

## **TECTONIC PROCESSES AND LITHOSPHERIC MAGNETIZATION: IMPROVED INTERPRETATION USING SPACE AND GROUND-BASED OBSERVATIONS**

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Tectonic processes affect the creation, destruction, and mobilization of magnetic materials within the lithosphere of the Earth. The scale of these processes dictates the appropriate observation platform. In the near surface, volcanism and related igneous processes such as dike emplacement, rifting, and faulting act to modify pre-existing magnetic signatures, thus providing critical details of the processes involved.

Within the mantle and deep crust, subduction processes produce serpentinite by the dewatering of subducting slabs. This produces highly magnetic but light material, and affects not only magnetic and gravity signatures, but also seismic behavior and properties of the slab and overlying materials. This has important implications for seismic risk assessment. The thickness of the terrestrial magnetic crust can also be related to tectonic processes. On the largest scale, diffuse plate boundary zones within continents are seen to have thinner crust than continental regions away from these zones. On intermediate scales, thickness variations are associated with rifting, and regions with enhanced heat flows.

Magnetic fields

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