



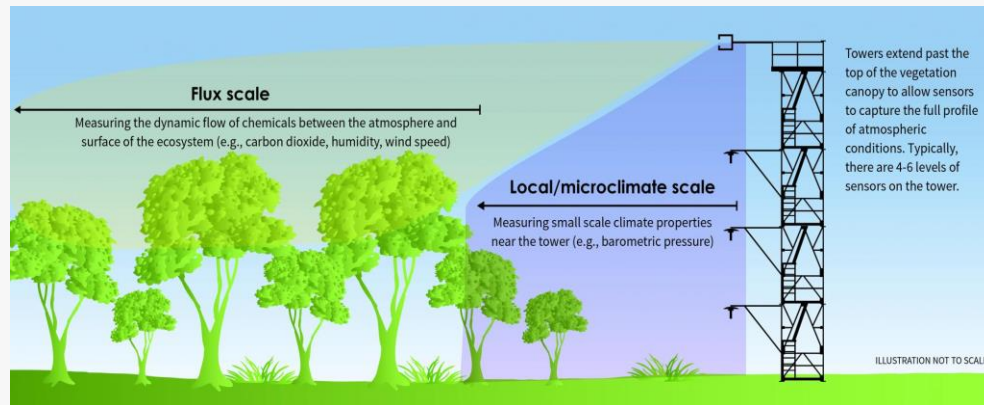
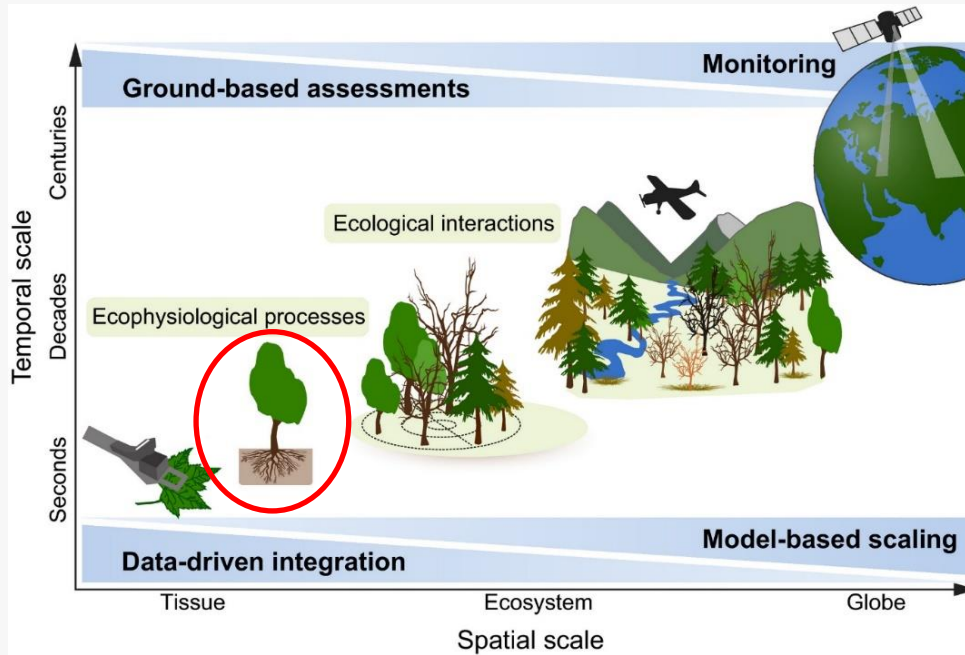
FONDAZIONE
EDMUND
MACH



Treetalker come strumento per il monitoraggio forestale

Damiano Gianelle, Luca Belelli
Marchesini

Monitoraggio forestale

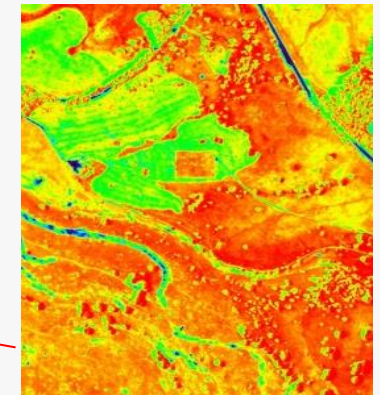
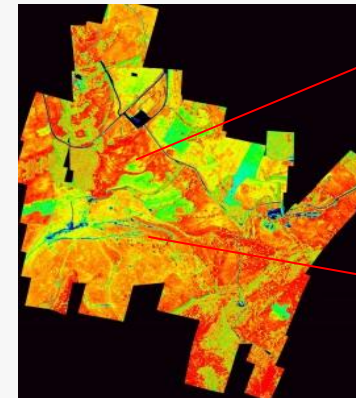


Caratterizzazione genetica



Misure fogliari

Torri
Microclimatiche

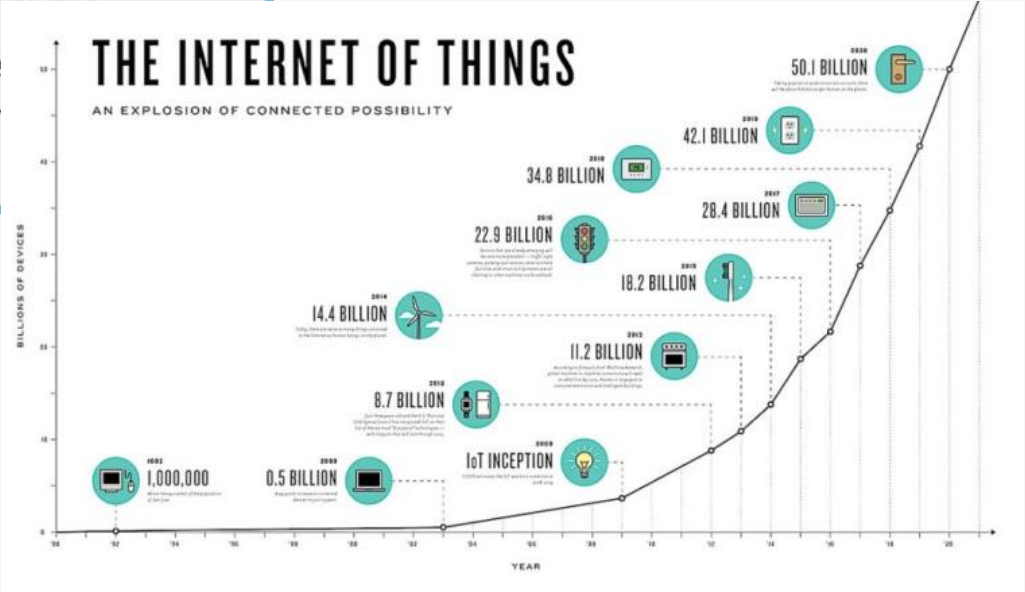
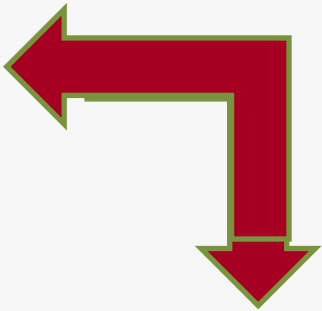


