



LOFAR OBSERVING: INTERACTION USER – RADIO OBSERVATORY

S. Ter Veen

- A large number of software and hardware engineers, astronomers and others who designed, constructed and keep LOFAR operational
- ASTRON's Radio Observatory Science Support Group



- Radio Observatory Operators

sciencesupport@astron.nl



observer@astron.nl

- Telescope Astronomers



+ Operations and maintenance
+ Software Support

I.

THE LOFAR SYSTEM: DATA FLOW



Station signals collected in the station cabinets



Signal sent to COBALT for correlation



I. CEP4



Products sent to the long-term archive



I. CEP3

Data sent to CEP4 for initial RO processing – products might get copied to CEP3

➤ Entire process is overseen by Operators, Science Support and Software Support groups

- Two observing Cycles every year:
 - May 15 – November 14
 - November 15 – May 14
- Proposal call: 4 months before start of the Cycle (January, July)
- <http://www.astron.nl/radio-observatory/observing-proposals/regular-proposal-call-instructions/regular-proposal-call-instr>
- Proposal deadline: 2 months before the start of the Cycle (March, September)
- Advertisement of new functionality for the coming Cycle
- Available **observing and processing hours**


International LOFAR Telescope

Proposal Call to the Worldwide Community

Cycle 7: 15 Nov 2016 - 14 May 2017

Submission deadline Wednesday 14 September 2016, 12 UT

[This file in PDF form](#) .

Submission only via the online tool [NorthStar](#) .

**** Proposers must ensure that their justification files adhere to the instructions given below and in Northstar, repeated online [here](#). ****

SYSTEM CAPABILITIES: The International LOFAR Telescope (ILT) is a powerful next-generation radio telescope for frequencies below 240 MHz that offers revolutionary new observing capabilities thanks to its phased-array technology with digital beam-forming. LOFAR delivers correlated visibility data for synthesis imaging, plus in/coherently added single and multiple station data (several beam-formed modes) as well as transient buffer read-out, for example for studies of pulsars, transients, and cosmic rays. For Cycle 7, pipeline processing will be performed on the new CEP4 cluster, which is being commissioned at the moment. The high resolution (arcsecond) imaging capability of the array has been significantly enhanced with the addition of three stations in Poland, bringing the total number to 38 in the Netherlands and 12 in other European countries. LOFAR capabilities are described in detail [online](#).

I.



WORKING ON PROPOSAL: MUST SEE



- Use the LOFAR web pages as a reference during the proposal preparation
- LOFAR pages: <http://www.astron.nl/radio-observatory/radio-observatory>
- Note: extensive description of LOFAR system available in van Haarlem et al. 2013

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RADIO OBSERVATORY

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RADIO OBSERVATORY

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The Radio Observatory is responsible for the astronomical exploitation of the Westerbork Synthesis Radio Telescope (WSRT) and the LOFAR Frequency Array (LOFAR).

The Westerbork Synthesis Radio Telescope, one of the most powerful radio-observatories in the world, is an open user facility available for scientists from any country. It is also part of the European VLBI network ([EVN](#)) of radio-telescopes. APERTIF (APERTure Tile In Focus), a next generation observing system using focal plane array technology, is being developed for the WSRT in order to significantly expand its field of view and its survey speed, enabling new, innovative types of astronomical research.

LOFAR is a radio interferometric array consisting of many low-cost antennas, organised in stations arranged in an area of 100km diameter as well as several international stations and operating between 10 and 250 MHz.

Astronomers can request observing time for LOFAR using this [NorthStar link](#) and following the instructions given in the "Announcement for Opportunity" issued periodically. Opportunities for observing with APERTIF will be advertised in due course.

These web pages provide further information for the [WSRT](#) and the [LOFAR](#) operations.

Technical inquiries and requests for support can be requested by e-mail to wsrt-support@astron.nl for the WSRT and to sciencesupport@astron.nl for LOFAR, where they will be answered or forwarded as needed.

Contact e-mail addresses

Radio Observatory director	R. Vermeulen
Secretariat	M. Tibbe, L. Elperhof
Science Support	R. Pizzo, L. Carrigone, R. Fellows, M. Iacobelli, E. Orrù, A. Shulevski, S. ter Veen, M. van der Wiel
Telescope Astronomers	M. Brentjens, A. Poliadis
VLBI with WSRT	A. Poliadis, G. Kuper

GENERAL

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WSRT

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- [Weekly schedule](#)
- [Apertif](#)

LOFAR

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WORKING ON PROPOSAL: MUST SEE



➤ LOFAR pages: <http://www.astron.nl/radio-observatory/radio-observatory>

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RADIO OBSERVATORY

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- LOFAR Slides
- In-depth Technical Information
- Summary

LOFAR OBSERVING CAPABILITIES FOR ASTRONOMERS

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LOFAR

LOFAR, the Low-Frequency Array, is a new-generation radio interferometer constructed in the north of the Netherlands and across Europe. Utilizing a novel phased-array design, LOFAR covers the largely unexplored low-frequency range from 10–240 MHz and provides a number of unique observing capabilities. Spreading out from a core located near the village of Eeloo in the northeast of the Netherlands, a total of 50 LOFAR stations are available for observations. Six of these have been deployed throughout Germany, and one station has been built in each of France, Sweden, and the UK. Three more international stations have been built recently in Poland.

Digital beam-forming techniques make the LOFAR system agile and allow for rapid repointing of the telescope as well as the potential for multiple simultaneous observations. With its dense core array and long interferometric baselines, LOFAR achieves unparalleled sensitivity and angular resolution in the low-frequency radio regime. The LOFAR facilities are jointly operated by the International LOFAR Telescope (ILT) foundation, as an observatory open to the global astronomical community. LOFAR is one of the first radio observatories to feature automated processing pipelines to deliver fully calibrated science products to its user community. LOFAR's new capabilities, techniques and modes operandi make it an important pathfinder for the Square Kilometer Array (SKA).

LOFAR entered its first operational Cycle in December 2012, following a period of commissioning.

WSRT

- Astronomers
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- AperTIF

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RADIO OBSERVATORY

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- Antennas
- LOFAR Array Configuration
- Frequency, subband selection, and RFI situation
- Transient Buffer Boards
- Data Products, Management, and Long-Term Archiving
- CSP and LTA computing facilities
- System notes
- LOFAR Signal Path
- LOFAR Stations
- LOFAR imaging capabilities and sensitivity
- Beam Definitions
- Timing delays system history
- Data quality inspection
- Functionality enhancements

LOFAR TECHNICAL INFORMATION

View | Edit | Revisions

LOFAR, the Low frequency Array, is a next-generation electronically steered phased array radio telescope. LOFAR's capabilities are revolutionising the astronomical capabilities in the 10–240 MHz range.

These web pages describe the general signal path, major observing modes, and their post processing options from the perspective of the potential user. In some instances, some modes are noted as being "Expert Mode": These are generally modes which require more manual intervention than the regular modes and are offered only to users who are familiar with them from their own commissioning work.

A more detailed description of the LOFAR array can be found in van Haarlem et al. 2013 (<http://arxiv.org/abs/1305.3550>)

Also, please note that an extensive description of the capabilities of LOFAR has been given at the LOFAR Data Schools. In particular, you can consult the slides of the last LOFAR School [here](#) if.

CONTACT

For further information you can contact the [LOFAR Science Support Group](#) if.

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I.

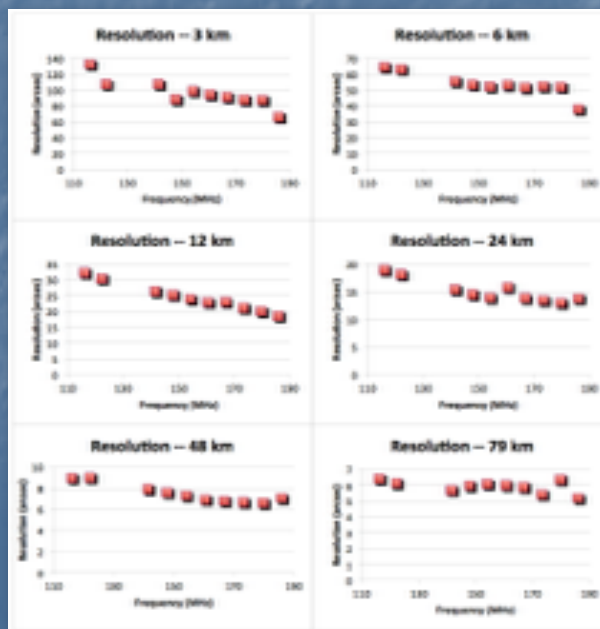
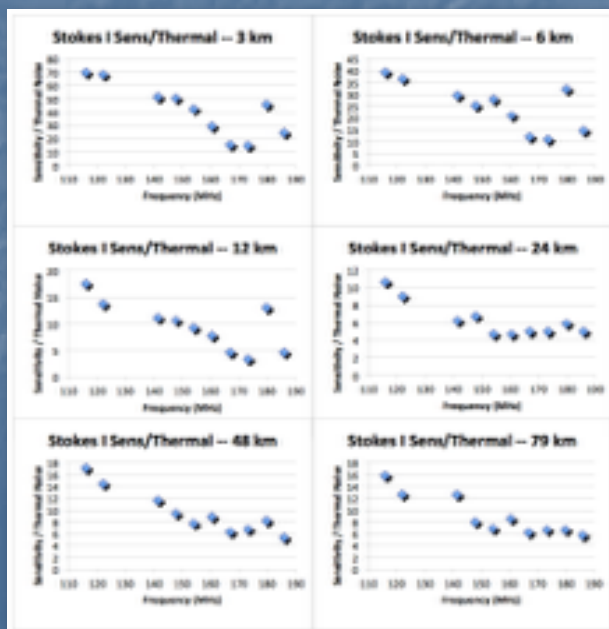
WORKING ON PROPOSAL: MUST SEE



