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Case study of Murree and Sakesar formation of upper Indus Basin Pakistan using AVO analysis

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AVO analysis is the analysis of the variations in the reflection coefficient. These variations are governed by the contrast in P-wave velocity and S-wave velocity at the interface. When there is gas in the layer, Vp drops whereas Vs does not change. This means that Vp/Vs is anomalous, and we hope to see the effect of this anomaly in the reflection pattern. In principle, AVO analysis should measure amplitude variations with angle of incidence. However, amplitude is measured with offset because usually as offset increases, the angle of incidence increases. In this paper, we will discuss different techniques for the AVO analysis of the Murree and Sakesar formation and then we will match the curves which will be generated using velocity and density of the formations to the (Castang's curves). If the curve is matching to any of them, then it shows that our results are true.

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The impact of the Syrian Arc Orogeny on the evolution of the Lower Paleogene sedimentary basin in Sinai, Egypt

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This work depends on the detail field, litho- and bio-stratigraphic studies on the Lower Paleogene succession of nine stratigraphic sections in Sinai, Egypt. These sections are nearly arranged in a geologic profile from north to south direction (e.g. Al-Hasanah, Sahabah, Sudr Al-Hitan, Al-Thamad, Wadi Sudr, Abu Qada, Wadi Matulla, Wadi Nukhul and Wadi Feiran). Lithostratigraphically, the studied sections are composed of five rock units namely, Sudr (uppermost part), Dakhla, Tarawan, Esna (El-Hanadi, El-Dababiya, El-Mahmiya and Abu Had members) and Thebes formations. The vertical contacts of the rock units are gradational or intercalation in some sections and sharp at the others. Moreover, a paleosol and an erosive surface are recorded at the formational boundaries. Biostratigraphically, a general planktonic foraminiferal zonal scheme consists of eighteen zones which is constructed for the Lower Paleogene strata. Some of these zones are absent in the studied sections. Based on the field and stratigraphic criteria, three remarkable tectonic events related to the Syrian Arc Orogeny are recognized. These tectonic events correspond to the Cretaceous/Paleogene, the Danian/Selandian and the Paleocene/Eocene boundaries respectively. The magnitude of these tectonic events varies in different localities in Sinai. The Cretaceous/Paleogene event led to the missing of the lowermost part of Danian sediments. The Danian/Selandian and Paleocene/Eocene events are lithostratigraphically evidenced by the missing of Qreiya Beds and El Dababiya Quarry Member respectively. Moreover, the Paleocene/Eocene event led to the missing of the upper part of the Thanetian and the lower part of the Ypressian sediments at some section and replaced by a paleosol and an erosive surface. It subdivided the Sinai into two sedimentary sub-basins in the north and south isolated by huge aerial paleohigh which extends from Sudr Al-Hitan in the north to Abu Qada in the south.

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