Telerilevamento



From industry 1.0 to Industry 4.0

			
The 1st Industrial Revolution 18th Century	The 2nd Industrial Revolution Early 19-20th Century	The 3rd Industrial Revolution Latter Half of the 20th Century	The 4th Industrial Revolution Early 21st Century -
Steam engine based mechanization revolution	Electricity based mass production revolution	Computer/Internet based knowledge and information	Big Data/AI/IoT



IoT applications: from Industry 4.0 to Nature 4.0

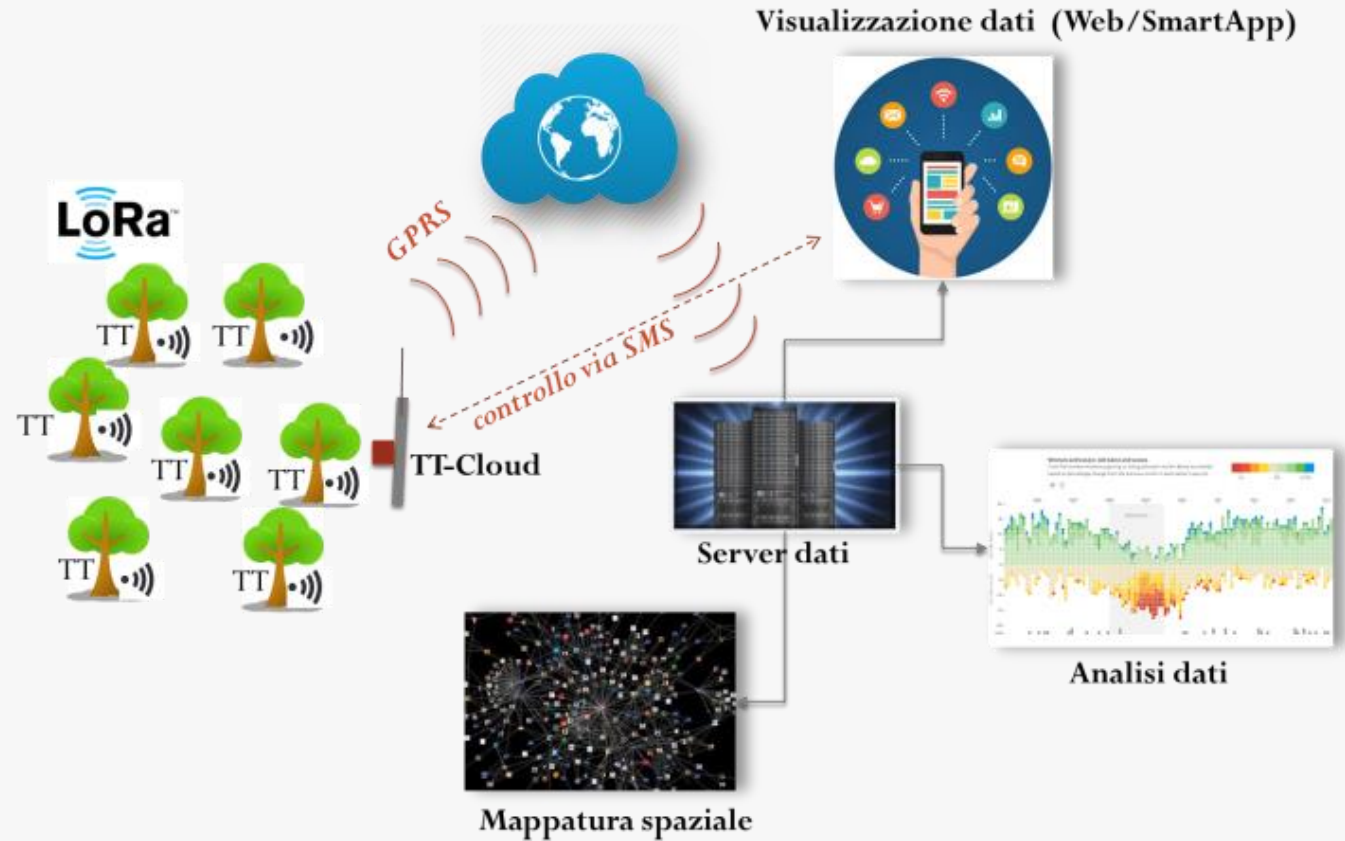
Smart Cities



Smart Farms

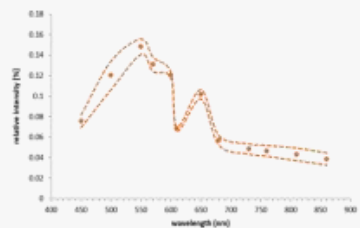
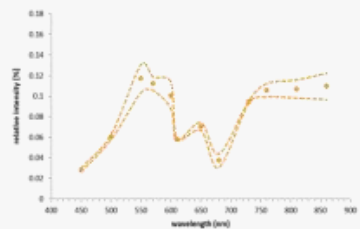
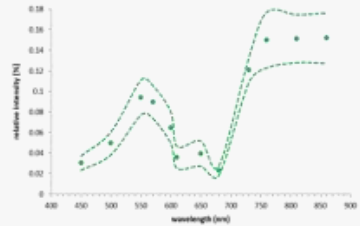


Smart Forests

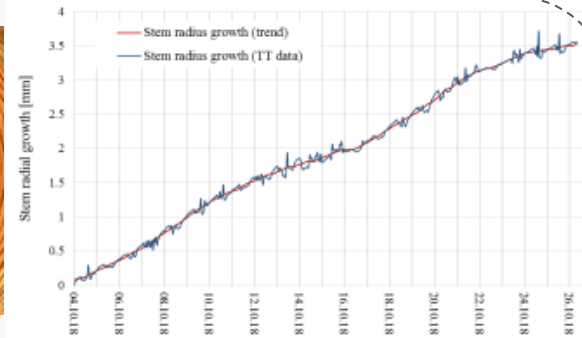


Cosa misura il Tree Talker?

