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Palaeogeographical evolution of the Arabian platform during the obduction of the Samail ophiolite

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Obduction of a dense oceanic lithosphere on top of a light continental lithosphere remains one of the oddest phenomenons in plate tectonics. In northern Oman, the emplacement of the Samail (or Oman) ophiolite took place during Upper Cretaceous. The Samail ophiolite is probably the best studied ophiolite in the world because of its large size and because it has been relatively well preserved from deformation after its emplacement. If many studies have been carried out on the ophiolite itself in order to better understand the structure of an oceanic crust, little is known on the processes leading to its emplacement on the top of the Arabian platform.
The sedimentary series deposited on the Arabian platform during the emplacement of the ophiolite could help us to understand the processes involved during the obduction by providing tectono-stratigraphic constraints on the evolution of the platform affected by the obduction. Moreover the reconstitution of the palaeoenvironments and the identification of source areas would allow discussing the evolution of reliefs formed in such a unique context. However, these series, being located just below the allochthonous units, have been affected by deformation. They are grouped in one formation, the Muti Formation, consisting of various lithologies of which the age is uncertain. In consequence, sedimentological analyses require careful mapping of the sedimentary series and biostratigraphical determinations remain difficult.
The first results of our sedimentological and stratigraphical investigations show (i) a diachronism of the onset of syn-tectonic sedimentation (chemostratigraphic and biostratigraphic data) and (ii) a high variation of the source areas within the basin. These data are used in order to present a new model of evolution of the basin formed during the emplacement of the Samail ophiolite on top of the Arabian Platform. Implications for the processes involved during the obduction are also discussed.