EU LIFE PROGNOSES – Data Management Plan

DMP Creator: Vandekerkhove, Kris (orcid.org/0000-0003-1954-692X ; kris.vandekerkhove@inbo.be)

DMP contributors: Margot Vanhellemont, Ruth Vanhaecht, Peter Meyer (Northwest German Forest Research Institute), Pierre L. Ibisch (Centre for Econics and Ecosystem Management at Eberswalde University for Sustainable Development) Manuela Hirschmugl (Joanneum Research)

DMP data steward: Emily Veltjen

Affiliation: Research Institute for Nature and Forest

DMP description: This DMP was written at the end of the project to outline the most important data products and their final storage locations. Version 1 (2025-03-28).

DMP language: English



Kellerwald, Germany (photo: Kris Vandekerkhove)

Project background information

Project title: LIFE PROGNOSES: PRotection of old-growth Forests in Europe: Natural heritage, Outline, Synthesis and Ecosystem Services (Strengthening primary and old-growth forest protection in Europe by capitalising on World Heritage sites)

Funder: EU-LIFE preparatory project: LIFE20 PRE/BE/000011

Project Administrator: Caroline Celis – Sonian Foundation - ccelis@sonianfoundation.be

Start date: 01-01-2021

End date: 30-06-2025

Project abstract:

The project LIFE PROGNOSES aims to provide the European Commission with a sound scientific basis for better protection of old-growth beech forests in Europe. The project has three objectives:
1. a clear definition and consistent mapping methods for old-growth forests in Europe
2. quantifying the characteristics of old-growth forests in comparison with the regularly managed European forest:
- influence on the forest microclimate of forest management versus inaction
- carbon storage
- comparative analysis of structural elements and their role in biodiversity (occurrence of microhabitats, dead wood, etc.).
3. raise awareness of services provided by old-growth forests, at local, national and international level.

Especially for the goals under 2., a large set of field data is produced and processed. The results are to be published to the wider scientific community. As for the data itself (raw and processed), it is agreed to provide this data and results to the project partners during the projectc and to publish them after the project in a data repository.

The metadata is to be published open access (CC BY NC ND); the raw data will be published in a repository but with restricted access through the contact point and the PROGNOSES Data Custodian Board (PDCB), (see procedure at the end of the document).

Datasets are available on dendrometrics (living and dead trees), soil carbon, tree microhabitats (TReMs), recreation enquiries and microclimate. There are also separate datasets for the sites and the plots (coordinates, elevation, slope, soil type,...) as well as a datafile with calculated plot-level values for basal area and living and dead tree volumes. All datasets are accompanied by a metadata file explaining the abbreviations in the headings and the codes for categories.

Moreover, also GIS layers are deposited and described in this DMP. A polygon layer of the sites, a point layer with the sample plots and a raster layer with the results of the remote sensing (RS) exercise to identify primary and old-growth forests are available.

Project partners

BE, Sonian Forest Foundation (SOFO) – coordinator

AT, E.C.O. Institute of Ecology (ECO)

AT, Joanneum Research (JORE)

AT, Kalkalpen National Park (NPKA)

BE, INBO Research Institute Nature and Forest (INBO)

BG, Central Balkan National Park (NPCB)

CZ, Czech University of Life Sciences (CULS)

DE, City of Angermünde (CANG)

DE, Eberswalde University for Sustainable Development (EUSD; Centre for Econics and Ecosystem Management)

DE, Northwest German Forest Research Institute (NW-FVA)

IT, Abruzzo, Lazio and Molise National Park (NPAB)

IT, University of Tuscia (UNITUS)

SI, Ministry of the Environment and Spatial Planning (MESP)

SI, University of Ljubljana, Biotechnical Faculty (UL)

UA, Carpathian Biosphere Reserve (CBR)

Links to existing information/documentation on the project:

https://lifeprognoses.eu/

Project contact: Vandekerkhove, Kris (orcid: 0000-0003-1954-692X; kris.vandekerkhove@inbo.be)

Aim of the Data Management Plan

The data management plan for LIFE PROGNOSES describes the management of data used and produced in this project. This includes the identification and description using standards and metadata; storage and back-up archiving as well as options for sharing and publishing. For the latter, all restrictions and applicable licensing is also defined here.

We will use FAIR Principles : all compiled final datasets should be **F**indable, **A**ccessible, **I**nteroperable, **R**eusable.

We have two levels of access: 'open access' and 'restricted access'. The (re-)use of the related data is regulated through the following licences:

- **For the 'open access' data** : CC BY NC ND 4.0 (Creative Commons - Attribution-NonCommercial-NoDerivatives 4.0 International
    - You are free to: Share — copy and redistribute the material in any medium or format. The licensor cannot revoke these freedoms as long as you follow the license terms.
    - Under the following terms:
        - Attribution — You must give appropriate credit, provide a link to the license, and indicate if changes were made. You may do so in any reasonable manner, but not in any way that suggests the licensor endorses you or your use.
        - NonCommercial — You may not use the material for commercial purposes.
        - NoDerivatives — If you remix, transform, or build upon the material, you may not distribute the modified material (also known as remixes or derivative works). The ND licenses do allow you to reproduce the material in unmodified form together with other material in a collection.
        - No additional restrictions — You may not apply legal terms or technological measures that legally restrict others from doing anything the license permits.

- **For the 'restricted access' data** : Zenodo Access and reuse - Restricted Access: Zenodo Access and reuse guidelines state : "Users may deposit restricted files with the ability to share access with others if certain requirements are met. These files will not be made publicly available and sharing will be made possible only by the approval of depositor of the original file."

