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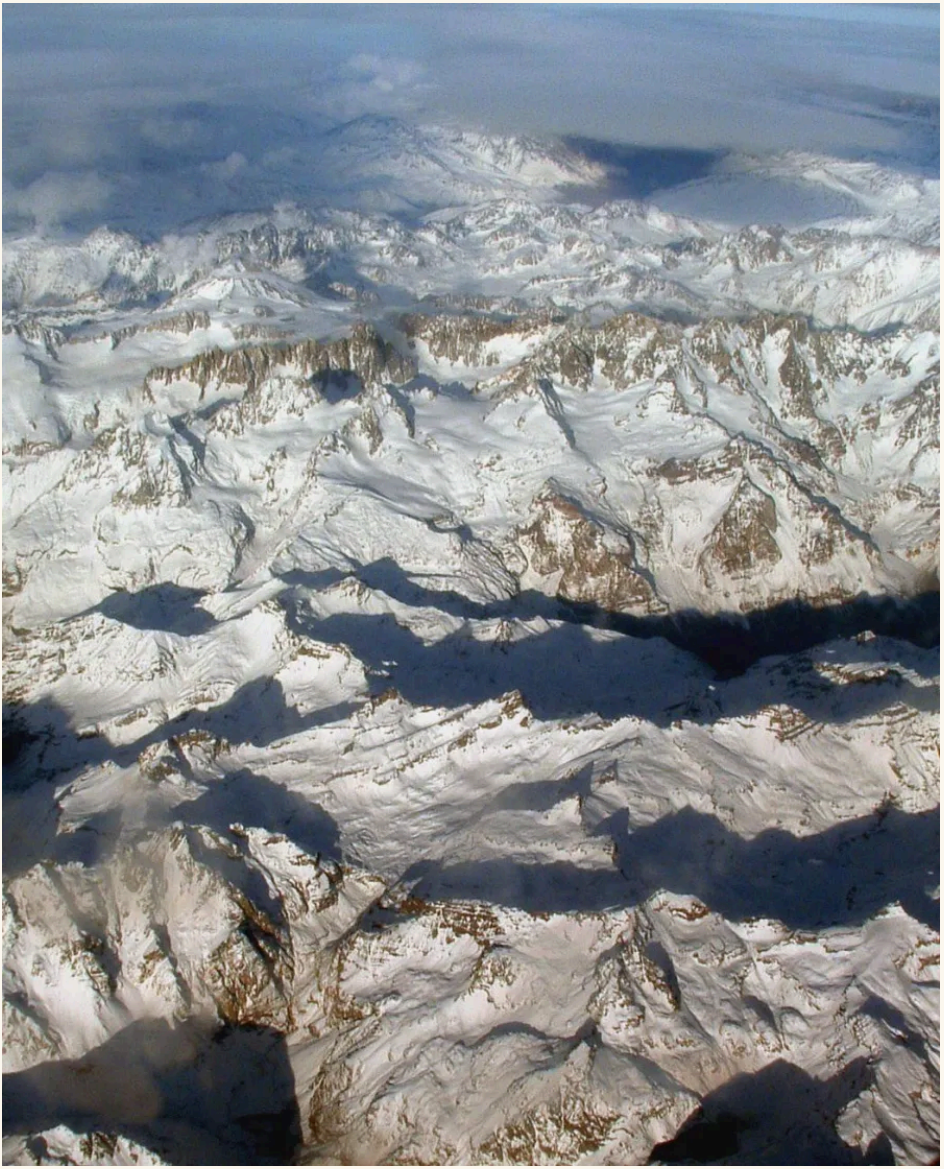
The Andes Mountains

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The Andes Mountains

Picture a wall of rock almost as long as the whole of India is tall. It runs along one edge of a continent, with the sea on one side and jungle on the other. That wall is the Andes. They are the longest continental mountain range on Earth.

This lesson walks through where they run, how they formed and why they matter. Each card gives one idea, with its source.



An aerial view of the Andes. Photo by Robert Morrow, CC BY-SA 3.0, via Wikimedia Commons.

At a glance

Point	Detail
Length	About 7,000 km (some sources give up to 7,500 km).
Width	About 200 to 700 km.
Countries	Seven: Venezuela, Colombia, Ecuador, Peru, Bolivia, Chile and Argentina.
Highest peak	Aconcagua, about 6,961 m.
Origin	Ocean plates sliding under South America for over 200 million years. Today that plate is the Nazca Plate.

Subduction is when one tectonic plate slides under another.

Think of two rugs on a floor. Push one toward the other and one edge dives under, while the top rug wrinkles up. The wrinkles are mountains. The Andes formed this way.

