

CONTINENT - OCEAN COLLISION AND THE ACTIVE DEFORMATION OF THE WESTERN HELLENIDES

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An onshore-offshore seismic survey performed in 1994 across three transects, from the deep Ionian sea to the western Hellenides, revealed that the crust and lithosphere offshore western Greece is of oceanic origin. The sediments have a thickness of 8 to 10 km while the crust below them is only 5 to 6 km thick, and the lithosphere does not exceed 25 km thickness. The deformation below the Hellenides is very intense and compressional processes have uplifted limestones of high velocity and density above softer sediments and Mesozoic anhydrites. Thickness of the post-Miocene sedimentation is very unevenly distributed over the entire area and strongly depends on the intensity of the horizontal deformation. Compression has forced the sedimentary sequences to glide over each other causing horizontal shortening of 40 to 50 km in places. The compressional processes are not developing in a uniform manner along the compressional axis and show strong lateral variations. The Mesozoic sediments have been strongly deformed and hydrocarbons associated with the early development of the Mesozoic basins must have migrated to higher levels of the sedimentary sequence. This process is responsible for oil and gas accumulation at economic depths within the Ionian Zone, and should be expected particularly under flysch covered areas where the flysch is acting as a cap-rock to oil and gas traps.