

Deep Structure Model of the South Kara Basin

Nataliya A. Sergeyeva (1), Ludmila P. Zabarinskaya (1), and Valentina B. Piip (2)

(1) Geophysical Center, Russian Academy of Sciences, Moscow, Russian Federation (nata@wdcb.ru), (2) Moscow State University, Moscow, Russian Federation (piip@list.ru)

The Arctic Ocean is bounded by passive continental margins that are characterized by long and intense subsidence processes. These processes have resulted in the accumulation of thick layers of sedimentary rocks with thickness greater than 15-20 km, forming a shelf of the Arctic seas in the Arctic Ocean. The structure and evolution of the passive continental margins of the Arctic Ocean are considered on the example of the South Kara Basin. Its development is associated with the evolution of the West Siberian Plate and the formation of the Arctic Ocean. Until the Late Cretaceous, the South Kara Basin was the northern margin of the West Siberian Plate formed as a result of the Permian-Triassic processes of riftogenesis accompanied by the eruptions of traps. The plume magmatism probably determined the formation of the basin as a separate structure. In the Late Mesozoic, due to the opening of the Eurasian basin of the Arctic Ocean, the South Kara Basin became a part of the passive continental margin with the continuing accumulation of marine sand-clayey rocks. The forming of riftogeneous structures in the sedimentary cover at that time may have been accompanied by basalt magmatism.