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Geochemistry of modern weathering and bole beds of the Deccan Traps, India

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Basalt is the most weatherable rock with its importance in sequestering atmospheric CO2. The Deccan basalts cover almost 15% of the geographical area of India. This study investigates the processes of chemical weathering operating in the modern basalt weathering profile and intertrappean beds in and around the district of Indore, Madhya Pradesh, India. There have been reports that the bole beds may have originated by aeolian deposition. The geochemical data was used to calculate the chemical index of alteration (CIA) and geochemical mass balance values (□). Weathered profiles have been studied for REE behaviour. The bole beds show a very high chemical index of weathering. The elemental mobility does not show any regular pattern. However, the REE patterns show slight depletion or enrichment, with stronger Ce mobility in some horizons. The geochemical study suggests that the highly weathered bole beds have originated from the chemical weathering of the surrounding basaltic rocks, not from the other external materials.