Federal Ministry
of Food
and Agriculture

UNECE

Convention on Long-range
Transboundary Air Pollution

40 YEARS ICP FORESTS

On the Pulse of European Forests

40 years of Pan-European Forest Monitoring:
From Air Pollution to Climate Change

ICP Forests 40th Anniversary Report under the UNECE Convention on Long-range Transboundary Air Pollution (Air Convention)

wge Working Group on Effects of the Convention on Long-range Transboundary Air Pollution

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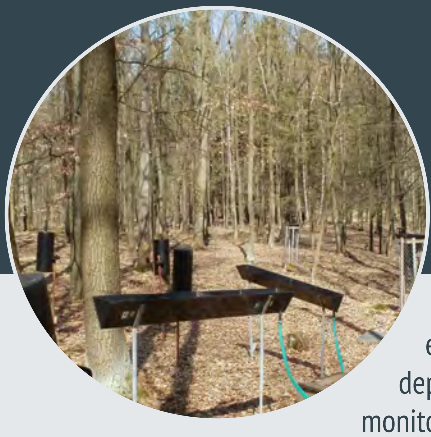


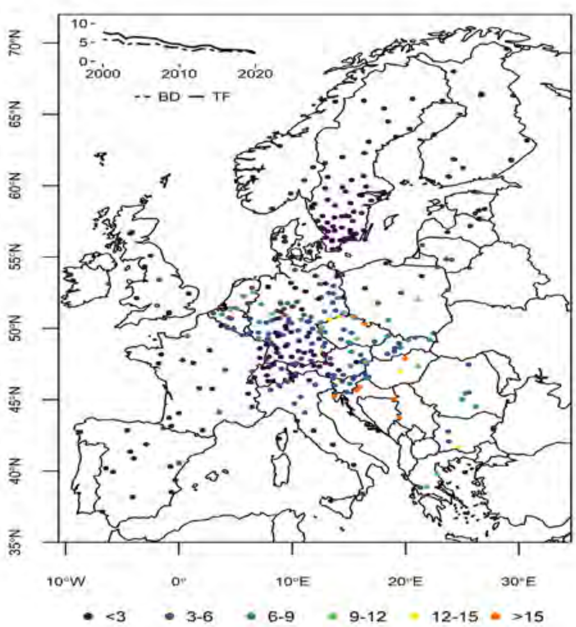
Atmospheric deposition in European forests shows differentiated reduction trends

A Verstraeten, A Schmitz, B Ahrends, N Clarke, W de Vries, K Hansen, C Hilgers, C Iacoban, T Jakovljević, PE Karlsson, T Kirchner, A Marchetto, H Meesenburg, G Pihl Karlsson, A-K Prescher, A Thimonier, P Waldner

Atmospheric deposition is an important source of macro- and micronutrients to forest ecosystems that are key to forest health, growth, and diversity. But excess input from deposition may cause eutrophication and acidification of forest ecosystems. ICP Forests monitors atmospheric deposition in open field as well as under the forest canopy on its Level II plots.

Declining sulphate deposition

Acidifying non-marine sulphate deposition has decreased substantially (>60%) in forests across Europe over the past two decades. The map on the right shows the mean annual throughfall (TF) deposition rates and trends of non-marine sulphate in forests across Europe for plots with at least 5 years of data between 2000 and 2020. With no doubt, the strong reduction in SO_2-emissions is a great achievement of the UNECE Air Convention.



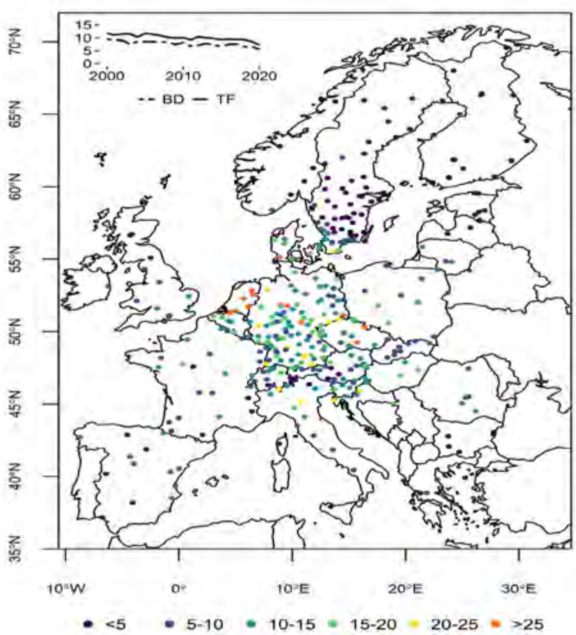
Color classes and trend lines indicate annual deposition rates in kg of **sulphur** per hectare per year.

Nitrate and ammonium decreased less

Deposition of nitrate and ammonium has decreased to a lesser extent than sulphate. In the last decade, a stagnation or even a re-increase has been observed in several European forests, particularly for ammonium.

Total deposition of inorganic N is highest in central Europe

Total inorganic N deposition is highest in central Europe. The critical load for an increased risk of eutrophication is still exceeded in most forests in Europe.



Color classes and trend lines indicate deposition rates in kg of **nitrogen** per hectare per year.

Slightly decreasing deposition of base cations

The decreasing trend in acidifying sulphate and nitrogen throughfall deposition was accompanied by a simultaneous decrease in the deposition of neutralizing base cations (calcium, potassium, and magnesium).

http://icp-forests.net

Contact
Programme Co-ordinating Centre of ICP Forests
Kai Schwärzel, Head
Thünen Institute of Forest Ecosystems
Alfred-Möller-Str. 1, Haus 41/42
16225 Eberswalde, Germany
Email: pcc-icpforests@thuenen.de

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