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How old is the Proto South China Sea? A 2D thermo-mechanical study

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Paleo-reconstruction models commonly propose that the South China Sea (SCS) opens within the China margin during the southward subduction of the Proto South China Sea (PSCS) beneath Borneo. However, (1) there is not yet a numerical model of this scenario (2) there are still discrepancies concerning the age of the PSCS opening. In this study, we use 2D thermo-mechanical simulations of subduction zones to evaluate the mechanical conditions required for the PSCS subduction to be responsible for the South China Sea opening within the lower plate. We find that the oceanic domain must be stronger than the continental margin for the slab pull force to be transmitted to the continental margin, resulting in continental breakup. The outcomes of our simulations provide support for a Cretaceous PSCS opening age.

Keywords: Numerical model Subduction Continental breakup South China Sea