

Tectonostratigraphy and basin development offshore southern West Greenland

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We present results of a recently completed mapping study of the southern West Greenland continental margin between 63°N–67°N. The results of the study are based on geophysical and geological data acquired in recent years. The work includes new studies on biostratigraphy and petrology of rocks from exploration wells, and radiometric dating (U-Pb) of igneous rocks. Eight seismic stratigraphic mega-units (A–H) are correlated to wells, and reflect the geological development from the basement to the seabed. Well data documents the presence of Archean igneous rocks and mega-units with mostly sedimentary rocks of Cretaceous to Cenozoic age. The tectonic development during the Cretaceous to Paleocene resulted in the formation of large structures including rifted fault blocks and anticlines. Some of the structures were drilled and reveal Cretaceous successions including conglomerates and sandstones. In addition, a thick succession with volcanic rocks was identified in one structure. During parts of the Late Cretaceous and Paleocene, claystone-dominated units were deposited in most basins. Some of the structures likely miss parts of the uppermost Cretaceous to Danian successions. Most of the structural highs, faults and basins trend SE–NW, but a few strike towards the N or NE. Most Palaeogene anticlines and thrust faults trend towards the N and were developed during seafloor spreading and extension phases between the Greenland and Canadian margins. After Palaeogene volcanism had evolved mostly towards the west, large Cenozoic sedimentary successions developed across the region.