



Cluster analysis of air mass trajectories reaching south of Romania

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During the last years an increasing number of dust transport events have been observed over southern Romania, mostly during spring. Often such events have been identified as having Saharan origin. Sahara desert (Africa) is known as one of the major sources of natural mineral dust in the atmosphere. Our study aims at monitoring and clustering the air mass trajectories in order to identify the main sources of dust loaded air masses reaching the south of Romania (Bucharest area). For monitoring the air mass trajectories we have used the NOAA 6 hourly reanalysis data in ARL format for the period 1991-2006. The NOAA hybrid single particle lagrangean integrated trajectory - HYSPLIT model has been used to calculate 5-day backward trajectories started daily from the location 44.5N; 26.2E (Bucharest area), at 1500 and 3000 m AGL at 00 UTC. Using the clustering algorithm of the HYSPLIT model, the trajectories were classified according to the air mass origin. The results show that a higher frequency of Sahara originating or Sahara passing through trajectories have been identified during February to May and, most of Sahara originating trajectories are rather coming from low level (500-3000 m AGL).