

LOFAR Users Meeting

Monday, 7 April 2014

13:00 - 13:30	Arrival, coffee/tea	
Radio Observatory contributions		
13:30 - 14:00	R. F. Pizzo	<i>LOFAR Observatory Overview</i>
14:00 - 14:20	G. Heald	<i>The Calibration and Imaging Tiger Team</i>
14:20 - 14:40	M. Wise	<i>LOFAR Development Roadmap</i>
KSP's experience contributions		
14:40 - 15:00	A. G. de Bruyn	<i>EoR KSP</i>
15:00 - 15:20	A. Bonafede	<i>Surveys KSP</i>
15:20 - 15:40	J. Broderick + J. Hessels	<i>Transients KSP</i>
15:40 - 16:00	Coffee Break	
KSP's experience contributions (cont.)		
16:00 - 16:20	A. Horneffer	<i>Magnetism KSP</i>
16:20 - 16:40	F. Breitling	<i>Solar KSP</i>
16:40 - 17:00	A. Nelles	<i>Cosmic Rays KSP</i>
17:00 - 18:00	Discussion	
18:00 - 19:30	Welcoming reception LOFAR Science Week. Venue: De Rode Hoed	



LOFAR OBSERVATORY OVERVIEW

R. F. Pizzo

on behalf of the Science Support group: R. Fallows, W. Frieswijk, E. Orru', C. Toribio

OUTLINE

- Operational status
 - Array
 - COBALT

- Science Operations
 - Cycle operations - Cycle 0/1 statistics
 - CEP3
 - Documentation
 - Cycle 2 proposals & Cycle 3 timelines

OPERATIONAL STATUS

ARRAY STATUS



Onsala



Chilbolton

- **46 operational stations completed**
- **38 NL stations, 8 international stations**
- **4 new stations to come: Germany (1), Poland (3)**

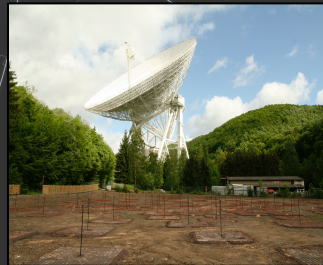
Hamburg
to come ...

Potsdam

Poland funded

Jülich

Effelsberg



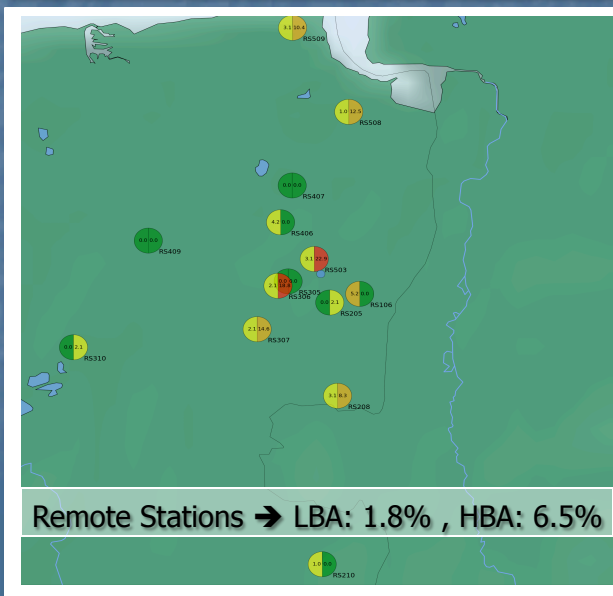
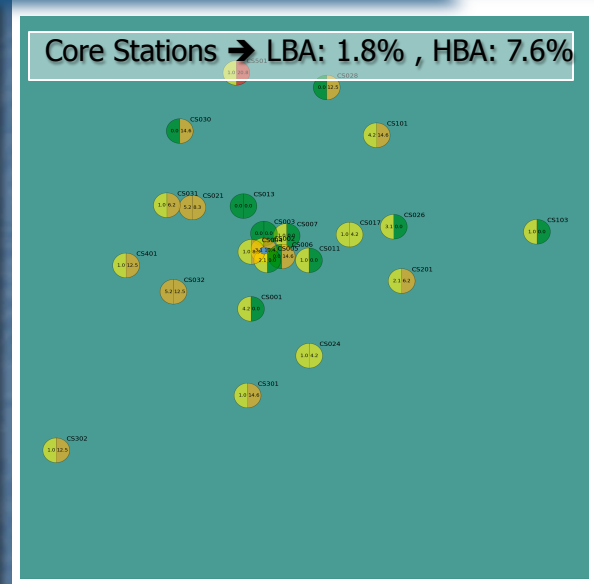
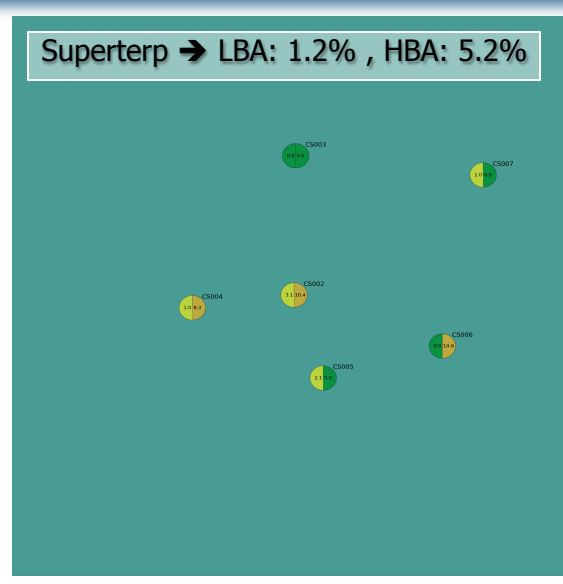
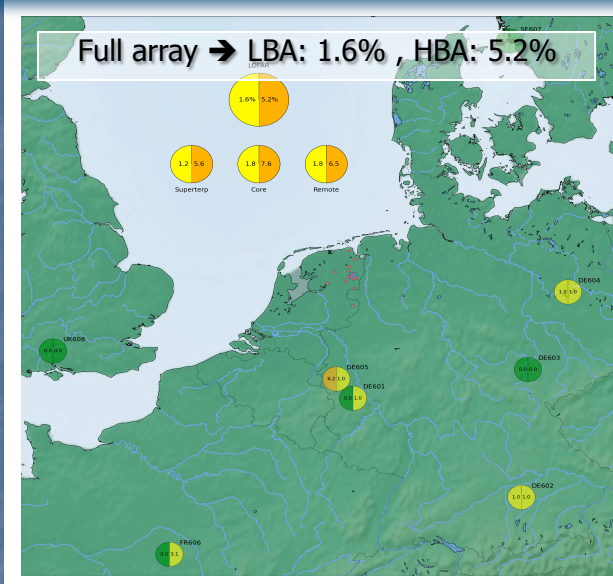
Tautenburg



