

Structure and Geomorphology in Central Thailand Using Techniques of Geospatial Data

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Abstract

Flooding areas in the central plain of Thailand have a spatial relationship with the monkey cheek reservoirs and fluvial systems; their shapes and locations may be related to subsurface structures running from the northern and western high terrains. Mapping fault lineaments on the floodplain area is challenging because no fault scarp evidence appears on the Quaternary sediment covers due to sedimentation processes. Geospatial analysis of the Digital Elevation Model (DEM), satellite images, and shapefiles of recent flood areas are tools for interpreting the existence of the concealed faults. Terrain analysis shows that structural lineaments in the northern region are related to the Thoen and Uttaradit fault zones. In the central region, interpreted structural lineaments striking NW-SE may be linked to the Moei fault zone to the northwest. These bent lineaments are strike-slip faults activated under an extensional regime, forming a pure or transtensional pull-apart basin. The lineaments are associated with the Three Pagodas and Si Sawat fault zones mapped in the western regions. Lineament interpretations indicate that subsurface active faults control exposed fluvial landforms and the drainage systems. The depression terrain with floods is associated with the pull-apart basin interpretation. Mapping the spatial relationship between the subsurface fault lines and the monkey cheek will imply the location of a suitable potential monkey cheek reservoir. The more monkey cheek reservoirs there are, the more efficiently the flood hazard in the central plain of Thailand can be addressed.

Keywords: monkey cheek reservoir, central plain of Thailand, terrain analysis, flood hazard