



VLTI / CHARA synergies

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ESO





Recent and future developments

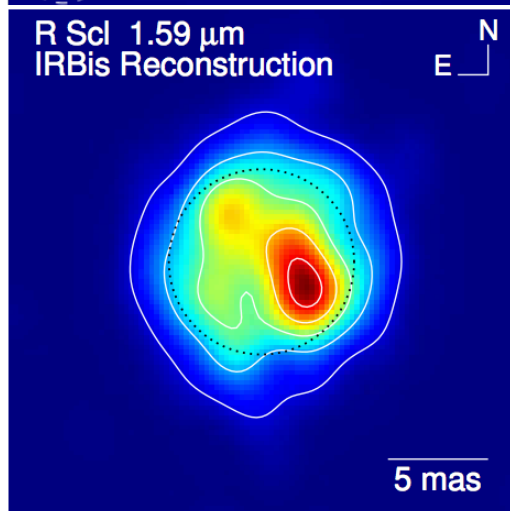
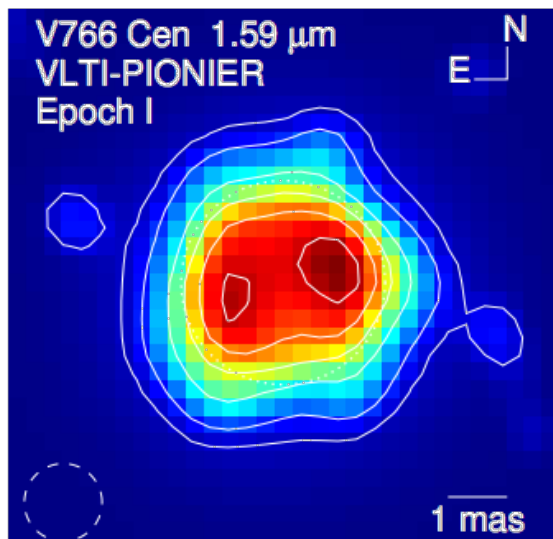
- 2015: GRAVITY installation
 - *closing for 7 months*
- 2017: MATISSE installation
- 2018: last year of operations for AMBER
- late 2018: NAOMI (AO for ATs)
 - *closing for 2 months*
- 2019: GRAVITY as fringe tracker for MATISSE
- later in 2019: VLTI Visitor Focus



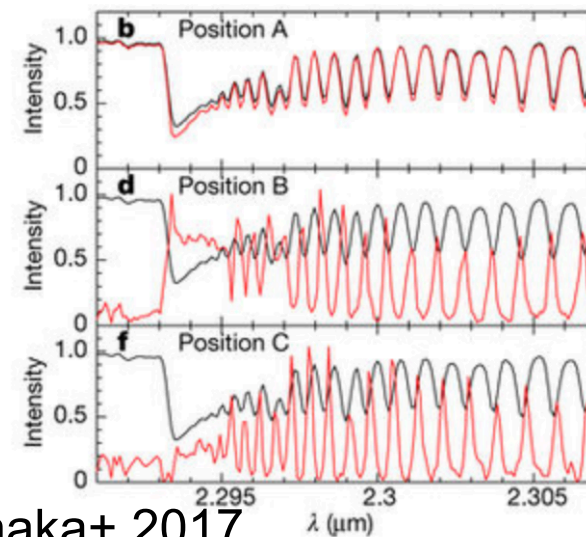
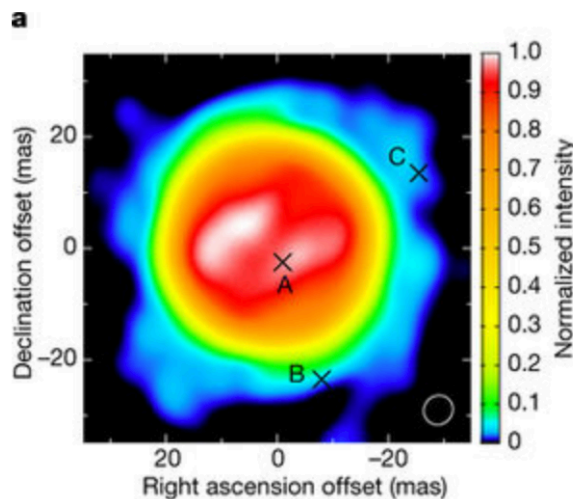
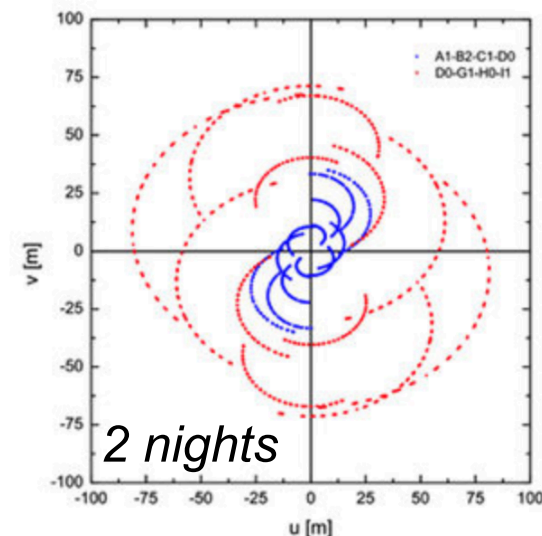
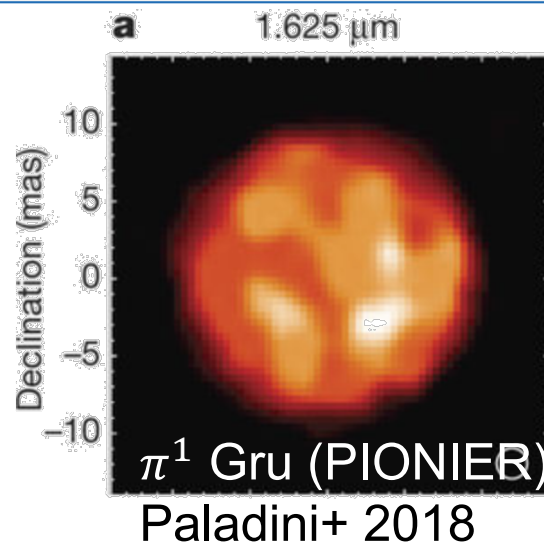
Instruments

