

Isostasy

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One of the fundamental principles of geophysics—**isostasy**—is discussed. It describes the state of gravitational equilibrium between the Earth's lithosphere and the underlying asthenosphere. According to this concept, the lithosphere is a mechanically rigid layer that “floats” on the plastic asthenosphere and responds vertically to changes in mass and density. Isostasy explains large-scale topographic features such as mountain systems, ocean basins, and continental plateaus.

Several models have been developed to explain isostatic compensation, the most well-known being the **Airy** and **Pratt** hypotheses, which account respectively for variations in crustal thickness and lateral density differences. Isostatic processes also explain phenomena such as **postglacial rebound**, when lithosphere that was previously depressed by glaciers slowly begins to rise after their melting. Understanding isostasy is essential for interpreting gravitational anomalies, crustal structure, and the long-term evolution of landscapes.