

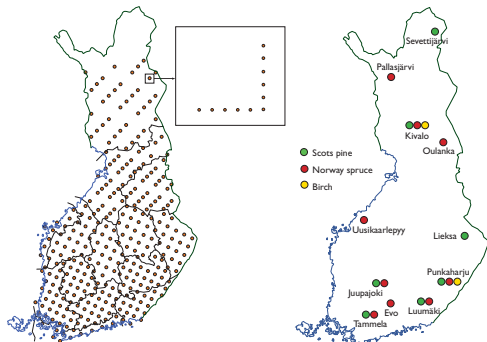
The European Forest Monitoring Programme is being further developed under the FutMon Project

Merilä, P., Beuker, E., Lindgren, M., Rautio, P., Derome, K., Lindroos, A.-J., Nevalainen, S., Nieminen, T.M., Niemistö, P., Nöjd, P., Salemaa, M., Ukonmaanaho, L. and Derome, J.

Introduction

Forest ecosystems are subjected to a wide range of pressures and disturbances of both natural and anthropogenic origin, and evaluation of the effect of these factors on ecosystem condition and functioning requires scientifically robust, long-term monitoring data. During 2009–2010 the European Forest Monitoring Programme is being continued and further developed under the FutMon Project, which is a co-financed project in the EU/Life+ funding programme.

The monitoring is being carried out on both a systematic plot network (so-called extensive monitoring, Level I) and a limited number of intensive monitoring plots (Level II).



The extensive forest condition monitoring is being carried out on ca. 800 permanent National Forest Inventory plots.

The intensive monitoring network of forest ecosystems in Finland under the FutMon project.

References

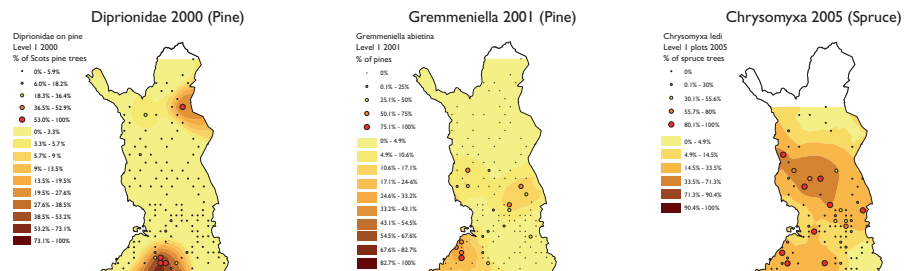
Mustajärvi, K., Merilä, P., Derome, J., Lindroos, A.-J., Helmisaari, H.-S., Nöjd, P. & Ukonmaanaho, L. 2008. Fluxes of dissolved organic and inorganic nitrogen in relation to stand characteristics and latitude in Scots pine and Norway spruce stands in Finland. *Boreal Environment Research* 13 (Suppl. B): 3–21.

Ukonmaanaho, L., Merilä, P., Nöjd, P. & Nieminen, T. M. 2008. Litterfall production and nutrient return to the forest floor in Scots pine and Norway spruce stands in Finland. *Boreal Environment Research* 13 (Suppl. B): 67–91.



Extensive monitoring (Level I)

The monitoring activities at Level I during 2009–2010 involve the determination of tree condition on the basis of defoliation and discoloration assessments and the occurrence of biotic and abiotic damage on a total of ca. 800 plots in the 9th NFI permanent plot network.



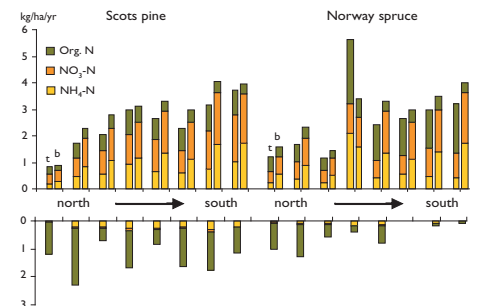
Annual forest condition surveys provide information on temporal variation and coarse spatial patterns of the most important factors affecting crown condition (S. Nevalainen et al. unpublished).

Intensive monitoring (Level II)

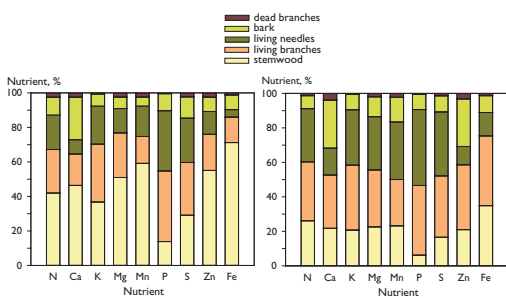
The purpose of the intensive monitoring (Level II) is to investigate the effects of anthropogenic, biotic and abiotic factors on the condition and functioning of forest ecosystems. The monitoring activities are carried out on a network of 18 observation plots distributed throughout the country. The data collected on the Level II plots during the FutMon Project will be used to carry out in-depth studies on tree vitality and adaptation, nutrient cycling and critical loads, and water budgets.

Intensively monitored attributes

- Tree condition
- Tree nutrient status
- Deposition load
- Soil solution composition
- Litterfall
- Stand growth
- Tree phenology
- Ground vegetation
- Meteorology



The mean annual fluxes of organic N, NO₃-N and NH₄-N in bulk deposition (b), throughfall (t) and in percolation water during 1998–2004 on intensive monitoring plots (n = 8 and 6 for Scots pine and Norway spruce plots, respectively; Mustajärvi et al. 2008).



Relative nutrient pool in different above-ground tree compartments on a) Scots pine, and b) Norway spruce plots. Estimates of biomass components were calculated using the functions of Marklund (1987, 1988; Ukonmaanaho et al. 2008).

More information

<http://www.metla.fi/ohjelma/myt/index-en.htm>
<http://www.futmon.org/index.htm>
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