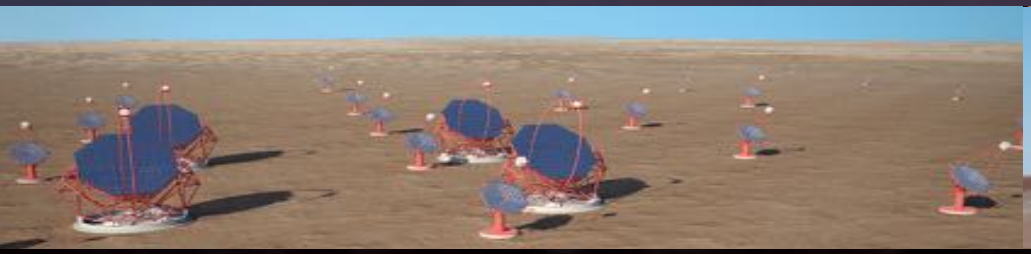
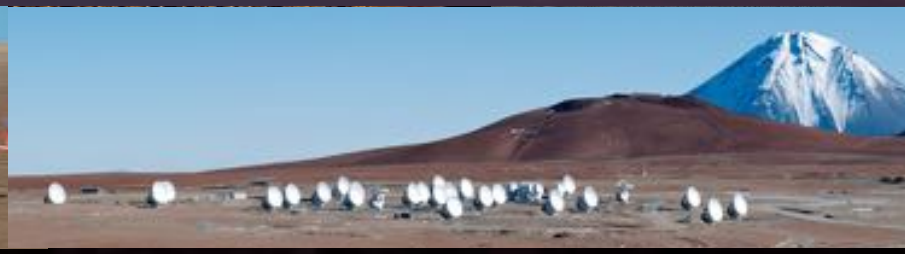


