CASP Research Award for Geological Fieldwork- 2017 Award Winner

Applicant: Dr. Emelie Axelsson, Department of Geological Sciences, Stockholm University.
Project title: Provenance studies of the Brooks Range, Arctic Alaska.
Award: £2,500.

Scientific question and rationale: The tectonic development of the Arctic and the opening of the Amerasian Basin are highly debated. By performing detrital zircon and rutile U-Pb and trace element studies on metasediments from the Brooks Range of Arctic Alaska, I aim to correlate thCASeir P provReenance with known or inferred Caledonian and Timanian sources.

Specific Objectives and Deliverables: I seek funds for travel costs related to fieldwork and sampling in the Brooks Range, Arctic Alaska US. After a successful expedition in 2016 to the Alatna River with colleagues from the US, I am invited to join the 2017 expedition, linking the provenance studies with the structural work of the US based group. This is a unique opportunity to re--visit a very important and inaccessible site, enables strategic sampling based on the results and knowledge gained from the previous year, and may further source--to sink North Slope correlations. The research is related to understanding the tectonic evolution of Alaska within a Circum--Arctic framework. A valid tectonic model for the evolution of the Arctic is also valuable for future exploration as the area is believed to contain 30% of the remaining undiscovered oil and 10% of the undiscovered gas resources (Gautier et al., 2009).

Proposed Work Plan:

Spring 2017 – Preparations for fieldwork, ID of travel route and sampling targets.
Analysis of 2016 samples (results to aid site selection for 2017).

Jul-Aug 2017 – Fieldwork in the Brooks Range within the borders of the National Park Gate of the Arctic, and close to or in the drainage of the Alatna River. The river crosscuts the stacked sedimentary units of the belt, providing maximum exposure of the geology across strike. The team is composed by the PI from Stockholm University focusing on the provenance studies, and two PhD students from Stanford University focusing on the structural geology.

Fall 2017 – Compile collected data, synthesise knowledge gained with previous seasons, sample processing, and preparation of analytical work.

Spring 2018 – Analytical work and writing up results, including composing an A0 scientific poster for CASP.

Proposed Expenditure including details of any other sources of funding:

Sum applied for: £2,500

In-kind support: Salary during the field season and following time of the project is covered by Prof. Pease. The daily allowance, accommodation expenses, bush flights and field equipment costs are being financed by Prof. Miller.

Applied for: Return flight Stockholm – Fairbanks estimated to ca. £2,000 based on economy class. Sample shipping £480, estimated on 8 US mail international packages á 60$ and 1.8 Kg.