



Crustal structure in the southern Hellenic subduction zone

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The Hellenic Subduction Zone consuming the remnants of Tethyan seafloor is subducting northward beneath Crete Island as part of the eastern Mediterranean oceanic lithosphere in contact with the northward moving African continental plate. Crete is located in the forearc of the Hellenic Subduction Zone. The north-dipping Wadati-Benioff seismic zone is extending beneath Crete to a depth of about 200 Km. Nowadays the Hellenic arc is associated with moderate arc-parallel extension and strong compression perpendicular to it. The Hellenic nappes are the dominating sequences within the upper structure of Crete Island. Two major rock successions could be distinguished, the pre-Neogene rock succession and the Neogene rock succession. The largest earthquakes occurred on and around Crete indicate E-W extension along N-S striking faults onshore Crete. N-S extension dominates the offshore regions south of Central and Western Crete, while normal and thrust faulting is the predominant mechanism south of Eastern Crete.

Information concerning deep onshore and offshore seismic reflection experiments data, topographic data and bibliography was used in order to construct detailed velocity models for the area around Crete Island and trace the main sedimentary sequences as well as deeper structures. In addition part of the velocity models were used in an effort to produce near field synthetic earthquake records for the 24th July 2004 earthquake in Western Crete.

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