

Geological-thermo-atmogeochemical preconditions of petroleum promises at the continental slope of the Western Black Sea Depression

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The integral structural thermo-atmogeochemical research (STAGR) have been carried out at the continental slope of the Western Black Sea Depression for the first time. The technique of STAGR as non-traditional and cost-effective exploration technology is originally developed at Institute of Geological Sciences. It consists of phased geo-structural researches and analysis of fault tectonics, morphological analysis and neotectonic interpretation of space images, thermal and atmo-geochemical surveying, lab measurements and processing of the data acquired to build thematic map using GIS technologies. Field data acquisition stage includes thermometric, emanation and gas surveying (Rn/Tn, He, CO₂, H₂, free hydrocarbons) in petroleum-prone onshore areas and bottom sediments (up to 2 m below the surface) thermometry, Rn-metering and measurements of gas content in the near-bottom layer offshore.



To conduct the surveying there was developed a special instrument with some modifications designed to work onshore and offshore respectively. This technology is tested in different regions of Ukraine over known oil and gas fields.

The geostructural analysis, interpretation of space images, atmogeochemical survey of the near-bottom water layer, thermic and lithogeochemical examination of bottom sediments enable to outline the petroleum-promising areas. Morphological, structural, tectonic, stratigraphic features of the continental slope's structure are characterized. It have been found that potential petroleum-bearing structures occur in the region, which are genetically similar to the productive Mesozoic and Cenozoic strata of the northwestern shelf and other areas of the Crimean – Caucasian Region. The results of the carried out studies show that it is purposeful to use STAGR for local forecast of promising targets at the early search stages, for rational location of drillholes, prospecting and recovery of hydrocarbons.