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Evolution and Hydrocarbon Potential of the Eastern Black Sea Basin

The Eastern Black Sea is one of the few remaining frontier basins within southwest Asia. It shares many similarities with the South Caspian Basin: a prolific (Maykopian) source rock, rapid Late Miocene - Pliocene subsidence, a basement with properties similar to thick oceanic crust of poorly constrained age and depositional systems whose sediments display marked variations in reservoir quality. Extensive fieldwork in Russian, Georgia and Armenia, along with analogue work around the South Caspian Basin, has been undertaken to assess the evolution and hydrocarbon potential of the Eastern Black Sea Basin. Ar-Ar dating of basalts in the Adjara-Trialet belt, the less extended onshore continuation of the oceanic basement to the Eastern Black Sea, yields a tightly clustered set of ages within the Early Tertiary, constraining the age of rifting. Similar ages were also obtained from the Talysh of Azerbaijan, implying contemporaneous back-arc extension in the South Caspian Basin. Detailed sampling and the successful application of the Russian palynological zonation scheme developed for the Maykop type section, have enabled marked temporal variations in Maykopian source rock quality to be mapped regionally. Spatial variations in reservoir quality are also recognised with analogues to the South Caspian palaeo-Kura and palaeo-Volga depositional systems being present, although quartzitic sands sourced from local granitic massifs complicate this picture. Sedimentological, structural and AFTA analysis constraining the timing and rate of uplift of the Greater Caucasus also provide important information as to the evolving nature, quantity and quality of sand input into the basin.