

**WELCOME**  
TO **Adda247**

अंधेरी है रात तो क्या,  
ऊंचे हैं रूखाब तो क्या,  
जुनून भी तो रखता हूँ,  
आसमां में उड़ने का।”



**BILINGUAL**



**Y588**

# Target UPSC CDS 1

**2023 (IMA, INA & AFA)**

**Complete Batch**

**Starts Nov 2, 2022**

**10 AM to 3 PM**

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# AFCAT 1 2023

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**Starts Nov 2, 2022**

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# FOUNDATION

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# WARRIOR 3.0

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# LAKSHYA 3.0

**BSF Head Constable 2022**

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# TARGET

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## **TARGET DRDO CEPTAM**

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## **TARGET IB**

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## **LAKSHYA 3.0**

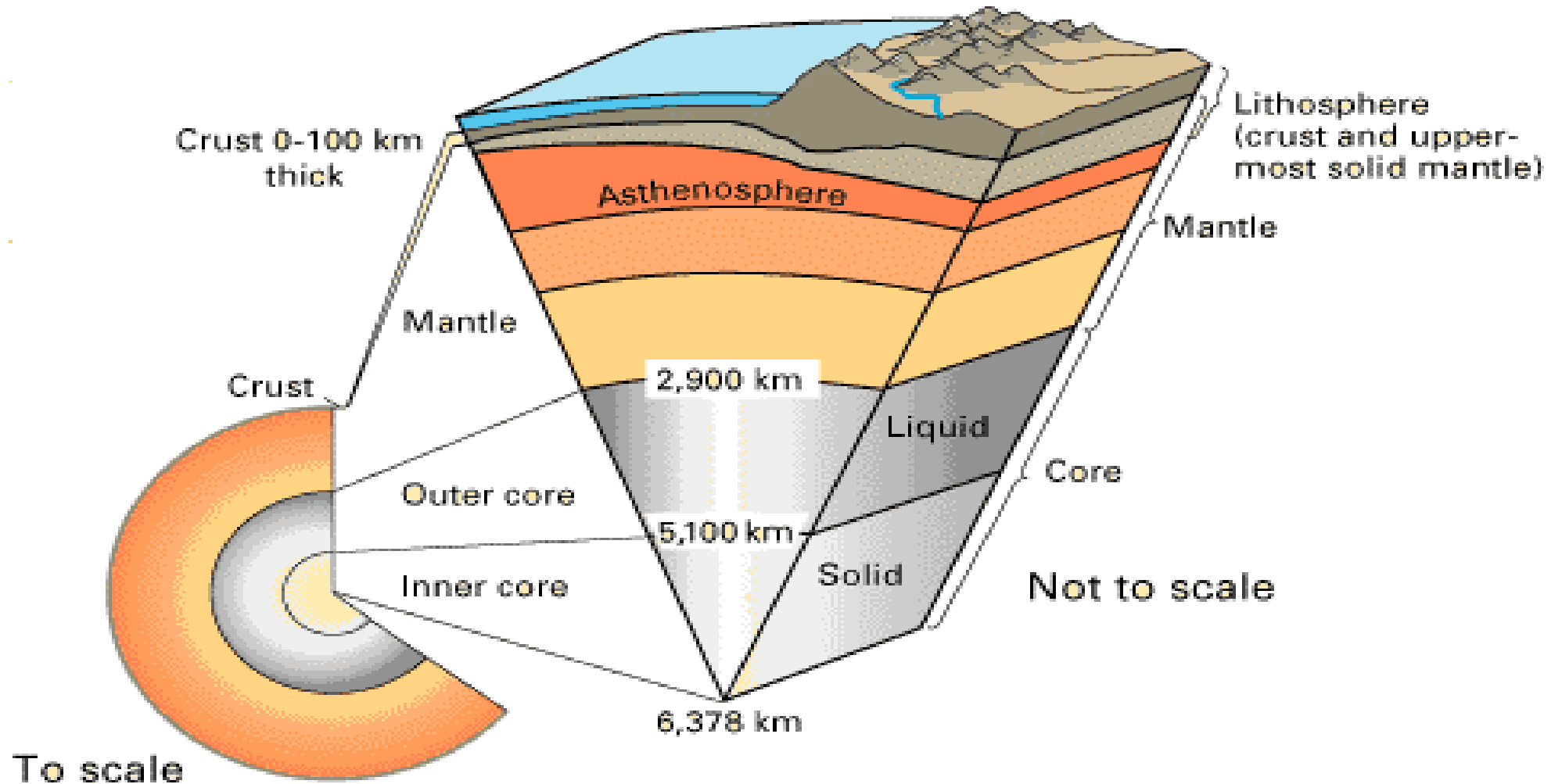
**BSF Head Constable 2022**

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**9 AM to 6 PM**

# INTERIOR OF THE EARTH



The configuration of the surface of the earth is largely a product of the processes operating in the interior of the earth.

Exogenic as well as endogenic processes are constantly shaping the landscape.



## SOURCES OF INFORMATION ABOUT THE INTERIOR

The earth's radius is 6,370 km.





## Direct Sources

The most easily available solid earth material is surface rock or the rocks we get from mining areas.

Gold mines in South Africa are as deep as 3 - 4 km.

