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Matteo Vizzarri

# Forest ecosystem models and transnational access

Experiences and lessons learned

Designing Trees for the Future

# DiBT Forestry Labs

## Natural Resources and Environmental Planning

### Global Ecology

#### Main activities

1. Sustainable forest management and planning
2. Forest inventory and monitoring (including remote-sensing techniques)
3. Forest ecosystem services assessment and mapping
4. Forest biodiversity conservation
5. Land use change monitoring and assessment
6. Forest resilience (e.g., forest fire behavior and risk)
7. Wood technology and climate-related studies

Group Leader



MARCO MARCHETTI

Professors and Permanent researchers



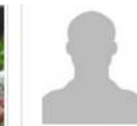
ROBERTO TOGNETTI



BRUNO LASSERRE



VITTORIO GARFI



PAOLO DI MARTINO

Technical staff and Post-Doc researchers



MARCO OTTAVIANO



DANIELA TONTI



CARMEN GIANCOLA



GIOVANNI SANTOPUOLI



CATERINA PALOMBO



MATTEO VIZZARI



LORENZO SALLUSTIO



FRANCESCO PARISI



ANGELA TAVONE

...and 20 PhD students...

## [1] Sustainable Forest Management at Landscape scale (SUSFORLAND) - *combination of two projects*

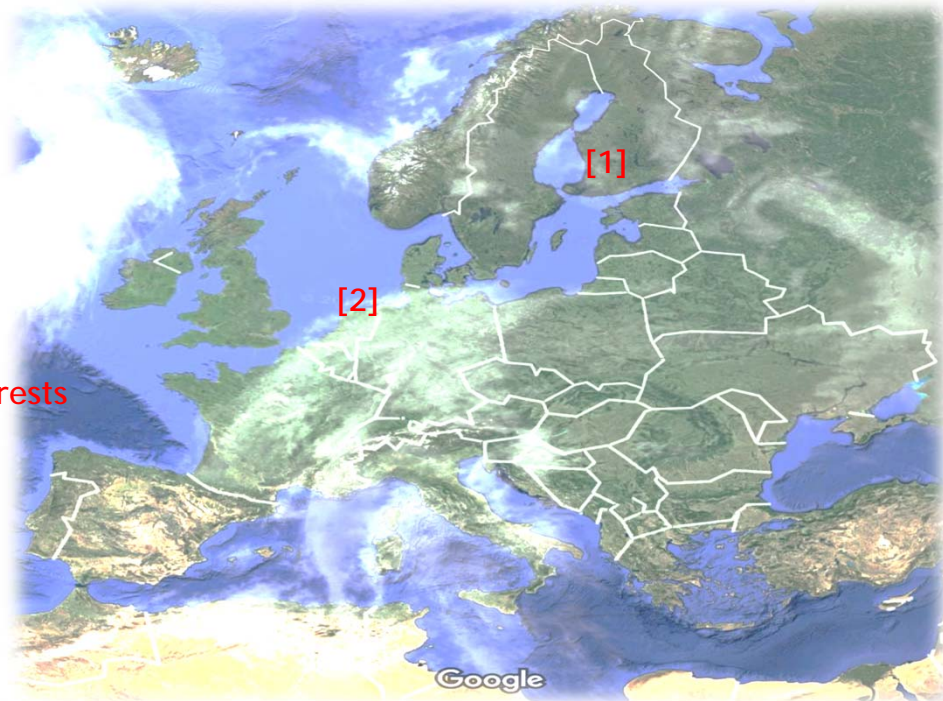
5 days visit - Hans Verkerk (site manager and supervisor)

