ANKLIWA-DS

Work package 1

Bundesanstalt für Landwirtschaft und Ernährung

Development and implementation of adaptation strategies to climate change in forest management

Razvoj i primena strategija prilagođavanja klimatskim promenama u gazdovanju šumama

ANKLIWA-DS

WP1 members:

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unique land use

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Univerzitet u Beogradu Šumarski fakultet

Prof. Marc Hanewinkel

UNI FREIBURG

Goč, 2024/05/14

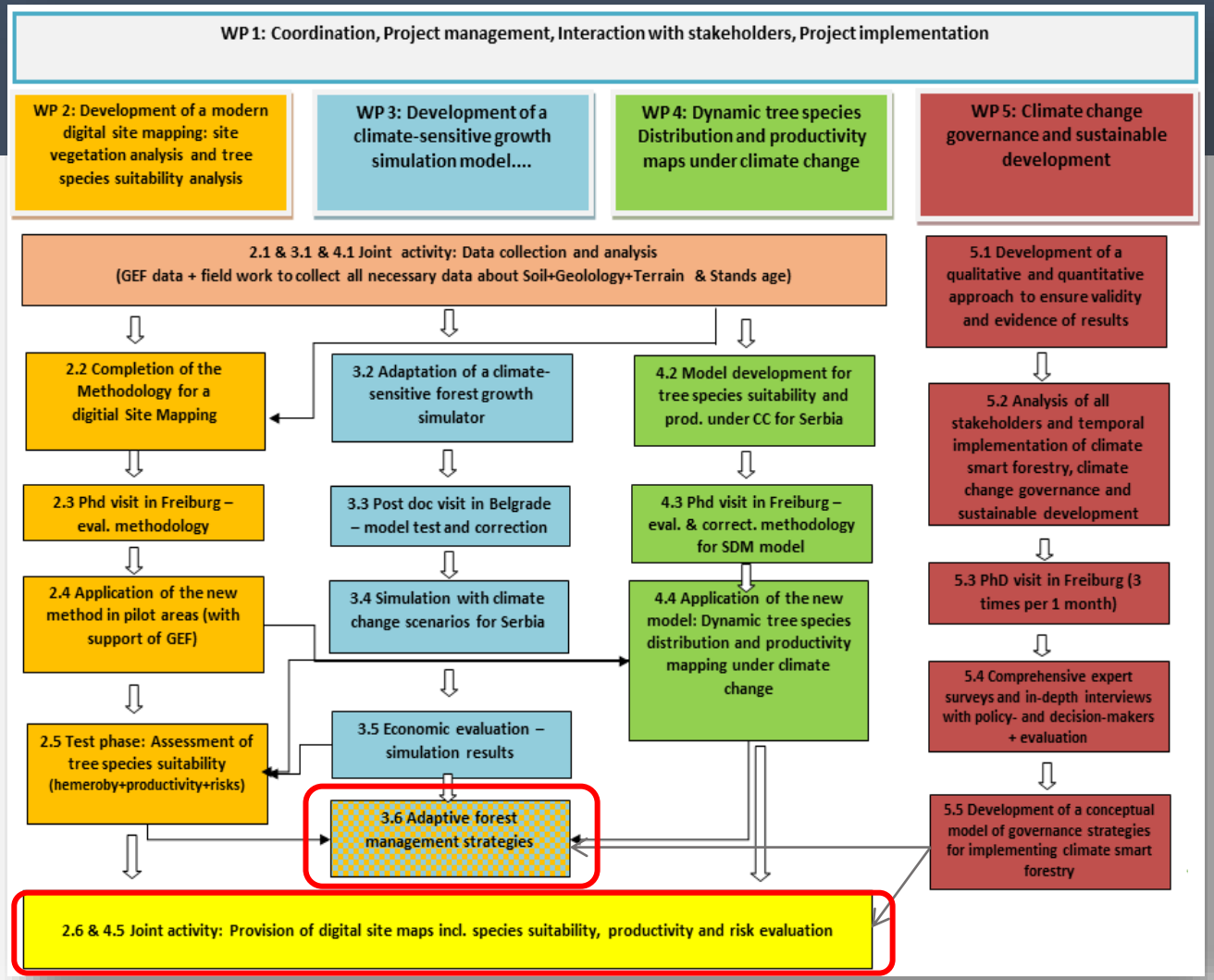
Content

01 Project Design

5 work packages:

- WP 1: Coordination, project management, interaction with stakeholders, project implementation support
- WP 2: Development of a modern **digital site mapping**, focusing on site vegetation analysis and tree species suitability analysis.
- WP 3: Development of a **climate-sensitive growth simulation model** with economic component for two main tree species in Serbia and forest treatment strategies as basis for the decision-making of forest management under climate change.
- WP 4: Dynamic **tree species distribution and productivity maps** under climate change
- WP 5: **Climate change governance** and sustainable development in Serbia

01 Project Design



01 Project Design – external support

Scientific institutions

Faculty of Physics, Uni Belgrade
- Knowledge transfer
- Climate data

Faculty of Civil Engineering, Uni Belgrade
- Climate data

Forest Research Institute of Baden-Württemberg
- Knowledge transfer

Praxis

Srbijašume
- Data provider

Vojvodinašume
- Data provider

Ministry DoF
- Communication logistics

01 Project Design – beneficiaries and main stakeholders

- Forest sector of Serbia
- Forest management institutions of Serbia
- Private forest owners

- Main stakeholders involved:

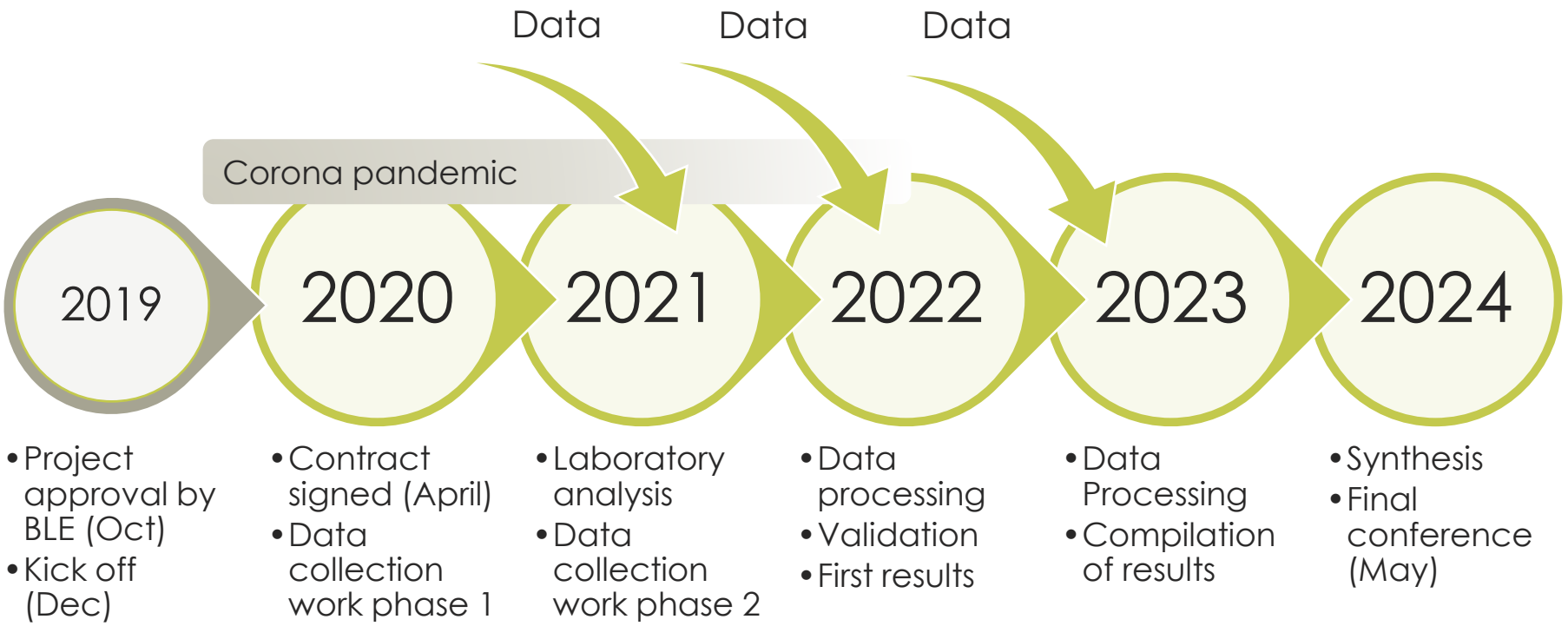
Србијашуме

VOJVODINAŠUME

ТАРА
НАЦИОНАЛНИ ПАРК

Министарство пољопривреде,
шумарства и водопривреде

01 Project implementation – temporal scale



02 WP1 objectives

WP 1 should not be seen as a separate, stand-alone work package, but as an cross-cutting, integral part of all other WPs of the project.

The objective of WP1 is

- to **ensure a smooth project** flow through enabling environment of **effective cooperation** and
- providing the methods for measuring, reporting and **steering of the core processes** of the project.
- The main activity will be the **overall coordination** of project activities