Scientists world over are working on two major projects such as “Deep Ocean Drilling Project” and “Integrated Ocean Drilling Project”.

The deepest drill at Kola, in Arctic Ocean, has so far reached a depth of 12 km.

Volcanic eruption forms another source of obtaining direct information.

As and when the molten material (magma) is thrown onto the surface of the earth, during volcanic eruption it becomes available for laboratory analysis.

However, it is difficult to ascertain the depth of the source of such magma

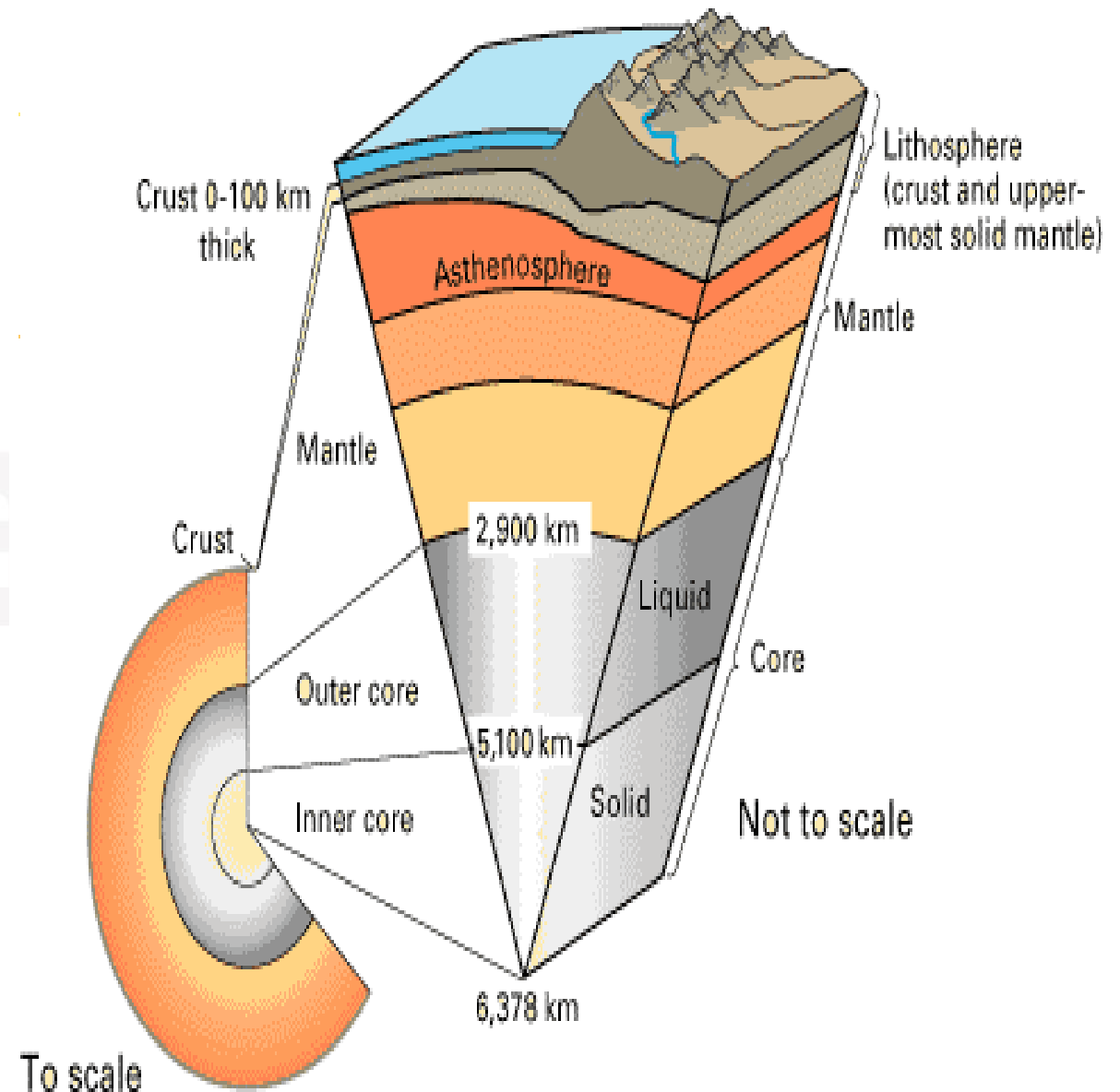


## Indirect Sources

Mining activity that temperature and pressure increase with the increasing distance from the surface towards the interior in deeper depths.

Moreover, it is also known that the density of the material also increases with depth.

It is possible to find the rate of change of these characteristics.



Knowing the total thickness of the earth, scientists have estimated the values of temperature, pressure and the density of materials at different depths.



Another source of information are the meteors that at times reach the earth.

However, it may be noted that the material that becomes available for analysis from meteors, is not from the interior of the earth.

The material and the structure observed in the meteors are similar to that of the earth.

They are solid bodies developed out of materials same as, or similar to, our planet. Hence, this becomes yet another source of information about the interior of the earth.

