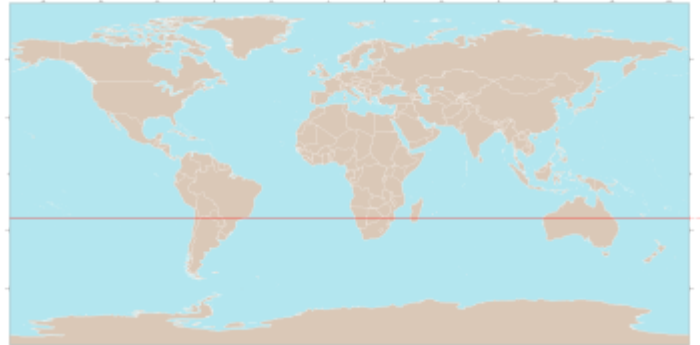


Tropic of Capricorn

The **Tropic of Capricorn** (or the **Southern Tropic**) is the circle of latitude that contains the subsolar point on the December (or southern) solstice. It is thus the southernmost latitude where the Sun can be directly overhead. Its northern equivalent is the Tropic of Cancer.

The Tropic of Capricorn is one of the five major circles of latitude that mark maps of Earth. As of 16 June 2019, its latitude is 23°26′12.3″ (or 23.43676°)^[1] south of the Equator, but it is very gradually moving northward, currently at the rate of 0.47 arcseconds, or 15 metres, per year.



World map showing the Tropic of Capricorn

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Monument marking the Tropic of Capricorn just north of Antofagasta, Chile



Sundial on the Tropic of Capricorn, Jujuy Province, Argentina

Name

When this line of latitude was named in the last centuries BC, the Sun was in the constellation Capricornus (Latin for goat horn) at the December solstice, the time each year that the Sun reaches its zenith at this latitude. Due to the precession of the equinoxes, this is no longer the case; today the Sun is in Sagittarius at the December solstice. The word "tropic" itself comes from the Greek "τροπή" (trope (τροπή)), meaning to turn or change direction, referring to the fact that the Sun appears to "turn back" at the solstices.

Geography and environment

The Tropic of Capricorn is the dividing line between the Southern Temperate Zone to the south and the tropics to the north. The Northern Hemisphere equivalent of the Tropic of Capricorn is the Tropic of Cancer.

The Tropic of Capricorn's position is not fixed, but constantly changes because of a slight wobble in the Earth's longitudinal alignment relative to its orbit around the Sun. Earth's axial tilt varies over a 41,000 year period from 22.1 to 24.5 degrees and currently resides at about 23.4 degrees. This wobble means that the Tropic of Capricorn is currently drifting northward at a rate of almost half an arcsecond (0.468") of latitude, or 15 metres, per year (it was at exactly 23° 27'S in 1917 and will be at 23° 26'S in 2045). See under circles of latitude for information.

There are approximately 13 hours, 35 minutes of daylight during the summer solstice. During the winter solstice, there are 10 hours, 41 minutes of daylight.

Africa

In southern Africa, where rainfall is reliable, farming is possible, though yields are low even with fertilisers.

Australia

In Australia, areas on the Tropic have some of the most variable rainfall in the world^[2] and thus even the wetter areas cannot be generally farmed, since irrigation sources invariably dry up in drought years.

South America

In South America, whilst in the continental cratons soils are almost as old as in Australia and Southern Africa, the presence of the geologically young and evolving Andes means that this region is on the western side of the subtropical anticyclones and thus receives warm and humid air from the Atlantic Ocean. As a result, areas in Brazil adjacent to the Tropic are extremely important agricultural regions, producing large quantities of crops such as sugarcane, and the natural rainforest vegetation has been almost entirely cleared, except for a few remaining patches of Atlantic Forest. Further south in Argentina, the temperate grasslands of the Pampas region is one of the most productive agricultural regions in the world, producing of wheat, soybeans, maize, and beef, making the country one of the largest worldwide agricultural exporters, similar to the role played by the Prairies region in Canada.

West of the Andes, however, the Humboldt Current makes conditions extremely arid, creating the Atacama Desert, one of the driest in the world, so that no glaciers exist between Volcán Sajama at 18° 30'S and Cerro Tres Cruces at 27° S.^[3] Vegetation here is almost non-existent, though on the eastern slopes of the Andes rainfall is adequate for rainfed agriculture.