- including **internal coordination among researchers** in the different WPs.

02 WP1 role and main tasks

Cooperation
- With partner projects (GEF SFM)
- Stakeholder relations

Project management
- Setup central projects structures
- Regular reporting

Technical Support
- Basic data compilation and preprocessing

Coordination
- Across all WP
  - Project workshops
  - Board of Scientific experts
  - Joint activities

03 WP1 activities – project coordination

- **Collaboration tools**: Nextcloud server
- **Central GIS project**: to integrate all secondary data and inform about interim results
- **Regular Project Meetings**: 2 per year, outside of Corona-period alternating in Belgrade and Freiburg – connected with field trips
- **Scientific conferences**: coordination and organization of contributions to several conferences prepared
- **Study visits in Freiburg** for PhD students from Belgrade: 1 visit per PhD, but with several delays
- **Technical workshops** focused on research topics between WPs: Mostly online, 6-8 times a year
- **Project website**: draft version activated May 2022

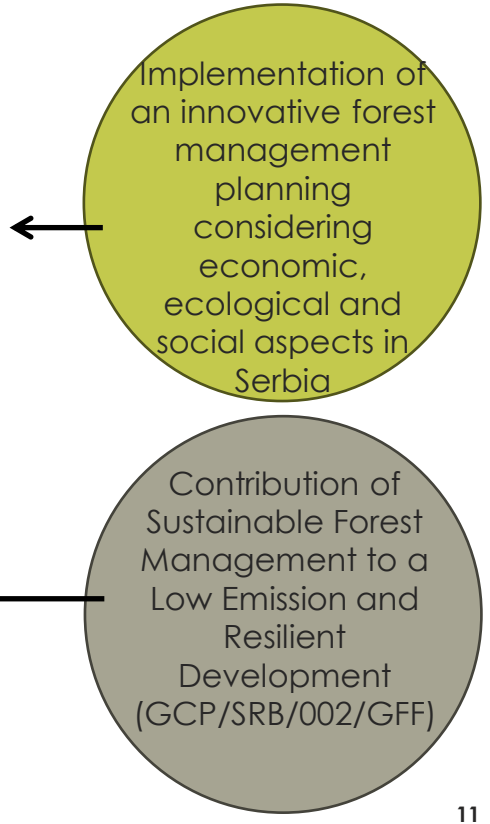
03 WP1 activities – cooperation with partner projects

1. Using results from predecessor **BMEL** project

    1. Concepts and data recognized for use in Ankliwa (Management guidelines for pedunculate oak and beech as results of BMEL project for climate-forestry simulation)

2. Cooperation with **GEF** project

    1. Arrangement of an intensive cooperation regarding pilot studies in connection with pilot FMP projects
    2. Agreement achieved between project coordinators to start NFI2 as priority data sampling within Ankliwa pilot regions (West Serbia and Vojvodina)



03 WP1 activities - stakeholder workshops

Stakeholder workshops were planned to regularly inform about the project status and to receive feedback and needs from the praxis.