Origin of the data

Dendrometric and TReM Data were generated within the project PROGNOSES unless otherwise specified below

- datasets (dendrometrics and TReMs) from UHOLKA NP (Ukraine) was kindly provided for use by WSL (CH) – contact person Jonas Stillhard – The fieldwork was performed by WSL and CBR in the framework of the Cooperation Project with Ukrainian Forest Research Institutions, financed by the Swiss State Secretariat for Education, Research and Innovation (SERI).
- datasets (dendrometrics and TReMs) from KELLERWALD and HAINICH NP (Germany) were kindly provided for use by NW-FVA (DE) – contact person: Peter Meyer – The fieldwork was performed either by the NP services or by contractors on behalf of the NP.
- datasets (dendrometrics and TReMs) from KLENOVSKY VEPOR (Slovakia) and STARA PLANINA (Bulgaria) originate from the REMOTE dataset of the University of Life Sciences in Prague, (CZ) - contact person: Miroslav Svoboda.
- datasets (dendrometics and TReMs) from SINCA FOREST: own datasets sampled and provided by Catalin Petritan (Univ. of Brasov) and Any Mary Petritan National Institute for Research-Development in Forestry "Marin Drăcea", RO (Contact person: Any Mary Petritan)
- data from sample plots in the Forest Reserve Joseph Zwaenepoel (Unesco Component part in SONIAN FOREST) were collected during the strict reserve monitoring programme of INBO in 2020, but were further extended within the PROGNOSES project with additional TReM-data and additional measurements of plots in the buffer zone and of the Unesco-component - Contact person: Kris Vandekerkhove (INBO)

PROGNOSES Dendrometric Fieldwork performed by :

- SONIAN FOREST: Peter Van de Kerckhove, Marc Esprit, Stefaan Goessens (INBO) – coordination and contact: Kris Vandekerkhove
- ABRUZZO NP: Alfredo Di Filippo, Luca Di Fiore, Andrea Caggegi, Simone Priori (UNITUS and Abruzzo NP service) – coordination and contact: Alfredo Di Filippo
- KALKALPEN NP: Barbara Brandstätter, Siegrun Ertl, Christian Fuxjäger, Julian Janisch, Simone Mayrhofer, Valentin Rakos, Josef Schürhagel, Marlon Schwienbacher, Nina Maria Weber,Maximilian Wögerer, Thomas Zimmermann
- – coordination and contact: Antonia Zichy (NPKA)
- KROKAR and SNEŽNIK: Gal Fidej, Blaz Fricelj, Tim Pirc - coordination and contact: Tom Nagel (Univ. Ljubljana)
- CENTRAL BALKAN NP: Yanitsa Ivanova, Sergej Aleksandrov (NPCB) - coordination and contact: Yanitsa Ivanova

SOIL Carbon data was collected for the four sites listed below in the framework of PROGNOSES.

Soil sampling (including organic layer) was performed by the field teams of SONIAN FOREST (Jonathan De Schrijver, Peter Van de Kerckhove, Marc Esprit and Stefaan Goessens), KALKALPEN NP (see: dendrometric Fieldwork), ABRUZZO NP (Simone Priori, Andrea Caggegi, Alfredo Di Filippo) and KELLERWALD NP (Andreas Henkel, Achim Frede, Julian Wellhäuser)

All soil samples were sent to the soil lab at INBO. Soil sample preparation for analysis (grinding, sieving,...) was done by Jonathan De Schrijver (INBO); analysis was performed by the analytical lab of INBO (coordinator: Els Mencke). Calculations of carbon stock were performed by Alfredo Di Filippo (Univ. of Tuscia). For details on sampling and analysis, see below at the respective datasets.

GIS layers

- GIS polygon map: compilation of existing GIS layers for the 9 sites was done by Hanns Kirchmeir (E.C.O.), collected and provided by the different project partners and site managers of the sites. Included sites are: Krokar (SI), Sneznik (SI), Sonian Forest (BE), Kellerwald (DE), Hainich (DE), Kalkalpen (AT) Abruzzo (IT), Central Balkan (BU) and Uholka (UA).
- GIS plot location map: compiled by Manuela Hirschmugl (Joanneum Research - AT) based on coordinates provided by the project partners.
- GIS mapping of Oldgrowthness for four test sites: generated by Joanneum Research, using field data provided by the project partners and available RS datasets (LiDAR; Sentinel-2). The LiDAR data were freely available (in case of Sonian Forest) or were provided by Joanneum Research (in case of Kalkalpen)..
- Microclimate study : plot location layer and Canopy temperature map produced and published on zenodo by Jeanette Blumröder (EUSD)

Data information.

Below, an overview of all datafiles generated in LIFE PROGNOSES is given with their accessibility restrictions.

1. Site and Plot data

1.1. Site data

Dataset title: PROGNOSES_sites_data.csv

Dataset description: CSV with description of the sample sites (n = 12) with overview of the sampling methodology, thresholds, etc.

Additional metadata file (csv) containing the explanation of the variables and categorical values in the datafile: PROGNOSES_sites_metadata.csv

Data origin: All data generated during the PROGNOSES project.

