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LONG RANGE TRANSPORT OF AIR POLLUTANTS TO BLACK SEA REGION OF TURKEY

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**Abstract**

Increasing population means increasing needs and therefore increasing production, either agricultural or industrial. Especially industrial activities continue to pollute our environment even with the latest control technologies. This pollution happens in the forms of air, water, and soil pollution. Considering air pollution, almost all industrial activities together with transportation activities will pollute the ambient air environment especially in big cities. To prevent or at least to reduce the health risk of citizens, governments can take precautions and control measures in short and long terms. However, long range cross-border transport of air pollutants among countries is something that cannot be dealt with local measures but requires international cooperation and regulations. Large air masses moving long distances can carry air pollutants to other regions of the world when meet with high concentrations of pollutants.

Black-Sea region of Turkey might get potentially influenced by long range transport of air pollutants from countries such Ukraine, Russia, Belarus, Georgia, and regions such as Northern and Eastern Europe. We obtained pollutant data for NO2, SO2, CO, and PM10 measured in air quality stations in Sinop, Zonguldak, Samsun, and Trabzon in 2019. In the first step, the pollutant concentration data was examined for determining episodic days with unusually high or low pollutant concentrations. After that, those episodic days were further examined by obtaining 120 hr back trajectories to understand if any long range transport influence is possible.

Results did not show any clear indication of long-range transport of pollutants to Black Sea region from the surrounding countries. Only CO concentrations on a few episodes indicated air trajectories coming from industrial cities of Ukraine. One factor that limits the long-range transport of NO2, SO2, and PM10 is their much shorter lifetime comparing to that of CO. However, considering that only one year of data was examined, longer term analyses with more episodic days might give more clues regarding this issue.