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Update on ICP Forests activities

Prepared by Anne-Katrin Prescher

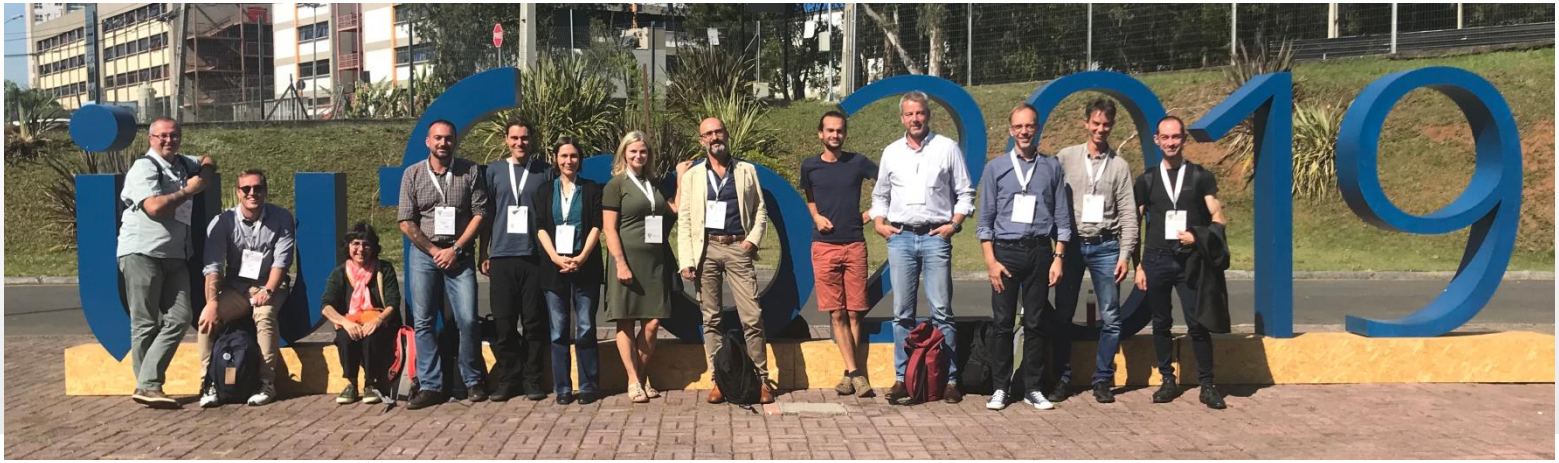
28th Task Force Meeting of ICP Integrated Monitoring, 13 – 14 May 2020

LRTAP Long-range Transboundary Air Pollution

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

Important Meetings

- **8th Scientific Conference of ICP Forests on Trends and events – Drought, extreme climate and air pollution in European forests (**11 – 13 June 2019 in Ankara, Turkey)
- **XXV IUFRO World Congress 2019 (**29 Sep – 05 Oct 2019 in Curitiba, Brazil)
  - ICP Forests session on “Long-Term Forest Monitoring Networks for Evaluating Responses to Environmental Change” (Marcus Schaub, Lars Vesterdal, Hiroyuki Sase, Marco Ferretti)
  - 25 oral presentations & 5 poster presentations



