HYSPLIT AND K-MEANS CLUSTERING APPLICATION FOR TRAJECTORY ANALYSIS TO DETERMINE SOURCE REGIONS OF SECONDARY INORGANIC AEROSOLS AT HUNGARY'S KECSKEMET BACKGROUND MONITORING STATION

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ABSTRACT

In this research, we aimed to pinpoint the origins of secondary inorganic aerosols at the Kecskemet Background Monitoring Station, located in a farming region. By integrating the HYSPLIT model for trajectory analysis and K-means clustering with CAMS reanalysis data on nitrate and ammonium, we identified distinct source clusters. Notably, Cluster 3, accounting for 20% of the air masses, emerged as a significant source across various areas, followed by Cluster 5, which accounted for 12% of air masses in the region. Our study sheds light on the geographical sources of secondary inorganic aerosols in this agricultural area.

Keywords: Hysplit, Air quality, CAMS, k-means clustering, Aerosols