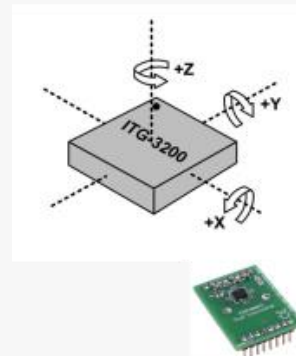
Stato fenologico e di salute



Accrescimento
del fusto



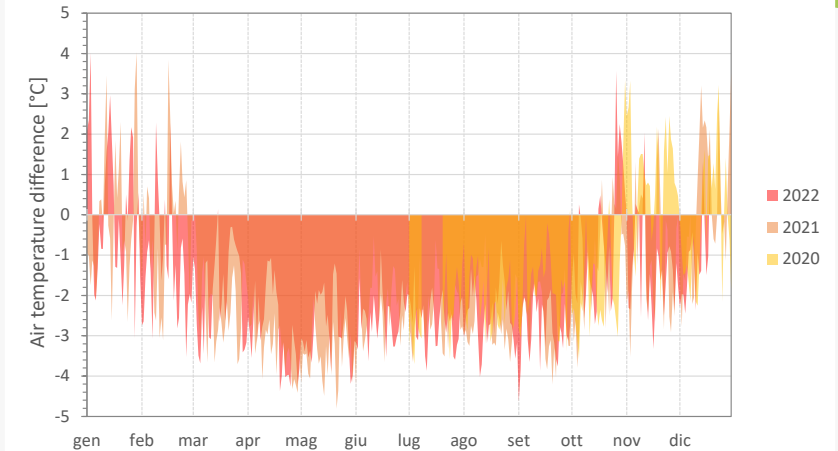
Stabilità albero



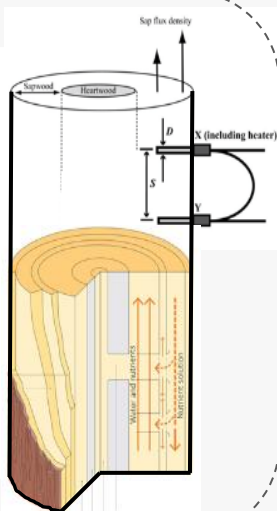
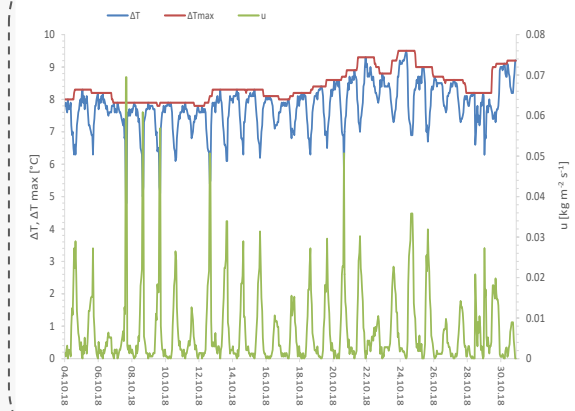
Misure dell'inclinazione e delle oscillazioni del fusto ($\pm 0.01^\circ$)



