

The updated Northstar proposal submission tool

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Update goals



Reasons for updating:

several users experienced problems when preparing their proposals

For example:

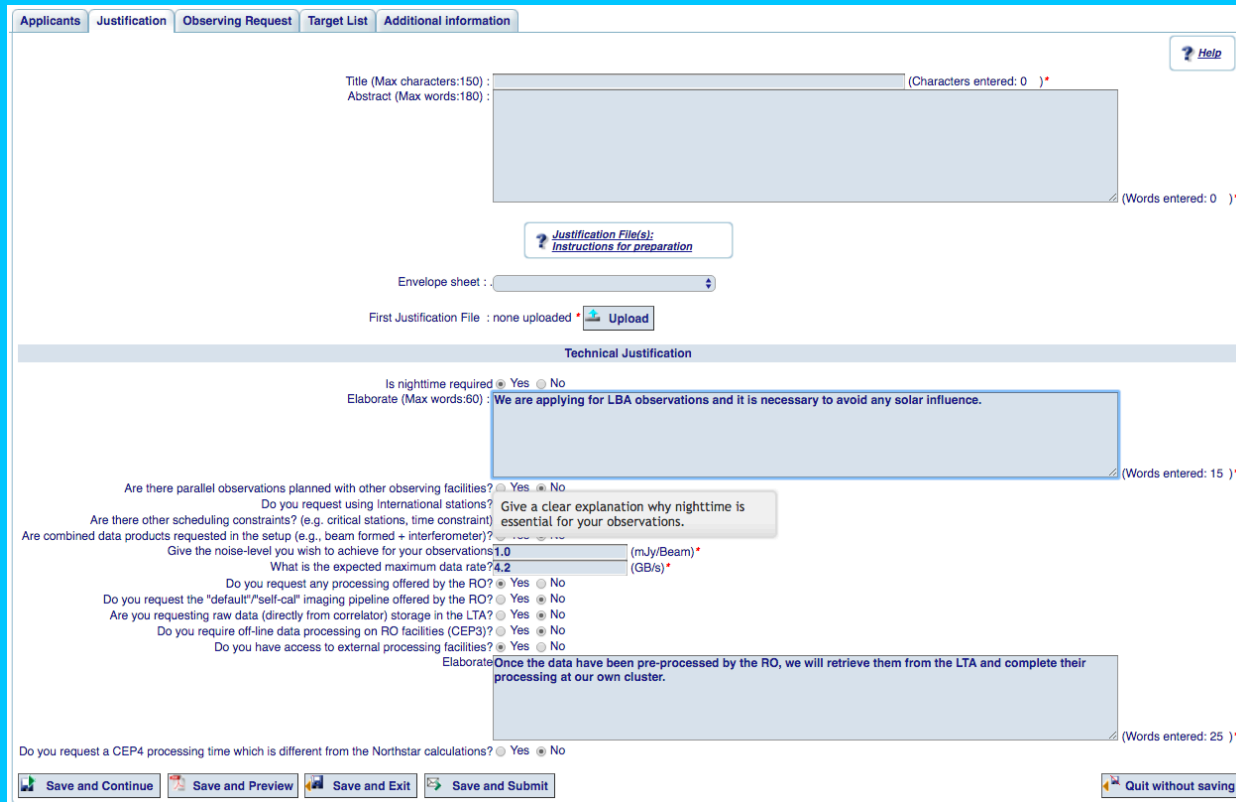
- uploading long lists of targets (more than 200)
- wrong data size
- wrong processing time

Main goal of the update: fixing known (reproducible) issues

No changes were implemented for TBB proposals

The Justification tab

The general aspect of the tool remains unchanged.



The screenshot shows the 'Justification' tab of a web application. At the top, there are navigation tabs: 'Applicants', 'Justification', 'Observing Request', 'Target List', and 'Additional Information'. A 'Help' icon is in the top right corner. The form contains several sections:

- Title and Abstract:** A text input for 'Title (Max characters:150)' and a larger text area for 'Abstract (Max words:180)'. A 'Help' icon is next to the title field.
- Justification File(s):** A section with a 'Help' icon and the text 'Instructions for preparation'. Below it is a dropdown menu for 'Envelope sheet' and a button for 'Upload' next to the text 'First Justification File : none uploaded'.
- Technical Justification:** A section with a title bar. It contains:
 - A radio button question: 'Is nighttime required?' with 'Yes' selected and 'No' as an option.
 - A text area for 'Elaborate (Max words:60)' containing the text: 'We are applying for LBA observations and it is necessary to avoid any solar influence.' A 'Help' icon is next to the text area.
 - A radio button question: 'Are there parallel observations planned with other observing facilities?' with 'Yes' selected and 'No' as an option.
 - A radio button question: 'Do you request using International stations?' with 'Yes' selected and 'No' as an option.
 - A text area for 'Elaborate' containing the text: 'Once the data have been pre-processed by the RO, we will retrieve them from the LTA and complete their processing at our own cluster.' A 'Help' icon is next to the text area.
 - A radio button question: 'Do you request a CEP4 processing time which is different from the Northstar calculations?' with 'Yes' selected and 'No' as an option.