- Interferometric mode web page (mode fully supported):

<http://www.astron.nl/radio-observatory/astronomers/array-configurations/3-telescope-parameters-and-array-configurations>

- Observing strategies (LBA, HBA) + Calibrators
- Imaging Pipeline -> see E. Orru's lecture
- Characterization: achievable noise, resolution and required processing time for various pipeline processing strategies



Type	Ni Derived Sources	Ni MB	P/O ratio
LBA	0	294	0.6
LBA	2	294	1.6
LBA	0	80	0.2
LBA	1	80	0.3
LBA	2	80	1.0
HBA	0	294	1.0
HBA	2	294	6.5
HBA	0	122	0.9
HBA	1	122	1.0
HBA	0	366	1.4
HBA	1	366	2.2
HBA	0	360	1.5
HBA	0	480	1.4

I. WORKING ON PROPOSAL: OBSERVING STRATEGIES



➤ Interferometric mode web page:

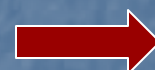
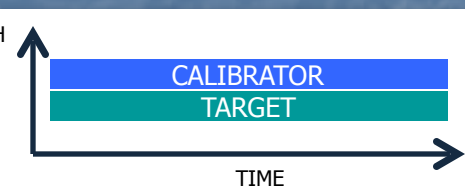
<http://www.astron.nl/radio-observatory/astronomers/array-configurations/3-telescope-parameters-and-array-configurations>

➤ **LBA:** half of the available bandwidth on the target field and half on the calibrator

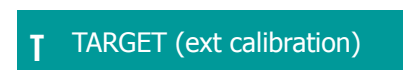
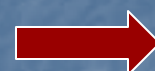
➤ **HBA:**

- Continuous in time/Hour Angle observation of the target with a short calibrator run before (and/or after)
- Interleaved calibrator observations (eg. 2 min) with target field (eg. ~ 30 min), quasi-continuous in HA
- Two beams, one on the target and a second on a "phase calibrator" if present within the analog beam of the HBA tiles (experimental strategy for advanced users). The "phase calibrator" should be a bright point like source selected by the user from other catalogues.
- Three quarters of the bandwidth dedicated to the target and one quarter on the "phase calibrator"
- If the user has a good initial model of the target field at his/her disposal, observations could be performed using the full bandwidth on the target

BANDWIDTH



DEFAULT



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WORKING ON PROPOSAL: MUST SEE



➤ Note LOFAR Tools

LOFAR Image noise calculator

This calculator is in beta, so please use it with caution. It uses theoretical SEFD values, but these will be updated soon with empirical numbers. For information about the array and its capabilities please see the [LOFAR webpage at ASTRON](#).

The calculations performed by this tool follow [SKA Memo 113](#) by Nijboer, Pandey-Pommier, & de Bruyn.

Observation details

Number of core stations (max 24)

➤ Split HBA core stations?

Number of remote stations (max 16)

➤ Taper remote stations to 24 tiles?

Number of international stations (max 8)

Observing frequency

Number of subbands

Subband width

➤ Number of channels

Time (sec)

Debug mode?

CALCULATE

LOFAR data size 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

Written by George Heald, v1

LOFAR 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.
- Apart from the target, 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 angular distance between the selected A team sources or solar system sources and the target is shown at the bottom of the page.

Target	RA	DEC	Date	Min. elevation	A team:	Solar system:	LOFAR calibrators:
PSR B1509-55	16:00:26.72	+55:21:33.0	03/06/2016	[deg]	Cyg A <input type="checkbox"/> Cas A <input type="checkbox"/> Tau A <input type="checkbox"/> Vir A <input type="checkbox"/>	Jupiter <input type="checkbox"/> Sun <input checked="" type="checkbox"/>	3C 48 <input type="checkbox"/> 3C 147 <input type="checkbox"/> 3C 295 <input type="checkbox"/> 3C 196 <input checked="" type="checkbox"/> 3C 380 <input type="checkbox"/>

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LOFAR TOOLS

LOFAR Data Size and Processing Time Calculator

Tool to compute the expected data size and processing time for Beamformed and Interferometric observations.

LOFAR Frequency-to-SB converter

To convert a correlator SB into an observing frequency and viceversa, you can use [this tool](#).

LOFAR Image Noise Calculator

Tool to compute the expected noise for imaging observations.

LOFAR target visibility Calculator

Compute the visibility of a particular target as seen from the LOFAR super-terp as well as its angular distance from the A-team sources.

LOFAR Management of Measurements (MoM)

GUI tool for creating and editing observations to be run using LOFAR.

LOFAR Long-Term Archive (LTA)

The Long-Term Archive of LOFAR data. Use this tool to retrieve your data or such for other LOFAR data in the public domain. Usually data are released into the public domain one year after observation.

If you encounter any issues using these tools, please email: science.support@astron.nl

LOFAR Long-Term Archive (LTA) - HOW TO

Wiki page describing how to search and retrieve data from the Long Term Archive.

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- Special projects
- People

I.

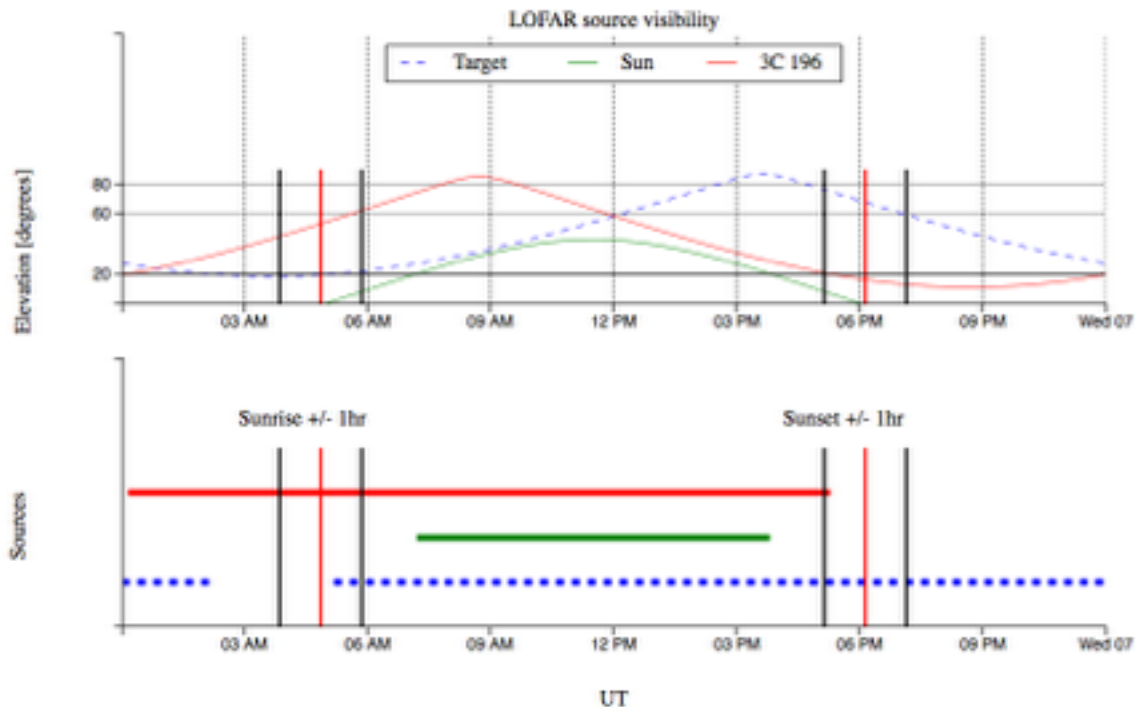
WORKING ON PROPOSAL: MUST SEE

➤ Visibility Calculator

LOFAR visibility calculator

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- The angular distance between the selected A team sources or solar system sources and the target is shown at the bottom of the page.