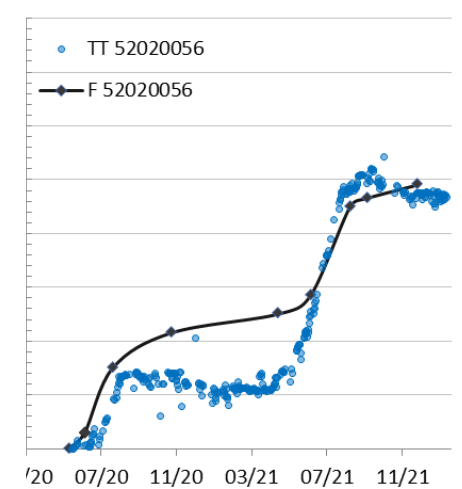
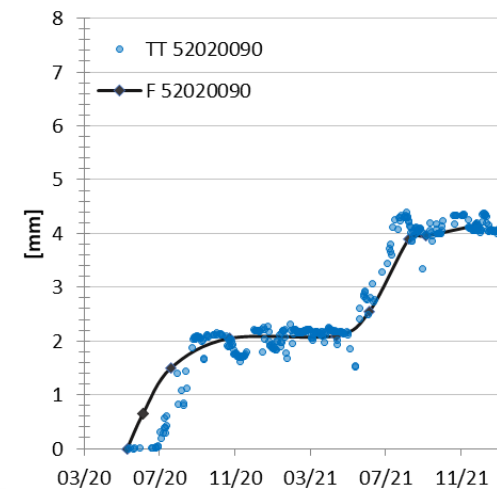
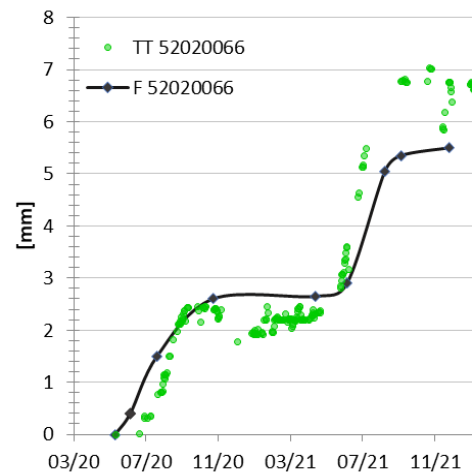
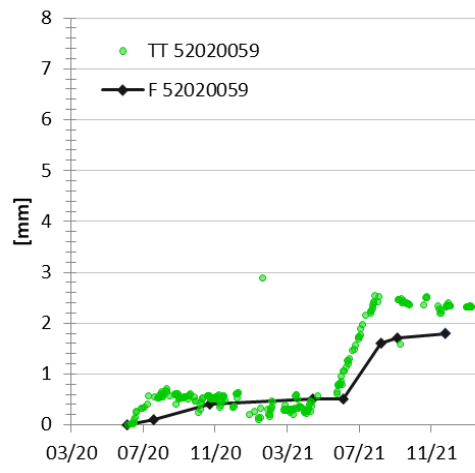
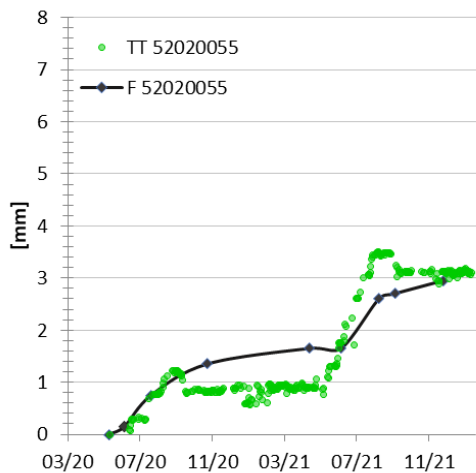
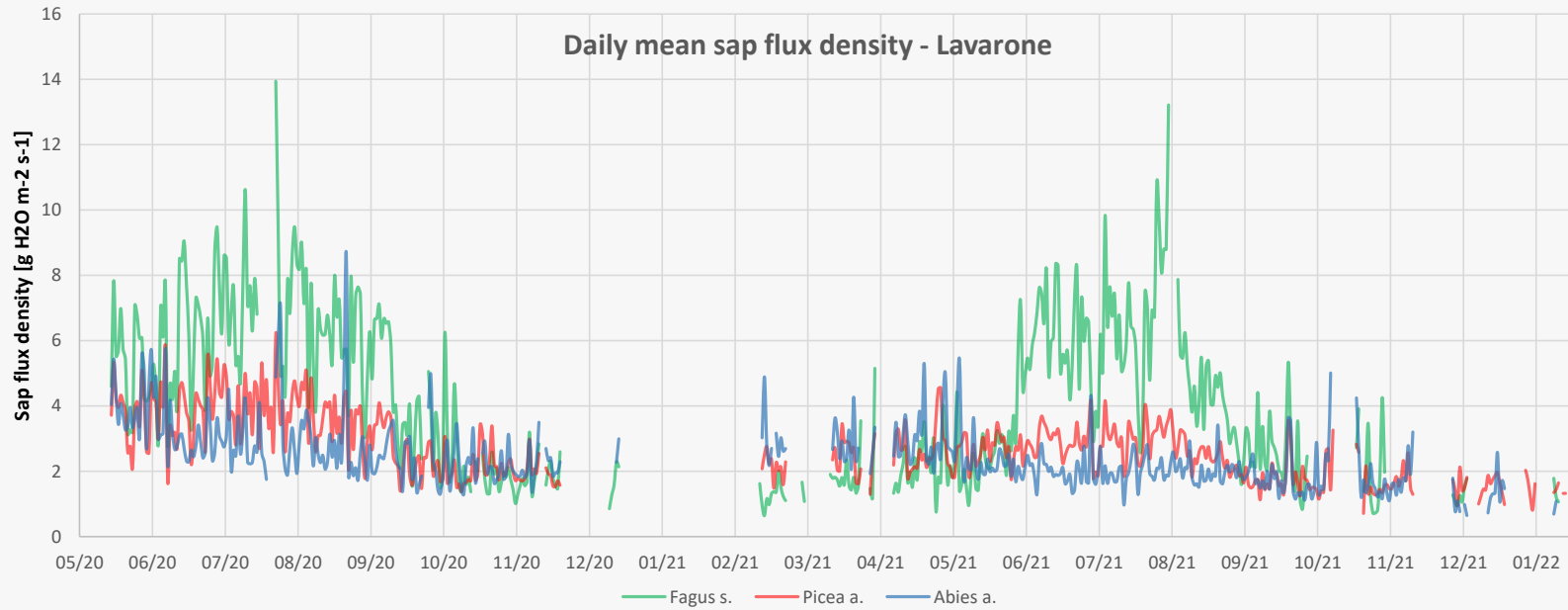
Microclima locale



Traspirazione

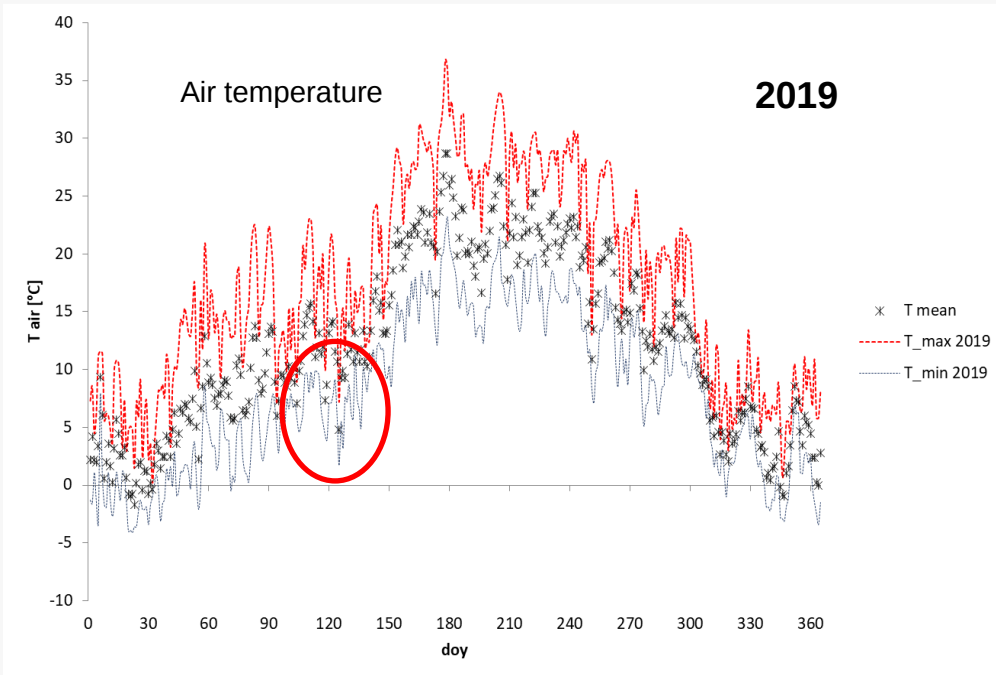


Come usare i dati



Gelata primaverile (gg 124-130)

