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Sedimentation in Response to Complex Continental Intraplate Deformation: Jurassic-Cretaceous Northwest Ordos Basin, North-Central China

The Ordos block is a stable crustal domain that has been surrounded by intracontinental deformation through the Mesozoic and Cenozoic. The Mesozoic NW Ordos basin was bounded to the west by the Western Ordos fold-thrust belt (WOFTB) and to the north by the Yinshan belt. Exposures of the WOFTB in the Helan Shan-Zhuozi Shan comprise a series of dominantly east-vergent reverse faults and folds that were active in the Late Jurassic-Early Cretaceous, and were linked to a nonmarine foreland basin system. Lower-Middle Jurassic strata exposed in the WOFTB suggest that shortening in the belt began west of the present Helan Shan in the Early Jurassic, on the basis of paleodrainage reorganization, changes in subsidence rate, and facies distribution. The Yinshan belt is exposed in the Lang Shan, where it contains a south-vergent Early Cretaceous fold-thrust belt, and an associated foreland basin system. The initiation age of shortening in the Lang Shan is unconstrained, although Lower Jurassic strata record deposition in extensional basins. The WOFTB and Lang Shan FTB may have been partially synchronous, with both belts providing sediment to the fluvial depositional systems that dominated the foredeep depozone of the linked NW Ordos foreland basin during the Late Jurassic(?)-Early Cretaceous. Following shortening, Early Cretaceous extensional deformation and basin formation occurred in both belts. The intense deformation that occurred on the margins of NW Ordos was the dominant control on sedimentation in the major NW Ordos basin during the Mesozoic, and the complexity of deformation is reflected in the basin's evolution.