

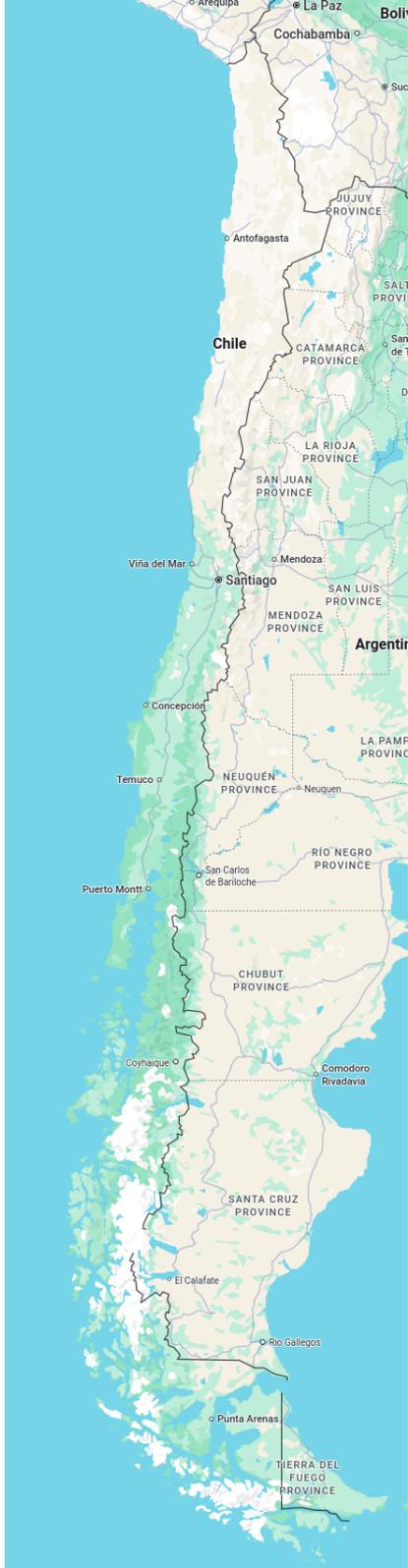
Astronomy in Chile (Then and Now)



Claus Tappert (IFA, UV)

Outline

- The beginnings of (modern) astronomy in Chile
- Astronomical Institutes and Observatories
- Formal astronomical infrastructure





President Gabriel Boric on June 12, 2024:
„Chile is the world capital of astronomy“

By 2030, nearly 70% of the astronomical data
gathering capacity will be concentrated in Chile

Astronomy in Chile:

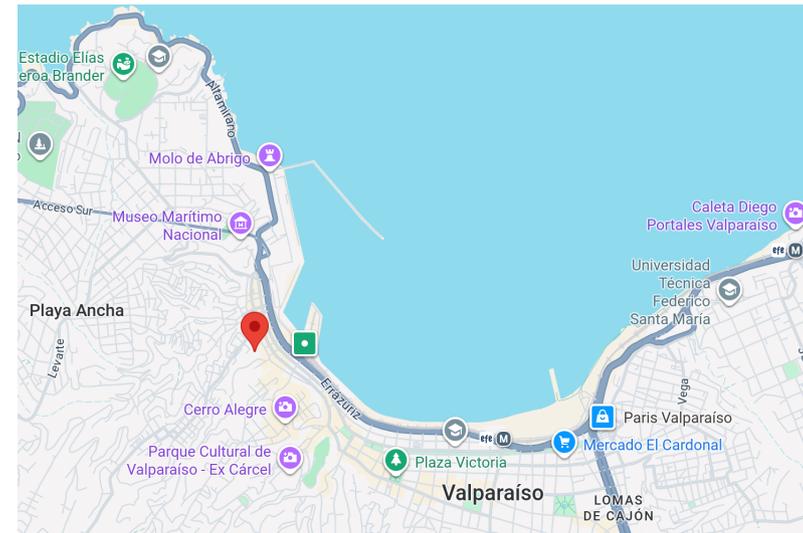
Then



1843

the Scotsman John Norbert Mouat & Walters (Juan Mouat) establishes the first „modern“ observatory on Cerro Cordillera in Valparaíso

