

**GROUND WATER
PROVINCES OF INDIA
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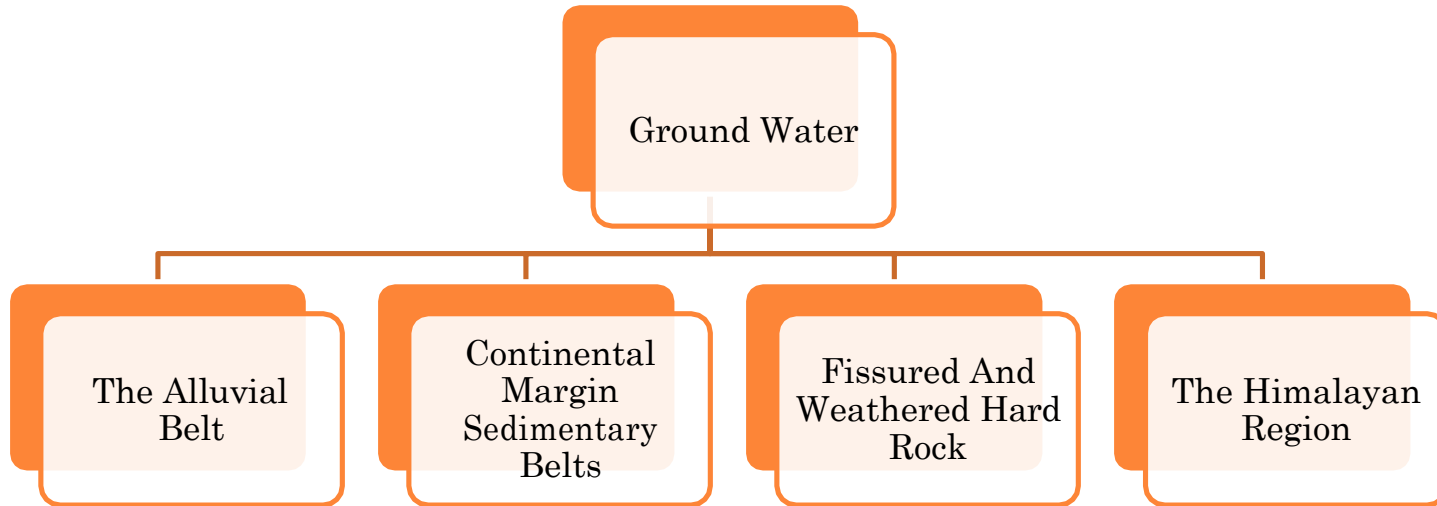
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GROUND WATER PROVINCES OF INDIA

Introduction:

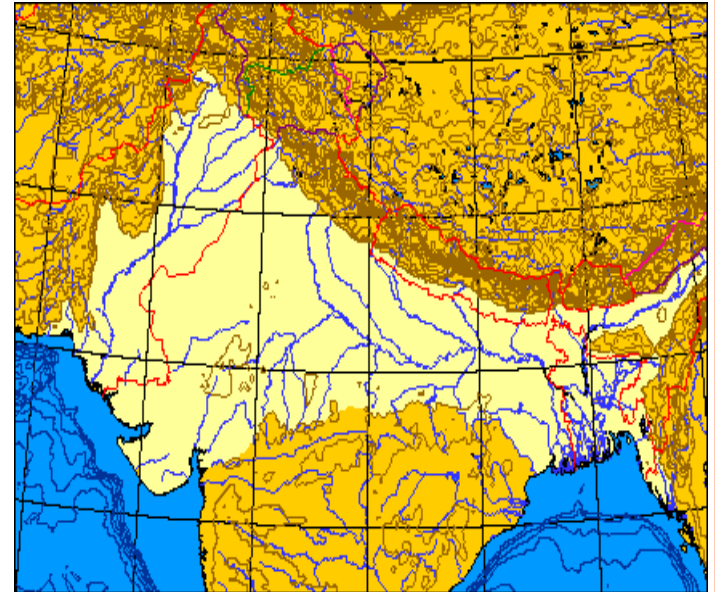
1. Total ground water reserve is around 3.7×10 million m down to depth of 300m.
2. Much of this stored water is located to the sind – Ganga-Brahmaputra plains and the coastal sedimentary belts.
3. Replenihable ground water=4,22,860
using per year=100040 (23%)
Available=322820 million m³