Data compilator/generator: Margot Vanhellemont (INBO) https://orcid.org/0009-0001-6045-8342

Contact for the dataset: Margot Vanhellemont (INBO) https://orcid.org/0009-0001-6045-8342

Link(s) to existing information/documentation on the dataset(s):

- Kirchmeir, H., Vandekerkhove, K., Di Filippo, A., Priori, S., Di Fiore, L., & Vanhaecht, R. (2023). Mapping guideline and field survey protocol for the Assessment of Old-Growth status and Ecosystem Services (Biodiversity & Carbon) in Beech Forests: LIFE PROGNOSES - ACTION A.1.21 Field Mapping and Testing of Indicators : final version June 2023. https://doi.org/10.21436/inbor.97064651
- Vanhellemont, M. (2025). LIFE PROGNOSES WP1 & WP2: Methods and Site Descriptions. https://doi.org/10.21436/inbor.121256273

Location of dataset during the project:
https://stichtingzonien.sharepoint.com/sites/LifePrognoses

Responsible person: Ruth Vanhaecht (Sonian Foundation)

Dataset is to be published on a repository: Zenodo (final version) 10.5281/zenodo.15222482

License: CC BY NC ND

1.2. Plot descriptive data

Dataset title: PROGNOSES_plots_data.csv

Dataset description: CSV file with data per sample plot (n = 2308) based on existing information or field assessment, including: site and plot ID, coordinates, exposure, slope, geomorphology, elevation, soil type, rockiness, forest type, former/current management, TSA, presence/absence of Very Large Trees and Coarse Dead Wood, type of regeneration and if the plot was selected for soil sampling (1/0)

Additional metadata file (csv) containing the explanation of the abbreviations in the headings and categories in the file: PROGNOSES_plots_metadata.csv

Data origin: All data generated during the PROGNOSES-project.

Data compilator/generator: Margot Vanhellemont (INBO) https://orcid.org/0009-0001-6045-8342

Contact for the dataset: Margot Vanhellemont (INBO) https://orcid.org/0009-0001-6045-8342

Link(s) to existing information/documentation on the dataset(s):

- Kirchmeir, H., Vandekerkhove, K., Di Filippo, A., Priori, S., Di Fiore, L., & Vanhaecht, R. (2023). Mapping guideline and field survey protocol for the Assessment of Old-Growth status and Ecosystem Services (Biodiversity & Carbon) in Beech Forests: LIFE PROGNOSES - ACTION A.1.21 Field Mapping and Testing of Indicators : final version june 2023. https://doi.org/10.21436/inbor.97064651

- Vanhellemont, M. (2025). LIFE PROGNOSES WP1 & WP2: Methods and Site Descriptions. https://doi.org/10.21436/inbor.121256273

Location of dataset during the project:
https://stichtingzonien.sharepoint.com/sites/LifePrognoses

Responsible person: Ruth Vanhaecht (Sonian Foundation)
Dataset is to be published on a repository: Zenodo (final version) DOI : 10.5281/zenodo.15222514

License: CC BY NC ND

2. Dendrometric and TReM data

2.1. Standing trees

Dataset title: PROGNOSES_trees_data.csv

Dataset description:

CSV –file with data on living and dead standing trees (n >56.000): siteID, plotID, treeID, species, native status, diameter at breast height (DBH) (cm), status (alive, dead standing, snag), measured height (m), decay stage for dead trees and snags (3 stages), calculated height based on local height-diameter curves (m) and calculated tree volume based on one- or two-entry tariffs or allometric functions (m^3) (see Vanhellemont, 2025 for details).

This CSV is accompanied by

- a metadata file (also CSV) containing the explanation of the abbreviations in the headings and categories in the file: PROGNOSES_trees_metadata.csv
- a list of the tree species codes (also csv): PROGNOSES_trees_specieslist.csv

Data origin: raw data measured in the field, height and volume calculated by the project partners

Data compilator/generator: Margot Vanhellemont (INBO) https://orcid.org/0009-0001-6045-8342

Contact for the dataset: Margot Vanhellemont (INBO) https://orcid.org/0009-0001-6045-8342

Link(s) to existing information/documentation on the dataset(s):

- Kirchmeir, H., Vandekerkhove, K., Di Filippo, A., Priori, S., Di Fiore, L., & Vanhaecht, R. (2023). Mapping guideline and field survey protocol for the Assessment of Old-Growth status and Ecosystem Services (Biodiversity & Carbon) in Beech Forests: LIFE PROGNOSES - ACTION A.1.21 Field Mapping and Testing of Indicators : final version June 2023. https://doi.org/10.21436/inbor.97064651
- Vanhellemont, M. (2025). LIFE PROGNOSES WP1 & WP2: Methods and Site Descriptions.: https://doi.org/10.21436/inbor.121256273

Location of dataset during the project:
https://stichtingzonien.sharepoint.com/sites/LifePrognoses

Responsible person: Ruth Vanhaecht (Sonian Foundation)
Dataset is to be published on a repository: Zenodo (final version) DOI : 10.5281/zenodo.15222093

Licence: 'Restricted Access'

2.2. Tree-related microhabitats

Dataset title: PROGNOSES_treemicrohabitats_data.csv

Dataset description: CSV file with presence/absence data of a predesigned set of Tree-Related Microhabitats (TReMs) on standing trees with diameter at breast height (DBH) of 20 cm and more (>25.000 trees). Tree-related microhabitats recorded are: bark pocket; bark loss; crack; trunk woodpecker cavity; trunk rot-hole; treebase rot-hole; root buttress concavity; treebase dendrotelm; perennial polypore; crown deadwood; broken crown; exudates; epiphyte cover mosses; epiphyte cover vascular plants; cankers.

beware! Some of the partners only sampled living standing trees meeting the DBH-threshold, other partners also inventoried dead standing trees. For future use, please make sure you check (based on the data itself) whether dead trees are included or not in the site-specific data.

