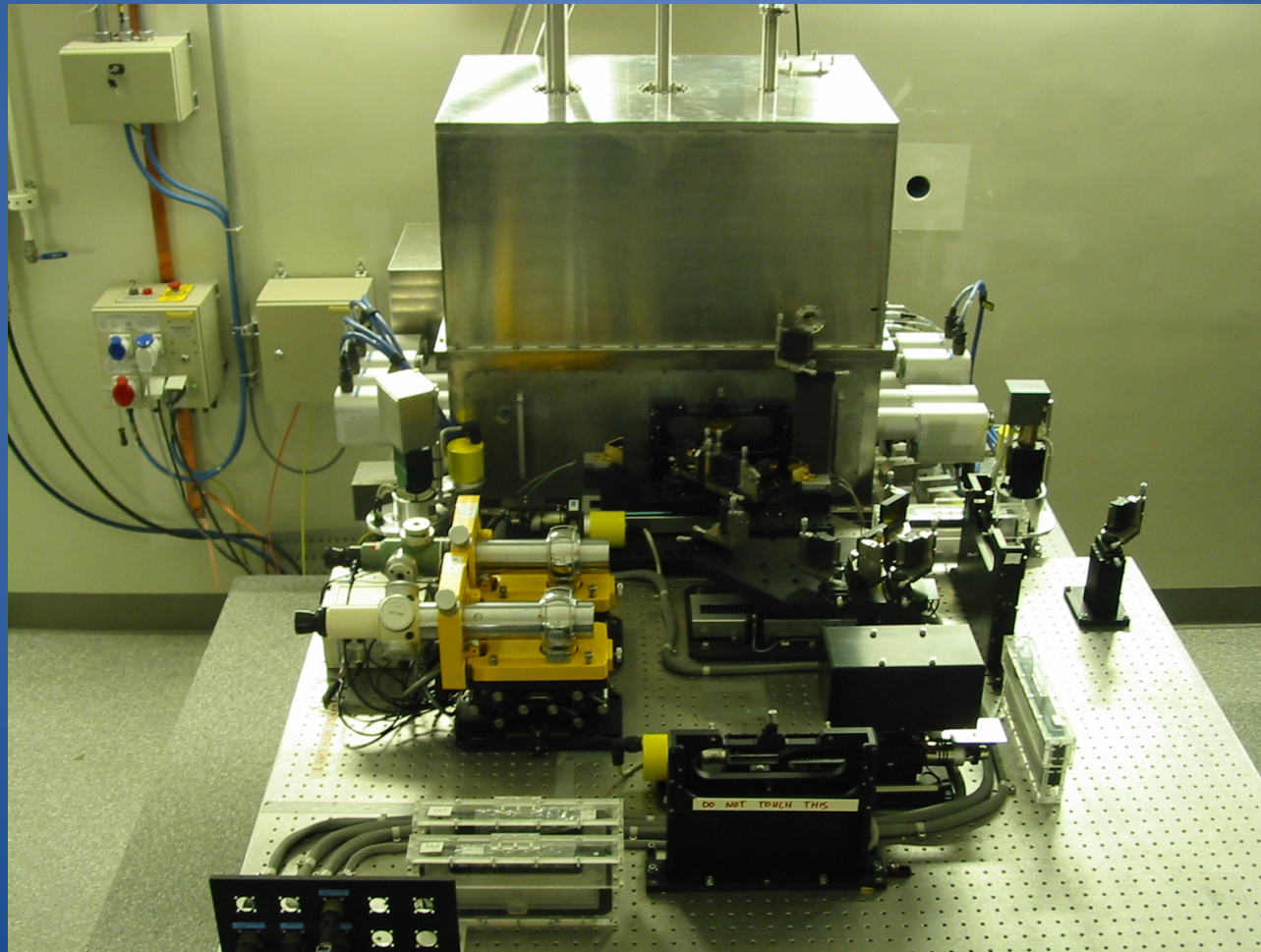


MIDI: the Paranal view

Sébastien Morel (ex-ESO)

Willem-Jan de Wit, André Müller, Thomas Rivinius (ESO)



The MIDI Instrument Operation Team, Paranal members (2002 to now)

