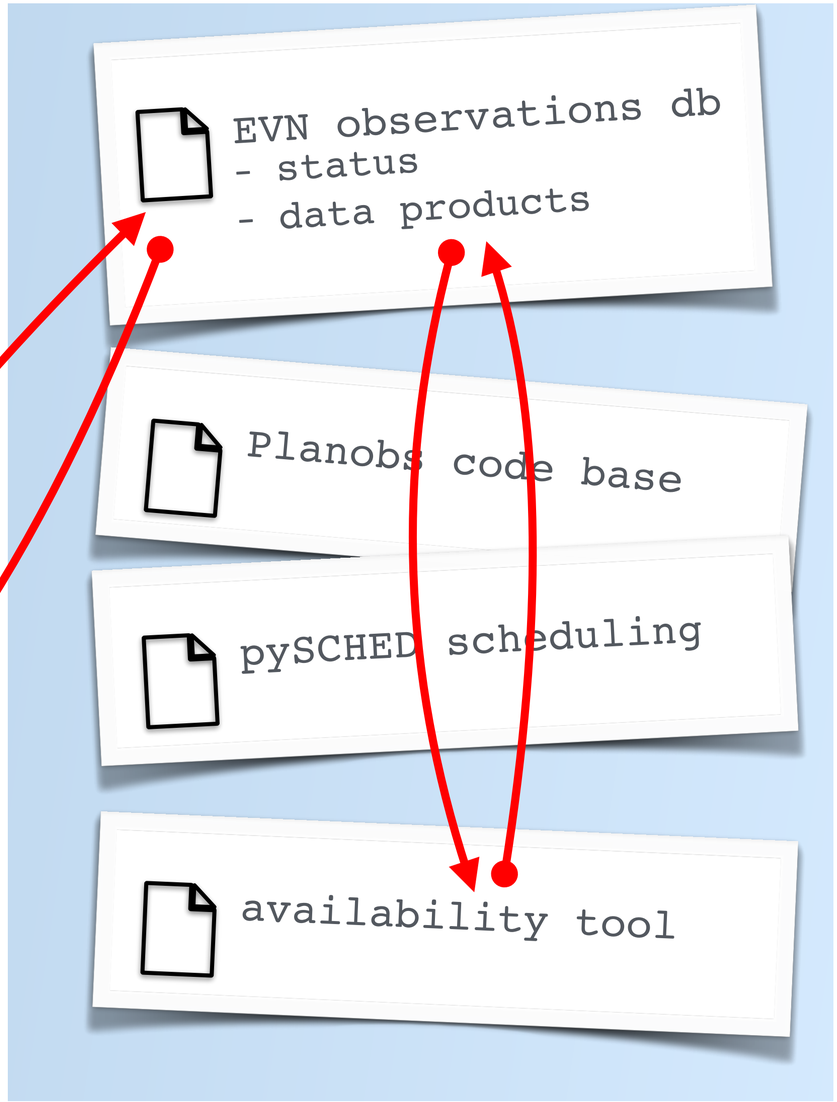
- implies >> 1 telescope *required*

every telescope *needs* to observe

- same position
- at the same time
- at the same frequency


Select station
tom-backend:8000/availability/select_station/
Log out
Select station
Configure availability
Add availability
Scheduled observations
Overview
Select station to manage
Station: Effelsberg
Submit
Add time range
tom-backend:8000/availability/add/
Log out
Select station
Configure availability
Add availability
Scheduled observations
Overview
Add available time range to Ef
Start time: mm / dd / yyyy , -- : -- --
End time: mm / dd / yyyy , -- : -- --
Band: 21 cm or 1.4 GHz
Add
Configure availability
tom-backend:8000/availability/manage/
Log out
Select station
Configure availability
Add availability
Scheduled observations
Overview
Configure available time ranges for Ef
Start time
End time
Band
11 / 04 / 2022 , 12 : 00 AM
11 / 11 / 2022 , 12 : 00 AM
21 cm or 1.4 GHz
Remove
11 / 15 / 2022 , 08 : 00 AM
11 / 18 / 2022 , 05 : 00 PM
21 cm or 1.4 GHz
Remove
Update
Add availability





webserver running TOM e.g.
https://bh-tom.astrolabs.pl/

server running EVN backend
https://tom-backend.jive.eu/

M31

SIDEREAL

10.6847

00:42:44.330

41.2687

+41:16:7.500

Imaging

Band*

21 cm or 1.4 GHz

Stations*

- [x] Effelsberg
- [x] Medicina
- [ ] Hartebeesthoek
- [ ] Onsala

Start time*

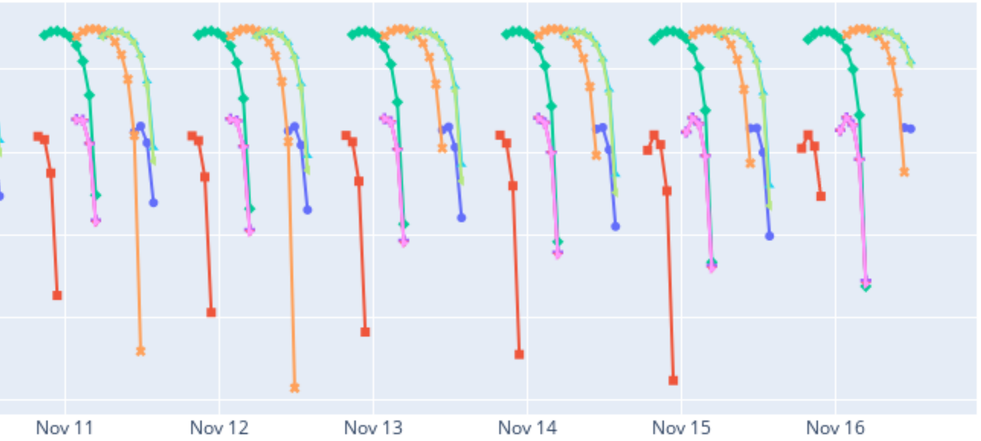
11 / 10 / 2022 , 12 : 00 PM

End time*

11 / 10 / 2022 , 04 : 00 PM

Check station availability

Submit Back



M31

SIDEREAL

10.6847

00:42:44.330

41.2687

+41:16:7.500

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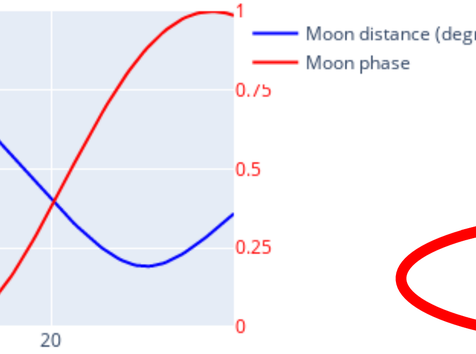