Nançay

Unterweilenbach

ANTENNA ELEMENTS STATUS



- Current status available at https://proxy.lofar.eu/array_status/
- Maintenance in progress
- Recently, various oscillating tiles affecting BF (Pulsars) runs → extensive campaign of test observations to identify and disable these
- Network issues affecting international stations during ILT runs → tiger team will be formed and will track down the issues during the next weeks
- Station calibration competing with Cycle operations → role of observers

ANTENNA ELEMENTS HISTORY

- History of operational antenna elements since February 2013 for all LOFAR stations is now available online at:

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

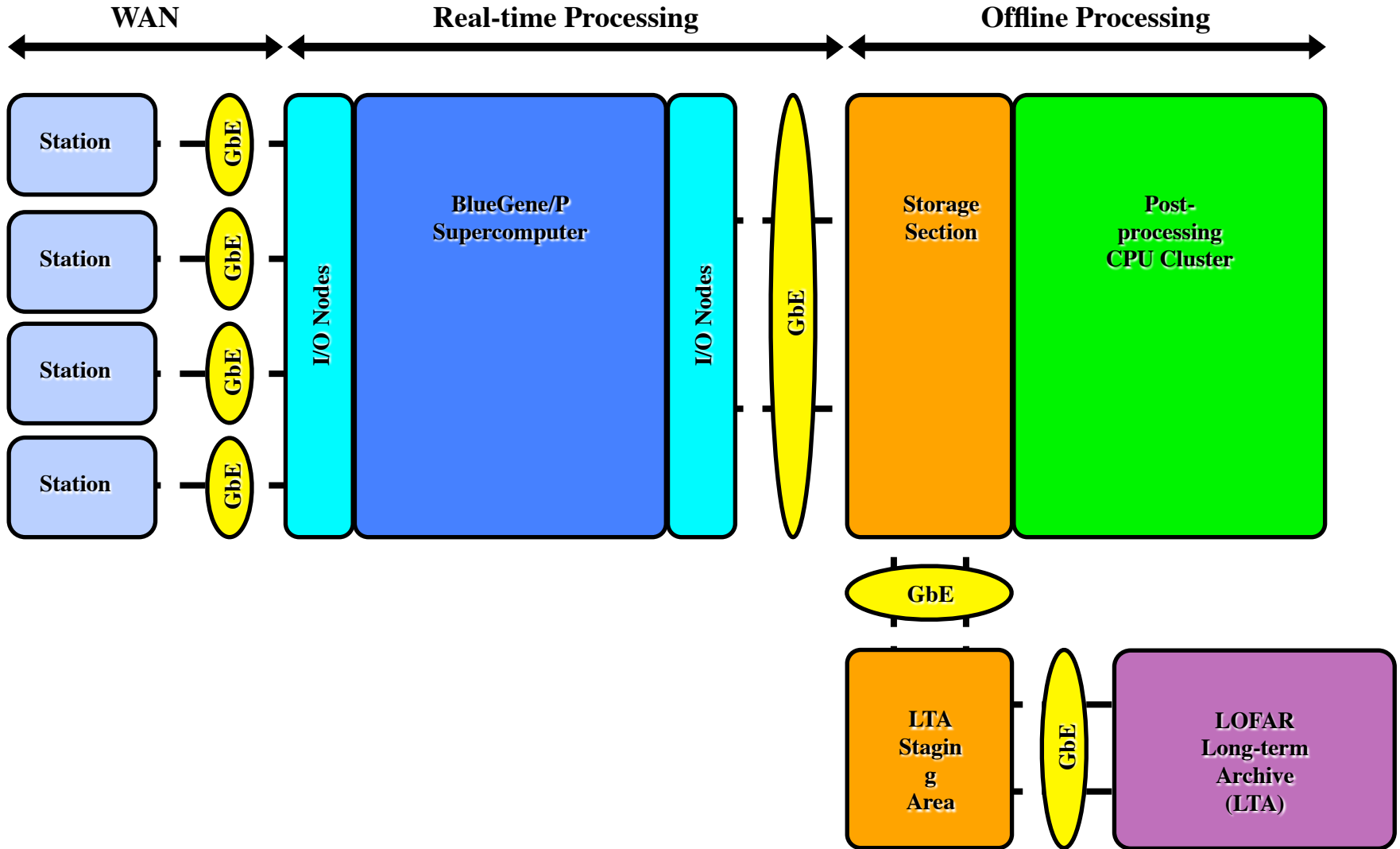
- Plots will be updated regularly
- Wrong info in antenna table of LOFAR MS's between Feb 2013 and Feb 2014
- Info included in 'System notes' web page on the ASTRON website:

