



## **Field-Structural and Geochronological Investigations of Engeløya-Steigen and their Implications for Caledonian Tectonic Evolution, North Norway**

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In the Engeløya-Steigen area (latitude 68°N) Baltic basement and its allochthonous cover are exposed in a series of eastward-plunging antiformal-and-synformal crossfolds. Granitic basement gneiss is exposed in the cores of antiforms. Penetrative shear fabrics are intensely developed at the base of the stack of nappes and they gradually disappear structurally downward into the basement granite over a ~300 m interval. The nappe stack in this area is composed of several allochthons. The basal allochthonous unit contains an igneous complex comprising mafic and felsic paragneisses and metavolcaniclastics, interpreted as part of an accreted arc complex. U-Pb LA-ICPMS ages on zircons from a sample of this complex are ca. 490 Ma, supporting its correlation to other complexes reported within the Uppermost Allochthon (Laurentian). Field observations on the basement-cored, Storskjeran anticline indicate that the dominant schistosity/gneissosity, S1, is folded by tight-to-open F2 folds that have a variably developed axial-planar foliation dipping steeply to the southwest. Structural analysis documents the pi-girdle (axis) to measured S1 surfaces trends S55°E and plunges ~10°, similar fold-hinge data collected from parasitic mesoscopic folds. The southeast trend of the Storskjeran anticline, which is perpendicular to the overall northeast-southwest orogenic trend of the Caledonians, indicates that it is associated with the fundamental set of orogenic crossfolds preserved throughout large parts of the central and northern Scandinavian Caledonides. The crossfolds are associated with sub-vertical left-slip mylonitic shear zones that display strongly-developed asymmetric shear-sense indicators (S-C fabrics, sigma-clasts, and Z-folds). In this student presentation we evaluate the following possible explanations for the crossfolds and associated sinistral shear zones as they may relate to: (1) Caledonian emplacement of the nappes across an inherited WNW-ESE structural grain imparted on the earlier-formed basement complex; (2) orogen-scale sinistral shearing along the coastal Caledonides; or (3) late- or post-orogenic low-angle normal faulting.