This CSV is accompanied by a metadata file (also CSV) containing the explanation of the abbreviations in the headings: PROGNOSES_treemicrohabitats_metadata.csv.

Data origin: raw data recorded in the field by the project partners; re-categorisation where needed by Margot Vanhellemont (INBO).

Data compilator/generator: Margot Vanhellemont (INBO) https://orcid.org/0009-0001-6045-8342

Contact for the dataset: Margot Vanhellemont (INBO) https://orcid.org/0009-0001-6045-8342

Link(s) to existing information/documentation on the dataset(s):

- Kirchmeir, H., Vandekerkhove, K., Di Filippo, A., Priori, S., Di Fiore, L., & Vanhaecht, R. (2023). Mapping guideline and field survey protocol for the Assessment of Old-Growth status and Ecosystem Services (Biodiversity & Carbon) in Beech Forests: LIFE PROGNOSES - ACTION A.1.21 Field Mapping and Testing of Indicators : final version june 2023. https://doi.org/10.21436/inbor.97064651
- Vanhellemont, M. (2025). LIFE PROGNOSES WP1 & WP2: Methods and Site Descriptions. https://doi.org/10.21436/inbor.121256273

Location of dataset during the project:
https://stichtingzonien.sharepoint.com/sites/LifePrognoses

Responsible person: Ruth Vanhaecht (Sonian Foundation)
Dataset is to be published on a repository: Zenodo (final version) DOI : 10.5281/zenodo.15222547

Licence: 'Restricted Access'

2.3. Lying deadwood

Dataset title: PROGNOSES_lyingdeadwood_data.csv

Dataset description: CSV-file containing information on lying dead wood; in case Full Area Sampling was applied, the file contains for every registered dead wood fragment: species, decay stage (3 stages), diameter (top and base), length and volume; in case of Line Intersects (aimed at at least 40 m of line per plot, see Vanhellemont for details), raw data contain species, decay stage (3 stages), and diameter at the intersection with the line.

This CSV is accompanied by

- a metadata file (also CSV) containing the explanation of the abbreviations in the headings and applied categories: PROGNOSES_lyingdeadwood_metadata.csv
- a list of the tree species codes (also csv): PROGNOSES_trees_specieslist.csv.

Data origin: raw data recorded in the field and log volume for each fragment calculated (in case of Full Area Survey) by the project partners

Data compilator/generator: Margot Vanhellemont (INBO) https://orcid.org/0009-0001-6045-8342

Contact for the dataset: Margot Vanhellemont (INBO) https://orcid.org/0009-0001-6045-8342

Link(s) to existing information/documentation on the dataset(s):

- Kirchmeir, H., Vandekerkhove, K., Di Filippo, A., Priori, S., Di Fiore, L., & Vanhaecht, R. (2023). Mapping guideline and field survey protocol for the Assessment of Old-Growth status and Ecosystem Services (Biodiversity & Carbon) in Beech Forests: LIFE PROGNOSES - ACTION A.1.21 Field Mapping and Testing of Indicators : final version June 2023. https://doi.org/10.21436/inbor.97064651
- Vanhellemont, M. (2025). LIFE PROGNOSES WP1 & WP2: Methods and Site Descriptions.: https://doi.org/10.21436/inbor.121256273

Location of dataset during the project:
https://stichtingzonien.sharepoint.com/sites/LifePrognoses

Responsible person: Ruth Vanhaecht (Sonian Foundation)
Dataset is to be published on a repository: Zenodo (final version) DOI 10.5281/zenodo.15221571

Licence: 'Restricted Access'

2.4. Plot-level summary dendrometric measures

Dataset title: PROGNOSES_plotsummary_values.csv

Dataset description: CSV –file with calculated derived values for the individual plots, based on the dendrometric data (described in the files below). File contains following information per plot: site_id, plot_id, DBH minimum maximum and range (cm), Basal area for living and standing dead trees (m^2/ha), aboveground volume in different fractions (living, standing dead, lying dead, only the very large trees, only coarse dead wood) (m^3/ha), number of Very Large Trees (VLT), number of trees with one or more tree-related microhabitats (TReM).

This CSV is accompanied by a metadata file (also CSV) containing the explanation of the abbreviations in the headings and categories in the file: PROGNOSES_plotsummary_metadata.csv

Data origin: compiled data generated during the PROGNOSES project.

Data compilator/generator: Margot Vanhellemont (INBO) https://orcid.org/0009-0001-6045-8342

Contact for the dataset: Margot Vanhellemont (INBO) https://orcid.org/0009-0001-6045-8342

Link(s) to existing information/documentation on the dataset(s):

- Kirchmeir, H., Vandekerkhove, K., Di Filippo, A., Priori, S., Di Fiore, L., & Vanhaecht, R. (2023). Mapping guideline and field survey protocol for the Assessment of Old-Growth status and Ecosystem Services (Biodiversity & Carbon) in Beech Forests: LIFE PROGNOSES - ACTION A.1.21 Field Mapping and Testing of Indicators: final version June 2023. https://doi.org/10.21436/inbor.97064651

- Vanhellemont, M. (2025). LIFE PROGNOSES WP1 & WP2: Methods and Site Descriptions.: https://doi.org/10.21436/inbor.121256273

Location of dataset during the project:
https://stichtingzonien.sharepoint.com/sites/LifePrognoses

