

Working at ESO

Reaching New Heights in Astronomy

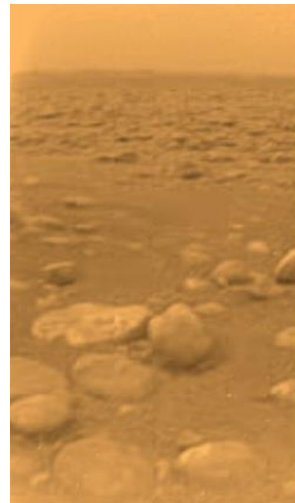


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Astronomy at an Observatory

- Astronomy benefits from *and* drives advances in telescopes / instruments
- It is now possible to
 - Study objects over 95% of the age of the Universe
 - Detect and study planets around other stars
 - Use particles to study objects in the Universe
 - Explore Solar system objects in situ
- And also to
 - Simulate astrophysical processes
 - Analyze large data streams





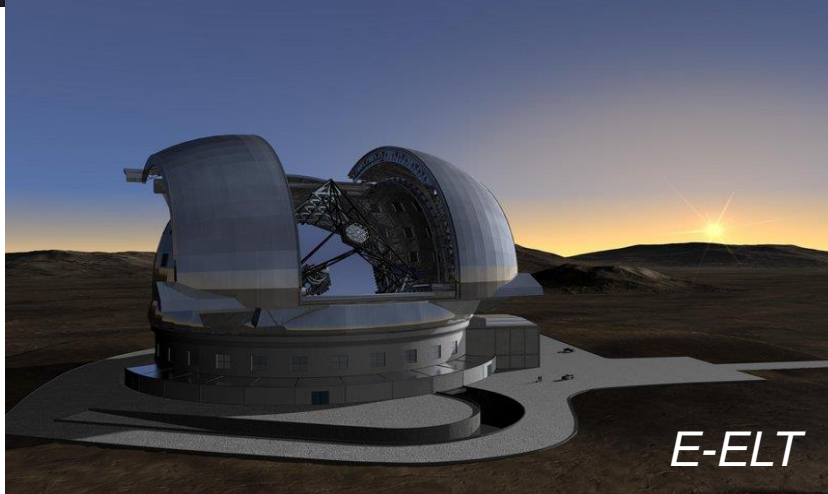
Answers to some (big) questions...

→ Require (big) facilities ...

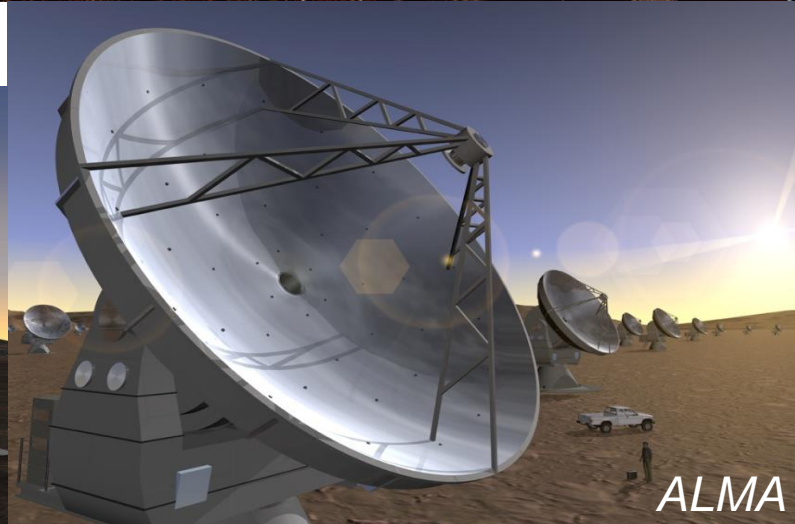
Paranal



La Silla



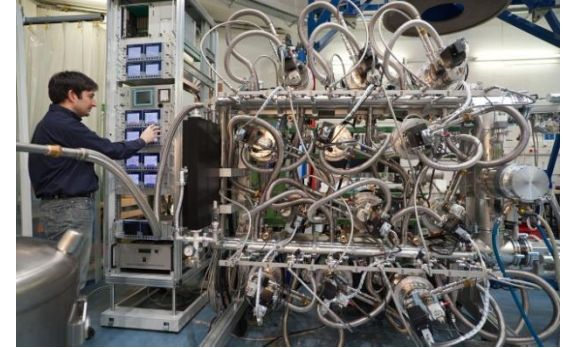
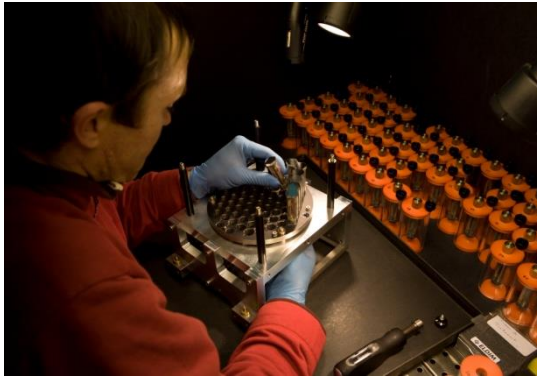
E-ELT