<http://www.astron.nl/radio-observatory/observing-capabilities/depth-technical-information/system-notes/wrong-information->

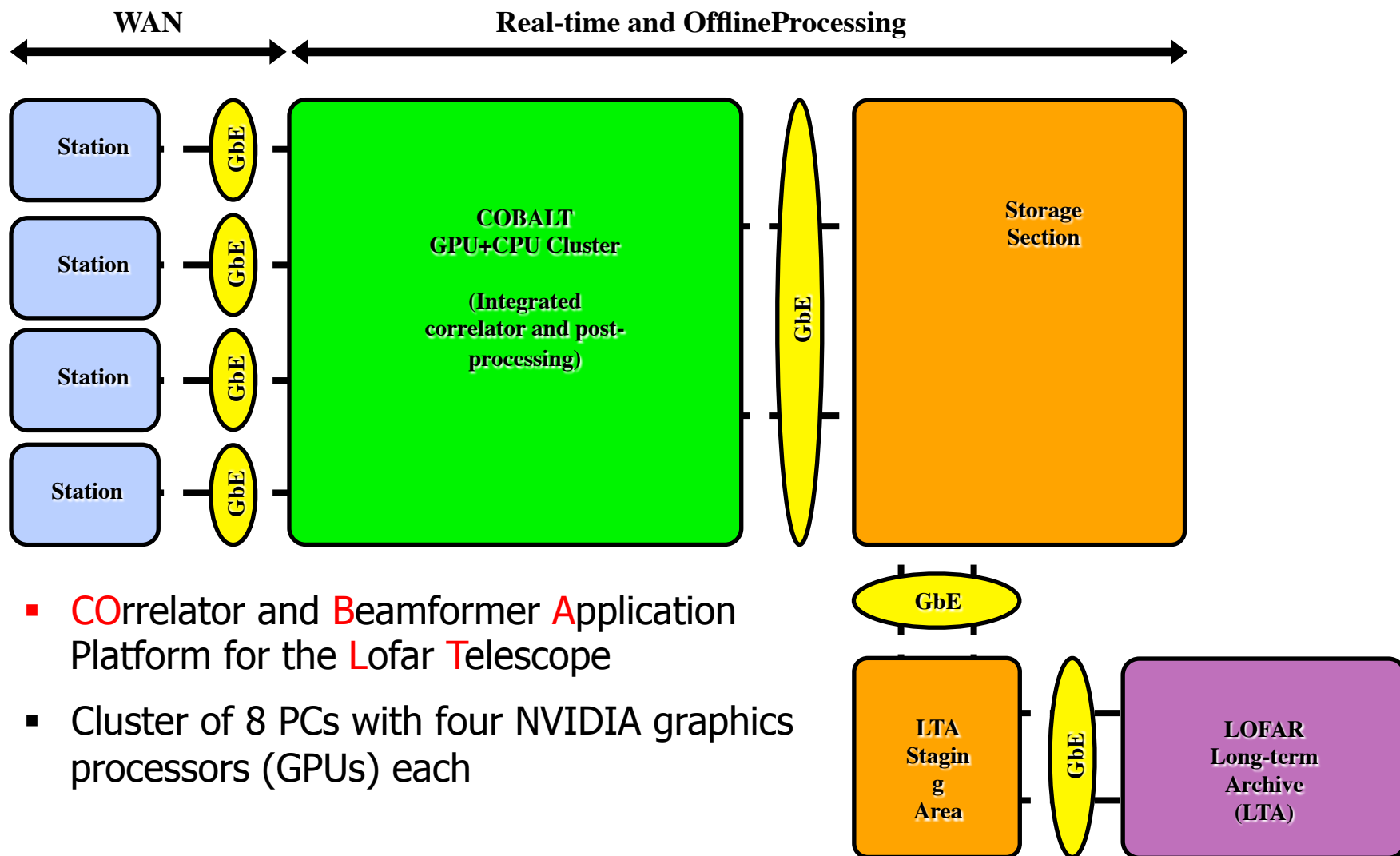


The screenshot shows the ASTRON website interface. At the top, the ASTRON logo and name are displayed, along with the text 'Netherlands Institute for Radio Astronomy'. Navigation links for 'Home', 'About ASTRON', 'Astronomy Group', 'Radio Observatory', and 'R & D Laboratory' are visible. The main content area is titled 'WRONG INFORMATION IN ANTENNA TABLES OF LOFAR MEASUREMENT SETS'. The text explains a software bug introduced on February 13, 2013, which affected the LOFAR internal database (LOFAR_4 OTDB). The bug caused a cumulative effect where information about malfunctioning antenna elements was added to the Measurement Sets (MS's) over time, without being removed after repair. This affected all reduction software that uses the antenna element information in the MS's to simulate the beam response of the LOFAR array. The text also notes that the quality of the data is