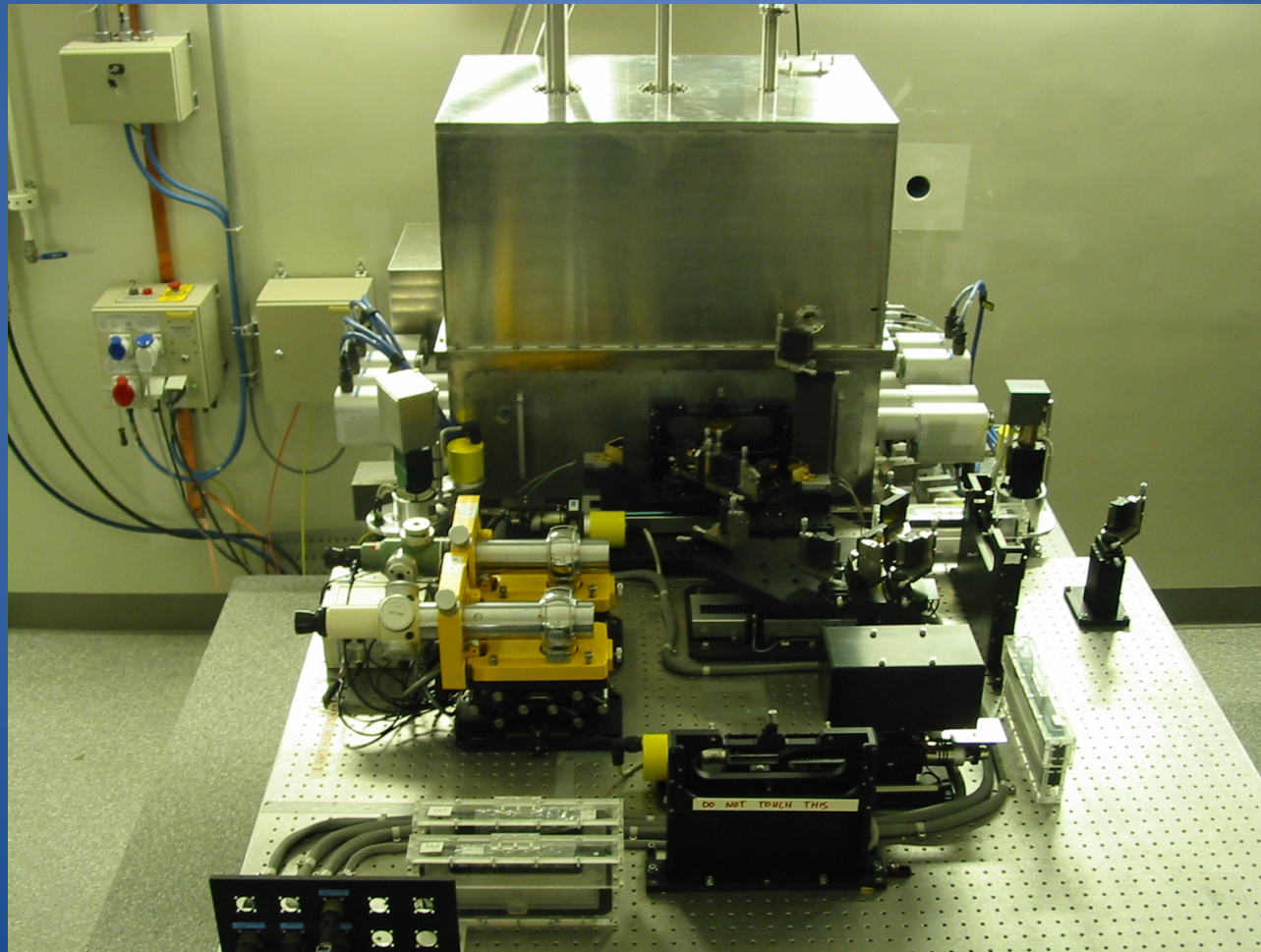# MIDI: the Paranal view

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 Reinero (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

