



IRAM ARC node

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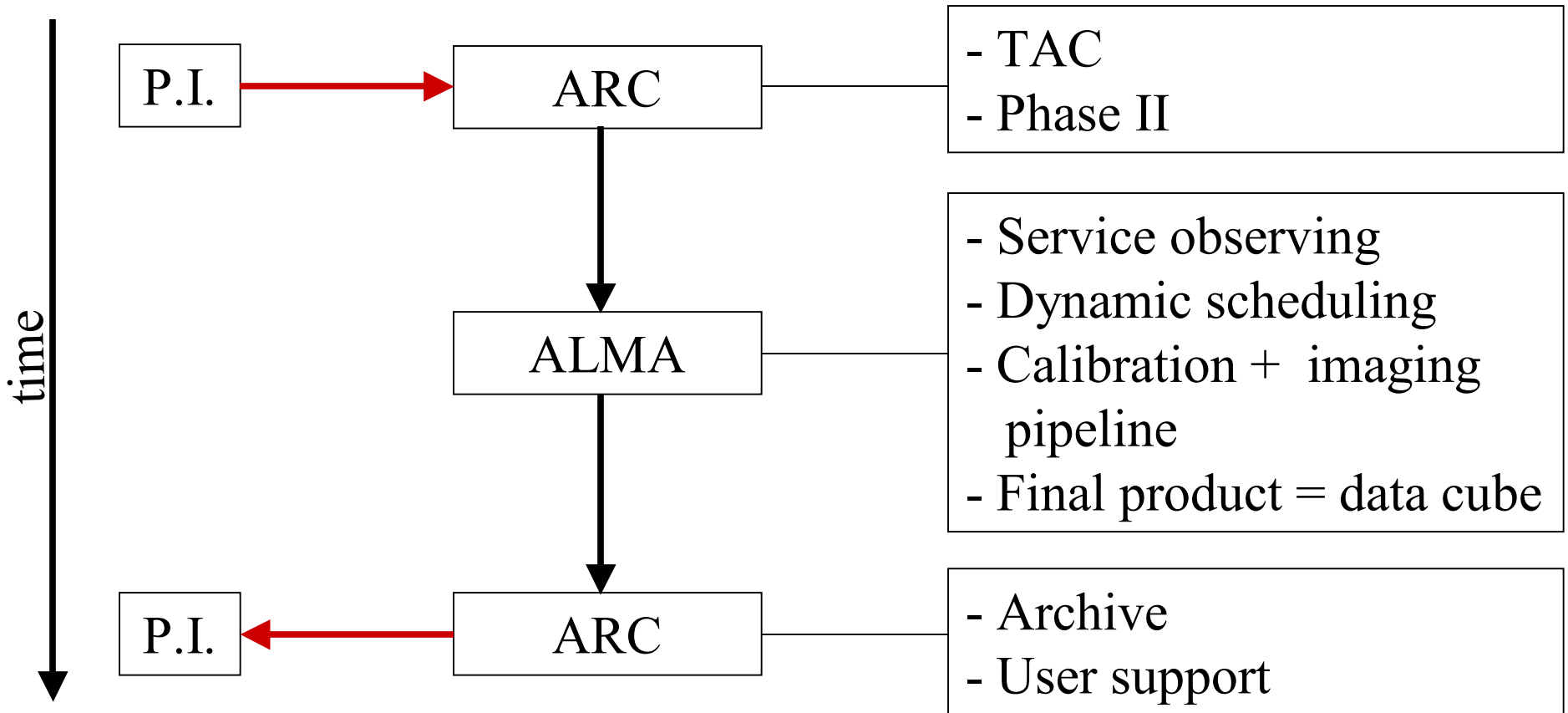
6th IRAM Millimeter Interferometry School
Grenoble, 6—10 October 2008





ARC @ IRAM

ALMA operation mode





ARC @ IRAM

ARC tasks

- **Core tasks → ESO**
 - Proposals preparation, proposals handling, TAC (Phase I)
 - Observing setups (Phase II)
 - ALMA archive
 - Data product support = delivering data + software
- **Additional tasks → ARC nodes**
 - Extended archive & data reduction support = **f2f support**
 - Special projects
 - Science community development (incl. schools, fellowships, workshops,...)
 - New software developments



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European ARC nodes

ARC core

- ESO Garching

ARC nodes

- INAF Bologna
- Univ. Bonn
- IRAM
- Leiden Obs
- Manchester Obs.
- Onsala Obs.