still preserved and that the issue does not affect the final results, although it might affect different fundamental ways depending on the processing procedures. A search box is visible in the top right corner of the page.

COBALT CORRELATOR UPGRADE



COBALT CORRELATOR UPGRADE



COBALT: REQUIREMENTS & RESOURCES

➤ Requirements:

- Port all current operational functionality
- Do this in a staged approach and within budget
- Be ready to scale-up and / or extend
- Maximize robustness, while minimizing operational and maintenance costs

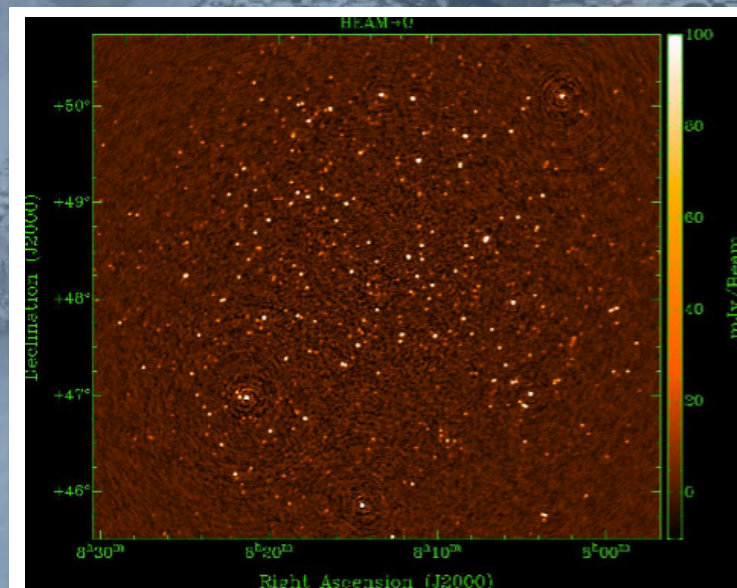
➤ Resources:

- Project leader: R. Nijboer
- Advisor: J. Romein
- Project Scientist: M. Brentjens
- Liason CIT Groningen: H. Holties
- HW: C. Broekema (lead), K. Stuurwold
- Functional Sw: J. D. Mol (lead), A. van Amersfoort, M. Loose, W. Klijn
- Obs. Sw: A. Schoenmakers (lead), A. Coolen, H. Holties, T. Grit, A. de Jong, R. Overeem, A. Renting, N. Vermaas

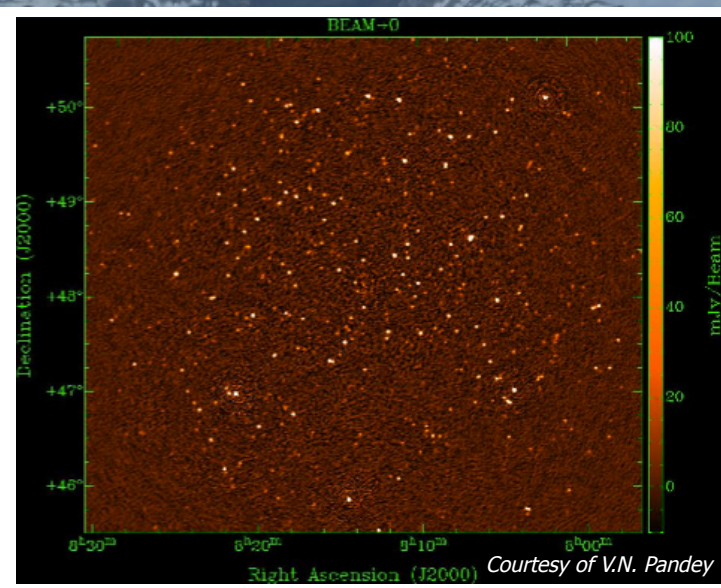
➤ Documentation: <http://www.lofar.org/wiki/doku.php?id=cobalt:start>

