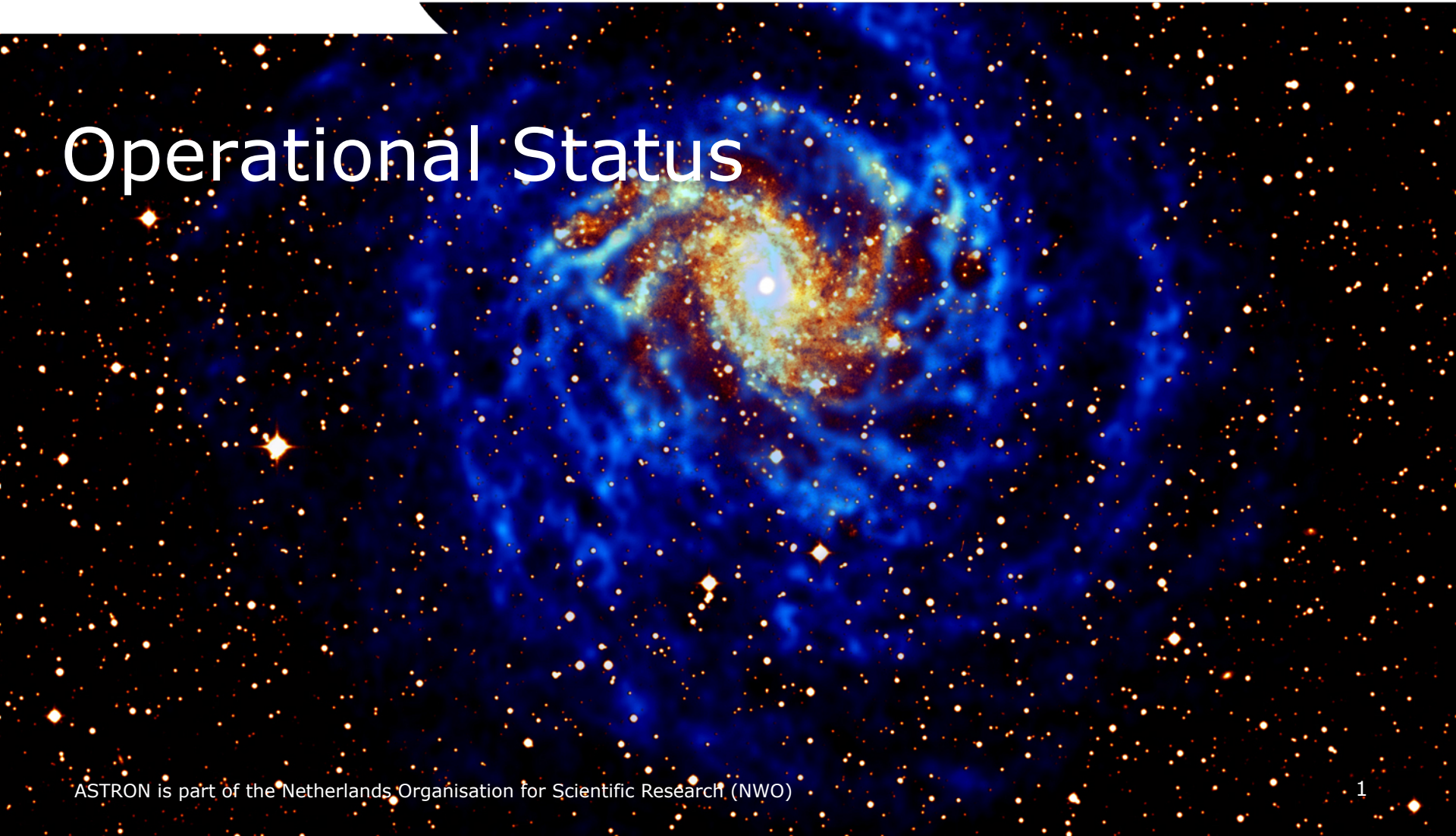
