THERMAL EVOLUTION OF THE PRYDZ BAY SEDIMENTARY BASIN (COOPERATION SEA, EAST ANTARCTICA)

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Master thesis is focused on thermal evolution of rift sedimentary basin situated within the Prydz Bay Shelf of East Antarctica (southernmost part of the Indian Ocean). Thermal basin modeling was based on seismic data collected by Polar Marine Geosurvey Expedition (PMGE) during 57-th Russian Antarctic Expedition in 2012. Sedimentary basins thermal evolution is an important factor to look at when accounting for hydrocarbon resources potential. In order to build a model basin development history was considered. TecMod basin analysis software was used to conduct the modeling. Modeling results were analyzed and compared to fundamental basin analysis theories and approaches. Heat flow estimations (taking into account sediment-blanketing effect), and maturity of rift sedimentary basin were modeled, model for subsidence and temperature. This work provides an important insight on the crustal and basin evolution of the East Antarctic margin.

The maximum of heat flow (75 mW/m^2) as the result of modeling is observed at the end of synrift, during the Gondwana split (130-120MA) and start of postrift phase (120MA), when the sedimentation rate was close to a minimum. The initial assumption would question this conclusion and suggested higher heat flow at the initial rifting stages (270-210MA).