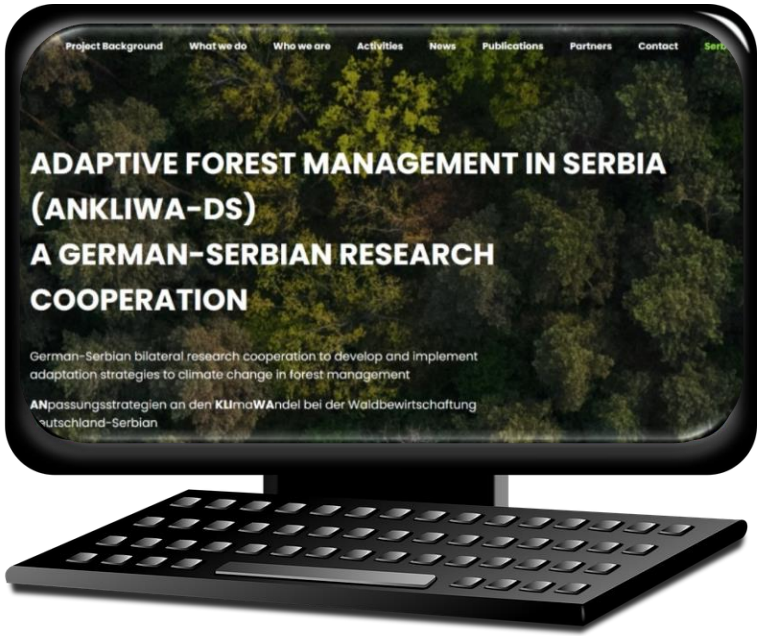
Meetings held:

- 16-20 Nov 2020 – separate meetings with DoF, VŠ and SŠ
- 20-22 Dec 2021 - Goč
- 23 Dec 2023 – Goč
- 21 March 2024 - Karakuša
- 14 May 2024 – Goč – final conference

03 WP1 activities – project coordination

Establishing a project website

Weblink: https://ankliwa.sfb.bg.ac.rs/



03 WP1 activities – project coordination

Presence on international scientific conferences

<u>Participated</u>

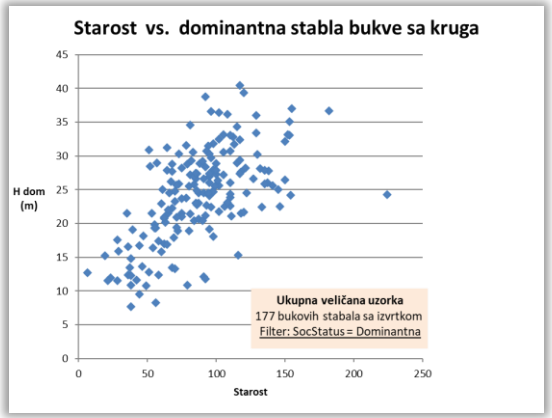
- Conference on Risk Analysis (IUFRO) - Nancy, France (31 May – 2 June, 2022)
- EFI Annual Conference - Novi Sad, Serbia (20-21 Sep 2023)
- Climate changes' impact on management and activities in protected areas: managers' and stakeholders' attitudes" - Skopje, Severna Makedonija (15-16 Jun 2022)