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ALMA facts

- **Observing time on ALMA**

- No guaranteed time
- EU ~ 35%, NA ~ 35%, EA ~ 20%, Chile=10%
- In ESO: D=21%, F=16%, E=9%
- In ALMA: D~7.5%, F~5.5%, E~3%

- **Timescale:**

- Q1 2009 ALMA commissioning
- Q4 2010 Early Science
- Q1 2013 Full operations

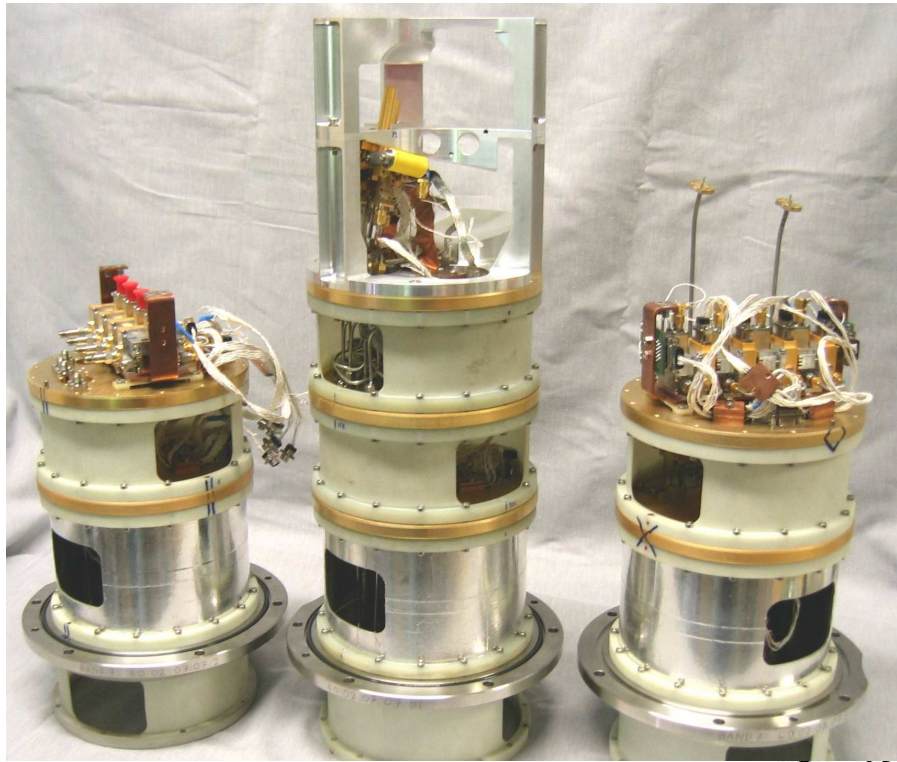
ARC must be
in place NOW



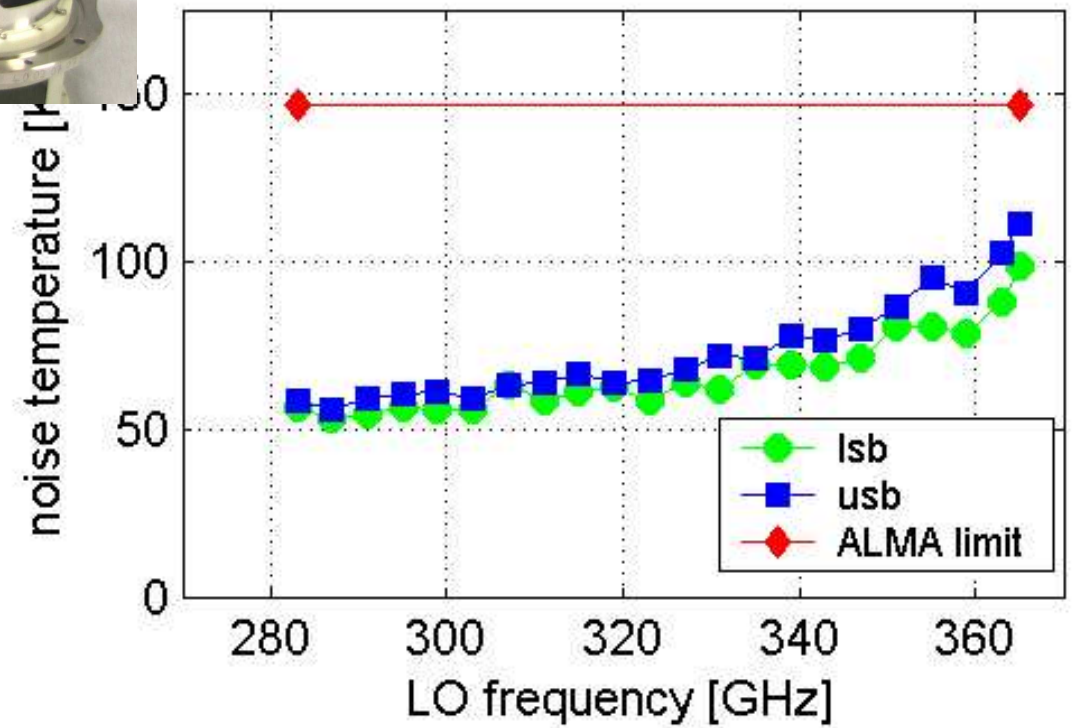
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Motivations

- Strong IRAM involvement in **ALMA construction**
 - ALMA Band 7
 - Correlator samplers
 - TelCal software
- Already existing center of expertise on mm interferometry
- Synergies with **PdBI user support** → only delta effort
- IRAM users = ALMA users



Band 7 cartridges



ARC developed
on top of existing
PdBI support and
expertise center





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Tasks

IRAM ARC node

Users support

- face-to-face support
- formation

Developments & Projects

- new developments
- ALMA commissioning
- ALMA software developments

<http://www.iram.fr/IRAMFR/ARC>



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Tasks

IRAM ARC node

Users support

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Developments & Projects

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- ALMA software developments

Key goal



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Tasks

IRAM ARC node

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Priority NOW



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Tasks

IRAM ARC node

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Developments & Projects

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To develop expertise on ALMA
To provide new tools to users



Users support f2f support

- **Extend PdBI f2f support to ALMA**
 - Local contact assigned to each project
 - Use existing infrastructures and procedures
 - Support adapted to PI/project
 - Travels to Grenoble will be funded by IRAM (*)
- **f2f support is the key goal of the IRAM ARC node**
 - Must be in place for Early Science (=2010/11)



