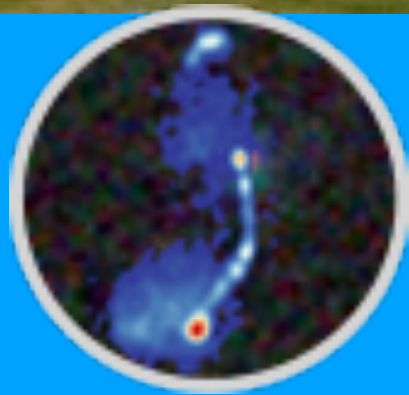
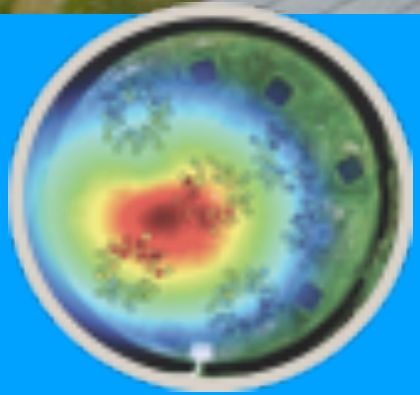
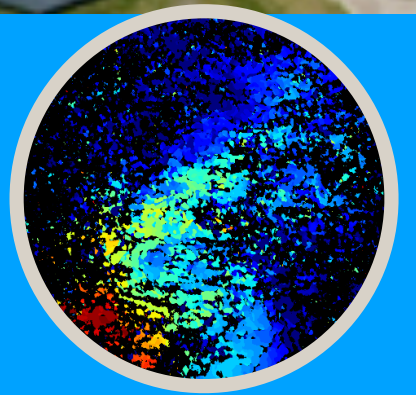


# Accessing the LOFAR telescope (D1)

E. Orru'



6th LOFAR Data School





# How to contact the SDCO support team

contact SDCO-helpdesk at  
<https://support.astron.nl/sdchelpdesk>

- log in (or sign up) → select type of request  
→ provide details → click create
- ticket receives unique identification number
- updates from SDCO-helpdesk and responses or additional information from user are added as 'comments' on ticket.
- automatic email notifications sent to submitter

## Announcements

### Covid-19

Due to the ongoing situation related to the coronavirus, ASTRON has asked its employees to work from home until further notice. We anticipate that the observing program will continue to run normally. However, operations are running remotely and therefore debugging and general communication concerning your project(s) may not be timely. Please do not hesitate to contact us through the SDC Helpdesk if you have any concerns.



Welcome! You can raise a SDC Helpdesk request from the options provided.  
We also provide a [LOFAR Frequently Asked Questions page](#).

What do you need help with?



Science and Operational Support



Suggestion



Bug report



Proposal

Project  
preparation

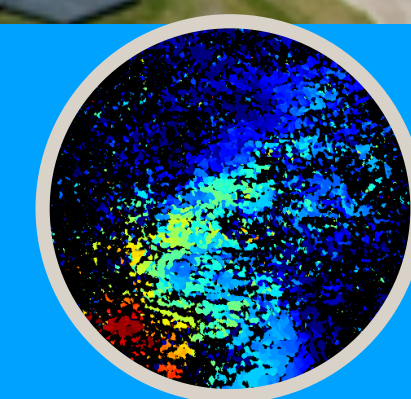
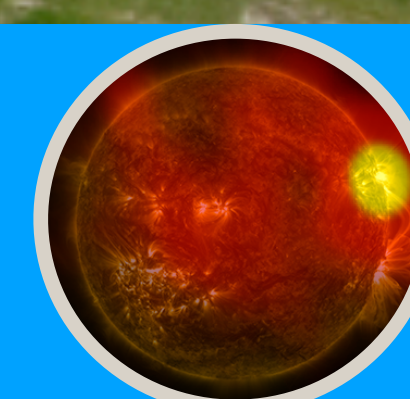
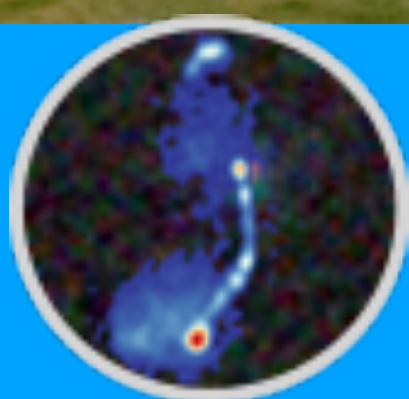
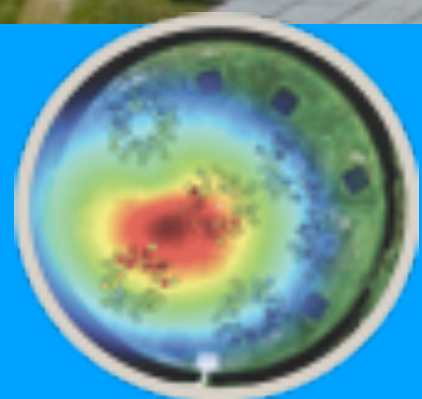
On line  
processing

Data retrieval



Archival

6th LOFAR Data School





# Proposal in steps:

1. Call for proposal: can be found [here](#)
2. Documentation: can be found [here](#)
3. Proposal preparation and submission: [North Star tool](#)
4. Proposal evaluation



# Proposal call & documentation

Two **cycles** per year:

- Dec – May (call in Jul, deadline in Sep)
- Jun – Nov (call in Jan, deadline in Mar)

**The call** details: total number of (1) observing hours, (2) processing hours, and (3) archive storage volume offered for the cycle

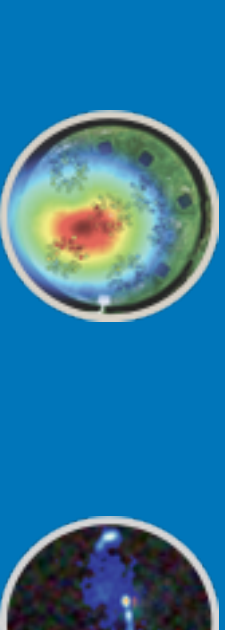
**proposal categories:** single-cycle (1 semester), long-term (2 year periods), Director's Discretionary Time (DDT), commissioning

Instructions for submitting DDT & commissioning proposals are given on Radio Observatory webpages



**Documentation** about system capabilities includes observing modes, sensitivity, resolution (angular, time, frequency), etc.





# LUCI

## LOFAR Unified Calculator for Imaging (LUCI)

### Observational setup

Observation time (in seconds)

28800

No. of core stations (0 - 24)

24

### Target setup

Target

3C196

RESOLVE

Coordinates

08h13m36.056s +48d13m02.

### Results

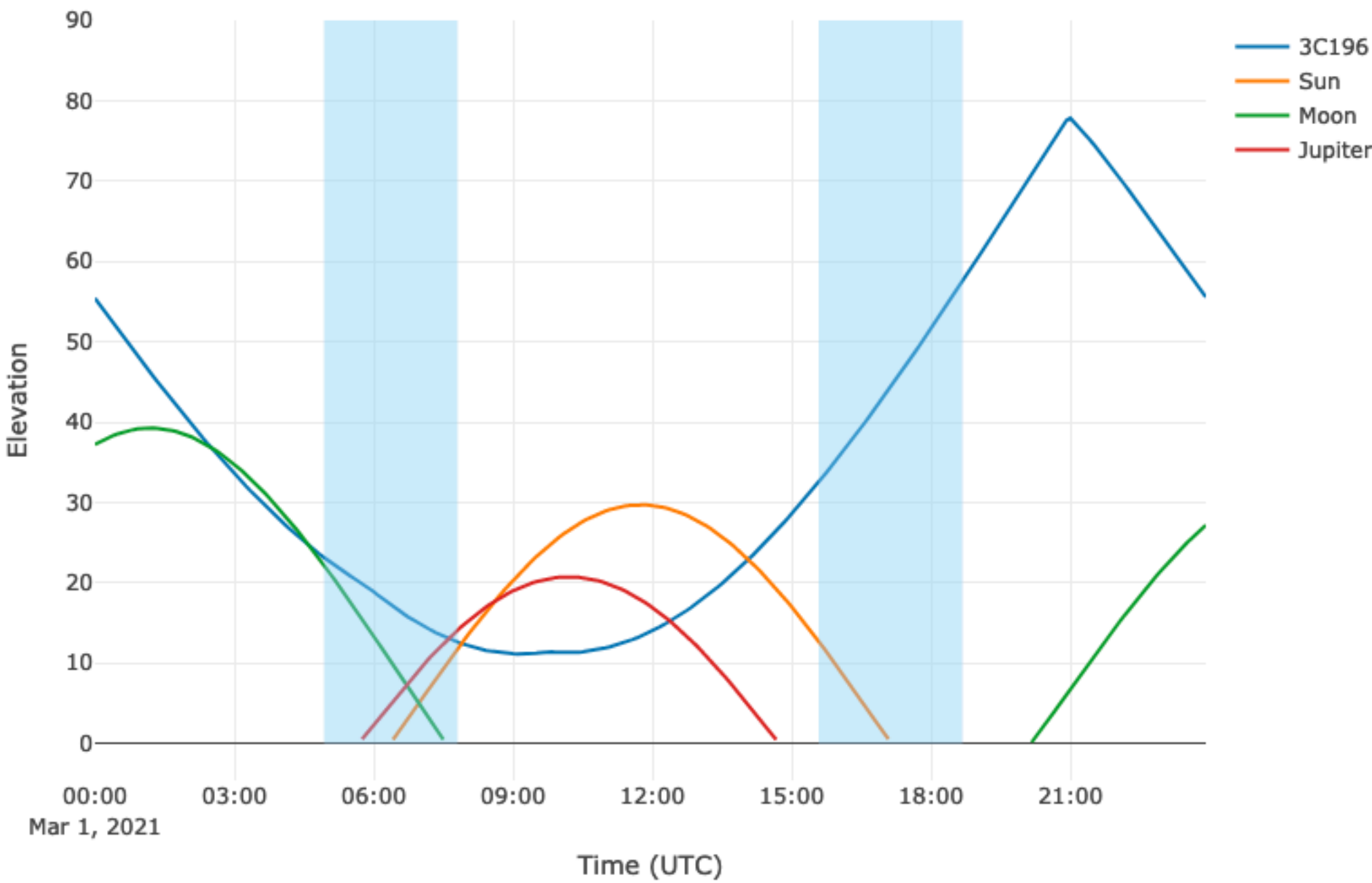
Theoretical image sensitivity (uJy/beam)