Mainly dedicated to exact time measurements, but also (visual) observations of Comet C/1843 D1



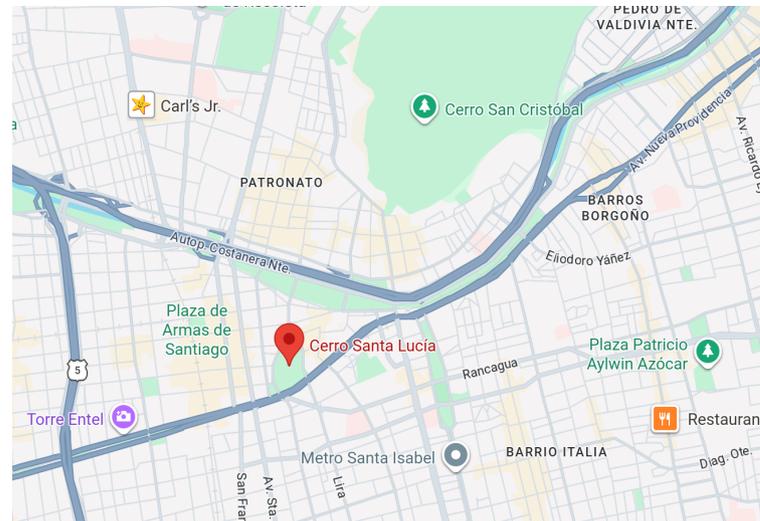
1849

Arrival of the first telescope in Chile, a 16.5 cm refractor

Scientific expedition led by Lt. James Melville Gilliss (USA) to measure the solar parallax

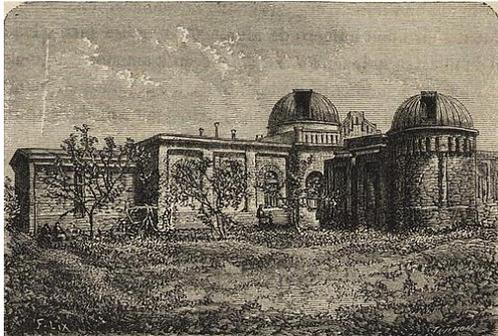
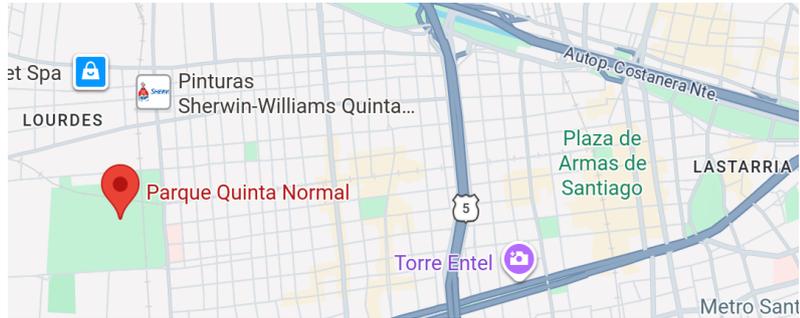
Installation on Cerro Santa Lucía in Santiago; acquired by the Chilean state in 1852