Target	PSR 01508-55	<input type="button" value="Resolve"/>	A team:	Solar system:	LOFAR calibrators:			
RA	15:09:25.72	[hh:mm:ss.s]	Cyg A	<input type="checkbox"/>	Jupiter	<input type="checkbox"/>	3C 48	<input type="checkbox"/>
DEC	+55:31:33.0	[dd:mm:ss.s]	Cas A	<input type="checkbox"/>	Sun	<input checked="" type="checkbox"/>	3C 147	<input type="checkbox"/>
Date	09/06/2016	[mm/dd/yyyy]	Tau A	<input type="checkbox"/>			3C 295	<input type="checkbox"/>
Min. elevation		[deg]	Vir A	<input type="checkbox"/>			3C 196	<input checked="" type="checkbox"/>
							3C 380	<input type="checkbox"/>



I. PROPOSAL REVIEW PROCESS AND ALLOCATIONS



- Proposal review process lasts for ~ 6 weeks
- Technical review panel assesses the technical feasibility of the projects
- National consortia distribute their reserved access hours in the form of must- and may-sponsor hours
- LOFAR Programme Committee complete allocations by detailing allocations to the may-sponsor list of proposals and by distributing open skies fraction of time
- Allocations known after the PC meeting at

<http://www.astron.nl/radio-observatory/cycles/cycles>

Proposal Code	PI	Proposal title	Total observing hours	Total processing hours
LOF_001	K. Faloutsos	Investigating Reflection Through the Solar Wind using Intensity and Phase Scintillation	3	0
LOF_002	K. Faloutsos	Probing a Coronal Mass Ejection with Scintillation Arcs	12	0
LOF_003	K. Faloutsos	Monitoring Ionospheric Scintillation across LOFAR	0	0
LOF_004	J.-M. Grieblmeier	Measuring the energy of Saturn's lightning	24	18
LOF_005	F. Govoni	Large-scale magnetic field connecting A339-A451	10	18
LOF_006	A. Gronberg	A search for p-HCOO, a potential SOF contaminant, toward the Galactic Center, W43, W44, W45, and W52	8	4
LOF_007	A. Lynch	Continued LOFAR Timing of Discoveries from the GEMCC Pulsar Survey	28	3
LOF_008	C. Ouyang	The mysterious giant radio source 2017+18	8	21.8
LOF_009	K. Sandwinger	Cosmic ray propagation in NGC5555	8	14
LOF_010	J. Verbeek	Pulsar Timing with LOFAR	105	30
LOF_011	M. Serylak	Studying Pulsars and the Interstellar Medium using International LOFAR Stations	0	0
LOF_012	B. Olan	Probing the stellar flare-CME relationship	12	18
LOF_013	A. Mykseton	Extended radio continuum tails in the edge-on galaxy NGC307	12	17
LOF_014	M. Bremer	Exploring radio-loud AGN-resolved activity with LOFAR	64	112
LOF_015	R. Fender	Wide-field searches for image-plane radio transients	63	132.3
LOF_016	G. Kneib	The first VLA observations of an ultra-cool dwarf star	3.5	10
LOF_017	D. Mulcahy	VLA observations of M81 and NGC307	18	25
LOF_018	F. Zarka	Search of radio emission from the 50 Ori exoplanetary system	32	0
LOF_019	A. G. de Bruyn	The LOFAR EoR project	204	0
LOF_020	J. E. Conway	First detection of lower-dwell with LOFAR	12	18.5
LOF_021	S. Tori	FRABs Commercial Real-Time Searches and Localization of Fast Radio Bursts	0	27
LOF_022	A. Karastergiou	ARTIME on LOFAR: real-time searches for Fast Radio Bursts with International LOFAR stations	0	0
LOF_023	S. Buitink	Radio detection of cosmic ray air showers	0	0
LOF_024	P. Best	A joint LOFAR deep field: EoR-N1	100	0
LOF_025	A. Blythe	A Full Census of the Known Pulsar Population: Extension to the Lowest Radio Frequencies	38	10
LOF_026	D. Stenning	Millisecond Pulsar Scintillation: a Pilot Study	27.5	9.2
LOF_027	G. Wann	Energetic electron propagation in solar flares	24.2	75.8
LOF_028	C. Wann	Solar coronal mass ejections	38	38.8
LOF_029	G. Milty	Long Baseline Studies of High-Redshift Radio Sources: Constraining particle acceleration and cold gas	17	30
LOF_030	I. Mizuno	Exploring Merger-Induced Dwarf Radio Emissions in Groups of Galaxies	10	14.1
LOF_031	C. Marín	Solar noise storms in the decametric and metric range: a study with LOFAR and the Nançay Radioheliograph	33	33.9
LOF_032	S. Turicani	Beast monitoring with LOFAR	9	9.2
LOF_033	J. Waggirent	Observations of solar type I radio bursts by LOFAR	16	48.7
LOF_034	J. Miller-Jones	Low-frequency radio emission from away binaries	14	38.7
LOF_035	H. Ford	The LOFAR quiescent sun	12	12
LOF_036	R. Coak	Probing the Galactic Interstellar Medium on Unprecedented Scales	35	110
LOF_037	B. Birmingham	A low-frequency survey for extragalactic auroral emission	25.5	75.7
LOF_038	H. Rottgering	LOFAR surveys: Opening up a new window on the Universe	270	488
LOF_039	R. Preston	LOFAR Observation of Eclipsing Binary Pulsars	50.8	100
LOF_040	J. E. Conway	A synchrotron search for advanced intelligence around nearby stars	18	6
LOF_041	I. Hoffman	Search for OH Masser Emission at 34 MHz in Galactic Star-forming Regions and Supernovae	8	10
LOF_042	E. Varrault	Spectral line surveys in Aps(20)	7	10
L7E_043	L. Curjel	Study of atomic hydrogen at z=0	12	6
L7E_044	R. Coak	Extragalactic Radio Recombination Lines: An LFA resource project	0	0
L7E_045	J. Hessels	LOFAR: The Solar Wind Array AS-Sky Survey for Pulsars and Fast Transients	170	36.4

MoM: MANAGEMENT OF MEASUREMENTS

- <https://lofar.astron.nl/mom3/>
- Description available at
<https://lofar.astron.nl/mom3/help/mom2.jsp>
- Reference tool for preparation and inspection of the observing/processing templates and status of observations and pipelines
- To have access, register as a new user
- After login, you will be able to see only the projects you are involved in



MoM PROJECTS



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

[Project List](#) [Query List](#) [Project Explorer](#) [Preferences](#) [Tools](#) [Admin](#)

Name: Description:

Status: opened active suspended finished

[Filter](#) [Explore selected](#)

Viewing Projects (1 - 50 / 63) First Prev 1 [Next](#) [Last](#)

Name	Status	Description	PI	Friend	Role
<input type="checkbox"/> 2014LOFAR085	active	2014LOFAR085	Pizzo, Dr. Roberto Francesco	Orru, Dr Emanuela	PI, Contact author
<input type="checkbox"/> CITT_2014	active	Calibration and Imaging Tiger Team	Heald, Dr. George	Toribio, Dr Carmen	(extern)
<input type="checkbox"/> COBALT	active	COBALT	Brentjens, Dr. Michiel	Pizzo, Dr. Roberto Francesco	Friend
<input type="checkbox"/> Commissioning2014	active	Commissioning2014	Pizzo, Dr. Roberto Francesco	Toribio, Dr Carmen	PI, Contact author
<input type="checkbox"/> DOT002	active	Directors Discretionary time - Radio Recombination Lines Cas A	Geak, Dr Raymond	van der Horst, Dr. Alexander Jonathan	(extern)
<input type="checkbox"/> DOT2_001	active	Search for possible pulsar located at SNR CTA-1	Mulcahy, David	Fallows, Dr Richard	(extern)
<input type="checkbox"/> DOT2_003	active	PSR6K3-Interplanetary CubeSat and Thin-Film Spacecraft/Lander/Rover Communications and Navigation Pathfinder Experiment with LOFAR and the LuxSpace 4M Lunar Flyby Mission	Johnson, Michael	Iacobelli, Dr Marco	(extern)
<input type="checkbox"/> IPS	active	Interplanetary Scintillation	Fallows, Dr Richard	Frieswijk, Dr Wilfred	(extern)
<input type="checkbox"/> LC0_035	active	Targeted searches for pulsars and fast transients	van Leeuwen, Dr Joeri	Fallows, Dr Richard	(extern)
<input type="checkbox"/> LC1_008	active	LOFAR blank-field surveys: AGN, star-formation and cosmology	Best, Professor Philip	Frieswijk, Dr Wilfred	(extern)
<input type="checkbox"/> LC1_014	active	The flux density scale between 30 and 500 MHz	Scaife, Dr Anna	Fallows, Dr Richard	(extern)
<input type="checkbox"/> LC1_020	active	Monitoring of the Crab pulsar	Wucknitz, Olaf	Frieswijk, Dr Wilfred	(extern)
<input type="checkbox"/> LC1_040	active	Testing the IC/CMB Model for X-ray Emission from Quasar Jets with LOFAR	Harris, Daniel	Toribio, Dr Carmen	(extern)
<input type="checkbox"/> LC1_052	active	LOTAAS: The LOFAR Tied-Army All-Sky Survey for Pulsars and Fast Transients	Hessels, Dr. Jason	Fallows, Dr Richard	(extern)
<input type="checkbox"/> LC1_057	active	Observing the Interplanetary Magnetic Field with LOFAR	Fallows, Dr Richard	Fallows, Dr Richard	(extern)
<input type="checkbox"/> LC2_002	active	Probing a Coronal Mass Ejection with Scintillation Arcs	Fallows, Dr Richard	Fallows, Dr Richard	(extern)
<input type="checkbox"/> LC2_003	active	Monitoring Ionospheric Scintillation above LOFAR	Fallows, Dr Richard	Fallows, Dr Richard	(extern)
<input type="checkbox"/> LC2_004	active	Measuring the energy of Saturn's lightning	Griesemeier, Dr Jean-Mathias	Fallows, Dr Richard	(extern)
<input type="checkbox"/> LC2_005	active	Large-scale magnetic field connecting A399-A401	Govoni, Dr. Federica	Iacobelli, Dr Marco	Co-I
<input type="checkbox"/> LC2_006	active	A search for p-HQCD, a potential Bok contaminant, toward the Galactic Center, W43, W44, W45, and W52	Ginsburg, Dr Adem	Toribio, Dr Carmen	(extern)
<input type="checkbox"/> LC2_007	active	Continued LOFAR Timing of Discoveries from the GBNCC Pulsar Survey	Lynch, Dr. Ryan	Fallows, Dr Richard	(extern)
<input type="checkbox"/> LC2_008	active	The mysterious giant radio source 0917+75	Giovannini, Prof. Gabriele	Iacobelli, Dr Marco	Co-I
<input type="checkbox"/> LC2_009	active	Cosmic ray propagation in NGC 3033	Sandlöper, Katharina	Frieswijk, Dr Wilfred	(extern)
<input type="checkbox"/> LC2_010	active	Pulsar Timing with LOFAR	Verbiest, Dr. Joris	Fallows, Dr Richard	(extern)
<input type="checkbox"/> LC2_012	active	Probing the Stellar Plate-Coronal Mass Ejection Relationship	Osten, Dr. Rachel	Frieswijk, Dr Wilfred	(extern)
<input type="checkbox"/> LC2_013	active	Extended radio continuum halo in the edge-on galaxy NGC5907	Hiskolci, Arpad	Toribio, Dr Carmen	Co-I
<input type="checkbox"/> LC2_014	active	Exploring radio-loud AGN recurrent activity with LOFAR	Brienza, Marisa	Iacobelli, Dr Marco	(extern)
<input type="checkbox"/> LC2_015	active	Wide-field searches for image-plane radio transients	Fender, Professor Rob	Toribio, Dr Carmen	(extern)
<input type="checkbox"/> LC2_016	active	The first 194 MHz observations of an ultra cool dwarf star	Ramsay, Dr Gavin	Iacobelli, Dr Marco	(extern)
<input type="checkbox"/> LC2_017	active	LBA observations of M51 and NGC892	Mulcahy, David	Iacobelli, Dr Marco	(extern)