- Instrument scientist:
 - S. Morel (2002 to 2007)
 - T. Rivinius (2007 to 2011 and 2013 to now)
 - W.-J. de Wit (2011 to 2013)
- Instrument fellow:
 - A. Müller (since 2012)
- Instrument engineer:
 - Nicolás Haddad (2002 to 2012)
 - Pedro Mardones (2012 to now)
- Software engineer:
 - Nico Housen (2002 to 2005)
 - Andrés Ramirez (2005 to 2006)
 - Daniel Salazar (2006 to 2008)
 - Claudio Reinerio (2008 to now)

MIDI development at Paranal, milestones

- **2002-12: First fringes**
- 2003-01 to 2004-03: Commissioning, GTO, SDT, paranalization
- 2004-04: Start of operations in open-time (P73), UTs only
- 2005-05: Preliminary Acceptance in Chile granted
- 2005-10: Start of MIDI operations with ATs in open-time (P76)
- 2006: Start of MIDI daily health-check (detector, prism, grism,...)
- 2006: Pupil alignment with ARAL TCCD
- 2006-04: Use of IRIS (beam stabilization) in MIDI operations (P77)
- 2007: Delay-line VCMs commissioned (better AT FoV for MIDI)
- 2007: IWS ported from HP-UX to Linux
- 2007-11: Experiment MIDI + AMBER (GL86b)
- 2009-07: First experiments MIDI + PRIMA FSU-A
- 2012-04: Start of operations of MIDI + FSU-A in open-time (P91)
- 2012-07: Pupil alignment with IRIS fully functional with MIDI

MIDI “Paranalization”

“Interferometry for dummies” approach:

- Instrument package with very few keywords

The screenshot shows the FindingCharts software interface. The main window title is "File Edit Synchronise FindingCharts". The interface is divided into several sections:

- Header Section:** Contains fields for Name (UT2UT3_SCI_HD76294), Status ((D)efined), Execution Time (00:30:00.000), User Priority (1), and OD Name (No Name). It also features a "Template Type" dropdown set to "acquisition" and a "Template" list containing "MIDI_starintf_acq", "science", "calib", and "test". Action buttons include "Add", "Delete", "Duplicate", and "Reset ExecTime".
- User Comments:** A text area for entering comments.
- Table Section:** A table with columns for template names and counts. The visible data is:

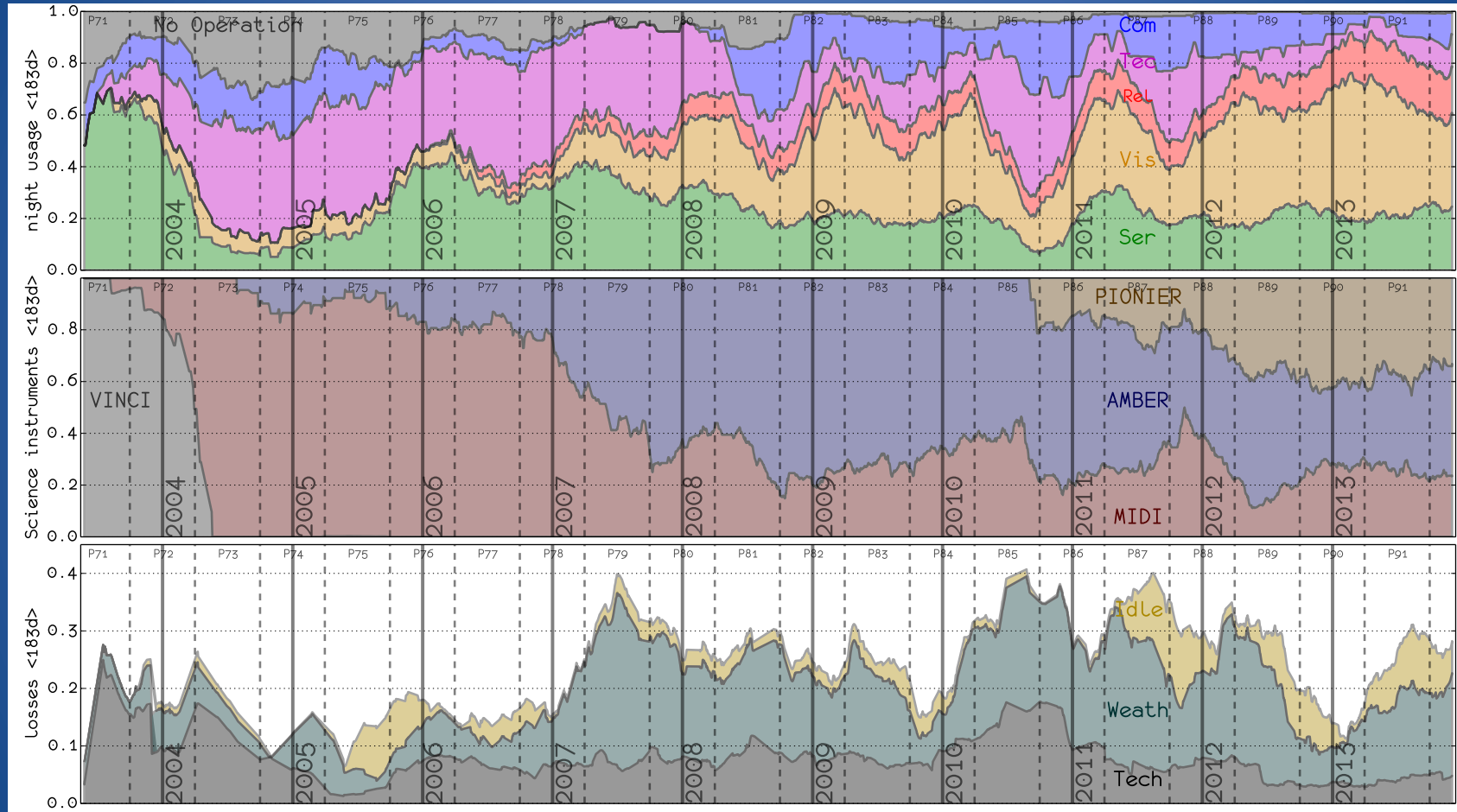
MIDI_starintf_acq	1	MIDI_starintf_obs_fringe_sci	1
Amplitude of chop in arcseconds on sk...	15		
Angle on chop (0-399 degrees)	0		
Coude guide star alpha	0.		
Coude guide star delta	0.		
Coude guiding mode	SCIENCE		
Coude guide star magnitude in V	12.		
- Target Section:** A tabbed interface with "Target", "Constraint Set", "Time Intervals", and "Calibration Requirements" tabs. The "Target" tab is active, showing fields for Name (No Name), Sky Transparency (Variable, thin cirrus), Seeing (2.0), Strehl R. % (NACO only) (0.0), Airmass (5.0), Lunar Illumination (1.0), and Moon Angular Distance (30).