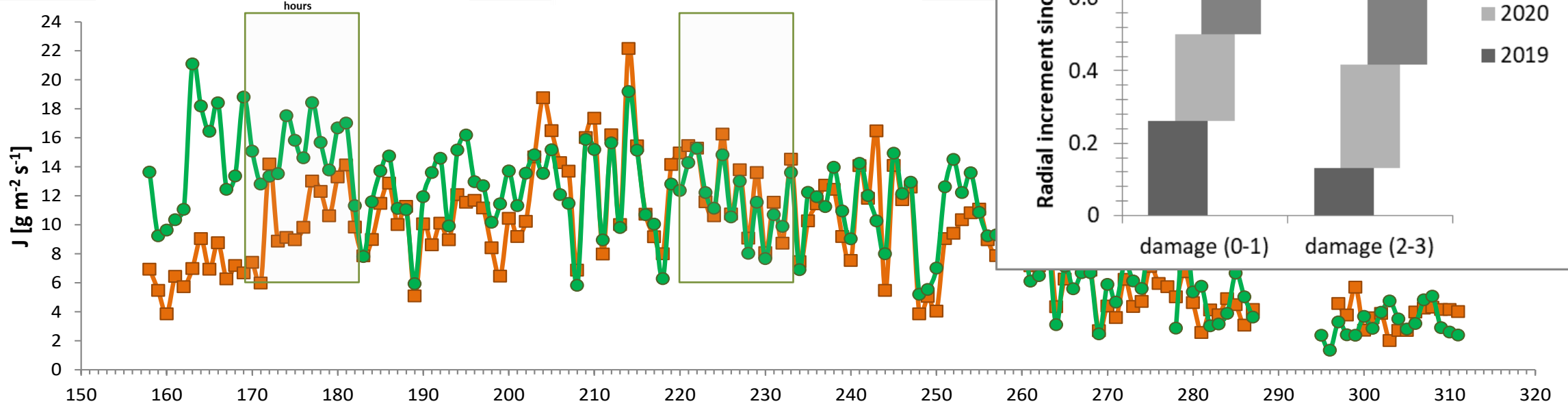
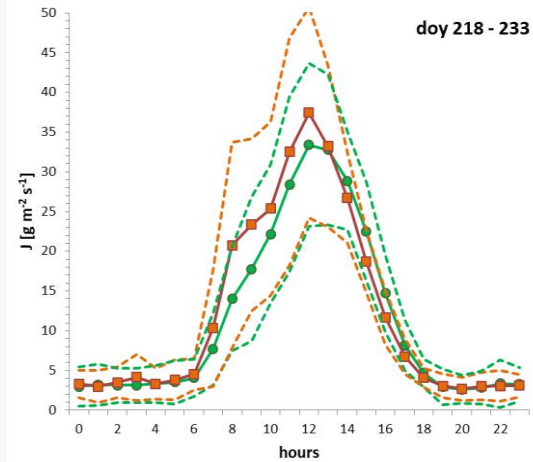
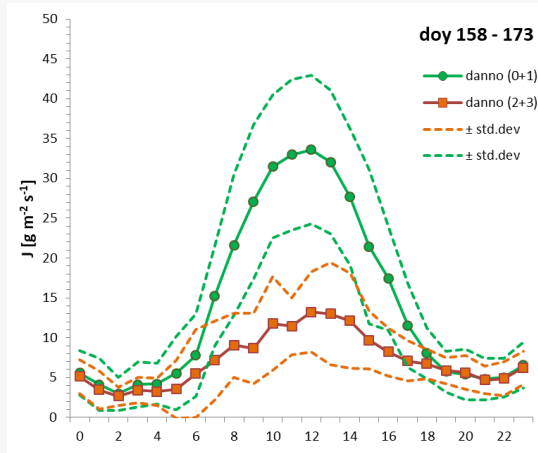
Data: Stazione meteo Cembra



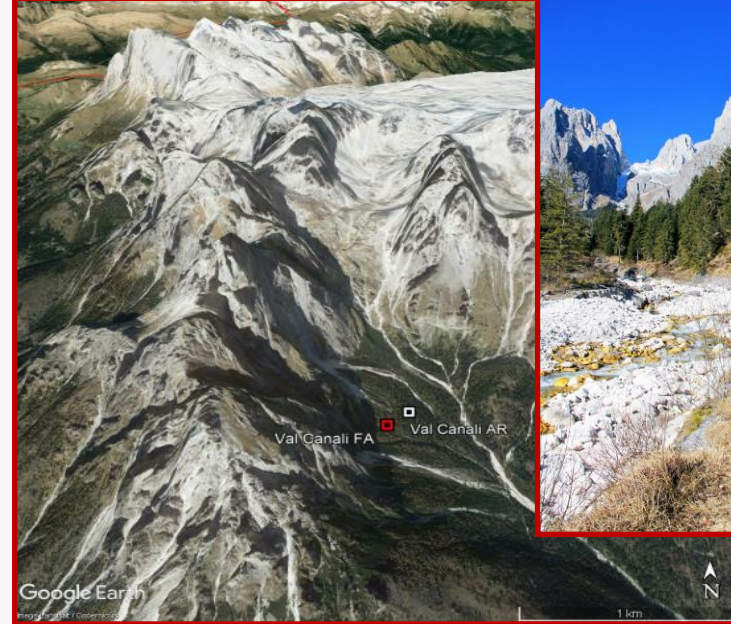
Danni al faggio con diversi gradi di severità (in funzione dello stato fenologico).
Danni a livello di piante da nullo a totale.