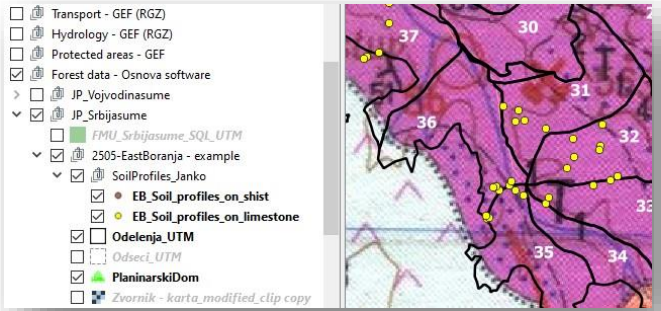
<u>In perspective</u>

- IUFRO World Congress - Stockholm, Sweden (23-29 June 2024)

03 WP1 activities – technical support

- WP1 team had solid overview on the existing relevant datasets and relevant institutions from the previous BMEL funded projects, which were interconnected with the fields of our research.
- WP1 supported the retrieval of available data sets necessary for work within the WP2, WP3 & WP4.
- Supported the collection, checks and preparation of the spatial databases





03 WP1 activities – technical support

Pilot region	Period	#	Task description	Data sources
Beech pilot region	2020-2022	2.1.	FMP inventories - data collection and compilation for beech	PE Srbijasume
	2021-2022	2.2.	NFI2 inventories – data for beech (raw dataset)	GEF/FAO project
	2021-2023	2.3.	Climate data for beech (interpolation from local weather stations in combination with downscaling of the E-OBS)	Faculty for civil engineering, Belgrade
			Climate change scenarios	Faculty for civil engineering, Belgrade + Serbia NAP portal
			Extract climate data for Gotilwa+ (test location, Tara) (WP3)	Local weather stations data (Zlatibor mnt)
			Preparation of a longer climate data time series (1x1km) – grid format (WP3) (in future near 1961-1990)	CE Faculty
	2022-2023	2.4.	Compilation of forestry dataset for Gotilwa+ (Tara sample areas) (WP3)	OsnovaNET + WP4
	2023	2.5.	Site mapping info cross check (geology, soil) (WP2)	OsnovaNET
	2023	2.6.	Geology raster tiles collection (WP2,3,4)	Geol ISS
			Geology map digitalization (WP2,3,4)	Geol ISS
Pedunculate oak pilot region	2020-2022	1.1.	FMP inventories - data collection and compilation for pedunculate oak	PE Vojvodinasume
	2021	1.2.	Height growth curves for site index classes	Faculty of Mathematics, Belgrade
	2021-2022	1.3.	Climate data for pedunculate oak (E-OBS) + Climate change scenarios	Delivered to researchers
	2022	1.4.	Productivity classes defined based on sample plot datasets from FMP inventories	WP4
	2022-2023	1.5.	Collection of harvesting records (WP3)	PE Vojvodinasume
	2022-2023	1.6.	Collection of piezometer dataset for ground water level mapping (WP2)	PE Vojvodinasume
			Piezometer data interpolation over three FMUs	PE Vojvodinasume
			Piezometer data kriging process over the pilot region (WP2)	Faculty of Forestry
	2022	1.7.	HR DTM (LiDAR dataset) for Srem	PE Vojvodinasume
	2023	1.8.	Compile inventory data for economic modeling (WP3)	PE Vojvodinasume

