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Title: *Spatial diversity of relative humidity in the Forlandsundet region (Spitsbergen) from August 2010 to August 2011*

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The aim of this paper is to demonstrate spatial differentiation of relative humidity in the area of Forlandsundet (NW Spitsbergen), covering all the months and seasons of the year. The seasons were distinguished as follows: winter (November - March), spring (April – May), summer (June – August) and autumn (September – October). From July 2010 until August 2011, measurement data were collected at twelve measuring sites for the area encompasses Kaffiøya and Sarsøyra region, Prins Karls Forland and St. Jonsfjorden region.

Large spatial differences of the relative humidity noted in the study area were influenced by different factors, e.g. character of ground, altitude above sea level, distance from the sea coast, exposition to the sun and incoming air masses, and local atmospheric circulation.

During the year, the wettest air (89%) was generally observed at the GF site (a mountain top at 345 m a.s.l.) and the SAO site (88%; on the coast), whereas the lowest humidity values (79%) were measured at the SJ3 site (on glacial polish in front of the Konow and Osborne glaciers) and at KT (79%; on a terrace in front of the Waldemar Glacier). The lowest air humidity was observed in the winter season, when it is usually a dozen or so per cent lower than in the autumn or the summer.

In an annual course, the relative humidity of air in the area of the Forlandsundet was the greatest in September, the highest mean values were recorded at the sites located near the sea (SAT 96% and SAO 95%), and the lowest in the southern part of the area of observations, the St. Jonsfjorden, in front of the Konow and Osborne glaciers (SJ3; 87%). In an annual course, the lowest mean values of relative humidity occurred in November 2010, the highest mean relative humidity occurred at the mountain top (GF; 85%), and the lowest – on the terrace in front of the Waldemar Glacier (KT; 74%).

On individual days the pattern of spatial diversity of air humidity may reveal considerable differences. In a day-by-day course, the relative humidity in the area of the Forlandsundet, even at the same temperature, shows various values depending on the direction of advection.