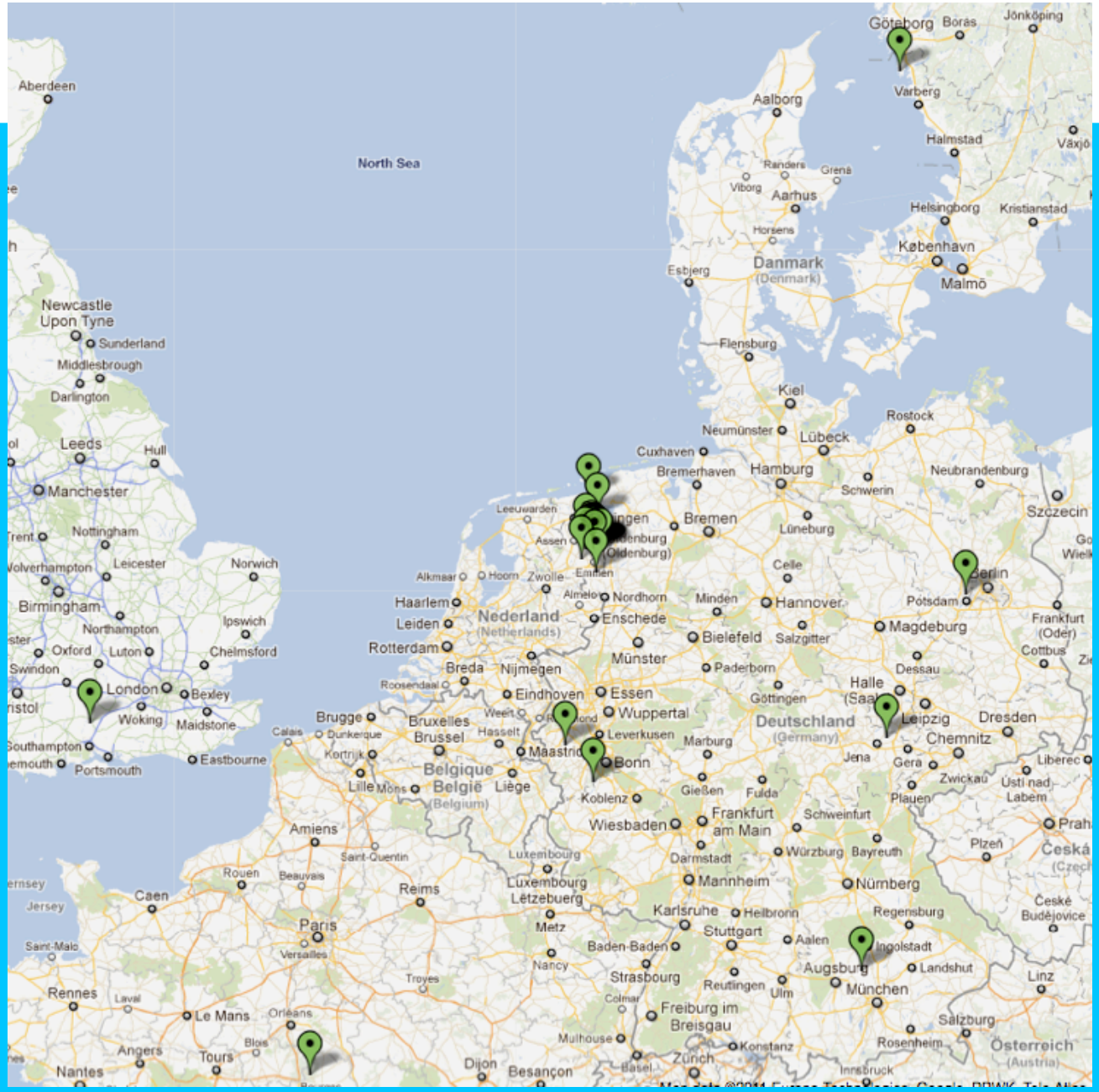
ASTRON

