



Chile and Astronomy

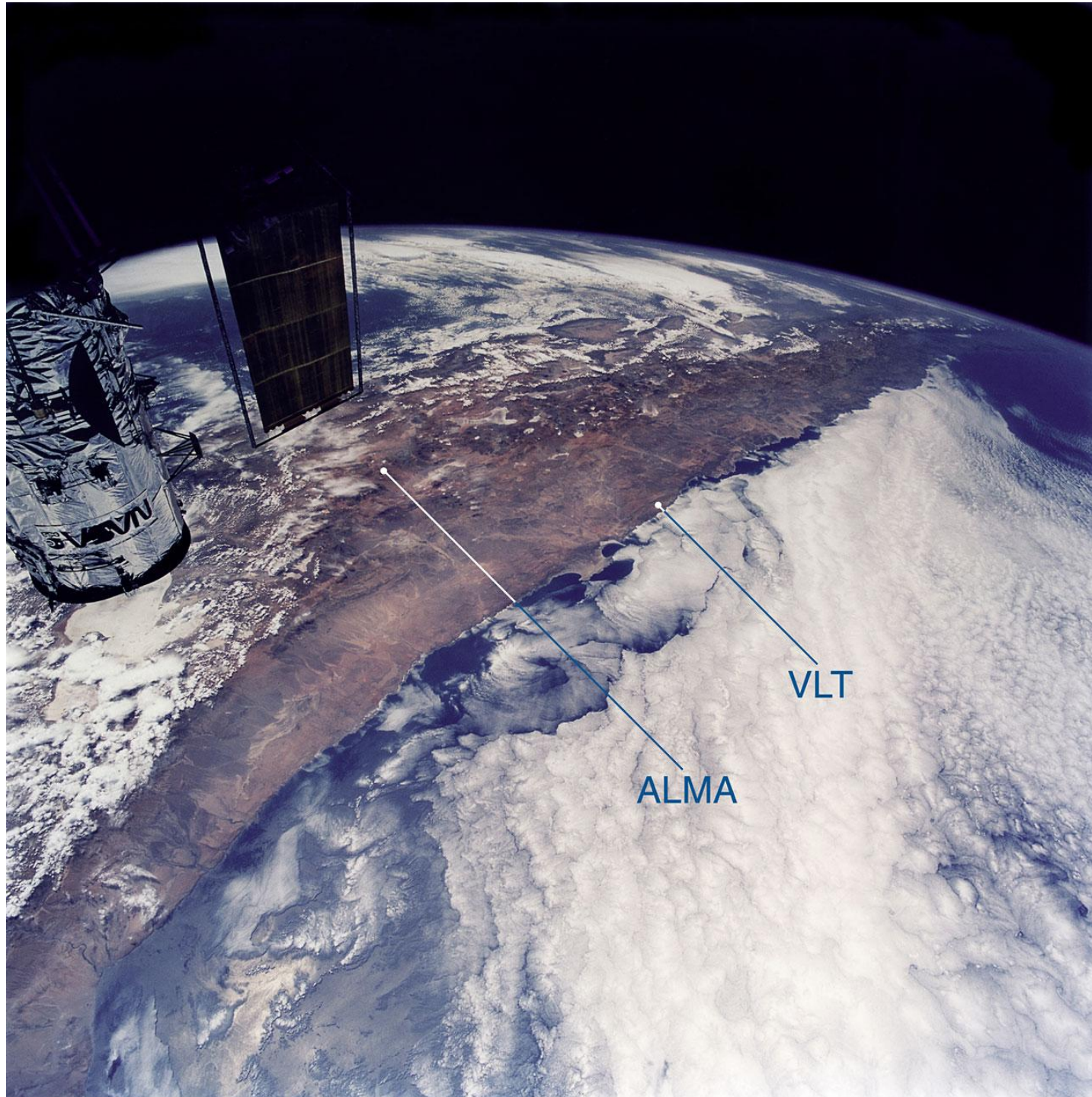


Eduardo Unda-Sanzana
Executive Director, SOCHIAS

Chile







VLT

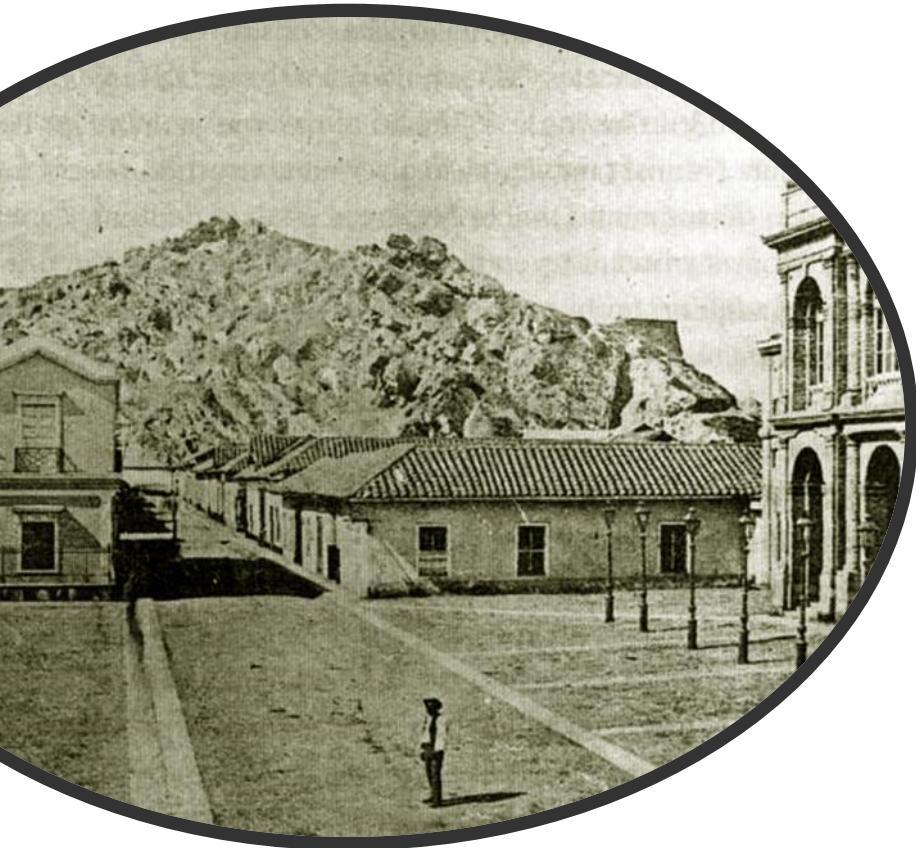
ALMA



ASTRONOMY

Astronomy Beginnings

- National Astronomical Observatory (1847)



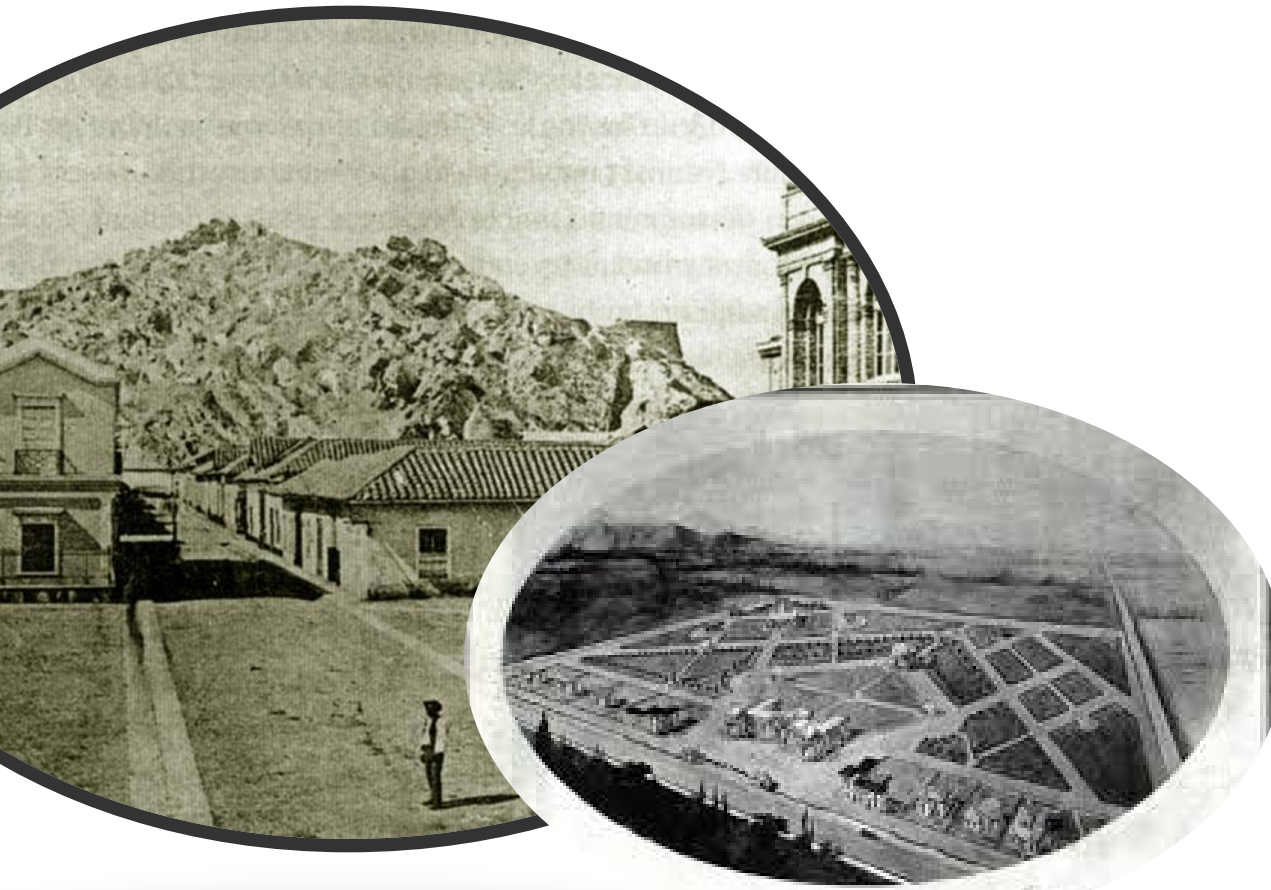
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159	☐ 1850MNRAS..11...42G	1.000	12/1850	E F G	R C	Gilliss, J.	Extract of letter from Lieut. Gilliss, U.S.N., to Capt. Smyth, Santiago de Chile, July 28, 1850
160	☐ 1850AJ.....1..156G	1.000	12/1850	F G		Gilliss, J. M.	Letters to the editor [Neptune observations]
161	☐ 1850AN.....31..145G	1.000	09/1850	E F G	C	Gilliss, James Melville; Gerling, Christian Ludvig	Schreiben des Herrn Lieut Gilliss an Herrn Professor Gerling
162	☐ 1850MNRAS..10..179G	1.000	06/1850	E F G		Gilliss, J. M.	Longitude of Washington
163	☐ 1850AN.....30..351G	1.000	06/1850	F G		Gilliss, James Melville	Lieut Gilliss U.S.N. Plan für die magnetischen Beobachtungen in Chili
164	☐ 1850MNRAS..10..126G	1.000	03/1850	E F G		Gilliss, J. M.	Longitude of Washington
165	☐ 1850MNRAS..10...89G	1.000	02/1850	E F G		Gilliss, J. M.	Astronomical expedition to Chile by the U. S. Government
166	☐ 1849MNRAS..10....1G	1.000	11/1849	E F G		Gilliss, J. M.	Astronomical expedition to Chile by the U. S. Government