At the bottom, there are five buttons: 'Save and Continue', 'Save and Preview', 'Save and Exit', 'Save and Submit', and 'Quit without saving'.

Questions and boxes in the Justification tab were adjusted so that all boxes show up when they need to.

Interferometric setup

The observing and pipeline setup sections will look as they used to.

Applicants Justification Observing Request Target List Additional information

Telescope configuration :

Telescope : LOFAR

Choose data output product(s) : Interferometer Mode Settings
 BeamFormed Mode Settings
 TBB Mode Settings
 TBB (PiggyBack) Mode Settings
 Other Settings

N.B. Combinations are allowed, except for TBB PiggyBack mode. Be aware that the data rate can increase significantly with combined settings.???

Common Settings

Choose stations : Dutch (24, 14, 0)
Choose clock : 200 MHz
Choose antenna : LBA Outer (48)
Choose filter : 30-70 MHz

Interferometer Mode Settings

Integration time (seconds) : 1
Keep correlated visibilities data : Yes No
Frequency channels : 1 16 32 64 128 256 512
Required noise level (Jy) : 0

Commit Observation specification

Save and Continue Save and Preview Save and Exit Save and Submit

Next to each station configuration, you will see the number of Core, Remote and International stations included (all of each subarray).

Applicants Justification Observing Request Target List Additional information

Pipeline configuration

Pre processing parameters

Processing mode : Pre processing only
Flagging strategy : LBA
Averaging time factor : 4 [steps]
Averaging freq. factor : 16 [steps]
Demixing ? Yes No

Demixing sources :

- CygA
- CasA
- TauA
- VirA
- HerA
- HydA

Imaging parameters

No imaging selected in processing mode

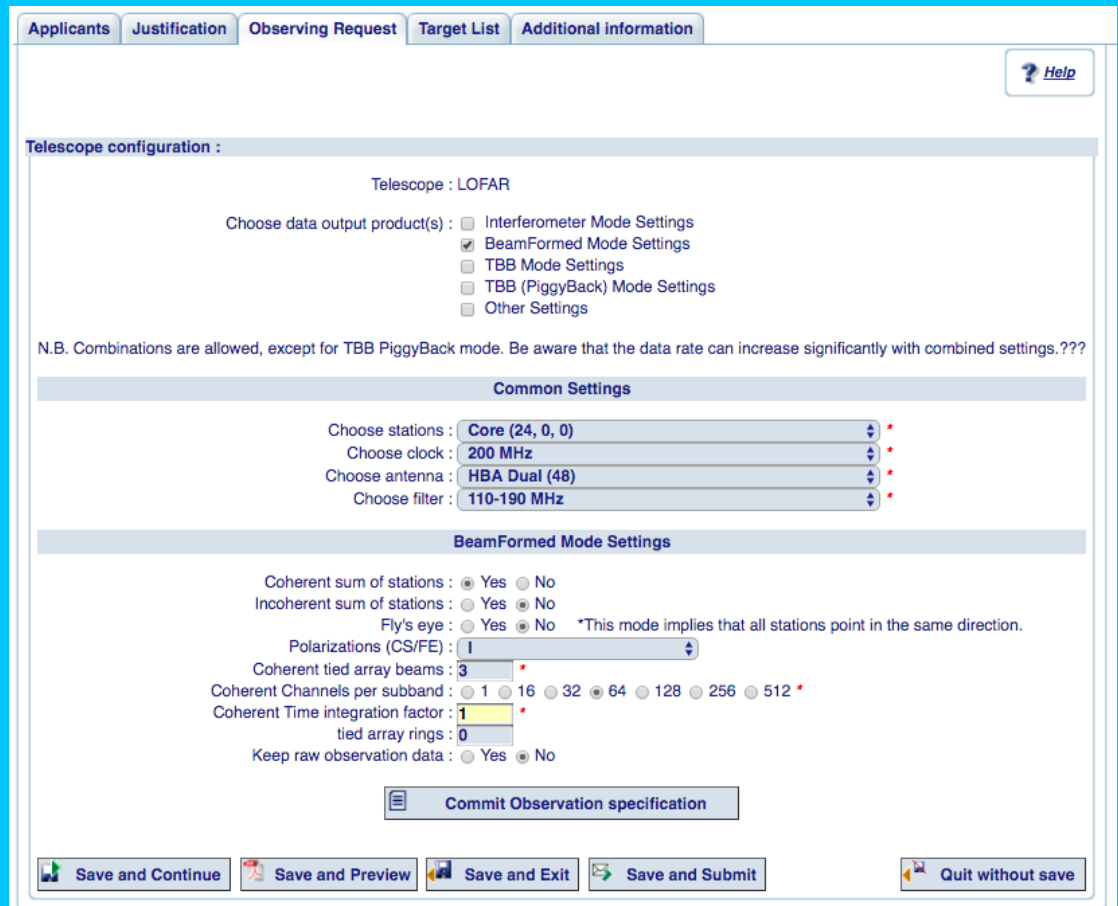
Subbands per image : [] [int]
Field of view : [] [deg]

