

## Accepted Manuscript

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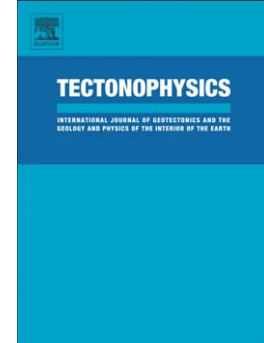
PII: S0040-1951(16)30535-2  
DOI: doi:[10.1016/j.tecto.2016.11.018](https://doi.org/10.1016/j.tecto.2016.11.018)  
Reference: TECTO 127320

To appear in: *Tectonophysics*

Received date: 28 June 2016  
Revised date: 31 October 2016  
Accepted date: 14 November 2016

Please cite this article as: Karaoğlu, Özgür, Selçuk, Azad Sağlam, Gudmundsson, Agust, Tectonic controls on the Karlıova Triple Junction (Turkey): implications for tectonic inversion and the initiation of volcanism, *Tectonophysics* (2016), doi:[10.1016/j.tecto.2016.11.018](https://doi.org/10.1016/j.tecto.2016.11.018)

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## **Tectonic controls on the Karlıova Triple Junction (Turkey): implications for tectonic inversion and the initiation of volcanism**

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### **Abstract**

Few places on Earth are tectonically as active as the Karlıova region of eastern Turkey which comprises a triple junction (KTJ). Triple junctions result in complex kinematic and mechanical interactions within the lithosphere generating tectonic inversions and uplift, extensive seismicity and volcanism. Here we present new data, and summarize existing data, on the tectonic evolution of the KTJ in eastern Turkey over the past 6 Ma. In particular, we present a kinematic model for the KTJ and the surrounding area as well as new structural maps. The deformation or strain rate has varied over this 6 million year period. The maximum strain rate occurred between 6 Ma and 3 Ma, a period that coincides with the initiation of activity in Varto Volcano. We suggest that increased strain rate and the initiation of activity at the Varto Volcano may be tectonically related. Subsequent to its formation, the Varto Volcano was dissected by active faults associated with the Varto Fault Zone, including reverse, normal and strike-slip faults. During the past 3 Ma, however, the KTJ area was deformed dominantly through dextral crustal movements associated to right-lateral faults. This deformation resulted in the development of a NE-SW-trending extensional/transensional regime, together with a complementary NW-SE-trending contractional regime. In the past 6 Ma the east end of the KTJ has been subject to incremental deformation. This

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