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On a tectonics, magmatism and hydrocarbons (HC, oil-gas) of the South Caspian - West Baluchestan, Middle East: some problems and constraints

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Joint analysis of tectonics, magmatism, metallogeny, and hydrocarbons (HC – oil-gas) for the South Caspian - west Baluchestan, Middle East (Alpine time mainly) was made. Different anomalies and degassing here are of interest too. Specific **anomalous** deep regime and degassing of CH₄, H₂ etc. due to a giant African superPlume activity are noted too. Such points discussed as follows:

1. Alpine North-Eastern (NE) tectonic zoning exists in this region up to Present (Q4). Anomalous long-lived African superPlume activity influences on regional tectonics, related magmatism and fluid regime (Fig.). There are different anomalies in this region on gravity, hydrocarbons (HC), degassing etc.
2. Miocene – Recent (N1-Q) intraplate magmatism with: different subalkaline- alkaline rocks directly relates to superPlume mentioned. There are data about Sr, Ca etc. input in upper younger Caspian Sea sediments from the lower older magmatites. Such magmatic trend exists as: Quaternary carbonatites, Hanneshin, Helmand block (Afghanistan) - Ca-rich volcanites with CaO up to 34.8% - trachyandesites with CaO = 7.2%.
 - Oligocene-Recent (Pg3-Q) calc-alkaline **subduction-related** rocks are as antipodes to mentioned intraplate rocks (intrusive, extrusive and volcanoclastic ones). Relation with African superplume is not formally necessary, but there are our data about **warmer** calc-alkaline rocks here, ex., warm melt inclusions in them with T crystallization as **1180oC**.
 - Decreasing of **earthquakes** activity from South to the Middle Caspian Sea, at

least (Khain, Bogdanov, 2003 etc.). HC resources decreasing from Persian Gulf to North Caspian Sea

- Lesser order HC **zoning (west to east: oil - gas)** in the S-M Caspian Sea exists. Is Great

Caucasus a barrier for HC in lesser order?

- A regional **tectonic - HC** correlation in **Iraq** - South Caspian- **Turkmenistan** exists: more compression and oil in **west** of region versus less compression and gas in the east of region up to the **east** Turkmenistan with, however, non-deep sea conditions (transitional facies) in the latter. Moreover, unusual several times repeating of oil - gas - gas-condensate in a stratigraphic section is revealed in west Turkmenistan. Is it a result of deep fluids input too? HC behavior and zoning is not quite clear in this unique economic and geological region.
- **Other HC north-south (N-S) zoning** is as follows: HC in the old rocks - since Devonian up to Paleogene (D-Pg) – **North** Caspian Sea vs. HC in Triassic-Jurassic, Paleogene rocks in the **Middle** Caspian Sea, and in Low Pliocene (N2) rocks - **South** Caspian Sea. It could be in agreement with northeastern (NE) superplume activity decreasing. Giant HC resources in **Saudi Arabia** – Caspian region could be related with this hot regime. HC localizations are in agreement with a regional general geology. Surely, the oil genesis is **traditional - organic** one.

There is a good correlation as detailed HC structural map - HC maximum. It is in agreement with a young concrete HC localization despite the different age of host rocks. Mud volcanoes (Kholodov, 2012 etc.) – HC – Salt – magmatism - tectonics in this region studied is the **one system**.

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