10.34

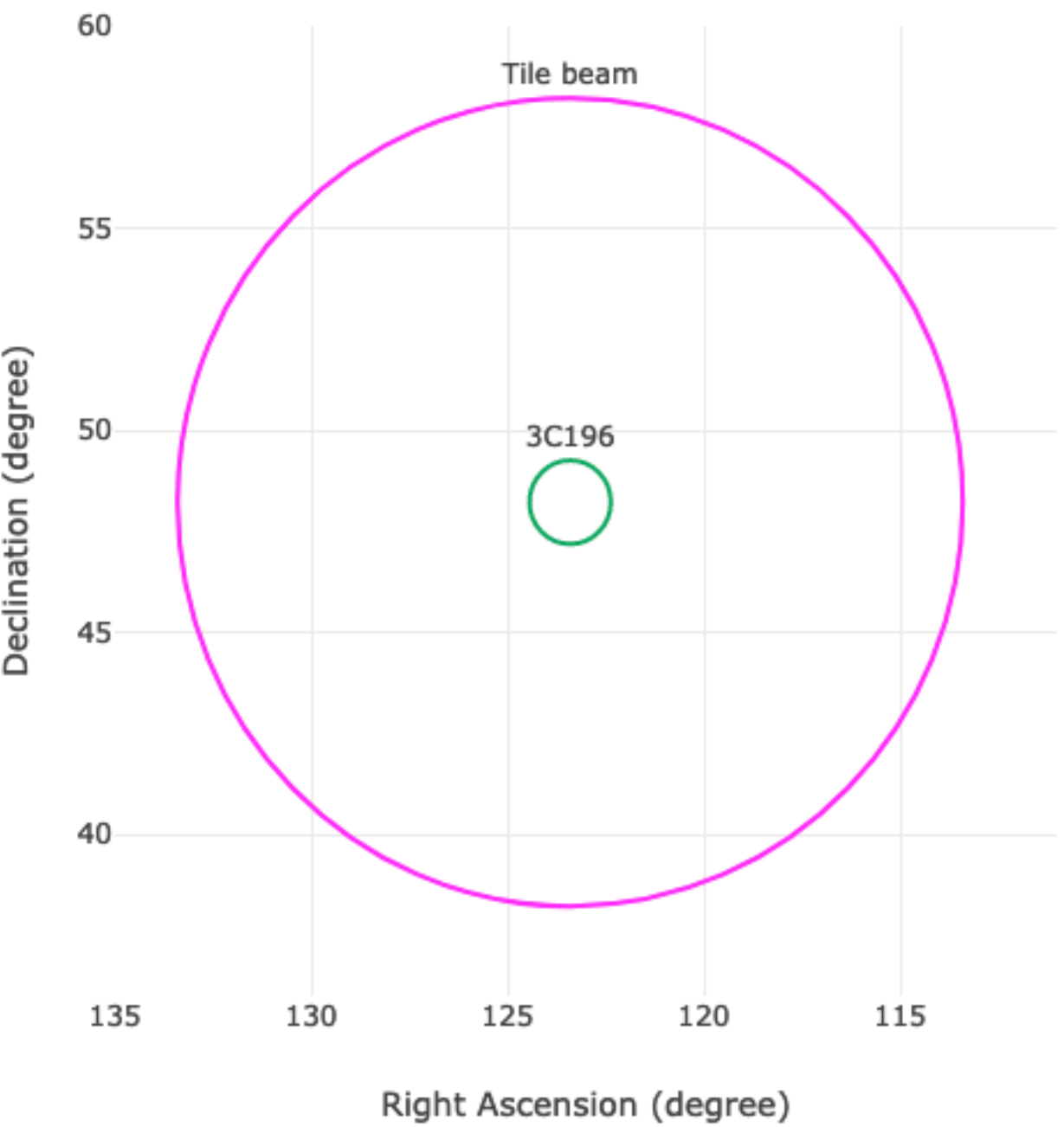
Raw data size (in GB)

83488.79

Target visibility plot



Beam layout



Angular distances in degrees between specified targets and other bright sources

Sources	3C196
CasA	66.13
CygA	90.99
TauA	41.03
VirA	63.76
Sun	127.47
Moon(min,max)	68.68,81.30
Jupiter	145.58

**Notes:**

The various features of this calculator are documented on the [LOFAR Imaging Cookbook](#).

The sensitivity calculation performed by this tool follow [SKA Memo 113](#) by Nijboer, Pandey-Pommier & de Bruyn. It uses theoretical SEFD values. So, please use it with caution.

LUCI (version 20200114) was written by Sarrvesh Sridhar and is now maintained for the ASTRON Science Data Center Operations group by Sander ter Veen. The source code is publicly available on [ASTRON Git](#). For comments and/or feature requests, please contact the Science Data Center Operations group using the [Helpdesk](#).



# Proposal preparation: NorthStar

**Proposal List**

[My Account](#)
[Help Index](#)
[Get Support](#)
[Logout](#)

Welcome to the Northstar tool for LOFAR proposals.

The tool is now available for preparation and submission of LOFAR proposals.

Additional information can be found online in the proposal call.

**Links:**

[Information about asking for time](#)  
[Call for Proposals](#)  
[Walkthrough manual of NorthStar \[PDF\]](#)

[Read me first!](#)
[Help](#)

Show reviewed proposals : ☐ Yes ☒ No  
 - Currently there are no proposals in preparation -

[Create new proposal](#)

No version information available

1

2

**LOFAR Proposal** **ASTRON LOFAR**

[Help Index](#)  
 Community : **LOFAR community**  
 Category : **commissioning**  
 Period : **LOFAR\_COM\_C15**

[Applicants](#)
[Justification](#)
[Observing Request](#)
[Target List](#)
[Additional information](#)

[Help](#)

Active Participant	contact author	PI	name	affiliation	country	email	potential observer
yes	<input checked="" type="radio"/>	<input checked="" type="radio"/>	Dr Emanuela Orru	Astron (Radio Observatory)	Netherlands	orru@astron.nl	<input type="checkbox"/>

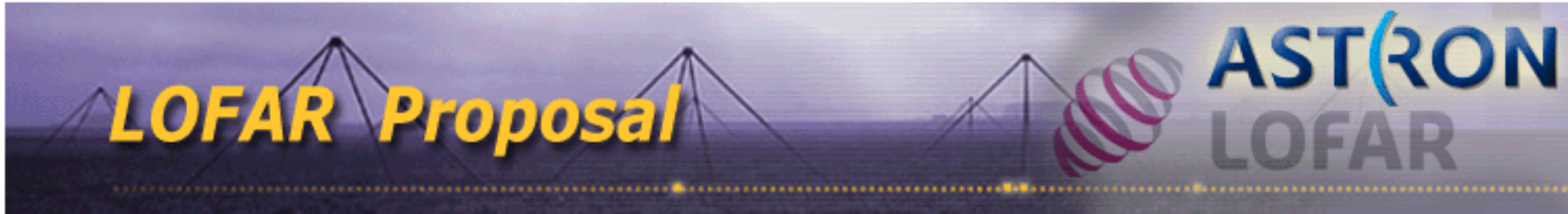
Select Proposal to import Applicant: **-- None Specified --**

[Add applicant from other proposal](#)  
[Add new applicant](#)  
[Quit without saving](#)

[Save and Continue](#)
[Save and Preview](#)
[Save and Exit](#)
[Save and Submit](#)



# Proposal preparation: NorthStar



[? Help Index](#)

Community : **LOFAR community**  
Category : **commissioning**  
Period : **LOFAR\_COM\_C15**

ApplicantsJustificationObserving RequestTarget ListAdditional information

Specify a new observation

Specify a new Pipeline :

Allocations per telescope :

LOFAR

Time specified for targets (in hours):  
Total 0

Hours requested this period (including calibration and overheads) :  
Total  \* This time will determine how many pages you are allowed to have in your scientific justification.  
\* In case this number is inconsistent with the total "exposure time" calculated from the target list, please explain the difference in the 'Observation strategy' box on the 'Justification tab'.

Minimum useful time (hours):  
Total  \* Minimum useful time must be less than or equal to requested hour.

Justify requested minimal useful time:


Processing time specified: 0.0 (Hours)  
Processing time requested in hours (on CEP4):  
Total  \*

Storage specified: 0.00 TB  
Long term LTA storage requested in terabytes (10<sup>12</sup> bytes):  
Total  \*

Save and ContinueSave and PreviewSave and ExitSave and Submit

Quit without save

ASTRON  
Netherlands Institute for Radio Astronomy

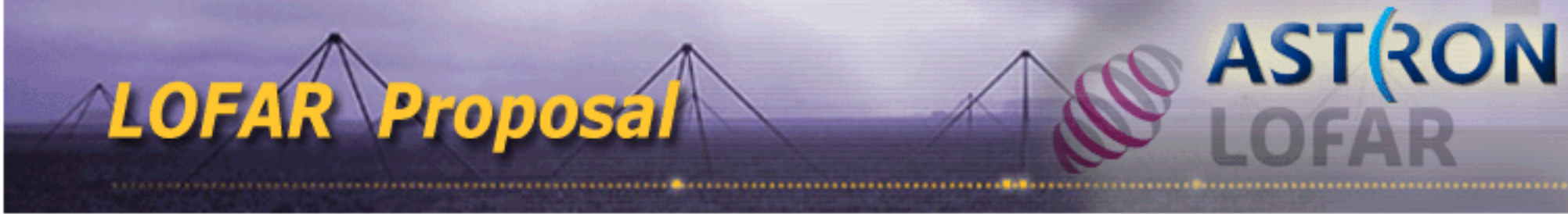
 LOFAR

 STELLAR

Image credits: A. Corstanje, F. Sweijen, C. Van Eck, P. Zucca



# Proposal preparation: NorthStar



[? Help Index](#)  
Community : **LOFAR community**  
Category : **commissioning**  
Period : **LOFAR\_COM\_C15**

Applicants Justification Observing Request **Target List** Additional information

[? Help](#)

**Targets :**  
Add here your target list per priority. Higher-priority targets on top.

In case of partial allocations and no preference indicated by the ILT-PC, ASTRON will select the targets highest on your input list.  
**Please check the coordinates of your intended target(s) in [the LOFAR archive](#) to confirm that your target has not been observed by LOFAR already.**  
In case of duplication, please specify in the science case why the new observation is needed. If you are interested in interferometric data and the LOFAR Two-Metre Sky Survey (LoTTS) observing and processing setups are suitable to achieve your science goals, please also check if your targets have been covered in any of the [performed / planned pointings of the LoTTS](#)

List of targets is empty

**New Target :**

Calibration beam? : ☐ Yes ☒ No

Field name :  [Resolve using Simbad](#) NB: proposers should check coordinates

RightAscension :  hh:mm[:ss.ss] \*

Declination :  [+|-]dd:mm[:ss.s] \*

Epoch :  J2000

Flux density (Jy) :  Reference frequency (MHz) :

Spectral index  $\alpha$  ( $S(\nu) \propto \nu^{-\alpha}$ ) :

NB: Put Frequency and Bandwidth and get SubbandList calculated, Otherwise put SubbandList manually. For Example: 2-315,15-115 etc. The maximum number of subbands per run is 488

Central frequency :  Bandwidth :

Subband list :  \*

Run# :  1 (new)

Exposure time in minutes :  \*

Select observation :

Select processing pipeline :  (Press ctrl (or cmd on Mac) to link multiple pipelines to this target at once)

Comments :



# Proposal preparation: NorthStar



[? Help Index](#)

Community : **LOFAR**  
community  
Category : **commissioning**  
Period : **LOFAR\_COM\_C15**

Applicants Justification Observing Request **Target List** Additional information

[? Help](#)

Information about all Students involved



Publications and relevant proposals

Add publications (Max 8) :  
Place each entry on a new line.  
The following information has to be provided:  
Publication - Authors, Title, Journal Reference

Add previously involved proposals (Max 300 words):  
Place each entry on a new line.  
The following information has to be provided:  
Instrument, cycle/code, status (e.g., time awarded/completed/in progress)

(Words entered: )\*

Additional Remarks :

 Save and Continue  Save and Preview  Save and Exit  Save and Submit  Quit without saving



# Review process

## Single and long term cycle:

- review process takes ~2 months
  - technical review: Radio Observatory / SOS heavily involved
  - scientific review: external committee and International LOFAR Telescope (ILT) board
- each project administered under code assigned at time of submission

## DDT:

Director's Discretionary Time

## Commissioning:

Planning to use LOFAR in new and unexplored ways?



