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Characterization of rainwater and determination of wet scavenging ratio

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Precipitation is an efficient pathway for removing the gases and particles from the atmosphere. It also plays a significant role in controlling the concentration of these species. Particles play important role in cloud condensation and formation of precipitation. Incorporation of S and N oxides in wet deposition is particularly important as they are the precursors of major acids ($H_2SO_4$and HNO_3). Present study deals with chemical constituents of rainwater and their scavenging ratio over Rampur, a rural site in India. The concentration of NH_4^+ was highest in rainwater followed by $Ca^{2+} > Cl^- > SO_4^{2-} > Mg^{2+} > Na^+ > NO_3^- > K^+$. The alkaline components Na^+, K^+, $Ca^{2+}$and Mg^{2+} contribute 36.4%, NH_4^+ 21.3 % whereas acidic components F^-, Cl^-, NO_3^- and SO_4^{2-} contribute 42.3%. The difference between sum of cations (NH_4^+, Na^+, K^+, $Ca^{2+}$and Mg^{2+}) and sum of anions (F^-, Cl^-, $NO_3^-$and SO_4^{2-}) is 46.9 μeq L^{-1}. The scavenging ratio (defined as the ratio of the concentration of a species in rain to that in aerosols) was highest for Mg^{2+} followed by NO_3^-, Ca^{2+}, NH_4^+, SO_4^{2-}, Na^+ and K^+.