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Partitioning between strike-slip and orthogonal extension in the western South China Sea

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Our study focuses on the Zhongjianna (ZJN) (Phu Kham) Basin, located at the western termination of the South China Sea (SCS) and separated from the Indochina continent by the N-S striking East Vietnam Boundary Fault Zone, which is a large scale strike-slip fault system. The sedimentary infill history of the ZJN basin records the complete evolution and interaction of the Indochina-SCS system and allows the tectonic and kinematic evolution of the basin to be understood.. The discovery of hyper-extended continental crust and mantle exhumation in this basin leads to the question of what is the relative role of large-scale strike-slip and orthogonal faulting in controlling crustal thinning in the ZJN basin.

Our preliminary results confirm the existence of hyperextended continental crust flooring the ZJN basin. Two different types of structures can be identified in this area: extension related deformation in the eastern part and strike-slip related deformation in the western part. The analysis of fault geometries and kinematics linked to timing and subsidence rates suggest that the N-S-orientated strike-slip structures dominated the continental shelf and slope area on the west side of the basin. In the basin, however, most faults strike NE-SW and are parallel to the mid-ocean ridge. Thus, it appears that the ZJN basin resulted from the partitioning between strike-slip and orthogonal extension.

In our presentation we show the results of our seismic interpretation, strain and subsidence analysis and discuss the interaction between strike-slip and orthogonal extension in setting up the hyper-extended ZJN basin and its implications for the large scale tectonic and geodynamic framework.