Responsible person: Ruth Vanhaecht (Sonian Foundation)
Dataset is to be published on a repository: Zenodo (final version) DOI ; 10.5281/zenodo.15222926

License: 'Restricted access'

3. Above- and belowground Carbon data

3.1. CARBON stock in living and dead standing trees

Dataset title: Prognoses_C_stock_standing

Dataset description: CSV-file (Prognoses_C_stock_standing.csv) containing calculated C-stocks per plot, per species and decay stage Carbon stock for standing trees (alive and dead) = (aboveground volume + root biomass according to Forrester (xx)) x density x 1/2

Data origin: field measurements provided by the project partners; see dataset 2.2. Prognoses_data_trees. Aboveground standing volume calculations by Margot Vanhellemont (see 2.4.); Carbon Stock calculations by Alfredo Di Filippo (University of Tuscia).

Data compilator/generator: Alfredo Di Filippo (University of Tuscia) https://orcid.org/0000-0001-5863-8339

Contact for the dataset: Alfredo Di Filippo (University of Tuscia) https://orcid.org/0000-0001-5863-8339

Link(s) to existing information/documentation on the dataset(s):

- Kirchmeir, H., Vandekerkhove, K., Di Filippo, A., Priori, S., Di Fiore, L., & Vanhaecht, R. (2023). Mapping guideline and field survey protocol for the Assessment of Old-Growth status and Ecosystem Services (Biodiversity & Carbon) in Beech Forests: LIFE PROGNOSES - ACTION A.1.21 Field Mapping and Testing of Indicators : final version june 2023. https://doi.org/10.21436/inbor.97064651
- Vanhellemont, M. (2025). LIFE PROGNOSES WP1 & WP2: Methods and Site Descriptions.: https://doi.org/10.21436/inbor.121256273

Location of dataset during the project: local storage at UNITUS

Responsible person: Alfredo di Filippo

Dataset is to be published on a repository: Zenodo (final version) DOI to be assigned
Licence: 'Restricted Access'

3.2. CARBON stock in lying deadwood

Dataset title:Prognoses_C_stock_lying.csv

Dataset description: CSV-file containing Carbon stock in lying deadwood per plot, subdivided by species and decay stage.

Data origin: Stock is calculated, based on the volume calculations by Vanhellemont (see 2.3) originating from the dendrometric measurements of the project partners (PROGNOSES_DATA_LYINGDEADWOOD.csv)

using the following function:

Cstock = V x density x ½

Applied methods and wood densities are explained in: *Di Filippo et al. (in prep). Above and Belowground Carbon stocks in managed and unmanaged beech forests in Europe: results for a set of UNESCO World Heritage sites*.

Data compilator/generator: Alfredo Di Filippo (University of Tuscia) https://orcid.org/0000-0001-5863-8339

Contact for the dataset: Alfredo Di Filippo (University of Tuscia)

Link(s) to existing information/documentation on the dataset(s):

- Kirchmeir, H., Vandekerkhove, K., Di Filippo, A., Priori, S., Di Fiore, L., & Vanhaecht, R. (2023). Mapping guideline and field survey protocol for the Assessment of Old-Growth status and Ecosystem Services (Biodiversity & Carbon) in Beech Forests: LIFE PROGNOSES - ACTION A.1.21 Field Mapping and Testing of Indicators : final version June 2023. https://doi.org/10.21436/inbor.97064651
- Vanhellemont, M. (2025). LIFE PROGNOSES WP1 & WP2: Methods and Site Descriptions.: https://doi.org/10.21436/inbor.121256273

Location of dataset during the project: local storage at UNITUS

Responsible person: Alfredo di Filippo

Dataset is to be published on a repository: Zenodo (final version) DOI to be assigned
Licence: 'Restricted Access'

3.3. Soil sample data

Dataset title: PROGNOSES_soil_data.csv

Dataset description: CSV-file (PROGNOSES_data_soil.csv) containing the results of soil sample analysis (bulk density, concentrations of C and N) from 5 sites (SONIAN FOREST, KALKALPEN NP, ABRUZZO NP, KELLERWALD NP, KLENOVSKY VEPOR)

Data origin: soil samples taken during PROGNOSES project in 4 forests (SONIAN FOREST, KALKALPEN NP, ABRUZZO NP, and KELLERWALD NP), in total 110 plots; additional data for KLENOVSKY VEPOR (14 plots) provided by CULS (contact: Miroslav Svoboda)

sample according to PROGNOSES protocol = 1 undisturbed sample and 1 mixed sample from 3 corings (2 at Kalkalpen) at fixed distance from the plot center for 4 fixed depths (0-10/10-30/30-60/60-100 cm) in Sonian Forest; until lythic contact and using a 'minipit' in Abruzzo (see Vanhellemont, 2025), and 0-10/10-30cm in Kellerwald and Kalkalpen. plotID, depth, bulk density, C and N concentration, max. soil depth and stoniness are registered (missing values marked as NA)

For Kalkalpen, no undisturbed samples were collected, but approximated standard volume samples based on a 10 cm sample x auger diameter

bulk density, C & N concentrations assessed by the soil lab of INBO.

