# LOFAR NEWSLETTERS JANUARY-FEBRUARY 2019

Previous LOFAR newsletters are collected [here](#).
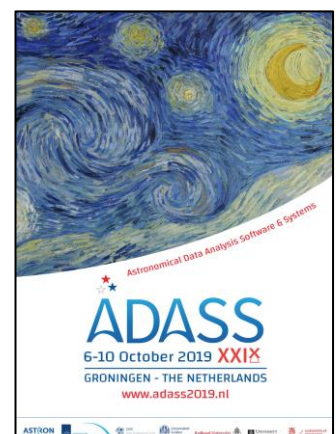
Announcements:

- The Cycle 12 proposal submission deadline is approaching: Wednesday, 6 March, 12 UT (noon). The call can be found [here](#). For Cycle 12, there will be 750 observing hours, 1000 processing hours and 2.2 PB of archive storage available. [RadioNet funding](#) is available to travel to ASTRON to get assistance with LOFAR data reduction – if this is desired, it must be specified in the proposal.

- Registration is now open for the the '2019 LOFAR Users Meeting', 'LOFAR Community Science workshop' and 'LOFAR 2.0 discussion' taking place in Leiden (The Netherlands) on 20-23 May. Details about the meetings, including relevant deadlines, can be found on the meetings [website](#).
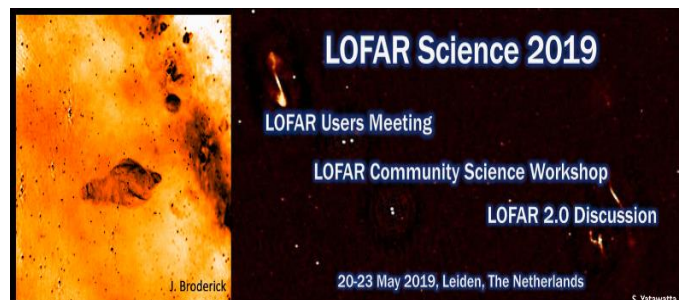

- ASTRON, together with six other Dutch astronomical institutes, will organize the 29th annual international Astronomical Data Analysis Software & Systems (ADASS) conference between 6-10 October 2019, in Groningen (The Netherlands). ADASS provides a *unique* forum for scientists and programmers concerned with algorithms, software and software systems employed in the acquisition, reduction, analysis, and dissemination of

astronomical data. More information about the event, as well as the form to propose for specific conference themes, can be found on the conference website. The first announcement will be distributed in April and will coincide with the opening of the registration.

- The first edition of the LOFAR beamformed cookbook has been released. It is available here. The cookbook provides a description of the beam- forming capabilities of LOFAR including the format of recorded data and the reading of these data using Python. A "dynamic spectrum toolkit" developed for reduction and visualisation of these data is also demonstrated.

LOFAR Beamformed Cookbook
Version 1.0

Edited by Pietro Zucca,
Richard Fallows and Vlad Kondratiev

Radio Observatory

LOFAR Science Operations and Support

ASTRON   February 2019

- JIRA tickets are now being used by the Radio Observatory to notify PIs/contact authors of observation setups to be checked, and to send observation reports. These tickets replace the reporting e-mails used previously. For communication regarding projects or user/technical support, users are advised to contact SOS through the RO helpdesk system and include the project code in the subject of the ticket.
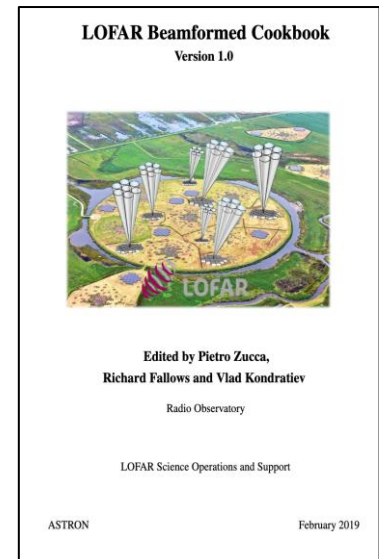
Array status:

- 38 stations operational in the Netherlands: 24 core and 14 remote stations. 13 international stations operational: DE601, DE602, DE603, DE604, DE605, FR606, SE607, UK608, DE609, PL610, PL611, PL612, IE613.

- A new international station is under construction in Latvia.

- The overview of non-operational antenna elements for LBA and HBA is available here.