Proposal

On line  
processing

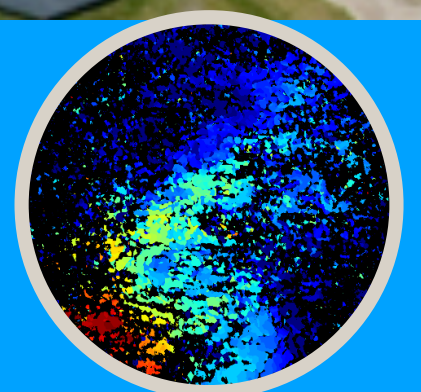
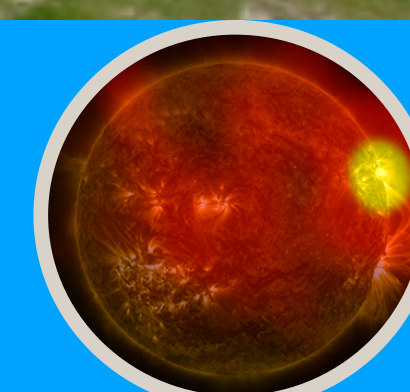
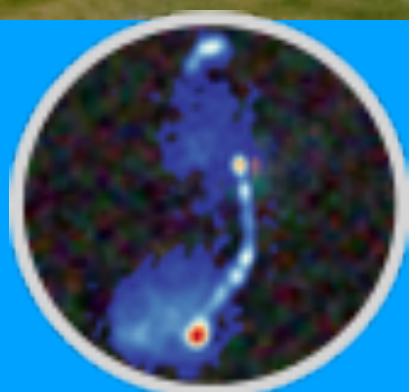
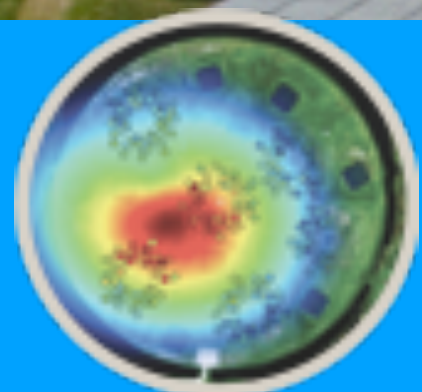
Data retrieval

Project  
preparation



Archival

6th LOFAR Data School









# MoM: Management of Measurements

Project structured as folders

- observations: (calibrator-target-calibrator)
- pipelines
- ingests to long term archive

Status:

approved, scheduled, running,  
finished, aborted

TO CHECK: open all the folders and info tabs  
details.

Project Explorer						OK	Status
<input type="checkbox"/>		LC15_027	<input type="checkbox"/>	Add	Details		active
<input type="checkbox"/>		2020-12-03_3C129	<input type="checkbox"/>	Add	Details		
<input type="checkbox"/>		2020-12-08_3C66	<input type="checkbox"/>	Add	Details		
<input type="checkbox"/>		2020-12-23_3C264	<input type="checkbox"/>	Add	Details		
<input type="checkbox"/>		2020-12-29_3C84	<input type="checkbox"/>	Add	Details		
<input type="checkbox"/>		3C84-3C196	<input type="checkbox"/>	Add	Details		
<input type="checkbox"/>		2020-12-29_3C84	<input type="checkbox"/>	Restart	Details		finished
<input type="checkbox"/>		2020-12-30_3C264b	<input type="checkbox"/>	Add	Details		
<input type="checkbox"/>		2021-01-19_3C84_rep	<input type="checkbox"/>	Add	Details		
<input type="checkbox"/>		2021-01-28_3C264rep	<input type="checkbox"/>	Add	Details		
<input type="checkbox"/>		3C264-3C196	<input type="checkbox"/>	Add	Details		
<input type="checkbox"/>		3C264/1/TO	<input type="checkbox"/>	Add	Details		finished
<input type="checkbox"/>		3C264	<input type="checkbox"/>	Details			finished
<input type="checkbox"/>		3C196	<input type="checkbox"/>	Details			finished
<input type="checkbox"/>		3C264/1.0/TP	<input type="checkbox"/>	Restart	Details		finished
<input type="checkbox"/>		3C196/1.1/TP	<input type="checkbox"/>	Restart	Details		finished
<input type="checkbox"/>		3C264-3C196	<input type="checkbox"/>	Restart	Details		finished
<input type="checkbox"/>		2021-01-30_3C84	<input type="checkbox"/>	Add	Details		
<input type="checkbox"/>		2021-02-17_3C264rep2	<input type="checkbox"/>	Add	Details		
<input type="checkbox"/>		2021-02-20_3C465	<input type="checkbox"/>	Add	Details		



Proposal

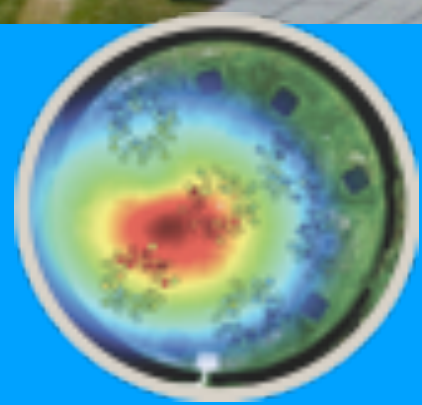
Project  
preparation

On line  
processing

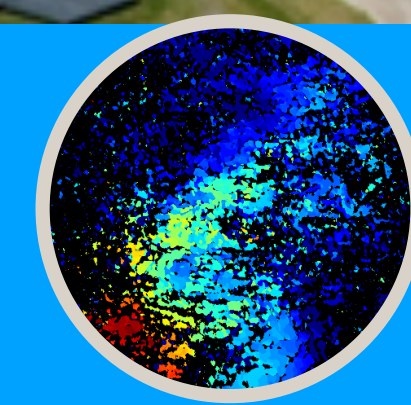
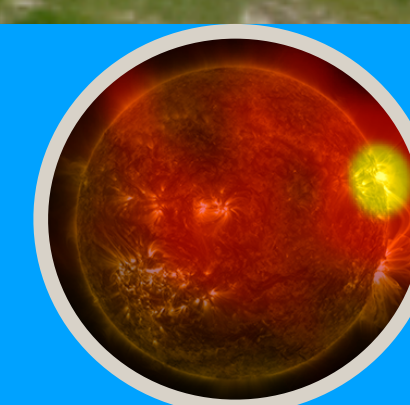
Data retrieval

Archival

Observations



6th LOFAR Data School





# Report observation QA:

- A report, in the form of a Jira ticket comment, is sent to the user: observation quality assessment & status of the processing and ingest
- Success of observation is based on policies reported here.
- QA is based on the analysis of the inspection plots see: Raw data quality assessment (D3) Thomas Franzen's demo.

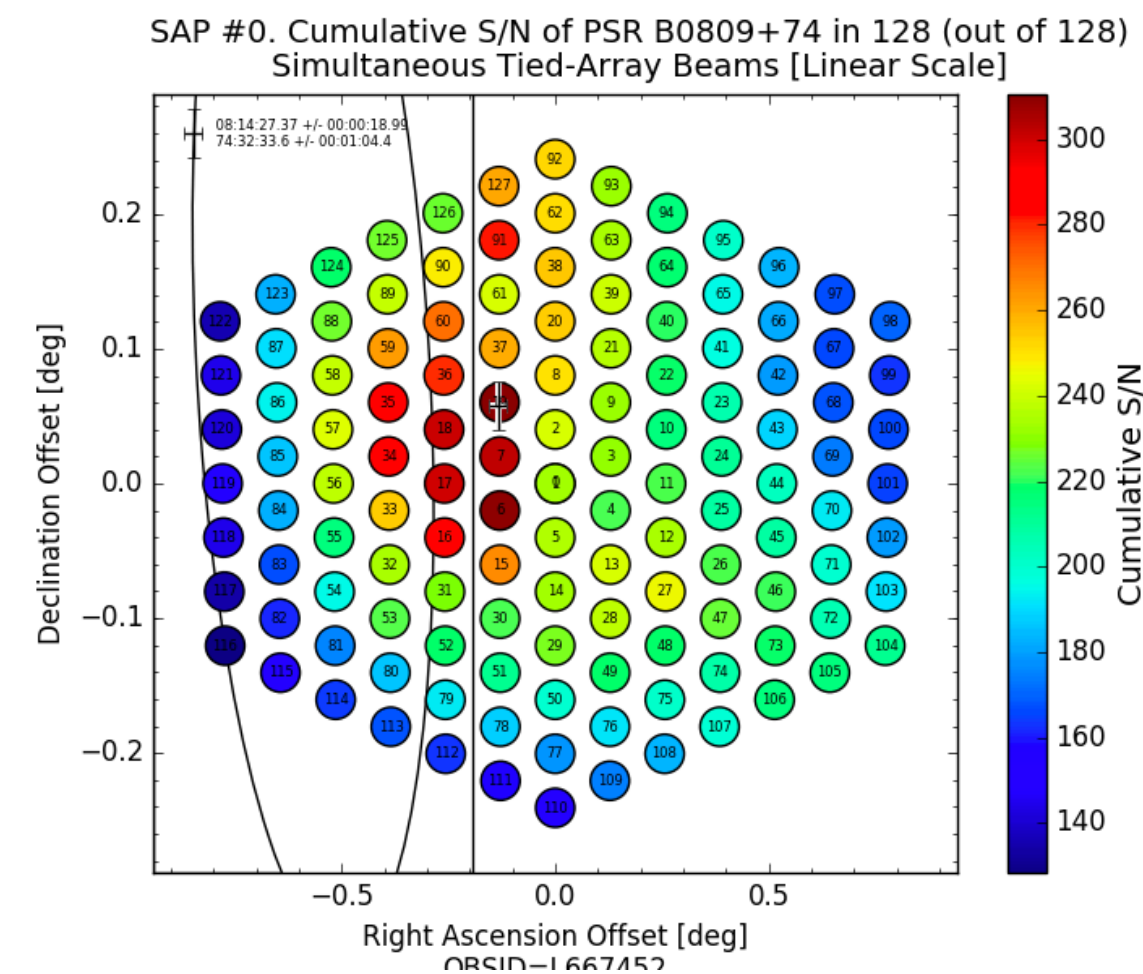


# Pre-processing pipeline

- Flags the data in time and frequency
- flags the autocorrelations
- flags the first and last two channels
- optionally “demix” subtraction of the contributions of the brightest sources in the sky (the so called “A-team”). Currently, users should specify if demixing is to be used, and which sources should be demixed.
- Average in time and frequency
- Data are dysco compressed
- It is the pipeline most commonly used

