AI for Climate Sensitive Tree Growth Modelling and Maximum Carbon Segregation

Project duration: 36 months
Start: April 1st, 2022
Contact: refiz.duro@ait.ac.at

BFW. Bundesforschungszentrum für Wald

AIT AUSTRIAN INSTITUTE OF TECHNOLOGY TOMORROW TODAY

GeoVille

umweltdata

E.C.O. Institut für Ökologie

KNOW Center

Bundesministerium
Klimaschutz, Umwelt,
Energie, Mobilität,
Innovation und Technologie

FFG Forschung wirkt.

The developments described are carried out within the AI4Trees research project funded by the Austrian Research Promotion Agency (FFG) in the frame of the Research, Technology & Innovation (RTI) initiative “AI for Green”.

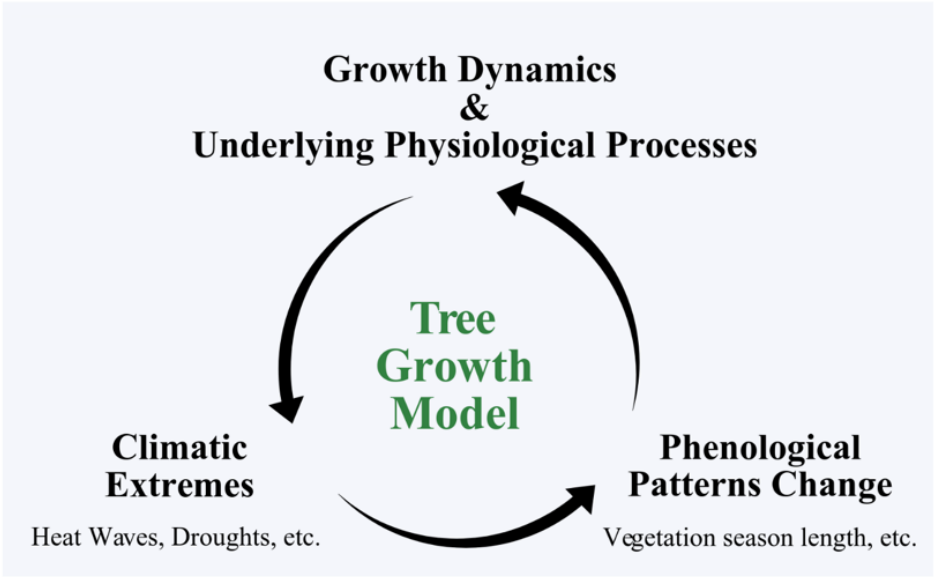
Project Goal:

Derivation of single tree growth models

that are sensitive to climate change, hazardous disturbance, and human intervention in forest ecosystems.