Start time*

11 / 10 / 2022 , 12 : 00 PM

End time*

11 / 10 / 2022 , 04 : 00 PM

Check station availability

Submit Back

Check station availability

M31

SIDEREAL

10.6847

00:42:44.330

41.2687

+41:16:7.500

Imaging

Band*

21 cm or 1.4 GHz

Stations*

- [x] Effelsberg
- [x] Medicina
- [ ] Hartebeesthoek
- [ ] Onsala

Start time*

11 / 10 / 2022 , 12 : 00 PM

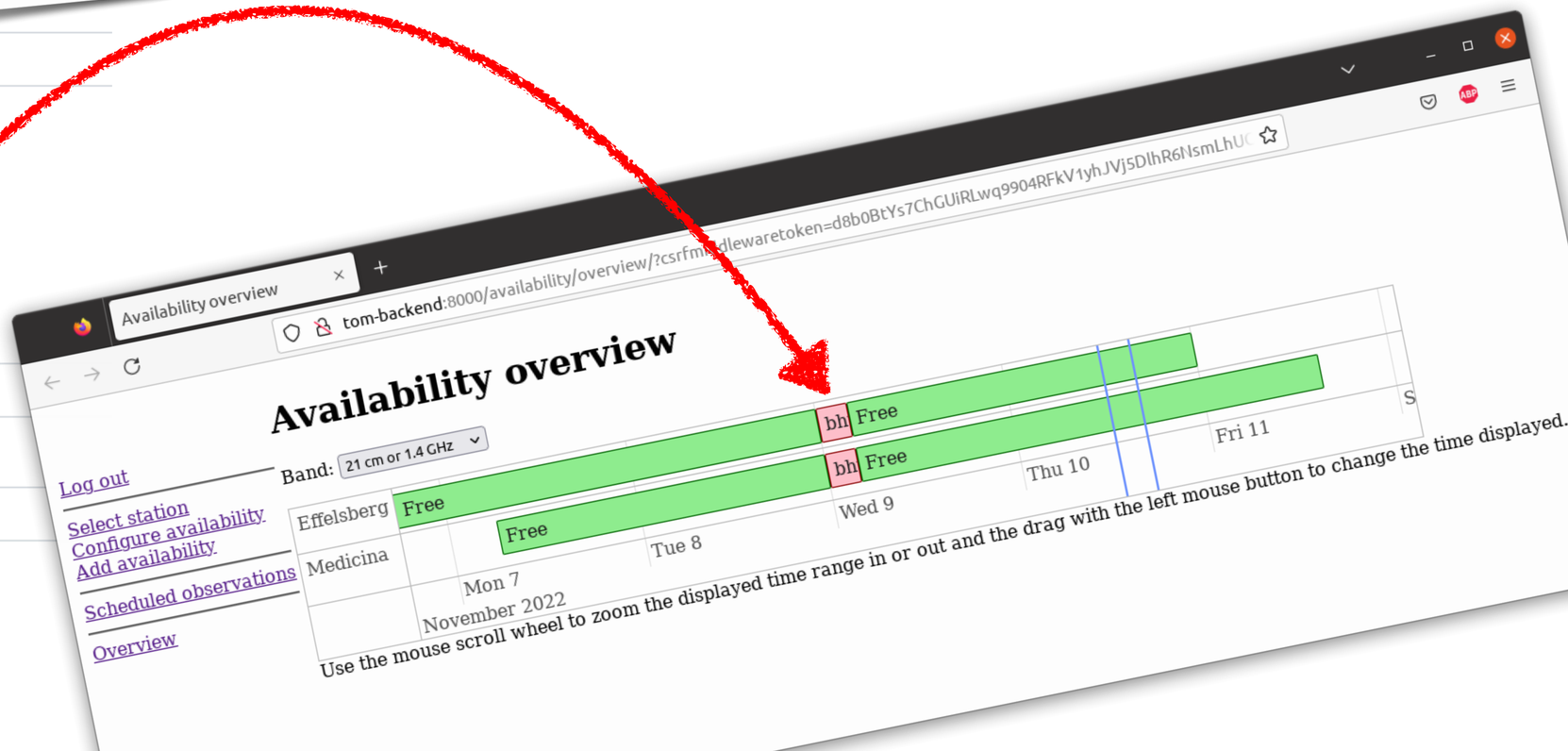
End time*

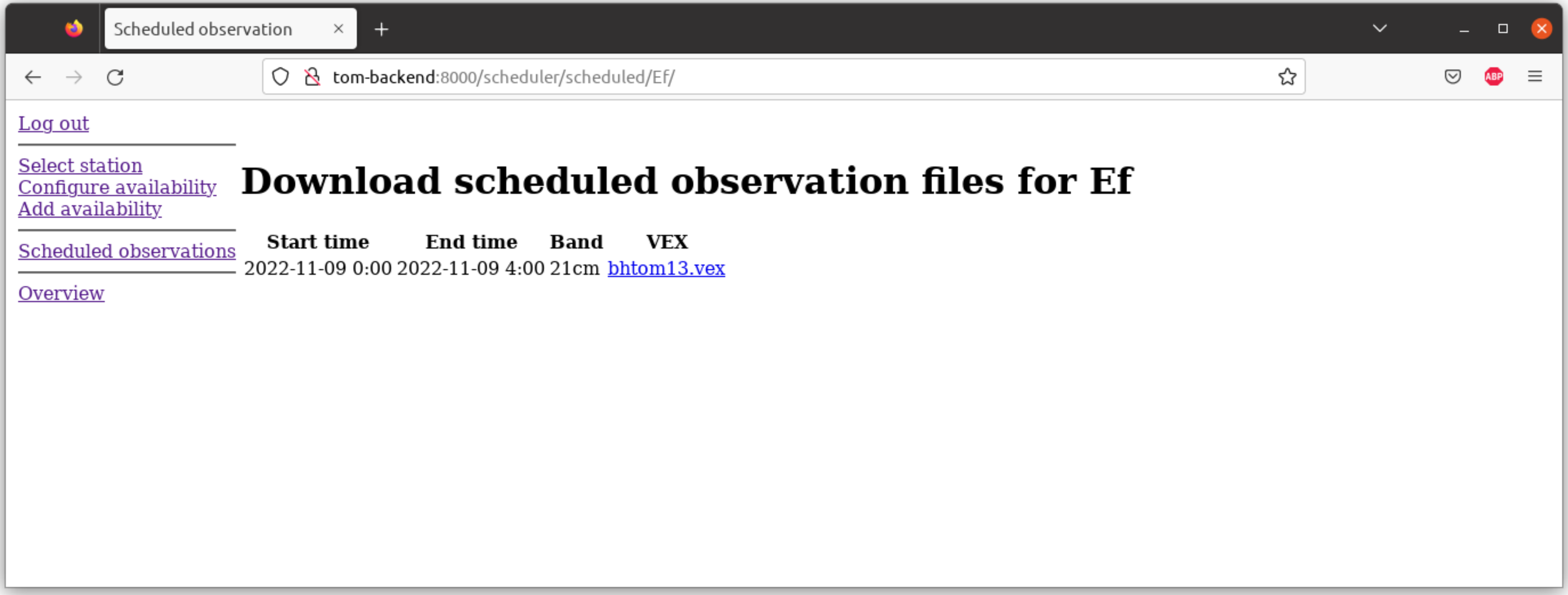
11 / 10 / 2022 , 04 : 00 PM

Check station availability

Submit Back

this planned observation!