- Fool-proof template executions (pop-up messages), OSF scripts

Improvement of MIDI efficiency

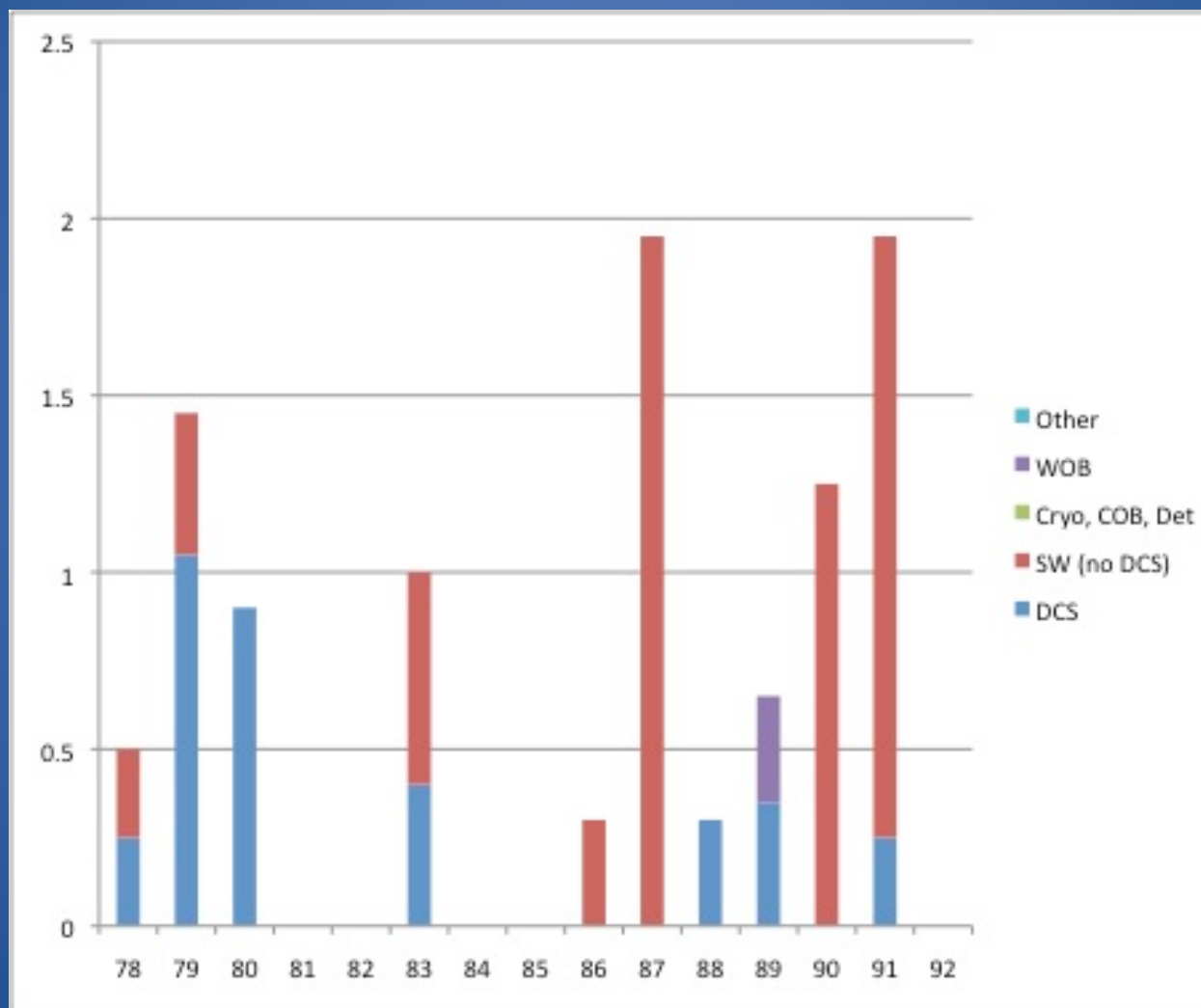
- Parallel VLTi preset and instrument set-up
- Beam acquisition and stabilization by IRIS
- Pupil alignment by IRIS
- OPD-model improvement (since 2011)

