



Identification methods of local marine coastal climate in the Baltic Sea region

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The Baltic Sea is one of the semi-enclosed intra-continental shallow seas in Europe surrounded by the landmasses of Scandinavia, Northern, Central, and North-Eastern Europe. The Baltic Sea region and its ecosystem is heavily impacted by the surrounding landmasses. The large-scale Baltic Sea gradient from temperate marine to subarctic continental climate type is often classified as two different climate types which does not represent the local climates very well. The Baltic sea region in Köppen climate classification is covered in mostly single climate territory and local climates are not defined. Local coastal marine climate is very distinctive around the Baltic sea and to properly identify this local climate, a unified method is needed. In this work we compare two methodologies for evaluating the effect of the Baltic sea to its coastal land air temperatures during winter and summer. To better reflect the summer and winter temperature range stability we use temperature range since a difference between the highest and lowest mean monthly temperatures on the coastal areas are influenced by heat capacity of the Baltic Sea. Vice versa for the summer period the correlation between solar net shortwave radiation and air temperature, which provides the opposite effect of the air over land areas in the coast is not heated as much as in the continental territories further away from the coast. The finding indicates that the temperature range measurement is prone to be more accurate in winter, yet it is strongly affected by the latitude and the correlation coefficient maps between net shortwave radiation and air temperature are less dependent on latitude and could prove to be more accurate.