Scheduled observation
tom-backend:8000/scheduler/scheduled/Ef/
Log out
Select station
Configure availability
Add availability
Scheduled observations
Overview
Download scheduled observation files for Ef
Start time
End time
Band
VEX
2022-11-09 0:00
2022-11-09 4:00
21cm
bhtom13.vex

The EVN array fineprint #2

The Program Committee (PC)

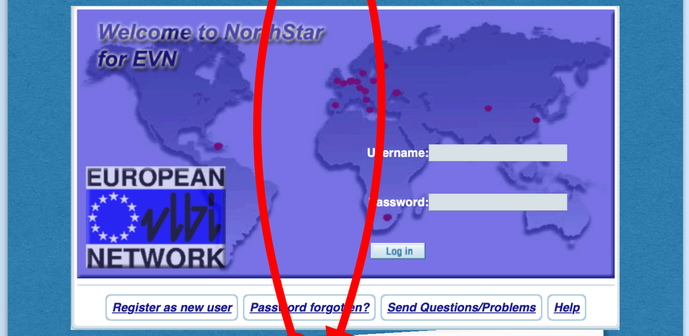
- time allocation to approved proposals
- approves source lists in proposal

The EVN array fineprint #2

The Program Committee (PC)

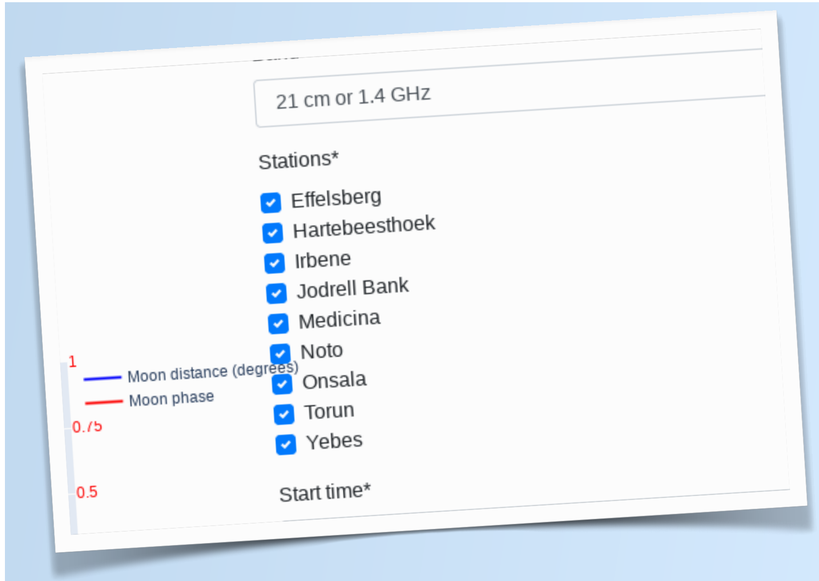
- time allocation to approved proposals
- approves source lists in proposal

OAuth2 Webservice
- authorization from **TOM** to **Northstar**
- RESTful API for plugin: *check proposal details*



EVN Proposal Submission Tool
- own user administration
- proposal database:
  - sources
  - flux densities
  - phase-reference sources
  - …

server running EVN PST
https://proposal.jive.eu/



/facilities/lco.py
/soar.py
/**evn.py**

webserver running TOM e.g.
https://bh-tom.astrolabs.pl/

EVN o
- stat
- data

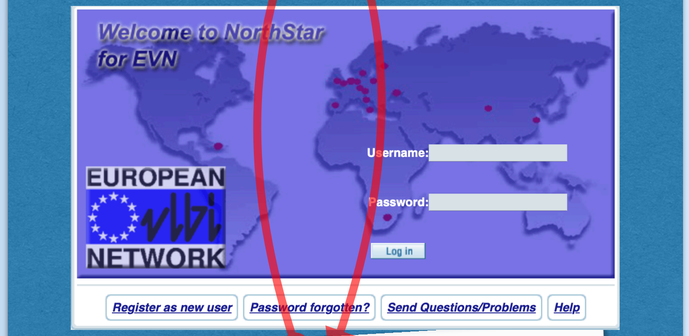
Plan

pySCH

avail

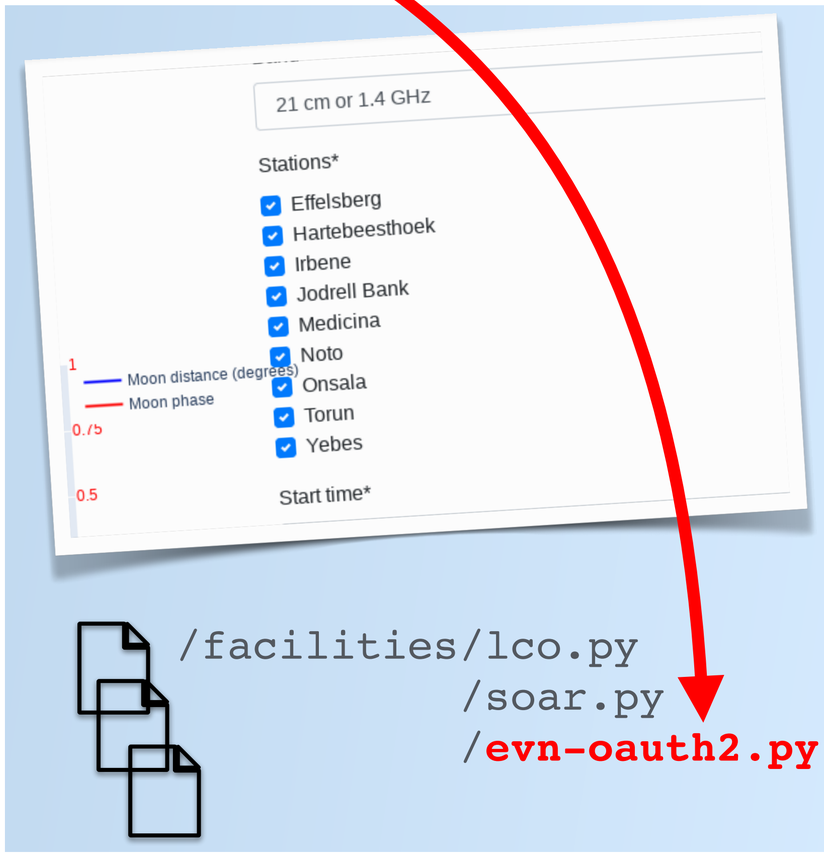
server runnin
https://tom-

OAuth2 Webservice
- authorization from **TOM** to **Northstar**
- RESTful API for plugin:
  check proposal details



EVN Proposal Submission Tool
- own user administration
- proposal database:
  - sources
  - flux densities
  - phase-reference sources
  - …

server running EVN PST
https://proposal.jive.eu/



/facilities/lco.py
/soar.py
/**evn-oauth2.py**

webserver running TOM e.g.
https://bh-tom.astrolabs.pl/

server runnin
https://tom-

The EVN array fineprint #3

Automatically generated schedules?

The EVN array fineprint #3

Automatically generated schedules?

Not really …

The EVN array fineprint #3

Calibration scheme is **critical** for succes

- flux calibrator source?
- band-pass calibrator?
- phase-reference source cycle pattern?

The EVN array fineprint #3

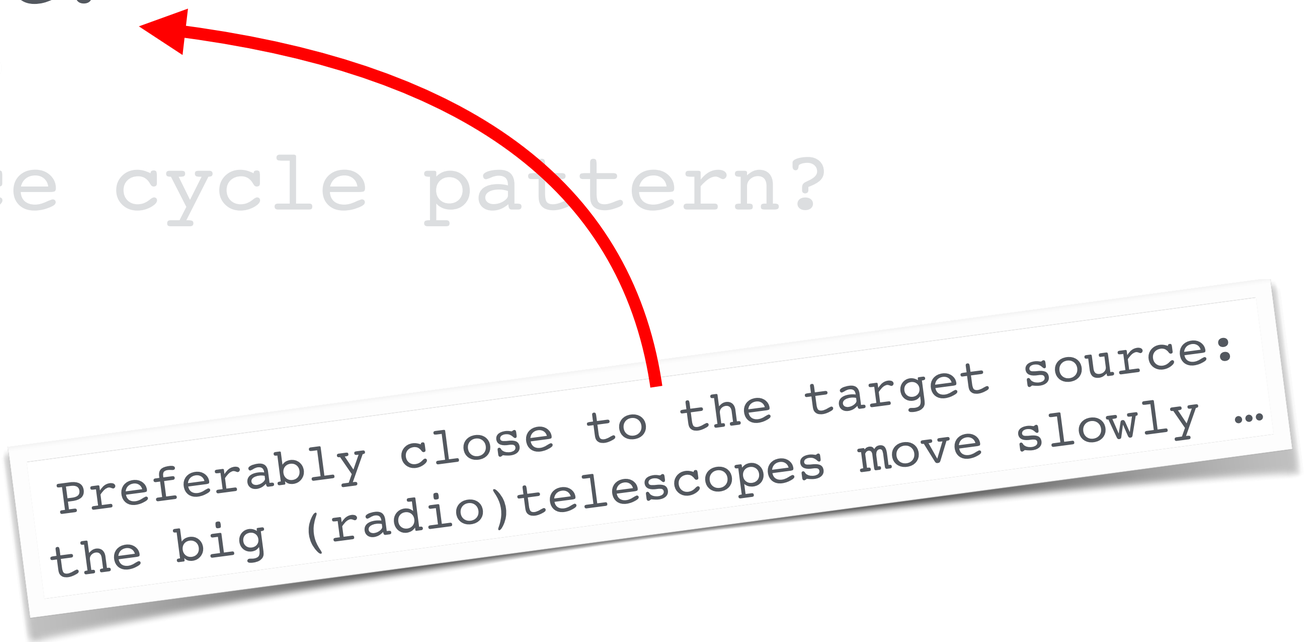
Calibration scheme is **critical** for succes

