

Title:

Characterization of the Late Cretaceous Oil Shale Sequence, Southern Tethys, Negev Israel, Inferred from Organic Geochemistry and Stable Isotopes

Abstract: (Your abstract must use 10pt Arial font and must not be longer than this box)

The late Cretaceous organic-rich carbonate succession in Israel is part of an extensive Southern Tethyan high productivity regime, and has major economic potential as a hydrocarbon source. A sequence of 49m fresh rocks of the Oil-Shale Member (OSM) and contacts with the underlying and overlying phosphate and marl members were sampled from a quarry located at Mishor-Rotem, Negev Israel. Reconstruction of the paleoenvironmental changes along the sequence is based on multi-proxies records of $\delta^{13}\text{C}_{\text{org}}$, $\delta^{15}\text{N}_{\text{org}}$, $\% \text{CaCO}_3$ and total organic carbon (TOC).

CaCO_3 and TOC records show opposite trends at the different lithological units. In the top phosphate member the $\% \text{CaCO}_3$ is high and TOC is low. A sharp increase in TOC to 17% is observed at the base of the OSM followed by gradual decrease upwards to less than 10%. These variations suggest that the top phosphate sequence experienced early diagenetic induration and organic matter oxygenation. Nevertheless, the preservation of organic matter of the OSM and their biomarkers indicate deposition under dysoxic condition associated with increased flux of organic matter. The decrease in the organic flux towards the top of the OSM seems to indicate weakening of the upwelling system.

In general, $\delta^{13}\text{C}_{\text{org}}$ values of -29‰ are depleted compared to typical marine organic matter values, may indicate fractionation during kerogen formation. The $\delta^{15}\text{N}_{\text{org}}$ show a linear enrichment from the top phosphate member (3‰) through the OSM (3‰-5‰) and up to the marl (7‰). This trend might suggest a change in nutrient availability or influence of decomposition processes.

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