Please fill in the name of the event you are preparing this manuscript for.	International Petroleum Technology Conference 2023 (15th IPTC)
Please fill in your 5-digit IPTC manuscript number.	IPTC-22835-Abstract
Please fill in your manuscript title.	Continental Breakup of Marginal Seas, Example From SE Asia

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Abstract

Objectives/Scope: Magma-Poor and Magma-Rich rifted/passive margins are now well studied thanks to deep seismic data in the prolific Atlantic domain. It has come together with the emergence of new plays.
Here we investigate rifted margins of marginal seas, including the Continent-Ocean-Transition (COT) of the South China Sea, the Coral Sea and the Woodlark Basin. Their COT structure differs from Atlantic-derived end-members archetypes suggesting a distinct mode of rifting and continental-breakup and specific set of controlling parameters.

Methods, Procedures, Process: Our approach is based on our knowledge and research exploration experience of worldwide margins. We used and interpreted new high-quality seismic data combined with the results of the IODP expeditions 367/368 in the South China Sea and the ODP leg 180 in the Woodlark basin, which have drilled the COT.

Results, Observations, Conclusions: We propose new interpretations of selected lines at crustal scale and compare them to assess the tectono-magmatic processes acting during continental breakup. The COT forms from the activity of one major low-angle normal fault localizing deformation during final rifting. Extension is contemporaneous with magmatic activity including volcanic edifices, dykes and sills in the distalmost part of these basins. The COT shows a sharp juxtaposition in space and time of continental crust against igneous oceanic crust, the overall structure differing from that of magma-poor or magma-rich passive margin archetypes. In the three examples, the margin's evolution from rifting to break-up follows and overprints a former orogenic collapse event. These phenomena are continuous in time. As a result, lithospheric thermal inheritance is very different from rifted margins for which there is a long time-lag between orogeny and rifting (see Wilson cycle and the Iberia-Newfoundland margins for example).

Novel/Additive Information: We propose that such mode of breakup is characteristic of marginal seas due to the high extension rate imposed by kinematic forces of nearby subduction zone. Revealed in the context of marginal seas, such mode of breakup and resulting COT structure highlight the, yet undervalued, diversity of continental breakup mechanisms.