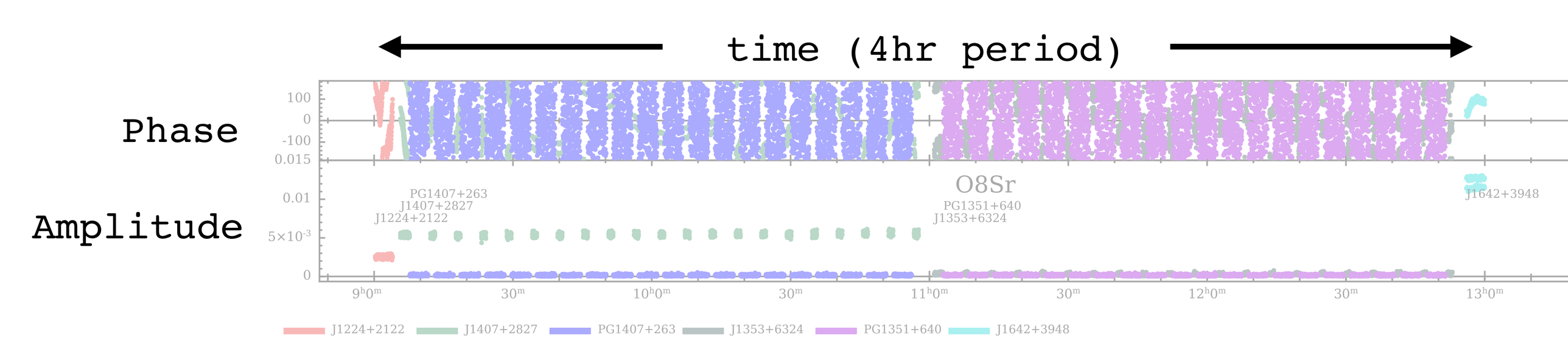
- flux calibrator source?
- band-pass calibrator?
- phase-reference source cycle pattern?

The EVN array fineprint #3

Calibration scheme is **critical** for succes

- flux calibrator source?
- band-pass calibrator?
- phase-reference source cycle pattern?

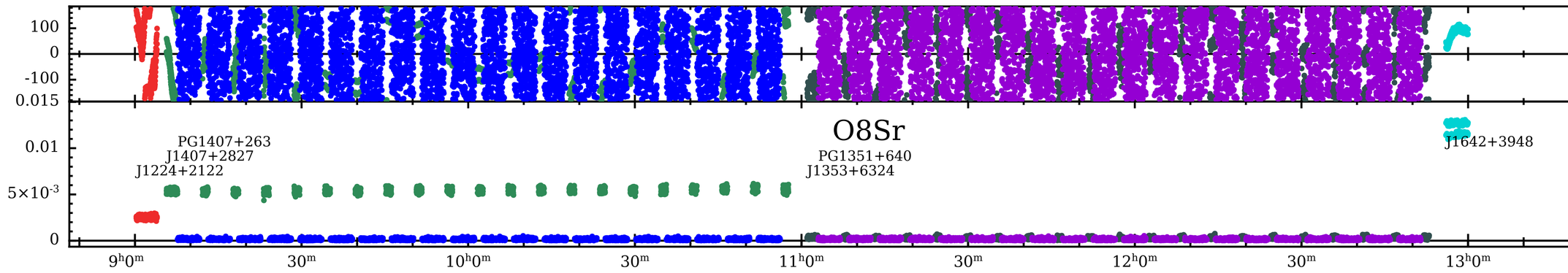



time (4hr period)
Phase
Amplitude
100
0
-100
0.015
0.01
5×10-3
0
PG1407+263
J1407+2827
J1224+2122
O8Sr
PG1351+640
J1353+6324
J1642+3948
9h0m
30m
10h0m
30m
11h0m
30m
12h0m
30m
13h0m
J1224+2122
J1407+2827
PG1407+263
J1353+6324
PG1351+640
J1642+3948

time (4hr period)

Phase

Amplitude



J1224+2122 J1407+2827 PG1407+263 J1353+6324 PG1351+640 J1642+3948

bandpass+flux cal (strong)

target source #2

reference source #2

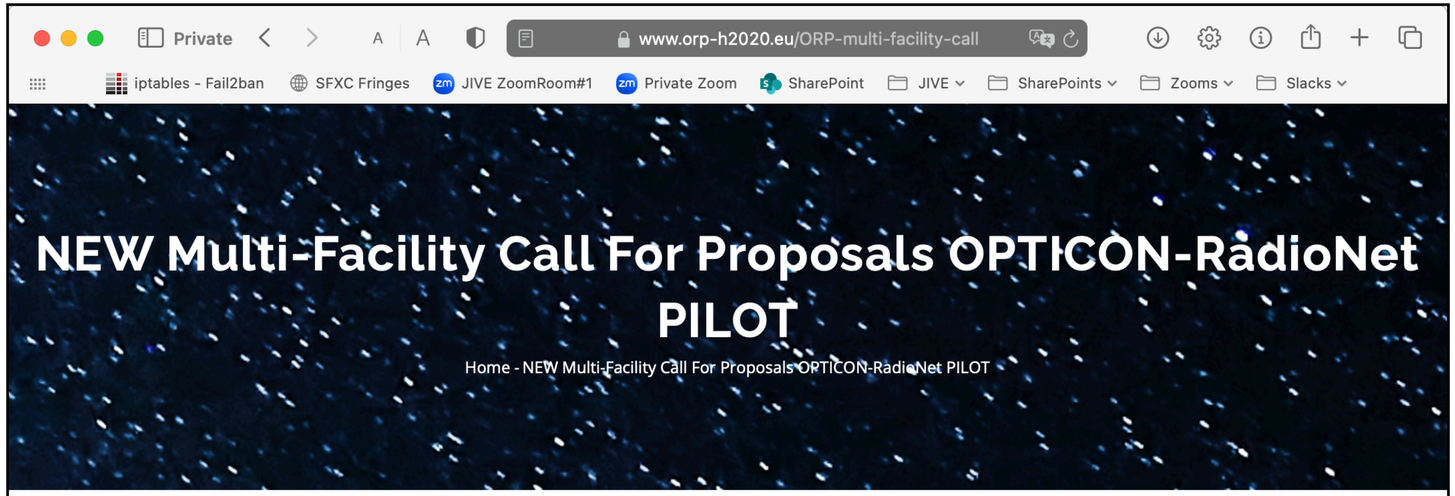
target source #1

reference source #1

fringe finder (strong source)

All is lost then?

https://www.orp-h2020.eu/ORP-multi-facility-call



Deadline – 9th April-2024 at 1400UTC/1500BST/1600CEST

Proposal submission tool: https://mfp.jive.eu

As part of the European Commission's Horizon 2020 OPTICON-RadioNet PILOT (ORP, Grant Agreement Number 101004719) we invite proposals for observing programs requiring multiple astronomical observing facilities to deliver unique science programs.