COBALT: CURRENT STATUS

- Delays due to network reconfiguration in Sept-Oct 2013
- (Hardware) system performance significantly degraded after Stop day in February
- Regained system performance by solving memory bug and infiniband bug
- Correlator production tests



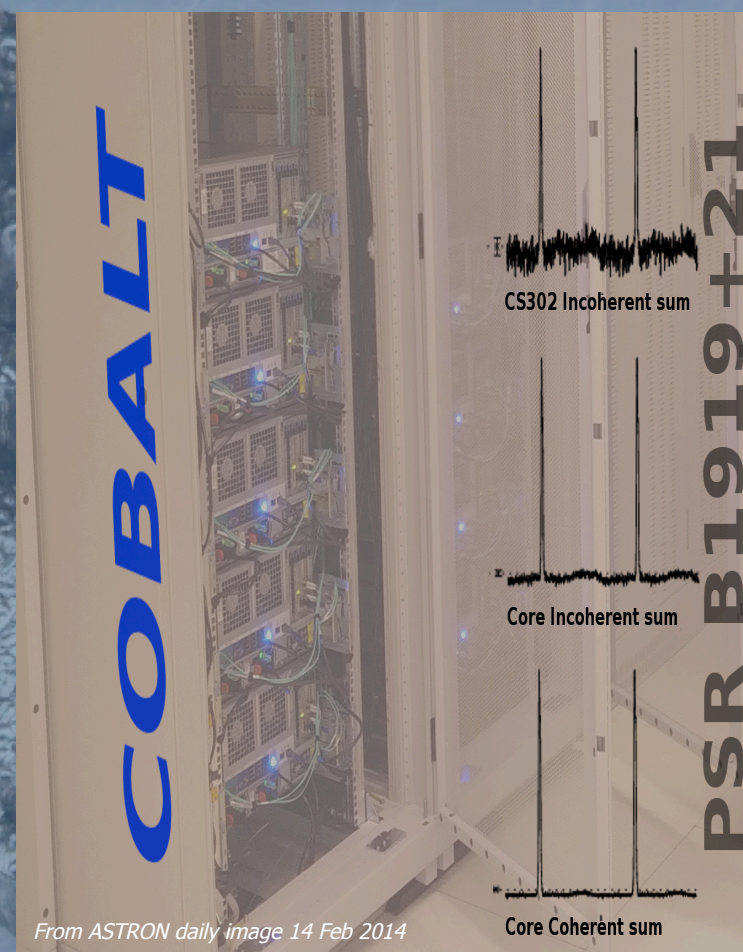
BG/P 15 December 2013



COBALT 12 March 2014

- Accounting for the ionospheric scintillation affecting the recent run, the **images are in fair agreement**

- Acceptance review on 18/03/14:
 - **Correlator mode accepted in production**
 - Bug in polarization output fixed
 - BF mode to be finished
- Extensive BF commissioning
- Recently in BF mode:
 - Complex voltages testing
 - Optimizations to improve performance