## DATA PRODUCTS:

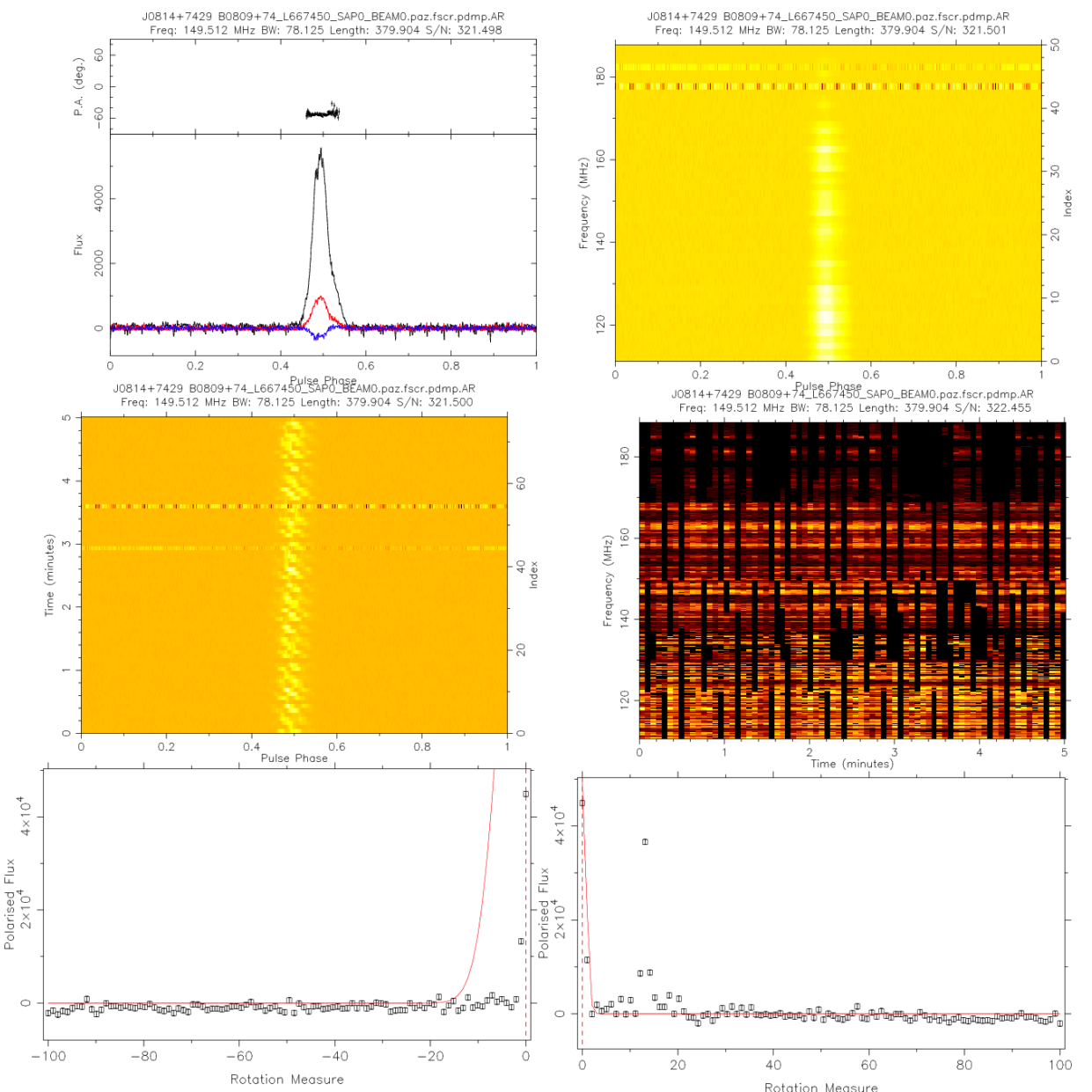
For each observing beam a set of uncalibrated correlated visibilities is provided



## PULP:

### LOFAR Pulsar Pipeline for known pulsars

- Given the pulsar ephemeris it folds the data to get the average pulsar profile (freq/time/pol/phase data cube) for every tied-array beam
- Also provides diagnostic plots to assess the quality of the data
- You will see it in: Processing beamform data: PULP (t4)





Proposal

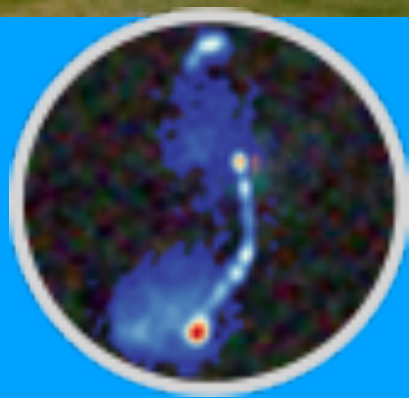
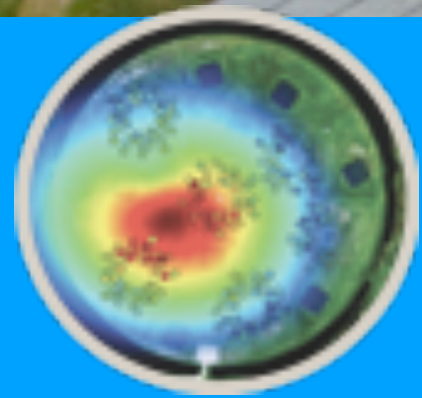
Project  
preparation

On line  
processing

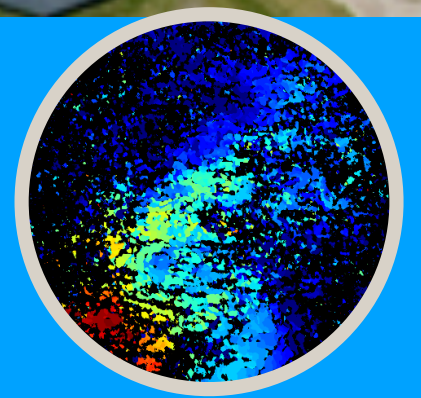
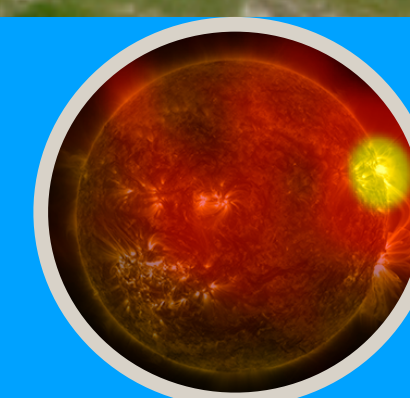
Data  
retrieval