Netherlands Institute for Radio Astronomy

Operational Status



Array Status & Rollout



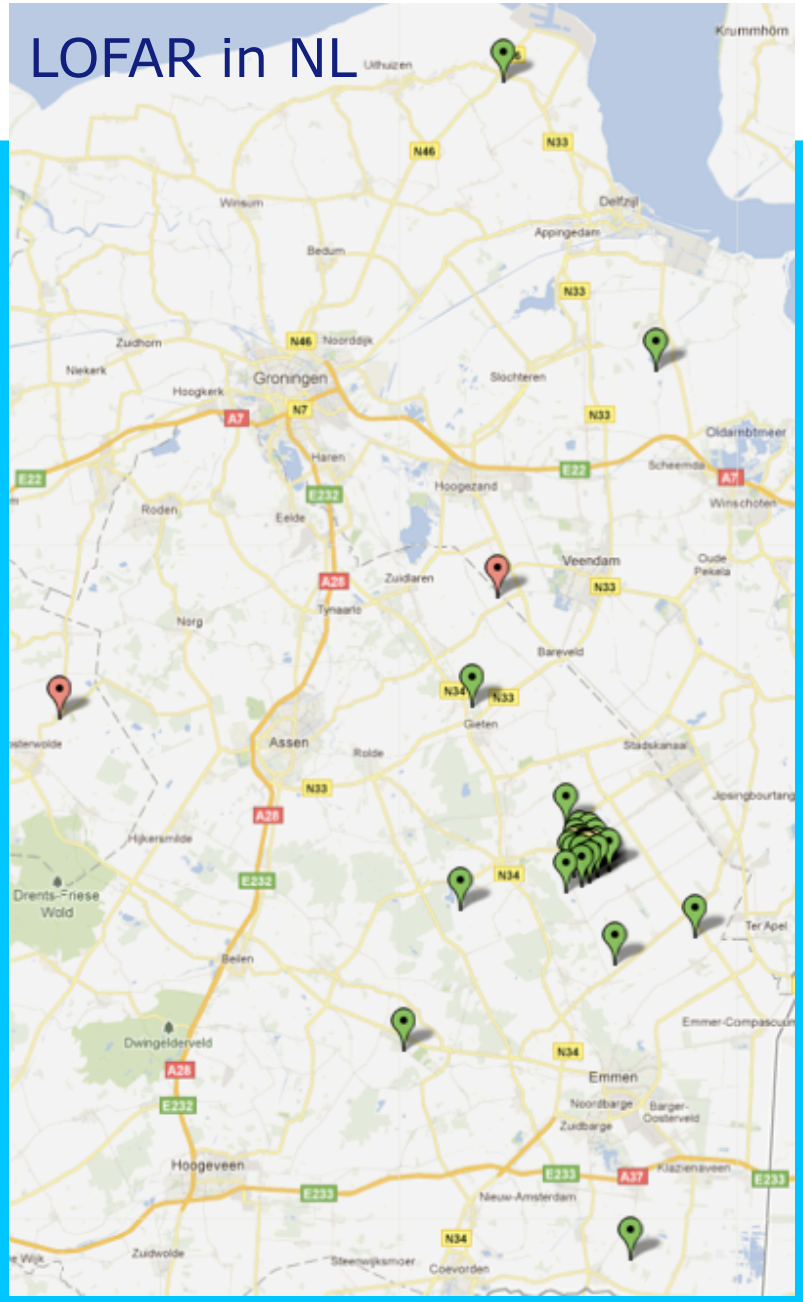
- 37 operational
- 41 validated

Recent Progress:

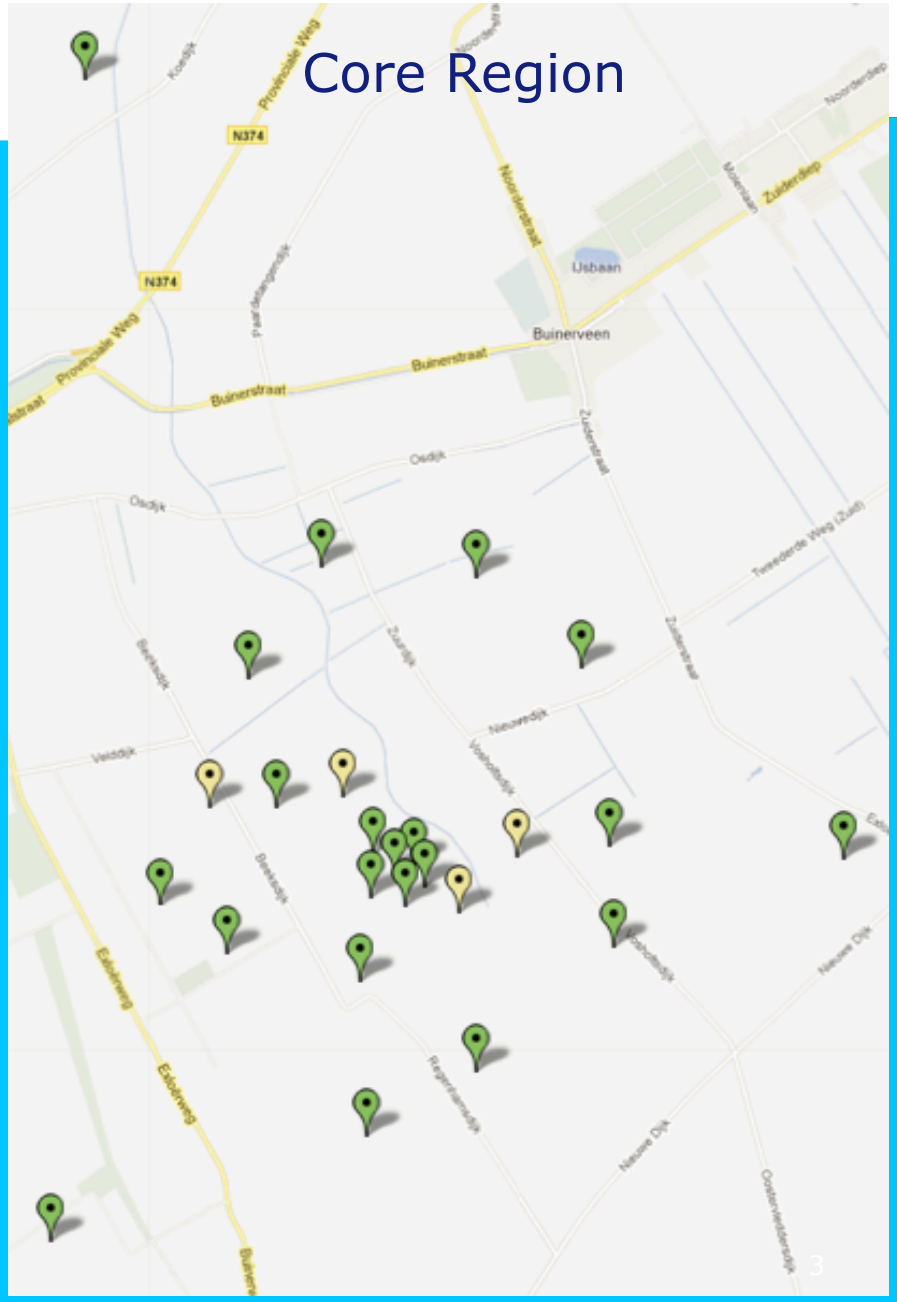
- RS508 & RS509
- DE604 (Potsdam) & DE605 (Juelich)
- SE607 (Onsala) validated; in the array soon.
- CS011, CS028, CS031, CS013: expected end Sept.
- RS409 installed.
- RS407 earthworks end of year.

Stations

LOFAR in NL



Core Region



Operational Status: Outstanding Issues

- Time synchronization of analogue processors in RSP boards solved.

Measurements to create new calibration table are taken for most stations and observing modes.

Systematically processing & creating new tables.

