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Modified High-resolution Sequence Stratigraphy of Alluvial Sediments Based on Modern Geomorphology

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The short-term base level cycle was subdivided into two types in the established high-resolution sequence stratigraphic model of alluvial deposits, namely deepening-upward unsymmetrical type and symmetrical type, which all stress that the common "dualistic structure" of fluvial vertical profile in alluvial environments was deposited in a deepening-upward base level half-cycle. However, according to observation about modern fluvial geomorphology, it is found that fluvial deposits always behave as characteristics of shoaling-upward sedimentary successions. On the basis of redefinition of base level and accommodation in alluvial settings, rise and fall of base level and their sedimentological responses were investigated that sediments are piled up in a descending base level half-cycle in this environment, while show eroding-downward or lateral erosion in a rising base level half-cycle with coarse bed lags perhaps. On the principle of base level rise-fall process and sedimentation response, it is suggested an improved division proposal for short-term base level cycle of alluvial deposits that includes two types, consisting of shoaling-upward unsymmetrical type and symmetrical type mainly on shoaling-upward cycle. The most difference between the recommended and the existed is that the former put emphasis on alluvial sediments deposited during period of base level fall. Although reliability of the suggested plan needs to be testified further, it at least reduces arbitrariness in ascertaining transformation surface between short term rise and fall half-cycle of base level.