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Interaction of micro-blocks and palaeogeomorphic reconstruction in Taiwan orogenic belt and adjacent areas

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Paleogeographic evolution was influenced by the interaction of deep geodynamics, tectonic uplift, erosion and valley incision. The eastern margin of the Eurasian Plate is critical zone of collision between the Tethys and Pacific Ocean. Its controversies of geodynamics have never stopped. The tectonic setting of Taiwan orogenic belt is extremely complex. The interaction of micro-blocks and Earth's surface response around Taiwan orogenic belt and adjacent areas are still difficult to study. A numerical simulation tool (Badlands) is assigned for the study of Earth's surface response to tectonic and deep mantle activities. In order to study the interaction of micro-blocks and palaeogeomorphic reconstruction, we quantify seventy-eight seismic profiles. Based on the data, the paleobathymetry was restored using Badlands and backstripping technique since Eocene to the recent and significantly linked with the published paleogeography for the land region. According to our numerical result, our resultant sediment of northern and western South China Sea margin (NWSCSM) linearly correlated with increased erosion during SE Tibet exhumation that also linked with deep dynamic influence, including dynamic topography and flexural isostasy. The erodibility and elastic thicknesses are the most variant and important parameters, which balanced uplifts, erosion, and deposition isostatically since Eocene. The key driving factor of deposits during Eocene was from northwestern of study area, whereas minor contributions seem from southern China with local uplifts on the continental shelf. Eocene was the stage of extension, thinning of lithosphere that isostatically correlated and balanced with the low exhumation in the SE Tibet region. Although the influence of dynamic topography is sometimes less prominent than that of structural topography in smaller areas, dynamic topography still controlled the drainage redistribution and sedimentary processes of the NWSCSM after Oligocene.