Commit Pipeline

Beamformed setup

More changes for the user will be found in the beamformed setup.

Several textual changes, to make the section more easily comprehensible.



The screenshot shows the LOFAR observation configuration interface. At the top, there are tabs for 'Applicants', 'Justification', 'Observing Request', 'Target List', and 'Additional information'. A 'Help' button is located in the top right corner. The main section is titled 'Telescope configuration :'. Underneath, it says 'Telescope : LOFAR'. There is a section for 'Choose data output product(s):' with the following options: Interferometer Mode Settings, BeamFormed Mode Settings, TBB Mode Settings, TBB (PiggyBack) Mode Settings, and Other Settings. Below this is a note: 'N.B. Combinations are allowed, except for TBB PiggyBack mode. Be aware that the data rate can increase significantly with combined settings.???'.

The 'Common Settings' section includes:

- Choose stations: Core (24, 0, 0)
- Choose clock: 200 MHz
- Choose antenna: HBA Dual (48)
- Choose filter: 110-190 MHz

The 'BeamFormed Mode Settings' section includes:

- Coherent sum of stations: Yes No
- Incoherent sum of stations: Yes No
- Fly's eye: Yes No *This mode implies that all stations point in the same direction.
- Polarizations (CS/FE): 1
- Coherent tied array beams: 3
- Coherent Channels per subband: 1 16 32 64 128 256 512
- Coherent Time integration factor: 1
- tied array rings: 0
- Keep raw observation data: Yes No