Sign marking the tropic in Maringá, Brazil



Tropic of Capricorn in 1794 Dunn Map of the World



Tropic of Capricorn on the Diamantina Developmental Road, Amaroo, Queensland, Australia

Around the world

Starting at the Prime Meridian and heading eastwards, the Tropic of Capricorn passes through 10 countries:

Co-ordinates	Country, territory or sea	Notes
<u>23°26'S</u> <u>0°0'E</u>	Atlantic Ocean	
<u>23°26'S</u> <u>14°27'E</u>	 Namibia	<u>Erongo</u> , <u>Khomas</u> , <u>Hardap</u> , <u>Khomas (again)</u> , and <u>Omaheke</u> regions
<u>23°26'S</u> <u>20°0'E</u>	 Botswana	<u>Kgalagadi</u> , <u>Kweneng</u> and <u>Central</u> districts
<u>23°26'S</u> <u>27°18'E</u>	 South Africa	<u>Limpopo</u> Province
<u>23°26'S</u> <u>31°33'E</u>	 Mozambique	<u>Gaza</u> and <u>Inhambane</u> provinces
<u>23°26'S</u> <u>35°26'E</u>	Indian Ocean	<u>Mozambique Channel</u>
<u>23°26'S</u> <u>43°45'E</u>	 Madagascar	<u>Toliara</u> and <u>Fianarantsoa</u> provinces
<u>23°26'S</u> <u>47°39'E</u>	Indian Ocean	
<u>23°26'S</u> <u>113°47'E</u>	 Australia	<u>Western Australia</u> , <u>Northern Territory</u> and <u>Queensland</u>
<u>23°26'S</u> <u>151°3'E</u>	<u>Coral Sea</u>	Passing just south of Cato Reef in  Australia's <u>Coral Sea Islands Territory</u>
<u>23°26'S</u> <u>166°46'E</u>	Pacific Ocean	Passing just north of the <u>Minerva Reefs</u> ( Tonga), and just south of <u>Tubuai</u> ( French Polynesia)
<u>23°26'S</u> <u>70°36'W</u>	 Chile	<u>Antofagasta</u> Region
<u>23°26'S</u> <u>67°07'W</u>	 Argentina	<u>Jujuy</u> , <u>Salta</u> , <u>Jujuy (again)</u> , <u>Salta (again)</u> and <u>Formosa</u> provinces
<u>23°26'S</u> <u>61°23'W</u>	 Paraguay	<u>Boquerón</u> , <u>Presidente Hayes</u> , <u>Concepción</u> , <u>San Pedro</u> and <u>Amambay</u> departments
<u>23°26'S</u> <u>55°38'W</u>	 Brazil	<u>Mato Grosso do Sul</u> , <u>Paraná</u> , and <u>São Paulo</u> states
<u>23°26'S</u> <u>45°2'W</u>	Atlantic Ocean	



Longreach, Queensland, Australia

Places located along the Tropic of Capricorn

The following cities and landmarks are either located near the Tropic of Capricorn, or the tropic passes through them.

Argentina

- Andes Mountains
- The Chaco
- San Salvador de Jujuy

Australia

- Paraburdoo, Western Australia
- Newman, Western Australia
- Lake Disappointment, Western Australia
- Gibson Desert, Western Australia
- Ikuntji (Haast's Bluff), Northern Territory
- Alice Springs, Northern Territory
- Amaroo, Queensland
- Longreach, Queensland
- Great Dividing Range, Queensland
- Emerald, Queensland
- Gracemere, Queensland
- Rockhampton, Queensland
- Cape Capricorn, Queensland

Botswana

- Kalahari Desert
- Khutse Game Reserve
- Kule
- Mahalapye

Brazil

- Itaquaquecetuba
- Mogi das Cruzes
- Maringá
- Sorocaba
- Santana de Parnaíba
- São Paulo-Guarulhos International Airport
- São Paulo (Tremembé)
- Guarulhos
- Taguaí
- Ubatuba

