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Cenozoic tectonic jumping in the Western Pacific Continental Margin

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Research on the continental margins is now a major focus of the international geoscience community. For example, InterMARGINS project emphasizes particularly on rifted margins and rifting of continental lithosphere, materials and energy exchange of subduction zones and subduction factory processes, making remarkable achievements in seismogenic zone and sedimentary processes and the source-to-sink system. The marginal sea and the continental shelf basins, mainly situated along Western Pacific Continental Margin (WPCM), are important components of complex continental margin system. The WPCM is the eastern margin of global convergent system located in the junction among the Eurasia Plate, the Pacific Plate and the India Plate. Under the effects of the India-Eurasia collision and retrogressive or roll-back subduction of the Pacific Plate, the WPCM has a wide basin-arc-trench system, mainly including the Bohai Bay, South Yellow Sea, East China Sea Shelf and South China Sea basins in East China. Cenozoic tectonic jumpings have been revealed in these basins based on seismic profiles and previous research. The tectonic jumpings are characterized by progressive eastward younging of faulting, sedimentation, depression, termination in and/or within basins. Due to the tectonic migration, the conditions related to hydrocarbon and gas hydrate accumulation of East China and its adjacent areas also get younger from west to east, and such a spatio-temporal distribution of Cenozoic hydrocarbon and gas hydrate is significant for the oil and gas exploration in East China. The mechanism of Cenozoic tectonic jumping is controlled by interplate, intraplate and underplating processes: the Late Mesozoic extrusion tectonics and the Cenozoic NW-directed crustal extension, the regional far-field eastward flow of the western asthenosphere due to the India-Eurasia plate collision accompanying with eastern jumping and back-rolling of subduction zones of the Pacific Plate.

References:

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