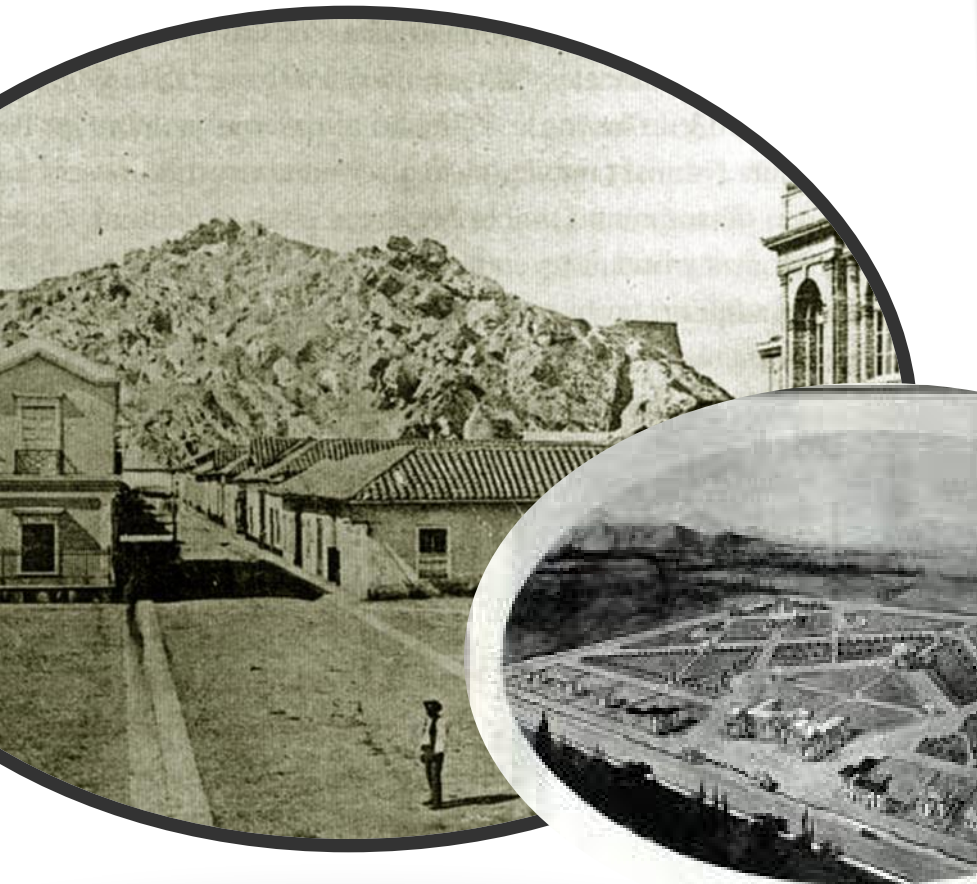
Astronomy Beginnings

- National Astronomical Observatory (1847)
 - 1927: under Universidad de Chile administration



Astronomy Beginnings

- National Astronomical Observatory (1847)
 - 1927: under Universidad Nacional de Tucumán



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The 50s

- Promotion of Chilean advantages (F. Rutllant)
 - Installation of
 - Cerro Tololo (AURA, EEUU)
 - Cerro La Silla (ESO, Europe)
 - Cerro El Roble (URSS-Chile)
 - Radio-observatorio Maipu (Chile)



Today

- Sites
 - Cerro Tololo
 - Cerro La Silla
 - Cerro Las Campanas
 - Cerro Pachón
 - Cerro Paranal
 - Cerro Armazones
 - Llano Chajnantor



Observatories

- National

- USA
 - AURA
 - LCO, Carnegie
- Swiss
- Danish
- Polish
- TAO
- ...

- Collaborations

- ESO, Europe
 - La Silla
 - Paranal
 - Armazones
- ALMA
- CCAT
- Gemini
- SOAR
- Apex
-