➤ Organized in folders

➤ Full inspection of observing observing setups might require some clicking – things will improve in the future

MoM: OBSERVATION FOLDERS

> Statuses:

- > Project: open, active, finished, suspended
- > Observations / pipelines: open, approved, scheduled, running, finished, aborted
- > Ingests: approved, scheduled, running, finished, aborted



My Account

Project List Query List Project Explorer Preferences Tools Admin

Copy selected Move selected Delete selected Change status Export XML

Project Explorer				OK Status		
<input type="checkbox"/>	<input type="checkbox"/>	LC2_014	<input type="button" value="Add"/>	<input type="button" value="Details"/>	<input checked="" type="checkbox"/> active	Exploring radio-loud AGN recurrent activity with LOFAR
<input type="checkbox"/>	<input type="checkbox"/>	3C338-20140804	<input type="button" value="Add"/>	<input type="button" value="Details"/>	<input type="checkbox"/> 	3C338 HBA 16:28:38.50 +39:33:06.0
<input type="checkbox"/>	<input type="checkbox"/>	3C338-20140805	<input type="button" value="Add"/>	<input type="button" value="Details"/>	<input checked="" type="checkbox"/>	3C338 LBA 16:28:38.50 +39:33:06.0
<input type="checkbox"/>	<input type="checkbox"/>	4C12.50-20140807	<input type="button" value="Add"/>	<input type="button" value="Details"/>	<input type="checkbox"/> 	4C12.50 HBA 13:47:33.30 +12:17:23.9
<input type="checkbox"/>	<input type="checkbox"/>	4C12.50-20140808	<input type="button" value="Add"/>	<input type="button" value="Details"/>	<input checked="" type="checkbox"/>	4C12.50 LBA 13:47:33.30 +12:17:23.9
<input type="checkbox"/>	<input type="checkbox"/>	4C12.50-20140809-2.5	<input type="button" value="Add"/>	<input type="button" value="Details"/>	<input checked="" type="checkbox"/>	4C12.50 HBA 13:47:33.30 +12:17:23.9
<input type="checkbox"/>	<input type="checkbox"/>	3C317-20140814	<input type="button" value="Add"/>	<input type="button" value="Details"/>	<input checked="" type="checkbox"/>	3C317 HBA 15:16:44.50 +07:01:18.0
<input type="checkbox"/>	<input type="checkbox"/>	3C317-20140815	<input type="button" value="Add"/>	<input type="button" value="Details"/>	<input type="checkbox"/> 	3C317 LBA 15:16:44.50 +07:01:18.0
<input type="checkbox"/>	<input type="checkbox"/>	3C338-20140816 REP	<input type="button" value="Add"/>	<input type="button" value="Details"/>	<input checked="" type="checkbox"/>	3C338 HBA 16:28:38.50 +39:33:06.0
<input type="checkbox"/>	<input type="checkbox"/>	3C317-20140821 REPET	<input type="button" value="Add"/>	<input type="button" value="Details"/>	<input checked="" type="checkbox"/>	3C317 LBA 15:16:44.50 +07:01:18.0
<input type="checkbox"/>	<input type="checkbox"/>	B20258+35-20140913	<input type="button" value="Add"/>	<input type="button" value="Details"/>	<input checked="" type="checkbox"/>	B20258+35 HBA 03:01:42.40 +35:12:21.0
<input type="checkbox"/>	<input type="checkbox"/>	B20258+35-20140916	<input type="button" value="Add"/>	<input type="button" value="Details"/>	<input checked="" type="checkbox"/>	B20258+35 LBA 03:01:42.40 +35:12:21.0

MoM: MULTI BEAM OBSERVING SETUPS & DETAILS



My Account

Project List Query List Project Explorer Preferences Tools Admin

Copy selected Move selected Delete selected Change status Export XML

Project Explorer		OK	Status	
LC2_014	Add Details	active	Exploring radio-loud AGN recurrent activity with LOFAR	
3C338-20140804	Add Details		3C338 HBA 16:28:38.50 +39:33:06.0	
3C338-20140805	Add Details		3C338 LBA 16:28:38.50 +39:33:06.0	
3C338 20140805	Add Details		LBA Outer, 10-90MHz, 8bits, 48MHz@48MHz, 1s, 64ch/xb(imaging):	
3C338/1/TO	Add Details	finished	[239990] 3C338/1/TO (Target Observation)	
3C295/1/CPT	Restart Details	finished	[240808] 3C295/1/CPT (Cal Pipe Target)	
3C338/1.0/TP	Restart Details	finished	[240054] 3C338/1.0/TP (Target Pipeline)	
3C338 20140805	Details	finished	Data archived in Long Time Archive (Download)	

My Account

Project List Query List Project Explorer Preferences Tools Admin

Copy selected Move selected Delete selected Change status Export XML

Project Explorer		OK	Status	
LC2_014	Add Details	active	Exploring radio-loud AGN recurrent activity with LOFAR	
3C338-20140804	Add Details		3C338 HBA 16:28:38.50 +39:33:06.0	
3C338-20140805	Add Details		3C338 LBA 16:28:38.50 +39:33:06.0	
3C338 20140805	Add Details		LBA Outer, 10-90MHz, 8bits, 48MHz@48MHz, 1s, 64ch/xb(imaging):	
3C338/1/TO	Add Details			
3C338	Details	finished	3C338	
3C295	Details	finished	3C295	
3C295/1/CPT	Restart Details	finished	[240808] 3C295/1/CPT (Cal Pipe Target)	
3C338/1.0/TP	Restart Details	finished	[240054] 3C338/1.0/TP (Target Pipeline)	
3C338 20140805	Details	finished	Data archived in Long Time Archive (Download)	

Details

LC2_014 > 3C338-20140805 > 3C338 20140805 > 3C338/1/TO > 3C338

General Info Data Products Reports and Remarks Status History

Name:	3C338
Description:	3C338
Current status:	Relaxed(2014/08/05 23:01 UTC)
Type:	BF Measurement
Project name:	LC2_014
Child id:	3C338/1/TO
MyKID:	418153
Measurement Type:	BF Measurement
Type:	Target
(System) Ra:	16:28:38.50
(System) Dec:	+39:33:06.0
(System) Equinox:	J2000
(System) Start time:	2014/08/05 13:00:13
(System) End time:	2014/08/05 23:00:17
(System) Duration:	
(System) Central frequency:	46.99976 MHz
(System) Bandwidth:	47.63023 MHz
(System) Subbands:	1/4...327
(System) Online Coherent De-dispersion (OCD):	None
(System) Tied Array Beam Physics:	None
(System) Number of Tied Array Rings:	0
(System) Tied Array Ring Size:	0.0
(System) Coherent Array Beams:	
(System) Incoherent Array Beams:	
(Specification) Target name:	3C338
(Specification) Ra:	16:28:38.50
(Specification) Dec:	+39:33:06.0
(Specification) Equinox:	J2000
(Specification) Start time:	N/A
(Specification) End time:	N/A
(Specification) Duration:	
(Specification) duration Squish Observation:	None
(Specification) Central Frequency:	N/A
(Specification) bandwidth:	N/A
(Specification) Contiguous:	None
(Specification) Subbands:	1/4...327
(Specification) Online Coherent De-dispersion:	None
(Specification) Tied Array Beam Physics:	None
(Specification) Number of Tied Array Rings:	0
(Specification) Tied Array Ring Size:	N/A
(Specification) Coherent Array Beams:	
(Specification) Incoherent Array Beams:	
Topology:	non_flow_418153.00_L1_SAF000