For details on the analysis and specifications for the different sites see Vanhellemont (2025)

This CSV is accompanied by a metadata file (also CSV) containing the explanation of the abbreviations in the headings and categories in the file: PROGNOSES_soil_metadata.csv

Data origin: data collected and compiled during the PROGNOSES project

Data compilator/generator: Margot Vanhellemont (INBO) https://orcid.org/0009-0001-6045-8342

Contact for the dataset: Margot Vanhellemont (INBO) https://orcid.org/0009-0001-6045-8342

Link(s) to existing information/documentation on the dataset(s):

- soil sampling protocol: see Kirchmeir, H., Vandekerkhove, K., Di Filippo, A., Priori, S., Di Fiore, L., & Vanhaecht, R. (2023). Mapping guideline and field survey protocol for the Assessment of Old-Growth status and Ecosystem Services (Biodiversity & Carbon) in Beech Forests: LIFE PROGNOSES - ACTION A.1.21 Field Mapping and Testing of Indicators : final version June 2023. https://doi.org/10.21436/inbor.97064651
- Lab protocol and detailed description of the applied protocols for LIFE PROGNOSES samples and for the additional samples from KLENOVSKI VEPOR: see Vanhellemont, M. (2025). LIFE PROGNOSES WP1 & WP2: Methods and Site Descriptions.: https://doi.org/10.21436/inbor.121256273

Location of dataset during the project: local storage at INBO

Responsible person: Margot Vanhellemont

Dataset is to be published on a repository: Zenodo (final version) 10.5281/zenodo.15222896

Licence: 'Restricted Access'

3.4. Organic layer sample data

Dataset title: PROGNOSES_organiclayer_data.csv

Dataset description: CSV-file containing the results of sample analysis from 4 forests (SONIAN FOREST, ABRUZZO NP, KELLERWALD NP and KLENOVSKY VEPOR) – 88 plots; samples of forest floor: plotID, dry weight; C and N concentration

Data origin: PROGNOSES sampling: the protocol foresees sampling of organic layer: composite sample from a fixed surface frame (but see Vanhellemont, 2025 for details per site) - in total data for 88 plots (C/N for 61 plots)

dry weight assessment by Jonathan De Schrijver (INBO) C & N concentrations assessed by the soil lab of INBO (except for Klenovsky Vepor: done by CULS - Miro Svoboda). For details on the analysis see Vanhellemont (2025)

also PROGNOSES_organiclayer_metadata.csv

Data compilator/generator: Margot Vanhellemont (INBO) https://orcid.org/0009-0001-6045-8342

Contact for the dataset: Margot Vanhellemont (INBO) https://orcid.org/0009-0001-6045-8342

Link(s) to existing information/documentation on the dataset(s):

- soil sampling protocol: see Kirchmeir, H., Vandekerkhove, K., Di Filippo, A., Priori, S., Di Fiore, L., & Vanhaecht, R. (2023). Mapping guideline and field survey protocol for the Assessment of Old-Growth status and Ecosystem Services (Biodiversity & Carbon) in Beech Forests: LIFE PROGNOSES - ACTION A.1.21 Field Mapping and Testing of Indicators : final version June 2023. https://doi.org/10.21436/inbor.97064651

- Lab protocol: see Vanhellemont, M. (2025). LIFE PROGNOSES WP1 & WP2: Methods and Site Descriptions.: https://doi.org/10.21436/inbor.121256273

Location of dataset during the project: local storage at INBO

Responsible person: Margot Vanhellemont

Dataset is to be published on a repository: Zenodo (final version) : 10.5281/zenodo.15222912

Licence: 'Restricted Access'

3.5. PROGNOSES Organic layer and soil carbon stocks

Dataset title:Prognoses_C_stock_soil.csv

Dataset description: CSV-file containing Carbon stock in organic layer and soil per fixed depth (0-10, 10-30, 30-60, 60-100 cm) per plot.

Data origin: For the sites sampled in PROGNOSES (sites: SONIAN FOREST, KELLERWALD, KALKALPEN and ABRUZZO): Stock is calculated, based on the carbon concentration and bulk density for the soil samples; for the organic layer based on the dry weight and fixed surface area of the sample frames.

Data for KLENOVSKI VEPOR provided by Czech University of Life Sciences (CULS)

Data compilator/generator: Alfredo Di Filippo (University of Tuscia) https://orcid.org/0000-0001-5863-8339

Contact for the dataset: Alfredo Di Filippo (University of Tuscia) https://orcid.org/0000-0001-5863-8339

Link(s) to existing information/documentation on the dataset(s):

- Kirchmeir, H., Vandekerkhove, K., Di Filippo, A., Priori, S., Di Fiore, L., & Vanhaecht, R. (2023). Mapping guideline and field survey protocol for the Assessment of Old-Growth status and Ecosystem Services (Biodiversity & Carbon) in Beech Forests: LIFE PROGNOSES - ACTION A.1.21 Field Mapping and Testing of Indicators : final version June 2023. https://doi.org/10.21436/inbor.97064651
- Vanhellemont, M. (2025). LIFE PROGNOSES WP1 & WP2: Methods and Site Descriptions.: https://doi.org/10.21436/inbor.121256273

Location of dataset during the project: local storage at UNITUS

Responsible person: Alfredo di Filippo

Dataset is to be published on a repository: Zenodo (final version) DOI to be assigned
Licence: 'Restricted Access'

4. PROGNOSES recreational survey-data

4.1. PROGNOSES recreational survey protocol and questionnaire

Dataset title: Prognoses_recrea-survey_form

Dataset description: file with the survey form as it was presented to the visitors at 3 test sites: SONIAN FOREST, KALKALPEN and ABRUZZO NP.

Data origin: form developed by ECO and xxx

Data compilator/generator: Anna Kovarovics (orcid ?)

Contact for the dataset: Anna Kovarovics (orcid ?)