- There are 4 major Ground water provinces in India –



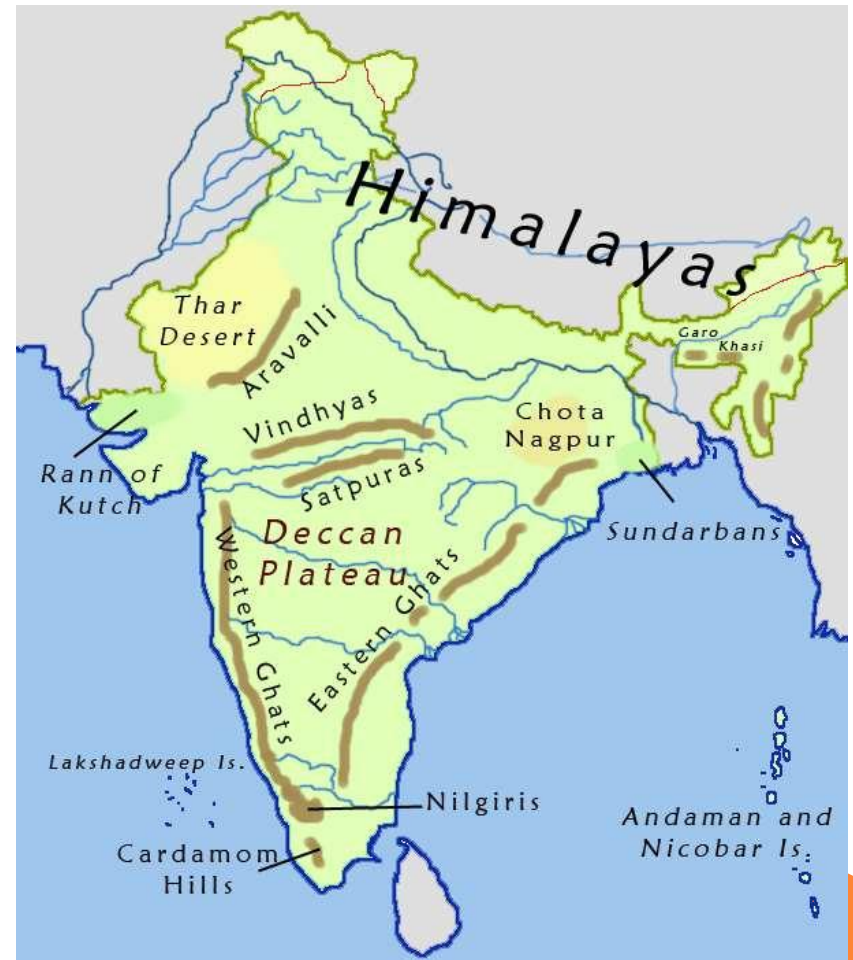
THE ALLUVIAL BELTS:

1. Thick Accumulation of porous unconsolidated sediments.
2. Includes the areas like Indo Gangetic plain, Plains of Brahmaputra, Mahanadi, Godavari, kaveri, Narmada, Mahi, Sabarmati.
3. Characterised by Large Lensoid and locally interfingering aquifers.
4. Thickness of aquifer varies from less than 20m to as much as 330 m in the Ganga basin.



