BAHRIA COLLEGE ISLAMABAD

ZAFAR CAMPUS)

Social Studies

(class VIII)


بسم الله الرحمن الرحيم

CHAPTER :1

The UNIVERSE

- Immensity and diversity of the universe
- The solar system, with the Sun and its planets

- Atmosphere (about 11 Km)
- space or
  outer space (about 100 Km)

We get information about space or outer space through Space Observatories and Space Telescopes.

The Hubble Space Telescope.

The Hubble Space Telescope is a space telescope that was launched in 1990 and remains in operation.(600 Km above the Earth). It was not the first space telescope but it is one of the largest and most versatile,

Hubble features a 2.4-meter (240 cm) mirror, and because it is far above the dusty and cloudy atmosphere of the Earth, it can take much more clear images of outerspace.

Chandra X-ray Observatory

Chandra is one of the Great Observatories, along with the Hubble Space Telescope,

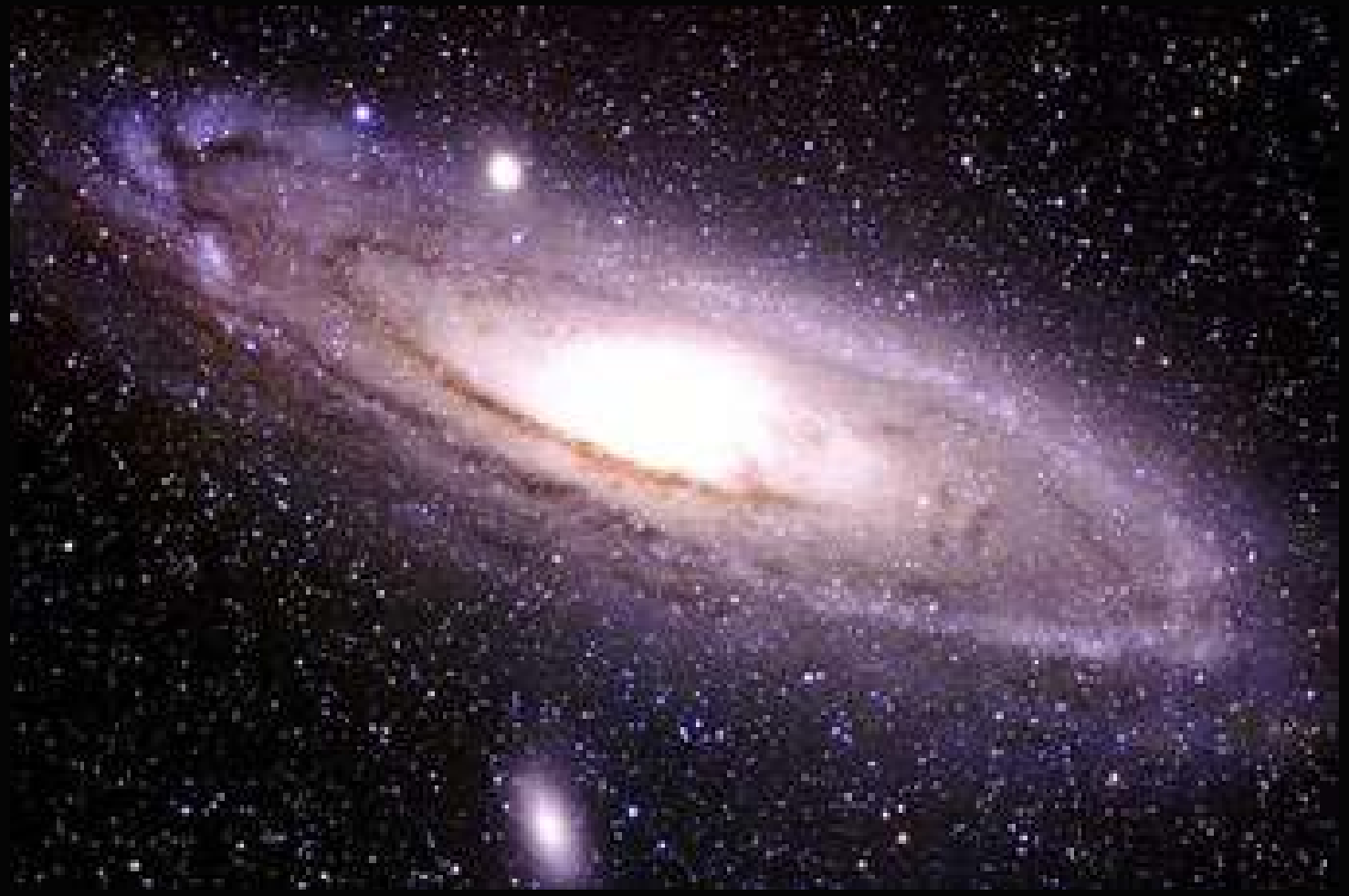
Chandra is a Flagship-class space telescope launched by NASA on July 23, 1999.

Chandra is sensitive to X-ray sources 100 times fainter than any previous X-ray telescope, enabled by the high angular resolution of its mirrors.

Chandra is an Earth satellite in a 64-hour orbit, and its mission is ongoing as of 2020.

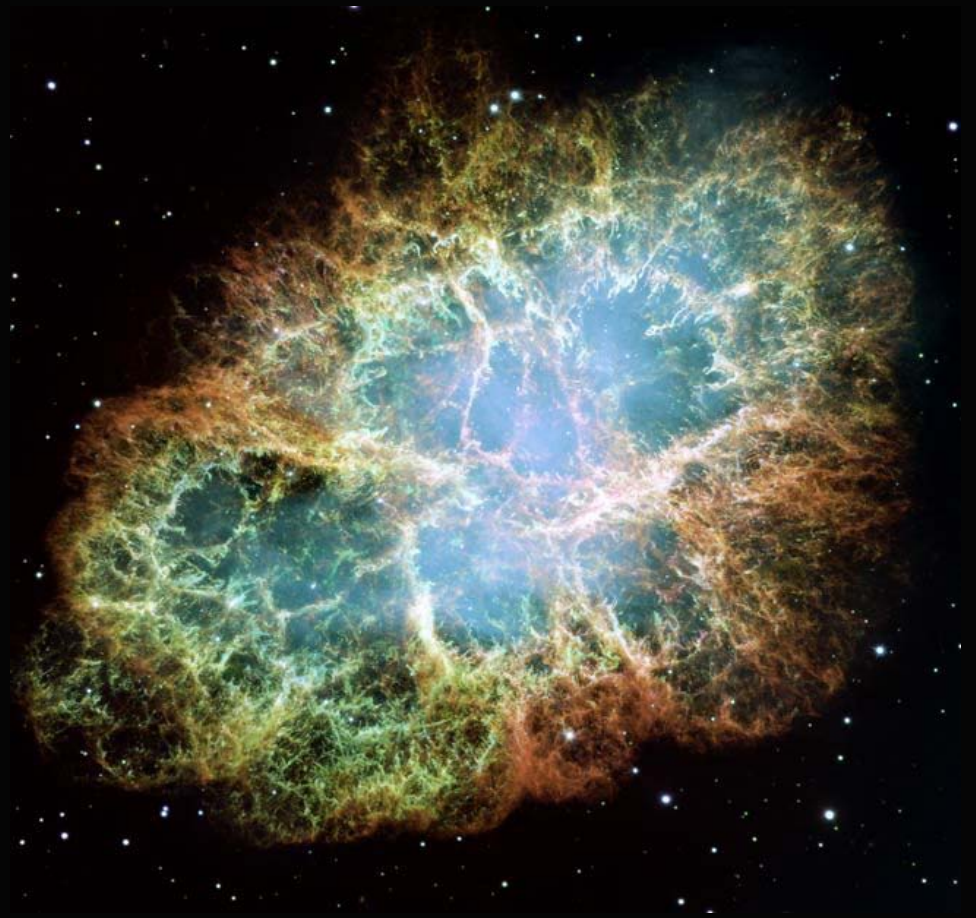
GALAXY / GALAXIES

Most of the stars in the universe are in huge clusters called galaxies.




Another galaxy
Andromeda

Nebulae (singular: nebula) are clouds of dust, hydrogen, helium and other gases, found between the stars.



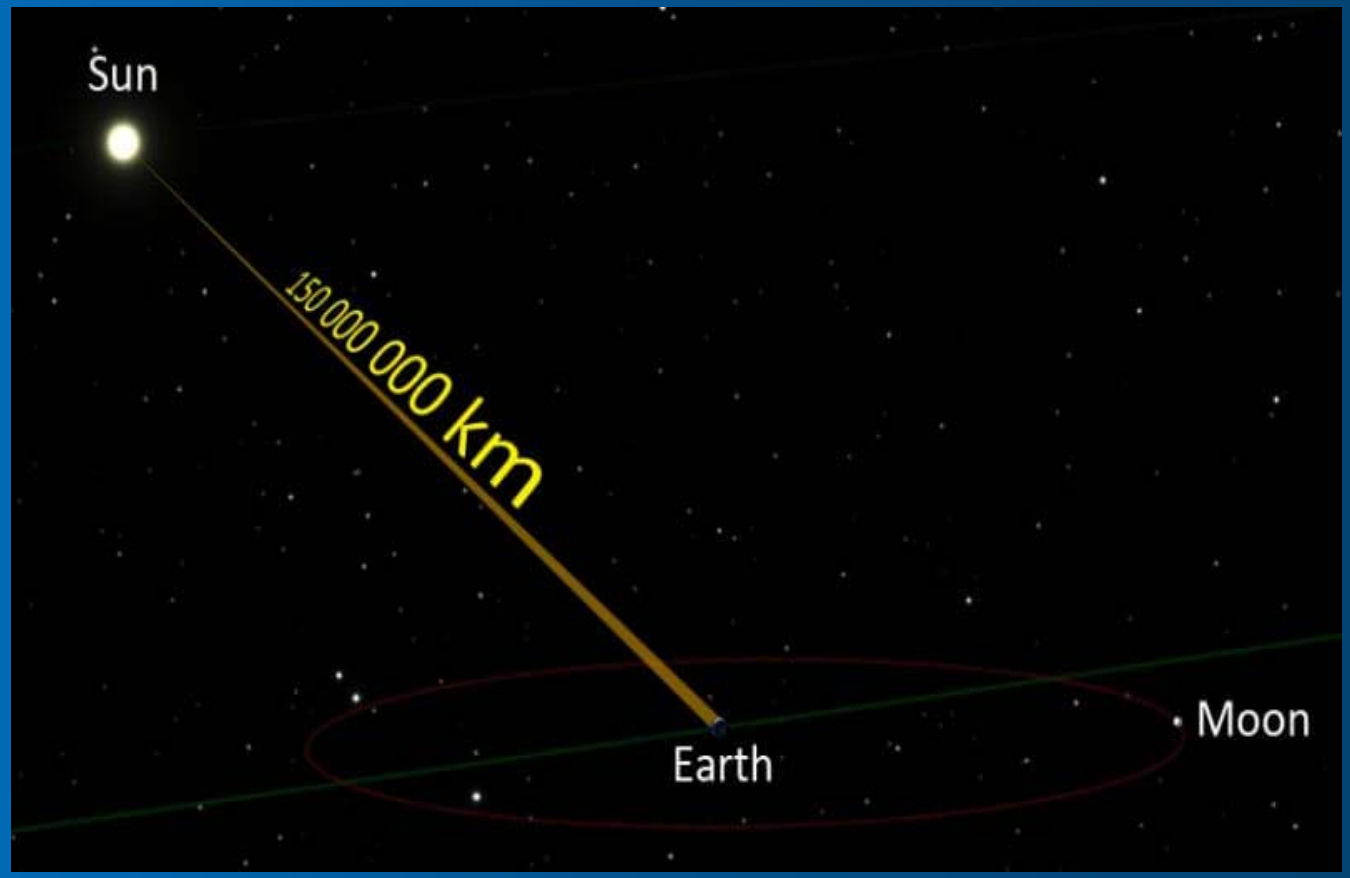
Distances in Space:

A **light year** is the distance
that light travels in a
single year.

A light year is a standard of
measurement used by astronomers
to describe huge distances
in the Universe.

From moon to the Earth → 1.3 light secods
From Sun to the Earth → 8.3 light minutes.

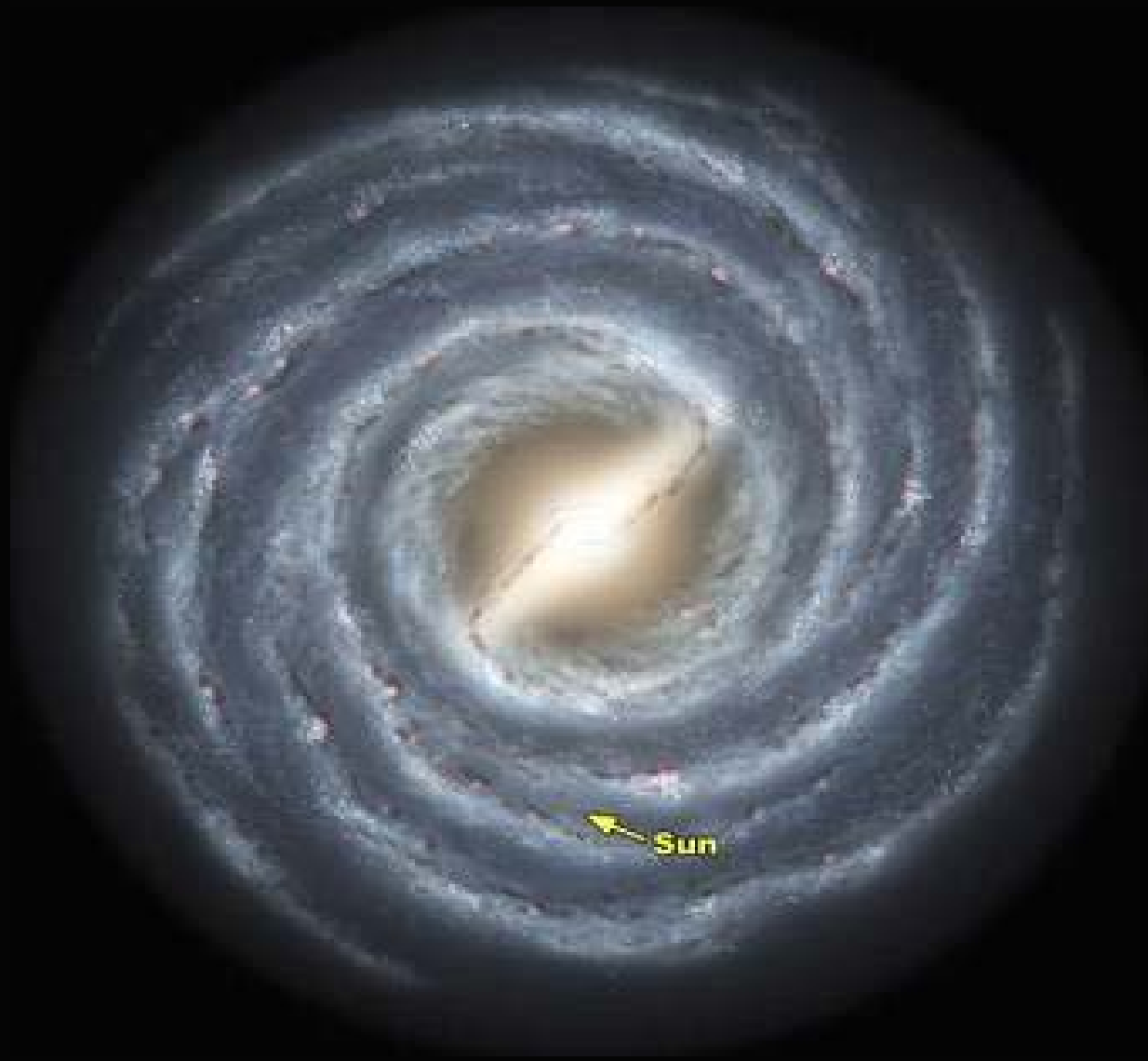
Llight travels 299,792,458 m / sec.



The **Milky Way** and our Solar system

- The Sun:

  a medium -sized star.
- Eight planets
- more than 166 moons



The Sun:

- Huge star
- Incredibly hot
- with planets revolving round it
- Our Sun contains about 99% of all the material found in our solar system.
- Temperature: 16,000,000℃

8 PLANETS OF OUR SOLAR SYSTEM:

Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune.

Orbits of the Planets.

The eight planets of our solar system move round the Sun in orbits which are not circular, but elliptical or oval in shape. the time for each planet to make one journey round the Sun is different.

A Planet Year is the time for a planet to complete one coplete journey round the Sun.

- Earth takes 365 and 1/4 days to go once round the Sun.
- Leap year?
- Mercury the nearest to the Sun, whizzes round in 88 days (Earth days)
- Neptune the furthest from the Sun, takes 165 Earth years to complete one journey.

Difference in sizes of the planets:

- Earth's diameter is12,756 Kilometers.
- Mercury (smallest) is 4878 Km in diameter.
- Jupiter (largest) is 143,884 Km in diameter,

Temperature and life on other planets

Mercury and Venus;

are too close to the Sun so that no life could exist there.

SURFACE TEMPERATURE;

Mercury → **430** ℃ （ on the side facing the Sun ）

−180 ℃ （ on the side away from the Sun ）

Venus → **462** ℃（The clouds on Venus are largely made up of Sulphuric acid)

Jupiter:

force of gravity is 2.4 times as much as on Earth.

Planets apart from Mars are bitterly cold:

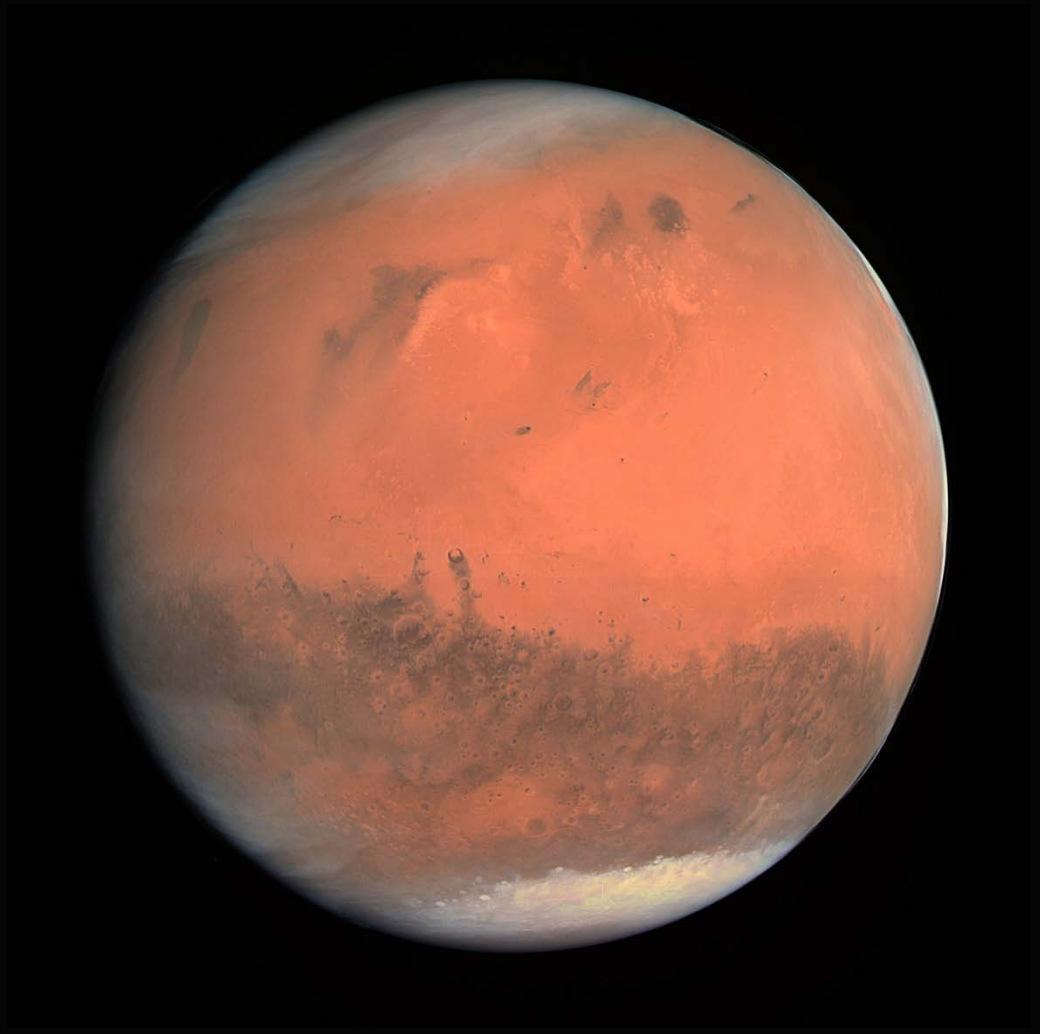
Saturn → about −172 ℃ and **Jupiter** → −150 ℃

Atmosphere of both have gases which are poisonous.