VLTl statistics: MIDI and other instruments

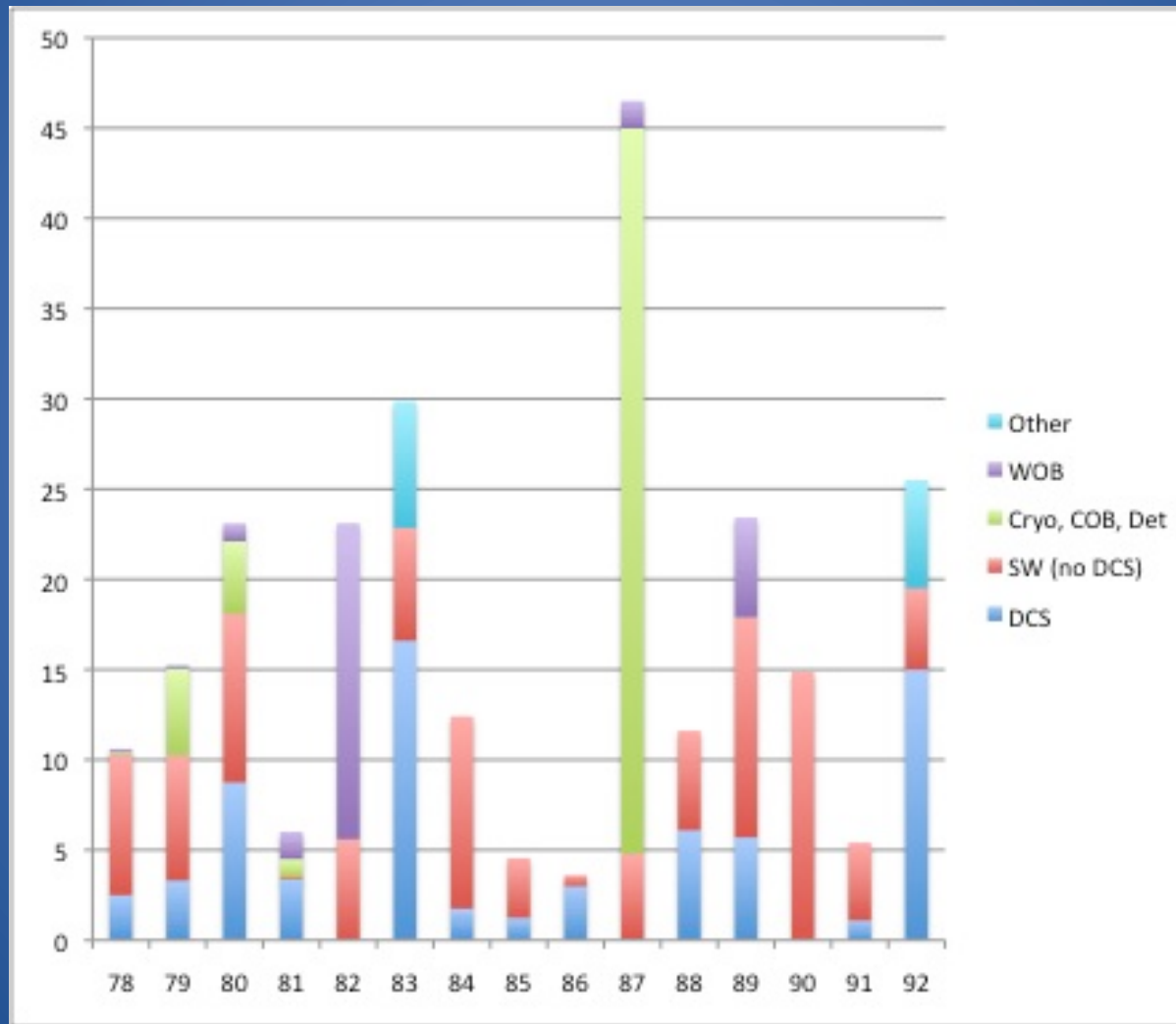


(courtesy of Antoine M erand)

MIDI technical downtime (PPRS)



MIDI workload (PPRS)



What was not very useful

- Many filters (mostly N8.7 and Nband were used)
- Many slits and pinholes (we just used SLIT_0.2 and open pinhole !)

=> With a simpler optical design, 4-telescope mid-IR interferometry would have already been possible in 2002 ?

- Wide-field interferometry (only one proposal in open-time, rejected)
- MIDI+FINITO (problem of targets over-resolved in H-band)
- Preparation for phase-referenced imaging: space on WOB, monitoring of internal OPD (discarded PRIMA mode)

=> This was time-consuming and not really rewarding

What we wish we had

- MIDI:
 - Motorized WOB tip-tilt mirrors for alignment (AT narrow field problem)
 - Efficient pipe-line from the beginning
 - Simple way to modify maximum size of files (still limited to 100 MB)
 - Simple tool for mask creation/update
 - More intuitive fringe-display
- VLTi:
 - Beam-compressors on the ATs
 - REMEMB/GOBACK mode (faster scientific-target/calibrator toggling)
 - Control panel for operation on-the-fly (instead of keyword setting in BOB), as proposed in 2006 (MCR rejected)
 - MARCEL N-band mode ready from the beginning (2008)

Conclusion

- MIDI has been proved to be very reliable and easy to use and maintain.
- We have learned a lot about how to improve VLTI instrument operations.
- Simple way (“drop-box”) to exchange data between Paranal and instrument consortium is wished
- “Cooperation” between VLTI instruments shall be part of their design