Introduction to ESO

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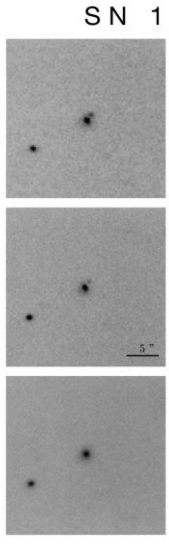
Who are we?

- European Organisation for Astronomical Research in the Southern Hemisphere
  ("European Southern Observatory" or ESO)
- The foremost intergovernmental astronomy organisation in Europe
- The world's most productive astronomical observatory

Purpose

- Mission – set for ESO in the founding charter:
  - Develop and operate world-class observing facilities for astronomical research
  - Organise collaborations in astronomy

Nobel Prize Physics 2011



Discovery of the accelerating universe using distant supernovae

What do we do?

- Design, construct and operate a suite of the world's most powerful ground-based astronomical telescopes
- Design, construct and operate instruments
- Develop technology to support the programme
- Train scientists and engineers
- Leading to:
  - high technology contract opportunities
  - numerous possibilities for technology spin-off and transfer
  - skilled personnel

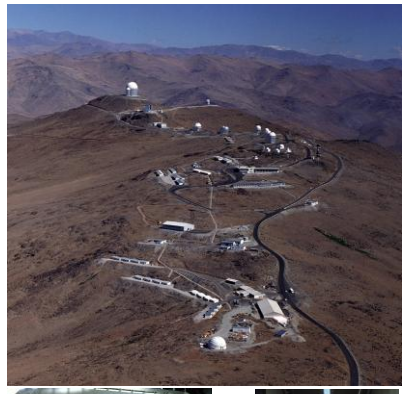
Facilities

- 4 operating units, spread over 5 sites in Germany and Chile
- HQ in Garching, Germany and Vitacura Office in Santiago, Chile
- Observatories (Chile)
  - Optical/infrared: La Silla and Paranal
  - Submm: APEX and ALMA partnerships on Chajnantor

ESO in Chile

La Silla

- The original site of the first ESO telescopes
- Part of La Silla-Paranal Observatory
- Medium-size telescopes
  - 3.6m: focused on exo-planet searches
  - 3.5m NTT: room for visitor instruments
  - 2.2m in partnership with MPG and Brazil

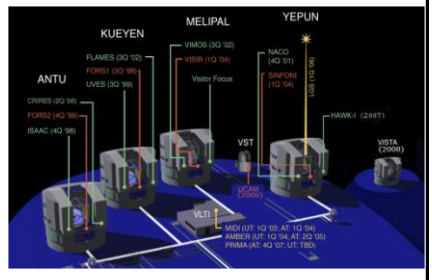


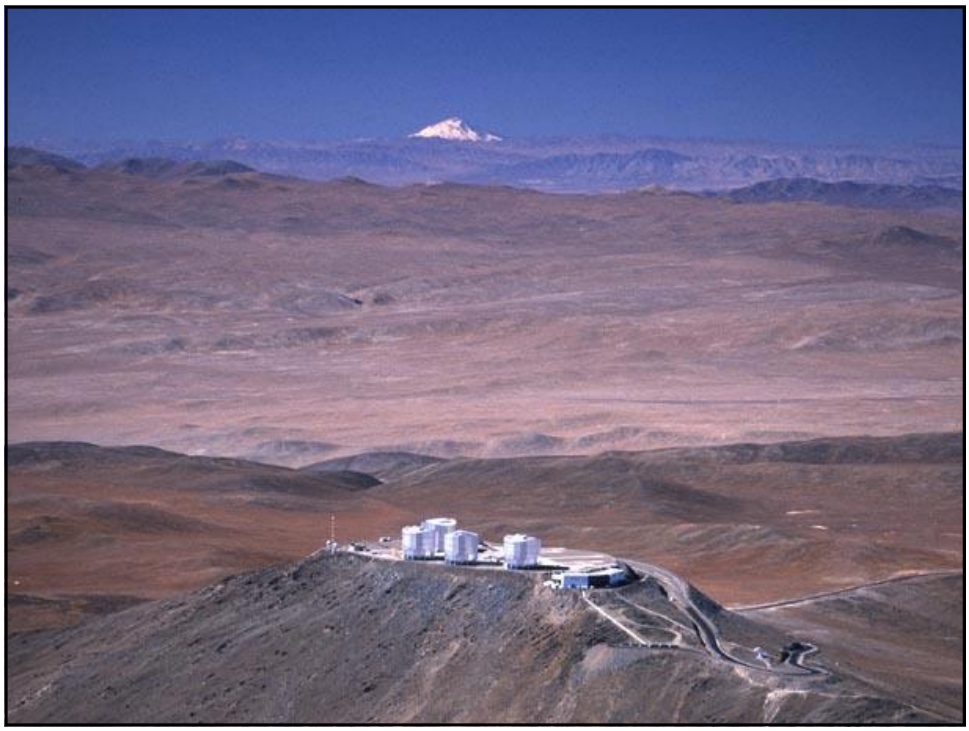
Paranal

- The VLT: 4 x 8.2m diameter optical/infrared telescopes
- The ATs: 4 x 1.8m diameter auxiliary telescopes

