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## **The characteristic and geodynamic origin of stratigraphic sequence structure in the compressional basin: a Jurassic example from the Fukang sag in the Junggar basin**

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In Jurassic, the Fukang sag was at the compressive depression stage for this compressional basin. Based on analysis of seismic, logging and core observation information, the strata framework of the Jurassic formation was established for the study with three second-order boundary (SB 1, 5 and 8), five three-order boundary (SB 2, 3, 4, 6 and 7), two second-order sequences ( I :SQ 1-4; II :SQ 5-7) and seven third-order sequences(SQ1-7). Because SQ7 was not present on wells, the analysis excludes this SQ7. According to the strata framework, the sequences stratigraphic structure of the three-order sequence can be classified into three types: two-divided sequence (SQ2) consisting of TST and FSST; three-divided sequence (SQ1), consisting of LST, TST and HST; and four-divided sequence(SQ3-6), consisting of LST, TST, HST and FSST.

The SQ1-2 developed during relative strongly compressional stage. During the SQ1 stage, the LST developed at the early compressional stage with the accommodation decreased rapidly and relative lake level fell. With enhanced compression, the accommodation increase exceeded the sediment supply with the relative lake level rose. At this stage, the TST developed. Then the tectonism became weak, the sediment supply is equal to the accommodation, and the HST developed with the braid-delta deposits. At the beginning of the SQ2, the northern part of the Junggar basin was uplifted under the action of relative strong compressional stress. The accommodation increase rapidly exceeded the sediment supply. The relative lake level rose rapidly and the TST developed with coastal and shallow lake deposits. The RST developed with the barid-delta deposits during the stage when the compressional decreased rapidly. As the period of SQ3-6 developed, the basement of the basin was uplifted in the control of the active tectonism, the accommodation of the basin decreased and the relative lake level fell quickly. Therefore, unconformities were formed, and the LSTs developed with braid-delta deposits.

During the tectonic quiescence, the warm and humid climate together with subsidence of the basement resulted in accommodation increase exceeding the rate of the supply, and the relative lake level rose. The TSTs developed with coast and shallow lake deposits. Later, the subsidence of the basement is so weak, that the climate drove the development of the system tracts. The accommodation increased slower, but sediment supply is relative strong. When the sediment supply is equal to the accommodation, the HST developed. Then, when the sediment supply far exceeded accommodation, the FSST developed. For compressional basin, it's clear that the geodynamic origin of two-divided and three-divided sequence is acute change of compressional strength. And the development of the four-divided is mainly driven by both compressional strength and climate cycle. LSTs are driven by the active tectonism, whereas the TST are driven by the relative weak tectonism and the climate. And the HST and FSST are mainly driven by the climate change.

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