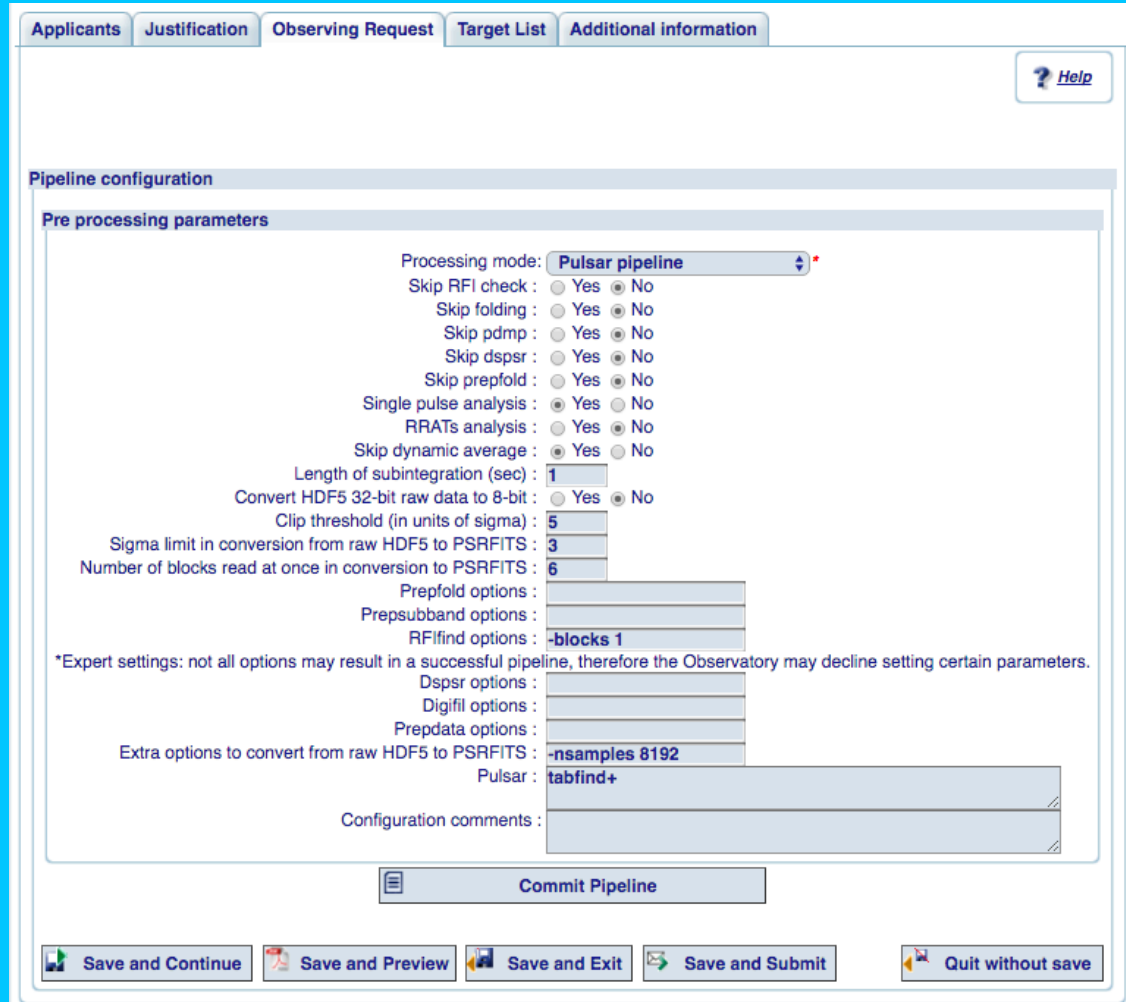
At the bottom of the configuration area is a 'Commit Observation specification' button. At the very bottom of the window are five buttons: 'Save and Continue', 'Save and Preview', 'Save and Exit', 'Save and Submit', and 'Quit without save'.

Beamformed setup

Users can now fully specify the parameters needed to run the pulsar pipeline.

None of the fields is mandatory.

An explanation for each parameter will be given in the new “NorthStar How TO”.



The screenshot shows the 'Pipeline configuration' window in the LOFAR ASTRON software. The window has a tabbed interface with 'Applicants', 'Justification', 'Observing Request', 'Target List', and 'Additional information'. The 'Additional information' tab is active. A 'Help' button is located in the top right corner. The main content area is titled 'Pipeline configuration' and contains a section for 'Pre processing parameters'. The 'Processing mode' is set to 'Pulsar pipeline'. Below this, there are several radio button options for skipping various checks: 'Skip RFI check', 'Skip folding', 'Skip pdmp', 'Skip dspr', 'Skip prepfold', 'Single pulse analysis', 'RRATS analysis', and 'Skip dynamic average'. Each has a 'Yes' or 'No' option. Below these are input fields for 'Length of subintegration (sec)' (set to 1), 'Convert HDF5 32-bit raw data to 8-bit' (set to No), 'Clip threshold (in units of sigma)' (set to 5), 'Sigma limit in conversion from raw HDF5 to PSRFITS' (set to 3), and 'Number of blocks read at once in conversion to PSRFITS' (set to 6). There are also fields for 'Prepfold options', 'Prepsubband options', 'RFI find options' (set to '-blocks 1'), 'Dspr options', 'Digifil options', 'Prepdata options', and 'Extra options to convert from raw HDF5 to PSRFITS' (set to '-nsamples 8192'). The 'Pulsar' field is set to 'tabfind+'. A 'Configuration comments' field is at the bottom. A 'Commit Pipeline' button is located below the configuration fields. At the very bottom of the window, there are five buttons: 'Save and Continue', 'Save and Preview', 'Save and Exit', 'Save and Submit', and 'Quit without save'.

Applicants Justification Observing Request Target List Additional information

? Help

Pipeline configuration

Pre processing parameters

Processing mode: Pulsar pipeline

Skip RFI check : Yes No

Skip folding : Yes No

Skip pdmp : Yes No

Skip dspr : Yes No

Skip prepfold : Yes No

Single pulse analysis : Yes No

RRATS analysis : Yes No

Skip dynamic average : Yes No

Length of subintegration (sec) : 1

Convert HDF5 32-bit raw data to 8-bit : Yes No

Clip threshold (in units of sigma) : 5

Sigma limit in conversion from raw HDF5 to PSRFITS : 3

Number of blocks read at once in conversion to PSRFITS : 6

Prepfold options :

Prepsubband options :

RFI find options : -blocks 1

*Expert settings: not all options may result in a successful pipeline, therefore the Observatory may decline setting certain parameters.