Altiplano is a high, flat plateau between two mountain ridges. It is like a wide table set high in the sky. Farmers and cities sit on it, even though the air is thin. The Altiplano lies mostly in Bolivia and Peru.

Rain shadow is a dry zone behind a mountain. Wet wind rises on one side and drops its rain there. The air that comes down the far side is dry. So the far side becomes a desert.

Lithium Triangle is the area where Argentina, Bolivia and Chile meet. Its salt flats hold a large share of the world's known lithium. This light metal goes into phone and electric-car batteries.

How far the Andes stretch, and through which countries

The Andes run for about 7,000 km down the western edge of South America. Some sources give up to 7,500 km, because people measure the line in different ways. This makes them the longest continental mountain range in the world.

“Continental” means the range sits on a continent, not under the sea. They are long but narrow. The width is about 200 to 700 km. Seven countries share the range.

- Venezuela
- Colombia
- Ecuador
- Peru
- Bolivia
- Chile
- Argentina

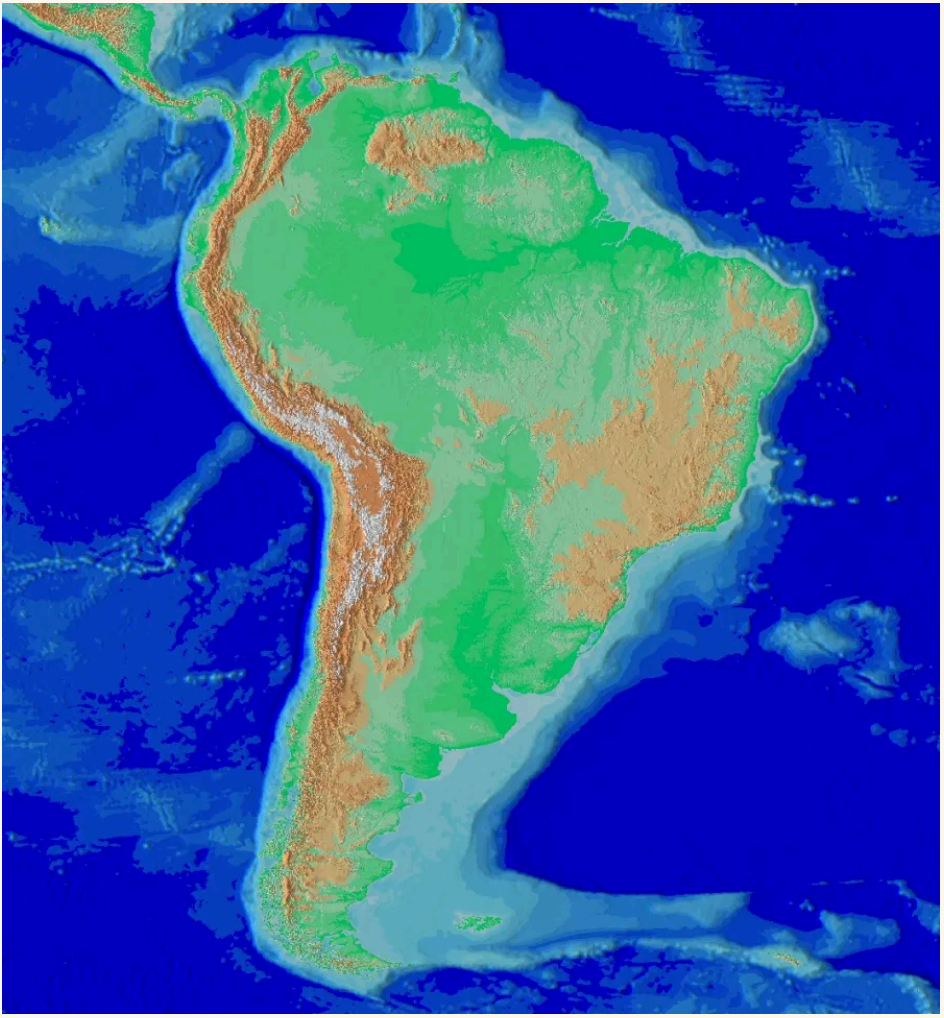
Brazil and Paraguay are not Andean countries. This is the classic exam trap, and it appears in the PYQ below.

Sources: topostreets.com; mountainfieldguide.com

> **Quick check 1.** The Andes pass through Brazil and Paraguay. *(True or False?)* See answer ↓



The Andes (brown line) run down the west coast through seven numbered countries. Brazil and Paraguay sit to the east. This is a simple sketch for learning, not to scale.