- Fool-proof template executions (pop-up messages), OSF scripts
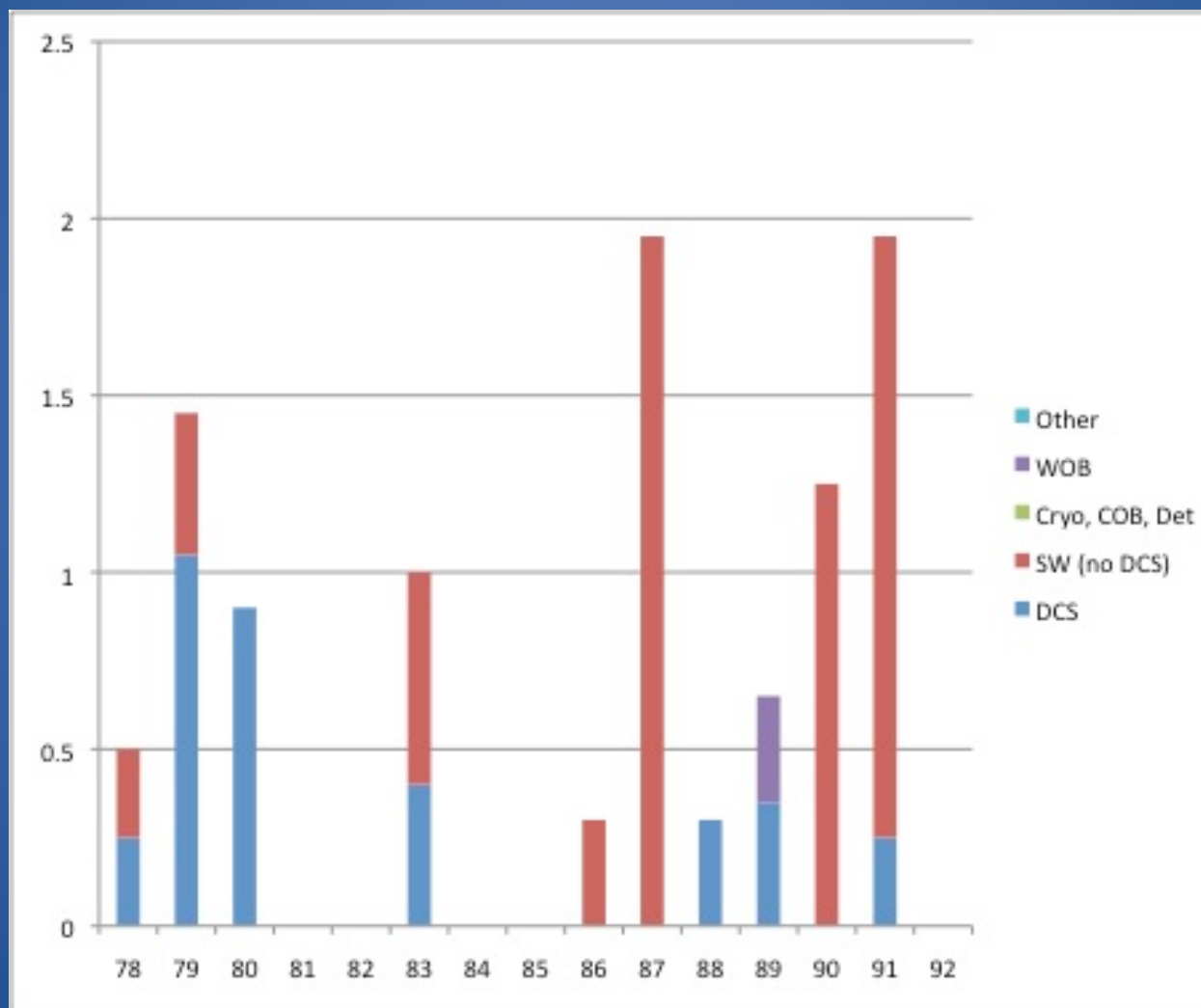
Improvement of MIDI efficiency

