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Atmospheric deposition of major and trace elements in Amman, Jordan

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Abstract

Wet and dry deposition samples were collected in the capital of Jordan, Amman. Concentrations of Al, Ba, Bi, Cd, Co, Cr, Cu, Mn, Mo, Ni, Pb, Sb, V, Zn, Fe, Sr, Mg^{2+}, Ca^{2+}, Na^{+}, K^{+}, Cl^{-}, NO_3^{-} and SO_4^{2-}, along with pH were determined in collected samples. Mean trace metal concentrations were similar or less than those reported for other urban regions worldwide, while concentrations of $Ca^{2+}$and SO_4^{2-} were among the highest. High Ca^{2+} concentrations were attributed to the calcareous nature of the local soil and to the influence of the Saharan dust. However, high SO_4^{2-} concentrations were attributed to the influence of both anthropogenic and natural sources. Except for Cl^{-}, NO_3^{-}, SO_4^{2-} and Cu, monthly dry deposition fluxes of all measured species were higher than wet deposition fluxes. The annual wet deposition fluxes of trace metals were much lower than those reported for other urban areas worldwide.