→ **Observatorio Astronómico Nacional**



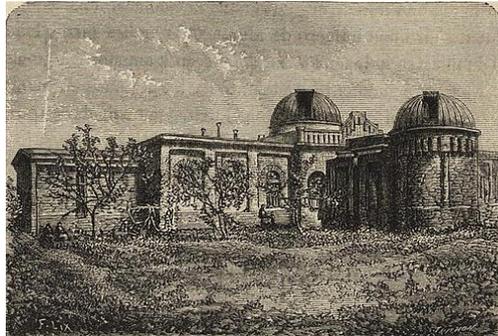
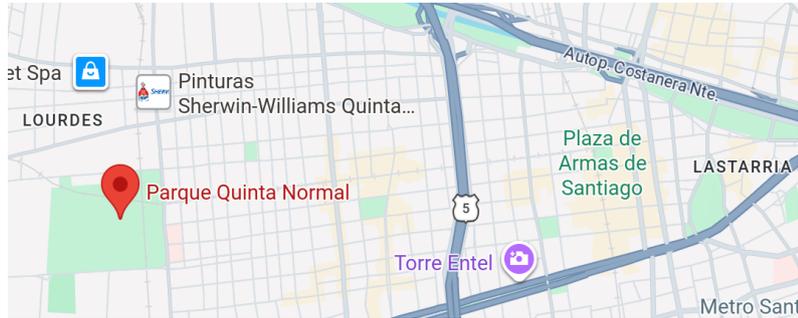
1856

Move to Parque Quinta Normal



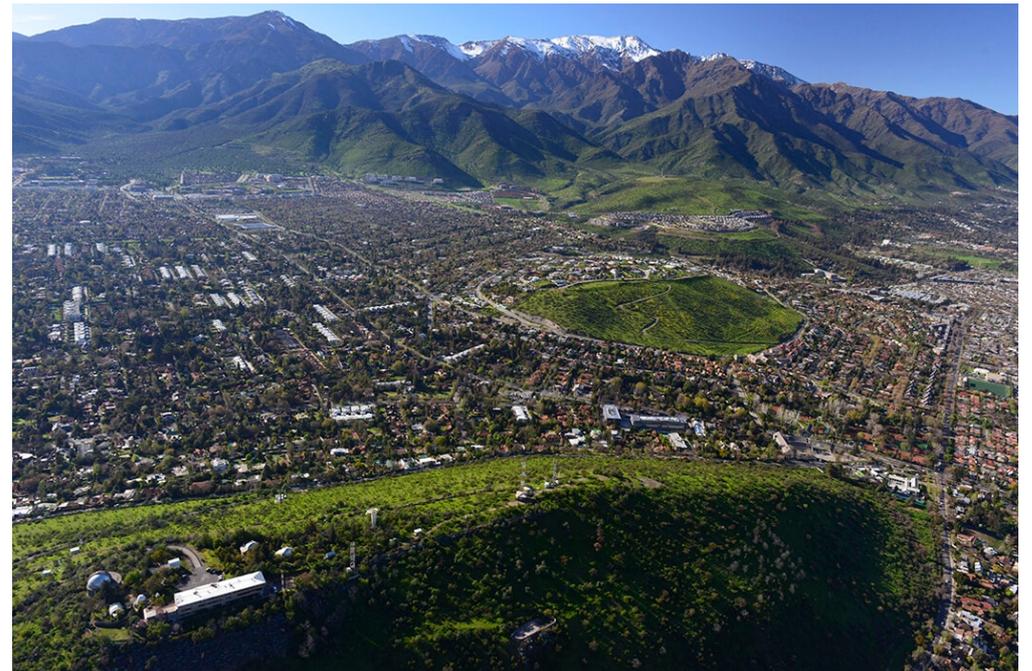
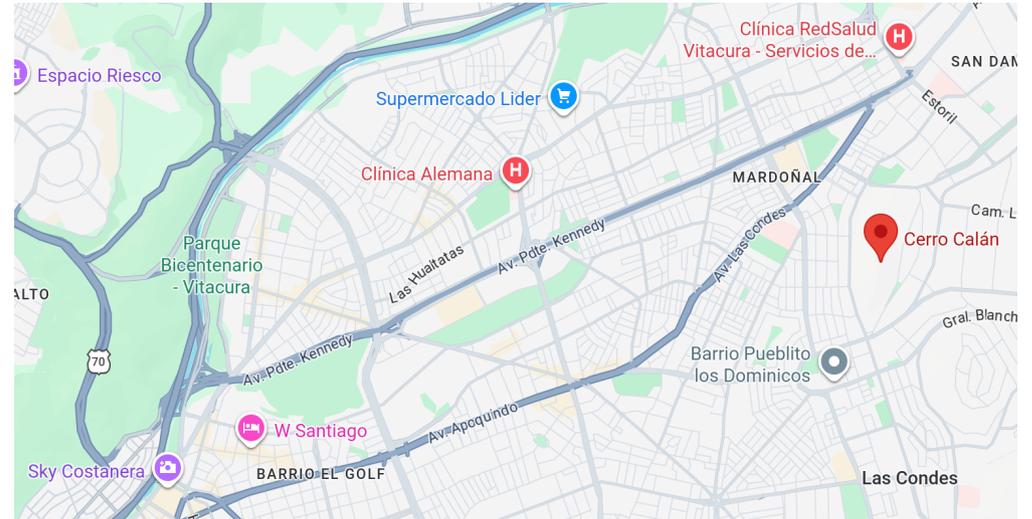
1856

