

## Geochemical characterization of carbonate rocks of the Aravalli Supergroup of the Umra area, Rajasthan, India: Plausible insights to the Great Oxidation Event

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The Umra area of Rajasthan, Western India has outcrops of Paleoproterozoic metasediments of the Aravalli Supergroup showing unconformable relationship with an Archean basement of felsic gneisses (Banded Gneissic Complex). The metasediments have undergone lower greenschist facies metamorphism at ~1900 Ma. The carbonate rocks of the area deposited in a shallow sea and preserve primary  $\delta^{13}\text{C}$  and  $\delta^{18}\text{O}$  values (Fig. 1a) with a positive  $\delta^{13}\text{C}_{\text{V-PDB}}$  excursion (having the highest value of 5.93 ‰). The PAAS normalised REE data of the carbonates show HREE > LREE with low positive Eu\* and Ce\* anomalies and no significant Y anomaly (Fig. 1b). The trace element data combined with the REE patterns indicate suboxic-anoxic condition of the shallow sea at the time of deposition of the carbonates. The area has reported occurrences of uranium and copper mineralisation. The geochemical studies provide insight to the Great Oxidation Event and uranium mineralisation in the area.

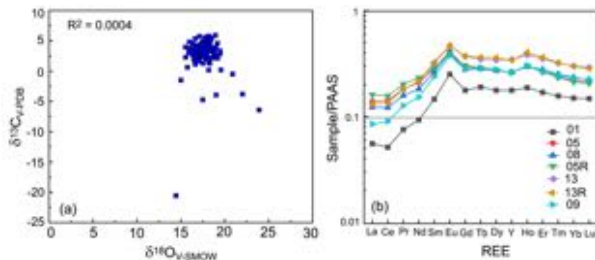


Fig. 1. Geochemical plots of the Umra area. (a) Cross plots of  $\delta^{13}\text{C}$  and  $\delta^{18}\text{O}$  concentrations in carbonate rocks and (b) Post Archean Australian Shale normalized rare earth element patterns showing low positive Eu- and Ce-anomalies and no significant Y-anomaly.