

Mo-Ni, organic carbon isotope and rare earth elements signatures of the Paleogene deposit from the Barmer Basin Western Rajasthan, India

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This study performed a redox sensitive trace element (RSTE) and organic carbon isotope investigation on the sedimentary succession of Sonari Lignite field, Barmer Basin (Akli Formation, Western Rajasthan, India) results demonstrate that Mo and Ni concentrations are several-folds higher compared to the upper continental crust (UCC). Bulk precipitation of Mo in a hydrosphere is mainly controlled by sulphide present in the anoxic/euxinic layers of the water column, on the other hand, Ni precipitation is generally controlled by oxygenic primary productivity. Furthermore, $\delta^{13}\text{C}\text{-org}$ values (between -25.0 and -29%) from the suggests that the organic carbon exported into the sediments during the Shale deposition was primarily derived from oxygenic photosynthesis in the concurrent surface water layers. The chondrite and PAAS normalized patterns exhibit negative Eu anomaly, enriched LREE, and depleted HREE, medium Y/Ho ratio ($\sim 15\text{-}30$) along with positive correlation between Y/Dy and Y/Ho ratio. The overall REE abundance and distribution suggests highly oxygenated environment under the shallow marine regressive phase of deposition