

Publication**Summertime elemental mercury exchange of temperate grasslands on an ecosystem-scale****JournalArticle (Originalarbeit in einer wissenschaftlichen Zeitschrift)****ID** 86876**Author(s)** Fritsche, J; Wohlfahrt, G; Ammann, C; Zeeman, M; Hammerle, A; Obrist, D; Alewell, C**Author(s) at UniBasel** [Alewell, Christine](#) ; [Fritsche, Johannes](#) ;**Year** 2008**Title** Summertime elemental mercury exchange of temperate grasslands on an ecosystem-scale**Journal** Atmospheric Chemistry and Physics**Volume** 8**Number** 24**Pages / Article-Number** 7709-7722

In order to estimate the air-surface mercury exchange of grasslands in temperate climate regions, fluxes of gaseous elemental mercury (GEM) were measured at two sites in Switzerland and one in Austria during summer 2006. Two classic micrometeorological methods (aerodynamic and modified Bowen ratio) have been applied to estimate net GEM exchange rates and to determine the response of the GEM flux to changes in environmental conditions (e. g. heavy rain, summer ozone) on an ecosystem-scale. Both methods proved to be appropriate to estimate fluxes on time scales of a few hours and longer. Average dry deposition rates up to $4.3 \text{ ng m}^{-2} \text{ h}^{-1}$ and mean deposition velocities up to 0.10 cm s^{-1} were measured, which indicates that during the active vegetation period temperate grasslands are a small net sink for atmospheric mercury. With increasing ozone concentrations depletion of GEM was observed, but could not be quantified from the flux signal. Night-time deposition fluxes of GEM were measured and seem to be the result of mercury co-deposition with condensing water. Effects of grass cuts could also be observed, but were of minor magnitude.

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