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Important Meetings

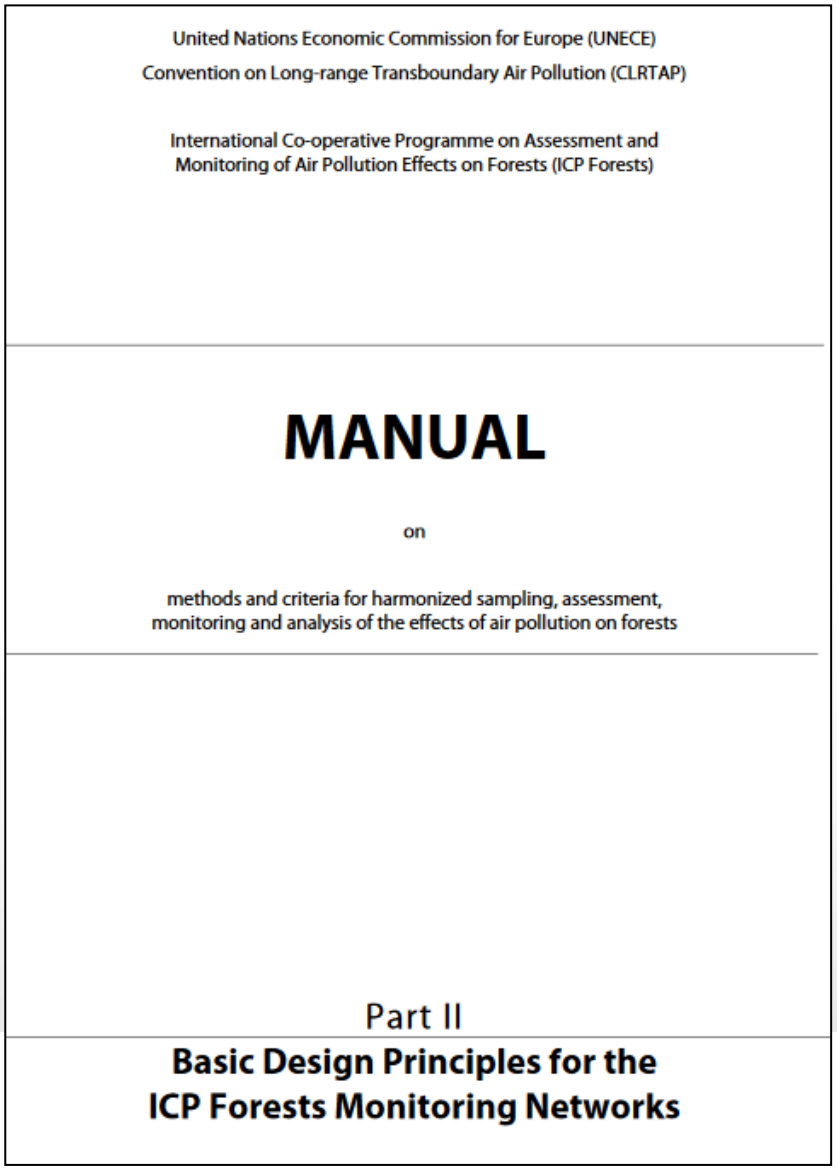
- **EANET-ICP Forests Workshop on regional impact assessment of atmospheric deposition and air pollution on forest ecosystems (**21 –22 Nov 2019 in Niigata, Japan)
- **ICP Forests Combined Meeting of the Expert Panels on Meteorology, Phenology and Leaf Area Index; Forest Growth; Ambient Air Quality; Biodiversity and Ground Vegetation** (9 – 11 Mar 2020, online)

Scientific Publications in 2019

- 51 international, peer-reviewed publications with data that had either originated from the ICP Forests database or from ICP Forests plots
- Addressing WP Items: 8 publications on nitrogen, 3 on ozone, 1 on heavy metals
- Other, e.g. 4 on climate/weather effects, 6 on SOC, 9 on biodiversity/deadwood

Mayor Manual Revision 2020

- Every 5 years
- Revision of 14 out of 18 Manual Parts
- Expert Panels are responsible
- Mayor changes in Manual Part II on Basic Design Principles:
  - New chapter: Management operations and natural disturbances
  - New Annex : Should Level II plots entering the stand regeneration stage be maintained under monitoring or relocated?
- http://icp-forests.net/page/icp-forests-manual


United Nations Economic Commission for Europe (UNECE)

Convention on Long-range Transboundary Air Pollution (CLRTAP)

International Co-operative Programme on Assessment and Monitoring of Air Pollution Effects on Forests (ICP Forests)

