The marine–to–terrestrial glacial sequence accumulated in a variety of tectonically controlled deposits under progressively drier climatic conditions.Numerous vertebrate fossils are preserved in these rocks, including fish, amphibians, primitive aquatic and terrestrial reptiles, and more advanced mammal–like reptiles and dinosaurs.The relatively cool climate and lowland setting promoted dense accumulations of peat on the coastal plains and deltas which now form the major coal reserves of South Africa.Uplift pulses in the southern source areas combined with possible orogenic influence resulted in two coarser–grained alluvial fans prograding in the more central parts of the basin.Paleoenvironmental analysis of the major stratigraphic units of the Karoo sequence demonstrates the influence of more local tectonic basins in influencing the style of sedimentation.At the same time, the southern part of Gondwana migrated over Antarctica, resulting in a large glaciation over the early Karoo basin and surrounding highlands.In the upper Karoo sequence, gradual aridity dominated the depositional style with playa lake and valley–type environments finally giving way to a dune–sand dominated system.Its strata record a nearly continuous sequence of continental sediments that began in the Permo–Carboniferous (280 Ma) and ended in the .Early Jurassic after 100 million years