

# **Lithosphere's fluid plumes as a model of oil-gas formation**

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Oil-gas formation occurs within a wide diversity of geological structures and formations. Clearly existence of common geological pathway of oil and gas accumulation is expected. The pathway is believed to be associated with the activity of global localized fluid flows transporting hydrocarbons from zones of their generation to the traps.

The fluids controlling oil and gas formation are the actual geological bodies. They represent rising overheated water-gas solutions penetrating through lithosphere layers. The fluids may be assigned to lithosphere fluid plumes located between lithosphere plates and within the plates too. They are fed by energy from mantle, consist mainly of the one-phase water-gas solutions having temperature over 300 - 400 °C and include the hydrocarbons, alkaline metals, volatile acids, halogens, CO<sub>2</sub>, CO, H<sub>2</sub>, N<sub>2</sub>, H<sub>2</sub>S, He, Hg and other chemical substances. They rise toward the surface through the lithosphere's dilatancy zones when hydrostatic pressure exceeds lithostatic one. The flow domain may be rated about 10<sup>1</sup> – 10<sup>2</sup> km in diameter.

Acting as hydraulic factor and source of energy and matter, the plume involves attendant processes of structure formation and oil-gas accumulation. Hydraulic forces create both reservoirs and traps by moving blocks of the beds. Entrapping into reservoir the plume's fluid is separated on three phases: gas, oil, and water solution, as a temperature decreases. As a result, the large oil-gas accumulation area is formed above the plume or within its upper part.

The lithosphere's fluid plumes model provides an explanation for all the known geological and geochemical regularities of oil-and-gas accumulation.