LOFAR NEWSLETTERS MAY-JUNE 2020

Previous LOFAR newsletters are collected here.

Announcements:

- **LOFAR 10-Year Anniversary:** On 12 June 2020, LOFAR celebrated its tenth anniversary. For this occasion, ASTRON has shared different technological and astronomical highlights of LOFAR of the past ten years as well as ten future highlights planned for the next decade. A complete overview of all the highlights can be found here.

- **Cycle 14**: about 2200 observing hours were awarded to projects for Cycle 14. The Cycle started on 1 June 2020.

- **Next proposal call:** the call for Cycle 15 proposals will be advertised early July. The call will be for single cycle projects for the observing period between 1 December 2020 till 31 May 2021.

   Lofar School: due to the current health threats of the corona virus pandemic, the 6th LOFAR Data Processing School has been postponed to 22 - 26 March 2021. The intention is to host it at ASTRON as a face to face event, if the pandemic will allow that. If not, we will revert to a remote option. Details about the school can be found on the school's official webpage.

   ASTRON/JIVE Traineeship: Due to the pandemic, the third edition of the ASTRON/JIVE traineeship on science operations with massive arrays has been tentatively postponed to April - July 2021.

Array & observing system status:

- 38 stations operational in the Netherlands: 24 core and 14 remote stations. 14 international stations in operations include: 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.

- The maintenance season has started for both Dutch and international stations.

- No major failures were experienced on CEP hardware/software over the past two months. Intermittent network connection issues with the ingest towards the LTA sites were experienced and resolved promptly.

Observing Programs

- Cycle 13 ended successfully on 31 May 2020 at a 99% completion level, which is the highest since the start of production observing. Of all past Cycles, Cycle 13 recorded the least amount of observing failures.

- To date, about 20% of the Cycle 14 observing program has been successfully observed. The observing schedule is available here.

PROJECTS

Telescope Manager Specification System (TMSS; R. Pizzo)

- Since the past newsletters, the TMSS project has made progress in various areas. Thanks to the addition of frontend developers to the SCRUM team, we have explored different technologies for the developments of the TMSS web interfaces. This led to the adoption of 'PrimeReact' as a framework for the further implementations. The collection of user stories for GUI's development is well underway and will steer the further developments in this area.

- After the first light of TMSS in April 2020, the project has achieved a new milestone, consisting of the execution of a scheduling block (the combination of observations, pipelines and quality assurance plots).

- In the background, the formulation of user's stories for the implementation of the DUPLLO science use cases and the dynamic scheduling system is progressing steadily.

- After a careful analysis, it was decided that TMSS will be switched to production and used as the only specification and scheduling platform for LOFAR at the beginning of June 2021, when a new LOFAR Cycle will start after the end of the first project phase.
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- Discussions about when to switch TMSS to production use it as the only specification and scheduling platform for LOFAR have taken place. A sketch for the second phase of the projects has been made.

LOFAR2.0 (W. van Cappellen)

- The LOFAR2.0 Station will receive a completely new software stack for Monitoring and Control. The architecture and design of that is quite different than that of the LOFAR1 station software. The new software will control and monitor most parts of the station, directly impacting the station's dynamic behaviour.

- The detailed design of the LOFAR2.0 hardware is progressing according to plan. Several boards have been designed and the prototypes are being produced, or have been produced already.

COBALT2 PHASE 2 (R. Kaptijn)

- The redigitization of the beamformed data products has been implemented. The DAL and associated Interface Control Documents have been adapted. The new redigitization leads to a data, bandwidth and storage reduction of a factor four, with minor extra GPU computing capacity required. This reduction is required for the implementation of LOFAR Mega Mode, to allow parallel observations. The astronomer can select, if he/she wants, the new redigitization, and set some digitization parameters. We are currently investigating what the best settings are for these parameters, based on the kind of observation.

- The team has made the NVIDIA Visual Profiler operational. This tool gives powerful visual insight into what the GPU's are doing when and for how long. It already helped us to improve the performance and throughput.

- The team is investigating some refactoring of the existing GPU code. The code was written for COBALT1 and with the current knowledge, expertise and state-of-art of the tooling several structural improvements can be made to be future proof again.

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: August 2020