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Salt-related tectonics in the eastern Sichuan Basin, South China

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Sichuan Basin is located in the northwest of Upper Yangtze platform of South China, and East Sichuan is situated between Huaying Mountain fault and Qiyue Mountain fault. The surface Jura type folds are very famous with barrier parallel folds, but the cause of folds formation have not been completely understood. Stratigraphic units are composed of thick competent flexural layers separately by relatively thin incompetent ductile layers that can act as detachments.Multiple detachment layers are developed in the eastern Sichuan and result in distinct structural domains. In addition to the basal, Triassic and Silurian system detachment layers, we recognize a regionally extensive salt layer in the Middle and Lower Cambrian. The recognition of salt layer is by the synthetical studies of outcrop, drilling well, and chaotic seismic reflection configuration. The Middle and Lower Cambrian salt forms a tectonic domain boundary that can be observed by seismic reflection profile in subsurface. The stratigraphic intervals above and below the salt develop characteristic salt-related tectonics. And the folds formation is by flow in and flow out of salt movement of the Middle and Lower Cambrian and flexural slip and grouding of the overlying units. Above the salt, the thrust fault-related folds were generated by the contractional action from southeast to northwest, including the fault-bend fold, fault-propagation fold, and thrust wedge fold, and so on. Below the salt, the broad anticlines were formed due to the basal detachment. Hydrocarbon traps are formed above and below the salt, and they are potential gas exploration domains in the eastern Sichuan Basin.