ESO – Your Observatory

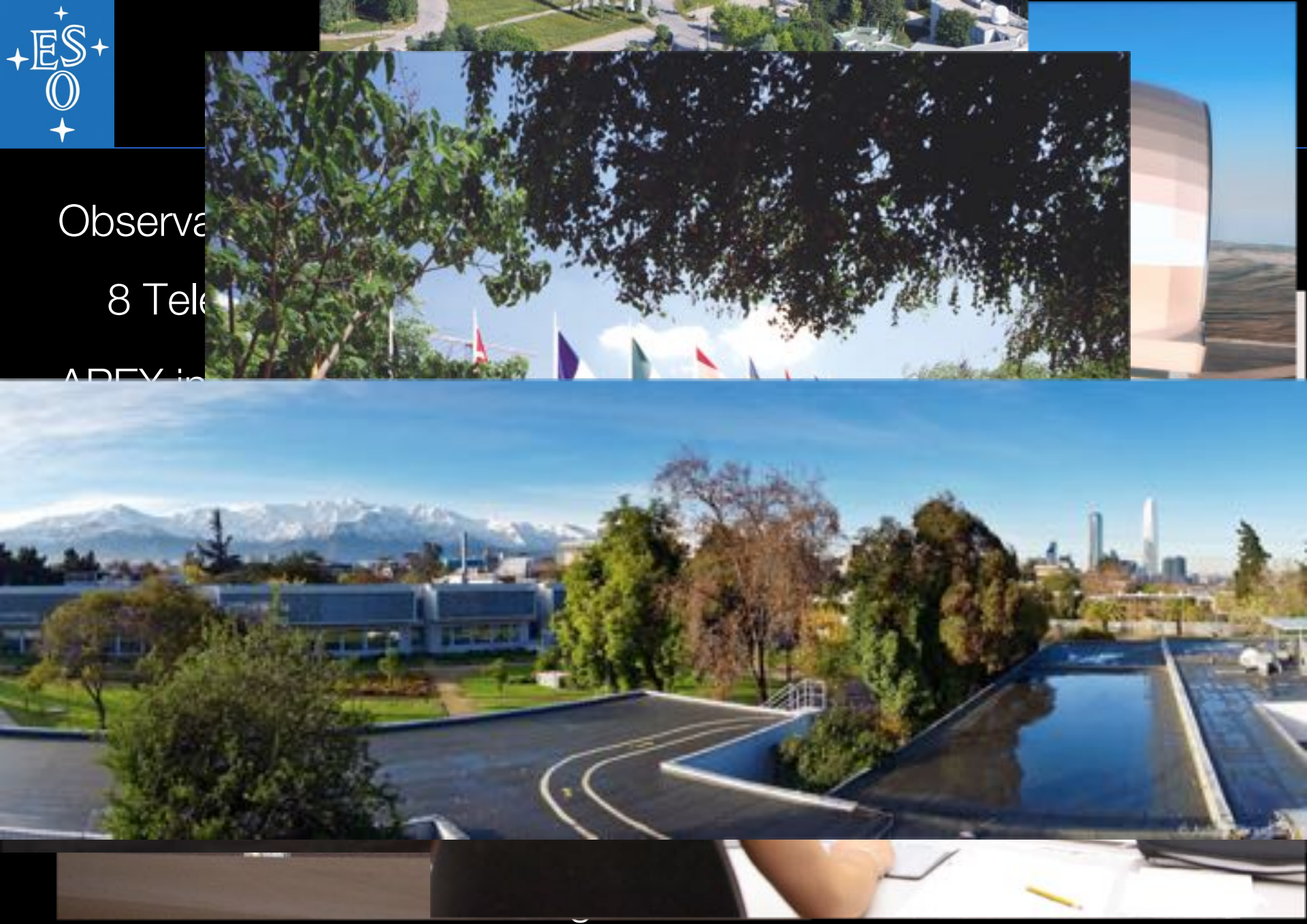
Bruno Leibundgut

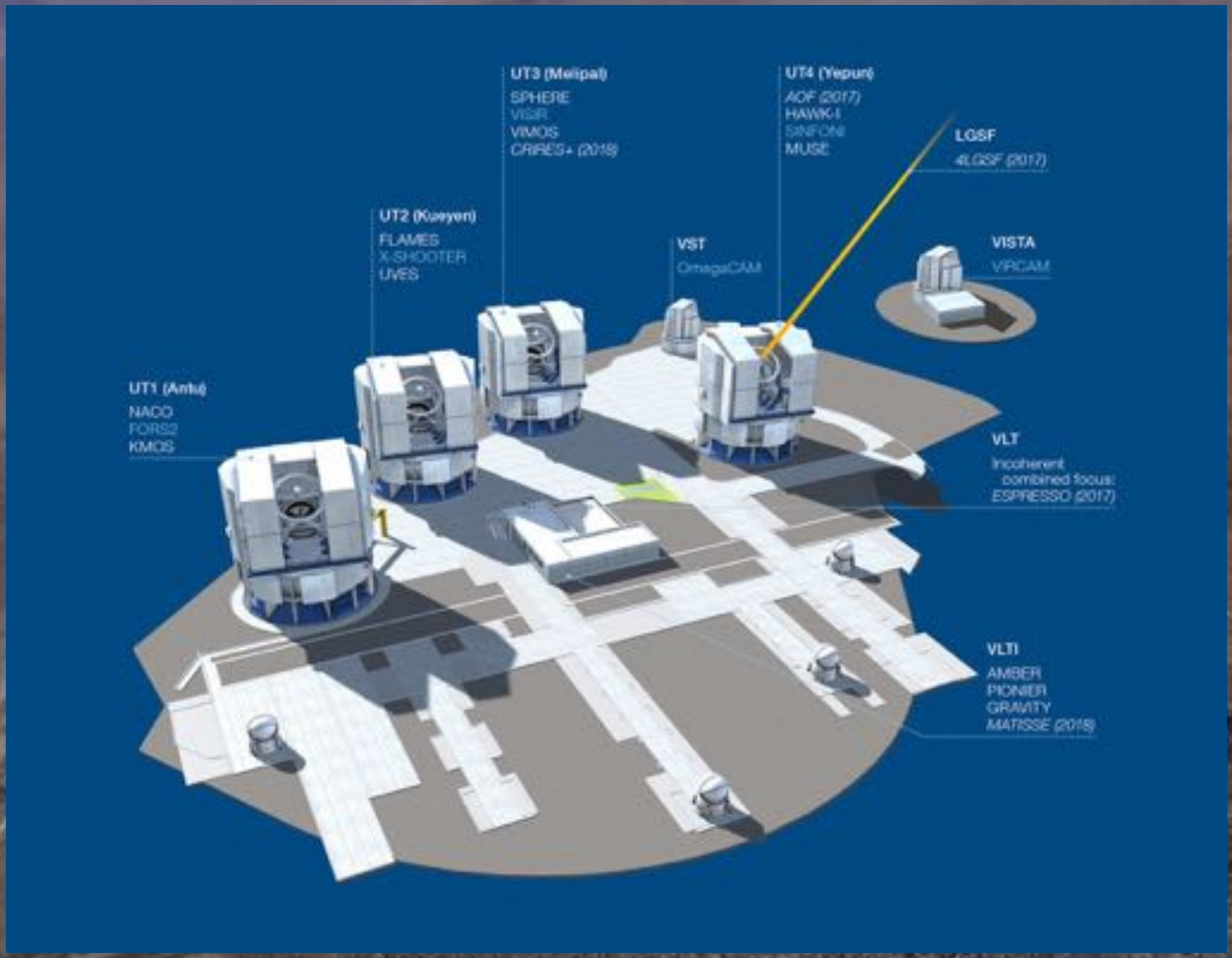
Observa

8 Tele

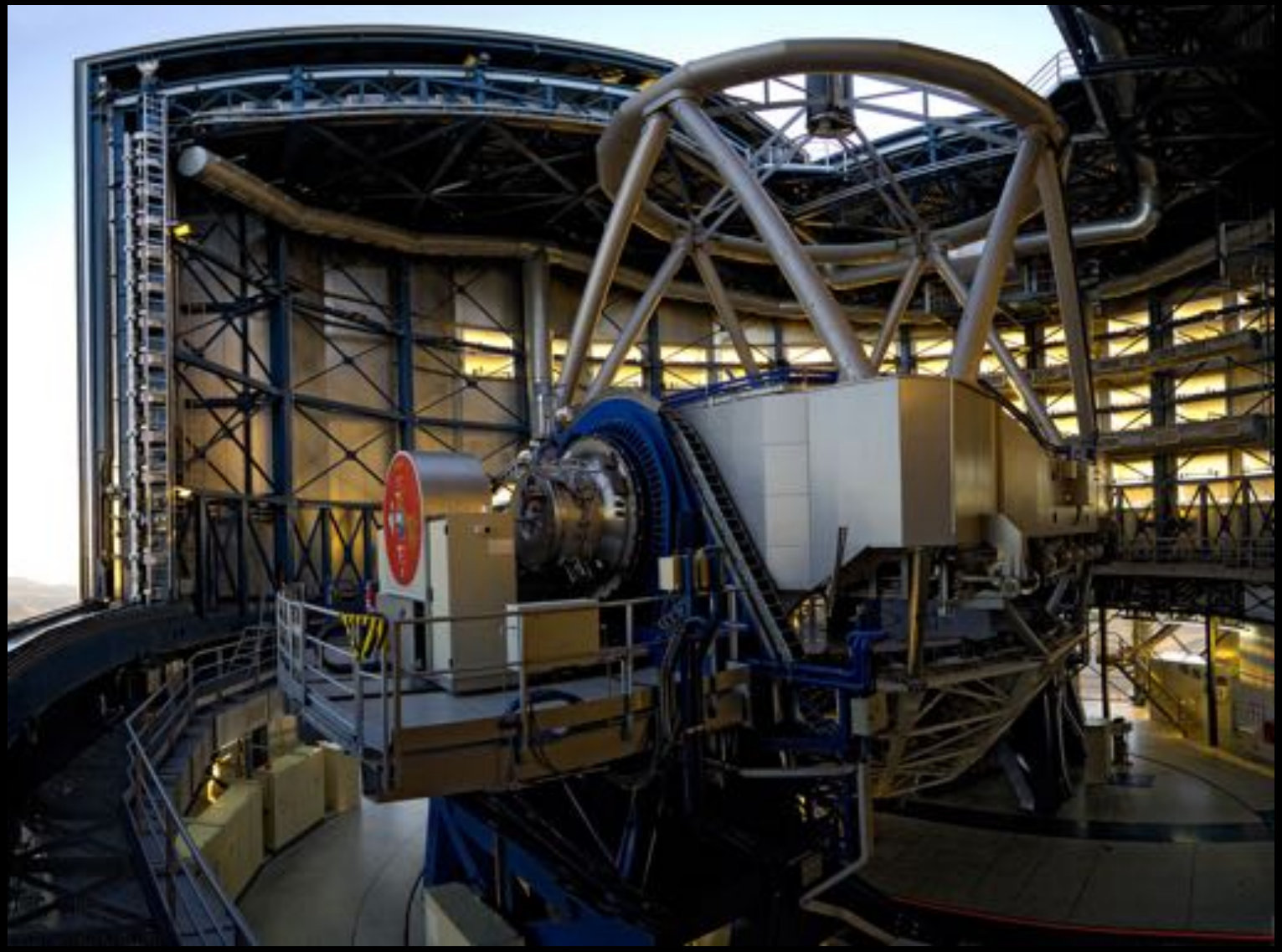
APEX in



Paranal 2018



