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Miocene to present kinematics in Cilicia Basin, the link between the Central Anatolia Plateau and the Kyrenia Range

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Aiming to enhance spatiotemporal resolution of plateau-buildup processes, the ESF-sponsored Vertical Anatolia Movement Project (VAMP) focuses on the Central Anatolia Plateau (CAP), in Central Turkey. The Miocene to recent CAP is a semi-arid roughly-flat elevated broad terrain bounded by the Pontides in the north and the Taurides in the south. Being part of the south flank of the CAP, the marine sediments forming the Miocene Basins on top of the arcuate Tauride fold-thrust belt, are presently outcropping at high elevations, i.e. at more than 2000 m in the case of the Mut Basin. These Miocene sediments are found at depths of more than 2500 m between Turkey and Cyprus, in the Cilicia Basin, which forms the downward continuation of the south margin of the plateau. The marine deposits are outcropping again in the southward-thrusted Kyrenia Mountain Range and in the Circum-Troodos sedimentary succession. These Miocene marine deposits, probably originally belonging to one single basin, are fundamental archives to constrain the tectonic stages immediately preceding and contemporaneous with plateau development. The Cilicia Basin is thus a strategic area to link the tectonic evolution of the southern margin of the CAP to that of northern Cyprus since Miocene. In this ongoing contribution we aim to determine the structures responsible and age of growth of the southern margin of the CAP as well as to achieve a quantitative understanding of the northeast Mediterranean tectonics. In order to achieve this, three N-S–trending seismic reflection profiles laying in the Outer Cilicia Basin that were provided by the Memorial University of Newfoundland have been interpreted and converted to depth. We have analyzed the main structures, sediment geometries and tilted blocks in the depth-converted seismic profiles. On the basis of the geological sections we have constructed for the Miocene units; (i) backstripped subsidence curves, to determine the vertical movements, and (ii) two palinspastically retrodeformed sections, to quantify the horizontal deformations. The horizontal motions have been then compared with the vertical motions. Finally, using ties of exploration wells in the Adana and Inner Cilicia Basin and correlation with onland stratigraphic units, we have expanded and compared these results to the adjacent Mut Basin and Kyrenia Range. Two main periods of differential tectonic activity are distinguished within the post-Palæogene succession for the area; Miocene, with subsidence of the whole area, and post-Messinian, characterized by uplift in the north, subsidence in the central transtensional domains and thrust activity and uplift in the Kyrenia Range.