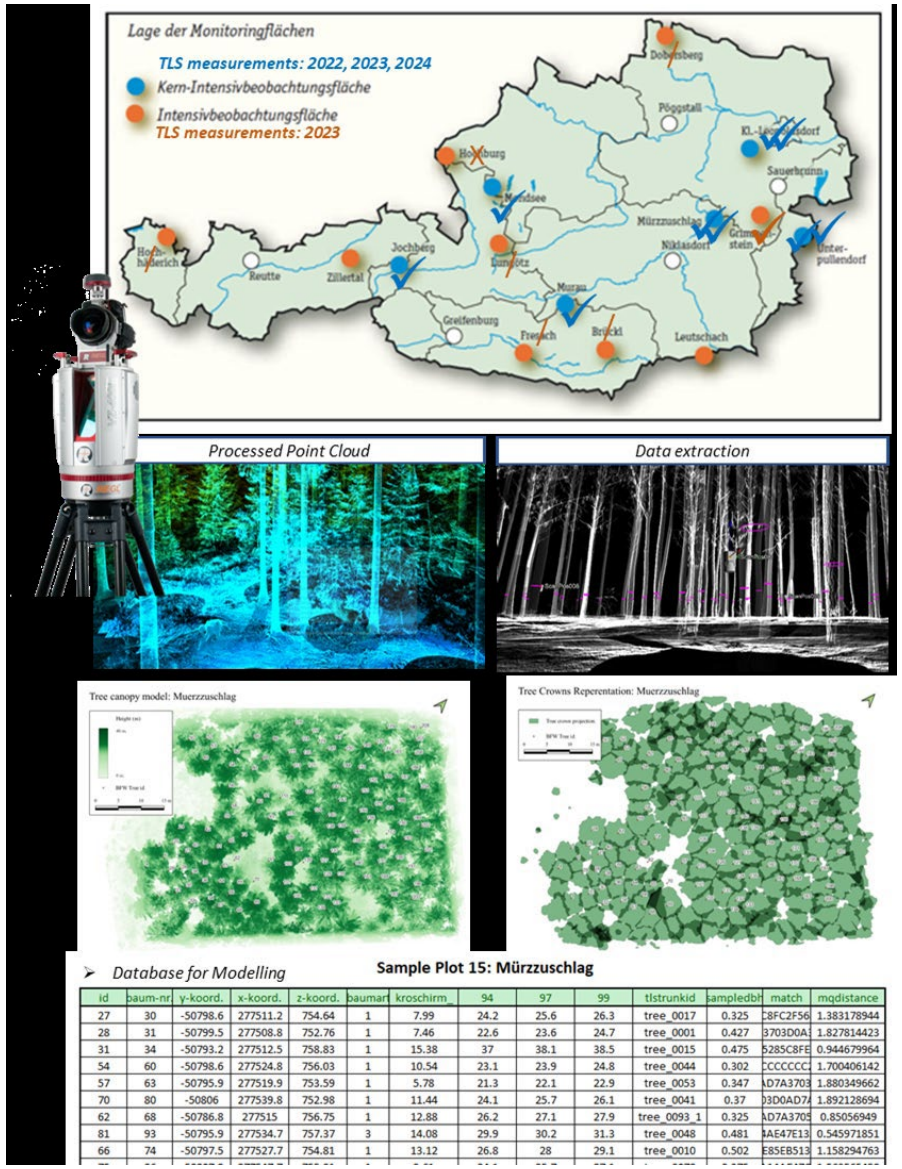
European Forests

Significant Carbon Sink **Mitigation of Climate Change & its Consequences**



Tree Growth

Tree Health **Carbon Sequestration**



➢ *Database for Modelling*

Sample Plot 15: Mürzzuschlag

id	baum-nr	y-koord.	x-koord.	z-koord.	baumart	kroschirm	94	97	99	tlstrunkid	sampledbh	match	mqdistance
27	30	-50798.6	277511.2	754.64	1	7.99	24.2	25.6	26.3	tree_0017	0.325	C8FC2F56	1.383178944
28	31	-50799.5	277508.8	752.76	1	7.46	22.6	23.6	24.7	tree_0001	0.427	3703D0A1	1.827814423
31	34	-50793.2	277512.5	758.83	1	15.38	37	38.1	38.5	tree_0015	0.475	5285C8FE	0.944679964
54	60	-50798.6	277524.8	756.03	1	10.54	23.1	23.9	24.8	tree_0044	0.302	CCCCCCC	1.700406142
57	63	-50795.9	277519.9	753.59	1	5.78	21.3	22.1	22.9	tree_0053	0.347	AD7A3703	1.880349662
70	80	-50806	277539.8	752.98	1	11.44	24.1	25.7	26.1	tree_0041	0.37	03D0AD7A	1.892128694
62	68	-50786.8	277515	756.75	1	12.88	26.2	27.1	27.9	tree_0093_1	0.325	AD7A3705	0.85056949
81	93	-50795.9	277534.7	757.37	3	14.08	29.9	30.2	31.3	tree_0048	0.481	AE47E13	0.545971851
66	74	-50797.5	277527.7	754.81	1	13.12	26.8	28	29.1	tree_0010	0.502	E85EB513	1.158294763