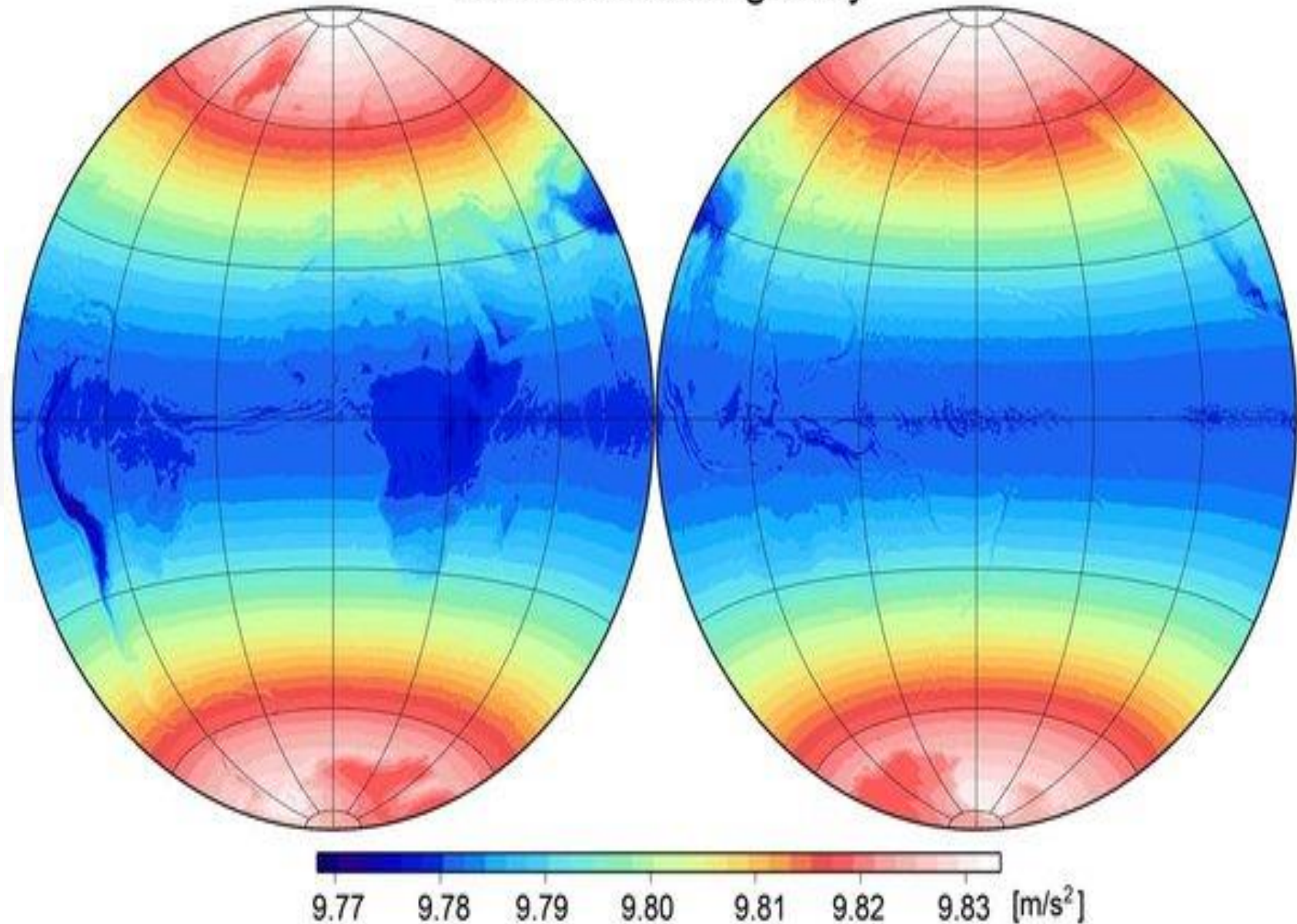


The other indirect sources include gravitation, magnetic field, and seismic activity.

The gravitation force ( $g$ ) is not the same at different latitudes on the surface.

It is greater near the poles and less at the equator.