Under Investigation

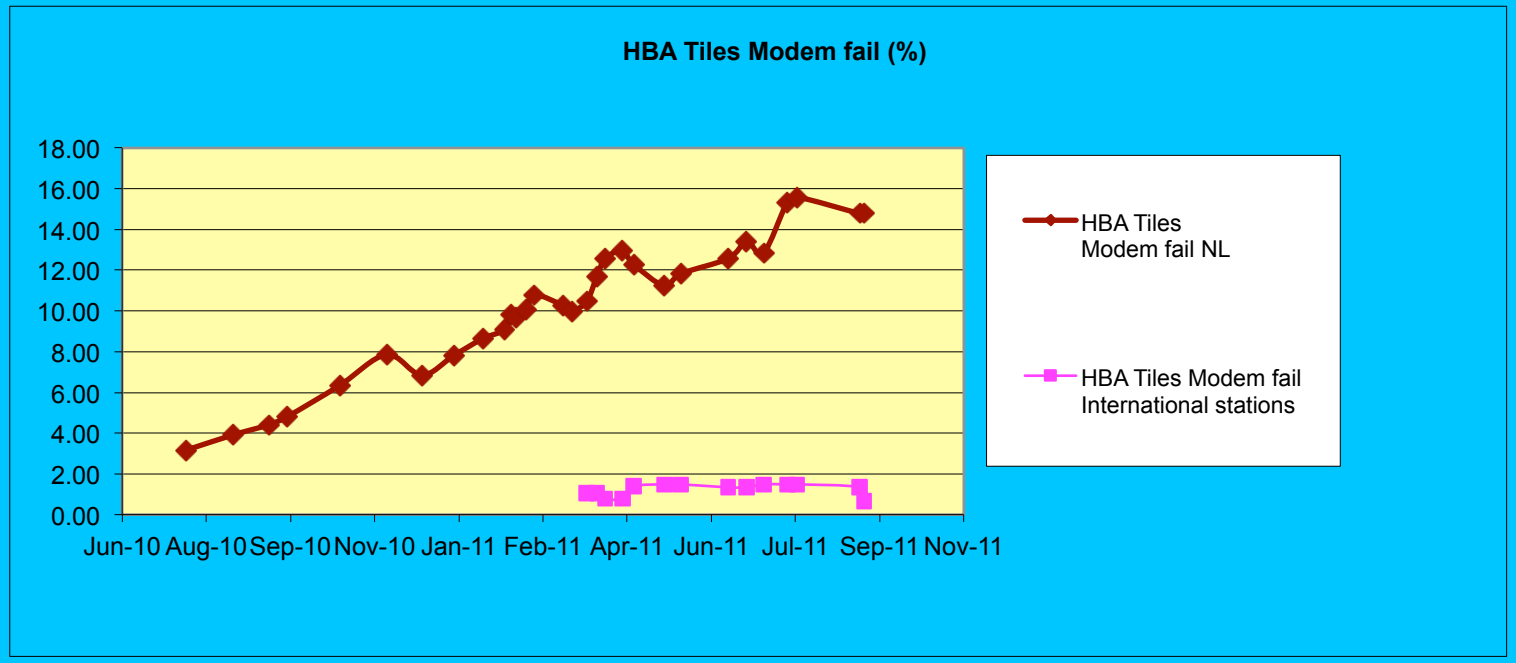
- Switch between 160MHz and 200MHz clock in real observations not dependable.
- RSP boards hanging spontaneously
- Reliability of passing observation parameters to stations

HBA Tile Failures

High humidity in some NL stations caused by insufficient drainage has sever effects to HBA tiles.

- 2 components are prone to failure, causing bad communication with or bad reception from the tile:
  - The Y-summator and
  - The HBA Front End (HBA-FE)

The rate of failures has been increasing:



HBA tile failures: Mitigation Strategies

- Explore new designs of the summator to be less susceptible to humidity.
- Developed new firmware to delay the rate of failures. Tested on CS401 over the summer. Started installation to all stations.
- Improve drainage in the fields.
- Repair HBA tiles:

  Use available spares, parts retrieved from tiles in storage and a new production of 100 summators in two parallel lines (Neways & Major)

Repair Priority:

- Superterp stations starting with the most severely affected.
- RS306 and RS503 that have <90% working tiles.
- Fix core stations in a sequence such that we get a large number of "complete" fields.

Strategy will be re-evaluated after 3 weeks.

Operational Status: International Stations

Network upgrade : Two additional 10Gb/s lines installed between Aachen-Amsterdam (July) and Amsterdam-Groningen (mid-August).

Allows up to 6 international stations to be connected to CEP.

Tests of up to 5 stations successful.

Considering a third line (or a 40Gb/s line) to bring all eight stations in Q4 2011.

Operational Status: CEP II cluster

CEP II cluster: 100 nodes with 24 cores, 64GB ram and 21 TB disk each.

Operational since mid-April 2011

- 50% of nodes rebooting spontaneously - Meanwhile used 50% of good nodes.
- Due to two manufacturing faults by ASUS - Fixed on two occasions in July 13-15 and August 10

Current Status:

89 nodes can be used in observations

5 nodes have problems (memory)

6 nodes LOCUS 095-100 reserved for testing & software builds.

Ingest (manual) to LTA operational since June

Improvement in performance (by S/W, kernel) in simultaneous observing at higher data rates and processing.

Exploring other performance problems a very high data rates.

CEP I cluster re-configuration

- CEP I cluster: 24 "storage" (LSE) with four 4TB disks and 75 "compute" (LCE) nodes with 1TB disks
- Compute elements still used by commissioners.

Planned Reconfiguration of CEP-I:

- Updated to same operating system and software as CEP-II *[started Sep 2011, ongoing]*
- Staging area for the LTA (24 LSE nodes with 3X4 TB disks each) *[Oct-Nov 2011]*
- Flexible configuration of LCE nodes:
  - Commissioning (larger disk capacity, a "virtual" disk of ~90TB) (~65 nodes)
  - Training new users (special training suite) (4-6 nodes)
  - Development area (3-5 nodes)

Will allocate a random number of nodes to one or a group of commissioners.