MANUAL

on

methods and criteria for harmonized sampling, assessment, monitoring and analysis of the effects of air pollution on forests

Part II

Basic Design Principles for the ICP Forests Monitoring Networks

Technical Reports & ICP Forests Briefs

Technical Report 2020 in preparation

- Deposition on Level II plots 2018
- Crown Condition on Level I plots 2019
- Questionnaire on future of Level II forest monitoring

ICP Forests Brief #4 *Tree nutrition is increasingly imbalanced in European forests* in print

http://icp-forests.net/page/icp-forests-briefs

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ICP Forests Brief #4 (in press): Title and authors

Increased evidence of nutrient imbalances in forest trees across Europe

by

Inken Krüger[1], Tanja GM Sanders[1], Nenad Potočić[2], Liisa Ukonmaanaho[3], Pasi Rautio[3]

[1]Thünen Institute of Forest Ecosystems
[2]Croatian Forest Research Institute
[3]National Resources Institute Finland (LUKE)

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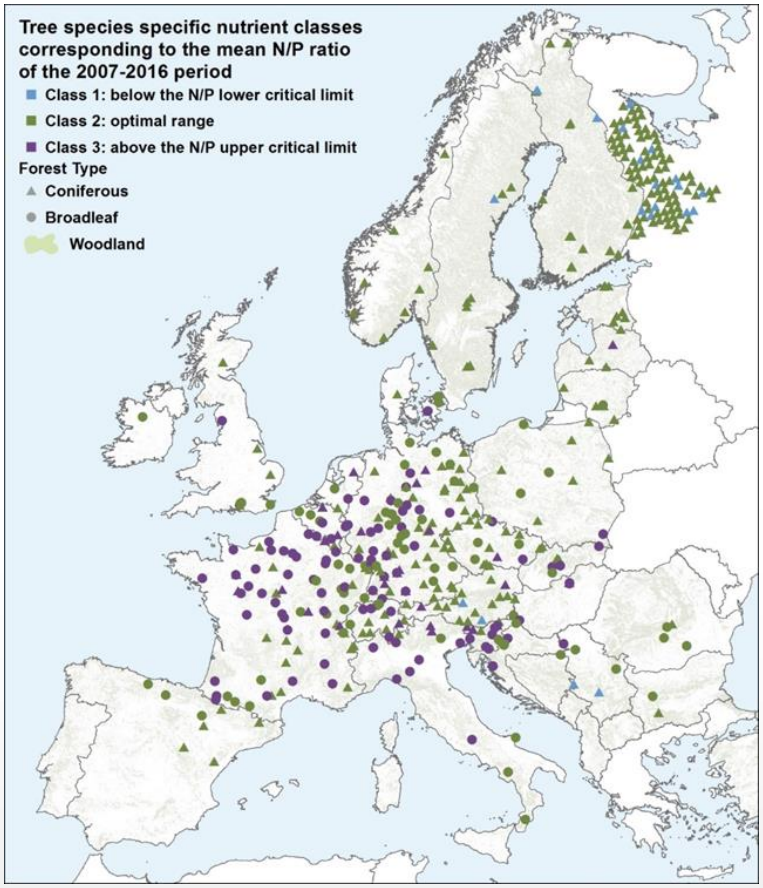
30% of Level II plots across Europe show imbalances in foliar N/P ratios

Critical N/P ratios (from Mellert & Göttlein 2012)

Tree species	N/P ratio
Fagus sylvatica	10 to 19
Quercus robur + Quercus petraea	9 to 20
Pinus sylvestris	7 to 14
Picea abies	6 -12



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Highlights from the Technical Report 2019