ALMA



... and very talented people



ESO's world

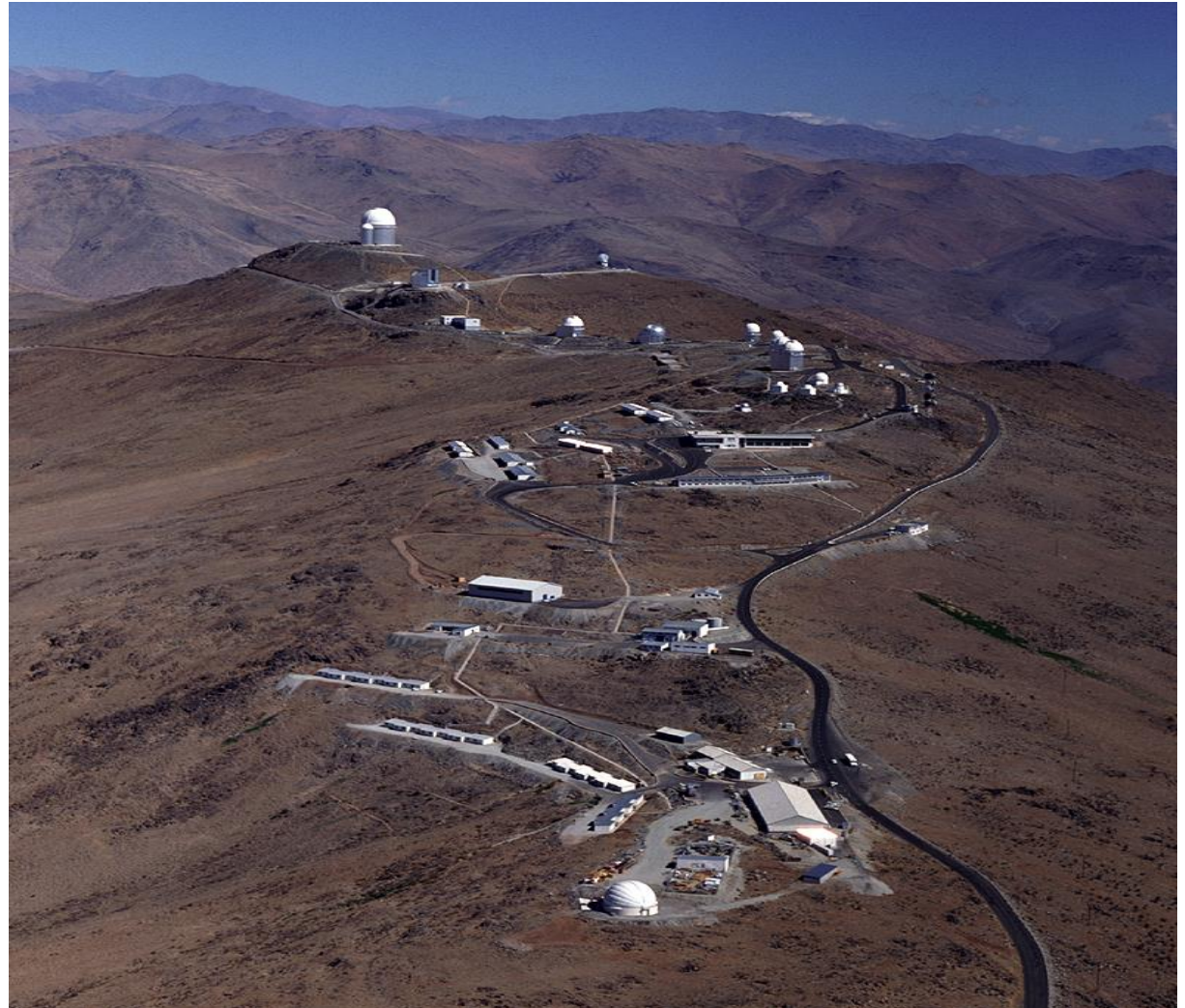
ESO's sites

Paranal
La Silla
Santiago

Chajnantor

Garching bei München

La Silla (Chile)



Paranal





Very Large Telescope - Paranal





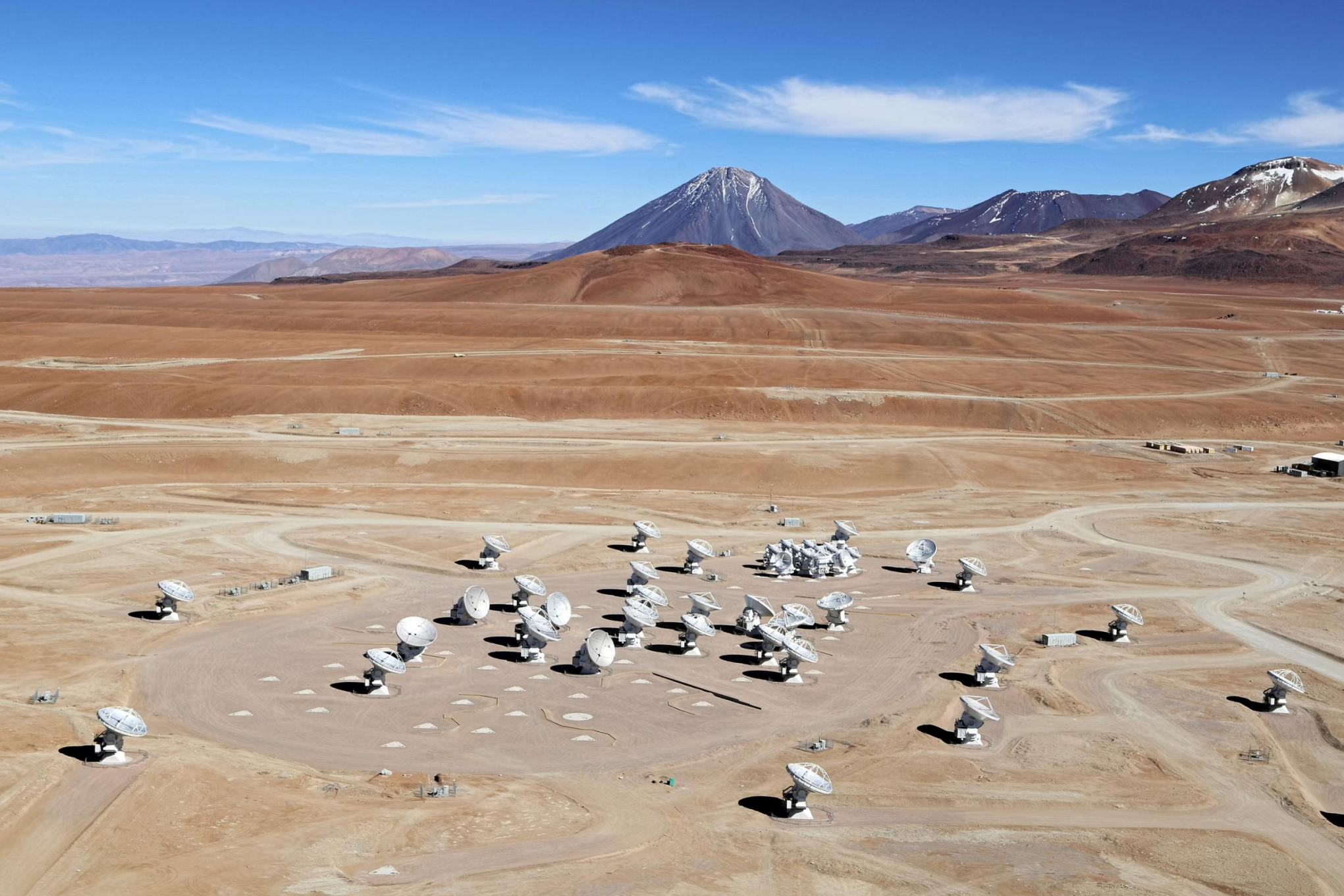


ALMA - Observing Support Facility




The Chajnantor plateau at 5000m







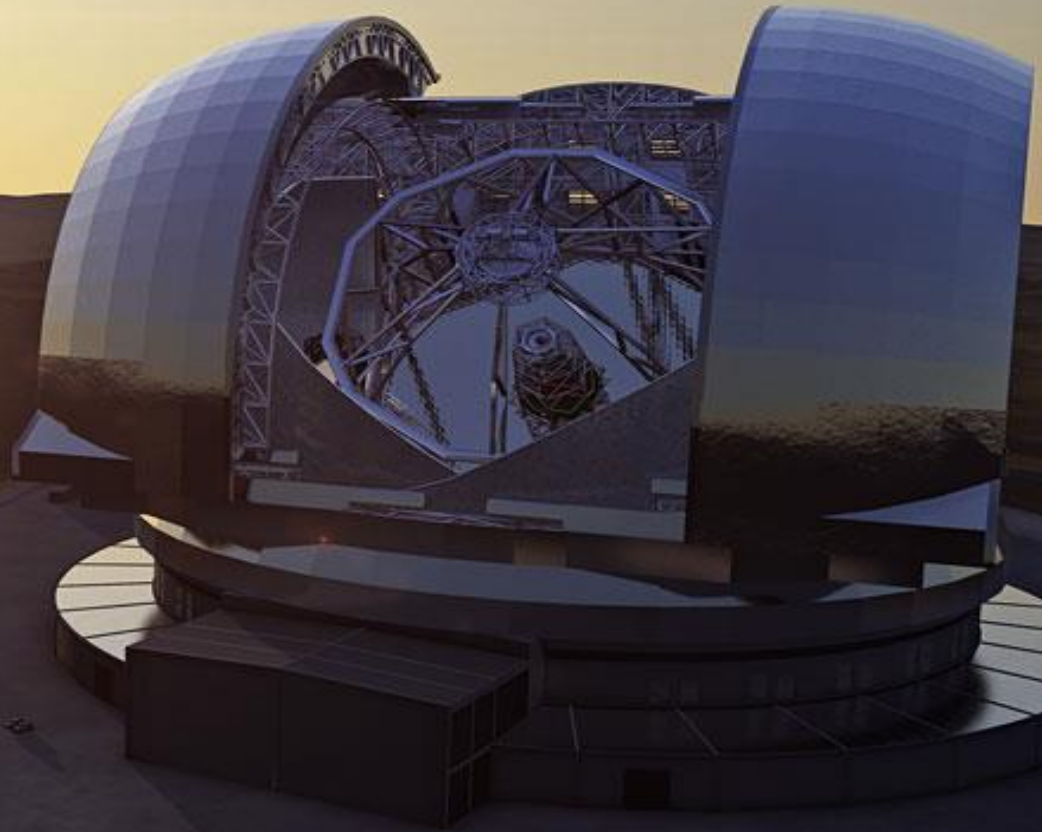
An aerial photograph of a vast, layered mountain range. The terrain is characterized by numerous ridges and valleys, creating a complex, undulating landscape. The lighting is soft, suggesting early morning or late afternoon, with long shadows cast across the ridges. The sky is a clear, pale blue. In the distance, a prominent, isolated mountain peak is visible against the horizon. The overall scene conveys a sense of immense scale and natural beauty.

