

The Late Triassic of Tasmania: a land of burning trees and swamps

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Norian to Rhaetian (~203–217Ma) sediments globally show evidence of faunal and floral transitions in both the marine and continental realm, leading up to and culminating in the End Triassic Mass Extinction event (ETE). These changes in the Norian–Rhaetian coincide with carbon-cycle perturbations associated with either Large Igneous Province (LIP) activity or the introduction of ¹³C depleted carbon dioxide into the atmosphere (c.f. Rigo et al. 2020). At present no specific LIP has been identified as a trigger for events at the Norian–Rhaetian transition.

Here we present new XRF, organic carbon isotopes (fossil wood and bulk sediment), and U–Pb ages from the Upper Parmeener Supergroup in Eastern Tasmania. These coal bearing sediments with interbedded tuffaceous units were previously dated to 217–222 Ma (cf. Calver et al. 2021) and contain Norian–Rhaetian palynomorphs, suggesting temporal overlap with the onset of Gondwana Margin magmatic activity, along the palaeo–Pacific plate boundary, may have had a significant impact on global climate and environmental change during this interval. This magmatic activity predates the better-studied emplacement of the Central Atlantic Magmatic Province as well as the Karoo and Ferrar LIPs in the Southern Hemisphere in the Early Jurassic all of which resulted in extinction events and significant major environmental and climatic perturbations.

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