Mars

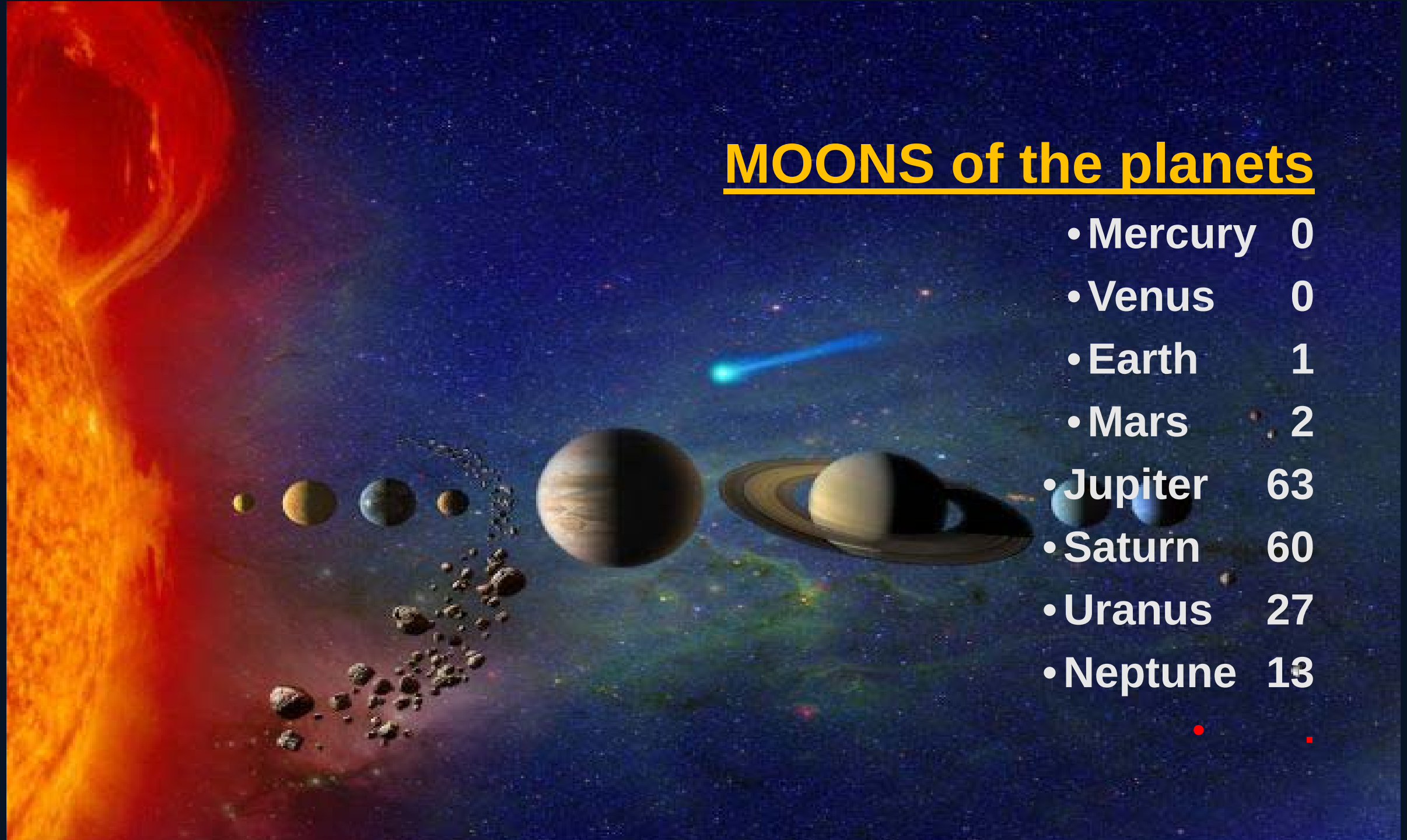
Mars is the fourth planet from the Sun and the second-smallest planet in the Solar System after Mercury. Often referred to as the 'Red Planet'.

- small amount of Oxygen in Mar's atmosphere.
- probably water in the form of ice under the surface
- temperatures are very harsh by Earth standards (- 140℃ to + 17 ℃)



Saturn with its gigantic rings

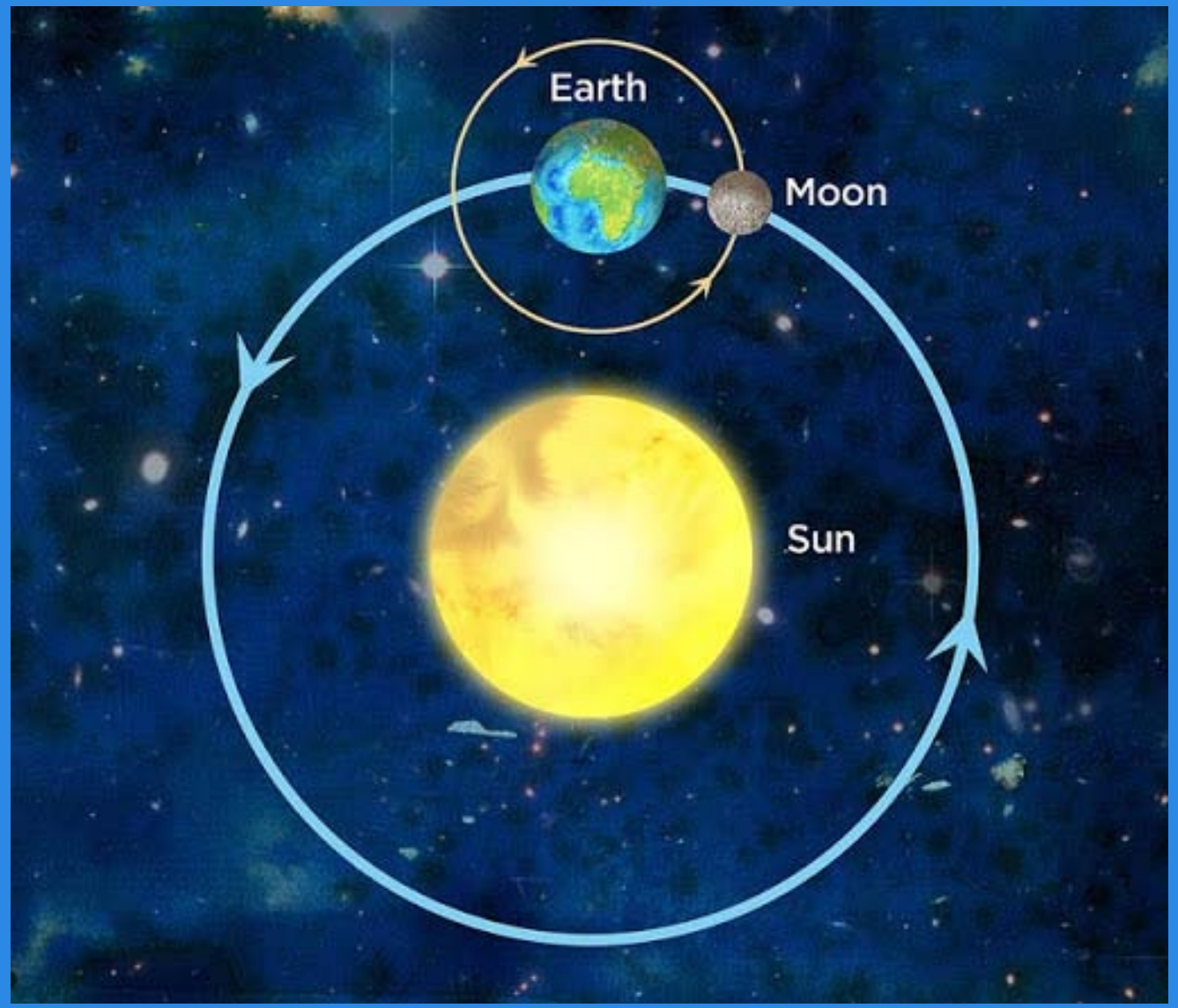
- The second largest planet with diameter of over 120,000 Km.
- bitterly cold with surface temperature of -180 ℃
- It spins on its axis in less than half time the Earth does (10 hours 39 minutes)
- days and nights are very short
- it takes 29.5 Earth years to make one journey round the Sun.
- it has seven gigantic rings 300,000 km across and 3000 km thick
- rings are made of ice, ranging from fine particals to blocks three metres in diameter.



MOONS of the planets

- Mercury 0
- Venus 0
- Earth 1
- Mars 2
- Jupiter 63
- Saturn 60
- Uranus 27
- Neptune 13

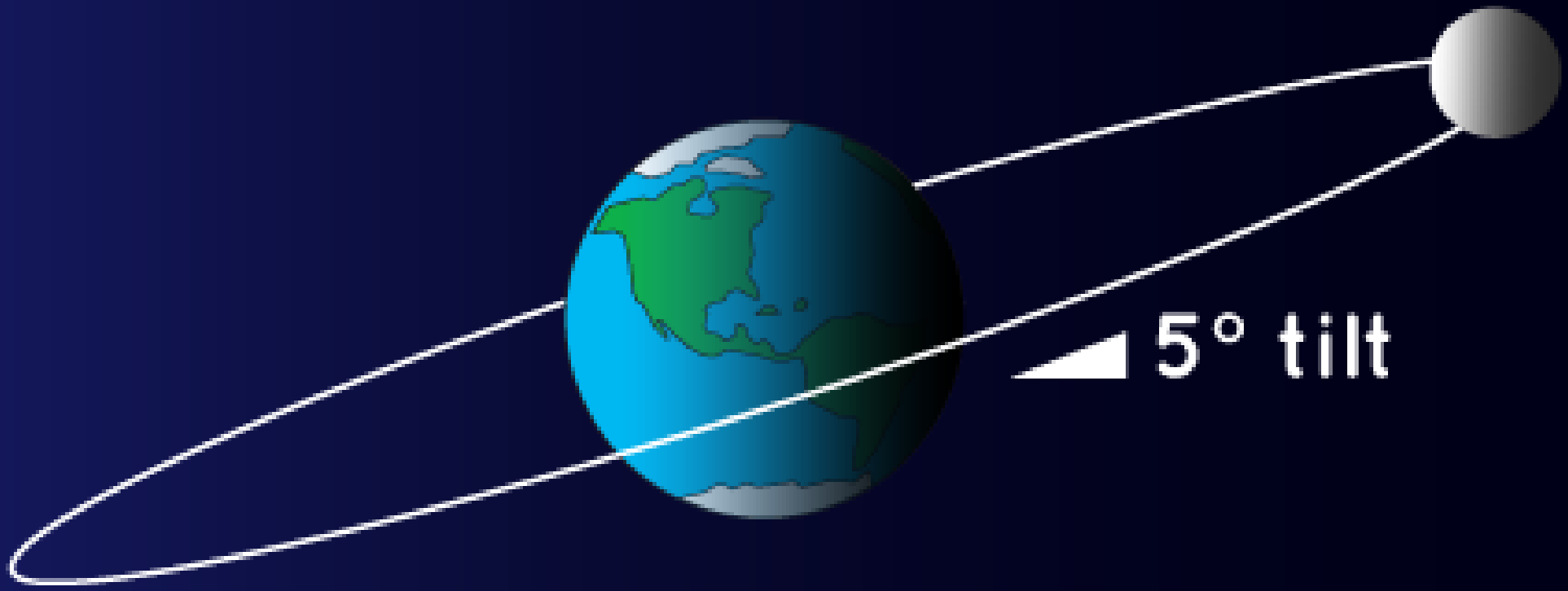
The Sun, Earth and Moon



The Moon

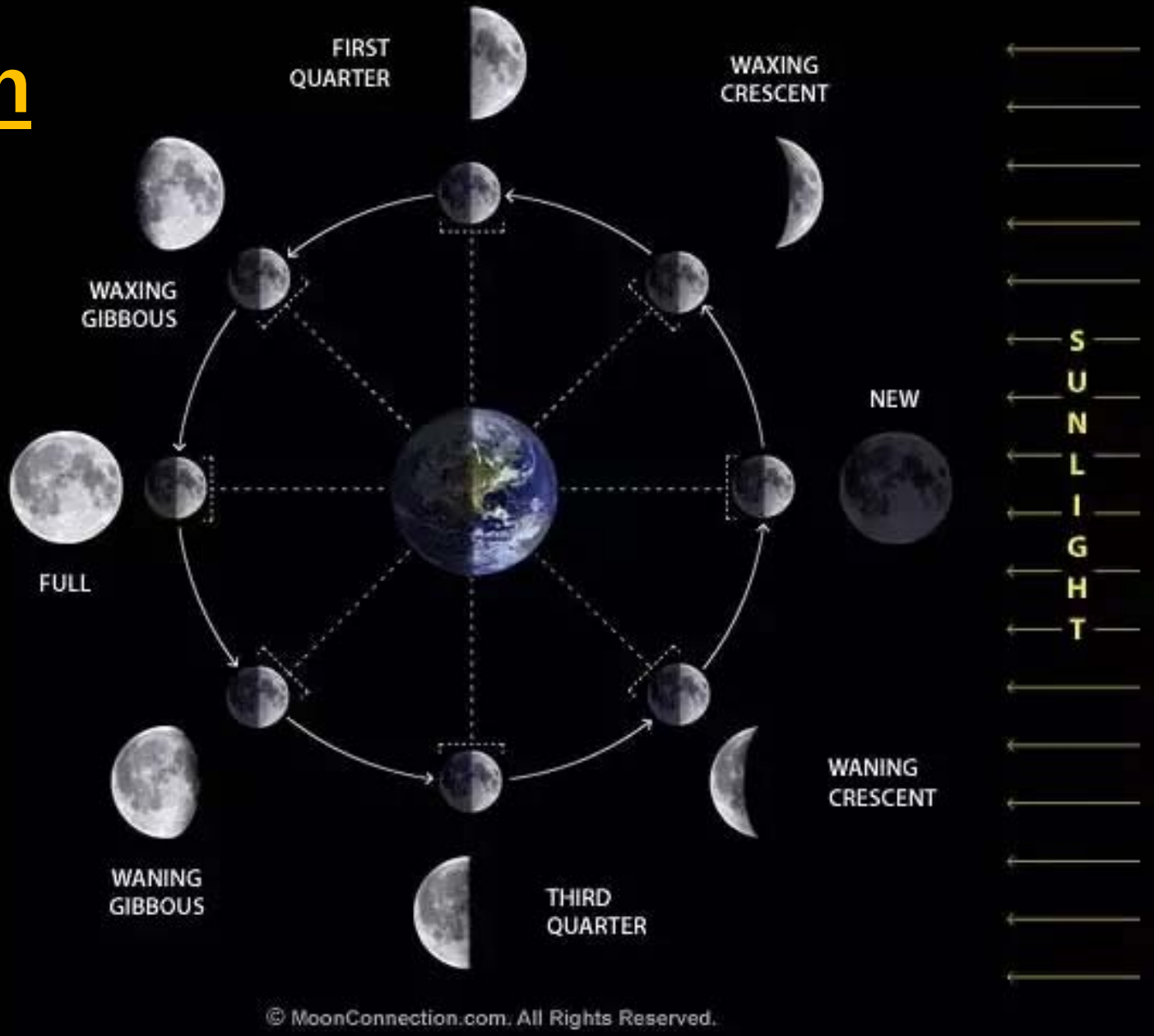
Our Moon seems to shine, but it is only like a mirror reflecting the light of the Sun.

The moon's orbit is tilted.



Phases of the Moon

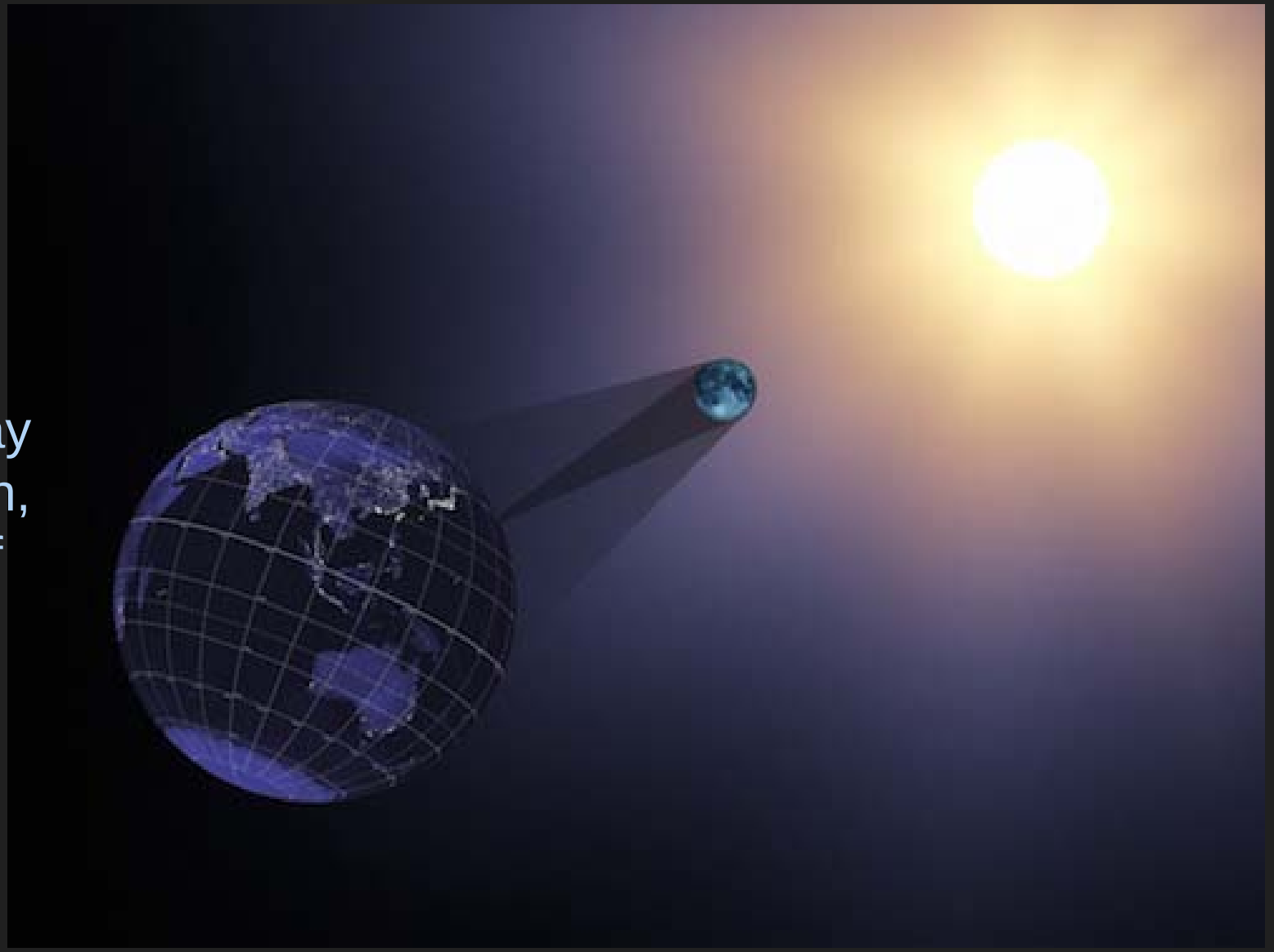
The Moon seems to change depending on the time of the month, It does not change of course, but appears to do so because the shadow of the earth crosses it.