Armazones

Paranal

The future: The European Extremely Large Telescope

- With a diameter of 39 m the E-ELT will be the largest telescope of the world – for decades to come.
- Start of construction: this year!
- Start of operations: 2023



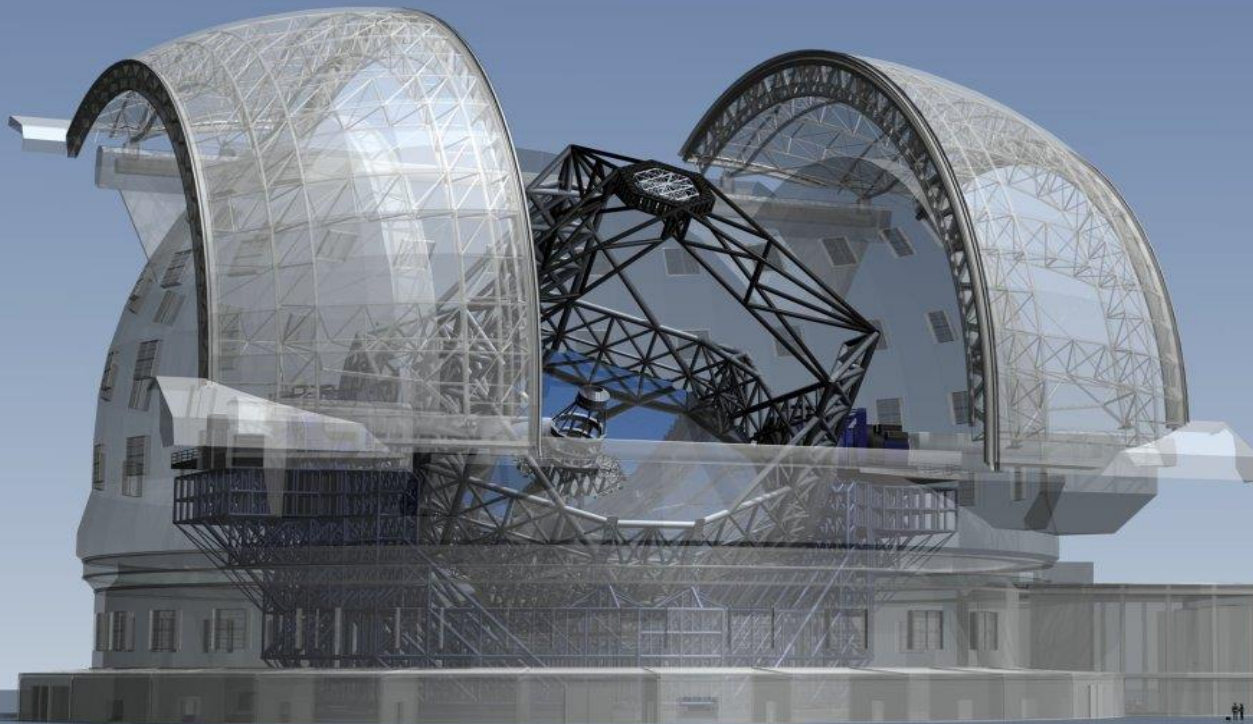
E-ELT is incredible...

- *The science to be done with the E-ELT is extremely exciting*
 - extrasolar planets and discs,
 - galaxy formation,
 - dark energy/dark matter and frontiers of physics.

- The E-ELT is the largest optical/near-infrared telescope in the world: ***“the biggest eye on the sky”***.

- E-ELT will gather 15 times more light than any other optical/NIR telescope today.

E-ELT 39-metre mirror



VLT 8-metre mirror





The European Southern Observatory

- **Mission**

- ❖ Develop and operate world-class observing facilities for astronomical research.
- ❖ Organize collaborations in astronomy.
 - ❖ Meetings, publications, large data archives
 - ❖ Fellowship and studentship programmes
 - ❖ Public outreach and education