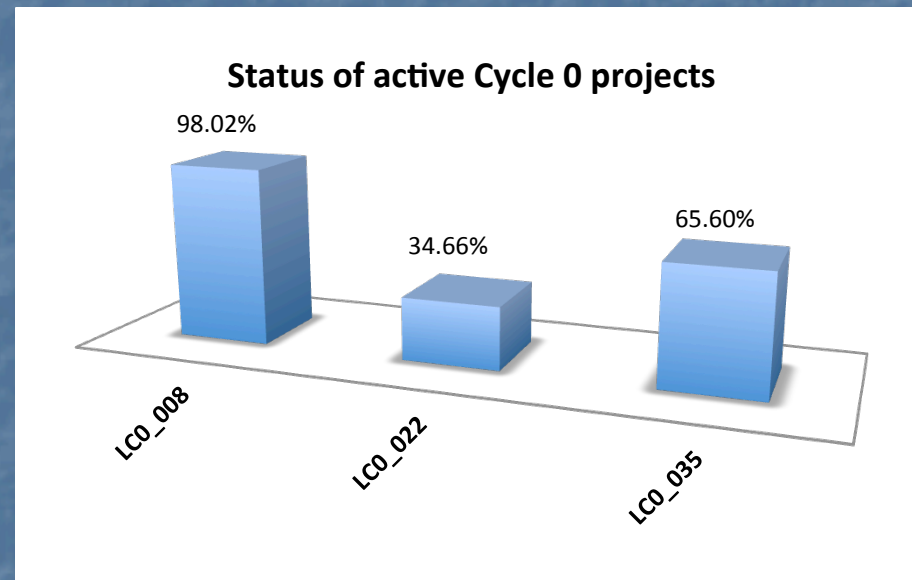
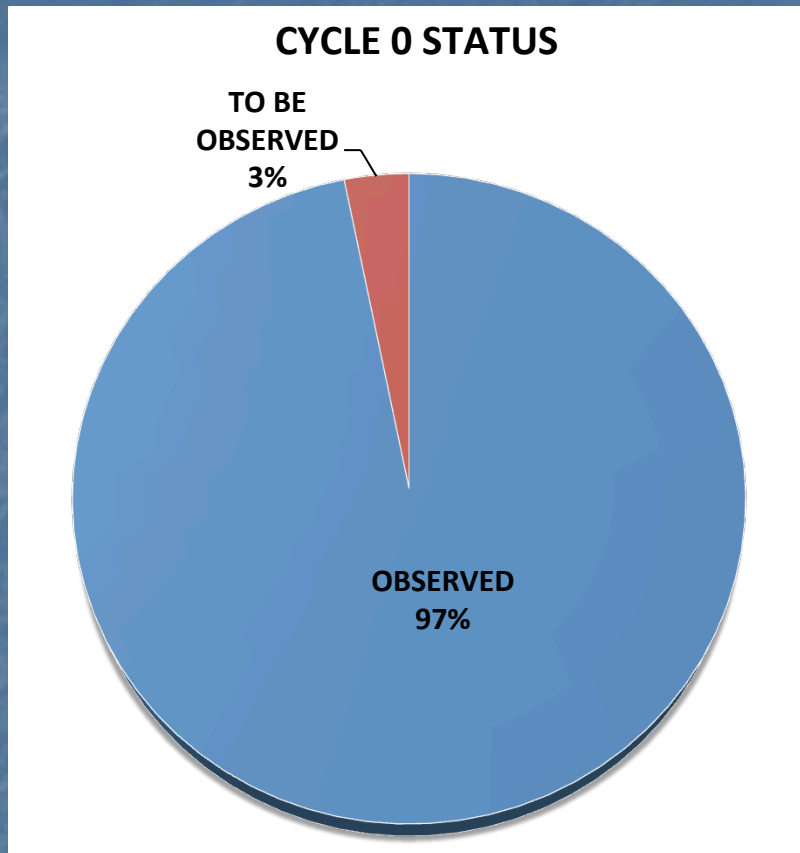


COBALT: WHAT'S NEXT?

- BF pipeline expected to be ready for replacing the BG/P at the end of April.
- In May the COBALT team will remain available for fixing bugs and finishing the project (writing documentation, setting up procedures for dealing with system updates in Groningen)
- The BG/P will remain available for LOFAR observations for the coming two months, although without a service contract.
- Project leadership (as of April 1st): Ronald Nijboer -> Hanno Holties
- Outside scope of current project:
 - Combined Imaging+BF observations

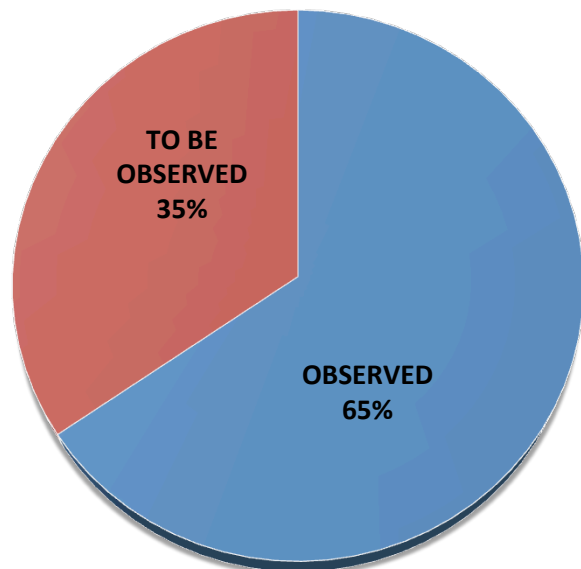
(more in Michael's talk)

