

## International Project

### FutMon

#### “Further Development and Implementation of an EU-level Forest Monitoring System”

FutMon ([www.FutMon.org](http://www.FutMon.org)) is a 2 years LIFE+ project (2009-2010) establishing a long term monitoring system on the health of European Forests.



LIFE+ “FutMon” Project - LIFE 07 ENV/D/ 000218  
Reg. CE n.614/2007 Contract

The aim of FutMon is the establishment of a pan-European forest monitoring system which can serve as a basis for the provision of policy relevant information on forests in the European Union as required under international obligations and key action 8 of the Forest Action Plan (COM 2006 final).

<http://www.sian.it/inventarioforestale/jsp/futmon.jsp>

### ENVEurope

#### “Environmental quality and pressures assessment across Europe”

ENVEurope ([www.enveurope.eu](http://www.enveurope.eu)) is a LIFE+ Project of 4 years (2010 -2013) having the largest site-based network of Long-Term Ecosystem Research in Europe ([www.lter-europe.net](http://www.lter-europe.net)) recently established (2006) under the auspices of the FP6 Network of Excellence ALTER-Net (<http://77www.alter-net.info/>).

The Project, coordinated at international level by CNR-ISMAR, is focused on three types of ecosystems (terrestrial, freshwater and marine), and it aims at defining research and monitoring activities relevant to different levels/scales of investigation.

The project has been designed in the conceptual and operative context of SEIS (<http://ec.europa.eu/environment/seis>) and will contribute to the development of the GMES (<http://ec.europa.eu/gmes>)



LIFE+ “Environmental quality and pressures assessment across Europe”  
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Moreover the Project aims to improve the monitoring through the integration and the harmonization of National Inventories and Monitoring grids (Lev. 1 and 2) of the involved European Countries.

FutMon, coordinated by the German research institute vTI ([www.vti.bund.de](http://www.vti.bund.de)), is carried out by 38 beneficiaries from nearly all EU-Member States.

Italian Associated beneficiaries:

1. Corpo Forestale dello Stato - CONECOFOR;
2. Consiglio Nazionale delle Ricerche (CNR);
3. Consiglio per la Ricerca e la Sperimentazione in Agricoltura (CRA).



MINISTERO POLITICHE AGRICOLE  
ALIMENTARI E FORESTALI



[www.corpoforestale.it](http://www.corpoforestale.it)



Corpo Forestale dello Stato

## Forze della Natura

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## Monitoring of Italian Forests and environment



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## Italian Forests Monitoring and environmental protection

National forest Service (Corpo forestale dello Stato - CFS) carries out forest monitoring through two working programmes: the National for Forest Ecosystems Control (CONECOFOR) and the National Forest and Carbon Sink Inventory (INFC).

Furthermore, these programmes carry out a daily monitoring to collect data on environmental status: CFS has a geographical network data base on any environmental issue (forest fires, illegal garbage dump, etc).



## CONECOFOR and INFC framework

- ~ 1 Administrative and management center  
(Divisione 6a - Ispettorato Generale del CFS);
- ~ 21 Regional Offices and 80 Monitoring Teams of National Forest Service  
(Comandi Regionali and Provinciali, Uffici Territoriali per la Biodiversità, Comandi Stazione)
- ~ 12 Italian Local Administrations  
(7 Regional Departments about which 4 Special Statute Region, 2 Autonomous Provinces Departments, 3 Regional Parks Agencies)
- ~ 9 Research Centers of national relevance  
(C.F.S.- [www.corpoforestale.it](http://www.corpoforestale.it), C.R.A. - [www.sito.entecra.it](http://www.sito.entecra.it), C.N.R. - [www.cnr.it](http://www.cnr.it), Italian Universities)

## What is CONECOFOR



Forest condition monitoring at national scale has been promoted in Italy since 1987 under the coordination of the National Forest Service.

This is the first and only successful experiment of a long term ecological web at national and international level. Nowadays the CONECOFOR programme is co-financed by the EC through the LIFE + FutMon project ([www.futmon.org](http://www.futmon.org)), for the period 2009 - 2010.

The programme named CONECOFOR (**Forest Ecosystems Monitoring**) has been founded in 1995 and involves investigations on 265 Level 1 (large scale monitoring) and 31 Level 2 (intensive monitoring) plots, in the framework of the UN/ECE Convention on Long-range Transboundary Air Pollution, in cooperation with ICP Forests ([www.icp-forests.org](http://www.icp-forests.org)) and ICP IM ([www.environment.fi](http://www.environment.fi)).

## Working programme

CONECOFOR net is composed by up plots which are widespread in Italy to represent all the main forest types (beech, pine tree, oak species, plain forests, etc.).