The ORP brings together expertise and access to a wide range of world leading ground based astronomical facilities covering a multitude of capabilities and wavelengths.

This call is an opportunity to request observing time on **multiple radio and/or optical facilities** via a **single science proposal and single review process. Access is provided to over eighteen individual facilities.**

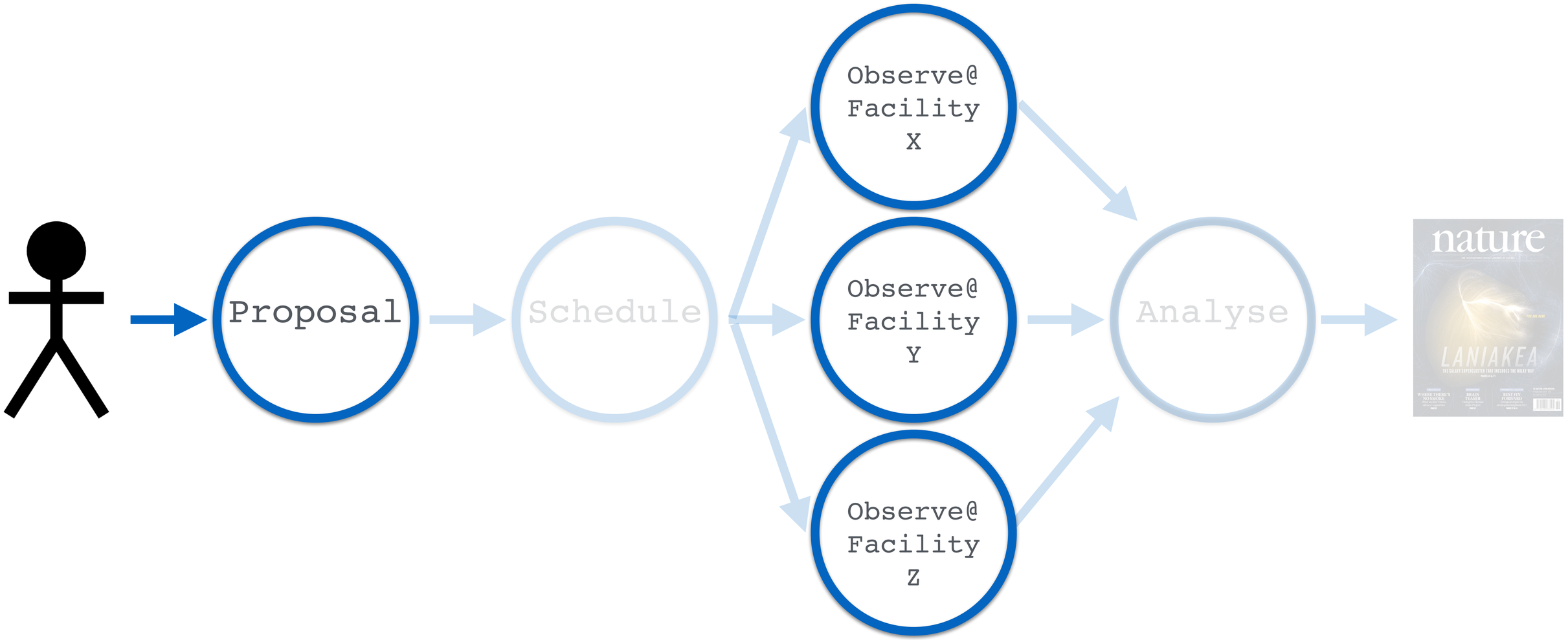
Technical and Science Opportunities

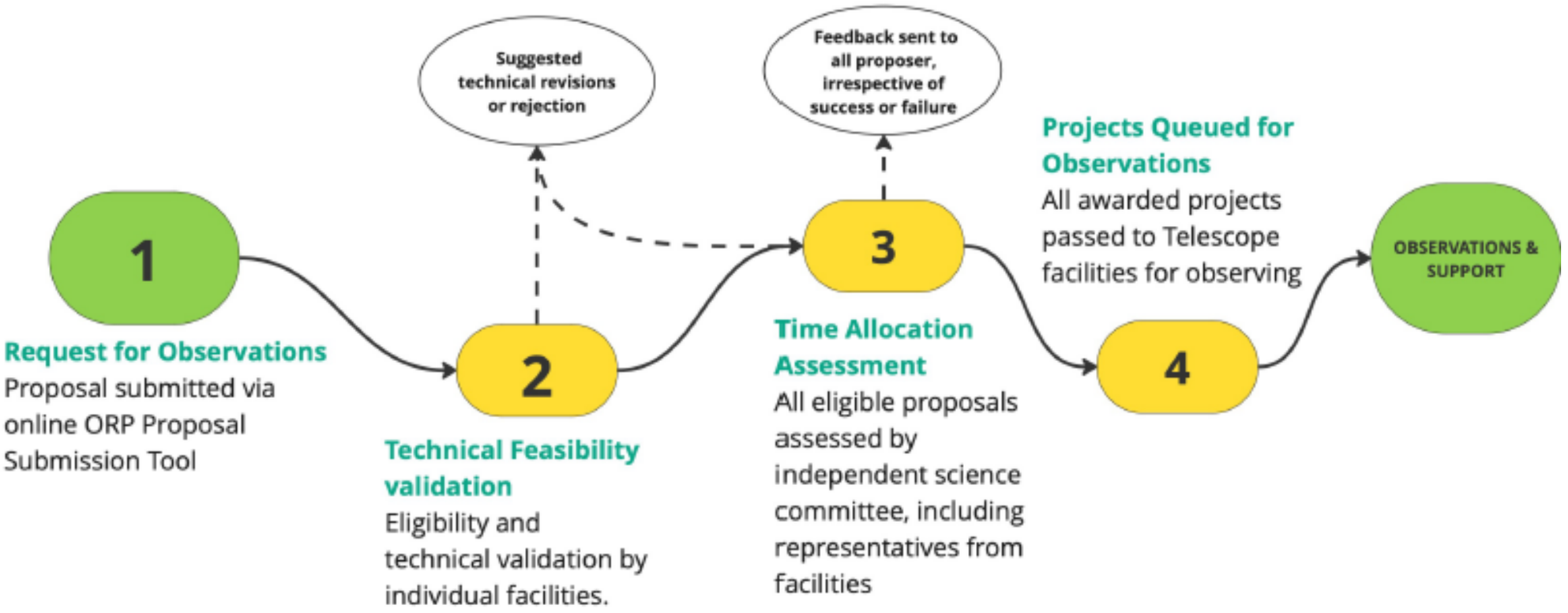
- **There are no constraints on the scientific areas that may be proposed for.** All requests must provide scientific and technical justification for the observing resources needed. All proposals are subject to eligibility requirements (see below).
- Observing programs must involve **two or more ORP** facilities. Observing proposals that request only one facility should be directed to regular calls for proposals of those facilities. Advice and feedback will be provided in this case.
- Requests for both non-simultaneous (nontime-critical) or time-critical/sensitive observations (e.g. contemporaneous or with requested cadence) will be considered. Proposers should carefully consider telescope scheduling capabilities and technical feasibilities (see links below). A technical review will be carried out prior to science assessment which may trigger follow-up requests for technical clarifications if required.