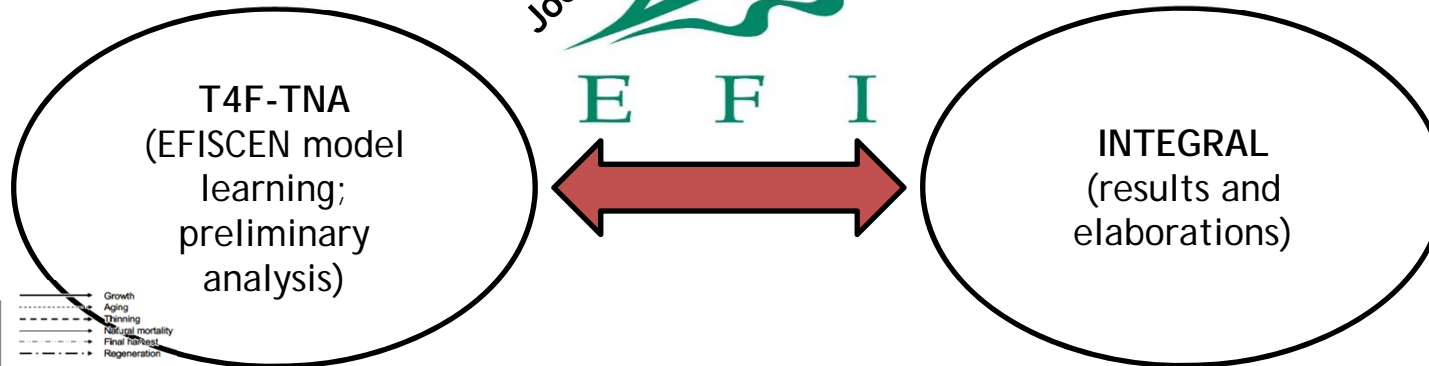
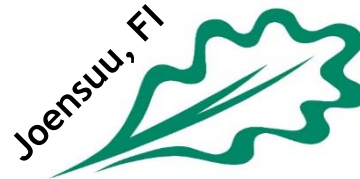
- (i) Future-oriented FES potentiality at landscape scale through EFISCEN model;
- (ii) FES trade-offs assessment

## [2] Enhancing carbon sequestration in managed forests (ENCAM) - *ongoing process*

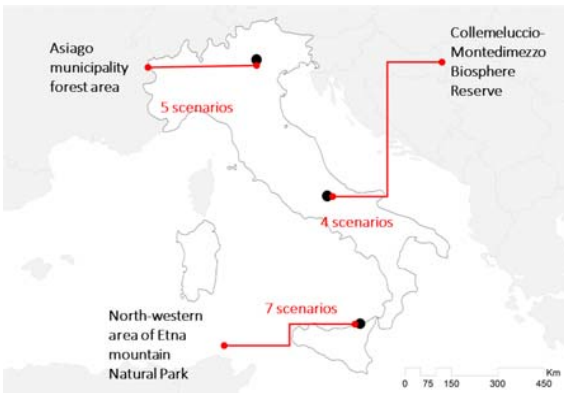
25 days visit - Geerten Hengeveld (site manager);  
Mart-Jan Schelhaas (supervisor); Gert-Jan Nabuurs

- (i) Carbon sequestration potential through CO2FIX model;
- (ii) Carbon profiles for FC-FMA combinations in managed sites in Italy





EFISCEN model (Sallnas 1990; Schelhaas et al. 2007)

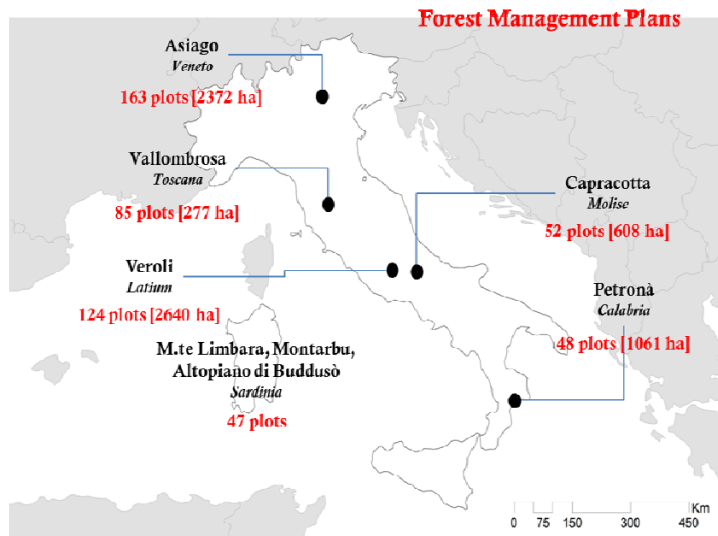


- Implementation of EFISCEN model in 3 landscapes in Italy
- Assessment of 4 forest ecosystem services according to several scenarios of integrated forest management
- Forest ecosystem services trade-offs evaluation (qualitative) - Assessment of impact factors on FES provision

