

# LOFAR user interaction with the Radio Observatory

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ASTRON  
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# Outline

- LOFAR: Science Operations & Support
- how to submit a support ticket
- how to submit an observing proposal
- commissioning proposals
- observing schedule and observing setups
- observation report to PI and policies about failed observing runs
- post-processing: Imaging & Beamformed Cookbooks
- user compute cluster CEP3



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Photo: Jelic et al.

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# Science Operations & Support (SOS)

- SOS is first point of contact for scientific users of LOFAR.
- SOS group is in continuous contact with **SDOS group (software)** and **Operations&Maintenance group (engineers)**
- contact with SOS through RO helpdesk at <https://support.astron.nl/rohelfdesk>



LOFAR

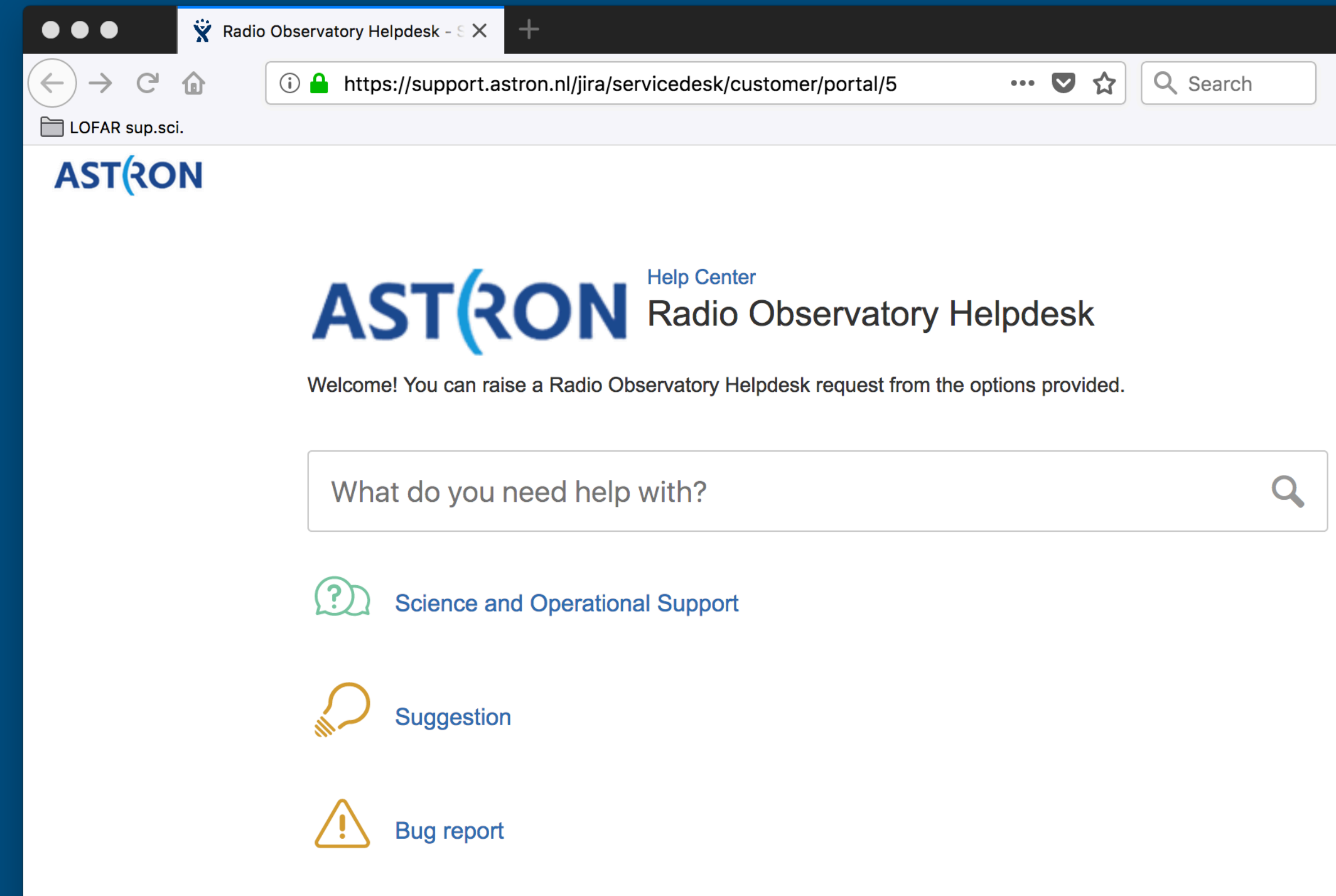
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# how to submit a support ticket

- contact with SOS through RO helpdesk at <https://support.astron.nl/rohelfdesk>
- log in (or sign up) → select type of request → provide details → click **create**
- ticket receives unique identification number
- updates from Radio Observatory and responses or additional information from user are added as 'comments' on ticket.
- automatic email notifications sent to submitter



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# how to submit an observing proposal

- read call for proposals (issued two times per year, typically in July and January)  
<http://www.astron.nl/radio-observatory/astronomers/asking-time/asking-time-0>
- read documentation about LOFAR system capabilities  
<http://www.astron.nl/radio-observatory/astronomers/technical-information/lofar-technical-information>
- prepare and submit your proposal in the **NorthStar proposal submission tool**  
(proposal deadlines in March and September, 2.5 months before start of semester)  
<https://lofar.astron.nl/proposal>
- technical review (RO+) and scientific assessment (external Programme Committee)
- await decision



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# proposals: call

- proposal calls go out 4.5 months before the start of each 'cycle' / semester:
  - **Dec – May** (call in Jul, deadline in Sep)
  - **Jun – Nov** (call in Jan, deadline in Mar)
- calls are published online on Radio Observatory section of **ASTRON.nl** and distributed via lofar-news mailing list
- 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



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**AST(RO)N**

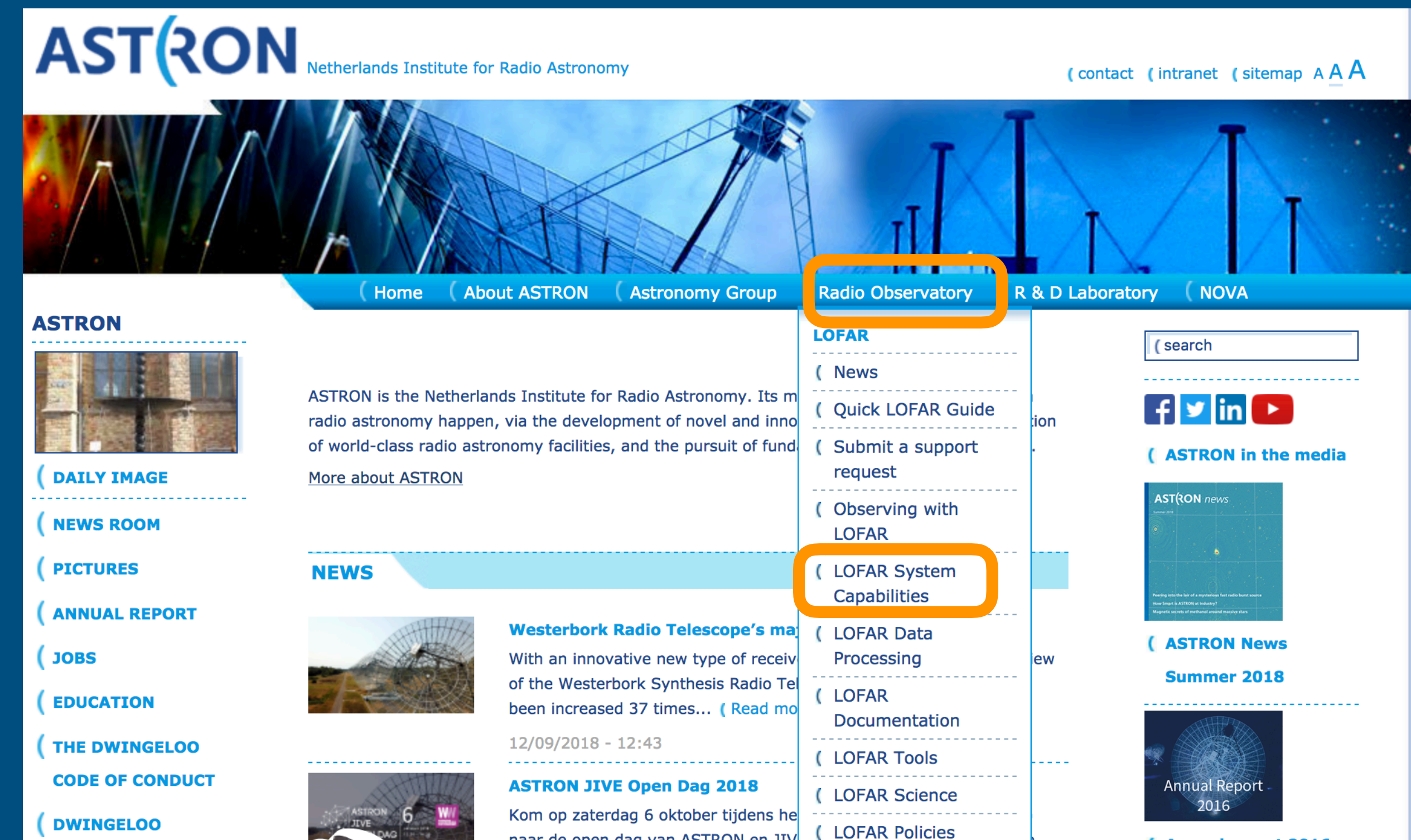
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# proposals: documentation about system capabilities

- LOFAR webpages contain large amount of documentation about the current system and its capabilities
  - observing modes, sensitivity, resolution (angular, time, frequency), ...

