



## **Determination of long range potential source regions of anthropogenic substances in the Black Sea coast of Turkey**

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Sources of anthropogenic ions and element on the Black Sea coast of Turkey are determined by applying potential source contribution function (PSCF) on the 2-years-long daily chemical composition data generated at rural station on the Black Sea coast. The station is located 20 km to the east of the town of Amasra, Bartın (32.3°E, 41.5°N). Approximately 354 daily aerosols samples were collected between April 1995 and July 1997. An isentropic back trajectory was calculated, for each sampling day, using European Center for Medium range Weather Forecasting (ECMWF) model.

PSCF calculations applied on the  $\text{SO}_4^{2-}$ ,  $\text{NO}_3^-$ ,  $\text{NH}_4^+$  and Pb concentration data assigned potential source regions affecting sampling point on a  $1^\circ \times 1^\circ$  grid system that extends from west of UK on the west, North of Siberia on the north, approximately middle of Asia on the east and middle of Africa on the south. Statistical significance of assigned potential source regions were tested by applying bootstrap approach, with 3000 iterations. Potential source regions of sulfate ion were determined as United Kingdom, northeast coast of Black Sea and central parts of Russia, Balkan countries like Albania and Serbia, and Italy, especially Sicily and Rome. Middle East region was found to be an important nitrate source region for the Black Sea coast of Turkey. The most essential potential region of  $\text{NH}_4^+$  in Amasra is the southern regions of Turkey. Other potential regions of  $\text{NH}_4^+$  are central parts of Russia, region in the Russia-Belarus border, eastern parts of Caspian Sea and England. Potential regions of

Pb in Amasra are Israel, central parts of Anatolia, central parts of Russia, all of the Balkan countries and the Central European countries particularly, Austria, Slovakia, Czech Republic and Germany. Thus, Russia, Balkan countries and Middle East region are found to be the most important potential source regions for the anthropogenic pollutants in the Black Sea coast of Turkey.