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Experimental and Parameterization Method for Evaluation of Dry Deposition of S Compounds to Natural Surfaces

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ABSTRACT

This paper deals with parameterization method based on meteorological parameters for calculation of dry deposition of S compounds on natural surface (leaf of Cassia siamea) and direct measurement method. A scheme based on meteorological parameters has been evolved to calculate the dry deposition theoretically and a computer program has been developed. Experimentally dry deposition flux of S on leaf of Cassia siamea was measured by exposing the leaf surfaces on non-dewy, non-foggy and non rainy days and washing the leaf surfaces with deionised water and samples were analyzed by Dionex Dx-500 Ion Chromatograph. Atmospheric concentration of SO_2 was 3.54 ± 1.41 μg m^{-3} and particulate $SO4^{2-}$ was 2.72 ± 1.15 μg m^{-3}. Theoretically obtained dry deposition velocity of SO_2 and $SO4^{2-}$ are 0.32 cm s^{-1} and 0.75cm s^{-1}, respectively. The calculated deposition of S as total sulphate (gaseous SO_2 and particulate $SO4^{2-}$) to Cassia leaf was 2.05 ± 0.78mg m^{-2} d^{-1} and experimentally obtained dry deposition of S as sulphate was 1.07 ± 1.35 mg m^{-2} d^{-1}. The experimentally and theoretically obtained mean values for S as $SO4^{2-}$ are comparable.

KEYWORDS

Flux; Deposition Velocity; Parameterization; Sulphur; Gas and Particulate

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