



Transformation of aerosol in Planetary Boundary Layer over the Baltic Sea

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Aerosols are one of the most important components of the atmosphere. The content and composition of aerosols in the atmosphere depends on their origin. In maritime areas transformation of aerosols in the atmosphere may occur. This depends on many factors, such as wind speed and direction, humidity and emission from the sea surface. The transformation of aerosols in the Planetary Boundary Layer over the Baltic Sea is replacing other sources of aerosols to aerosols composed of sea salt. When the air passing over the Baltic aerosol optical thickness (AOT) initially decreases and then increases in strong winds due to increase of the marine aerosol content in the layer. This type of change can be followed with use of many numerical experiments performed on the model of the transformation of aerosols in the Planetary Boundary Layer. This model consists of two parts, dynamic and optical.

The dynamic part is based on the repeated numerical solution of the equation of diffusion for different particle size and optical properties. The result of the dynamic part provides vertical profiles of aerosol size distributions. Optical module to calculate the relative cross sections for the weakening used Mie single process.

We compare data from numerical experiments with data from in situ experiments and with data from MODIS (Moderate Resolution Imaging Spectroradiometer) on board of Terra and Aqua satellite. From the resulting comparisons received correlations are in order as 0.789 and 0.862. What indicates a good correlation between the data from numerical experiment and in situ data or MODIS data.

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