Dspr options :

Digifil options :

Prepdata options :

Extra options to convert from raw HDF5 to PSRFITS : -nsamples 8192

Pulsar : tabfind+

Configuration comments :

Commit Pipeline

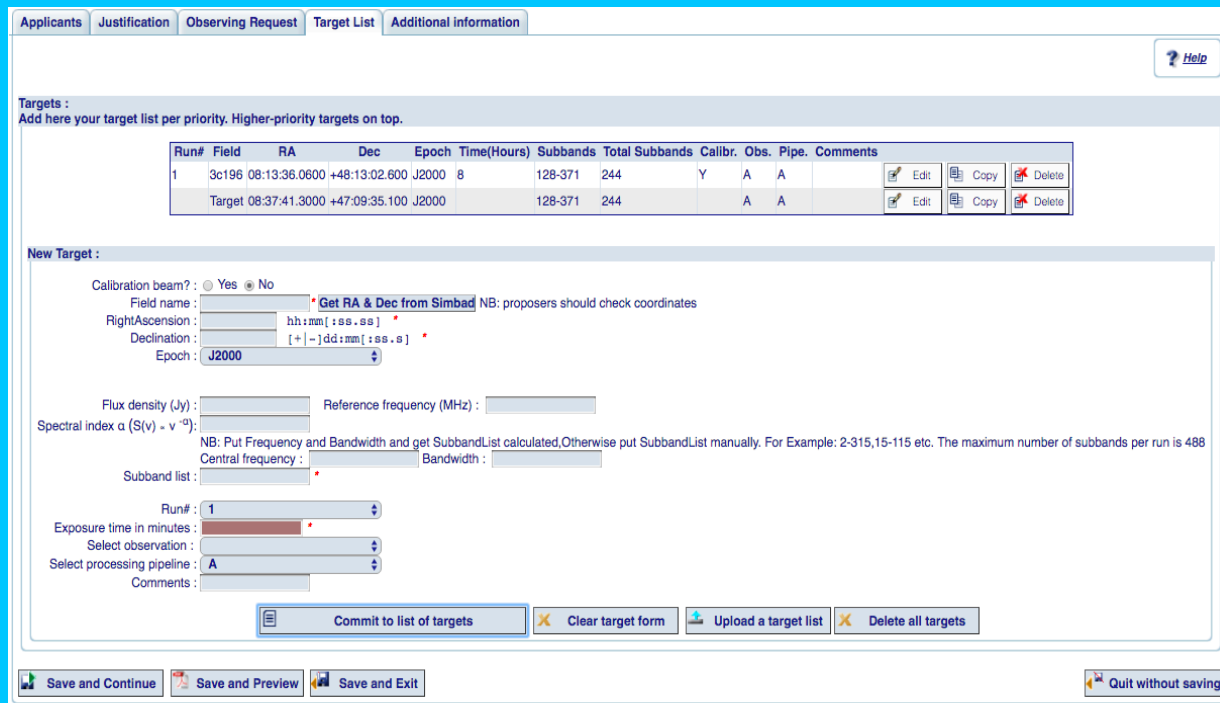
Save and Continue Save and Preview Save and Exit Save and Submit Quit without save

The Target tab

A target can now be copied without losing information on the previous target entry.

The issue with long lists of targets generating errors turned out to be a problem with the amount of time requested. This has been fixed.

Setting up TABs for BF observations remains problematic, since each target is charged the corresponding amount of subbands in NorthStar.



The screenshot shows the 'Target List' tab in the LOFAR observing request system. It features a table of existing targets and a form for adding new ones.