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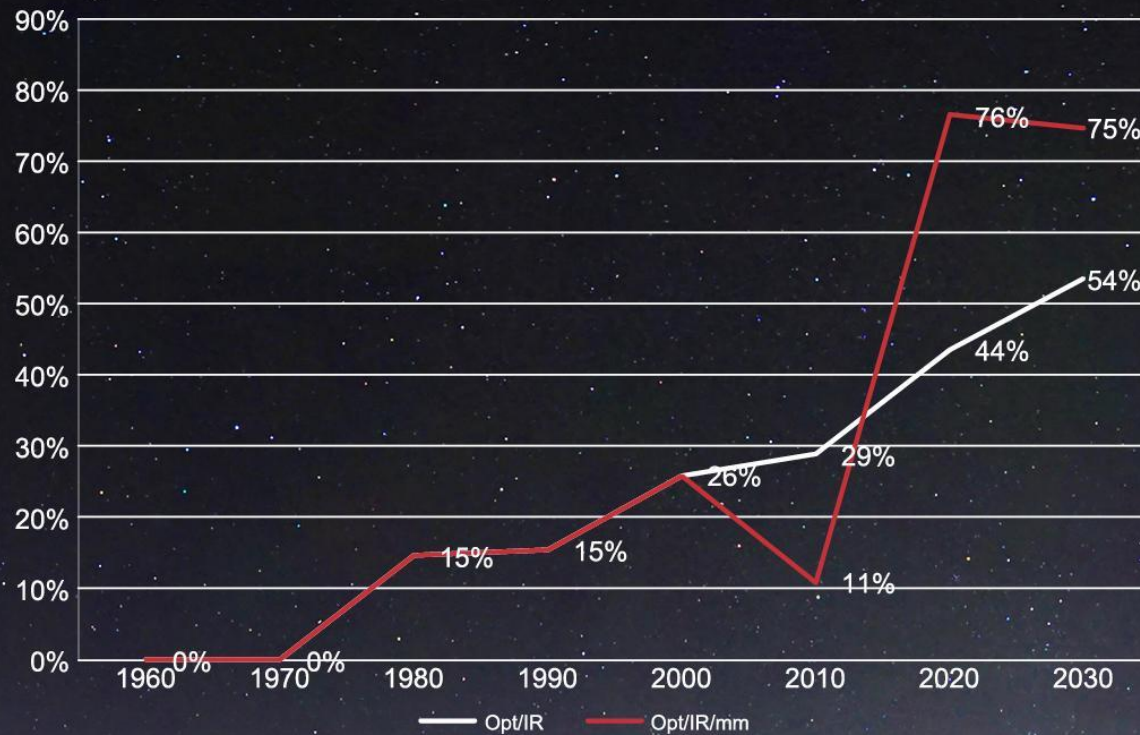
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Observatories