	AMBER	PIONIER	GRAVITY	MATISSE
Status	decomm. late 2018	offered	offered	in commissioning
N tel.	3	4	4	4
bands / spectral resolution	H+K 35,1500,12000	H R=5,30	K R=22,500,4000	L+M+N R=30,5000
Mag. Lim AT/UT	6.5 / 9.0	8.0 / 8.0	8.5 / 10.5	
Fringe Tracker	FINITO (H)	-	GRAVITY (K)	GRAVITY (K)

Recent Stellar Images



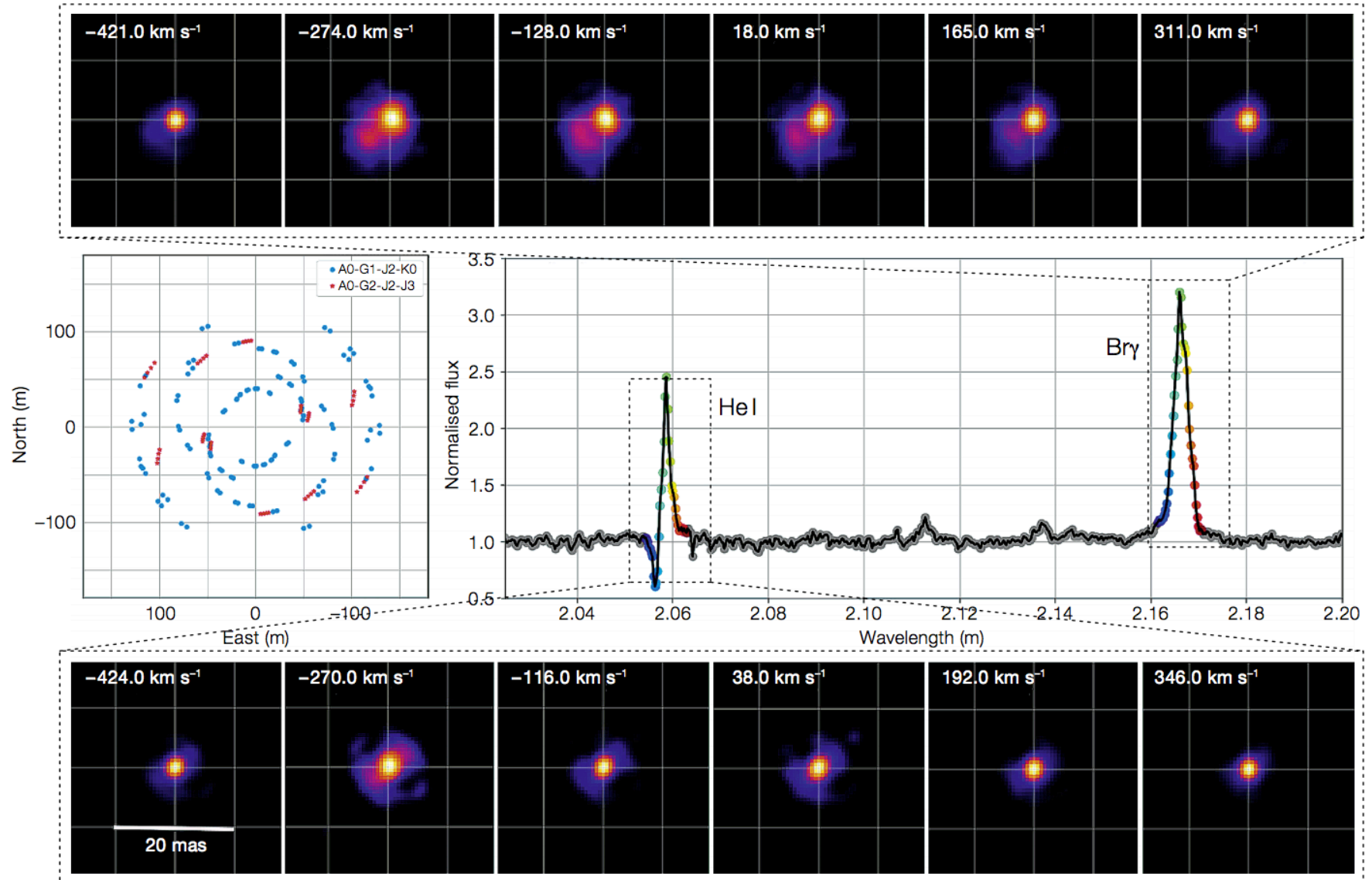
Wittkowski+ 2017a
 Wittkowski+ 2017b



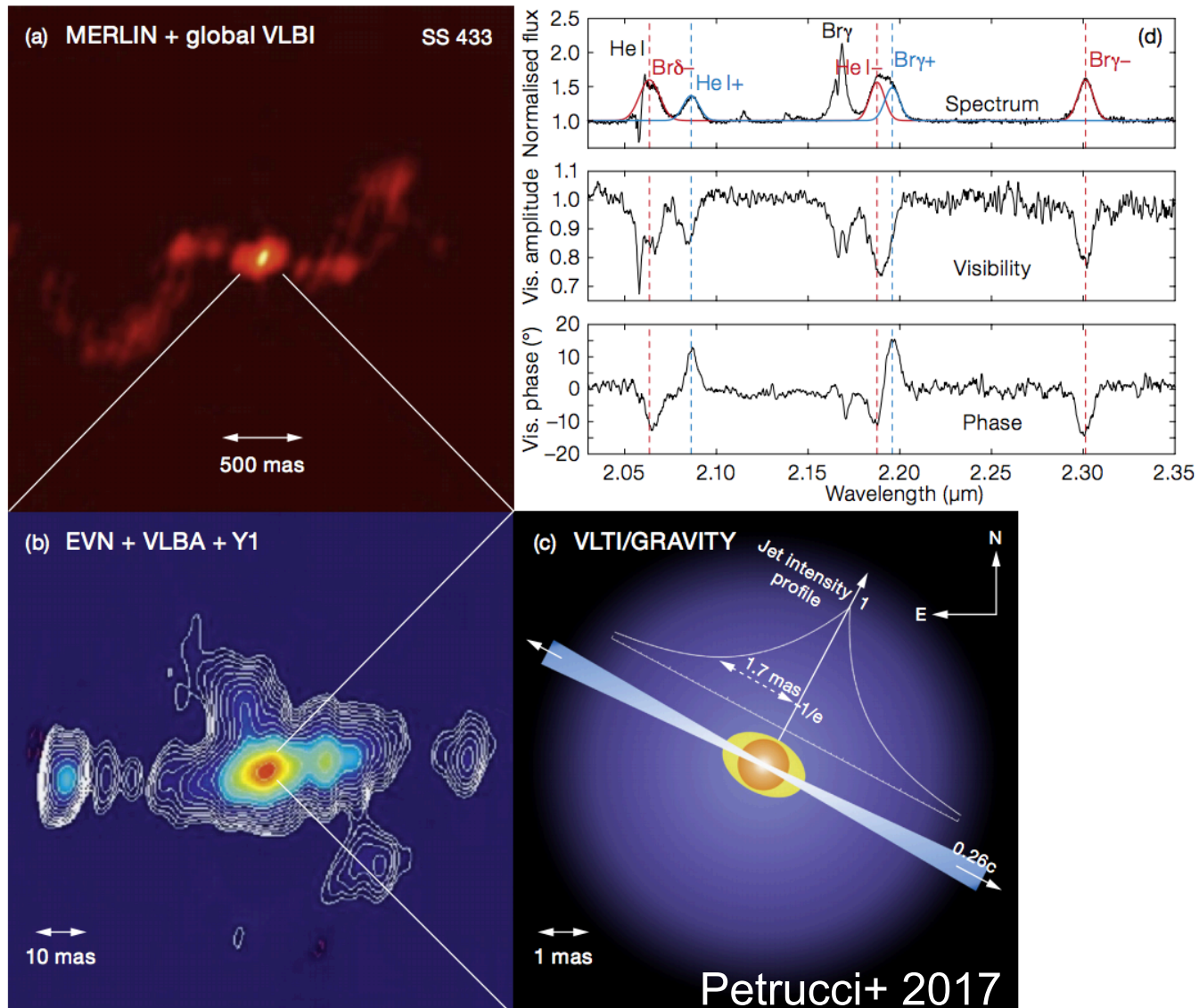
Antares (AMBER) Ohnaka+ 2017

GRAVITY: η Car in Hel and Bry

Eta Car in Hel and Bry
 (Gravity Collaboration+ 2017)

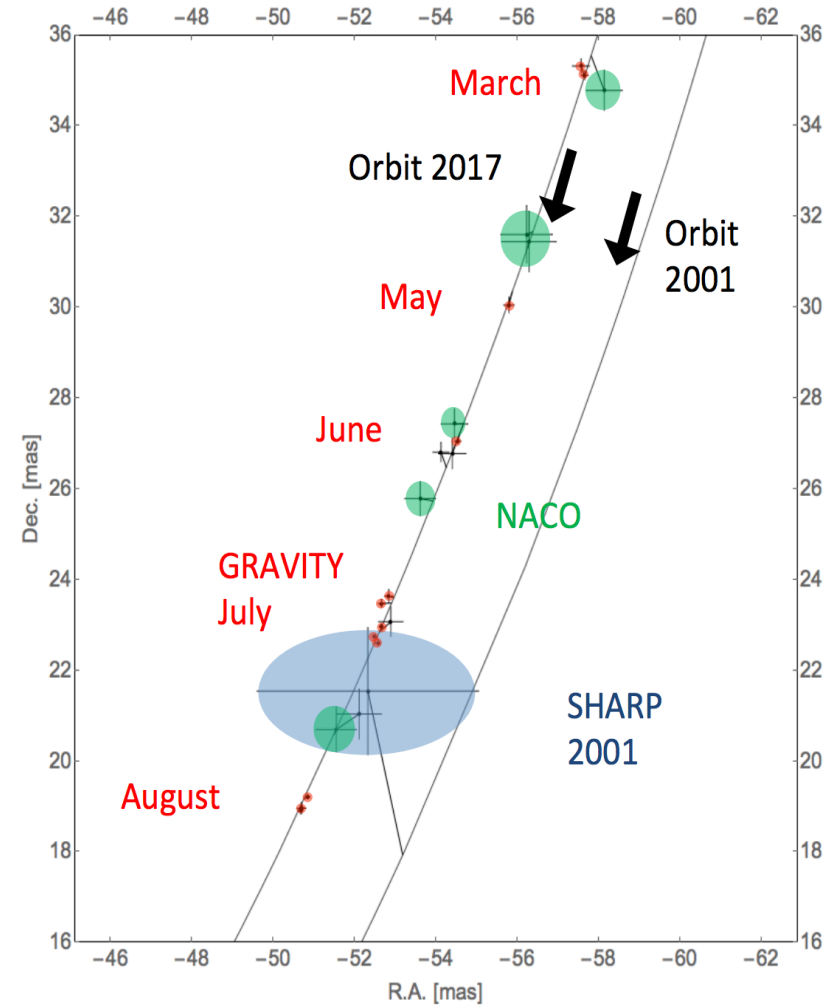
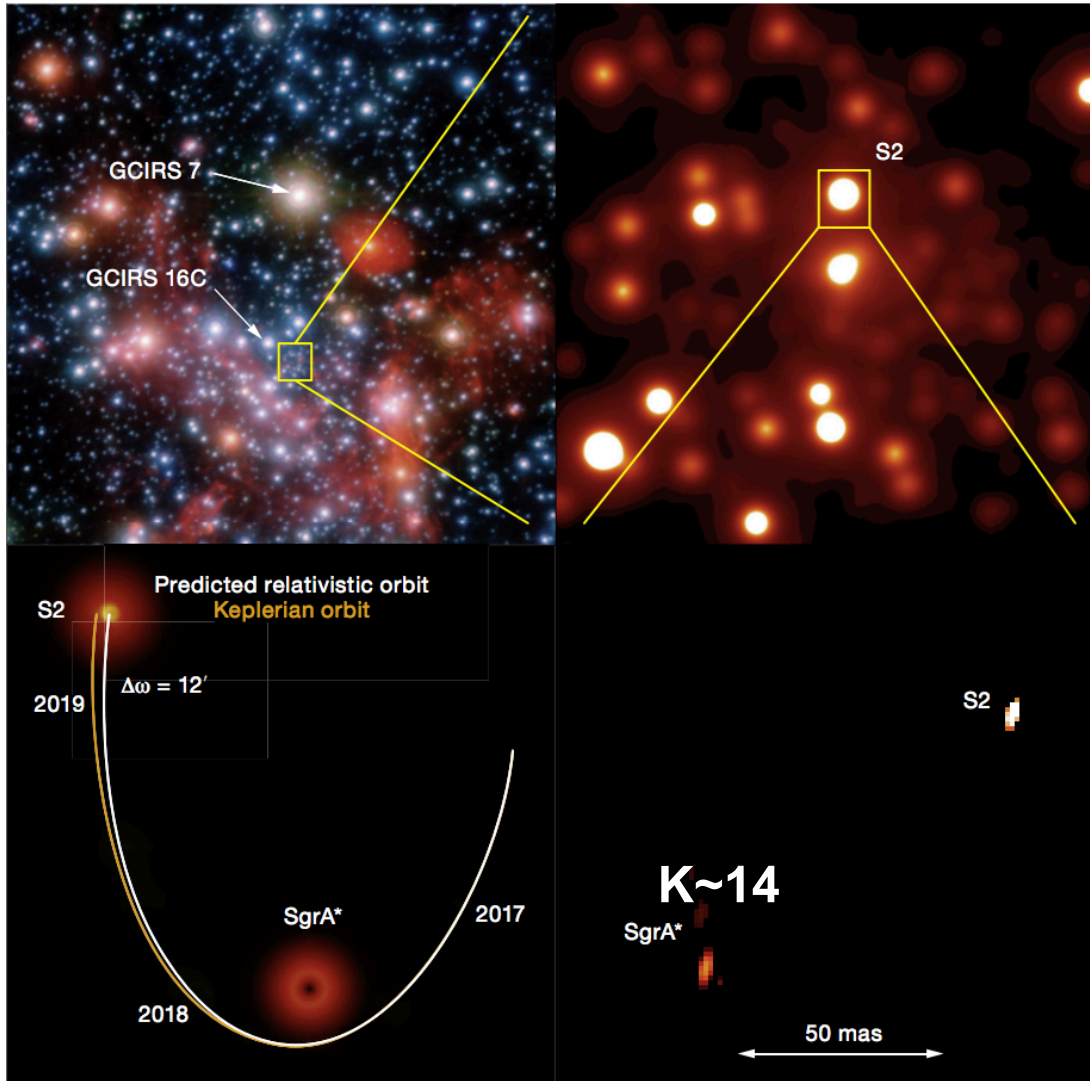


