Precambrian Succession of South Oman. New Insights

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The Precambrian series truncated by the pre-Mesozoic unconformity is exposed in south Oman in three different areas: in the Mirbat basin, the Precambrian Mirbat Fm rests over basement, and south-westward along the coast the Precambrian Al Hotah Fm outcrop in the type locality and to the north of the Salalah harbour. The age of the Mirbat Fm was until recently attributed to the Late Carboniferous. However, Carbon Isotope Stratigraphy led to reinterpret the series as Late Precambrian. In the Mirbat basin, the Mirbat Fm is subdivided into three members: the Lower member is a glaciogenic series related to the Sturtian Glacial event. The Middle member is made up of turbidite channels. The Upper member shows a remarkable slope to shelfal succession including numerous third order depositional sequences with well defined storm dominated sharp base shoreface. The ultimate preserved layer of this Upper member is a diamictite related to the Marinoan Glacial events. To the south-west, a kilometre thick clastic series (Al Hotah Fm) ascribed to the Precambrian starts with turbidites grading into stacked shelfal sandstones. The facies are different and difficult to correlate with those of the Upper member of the Mirbat Fm. Although attributed to the Precambrian, the Al Hota Fm seems to be older than the Mirbat Fm. It is deformed, and truncated by the pre-Mesozoic unconformity. The deformation increases toward the south-west in the Al Hotah type locality where this deep water series is intensively folded. Preliminary comparison with subsurface data and second order Precambrian stratigraphic cycles suggests that this Al Hotah Fm could be the oldest series deposited over the Arabian Plate.