ASTRON

Netherlands Institute for Radio Astronomy

Programme:

1. *Array status & Observatory update – M. Iacobelli*

2. *Image Domain Gridding with WSClean on a CEP4 GPU node - B. van der Tol*

3. *Demonstration of Space Weather Monitoring with LOFAR - R. Fallows*

4. *Diffuse emission in clusters of galaxies with MSSS - M. Iacobelli*

International LOFAR Telescope (ILT)

- ➢ 50 operational stations: 24 CSs / 14 RSs / 12 Is
  - + new station upcoming in Ireland

- ➢ RS210 replaced heat sensor
- ➢ RS301 replaced LBA power supply
- ➢ RS310 replaced heat sensor
- ➢ DE604 new rubidium clock to be replaced.

- ➢ Few LBA's down and repaired.
- ➢ ILT maintenance for DE601,DE609; ongoing SE607.
- ➢ Oscillating tiles and noisy elements detected and deactivated from several stations.
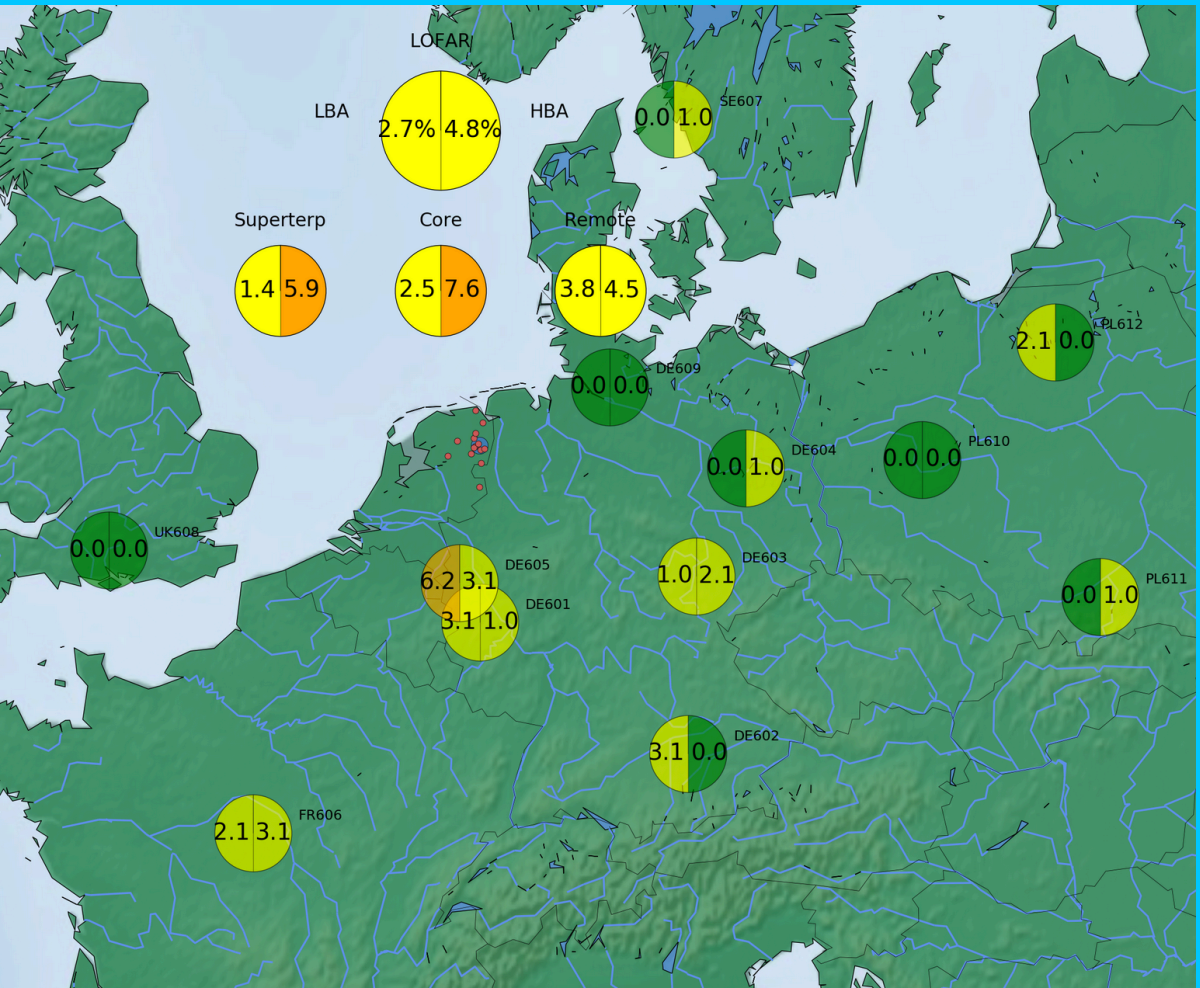
Onsala · Norderstedt · Potsdam · Bałdy · Borówiec · Łazy · Dutch stations · LOFAR Core (NL) · Chilbolton · Jülich · Effelsberg · Tautenburg · Unterweilenbach · Nançay