A topographic map of South America. The Andes run the full length of the western coast. Map by Carlos A Arango, public domain, via Wikimedia Commons.

Aconcagua, the roof of the Americas

Aconcagua is the highest peak in the Andes, at about 6,961 m. It stands in Argentina, near the border with Chile. It is the highest mountain outside Asia.

Ojos del Salado is the highest volcano in the range. Do not mix the two up. The first recorded climb was in 1897. A Swiss guide, Matthias Zurbriggen, reached the top alone on 14 January.

The British leader of the team, Edward Fitzgerald, did not reach the summit.

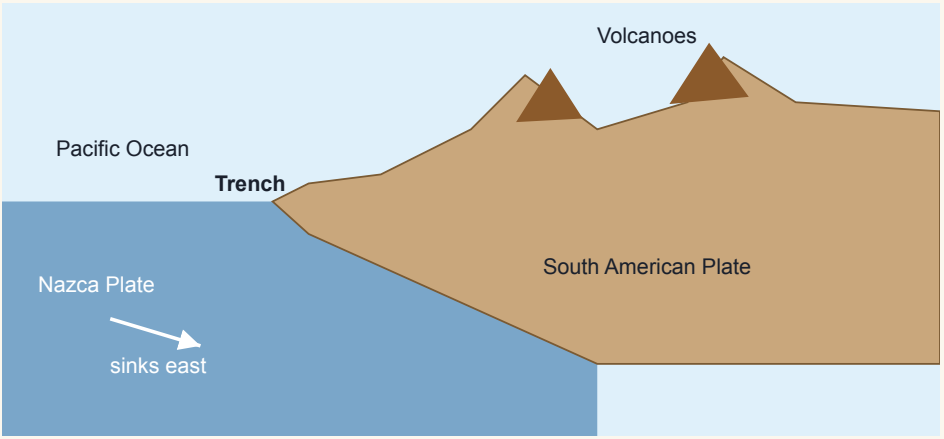
Sources: mountainfieldguide.com; climbing.com

How the Andes were built

The Andes were built by subduction. Ocean plates have slid under South America for a very long time. Today the Nazca Plate slides under the South American Plate. The Nazca Plate is young. It split from the Farallon Plate about 23 million years ago. Think of the plates as rugs pushed together. One rug dives under, and the other wrinkles up.

Over about 200 million years, that slow push from a series of ocean plates lifted the land into a tall chain. Earthquakes and volcanic eruptions show that the Andes are still rising. The same process also helped form many mineral ores. Oil and natural gas formed another way, from buried organic matter in sedimentary basins.

Sources: mountainfieldguide.com; ebsco.com



The ocean plate (Nazca) dives under the continent at a deep trench. Heat and melting rock feed volcanoes, and the squeeze lifts the land into mountains. Not to scale.

> **Quick check 2.** The Andes formed when ocean plates, today the Nazca Plate, slid beneath the South American Plate. *(True or False?)* See answer ↓

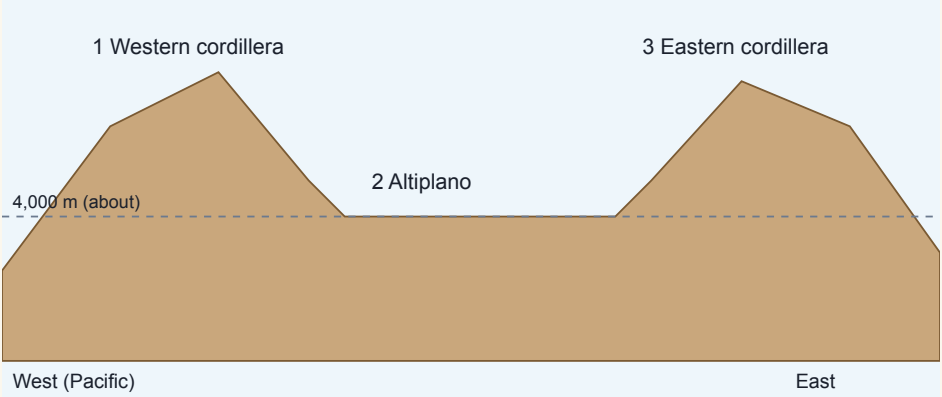
Three strips side by side

In the central Andes, the range splits into three strips from west to east. The first is the western cordillera. Cordillera means mountain system. The second is the altiplano, the high plateau in the middle.

The third is the eastern cordillera. The altiplano sits about 3,800 to 4,500 m above sea level. It is more than 150 km wide. The plateau is lower than the ridges on either side.

A chain of huge volcanoes stands on top of the western ridge and the plateau. The eastern cordillera is older. Its rocks formed before subduction began.

