An outcrop analogue study of Late Jurassic reefs in the Russian western Caucasus, Crimea and Pontides: implications for the Eastern Black Sea

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Seismic data have revealed the likely occurrence of Late Jurassic reef complexes up to 1-2 km thick and 10-20 km wide on the northern Shatskiy Ridge in the Eastern Black Sea. Reefs may also be present in the area of the Mid Black Sea High. Widespread onshore exposures of Late Jurassic reefs in the Russian western Caucasus, Crimea and Pontides provide excellent reservoir analogues for offshore targets.

The Russian western Caucasus, Crimea and northern Pontides formed part of the northern margin of Tethys during the Late Jurassic. Reef development was widespread through Oxfordian to Tithonian time. These reefs, similar to the Late Jurassic reefs in other part of northern Tethys, can be grouped into coral-dominated, siliceous sponge-microbial and microbial types. Coral-dominated reefs occur as patchy and massive forms mostly in shallow-water platforms, but also in slightly restricted deeper-water mid shelf settings depending on different coral communities. Siliceous sponge-microbial and microbial reefs occur as lenses and mounds and are restricted to deeper-water mid-outer shelf environments. The development of these reefs was controlled mainly by local variations in water depth, light, the availability of nutrients, and sedimentation rate.

The reefs exhibit a complex pattern of porosity development reflecting independent diagenetic histories involving near-surface and deep-burial dissolution, dolomitization and dedolomitization. Porosity is particularly common in coral-dominated reef facies and consists of both primary and secondary types. The amount of visual porosity estimated at outcrop is up to 5%.