- Parallel VLTI preset and instrument set-up

- Beam acquisition and stabilization by IRIS

- Pupil alignment by IRIS

- OPD-model improvement (since 2011)

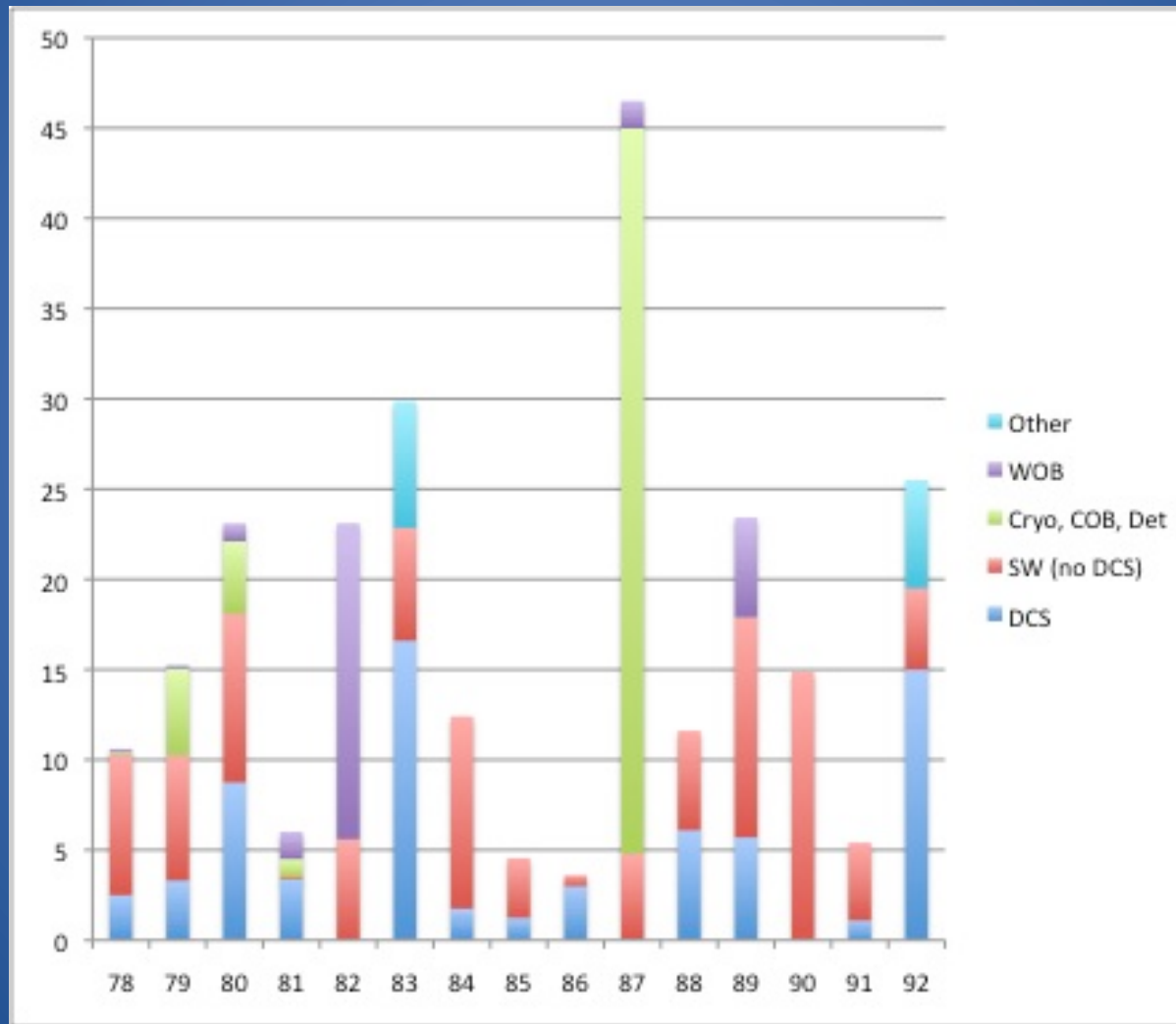# VLTI statistics: MIDI and other instruments
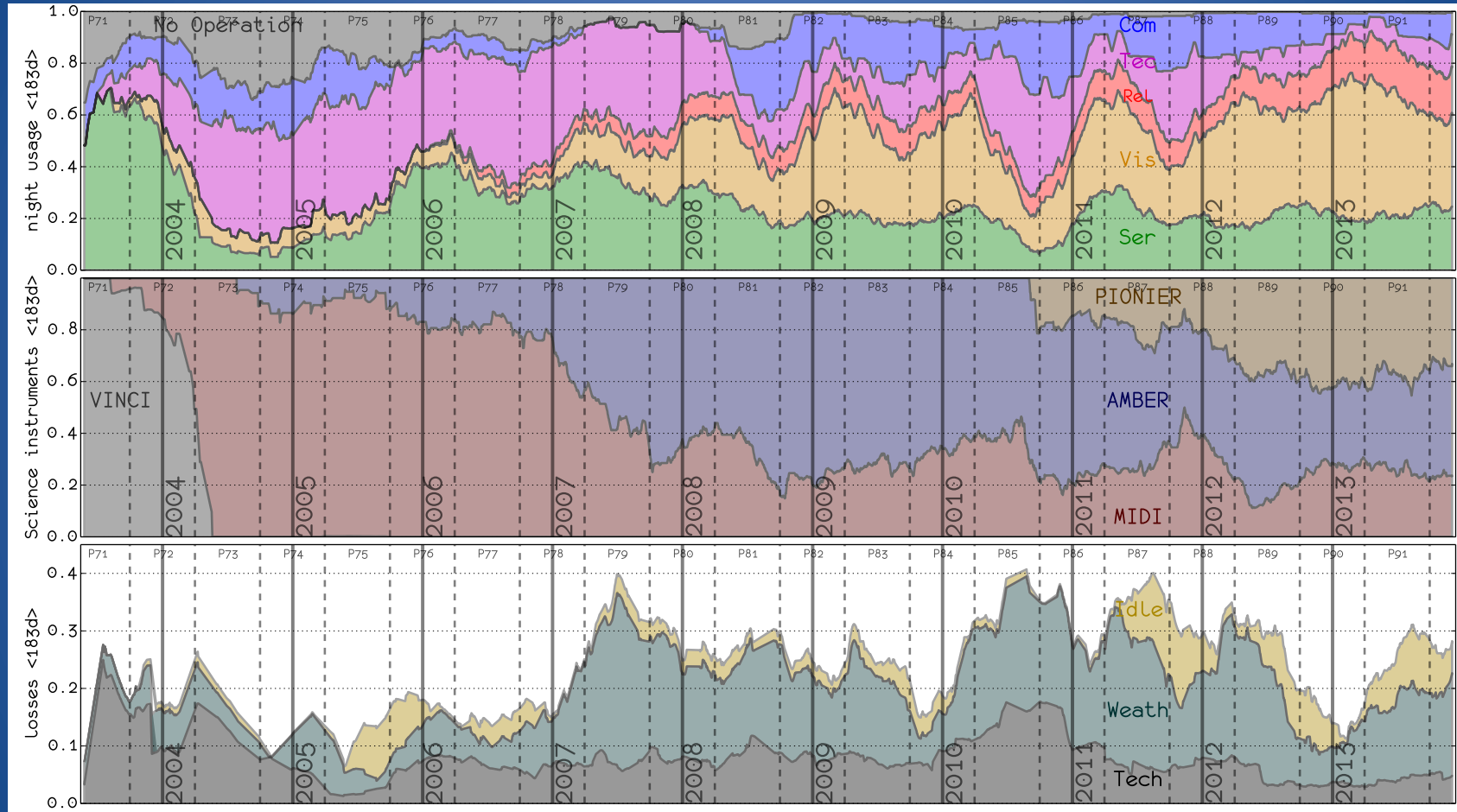
(courtesy of Antoine Mérand)

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