



Internal Deformation of the Anatolian Scholle during its westward extrusion and reactivation of the early structures

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The North and East Anatolian Fault Zones (NAFZ and EAFZ) present the main deformation zones providing the westward extrusion of the Anatolian Scholle. This system is one of the most remarkable and unique examples of intraplate deformation in the eastern Mediterranean Region. The post-collisional processes formed between the amalgamation of the Arabian and the Eurasian Plates caused internal deformation in the Anatolian Scholle where large bulk strain generated not only development of the new structures (e.g. the NW-striking dextral and the NE-striking sinistral faults) but also reactivation of older structures within the Scholle.

In this study, we focused on more complex deformation region in the Anatolian Scholle, which is delimited by the NAFZ to the north, the EAFZ to the southeast, the Malatya Ovacık Fault Zone (MOFZ) to the west and the Nazımiye Fault Zone (NFZ) to the south. The right lateral NFZ, which is located 60 km south of the NAFZ and oriented parallel to it, extends between the EAFZ and the MOFZ and consist two sub-parallel segments. Our studies revealed clear offset geologic and morphologic structures that reflect the recent slip on the NFZ. We also measured c. 12 and c. 23 km cumulative offset on the northern and southern segment of the NFZ, respectively. Although these offset values are greater than the cumulative offset of any faults within the eastern part of the Anatolian Scholle, there are important similarities between the NFZ and Murat Fault Zone (MFZ), which is located in east of the EAFZ, in terms of their orientations, slip senses and cumulative offsets. The MFZ has two segments and they indicate clear evidence of recent tectonic activity in the Eastern Anatolia. The 23 km dextrally offset Murat River present the cumulative offset of the MFZ. Considering the similarities between the NFZ and MFZ we put forward the idea that they belonged to the same deformation zone that was parallel to the NAFZ then they have offset by the EAFZ about 33 km. We propose that this offset value is the maximum value for the EAFZ. The age of the EAFZ could be assigned as 6 Ma considering the calculated long-term slip rate value of the fault zone. Thus, the NFZ represents an older structure that reactivated as a result of generated bulk strain during the westward extrusion of the Anatolian Scholle. This study supported by TUBITAK project no:115Y684