Archival

Observations

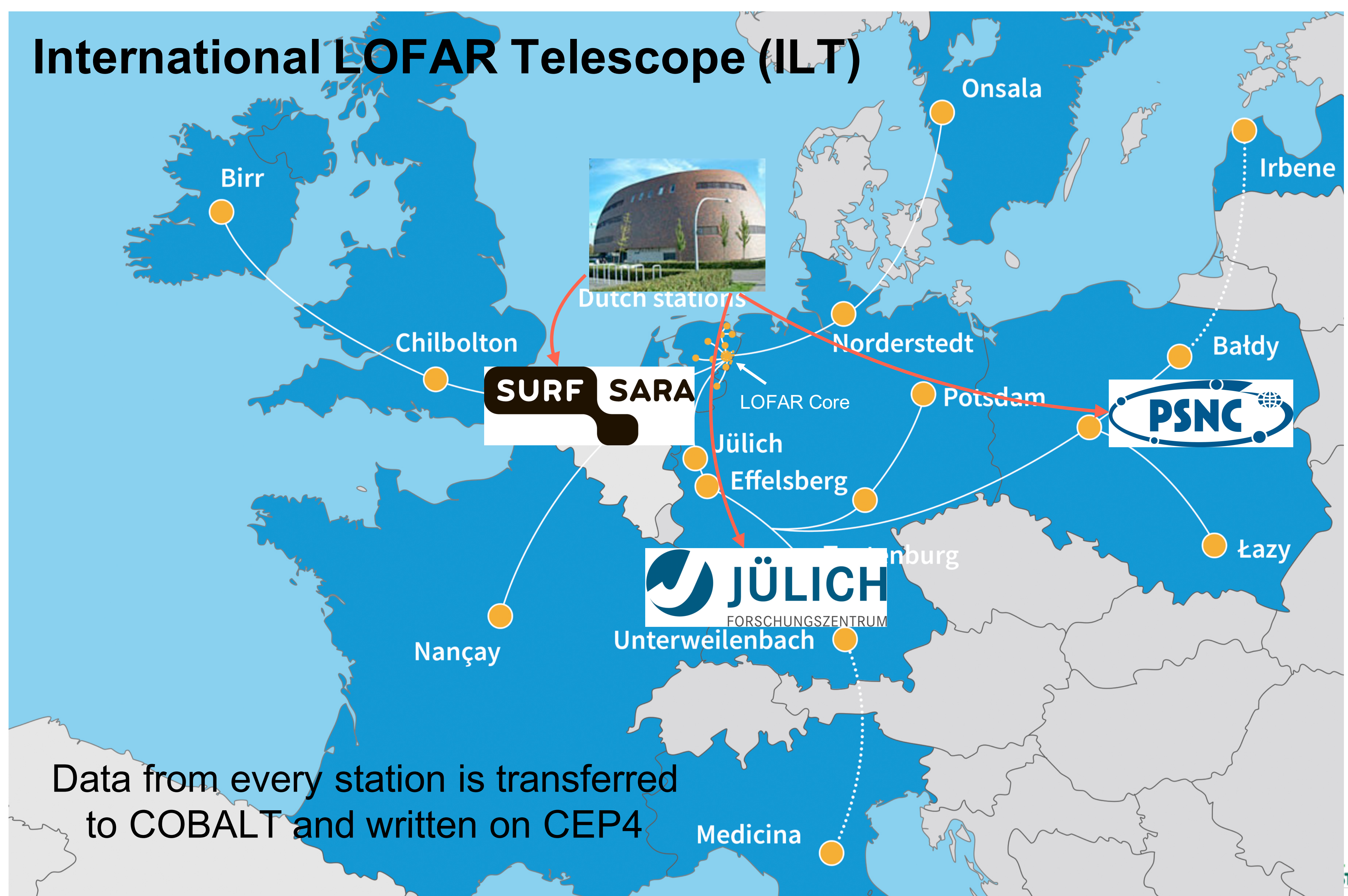


6th LOFAR Data School





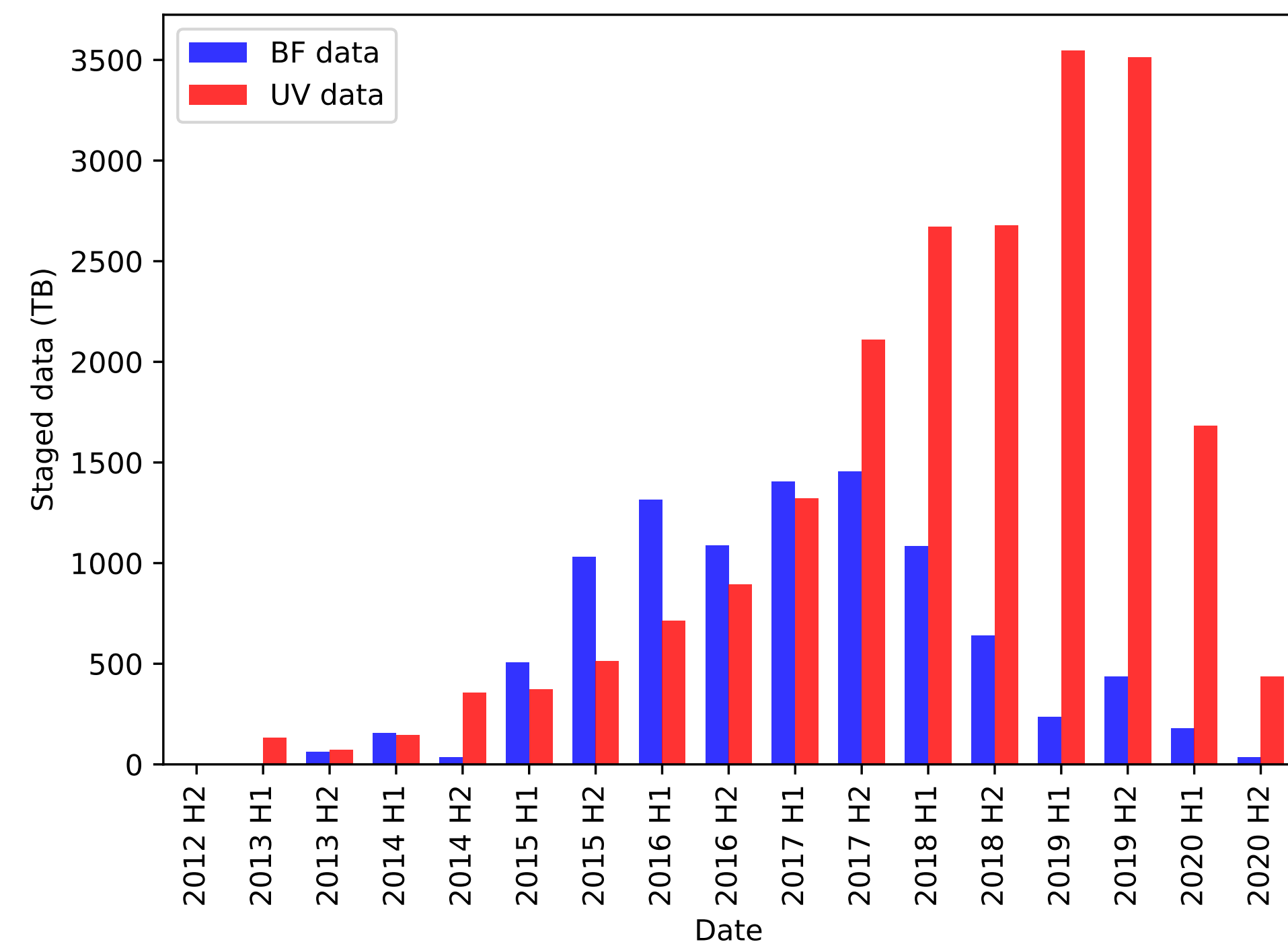
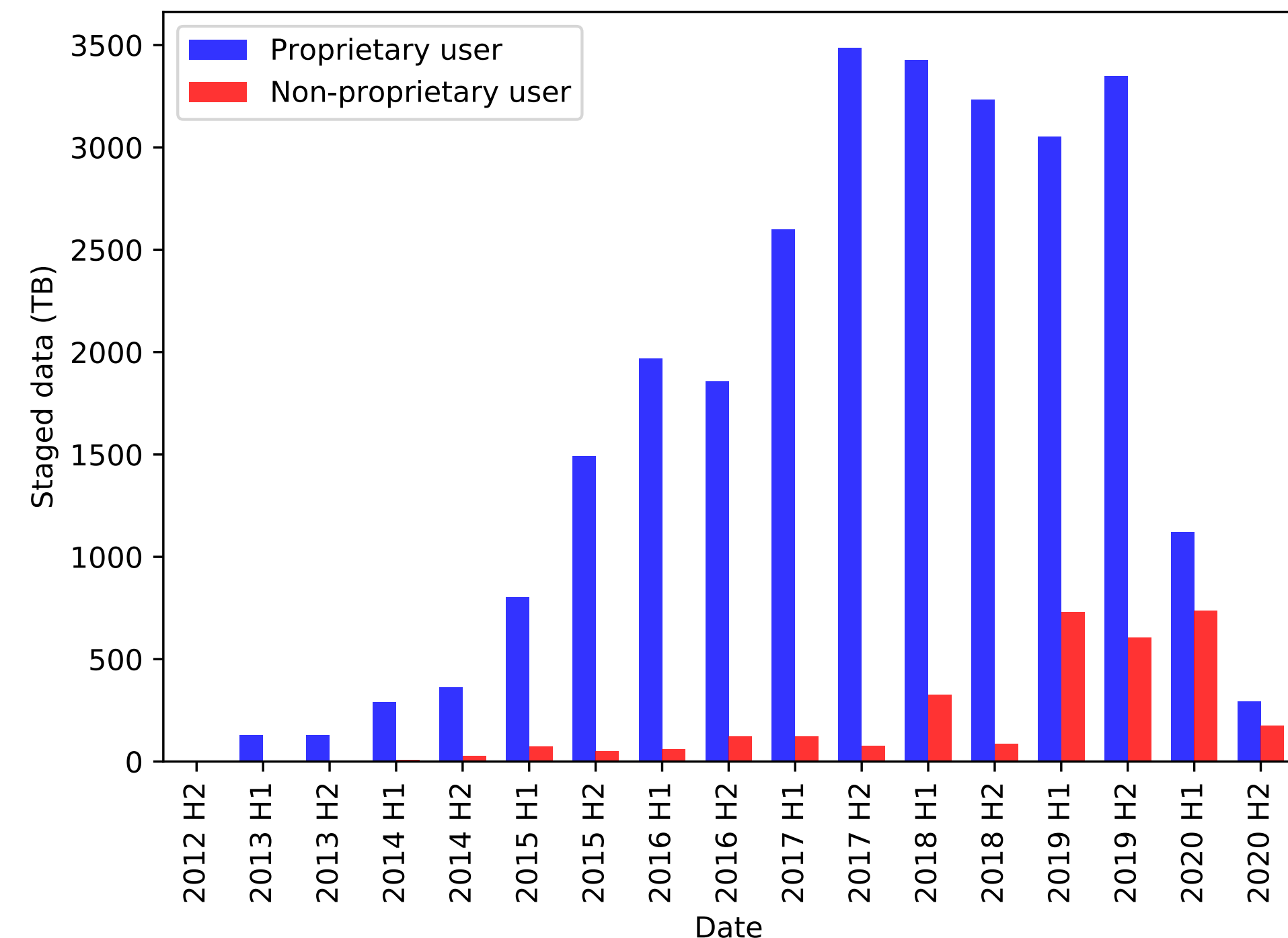
# International LOFAR Telescope (ILT)





# LOFAR LTA

- Data rate from the LOFAR cluster to the LTA sites at  $\sim 1.5$  GB/s. Size of stored data growing at  $\sim 7$  PB/yr.  $> 30$  PB since 2012!!!
- A series of checks is performed when data is archived
- The data reaching the LTA is written on disks, but the final storage is on tapes.  
The tape containing the data is reached by a robotic arm, then its content is read and copied to disk



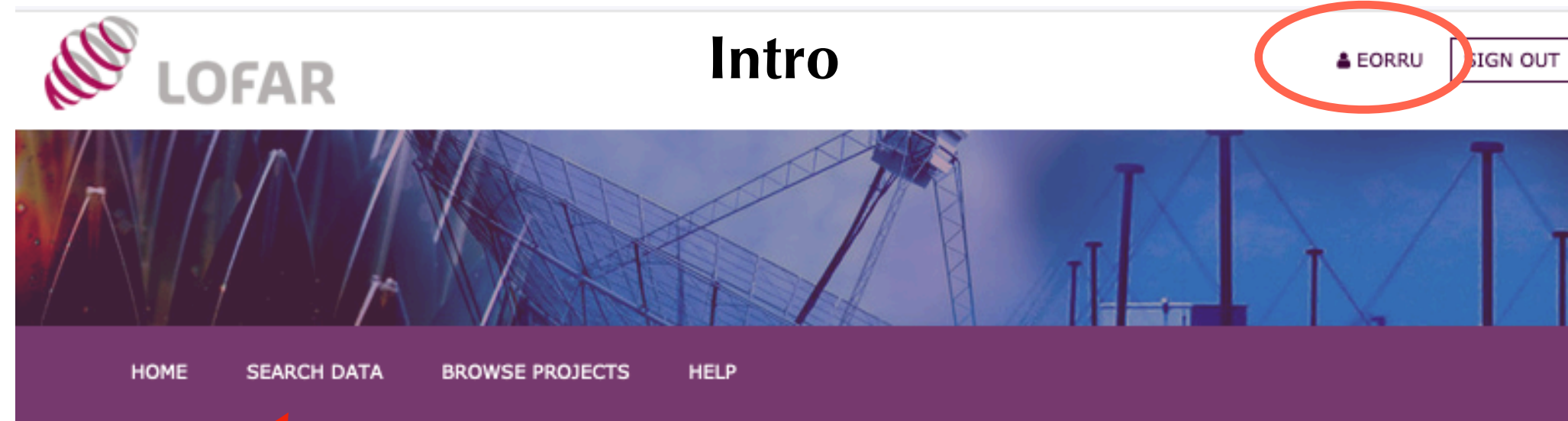


# LTA access

- The necessary information can be found in the LTA How To. The web interface to the archive is located at <https://lta.lofar.eu/>
- The data in the archive have a *proprietary* status for 1 year. All the metadata are public as soon as the data are archived.
- Staging is possible only if you are a registered user. You need a MoM account with *LTA user* privileges. You can create an account within the web interface. After creating the account, send via SDC-helpdesk ticket a request for *LTA user* privileges.
- A staging request cannot contain more than a few thousand files and it cannot exceed 5 TB. What if I need to stage 20k files? Split them into 10 consecutive requests for 2k files each.



# The web interface



## Lofar Long Term Archive

### Welcome to the Lofar Long Term Archive (LTA) web service

This service is the main access point for searching and downloading data from the LOFAR LTA. Please visit the [documentation](#) for a description on how to use this service. If you have any question please contact the ASTRON SDCO staff via the [helpdesk](#).

From March 1 2015 onwards, cycle data which have passed the proprietary period will be publicly available. All metadata in the Archive can be queried anonymously at anytime, but downloading public data can only be done by registered users (follow the "Create account" link). Non-public data can only be downloaded by project members.