Eclipses

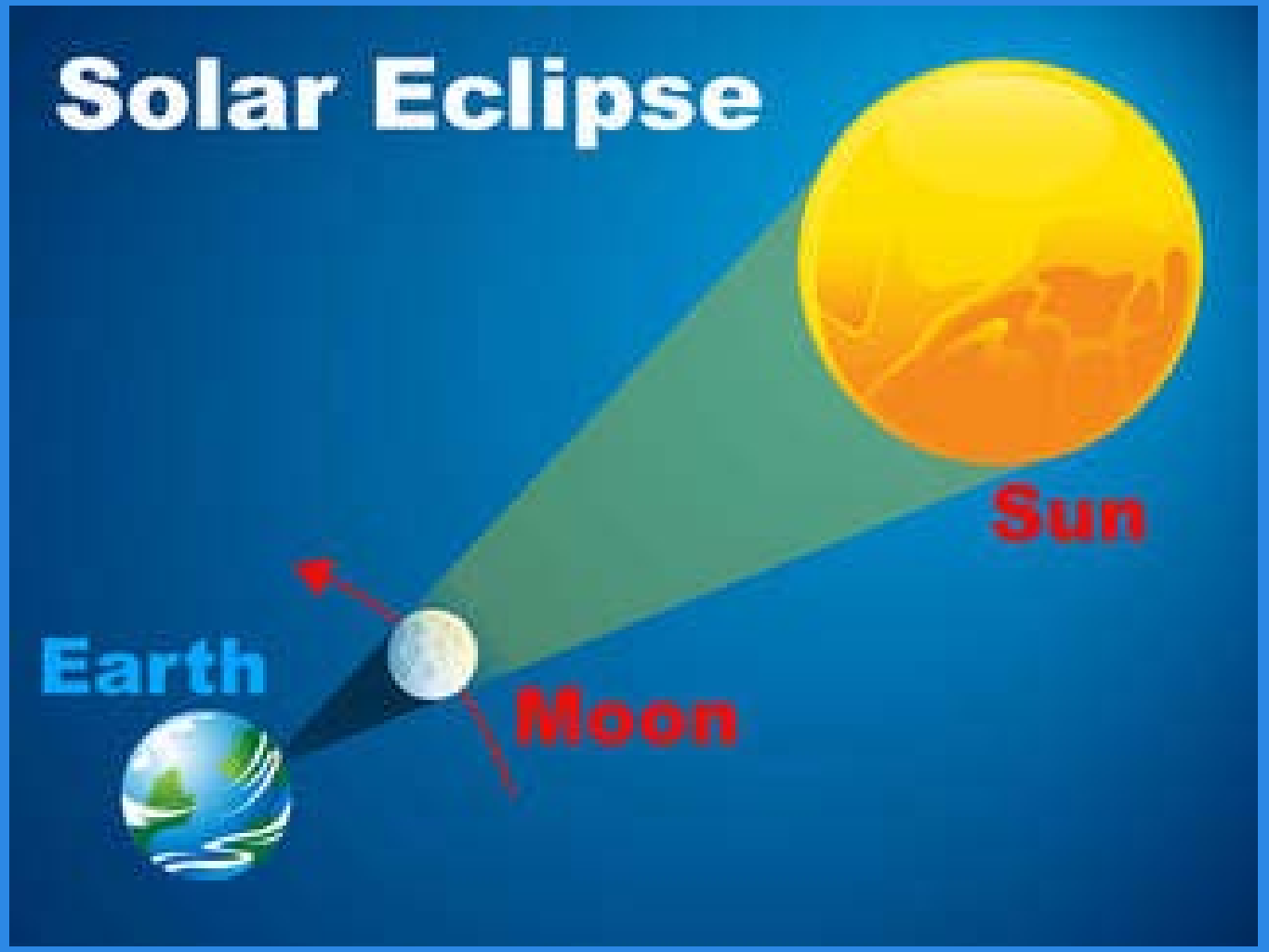
What is an eclipse?

An eclipse happens when a planet or a moon gets in the way of the Sun's light. Here on Earth, we can experience two kinds of eclipses: **solar eclipses** and **lunar eclipses.**



Solar eclipse

It happens when the moon gets in the way of the sun’s light and casts its shadow on Earth. That means during the day, the moon moves over the sun and it gets dark.



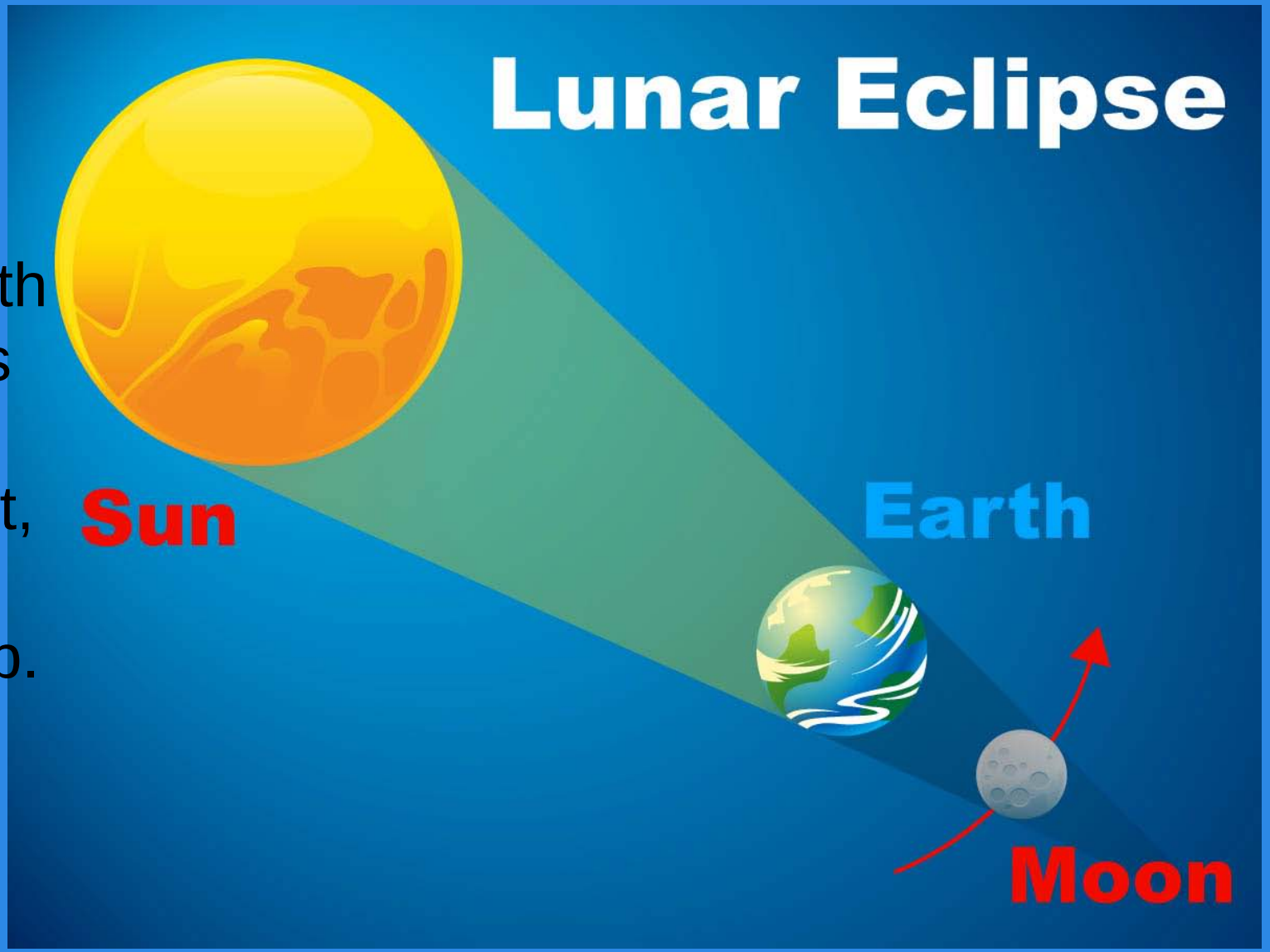
Total solar eclipse happens about every year and a half somewhere on Earth. A partial eclipse, when the moon doesn’t completely cover the sun, happens at least twice a year somewhere on Earth.

In this picture, the moon is covering up the sun in the middle of the day. This is a total solar eclipse .

When the Solar eclipse is full- and the Sun is completely blotted out - we can often see with a telescope great flames leaping up hundreds of miles into the air.

Lunar Eclipse

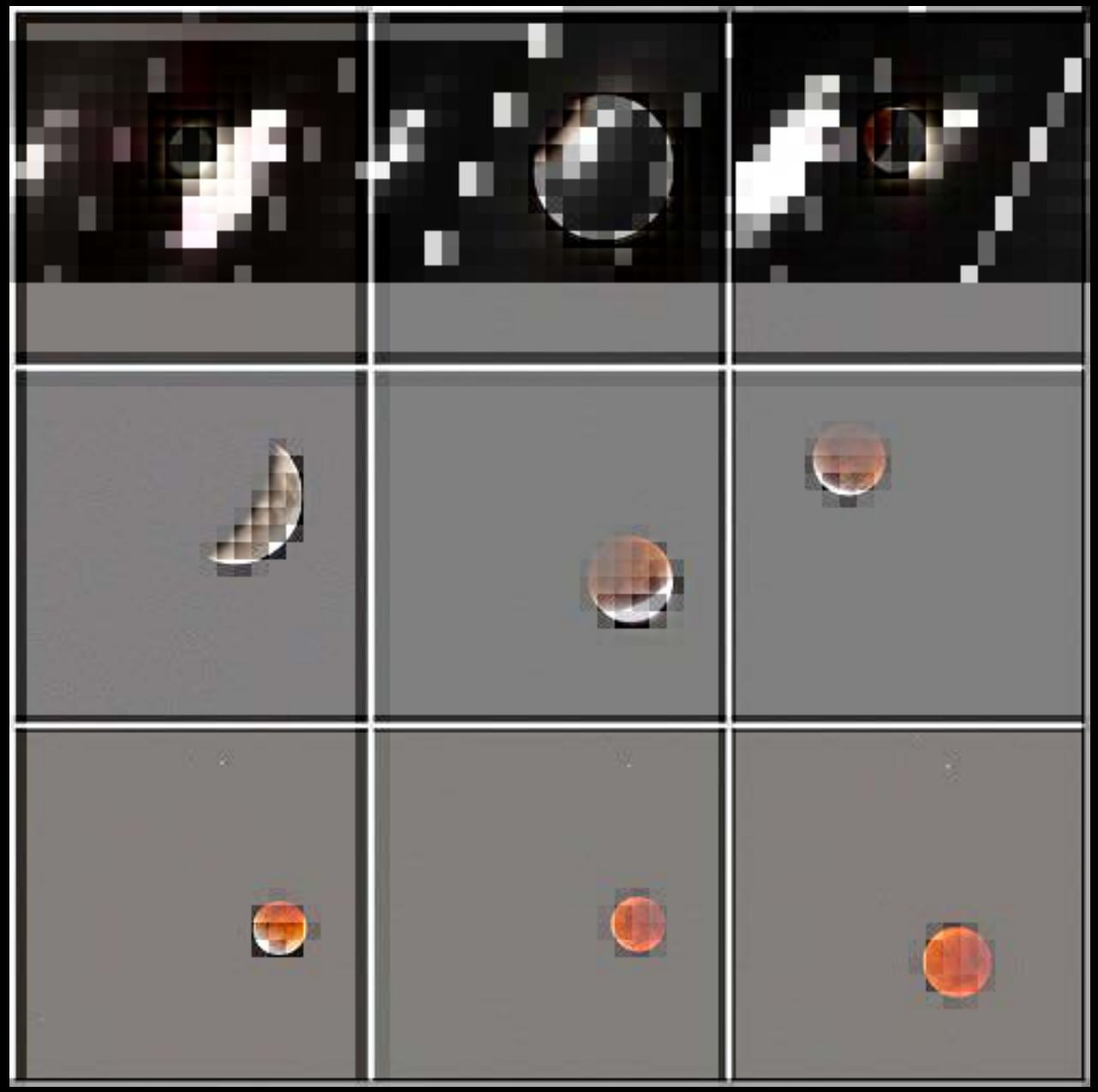
During a lunar eclipse, Earth gets in the way of the sun's light hitting the moon. That means that during the night, a full moon fades away as Earth's shadow covers it up.



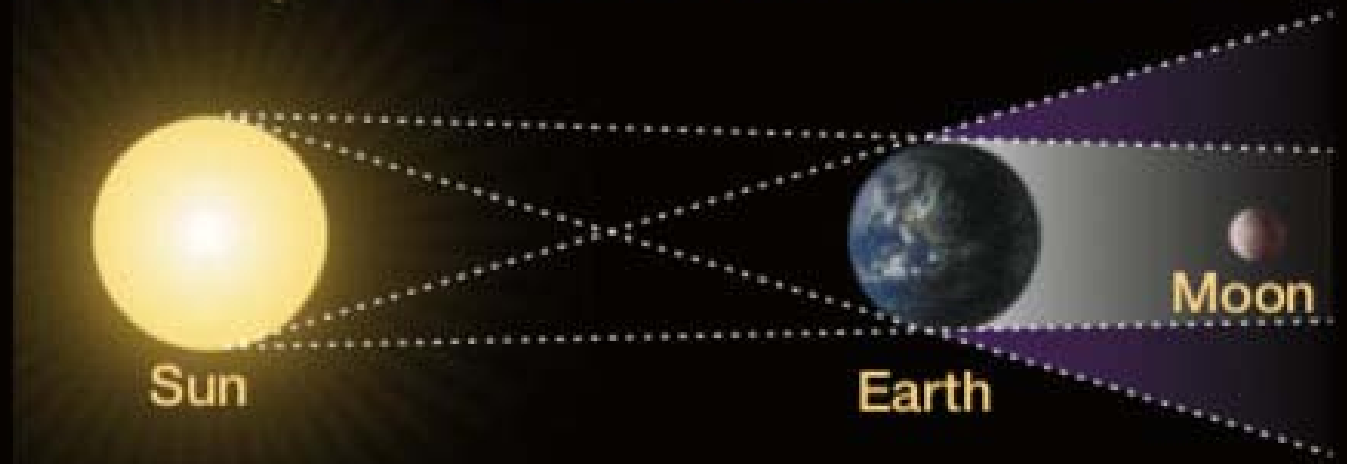
During a total lunar eclipse, the moon is shining from all the sunrises and sunsets occurring on Earth therefore it appears reddish orange.

In this picture the moon appears orange-red in a total lunar eclipse on October 27, 2004.

During a total lunar eclipse, the Earth's circular shadow can be seen moving slowly across the disk of the full moon.



Lunar Eclipse: Earth's shadow falls on Moon



Solar Eclipse: Moon's shadow falls on Earth

Evaluation:

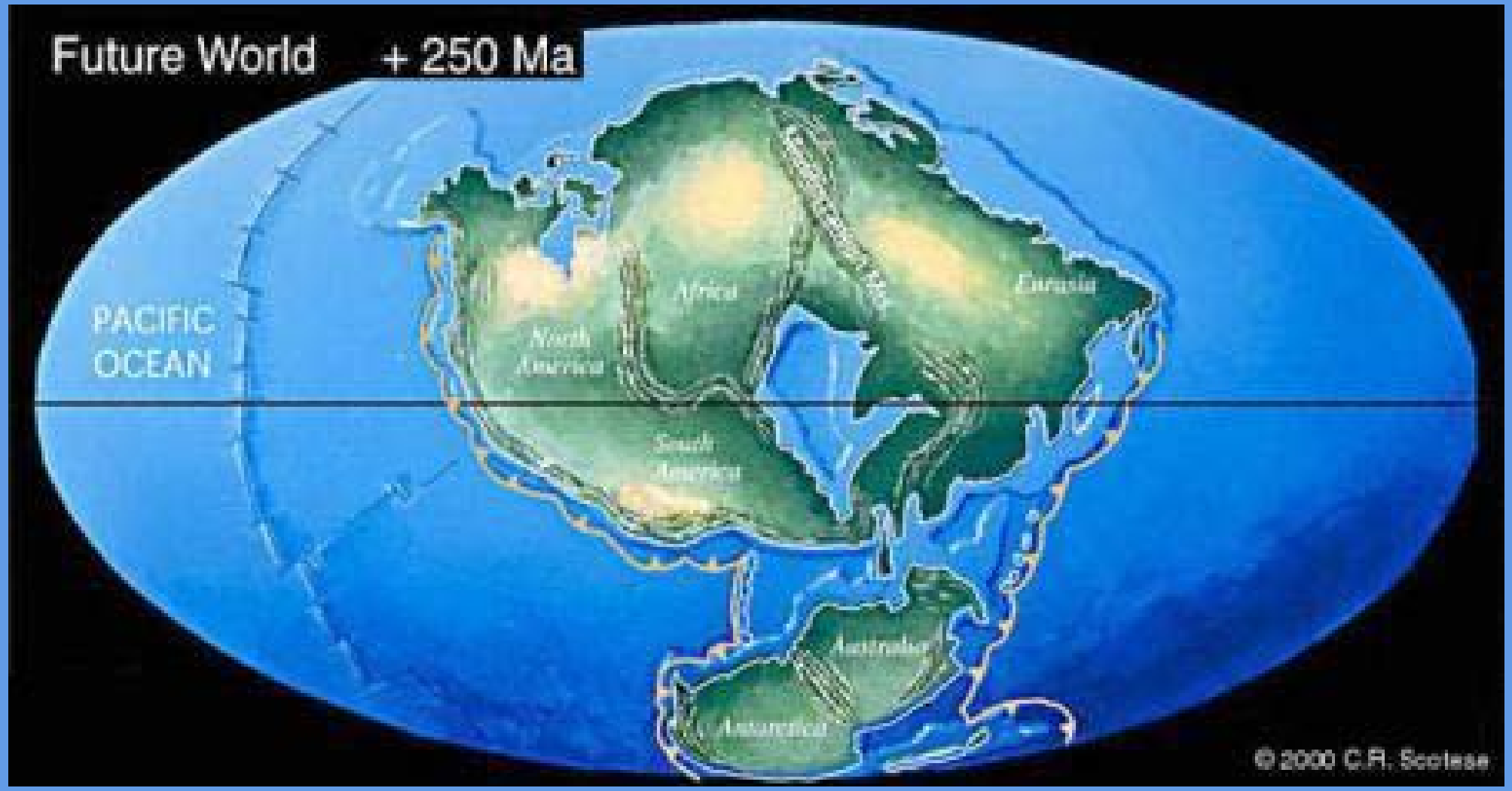
- What causes the extreme temperatures on the different planets of the solar system?
- How have the Hubble and Chandra telescopes helped scientists?
- How solar eclipse is caused?
- How lunar eclipse is caused?