GRAVITY: Micro-Quasar SS433



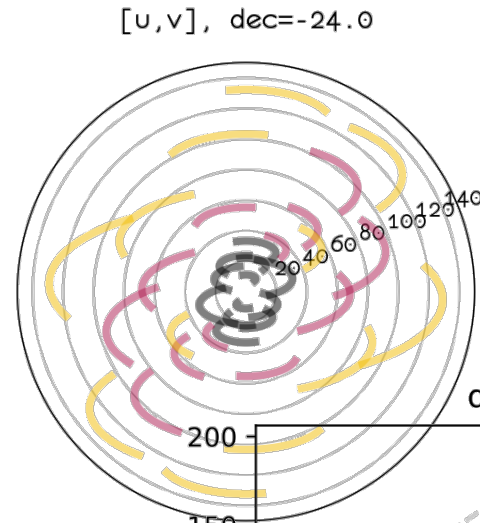
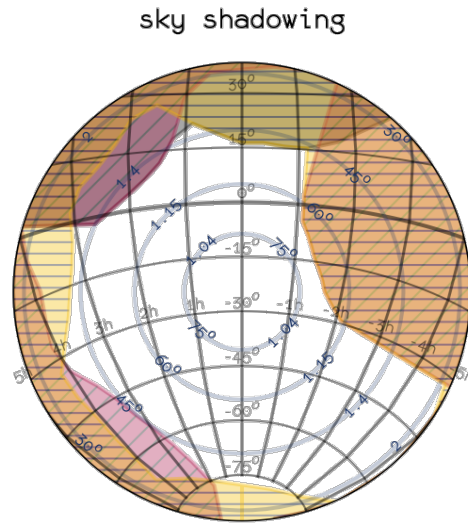
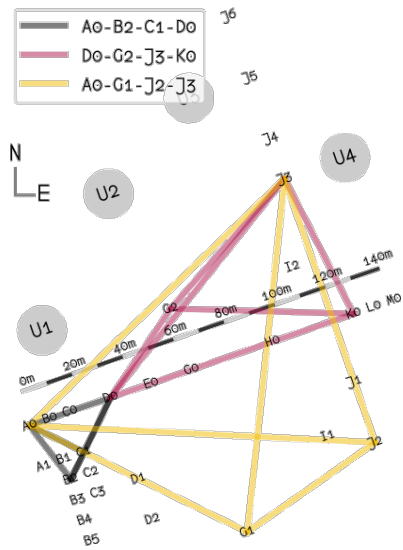