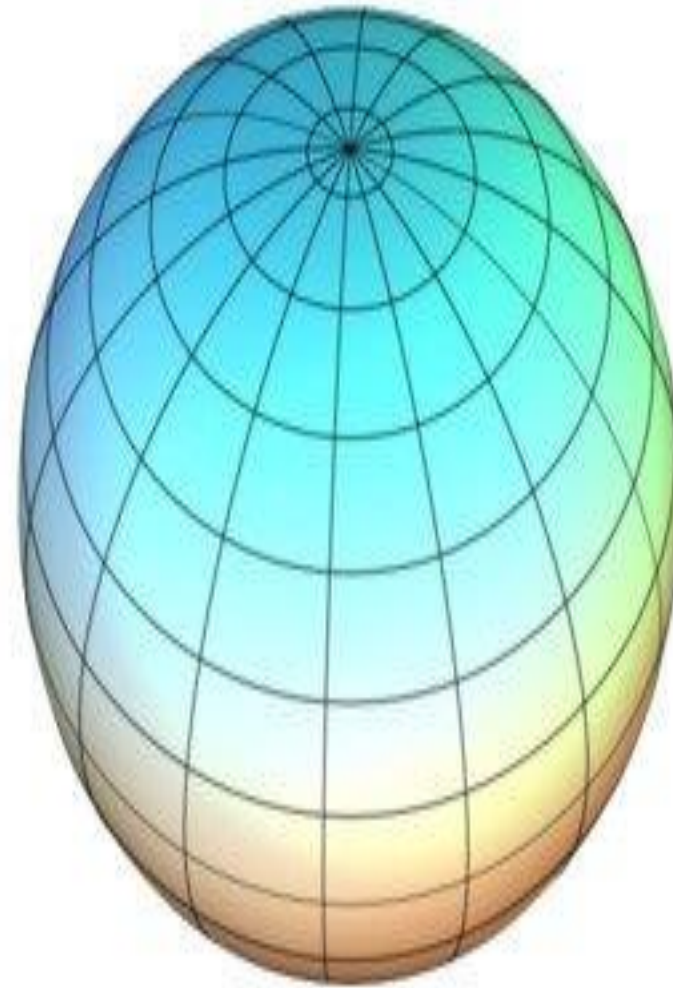
Earth's surface gravity



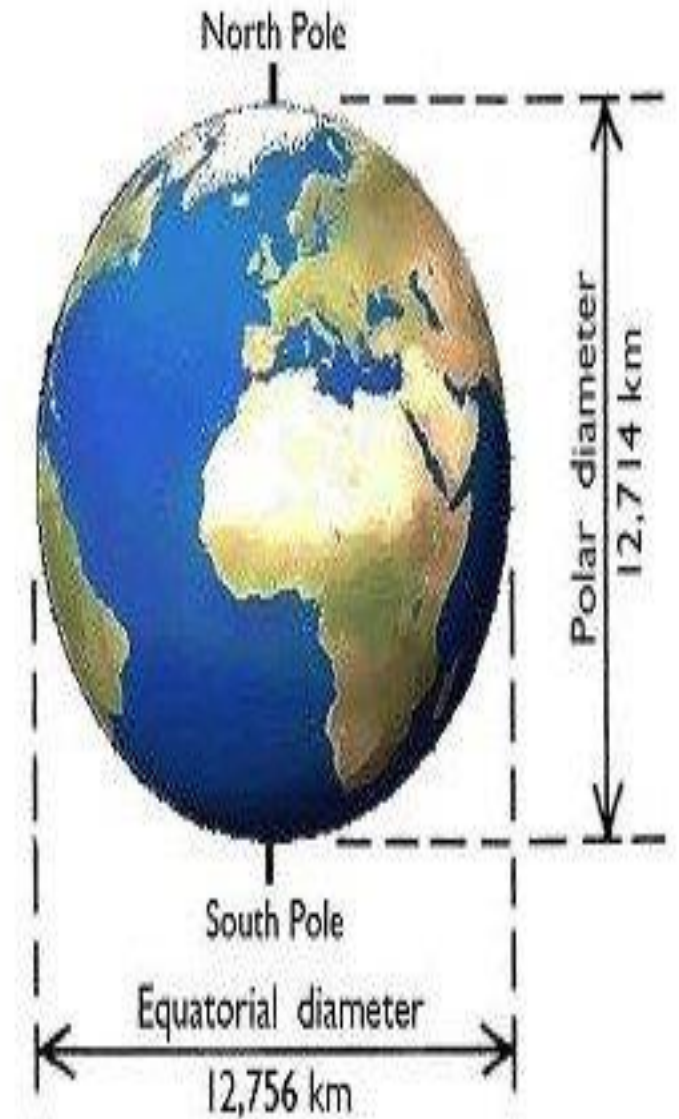
This is because of the distance from the centre at the equator being greater than that at the poles.

The gravity values also differ according to the mass of material.

The uneven distribution of mass of material within the earth influences this value.



