

THE CONTINENTAL DRIFT

The large, continuous landmasses on earth were named „**continents**“. This word has its origins in the Latin word „continentis“, which means „to hold together“ or „to contain“. People used to think, that these large landmasses were unchanging, and securely connected masses that endure over time.

Now, people in the past have also wondered why the coastlines of South America and Africa fit together so well; but they didn't know the answer. When Alfred Wegener published a theory in 1915 in which he explained this observation with a migration of continents (he called it „continental drift“), many scientists rejected this idea and thought it was ridiculous.

Today we know that continents are not permanent and fixed for all time. In the course of Earth's long history, continents have emerged and passed over and over again. Land sank and turned into the bottom of the sea and the ocean bed raised into mountains. Even the continents on which we live now have only gradually become the continents which we know today.

We want to show how the continents were formed and how they have changed over the last 250 million years in five images.

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Übersetzt von Rebecca Wiedner, Flein 2024

PERMIAN – about 250 to 225 million years ago

- All of the land on earth forms a single, large continent. We call it "PANGAEA", which means „All-Earth“.
- Pangaea is surrounded by a single vast ocean called "PANTHALASSA", which means "All-Ocean".
- Of course, there are waterways, rivers, bays, lakes and islands, mountains and valleys, but we know little about their location, size and appearance. For many millions of years, the primordial continent and primordial ocean, Pangaea and Panthalassa, remain this way; They hardly change.

TRIASSIC and JURASSIC – about 230 to 145 million years ago

- A cosmic event brings tremendous changes; maybe it's the impact of a large planetoid, or the moon has come too close to the Earth, we don't know for sure: the primordial continent is breaking apart and parts are starting to migrate.
- The northern part of the great continent (we call it LAURASIA) rotates clockwise and separates from the southern continent, which we call GONDWANA.
- In between the two continents, a sea is formed in the east, which we call TETHYS Sea; it is the forerunner of the Mediterranean sea. The gap that arises between the continents in the west forms the beginning of the Atlantic; It's the primordial Atlantic sea and can be referred to as the UR-ATLANTIC.
- Gondwana pushes against Laurasia with its northern tip, while the western part (which is South America today) begins to break away from Gondwana.
- Another piece of the southern continent (which is today's India) migrates northeast.
- Antarctica is drifting south-west with Australia.
- This shift happens very slowly, probably less than 10 cm per year (That's about as wide as a postcard).

CRETACEOUS – about 145 to 65 million years ago

- South America separates from Africa and continues to migrate westwards.
- The South Atlantic ocean is getting much bigger.
- North America is partially separating from Europe.
- Tethys evolves into the Mediterranean Sea.
- India continues to move north.
- Madagascar is separated from Africa and is now a large island.
- Australia and New Guinea are now drifting northeast.
- Antarctica continues to drift westward.
- Italy, Turkey and the Arabian peninsula are still connected to Africa, but have not connected to Europe or Asia yet.
- Panthalassa, the former „All-Ocean“, becomes the Pacific Ocean.

TERTIARY – about 65 to 2 million years ago

- India moves north at great speed and eventually crashes into Asia's southern coast. This causes the Himalayan mountain range to bulge.
- The sea that was formed between Australia, India and Africa is what we call the Indian Ocean. Italy breaks away from the southern continent and clashes with Europe; large parts of the Alps are formed.
- The Arabian Peninsula separates from Africa and collides with Asia.
- The rift with Africa is today's Red Sea.
- North America and Europe are breaking apart; North America is drifting westward. Greenland is split off from North America and is now a large island between the continents.
- New Guinea is separated from Australia; both pieces drift northeast quickly.
- Antarctica continues to drift westward.
- South America continues to migrate northwest until it almost reaches North America.

QUATERNARY / HOLOCENE – about 2 million years ago until today

- The continents now almost look the way they do today. Also their location is similar to today's position. During the last 2 million years, they have only migrated a little.
- South America clashes with North America.
- The gap between America and the eastern continents (Africa and Europe) continues to widen, but a lot slower.
- And even today, the continents are drifting: America is moving westwards by approximately 1 cm a year. Australia is moving northeast.
- This allows us to predict how the Earth may change in the future.

And this is how the Earth could look like after another 50 million years

- AMERICA has drifted 2000 km to the west.
- The ATLANTIC has now become much larger, the PACIFIC has become smaller.
- NORTH AMERICA and SOUTH AMERICA have separated again.
- LOS ANGELES (in North America) has broken away the continent and moved to San Fransisco.
- EAST AFRICA has broken away from Central Africa.
- AUSTRALIA and NEW GUINEA have drifted 3000 km further north and are now where the Philippines lay today.

Asia	Europe	North America
South America	Africa	Antarctica
Australia	India	Australia
Asia	Europe	North America
South America	Africa	Antarctica
Asia	Europe	North America
South America	Africa	Antarctica
Madagascar	India	Australia
Asia	Europe	North America
South America	Africa	Antarctica
Madagascar	India	Australia
Rear-India	Arabia	Greenland
New Guinea		

PANTHALASSA	PANTHALASSA	TETHYS
UR-ATLANTIC	PAZIFIC OCEAN	PAZIFIC OCEAN
ATLANTIC OCEAN	ATLANTIC OCEAN	PAZIFIC OCEAN
PAZIFIC OCEAN	INDIAN OCEAN	MEDITERRANIAN SEA

PANGAEA

GONDWANA

LAURASIA

During the time of the PERMIAN

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