GRAVITY: Galactic Center

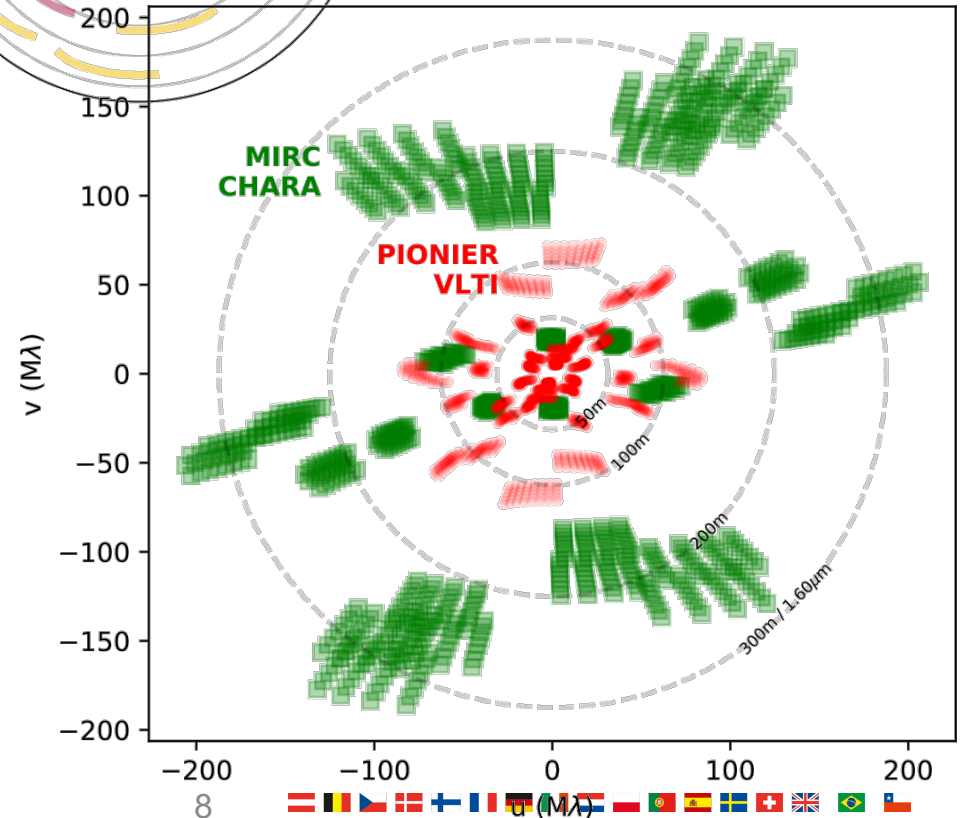


Gravity Collaboration+ 2017

CHARA+VLT u,v coverage



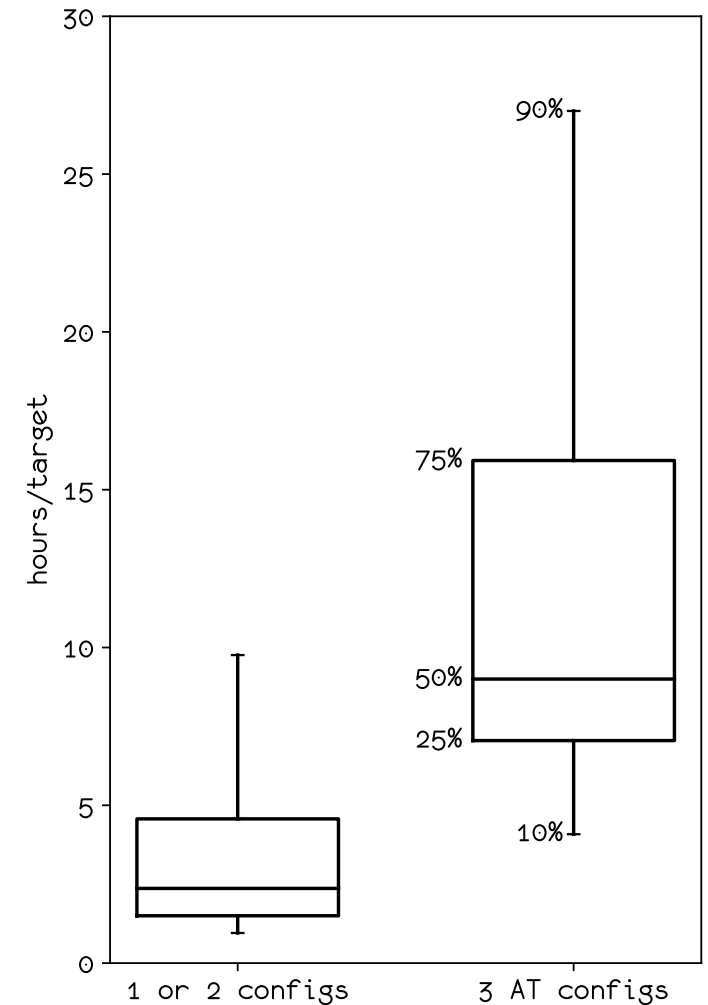
declination ~ 9 degrees



- $\frac{B_{max}}{B_{min}}$ VLTi ~ 20
- $\frac{B_{max}}{B_{min}}$ CHARA ~ 10
- $\frac{B_{max}}{B_{min}}$ combined ~ 40