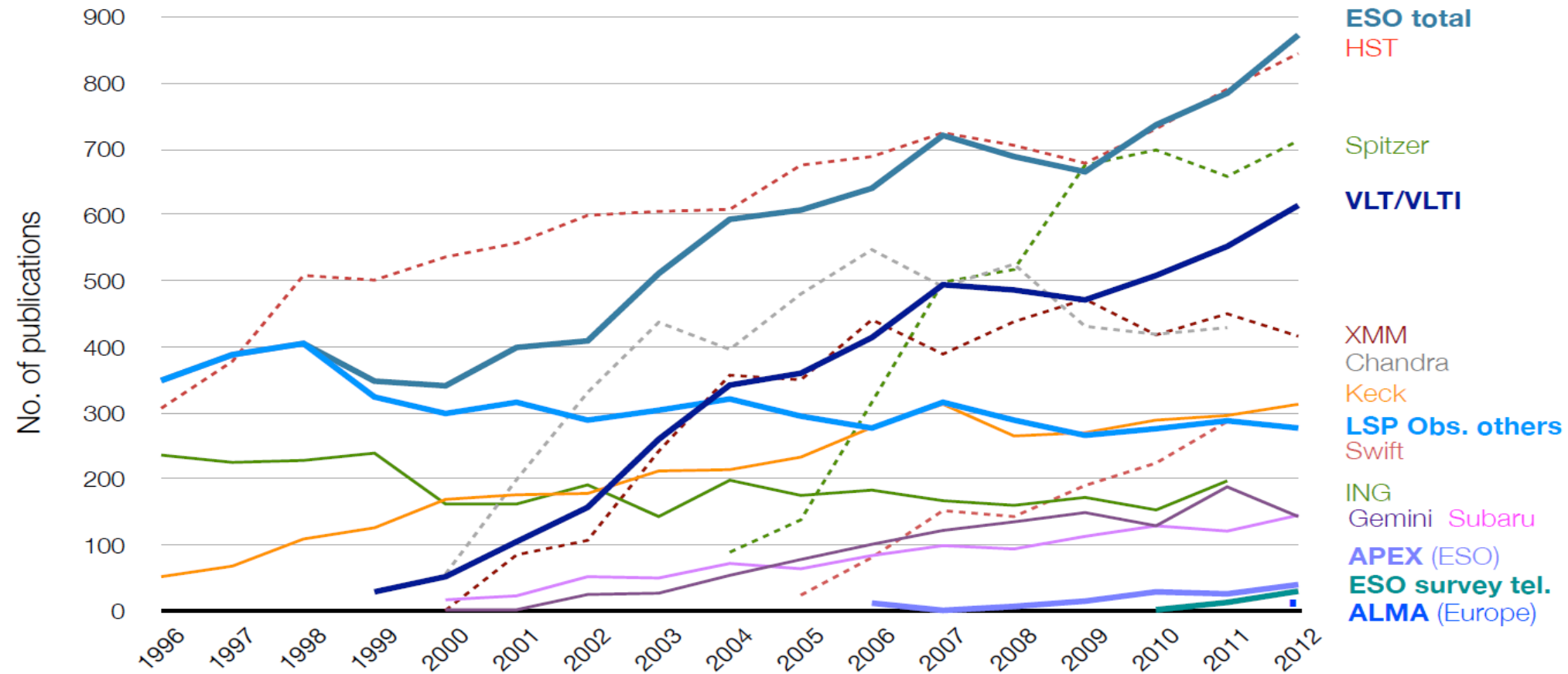
ESO today

- **15 member states**, several others interested
- Collaborations with Chile, US, East Asia, Canada
→ a global world
- ~ 680 (630) staff at 5 main sites
- ESO is the driving force behind ground-based astronomy, and the foremost intergovernmental astronomy organisation in the world.
- ESO is *the most productive observatory in the world* (871 refereed academic papers in 2012, Hubble 844).



Scientific Productivity

Publications of major observatories by year



<http://www.eso.org/sci/libraries/edocs/ESO/ESOstats.pdf>





ESO offices

**Santiago
/
Garching**





ESO Headquarters in 2014



And the next step is...

The ESO Supernova



- Donation offered by the *Klaus Tschira* Stiftung
- Stunning building conceived by Klaus Tschira with Bernhardt + Partner

