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Sea-level Eustatic Cycles and Potash Formation Event: A Case Study of Triassic Sichuan Basin

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Identification of the favorable salt- and potash- forming layer, we still mainly rely on logging interpretation and coring verification. However, we both know that the continuously carbonate platform is cyclical growing. It has recorded valuable information about the phase transition of carbonate rocks, which were synchronized with the relative sea-level cycles. This paper presents a fast and efficient way to preliminary judge favorable potassium-rich intervals: utilizing the natural gamma ray logging data, using numerical simulation, high-frequency sedimentary cycles could be identified effectively from the sedimentary record, then we can inverse the distribution model and stacking patterns of these cycles, restore the ancient relative sea-level trends, and finally deduce the favorable salt- and potash- forming phases from the low-stand depositional system. On the basis of these principles, in this paper, a case study has been taken in Triassic of Guang'an area, in the central of Sichuan Basin. We deem that the interval from the Fifth Member of the Jialingjiang Formation to the First Member of the Leikoupo Formation is the most potential salt- and potash- forming layer (Fig. 1). The favorable potassium interval that we identified is consistent with the potassium-rich layer which is realized by other academics according to the drill core. It shows that this method could effectively identify potassium rich layer from the marine carbonate platform.

Key words: Marine carbonate platform, depositional cycles, potassium-rich layer, well logging response, Triassic, Sichuan Basin

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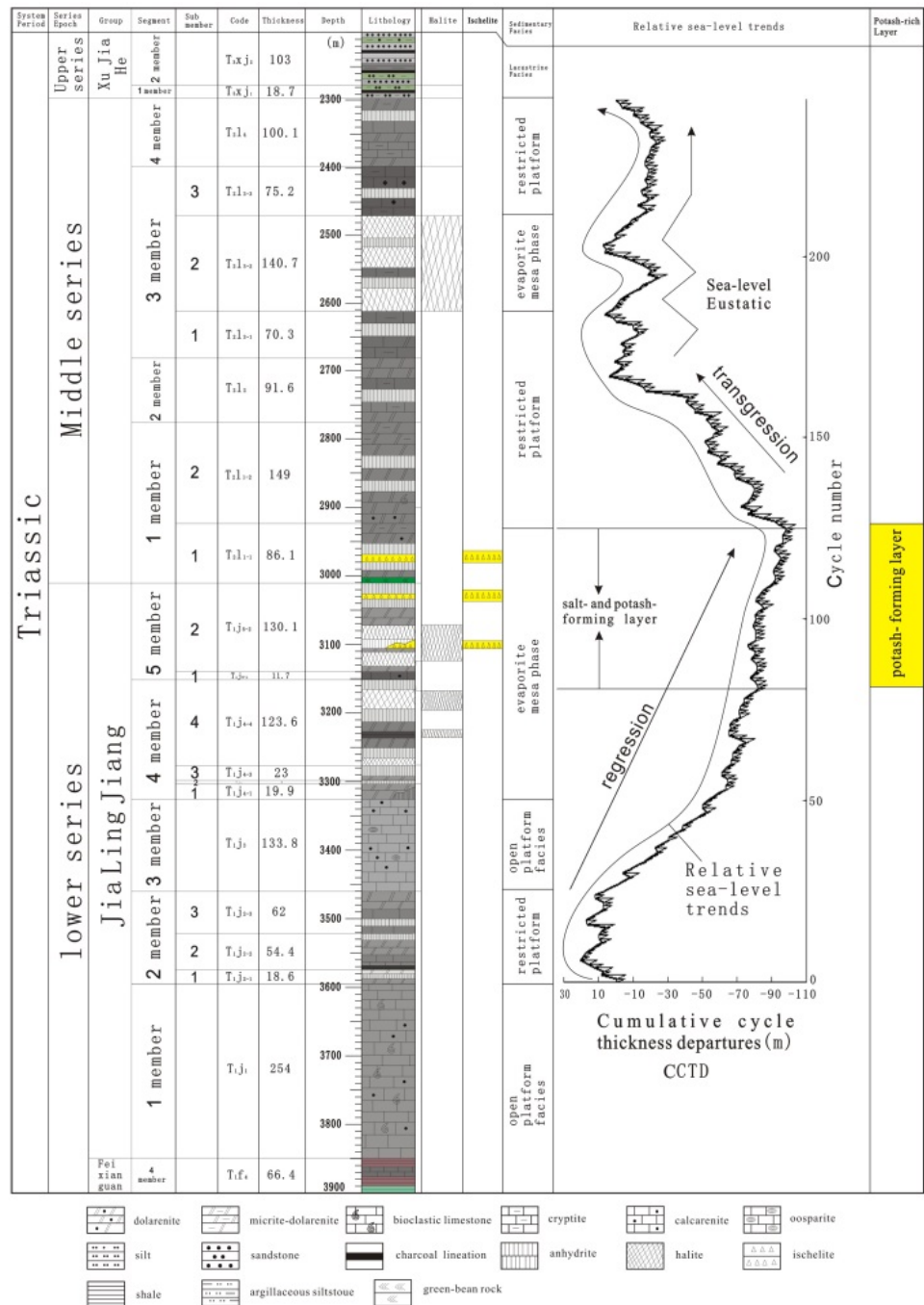


Fig. 1. Integrated column of sea-level change in the early and middle Triassic, in Guang'an area, Sichuan, China.

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