Link(s) to existing information/documentation on the dataset(s):

- protocol with questionnaire to be published!

Location of dataset during the project: local storage at ECO

Responsible person: Anna Kovarovics

Dataset is to be published on a repository: Zenodo (final version) DOI to be assigned

Licence: 'open access'

4.2. PROGNOSES data analysis recreational survey

Dataset title: Prognoses_recrea_results

Dataset description: file containing the results of the recreational survey at 3 test sites: SONIAN FOREST, KALKALPEN and ABRUZZO NP: xx.

Data origin: data sampled by staff at Sonian Foundation, Kalkalpen NP and Abruzzo NP; compiled by E.C.O. and further processed by XX

Data compilator/generator: Anna Kovarovics (orcid ?)

Contact for the dataset: Anna Kovarovics (orcid ?)

Link(s) to existing information/documentation on the dataset(s):

- reference ?

Location of dataset during the project: local storage at E.C.O.

Responsible person: Anna Kovarovics

Dataset is to be published on a repository: Zenodo (final version) DOI to be assigned

Licence: 'Restricted Access'

5. PROGNOSES microclimate data

5.1. PROGNOSES microclimate data (plot measurements)

Dataset title: Beech Buffers: microclimate regulation in temperate old-growth forests, surroundings and forest edge

Published on ZENODO : https://zenodo.org/records/10409712

Dataset description: a set of TXT files, containing both raw data and aggregated data sets (per plot and per forest category) for the microclimate-loggers on 250 plots in 4 UNESCO component parts (HAINICH, KELLERWALD, GRUMSIN and SERRAHN).

Data includes information about the plot (site and plot ID, forest category = core zone, buffer zone, edge, open; distance to forest edge, Height level of the logger, canopy cover using densiometer and measurements on microclimate. Raw data files contain measurements of "Temp" = Temperature [°C], "RH" = Relative humidity [%] and "VPD" = Vapor pressure deficit [kPa] (Duursma 2015). Aggregated data per plot contain mean, median, standard deviation, minimum and maximum values for temperature and vapor pressure. Aggregated data per forest category contain the same statistics aggregated to forest category for the four sites.

Data origin: plots setup and information compiled by Centre for Econics and Ecosystem Management at Eberswalde University for Sustainable Development

Data compilator/generator: Jeanette S. Blumröder https://orcid.org/0000-0002-0269-0696, Caroline Meier, Yojana Adhikari https://orcid.org/0000-0002-9595-7061 (EUSD)

Contact for the dataset: Pierre Ibisch https://orcid.org/0000-0001-9820-9272

Link(s) to existing information/documentation on the dataset(s):

- manuscript to be submitted: “Beech buffers: microclimate regulation in temperate old-growth forests, surroundings and forest edge”

Location of dataset during the project: local storage at University of Eberswalde

Responsible person: Pierre Ibisch

Dataset is published on a repository: https://zenodo.org/records/10409712

Licence: ‘open access’

5.2. PROGNOSES Land surface temperature dataset

Dataset title: Old-growth Beech Forests in Germany as Cool Islands in a Warming Landscape

Dataset description: data accompanying the published journal paper : Adhikari, Y., Bachstein, N., Gohr, C., Blumröder, J. S., Meier, C., & Ibisch, P. L. (2024). Old-growth beech forests in Germany as cool islands in a warming landscape. Scientific Reports, 14(1), 30311. https://doi.org/10.1038/s41598-024-81209-0

The data comprises of 5 datafiles :

dLST_NDVI(above 30°C) per-pixel mean values of Land Surface Temperature (LST) for days exceeding 30°C and the greenest NDVI (Normalized Difference Vegetation Index) pixels during the summer months (May–September) from 2017 to 2023, across different zones and forest types in five UNESCO-listed old-growth forests in Germany.

LST_NDVI(below 30°C) per-pixel mean values of Land Surface Temperature for days below 30°C and the greenest Normalized Difference Vegetation Index (NDVI) pixels during the summer months (May–September) from 2017 to 2023, across different zones and forest types in five UNESCO-listed old-growth forests in Germany.

LST_NDVI_Timeseries annual time series data (2017–2023) of per-pixel mean values of the greenest NDVI (Normalized Difference Vegetation Index) and Land Surface Temperature for days above 25°C, across different zones and forest types in five UNESCO-listed old-growth forests in Germany

AT_LST includes simultaneous satellite-derived LST values and ground-based air temperature (AT) measurements collected at 11:15 AM for selected forest components over different months and years

NDVI_change This dataset represents the change in NDVI values over time, specifically the difference between 2023 and 2017, across different zones and forest types

Data origin: Remote sensing data and ground-based air temperature from the loggers used in the Prognoses project

Data compilator/generator: Jeanette S. Blumröder https://orcid.org/0000-0002-0269-0696, Caroline Meier, Yojana Adhikari https://orcid.org/0000-0002-9595-7061 (EUSD)

Contact for the dataset: Pierre Ibisch https://orcid.org/0000-0001-9820-9272

Link(s) to existing information/documentation on the dataset(s):

Adhikari, Y., Bachstein, N., Gohr, C., Blumröder, J. S., Meier, C., & Ibisch, P. L. (2024). Old-growth beech forests in Germany as cool islands in a warming landscape. Scientific Reports, 14(1), 30311. https://doi.org/10.1038/s41598-024-81209-0

Location of dataset during the project: local storage at University of Eberswalde

Responsible person: Pierre Ibisch

Dataset published on a repository: https://zenodo.org/records/15188646

Licence: open access

PROGNOSES GIS and RS outputs

6.1. PROGNOSES Microclimate plot locations

Dataset title: Prognoses_microclimate_plots

Dataset description: Plot-ID and coordinates of the 250 microclimate loggers over four sites, used in the microclimate study of LIFE-Prognoses.