Sources: ebsco.com; mountainfieldguide.com



A west-to-east slice of the central Andes. A high flat plateau, the altiplano, sits between two mountain ridges. The dashed line is only a guide; the plateau is about 3,800 to 4,500 m high.

> **Quick check 3.** The altiplano is a high plateau lying between two mountain chains. *(True or False?)* See answer ↓

Why the Atacama is so dry

The Atacama Desert is among the driest places on Earth because three things work together. The first is the Andes rain shadow. The mountains block moist air from the Atlantic.

The second is the cold Humboldt Current. It flows north along the coast. The current cools the air near the sea. Cold air near the sea cannot rise to build deep storm clouds. Low fog can still form, but it brings almost no rain.

The third is the South Pacific subtropical high, a belt of high pressure that also clears the skies. The result is about 330 clear nights a year above the plateau. That is why many large telescopes stand there.

Sources: ebsco.com; darkskiesatlas.com

Think it through: how can a desert sit right beside the Pacific Ocean?

Sea air does not bring rain here.
The cold current chills the air near the sea. Low fog and low cloud can form. A warm layer of air above traps them, so deep storm clouds cannot grow and rain does not fall.

The Andes shut out wet air from the east.
So rain cannot reach the Atacama from either side.

Quick check 4. The Atacama is dry because warm ocean winds blow rain away from it. *(True or False?)* See answer ↓

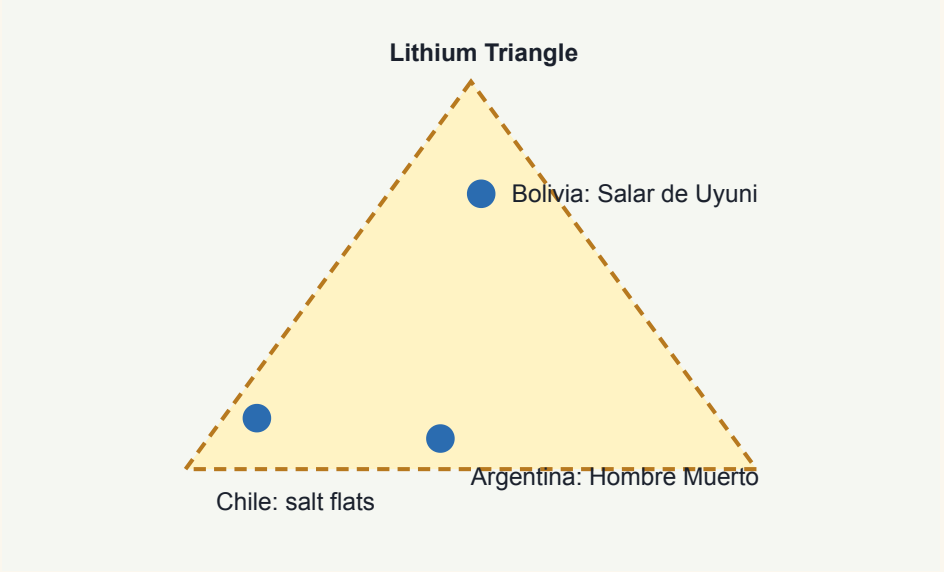
The Lithium Triangle and Andean minerals

The **Lithium Triangle** is the area where **Argentina, Bolivia and Chile** meet. It holds about **58%** of the world's identified lithium resources, by January 2021 data. Most of this lithium lies in salt flats, called **salares**.

Lithium is a light metal. It powers rechargeable batteries in phones, laptops and electric cars, and its use keeps rising. The Andes are also rich in other minerals. Many metal ores formed from hot fluids linked to subduction. Oil and natural gas are different. They formed from buried organic matter that was heated in sedimentary basins.

- **Where**: the corner where Argentina, Bolivia and Chile meet
- **Share**: about 58% of identified world lithium resources
- **Source**: salt flats, called salares
- **Use**: batteries for phones, laptops and electric cars

Sources: as-coa.org; ebsco.com



A rough locator for the Lithium Triangle. Blue dots mark salt flats (salares) where lithium is taken from brine. Positions are sketched, not exact.

Quick check 5. Peru is one of the three countries of the Lithium Triangle. *(True or False?)* See answer ↓

Lake Titicaca and the Andean condor

Lake Titicaca is the highest navigable lake in the world. It lies at 3,812 m on the border of Peru and Bolivia. Boats can sail on it. That is what “navigable” means.

It sits on the Altiplano, so it is part of the high plateau. The Andean condor is a giant bird of the range. Its wingspan reaches about 3 m (10.5 ft). It is a vulture, so it eats animals that are already dead.

