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Hydrocarbon Generation by Rocks of the Bremer Formations on Conjugate Areas of the Nonvolcanic Passive Margins of Australia and Antarctica

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The article analyzes the differences in the history of the hydrocarbons (HC) generation by rocks of the Bremer 1 – 6 formations on adjacent areas of non-volcanic passive continental margins of Australia and Antarctica. The problem is considered on the example of numerical reconstruction of the burial and thermal histories of two sedimentary sections of approximately equal thickness: the section of the 19-2012 well in the Bremer sub-basin of the south-western margin of Australia, and the section of pseudo-well 2 on the 5909 seismic profile crossing the Mawson Sea in the Antarctica margin. The asymmetry of the Gondwana rifting in the region under consideration resulted in the asymmetry in tectonic structure and development of the conjugate areas of passive margins: and, as a result, a significant difference in the history of hydrocarbon generation by the rocks of the Bremer 1 – 6 formations on the studied areas of conjugate margins. Modeling suggests that the rocks of the Bremer 1 and 2 are mainly gas prone in the Bremer basin, but they become oil prone in the Mawson Sea of Antarctica. In contrast, the rocks of the Bremer 4 and 5 formations must generate little volume of hydrocarbons in the area of the 19-2012 well according to the modeling whereas the same rocks in the conjugate area of Antarctica, in the Mawson Sea, could generate appreciable amounts of heavy and light oil.

Biography:

Dr. Yurii I. Galushkin (born 1941) is leading scientist in the Earth Science Museum in Lomonosov States University. He graduated from the Moscow Institute of Physics and Technology. His main scientific interest is focused on thermal evolution of the lithosphere, basin modeling, numerical estimation of organic matter maturity and oil and gas generation.