Traspirazione



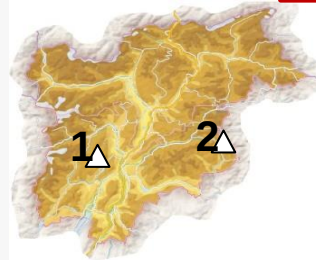
La rete Trentina



1. Molveno – Parco Naturale Adamello Brenta
(1410 -1420 m)

FA: Faggeta tipica a dentarie

AR: Abieteteto calcicolo con faggio

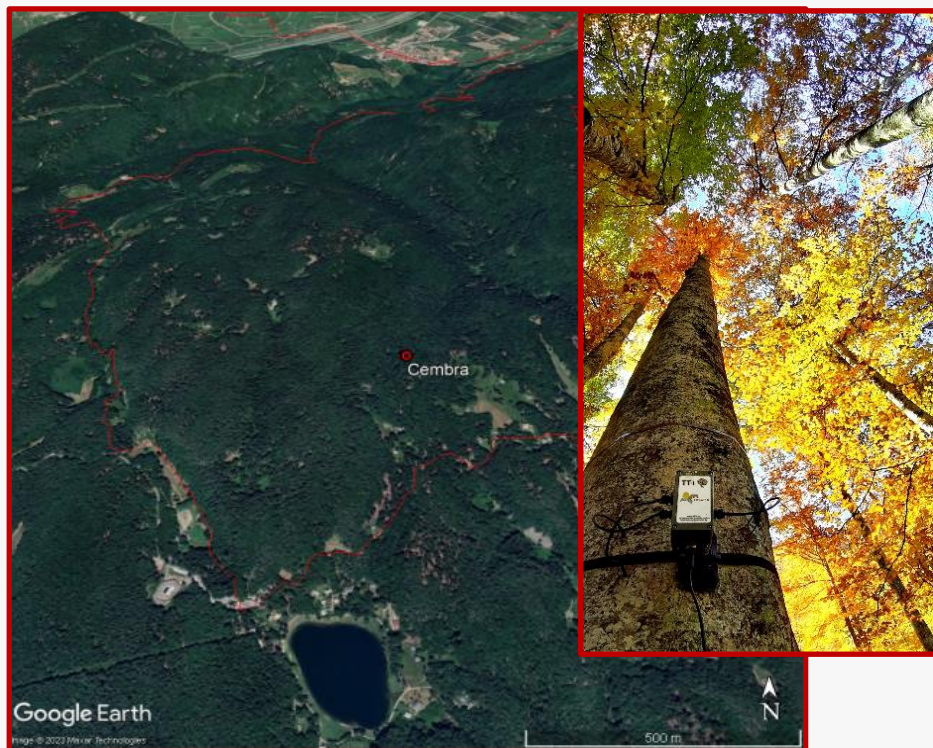


2. Val Canali – Parco di Paneveggio
Pale di San Martino
(1560-1590 m)

FA, AR : Pecceta altimontana xerica

TreeTalker: Picea abies (20) +
Fagus sylvatica (20). Installazione:
05/2020.

TreeTalker: Picea abies (20) + Fagus
sylvatica (20). Installazione: 07/2020.



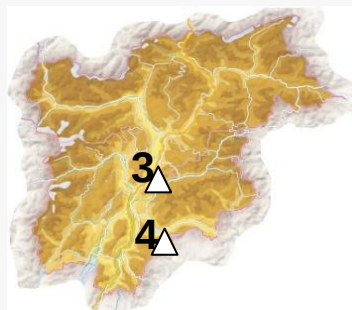
3. Cembra (1270 m)

Faggeta silicicola a luzula o
graminacee/ faggeta tipica a
dentario

TreeTalker: *Fagus sylvatica* (30)

Installazione: dal 06/2019

Sito Progetto ANAEE



4. Lavarone (1340 m)

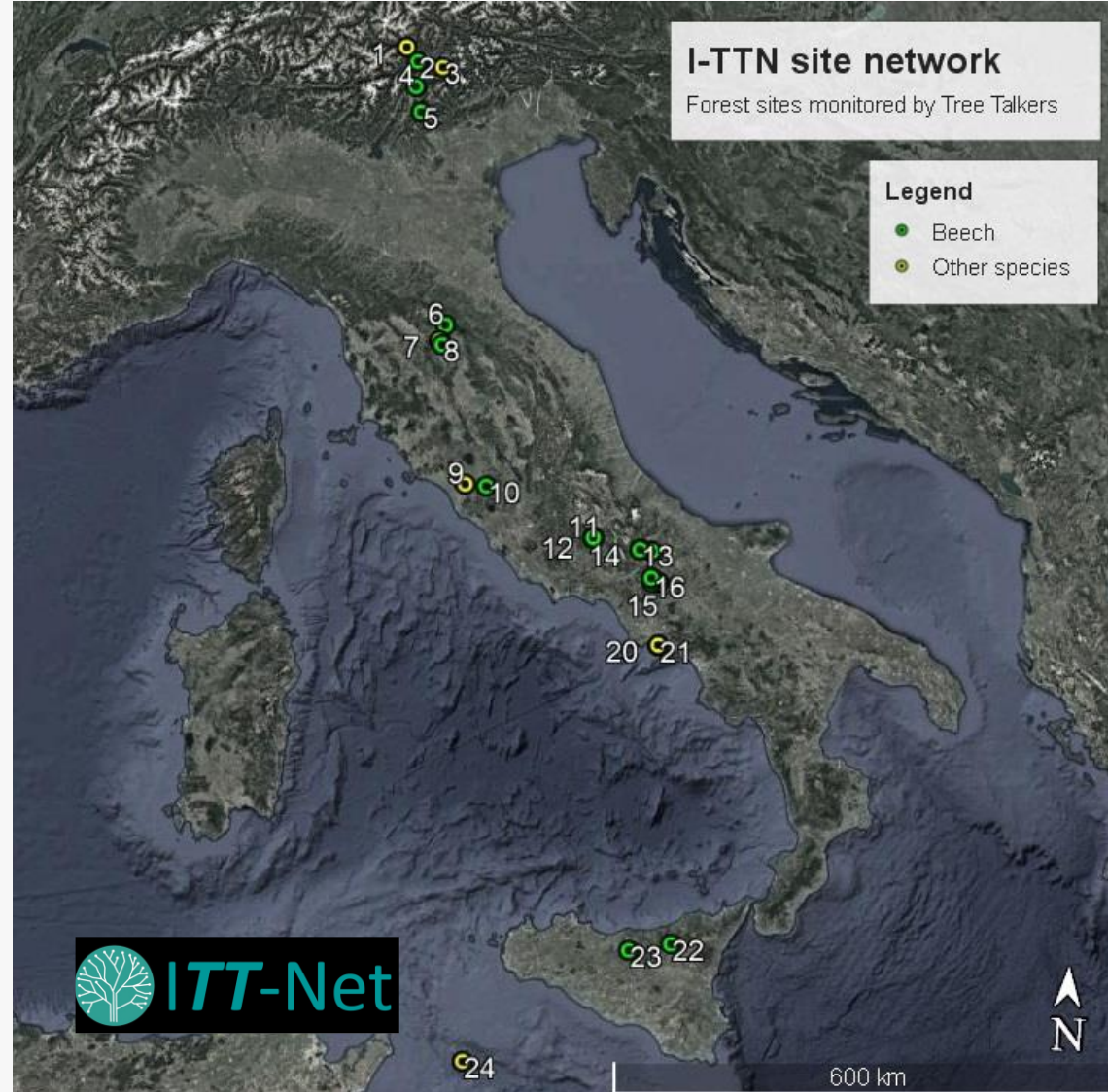
Abieteteto calciolo con faggio

TreeTalker: *Fagus sylvatica* (7),
Picea abies (9), *Abies alba* (9)

