

CASP Research Award for Geological Fieldwork- 2017 Award Winner

Applicant: Mr. Julien Morin, University of Rennes.
Project title: The Jurassic tectonic and climatic evolution of the Talas Fergana basin (Kyrgyz Tien Shan)
Award: £2,920.

Scientific question and rationale: The Jurassic - Cretaceous period has been considered as a phase of tectonic quiescence but it appears more and more that this period is, in fact, a key moment in the geodynamic evolution of Central Asia. Indeed this period seems to be associated to a general extension resulting in the opening of numerous basins containing coal, hydrocarbon and uranium deposits but also to a major aridification phase occurring during the late Jurassic. But what is the driving mechanism inducing this generalized extension phase and what is the kinematic evolution of Central Asia linking the extension of the Turan domain with the one occurring in the Mongolian-Siberian domain? Is there a link between this extensional phase and the major climatic change occurring during this period?

Specific Objectives and Deliverables:

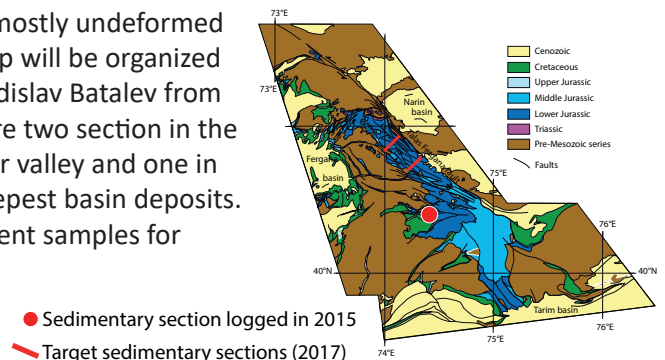
Nearly all the Jurassic basins that developed within the Turan and Kazakh domains were also subsiding during the late Mesozoic-Cenozoic. The Jurassic series and the corresponding structures are thus buried below several kilometers of several younger sediments. The Talas Fergana basin, in Kyrgyzstan is the only one to be fully exposed. This basin has the particularity to present a thick succession of Jurassic rocks (up to 4km) and to be located along the Talas Fergana fault, that acted as a major lineament accommodating the Jurassic extension.

During this planned field work we will **study Jurassic sedimentary sections distributed across the basin** perpendicular to the Talas Fergana Fault to decipher the tectonic, paleogeographic and climatic evolution of the Talas Fergana basin and its relation with the Talas Fergana Fault.

By doing this work we want to propose **paleogeographic and climatic reconstructions** of this area for the Jurassic time and to integrate our results at the scale of Central Asia with the objective of proposing a general geodynamic evolution model for this period.

Proposed Work Plan:

A first field trip in 2015 allowed recognition of accessible, mostly undeformed sedimentary sections within the basin. This second field trip will be organized in September 2017 (2 weeks long), in cooperation with Vladislav Batalev from the Russian Academy of Sciences in Bishkek. We will explore two sections in the central and northern part of the basin, one in the Chitty river valley and one in the Kara Alma valley. Both sections seem to display the deepest basin deposits. The collected data should include, detailed logging, sediment samples for provenance analysis. Results should be published within the year following the fieldwork and will be incorporated to my final PhD manuscript.



Proposed Expenditure including details of any other sources of funding:

The proposed expenditure is based on the cost of our previous fieldwork in 2015:

- Plane Tickets: 900 euros
- Car rent: 1500 euros
- Petrol: 500 euros
- Food and logistics: 500 euros Total: 3400 euros / around 2920£

The analytical expenses will be covered by an AREVA research grant obtained by Mr. Jolivet (PhD supervisor) and by money from internal Geosciences Rennes funding.