Recent Block Structure of the Earth's Crust as Geological Base for Prediction of the Giant Hydrocarbon Resources (South America, Israel, Hindustan)

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A technology of recognition of giant oil and gas deposits by the method of modeling of recent block structure of the Earth's crust within sedimentary basins (both onshore and offshore) was developed. The main objects (exploration plays) are the recognized promising disjunctive knots created by intersection of morphostructural lineaments – the borders of crust blocks. These knots can be interpreted as fault crossing areas with high level of tectonic activity which are the pathways for both heat flows and hydrocarbons in the Earth's crust. This model was applied to solve the problem of oil and gas exploration in the Andean and Pre-Andean basins (South America). Our first forecast of oil and gas location based on the Earth's crust block structure model for the Andes was published in 1986. All giant oil/gas fields discovered during next years was found within the disjunctive knots mentioned in the forecast: Cano Limon, Cano Verde, Cusiana-Cupiagua, Camisea and others. The discovered giant fields were indicated with a precision of 75 km. That technology was successfully applied for other regions (West Siberia, North Sea, Gulf of Mexico and others, as well as for some other territories of former Gondwana - Hindustan, Israel). In all cases (excluding Israel) our success rate was approximately 80%. In Israel the great fields were not discovered yet. But the areas having promising geological and geochemical conditions for oil and gas searches locate in the promising disjunctive knots in our model of the recent block structure of the Earth's crust of this region.