Overview, including IS

LBA: 2.7%; HBA: 4.8%

see https://proxy.lofar.eu/array_status/

➢ Color coding of non-operational components per stations:

- all operational
- <5% non-operational
- <15% non-operational

HBA: CS002, CS004, CS005, CS006, CS017, CS021, CS031, CS101, CS301, CS501, RS205, RS306, RS307, RS409, RS503

LBA: CS401, CS501, RS205, RS210, RS305, RS306, RS409, DE605

- >15% non-operational

HBA: CS030, CS032, CS302, CS401

News regarding the observing system

- Minor delay with processing. Minor issues with the ingest.
    - SARA dcache upgrade June 6th – 9th : NO data ingest / staging / retrieval.
- Stop Day May 2nd 2017
    - Write performance test on CEP4.
    - LCU bios update of cs101 cs103 cs201 cs301 cs302 cs401 cs501.
- Station sensitivities issue when observing using HBA mode.
    - DE601: big delays found in data since March 2017
    - DE605: corrected HBA antenna positions
    - SE607: high amplitudes in 3rd quartile of subbands in SE607 for 8-bit mode
- Station calibration status:

    Overview available at: *http://www.astron.nl/radio-observatory/astronomers/current-status*

    - Investigation into LBA Sparse calibration tables ongoing, not usable for production yet.
    - HBA mode 7 (210-250 MHz) calibration table update ongoing.

News regarding Cycle 8 observations

LOFAR
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Week 22	UT	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Approximate LST		17	18	19	20	21	22	23	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

June										
29	Mon	(c) LC7_026 - 8hrs HBA	all international stations to ILT mode at 9 UT	Anonymous Squirrel (c) A: LC8_016 - P105+69 & P120+69- 8hrs HBA		TBB + tests
30	Tue	(c) LC7_026 - 8hrs HBA		(c) A: LC8_004 - S255NIRS & P092+19 - 8hrs HBA	Commissioning NuMoon	LC8_029 - J1110 - 30min HBA	TBB + tests
31	Wed	TBB + tests	STATIONTEST	TBB + tests	(c) A: LC8_022 - P029+29 & P024+31 - 8hrs HBA	LC8_034 - 3C190 - 4hrs LBA	TBB + tests
1	Thu	(c) LC7_026 - 8hrs HBA	(c) LC8_006 - P063+11 (A478) & P058+11 - 4hrs HBA	TBB + tests	(c) Commissioning2017 - LOFAR R2.0 LBA+HBA - 1hr repeat	TBB + tests	(t) LT5_004 - LOTAAS - 1hr - HBA
2	Fri	(c) LC7_026 - 8hrs HBA	all international stations to local mode at 9 UT	TBB + tests	LC8_029 - J1110 - 15min HBA	TBB + tests	A: LT5_003 - Pulsar Timing - HBA
3	Sat	A: LT5_003 - Pulsar Timing - HBA					
4	Sun	A: LT5_003 - Pulsar Timing - HBA	TBB + tests	LC8_024 - W3 - 4hrs HBAh run1 *	LC8_029 - J0355 - 15min HBA	LC8_029 - J0534 - 15min HBA	TBB + tests	A: LT5_003 - Pulsar Timing - HBA	(t) LT5_004 - LOTAAS - 4hrs HBA	TBB + tests	LC8_029 - J1239 - 15min HBA	TBB + tests	A: LT5_003 - Pulsar Timing - HBA

➤ Cycle 8 observing program ongoing (~3% completed):

  ▪ Some impact of CEP4 data losses

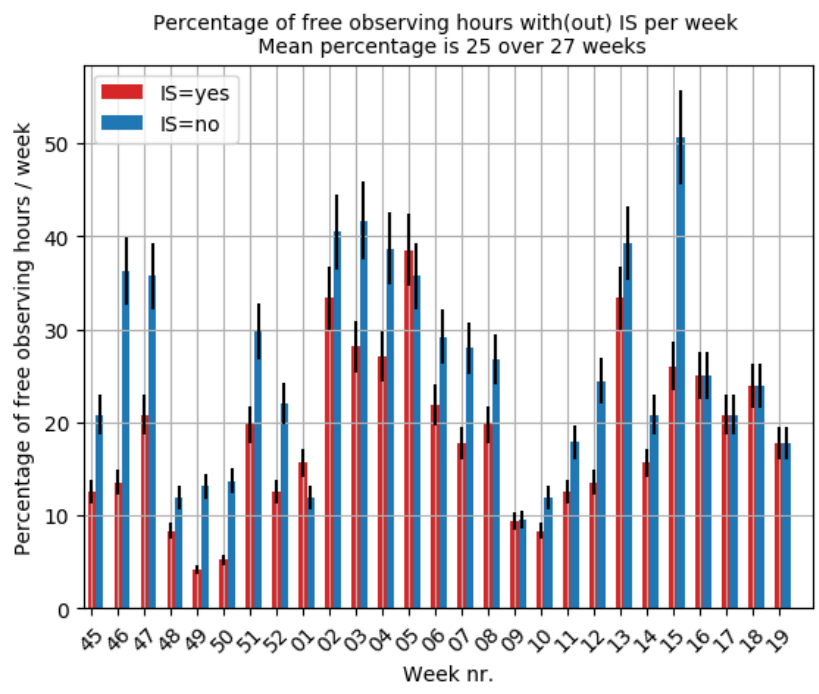 Detailed Cycle 8 schedule available here: *http://www.tiny.cc/LC8*