Move to Parque Quinta Normal



1956-1962

Move to Cerro Calán (DAS, U de Chile)



1903

Expedition from Lick Observatory and Observatorio Manuel Foster



92cm Cassegrain Reflector
Photographic plates (imaging + spectroscopy)
Scientific Results (at least) up to the 1980s

1959

Radio Observatorio Maipú (collaboration with Carnegie Institute)
First Radio Telescope in South America
Closed 2000



1962 and onwards

Arrival of the big observatories

1962
Cerro Tololo (AURA)



1964
La Silla (ESO)



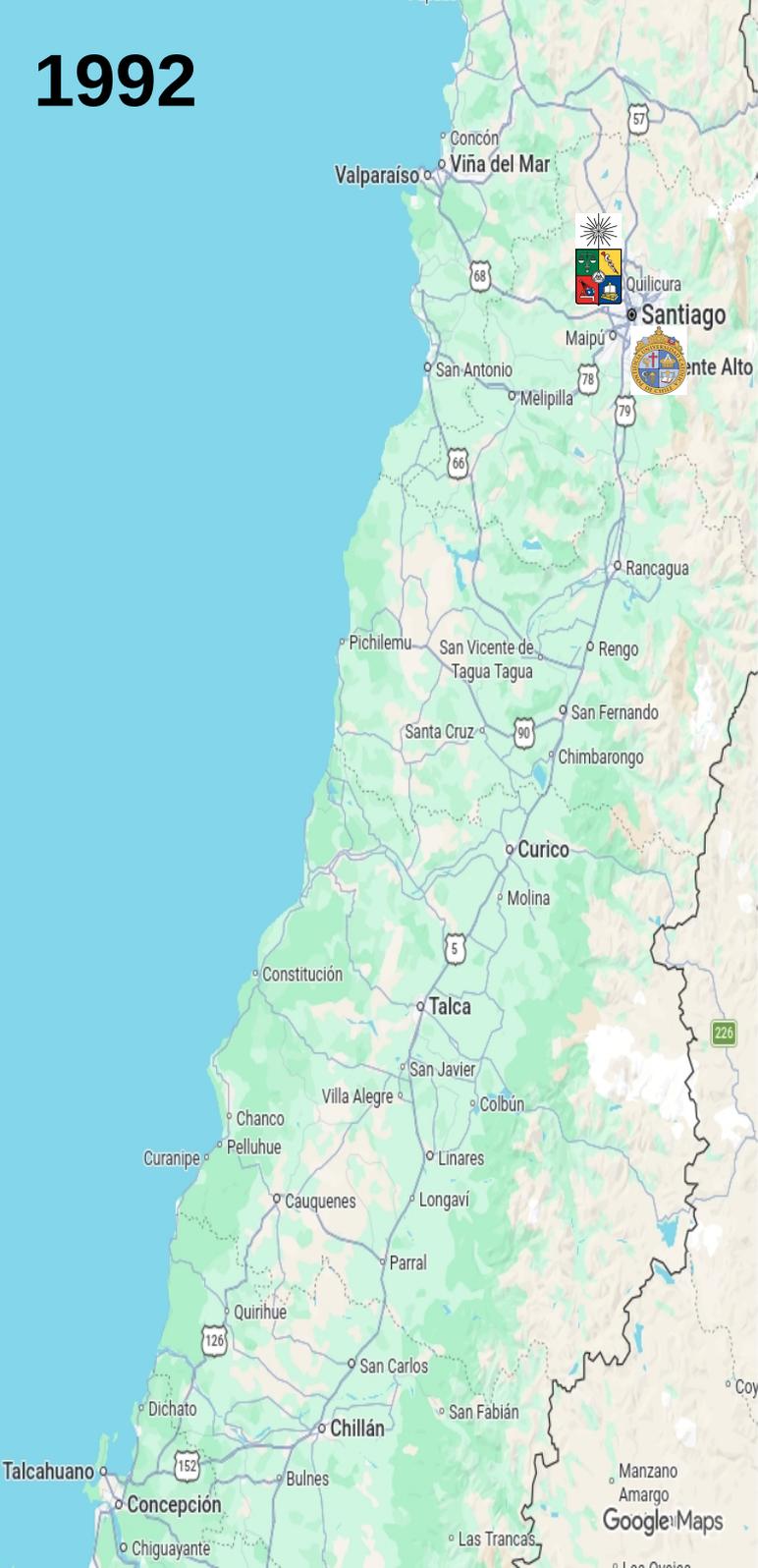
1969
Las Campanas (Carnegie)