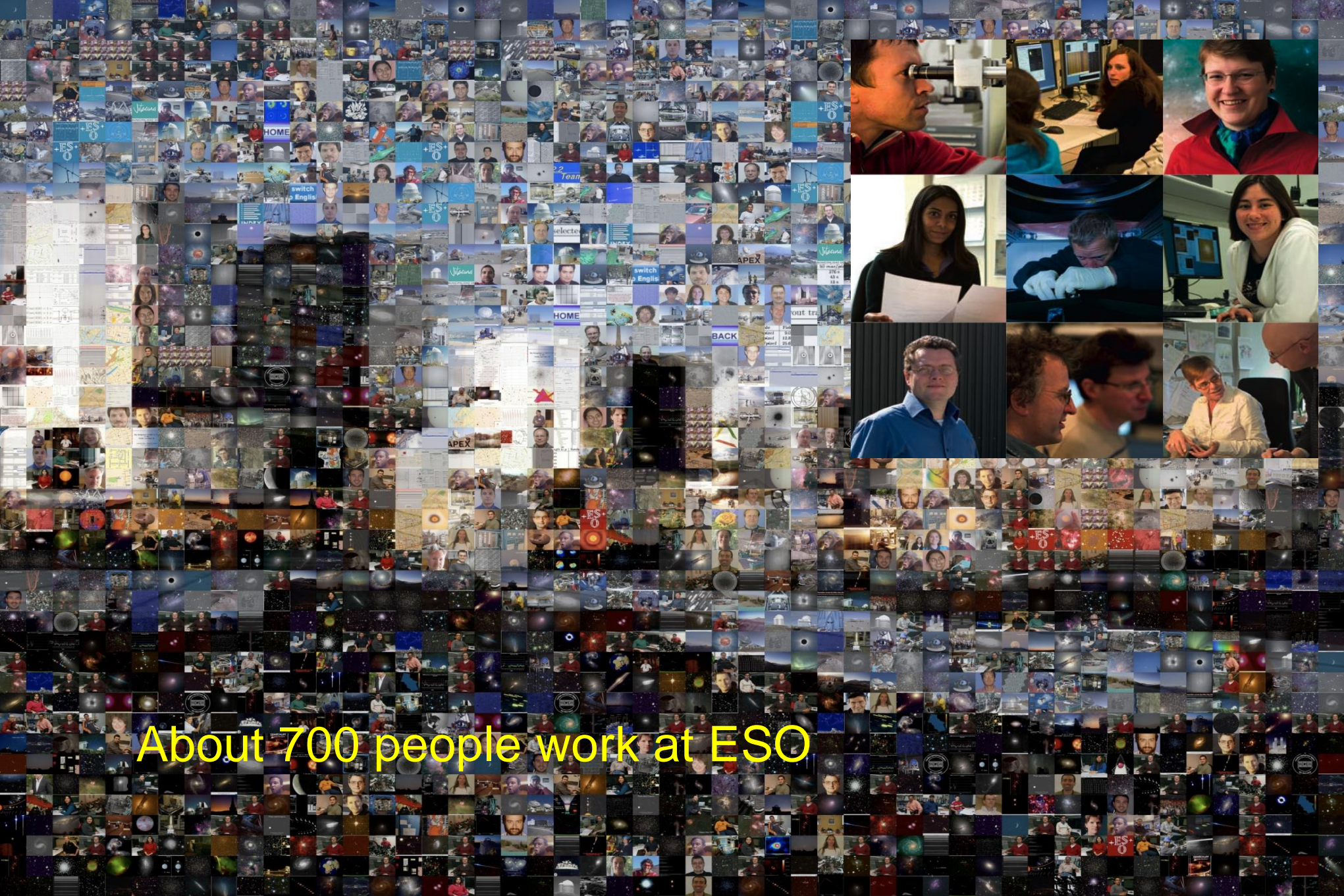


ESO Santiago



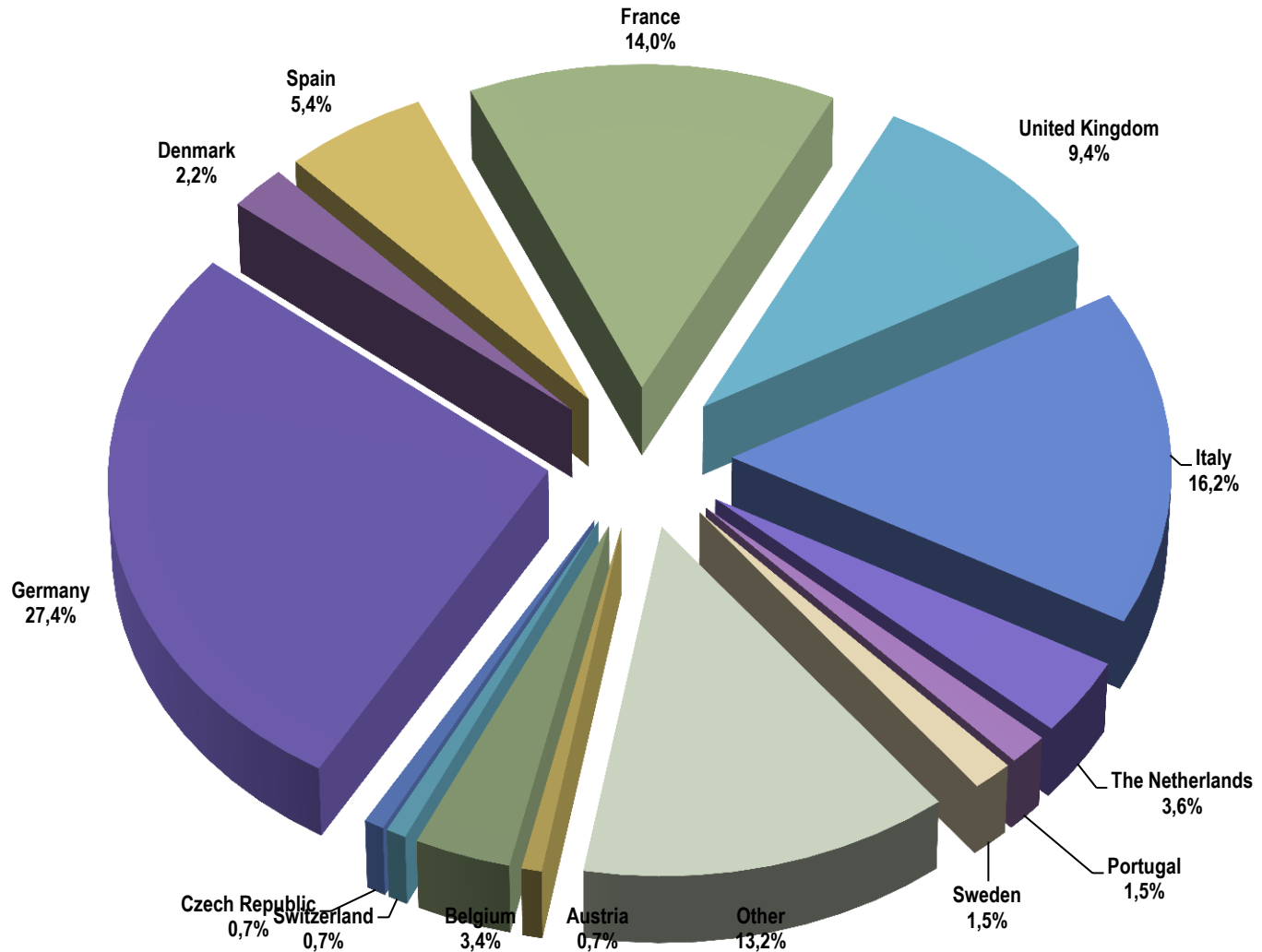
ESO Santiago





About 700 people work at ESO

Staff Members by Nationality



What are the opportunities?



Studentships



Internships

Fellows



Unpaid Associates



Paid Associates

What type of jobs?

Engineer

- Software Engineer
- Optical Engineer
- APEX – Senior Engineer
- VLT System Engineer
- Operations Engineer
- Instrument Engineer
- Mechanical Engineer

Technician

- Mechanical Technician
- Electronics Technician
- Software Technician
- etc

Admin

- Finance
- Human resources
- Legal affairs
- etc

What type of jobs?

Astronomer/Scientist

- Outreach Scientist
- Instrument Scientist
- Applied Scientist
- Astronomer
- User Support Astronomer
- Operations Astronomer
- PhD Student
- Intern
- Post-doctorate Fellows



2 Offices for Science at ESO

■ Mission

- ★ **Maintain an attractive/stimulating research environment**
- ★ **Disseminate ESO expertise into the community**
- ★ **Foster scientific collaborations**
- ★ **Keep ESO Astronomers at the forefront of Astronomy**
- ★ **Educate, Train Students and Junior Astronomers**

We are there to help

➤ **190 Science Staff + ESO community**





Offices for Science – Vitacura/Garching

Maria Eugenia



Paulina



Pam



Uta



Silvia



Stella



Programmes

Workshops, Visitors,
Studentship, Fellowship,
Internship

People

Faculty, Scientists
Fellows, Students
Interns, Visitors

Offices

Processes

Recruitment,
Monitoring, Evaluation,
Training, Development

Environment

Seminars, Discussions,
Visitors, Library,
Garching Campus, Santiago's
Institutes, Observatory

Facilities

Observatories
Desks, Hardware, Software,
Information Centre (library)



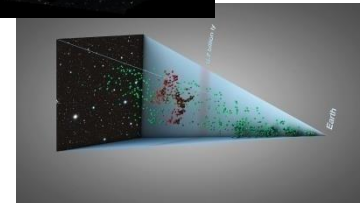
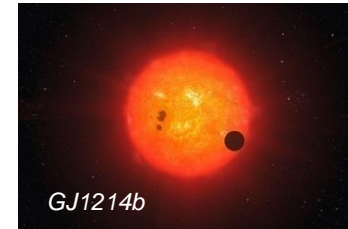
Science Staff @ ESO

- ~80 Faculty + 30 Scientists
- ~45 Fellows
- ~35 Students (including about 7 from IMPRS)
- 1-4 Interns
- > 35 long-term Visitors/yr + many short terms



Science done by ESO Astronomers

- ESO staff → a wide variety of research topics, broadly divided into five areas with ample overlap
 - Planets and Star Formation
 - Stellar Structure and Evolution
 - Stellar Populations
 - Evolution of Galaxies and the ISM
 - Cosmology and the Early Universe



Scientific Life @ ESO

- 4-8 conferences a year hosted @ ESO (Chile/Germany)
+ a few sponsored events
- Lively seminar schedule
 - ❖ Munich Joint Astronomy Colloquium
 - ❖ Journal Club + Lunch Talks
 - ❖ Informal Discussion (whiteboard talks)
 - ❖ Wine & Cheese
 - ❖ Flash Mob Science
- + many other informal seminars (star formation, AGN, cosmology, ...)
- Many interactions with neighbouring institutes



Garching



Vitacura





Meetings





ESO Workshops Programme



Fornax, Virgo, Coma et al.

Stellar systems in high density environments

ESO Garching, Germany
27 June–01 July 2011



An ESO workshop to discuss recent observational progress in our understanding of stellar systems in the nearby clusters Fornax, Virgo, Coma et al., and provide a forum for discussion between theorists and observers on galaxy evolution in high density environments at redshift zero.

SOC:

- Nobuo Arimoto
- Magda Arnaboldi (Chair)
- Eric Emswiler
- Ken Freeman
- Orwin Gerhard
- Bill Harris
- John Kormendy
- Harald Kuntschner
- Claudia Maraston
- Lucio Mayer
- Simona Mei
- Sadanori Okamura
- Bianca Poggiani
- Tom Richtler

LOC:

- Magda Arnaboldi
- Ludovico Cocconi
- Luca Corlese
- Michael Heiler
- Marina Rejkuba
- Christina Stoffer

Web page: http://www.eso.org/sci/meetings/2011/fornax_virgo2011.html

Conference email: fornax_virgo2011@eso.org

The evolution of compact binaries

Viña del Mar - Valparaíso, Chile
6-11 March 2011

Sessions:

- Different classes of compact binaries
- Formation of close binaries
- Stellar population synthesis
- Common envelope physics
- Post common envelope phase
- Contact phase
- Graveyard or Boom?
- Impact of binary evolution on other areas

Invited speakers include:

- Jay Anderson
- Patrick Côté
- Pierre-Alain Duc
- Bruce Elmegreen
- Marla Geha
- Gerald Gilmore
- Andres Jordán
- Andreas Kuepper
- Pavel Kroupa
- Søren Larsen
- Tom Richtler
- Riccardo Scarpa
- Matthew Walker

Dynamics of Low-Mass Stellar Systems

- From Star Clusters to Dwarf Galaxies

ESO workshop, Santiago, April 4-8, 2011

<http://www.eso.org/sci/meetings/dynamics2011/index.htm>

SOC:

