

## ANALYSIS OF STRUCTURAL PATTERNS OF LINEAMENTS TO PREDICT OIL-GAS ACCUMULATION ZONES USING REMOTE PROBING AND GIS

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**ABSTRACT:** Space images provide possibility to compare them with geological, geochemical and geophysical data spatially tied to the geoinformation system. The analysis used synthesized images Landsat 7 ETM+ with spatial resolution 15 m.

By means of manual and automatic decoding the lineaments of different extension have been determined and included in the geoinformation system of Northeastern European Russia for the further processing and analysis. The geoinformation system is realized with ArcGIS 9.3 and contains the following data: a survey map, chronostratigraphic sections, stratigraphic map, tectonic and petrogeological zonation, structural maps, maps of deposits, local structures and data of remote sounding. GIS contains also developed tools for the data processing and analysis. The research objective was to analyze structural pattern of rectilinear areas (lineaments) and comparison by their tectonic structure, faults, oil and gas accumulation zones. The first stage was to reveal dependences between location of lineaments, geological structure of the area, oil and gas accumulation zones and development of prediction model that further the obtained regularities can be connected to less studied areas to predict oil and gas accumulation zones. The use of quantitative assessments allowed to formalize the analysis and to achieve greater objectivity. The quantitative parameters of lineament networks included density, isotropy, Minkowsky fractal dimensionality, analysis of rose-diagrams and others. The studied region was divided into areas, where the lineament distribution and geological-geophysical data were analyzed. The areas with spatial distribution of lineaments, characteristic for rich hydrocarbon deposits, were determined, and the possibility of analysis of lineaments using characteristic patterns was presented to predict possible oil and gas accumulation zones in poorly studied regions.