

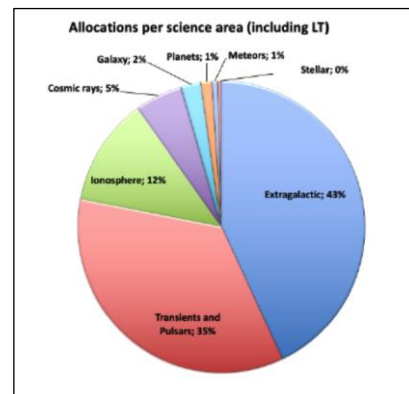


LOFAR NEWSLETTERS NOVEMBER-DECEMBER 2020

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

Announcements:

- **Cycle 15:** about 1400 observing hours have been allocated to single-cycle projects for Cycle 15. In addition, ~1500 hours will be observed for long-term projects. As shown in the figure, the projects cover a wide range of science areas. Cycle 15 started on 1 December. The final allocations and observing schedule can be found [here](#).



- **Lofar School:** the 6th LOFAR Data School will take place between 22 - 26 March 2021. Because of the current Covid-19 pandemic, the event will be virtual. The school will offer lectures and demos. Online material will also be provided for offline hands-on data processing sessions. Interaction and networking between participants and lecturers will be promoted via Q&A sessions as well as team building activities. An announcement with further details and advertising the opening of the registration will be distributed next week. The School website can be found [here](#).

<ul style="list-style-type: none"> General Information Logistics Announcements Programme Code of Conduct Registration SOC and LOC 	<p>6th LOFAR data school 2021</p> <p>22-26 March, Dwingeloo, The Netherlands</p>
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General information
 The aim of this School is to introduce the LOFAR system to new members of the LOFAR community who will analyse both interferometric and high time resolution beamformed LOFAR data. Students, postdocs, and staff are all encouraged to attend. The School will cover the many aspects of the LOFAR system from the capabilities of the basic station hardware to the software pipelines and their science products. Lectures and tutorials will be presented by members of the LOFAR project team as well as staff from the many institutions involved in the collaboration. Hands-on sessions will play a crucial role during the School giving attendees an opportunity to gain experience with real LOFAR data. Participants will have the choice of following tutorials on beamformed, interferometric or long baseline data reduction.

 Presentations will be given at a level appropriate for someone new to LOFAR. Familiarity with the concepts of radio interferometry and standard data processing software such as CASA will be useful, but not required. Minimum requirements should include some familiarity with scripting languages and in particular Python. Parallel sessions for more expert students are also planned.

 View [here](#) the poster for this School.

 E-mail: lofarschool@astron.nl

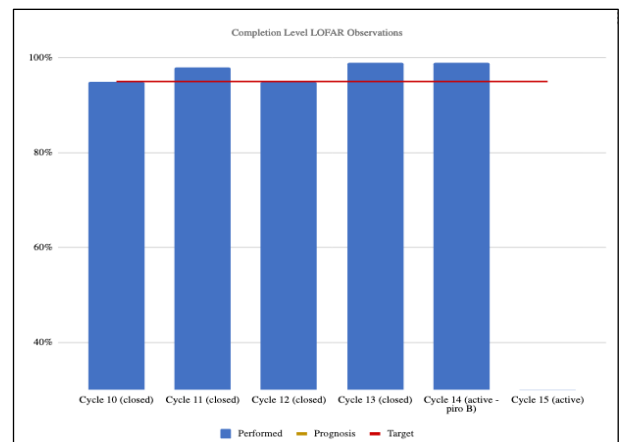
Array & observing system status:

- 38 stations operational in the Netherlands: 24 core and 14 remote stations. 14 international stations in operations: DE601, DE602, DE603, DE604, DE605, FR606, SE607, UK608, DE609, PL610, PL611, PL612, IE613, LV614.
- All stations are online now except LV614, which has a broken rubidium. The broken unit is already delivered to site, waiting to be replaced.
- A new international station will soon be built in Italy. Station deployment will start in 2022. The station is expected to be fully functional in 2023.
- The overview of non-operational antenna elements for LBA and HBA is available [here](#). At the moment, all antenna components are operating nominally.
- No major failures were experienced on CEP hardware/software over the past couple of months. A major CEP4 upgrade is being planned in January 2021. System downtime will be limited to a couple of days.



Observing Programs

- Cycle 14 ended on 30 November 2020 with a completion level of 99% and an average observing efficiency of 65%.
- The figure shows the completion levels of the last five cycles. The completion target is included. This is set at 95%. The average completion level of the last five cycles is 97%.
- Cycle 15 started on 1 December. So far, 6% of the observing program has been completed. The observing schedule can be found [here](#).