CHAPTER: 2

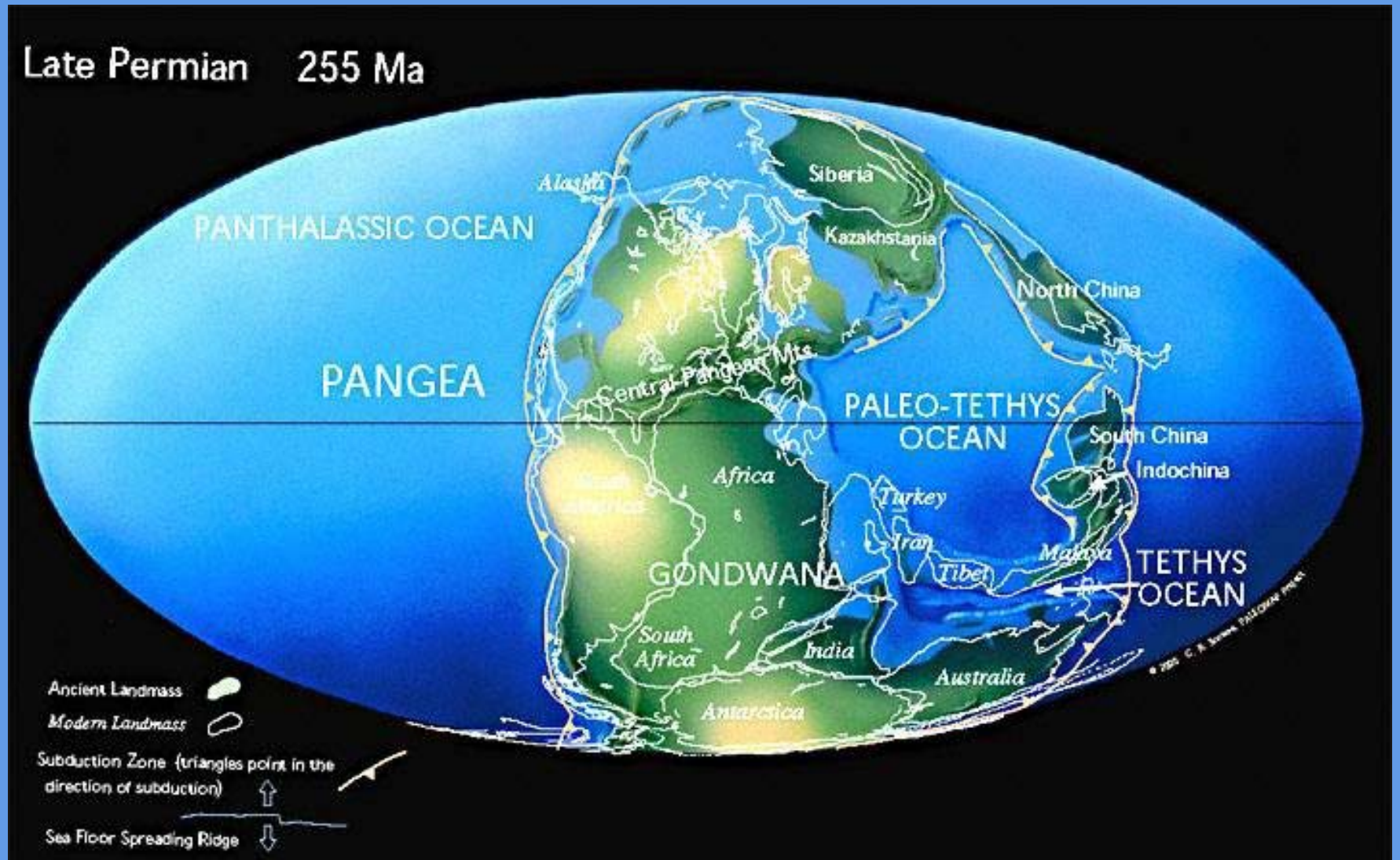
THE EARTH

Geographers have divided the surface of the Earth into **seven continents.**

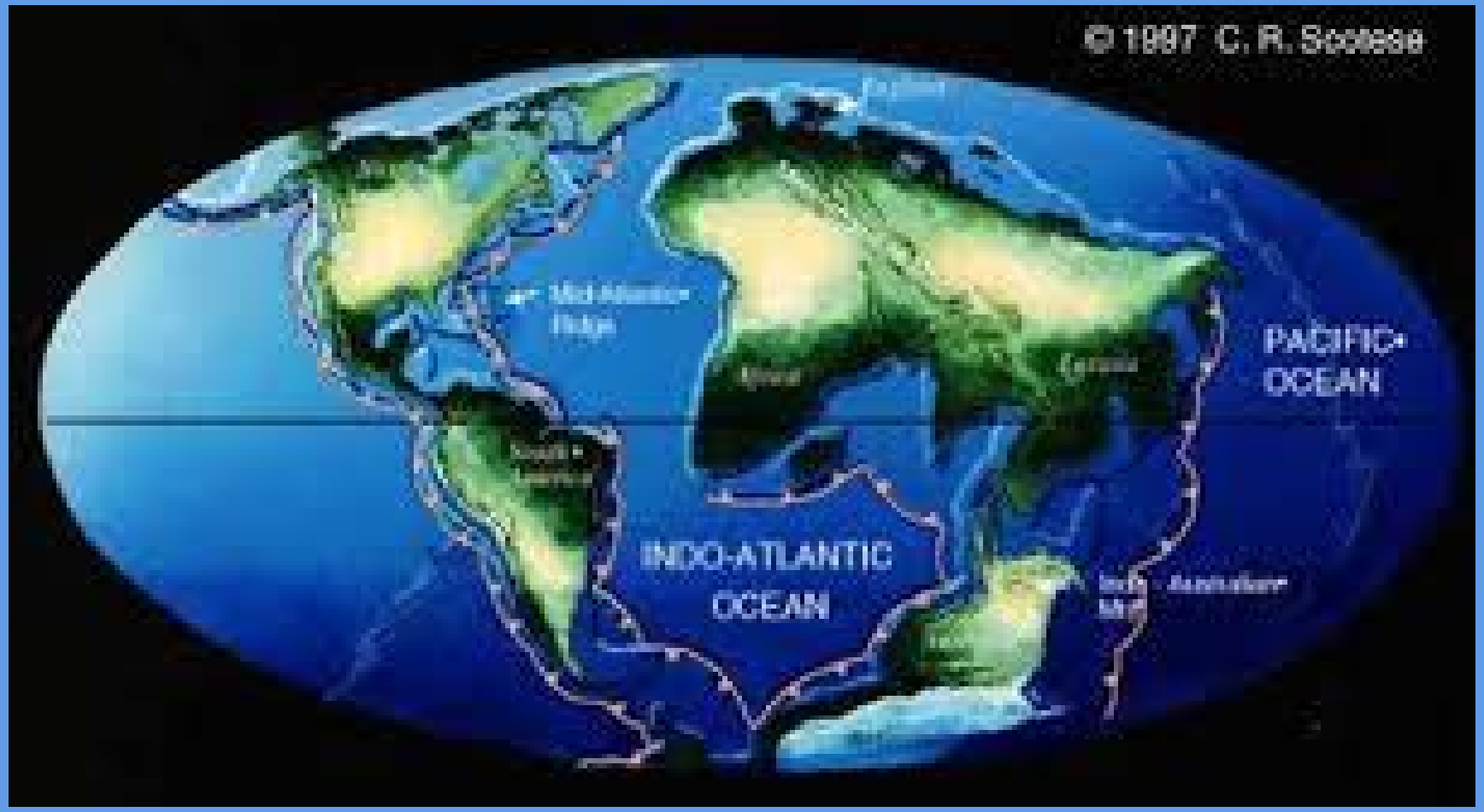
Millions of years ago there was only one huge land mass on Earth, which geologists now called Pangaea (Greek for ' All Earth')



There was only one ocean, Panthalassa (Greek for ' All Sea')



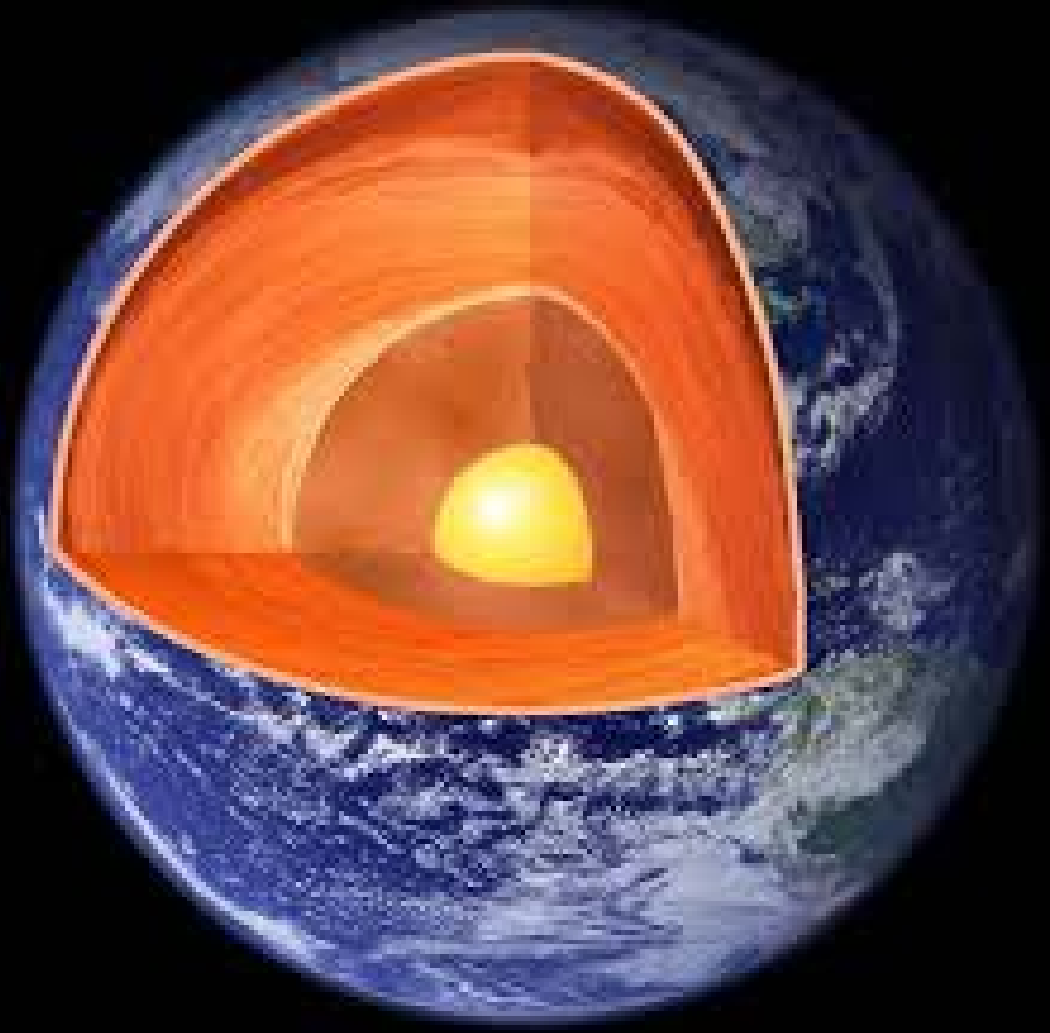
About 240 million years ago, Pangaea cracked into gigantic pieces (plates) and began to drift apart on the semi-liquid interior of the Earth.



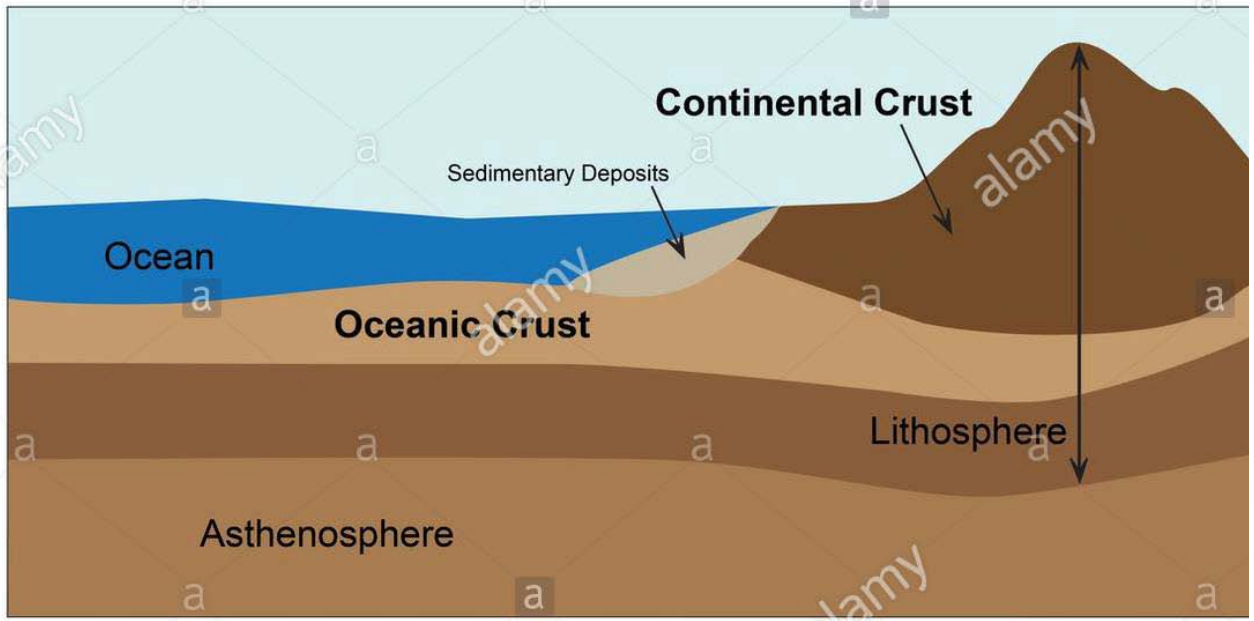
Geographers have divided the surface of the Earth into **seven continents.**

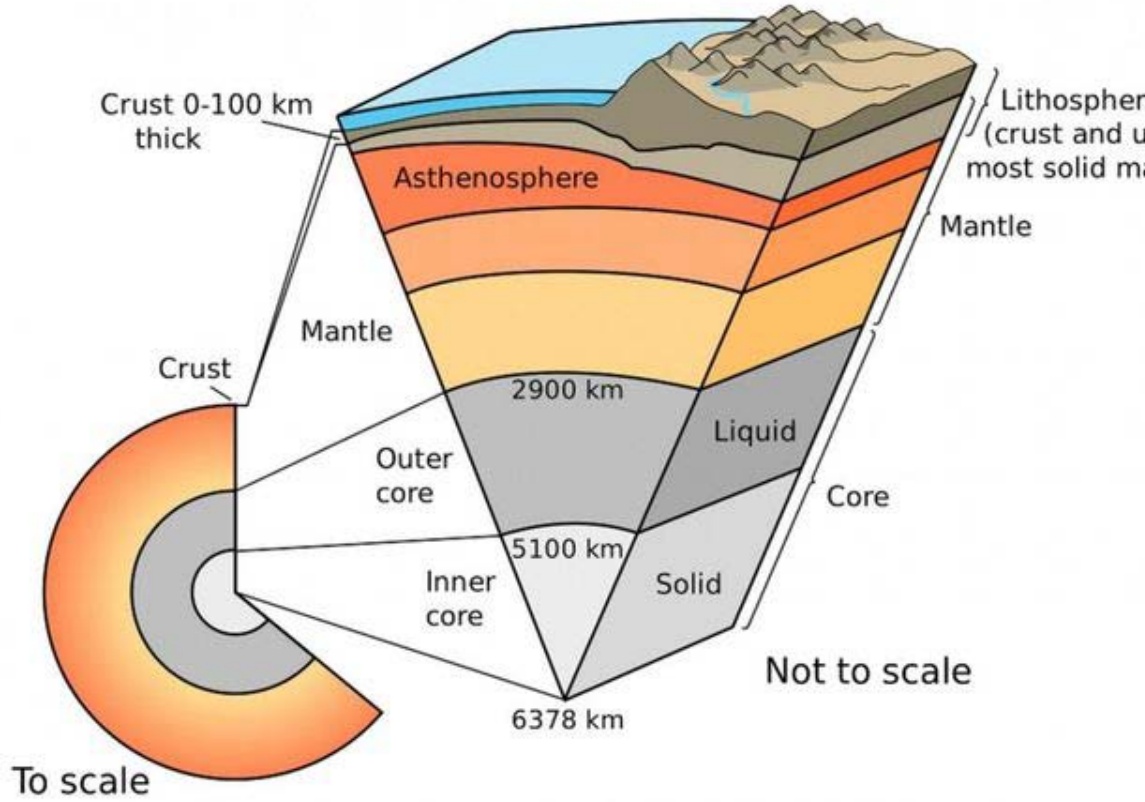
Tectonic Plates Theory

Earth crust and Inner cores

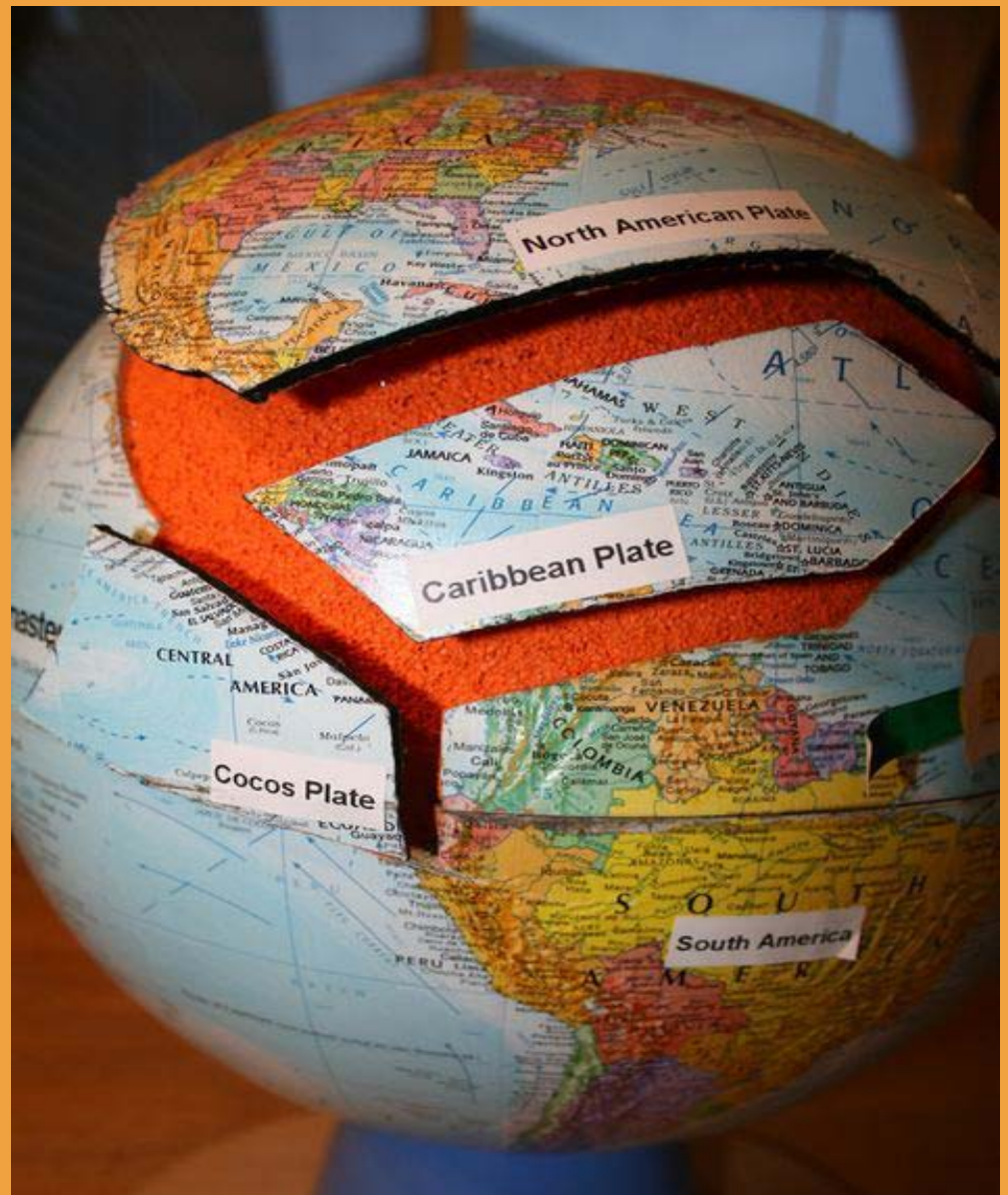


Earth crust:



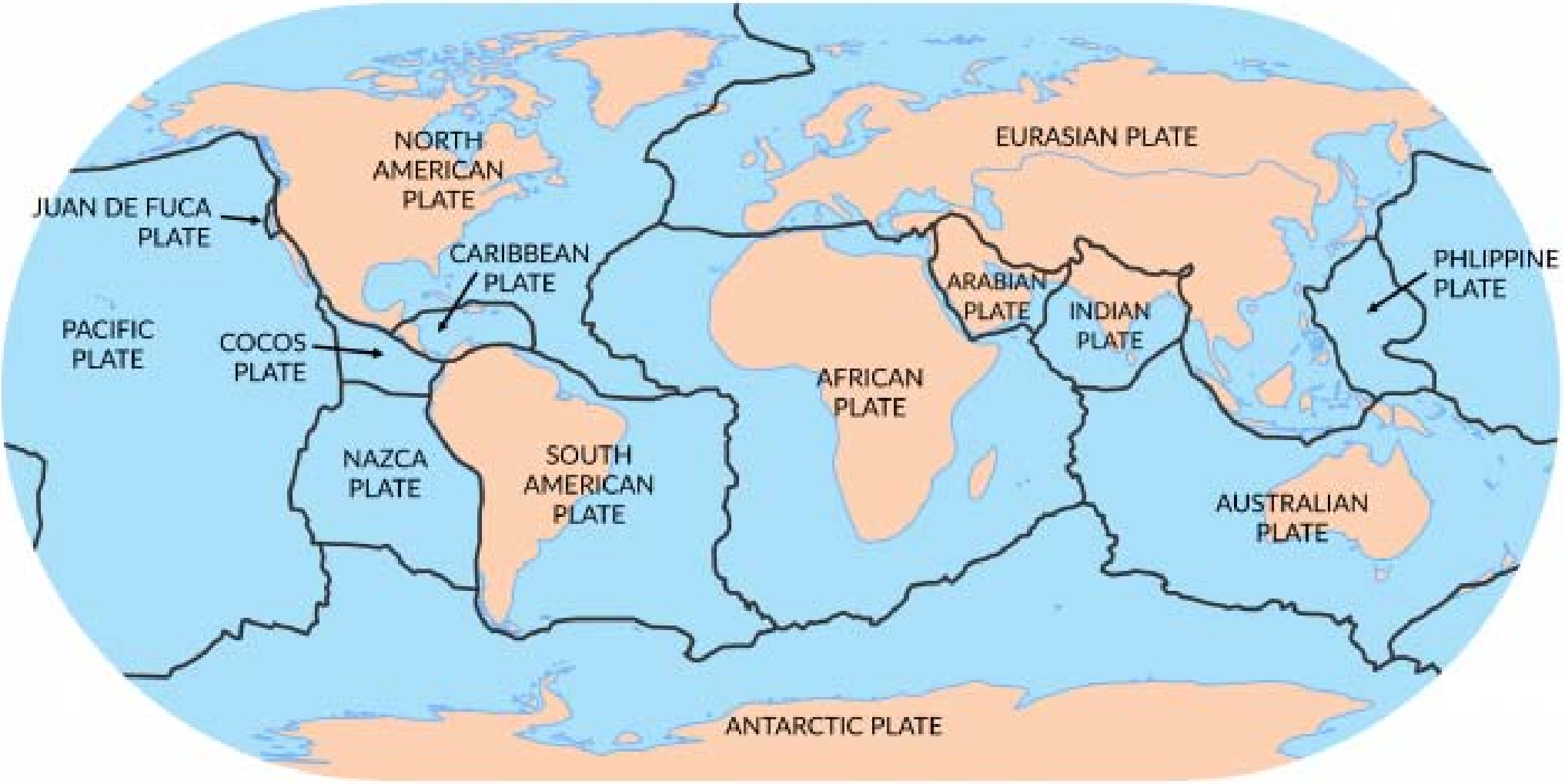


Tectonic Plates:

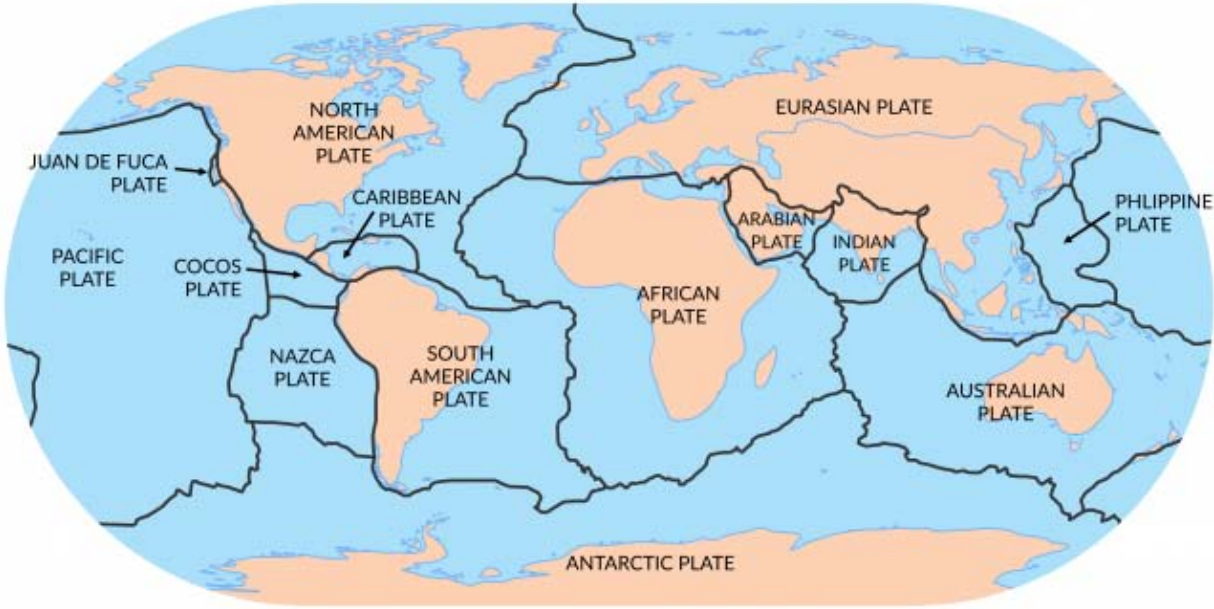


Model of Tectonic Plates:

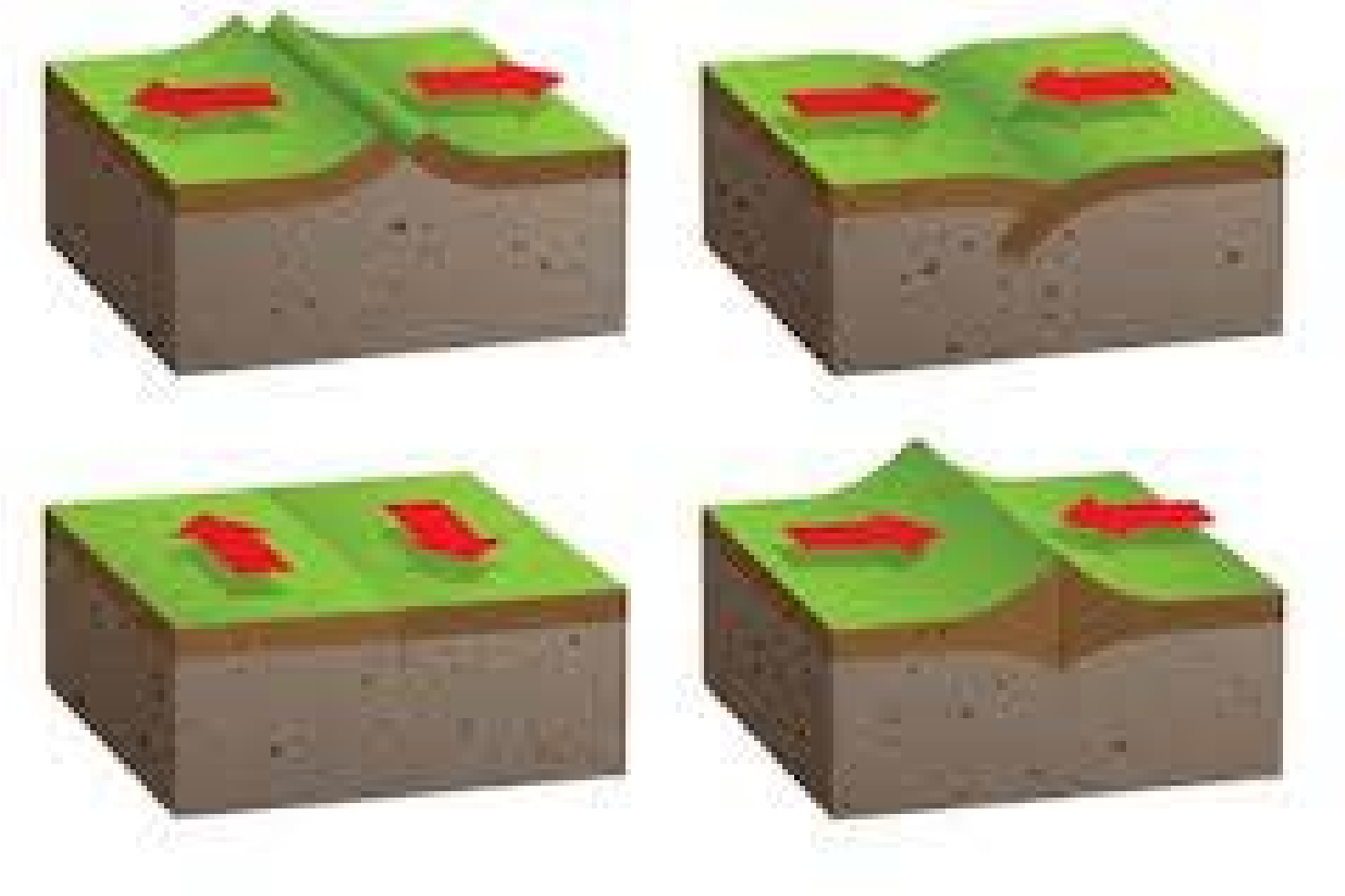
Tectonic plates



Difference between a continent and a plate



Movements amongst the tectonic plates:



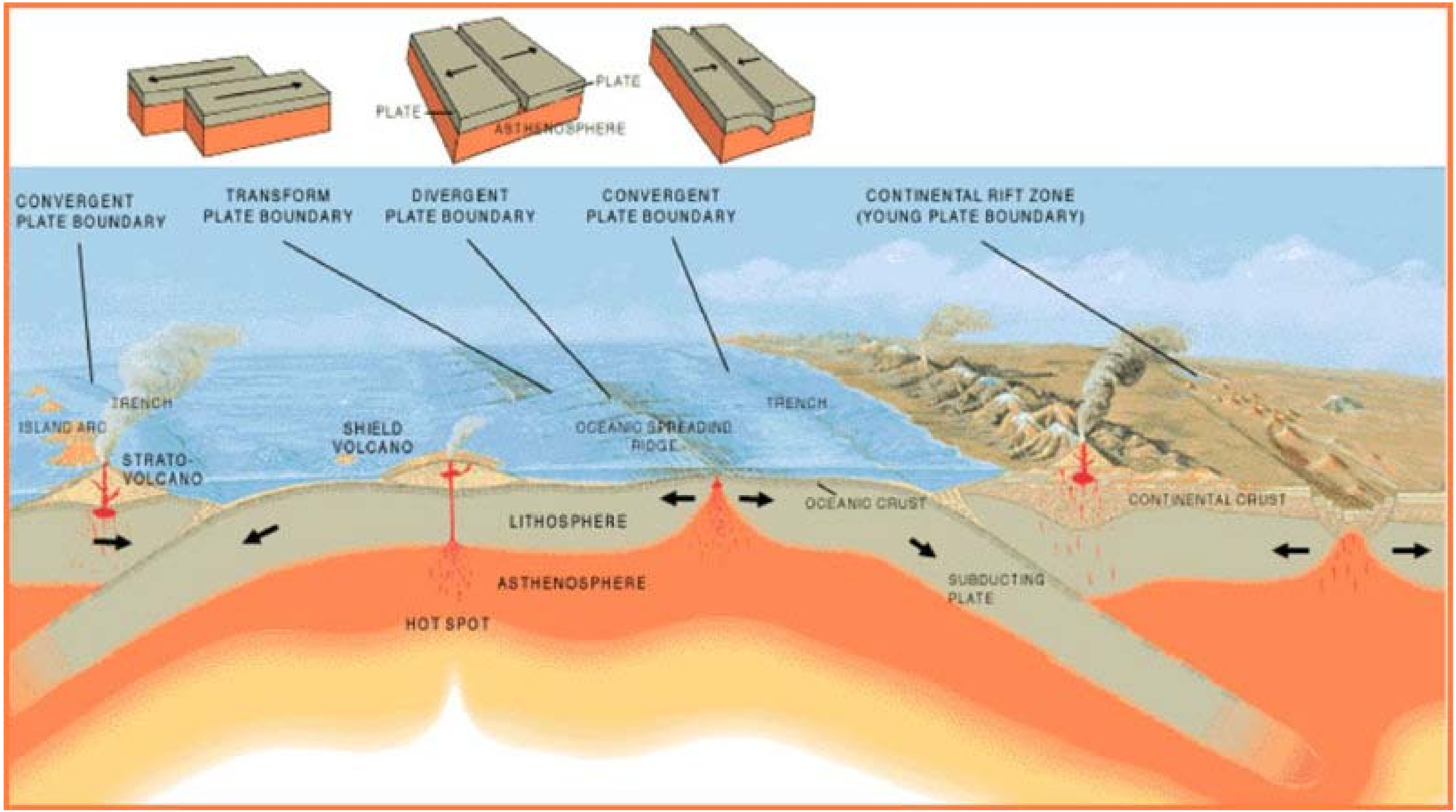
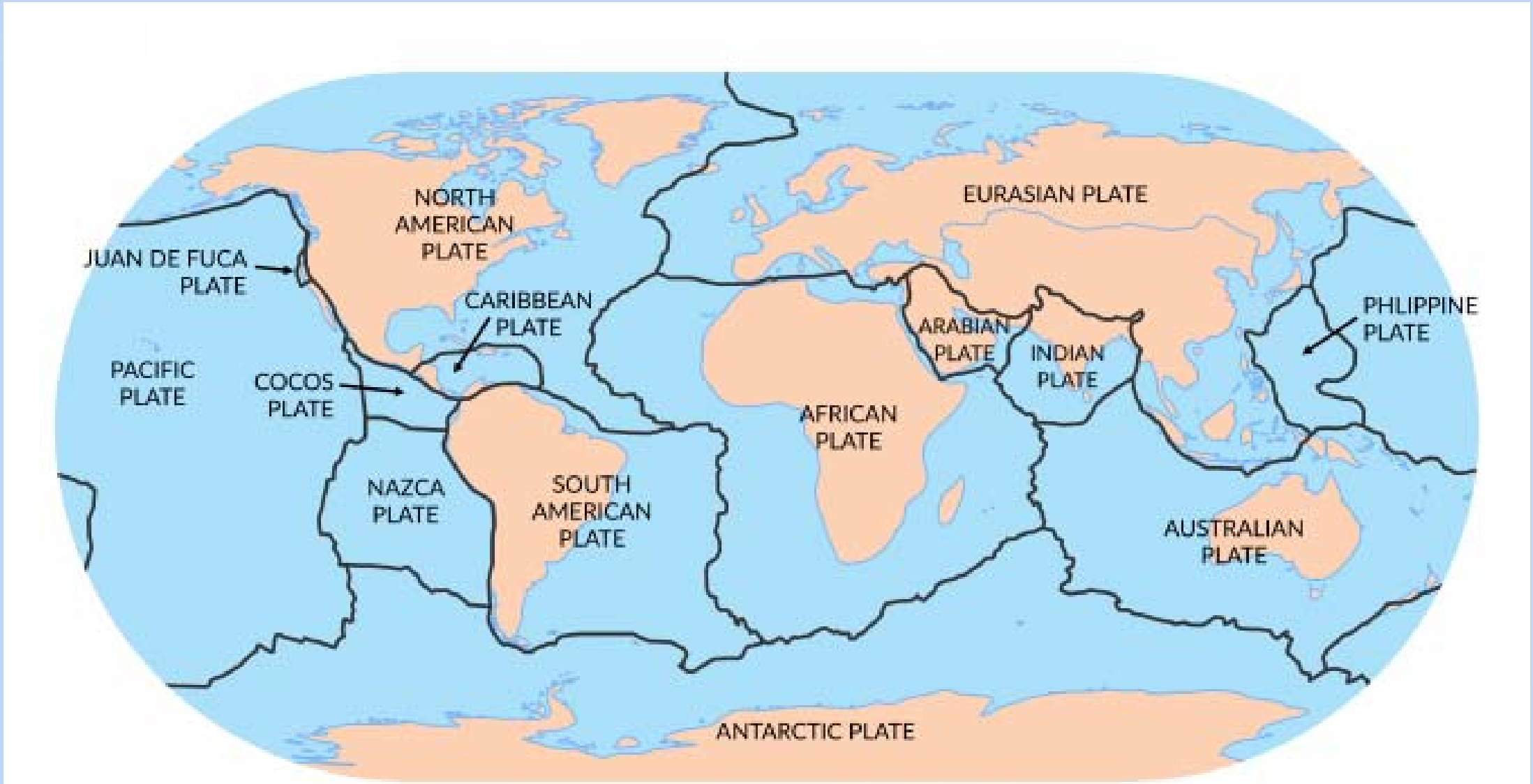


PLATE
PLATE
ASTHENOSPHERE
CONVERGENT PLATE BOUNDARY
TRANSFORM PLATE BOUNDARY
DIVERGENT PLATE BOUNDARY
CONVERGENT PLATE BOUNDARY
CONTINENTAL RIFT ZONE (YOUNG PLATE BOUNDARY)
TRENCH
ISLAND ARC
STRATO-VOLCANO
SHIELD VOLCANO
OCEANIC SPREADING RIDGE
TRENCH
LITHOSPHERE
OCEANIC CRUST
CONTINENTAL CRUST
ASTHENOSPHERE
SUBDUCTING PLATE
HOT SPOT

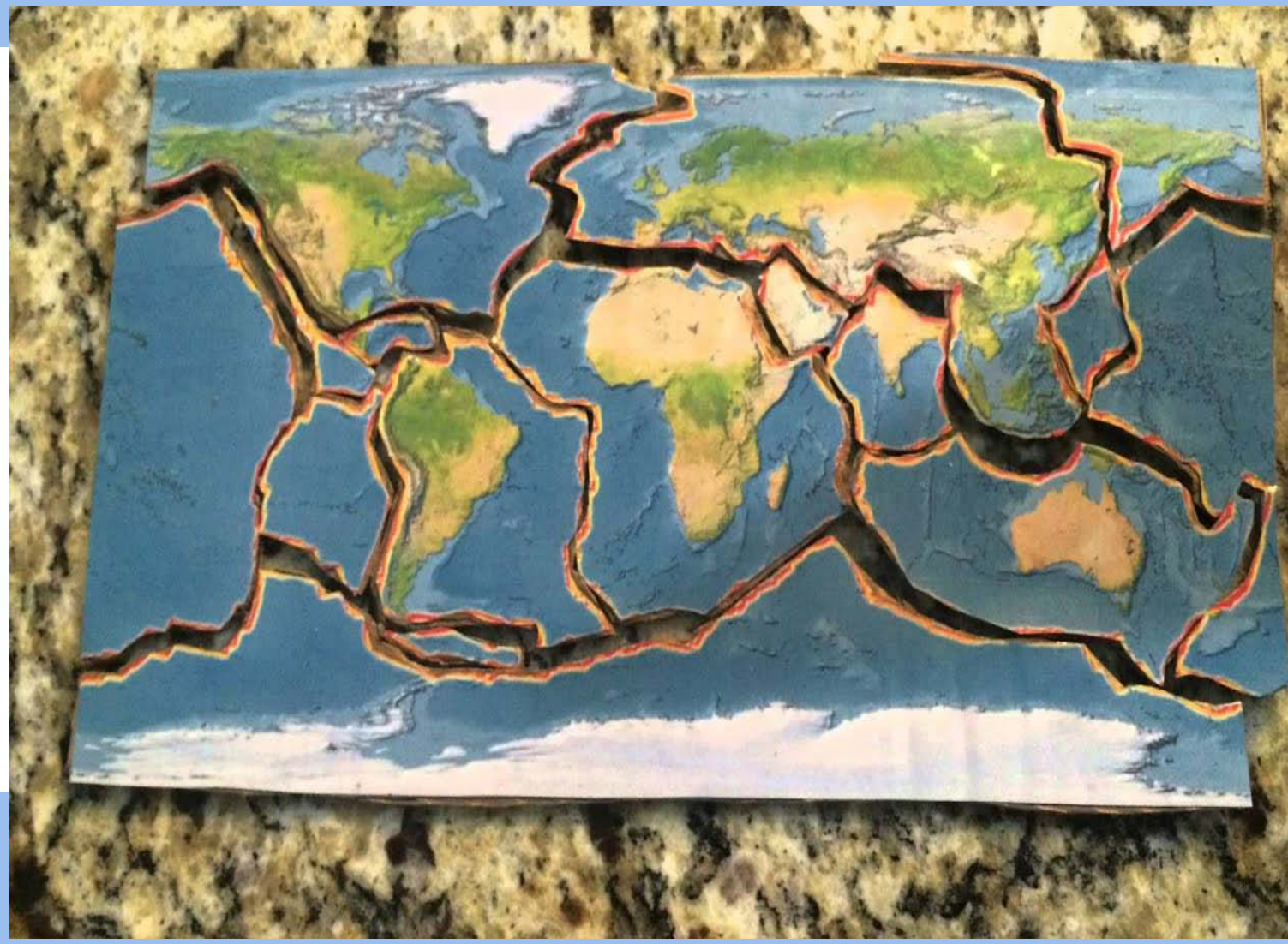
Tectonic plates theory explains:

- Formation of mountain ranges
- Earthquakes
- Volcanic activity
- Mineral oil
- Fossils of sea water creatures on land well above sea level

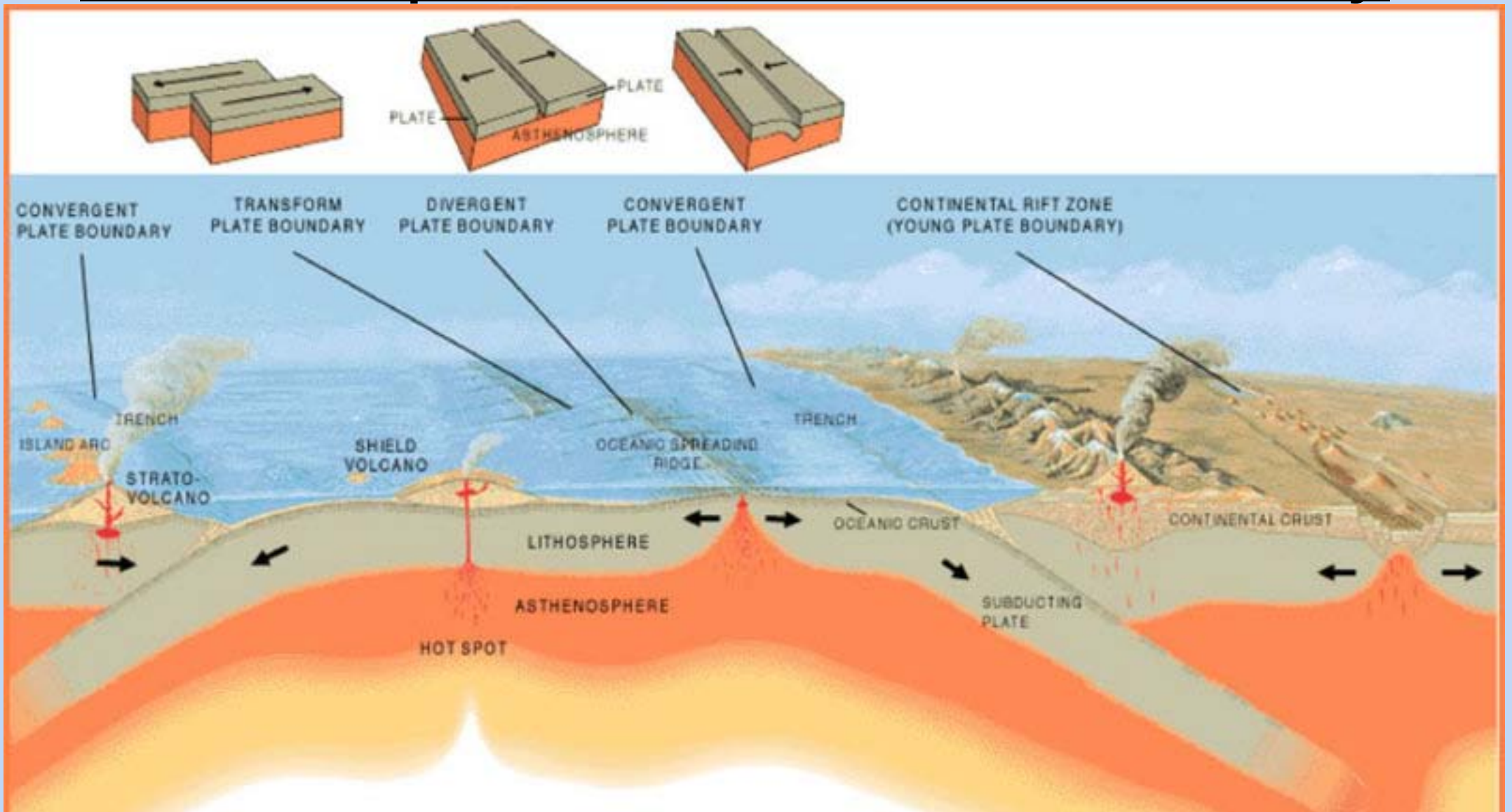
Tectonic plates and formation of continents



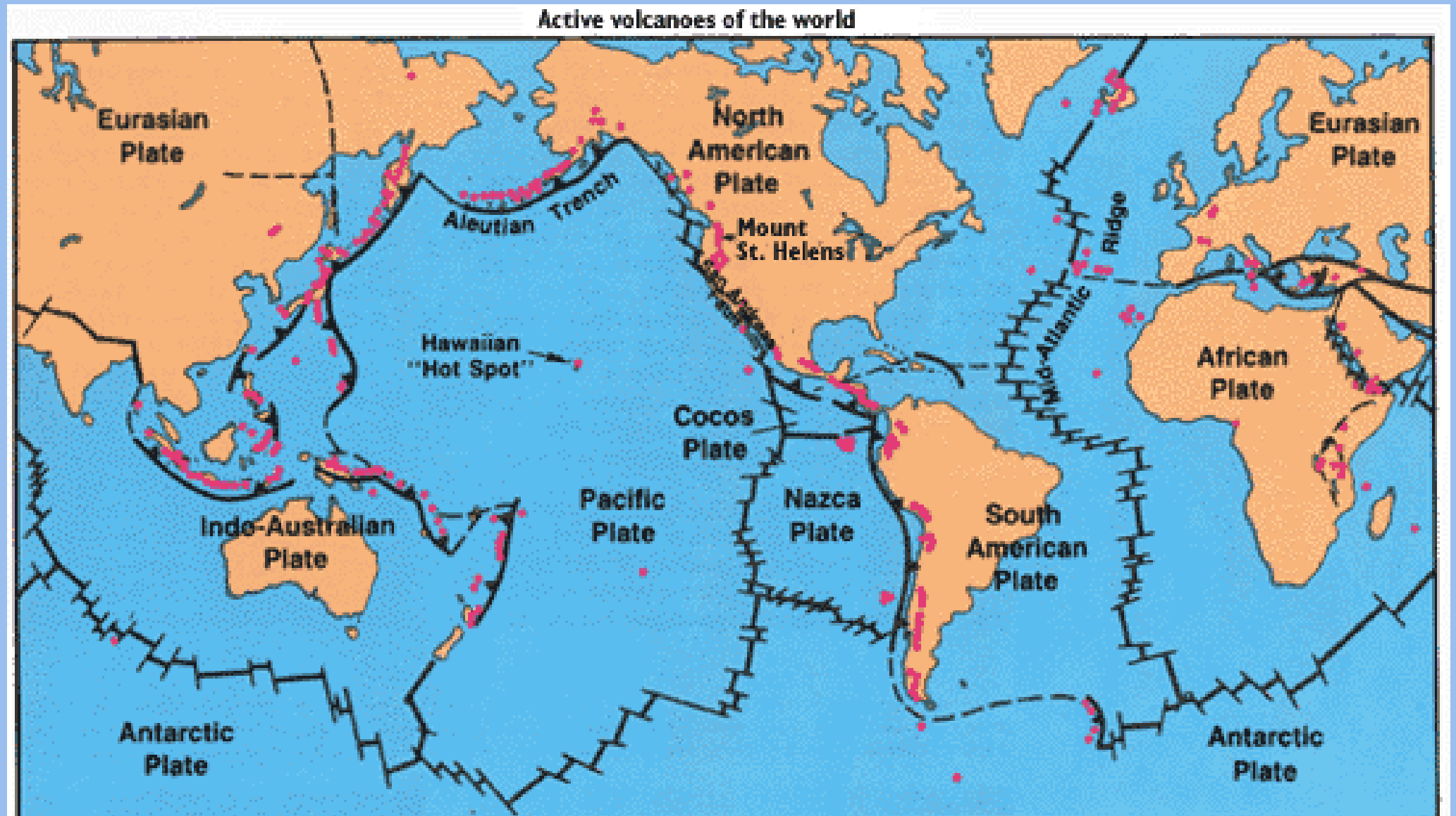
Tectonic plates and formation of mountains



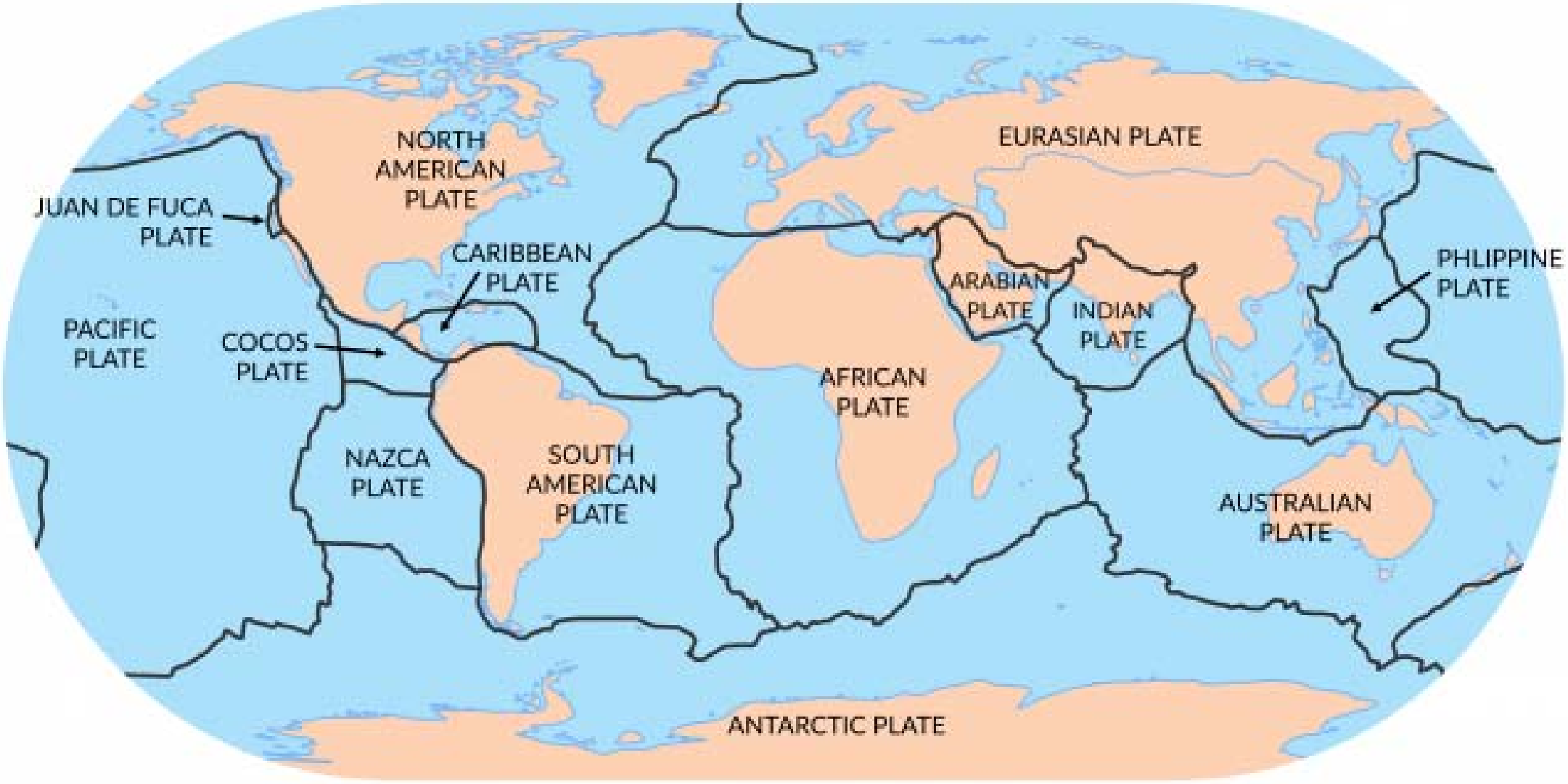
Tectonic plates and Volcanic activity



Fault lines and volcanic activity



Mineral oil and Fossils of marine life



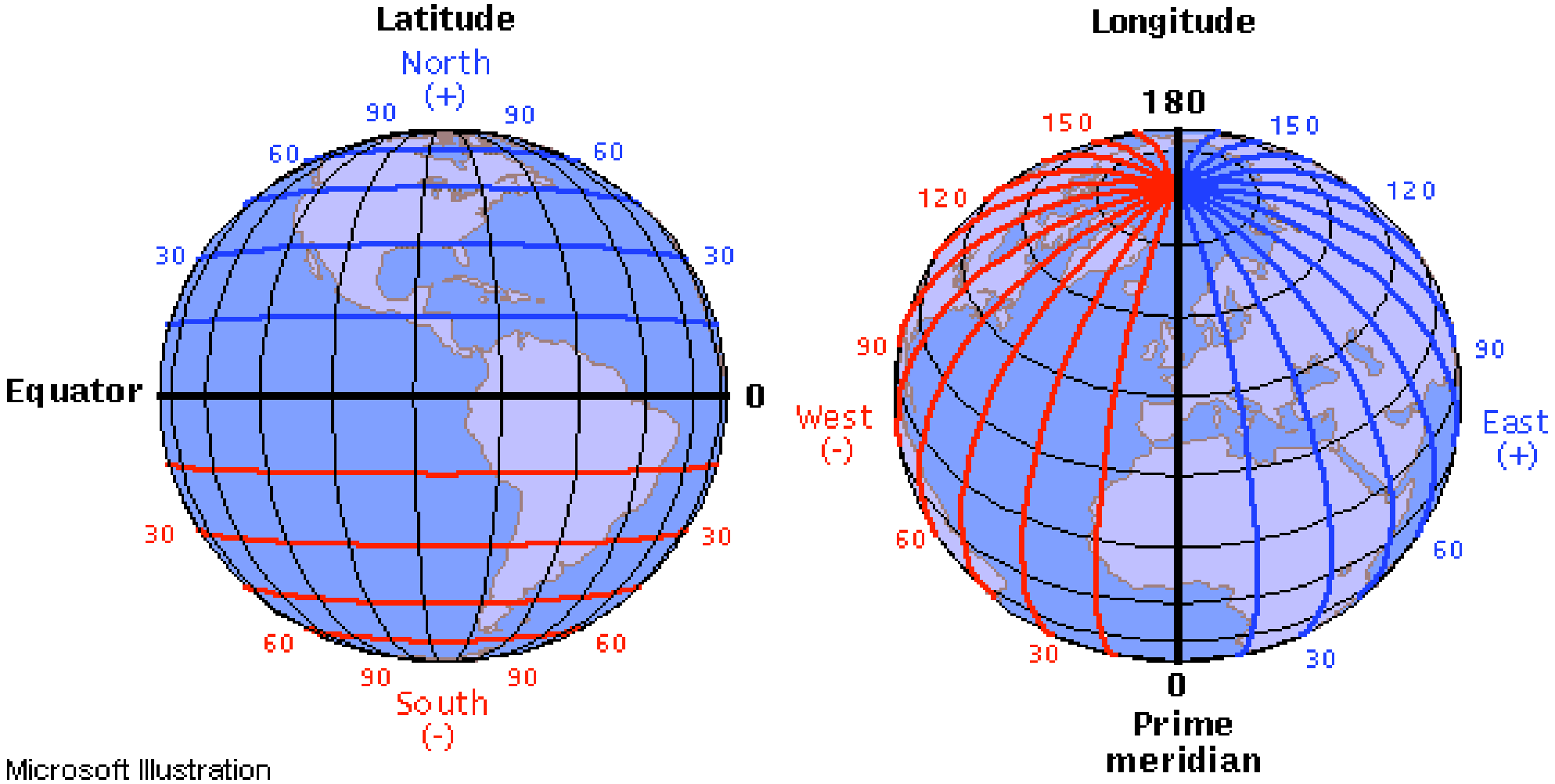
- **Evaluation:**

- What are the tectonic plates? How were the continents formed?
- What are fault lines?

FINDING PLACES ON MAP

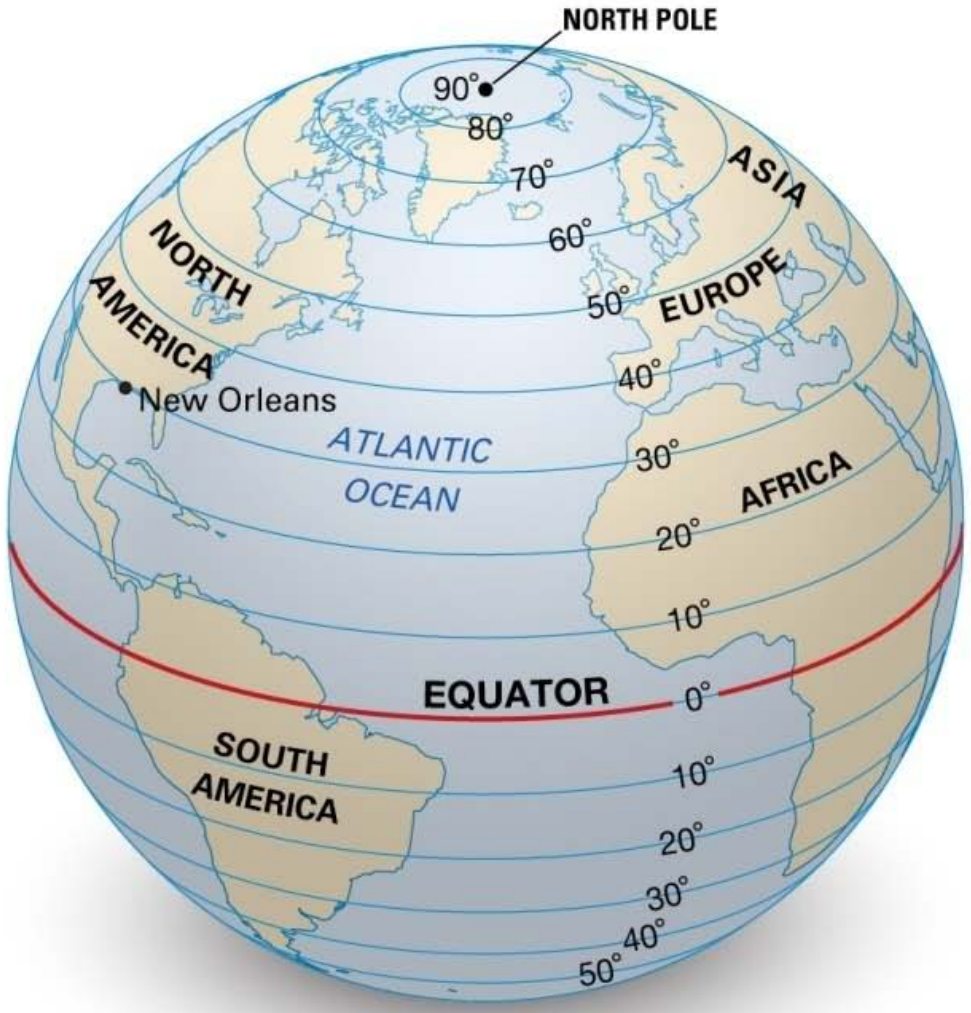
Have you ever seen a map of a town?

Every location on earth has a global address, which is given as two numbers. These two numbers are a location's latitude number and its longitude number.