MoM: MULTI BEAM OBSERVING SETUPS & DETAILS



My Account

Project List Query List Project Explorer Preferences Tools Admin

Copy selected Move selected Delete selected Change status Export XML

Project Explorer		OK	Status	
LC2_014		✓	active	Exploring radio-loud AGN recurrent activity with LOFAR
3C338-20140804		⚠		3C338 HBA 16:28:38.50 +39:33:06.0
3C338-20140805		✓		3C338 LBA 16:28:38.50 +39:33:06.0
3C338 20140805		✓		LBA Outer, 10-90MHz, 8bits, 48MHz@48MHz, 1s, 64ch/1b(imaging):
3C338/1/TO		✓	finished	[239990] 3C338/1/TO (Target Observation)
3C295/1/CPT		✓	finished	[240054] 3C338/1.0/TP (Target Pipeline)
3C338/1.0/TP		✓	finished	Data archived in Long Time Archive (Download)
3C338 20140805		✓	finished	

Details

LC2_014 > 3C338-20140805 > 3C338 20140805 > 3C295/1/CPT

General Info Parset Dataproducts Reports and Remarks Status History

Name:	3C295/1/CPT
Description:	3C295/1/CPT (Cal Pipe Target)
Current status:	Finished(2014/08/08 01:51 UTC)
Type:	Calibration Pipeline
Project name:	LC2_014
Child of:	3C338 20140805
mom33d:	418132
SAS_ID:	240808
Start time:	2014/08/07 11:48:49
End time:	2014/08/08 01:51:15
Duration:	50545.0
SAS Default Template:	Calibrator Pipeline (No export)
(Frequency Integration Step):	N/A
(Time Integration Step):	N/A
Calibration SkyModel:	3C295
Flagging Strategy:	LBAdefault
ZeroPhase:	true
Demixing Freq Step (demixing):	64
Demixing Time Step (demixing):	10
Averaging Freq Step (demixing):	16
Averaging Time Step (demixing):	5
Ignore Target (demixing):	false
Demix Always (demixing):	{CASA,CYGA}
Demix If Needed (demixing):	<input type="checkbox"/>
Baselines (BBS):	*%
Correlations (BBS):	<input type="checkbox"/>
Beam Model enabled (BBS):	true
SolveParms (BBS):	["Gain:0.0:*", "Gain:1.1:*"]
Solve UV Range (BBS):	<input type="checkbox"/>
Strategy Baselines (BBS):	*%
Strategy Timerange (BBS):	<input type="checkbox"/>
Topology:	mom33d_418131.80.1.CPT
Predecessor:	W418132

My Account

Project List Query List Project Explorer Preferences Tools Admin

Copy selected Move selected Delete selected Change status Export XML

Project Explorer		OK	Status	
LC2_014		✓	active	Exploring radio-loud AGN recurrent activity with LOFAR
3C338-20140804		⚠		3C338 HBA 16:28:38.50 +39:33:06.0
3C338-20140805		✓		3C338 LBA 16:28:38.50 +39:33:06.0
3C338 20140805		✓		LBA Outer, 10-90MHz, 8bits, 48MHz@48MHz, 1s, 64ch/1b(imaging):
3C338/1/TO		✓	finished	[239990] 3C338/1/TO (Target Observation)
3C338		✓	finished	3C338
3C295		✓	finished	3C295
3C295/1/CPT		✓	finished	[240808] 3C295/1/CPT (Cal Pipe Target)
3C338/1.0/TP		✓	finished	[240054] 3C338/1.0/TP (Target Pipeline)
3C338 20140805		✓	finished	Data archived in Long Time Archive (Download)

MoM: INTERLEAVED OBSERVING SETUPS



My Account

Project List Query List Project Explorer Preferences Tools Admin

Copy selected Move selected Delete selected Change status Export XML

Project Explorer				OK	Status	
<input type="checkbox"/>	<input type="checkbox"/>	LC2_014	Add Details		active	Exploring radio-loud AGN recurrent activity with LOFAR
<input type="checkbox"/>	<input type="checkbox"/>	3C338-20140804	Add Details			3C338 HBA 16:28:38.50 +39:33:06.0
<input type="checkbox"/>	<input type="checkbox"/>	3C338-20140805	Add Details			3C338 LBA 16:28:38.50 +39:33:06.0
<input type="checkbox"/>	<input type="checkbox"/>	4C12.50-20140807	Add Details			4C12.50 HBA 13:47:33.30 +12:17:23.9
<input type="checkbox"/>	<input type="checkbox"/>	4C12.50-20140808	Add Details			4C12.50 LBA 13:47:33.30 +12:17:23.9
<input type="checkbox"/>	<input type="checkbox"/>	4C12.50-20140809-2.5	Add Details			4C12.50 HBA 13:47:33.30 +12:17:23.9
<input type="checkbox"/>	<input type="checkbox"/>	3C317-20140814	Add Details			3C317 HBA 15:16:44.50 +07:01:18.0
<input type="checkbox"/>	<input type="checkbox"/>	3C317-20140815	Add Details			3C317 LBA 15:16:44.50 +07:01:18.0
<input type="checkbox"/>	<input type="checkbox"/>	3C338-20140816 REP	Add Details			3C338 HBA 16:28:38.50 +39:33:06.0
<input type="checkbox"/>	<input type="checkbox"/>	3C317-20140821 REPET	Add Details			3C317 LBA 15:16:44.50 +07:01:18.0
<input type="checkbox"/>	<input type="checkbox"/>	B20258+35-20140913	Add Details			B20258+35 HBA 03:01:42.40 +35:12:21.0
<input type="checkbox"/>	<input type="checkbox"/>	B20258+35 20140905	Add Details			HBA Dual Inner, 110-190MHz, 8bits, 96MHz@144MHz, 1s, 64ch/sb(Imaging):
<input type="checkbox"/>	<input type="checkbox"/>	B20258H/3C48/1/CO	Add Details		finished	[243405] B20258H/3C48/1/CO (Calibration Observation)
<input type="checkbox"/>	<input type="checkbox"/>	B20258H/3C48/1/CPC	Restart Details		finished	[243465] B20258H/3C48/1/CPC (Cal Pipe Calibrator)
<input type="checkbox"/>	<input type="checkbox"/>	B20258H/B20258+35/1/	Add Details		finished	[243407] B20258H/B20258+35/1/TO (Target Observation)
<input type="checkbox"/>	<input type="checkbox"/>	B20258H/B20258+35/1.	Restart Details		finished	[243467] B20258H/B20258+35/1.0/TP (Target Pipeline)
<input type="checkbox"/>	<input type="checkbox"/>	B20258H/3C48/2/CO	Add Details		finished	[243409] B20258H/3C48/2/CO (Calibration Observation)
<input type="checkbox"/>	<input type="checkbox"/>	B20258H/3C48/2/CPC	Restart Details		finished	[243469] B20258H/3C48/2/CPC (Cal Pipe Calibrator)
<input type="checkbox"/>	<input type="checkbox"/>	B20258H/B20258+35/2/	Add Details		finished	[243411] B20258H/B20258+35/2/TO (Target Observation)
<input type="checkbox"/>	<input type="checkbox"/>	B20258H/B20258+35/2.	Restart Details		finished	[243471] B20258H/B20258+35/2.0/TP (Target Pipeline)
<input type="checkbox"/>	<input type="checkbox"/>	B20258H/3C48/3/CO	Add Details		finished	[243413] B20258H/3C48/3/CO (Calibration Observation)
<input type="checkbox"/>	<input type="checkbox"/>	B20258H/3C48/3/CPC	Restart Details		finished	[243473] B20258H/3C48/3/CPC (Cal Pipe Calibrator)
<input type="checkbox"/>	<input type="checkbox"/>	B20258H/B20258+35/3/	Add Details		finished	[243415] B20258H/B20258+35/3/TO (Target Observation)
<input type="checkbox"/>	<input type="checkbox"/>	B20258H/B20258+35/3.	Restart Details		finished	[243475] B20258H/B20258+35/3.0/TP (Target Pipeline)
<input type="checkbox"/>	<input type="checkbox"/>	B20258H/3C48/4/CO	Add Details		finished	[243417] B20258H/3C48/4/CO (Calibration Observation)
<input type="checkbox"/>	<input type="checkbox"/>	B20258H/3C48/4/CPC	Restart Details		finished	[243477] B20258H/3C48/4/CPC (Cal Pipe Calibrator)
<input type="checkbox"/>	<input type="checkbox"/>	B20258H/B20258+35/4/	Add Details		finished	[243419] B20258H/B20258+35/4/TO (Target Observation)
<input type="checkbox"/>	<input type="checkbox"/>	B20258H/B20258+35/4.	Restart Details		finished	[243479] B20258H/B20258+35/4.0/TP (Target Pipeline)

