

**Continental Crises of the Jurassic: Major Extinction Events
and Environmental Changes within Lacustrine Ecosystems**

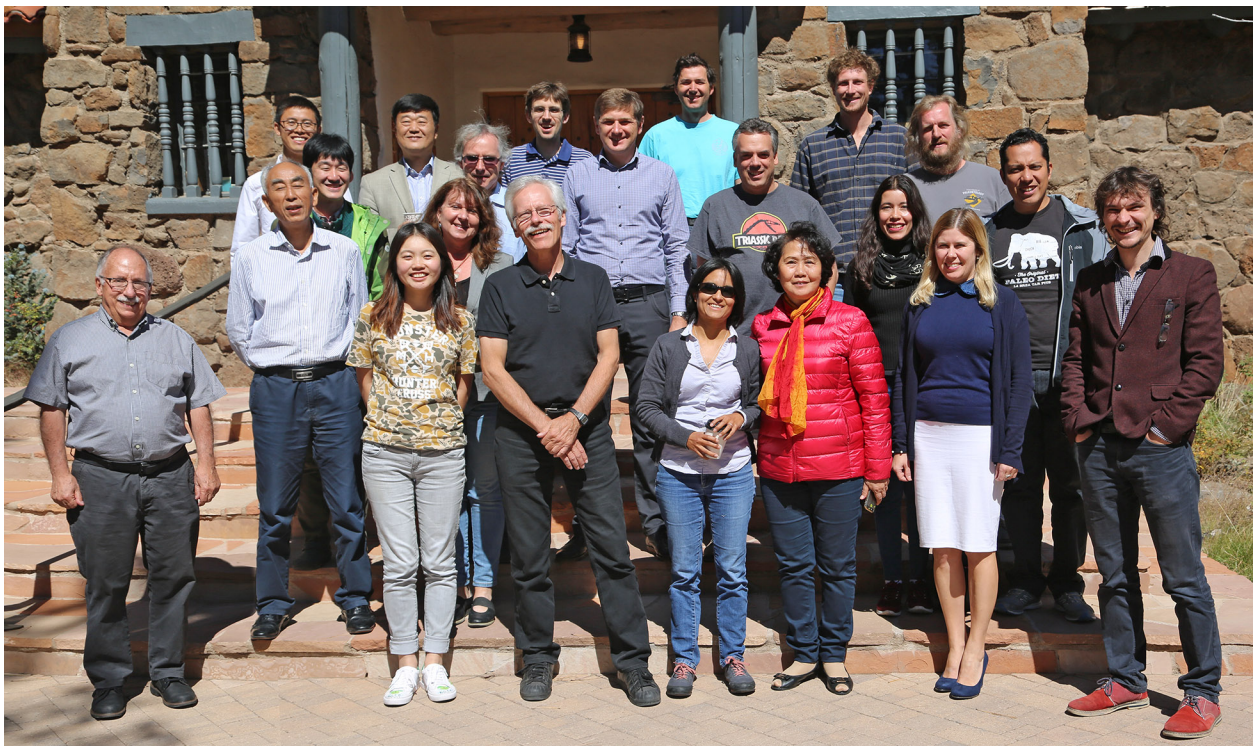
5th Symposium of IGCP 632

Jurassic Tropical to Polar Biotic and Climatic Transects

Museum of Northern Arizona, Flagstaff, Arizona, USA

September 28 - October 2, 2017

SYMPOSIUM ABSTRACTS WITH PROGRAM



Symposium Presenters

PROVENANCE AND SEDIMENTARY ENVIRONMENT EVOLUTION OF THE SOUTHERN JUNGGAR BASIN IN THE JURASSIC

FANG, Yanan¹ (ynfang@nigpas.ac.cn), SHA, Jingeng², Olsen, Paul E.³

¹ *CAS Key Laboratory of Economic Stratigraphy and Palaeogeography, Nanjing Institute of Geology and Palaeontology, Chinese Academy of Sciences, Nanjing, China.*

² *Nanjing Institute of Geology and Palaeontology, Chinese Academy of Sciences, Nanjing, China.*

³ *Lamont Doherty Earth Observatory of Columbia University, Palisades, NY USA.*

The Junggar Basin, located in the north margin of the Tian Shan Mountain (NW China), is one of the biggest oil and coal-bearing basins in China. Thick and complete Jurassic strata are well exposed in the south margin of the Junggar Basin due to far away effects of the collision between India and Asia in the Neogene, providing us a unique condition for investigating the evolution of provenance and sedimentary environments.

The Jurassic strata are composed of Lower to Middle Jurassic Badaowan, Sangonghe and Xishanyao formations, and Middle to Upper Jurassic Toutunhe, Qigu and Kalazha formations from bottom to top, in which eight sandstone samples were collected for detrital zircon U-Pb dating. A total of 794 effective U-Pb ages was obtained and divided into four groups: 488-2537 Ma, 328-482 Ma, 254-322 Ma, 135-250 Ma. These ages indicate three stages of the southern Junggar basin during the Jurassic. 1) From the early to middle Jurassic, Tian Shan experienced continued exhumation, and a peneplain was finally formed by the time Xishanyao Formation was deposited with source rocks (402-423 Ma with a peak age of 415 Ma) arriving at Central Tian Shan; 2) During deposition of the Toutunhe and Qigu Formations, volcanic activities occurred along the North Tian Shan fault, providing main detrital materials (151-161 Ma) to the southern Junggar Basin and indicating the end of peneplanation; 3) By the time of deposition of the Kalazha Formation, Tian Shan experienced rapid tectonic uplift with alluvial fans well developed along the south margin of the Junggar basin with source rocks being the underlying sedimentary strata.

The Badaowan and Xishanyao Formations are all characterized by coal-bearing and organic-rich strata, indicating a humid climate, and supposed to be deposited in a shallow lake environment. However, the Sangonghe Formation between them lacks coal-bearing strata and is mainly composed of green gray fine-grained sediments, which almost all researchers have interpreted to be deposited in a deep lake environment. In fact, it is full of roots and contains thin red beds becoming much more common in the upper part, indicating a shallow lake environment and relative dry climate. The Toutunhe and Qigu Formations consist mainly of fine-grained red beds with rich gypsum, caliche nodules and eolian deposits, suggesting a very dry climate. While, the uppermost Kalazha Formation alluvial fan conglomerates overly directly on the fine-grained red beds. By contrasting the field data to that from well and seismic data from inside the basin, we conclude that the Junggar basin experienced a general tectonic uplift at the end of deposition of the Qigu Formation and followed by a sudden subsidence during deposition of the Kalazha Formation.