- extensive description of LOFAR system in overview paper by Van Haarlem et al. (2013, A&A)



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# proposals: LOFAR calculators



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# proposals: LOFAR calculators

- data size and processing time calculator

## LOFAR data size and processing time Calculator

Measurement type ☐ Beamformed ☒ Interferometer ☐ Image noise  
Observation time  [s]

### UV Data:

Amount of core stations  [int]  
Amount of remote stations  [int]  
Amount of international stations  [int]  
HBA dual ☒  
Channels Per Subband  [int]  
Subbands  [int]  
Integration Steps

Data size: 10148.125 GB



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# proposals: LOFAR calculators

- data size and processing time calculator
- frequency-to-subband converter

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HBA dual ☒  
Channels Per Subband  [int]  
Subbands  [int]  
Integration Steps

Data size: 10148.125 GB

### LOFAR Frequency Calculator

#### Instrument

☒ LBA  
☐ HBA

#### Clock

☒ 200 MHz  
☐ 160 MHz

#### Filter

#### Subband

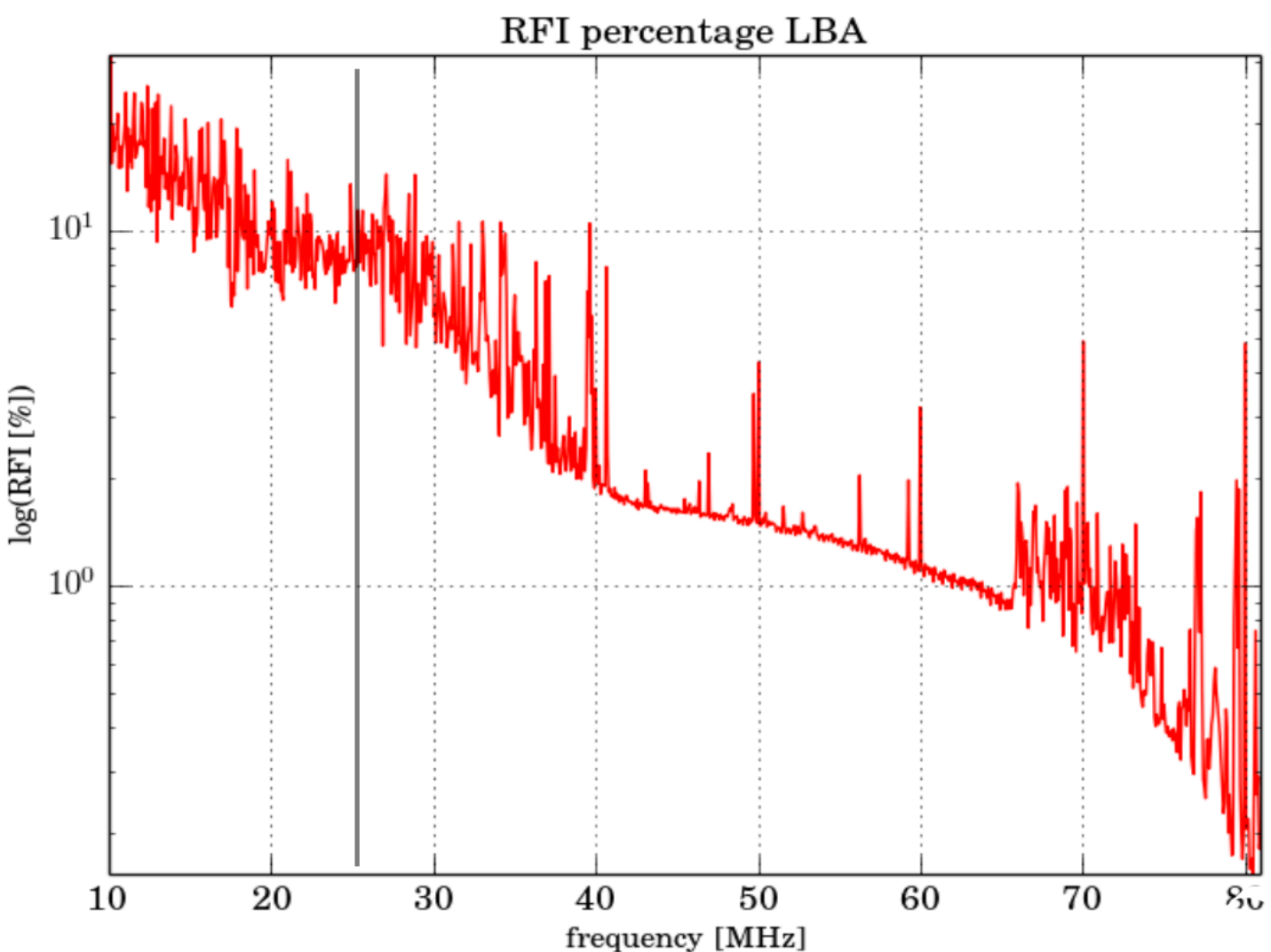
Manual selection:

Frequency 25.30000 MHz

Manual selection:  MHz

Note: The RFI plot in the right panel is intended to be only a navigation aid.

LBA  
200 MHz  
10-90 MHz  
Subband: ---  
Corresponds to: invalid frequency  
Frequency: 25.30000 MHz  
Corresponds to: 129  
RFI percentage: 7.92599 %



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# proposals: LOFAR calculators

- data size and processing time calculator
- frequency-to-subband con
- sky visibility tool

## LOFAR data size and processing time Calculator

### LOFAR target visibility calculator

- For a given target, this calculator displays its visibility and elevation over a 24hr period at a date set by the user.
- The default minimum elevation is 20 degrees, it can be modified by the user.
- The user can select to display the visibility of the LOFAR standard calibrator sources, some solar system targets and some of the brightest radio sources on the sky (the A team).
- The plotted graphics can be manipulated using the pan and zoom controls in the plot menu.
- The angular distance between any selected sources and the target is shown at the bottom of the page.

Target

TMC1A

Resolve

RA

04:39:35.19

[hh:mm:ss.s]

DEC

+25:41:44.7

[dd:mm:ss.s]

Date

09/17/2018

[mm/dd/yyyy]

Min. elevation

[deg]

A team:

Cyg A ☒

Cas A ☐

Tau A ☐

Vir A ☐

Solar system:

Sun ☒

Jupiter ☐

Saturn ☐

LOFAR calibrators:

3C 48 ☒

3C 147 ☒

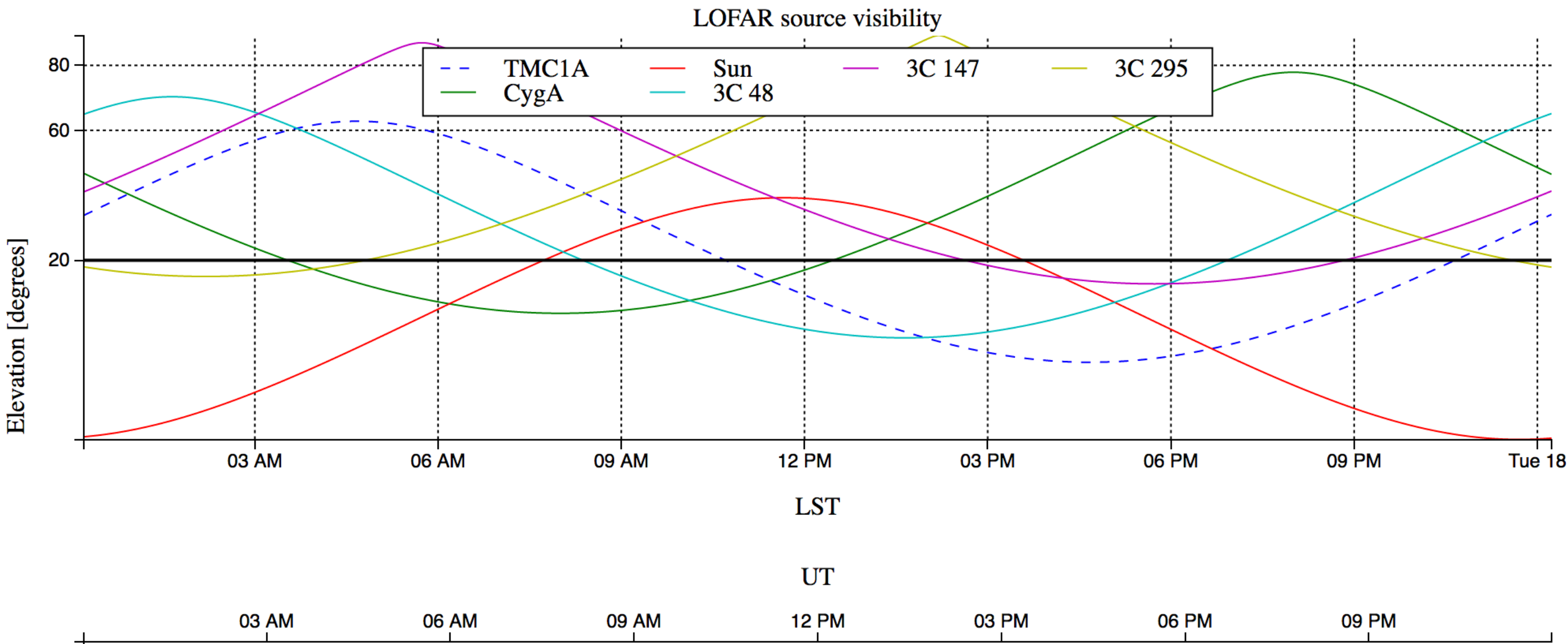
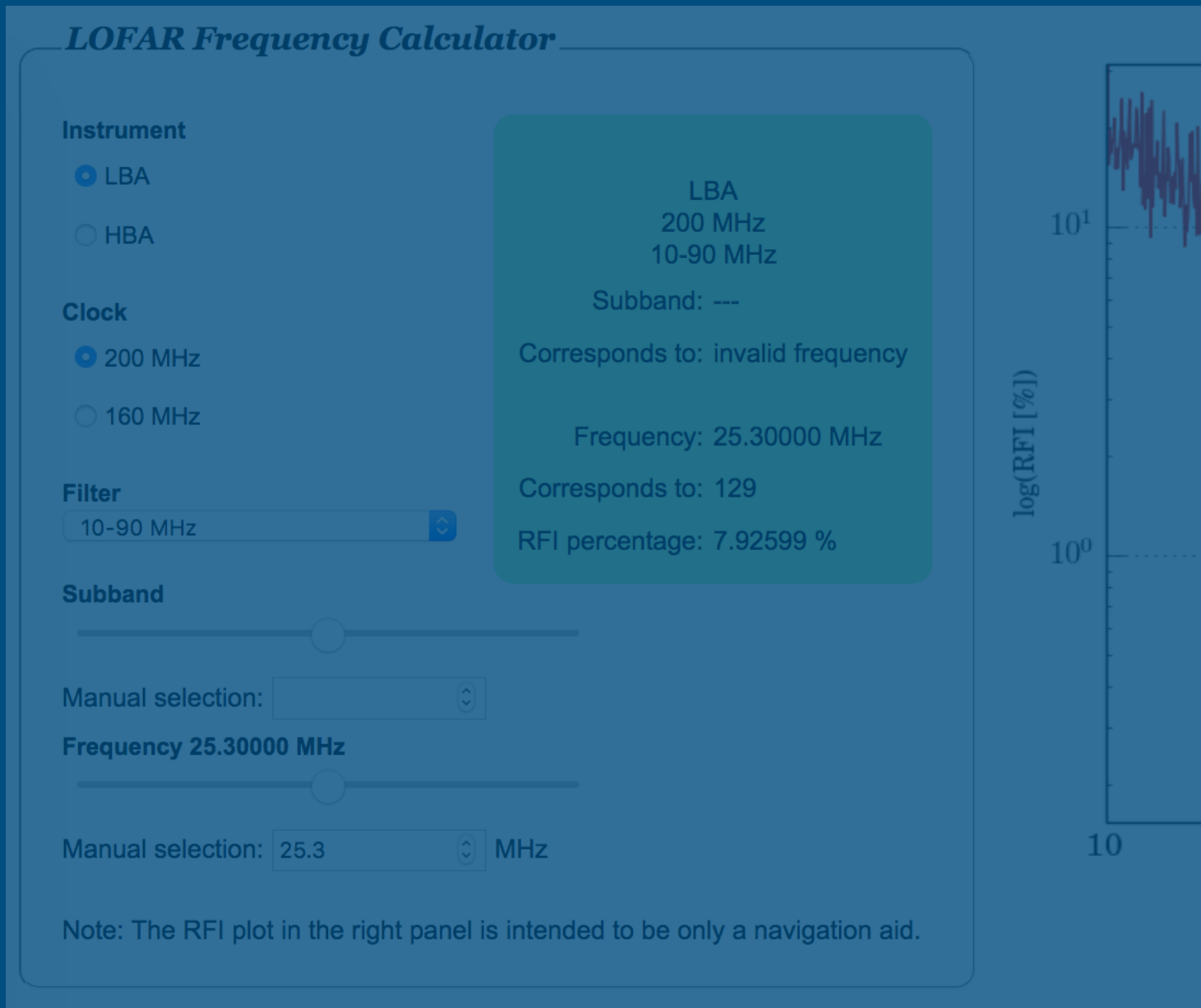
3C 295 ☒