Astronomy in Chile:

From Then to Now

1992



Growth of Chilean Astronomy

- Peaceful transition from the dictatorship to democracy in 1988
- Legal implementation of the 10% rule in the mid-1990s
- Big observatories establish several funding options
- Support for science by the Chilean state (ANID, formerly CONICYT since the 1960s; Ministerio de Ciencia since 2018); the Chilean state remunerates Universities for scientific publications
- Formation of Sociedad Chilena de Astronomía (SOCHIAS) in 2000
- Further investment from foreign institutions in astronomical facilities in Chile (VLT, ALMA, Magellan, Gemini, Rubin, ELT, GMT, etc.)
- Economic and political stability

Astronomy in Chile:

From Now to Soon

Cerro Tololo Inter-American Observatory



- Established 1962
- Managed by Association of Universities for Research in Astronomy (AURA)
- Hosts around 20 telescopes / projects on sites Cerro Tololo and Cerro Pachón
- Largest telescopes:
 - 4.0 m Blanco (Tololo)
 - 4.1 m SOAR (Pachón)
 - 8.0 m Gemini (Pachón)
- Old small telescopes (0.9 m, 1.0 m, 1.3 m, 1.5 m) are managed by [SMARTS](#)

Vera C. Rubin Observatory (formerly LSST)



- Situated on Cerro Pachón
- First light 2025, regular operations to begin in early 2026
- Managed by a number of US institutions
- 8 m telescope with a wide field camera (9.6 square degrees)
- Survey telescope down to $r \sim 24.5$ mag for a single image
- Two 15 s exposures per field, six bandpasses (although camera wheel can only hold 5 filters at a time)

La Silla Observatory



- Situated on Cerro La Silla
- Established 1964
- Managed by European Southern Observatory (ESO)
- About 15 (active) telescopes / projects, most of which are **not** operated by ESO
- Largest telescopes: 3.6 m ESO telescope, NTT
- Newest: [BlackGEM](#) array (2023), follow-up of GW events

Las Campanas Observatory



- Situated on Cerro Las Campanas
- Established 1969
- Managed by Carnegie Institute
- About 10 (active) telescopes / projects
- Largest telescope: the two 6.5 m Magellan telescopes
- Soon(ish): 24.5 m Giant Magellan Telescope (operations to start in 2029)

