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Imbricated OPS material in Tarabagatay, and its implication

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The Tarbagatay Complex, located in northwest Junggar, is situated tectonically between the Zharma-Saur arc to the north and the Tacheng terrane and the Boshchekol-Chingiz arc to the south. This Complex belt is variably composed of ophiolitic mélange, sedimentary mélange, and coherent units of turbidites and shallow water sediments. These rocks crop out in fault-bound slices with fault-parallel asymmetric folds. Both the lithologies and deformation features of the Tarbagatay Complex suggest an accretionary origin generally with a top-to-the-south tectonic vergence, suggesting north-dipping subduction beneath the Zharma-Saur arc. The presence of a former ocean is indicated by the Ordovician ophiolite mélanges and related marine fossils. The time of duration of the Tarbagatay Complex can be bracketed by detrital zircon ages of turbidites and shallow water sediments with a lower limit of major peak ages of 350 – 370 Ma, and an upper limit of Middle Permian indicated by detrital zircon ages of 262.3 Ma. Based on these data, we suggest that the subduction of the Tarbagatay Ocean likely started in the Late Devonian and lasted until the Middle Permian. Taking into account the formation of the northern part of the Kazakhstan orocline, which has a similar temporal-spatial framework, we propose a tectonic model for the western CAOB that involves accretion and amalgamation from the Ordovician to the Middle Permian.