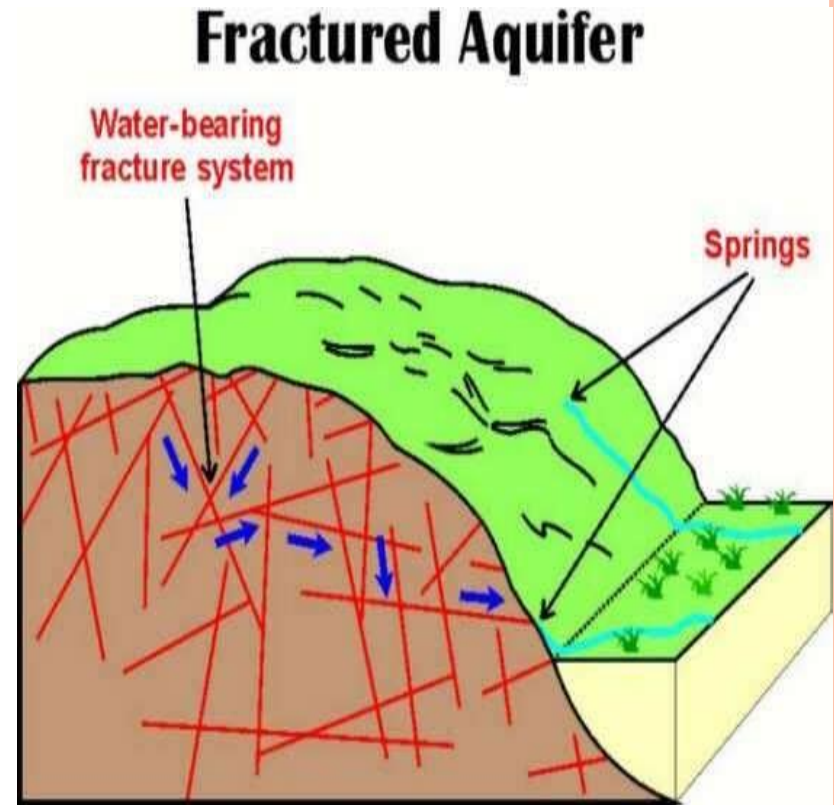
CONTINENTAL MARGIN SEDIMENTARY BELTS:

1. These are thin covering of porous sedimentary rocks ,Mesozoic to cenozoic in age.
2. Exposed in patches in the coastal belts from Orissa through Kerla to Saurashtra
3. They cover about 55 thousand sq km area and contains smaller discontinuous aquifer.
4. The aquifer in this belt like those in cuddalore sst(cretaceous) in Tamil Nadu, Umia sst (Jurassic) in Gujarat , Gondwana (Mesozoic) sst in Central india are being tapped profusely by well for the ground water.



FISSURED AND WEATHERED HARD ROCK:

1. In fractured rock aquifers, groundwater is stored in the fractures, joints, bedding planes and cavities of the rock mass. Water availability is largely dependent on the nature of the fractures and their interconnection
2. They occupy the vast terrain of southern central and eastern India covering about 1700 thousand sq km area.
3. The thick mantle of weathered material makes good aquifers with the water table at shallow depths of 2 to 10m.
4. The weathered material is also associated with the buried erosion surface where porosity is high and permeability appreciable.
5. In the Deccan trap the lava are characterized by a high degree of jointing, interconnecting vesicles and pipes or tunnels and are interbedded with porous permeable volcanic ash and sediments.
6. There are thus, multiple layered aquifers up to the depth of 15 to 20 m.



THE HIMALAYAN REGION

1. The siwalik ranges are fringed on the southern side by an apron of coalescing fans of colluvial and fluvial debris.
2. This piedmont belt is known as “Bhabhar” where mountain rivers lose their water and recharge the unconfined aquifers which extends down to a depth of 90 to 150m.
3. It is fringed to the south by a line of countless no. of perennial springs and seepages making the whole belt very wet. This is known as “Tari” belt.
4. In the vertical column of 300m there can be as many as 3 to 4 different confined aquifers under varying artesian conditions.



Conclusions:

About two-third of the total land area in the country comprises consolidated formations, 75% of this being made up of crystalline rocks and consolidated sediments. The remaining 25% being trap. The remaining one-third of the total land area comprises semi-consolidated and unconsolidated formations like alluvial plains. In the Terai zone, groundwater is available under artesian conditions and at shallow depths of 3-50 m. Sands and gravels confined in the silts & clays, make good aquifers under confined conditions. The Kashmir valley which was a vast lake during the Pleistocene age, shows a large scale development of fresh water sediments of lacustrine, fluvial and glacial origin ~600 m thick. There is ample scope for development of groundwater in these areas.

For further studies and References:

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THANKS