03 WP1 activities – technical support

Example: Sample plot data compilation for West Serbia

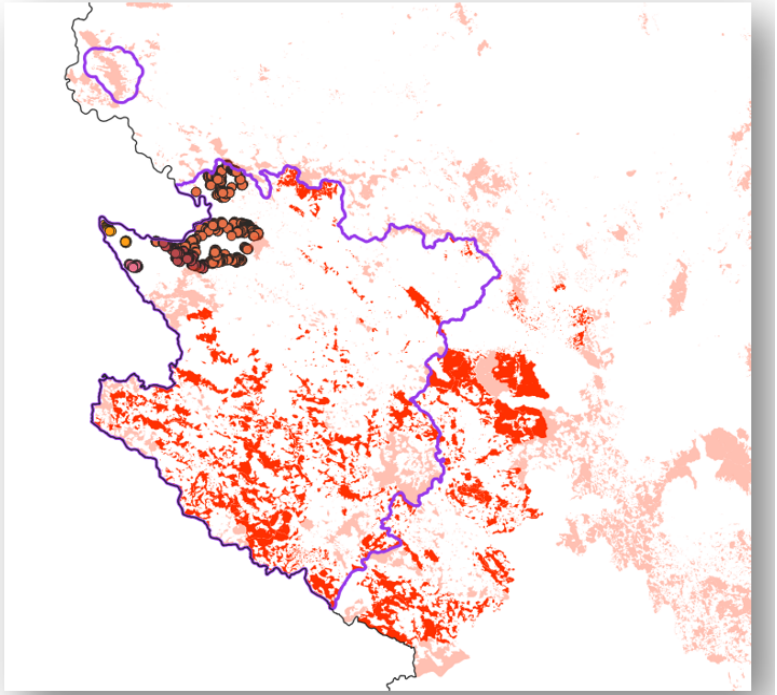
Agreement on data share reached after stakeholder meeting at Goc forestry training center (Dec 2021)

Source: Forest estates (FE)

FEs	FAUs	FMUs	Geometries received (FMUs)	DBs received (FMUs)	Geom-DB link created (FMUs)
5+1	18	124	89	94	80

N of SPs	N of trees per SP (assumption)	Potential N of trees (all species)	Potential N of trees (beech, 1/4)
102,141	12	1,225,692	306,423

N of FMUs within Ankliwa pilot areas → 48



03 WP1 activities – technical support

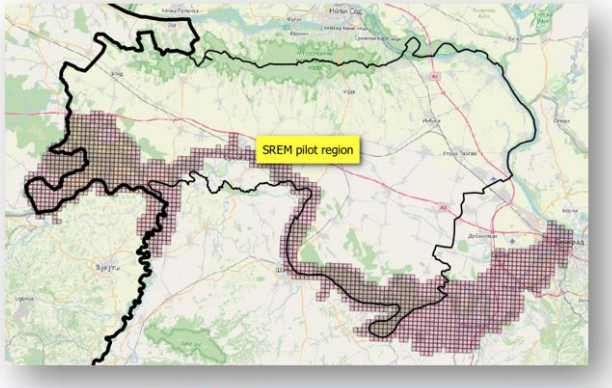
Example: DTM from LiDAR data set (Oak pilot region)

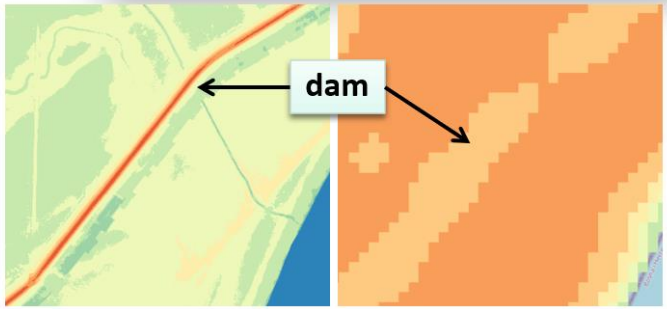
Received from: PE Vojvodinašume

Scan date: February 2018

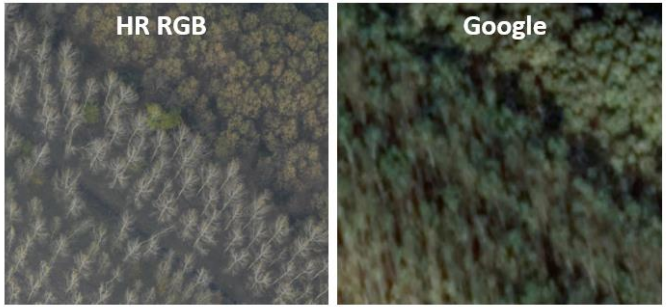
Area covered: Along Sava River (135,351ha)