Crown condition assessment is carried out on 265 Lev. 1 plots (figure 1) every year, to study the health of tree crowns.



The 31 Lev. 2 permanent plots (figure 2) are designed to study the interaction between the structural and functional components of forest ecosystems and stress factors, such as air pollution, climate and biodiversity changes.

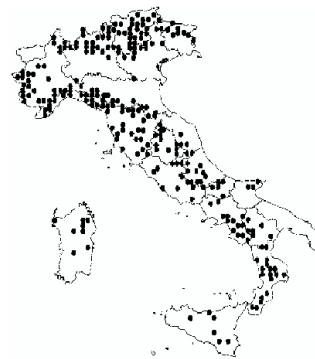


Figure 1. LEV. I - ESTENSIVE NETWORK

CONECOFOR is the only monitoring web at national level of the ozone concentrations in rural and extra-urban areas: therefore this is a valuable source of data to study ozone concentrations

## Main results

In 2009 **Level 1** survey in Italy considered 6966 trees in 257 permanent plots. The trees analyzed presented defoliation (35,8%) and discoloration (5-6%) damages: the causes are due to biotic (insects: 20,6%; fungi: 8,2%) and abiotic (6,4%) damage factors.

In 15 years of monitoring of forest conditions in **Level 2** plots, the combined and integrated data evaluation shows the particular risk of high acid and nitrogen deposition for sensitive soils and biodiversity status.

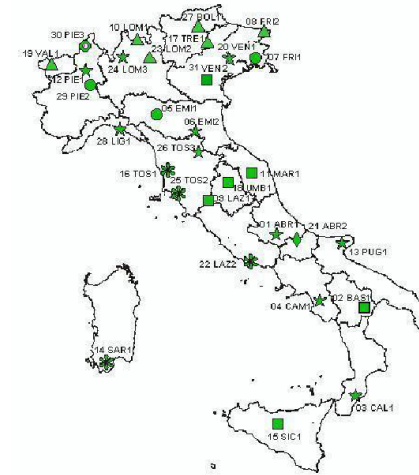


Figure 2. LEV. II - INTENSIVE NETWORK

Ozone concentrations exceed the critical level at all monitoring sites, especially in summer, and reduce the vitality of sensitive forest species. Ozone affects crown transparency (defoliation) and it is related to carbon sequestration through its effects on tree growth. These data confirm that ozone represents a potential risk factor for Italian forests.

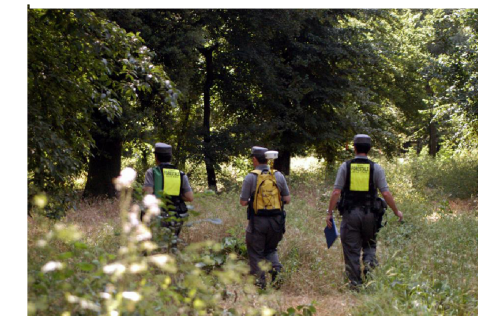
## What is INFC



National Forest Service, with the scientific coordination of CRA-MPF ([www.sito.entecra.it](http://www.sito.entecra.it)) and in co-operation with the Environmental Ministry ([www.minambiente.it](http://www.minambiente.it)), performed the **National Forest and Carbon Sink Inventory (INFC)**.

## Working programme

The field monitoring activities started in 2003 and stopped at the end of 2008. During this period the CFS staff took lots of data from Italian forests.



Nowadays the research institute CRA-MPF is carrying out analysis and processing of these data to study the 5 forest carbon sink expected from the Kyoto Protocol: ground plant biomass, underground plant biomass, dead wood, litterfall and soil.

All these parameters had been carefully analyzed and estimated at regional and national level. The surveys concern forests as a whole as well as their main categories (tree species, structure, forest management).

These data are very important for Italian economy in the framework of the Kyoto Protocol. The storage of Carbon dioxide in our forests can decrease the amount of Italian greenhouse gas emissions: this particular effect could be calculated in about 1.000.000.000 euro within the mechanism of Kyoto Protocol Italian commitments!

[www.sian.it/inventarioforestale/](http://www.sian.it/inventarioforestale/)



## Main Result

First results show that in Italy:

- there are 12 billion trees in Italy distributed on 10.467.533 hectares of forest areas (about 200 per Italian person!);
- beech is the most common species: there are more than 1 billion beech trees which cover almost all the Apennines.
- forests contain more than 1.260.000.000 m<sup>3</sup> of wood, i.e. more than 870.000.000 tons of wood, that means about 435.000.000 tons of stocked carbon.