

RELIEF OF INDIAN OCEAN

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- *All the things which satisfy human needs are called resources. That's why water is a resource .Water is a renewable type of resource, which makes human life easy and comfortable to create and continue civilization. (Humans can live only for three days without water.) Most of the civilizations of the world developed in the river valleys. According to Collins junior illustrated dictionary **Water is a clear liquid that all living things need in order to live.***

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- **Geographically** $3/4^{\text{th}}$ (i.e. 71%) of the earth surface is covered with water .Out of which 97.3% is salty and 2.7% is fresh water. The large water bodies (remains of Panthalasa) are called oceans. All oceans are connected to each other. The total volume of the world ocean is approximately 1.3 billion cubic kms. and the average depth of ocean is 4000 meter.
- All oceans have salt water. In Pacific Ocean 49.9%, in Atlantic Ocean 25.7%, in Indian Ocean 20.5% and in Arctic Ocean 3.9% water is found.
- The average depth of ocean is nearly 4000 meters whereas, it is only 840 meters for continents. **Multi-beam Eco sounder** helps in mapping the oceans. **Hypsographic or Hypsometric curve** is suitable for showing the (depth and height) relief of oceans and continents. The line on the map joining the places or points of equal depth is known as **Isobaths**. From continent to the deep of the ocean; six major reliefs are found successively.

Relief Features of Indian Ocean

- *Indian Ocean is the only landlocked ocean and the smallest among the three. Asia is in the east and north, Africa is in the west, while Antarctica is in the south. Near Antarctica, Indian Ocean meets with Pacific and Atlantic oceans. Different ridges are found in Indian Ocean. The ocean is more extended in the south compare to the north.*
- *On the basis of regional features Johnson and Sir John Murrey have divided the Indian Ocean into three parts-*
- *a- **Eastern Part:** The Eastern Part of Indian Ocean is deeper. Its average depth is 5500 metres. The continental shelf of this part is narrow and vertical.*
- *b- **Western Part:** It includes the coastal areas of Africa where average depth is less than 3600 metres. Seychelles Island and Madagascar islands are found here.*
- *c- **Central Part:** It is the high part of Indian Ocean where average depth is found up to 3000 metres. Several islands are found here.*

INDIAN OCEAN



- *Several features of Indian Ocean are as follows:*
- ***Continental Shelf:*** *The width of the continental shelves of Indian Ocean is very irregular. The continental shelves near Bay of Bengal and Arabian Sea are very wider. It is up to 640 kms. It is medium near African coast and is very wider and found maximum near Madagascar. Madagascar Island itself is situated on continental shelf. The width of this shelf is up to 160 kms near Java, Sumatra and Australian coast. The width of continental shelf near Antarctica is very less.*

- **Oceanic Ridge:** The average depth of Indian Ocean is 3600 metres but oceanic ridge is found continuously from north to south. The ridge is 320 kms wide in the northern part of (south of Indian Peninsula) the ocean. This part is known as **Lakshadweep-Chagos ridge** where Lakshadweep and Maldweep islands are situated. Between 0° - 30° South the ridge is known as **Chagos-St. Paul ridge**. 1600 kms wider **St. Paul- Amsterdam ridge** is found between 30° - 50° souths. There are two branches of this ridge is found beyond 50° south. The western branch is called **Kargulen-Gausberg ridge** and the eastern branch is called **Indian-Antarctica ridge**.

- *Several smaller branches of the ridges are found from the main central ridges.*
- *a) Socotra – Chagos ridge is found in the north-western part up to Gurdakui Peninsula near eastern Africa from 5⁰ South latitude.*
- *b) Seychelles ridge is bifurcated near 18⁰ South latitude just parallel to Socotra - Chagos ridge.*
- *c) Malagasy ridge is started from Malagasy shelf to the south. Near 48⁰ south this ridge is known as Prince Edward Crozet ridge.*
- *d) Andaman- Nicobar ridge is extended from the mouth of Irrawaddy River to Nicobar Island.*
- *e) Carlsberg ridge is found between India and Africa.*

- **Oceanic Basin:** Central ridge divided the oceanic basin of Indian Ocean into eastern and western parts. Some major ocean basins of this ocean are as follows-
- *i- Arabian Basin - The Arabian Basin is extended in circular form among African coast, Arabian coast and Indian coast. The average depth of this basin is 3600-5400 metres. Carlsberg ridge divided this basin into two parts.*
- *ii- Oman Basin – Oman Basin is extended in front of Gulf of Oman with average depth of 3600 metres.*
- *iii- Natal Basin – Natal basin is extended at the depth of 5400 metres between west of Madagascar ridge and eastern coast of Africa.*
- *iv– Mauritius Basin - Mauritius Basin is extended between 10⁰ to 50⁰ south latitudes in north to south direction between Madagascar and St. Paul ridge Its average depth is 3600 -5400 metres.*

- *v- Andaman Basin – Andaman basin is found in the east of Andaman ridge in Bay of Bengal.*
- *vi- Somali Basin- Somali basin is surrounded by Socotra, Chagos, St. Paul and Seychelles ridges. Its average depth is 3600 metres and touches the Mauritius basin in the south.*
- *vii- Indian-Antarctica Basin- Surrounded by ridges from three sides and by Antarctica basin in the south, this basin is found in the south of 50⁰ South latitude.*
- *Viii- Indian-Australian Basin- This basin is also known as Cocos-Kiling basin extended between 10⁰ north latitude to 50⁰ south latitudes.*

- **Oceanic Deep:** There are few deeps found in Indian Ocean. **Sunda deep is the deepest deep of Indian Ocean** situated in the south of Java Island. It is 7453 metres deep.
- **Submarine Canyons:** There are several submarine canyons in Indian Ocean. Some of them are-
- i-Indus canyon is found at the mouth of Indus River in Arabian Ocean. Its continental shelf is 30 metres deep and the canyon is 1140 metres deep.
- ii – Canyon at the mouth of mighty river Ganges in Bay of Bengal .Its continental shelf is 30 metres while canyon is 1100 metres deep.
- iii – Canyon is also found at the mouth of river Irrawaddy.

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