MoM: INTERLEAVED OBSERVING SETUPS



My Account

Project List Query List Project Explorer Preferences Tools Admin

Copy selected Move selected Delete selected Change status Export XML

Project Explorer		OK	Status	
<input type="checkbox"/>	LC2_014	Add Details		active Exploring radio-loud AGN recurrent activity with LOFAR
<input type="checkbox"/>	3C338-20140804	Add Details		3C338 HBA 16:28:38.50 +39:33:06.0
<input type="checkbox"/>	3C338-20140805	Add Details		3C338 LBA 16:28:38.50 +39:33:06.0
<input type="checkbox"/>	4C12.50-20140807	Add Details		4C12.50 HBA 13:47:33.30 +12:17:23.9
<input type="checkbox"/>	4C12.50-20140808	Add Details		4C12.50 LBA 13:47:33.30 +12:17:23.9
<input type="checkbox"/>	4C12.50-20140809-2.5	Add Details		4C12.50 HBA 13:47:33.30 +12:17:23.9
<input type="checkbox"/>	3C317-20140814	Add Details		3C317 HBA 15:16:44.50 +07:01:18.0
<input type="checkbox"/>	3C317-20140815	Add Details		3C317 LBA 15:16:44.50 +07:01:18.0
<input type="checkbox"/>	3C338-20140816 REP	Add Details		3C338 HBA 16:28:38.50 +39:33:06.0
<input type="checkbox"/>	3C317-20140821 REPET	Add Details		3C317 LBA 15:16:44.50 +07:01:18.0
<input type="checkbox"/>	B20258+35-20140913	Add Details		B20258+35 HBA 03:01:42.40 +35:12:21.0
<input type="checkbox"/>	B20258+35 20140905	Add Details		HBA Dual Inner, 110-190MHz, 8bits, 96MHz@144MHz, 1s, 64ch/sb(Imaging):
<input type="checkbox"/>	B20258H/3C48/1/CO	Add Details		finished [243405] B20258H/3C48/1/CO (Calibration Observation)
<input type="checkbox"/>	3C48	Details		finished 3C48
<input type="checkbox"/>	B20258H/3C48/1/CPC	Restart Details		finished [243465] B20258H/3C48/1/CPC (Cal Pipe Calibrator)
<input type="checkbox"/>	B20258H/B20258+35/1/	Add Details		finished [243407] B20258H/B20258+35/1/TO (Target Observation)
<input type="checkbox"/>	B20258+35	Details		finished B20258+35
<input type="checkbox"/>	B20258H/B20258+35/1.	Restart Details		finished [243467] B20258H/B20258+35/1.0/TP (Target Pipeline)
<input type="checkbox"/>	B20258H/3C48/2/CO	Add Details		finished [243409] B20258H/3C48/2/CO (Calibration Observation)
<input type="checkbox"/>	B20258H/3C48/2/CPC	Restart Details		finished [243469] B20258H/3C48/2/CPC (Cal Pipe Calibrator)

OBSERVATION PERFORMED: RO REPORT TO PI



Dear Colleague,

the following message contains information regarding a LOFAR Cycle 6 project for which you are listed as the contact author. Please, forward this information to the suitable individuals

We would like to inform you that an observation related to your LOFAR Cycle 6 project has been performed. Please find detailed information below

General notes: -> any fundamental remarks

Observations: -> details of performed observations

Performance of the system: -> any issues to report with stations or CEP cluster?

Data recording: -> any data missing?

Data processing: -> status of processed data

Archiving: -> started or in the queue

Remarks: please analyze the validation plots at <https://proxy.lofar.eu/inspect/HTML/> within 24 hours after this notification and get in contact with sciencesupport@astron.nl in case you need to report problems about their quality. After this time window has passed, we will assume that your judgment 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 or, if requested, on CEP3, you will have two weeks available to check their quality and to report 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

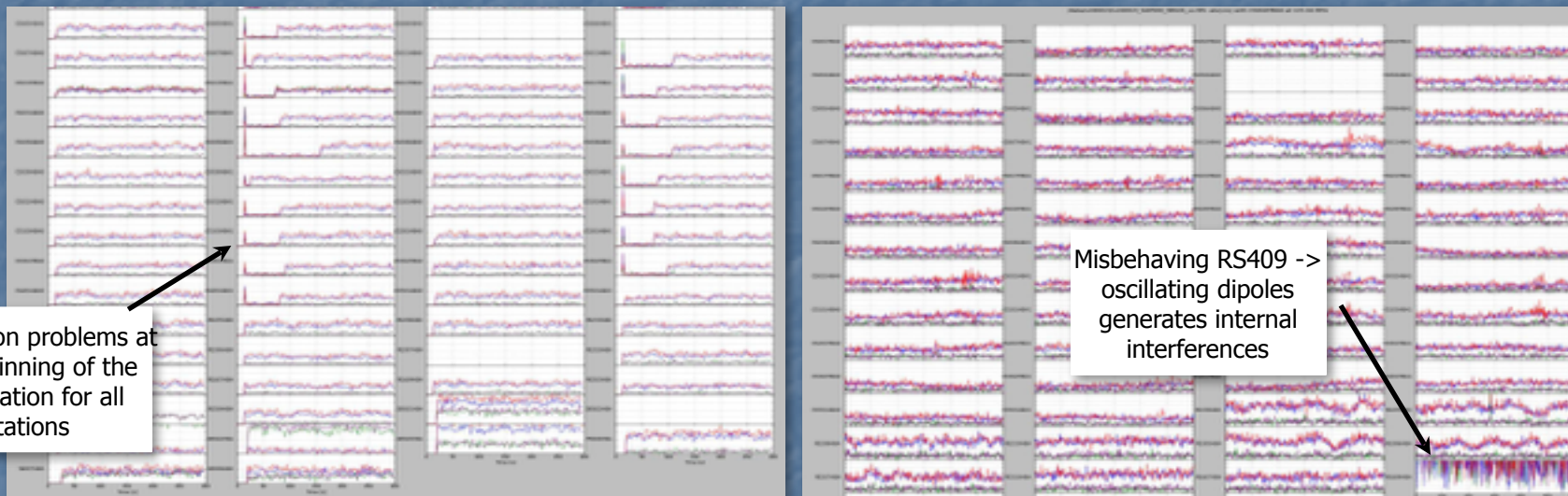
RADIO OBSERVATORY OBSERVING POLICIES



- <http://www.astron.nl/radio-observatory/observing-capabilities/depth-technical-information/cycle-1-observing-and-processin>
- Most relevant ones are:
 - I. In the case of malfunctioning stations or locus 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, according to the science goals of the relevant proposal
 - II. 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
 - III. From the moment the data are made available to the users at the LTA or, if requested in the original proposal, on CEP3, they will have two 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**
 - IV. In the case that an observation is considered failed, it may be repeated only once if the observing schedule allows it.
 - V. All Cycle projects with priority "A" 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. Priority "B" projects will not be observed in the next Cycle.

INSPECTION PLOTS: TIME SERIES

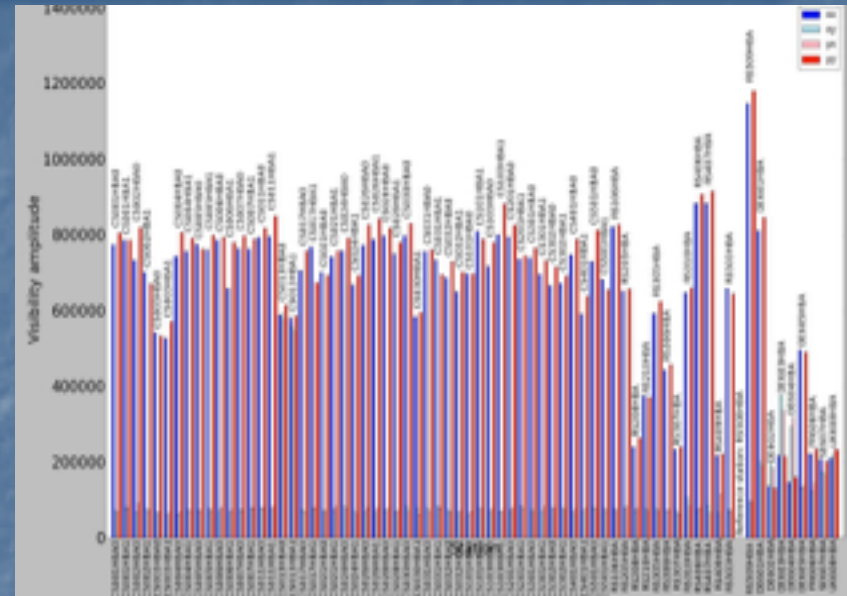
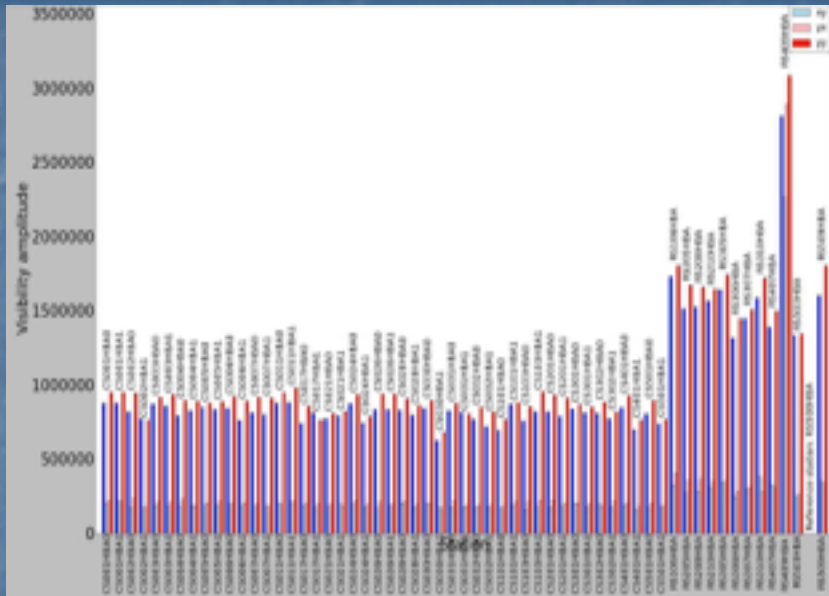
- See tutorial at <http://www.astron.nl/radio-observatory/observing-capabilities/depth-technical-information/data-quality-inspection/data-qu>