- Holger Baumgardt
- Giovanni Carraro
- Michael Fellhauer
- Mark Gieles (co-chair)
- George Hau
- Michael Hilker
- Helmut Jerjen
- Steffen Mieske (co-chair)
- Yazan Momany
- Ivo Saviane
- Michael West
- Mark Wilkinson

dynamics2011@eso.org

An ESO workshop on Multiwavelength Views of the ISM in High-Redshift Galaxies

June 27-30, 2011
Santiago, Chile

gas2011@eso.org

LOC:

- Carlos De Breuck
- Diego Garcia-Appadoo
- Maria Eugenia Gomez
- Paulina Jiron
- Sergio Martin
- Alison Peck
- Jeff Wagg

SOC:

- Andrew Baker
- Chris Carilli
- Carlos De Breuck (co-Chair)
- Leopoldo Infante
- Rob Ivison
- Roberto Maiolino
- Alison Peck
- Dominik Riechers
- Linda Tacconi
- Jeff Wagg (Chair)
- Fabian Walter
- Tommy Wiklind
- Min Yun



<http://www.eso.org/sci/meetings/2011/gas2011.html>

ESO Workshop Programme

- Internal Selection of a few workshops per year
- Contact ESO staff to trigger potential ideas for workshops which could benefit the ESO community



ESO Visitor Programme

- ESO welcomes
 - **short** (< 4 weeks) and **long-term** visits
 - by astronomers from around the world
- ➔ ESO Contact person + contribution to science life

- Visitor applications ***can be submitted any time***



ESO Visitor Programme

■ Short-term visitors:

- < 4 weeks
- Via the Heads of the Offices

■ Long-term visitors

- 1 to 6 months (typically 2 months)
- Selection via a science committee

➔ [See ESO Web](#)



Internship Programme

- Masters or Undergrads students
- Strictly limited to ESO member States
- Anytime during the year, typically 3 months
- Work on a science project
 - formal supervision at ESO by Astronomer
- Allowance and support (trip, lodging)
- *No advert: pls contact Staff at ESO*



Studentship Programme

- Open to students enrolled in a PhD
- All nationalities, *preference to ESO Member States*
- **Duration:** 1 or 2 yrs (out of 3)
- Start ~ between August & December in the year which they are awarded
- Ad in March, **deadline June 15**
- Work on your doctoral project
 - formal supervision of your home University
 - Co-supervised by an ESO staff astronomer
- Chile – Volunteer up to 40 days/nights per year at La Silla Paranal



Choosing ESO for your PhD

- ESO's PhD topics are both observational or about modelling :
→ excellent chance you will work with real (multi-wavelength) data and will be involved with observations.
- *Excellent travel support* for conferences and observing runs.
- Great *team spirit* among student + postdoc + ... at ESO.
- *Fantastic environment*
 - Garching Campus, Chilean institutes
 - LRZ, Excellence Cluster (Germany)
 - Observatory : La Silla, Paranal, APEX/ALMA (Chile)
- **And ESO welcomes initiatives from students (and fellows)**



Choosing ESO for your PhD

- It requires you to be enrolled in a PhD programme
- You need to prepare your application well in advance
- *Requires close contact with an ESO Faculty member*
- *And it requires a solid PhD project*
 - + Scientific excellence

Deadline = June 15

PhD topics: <http://www.eso.org/sci/activities/thesis-topics.html>



ESO Fellowship Programme

■ Core mission

- *To educate and prepare the next generation of astronomers* by giving them the opportunity to work in a unique environment where they can consolidate their scientific career and visibility, as well as get an in-depth experience with state-of-art facilities.

■ Goal

- Bring the fellows to the next step of their career

ESO Fellowship Programme



- Open to all nationalities, but preference to ESO member countries
- **3 years** in Garching or **3+1** in Chile
- **Chile Fellows** do research plus observatory work
- **Garching Fellows** do research plus support work
- Deadline for applications is *October 15th*

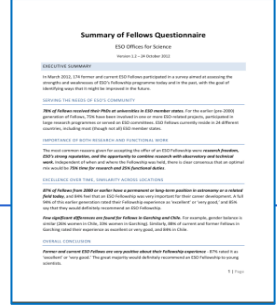
Fellowship Programme - Germany

- Join ESO after you have achieved PhD
- Application Deadline October 15
- Start ~ September – December in the year which they are awarded
- Contract: 3 years (1+2)
- 25% (Germany) of time spent on support/development activities:
 - ❖ Instrumentation, Operations Support
 - ❖ Archive/Virtual Observatory
 - ❖ VLT/ALMA/ELT
 - ❖ Science Operations at the Observatory (Chile)
 - ❖ Public Affairs

Fellowship Programme - Chile

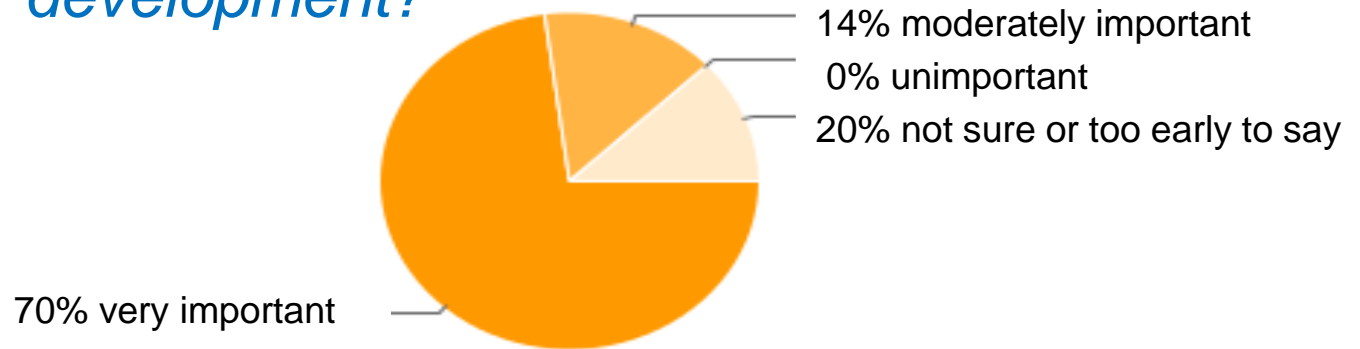
- Join ESO after you have achieved PhD
- Application Deadline October 15
- Start ~ September – December in the year which they are awarded
- **Contract: 4 years (1+2+1)**
- **80 nights assigned to one of the following groups, then in Santiago's Office:**
 - ❖ Paranal
 - ❖ La Silla
 - ❖ APEX/ALMA
- **Within year 4, no functional work**

Fellowship Questionnaire



- Survey of 222 ESO Fellows (174 replies = 78%)
 - ➔ strengths/weaknesses of ESO's Fellowship programme

With hindsight, how important was your ESO Fellowship for your career development?