Oblate Spheroid

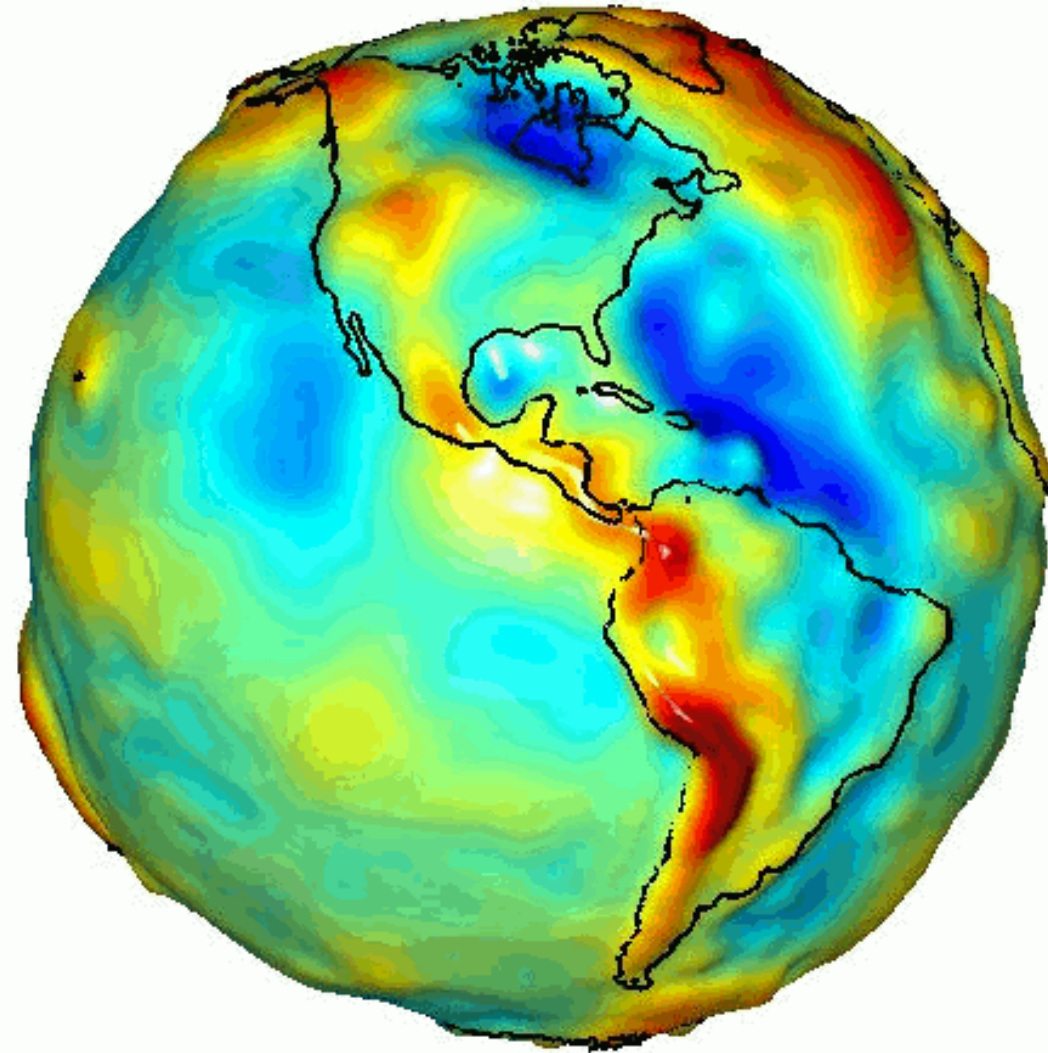


The reading of the gravity at different places is influenced by many other factors.

These readings differ from the expected values.

Such a difference is called gravity anomaly.

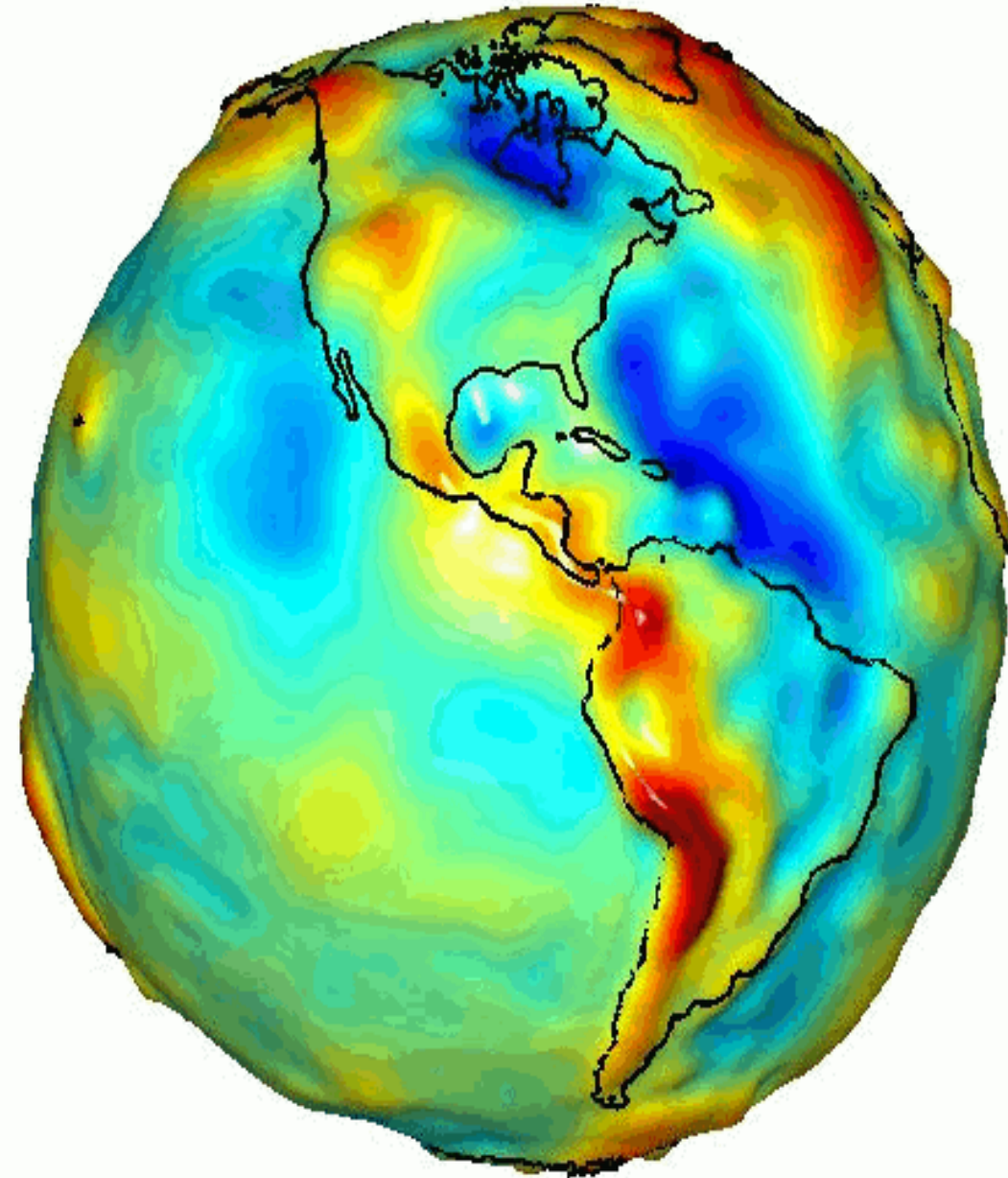
Gravity anomalies give us information about the distribution of mass of the material in the crust of the earth.