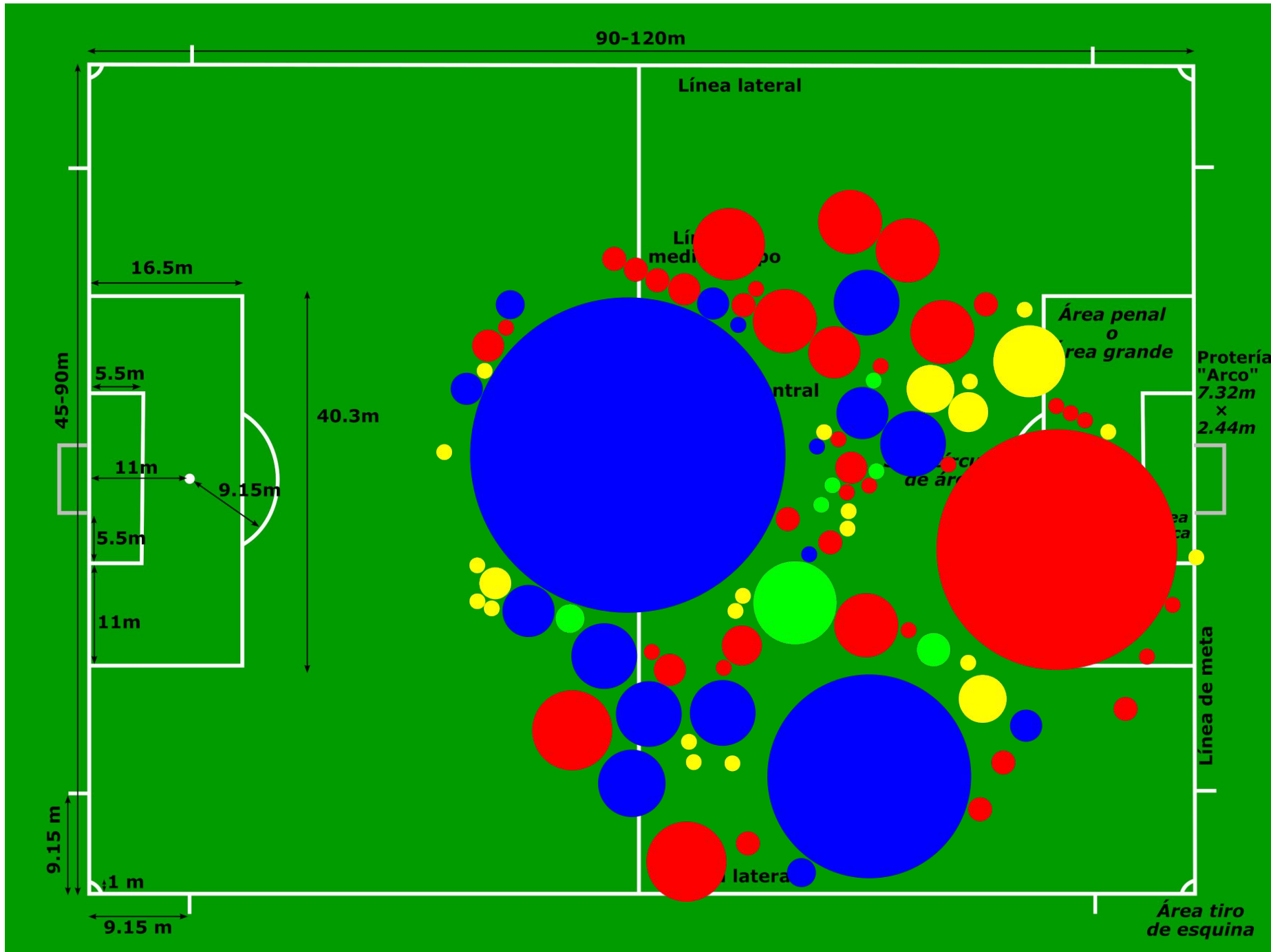


A Window to the Universe

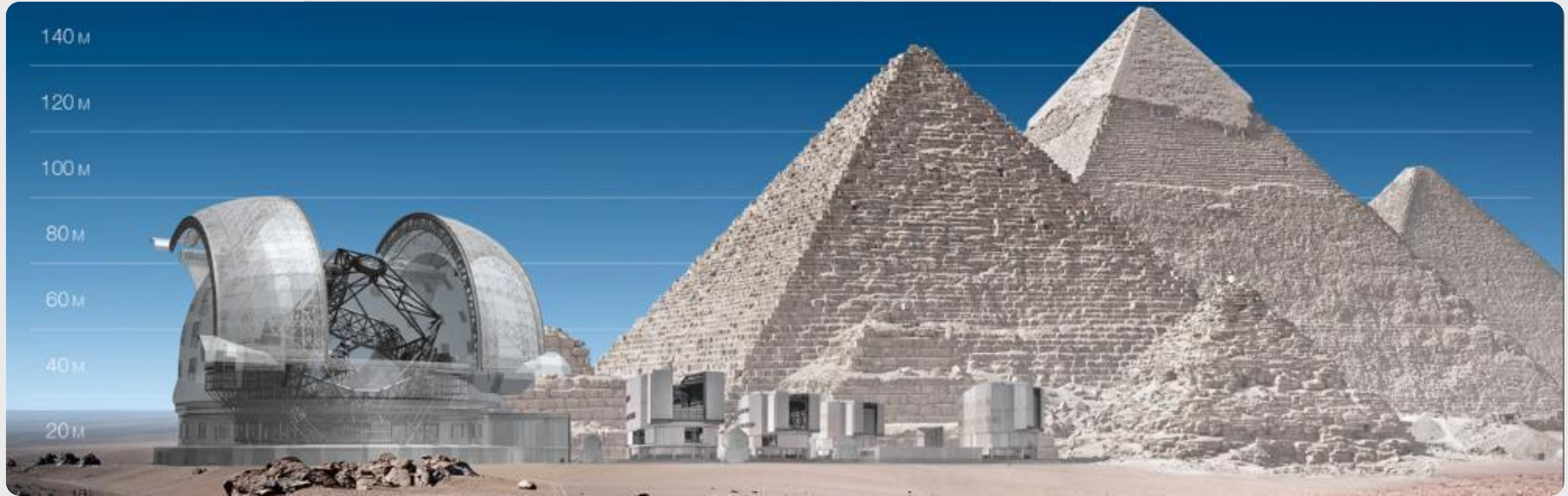
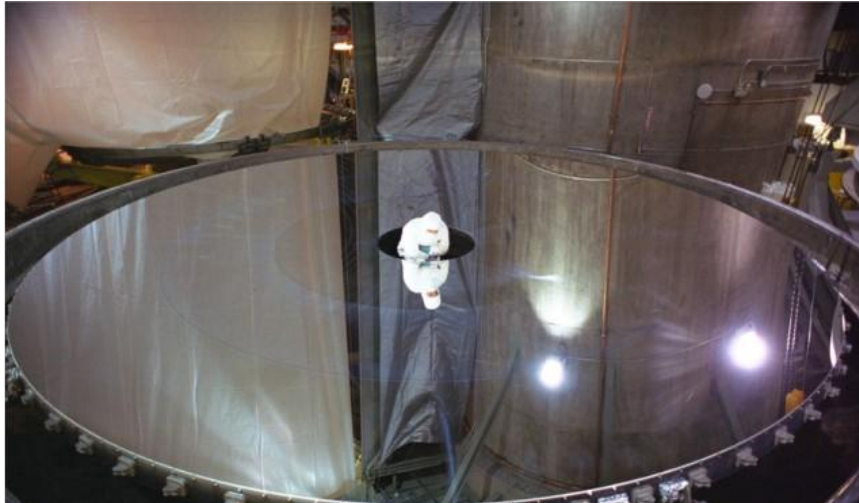


Most ground-based astronomical photons arrive through Chile



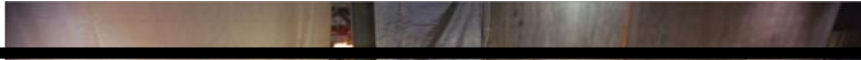


Varied Sizes



Varied Sizes

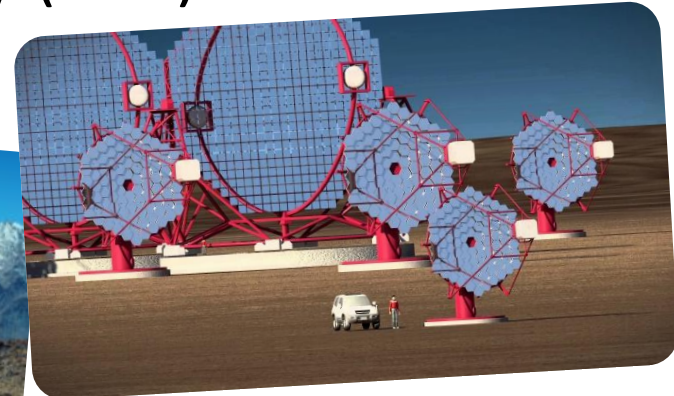
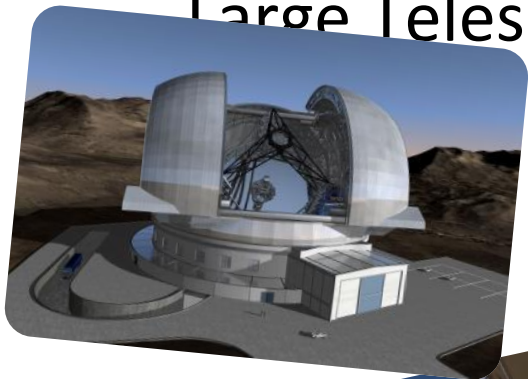
Varied Wavelengths



