Geophysical Research Abstracts
Vol. 20, EGU2018-11233, 2018
EGU General Assembly 2018

Characterization of the conjugate rifted margins of South China Sea and implication for extension model

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To further advance our understanding of the continental rifting mechanism of the South China Sea (SCS), we characterize the crustal structure of the conjugate rifted margins of each-Sub-basin and calibrate the continental-ocean transition zone (COT) combining multi-channel seismic reflection, gravity and magnetic anomaly data. Among three Sub-basins, The COT is narrower than those found in other magma-poor margins, which is coincides well with the positive-negative gravity anomaly transition zone and characterized by discontinuous Moho reflection, basement high and seaward normal fault. Rift basins are often bounded by listric normal faults, most of which are terminated at the upper-lower crust interface where corresponds to the brittle-ductile transition zone. The syn-rift sediments and post-rift magmatism is well developed. These various pieces of evidence suggest that the lower crust as a decouple layer plays a dominant role in controlling the crust breakup and the COT most likely to be ruined by the post-rift magmatic intrusion. Based on the study, we propose an extension model of SCS, which is the intermediate-level of the two end-member type margins and the normal oceanic crust started to establish soon after crustal breakup. Besides, we further discuss the major controlling factor that affect the range and timing of continental rifting of each Sub-basin of SCS.