Paranal (and Armazones) Observatory



- Established 1999
- Four 8.2 m telescopes (VLT) + four 1.8 m telescopes (AT) => VLTI
- Two survey telescopes: VISTA (4 m) and VST (2.6 m)
- **NGTS** and **SPECULOOS** telescope arrays

Paranal (and Armazones) Observatory



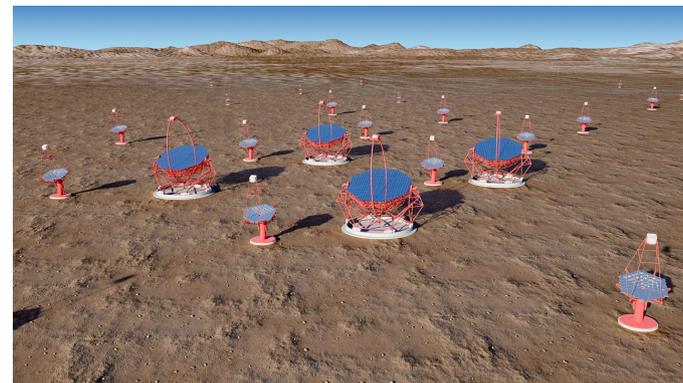
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- Soon(ish): 39 m ELT (expected for 2029); Cherenkov Telescope Array (2027)



Atacama Large Millimeter Array (ALMA)



- Established 2011
- Array of 66 radio telescopes at the Chajnantor plateau
- Managed by several partners, incl ESO
- Close-by:
 - 12 m [Atacama Pathfinder Experiment \(APEX\)](#)
 - 10 m [Atacama Submillimeter Telescope Experiment \(ASTE\)](#)
 - 4 m [NANTEN2 Observatory](#)
 - [University of Tokyo Atacama Observatory \(TAO\)](#), a 6.5 m optical and infrared telescope

Astronomy in Chile:

Now

Sociedad Chilena de Astronomía (SOCHIAS)

- Since 2000
- Association of Chilean Astronomers / Astronomers in Chile
- Currently 226 members (Jan 30, 2026)
- Directiva elected for 2 years; current president Chiara Mazzucchelli (UDP)
- Current yearly membership fees:
140,000 CLP (normal), 20,000 CLP (students)

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- Manages the list of persons eligible for Chilean telescope time (lista blanca)
- Travel grants for students (Beca Adelina); Premio Rodolfo Barbá
- Several Activities like Día de la Astronomía, Olimpiada de Astronomía y Astronáutica; Commission against light pollution; Inclusion and gender issues; Breaking the Barriers; Ella es una astrónoma
- Annual (Scientific) Meetings; next one at UTFSM, Valparaíso (late 2026)



Agencia Nacional de Investigación y Desarrollo (ANID)

- Grants for Master and PhD students in Chile (Becas ANID; program must be accredited) and for Chilean students to study abroad (Becas Chile)
- Fundings for
 - Projects (Fondecyt Regular)
 - Postdocs (Fondecyt Postdoctorado)
 - Young professors (Fondecyt de Iniciación en Investigación)
- Also involved in other funding projects like
 - Fondo Gemini-ANID
 - Fondo ALMA-ANID
 - ESO Comité Mixto – Gobierno de Chile (?)
- etc

=> several options to fund a large and diverse range of projects

Chilean Telescope Time

- 10% of the observing time on each telescope (instrument?) in Chile is reserved for Chilean astronomy
- Works a bit differently for survey telescopes (projects)
- Full use of 10% subject to feasibility and quality

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- [ESO](#): Chilean proposals are evaluated by the regular, international TAC
- ALMA?
- [Gemini](#)-NTAC for Gemini-South (no guaranteed time on Gemini-North)
- All(?) other telescopes are managed by [CNTAC](#)

Chilean Projects & Collaborations

(very likely incomplete)

