Tectonic transition in the Early Jurassic in South China

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It is well known that South China experienced two important tectonic movements in the Mesozoic, i.e. the Early Mesozoic Indosinian and the Late Mesozoic Yanshanian movements, which yield widely distributed granitoids and abundant mineral resources. Our results indicate that those two tectonic movements overlapped in the Early Jurassic and controlled the evolution of the South China continental crust during the transition.

Studies on selected Late Indosinian plutonic rocks in South China indicate that granitoids formed during 220-200 Ma [1] are typical post-collisional granites. which are related to extension regime in response to continental thickening attributed to the collision between the South China and Indosinian blocks in ~245 Ma [2-4]. Magmatism significantly declined between 200-190 Ma, followed by formation of granitoids and volcanic rocks associated with extensional settings during 190-170 Ma, which can be plausibly interpreted by the long-distance effect of subdution of the paleo-Pacific plate towards Eurasian continent. The magmas inherited extensional characteristics associated with the Indosinian tectonic regime.

Our results indicate that the transition from Indosinian to Yanshanian movements, as well as the corresponding transformation in tectonic domains, is a continuing process occurred during the Early Jurassic. We propose that: in the Early Jurassic, the influence of Indosinian movement gradually decreased as the post-collisional extension and continental crust-thinning continued. Meanwhile, the influence of Yanshanian movement increased steadily as the subduction of the paleo-Pacific plate towards Eurasian continent developed, with decreasing effects from the east to the west. The influence of Indosinian movement is finally over around the late stage of the Early Jurassic, consequently the geological evolution of South China came into the epoch of Yanshanian movement entirely dominated by the paleo-Pacific tectonic domain.

References

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