Tracing air pollution and climate change effects

on forest ecosystems: trend and risk assessments

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Abstracts

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THÜNEN

Spatial and temporal patterns of plant diversity in the Italian forest monitoring network (CONECOFOR)

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Since 1996, the Italian network CONECOFOR included Ground Vegetation (GV) within the forest monitoring actions, in the frame of ICP Forests. Plant diversity variables have been assessed yearly on 11 of the 31 sites of the intensive network (LII), while a unique survey was realized for the extensive network (LI) in 2007, within the Biosoil-Biodiversity project.

CONECOFOR is presently undergoing a revision process aimed to assure the financial sustainability of reliable information on forest status and trends (SMART4Action, LIFE+ ENV project).

We contribute to the project by analysing spatial and temporal patterns options for GV assessment.

(i) Aims: suggest an affordable number of sites and the best sampling strategy to provide an overview of forest plant diversity within both LII and LI network.

(ii) Objectives: estimate the effect of reduced sampling frequency and size, as well as different sampling designs on GV assessment.

(iii) Methods: previous datasets are examined to test the conformity of LII vs. LI sites, to compare time-trend descriptors, and to estimate the critical number of sites and sampling units (SU). Field cross-surveys in next summer will compare different methods on selected sites.

(iv) Considering LII sites (1999-2102), the reduction from annual to multiple-year surveys provides incomparable regression functions. The effect of reducing SUs numbers within LII sites is variable, due to different understory heterogeneity, and arousing misleading plant diversity description. LII hardly represents the spatial distribution achieved by LI reference (in 2007), due to the "preferential" selection used in the former network. A relevant reduction of LI sites can be achieved (almost 50%) maintaining the representativeness of plant species richness; relevant thresholds have been provided considering the stratification by Biogeographic Regions and the most relevant Forest types (Alpine conifers, Mountinous Beech, and Thermophilous deciduous forests).

The experimental design of the comparative field test will be presented.