



## **Late Jurassic-Early Cretaceous stratigraphic records of thrusting events in the Chicheng basin of western Yanshan fold-and-thrust belt, North China**

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A sequence of small-scale, Mesozoic intramontane basins developed in the Yanshan fold-and-thrust belt, but timing and style of the tectonic events that shaded controls on the formation and evolution of these basins remain unclear. Sediments, especially syn-tectonic conglomerates, in the intramontane basins honestly record the history of regional tectonic activities along basin margins. Thereby, detail stratigraphic and geometric studies in syn-tectonic deposits (growth strata), isotopic geochronology and geometric analysis of growth structures in these basins help to elucidate the mechanism and timing of deformations in western Yanshan belt during Late Jurassic-Early Cretaceous. In this study, stratigraphic and sedimentary researches help to separate the upper Jurassic-lower Cretaceous sequence of the Chicheng basin into 3 major units: unit 1, gravelly fan-delta consists of mass flow-originating conglomerates and pebbly sandstones, distributing along basin margins and occupying the lower part of the sequence; unit 2, lacustrine deposits in middle part of the sequence, prevailing center area of the basin and comprising mainly purple mudstones with abundant sandy turbidites intercalations; unit 3, alluvial fan deposits dominated by red, coarse-grained sediments from debris-flow and braided rivers, resting directly on the lacustrine unit and widespread in the this basin. Provenance analysis suggests sediments in the Chicheng basin is simultaneously fed by source areas to the north and the south. Typical growth strata developed in unit 1 and unit 3 gravelly sediments and their geometric characteristics indicate controls from fault-related folding processes. In bases of structural analysis and detrital zircon U-Pb dating works, growth strata of unit 1 deposited atop drag folds by southward thrusting of the E-W trending, dextral tanscompressional Shangyi-Pingquan fault yield a Late Jurassic age (ca. 156 Ma); and the formation of growth strata in unit 3 is closely related to fault-propagation foldings in Early Cretaceous (ca. 137 Ma). These growth strata indicate that the formation of two gravelly units was controlled by two episodes of thrusting and the western Yanshan belt was generally under a NW-SE contractional setting, which may be the shallow responses to NW-directing subduction of Izanagi plate beneath East Asian continent during Late Jurassic-Early Cretaceous.