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Research Highlight

Exotic origin of the Chinese continental shelf

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The history of western Pacific subduction and its relation to eastern China are big issues for geological investigations [1, 2]. Many models have been proposed for interpreting the tectonic scenarios of eastern China since the Mesozoic, but most have centered on the lithosphere destruction of the North China Craton [3–6] with increasing emphasis on the effect of the paleo-Pacific subduction in recent years [7]. However, important questions such as when the subduction of the paleo-Pacific plate may have begun, where is the suture zone that may record the paleo-Pacific subduction, and when and why that subduction may have ended remain unanswered. Yet, these questions are key to understanding the geological processes of the western Pacific and continental China.

In this issue of *Science Bulletin*, Niu et al. [8] investigated the Jurassic–Cretaceous granitoids associated with western Pacific subduction in the eastern continental China. They revealed that termination of the granitoid magmatism throughout the vast region was likely a "sudden" event at $\sim 88 \pm 2$ Ma, which is best explained by "sudden", or shortly beforehand (~ 100 Ma), trench jam of the Mesozoic western Pacific subduction. They hypothesize that the basement of the Chinese continental shelf represents a buoyant and unsubductable oceanic plateau or microcontinent that jammed the trench at ~ 100 Ma, terminating the subduction, and re-orientating the Pacific plate motion in the course of NNW direction.

The amalgamation of oceanic plateaus or microcontinents to continental margins was thought to be one of the major processes of continental growth [9]. The presence of the ~ 40-Myr gap of subduction-related magmatism from ~ 88 to ~ 50 Ma emphasized in this paper reveals us an important message about the tectonic evolution of the western Pacific subduction. Niu et al. [8] make an important contribution by showing us the perspectives on tectonic correlation between the western Pacific and eastern continental China, as well as the exotic origin of the eastern Chinese continental shelf. To test this hypothesis by deep drilling is challenging, but it is indeed necessary in order to better understand the evolution of the western Pacific and its effect on the geology of eastern China since the Mesozoic. This task will also offer novel contributions to the plate tectonics theory.

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