Users support f2f support

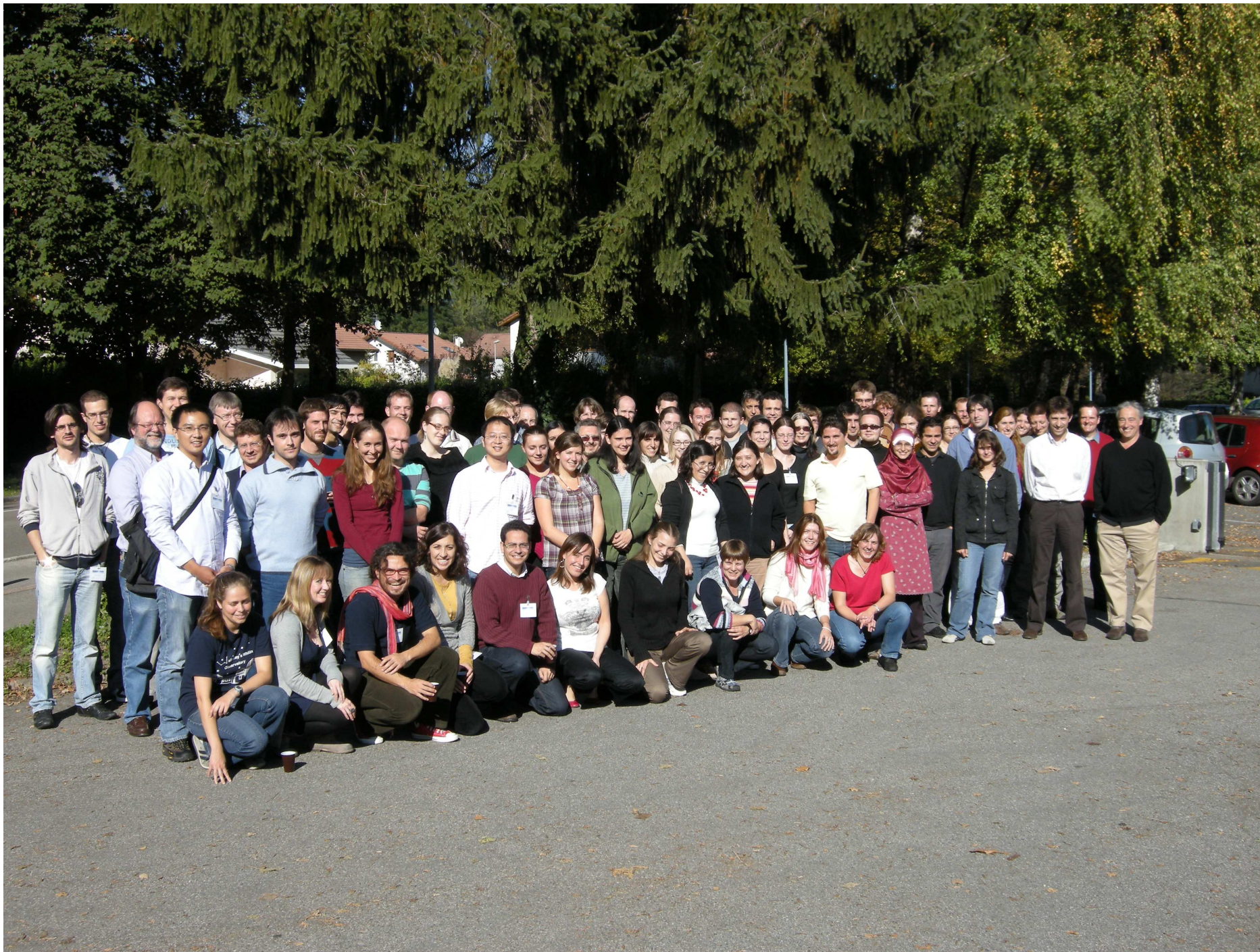
- **ARC audience: user support open to whom?**
- IRAM ARC done on behalf of IRAM council and funding agencies (MPG, CNRS, IGN)
- IRAM telescopes open to all scientists

**IRAM ARC services open to all interested
scientists, with emphasis on Germany, France,
Spain**



Users support Formation

- **Plateau de Bure** = best instrument to prepare ALMA and form future ALMA users
- Host **visiting astronomers** at Grenoble/PdBI for long-duration (months) periods?
- IRAM mm-interferometry school series
 - **6th school October 6-10th 2008** (68 participants, 110 requests)





Users support Web pages

IRAM ARC Node - Mozilla Firefox

File Edit View Go Bookmarks Tools Help

http://www.iram.fr/IRAMFR/ARC/

Red Hat, Inc. Red Hat Network Support Shop Products Training

Home ALMA User Support Tools Projects

IRAM ARC
IRAM Node of the European
ALMA Regional Center
arc@iram.fr

Welcome to the IRAM ARC Node

Based on the existing support activities for the Plateau de Bure millimeter interferometer and the involvement of the institute in the ALMA center, which forms the IRAM ARC node aims to provide user support - which includes user formation and face-to-face support - and is involved in a number of ALMA-related scientific software developments. The ARC node is a new service provided by IRAM which is open to all

www.iram.fr/IRAMFR/ARC

Done



Users support Formation

- **Software testing** (OT, CASA)
- **Reducing PdBI data in CASA**
 - PdBI data → ASDM v.0 CLIC
 - ASDM v.0 → MS ALMA
 - Status: available, must be finalized, debugged
 - Goal: offer CASA reduction of PdBI data (2009)
 - to learn CASA
 - to test CASA on mm data