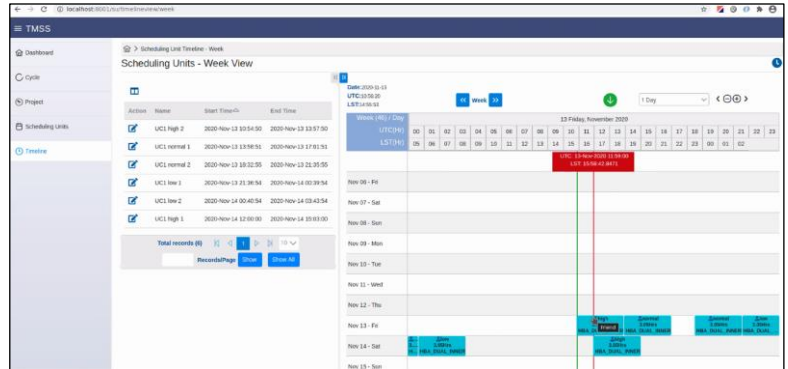


PROJECTS

Telescope Manager Specification System (TMSS; R. Pizzo, S. ter Veen, M. Iacobelli)

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



- The web interface of the new system is rapidly taking shape (see figure). We can now create full scheduling units and view these on a timeline in a user-friendly way, which directly meets the needs of operations.
- The framework for dynamic scheduling, a revolutionary system that will automatically determine the observing schedule, is now in place and has demonstrated to work successfully for basic scheduling constraints.
- Current focus areas for further development are the inclusion of a quality assessment workflow in TMSS, which will streamline the reporting of observations to the project investigators, user administration, and the addition of the full set of scheduling constraints to the dynamic scheduler.
- The development plan of TMSS is on track: TMSS will be put in production in June 2021, at the start of cycle 16.

LOFAR2.0 (W. van Cappellen)

- We are roughly halfway the development of LOFAR2.0 Stage 1. The costs of developing all planned LOFAR2.0 functionality will exceed the budget approved by the ILT Board. Over the last couple of months, we have identified options to downscope LOFAR2.0 functionality to reduce development costs. The impact and prioritization of these options has been discussed with the LOFAR2.0 Science Advisory Panel, the program scientist and the Operations team, and endorsement by the ILT Board is pending.
- The COBALT2.0 Phase 2 project is nearly completed. COBALT now also includes a truly flexible beamformer pipeline that has the ability to run a correlator and several beamformer pipelines concurrently. This is a key part of the LOFAR Mega Mode, which enables generating data products for various science cases in a single observation. A new redigitisation method that reduces data volumes for beamformed observations has been implemented, which allows us to form more tied-array beams within the available bandwidth to our storage cluster. We have also spent significant effort to improve our understanding of the performance of various parts of the COBALT software and wrote tests to make those visible and testable. This is a key step on our way to automatically test and integrate the COBALT code in the future. All of these features are about to be merged into the LOFAR master repository, which will start the commissioning process.
- The preparations for the Dwingeloo Test Station (DTS) are in full swing. The DTS is the next major increment in which a complete signal chain will be integrated, including a

connection to CEP. The goal of the DTS is to test the integration of all components as early as we can in a realistic test environment. This enables us to find integration issues at this early stage, when they can still be adapted easily.

- The Timing Distributor is now scheduled for rollout in the second half of 2021, delivering improved clock accuracy to the LOFAR stations in the Netherlands.
- You can find more highlights of the LOFAR2.0 program in the LOFAR2.0 Newsletters: <https://www.astron.nl/lofar2-0-newsletter/>

LOFAR Data Valorization (R. Pizzo)

- The LOFAR Data Valorisation (LDV) project will bring the data currently hosted in the LTA archive from level L0-L1 (uncalibrated) to L2+ (advanced data products, including direction-dependent calibrated images). Additionally, LDV will allow us to control the size of the archive. By doing so, LDV will:
 - o significantly increase the scientific output of LOFAR, as more users will be able to more easily access the advanced data products and use them for cross-domain science;
 - o streamline data processing operations at the LTA through a gradual adoption in production of the LTA processing interface under development within the SDF-PPE project;
 - o prepare SDCO (SDC Operations) for routine LTA operations towards the DUPLLO surveys.
- LDV started in September 2020 and will last until June 2024. Data processing will be performed in phases and will be applied to both imaging and BF data.
 - o the imaging data will be processed by applying Dysco compression (year 1), Prefactor4 (year 2) and Raptor and the LOFAR-VLBI pipelines (year 3). *The results of the processing will be science ready products.*
 - o For BF data, processing will consist of re-biting the data to significantly decrease their size and therefore increase considerably the capacity of users to handle and exploit them.
- After the necessary profiling of the data and of the initial processing routines, we are now preparing to start production processing at SURFsara in February 2021. We begin from this LTA site because both the processing infrastructure and available pipelines have been developed to initially run here. We will expand to the other LTA sites by January 2023.
- The data products will be made available to the community in subsequent data releases.

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:

- Next LOFAR bulletin: February 2021