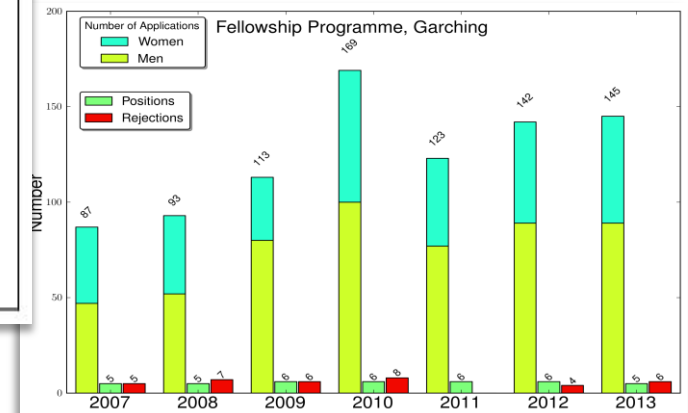
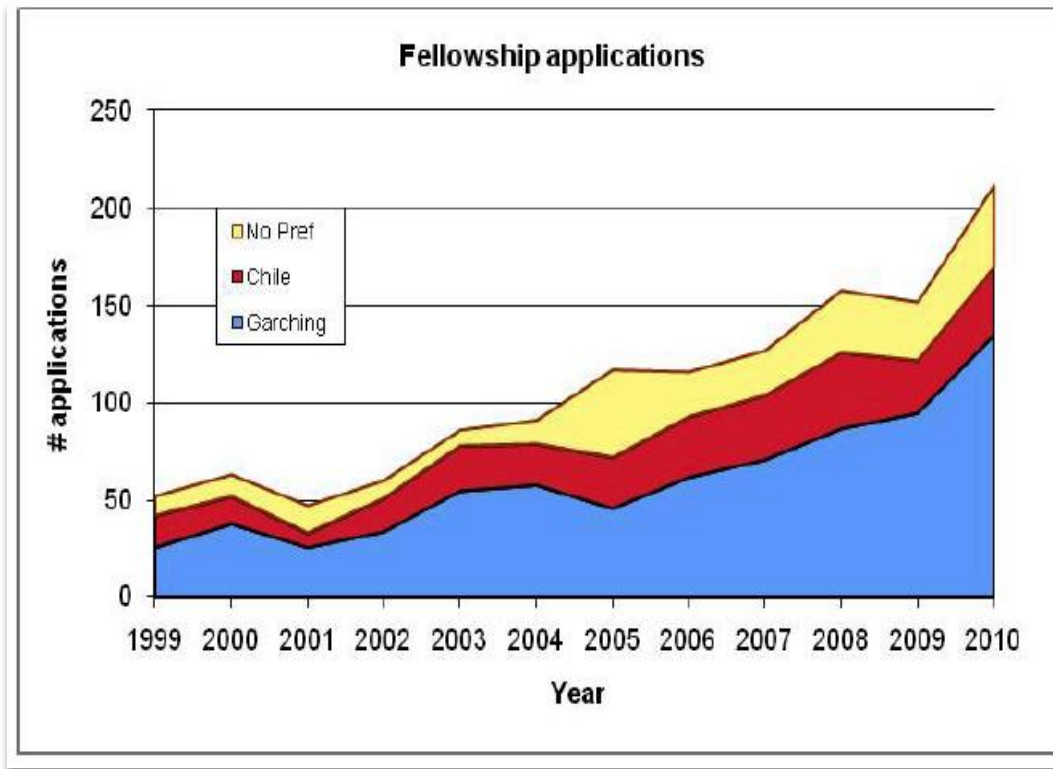
■ Bottom line

ESO's Fellowship programme has been very successful in serving the needs of ESO's community

- 87% of Fellows from 2000 or before have permanent jobs in astronomy or related field today

Fellows: the next generation of ESO users!

- Increasing pressure, competitive process



Fellowship Applications

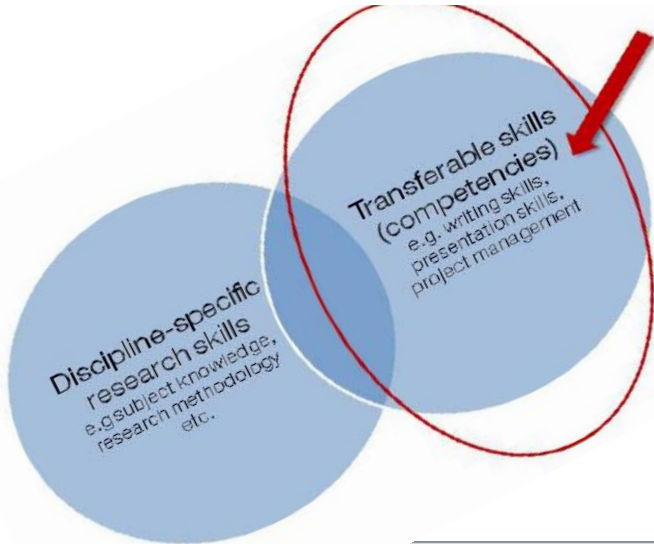
■ Selection criteria

- *No excluded research topic*
- Science excellence
- Independence
- Science excellence

- **And Why ESO ?**



ESO Fellows Development Programme



Career Days

During your 2nd year at ESO Human Resources together with the Heads of Science in Garching and Chile will run training sessions in writing winning CVs and in mock interviews to help you prepare for the next stage in your career.

Both types of training sessions are voluntary, and aim at providing you with practical tips from HR and those sitting in interview boards and making the selection. We will work with practical examples to help you understand what employers are looking for. This valuable insight with individual feedback.

Again, we would like to encourage you to make use of Human Resources as much as you can. Of course, HR and the Heads of Science will also be available at any training sessions to give you any support you may need.

Year 1

Year 2

Year 1		Year 2		
Module 1	Project Management	Formal programme	Module 4	Effective Networking
Module 2	Scientific Writing		Module 5	People Skills
Module 3	Presentation Skills		Module 6	Career Coaching
		Career Days	Voluntary	Creating Winning CVs and Cover Letters
			Voluntary	Interview Skills

Hosting Fellows at ESO

- **Humboldt fellows**
- **Marie Curie Individual Fellowships**
 - **FP7 + Horizon 2020)**
 - **1 position in 2012, 1 in 2013**
 - **2013 round: 5 proposals**
- **Potential ERC grants**

- **ESO can also host externally funded students**

- ➔ **In all cases: science excellence is a must**

Staff astronomers at ESO



- In Garching work on instrument development, user support, etc.
- In Chile spend 105 or 135 nights per year working at the observatory
- All ESO astronomers do research

Qualifications/Experience

- Ph. D. in Astronomy, Physics, Astrophysics or equivalent
- Programming qualifications/significant experience
- **English:** proficiency in oral + written communication
- Working together/team working
- Project experience
- Management experience can be a plus
- **PASSION!**

Skills

- Team spirit
- Self dependent
- Good communication
- Conflict management
- (Inter-) cultural empathy
- Emotional intelligence