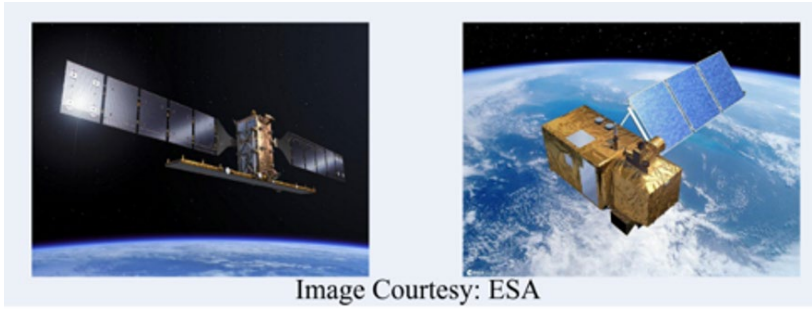
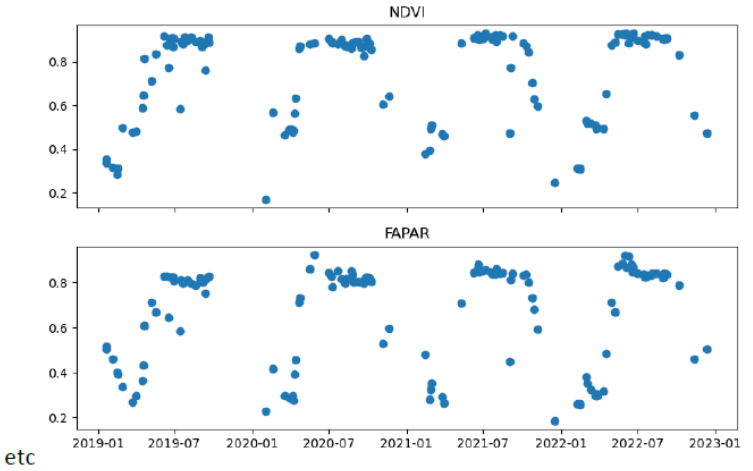
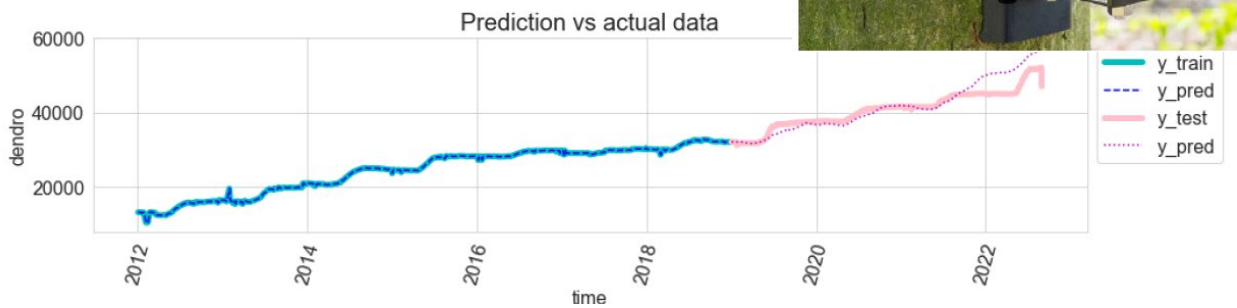


Image Courtesy: ESA



etc

Figure 3: Sentinel2 based LAI, NDVI and fAPAR time series plots of ICP Site Klausen



https://ai4trees-project.at

ABOUT CONSORTIUM BLOG RESULTS LEGAL CONTACT

AI for Climate Sensitive Tree Growth Modelling and Maximum Carbon Segregation

A research project funded in the framework of the "AI for Green" programme by the Federal Ministry for Climate Protection, Environment, Energy, Mobility, Innovation and Technology (BMK).

About | The Consortium

BACKGROUND
Climate change is significantly influencing

MAIN CHALLENGE
Lack of climate-sensitive single tree growth

PROJECT GOAL
Derivation of single tree growth models,

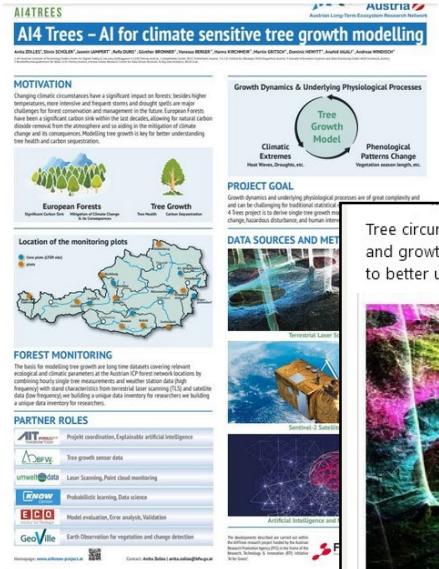
AI4Trees Super admin view

Analytics | To do list

Posted by Refiz Duro • 1/12/2023

AI4Trees
188 followers
3mo •

AI for climate sensitive tree growth modelling - AI4Trees presented by Anita Zolles at LTER-Austria Yearly Conference (LTER - Österreichische Gesellschaft für ökologische Langzeitforschung). Check the poster and download it f ...see more



