



## **Strike-slip tectonics in the Kulutingwak Fiord area, northern Ellesmere Island**

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One of the unsolved problems in context of Arctic geology is the Mesozoic-Cenozoic opening of the Arctic Ocean with the formation of circum-Arctic sedimentary basins. Especially in the area of the exotic and composite Pearya terrane, which dominates the northernmost part of Ellesmere Island, the knowledge about the structural style of the Cenozoic deformation is still limited and has only been analysed in very few studies. During the BGR CASE 19 expedition in summer 2017, field work in the area of the Kulutingwak Fiord and the Wootton Peninsula was carried out with a focus on the analysis of structural elements that originated during the Eureka deformation phase.

The study area is characterized by large NE-SW trending strike-slip faults with the Mitchell Point fault in the NW, the Petersen Bay fault in the central part of the study area and the Emma fault zone in the SE. Between these major fault zone, smaller strike-slip faults are developed. The outcrop data show that left-lateral strike-slip faults dominate, but also subordinate faults with right-lateral kinematics were documented. Cross-cutting relationships of the individual faults give evidence for a multiple fault reactivation within a major strike-slip zone. The analysed strike-slip faults often form complex zones that show Riedel and anti-Riedel shears, kinematically related to the main zones of displacement. Local small-scale thrust faults indicate horizontal shortening and may point to transpression along restraining bends. Late Cretaceous mafic dykes that are offset by thrust faults, imply a post-Cretaceous, Paleogene age of the fault movements. Based on the outcrop data, fault-slip analyses were performed and the slickenside data sets were inverted to derive the directions of the p- and t-axis, which reflect the orientation of the regional paleostress field. Initial results based on the major faults point to a NNW-SSE oriented contractional paleostress field in the central part of the study area.

Ongoing seismic activity in the area of the Pearya terrane implies that some of the faults in this region are still active. Especially the major Eureka fault zones have the potential to show young tectonic movements.