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

Run#	Field	RA	Dec	Epoch	Time(Hours)	Subbands	Total Subbands	Calibr.	Obs.	Pipe.	Comments	
1	3c196	08:13:36.0600	+48:13:02.600	J2000	8	128-371	244	Y	A	A		Edit Copy Delete
	Target	08:37:41.3000	+47:09:35.100	J2000		128-371	244		A	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: J2000

Flux density (Jy): Reference frequency (MHz):
Spectral index α (S(V) $\propto \nu^{-\alpha}$):
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: *

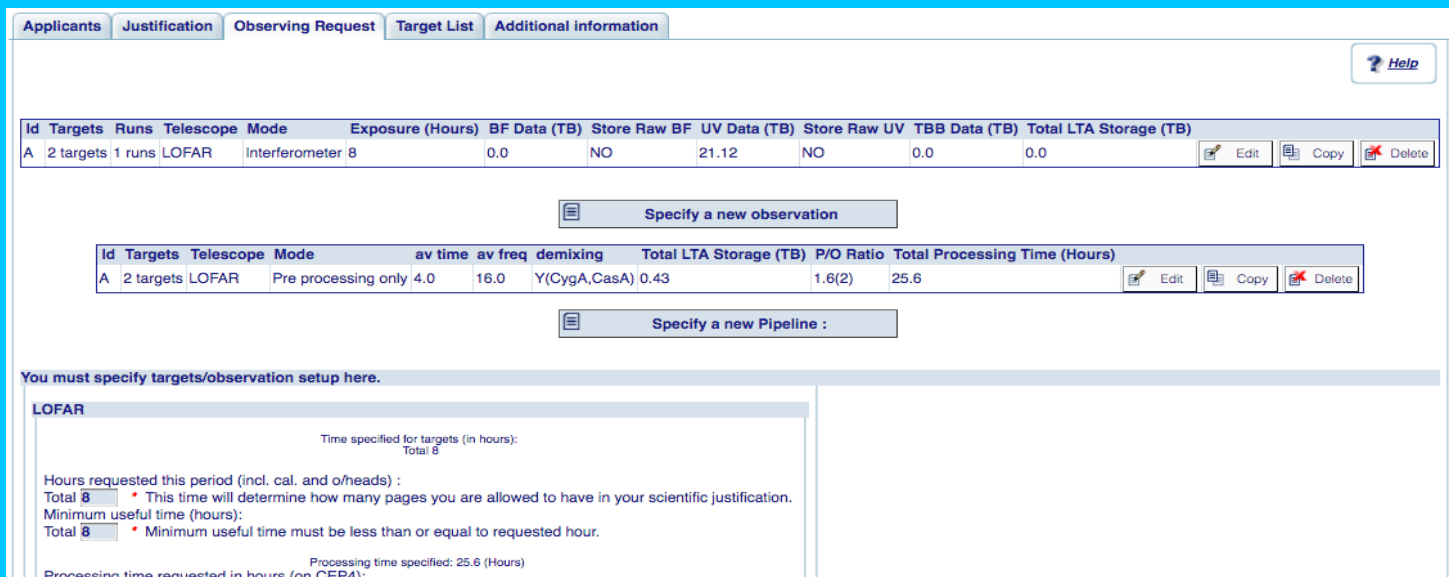
Run#: 1
Exposure time in minutes: *
Select observation:
Select processing pipeline: A
Comments:

Data size and processing time

This is the part that took most of the time to be fixed.

For interferometric data, the size is reported for both raw and processed data. The values will NOT match with those from the web calculator. The reason is a correction of the final MS size accounted for in Northstar, but not in the web tool. Use the value given by Northstar.

The processing time also includes correction factors for small (<160) and large (>360) amounts of subbands.



The screenshot shows a web interface for LOFAR observation requests. It features several tabs: Applicants, Justification, Observing Request, Target List, and Additional information. A 'Help' button is located in the top right corner.

The main content area displays two tables. The first table, titled 'Observation Details', has the following data:

Id	Targets	Runs	Telescope	Mode	Exposure (Hours)	BF Data (TB)	Store Raw BF	UV Data (TB)	Store Raw UV	TBB Data (TB)	Total LTA Storage (TB)	Actions
A	2 targets	1 runs	LOFAR	Interferometer	8	0.0	NO	21.12	NO	0.0	0.0	Edit Copy Delete

Below this table is a button labeled 'Specify a new observation'.

The second table, titled 'Pipeline Details', has the following data:

Id	Targets	Telescope	Mode	av time	av freq	demixing	Total LTA Storage (TB)	P/O Ratio	Total Processing Time (Hours)	Actions
A	2 targets	LOFAR	Pre processing only	4.0	16.0	Y(CygA,CasA)	0.43	1.6(2)	25.6	Edit Copy Delete

Below this table is a button labeled 'Specify a new Pipeline :'.