3C 196 ☐

3C 380 ☐

3C 286 ☐

CTD 93 ☐





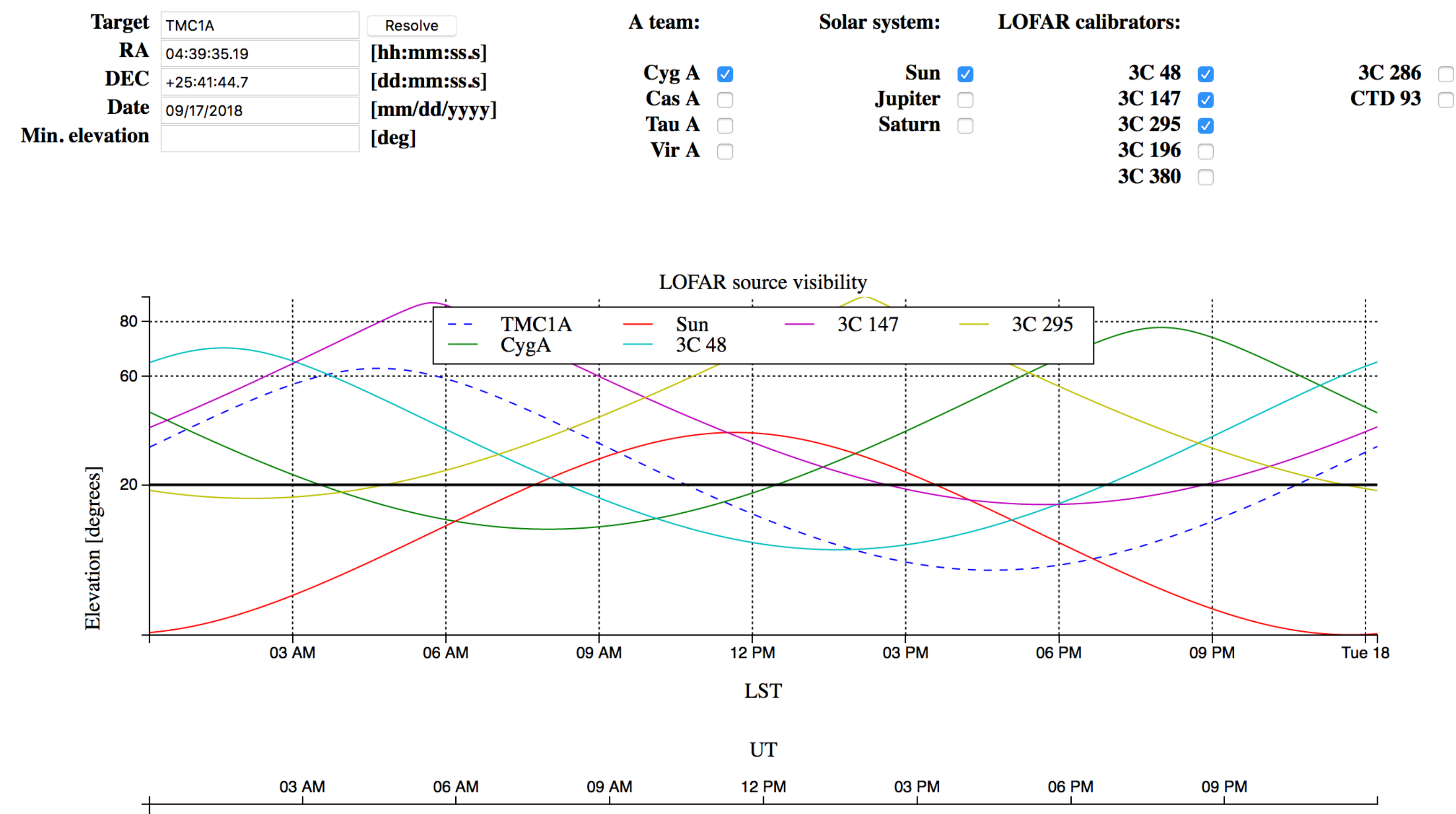
# proposals: LOFAR calculators

- data size and processing time calculator
- frequency-to-subband con
- sky visibility tool
- linked on RO web pages

## LOFAR data size and processing time Calculator

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- The default minimum elevation is 20 degrees, it can be modified by the user.
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LOFAR source visibility

Elevation [degrees]