We advise prospective proposers to contact Rob Beswick, Marjolein Verkouter or ta-call@orp-h2020.eu for advice, and any technical or science queries. Where necessary these will be passed on to experts at individual facilities.

Observing semester:

The observing semester is 1st August 2024 to 28th February 2025, but the semester dates for each telescope may vary from July 2024 though to March 2025 to accommodate their normal semesters and enable flexible scheduling (see table notes).


Proposal
Schedule
Observe@ Facility X
Observe@ Facility Y
Observe@ Facility Z
Analyse
nature
LANIAKEA


Suggested technical revisions or rejection
Feedback sent to all proposer, irrespective of success or failure
1
2
3
4
OBSERVATIONS & SUPPORT
Request for Observations
Proposal submitted via online ORP Proposal Submission Tool
Technical Feasibility validation
Eligibility and technical validation by individual facilities.
Time Allocation Assessment
All eligible proposals assessed by independent science committee, including representatives from facilities
Projects Queued for Observations
All awarded projects passed to Telescope facilities for observing

Facility	RI code	Allocation Unit
Anglo-Australian Telescope (Siding Spring)	AAT	15 nights
Canada France Hawaii Telescope	CFHT	4 nights
CAHA 2.2m (Calar Alto)	CAHA2.2	10 nights
CAHA 3.5m (Calar Alto)	CAHA3.5	5 nights
Carlos Sanchez Telescope (Observatorio del Teide, Tenerife)	TCS	14 nights
Effelsberg 100-m Radio Telescope	EF	100 hours
e-MERLIN	e-MERLIN	100 hours
European VLBI Network	EVN	100 hours
Las Cumbres Observatory	LCO	400 hours

Facility	RI code	Allocation Unit
Liverpool Telescope (ORM, La Palma)	LT	50 hours
LOFAR	LOFAR	50 hours
Nordic Optical Telescope (ORM, La Palma)	NOT	10 nights
Observatoire de Haut Provence 1.93m	OHP	10 nights
REM (La Silla, Chile)	REM	300 hours
South-African Large Telescope	SALT	50 hours
Sardinia Radio Telescope	SRT	100 hours
Telescope Bernard Lyot (Pic du Midi)	TBL	80 hours 10 nights
TNG Galileo (ORM, La Palma)	TNG	10 nights

Code	Title	Facilities requested
M1	Exploring Venus: a first "subsurface-to-space" snapshot	LOFAR, SRT, Effelsberg, TNG, LT, LCO, REM
M2	*Determining the progenitor types of interacting supernovae*	*NOT, LT, CAHA3.5*
M3	*Developing our understanding of extreme coronal line emitters*	*NOT, LCO*
M4	*A search to discover the first RV variable white dwarf with a planet*	*SALT, CAHA3.5*
M5	*Precession of the orbital planes of hot Jupiters: studying new candidates*	*NOT, TBL, OHP, TNG, REM, CAHA3.5*
M6	*Gamma-ray burst afterglows with robotic facilities available within the ORP call*	*LT, LCO*
M7	Probing the immediate aftermath of core-collapse supernova explosions	e-MERLIN, LT
M8	Simultaneous Multi-telescope, Multi-band SETI (SMM-SETI)	LOFAR, Effelsberg, SRT, e-MERLIN, EVN
M10	Investigating the second bump in the light curve of the closest recurrent nova	LOFAR, e-MERLIN, EVN, NOT
M11	Exploring a new population of Fast X-Ray Transients (FXRTs)	e-MERLIN, SALT, LCO, CAHA2.2
M12	Star formation in dwarf galaxy NGC 4163 with peculiar emission line ratios	e-MERLIN, NOT,
M13	*Luminous flares from the supermassive black holes in galactic nuclei*	*NOT, LT*
M14	An e-MERLIN-LCO Survey of VLBI-Gaia Offset Sources	e-MERLIN, LCO

Code	Title	Facilities requested
M1	Exploring Venus: a first "subsurface-to-space" snapshot	LOFAR, SRT, Effelsberg, TNG, LT, LCO, REM
M3	*Developing our understanding of extreme coronal line emitters*	*NOT, LCO*
M5	*Precession of the orbital planes of hot Jupiters: studying new candidates*	*NOT, TBL, OHP, TNG, REM, CAHA3.5*
M7	Probing the immediate aftermath of core-collapse supernova explosions	e-MERLIN, LT
M8	Simultaneous Multi-telescope, Multi-band SETI (SMM-SETI)	LOFAR, Effelsberg, SRT, e-MERLIN, EVN
M10	Investigating the second bump in the light curve of the closest recurrent nova	LOFAR, e-MERLIN, EVN, NOT
M11	Exploring a new population of Fast X-Ray Transients (FXRTs)	e-MERLIN, SALT, LCO, CAHA2.2
M12	Star formation in dwarf galaxy NGC 4163 with peculiar emission line ratios	e-MERLIN, NOT,
M14	An e-MERLIN-LCO Survey of VLBI-Gaia Offset Sources	e-MERLIN, LCO

Analysis: EVN, e-Merlin

Analysis: EVN, e-Merlin

Feasible to automate or benefit from TOM?

Basically, MF-CfP proposals seem to be of the form:

"Point network at target source until we have a sensitivity of *X* W/m²/Hz"

The reasoning being:
"The calculator for the facility says that sensitivity X is reached in Y hours of observing, so we request Y hours."

Expected target source flux density could be a required parameter in the proposal?

Few of the proposals are specific about the calibration strategy:

“The mentioned observation strategy is a simple 10 minute cycle with a calibrator and the source”

Moderately specific - scheduling parameters might be taken from proposal

“Including standard calibration overheads, we expect this will result in a total of 25 hours of EVN time”

Seems to imply a “standard observation strategy”?

“30 min each on a flux and pass-band/gain calibrator source, then repeating a cycle of 5 minutes on the target source and 1 minute on a phase calibrator”

Quite specific - scheduling parameters might be taken from proposal

Requested response time?

“2 out 4 e-Merlin proposals require a quick reaction time of the network”

response times requested:
- on the order of a day
- within a week

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“2 out 4 e-Merlin proposals require a quick reaction time of the network”

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- on the order of a day
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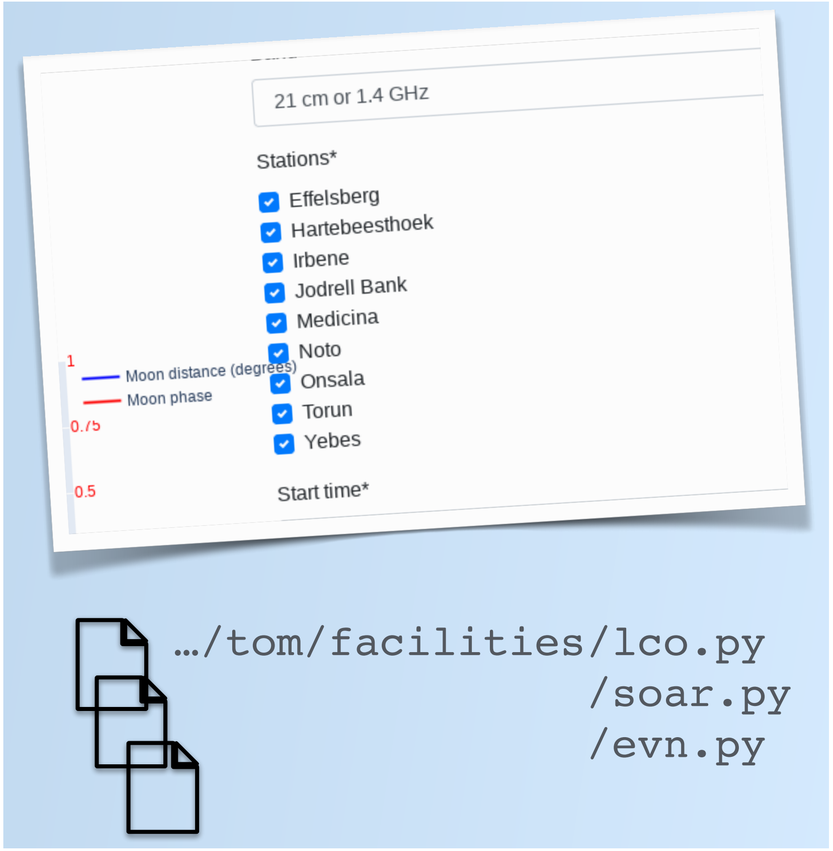
A TOM-based approach with some automation might be beneficial?

