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EARTH'S MAGNETIC FIELD: SLOW AND FAST VARIATIONS

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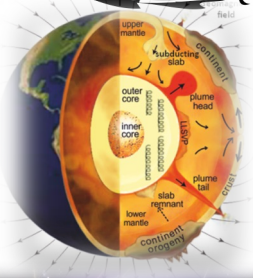

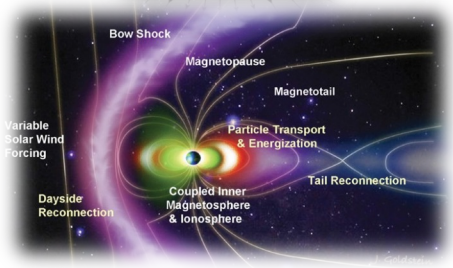

Earth's magnetic field, also known as geomagnetic field, is the strongest one among the rocky planets of our Solar System and extends from the Earth's deep interior to ~58,000 km into space. It is estimated that ~90% of its field strength, approximated as a dipole on Earth's surface, is created by the "dynamo action" of convective fluid motions in the Earth's electrically conducting outer core subject to the Coriolis forces of Earth's rotation. The magnitude of the Earth's magnetic field at its surface ranges from 40,000 at the magnetic Equator to 65,000 nT at the Poles.

The dipole field interacts with the interplanetary magnetic field and charged particles (solar wind) streaming out of the Sun, forming the cavity of the Earth's magnetosphere, producing currents and convective electrojets that become as significant as those produced by the Main field, a few hundred kilometer above the surface. Geomagnetic measurements track solar-terrestrial interactions, identify and quantify solar-wind-magnetosphere processes, magnetic pulsations, magnetic storm, quiet-time ionosphere dynamo as well as long term changes of the Main Field.

The changes of Earth's magnetic field on local to global scale cover about 7 orders of magnitude in space and about 17 orders of magnitude in time. The impact of these variations on Earth's atmosphere, satellite communications and space exploration, have made the continuous monitoring of solar and interplanetary energy transmission imperative, which. require global real-time data from observatory networks and satellites. In this talk the nature and interactions of the different aspects of the field are presented.

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TIFRH Auditorium 16:00 Hrs

Tea/Coffee 15:45 Hrs