- Station calibration:

    o LBA Outer: the calibration table installed at CS013 was incorrect and has been replaced on January 17th. At CS031, cables for 16 of the 48 antennae were wrongly connected (x/y connections were swapped). This was corrected on January 7th. The station was then

recalibrated and has been performing on par with other stations since January 17th.

- o LBA Outer data of other stations has been processed and will be further analyzed. The new calibration tables are expected to improve the sensitivity of a subset of stations.

- o HBA low calibration data were taken for core and international stations in December and have been partly processed.

Observing System Status:

- The observing system has been relatively stable during the past two months. As usual, oscillating tiles at a few stations were detected during BF observations and were disabled.

Software development status (J. Annyas):

- Migration to Python 3 is being realized for all LOFAR software under our control. It will be deployed at the software roll out planned on 23 April.

SCIENCE DELIVERY FRAMEWORK – PRODUCTION PIPELINE ENHANCEMENT (SDF-PPE; R. Pizzo & T. Shimwell)

- The goal of the SDF-PPE project is to maximize the scientific return of the ASTRON-operated observing facilities through the deployment in production of the best available processing pipelines generating advanced data products that are closer to science than those produced by the current operational pipelines. The project has two components:

1. Deployment of available advanced processing pipelines in the Radio Observatory production system, which in due course should also include LTA facilities.

2. Research to further advance calibration and Imaging software techniques to be pursued within a forum (Calibration and Imaging Research Forum - CIRF).

- During the past two months, Prefactor 3.0 has been ported to CEP4 and is now being commissioned and characterized. This pipeline produces direction-independent calibrated visibilities and wide-band images of the target field, together with diagnostic plots. Prefactor will be broadly offered to the community in the Cycle 13 call. In Cycle 12, the Radio Observatory may already select a sample of appropriate projects that will be offered the opportunity to obtain data products processed through this pipeline.

- The RO is gaining experience with pipeline processing at the LTA with the goal to offer this service to the community in the near future.

- As part of the CIRF, monthly telecons are starting where members of the LOFAR community will discuss calibration issues for a variety of topics such as the international baselines, polarization, and wide field HBA and LBA imaging. Within ASTRON we have also begun to have regular calibration and imaging meetings in which ways to fit and applying screens to correct images for ionospheric distortions are being discussed.

COBALT2.0 Phase 1 (R. Kaptijn)

- The new GPU cluster has been delivered, installed and accepted.

- The system administrators have installed, configured and tuned the OS.

- The software is being installed and tuned.

LOFAR Efficiency Improvement (LEI) Phase 1 (R. Kaptijn)

- The main objective of the LEI project is to have a robust, future-proof, evolvable and efficient software environment for monitoring and control of the current LOFAR system. The project is split up into phases. The main

objective of phase 1 (currently active) is to replace MoM and the surrounding systems (MoMDB, OTDB, Scheduler).

- The system requirements have been put in the Polarion requirements management tool and have been submitted to a review panel.

- Implementation is starting up.

LOFAR2.0 (W. van Cappellen)

- LOFAR2.0 is a staged upgrade program of LOFAR such that it will continue to develop and remain the world's most powerful very-low-frequency, and long-baseline, radio interferometer until at least 2030.

- The first stage of LOFAR2.0 enables simultaneous observing with all LBA and HBA antennas in a station, install a centralized high-precision clock distribution system, and use joint LBA+HBA antenna data to accurately model and remove ionospheric disturbances, which are strongest at low frequencies.

- C. Bassa has been appointed as the deputy project scientist of LOFAR2.0. He closely collaborates with the Project Scientist, Jason Hessels.

- The use-cases for the new modes enabled by Stage 1 have been approved. Science and system requirements are currently being derived.

- Uniboard2 has been selected as the new processing platform for the stations.

- The LOFAR for Space Weather project successfully passed the Preliminary Design Review (PDR).

Observing Programmes

- Cycle 11 observing programme: ~50% complete. The observing schedule can be found here.

- Cycle 10 observing programme: 95% complete. The rest is being observed with second priority during Cycle 11.

Calendar next LOFAR activities:

The dates of LOFAR Status Meetings, roll-outs and stop days are listed in an online calendar that is available [here](#)_. In particular, we emphasize:_

- LOFAR Cycle 12 proposal deadline: 6 March, 12 UT (noon)

- Deadline submission progress report for LT10 projects: 10 April, 12 UT (noon)

- [LOFAR science week](#): 20-23 May 2019

- Next LOFAR bulletin: April 2019