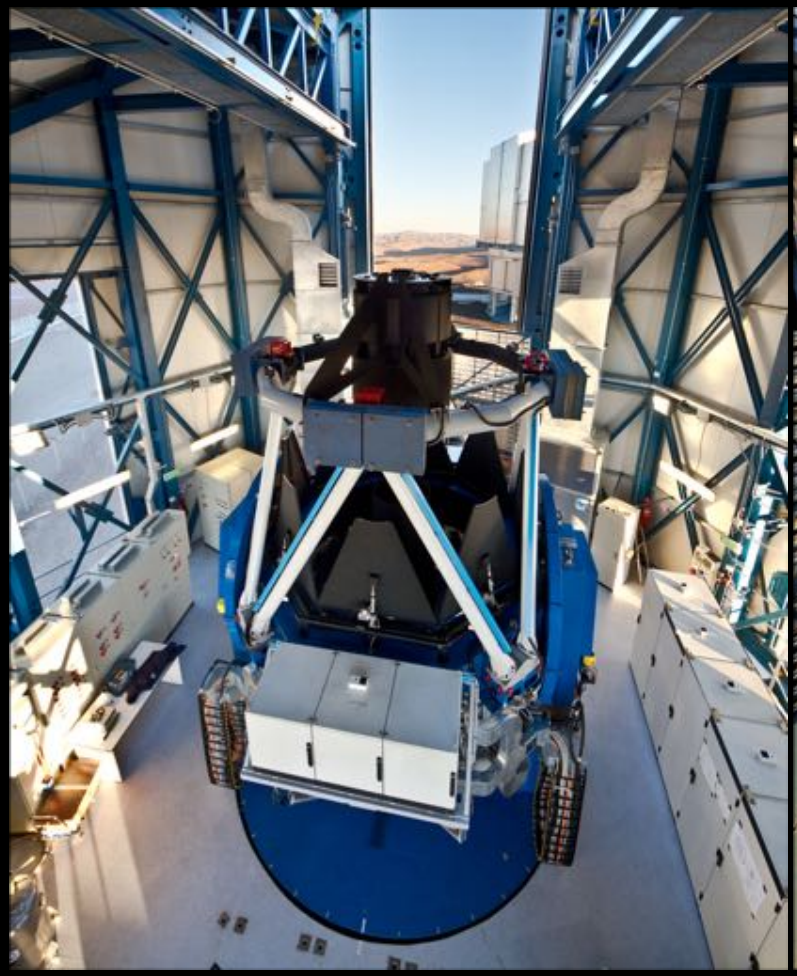
One of the 8m telescopes

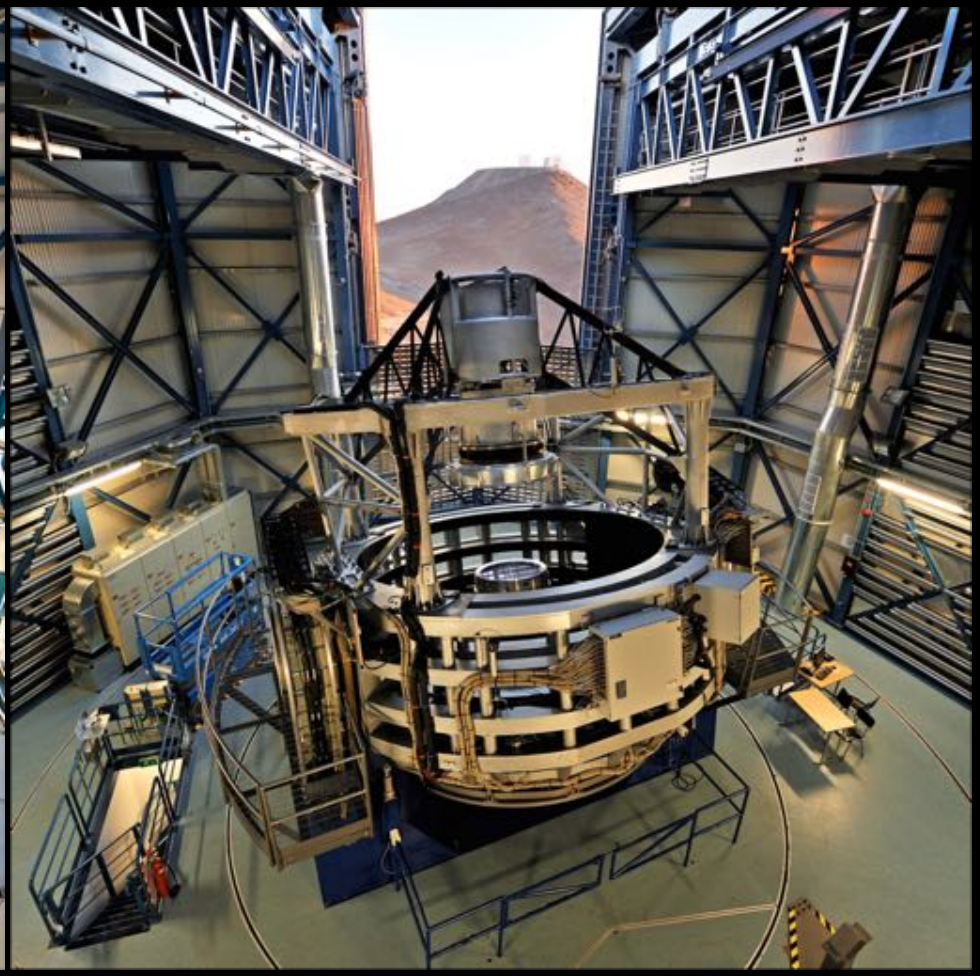


The Survey Telescopes

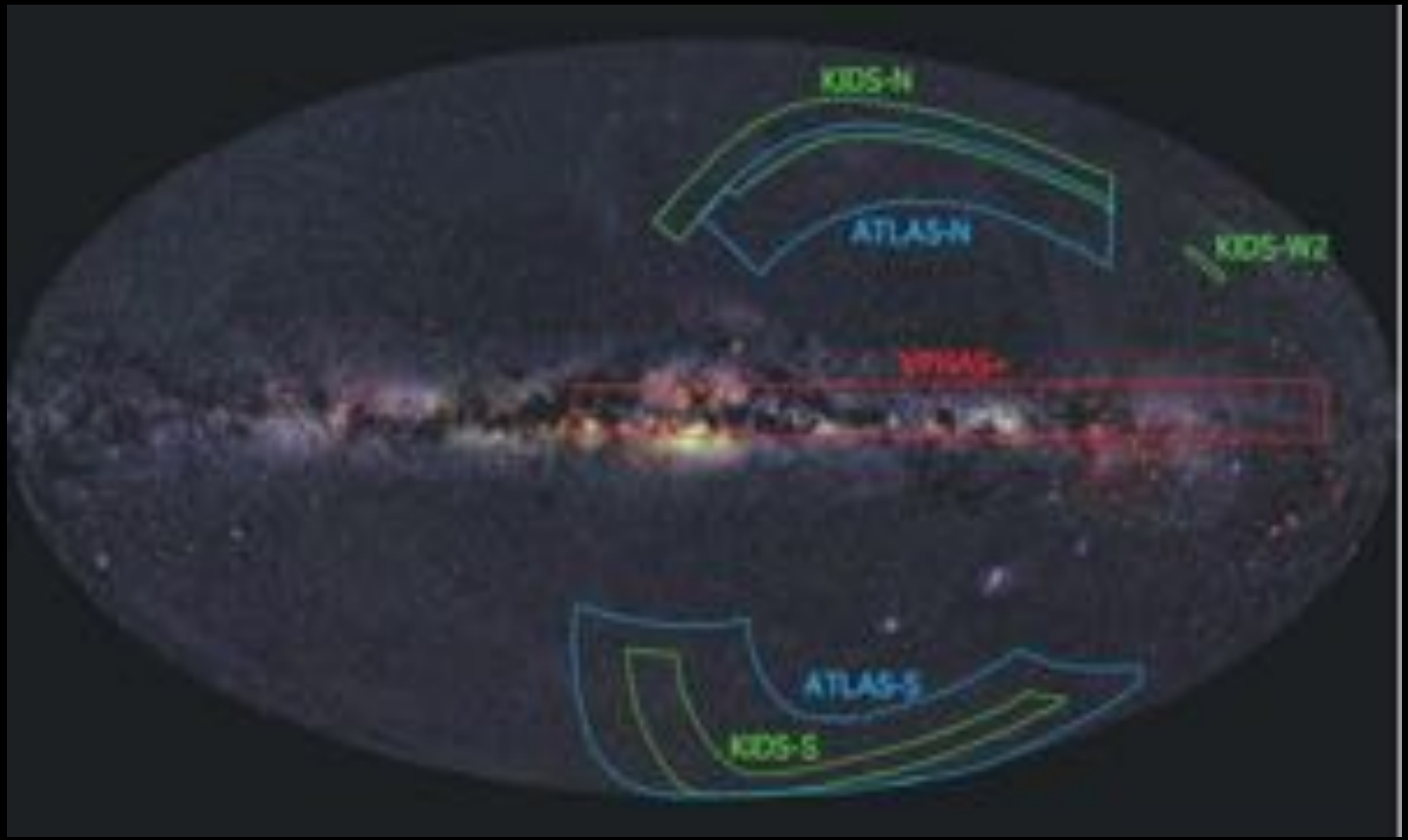
VST 2.6m for optical and VISTA 4.1m für infrared observations