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Tasks

IRAM ARC node

Users support

- face-to-face support
- formation

Developments & Projects

- new developments
- ALMA commissioning
- ALMA software developments

To develop expertise on ALMA
To provide new tools to users



Developments Using the PdBI

New software/algorithms/observing techniques developments; using PdBI as test-bed

- **OTF observing mode** : to be validated at PdBI then implemented for ALMA
- Using the PdBI to develop calibration procedures?
 - Atmospheric phase correction
 - Polarization
 - NB: Band 7 is the main ALMA polarization target



Developments **GILDAS**

ALMA-related developments in GILDAS

- **PdBI data in ASDM** → fillers
- **pyGILDAS**: Python binding of GILDAS → interoperability of GILDAS and CASA
- **Holographies**: CLIC to be used for holography measurements of ALMA antennas

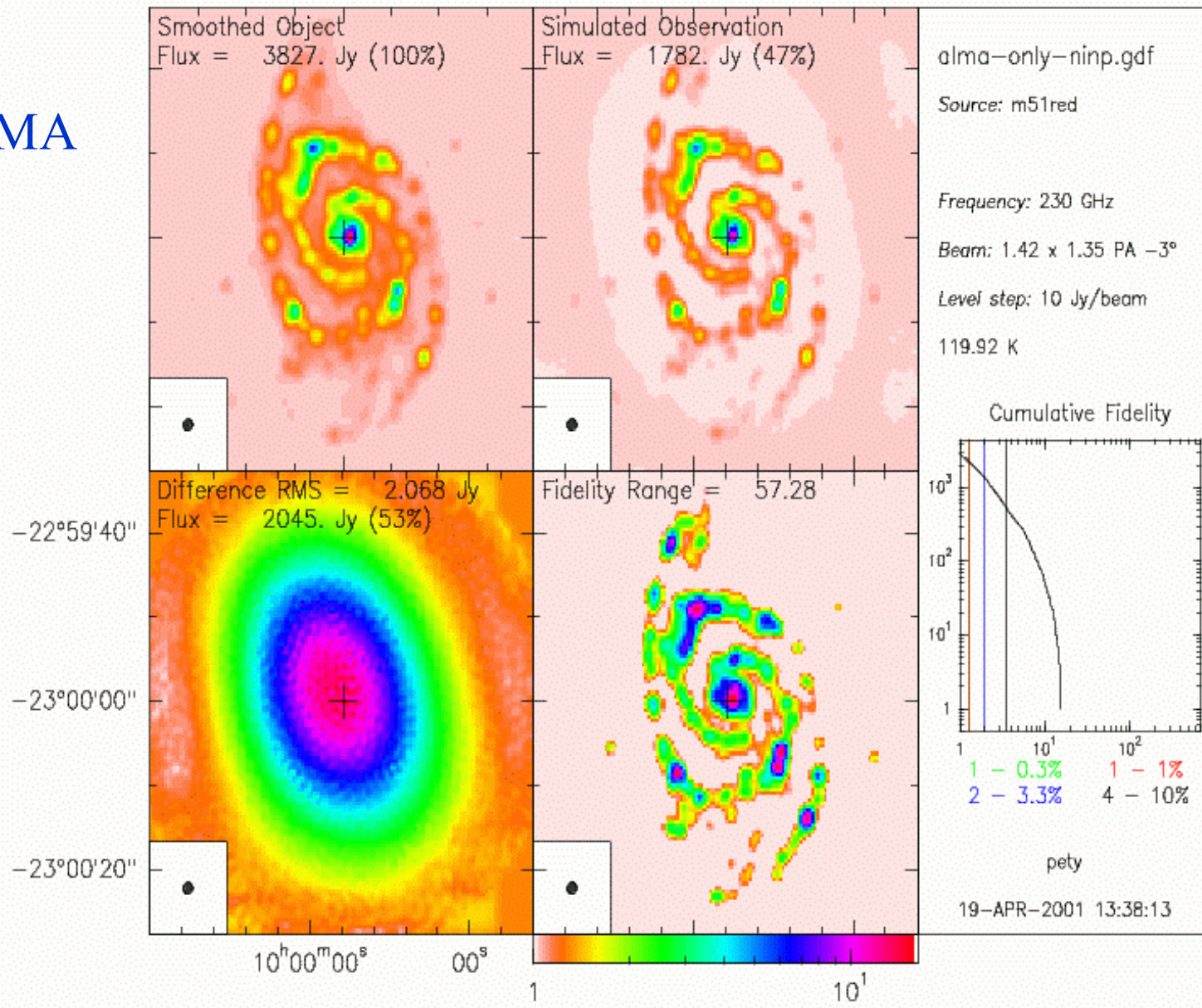


Developments **GILDAS**

ALMA-related developments in GILDAS

- **ALMA imaging simulator** in GILDAS
 - Cf ALMA memo 398
 - Used for ACA studies
 - Requires upgrade/further developments