Imaging Operations

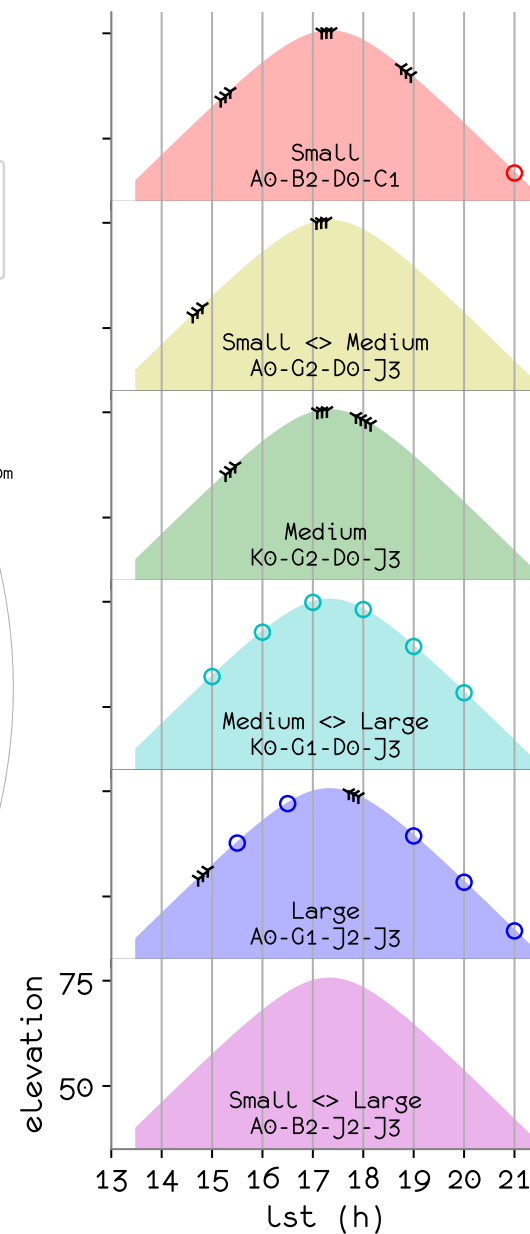
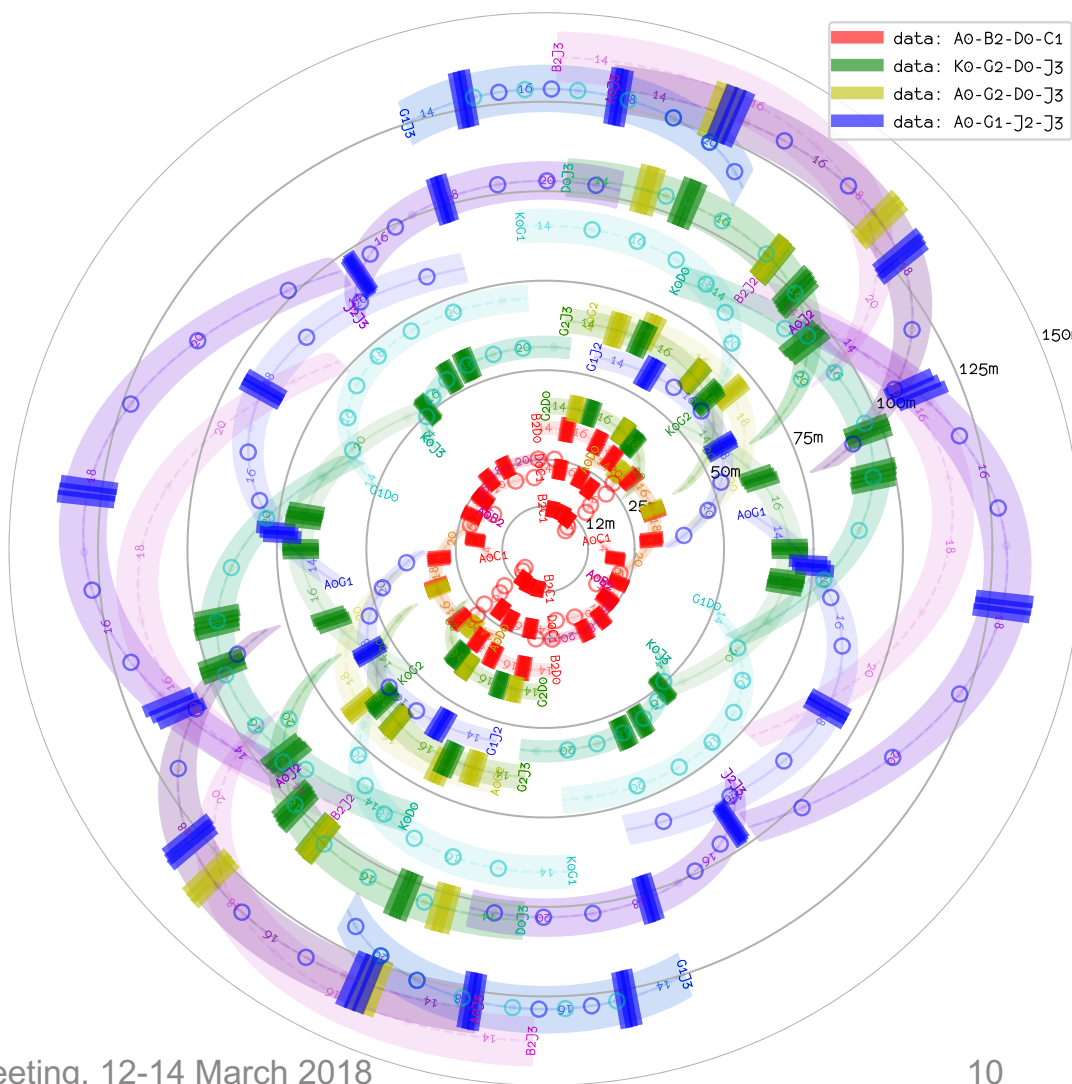
- PI tend to ask for too little time
- Observation descriptions too detailed, impede operations
- New in this Call for Proposal (Apr 2018):
 - Service Mode, at least 6 pointings / configuration
 - We will monitor u,v coverage and fill it uniformly
 - We use “intermediate” configurations





Monitor and complete u,v

Fried Egg Nebula, GRAVITY
 099.D-0664(A), 099.D-0664(B), 099.D-0664(C)
 2017-04-11T06:33:26 -> 2017-06-18T05:51:45



