

Recent block structure of the Earth's crust and location of great oil-gas fields in the Andes

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Regional and detailed hierarchy models of recent block structure of the Earth's crust include the following main components expressed in a surface relief: homogenous areas (*blocks*), linear zones between blocks (*morphostructural lineaments*) and areas of the lineament intersection (*morphostructural knots*). Both lineaments and knots consist of small blocks, which are more movable zones in comparison with relatively stable large blocks. The morphostructural knots can be interpreted as fault crossing areas with high level of tectonic activity where channels serving as pathways for heat flows and hydrocarbons are created in the crust. Vertical movements of small blocks provide the appearance of anticline structures and non-structural traps for hydrocarbons.

This model was applied to solve the problem of oil and gas exploration in the Andean basins. It was found that almost all GIANT oil and gas fields in that region coincide with morphostructural knots (oil-and-gas accumulation knots). The first publication of oil and gas location forecast based on the Earth's crust block structure model for the Andes was in 1986. During next 10 years all the discovered giant oil/gas fields have been FOUND within the morphostructural knots mentioned in the forecast: Cano-Limon, Cusiana, Cupiagua in Llanos basin, and Camisea in Ukayali basin. The discovered giant fields were indicated with a precision of 5 miles.

That technology was successfully applied in other regions.