Installazione: 05/2020

Torre eddy covariance dal 2003

La rete nazionale

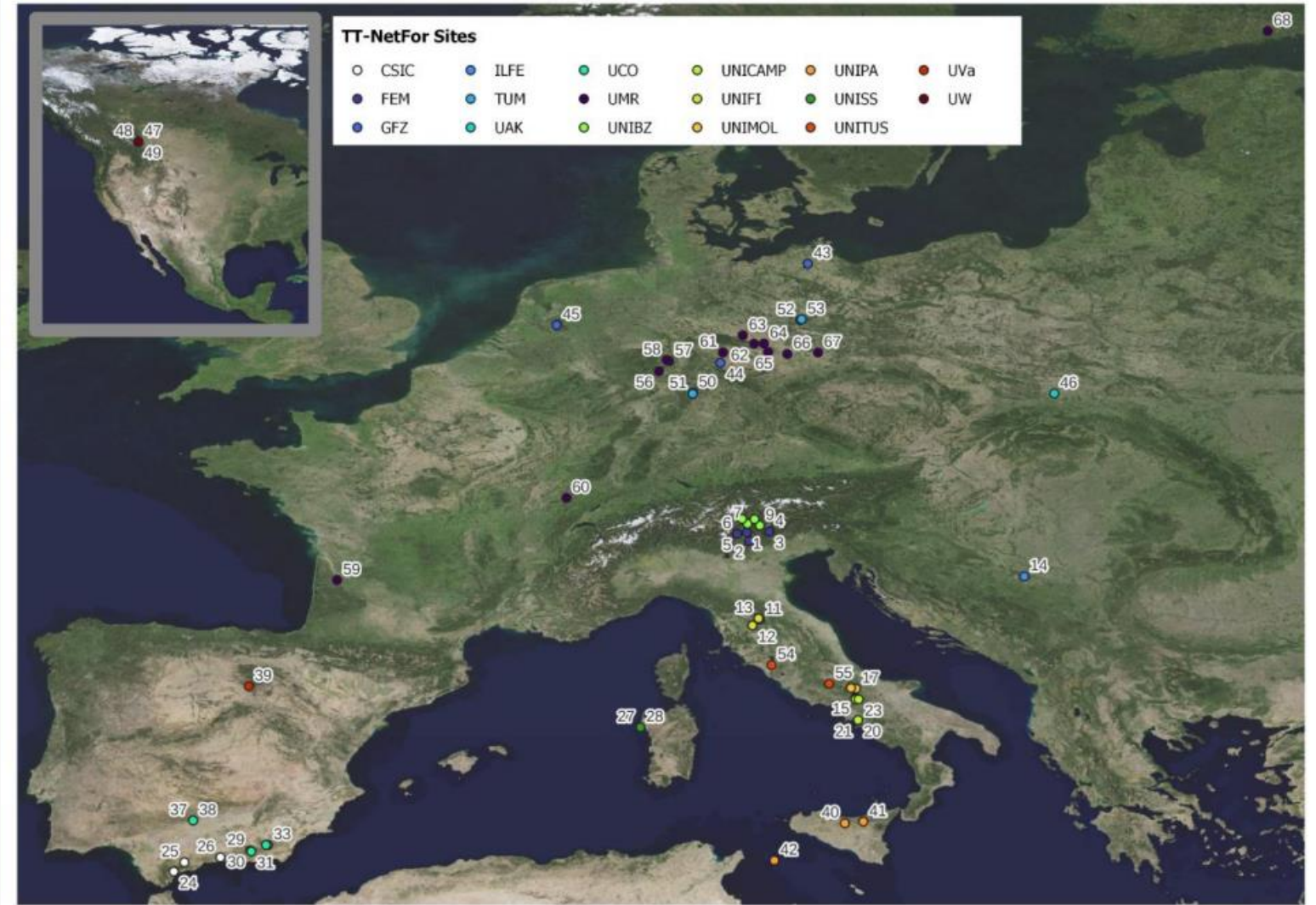


ID	Site	TT+ (n)	Fagus s. (%)
1	Val d'Ultimo	20	0
2	Mendola	19	100
3	Carezza	20	0
4	Cembra	30	100
5	Lavarone	25	28
6	Rincine	12	100
7	Vallombrosa	40	0
8	Sant'Antonio	40	100
9	Roccarespampani	30	0
10	Lago di Vico	10	100
11	Collelongo 1	15	100
12	Collelongo 2	15	100
13	Bosco Pennataro – (Martelloscopio)	20	20
14	Bosco Pennataro	20	35
15	Roccamandolfi 1	20	100
16	Roccamandolfi 2	20	100
17	Riserva di Collemeluccio	20	100
18	Matese Control (Falode)	10	100
19	Matese Stress (Campo Braca)	20	100
20	Vesuvio Burned	10	0
21	Vesuvio Control	10	0
22	Nebrodi	20	100
23	Madonie	23	78.3
24	Pantelleria	9	0
		468	59.2 (mean)