SCIENCE OPERATIONS



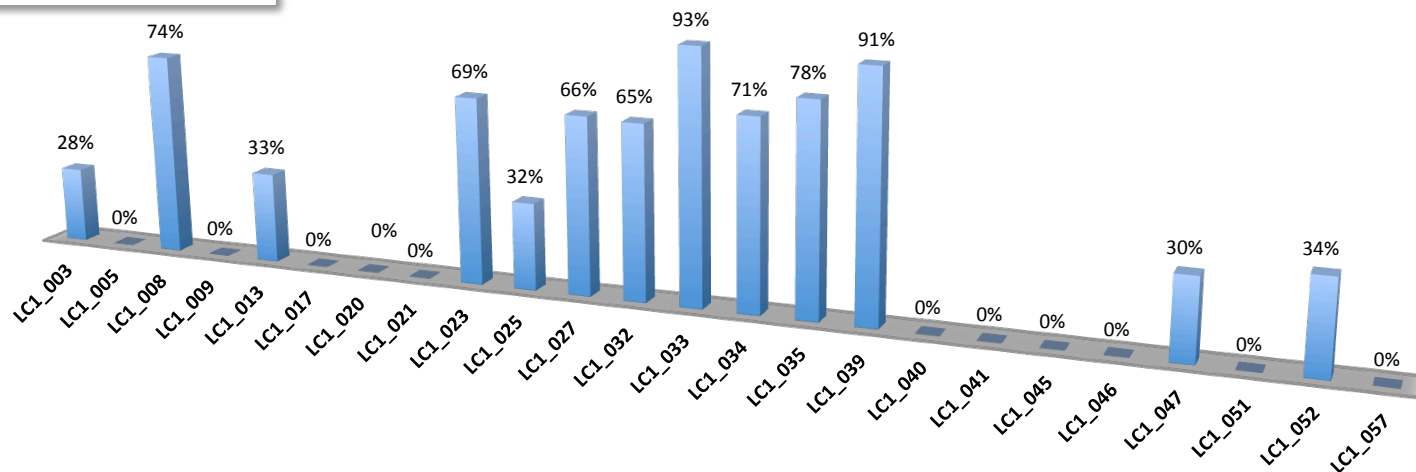
- 2300 hours **observed successfully**
- 3 projects still active (Pulsar projects) -> they **will not** continue during Cycle 2

STATUS CYCLE 1



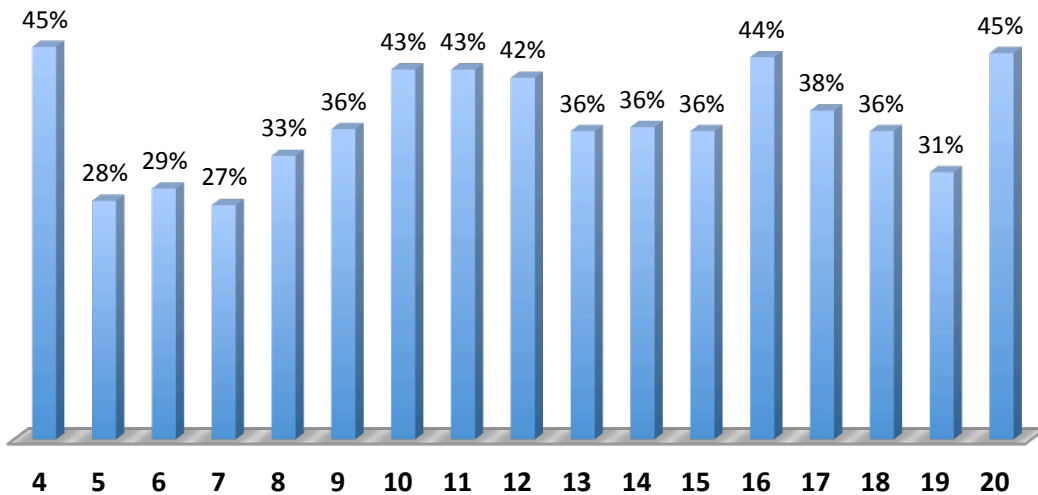
- 18 projects completed – 1050 hours observed successfully
- ~ 450 hours scheduled for completion by 14 May
- LC1_039, 052, 020, 051 will not finish → will continue during Cycle 2
- Also observed MSSS -> completed HBA part of the survey

Status of active Cycle 1 projects



OBSERVING EFFICIENCY

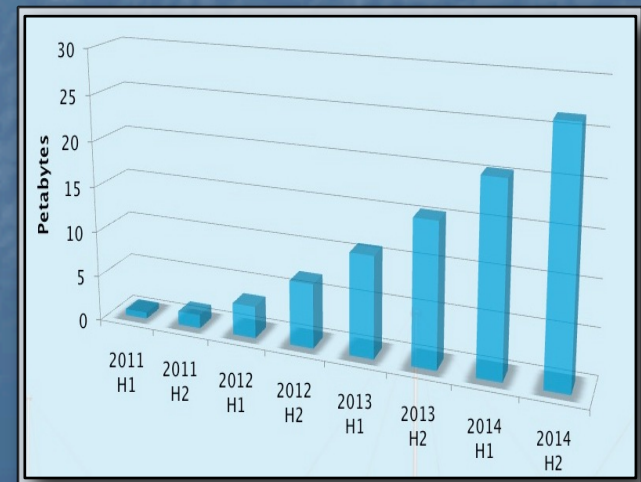
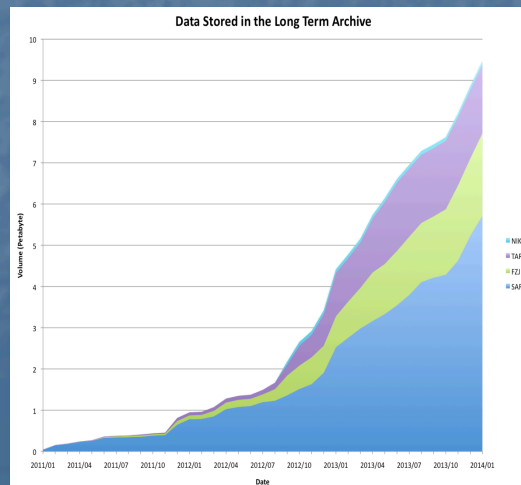
Efficiency during the last 17 weeks of Cycle 1