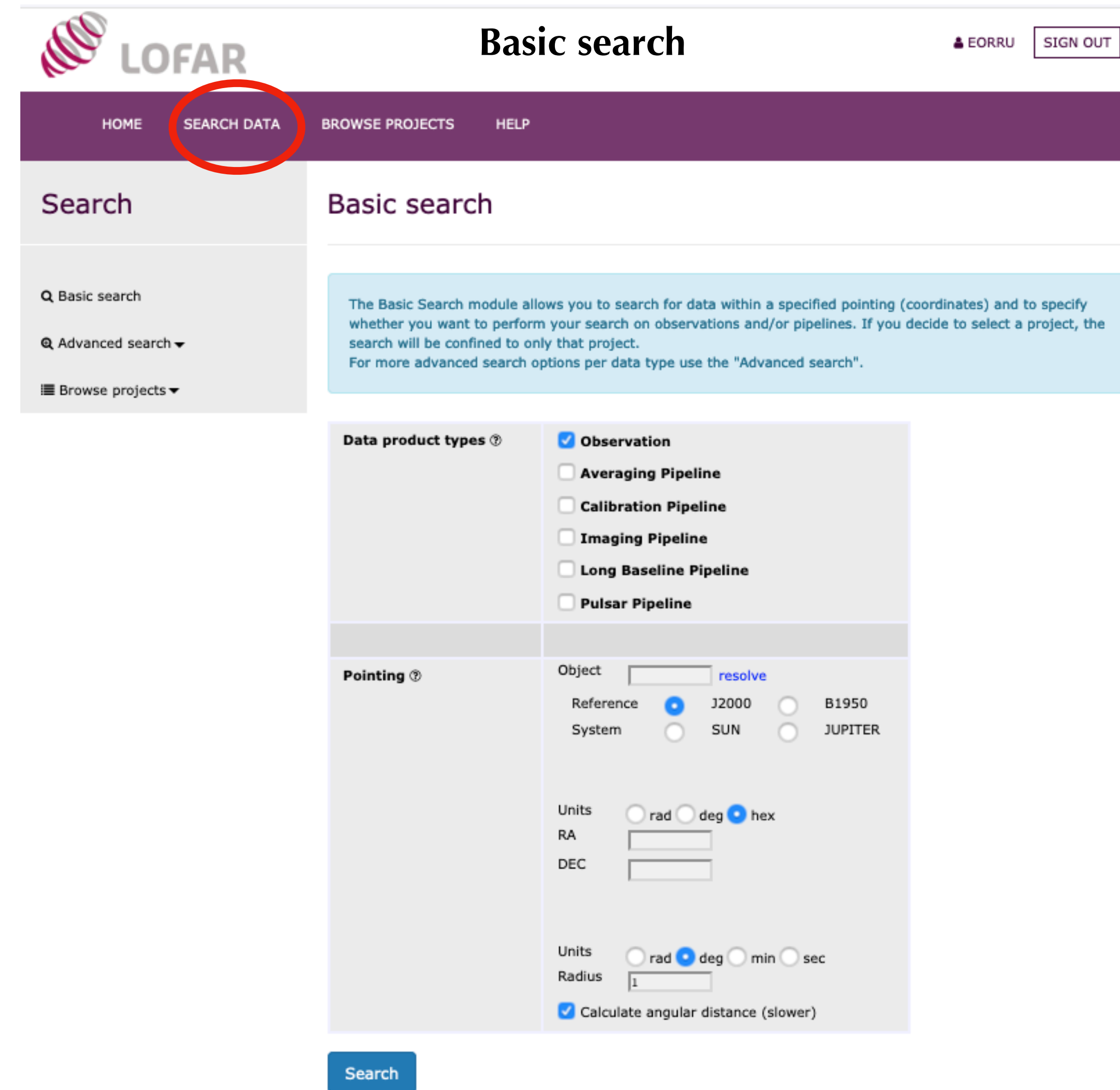
#### Notes:

- For the first cycles of LOFAR operations, part of the data were ingested in the archive without metadata. These data cannot be found using the standard search parameters, except for the appropriate Observation ID. When unspecified data are present in a project, this is listed in the "Unspecified" column on the Projects page. Data can still be requested using the "Project" pulldown in the various Search options.
- Since August 2017, after each LOFAR observation, [inspection plots](#) are routinely generated, including station dynamic spectra. These plots are used by ASTRON SDCO staff to check the quality of the raw data. They only remain online for 3 weeks from the date of observation. After that, they are compressed and transferred to offline storage. If you wish to access the inspection plots before downloading an observation or pipeline, please contact SDCO staff via the [ASTRON helpdesk](#), and provide the project code and SAS ID of the observation you are interested in. Since June 2019 (the beginning of Cycle 12), the data quality report written by SDCO staff based on the inspection plots can also be made available upon request.


A list of all LOFAR observing cycles and approved projects can be found [here](#).

For more information on this web service see the [Lofar wiki](#).

This system was developed as part of the Target project. Target was [supported](#) by Samenwerkingsverband Noord-Nederland (SNN) and the Groningen Municipality. The project was financially supported by the European Fund for Regional Development and the Dutch Ministry of Economic Affairs, Agriculture and Innovation (Pieken in de Delta), the Province of Groningen and the Province of Drenthe.







Advanced search

EORRU

SIGN OUT

HOMESEARCH DATABROWSE PROJECTSHelp

Search

Q Basic search

Q Advanced search

Raw Observations

Averaging Pipeline

Calibration Pipeline

Imaging Pipeline

Long Baseline Pipeline

Pulsar Pipeline

Unspecified Process

All Observations and Pipelines

Browse projects

Search Averaging Pipeline

The Advanced Search modules allow you to specify coordinates and specific parameters of the observation or pipeline products that you are looking for.  
A search on observations will return the setup of the telescope at the time of observing, but is unlikely to return any downloadable data. Typically, only pipeline products are archived and these can be directly searched for by selecting the Pipeline modules. If you choose observations, you will anyhow have the chance to jump to the relative pipelines.

Averaging Pipeline Output

SAS Id

Pipeline Run Date

Pointing

Time Integration Step

Time resolution

Project

Maximum Number of Rows

☒ Interferometric Data

From0000-00-00 00:00:00

To0000-00-00 00:00:00

Object resolve

Reference☒ J2000☐ B1950

System☐ SUN☐ JUPITER

Units☐ rad☐ deg☒ hex

RA

DEC

Units☐ rad☒ deg☐ min☐ sec

Radius 1

☒ Calculate angular distance (slower)

From To

From To [Hz]

From To

From To [s]

any

Description

Time resolution of the data.

Usage

Enter a minimum and/or a maximum value.

Search

© ASTRON Netherlands Institute for Radio Astronomy

powered by

Searching on observations almost never returns retrievable data. You are searching over the products of an observation, i.e. raw data. With some exceptions, raw data are not archived

Most data simply go through the averaging (pre-processing) pipeline

Your search will take you immediately to the products of the pipeline in the archive

ASTRON  
Netherlands Institute for Radio Astronomy

LOFAR

STELLAR

Image credits: A. Corstanje, F. Sweijen, C. Van Eck, P. Zucca



# Search confined to a particular project

HOMESEARCHDATA  
BROWSE PROJECTS  
HELP

LOFARSCHOOL

Search

Basic search

Advanced search

Browse projects

All projects

Commissioning

Cycle 0

Cycle 1

Cycle 10

Cycle 11

Cycle 12

Cycle 13

Cycle 14

Cycle 15

Cycle 2

Cycle 3

Cycle 4

Cycle 5

Cycle 6

Cycle 7

Cycle 8

Cycle 9

Other projects

Other projects

Number of projects: 61

In the table below a project can be selected to restrict all data searches to that project only. Use the 'search' button to select the project and go to the search page, use the 'show data' button to select the project and to show all data in it. Alternatively click on the project name to view the project details.

The first column shows a when you are a member of the project or a for public projects.

M	Project	Description	Release date	Actions
	2013LOFAROBS	2013LOFAROBS	2038-01-01	<div>setsearchshow data</div>
	2014LOFAROBS	2014LOFAROBS	2038-01-01	<div>setsearchshow data</div>
	2015LOFAROBS_new	2015LOFAROBS	2038-01-01	<div>setsearchshow data</div>
	2015LOFAROBS_old	2015LOFAROBS	2038-01-01	<div>setsearchshow data</div>
	2016LOFAROBS	None	2038-01-01	<div>setsearchshow data</div>
	2017LOFAROBS	2017LOFAROBS	2038-01-01	<div>setsearchshow data</div>
	2018LOFAROBS	2018LOFAROBS	2030-01-01	<div>setsearchshow data</div>
	2019LOFAROBS	tests and misc	2030-01-01	<div>setsearchshow data</div>
	2020LOFAROBS	2020LOFAROBS	2030-12-12	<div>setsearchshow data</div>
	2021LOFAROBS	2021LOFAROBS	2022-01-13	<div>setsearchshow data</div>
	CEP4_commissioning	CEP4 commissioning and characterisation	2038-01-01	<div>setsearchshow data</div>
	CITT_2014	Calibration and Imaging Tiger Team	2018-05-17	<div>setsearchshow data</div>
	COBALT	COBALT		<div>setsearchshow data</div>
	Cobalt_Delays	Cobalt_Delays	2038-01-01	<div>setsearchshow data</div>
	COM10_001	LONG BASELINE CALIBRATOR MODELS	2020-06-05	<div>setsearchshow data</div>
	COM12_002	The sign of Stokes V	2038-01-01	<div>setsearchshow data</div>
	COM13_001	Lunar Detection of Ultra-High-Energy Cosmic-Rays and Neutrinos	2038-01-01	<div>setsearchshow data</div>
	COM13_002	Radio spectroscopy of the first blazar above redshift 6	2021-07-01	<div>setsearchshow data</div>
	COM14_002	Commissioning LOFAR fast imaging for transient detection and localization	2021-11-03	<div>setsearchshow data</div>
	COM15_001	Detecting HI absorption in radio-brightest quasar at z>6		<div>setsearchshow data</div>
	COM_ALERT	Commissioning for ALERT TBB subband mode	2020-12-11	<div>setsearchshow data</div>
	COM_LBA_SPARSE	Commissioning of current performance of LBA Sparse Even		<div>setsearchshow data</div>
	Commissioning_TMSS	A commissioning project for the TMSS project		<div>setsearchshow data</div>
	Commissioning_TMSS2	Commissioning_TMSS		<div>setsearchshow data</div>
	Commissioning_TMSS3	Commissioning_TMSS3		<div>setsearchshow data</div>
	DDT0001	M33	2015-03-01	<div>setsearchshow data</div>
	DDT001	Directors Discretionary time - Radio Recombination Lines Cas A	2020-04-09	<div>setsearchshow data</div>
	DDT002	Directors Discretionary time - Radio Recombination Lines Cas A	2015-03-01	<div>setsearchshow data</div>
	DDT0004	Measuring the energy of Saturns Magnetosphere	2015-03-01	<div>setsearchshow data</div>

HOMESEARCHDATA  
BROWSE PROJECTS  
HELP

LOFARSCHOOL

Search

Basic search

Advanced search

Browse projects

All projects

Commissioning

Cycle 0

Cycle 1

Cycle 10

Cycle 11

Cycle 12

Cycle 13

Cycle 14

Cycle 15

Cycle 2

Cycle 3

Cycle 4

Cycle 5

Cycle 6

Cycle 7

Cycle 8

Cycle 9

Other projects

Basic search for LOFARSCHOOL

The Basic Search module allows you to search for data within a specified pointing (coordinates) and to specify whether you want to perform your search on observations and/or pipelines. If you decide to select a project, the search will be confined to only that project. For more advanced search options per data type use the "Advanced search".

