



Subsidence history of the Amu Darya Basin during the Late Palaeozoic-Mesozoic period, in relation with the geodynamics of the Tethyan realm

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The Amu Darya Basin (ADB) of western Central Asia is underlain by a heterogeneous basement consisting of poorly defined blocks and island arcs accreted to Eurasia during the Palaeozoic by the closing of the Turkestan Ocean in the north. The area was then belonging to the southern Eurasian active margin. The Cimmerian terranes, detached from Gondwana in the Permian, accreted the Eurasian margin during the Early Mesozoic, closing the Palaeotethys Ocean in the south.

We use subsidence curves, regional cross-sections and maps to reconstruct the basin history during the Late Palaeozoic-Mesozoic period. The reactivation of inherited Palaeozoic structures greatly influenced the complex organization of the ADB into variously oriented sub-basins, highs and steps. The subsidence evolution of the ADB has been driven by two main extensional events and affected by compressive events due to the collision of the Cimmerian terranes. An important Late Palaeozoic-Triassic North- to NE-directed extension created several kilometres thick troughs between the main blocks of the ADB basement. The Early-Middle Jurassic extension shaped chiefly the eastern half of the ADB where thick Upper Jurassic evaporites were deposited. An Early Cretaceous extensional reactivation occurred before a long thermal subsidence of the whole basin.