



## LOFAR NEWSLETTERS JANUARY-FEBRUARY 2019

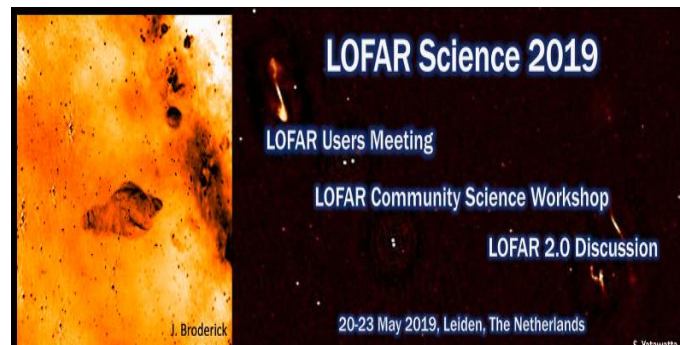
Previous LOFAR newsletters are collected [here](#).

### **Announcements:**

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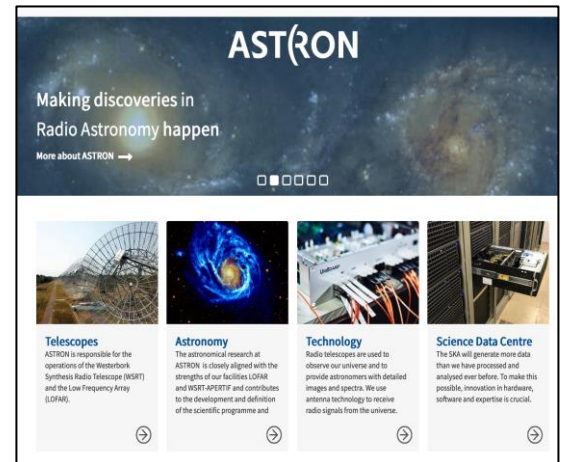
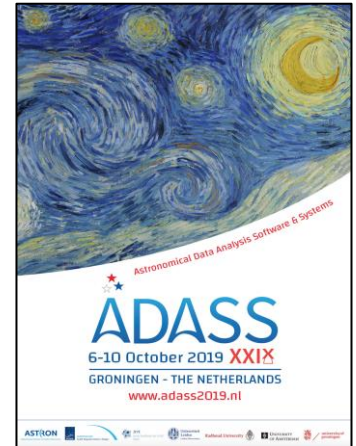
- Cycle 12 allocations have been finalized during the recent PC meeting on 25+26 April. They will be made public within a few days, after the endorsement by the ILT-board.

- The '2019 LOFAR Users Meeting', 'LOFAR Community Science workshop' and 'LOFAR 2.0 discussion' will take place in Leiden (The Netherlands) on 20-23 May. Details about the meetings can be found on the meetings [website](#). The deadline to register for the meetings is 30 April.



- The second traineeship in 'Science Operations with Massive Arrays' will run between 6 May – 26 July. Four trainees have been selected from a total of 77 applicants. The programme will provide full exposure to LOFAR operations and data reduction techniques. We expect that the traineeship will once more give crucial visibility to the techniques the RO has pioneered and adopts daily to operate LOFAR and that will with no doubt be reference for next generation facilities, such as the SKA.

- ASTRON, together with seven 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. Registration to the conference is now [open](#). The first announcement is available [here](#). More information about the event can be found on the [conference website](#).
- The new ASTRON website has been launched on <https://www.astron.nl>. Currently, the website contains the first 75 most important pages. Others will be added soon, during the next stages of the website development. The old website will still be available at the URL <https://old.astron.nl>. If you have bookmarks to specific web pages on the old website, please replace 'www' with 'old' and they will still work. In due course, the old website will be archived permanently - we will inform you about that.



## Array status:

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- 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 and will become available for observations by the end of 2019
  - A new international station will be built in Italy by the end of 2022.
  - The overview of non-operational antenna elements for LBA and HBA is available [here](#).

## **Observing System Status:**

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- The observing system has been relatively stable till last week. Efforts are in progress to stabilize the system after the major software roll out that took place on 23 April (see below).
- As usual, oscillating tiles at a few stations were detected during BF observations and were disabled.

## **Software development status (J. Annyas):**

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- Installed and tested the needed software on COBALT 2 (see below).
- The GPL open source license will be changed to the Apache 2 license.
- The latest LOFAR Software release 4.0.0 is in progress and will deliver C++11, Python 3, and CasaCore 3 support.

## **Science Delivery Framework – Production Pipeline Enhancement (SDF-PPE; R. Pizzo & T. Shimwell)**

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- 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).

- Prefactor 3.0 has been ported to CEP4 and is being commissioned and characterized. This pipeline produces direction-independent calibrated visibilities and wide-band images of the target field, together with diagnostic plots. We expect to broadly offer Prefactor to the community in the Cycle 13 call. In Cycle 12, the Radio Observatory will select a few appropriate projects that will be offered the opportunity to obtain data products processed through this pipeline.
- The monthly CIRF telecons are now underway with A. Drabent describing Prefactor3.0 in the first telecon and L. Morabito and N. Jackson outlining calibration and imaging of the LOFAR international stations in the most recent meeting.

### **COBALT2.0 Phase 1 (R. Kaptijn)**

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- COBALT2.0 will be the next generation correlator and beamformer for the LOFAR telescope and will represent a significant upgrade of the currently operational COBALT correlator/beamformer.
- The main objective of the COBALT2.0 project is to deliver the LOFAR MegaMode (LMM) and replace COBALT hardware. LMM will support simultaneous observations serving half a dozen scientific surveys and space weather applications in parallel, greatly increasing the efficiency with which LOFAR is used for scientific research. The project has been split up into two phases. Phase 1 covers only replacing the COBALT1 hardware (tendering, installation, validation and commissioning).
- The COBALT software is now installed and tuned.
- Commissioning is ongoing. On March 7th the first successful real-time observation via COBALT2.0 took place.

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

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- 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 multiple 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 reviewed.
- Preparatory and the first implementation activities are ongoing.

## **LOFAR2.0 (W. van Cappellen)**

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- 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 LOFAR2.0 Stage 1 science requirements, system requirements and an architectural design have been derived from the LOFAR2.0 use cases and have been reviewed by an independent review panel. The panel confirmed that the robust systems engineering approach is sensible.
- Lab tests of the new clock distribution system have been concluded and field tests are being prepared.

## **Observing Programmes**

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- Cycle 11 observing programme: ~80% 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:**

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*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:*

- Start of Cycle 12: 1 June.
- [LOFAR science week](#): 20-23 May 2019
- Next LOFAR bulletin: June 2019