Data product types

☒ Observation

☐ Averaging Pipeline

☐ Calibration Pipeline

☐ Imaging Pipeline

☐ Long Baseline Pipeline

☐ Pulsar Pipeline

Pointing

Object

Reference

System

J2000

B1950

SUN

JUPITER

Units

rad

deg

hex

RA

DEC

Units

rad

deg

min

sec

Radius

1

☒ Calculate angular distance (slower)

Search

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ASTRO  
WISE



# Search output

Here is the output of a search for all averaging pipeline data products within 1 deg from 3C35 1. You can click on the *Number of correlated data products* link for further details

2. *Show pipelines* will tell you which pipelines were run on the product selected. In this case, none.

3. *Source data product* will take you to the raw data

HOME

SEARCH DATA

BROWSE PROJECTS

HELP

Averaging Pipeline 1 to 100 (showing 100 of total 433) ▾

edit columns

stage selected

show dataproducts

show pipelines

first

previous

1

2

3

4

5

next

last

#	<input type="checkbox"/>	Distance [degrees]	Project	Release Date	Pipeline Name	Pipeline Version	SAS Id	Frequency Integration Step	Time Integration Step	Strategy Name	Flag Auto Correlations	Demixing	Number Of Correlated DataProducts	Source DataProduct	All Dataproducts
1	<input type="checkbox"/>	0.0001	LC0_012	2015-03-01	3C35_15/3C35 /5.0/TP	n/a	161528	16	4	Preprocessing Pipeline	1	1	319 / 320	show	show
2	<input type="checkbox"/>	0.0001	LC0_012	2015-03-01	3C35_15/3C35 /13.0/TP	n/a	161544	16	4	Preprocessing Pipeline	1	1	320	show	show
3	<input type="checkbox"/>	0.0001	LC0_012	2015-03-01	3C35_15/3C35 /7.0/TP	n/a	161532	16	4	Preprocessing Pipeline	1	1	319 / 320	show	show
4	<input type="checkbox"/>	0.0001	LC0_012	2015-03-01	3C35_15/3C35 /6.0/TP	n/a	161530	16	4	Preprocessing Pipeline	1	1	320	show	show
5	<input type="checkbox"/>	0.0001	LC0_012	2015-03-01	3C35_15/3C35 /1.0/TP	n/a	161520	16	4	Preprocessing Pipeline	1	1	320	show	show



# Customise result columns and filter results

## Interferometric Data

Select which columns to show.

Select [all](#) or [none](#) or [default](#)

Select	Column
<input checked="" type="checkbox"/>	Project
<input type="checkbox"/>	Creator
<input type="checkbox"/>	Privileges
<input checked="" type="checkbox"/>	Release Date
<input type="checkbox"/>	DataProduct Identifier
<input checked="" type="checkbox"/>	Target Name
<input checked="" type="checkbox"/>	Right Ascension
<input checked="" type="checkbox"/>	Declination
<input checked="" type="checkbox"/>	Central Frequency
<input checked="" type="checkbox"/>	Channel Width
<input checked="" type="checkbox"/>	Channels Per Subband
<input checked="" type="checkbox"/>	Integration Interval
<input checked="" type="checkbox"/>	Start Time
<input checked="" type="checkbox"/>	Duration
<input type="checkbox"/>	End Time
<input checked="" type="checkbox"/>	SubArray Pointing Identifier
<input checked="" type="checkbox"/>	Subband
<input type="checkbox"/>	Station Subband
<input checked="" type="checkbox"/>	Stations
<input checked="" type="checkbox"/>	Observations
<input checked="" type="checkbox"/>	Pipeline
<input checked="" type="checkbox"/>	Derived DataProducts
<input type="checkbox"/>	DataProduct Type
<input type="checkbox"/>	Ingestion Date
<input type="checkbox"/>	File Format
<input type="checkbox"/>	Filename
<input type="checkbox"/>	Valid Flag
<input type="checkbox"/>	Dirty Flag
<input checked="" type="checkbox"/>	Storage Writer
<input type="checkbox"/>	Storage Writer Version

DataProducts which are a result from a Pipeline all have Station Subband 0, use frequency to filter on these.

Station Subband	<input type="text"/>
Beam Number	<input type="text"/>
Observing Frequency	From <input type="text"/> To <input type="text"/> [10-250 MHz]
Observing Frequencies	<input type="text"/> 0.1953125 width [MHz]
Filename	<input type="text"/>
Maximum Number of Rows	<input type="text" value="1000"/>
<input type="button" value="Filter"/>	

## Interferometric Data (total 320) ▾

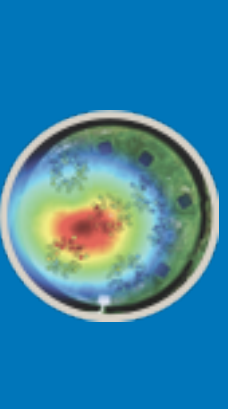
[edit columns](#)

[stage selected](#)

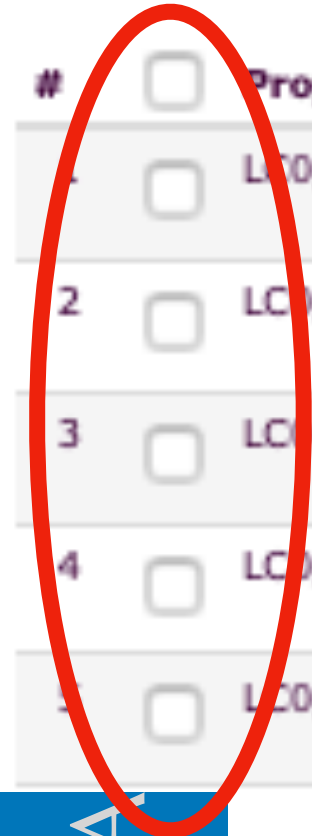
[filter dataproducts](#)

#	Pr	Right Ascension [degrees]	Declination [degrees]	Central Frequency [MHz]	Channel Width [Hz]	Channels Per Subband	Integration Interval [s]	Start Time	Duration [s]	SubArray Pointing Identifier	Subband	Stations	Observations	Pipeline	Derived DataProducts	Storage Writer
1	LC	18.0093	49.4764	115.8203	48828.125000	4	4.00556	2013-07-15 06:52:00	1802.0	289004	4	show	1	3C35_15/3C35/13.0/TP		CasaStorageManagers
2	LC	18.0093	49.4764	115.0391	48828.125000	4	4.00556	2013-07-15 06:52:00	1802.0	289004	0	show	1	3C35_15/3C35/13.0/TP		CasaStorageManagers
3	LC	18.0093	49.4764	115.6250	48828.125000	4	4.00556	2013-07-15 06:52:00	1802.0	289004	3	show	1	3C35_15/3C35/13.0/TP		CasaStorageManagers
4	LC	18.0093	49.4764	115.4297	48828.125000	4	4.00556	2013-07-15 06:52:00	1802.0	289004	2	show	1	3C35_15/3C35/13.0/TP		CasaStorageManagers
5	LC	18.0093	49.4764	116.7969	48828.125000	4	4.00556	2013-07-15 06:52:00	1802.0	289004	9	show	1	3C35_15/3C35/13.0/TP		CasaStorageManagers





# Stage the data



## Interferometric Data (total 320) ▾

[edit columns](#)

[stage selected](#)

[filter dataproducts](#)

#	<input type="checkbox"/>	Project	Release Date	Target Name	Right Ascension [degrees]	Declination [degrees]	Central Frequency [MHz]	Channel Width [Hz]	Channels Per Subband	Integration Interval [s]	Start Time	Duration [s]	SubArray Pointing Identifier	Subband	Stations	Observations	Pipeline	Derived DataProducts	Storage Writer
1	<input type="checkbox"/>	LC0_012	2015-03-01	3C35	18.0093	49.4764	115.8203	48828.125000	4	4.00556	2013-07-15 06:52:00	1802.0	289004	4	show	1	3C35_15/3C35/13.0/TP		CasaStorageManagers
2	<input type="checkbox"/>	LC0_012	2015-03-01	3C35	18.0093	49.4764	115.0391	48828.125000	4	4.00556	2013-07-15 06:52:00	1802.0	289004	0	show	1	3C35_15/3C35/13.0/TP		CasaStorageManagers
3	<input type="checkbox"/>	LC0_012	2015-03-01	3C35	18.0093	49.4764	115.6250	48828.125000	4	4.00556	2013-07-15 06:52:00	1802.0	289004	3	show	1	3C35_15/3C35/13.0/TP		CasaStorageManagers
4	<input type="checkbox"/>	LC0_012	2015-03-01	3C35	18.0093	49.4764	115.4297	48828.125000	4	4.00556	2013-07-15 06:52:00	1802.0	289004	2	show	1	3C35_15/3C35/13.0/TP		CasaStorageManagers
5	<input type="checkbox"/>	LC0_012	2015-03-01	3C35	18.0093	49.4764	116.7969	48828.125000	4	4.00556	2013-07-15 06:52:00	1802.0	289004	9	show	1	3C35_15/3C35/13.0/TP		CasaStorageManagers

Select the data products you want to retrieve and click on *stage selected*

Depending on the load on the system, staging can be slow. Waiting times of a week are not unheard of.

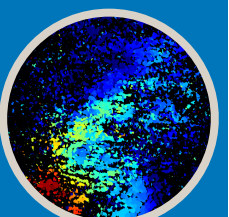
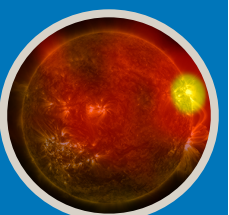
## Staging Service

The following 1 file(s) will be requested for download, with a total size of 212.6 MB.

