LOFAR NEWSLETTERS JANUARY-FEBRUARY 2020

Previous LOFAR newsletters are collected here.

<u>**Announcements**</u>**:**

- The Cycle 14 proposal submission deadline is approaching: Wednesday, 4 March, 12 UT (noon). The call can be found here. Note: this is also a long-term call. There are restrictions in observing modes available in the single-cycle (Cycle 14) as well as in the long-term cycle (Cycles 14-15-16-17), as specified here. Also, starting from Cycle 14 the number of hours required to support the proposed observing projects becomes a resource to be allocated during the review process. More information about this and a method to calculate the support load for a given project configuration can be found here.

- The ASTRON RO in collaboration with JIVE will run the third edition of the 'Traineeship in Science Operations with Massive Arrays'. Three trainees from various Worldwide countries will visit ASTRON and JIVE starting on 6 April to be exposed to LOFAR and EVN operations. The traineeship will give great 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 SKA. The programme will last for 12 weeks. The traineeship is sponsored by ASTRON and the Jumping Jive project.

- The 6th LOFAR Data Processing School will take place at ASTRON, in Dwingeloo (The Netherlands), between 21-25 September 2020. The aim of this School is to introduce the LOFAR system to new members of the community who will analyse both interferometric and high time resolution beam formed LOFAR data. Hands-on sessions will play a crucial role during the School giving attendees the opportunity to gain experience with real LOFAR data. The registration as well as the website will open in March, when the second announcement will be circulated.

Array status:

- 38 stations operational in the Netherlands: 24 core and 14 remote stations. 14 international stations operational: DE601, DE602, DE603, DE604, DE605, FR606, SE607, UK608, DE609, PL610, PL611, PL612, IE613, LV614.

- 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:

- No major failures were experienced on CEP hardware/software. However, because of the stormy weather, several Dutch stations had damages in the LBA antenna fields. An overview of the damages has been done and maintenance is being planned accordingly.

Observing Programs

- Cycle 13 observing program: 46% complete. The observing schedule can be found here.

- Cycle 12 observing program: ~95% complete, progressing with second priority. The observing schedule can be found here.
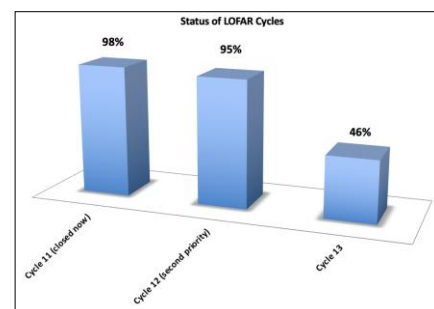
Telescope Manager Specification System (TMSS; R. Pizzo)

- TMSS (Telescope Manager Specification System) will be a brand-new software application for the specification, administration, and scheduling of LOFAR observations. Its realisation

is crucial, as it will enable the required support for LOFAR2.0 use cases while also streamlining LOFAR operations and improving the adaptability and maintainability of software for future extensions.

- By the end of 2020, TMSS will deliver with high priority the software components for executing the LOFAR2.0 Survey Use Cases. By doing that, the project will implement also other LOFAR Science Use Cases, which will ensure a healthy continuation of the Cycle observing programs also before the start of the LOFAR2.0 surveys.

- The TMSS project started in January. During its first quarter, TMSS will implement the system foundations in terms of telescope model and database. Additionally, it will deliver a system capable to perform the survey observations with the required handling of and feedback on system resources. The following cycles will implement dynamic scheduling functionality, support for the other planned use cases and responsive telescope functionality.

- TMSS is an important component of the Telescope Manager of LOFAR2.0, the system that will control all aspects of the telescope, including proposal handling, observation execution, and system monitoring.

LOFAR2.0 (W. van Cappellen)

- LOFAR2.0, the program to upgrade the station electronics, timing distribution system and LBA processing pipeline, is proceeding according to plan.

- The baseline design of the Station and Timing Distributor that was approved at PDR in September 2019 is currently being implemented in detail.

- A European tender to procure the signal processing boards for DUPLLO (Uniboard^2) has been published and quotations are currently being evaluated.

- Good progress has been made on the system implementation of the detailed ionospheric calibration at the lowest frequencies. Our latest results show that the intended method of fitting the ionospheric screens is tractable: this gives us confidence that the method to do the full ionospheric information transfer from the high-to the low-band data will work.

COBALT2 PHASE 2 (R. Kaptijn)

- The COBALT 2 next generation correlator and beamformer runs stable and reliable. In March 2020, Phase 2 of the COBALT2.0 project will start. In this phase the Lofar Mega Mode (LMM) will be implemented. The software will be adapted to enable parallel observations.

Science Delivery Framework – Production Pipeline Enhancement (SDF-PPE; T. Shimwell)

- The SDF project is currently focused on creating a prototype system to demonstrate bulk PreFactor3.0 processing of LTA data on facilities local to the data with the intention of providing users higher level data products. This builds upon tools developed by the LOFAR surveys collaboration that are currently also used for co-observing projects.

- PreFactor3.0 is being implemented within the Automated Grid-enabled LOFAR Workflows (AGLOW) framework to enable processing on the SURFsara and Juelich Long Term Archive (LTA) compute clusters and to operate this from a simple web interface. The first successful processing runs for data archived in SURFsara have recently been completed.

- To improve its maintainability, PreFactor3.0 is being translated from the generic pipeline framework to the Common Workflow Language (CWL). The translation of the calibrator section of PreFactor3.0 is almost completed and the new implementation is now being tested.

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:

- Cycle 14 proposals submission deadline: 4 March, 12 UT (noon)

- Next LOFAR bulletin: April 2020