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Westward extension of the Levantine Basin to the Eratosthenes Seamount and the Cyprus Arc – no evidence for strike-slip motion

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The Eastern Mediterranean represents a complex pattern of micro plates. A side by side distribution of diverse tectonic situations like collision, subduction, obduction and shear makes this area a very interesting spot on earth. Whereas subduction of Neo-Tethys oceanic crust is still ongoing at the Hellenic Arc, a collision occurred eastward when the Eratosthenes Seamount (ESM) entered the Cyprus Arc. If subduction is still active further east towards the Syrian coast remains unclear. The collision related deformation of the ESM and the adjacent Levantine Basin will be discussed in this paper.
We present a new set of 2D multichannel seismic data, acquired in 2010 with the RV Maria S Merian, which is a dense line grid with NW-SE and NE-SW trending profiles crossing the ESM and the western part of the Levantine Basin south of Cyprus. We show first results of the profiles that were processed up to Pre-Stack Depth Migration. Based on the dense line grid with distances of not more than 5 nautical miles, we picked the key horizons in the Levantine Basin and generated reliable 3D-grids of the horizons.
With this dense line grid, it was possible to trace the western extension of the Levantine Basin sometimes also referred to as Baltim Hecataeus Line (BHL), which is a fault lineament of Mesozoic age separating the Levantine Basin from the ESM. This extension is observed on every NW-SE and NE-SW trending profile and we were able to trace it even further north and south of the ESM. The BHL is believed to be reactivated as a linear sinistral transform fault that compensates the northward motion of the African-Arabian plate with respect to the blocked ESM. With our data we can show that the western extension of the Levantine Basin does not coincide with a sinistral transform fault and that it is rather a normal fault with a meandering NNE-SSW trending strike.