Magnetic surveys also provide information about the distribution of magnetic materials in the crustal portion, and thus, provide information about the distribution of materials in this part.

Seismic activity is one of the most important sources of information about the interior of the earth.

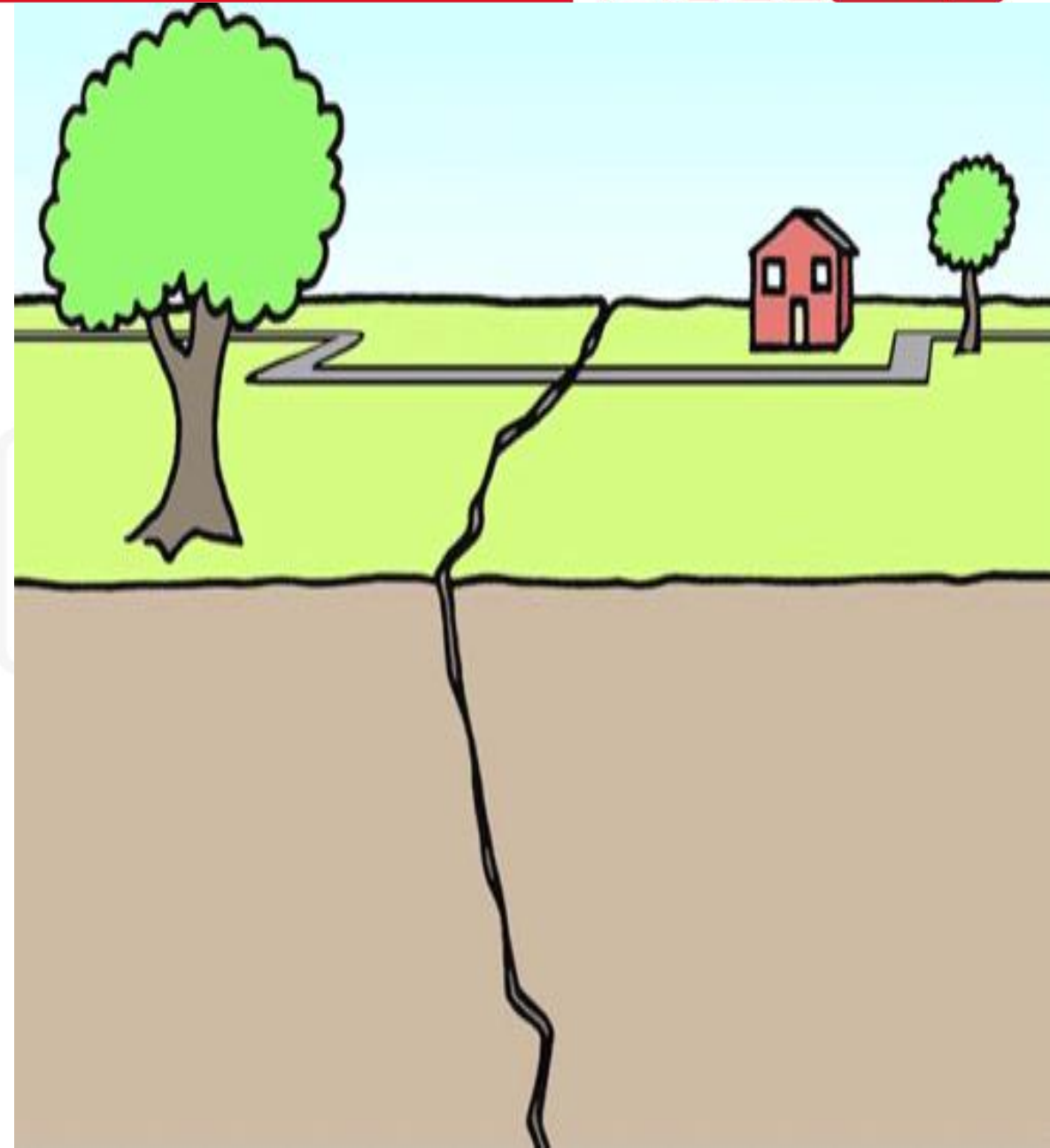


## Earthquake

The study of seismic waves provides a complete picture of the layered interior.

An earthquake in simple words is shaking of the earth. It is a natural event.

It is caused due to release of energy, which generates waves that travel in all directions.



