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The structure and sedimentary sequence of intracratonic rift from Late Sinian to Early Cambrian in the Sichuan Basin, South China

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Sichuan Basin is located in the northwest of Upper Yangtze craton of South China, and there is developed an intracratonic rift from Late Sinian to Early Cambrian in the middle of Sichuan Basin, and the paper systematically discusses the structure and sedimentary sequence of the intracratonic rift based on the fields, drilling and seismic data, and so on. Detailed structural interpretation of 2D and 3D seismic profiles displays the development of two stages of intracratonic rift due to regional extension with the depth of 2000m, and plane distribution of intracratonic rift presents the V-pattern from the northwest to the southeast in the middle of Sichuan Basin with the width from 100km to 20km. The drilling data from the intracratonic rift shows the obvious thinning of Upper Sinian and thickening of Lower Cambrian. And field outcrops situated in the intracratonic rift reveal that the Upper Sinian is mainly composed of siliceous rock, shale and carbonate, with the thickness of less than 100m, but the thickness of Upper Sinian on the platform reaches 1000m by contrast; They also reveals that Lower Cambrian is mainly composed of shale, mudstone, and siltstone with the development of gravity current, and the thickness of Lower Cambrian reaches 2000m. The formation of intracratonic rift may be initiated by pre-existing basement weakness zone and deep mantle dynamics.