Cancel

Submit

Size	MD5 checksum	Filename
212.6 MB	204f8a29db9b0e7da37ec042d66e5357	L161544_SB003_uv.dppp.MS_181d3738.tar
212.6 MB	Total filesize	





# Download

When you have received an e-mail announcing that staging has finished, you can download your data

The download speed can vary between the different LTA sites (different lines) and it depends on how you retrieve your files

The fastest way is a globus copy (requires grid certificate and grid srm software), which should reach 100 MB/s; the slowest is http at ~10-20 MB/s

Alternative interfaces are also available. Documentation at: [https://www.astron.nl/lofarwiki/doku.php?id=public:lta\\_tricks](https://www.astron.nl/lofarwiki/doku.php?id=public:lta_tricks)



# Post-processing

**Cookbooks:** imaging and beamformed modes

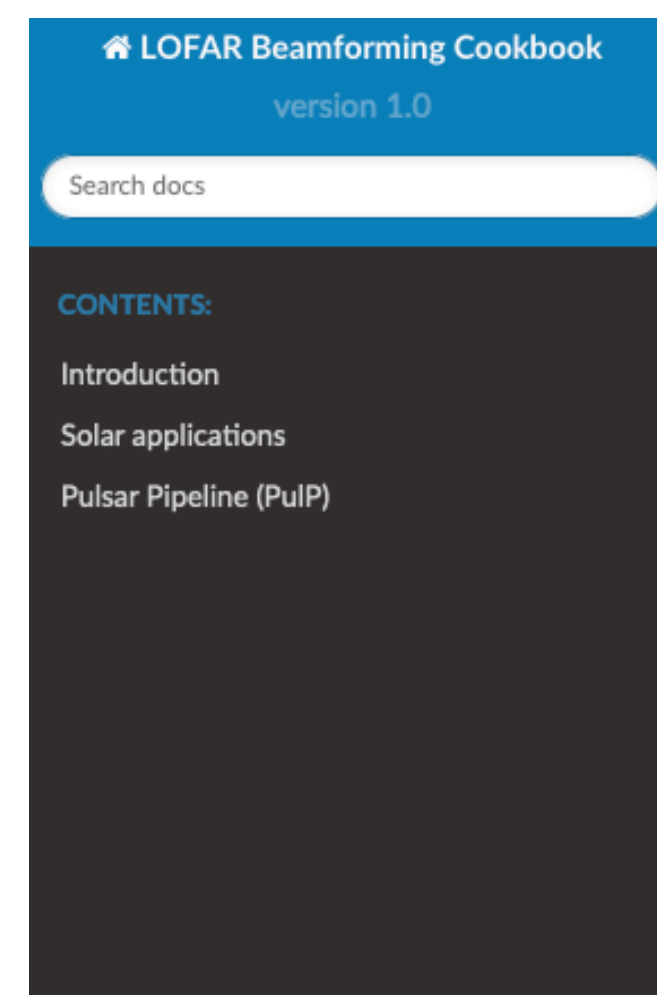
explanation and examples of external tools  
used for: software introduction — data  
inspection — calibration — cleaning — more ..

**Material of the 6th LOFAR Data School** that  
will become available on line.

Computing: **CEP3 commissioning cluster**

<https://support.astron.nl/LOFARImagingCookbook/gettingstarted.html#cep3> and <https://www.astron.nl/lofarwiki/doku.php?id=cep3:start>

HAVE FUN!



[Docs](#) » Welcome to LOFAR Beamforming Cookbook

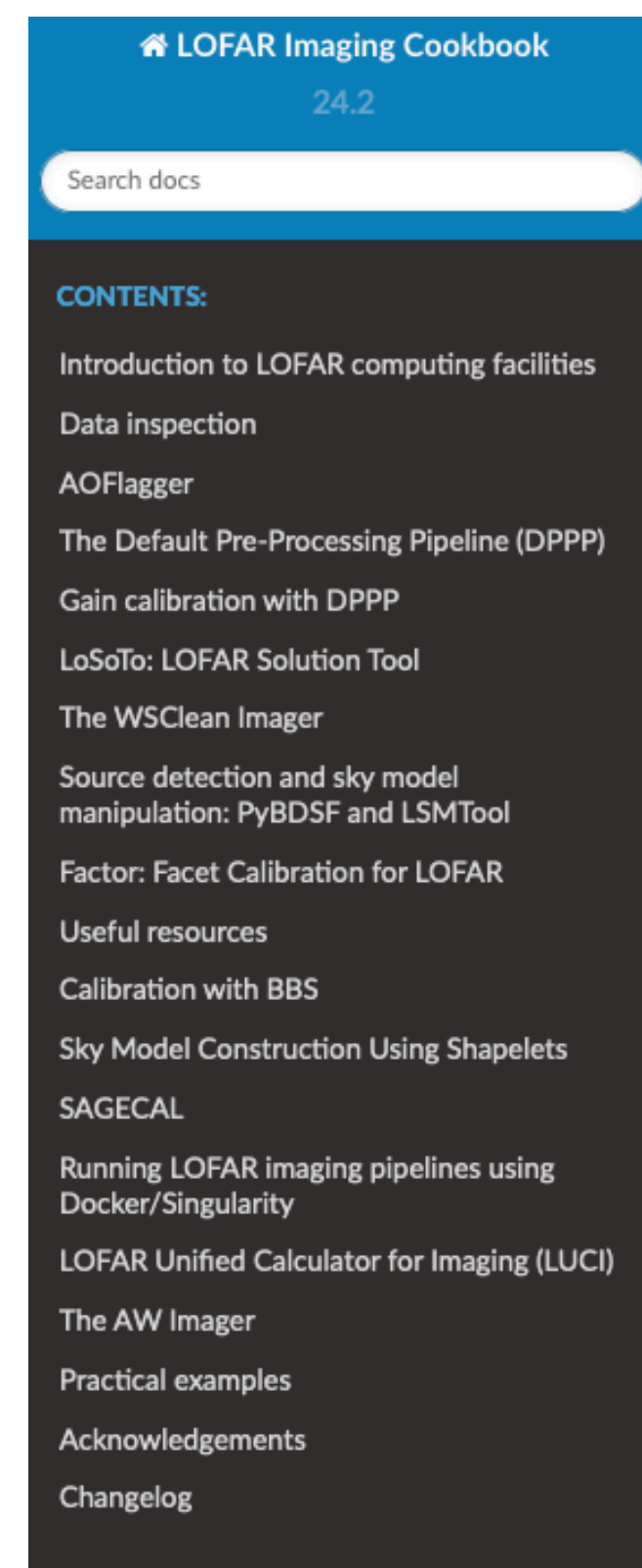
[View page source](#)

## Welcome to LOFAR Beamforming Cookbook [↗](#)

Beamforming means “pointing” an antenna array and shaping the beam by giving each antenna the right delay, then adding the signals. Beam-formers in place at the LOFAR stations and the correlator apply phase offsets to the signal to “point” beam(s) in particular directions and track known sources. The beam-formed data from LOFAR are used for applications requiring high time and/or frequency resolution, such as pulsars, dynamic spectra of solar and planetary emission, and scintillation. This cookbook provides a description of the beam-forming capabilities of LOFAR including the format of recorded data and the reading of these data using Python. A “dynamic spectrum toolkit” developed for reduction and visualisation of these data is also demonstrated.

### Contents:

- [Introduction](#)
- [Solar applications](#)
- [Pulsar Pipeline \(PulP\)](#)



[»](#) Welcome to LOFAR Imaging Cookbook's documentation!

[View page source](#)

## Welcome to LOFAR Imaging Cookbook's documentation!

This web site can also be downloaded as a pdf [LOFARImagingCookbook\\_latest.pdf](#).

### Contents:

- [Introduction to LOFAR computing facilities](#)
- [Data inspection](#)
- [AOFlagger](#)
- [The Default Pre-Processing Pipeline \(DPPP\)](#)
- [Gain calibration with DPPP](#)
- [LoSoTo: LOFAR Solution Tool](#)
- [The WSClean Imager](#)
- [Source detection and sky model manipulation: PyBDSF and LSMTTool](#)
- [Factor: Facet Calibration for LOFAR](#)
- [Useful resources](#)
- [Calibration with BBS](#)
- [Sky Model Construction Using Shapelets](#)
- [SAGECAL](#)
- [Running LOFAR imaging pipelines using Docker/Singularity](#)
- [LOFAR Unified Calculator for Imaging \(LUCI\)](#)
- [The AW Imager](#)
- [Practical examples](#)
- [Acknowledgements](#)
- [Changelog](#)



Proposal

Project  
preparation

On line  
processing

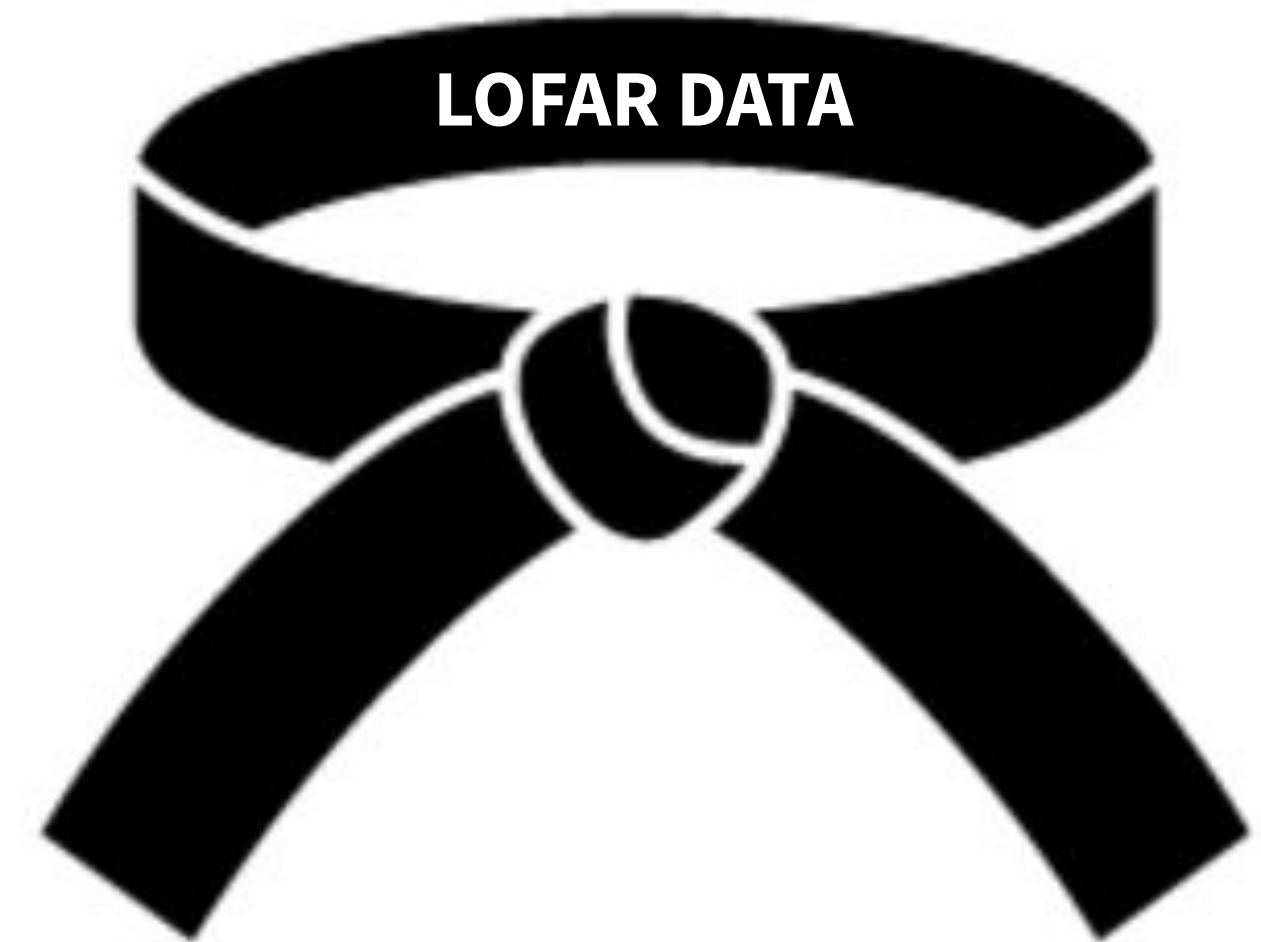
Data retrieval



Archival

Observations

LOFAR DATA



6th LOFAR Data School

