

Energy Responsible for Movements of Plates

Arthur Holmes explains the movement of plates as an outcome of the heat energy prevailing inside the surface. According to him energy rises in the form of conveyor belt manner having ascending limb and descending limb. Mantle plumes rise towards the earth crust because of high energy. Near crust it literally spreads and sinks because of loss of heat.

Along ascending limb divergence occurs because mantle plumes result in thinning of earth crust which ultimately develops a fissure zone.

On the surface along with 2 plates diverge. Descending limb plates form a convergence zone.

Plume = Lava + Radioactive Elements

Critical Analysis or Limitation of Plate Tectonics

1. It fails to throw a light on plate formation
2. It does not help in the prediction of volcanism
3. Acc. to tectonics the overall surface area of earth should remain constant whereas satellite images shows that the circumference of earth has increased.
4. It does not explain why pangea splitted only 500 million years back and not before that.
5. It also fails to explain the randomness in the movement of plates.

Comparison between Plate Tectonics and Drift

- 1) In Continental drift only continents can move whereas plate tectonic continent as well as ocean can move.
- 2) According to drift continent, continent are moving towards west and plate tectonics-random movement.
- 3) Continental Drift- Regarding fold mountains it says that aggradation of sediments takes place due to friction between (SiMa and SiAl) and plate tectonic- convergence of 2 plates, fold mountains are formed due to plates.
- 4) Continental drift is silent in volcanism where as plate tectonics explain the mechanism of Volcanism.
5. Continental drift explains movement because of gravitation pull of moon and buoyancy of asthenosphere. Plate tectonics because of heat inside the earth surface.
6. Continental drift explain movement of SiAl on SiMa whereas plate (brittle crystal plate) moving on asthenosphere.

7) Continental drift dependent upon paleoclimatic changes of fossil and other evidences like rocks etc. It is dependent upon events like earthquake, seafloor spreading etc.

8) Continental drift- It does not make any future prediction, Where as plate tectonics end the movement of at the reformation of super continent or pangea. It is called as Willson Cycle.