Coordinated sky surveys in 5-year projects





Public Surveys



VLT Opportunities

- Four 8m telescopes
  - flexibility
  - scientific throughput
    - 1200 observing nights/year
- Successful operational model
  - expand existing model to allow new modes
    - high time resolution photometry and spectroscopy
    - faster turnaround (currently DDT)
    - closer interaction with user, e.g. remote observing
- Telescope system
  - spatial resolution from 1 degree to 2 mas
  - wavelength coverage from 320nm to 20μm
  - spectral resolutions from a few to 100000

➤ Talks by H. Boffin, M. Petr, C. Hummel

Multi-Wavelength Astrophysics

ESO offers access to optical, infrared and sub-mm wavelength ranges

VLT/I provide many resolution scales

Operational model adapted to fast reactions/transient targets

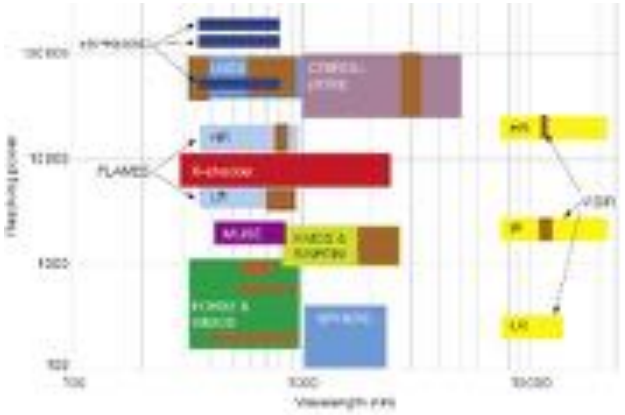


Figure 1: Wavelength-Spectral Resolving power diagram for the VLT instruments of 1st and 2nd generation.

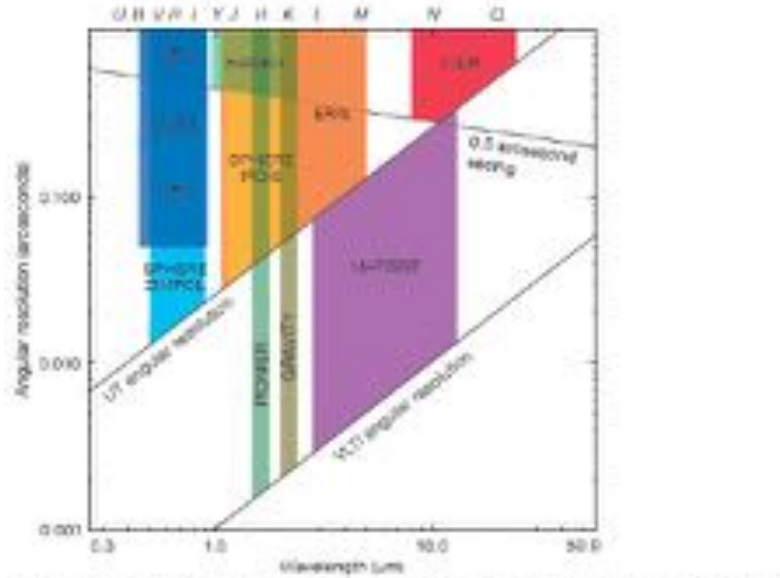
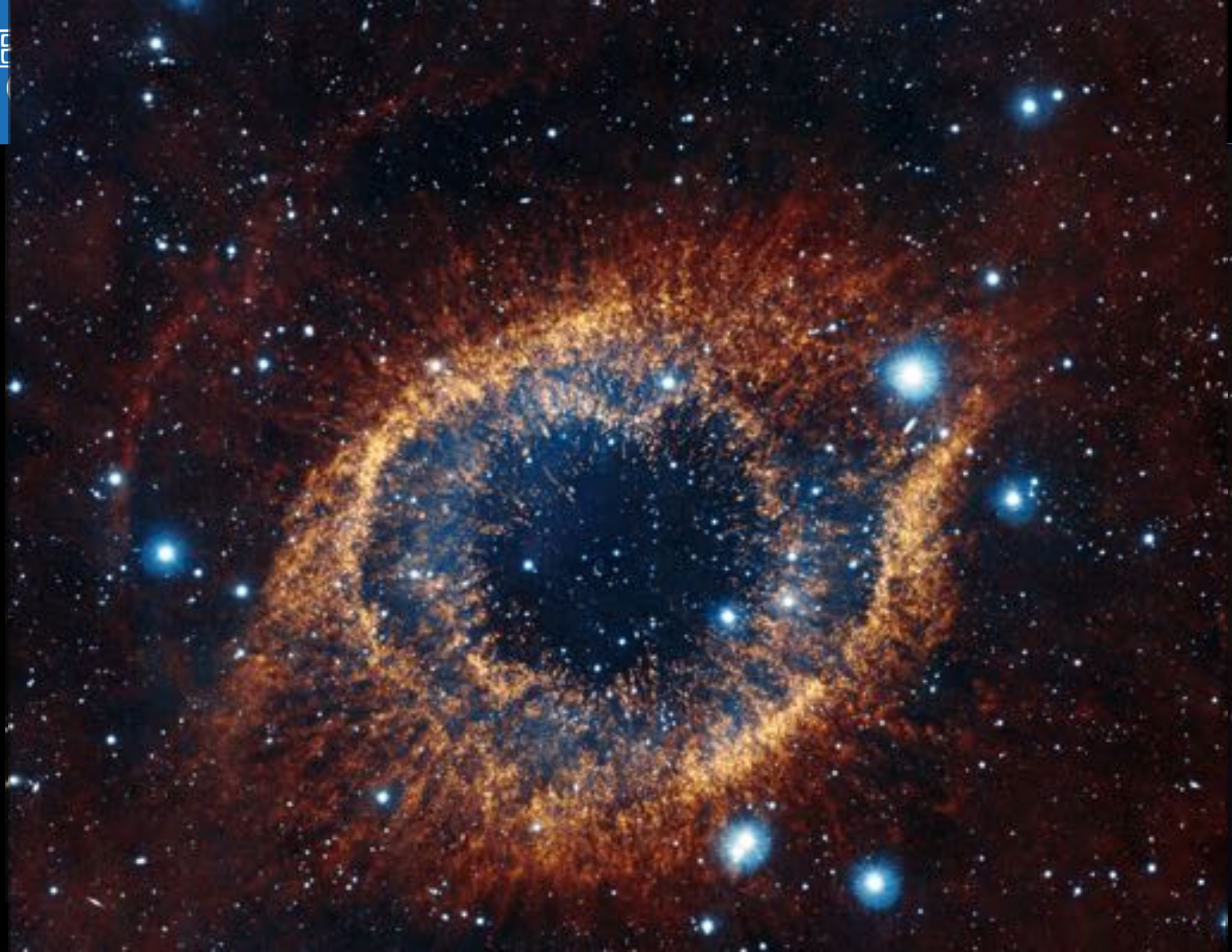


Figure 2: Wavelength-angular resolution diagram for the VLTI instruments of 1st and 2nd generation.