80

60

20

0

TMC1A

CygA

Sun

3C 48

3C 147

3C 295

03 AM

06 AM

09 AM

12 PM

03 PM

06 PM

09 PM

Tue 18

LST

UT

03 AM

06 AM

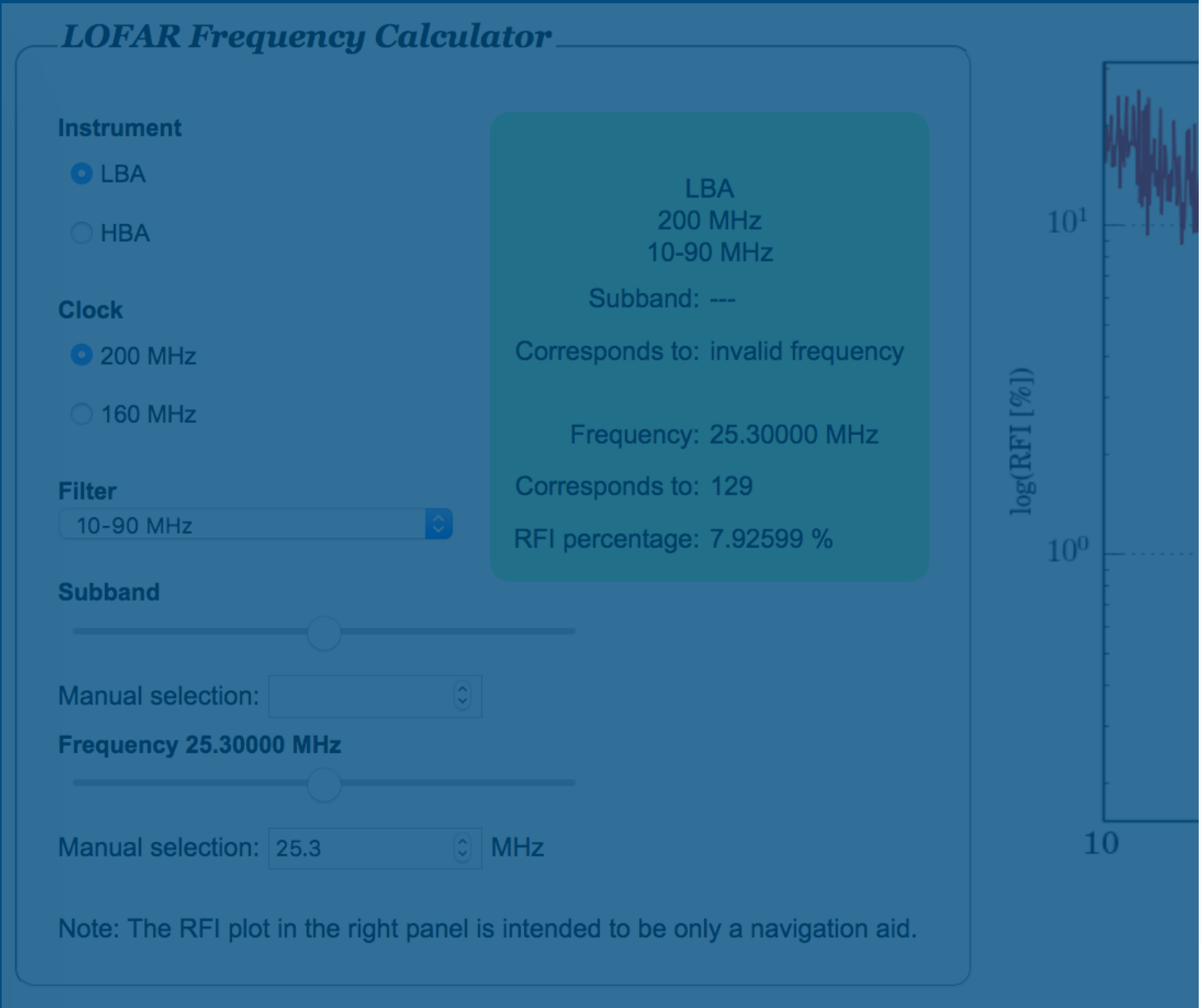
09 AM

12 PM

03 PM

06 PM

09 PM





# proposals: Northstar tool

- fill in all required fields and upload scientific justification document (pdf)

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 Matthijs van der Wiel	ASTRON	Netherlands	wiel@astron.nl	<input type="checkbox"/>				
no	<input type="radio"/>	<input type="radio"/>	Niels Bohr	København Universitet	Denmark	nielsbohr@bohr.dk	<input type="checkbox"/>	invite	Edit	Delete	

Select Proposal to import Applicant -- None Specified --

Add applicant from other proposal

Add new applicant

Save and Continue

Save and Preview

Save and Exit

Save and Submit

Quit without saving



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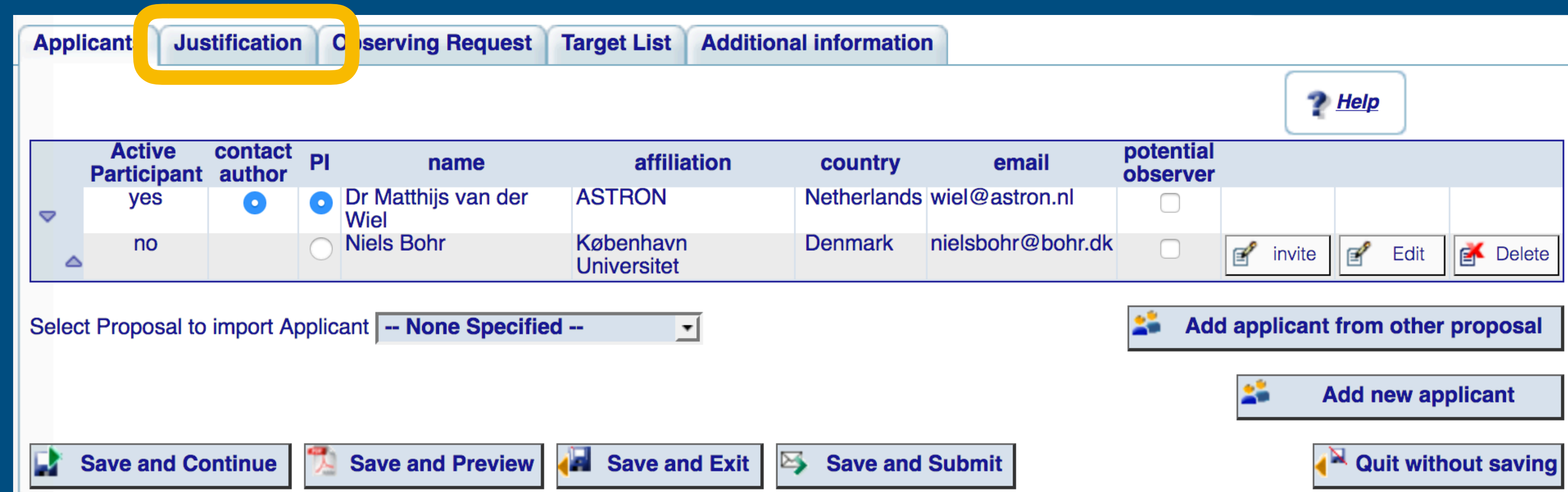
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# proposals: Northstar tool

- fill in all required fields and upload scientific justification document (pdf)



The screenshot shows the Northstar tool interface with the 'Justification' tab highlighted. The interface includes a navigation bar with tabs: Applicant, Justification, Observing Request, Target List, and Additional information. A 'Help' button is located in the top right corner. Below the navigation bar is a table with the following columns: Active Participant, contact author, PI, name, affiliation, country, email, and potential observer. The table contains two rows of data. The first row shows 'yes' for Active Participant, a blue circle for contact author, a blue circle for PI, 'Dr Matthijs van der Wiel' for name, 'ASTRON' for affiliation, 'Netherlands' for country, 'wiel@astron.nl' for email, and a checkbox for potential observer. The second row shows 'no' for Active Participant, a grey circle for contact author, a grey circle for PI, 'Niels Bohr' for name, 'København Universitet' for affiliation, 'Denmark' for country, 'nielsbohr@bohr.dk' for email, and a checkbox for potential observer. Below the table is a dropdown menu labeled 'Select Proposal to import Applicant' with the value '-- None Specified --'. To the right of the dropdown are two buttons: 'Add applicant from other proposal' and 'Add new applicant'. At the bottom of the interface are five buttons: 'Save and Continue', 'Save and Preview', 'Save and Exit', 'Save and Submit', and 'Quit without saving'.

Active Participant	contact author	PI	name	affiliation	country	email	potential observer
yes	<input checked="" type="radio"/>	<input checked="" type="radio"/>	Dr Matthijs van der Wiel	ASTRON	Netherlands	wiel@astron.nl	<input type="checkbox"/>
no	<input type="radio"/>	<input type="radio"/>	Niels Bohr	København Universitet	Denmark	nielsbohr@bohr.dk	<input type="checkbox"/>

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

Buttons: Add applicant from other proposal, Add new applicant, Save and Continue, Save and Preview, Save and Exit, Save and Submit, Quit without saving.

- justification



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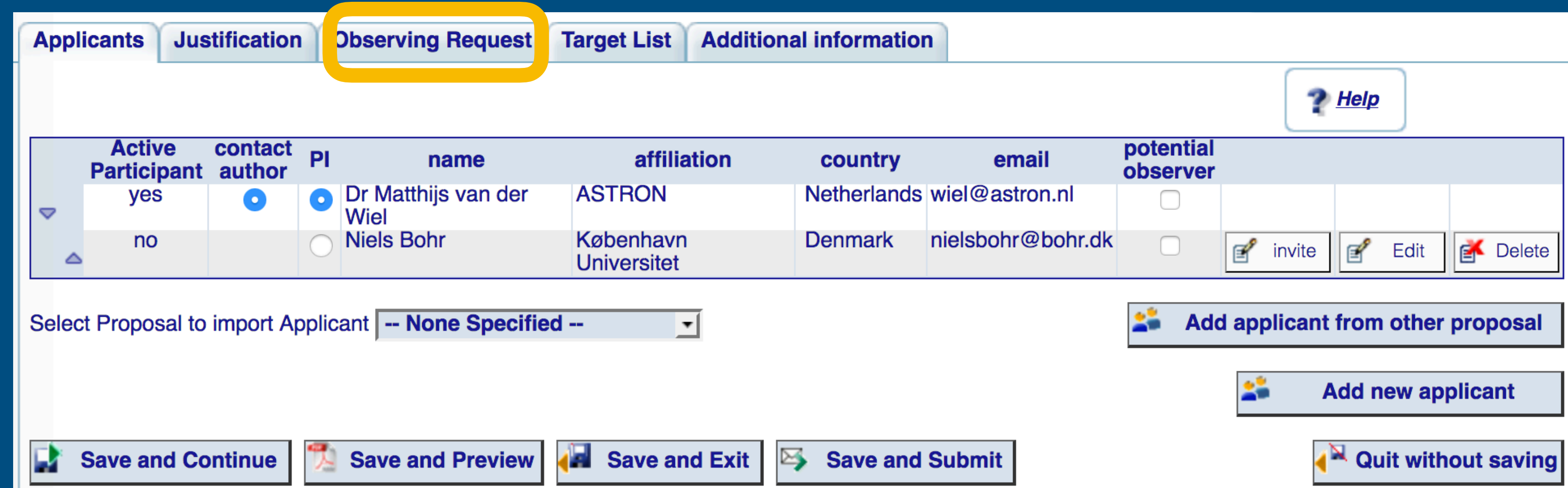
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# proposals: Northstar tool

- fill in all required fields and upload scientific justification document (pdf)



The screenshot shows the 'Observing Request' tab of the Northstar tool. The interface includes a table of applicants, a dropdown for selecting a proposal to import, and several action buttons at the bottom.