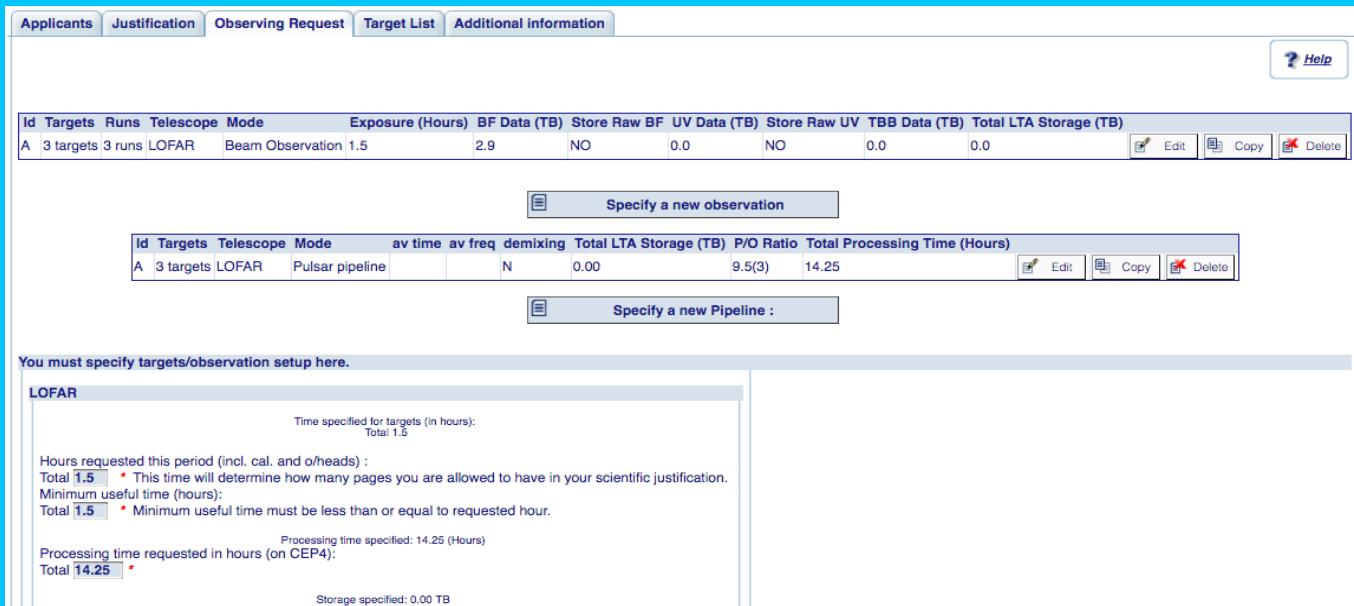
At the bottom, there is a section titled 'You must specify targets/observation setup here.' with a sub-section for 'LOFAR'. It contains the following information:

- Time specified for targets (in hours): Total 8
- Hours requested this period (incl. cal. and o/heads) : Total 8. A note states: '* This time will determine how many pages you are allowed to have in your scientific justification.'
- Minimum useful time (hours): Total 8. A note states: '* Minimum useful time must be less than or equal to requested hour.'
- Processing time requested in hours (on CER4): Processing time specified: 25.6 (Hours)

Data size and processing time

For BF observations, calculating automatically the data size and processing time may be impossible, since the target setup may not allow you to fully specify your observation.

The guide line here was to provide the user with what is offered by the online size and time calculator. The size of the output of the pipeline is not given. The processing time depends on the number of TABs and cores set up by the pipeline.



The screenshot shows a web interface for LOFAR observation setup. It features several tabs: 'Applicants', 'Justification', 'Observing Request', 'Target List', and 'Additional information'. A 'Help' button is located in the top right corner. Below the tabs, there are two tables. The first table, titled 'Observing Request', has columns for Id, Targets, Runs, Telescope, Mode, Exposure (Hours), BF Data (TB), Store Raw BF, UV Data (TB), Store Raw UV, TBB Data (TB), and Total LTA Storage (TB). It contains one row with the following data: Id: A, Targets: 3 targets, Runs: 3 runs, Telescope: LOFAR, Mode: Beam Observation, Exposure (Hours): 1.5, BF Data (TB): 2.9, Store Raw BF: NO, UV Data (TB): 0.0, Store Raw UV: NO, TBB Data (TB): 0.0, Total LTA Storage (TB): 0.0. Below this table is a button labeled 'Specify a new observation'. The second table, titled 'Pipeline', has columns for Id, Targets, Telescope, Mode, av time, av freq, demixing, Total LTA Storage (TB), P/O Ratio, and Total Processing Time (Hours). It contains one row with the following data: Id: A, Targets: 3 targets, Telescope: LOFAR, Mode: Pulsar pipeline, av time: (empty), av freq: (empty), demixing: N, Total LTA Storage (TB): 0.00, P/O Ratio: 9.5(3), Total Processing Time (Hours): 14.25. Below this table is a button labeled 'Specify a new Pipeline :'. At the bottom of the interface, there is a section titled 'You must specify targets/observation setup here.' which contains a 'LOFAR' sub-section. This section displays the following information: 'Time specified for targets (in hours): Total 1.5', 'Hours requested this period (incl. cal. and o/heads): Total 1.5 * This time will determine how many pages you are allowed to have in your scientific justification. Minimum useful time (hours): Total 1.5 * Minimum useful time must be less than or equal to requested hour.', 'Processing time specified: 14.25 (Hours)', 'Processing time requested in hours (on CEP4): Total 14.25 *', and 'Storage specified: 0.00 TB'.