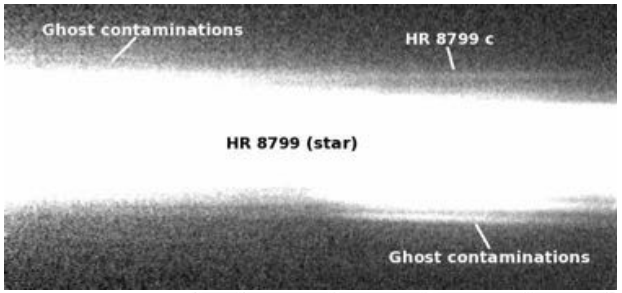
Science with Paranal/La Silla telescopes

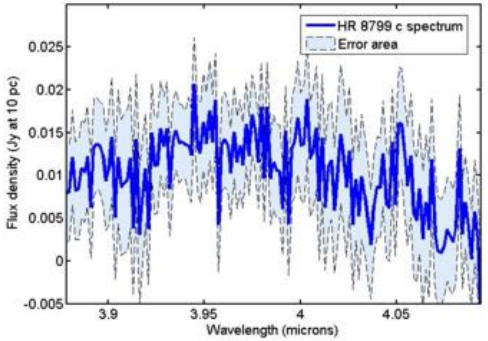
- Contributions to nearly all of astrophysics
  - Solar system
    - Trans-Neptunian Objects, asteroids, comets
  - Exo-planets
    - direct imaging, temperate planets, planetary systems
  - Stellar physics
    - metal-poor stars, supernovae, neutron star mergers
  - Milky Way structure
    - galactic centre, distances
  - Galaxy evolution
    - redshift surveys, rotation curves, absorption studies
  - Cosmology
    - accelerating universe, background temperature, chemical evolution

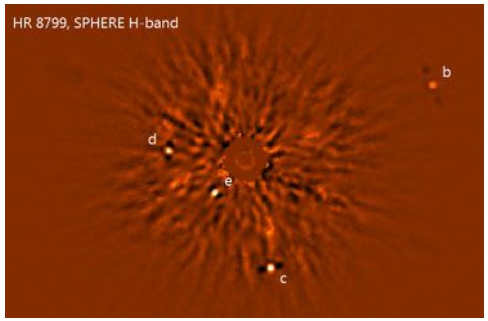
➤ H. Boffin's talk

The ESO exo-planet machinery

- HARPS at 3.6m telescope (in the future also NIRPS)
  - best radial velocity machine at a 4m telescope
  - extremely stable spectrograph
  - ESPRESSO at VLT
- NACO/SPHERE
  - adaptive optics supported imaging and spectroscopy
- VLTI
  - highest spatial resolution for follow-up observations of known systems
- NACO/SINFONI/FORS2
  - transit measurements, atmospheres of exo-planets
- CRIRES+
  - spectroscopy of atmospheres