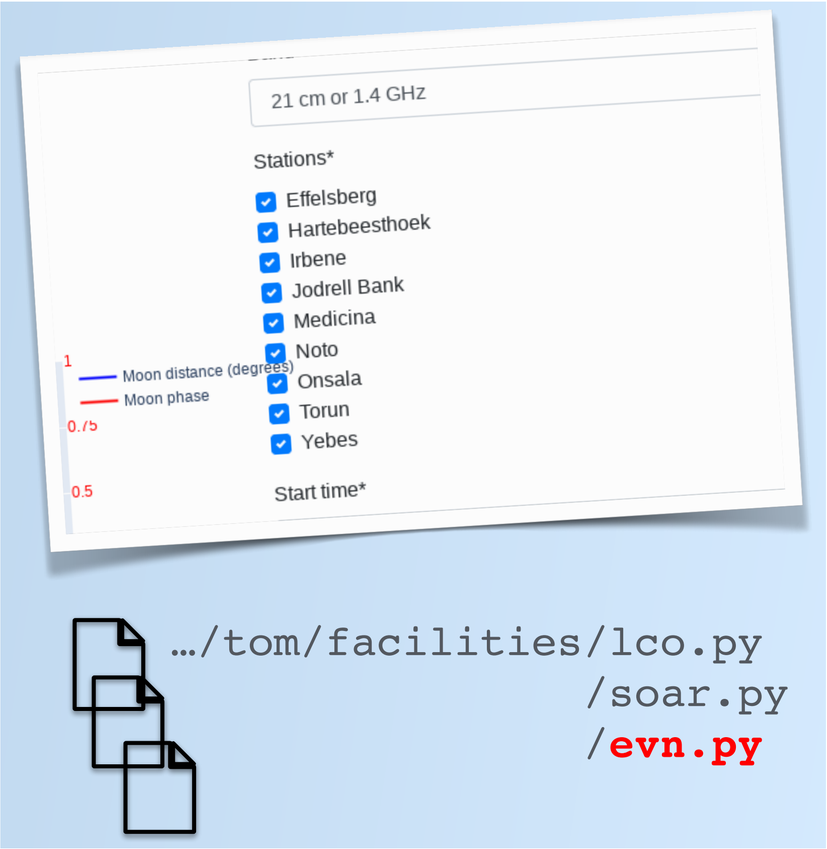
Future?



webserver running TOM e.g.

https://bh-tom.astrolabs.pl/

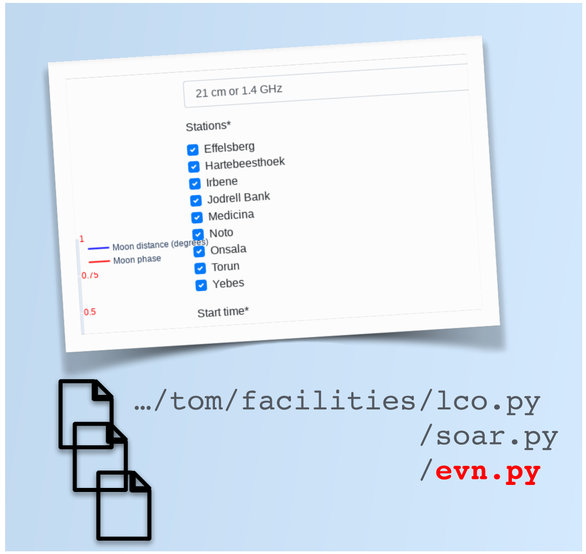
Future?



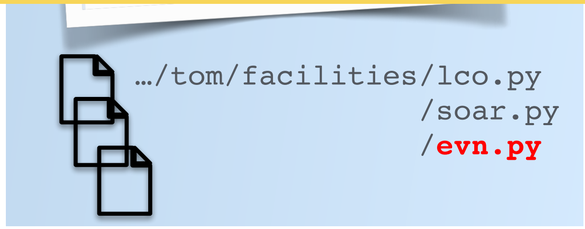
webserver running TOM e.g.

https://bh-tom.astrolabs.pl/

Future?



