# Universität Basel

Publication

# Epidemiological estimate of growth reduction by ozone in Fagus sylvatica L. and Picea abies karst.: sensitivity analysis and comparison with experimental results

The critical level of ozone flux for forest trees is based entirely on biomass data from fumigation experiments with saplings, mostly in open-top chambers. Extrapolation to mature forests asks, therefore, for validation, which may be performed by epidemiological data analysis. This requires a multivariable regression analysis with a number of covariates to account for potential confounding factors. The present paper analyses the ozone sensitivity of volume increments of mature European beech (Fagus sylvatica) and Norway spruce (Picea abies), with the addition, or removal, of covariates. The comparison of the epidemiological dose-response relationship with experimental data shows very good agreement in beech and a more sensitive relationship in the epidemiological analysis of Norway spruce compared to the experiments. In Norway spruce, there was also a strong interaction between the effects of ozone and temperature; at high July temperatures, the ozone effect was stronger. This interaction may explain the disagreement between the epidemiological study and the experiments, of which the majority were performed in Sweden.