

APPLICATION OF AIR MASS TRAJECTORIES FOR IDENTIFICATION OF AIR POLLUTION SOURCES

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The main factor forming the regional background of air pollution is long-range transport of air masses having influence for thousands kilometers with the duration to several days [1, 2]. The amount of contaminants transported to the site of observation mainly depends on powerful sources of pollution, meteorological and physico-chemical factors occurring on the way of air mass transport. Comprehensive analysis of these factors defines the accuracy of mathematic model.

The investigation of long-range transport influence to the air pollution of the Preila background station has been carried out since 1978. The region of pollutant source was determined from the back trajectories of the air masses passing the background station. They were calculated from the maps of baric topography for the preceding 48 and 96 hours. Since 1997, trajectories of air masses are taken from the NOAA net. Trajectories of air masses were divided into 4 sectors, and "sector 0" characterizing air masses formed in the region of the observation site. Daily analysis of long-range air mass transport during 15 years showed that each year the percentile distribution of the air masses direction was different, but in each case air masses from the west were prevailing and sometimes they comprised nearly 80% of all annual cases. Trajectories of air masses at different heights of 1000 m, 500 m and 20 m are influenced by different sources of pollution. Analysis of air mass trajectories at 3 Lithuanian background sites showed that the origin of pollution for different sites may be different, in spite of relatively short distances (100-200 km) between sites. This might have influence on the accuracy of mesoscale model. The ways of various pollutants transport at the background station by air masses of different origin will be presented.

REFERENCES

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