Active Participant	contact author	PI	name	affiliation	country	email	potential observer
yes	<input checked="" type="radio"/>	<input checked="" type="radio"/>	Dr Matthijs van der Wiel	ASTRON	Netherlands	wiel@astron.nl	<input type="checkbox"/>
no	<input type="radio"/>	<input type="radio"/>	Niels Bohr	København Universitet	Denmark	nielsbohr@bohr.dk	<input type="checkbox"/>

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

Buttons: [Add applicant from other proposal](#), [Add new applicant](#), [Save and Continue](#), [Save and Preview](#), [Save and Exit](#), [Save and Submit](#), [Quit without saving](#)

- justification
- define setup of observations and pipelines



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# proposals: Northstar tool (continued)

- **target list:**  
couple each target to a defined observation setup (and optionally pipelines)
- observing and pipeline setups need to be defined before you can couple them to a target

ApplicantsJustificationObserving RequestTarget ListAdditional 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, the Radio Observatory 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*

Run#	Field	RA	Dec	Epoch	Time(Hours)	Subbands	Total Subbands	Calibr.	Obs.	Pipe.	Comments
1	TMC1A	04:39:35.1900	+25:41:44.700	J2000	1	100..200	101		A		<div>EditCopyDelete</div>

New Target :

Calibration beam? : ☐ Yes ☒ No

Field name : 

Get RA & Dec from Simbad

 NB: proposers should check coordinates

RightAscension :  hh:mm[:ss.ss]

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

Epoch :

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# :

Exposure time in minutes :

Select observation :

Select processing pipeline :

Comments :

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

Commit to list of targets

Clear target form

Upload a target list

Delete all targets

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10



# proposals: Northstar tool (continued)

- **target list:**  
couple each target to a defined observation setup  
(and optionally pipelines)
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Applicants Justification Observing Request **Target List** Additional information

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1	TMC1A	04:39:35.1900	+25:41:44.700	J2000	1	100..200	101		A		Edit  Copy  Delete

New Target :

Calibration beam? : ☐ Yes ☒ No

Field name :  \* [Get RA & Dec from Simbad](#) NB: proposers should check coordinates

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

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

Epoch :

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# :

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 :

Commit to list of targets Clear target form Upload a target list Delete all targets



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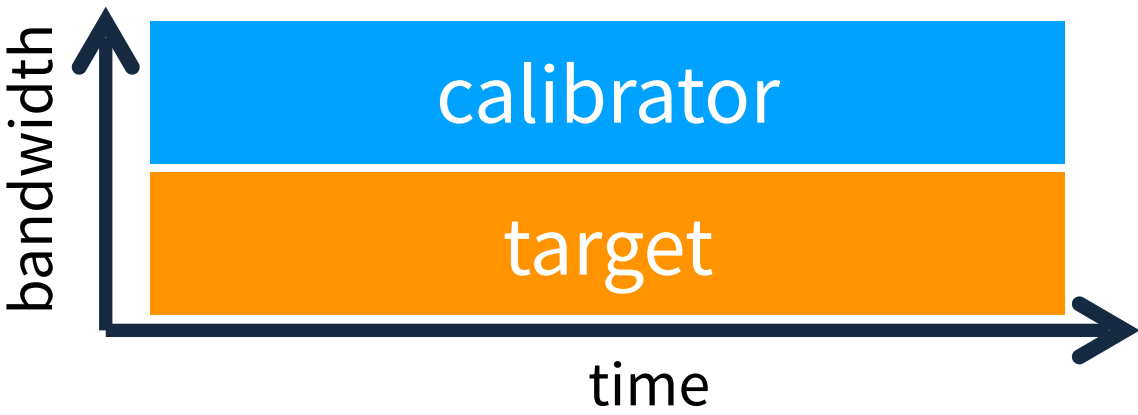
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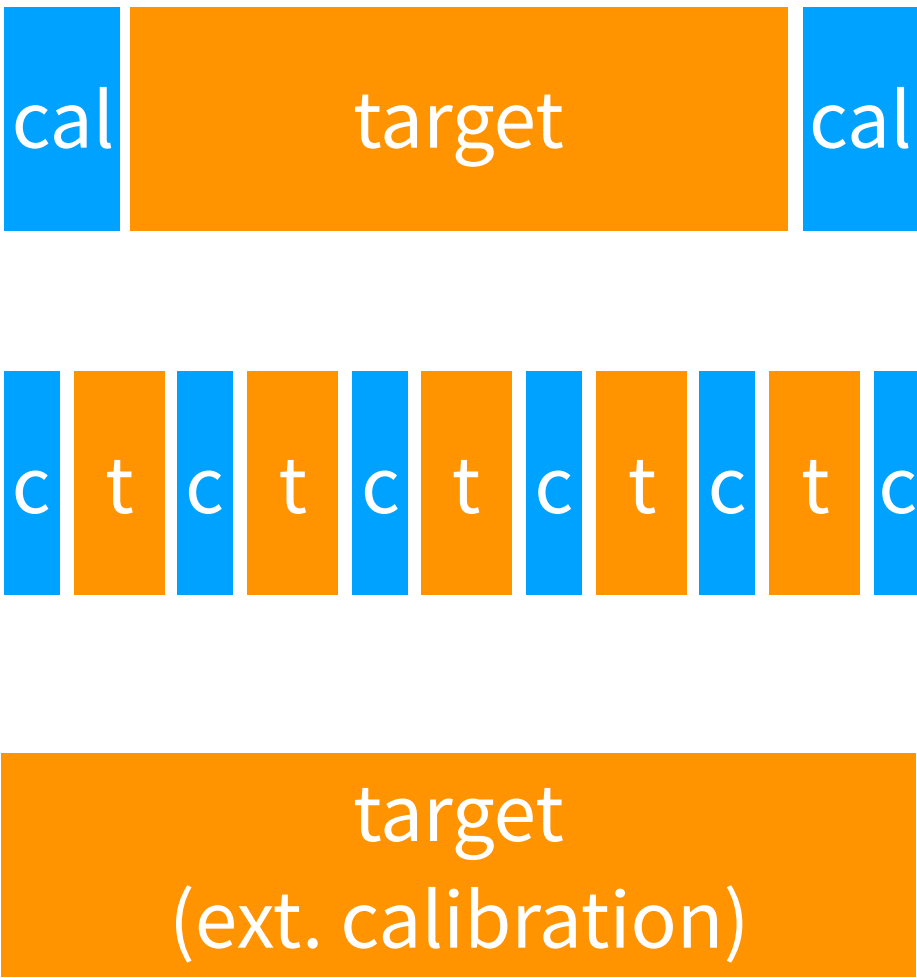
# proposals: observing strategy

- devise and describe your observing strategy  
mandatory “observation strategy” box in Northstar
- specify any scheduling constraints

typical LBA  
interferometric



typical HBA  
interferometric



Applicants Justification Observing Request Target List Additional information

Help

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

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1	TMC1A	04:39:35.1900	+25:41:44.700	J2000	1	100..200	101		A		Edit  Copy  Delete

**New Target :**

Calibration beam? : ☐ Yes ☒ No

Field name :  \* [Get RA & Dec from Simbad](#) NB: proposers should check coordinates

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

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

Epoch :

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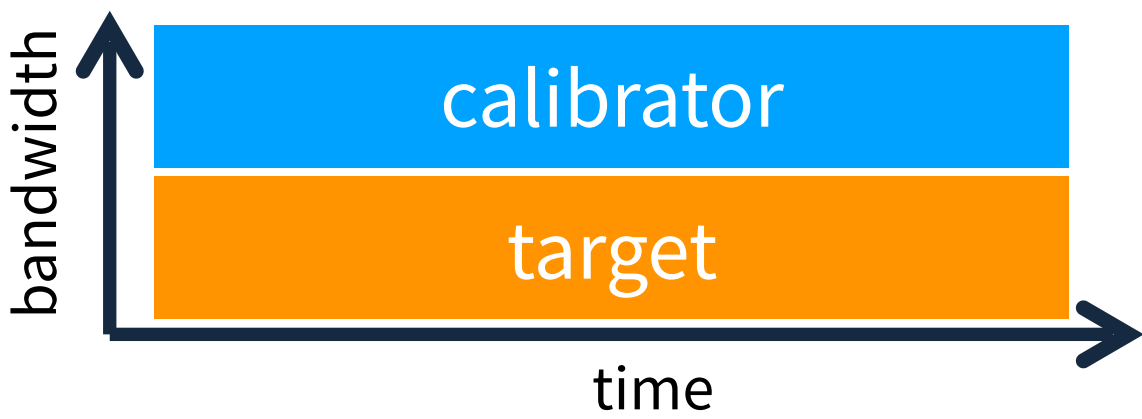
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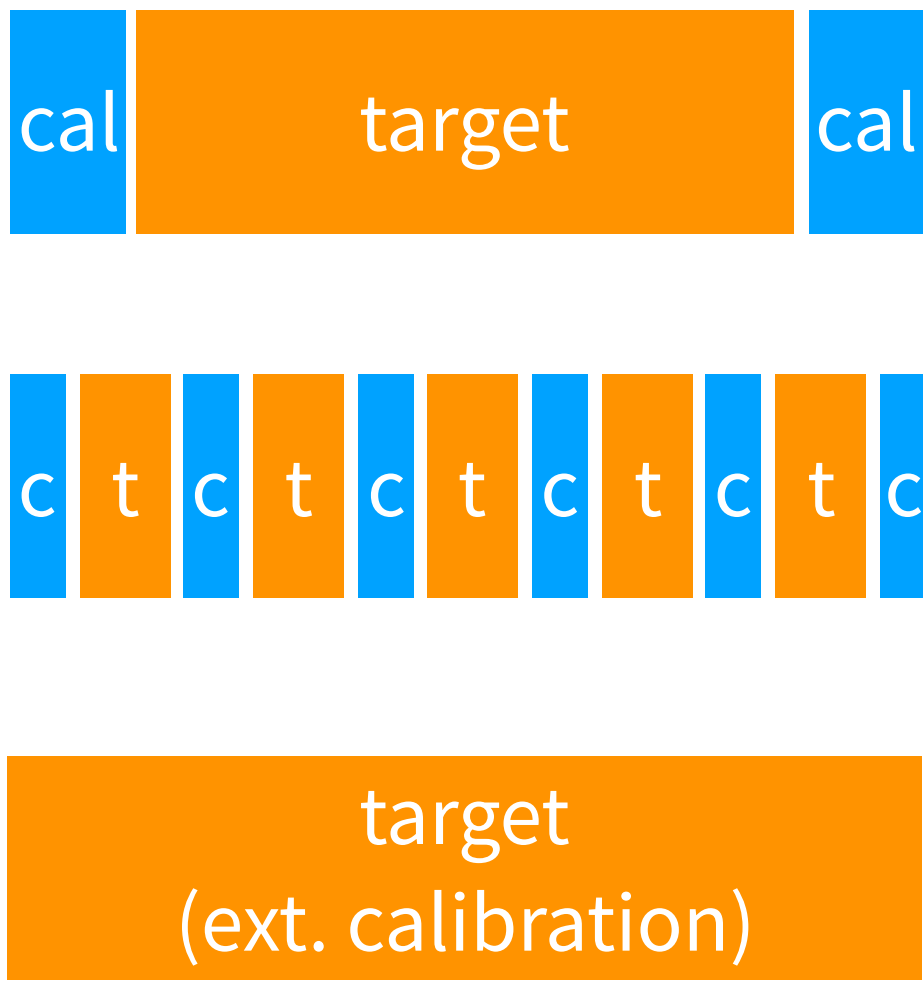
# proposals: observing strategy