ALMA



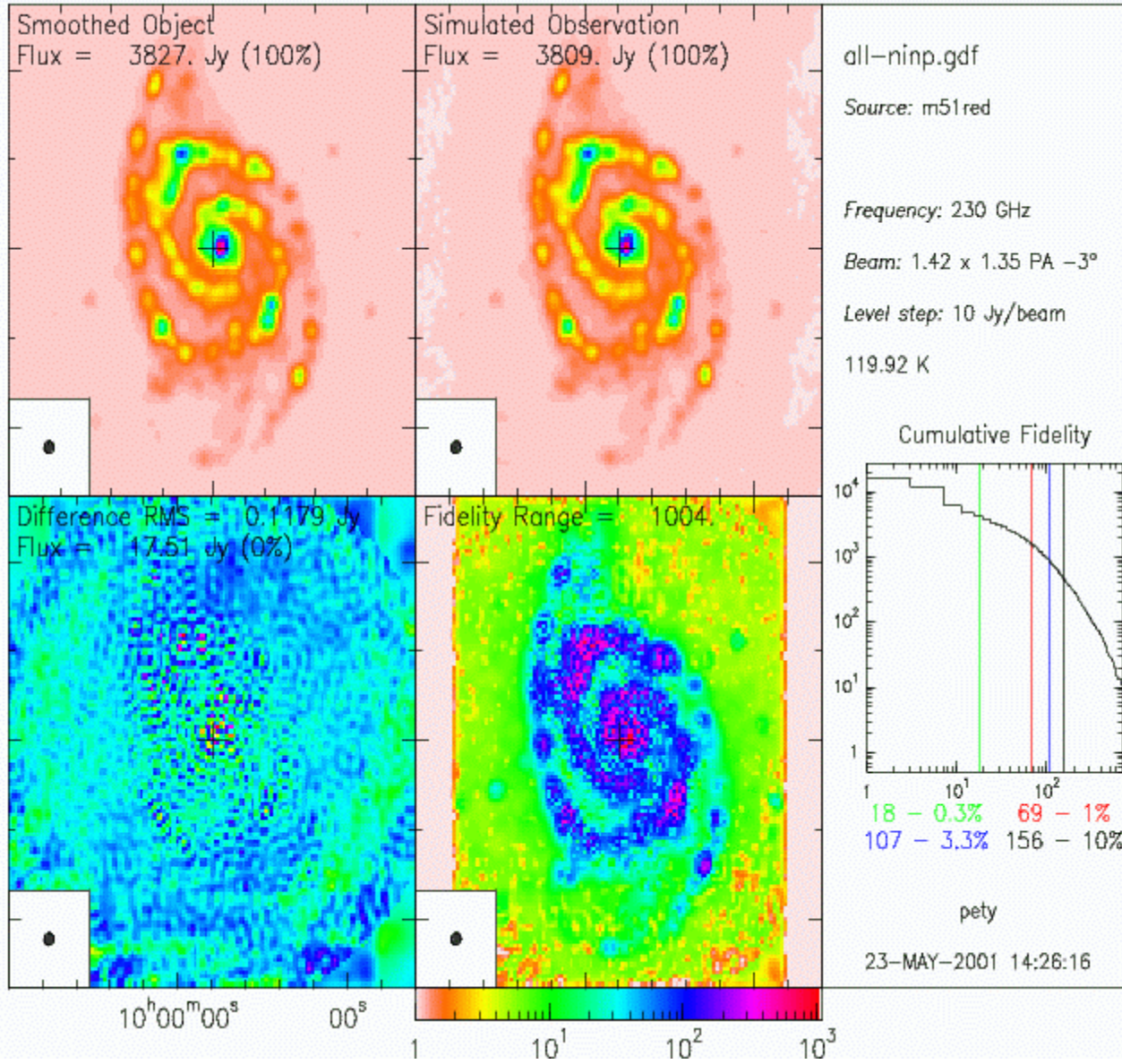
ALMA

+

ACA

+

SD





Developments

ALMA

ALMA software developments

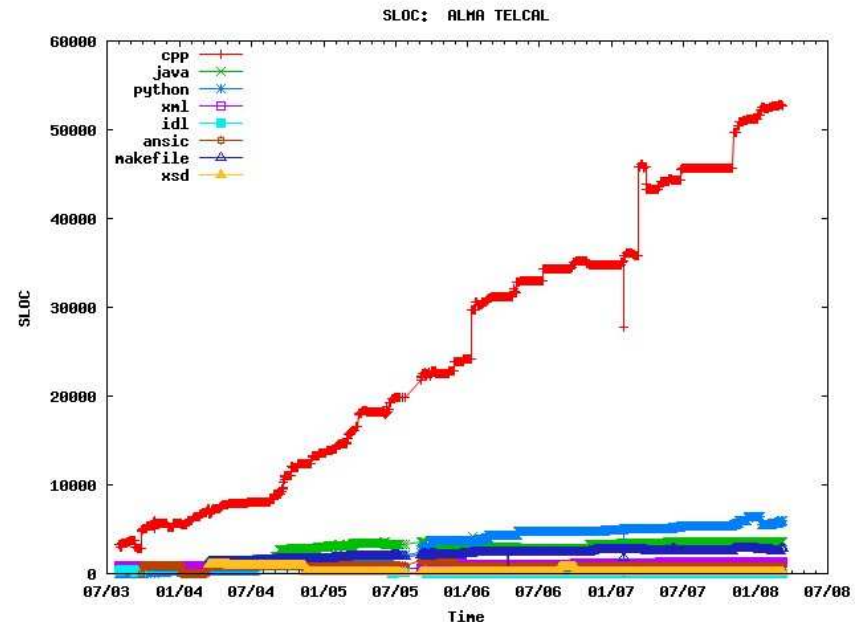
- Science software requirement group
 - ObOps
- Software **testing** (OT, CASA)
- ASDM definition (with Obs.Paris) = **data format**
- ALMA **Telescope Calibration** software



