

Metla in charge of Finnish Forest Inventories since 1920



METLA

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National Forest Inventories (NFI)

The national forest inventories (NFI) produce information on

- forest resources – volume, growth and quality of growing stock
- cutting possibilities
- land use structure and forest ownership
- forest health
- biodiversity of forests and
- forest carbon stocks and their changes

The first NFI in Finland was carried out by Metla in 1920's. It was one of the first inventories in the world based on statistical sampling. Since then Metla has made NFIs regularly in appr. 10 years cycles.

The national forest inventories form an unique time series of the development of forests in Finland. In first inventories, lines through the country were surveyed but in recent inventories systematic sampling and measurements of 60 000 field plots have been used. The field plots are located in clusters that form a regular network over the whole country.

The 10th National Forest Inventory of Finland

The most recent NFI, 10th in order, started in 2004 and it will be completed in 2008. The new inventory is designed to produce reliable forest resource information biannually for the whole country and in 3 year cycle at regional level. The information is widely used for forest policy making at national and regional levels, regional and national forest management planning, planning of forest industry investments, assessing the sustainability of forestry, in forest certification, as well as material for further research.

Multi-source NFI

Based on the field data, reliable forest statistics can be calculated for the whole country and for large areas of over 200 000 hectares. In order to provide forest information for smaller areas, e.g. municipalities, an inventory method based on satellite images was developed at the end of 1980's. The multi-source national forest inventory (MS-NFI) utilises several data sources: field measurements, satellite images and digital maps. MS-NFI produces forest statistics and thematic maps for any given area. An example of the thematic maps is the volume of the growing stock in whole Finland. In the MS-NFI, mainly high resolution satellite images, like Landsat TM and SPOT, have been applied. Map data is used to separate forests from other land use categories, and soil map also for stratification. A digital terrain model is used to reduce distortion effects caused by topography. The geometric resolution of resulted maps is 25 m.

Metla's specialists at your service

The MS-NFI (developed by Metla) can serve as a prototype of a globally applicable forest resource inventory system using remote sensing techniques. The MS-NFI method has been successfully applied outside Finland and its further development work is done in cooperation with organizations in Germany, New Zealand, Sweden, Norway, United States and China. MS-NFI will contribute to USDA Forest Service's efforts to develop a new inventory method for the next century.

The NFI personnel in Metla consists of 17 research scientists, 20–24 field teams during the field season, forest technicians and research assistants. Metla has expertise for all phases of forest inventory: design, field data collection, computation, publishing and dissemination of forest resource information. In addition, the current activities of the MS-NFI team include:

- Planning inventory design by means of satellite based theme maps
- Updating NFI information by remote sensing data
- Utilization of imaging spectrometry in large area forest inventories
- Utilization of ERS-1 SAR data in large area forest inventories
- Imaging spectrometry in forest health monitoring
- Dynamics of biodiversity and methods for its assessment
- Improving and estimating the accuracy of multi-source inventory estimates
- Utilisation of digital camera in tree stem measurements
- Assessment of temporal and spatial dynamics of ground vegetation in Finnish forests and peatlands
- Estimating carbon balance of forests