➤ Changes can be applied on daily base: in case of questions/issues contact Science Operations & Support at sos@astron.nl and include the proposal code in the subject line

Data loss experienced in Juelich

➢ Some files that were ingested by the Radio Observatory towards Juelich did not reach the tapes and are therefore lost.

  ▪ Experienced during 2 periods: from October 3rd until October 5th, 2016 and from April 1st until May 15th 2017.

  ▪ Reasons: During the 1st period a problem with the distributed file system was experienced. During the 2nd (longer) period, following an update of the tape client software, transfers from disk to tape were erroneously classified as successful while the data copy did not take place.

Observing efficiency test

- ➢ To assess what observing efficiencies can currently be supported by the observing/processing system with the ultimate goal to increase the scientific output of LOFAR .

Percentage of free observing hours with(out) IS per week
Mean percentage is 25 over 27 weeks

- ▪ Test campaign with increased observing load during 2 weeks in February 2017 to assess the limitations imposed by the system robustness as well as by the workload on the available workforce.

- ▪ Results biased by two systematics causing data losses: crashes of COBALT nodes and instability of the Lustre file system. A quantitative assessment of the increased percentage of the efficiency could not be achieved.

- ▪ Test to be repeated on a (longer) time scale of about 1 month.

CEP news:

➢ CEP3 upgrade in May 15th – June 5th

- Operating system: upgrade from Ubuntu 12.04.4 LTS to Centos 7.3, a more modern, better maintainable system for the coming years. Newer system libraries to facilitate to support software that require modern features of the compilers and libraries.

- System configuration: by using a combination of xCAT and Ansible configuration tools will now be easier to reinstall nodes and to ensure that all nodes are configured the same. Environment modules will be used to support installation of different versions of software packages and to allow users to easily switch between them.

- Docker: to allow users to run self-prepared docker images or (in the future) to use one of the standard LOFAR images. This makes users less dependent on what software is available on CEP3.

CEP news:

➤ CEP3 upgrade in May 15th – June 5th

- Data sharing: the data disks of the compute nodes will now be shared using NFS, to enable multi-node processing while writing to the same data area assigned to the user. In the future this may also be used to increase the utilization of CEP3 as a whole.

	Block write (MB/s)	Block read (MB/s)
local	895	542
async NFS	828	342
async/nocache NFS	787	318
async/sync NFS	46	363
sync NFS	17	290

- Cluster configuration: lhd001 is now the main head node; to be used for login.

- Updated wiki documentation at *http://www.lofar.org/operations/doku.php?id=cep3:start* .

CEP news:

- ➢ CEP4
  - ▪ Some issues with docker images & PSR pipeline.
  - ▪ Investigations data loss ongoing in collaboration with DELL. Mitigating actions:

    1) avoid deletion of large amount of data during observations

    2) do not fill up the cluster disk space beyond 70%

LOFAR related events:

- Next LSM : 19 July 2017 (volunteers welcome)

- LOFAR 'Multi-wavelength follow-up' Busy Week: 12-16 June (Hertfordshire, UK)

- The Broad Impact of Low Frequency Observing
  & the 4th LOFAR Users Meeting : 19-23 June 2017 (Bologna, Italy)
  Please see *http://www.astron.nl/lowfrequencyobserving2017*
  or email *lowfrequency2017@astron.nl*

- LOFAR science session @ NAM : 2-6 July 2017 (University of Hull, UK)
  Please see *https://nam2017.org/science-programme*
  or email David Mulcahy at *david.mulcahy@manchester.ac.uk*

- Cycle 9 proposal submission deadline: 13 September, 12 UT (noon)

Useful LOFAR links:

> Calendar LOFAR activities:

http://astron.nl/radio-observatory/calendar-lofar-activities/calendar-lofar-activities

> LOFAR Papers:

http://www.astron.nl/radio-observatory/lofar-science/lofar-papers/lofar-papers

> All accepted LOFAR DDT projects list:

http://www.astron.nl/radio-observatory/cycles/accepted-ddt-projects/accepted-ddt-projects

> LSM presentations list & users suggestions:

http://www.lofar.org/operations/doku.php?id=public:lsm_new:start

> LOFAR news email list:

http://www.astron.nl/radio-observatory/subscribe-lofar-news/subscribe-lofar-News