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- specify any scheduling constraints

typical LBA  
interferometric



typical HBA  
interferometric



Application **Justification** Observing Request Target List Additional information [Help](#)

**Targets :**  
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1	TMC1A	04:39:35.1900	+25:41:44.700	J2000	1	100..200	101		A		<a href="#">Edit</a> <a href="#">Copy</a> <a href="#">Delete</a>

**New Target :**

Calibration beam? : ☐ Yes ☒ No

Field name :  [Get RA & Dec from Simbad](#) NB: proposers should check coordinates

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

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

Epoch :



# proposals: Northstar documentation and help

- The NorthStar front page links to the call for proposals and to the ‘walkthrough manual’

The screenshot shows the 'Proposal List' web interface. At the top, there are navigation links: 'My Account', 'Help Index', 'Send Questions/Problems', and 'Logout'. A central message box contains a welcome message and a list of links: 'Information about asking for time', 'Call for Proposals', 'FAQ & Known Issues', and 'Walkthrough manual of NorthStar [PDF]'. Below this, there is a 'Read me first!' button. At the bottom, there is a filter for 'Show reviewed proposals' with radio buttons for 'Yes' and 'No'. Below the filter is a table with columns: 'Proj\_ID', 'PI', 'Title', 'Community', 'Category', 'Status', and 'Options'. The first row of the table is 'LOFAR telescope Proposals'.

Proposal List

[My Account](#) [Help Index](#) [Send Questions/Problems](#) [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](#)  
[FAQ & Known Issues](#)  
[Walkthrough manual of NorthStar \[PDF\]](#)

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

Show reviewed proposals : ☐ Yes ☒ No

Proj_ID	PI	Title	Community	Category	Status	Options
LOFAR telescope Proposals						
van der Wiel test proposal in Cycle 10 LOFAR community single cycle						



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# proposals: Northstar documentation and help

- The NorthStar front page links to the call for proposals and to the ‘walkthrough manual’

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[My Account](#) [Help Index](#) [Send Questions/Problems](#) [Logout](#)

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

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

Show reviewed proposals : ☐ Yes ☒ No

Proj_ID	PI	Title	Community	Category	Status	Options
LOFAR telescope Proposals						
van der Wiel test proposal in Cycle 10 LOFAR community single cycle						



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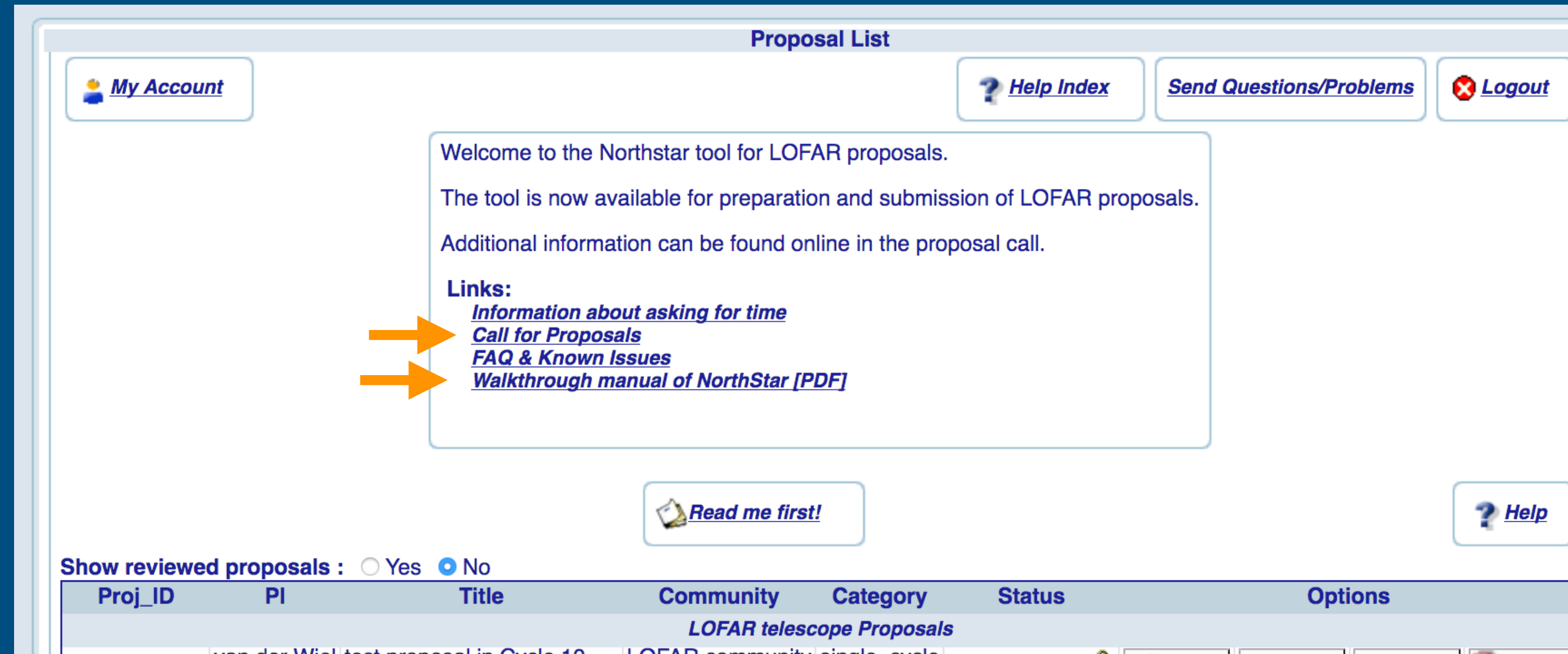
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# proposals: Northstar documentation and help

- The NorthStar front page links to the call for proposals and to the ‘walkthrough manual’



- for questions: contact SOS through the [RO helpdesk](#)



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# proposals: review process and allocations

- 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
  - e.g., '**LC10\_005**': fifth project submitted for **Cycle 10** single-cycle category;
  - '**LT10\_012**': twelfth project submitted for long-term period May 2018 – May 2020.
- at last deadline (Sep 6th), only single-cycle (Cycle 11) projects were solicited, since long-term projects had already been allocated last semester — still running.



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# commissioning ideas?