Id	Targets	Runs	Telescope	Mode	Exposure (Hours)	BF Data (TB)	Store Raw BF	UV Data (TB)	Store Raw UV	TBB Data (TB)	Total LTA Storage (TB)
A	3 targets	3 runs	LOFAR	Beam Observation	1.5	2.9	NO	0.0	NO	0.0	0.0

Id	Targets	Telescope	Mode	av time	av freq	demixing	Total LTA Storage (TB)	P/O Ratio	Total Processing Time (Hours)
A	3 targets	LOFAR	Pulsar pipeline			N	0.00	9.5(3)	14.25

You must specify targets/observation setup here.

LOFAR

Time specified for targets (in hours):
Total 1.5

Hours requested this period (incl. cal. and o/heads) :
Total 1.5 * This time will determine how many pages you are allowed to have in your scientific justification.
Minimum useful time (hours):
Total 1.5 * Minimum useful time must be less than or equal to requested hour.

Processing time specified: 14.25 (Hours)
Processing time requested in hours (on CEP4):
Total 14.25 *

Storage specified: 0.00 TB

Data size and processing time (*behind the scenes*)

The P/O factors used to be hardcoded in Northstar.

With CEP4 coming up and possibly new processing being offered in the future, a different approach was needed.

Now, P/O factors are specified in a separate option file allowing the RO to update them at any time and also add new values for new pipelines.

```
<P0 processingMode="Pre processing only, Calibration, Calibration + imaging" type="HBA" numberOfDemixingSources="1" totalTargetSubbandMin="">  
  <Ratio>1.5</Ratio>  
</P0>  
<P0 processingMode="Pre processing only, Calibration, Calibration + imaging" type="HBA" numberOfDemixingSources="2" totalTargetSubbandMin="">  
  <Ratio>4.5</Ratio>  
</P0>
```

DDT proposals

DDT proposals have now the same layout as regular ones. You can fully specify your observing request, targets, etc.



[? Help Index](#)

Community : LOFAR community
Category : ddt
Period : LOFAR_DDT_C6

Applicants Justification Observing Request Target List Additional information

[? Help](#)

Telescope configuration :

Telescope : LOFAR

- Choose data output product(s) :
- Interferometer Mode Settings
 - BeamFormed Mode Settings
 - TBB Mode Settings
 - TBB (PiggyBack) Mode Settings
 - Other Settings

N.B. Combinations are allowed, except for TBB PiggyBack mode. Be aware that the data rate can increase significantly with combined settings.?

Common Settings

Choose stations : *

Choose clock : *

Choose antenna : *

Choose filter : *

Interferometer Mode Settings

Integration time: (seconds) : *

Keep correlated visibilities data : Yes No

Frequency channels : 1 16 32 64 128 256 512 *

Required noise level (Jy) :

Good habits

- Save often your work
- Always “Save and Exit” before logging out of NorthStar
- View your proposal in pdf format before submitting (you don’t want to upset the reviewers trying to figure out what your out-of-margin caption/figure means)
- Have in your justification a short paragraph at the end, where you describe your observing strategy and summarize your requests (observing time, archive storage, and processing time).

Finally, our overall request is for a total of 84 hours of observation (including calibrations and overheads), spread over 10 sessions of 8.4 hours each, to be scheduled during the cycle so that each session is centred around the transit of the respective target. Each session will be made up of a calibrator run of 10 minutes, a main run on target of 8 hours, and a second calibrator run of 10 minutes. Based on what calculated by Northstar and verified by us, we request 84 hours of pre-processing time on CEP4 and 167 TB of storage space in the LTA. We also request a CEP3 reservation, which we will use for smart demixing.

- Include time for your calibrators and overheads in your time request
- If you ask for nighttime observations, check that your targets are observable at night during the cycle!