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A 10 My Long Record of Sedimentation in a Continental Active Strike Slip Basin (Upper Cretaceous, Provence, France)

The Upper Cretaceous to Lower Paleogene continental formations of the Provence basin were characterized by a fluvial network flowing into a permanent shallow lake. These series show rapid lateral variations which do not allow precise correlations over large areas and limit the interpretation of the tectonic setting. The basin architecture is reconstructed based on a combined sedimentary and paleomagnetic analysis of the series. Within these formations, deposited under a tropical climate, four semi arid episodes are identified. These corresond to low base level during which mineralogical transformation are significative : distinct clay mineral assemblages as well as complex paleomognetic signals are associated to playa, marginal lake environments and paleosols. Sedimentation in the basin was then controlled by main faults that bordered the basin on its north and south limits and by a transverse one, the Durance fault. Our results enable us to estimate the relative changes in elevation as well as the variations in the sedimentation rate within a define stratigraphic framework. Architecture of the series is mainly controlled by the strike slip movement of the bordering faults with displacement of the subsiding areas through time. The transverse fault system induced complexity in the architecture creating from time to time two depocenters.

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