Connection problems at the beginning of the observation for all stations

Misbehaving RS409 -> oscillating dipoles generates internal interferences

INSPECTION PLOTS: VISIBILITY AMPLITUDE

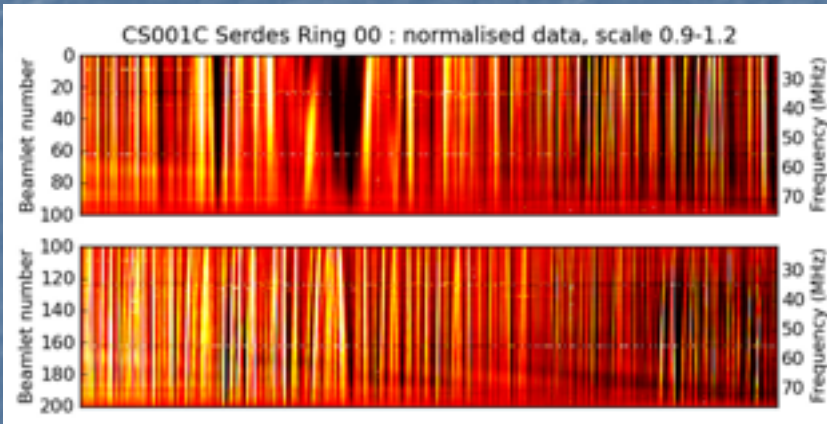


- Stations with the same characteristics, e.g. all CS should have more or less the same amplitudes; when their values differ too much the sensitivity of the station is not good (in this case RS409)
- It is good to check on a long baseline a frequency with high S/N which is relatively clean of interferences (e.g. correlator SB 77 in HBA and 301-302 in LBA)
- A way to identify the presence of Solar bursts is to check if the amplitude visibilities scales of CS have much higher values than the remote station or CS in quiet conditions.

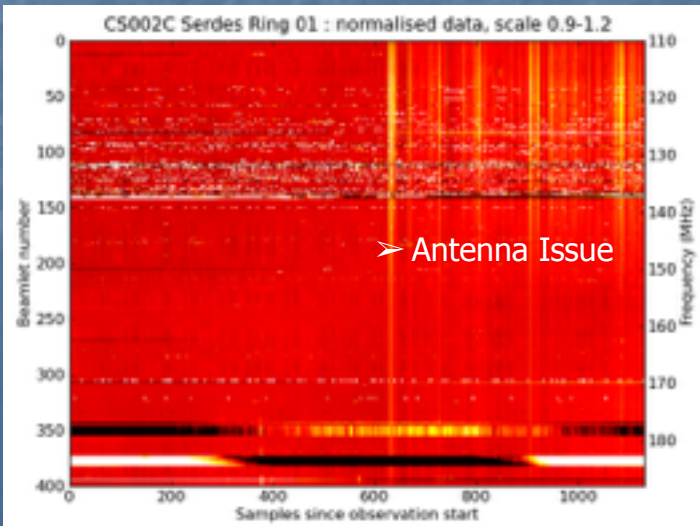
- Visibility amplitude 3C196 (resolved at long baselines)
- Different amplitudes values among RS and IS are due to the fact that some baselines detect and resolve source structure and some other do not.
- Knowing the layout of the telescope and the characteristics of the source are the key to interpret these plots.

I. INSPECTION PLOTS: BEAMLET STATISTICS PLOTS

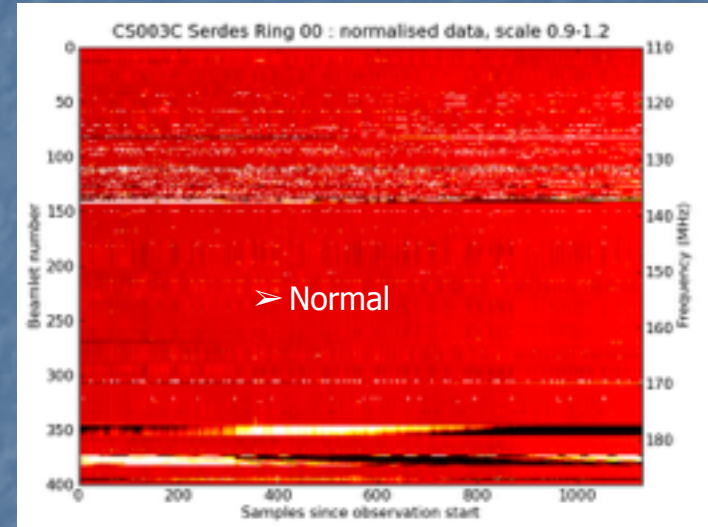
- Statistics for each station
- Spectrum every second



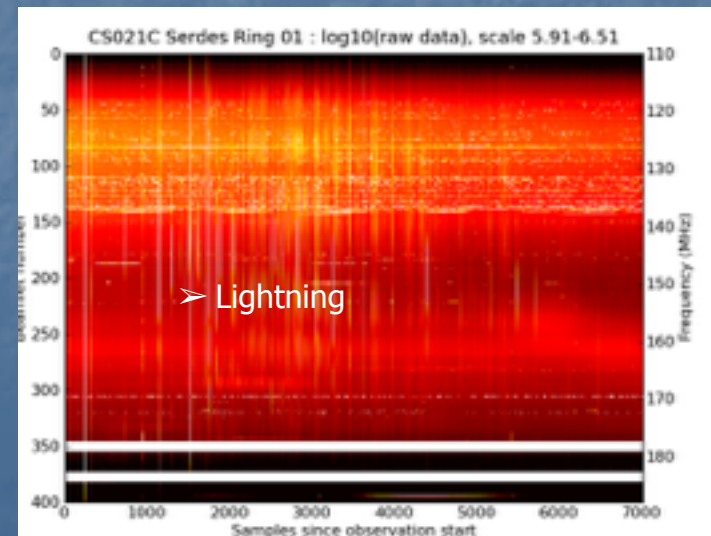
➤ Scintillation (LBA)



➤ Antenna Issue



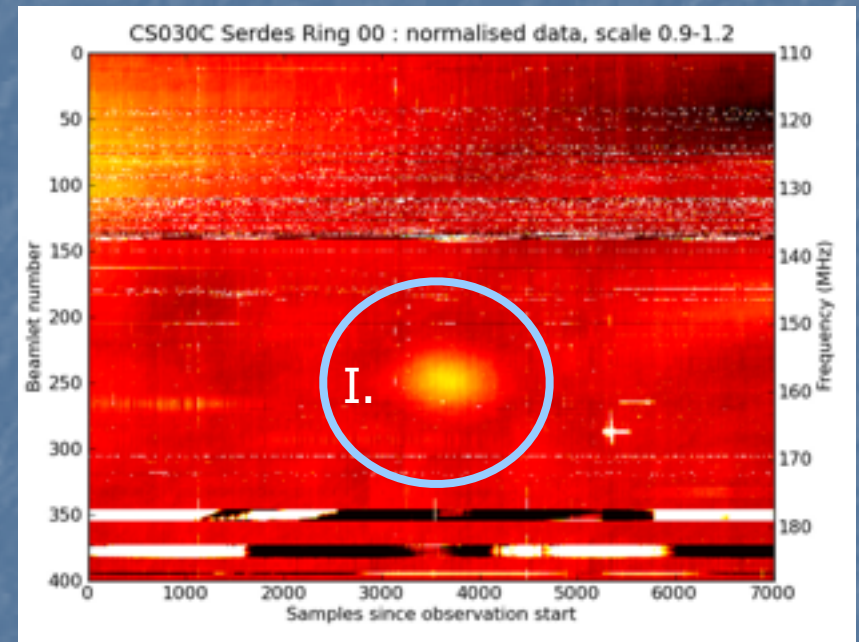
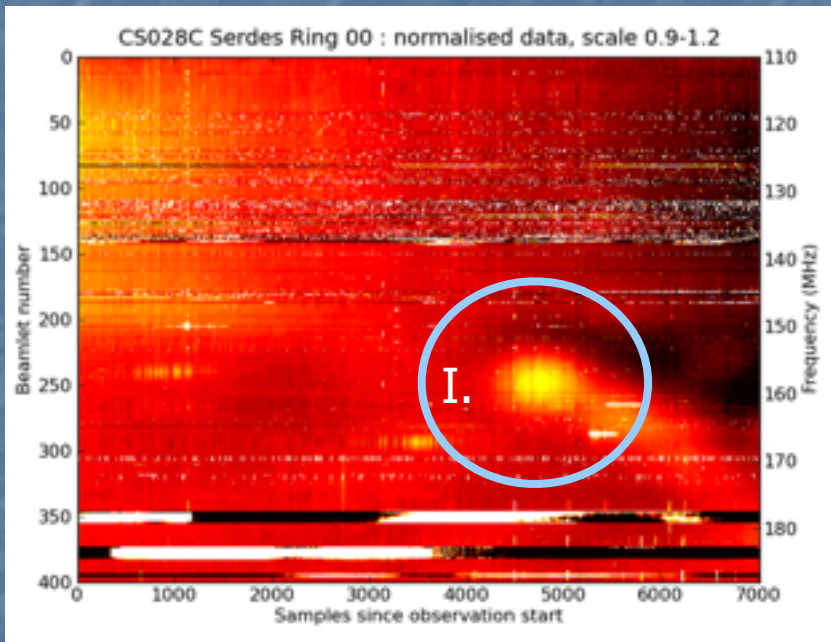
➤ Normal



➤ Lightning

I. INSPECTION PLOTS: BEAMLET STATISTICS PLOTS

- Strong source in sideline
- HBA regular pattern
- Shifts in time per station



I.

