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## Impact of thermal, compositional and structural inheritance on early post orogenic continental breakup in the South China Sea

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The South China Sea (SCS) is unique among the worldwide supra-subduction oceanic basins as continental rifting occurred in the lower plate, long after an orogenic collapse, quite far from the surrounding active subduction zones. Using seismic imaging results and thermo-mechanical modeling, many authors infer an important role of thermal, compositional and structural inheritance during the onset of post-orogenic continental breakup in the SCS. Here we study the interactions between the inheritance mentioned above and the SCS rifting processes by (1) processing Ocean Bottom Seismometers (OBS) refraction data in the southwestern sub-basin and (2) building numerical models to test related rheological heterogeneities. In these models, we study the effect of sedimentary and crustal dipping layers corresponding to former orogenic, thrust related nappes. We also aim to obtain a more detailed result of the lithospheric P-wave velocity structure in the southwestern sub-basin from 30 OBS to better constrain where the crustal structure significantly differs from a wide rift with constant crustal thickness. The observed and modeled deep crustal structures will be used to better understand how the rifting processes relate to the Mesozoic orogenic inheritance.

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