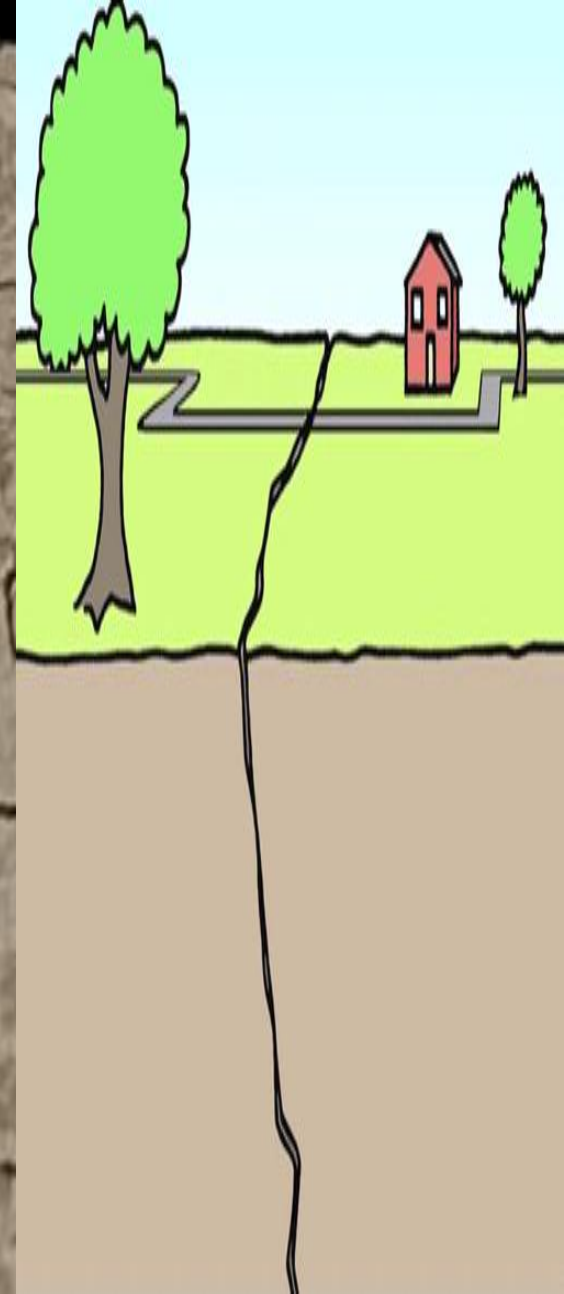
## Why does the earth shake?

The release of energy occurs along a fault. A fault is a sharp break in the crustal rocks.

Rocks along a fault tend to move in opposite directions.

As the overlying rock strata press them, the friction locks them together.

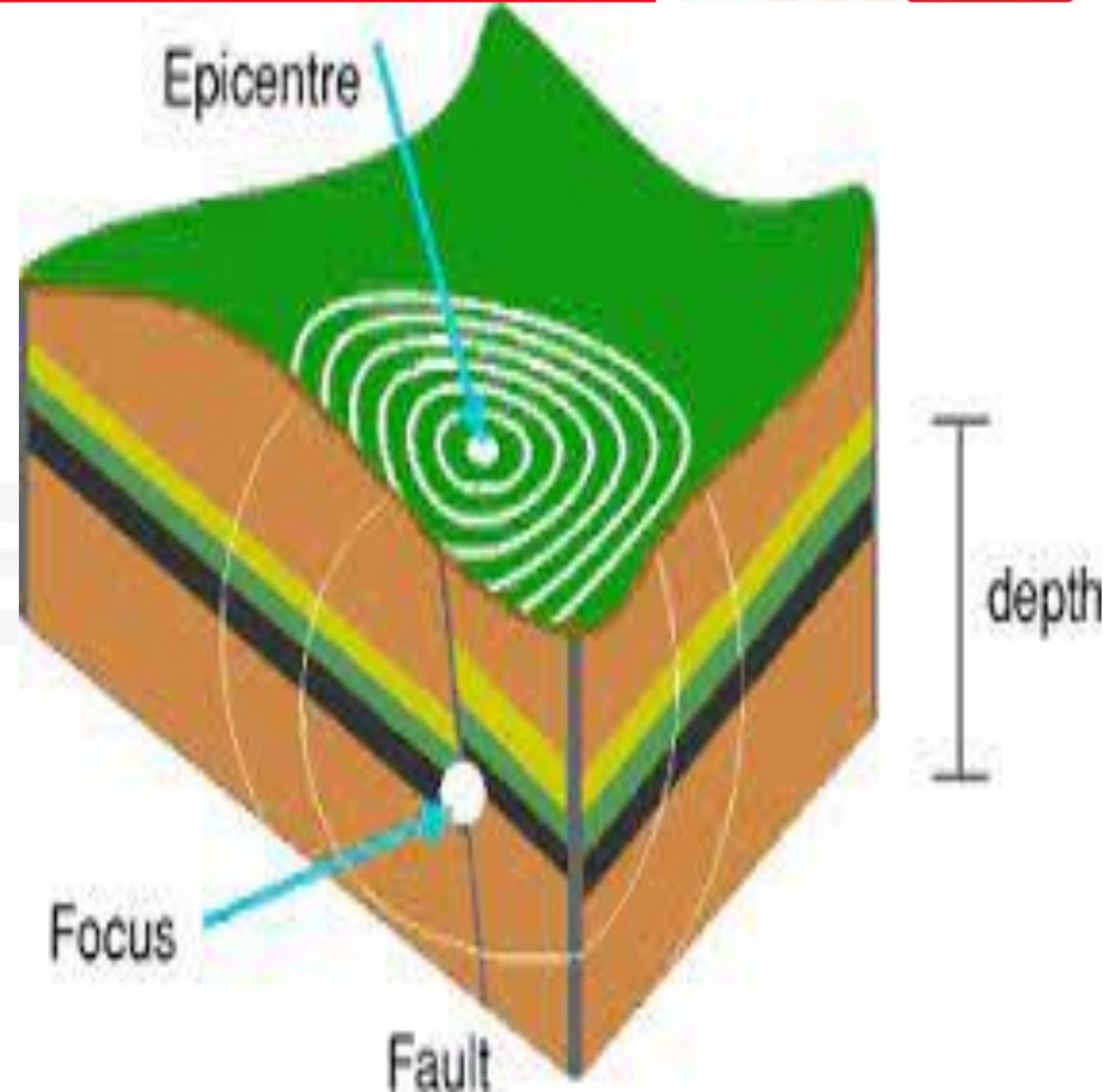
However, their tendency to move apart at some point of time overcomes the friction.