140 M
120 M
100 M
80 M
60 M
40 M
20 M

Large Projects

- Giant Magellan Telescope (GMT)
- European Extremely Large Telescope (E-ELT)
- Large Synoptic Survey Telescope (LSST)
- Atacama Large Millimeter Array (ALMA)
- Cherenkov Telescope Array (CTA)



MADE IN CHILE

The Chilean administration

- Ministry of Education
 - CONICYT
- Ministry of Economy
 - Oficina de Enlace Industrial
 - CORFO
 - SERNATUR
- Ministry of Foreign Affairs
 - DECYTI

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 - DECYTI



Chile

Superb Conditions

Unique Skies



The Atacama Desert



The Atacama Desert



Mars





Authors: NASA / Vía Láctea Astrotour

Astronomy: in fast development

- XX century
 - 2 institutions (UCHile, PUC)
 - ~20 faculty
 - <1 grad student per year

Astronomy: in fast development

- Today
 - >10 institutions
 - ~90 faculty
 - ~25 grad students per year

Astronomy: in fast development

- Today

- >10 institutions



5x

- ~90 faculty



4x

- ~25 grad students per year



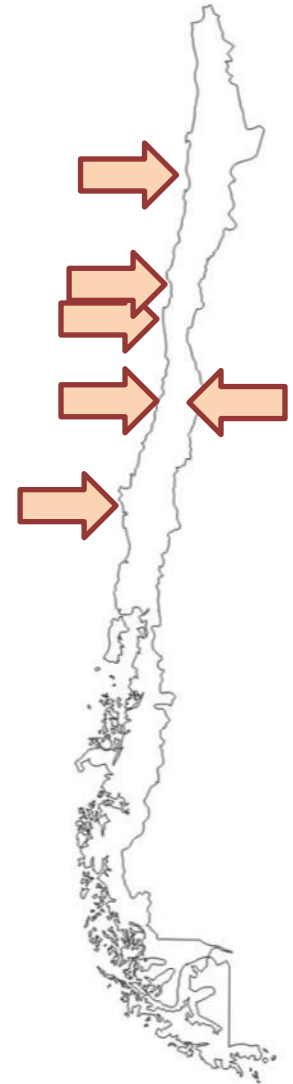
25x

Astronomy: in fast development

- Today
 - >10 institutions
 - ~90 faculty
 - ~90 postdocs
 - ~25 grad students per year
 - ~30 undergrads per year

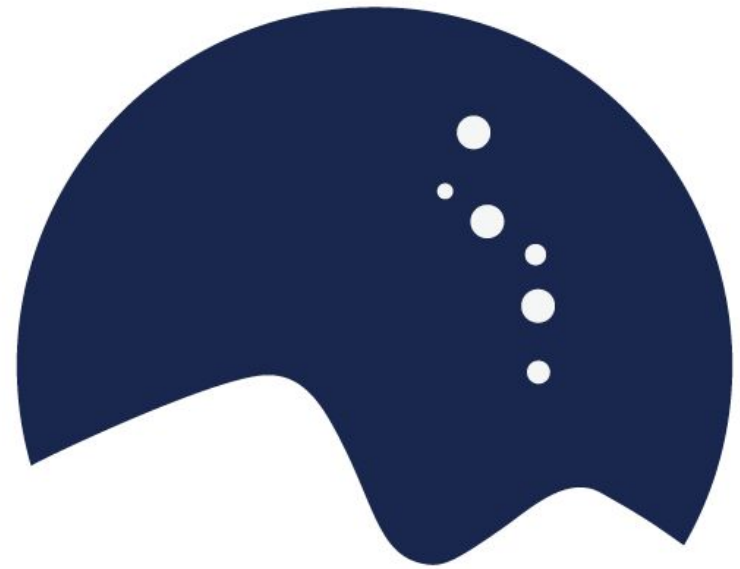
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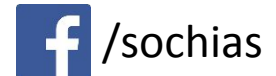
Sociedad Chilena de Astronomía

- Founded in early 2000s
- Individual Affiliation
 - ~250 members
- Recognized voice
- Annual meetings



SOCHIAS

sociedad chilena de astronomía





COLLABORATION OPPORTUNITIES

Formal Country-level Collaborations

- In operation

- France (UMI-CNRS)



- U. de Chile, PUC, U. de Concepción

- China (CCJCA or CASSACA)

- Conicyt-SOCHIAS



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- In operation

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- In exploration

- India



- Germany (Max-Planck)



- Greece



For researchers: Telescope Access

- “Chilean Time”: Guaranteed fraction of observing time at all telescopes for researchers in Chilean institutions (but you need to apply; pressure factor is increasing). Valid for Professors, Postdocs and Students.
- The Chilean Time is valid for proposals emanated from Chilean institutions. You can collaborate with a Chilean PI (or look for work in Chile).

For researchers: Large Centers

- Basal CATA (2009-)
 - Director: M.T. Ruiz
 - 3 institutions
- MAS institute (2014-)
 - Director: M. Zoccali
 - 6 institutions
- >5 medium-size centers
 - Anillos, Núcleos

For researchers: Instrumentation Labs

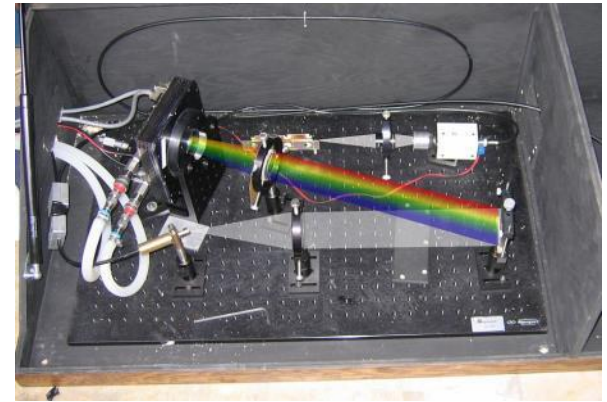
- Radioastronomy

- UChile
- UConce



- Optics/IR

- PUC
- UAntof



- Data

- PUC
- UChile



For researchers: Funding!