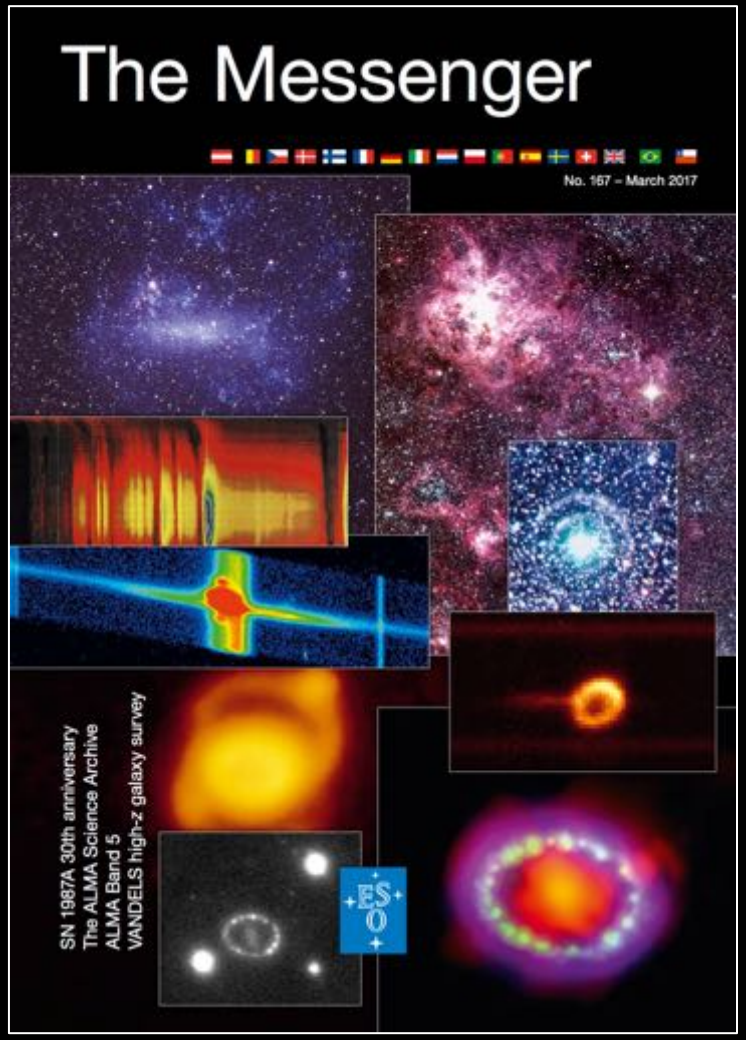






Long-term observations

SN 1987A observed over 3 decades



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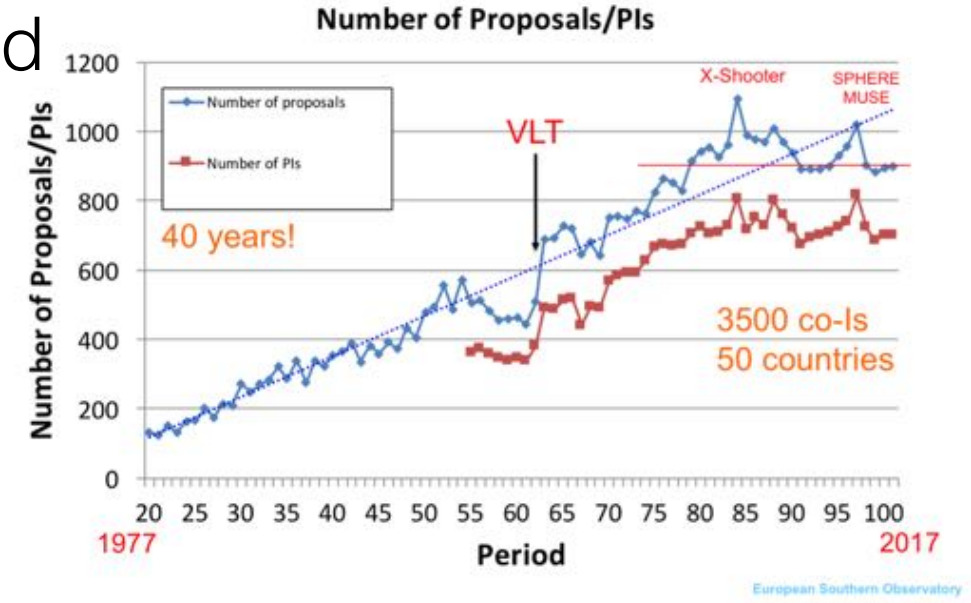
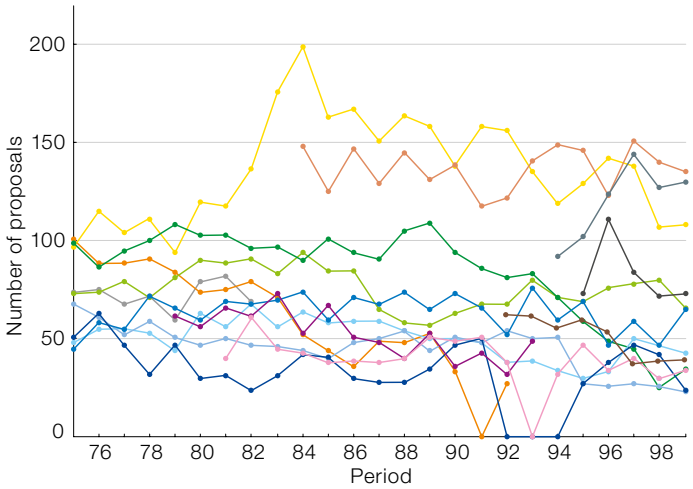
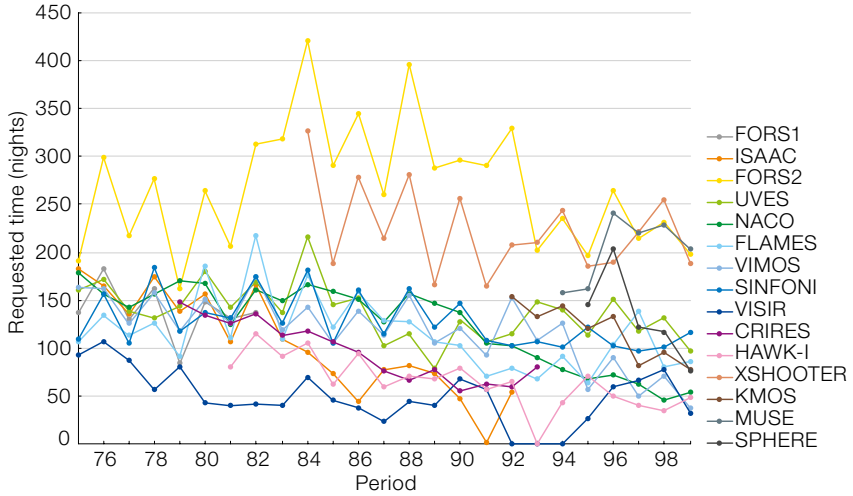
- Consistently high demand
- ➤ F. Patat and D. Gadotti







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- Steadily increasing science return

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High impact

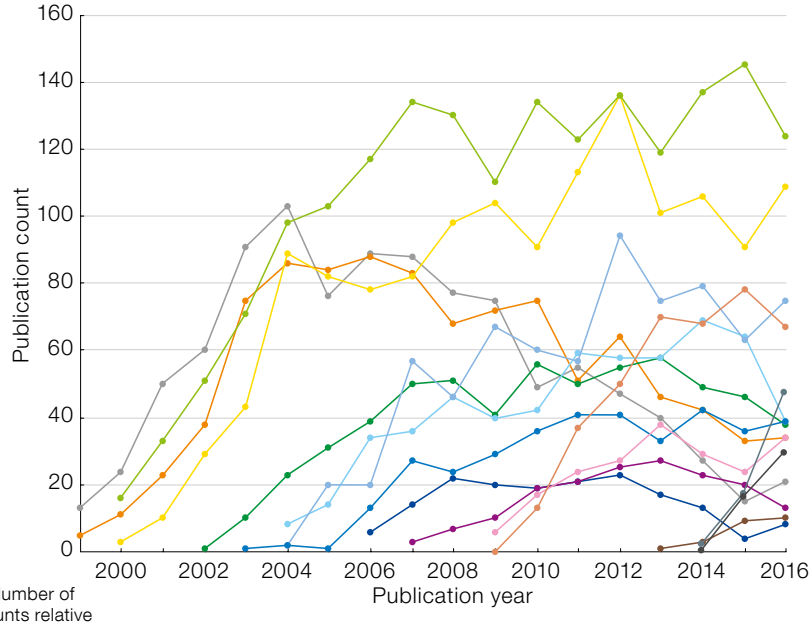


Figure 2. Number of publications per VLT instrument.

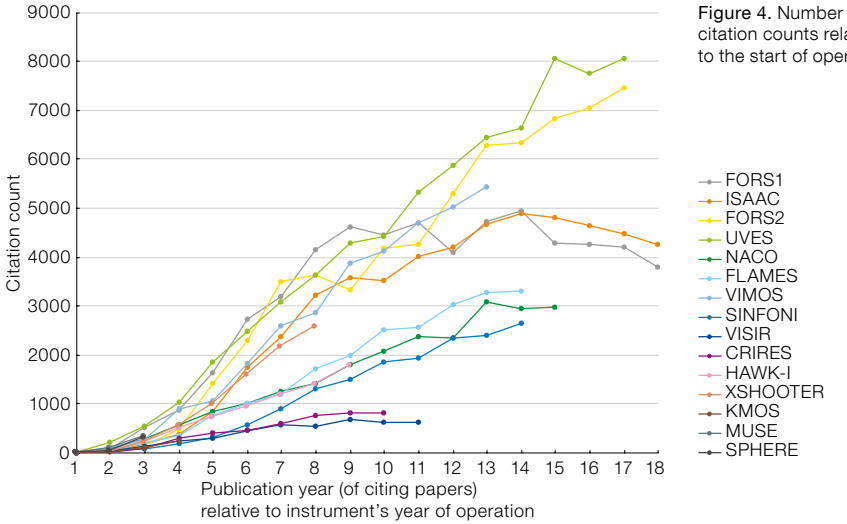
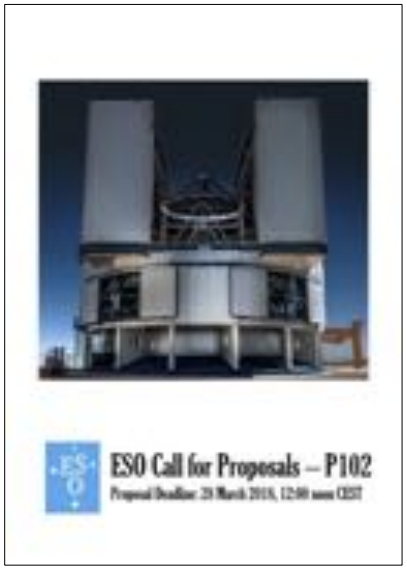


Figure 4. Number of citation counts relative to the start of operation.