As a result, the blocks get deformed and eventually, they slide past one another abruptly.

This causes a release of energy, and the energy waves travel in all directions.

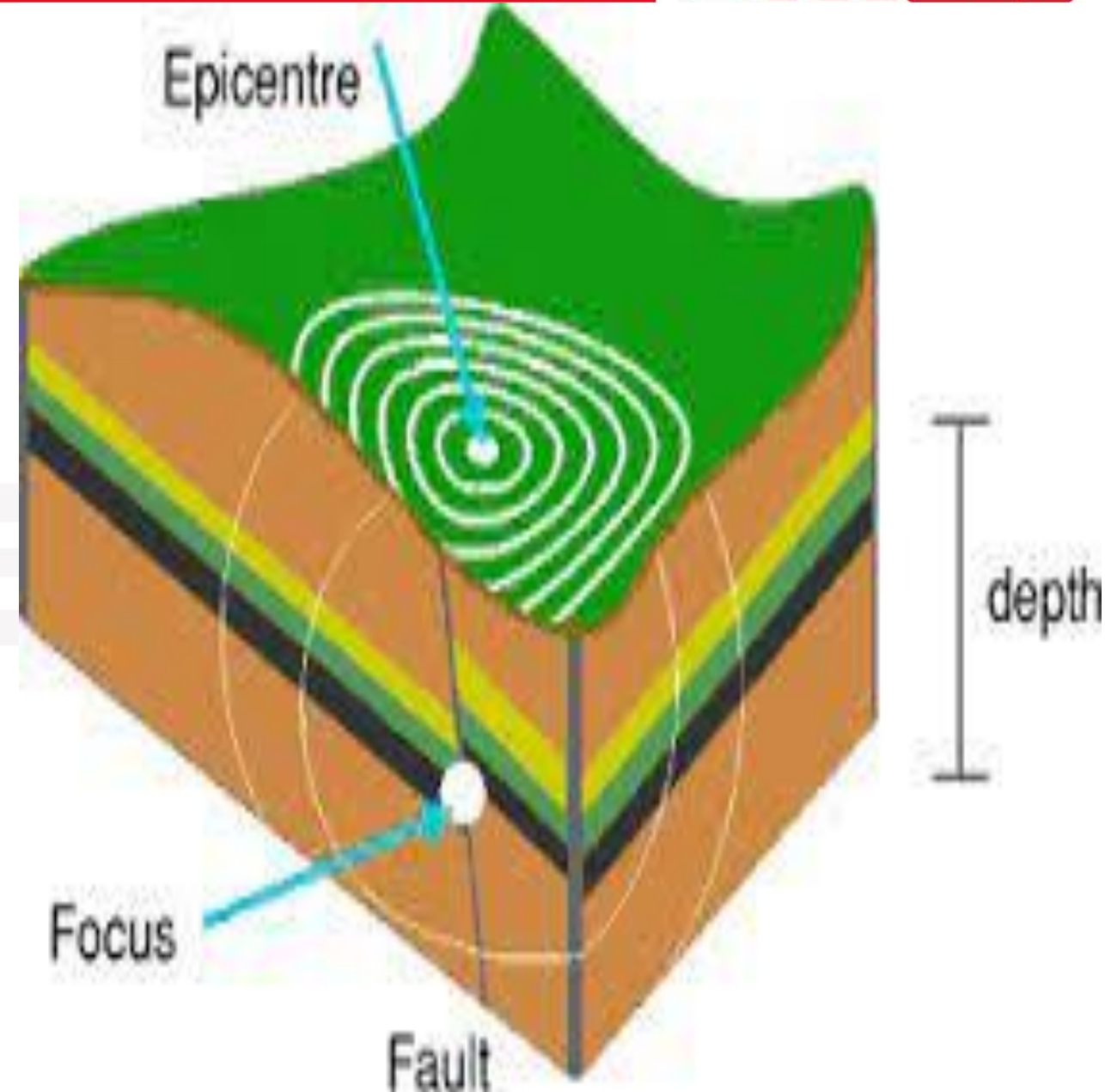
The point where the energy is released is called the focus of an earthquake, alternatively, it is called the hypocentre.



The energy waves travelling in different directions reach the surface.

The point on the surface, nearest to the focus, is called epicentre.

It is the first one to experience the waves.  
It is a point directly above the focus.



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