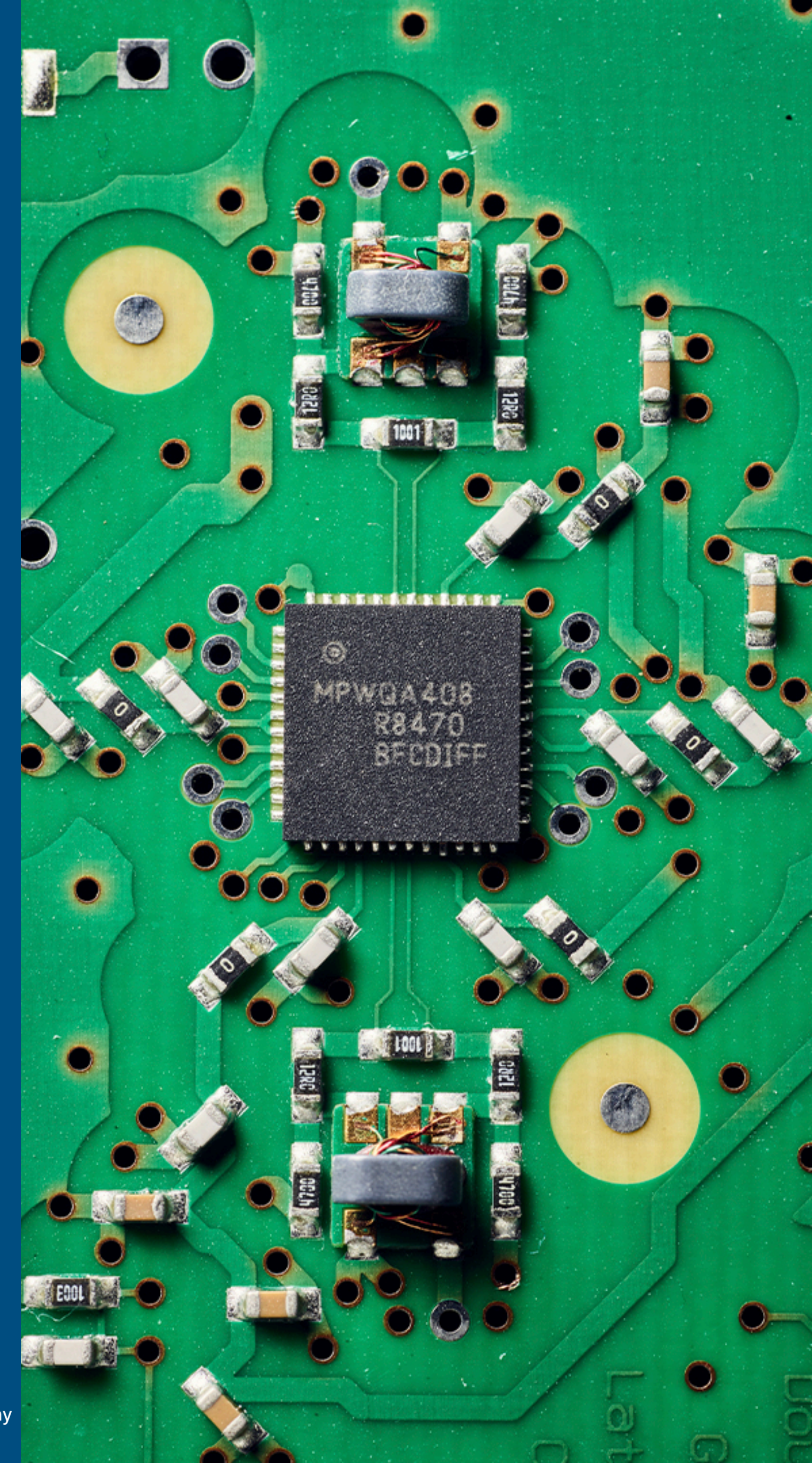
- Planning to use LOFAR in new and unexplored ways?
- separate category of projects: '**commissioning**'
- instructions for submitting a commissioning proposal are given on Radio Observatory webpages:  
<http://www.astron.nl/radio-observatory/observing/asking-time/asking-time>



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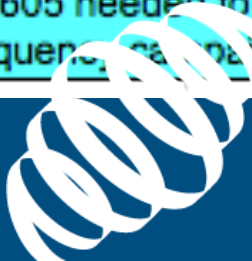




# Observing schedule

- observing schedules of current and past cycles are publicly shared (read-only)
- changes may be applied on a daily basis

Week 38		UT	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Approximate LST			0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Sept	17	Mon	(c) LT10_010 272 - P018+41 & P026+44 - 8hrs - HBA - LST 21-05					LT10_001+LT10_011+LT10_017 - Filler - 4hrs				FE		(c) LT10_010 225 - P213+62 & P213+57 - 8hrs - HBA							LT10_001+LT10_011+LT10_017 - Filler - 1hrs		(c) LC10_014 1 - M31 & P004+41 - 8hrs - HBA			
	18	Tue	(c) LC10_014 1 - M31 & P004+41 - 8hrs - HBA			test time		(c) LC5_005 - LBCS - 3hrs - HBA			test time		all international stations to local mode at 9 UT	test time	(t) LT10_005 - LOTAAS - 1hr - HBA	LT10_015 - J1235 - 10min - HBA (2)	(t) LT10_005 - LOTAAS - 7hrs - HBA						LT10_001+LT10_011+LT10_017 - Filler - 4hrs			
	19	Wed	LT10_001+LT10_011+LT10_017 - Filler - 6hrs					RT tests				LC10_007 1.1 - bootes - 8hrs - LBA - all international stations to ILT mode at 14:30 UT							test time	FE	test time	(c) LT10_010 182 - P359+21 & P353+21 - 8hrs - HBA				
	20	Thu	(c) LT10_010 182 - P359+21 & P353+21 - 8hrs - HBA			test time		(c) LT10_010 94 - P154+35 & P156+30 - 8hrs - HBA							(c) LT10_010 267.1 - P243+12 & P238+12 - 4hrs - HBA EXPERT				test time		(c) LT10_010 71 - P008+23 & P008+28 - 8hrs - HBA					
	21	Fri	(c) LT10_010 71 - P008+23 & P008+28 - 8hrs - HBA			LT10_001+LT10_011+LT10_017 - Filler - 2hrs		FE		all international stations to local mode at 9 UT	(t) LT10_005 - LOTAAS - 3hrs - HBA		test time		(t) LC10_002 1.3 - B1508+55 - 3hrs - HBA/LBA/HBAh *		LT10_001+LT10_011+LT10_017 - Filler - 4hrs				(t) LT10_005 - LOTAAS - 3hrs - HBA					
	22	Sat	LT10_001+LT10_011+LT10_017 - Filler - 9hrs								LC10_007 1.2 - bootes - 8hrs - LBA							test time	LT10_001+LT10_011+LT10_017 - Filler - 2hrs		LC10_019 1 - Cyg X-2 - 8hrs - HBA - offtransit					
	23	Sun	LC10_019 1 - Cyg X-2 - 8hrs - HBA - offtransit			LT10_001+LT10_011+LT10_017 - Filler - 5hrs					LC10_007 1.3 - bootes - 8hrs - LBA - between 14 - 18 UT, DE601, DE602, DE605 needed to int. sta. owners for multifrequency design.							test time	LT10_001+LT10_011+LT10_017 - Filler - 6hrs							



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# Management of Measurements (MoM)

- project structured as folders  
*open, active, finished, suspended*
- observations  
(calibrator-target-calibrator)  
*open, approved, scheduled, running, finished, aborted*
- pipelines  
*open, approved, scheduled, running, finished, aborted*
- ingests to long term archive  
*approved, scheduled, running, finished, aborted*

Project Explorer					
<div> <div>Project List</div> <div>Query List</div> <div>Project Explorer</div> <div>Preferences</div> <div>Tools</div> <div>Admin</div> </div> <div> <div>Copy selected</div> <div>Move selected</div> <div>Delete selected</div> <div>Change status</div> <div>Export XML</div> <div>Update Feedback</div> </div>					
[-] [ ] [ ] LC7_027	Add	Details	OK Status	finished	Carbon radio recombination lines in 3C190
[+] [ ] [ ] 2016-12-16	Add	Details			
[-] [ ] [ ] 2017-01-14	Add	Details			repeat from Dec 16
[-] [ ] [ ] 3C196 cal	Add	Details			[G741596] 15min 3C196 calibrator (Preprocessing)
[+] [ ] [ ] 3C196/1/TO	Add	Details	finished		[565335] 3C196/1/TO (Target Observation)
[ ] [ ] [ ] 3C196/1.0/TP	Restart	Details	finished		[565337] 3C196/1.0/TP (Preprocessing)
[+] [ ] [ ] 3C190 target	Add	Details			[G741600] 4h 3C190 target (Preprocessing)
[+] [ ] [ ] 3C196 cal	Add	Details			[G741604] 15min 3C196 calibrator (Preprocessing)
[ ] [ ] [ ] 2017-01-14	Restart	Details	finished		100.0% Ingested (1233 of 1233)
[+] [ ] [ ] 2017-05-03	Add	Details			



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# MoM: chain of events

proposal specifies  
requested instrument  
setup

SOS prepares MoM  
specification

Project List Query List Project Explorer Preferences Tools Admin				
Copy selected Move selected Delete selected Change status Export XML Update Feedback				
Project Explorer			OK Status	
[-] [ ] [ ] LC7_027	Add Details	✓	finished	Carbon radio recombination lines in 3C190
[+] [ ] [ ] 2016-12-16	Add Details	⚠		
[-] [ ] [ ] 2017-01-14	Add Details	✓		repeat from Dec 16
[-] [ ] [ ] 3C196 cal	Add Details	✓		[G741596] 15min 3C196 calibrator (Preprocessing)
[+] [ ] [ ] 3C196/1/TO	Add Details	✓	finished	[565335] 3C196/1/TO (Target Observation)
[ ] [ ] [ ] 3C196/1.0/TP	Restart Details	✓	finished	[565337] 3C196/1.0/TP (Preprocessing)
[+] [ ] [ ] 3C190 target	Add Details	✓		[G741600] 4h 3C190 target (Preprocessing)
[+] [ ] [ ] 3C196 cal	Add Details	✓		[G741604] 15min 3C196 calibrator (Preprocessing)
[ ] [ ] [ ] 2017-01-14	Restart Details	✓	finished	100.0% Ingested (1233 of 1233)
[+] [ ] [ ] 2017-05-03	Add Details	✓		



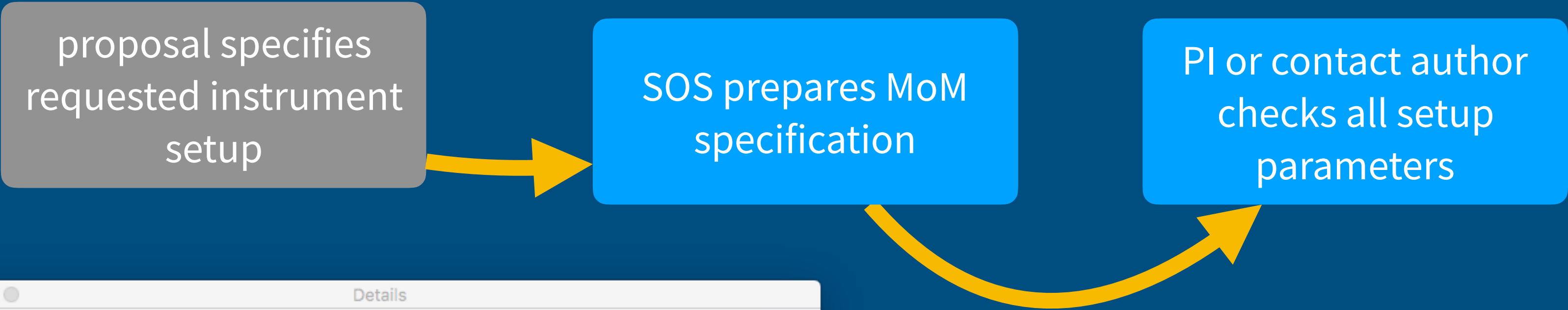
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# MoM: chain of events



Details

https://lofar.astron.nl/mom3/user/project/setUpMom2ObjectDetails.do?view=...