Exploring "booking" scheme options.

CEP I cluster re-configuration Timescale

- Upgraded LSE nodes to Ubuntu 10 (Sep 5) - same S/W as in CEP-II
- New frontend node; LFE002 is now Ubuntu 10
- Upgrade LCE nodes to U10 & new S/W (end Sep)
- Use one of the 4TB data disks across LSE nodes to create a large “virtual” disk of ~90TB to be used by all commissioners (Oct)
- Commission the LTA staging nodes (Oct-Nov).

Operational Status: Post-Processing

- Pipeline framework controlled by MAC
  Awaiting to be started automatically by SCHEDULER

- Inspection plots generated. Working to automating them through the SCHEDULER and publishing to a public web-page.

- Imaging pipeline within the Pipeline framework:
  - Standard: RFI rejection and averaging (NDPPP)
  - "Demixing" (scripted way) included from June 2011.
  - BBS can be included in pipeline – parameters given by astronomer.
  - Imager can be included – parameters by astronomer.

- Pulsar prototype pipeline in CEPII still to be fully integrated in framework.

- VHECR & Transients mode: TBB writer can be started through SAS/MAC.

Commissioning Observations

Proposal	Project	Target(s)	KSP	2010 Q3 & 4	2011 Q1 & 2	2011 Q3	Commissioners
LEA004	Trigger Events	LIGO events	T	16			Rol, Daw
LEA006	Solar Dynamic spectrum	Sun, IPS	SP	20	20	11	Fallows
LEA012	Solar Imaging	Sun	SP	95	30	30	Breitling, Vocks
LEA016, LEA018, LEA022	Pulsar modes	various	T	~400	~300	~150	Hessels, Coenen, Hassal, Kondratiev
LEA032	Transients	L0329+58, CygX3, CygX1, SS433, Crab	T	112	84	73	Bell, Broderik, Tudose, Swinbank
LEA046	3C sources		S		60		Misrael, van Weeren, Orru, Williams, Natt, Mueller, van Bemmel
LEA048	Saturn & Jupiter Spectra	Saturn	T	16	0	17	Griessmeier, Zarka,
LEA050	Imaging Planets	Jupiter	T			14	Wucknitz, Griessmeier
LEA052	Clusters	Abell 2256, Abell 2255, Coma, Hydra A	S	32	38	54	Van Weeren, Pizzo, Bonaferde, Rafferty, Maccario, Trasatti, Orru
LEA058	TBB modes		CR		8		ter Veen, Corstanje, McFadden, Frieswijk
LEA060	Extended radio sources	N6251	S		6		Shulevski
LEA064	Virgo A	Virgo A	S		30	20	deGapserin, Orru
LEA066	Long Baselines	3C196, 3C147, Tau A, 3C48	S		130	33	Wucknitz, Andreson
LEA070	SETI		T	12	0		Penny
LEA072	Deep Fields	Lockman Hole	S	0	8		Guglielmino
LEA076	TBB Comm.		CR			98	
LEA080	Magnetism	N4631	M		12		Drzazga, Jurusik Chyzny,
LEA082	Below 30MHz	3C196	S	12	16	7	
LEA092	EoR fields	7bm 3C196	E		12	6	Offringa, Lambropoulos
LEA102	Moon	Moon	E / CR		0		McFadden, Meevius, deBruyn
LEA114	FAN region	FAN	M	8	18	12	Havekorn
LEA122	Jupiter Polariz.	Jupiter	T		4		Scaife, Griessmeier
LEA128	Monitoring	3C196, NCP	E / Cal.	54	212	102	Lambropoulos, Brentjens, Yattawatta
LLT052	Nearby galaxies	M81/82	S		6		Batejat, Jurusik
MKSP	Magnetism KSP	various	M	24	22	10	
MSSS	Various tests			35	72	30	
Total Time				777	1080	661	

- Commissioning observations continued during summer 2011.
- Emphasis was given to projects to be presented to LOFAR workshop.
- RO automatically run NDPPP for RFI rejection and averaging
- At commissioners' request Demixing run in Pipeline framework
- Commissioners worked on CEP-I for individual SBs
- Further pipeline processing (BBS etc) in consultation with commissio-ners.
- Until now imaging done by commissioners.