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Quaternary Evolution of Karlıova Triple Junction

Taylan Sançar (1), Cengiz Zabcı (2), and H. Serdar Akyüz (2)

(1) Tunceli Üniversitesi, Jeoloji Mühendisliği Bölümü, Tunceli-Turkey , (2) İstanbul Teknik Üniversitesi, Jeoloji Mühendisliği Bölümü, İstanbul-Turkey

The arguments to explain Quaternary evolution of Karlıova Triple Junction (KTJ) depends upon two different analogue models. The compressional type of Prandtl Cell Model (PCM) and 60 km wide shear zone with concomitant counter clockwise block rotation used to modelled for west and east of the KTJ respectively. The data for the model of west of the KTJ acquired by extensive field studies, and quantified geomorphic features. Compressional PCM put forward that behavior of slip lines controlled by boundary faults. But the model is not enough to explain slip distribution, age relation of them. At west of the KTJ boundary faults presented by eastern most segments of the North Anatolian Fault Zone (NAFZ) and the East Anatolian Fault Zone (EAFZ). Slip lines, however, presented by Bahçeli and Toklular faults. Both field studies and morphometric analyses undisputedly set forth that there are two different fault types between the NAFZ and EAFZ. The most strain loaded fault type, which are positioned near the NAFZ, start as a strike-slip fault and when it turn to SE its sense of motion change to oblique normal due to changing orientation of principal stress axes. The new orientation of stress axes exposed in the field as a special kind of caprock -cuesta-. The younger slip lines formed very close to junction point and accommodate less slip. Even though slip trajectories started from the boundary faults in compressional PCM, at the west of KTJ, right lateral trajectories more clearly formed close the NAFZ and left lateral trajectories, relatively less strain loaded fault type, are poorly formed close the EAFZ . We think that, this differences between KTJ and compressional PCM result from the distinction of velocity of boundary faults. East of the KTJ governed by completely different mechanism. The region controlled two main fault systems. The Varto Fault Zone (VFZ), the eastern branch of the KTJ, and Murat Fault (MF) delimited the region from north and south respectively. The region also delimited at west by the EAFZ. All secondary faults between these three faults are strike slip faults. The faults which are positioned NW-SE and nearly parallel to the N70W oriented VFZ are dextral, whereas sinistral faults are N-S oriented and nearly orthogonal to NW-SE trending right lateral faults. Sinistral faults develop in the overlap area between adjacent left stepping of dextral faults which are arranged in an en echelon pattern. This configuration formed under shear zone regime with one Previous shear zone model studies proposed that right lateral faults form the 17-24 degree to principal displacement zone. Paleo-magnetic studies of Plio-Quaternary rocks, which covered the all region, show that there is a counterclockwise block rotation between 18 to 23 degree that is clearly explain position of the secondary right lateral faults.