webserver running TOM



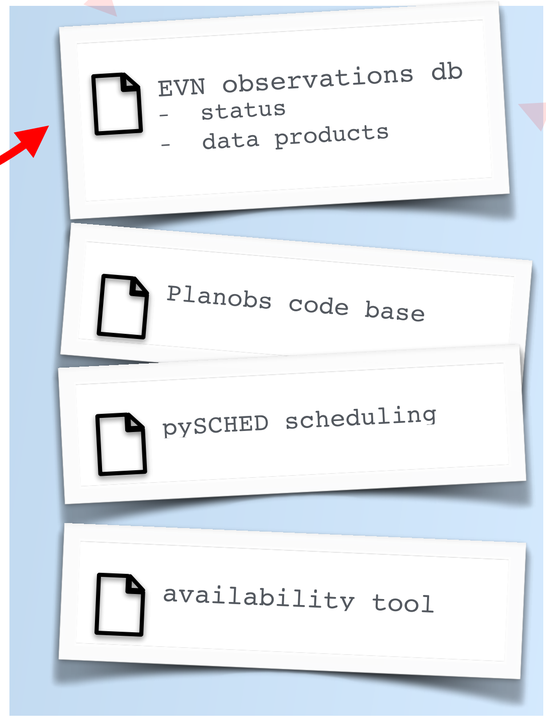
webserver running TOM

server running EVN backend

https://tom-backend.jive.eu/

webserver running TOM

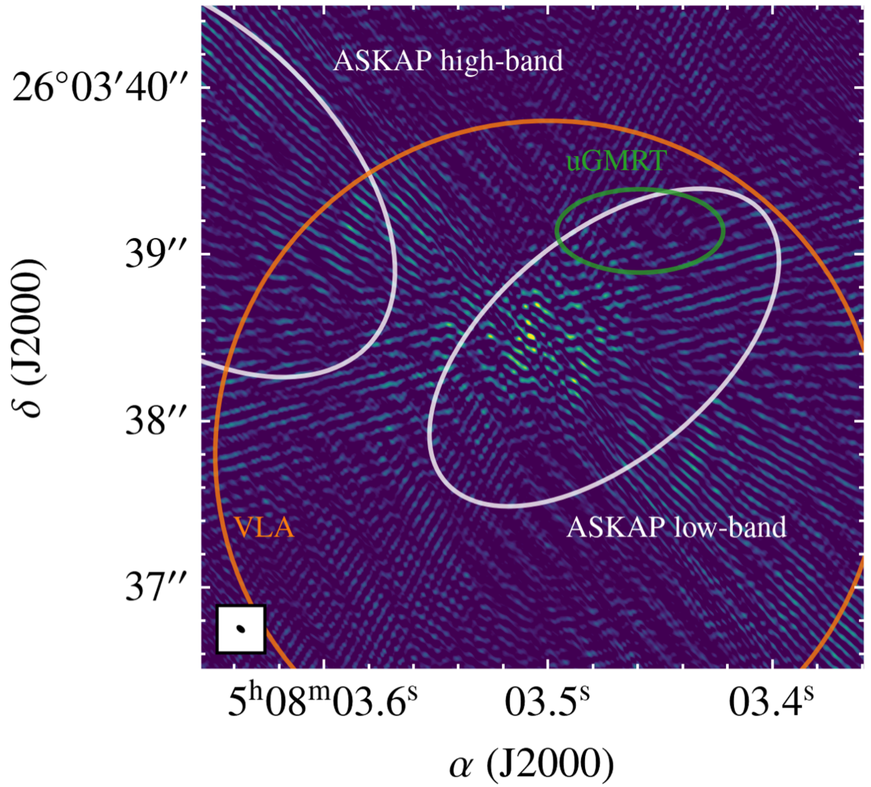
Future? EVN-lite subarray?

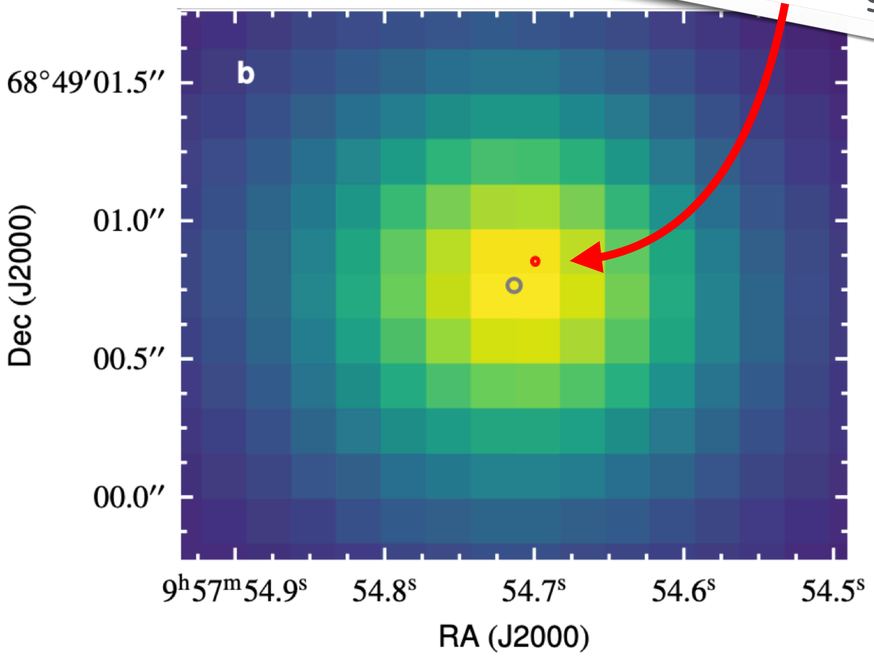


EVN-lite: subset of small EVN telecopes offerening more observing hours to large programs

PRECISE

“**P**inpointing **RE**peating **C**h**I**me **S**ources with **E**VN dishes”



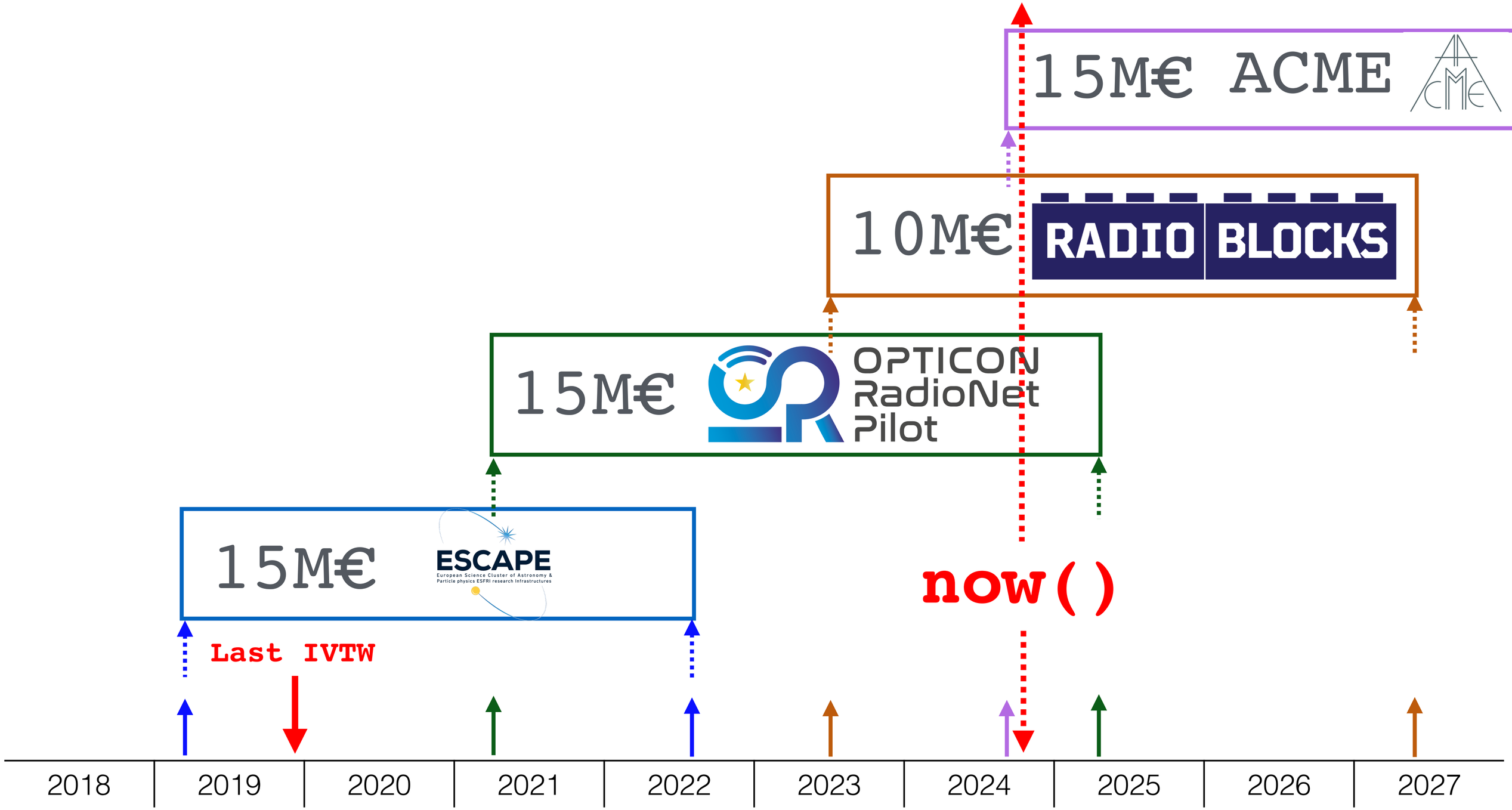


This is within a globular cluster!

Two different Fast Radio Burst localisations to mas precision

“PRECISE localizations of repeating Fast Radio Bursts” Marcote et al. https://arxiv.org/abs/2202.11644

?


15M€ ACME
10M€ RADIO BLOCKS
15M€ OPTICON RadioNet Pilot
15M€ ESCAPE
European Science Cluster of Astronomy & Particle physics ESFRI research Infrastructures
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Thanks for attention!