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**Title:** *CHANGES IN TUNDRA VEGETATION OF SPITSBERGEN OVER THE LAST 30 YEARS*

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Climate changes observed in the Arctic during the last decades triggered significant changes in tundra vegetation. This, coupled with growing herbivore impact, have led to a serious decline of some terricolous lichens.

Here we present results of comparative vegetation research from two areas of Spitsbergen, Svalbard, where historical data are available. Vegetation changes in the last 30 years were described and possible causes were assessed.

Field studies were conducted in western Sørkapp Land (SW Spitsbergen) and Kaffiøyra (Oscar II Land, NW Spitsbergen), in 2008 and 2012, respectively. Coastal plains in western Sørkapp Land are characterized by differentiated and stable terrain relief, and no glaciers in vicinity. The coastal plain of Kaffiøyra is strongly influenced by erosion-accumulation processes induced by the activity of several big glacier rivers.

Data collection methodology included phytosociological relevés (Braun-Blanquet method) and vegetation mapping. The results were then compared with historical data from the 1970s and 1980s. Repeated photography of different vegetation types was also used.

In Sørkapp Land, ranges of plant communities have not changed since 1980s, while changes were observed in species composition of tundra. Extensive reindeer grazing and trampling caused severe degradation of lichen tundra communities. Soil macrolichens from the genus *Cladonia* and *Flavocetraria* have almost disappeared, while increase of some species (*Cetrariella delisei*, *Gymnomitrium coralloides*, *Luzula arquata*, *Salix polaris*) was recorded. In the effect former vegetation mosaics became unified.

In the Kaffiøyra region, in places where river activity was minimal, changes similar to the results from Sørkapp Land were noted. However, pioneer vegetation dominated over the plain, and only successional changes were visible in the



majority of the area. Materials collected from Kaffiøyra are still being analyzed.

Generally, our results were in line with records from other areas in Svalbard. It seems extremely hard to detect exclusively climate-driven vegetation changes in the studied areas. Re-appearance of reindeer population in Sørkapp Land since early 1980s proved to be the major cause of shifts in tundra composition. In Kaffiøyra, water activity could possibly mask changes due to warmer climate. Thus it can be assumed, that recording and interpreting climate-induced vegetation changes is possible only on stable ground, where erosion-accumulation processes, especially induced by glacier rivers activity, do not occur.

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