

1-D MODELLING OF HYDROCARBON GENERATION AND EXPULSION FROM MENILITE SOURCE ROCKS IN THE AREA BETWEEN SAN AND STRYI RIVERS (POLISH AND UKRAINIAN CARPATHIANS)

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The study area is devoted to the Polish-Ukrainian border region between San and Stryi rivers (Fig. 1).

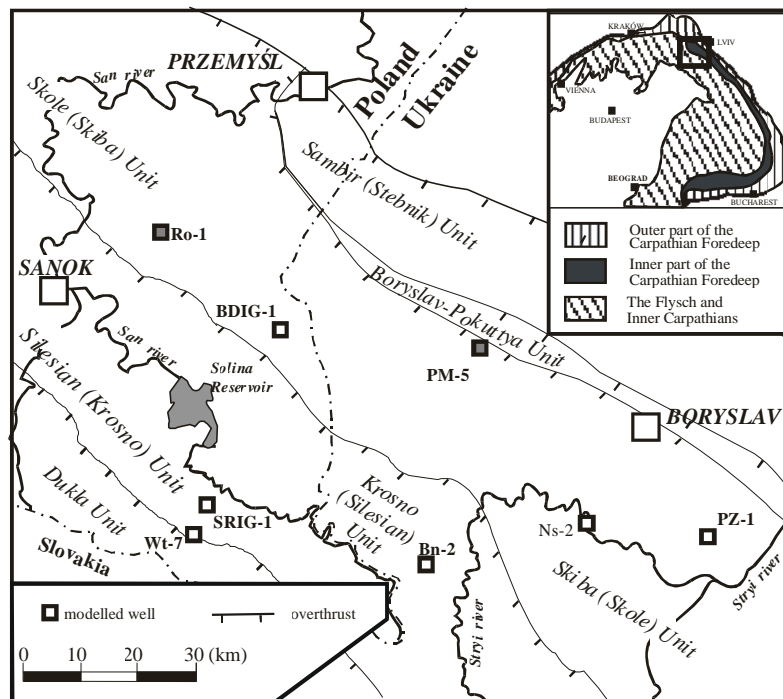


Figure 1. Geological sketch map of the Polish and Ukrainian Carpathians in the San and Stryi rivers region showing the location of tectonic units and modeling wells.

The Oligocene Menilite Shales is the most important source rock in Polish and Ukrainian Carpathians (Koltun et al., 1998; Kotarba and Koltun, 2006). The organic matter content in the Menilite Shales is up to 20% and type II kerogen dominates (Kotarba et al., 2007). Based on the geochemical analyses of Menilite Shales in Boryslav-Pokuttya, Skole (Skiba) and Silesian (Krosno) units in the San and Stryi rivers region 1-D modeling of generation and expulsion processes of hydrocarbons was carried out. Organic matter in the Skole (Skiba) Unit is immature and in Boryslav-Pokuttya and Silesian (Krosno) units mature enough for generating low-temperature hydrocarbons. The highest hydrocarbon potential was confirmed in the Skole and Boryslav-Pokuttya Units (Kotarba et al., 2007).

Results of 1-D modelling for 8 profiles reveal that in the Boryslav-Pokuttya, Skole (Skiba) and Silesian (Krosno) Units Menilite source rocks are not mature enough to generate hydrocarbons at sedimentation stage of formation of the Flysch Carpathians (Fig. 2). Differences in the burial history, visible in the diversified thermal maturity of kerogen, manifested only at a thrusting stage of formation of the Flysch Carpathians. The analysis of hydrocarbon generation and expulsion from the source rock of all studied units reveals that the highest maturity and the highest potential were obtained by Menilite Beds in the Polish part of the Silesian (Krosno) Unit. The generation of processes in this unit was earliest, and the level of kerogen transformation and the expulsion potential were highest.

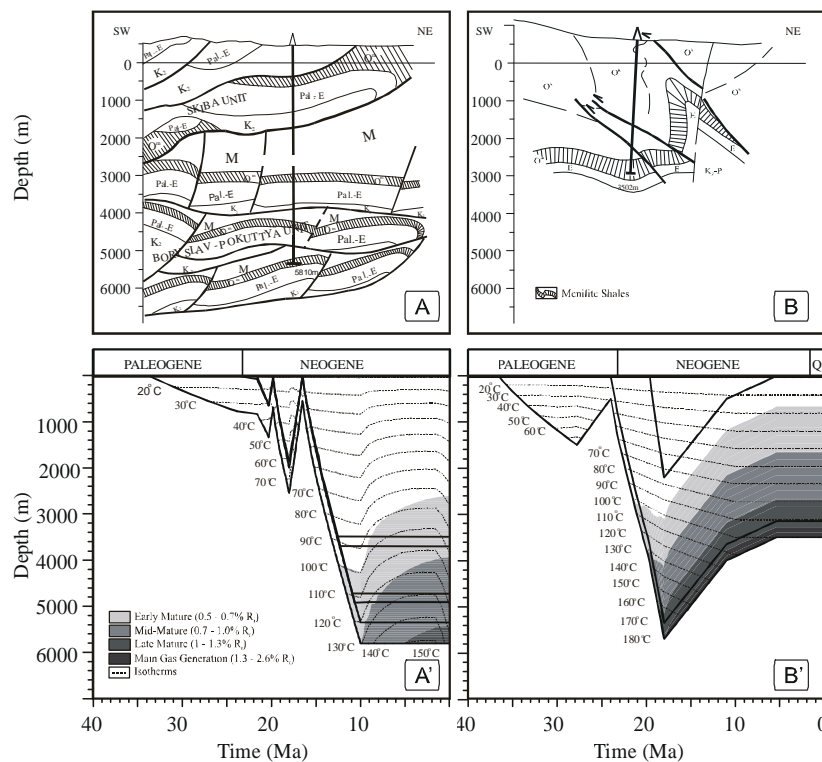


Figure 2. Geological profiles and burial history with thermal evolution of Menilite Shales in (A and A') Pivnichna Zavoda-1 well in Boryslav-Pokuttya Unit and (B and B') Suche Rzeki IG-1 well in Silesian Unit.

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