19 | Like

Organic impressions: 455 Impressions

Tree circumference can be used to draw many conclusions about tree health and growth. In the course of the #AI4Trees project, researchers are now trying to better understand the natural processes behind this using artificia ...see more

Laserscanningtechnologien liefern Punktewolken, aus denen Kenngrößen im Bestand abgeleitet werden können. © BFW

AI4TREES

Natürliche Intelligenz künstlich verstehen

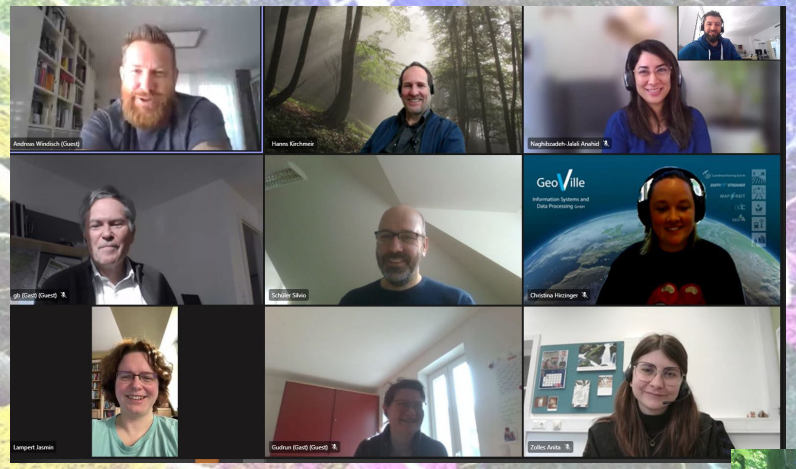
Ein Artikel von **Anita Zolles (BFW), Karl Gartner (BFW)** | 28.10.2022 - 12:12

Über den Baumumfang können vielerlei Rückschlüsse auf Baumgesundheit und Wachstum gemacht werden. Im Zuge des FFG-geförderten Projekts AI4Trees versuchen Forschende nun, mittels künstlicher Intelligenz die natürlichen Vorgänge dahinter besser zu verstehen. Ziel ist neben der Untersuchung von Extremereignissen auch die Identifikation wichtiger Monitoringparameter.

BFW Bundesforschungszentrum für Wald
umweltdata
E.C.O. Institut für Ökologie
AIT Austrian Institute of Technology TOMORROW TODAY
GeoVille
KNOW Center

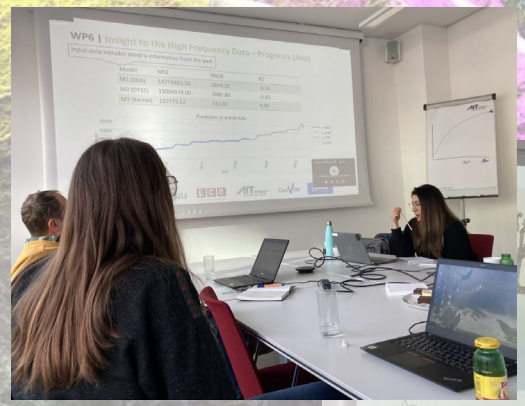
- (some) **Success points**:
  - Deep understanding of the topic (Climate Change – Trees – Forestry – etc.) – due to great cooperation and exchange among the domain experts and tech partners
  - Scientific progress on data collection and modelling
  - Active dissemination activities reaching out to scientific and general public

- (some) **Challenges:**
  - Data collection in certain cases can be affected due to the external factors (e.g., weather conditions)
  - Reevaluation of the project plan due to new findings in the course of the project



Thank You!

AI4TREES



Bundesministerium
Klimaschutz, Umwelt,
Energie, Mobilität,
Innovation und Technologie

FFG
Forschung wirkt.

The developments described are carried out within the AI4Trees research project funded by the Austrian Research Promotion Agency (FFG) in the frame of the Research, Technology & Innovation (RTI) initiative “AI for Green”.