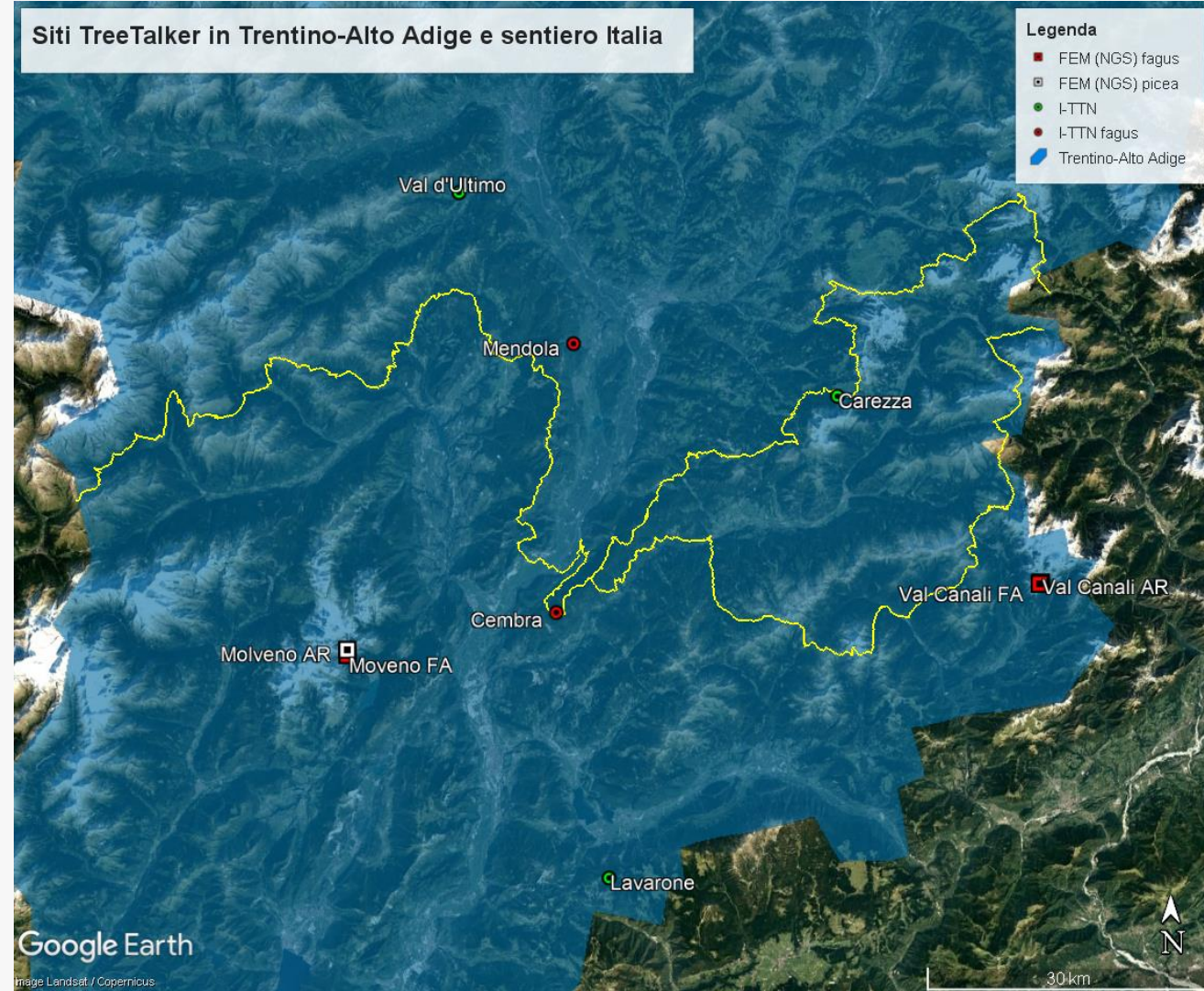
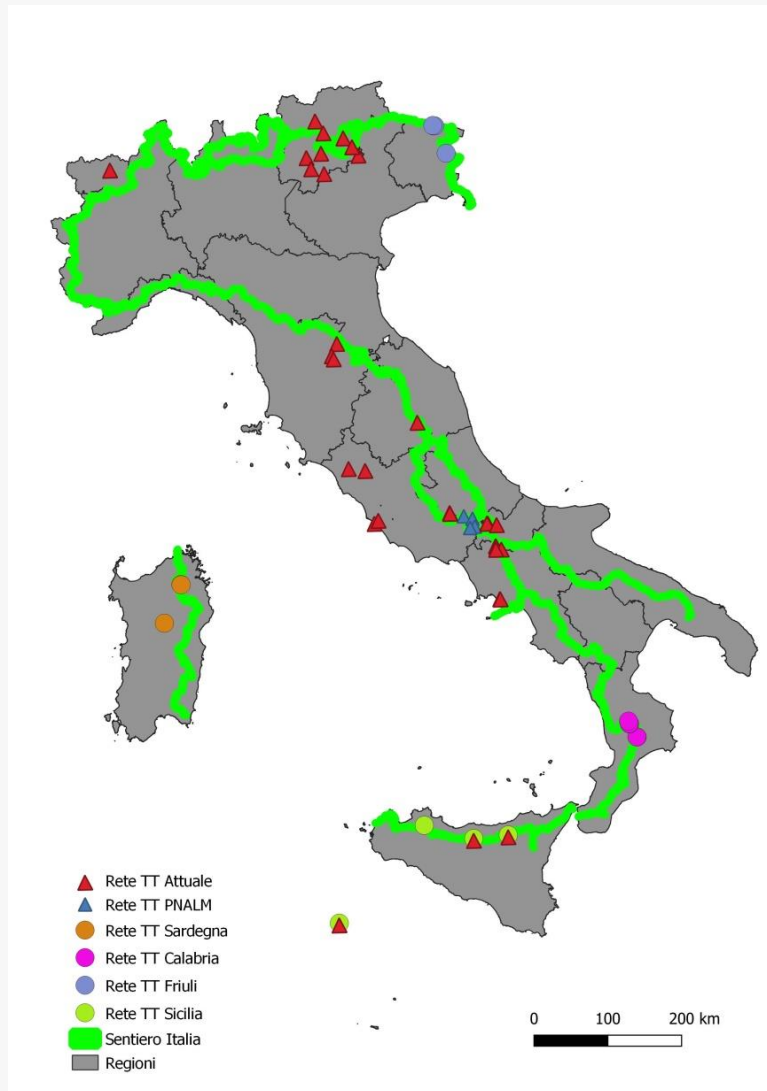
La rete internazionale

68 siti forestali con 1080 alberi monitorati (19 specie)

39 % faggio
21 % querce
10 % abete rosso
6 % pino silvestre
6 % pino marittimo
5 % pino nero



Sentiero Italia



Finanziamento: PNRR GEOSCIENCES (UNIMOL) Coordinamento: Marco Marchetti e Riccardo Valentini



In ogni regione Italiana

1 BOSCO NEOFORMAZIONE

1 BOSCO PRODUTTIVO

1 BOSCO “SENTINELLA” (TREELINE o in altri luoghi ecologicamente significativi)

Sistema campionari basato sui punti IUTI (INVENTARIO DELL'USO DELLE TERRE D'ITALIA)
classificati a foresta e con un buffer di 200 m dalla traccia del sentiero Italia

10 Università di Scienze Forestali

3 Centri di ricerca