- A few observing failures due to BG/P network issues
- Delays caused by (i) COBALT testing, (ii) ingest system instability and (iii) oscillating HBA tiles
- **NOTE:**

ALL PROJECT-HANDLING PROCEDURES ARE (STILL) MOSTLY MANUAL

- Exceeded 9 PB of LOFAR data at the LTA
- ~ 3.8 PB of Cycle 2 data expected

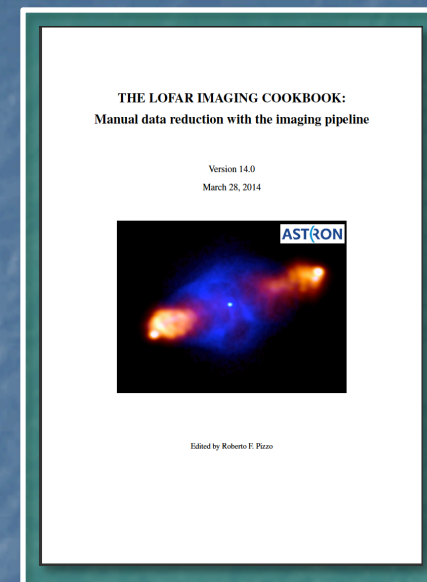


CEP3: TIMELINE & POLICIES

- CEP1 will be replaced by CEP3 in the **middle of April**
- CEP3 will be used to run the commissioning processing routines, testing production software and, in selected cases, to perform advanced Cycle processing by the Cycle users
- CEP1 data will be removed when CEP3 is available. All CEP1 users have been informed.
- Observing, CEP2 processing time and the use of CEP3 are allocated by the LOFAR Programme Committee and the ILT director during the regular proposal evaluation stages, or under Director's Discretionary Time.
- Access privileges **limited in time** (4 weeks by default). Automatic notification will be sent to users one week before the expiration of access privileges. Users can request extension of their access, in case this is justified. The user's data products generated on the CEP3 nodes **will be removed regularly** after the expiration of the access.

➤ A new version of the **LOFAR Imaging Cookbook (v. 14.0)** was released last week. It includes:

- Description of the Selfcal tool
- Description of LoSoTo – the LOFAR Solution Tool
- Description of CLOCK-TEC separation
- Description of CEP3



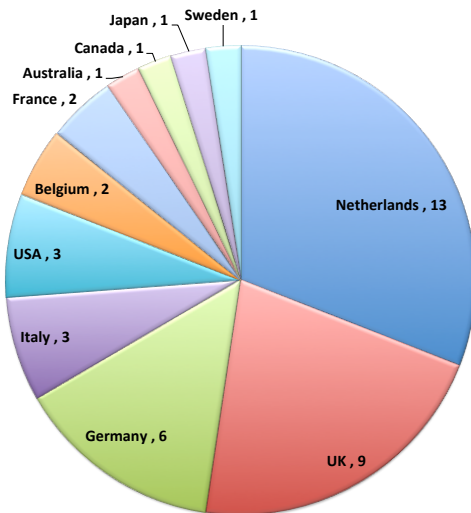
- Experienced commissioners requested to contribute to a **LOFAR DATA REDUCTION MANUAL** -> extension of Chapter 13 of the Imaging Cookbook
- **LOFAR data school coming October 20-24** – announcement will go out soon
- After data school -> **LOW FREQUENCY MANUAL** (will collect and present in detail the topics of the lectures given at the school).

- Cycle 2 proposal deadline on Friday 7 March, 12 UT.
- We received:
 - 42 regular proposals
 - 3 long-term proposals
 - 2 envelope sheets

Requested modes:

IM	51%
BF	30%
BF+IM	11%
TBB	4%
Stand alone	4%

LOFAR CYCLE 2: country affiliation of first author



Science areas:

Extragalactic (AGN, clusters, nearby galaxies)	29%
Transients	23%
Solar	18%
Stellar	12%
Cosmic rays	6%
EoR	4%
Planets and exoplanets	4%
Ionospheric studies	1%
ISM	1%
RRL	1%
SETI	1%

CYCLE 2 REVIEW PROCESS & CYCLE 3 TIMELINES



LOFAR

ASTRON

- Technical aspects of the Cycle 2 proposals assessed by technical review panel
- Subscriptions:
 - Observing time: 1.2
 - Processing time: 0.9
- Consortia will return their must and may sponsor allocations on April 11
- PC meeting on April 29-30, at ASTRON
- Cycle 2 schedule publicly available on May 14th
- Start of Cycle 2: May 15th

- *Cycle 3:*
 - *proposal call will be advertised at the beginning of July*
 - *submission deadline → beginning of September*
 - *Start of Cycle 3: November 15th*

THANKS

...QUESTIONS?