

LOFAR Operations

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LOFAR, the Low Frequency Array is a novel digital radio interferometer telescope designed, build and operated by ASTRON. Its main application area is astronomy in the frequency range from 10MHz to 250MHz for which it uses thousands of small omni-directional antennas which are bundled in individual sensor stations spread throughout Northern Europe. Specialized software tools are developed by ASTRON to control the complete observing and processing flow for this complex software interferometer array.

Left: Six core stations are situated on what is called the superterp near the village of Exloo in the Netherlands. A total of 38 Dutch stations are scattered throughout the Netherlands. Additional international stations are spread out over Germany, France, UK, and Sweden.



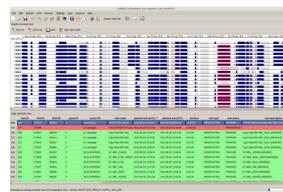
Right: The Radio Observatory Control Room. The heart of LOFAR operations.



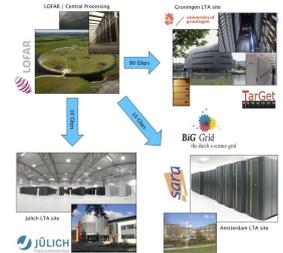
NorthStar; LOFAR Science Proposal tool



MoM; Specification of observations and pipelines

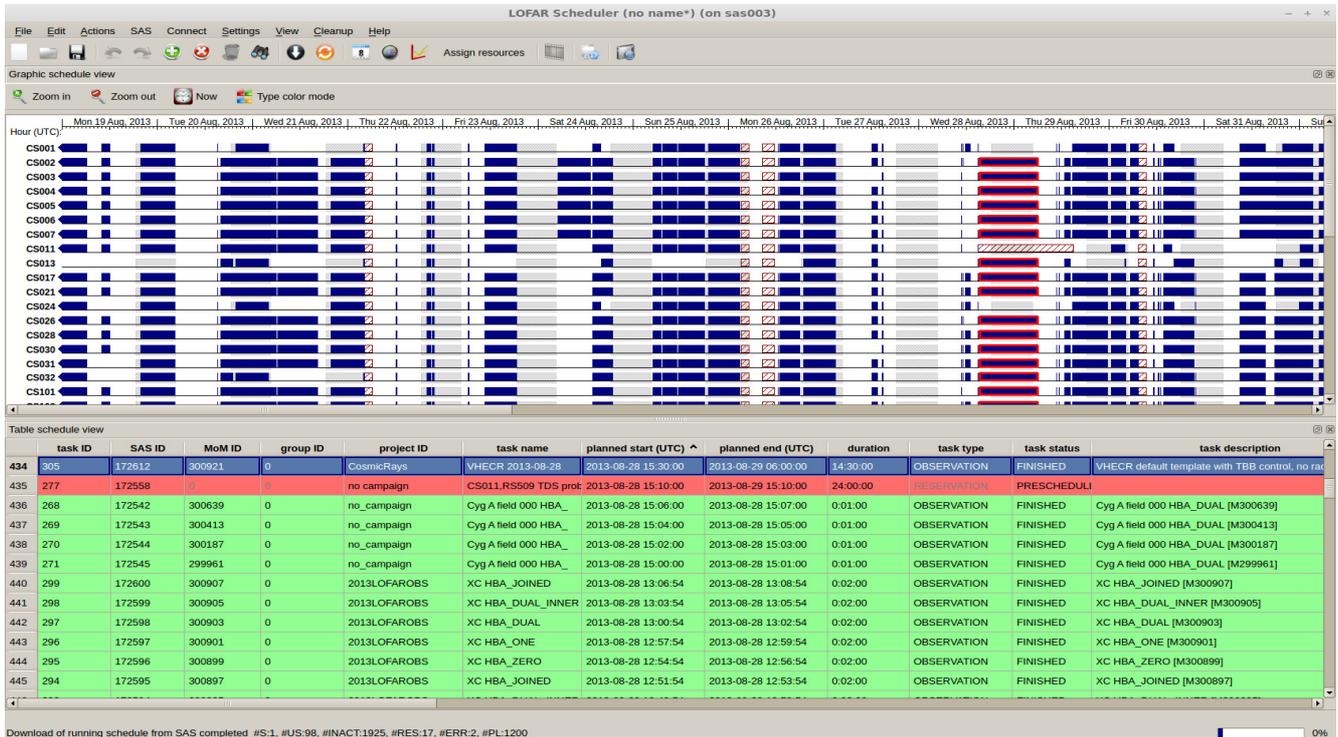


LOFAR Scheduler: Planning and execution of observations and post-processing



LOFAR Long Term Archive (LTA); Archiving data

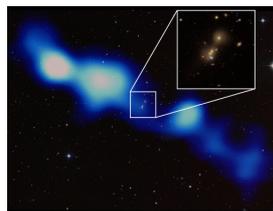
The specialized LOFAR software tools used from proposal phase to the preparation, planning and execution and finally the archiving of data in the long term archive.



The LOFAR Scheduler, software developed by ASTRON used for scheduling and execution of observations and processing pipelines on LOFAR.



Blue Gene/P Supercomputer, used for real-time correlating and software beamforming. In 2014 the BG/P will be replaced by a cluster of powerful GPUs. More than 200 simultaneous digital station beams pointing at different targets can be formed.



An example of LOFAR Scientific results led to the discovery of a previously undetected Giant Radio Galaxy. Courtesy: G. Heald and MSSS imaging team