Developments TelCal

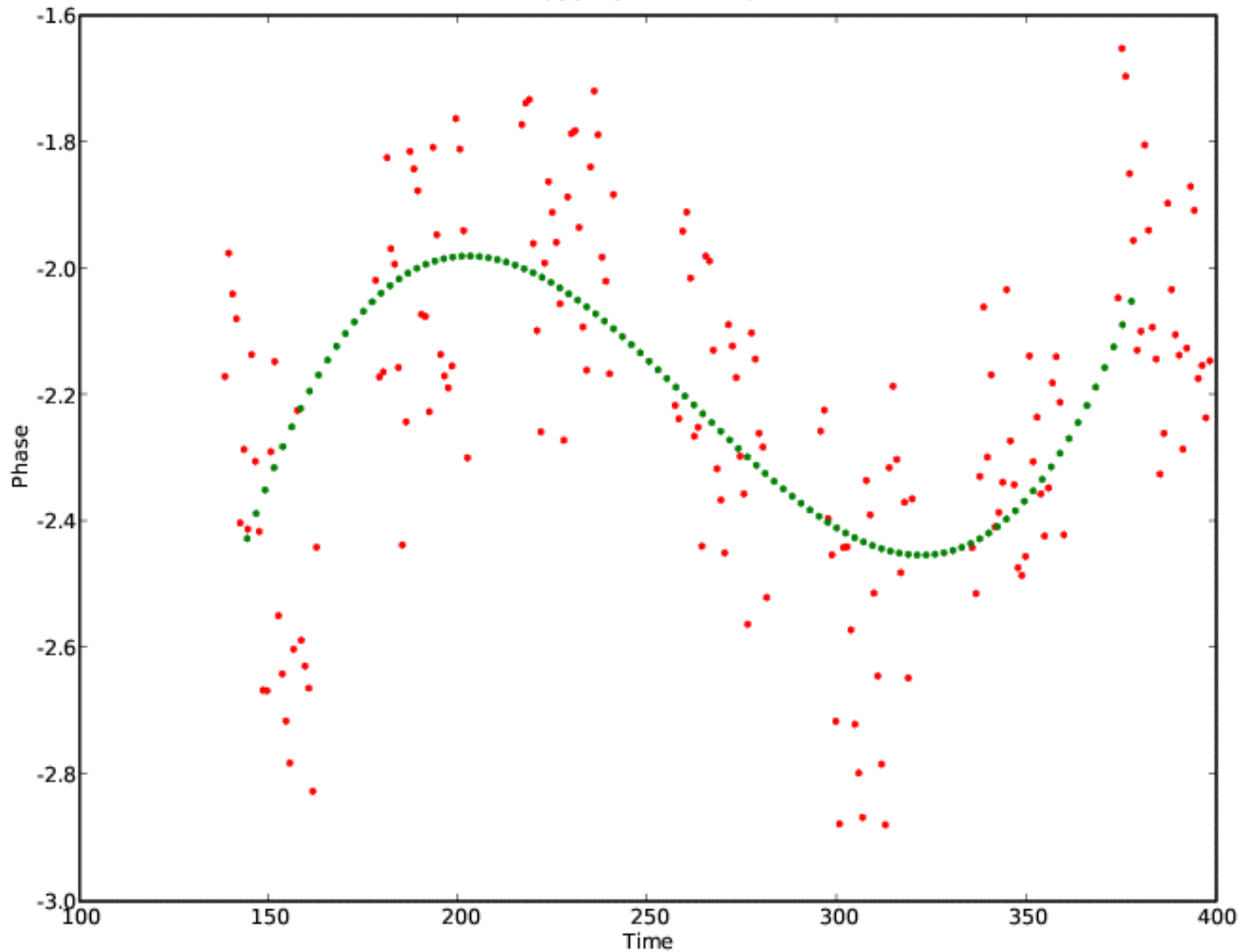
- **Real-time calibration of the instrument** (pointing, delay, baseline, atm. phase, ...)
- Developed at IRAM since 2003 (R.Lucas, D.Broguiere, J.C. Roche)
- now used at the ATF; expect heavy workload during ALMA commissioning
- Includes ATM software (J.Pardo, J.Cernicharo, CSIC)

2003 → 2008



ASDM: uid__X1eb_X55eb_X1

Baseline: DA41-DV01



TelCal used at ATF



ARC @ IRAM Conclusion

- IRAM ARC node **already in place**
- Further development (manpower)
- PdBI + ARC will place **IRAM community in best position** to get observing time on ALMA (expect huge pressure)