Chile

- Atacama Desert
- Andes Mountains
- Antofagasta

Madagascar

- Toliara

Mozambique

- Inhambane city
- Morrumbene
- Massinga

Namibia

- Walvis Bay
- Swakopmund
- Namib Desert

Paraguay

- Concepción

South Africa

- Kruger National Park
- Polokwane
- Capricorn District Municipality



Atsimo-Andrefana
Region, Madagascar



The Tropic of Capricorn
marked in Jujuy
Province in northern
Argentina



Monument marking the
Tropic of Capricorn as it
passes through
Botswana



A sign marking the
Tropic of Capricorn as it
passes through Namibia



Roadway plaque
marking the Tropic of
Capricorn in the city of
Santana do Parnaíba,
Brazil, at the correct
latitude for year 1917.



Marker for the tropic in
Maringá, Paraná, Brazil,
July 2012



Roadside monument
marking Tropic of
Capricorn in
Rockhampton,
Queensland, Australia,
28 January 2005



Monument marking
Tropic of Capricorn in
Rockhampton,
Queensland, Australia,
1970



Road sign marking
Tropic of Capricorn in
Western Australia,
Australia, 26 August
2008



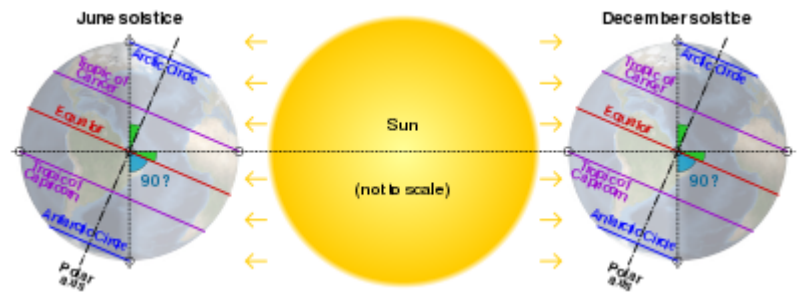
Monument marking the
Tropic of Capricorn just
north of Alice Springs,
Northern Territory,
Australia

List of countries entirely south of the

Tropic of Capricorn

As the major portion of earth's land is located in the Northern Hemisphere there are only four countries entirely south of the Tropic of Capricorn (there are 74 countries entirely north of the Tropic of Cancer):

- Lesotho
- New Zealand^[a]
- Eswatini (formerly Swaziland)
- Uruguay



Relationship between Earth's axial tilt (ϵ) to the tropical and polar circles

Length

Length of the Tropic on 11 June 2015, at 23°26′14″S is **36,788 kilometres (22,859 mi)**.^[4]

Note

- a. The Cook islands, Tokelau and Niue, which are part of the Realm of New Zealand lie above the Tropic of Capricorn.

References

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2. Geographical Patterning of Interannual Rainfall Variability in the Tropics and Near Tropics ([http://journals.ametsoc.org/doi/pdf/10.1175/1520-0442\(1999\)012%3C3457%3AGPOIRV%3E2.0.CO%3B2](http://journals.ametsoc.org/doi/pdf/10.1175/1520-0442(1999)012%3C3457%3AGPOIRV%3E2.0.CO%3B2))
3. Exposure dating of Late Glacial and pre-LGM moraines in the Cordon de Doña Rosa, Northern/Central Chile (~31°S) (<http://hal-sde.archives-ouvertes.fr/docs/00/29/80/60/PDF/cp-3-1-2007.pdf>)
4. RhumbSolve online rhumb line calculator (<http://geographiclib.sourceforge.net/cgi-bin/RhumbSolve>).

External links

- Temporal Epoch Calculations (http://www.jqjacobs.net/astro/epoch_2000.html)
- Useful constants" (<http://hpiers.obspm.fr/eop-pc/models/constants.html>) See: Obliquity of the ecliptic
- Montana State University: Milankovitch Cycles & Glaciation (<https://web.archive.org/web/20110806021244/http://www.homepage.montana.edu/~geol445/hyperglac/time1/milankov.htm>)

See also

- Circle of latitude
 - Arctic Circle
 - Tropic of Cancer
 - Equator
 - 23rd parallel south
 - 24th parallel south
 - Antarctic Circle
- Axial tilt
- Milankovitch cycles

- Capricornus

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