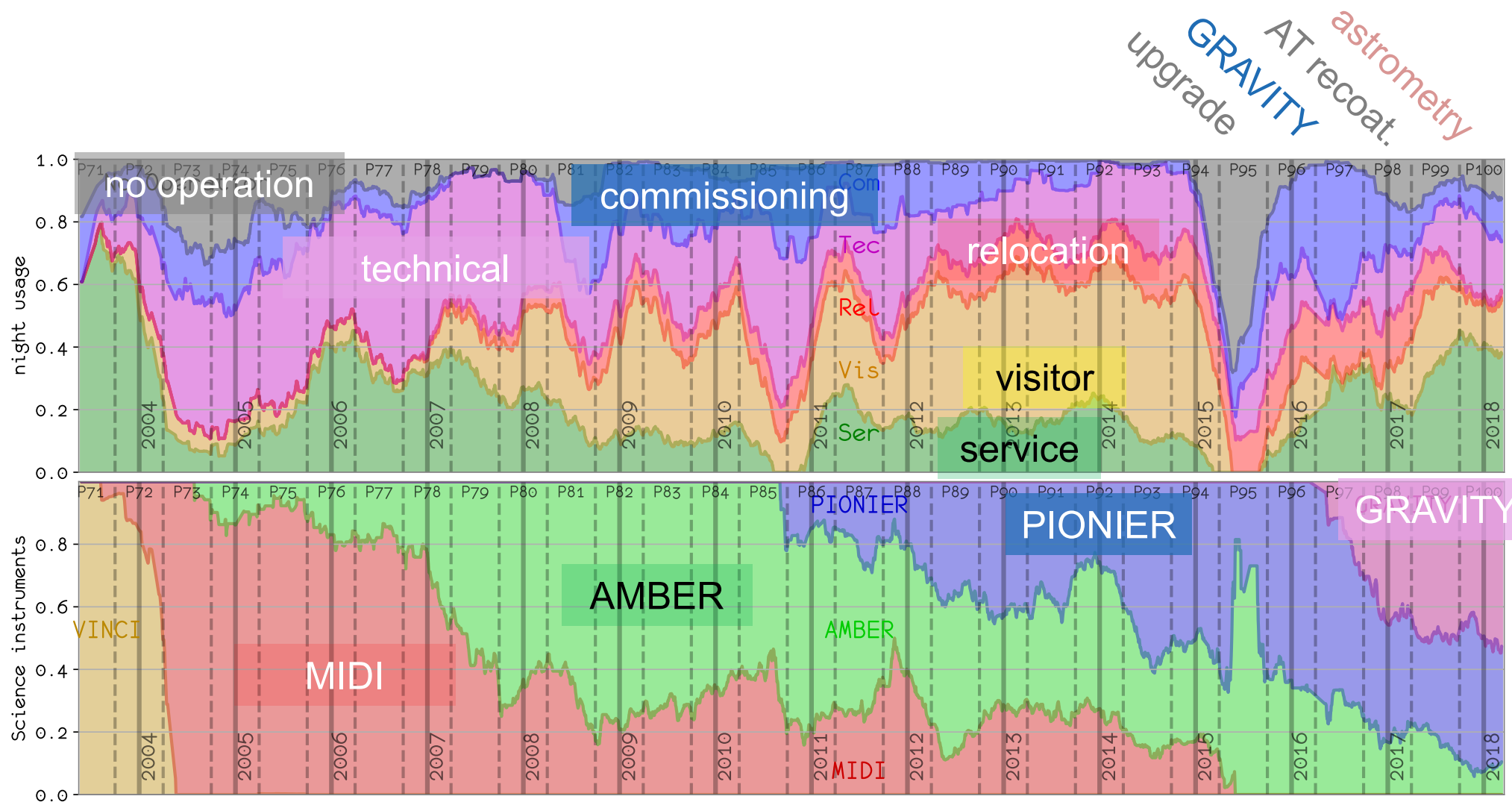


VLTI for new users

- VLTI is open to **all** applicants
- Service / Visitor / dVM / ToO / DDT modes
- Semesters: April-September / October-March
- CfP deadline every October 1st / April 1st
- **Aspro** for easy preparation of observations
- Data reduction with ESO pipelines, OIFITS
- Data become public after 1 year; public archive
- Next VLTI School in July 2018, in Porto (Portugal)



VLT Interim Statistics



Community and Productivity

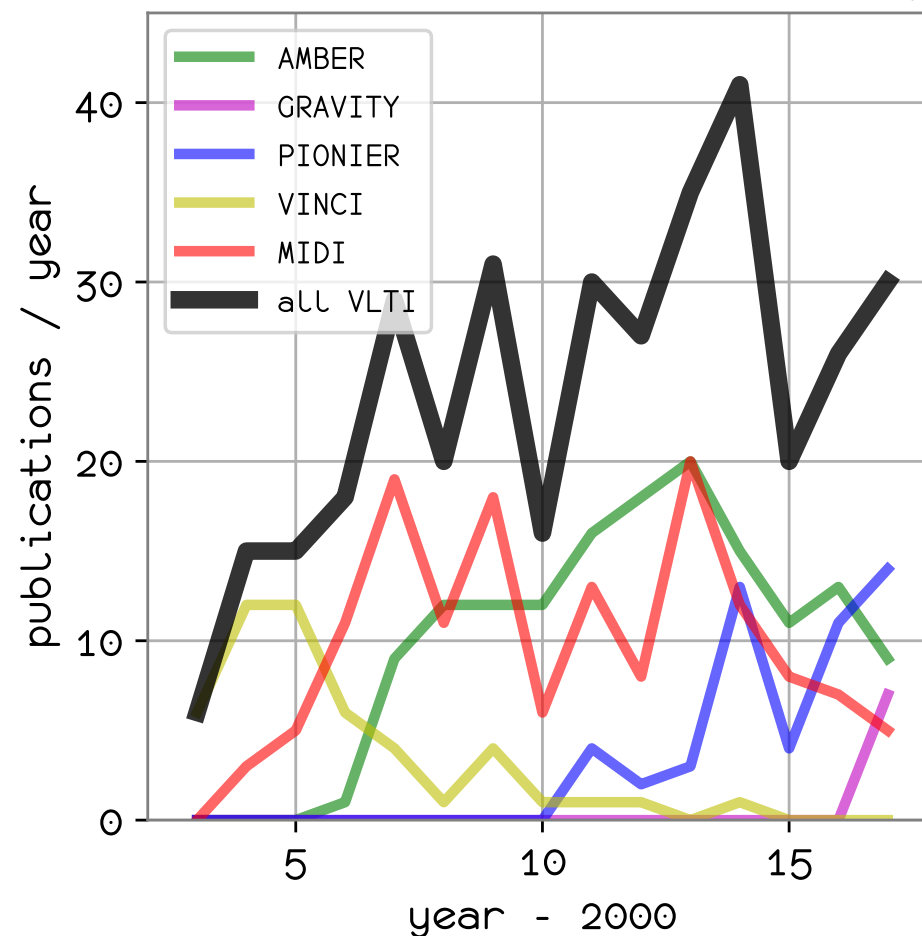
■ VLT community not small:

- ~100 PI in the past 2 years
- ~30 publications/year, 359 total

■ Room for growth

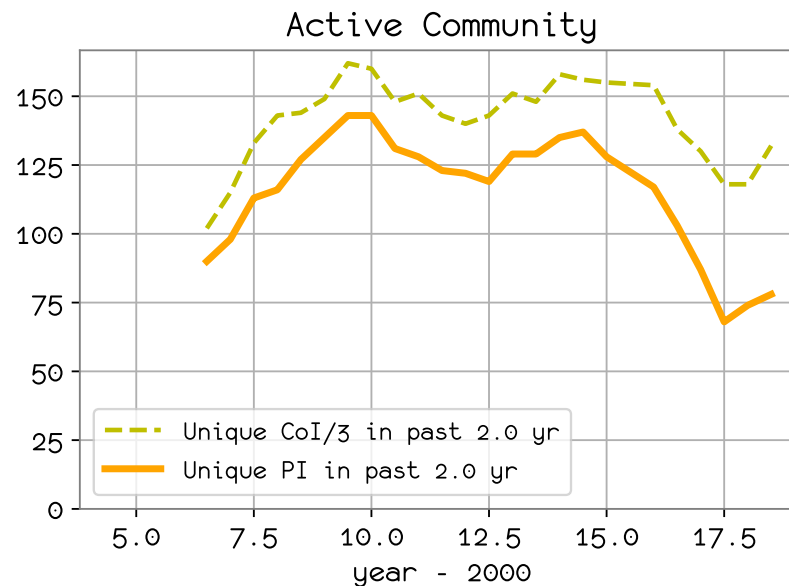
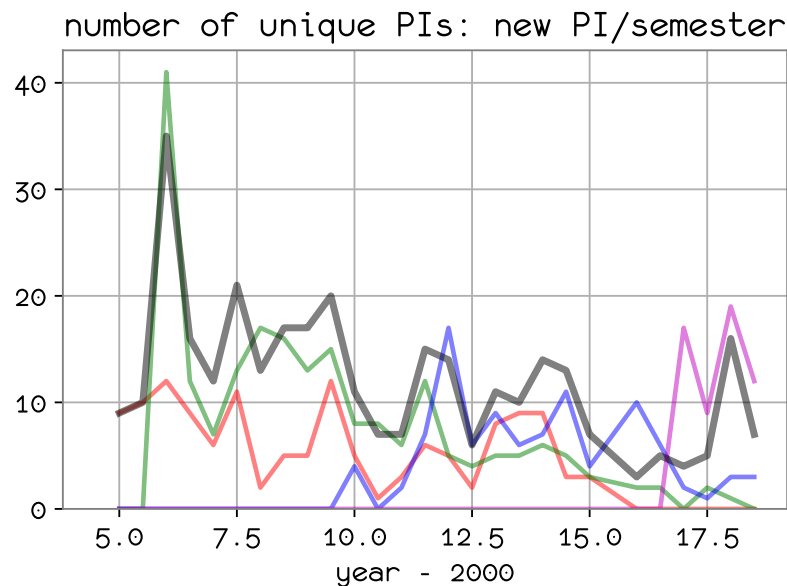
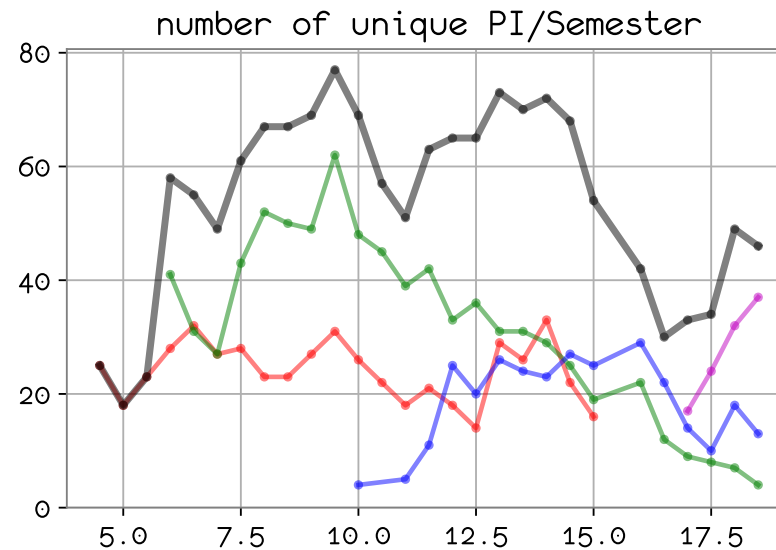
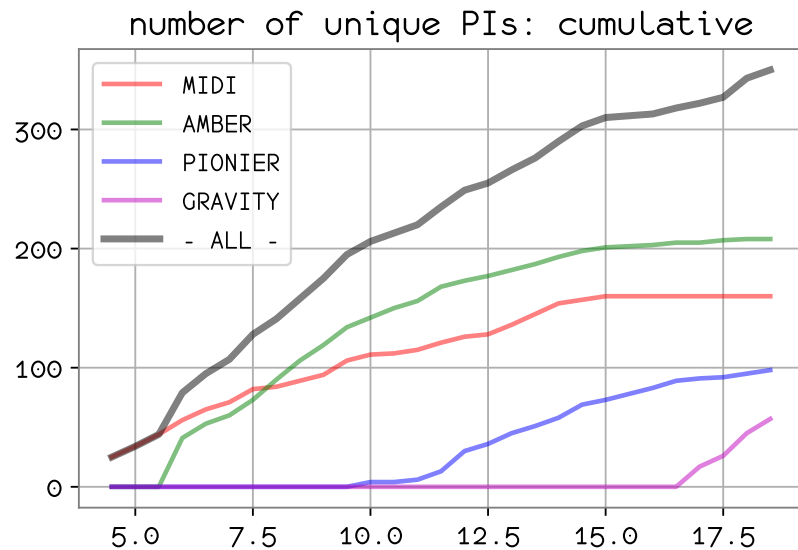
- ~50% VLT programs do **not** lead to publication*
- VLT Time request pressure of 2 and 3

* 35% for MIDI, 60% for AMBER, typical for VLT:
<https://www.eso.org/sci/publications/messenger/archive/no.170-dec17/messenger-no170-51-57.pdf>





Community and Productivity



Reaching Critical Mass

■ Mid term:

- Next ~10 years of VLT operations are safe, inc. with UTs
- Main scope is scientific exploitation
- We will be (re-)opening a visitor focus soon

■ Longer term:

- VLT 3rd Generation instrument will come if pushed by community
- No current plan for major developments (see “VLT Roadmap” in the upcoming ESO’s Messenger)
- Future of the facility is not set



Stronger impact

- Routine complex operations
 - Time monitoring with images
 - Galactic Centre monitoring
 - Coordination with other facilities

- Surveys and statistically significant sample tend to have large impacts
 - Cepheids
 - binarity fraction
 - YSOs
 - AGNs
 - ...

Conclusions

- VLT and CHARA are very mature facilities
- Community is strongly organised
 - OIFITS, Aspro, Image Reconstruction
 - Shared technologies
 - Many teams already observe with CHARA+VLT
- Userbase growth benefits for both facilities
 - Funding and/or institutional support
 - Both are gearing up to handle the growth
 - Does the future of LBOI depend on it?

Can we do a better job at improving the impact of LBOI and increase the community?