Dedicated to astronomy, nationwide:

- ALMA/Conicyt
- Gemini/Conicyt
- Comité mixto ESO/Chile
- Quimal
- Chile/China

Likely in the near future:

- LSST
- Atacama Park

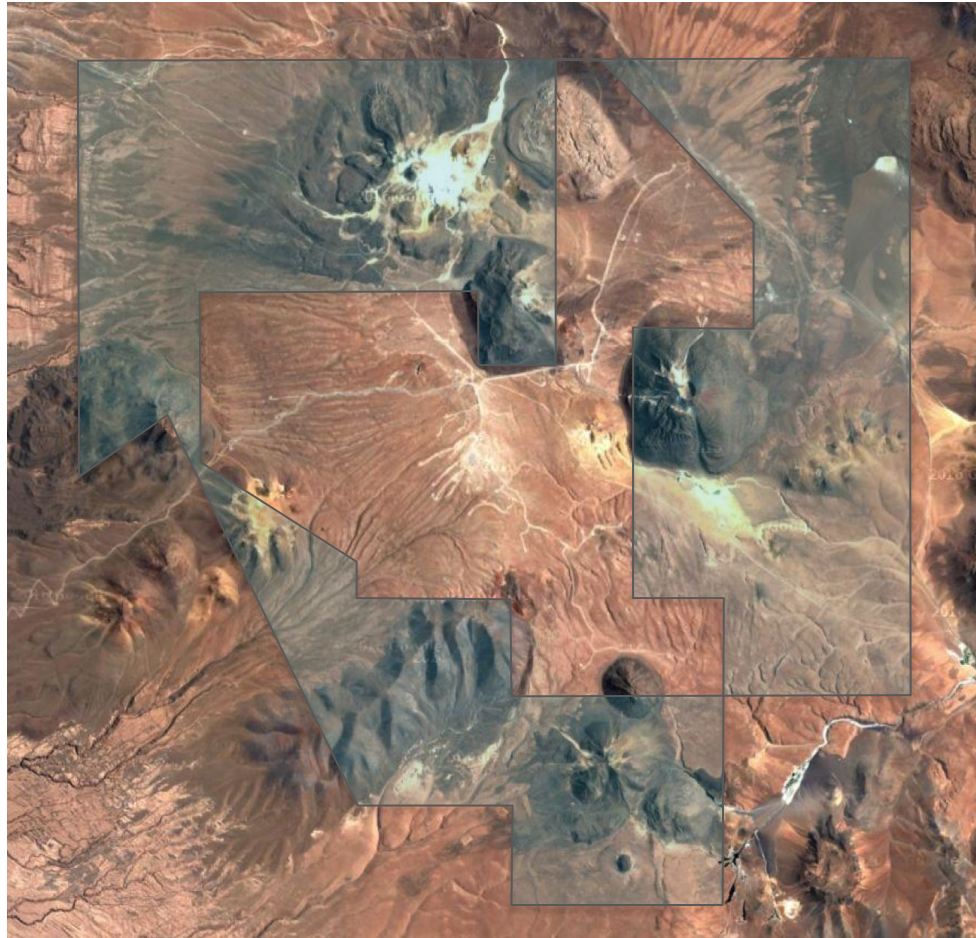
Other successful experiences:

- FIC-R (some regions)
- CORFO (for business-related ventures)

You need to collaborate with a Chilean PI, to work on a proposal of interest for the development of Chilean astronomy.

For PIs of a telescope project

Chile manages through CONICYT the Atacama Park, next to ALMA.



Atacama Astronomy Park

Co. Toco
(5604 m)

Co. Chajnantor
(5640 m)