Microsoft Illustration

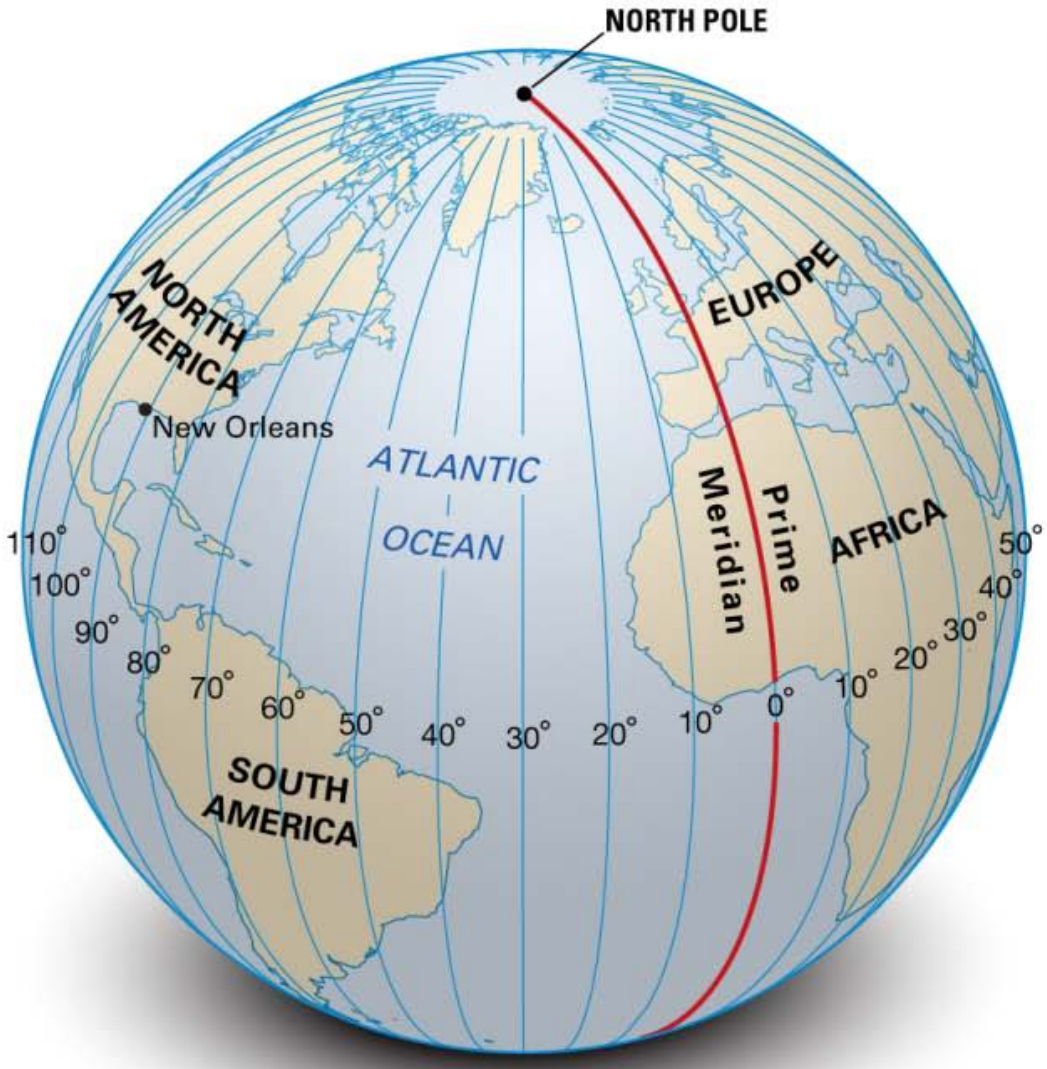
Lines of latitude: 180 in number (90 in the north and 90 in the south)



FACTS ABOUT LINES OF LATITUDE

- Are known as parallels.
- Run in an east-west direction.
- Measure distance north or south from the Equator.
- Are parallel to one another and never meet.
- Cross the prime meridian at right angles.
- Lie in planes that cross the Earth's axis at right angles.
- Get shorter toward the poles, with only the Equator, the longest, a great circle.

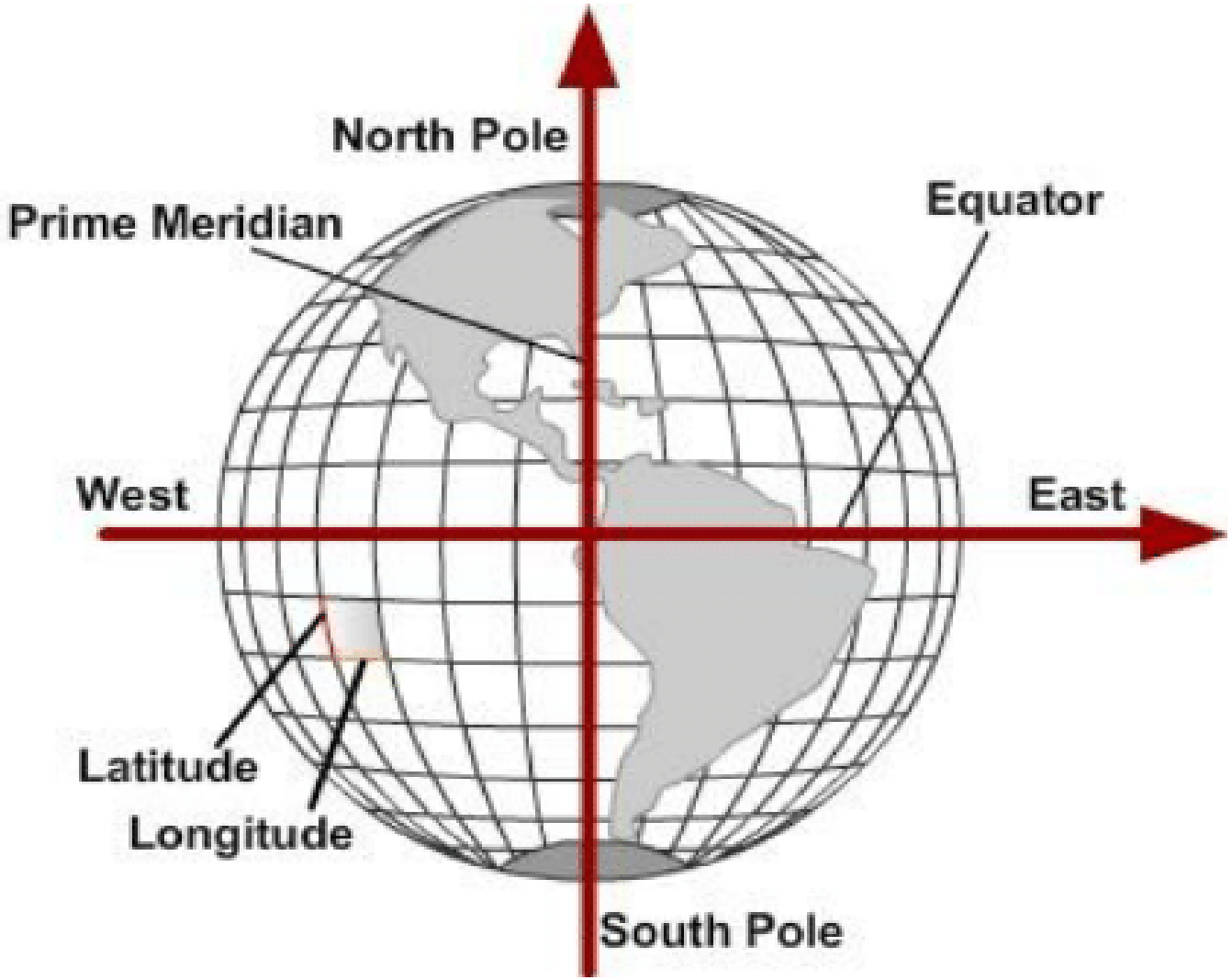
Lines of longitude: 360 in number (180 in the east and 180 in the west)



FACTS ABOUT LINES OF LONGITUDE

- Are known as meridians.
- Run in a north-south direction.
- Measure distance east or west of the prime meridian.
- Are farthest apart at the Equator and meet at the poles.
- Cross the Equator at right angles.
- Lie in planes that pass through the Earth's axis.
- Are equal in length.
- Are halves of great circles.

Grid map system / Grid mapping the globe:



Greenwich line: longitude assigning value 0°

Greenwich Observatory:

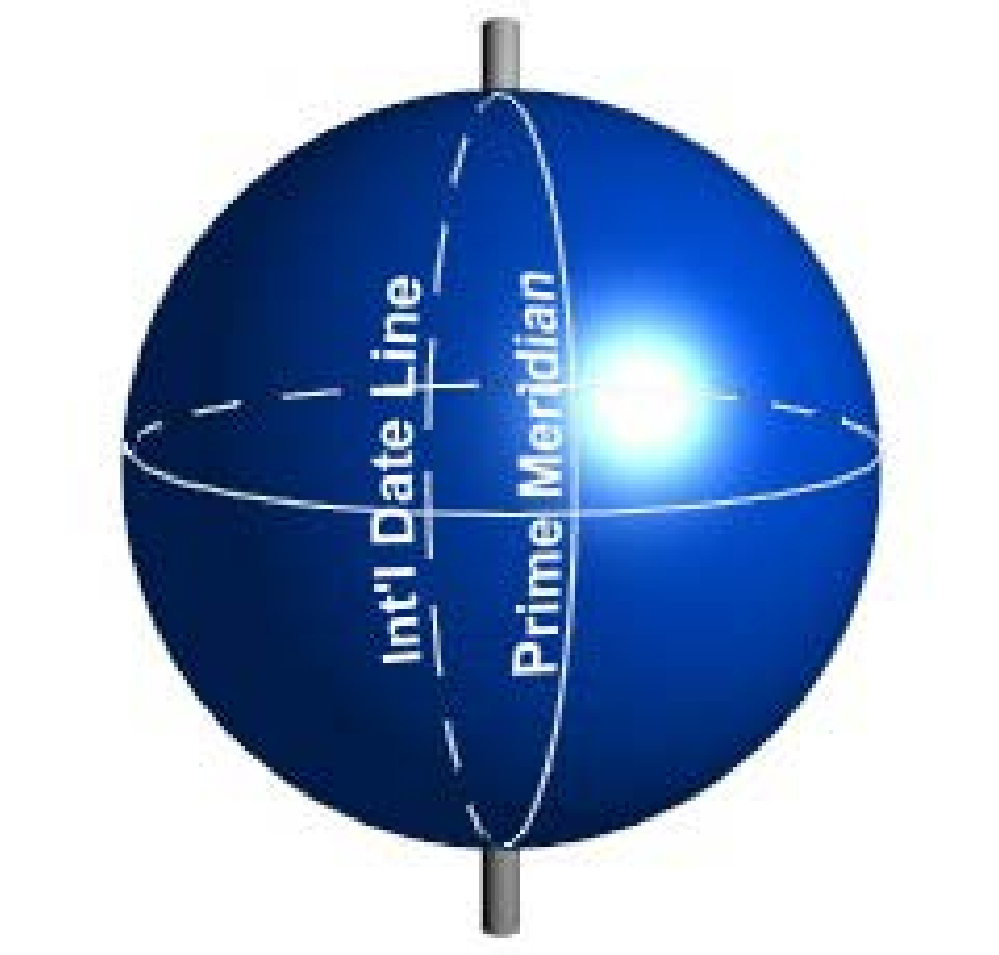
- Distances EAST of London, marked as ___ degrees E.

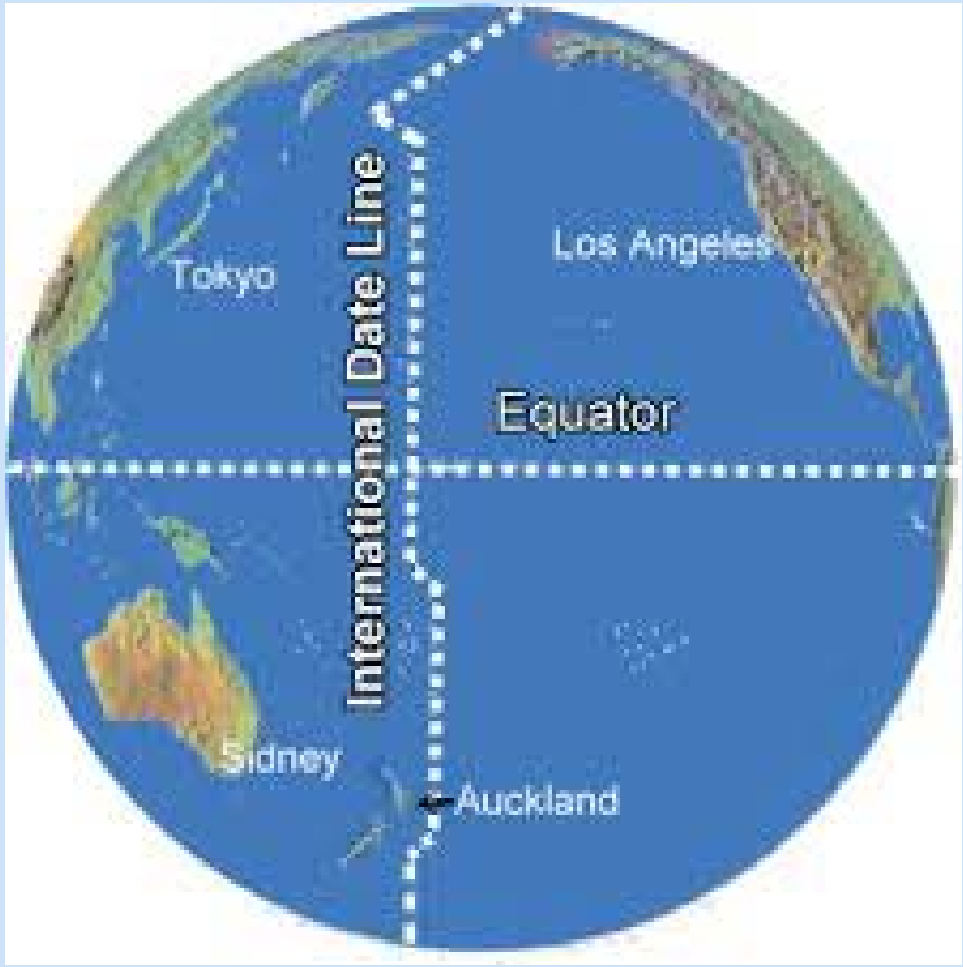
- Distances WEST of London, marked as ___ degrees W.

International Date Line:

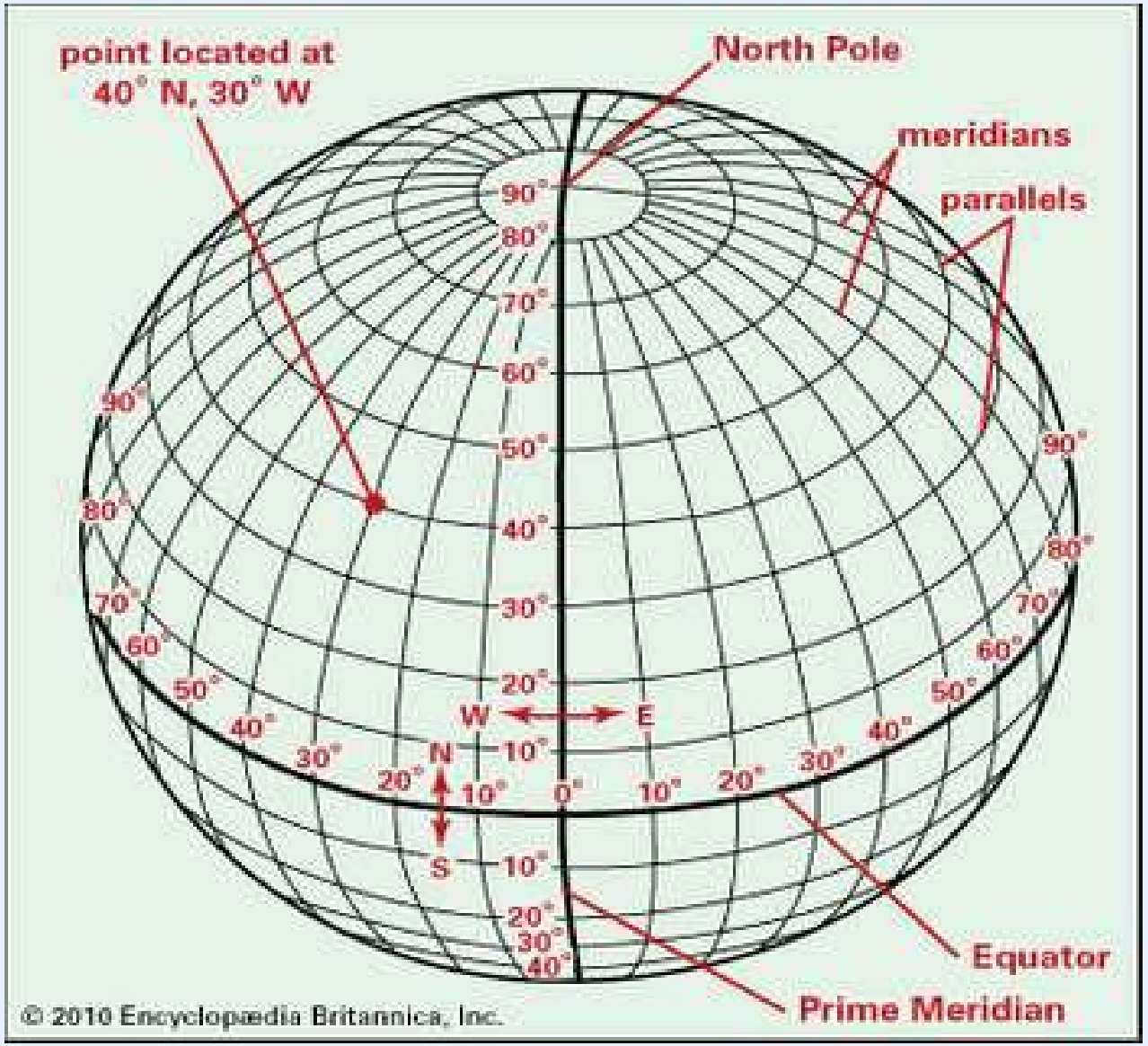
Line of longitude right opposite to the Greenwich longitude.