- Point cloud (≈10-15 points/m2)
  - First return (canopy)
  - Bear earth
- HR images (1671 tiles, 900x900m)
  - DTM (pixel size 0.5x0.5m)
  - RGB (pixel size 15x15cm)





LiDAR DTM SRTM DEM

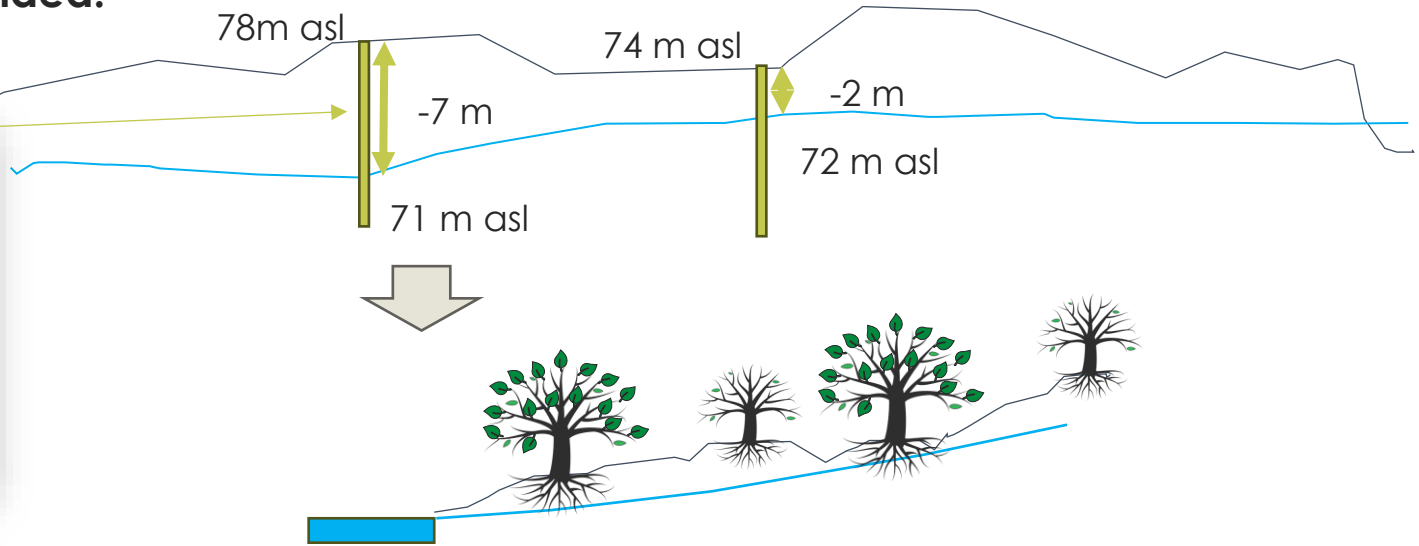


03 WP1 activities – technical support

Example: Ground water level mapping

via piezometer data analysis – process run by Prof. Vesna Nikolic, Chair of Amelioration, Faculty of Forestry, UNI Belgrade

Concept idea:



03 WP1 activities - stakeholder feedback

Feedback from the stakeholder meetings => recommendations and needs for future reserach

- We need clear inputs from the research how to manage forest in the future under climate change
- What can grow on which site in the future and what we could expect in terms adaptation measures to achieve forest managements goals (dynamic site mapping)
- We need to be included in project preparation and implementation part in order to steer project results
- Project should consider a knowledge transfer to praxis
- Focus on other tree species (Fir, Tilia, Pine, Douglas fir etc.)
- Tree species as possible substitution for beech
- Groundwater research as instrument for proper forest management in alluvial forests and pedunculate oak forests in the future

Thank you for your attention!

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Ankliwa-DS project

Project webpage
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