



## **Jurassic paleogeographic reconstructions of the Tian Shan region: an Early to Middle Jurassic evolution driven by far-field extension**

Julien Morin (1), Gloria Heilbronn (2), Marc Jolivet (1), Cécile Robin (1), Sylvie Bourquin (1), Laurie Barrier (3), Yingying Jia (4), and Vlad Batalev (5)

(1) Univ Rennes, CNRS, Géosciences Rennes, UMR 6118, CNRS – F-35000 Rennes, France., (2) CASP, West Building, Madingley Rise, Madingley Road, Cambridge, CB3 0UD, United Kingdom, (3) Institut de Physique du Globe de Paris, Sorbonne Paris Cité, Université Paris Diderot, UMR 7154 CNRS, Paris, France., (4) Institute of Geology and Geophysics, Chinese Academy of Sciences, Beijing 100086, China, (5) Research Station of the Russian Academy of Sciences, Bishkek, 720049, Kyrgyzstan.

Using both detailed field analysis and bibliographic data we reconstructed the Early, Middle and Late Jurassic – Early Cretaceous paleogeography of the Tian Shan region with the objective to decipher further its large-scale tectonic and topographic evolution. During the Lower to Middle Jurassic, the topographic evolution of the Tian Shan Range was dominated by the progressive planation of a Late Paleozoic to Early Mesozoic relief. Meanwhile, in the basins surrounding the range and in the intra-mountain depressions, sedimentation was characterized by alluvial to lacustrine systems deposited under humid conditions. Sediment by-pass dominated to the north of the range, in the Chu-Sarysu and Ili-Balkash basins but also in the west Tarim Basin to the south. The Late Jurassic period marked the onset of an aridification trend recorded all over the Tian Shan area and expressed by the emplacement of numerous calcareous paleosols and the disappearance of coal beds within the basins. This aridification reached a peak during the Late Jurassic – Early Cretaceous transition corresponding to the emplacement of semi-arid/arid alluvial systems locally associated to large dune fields (in the Junggar basin). Meanwhile, the intra-mountains depressions localized within the central part of the Tian Shan where mostly dominated by sediment by-pass. This period was also characterized by differential relief build-up characterized by stronger relief building to the west than to the east of the Tian Shan range. Finally, we proposed that the Early to Middle Jurassic evolution of the Tian Shan region was not controlled by collisional events but could have instead been driven by the subduction-related NE-SW extension event occurring on the Caspian - Turan - Kazakh domains to the west.