



Lead Author e-mail: marek.kasprzak@uni.wroc.pl

Title: *Complex analysis of the evidence of valley glacier advance and recession - an example of Werenskioldbreen (SW Spitsbergen)*

Marek Kasprzak¹

¹*University of Wrocław, Poland*

Werenskioldbreen is a large valley glacier (~27 km²) with the ablation zone entirely on land. Since the 1920s continuous glacier recession is observed (Kosiba 1960) and the glacier terminus has stepped back at a rate of several tens of meters (15–23 m) per year. Dynamic transformation of post-glacial surface relief and hydrographic system in the glacier foreland occurs concurrently. Among processes worth attention are the specific relief inversion as a result of medial moraine ablation.

The location of the glacier close to the Polish polar stations makes the surroundings of Werenskioldbreen one of the best known areas in the SW part of Spitsbergen. Changes in terrain morphology are documented on multi-temporal topographical and geomorphological maps and aerial photographs. Furthermore, the concept of two glacier advances after the Holocene climatic optimum, including a surge at the end of the Little Ice Age, was born here, based among others on fossil tundra dating (Baranowski 1977a, b).

New results allow to verify previous theories. The internal structure of end and lateral moraines of Werenskioldbreen was recognized by means of geophysical methods (ERT – electrical resistivity tomography) and specified an impact of their ice-core on bedrock thermals. ERT profiling was extended to push-moraines, which have not been described previously. Inside the push-moraines fossilized arctic tundra was discovered, whose dating is expected to yield a date prior to a formation of end moraine of Werenskioldbreen (dating results were not yet available during the preparation of this abstract). In addition, erratic boulders were inventoried at a bottom of the Nothinghambukta bay. These boulders determine the extent of an older transgression of the Werenskioldbreen glacier or were transported during jökullhlaup type flood.

Baranowski S. 1977a: Results of dating of the fossil tundra in the forefield of Werenskioldbreen. Spitsbergen Expeditions II, Acta Universitatis Wratislaviensis 387: 31–36.

Baranowski S. 1977b: The subpolar glaciers of Spitsbergen seen against the climate of this region. Results of investigations of the Polish Scientific Spitsbergen Expeditions vol. III, Wydawnictwa Uniwersytetu Wrocławskiego, Wrocław: pp. 94.

Kosiba A. 1960: Some results of glaciological investigations in SW-Spitsbergen carried out during the Polish I.G.Y. Spitsbergen Expedition. Zeszyty Naukowe



Uniwersytetu Wrocławskiego, ser. B Nauki Przyrodnicze, 4, Uniwersytet Wrocławski,
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