The VLT and the ATs, working together, make up the VLT Interferometer (VLTI)

- 2.6m diameter VLT Survey Telescope (VST; optical)
- 4m diameter VISTA Survey Telescope (infrared)

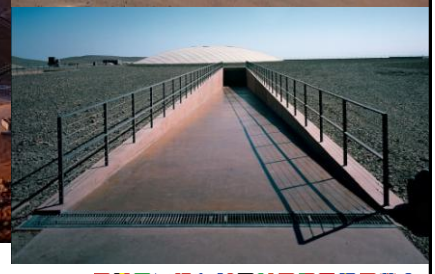




Paranal: View from Space

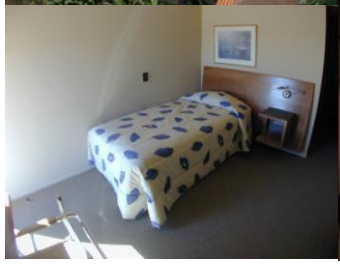
Living at Paranal (1)



Living at Paranal (2)

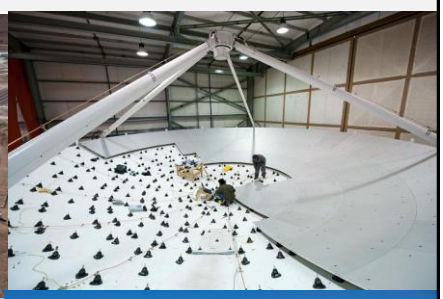




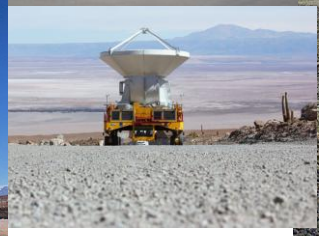
Chajnantor

- APEX
  - 12m sub-millimeter antenna, operated by ESO @ Sequitor
  - MPG (50%), Sweden (23%) and ESO (27%)
- ALMA
  - Transformational science
  - 66 antennas at 5000m (AOS)
  - Operations support at 2900m (OSF)
  - Global partnership with North America & East Asia

Operations Support Facility



Transporting the antennas



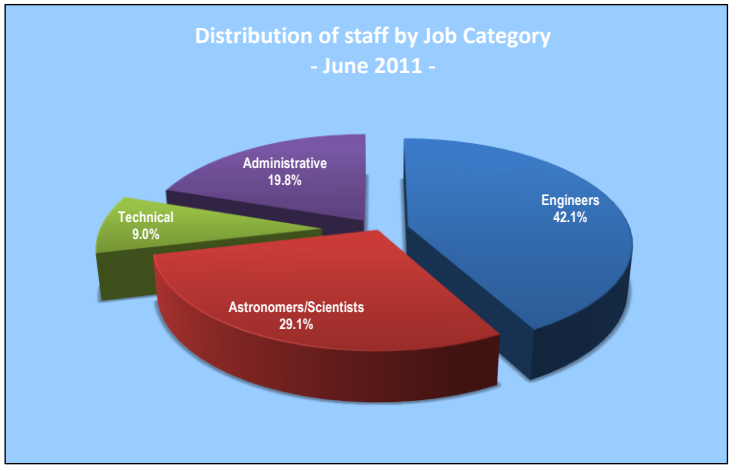
Array Operating Site

ALMA antennas at the AOS

Personnel

- ~750 staff, split:
  - Garching HQ: ~ 450
  - Chile: 250+, spread over:
    - Vitacura
    - La Silla Paranal Observtory
      - La Silla
      - Paranal
      - Sequitor (near San Pedro de Atacama)
    - ALMA
- Staff comprise astronomers, engineers, technicians, administrators

Staff Members by Job Category



The Organisation

- Intergovernmental treaty-level organisation (membership normally has to be ratified by Parliament)
- Founded in 1962 by five countries (50th anniversary in 2012)
- Currently 15 member states (Brazil in the process of ratification)

ESO Governance

- Council
  - Two delegates per member state, plus President
  - At least one of the two an astronomer
  - Approves income and budget, and overall programme
  - Appoints DG to lead ESO, and deliver programme
- Advisory to Council
  - Finance Committee (one delegate per member state)
  - Science and Technical Committee (+ sub-committees)
  - Scientific Strategy Working Group
  - ELT Standing Review Committee

Annual Income

- Annual contributions to the Organisation's budget based on the countries' net national income (NNI)
- 2010 Scale of Contributions: 131 million EUR
  - Germany 22%
  - France 17%
  - United Kingdom 16%
  - Italy 13%
  - Spain 9%
  - other Member States between 1% and 5% each
- In steady state, Brazil will be approximately 13% on current estimates

Current ESO programme

- Exploit La Silla-Paranal Observatory to obtain best science:
  - Second generation instruments (VLT/VLTI)
  - Key surveys with VST and VISTA
  - Long-term programmes for unique science on La Silla
  - Prepare for ALMA science with APEX
- Complete construction of ALMA and start operations
- Design world-leading ELT, and secure funding for construction and operations