Assigning value as 180 °





Finding Places on a Map

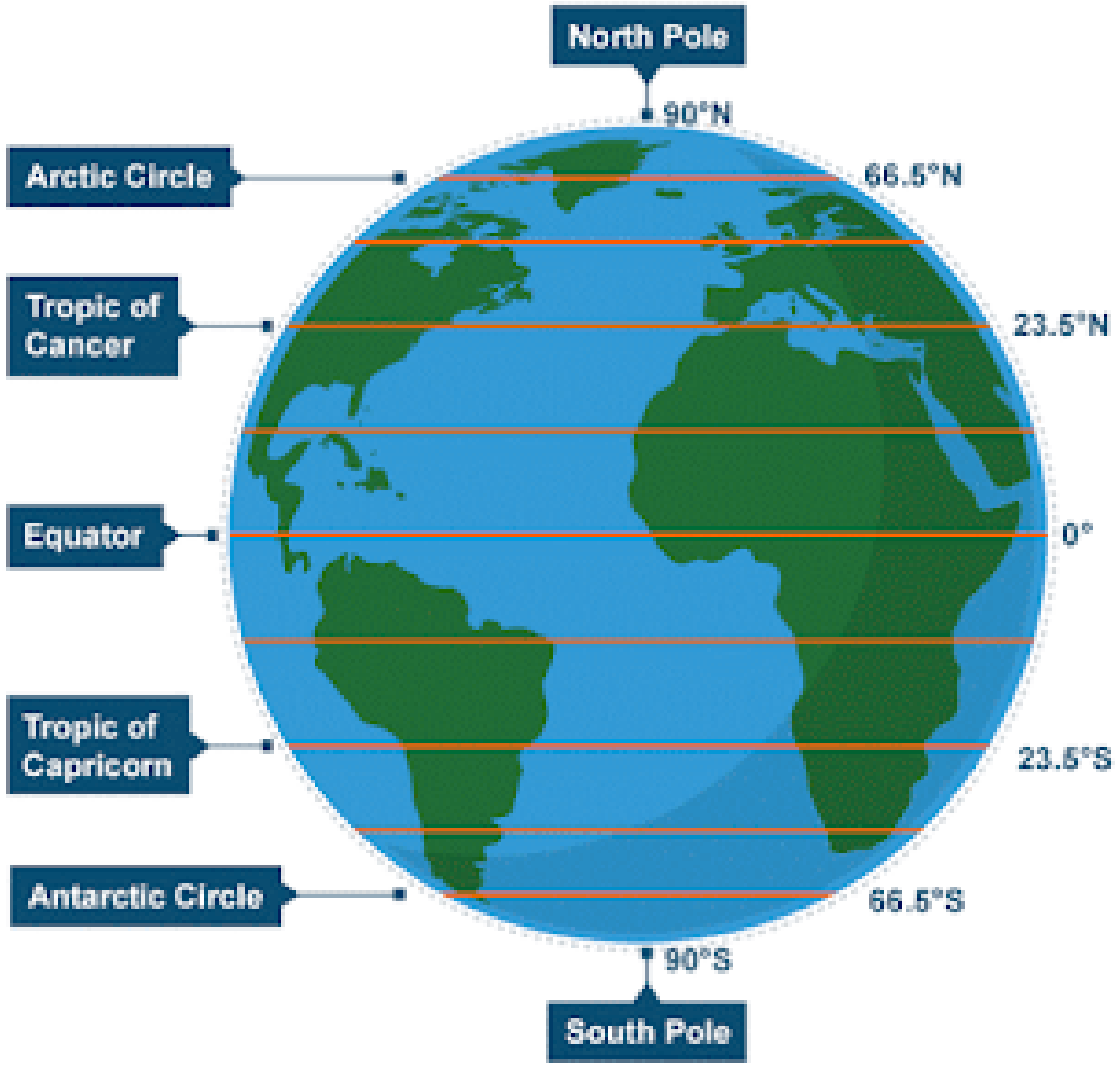


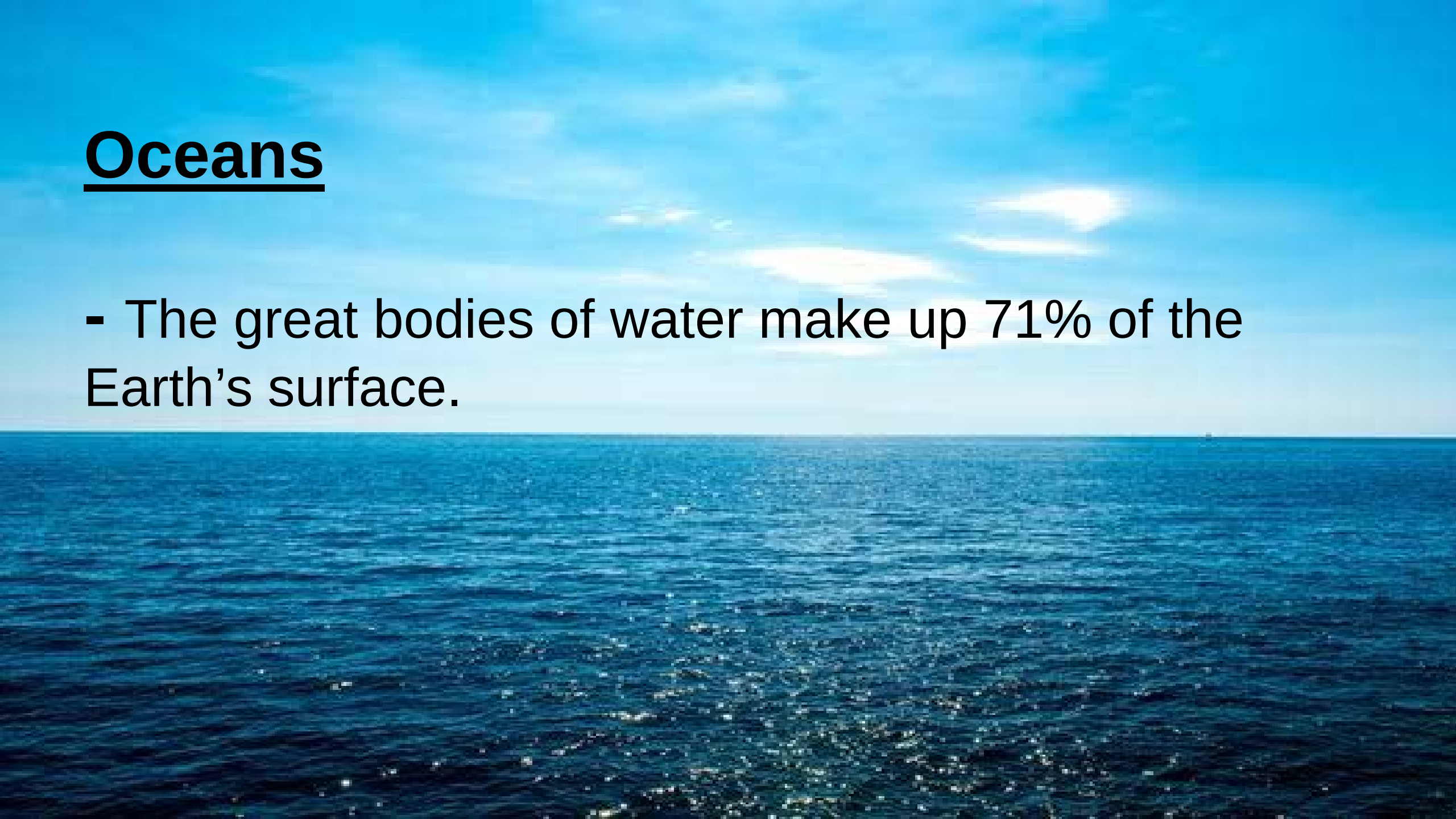
The tropics and the Arctic and Antarctic circles:

Important lines of latitudes:

- The tropic of Cancer (23.5° N)
- The tropic of Capricorn (23.5° S)

- The Arctic Circle (66,5° N)
- The Antarctic Circle (66,5° S)



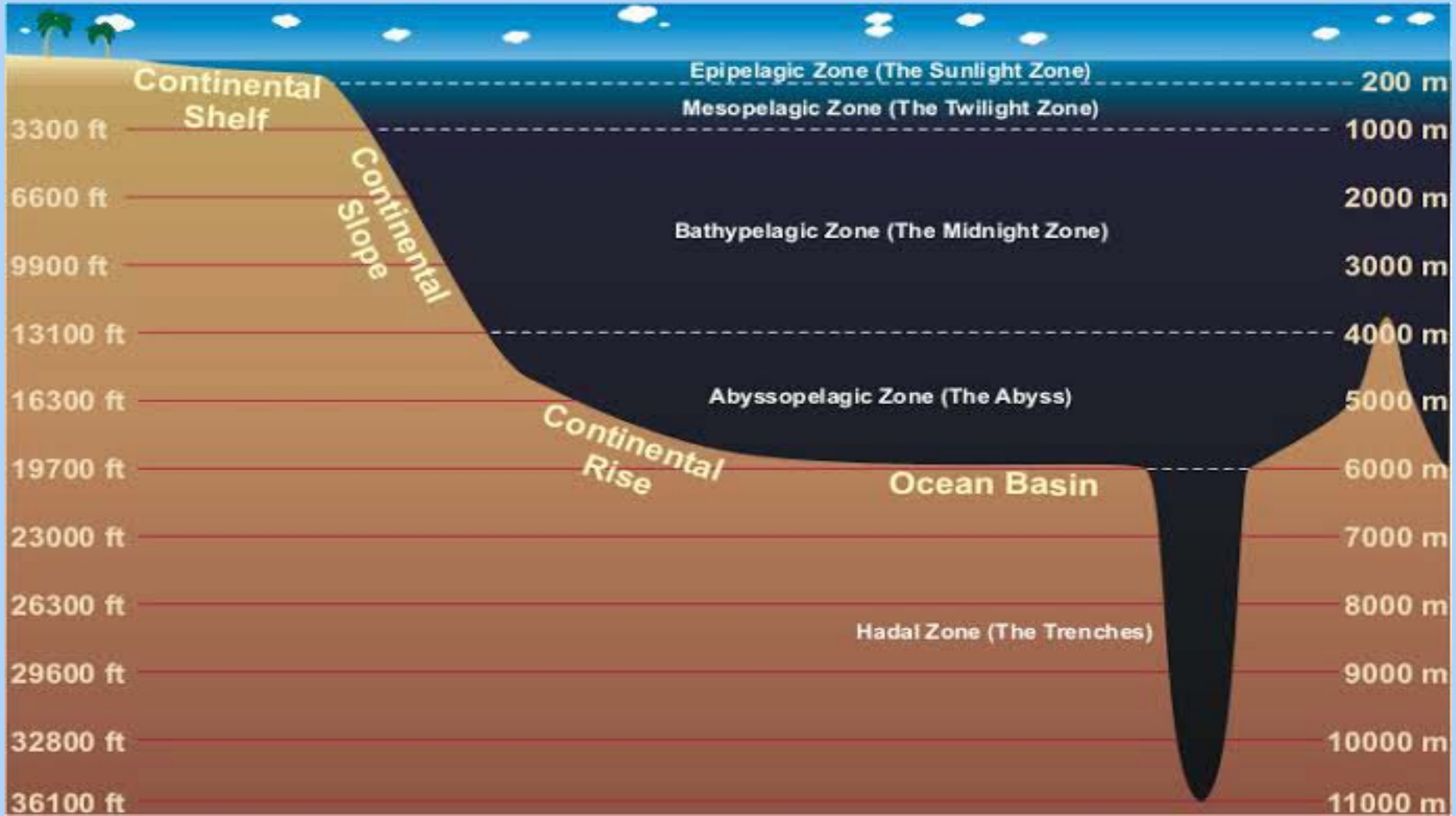


Oceans

- The great bodies of water make up 71% of the Earth’s surface.

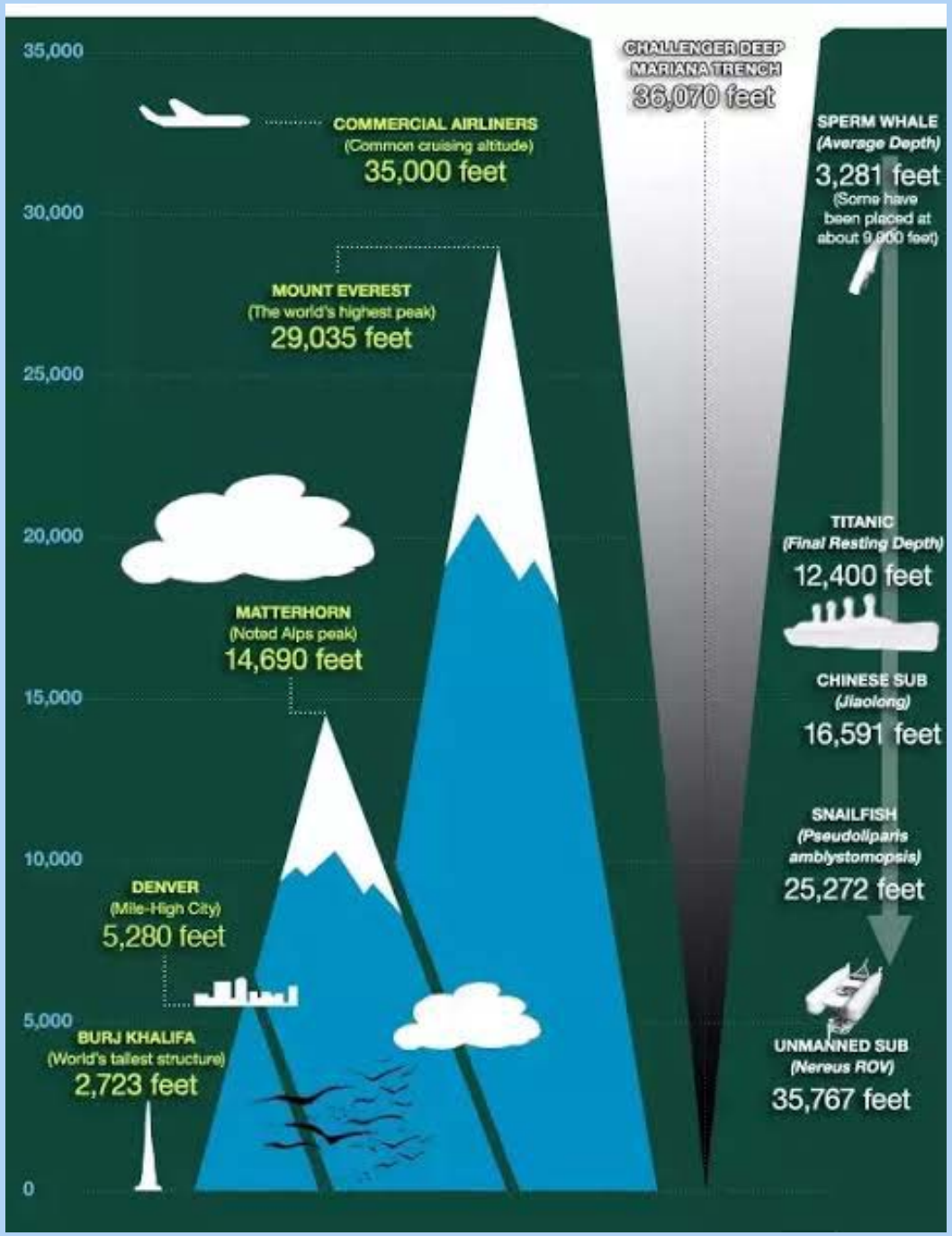
Land and Oceans

The average depth of the oceans is almost 4000 metres.



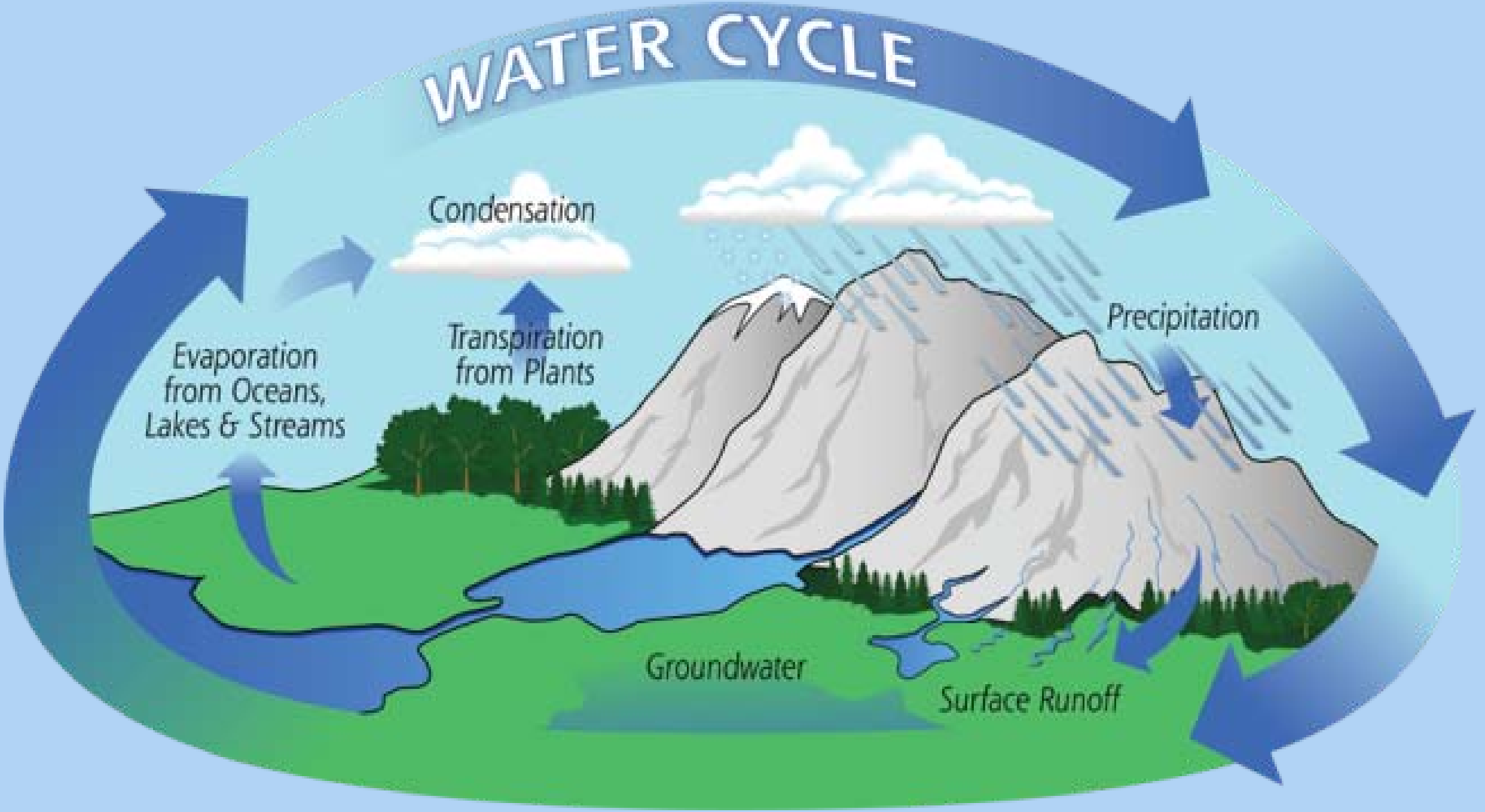
Mariana Trench:

- Off the island of Guam in the Pacific, plunges down to 11,022 metres__ more than 11 Kilometres.
- If Mount Everest (8848 m) were sitting at the bottom of this trench, the peak would still be about 2.2 Km below the surface.



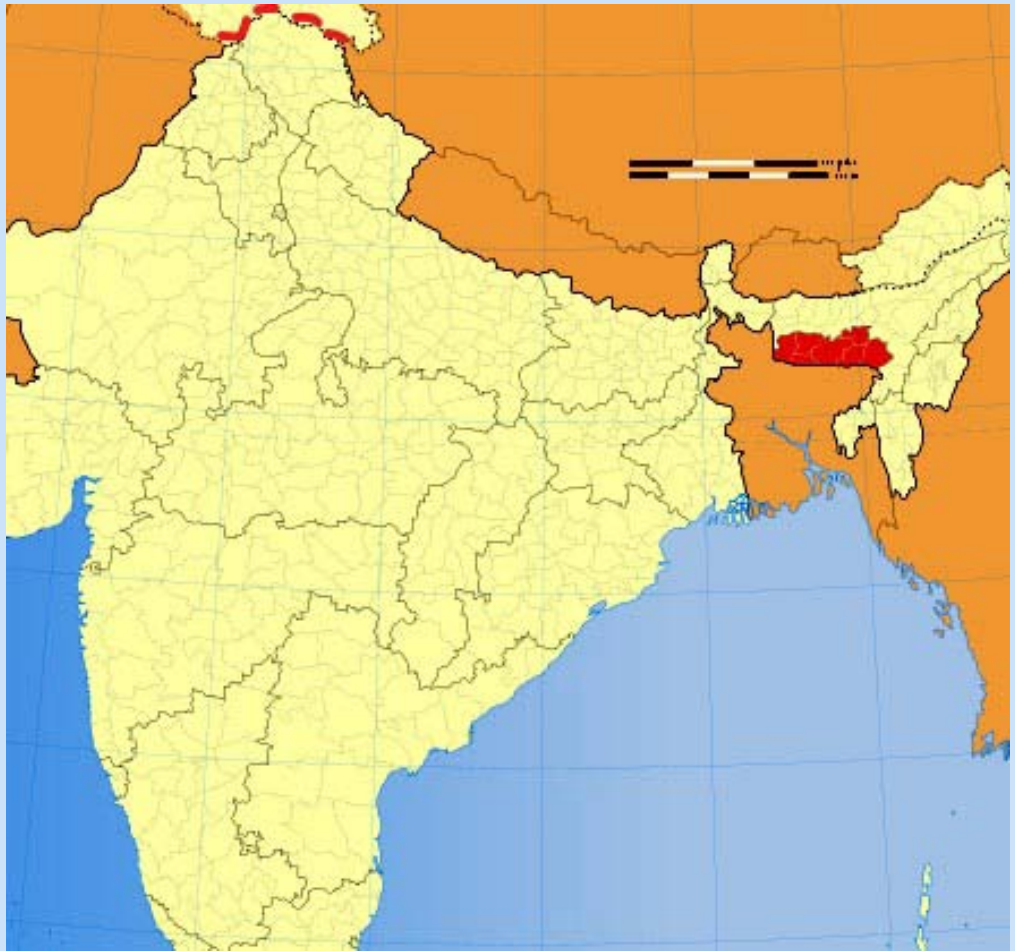
The importance of oceans:

- The source of rain on which the world depends for life,
- Regulate the Earth’s temperature,
- Provide transport across much of the world,
- Source of food-fish ,shellfish, seaweed and plankton,
- The ocean floor supplies minerals especially oil and gas.


WATER CYCLE
Condensation
Transpiration
from Plants
Evaporation
from Oceans,
Lakes & Streams
Precipitation
Groundwater
Surface Runoff

The heaviest rainfall ever recorded: Cherrapunji: (in India)

26,700 mm of rain in one year, 1860-1.



The highest rainfall in a single day was on Reunion Island in the Indian ocean (1870 mm rainfall on 5 and 6 March 1952.)

Atacama Desert: (western coast of Chile)

Driest place on earth,(only 0.5 mm of rain in 43 years)

RAINFALL

- The world's average rainfall is about 700 - 800 mm a year, though there are great differences.
- The average rainfall in Pakistan is less than 250 mm a year.