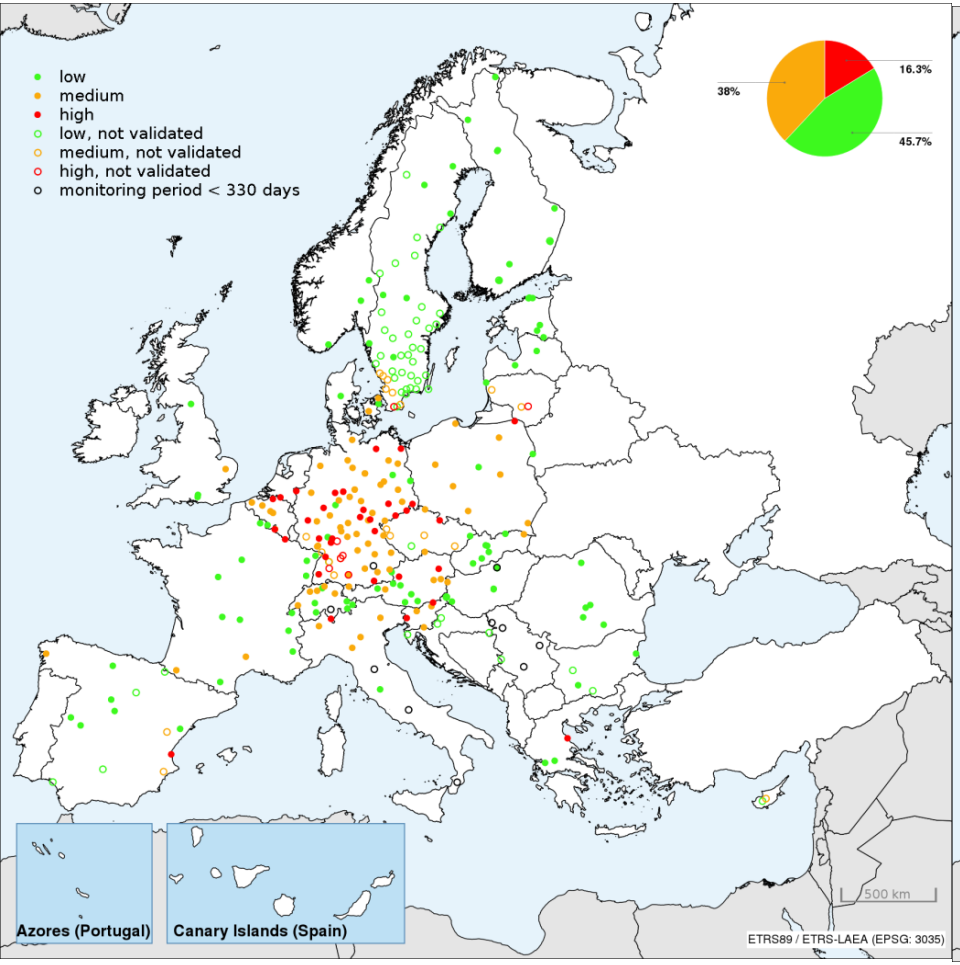
Throughfall deposition in 2017

0 to 4 kg $ha^{-1}yr^{-1}$

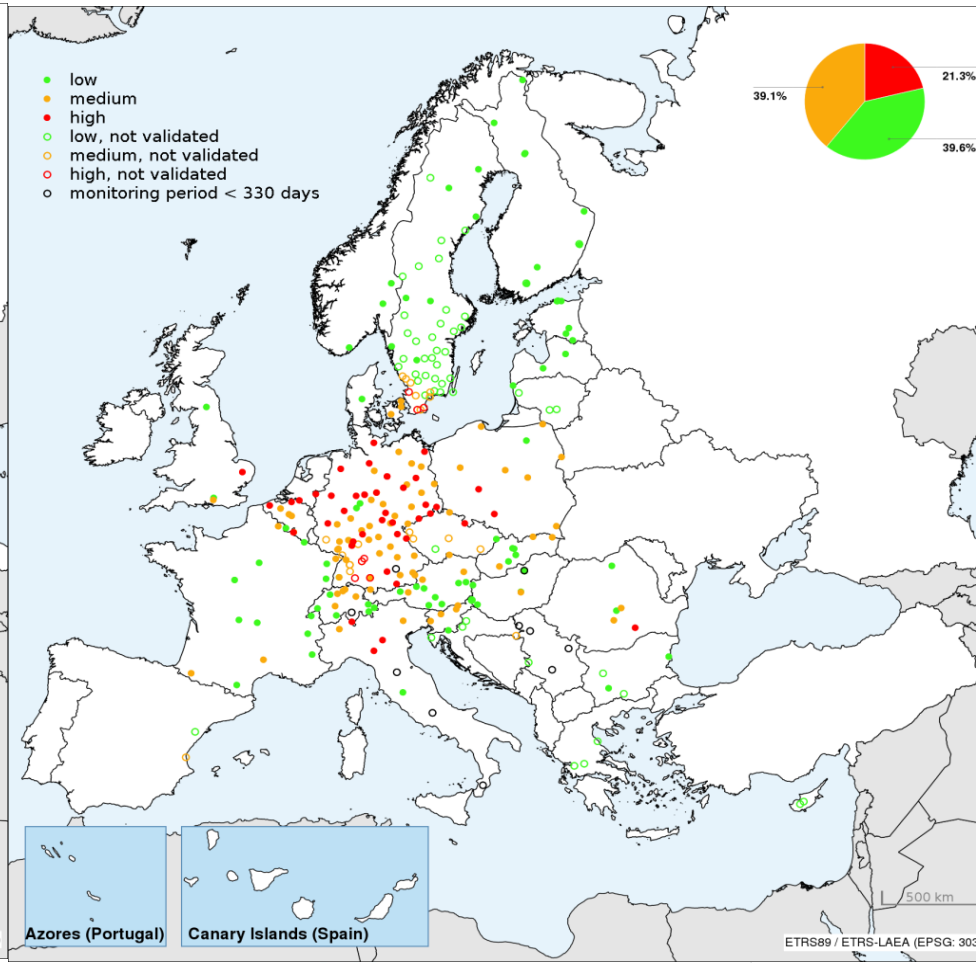
4 to 8 kg $ha^{-1}yr^{-1}$

>8 kg $ha^{-1}yr^{-1}$

Nitrate-Nitrogen



Ammonium-Nitrogen



Highlights from the Technical Report 2019

Deposition in 2017

- The area of high deposition is smaller for **sulphate**, including **some plots** in Hungary, Greece, the Czech Republic, Slovakia, Bulgaria, and in Belgium-Flanders near the port of Antwerp.
- **Calcium, potassium and magnesium** deposition can buffer the acidifying effect of atmospheric deposition. High values of calcium throughfall deposition are reported in southern Europe, mainly related to the deposition of Saharan dust, and in Eastern Europe.
- **Total deposition** to the forest can be higher (typically for nitrate and ammonia) or lower (typically for buffering compounds) than the throughfall deposition, due to canopy exchange processes.

Highlights from the Technical Report 2019

Tree crown condition in 2018

- The overall **mean defoliation** for all species was 22.6% in 2018, and there was a slight increase in defoliation for both conifers and broadleaves in comparison with 2017.
- **Damage cause assessments** were carried out on 103714 trees on 5505 plots in 26 countries. On 47327 trees (45.6%) at least one symptom of damage was found, and 711 trees (0.7%) were dead.
- **Insects** were the predominant cause of damage and responsible for 27.3% of all recorded damage symptoms. Abiotic agents were the second major causal agent group responsible for 16.4% of all damage symptoms whereas more than half of the symptoms (49.7%) were attributed to **drought**.

Kind invitation

36th Task Force Meeting of ICP Forests

online, 11 - 12 June 2020

9th Scientific Conference

"Forest Monitoring to assess Forest Functioning under Air Pollution and Climate Change“

Zurich, 7 - 9 June 2021

http://sc2021.thuenen.de

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