It is the national bird of Bolivia, Chile, Colombia and Ecuador.

Sources: geographyworlds.com; riseofandes.com; peregrinefund.org

How has this been asked in exams?

UPSC CSP 2025

The question listed six countries: Bolivia, Brazil, Colombia, Ecuador, Paraguay and Venezuela. It asked how many of them the Andes pass through. The answer is four: Bolivia, Colombia, Ecuador and Venezuela. Brazil and Paraguay lie east of the range.

See UPSC CSP 2025.

Exam trap

Do not count Brazil or Paraguay. Learn the seven countries as a line from north to south. Also keep Aconcagua (highest peak) apart from Ojos del Salado (highest volcano).

Quick Q&A

- **How long are the Andes?** About 7,000 km, through seven countries.
- **What is the highest peak?** Aconcagua, at about 6,961 m.
- **Why is the Atacama dry?** The Andes rain shadow, the cold Humboldt Current and high pressure.
- **Which countries form the Lithium Triangle?** Argentina, Bolivia and Chile.

Remember This

- **Length**: about 7,000 km, longest continental range.
- **Countries**: seven, not Brazil or Paraguay.
- **Peak**: Aconcagua, about 6,961 m.
- **Origin**: ocean plates, today the Nazca Plate, subducting under South America.
- **Atacama**: dry from rain shadow, cold current and high pressure.

Practice MCQ

Practice MCQs

1. The Andes pass through how many of these countries: Bolivia, Brazil, Colombia, Ecuador, Paraguay and Venezuela?

A. Six

B. Four

C. Three

D. Five

See answer ↓

2. Which peak is the highest in the Andes?

A. Ojos del Salado

B. Aconcagua

C. Chimborazo

D. Cotopaxi

See answer ↓

3. What process built the Andes?

A. Two continents drifting apart

B. Wind erosion of old plains

C. A plate sliding under another plate

D. A giant meteor strike

See answer ↓

4. Which feature best explains the extreme dryness of the Atacama Desert?

A. Heavy monsoon winds

B. The Andes rain shadow

C. Warm ocean currents

D. Melting glaciers

See answer ↓

5. Which countries form the Lithium Triangle?

A. Bolivia, Peru and Brazil

B. Chile, Colombia and Argentina

C. Argentina, Bolivia and Chile

D. Peru, Chile and Ecuador

See answer ↓

6. Lake Titicaca, the highest navigable lake in the world, lies on the border of which two countries?

A. Bolivia and Chile

B. Peru and Bolivia

C. Chile and Argentina

D. Ecuador and Colombia

See answer ↓

Answer Key

1. **B.**
   The Andes cross Bolivia, Colombia, Ecuador and Venezuela. They do not cross Brazil or Paraguay.
   Sources: Mountain Field Guide: Andes · UPSC CSP 2025 question.
   ↑ Q1
2. **B.**
   Aconcagua rises to about 6,961 m on the Argentine side of the range.
   Sources: Mountain Field Guide: Andes · Climbing: Aconcagua.
   ↑ Q2
3. **C.**
   The Nazca Plate dives beneath the South American Plate. This is called subduction, and it pushed the land upward.
   Sources: EBSCO: Andes · Mountain Field Guide: Andes.
   ↑ Q3
4. **B.**
   The Andes block moist air from the Atlantic side. The cold Humboldt Current adds to the dryness.
   Sources: EBSCO: Atacama · Dark Skies Atlas: Atacama.
   ↑ Q4
5. **C.**
   Argentina, Bolivia and Chile hold most of the world's known lithium. Peru is not part of the triangle.
   Sources: AS/COA: Lithium Triangle · EBSCO: Andes.
   ↑ Q5
6. **B.**
   Lake Titicaca sits at 3,812 m on the Peru–Bolivia border.
   Sources: Geography Worlds: Andes · Rise of Andes.
   ↑ Q6

Quick-check answers

1. **False.** The Andes cross seven countries: Venezuela, Colombia, Ecuador, Peru, Bolivia, Chile and Argentina. Brazil and Paraguay are not among them. ↑ 1

2. **True.** Subduction of ocean plates beneath South America built the range over about 200 million years. Today that plate is the Nazca Plate. ↑ 2
3. **True.** In the central Andes the altiplano lies between the western and eastern cordilleras, at about 3,800 to 4,500 m. ↑ 3
4. **False.** The cold Humboldt Current and the Andes rain shadow keep it dry. The current is cold, not warm. ↑ 4
5. **False.** The triangle is Argentina, Bolivia and Chile. Peru is not part of it. ↑ 5

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