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Structural and Kinematic Analysis of a Transpressional Basin in Central Anatolia: Çiçekdağ Basin

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The Central Anatolian Crystalline Complex (CACC), which lies within Turkish Alpine orogenic belt, incorporates several basins located either within the complex or at and along its boundaries. Many of the basins developed during extension since Late Cretaceous and then evolved with advancing collision of Anatolide-Tauride with Pontides. With regard to deformation and evolution of the region, recent paleomagnetic study from the central Anatolian intrusives defines three blocks with characteristic rotation, pointing out the break-up of the CACC and the formation of two deformation zones between blocks. This study is focused on Çiçekdağ Basin (ÇB) which is located within one of the intensely deformed zones in the CACC. The structural analysis within and around ÇB in support of these models and claims is, however, limited. Thus this present study aims to provide more structural data that bears on the evolution of the Çiçekdağı Basin as well as the CACC, especially during regional contraction taking place at the end of the Eocene.

Major structures of the study area fall into six groups: (i) E-W-trending synclines and a burried major reverse fault, suggesting N-S shortening; (ii) approximately NW-SE-trending plunging en-échelon folds, consistent with NE-SW compression; (iii) a NW-SE-trending (130°) left-lateral strike-slip fault; (iv) E-W-trending (260°) normal fault at southern edge of the basin and NW-SE-trending (∼150°) normal fault; (v) NE-SW-trending reverse faults (∼050°-055°) in the north of and middle of the basin, with hanging wall syncline geometry compatible with NW-SE to N-S compression; (vi) WNW- ESE trending reverse faults implying nearly N-S compression. At this stage, it is not clear to us if all these structures were encountered within the same strain field or they belong to a poly-phase deformation. This will be evaluated and discussed further.