- Institutos and Núcleos Milenio: collaborations of groups from different universities
 - [Instituto Milenio de Astrofísica](#) (MAS): Milky Way and Local Group, Transients and Variables, Planets
 - [Núcleo Milenio de Formación Planetaria](#) (NPF)
 - [Núcleo Milenio en Tecnología e Investigación Transversal para explorar Agujeros Negros Supermasivos](#) (TITANS)
 - [Núcleo Milenio sobre exoplanetas jóvenes y sus lunas](#) (YEMS)
 - [Núcleo Milenio Evolución Reconstruida del medio interestelar](#) (ERIS)

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 - [Núcleo Milenio Evolución Reconstruida del medio interestelar \(ERIS\)](#)
- [Chinese Academy of Sciences South America Center for Astronomy \(CASSACA\)](#)
- [Institut national de recherche en sciences et technologies du numérique \(Inria\)](#)
- Collaborations by individual universities (e.g., PUC and Carnegie)
- Just in (Jan 2026): Chile officially joins CERN
- Chile (via ESO?) is associated member of A&A => no publication fees

Astronomy in Chilean Universities

(based on lista blanca Nov 2025)

Antofagasta

- [Universidad de Antofagasta](#) (UA)
 - Magíster en Astronomía
 - Doctorate in Astrophysics and Astroinformatics
- [Universidad Católica del Norte](#) (UCN)
 - Magíster en Ciencias con mención en Física
 - Doctorado en Ciencias con Mención en Física

Arica

- [Universidad de Tarapacá](#) (UTA)
 - investigation only for now

Concepción

- [Universidad Católica de la Santísima Concepción](#) (UCSC)
 - Doctorado en Ciencias del Universo
- [Universidad de Concepción](#) (UdeC)
 - Magíster en Astronomía
 - Doctorado en Astronomía

Astronomy in Chilean Universities

(based on lista blanca Nov 2025)

Copiapó

- [Universidad de Atacama](#) (UDA)
 - Doctorado en Astronomía y Ciencias Planetarias

La Serena

- [Universidad Central](#) (UCentral)
 - Currently no postgraduate program
- [Universidad de La Serena](#) (ULS)
 - Magíster en Astronomía
 - Doctorado en Astronomía

Puerto Montt

- [Universidad Austral de Chile](#) (UACH)
 - only investigation for now

Santiago

- [Pontificia Universidad Católica](#) (PUC)
 - Magíster en Astrofísica
 - Doctorado en Astrofísica

Astronomy in Chilean Universities

(based on lista blanca Nov 2025)

Santiago (cont.)

- [Universidad Autónoma](#) (UAutónoma)
 - Currently no postgraduate program
- [Universidad Bernardo O'Higgins](#) (UBO)
 - Currently no postgraduate program
- [Universidad de Chile](#) (UC)
 - Magíster en Ciencias, Mención Astronomía
 - Doctorado en Ciencias, Mención Astronomía
- [Universidad del Desarrollo](#) (UDD)
 - only investigation for now
- [Universidad Municipal de Ciencia y Educación](#) (UMCE)
 - Currently no postgraduate program (physics for teachers)
- [Universidad Nacional Andrés Bello](#) (UNAB)
 - Doctorado en Astrofísica
- [Universidad Santiago de Chile](#) (USACH)
 - Currently no postgraduate program
- [Universidad Diego Portales](#) (UDP)
 - Doctorado en Astrofísica

Astronomy in Chilean Universities

(based on lista blanca Nov 2025)

Talca

- [Universidad de Talca](#) (UTalca)
 - only investigation for now

Temuco

- [Universidad Mayor](#) (UM)
 - only investigation for now

Valparaíso

- [Pontificia Universidad Católica de Valparaíso](#) (PUCV)
 - Magíster en Ciencias con Mención en Física
 - Doctorado en Ciencias Físicas
- [Universidad de Valparaíso](#) (UV)
 - Magíster en Astrofísica
 - Doctorado en Astrofísica
- [Universidad Técnica Federico Santa María](#) (UTFSM/USM)
 - Doctorado en Ciencias Físicas

Viña del Mar

- [Universidad Adolfo Ibáñez](#) (also in Santiago) (UAI)
 - only investigation for now