

BOOK OF ABSTRACTS

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Status and trends of nitrogen deposition in European forests

T1.23 Nitrogen Depositions in a changing climate: Trends and Implications on Forest Ecosystem Services

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Abstract: The input of nitrogen (N) into forests through atmospheric deposition has been determined for the main forest types within the ICP Forests Level II monitoring network since the 1990s from measured concentrations in continuously collected precipitation (bulk deposition) and throughfall (below tree canopy) samples. Over the past five years, a full deposition data set was elaborated, in which various technical issues were solved, inconsistencies were corrected, some data missing in the central database were added from national sources, and further completion was accomplished through gap-filling. Total deposition was calculated from bulk deposition and throughfall accounting for canopy exchange at annual and monthly scales. Here, we present the current status and the long-term trends (1996-2020) for throughfall and total deposition of dissolved inorganic nitrogen (DIN) compounds, including ammonium ($\text{NH}_4^+\text{-N}$), nitrate ($\text{NO}_3^-\text{-N}$), and the $\text{NH}_4^+\text{-N}:\text{NO}_3^-\text{-N}$ ratio, for more than 300 Level II forest plots. Depositions of $\text{NH}_4^+\text{-N}$ and $\text{NO}_3^-\text{-N}$ generally decreased over the studied period, and the decrease was also statistically significant on many of the plots. For $\text{NH}_4^+\text{-N}$, the decrease was the highest during the first decade, while its deposition has been stagnating afterwards. Furthermore, spatial patterns of trends in N depositions across biogeographic regions will be presented and discussed.