Biodiversity conservation Timber production

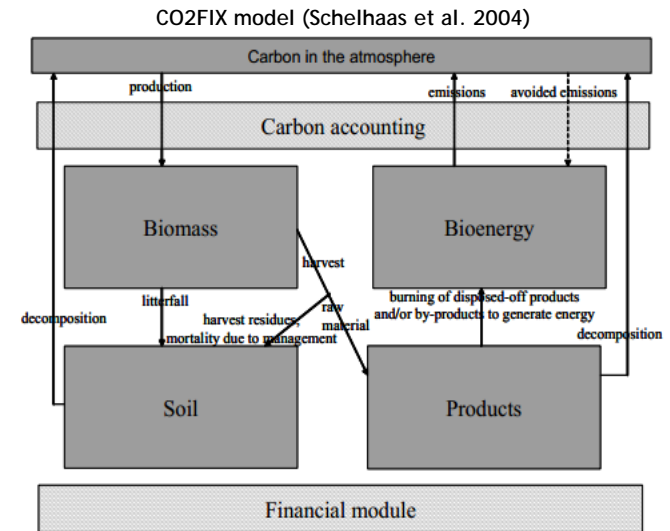


C sequestration Recreational opportunities



- Implementation of CO2FIX in 6 managed sites in Italy
- Simulating carbon sequestration for each FC-FMA combination

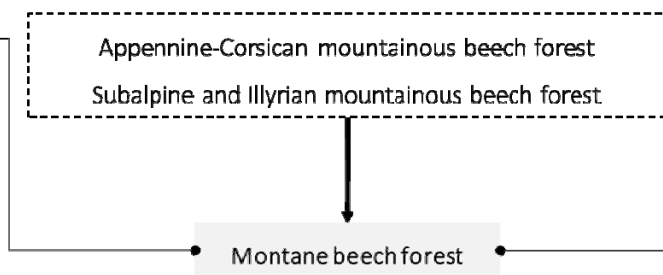
Simulation period -> 300 years



### Alternative management

- Asiago (selection system)

Frequency	Intensity
15	0.15
30	0.15
45	0.15
60	0.15
75	0.15
90	0.15
105	0.15
120	0.15
...	...



### Regular management at national scale

- 4 case studies (Shelterwood system)

Frequency	Intensity
15	0.3
30	0.2
45	0.15
65	0.15
90	0.15
110	0.4
120	0.55
130	0.85
...	...

### DRIVERS

Improve and share  
knowledge and  
expertise

Possibility to use  
advanced tools and  
have related  
support

Establish  
cooperation and  
create networks

### BARRIERS

Lack of  
available data

Poor expertise  
and self-  
adaptation

Difficulty to  
meet the  
deadlines

1

Future-oriented cooperation with TNA supervisor(s) for project proposal preparation and data sharing *(if possible)*

2

Finalizing manuscript(s) with TNA supervisor(s) -> for ENCAM project: Vizzarri et al. – Simulating carbon sequestration potentials: the case of mountain forests in Italy *(ongoing process)*

3

Experiences useful for other studies on forest resource modeling

***Suggestion (to myself, at first) -> take advantage from opportunities like T4F, but try to balance the expected outcomes with time constraints, and limitations linked to human nature***

# Thank you for your attention

A handwritten signature in black ink, appearing to read "Hans Verkerk".

I would like to thank Hans Verkerk working at EFIMED, Mart-Jan Schelhaas, Gert-Jan Nabuurs, and Geerten Hengeveld working at ALTERRA-WUR, for their support in implementing and testing ESFISCEN and CO2FIX models for the Italian case-studies, and in analyzing the preliminary results. Financial support by the Transnational Access to Research Infrastructures activity in the 7<sup>th</sup> Framework Programme of the European Commission under the Trees4Future project (no. 284181) for conducting the research is gratefully acknowledged.