LTA: LONG-TERM ARCHIVE



➤ Ingests are initiated by Science Support / operators in MoM. Currently, the PI should actively check the status of the ingest in MoM

➤ LOFAR Tools: <http://www.astron.nl/radio-observatory/lofar/lofar-tools/lofar-tools>

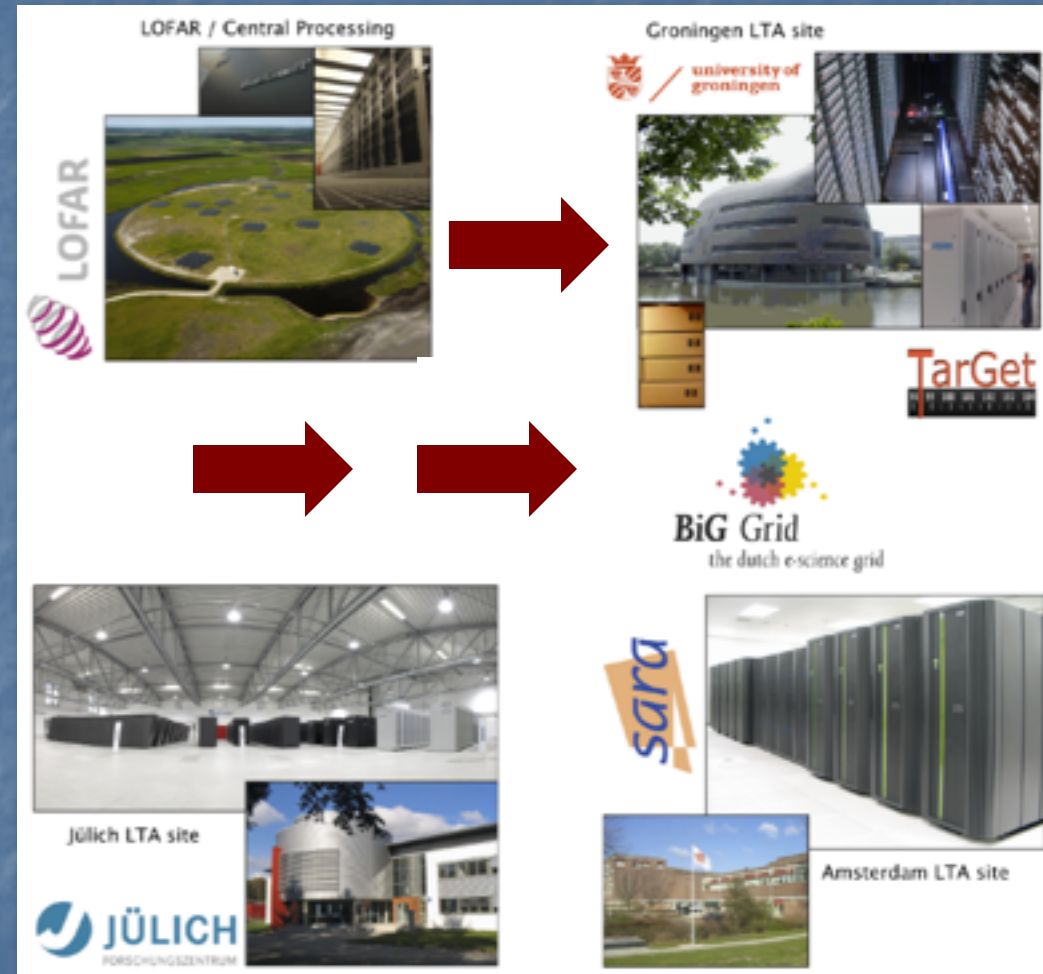


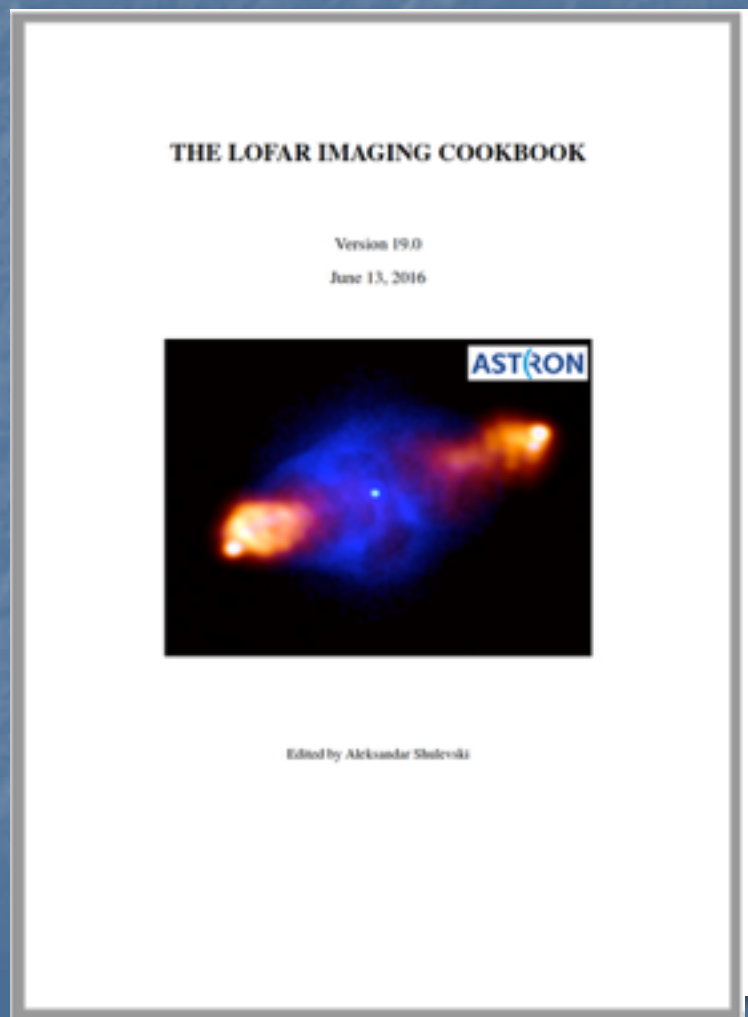
ASTROWISE -> <http://lofar.target.rug.nl/>



HowTo -> http://www.lofar.org/wiki/doku.php?id=public:lta_howto

➤ See Lecture L. Cerrigone





- <http://www.astron.nl/radio-observatory/lofar/lofar-imaging-cookbook>
- Important overview and description of tools to inspect, reduce, and analyze imaging data
- Supplemented by online material

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- Editor A. Shulevski
- Authors: experienced LOFAR commissioners

- CEP3 will be used to run the commissioning processing routines, testing production software and, in selected cases, to perform advanced Cycle processing by the Cycle users
- Observing, CEP4 processing time and the use of CEP3 are allocated by the LOFAR Programme Committee and the ILT director during the regular proposal evaluation stages, or under Director's Discretionary Time
- Access privileges **limited in time** (8 weeks by default). Automatic notification will be sent to users one week before the expiration of access privileges. Users can request extension of their access, in case this is justified. The user's data products generated on the CEP3 nodes **will be removed regularly** after the expiration of the access privileges
- You will be using CEP3 for the School tutorials
- CEP3 information is available on the wiki: <http://www.lofar.org/operations/doku.php?id=cep3:start>

- LOFAR users who want to suggest observing experiments aimed at commissioning specific aspects of the instrument can **apply for 'commissioning time' at any moment**
- Requests should be sent to R. Pizzo (pizzo@astron.nl) and M. Brentjens (brentjens@astron.nl), who jointly will decide whether there is room in the schedule for such experiment and it is useful enough to take some specified amount of Science Support and Software Support
- In case of rejection, the proposers can appeal to the Director of the Radio Observatory
- People who achieve scientific results from commissioning time obviously **have to go through the Builders List**
- For more details see

I. <http://www.astron.nl/radio-observatory/asking-time/asking-time>



The screenshot shows the ASTRON website interface. At the top, the ASTRON logo is displayed with the text 'Netherlands Institute for Radio Astronomy'. Below the logo is a navigation menu with links for Home, About ASTRON, Astronomy Group, Radio Observatory, and R & D Laboratories. The main content area is titled 'RADIO OBSERVATORY' and 'ASKING FOR TIME'. A sidebar on the left contains a list of links for various topics, including 'LOFAR' (Subscribe to LOFAR news, Observing Proposals, Asking for time, LOFAR Data Policy, Observing and processing policies, Observing Capabilities, LOFAR Tools, Cycles, Weekly schedule, Commissioning Period & the LCCG, LOFAR MSSS, Station Status, LOFAR Science, Publications and Authorship Policy, Roll-out status, LOFAR Wiki), 'WEST' (Astronomers, Weekly schedule, Observation status, Apertif), and 'GENERAL' (Apertif - EoIs, PC pages). The main content area includes a breadcrumb trail 'Home > Radio Observatory > Asking for time', a 'View Edit Revisions' button, and sections for 'Regular proposal deadlines', 'Proposal submission', and 'DDT proposals'. The 'Regular proposal deadlines' section lists four cycles with their respective proposal deadlines. The 'Proposal submission' section states that proposals are submitted through the NorthStar online submission tool. The 'DDT proposals' section states that Director's Discretionary Time proposals can be submitted at any time through the NorthStar online submission tool. The 'Commissioning proposals' section explains that LOFAR users can apply for commissioning time and provides contact information for R. Pizzo and M. Brentjens.

THANKS