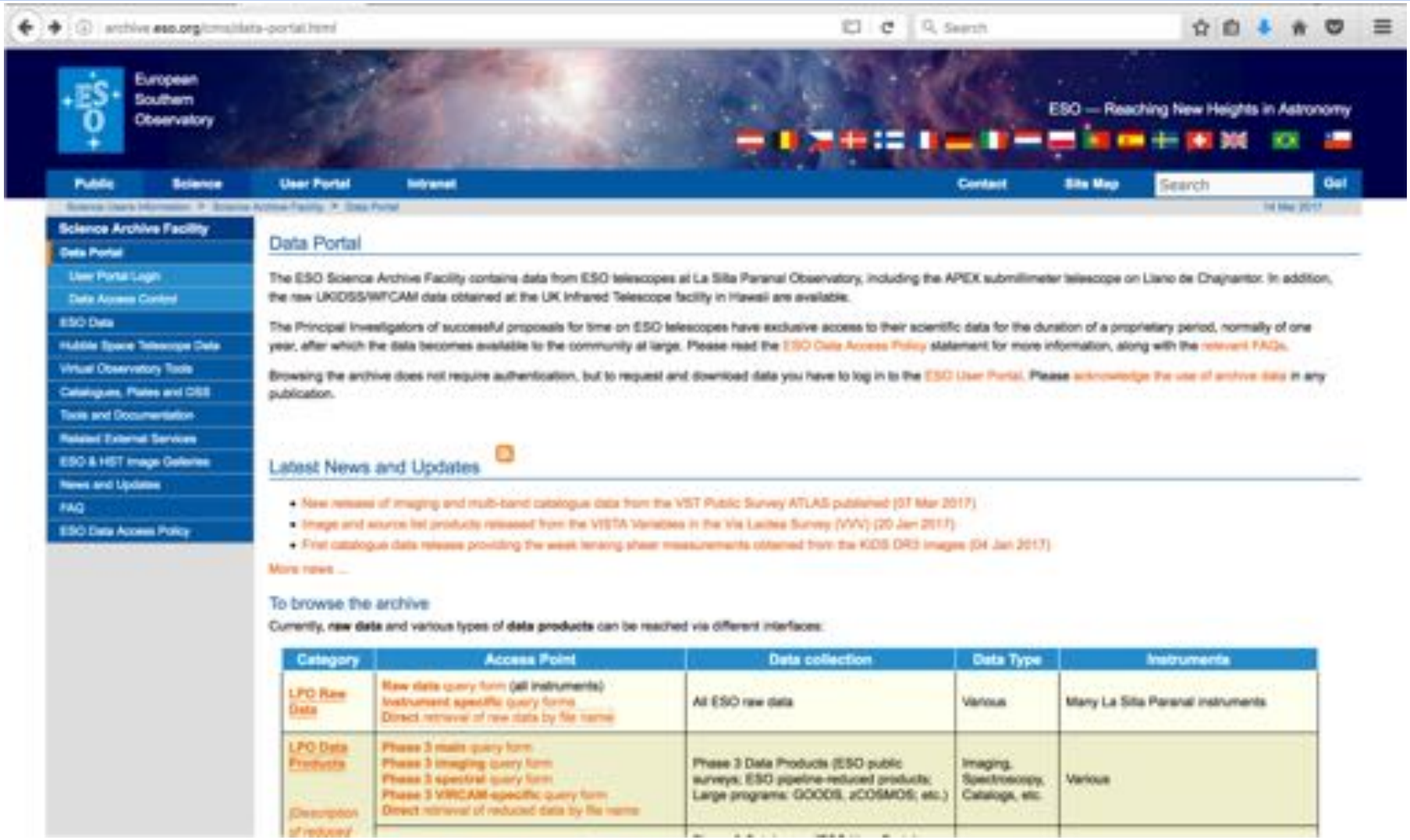
ESO – Your Observatory

- Support for observation preparations
  - Talks by H. Boffin, F. Primas, L. Tacconi-Garman, M. Hilker, G. Beccari, J. Pritchard



- Support with data reductions
  - Instrument pipelines
  - Presentations by W. Freudling, L. Coccato, J. Pritchard

Science Archive



➤Talks by M. Romaniello

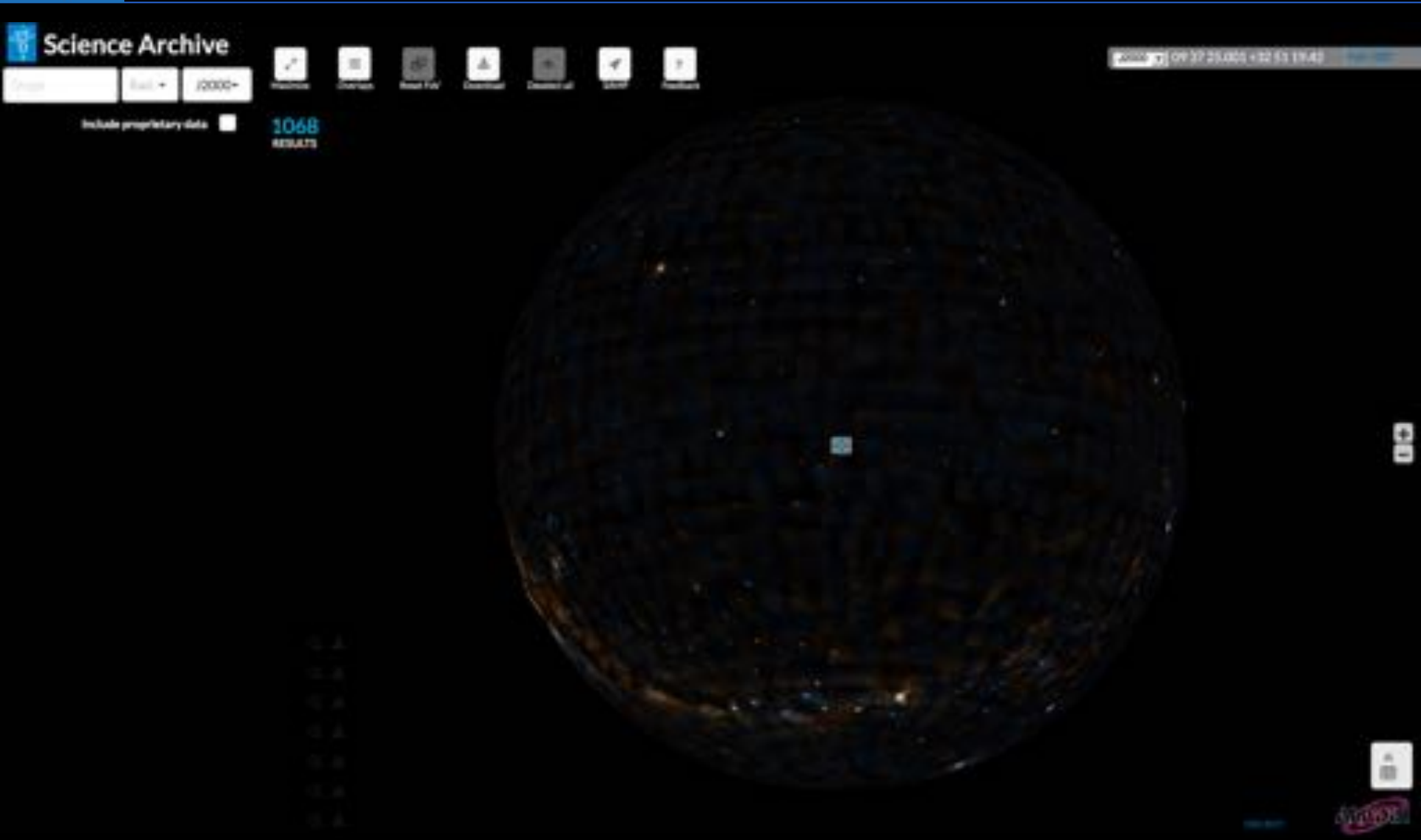
Science Archive

To browse the archive

Currently, **raw data** and various types of **data products** can be reached via different interfaces:

Category	Access Point	Data collection	Data Type	Instruments
LPO Raw Data	Raw data query form (all instruments) Instrument specific query forms Direct retrieval of raw data by file name	All ESO raw data	Various	Many La Silla Paranal instruments
LPO Data Products [Description of reduced data products types]	Phase 3 main query form Phase 3 imaging query form Phase 3 spectral query form Phase 3 VIRCAM-specific query form Direct retrieval of reduced data by file name	Phase 3 Data Products (ESO public surveys; ESO pipeline-reduced products; Large programs: GOODS, zCOSMOS; etc.)	Imaging, Spectroscopy, Catalogs, etc.	Various
	Catalogue Facility query interface	Phase 3 Catalogues [ESO User Portal authentication required also when browsing]	Catalogues	Various
	HARPS-Polarimetry pipeline processed data query form	HARPS-Polarimetry pipeline processed data	Spectroscopy	HARPS-Polarimetry, HARPS reduced calibrations (other HARPS see Phase3 above). FEROS is now available via the Phase 3 interfaces.
	Other Advanced Data Products (available only as downloadable packages, no query form)	Various (30 Doradus, Corot, GaBoDs, etc.)	Spectroscopy Imaging	FEROS WFI
	Science Verification, Commissioning, EIS, etc. (no query form)	Full list of available data packages	Various	Many
APEX Quick Look Products	APEX query form	APEX	Heterodyne, Bolometer	APEX-2A, LABOCA, SABOCA, SHeFI
LPO Schedule	Scheduling query form	ESO Observing Programme Information and Scheduling		All La Silla Paranal instruments, including APEX
ALMA Data	▷ ALMA Science Archive	All ALMA data	Cube	ALMA

New Science Archive Interface



Stay involved

- Student- and Fellowship programme
- Visitor programme
- Workshops and conferences
- Messenger
- Science Newsletter
- Web pages

ESO Studentship Programme

- Open to all nationalities, but preference to ESO member countries
- Students spend one or two years at ESO
- Also 2-3 month research opportunities for student interns

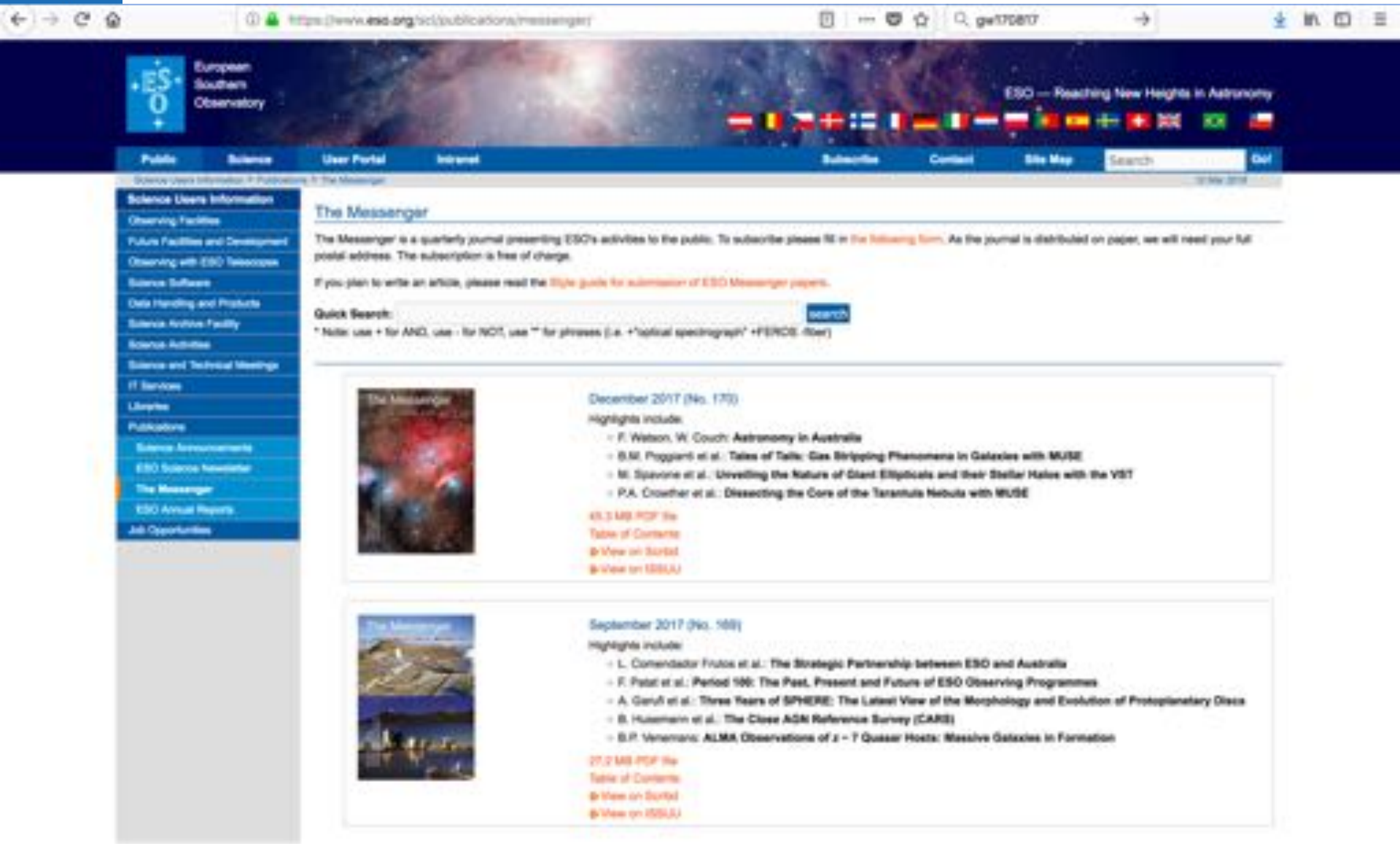
ESO Fellowship Programme

- Open to all nationalities, but preference to ESO member states
- 3 years in Garching or 4 in Chile
- Chile Fellows do research plus observatory work
- Garching Fellows do research plus support work
- New: Technical Fellowships

ESO Visitor Programme

- ESO welcomes short and long term visits by astronomers from around the world

ESO Messenger



ESO Science Newsletter