- **PASSION !**

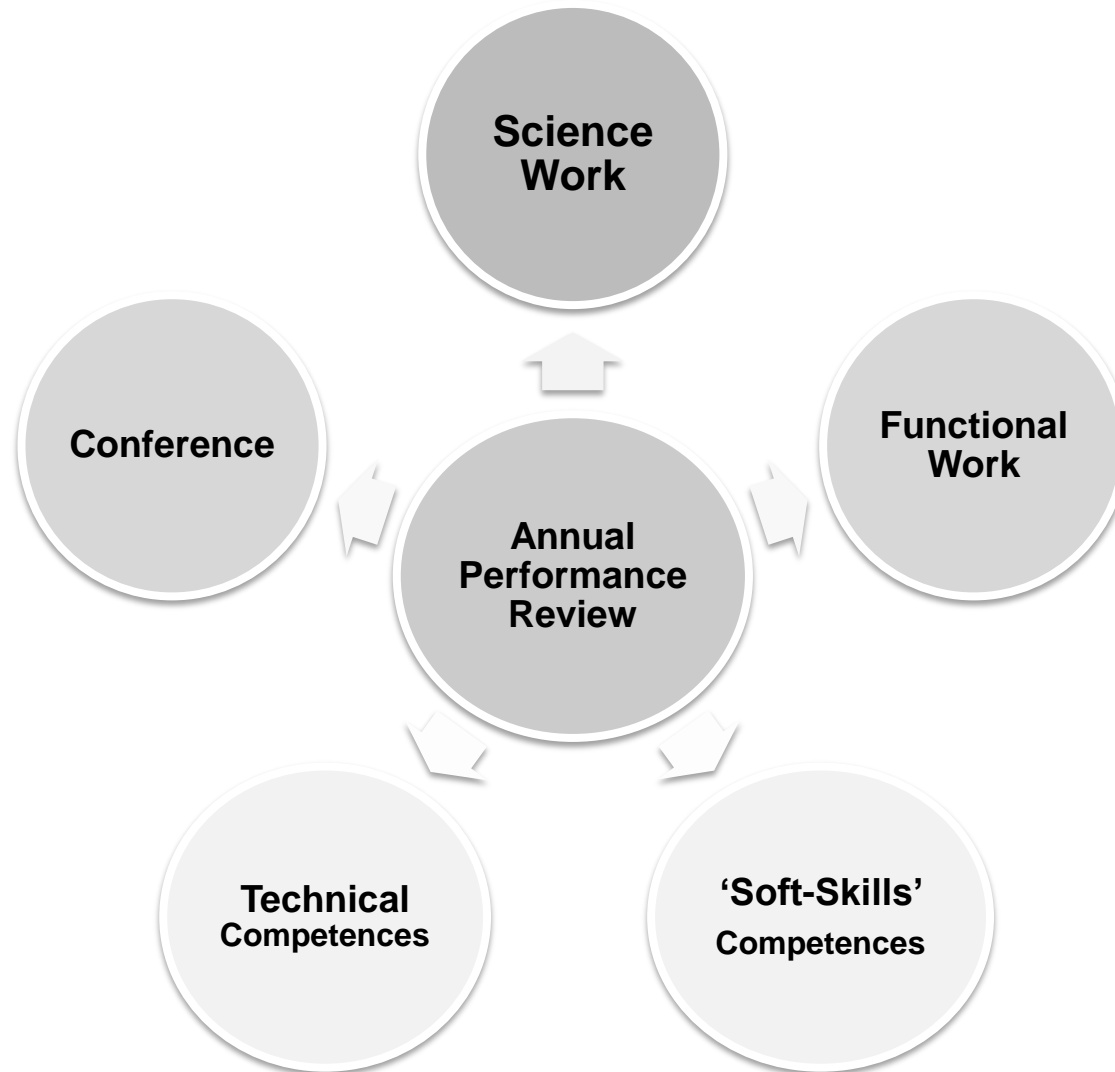
Conditions of Employment

International Staff

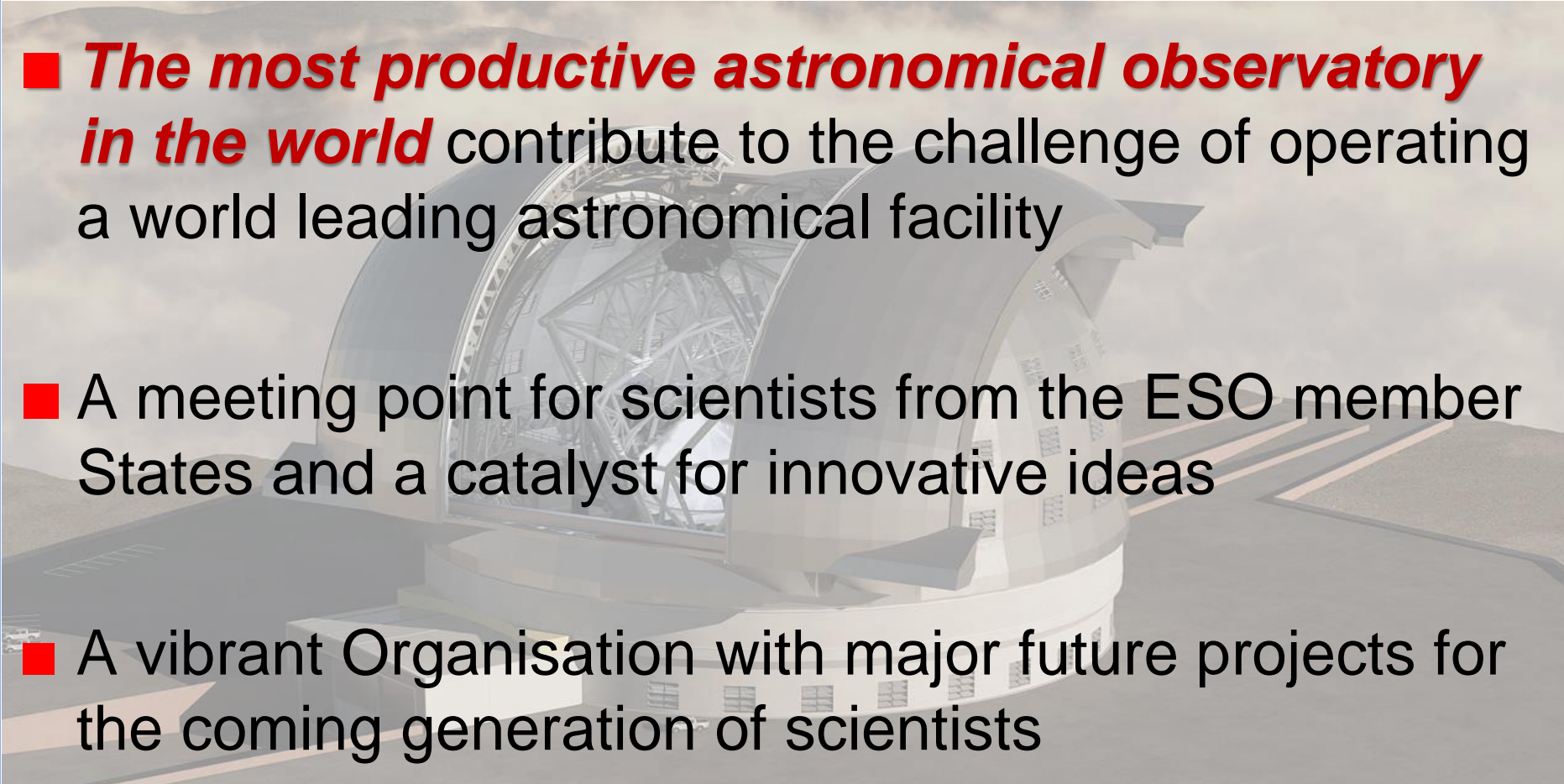
■ Benefits

- Home Leave
- Relocation Allowance/Support
- Expatriation Allowance
- Cost of Living Adjustment
- Education Grant
- Parental/Paternity Leave
- Children's Allowance
- Kinderkrippe
- Kindergarten
- Flexible Working

Staff Development: one example



What this means for you ...

- 
- A semi-transparent background image of a large astronomical observatory with its dome open, showing the internal structure. The observatory is situated in a mountainous region.
- ***The most productive astronomical observatory in the world*** contribute to the challenge of operating a world leading astronomical facility
 - A meeting point for scientists from the ESO member States and a catalyst for innovative ideas
 - A vibrant Organisation with major future projects for the coming generation of scientists



**Fellowship
programme**



**Internship
programme**

→ Come to work at ESO!



**Studentship
programme**



**Visitor
programme**



**Workshops,
meetings**



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Questions ?

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