Co. Negro

Co. Chascon

ALMA

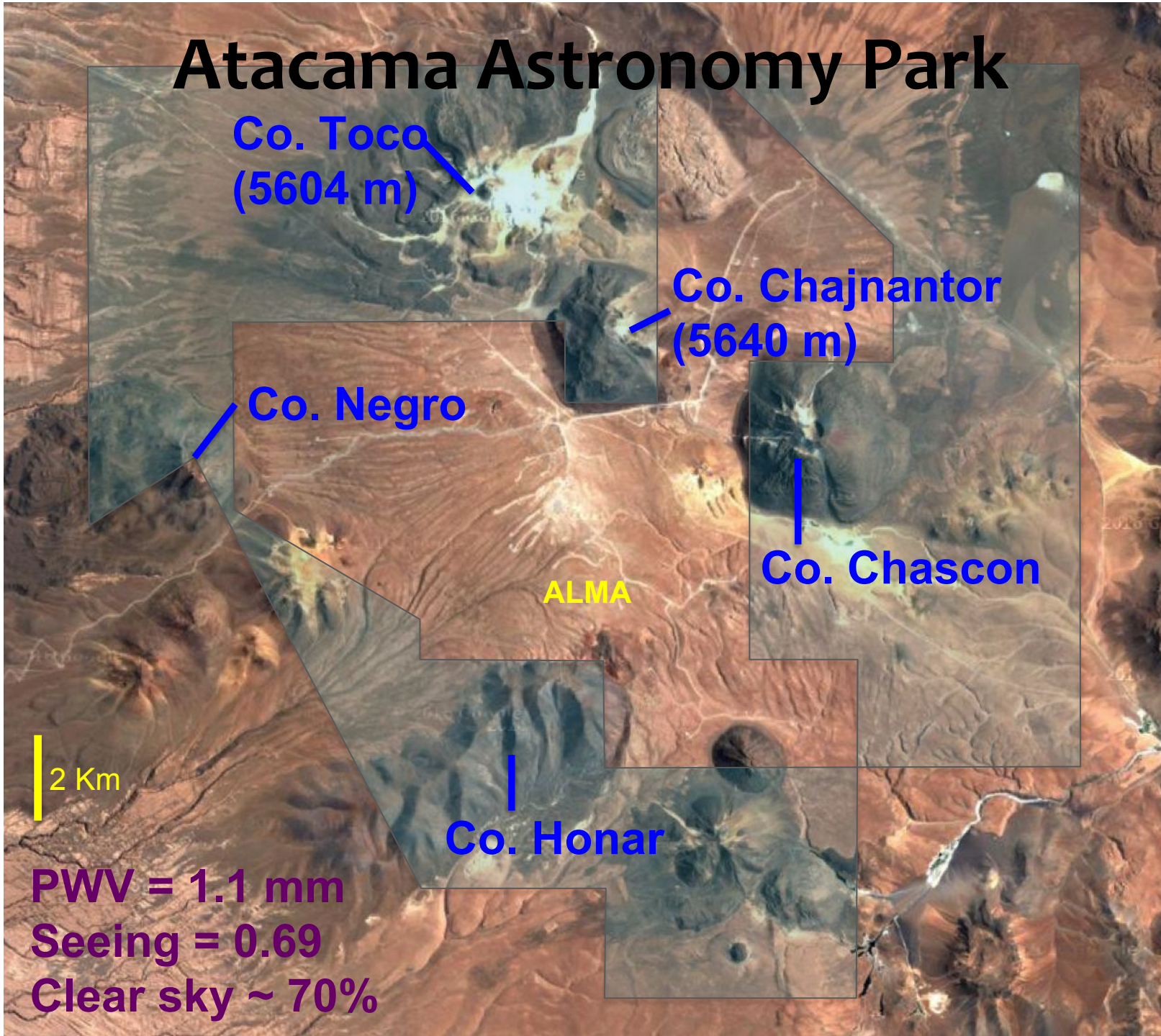
Co. Honar

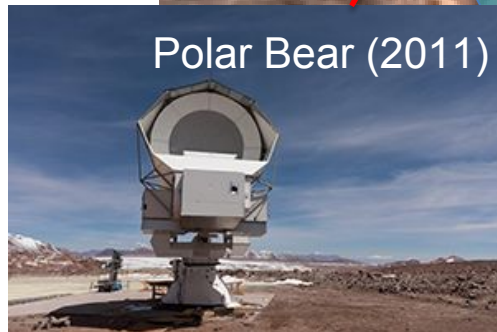
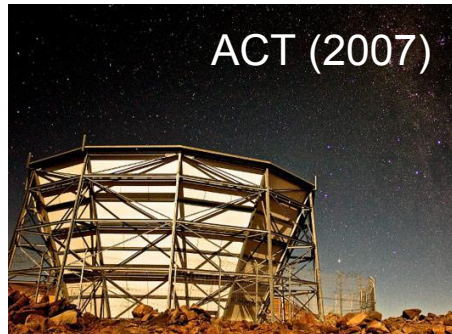
2 Km

PWV = 1.1 mm

Seeing = 0.69

Clear sky ~ 70%





For potential postdocs: Funding!

- Funding
 - International funds managed through CONICYT
 - ~July deadline
 - FONDECYT Postdocs
 - ~August deadline
- Often (**but not always**) announced on AAS job register but valid for any Chilean university, no matter whether they put out an AAS ad or not.

For potential graduate students

- Most universities have some graduate program
- Typical timeline (but again, not always; at least one program starts in September):
 - Application: September – November
 - Start: March
- Often there is local funding available

For everybody: Conferences in Chile

- Annual meeting of SOCHIAS
 - ~200 participants, 4 days (record attendance was achieved in Antofagasta in 2016, with 240 participants).
- International conferences
 - A handful a year
- IAU's LARIM 2019 (Antofagasta!)

Upcoming conferences in 2017

- Sharing One Sky II: SDSS, APOGEE, and Astronomy Outreach
 - July 22-23, Santiago
- ADASS 2017
 - Oct 22-26, Santiago
 - Oral deadline: July 1st
- Astrobiology 2017
 - Nov 26-Dec 1, Coyhaique
 - Oral deadline: July 28th

[HOME](#)[ABOUT](#)[KEY THEMES](#)[KEY DATES](#)[GENERAL INFO](#)[SPONSORS](#)[CONTACT](#)[IVOA](#)[PRESS](#)

New deadline for Oral Presentations and Focus Demos: July 7th

**Sheraton Santiago
Convention Center**

SCL>22-26 OCT / 2017



A D A S S
X X V I I

**Astronomical Data Analysis
Software & Systems**

adass.cl

ASTROBIOLOGY

2017 - COYHAIQUE - CHILE

NOVEMBER 26

DECEMBER 1

CONFERENCE TOPICS:

- Star and Planet Formation
 - Search for Life in the Universe
 - Life in Extreme Conditions
 - Planets in the Solar System; Comets and Meteorites
 - Prebiotic molecules in the ISM and Protoplanetary Disks
-
- Early Earth environments and the emergence of Life
 - Extrasolar Planets; Habitable Zones and Habitable Planets
 - Education on Astrobiology
 - Societal and Ethical issues linked to Astrobiology



 ASTROBIO2017  ASTROBIO2017

WWW.ASTROBIOLOGY2017.ORG



**Merci beaucoup
pour l'invitation!!**



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