Details

LC10\_010 > 2018-09-14 RXJ1532.9 > 3C295 > 3C295/1.0/TP

General Info | Parset | Dataproducts | Reports and Remarks | Status History

Name: 3C295/1.0/TP

Description: 3C295/1.0/TP (Preprocessing)

Current status: finished(2018/09/14 12:38 UTC)

Type: Averaging Pipeline

Project name: LC10\_010

Child of: 3C295

mom2Id: 894295

SAS\_ID: 667520

Start time: 2018/09/14 12:15:54

End time: 2018/09/14 12:38:43

Duration: 1369.0

SAS Default Template: Preprocessing Pipeline

(Frequency Integration Step): N/A

(Time Integration Step): N/A

Demixing Freq Step (demixing): 64

Demixing Time Step (demixing): 10

Averaging Freq Step (demixing): 4

Averaging Time Step (demixing): 1

admin

status Export XML Update Feedback

OK Status	
finished	Carbon radio recombination lines in 3C190
	repeat from Dec 16
	[G741596] 15min 3C196 calibrator (Preprocessing)
finished	[565335] 3C196/1/TO (Target Observation)
finished	[565337] 3C196/1.0/TP (Preprocessing)
	[G741600] 4h 3C190 target (Preprocessing)
	[G741604] 15min 3C196 calibrator (Preprocessing)
finished	100.0% Ingested (1233 of 1233)

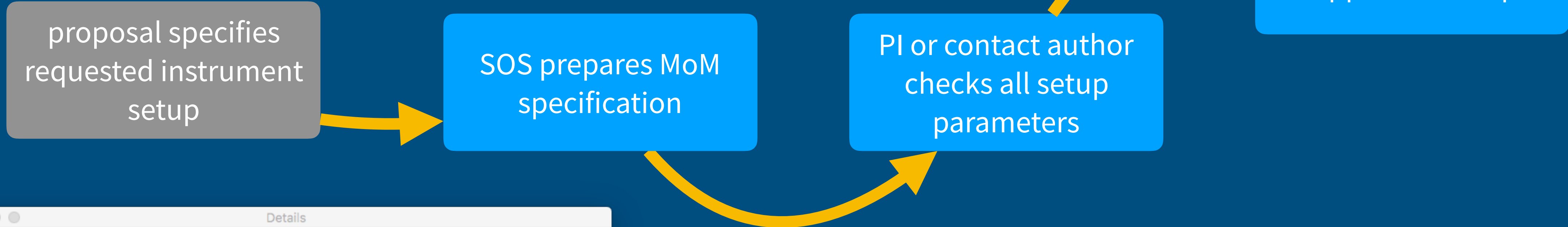


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# MoM: chain of events



Details

https://lofar.astron.nl/mom3/user/project/setUpMom2ObjectDetails.do?view=...

LC10\_010 > 2018-09-14 RXJ1532.9 > 3C295 > 3C295/1.0/TP

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Child of:	3C295
mom2Id	894295
SAS_ID	667520
Start time	2018/09/14 12:15:54
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Duration	1369.0
SAS Default Template	Preprocessing Pipeline
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(Time Integration Step)	N/A
Demixing Freq Step (demixing)	64
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admin

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finished	100.0% Ingested (1233 of 1233)



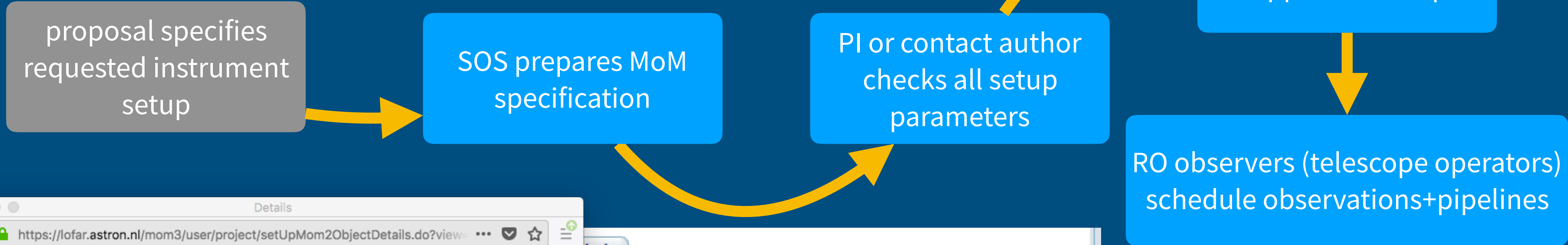
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# MoM: chain of events



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LC10\_010 > 2018-09-14 RXJ1532.9 > 3C295 > 3C295/1.0/TP

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finished	100.0% Ingested (1233 of 1233)



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# MoM: chain of events

proposal specifies  
requested instrument  
setup

SOS prepares MoM  
specification

PI or contact author  
checks all setup  
parameters

SOS (adjusts and  
'approves' setup

RO observers (telescope operators)  
schedule observations+pipelines

SOS sends observation report to  
PI / contact author  
[see QA lecture, Vanessa Moss]  
**and starts ingest to LTA**

Details

https://lofar.astron.nl/mom3/user/project/setUpMom2ObjectDetails.do?view=...

LC10\_010 > 2018-09-14 RXJ1532.9 > 3C295 > 3C295/1.0/TP

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RO observers (telescope operators)  
schedule observations+pipelines

SOS sends observation report to  
PI / contact author  
[see QA lecture, Vanessa Moss]  
**and starts ingest to LTA**

PI or associate downloads  
data from LTA  
[see lecture Thomas Franzen]

Details

https://lofar.astron.nl/mom3/user/project/setUpMom2ObjectDetails.do?view=...

LC10\_010 > 2018-09-14 RXJ1532.9 > 3C295 > 3C295/1.0/TP

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# observation report to PI

Dear Colleague,

The following message contains information regarding a LOFAR Cycle 10 project for which you are listed as the contact author. Please forward this information to your collaborators.

We would like to inform you that observations related to your LOFAR Cycle 10 project have been performed. Please find detailed information below.

General notes: **any fundamental remarks**

Observations: **(details of performed observations)**

SAS ID	Campaign	Target	Compl	AntennaSet	Band	Start
L667600	LT10_001	CasA	66%	LBA_OUTER	LBA_10_90	2018-09-15 23:42:00

Performance of the system: **any issues to report with stations, correlator, CEP4 cluster**

Data recording: **any part of the requested data missing?**

Data processing: **status of processing jobs**

Archiving: **'has started', 'is scheduled', ...**

Remarks: Please analyse the validation plots at <https://proxy.lofar.eu/inspect/HTML/> within 24 hours after this notification and get in contact with [sos@astron.nl](mailto:sos@astron.nl) in case you need to report problems about their quality. After this time window has passed, we will assume that your judgement is that the observation was successful and we will complete the actions described above to support your run.

From the moment the data are made available to you at the LTA you have four weeks to check their quality and to report any problems to the Observatory. After this time window has passed, no requests for re-observation will be considered.

Actions: if you need any further clarification, please do not hesitate to contact us.



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# observation report: policies about failures

- policies to determine if an observation is successful:  
[astron.nl](http://astron.nl) / radio observatory / LOFAR policies
- Most relevant are:
  - in case of malfunctioning station or CEP nodes, an observation will be considered failed if more than **5%** of the data are missing on disk. Processing will be considered failed if more than 5% of the resulting processed data are missing with respect to the raw visibilities. In other cases, observations may be considered failed on a case-by-case basis, [...], and according to the science goals of the relevant proposal.
  - The only raw data inspection available to users prior to data reduction is via the **inspection plots** which are created automatically immediately after the associated observation has finished. *[See lecture by Vanessa Moss.]*
  - From the moment the data are made available to the users at the LTA they will have four weeks available to check the quality of their data and report problems to the Observatory. After this time window has passed, **no requests for re-observation will be considered**.
  - In the case that an observation is considered failed, it may be repeated only once if the observing schedule allows it, and only if it was declared failed.
  - All 'priority A' Cycle projects (with the exception of ToO projects) that cannot be completed by the end of the Cycle they refer to will remain active only during the following semester and they will be observed then with second priority with respect to the new Cycle projects.



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# post-processing: cookbooks for imaging mode and beamformed modes

- Imaging cookbook (for interferometric LOFAR data):
  - available at <https://support.astron.nl/LOFARImagingCookbook/>
  - current editor: Sarrvesh Sridhar
  - essential contributions by many expert users both within and external to the observatory
  - explanation and examples of external tools used for: software introduction — data inspection — calibration — cleaning — *more ..*

## 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 LSMTool
- Factor: Facet Calibration for LOFAR
- Useful resources
- Calibration with BBS
- Sky Model Construction Using Shapelets
- SAGECAL
- Running LOFAR imaging pipelines inside Docker
- The AW Imager
- Practical examples
- Acknowledgements
- Changelog



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  - essential contributions by many expert users both within and external to the observatory
  - explanation and examples of external tools used for: software introduction — data inspection — calibration — cleaning — *more ..*
- Beamformed cookbook: in preparation by RO

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# user compute cluster CEP3

- ASTRON RO operates a computing cluster 'CEP3', with all relevant LOFAR software pre-installed
- processing time can be applied for at time of observing proposal submission
- allocation period typically 8 weeks
- during school:  
participants will be logging in to CEP3 under dedicated reservation



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