Planetary Spheres (i.e., Atmosphere, Hydrosphere, Lithosphere, Biosphere) Interact to Form Conditions Appropriate for Hydrocarbon Existence

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The various planetary spheres (geospheres) of planet Earth number eight. From top to planet center, they are: atmosphere, cryosphere, hydrosphere, sedimentosphere, lithosphere, mantle, core, with biosphere intertwined with several layers. Each geosphere has its own major characteristics with each layer containing boundary zones. The type and extent of boundary interactions is poorly known with potential ranges from no interaction to bisecting the host geosphere. When sufficient energy and time is associated with an interaction, such interactions actually bisect a host layer, i.e., magma from the mantle passing through the lithosphere.

Interaction extent between layers appears to be not governed or limited by density, mechanical strength, heat or ability to cause chemical reactions/low-temperature valence physics. Each layer-type seems to have the ability to influence, from dominant to minute, adjacent geospheres and beyond with extents poorly known. Water, descending along fractures and other migration routes, from the hydrosphere has been found even at the greatest depths ever drilled along The Kola Peninsula, due north of Moscow, along with methane traces from abiologic generation. The combination of breakage, the presence of locally generated methane gas, and the presence of liquids implies that the overall mechanical strength of the lithosphere must be variable. This also indicates that trans-lithosphere mechanical strength stresses must be variable.

Detailed interpretation of multi and single channel seismic data across deep ocean basins requires interpretation of major to minor magmatic intrusions through the supposedly quiescent lithosphere. By analogy, similarly complex intrusions may also occur in the continental crust. Given generous ranges of potential thermal/stress heterogeneity in the lithosphere, abiologic and biologic hydrocarbon generation from the lithosphere and sedimentosphere appears to be a reasonable geologic "working" suggestion. This implies complex provenance for petroleum generation and migration.

Thus, the simplistic models for petroleum generation will need greater sophistication to account for potential inputs from planetary spheres.