Data origin: GIS-layer by Centre for Econics and Ecosystem Management at Eberswalde University for Sustainable Development

Data compilator/generator: Jeanette S. Blumröder https://orcid.org/0000-0002-0269-0696, Yojana Adhikari https://orcid.org/0000-0002-9595-7061

Contact for the dataset: Pierre Ibisch https://orcid.org/0000-0001-9820-9272

Link(s) to existing information/documentation on the dataset(s): Adhikari, Y., Bachstein, N., Gohr, C., Blumröder, J. S., Meier, C., & Ibisch, P. L. (2024). Old-growth beech forests in Germany as cool islands in a warming landscape. Scientific Reports, 14(1), 30311. https://doi.org/10.1038/s41598-024-81209-0

Location of dataset during the project: local storage at University of Eberswalde

Responsible person: Pierre Ibisch

Dataset is published on a repository: https://zenodo.org/records/15352367

Licence: open access

6.2. PROGNOSES polygon layer

Dataset title: Prognoses_stands_polygon

Dataset description: GIS –file (polygon layer) compiling the existing information on species composition, stand age, canopy cover and time since last intervention (all in classes) for the 8 sites involved in PROGNOSES (Krokar, Zdrocle, Sonian Forest, Kellerwald, Hainich, Kalkalpen, Abruzzo and Central Balkan) and Uholka as additional site (= 9 sites in total). Polygon maps of the additional sites (Klenovsky Vepor, Stara Planina, Sinca forest) are not included.

Data origin: existing polygon layers, provided by the project partners and compiled by E.C.O

Data compilator/generator: Hanns Kirchmeir

Contact for the dataset: Hanns Kirchmeir https://orcid.org/0000-0003-1000-370X

Link(s) to existing information/documentation on the dataset(s):

- Kirchmeir, H., Vandekerkhove, K., Di Filippo, A., Priori, S., Di Fiore, L., & Vanhaecht, R. (2023). Mapping guideline and field survey protocol for the Assessment of Old-Growth status and Ecosystem Services (Biodiversity & Carbon) in Beech Forests: LIFE PROGNOSES - ACTION

A.1.21 Field Mapping and Testing of Indicators : final version June 2023. https://doi.org/10.21436/inbor.97064651

- Vanhellemont, M. (2025). LIFE PROGNOSES WP1 & WP2: Methods and Site Descriptions.: https://doi.org/10.21436/inbor.121256273

Location of dataset during the project: local storage at E.C.O.

Responsible person: Hanns Kirchmeir

Dataset is to be published on a repository: Zenodo (final version) DOI to be assigned

Licence: open access: CC BY NC ND

6.3. PROGNOSES dendroplot layer

Dataset description: GIS–layer (point layer) with the point location of the centre of the dendrometric sample plots used in the PROGNOSES project. Attribute table contains information on exposure, slope, geomorphology, Elevation ASL, soil type, rockiness, forest type, former/current management, TSA, presence/absence of Very Large Trees and Coarse woody debris, type of regeneration and if the plot was selected for soil sampling (1/0)… - total of approx. 2200 plots from 12 sites

Additional metadata file (csv) containing the explanation of the abbreviations in the headings and categories in the file

Data origin: Plot coordinates provided by the project partners; GIS-layer compiled by Manuela Hirschmugl (Joanneum Research). Attribute table data compiled by Margot Vanhellemont (INBO).

Data compilator/generator: Manuela Hirschmuglhttps://orcid.org/0000-0002-5224-0992

Contact for the dataset: Manuela Hirschmuglhttps://orcid.org/0000-0002-5224-0992

Link(s) to existing information/documentation on the dataset(s):

- Kirchmeir, H., Vandekerkhove, K., Di Filippo, A., Priori, S., Di Fiore, L., & Vanhaecht, R. (2023). Mapping guideline and field survey protocol for the Assessment of Old-Growth status and Ecosystem Services (Biodiversity & Carbon) in Beech Forests: LIFE PROGNOSES - ACTION A.1.21 Field Mapping and Testing of Indicators : final version June 2023. https://doi.org/10.21436/inbor.97064651
- Vanhellemont, M. (2025). LIFE PROGNOSES WP1 & WP2: Methods and Site Descriptions.: https://doi.org/10.21436/inbor.121256273

Location of dataset during the project: local storage at Joanneum Research

Responsible person: Manuela Hirschmugl

Dataset is to be published on a repository: Zenodo (final version)

DOI: 10.5281/zenodo.14718749
License: CC BY NC ND

6.4. PROGNOSES Old-Growth Mapping using Remote Sensing

Dataset description: GIS –file (raster layer) with the assessment of stand age as proxy for level of oldgrowthness for 4 test sites located in the UNESCO components Sonian Forest, Abruzzo, Central Balkan and Kalkalpen.

Data origin: GIS mapping of stand age for four test sites was generated by Joanneum Research, using field data provided by the project partners and available RS-datasets (LiDAR; Sentinel-2). The LiDAR data were freely available or were provided by the project partner.

Dataset is linked to a scientific paper in preparation (Hirschmugl et al., in prep.)

Data compilator/generator: Manuela Hirschmuglhttps://orcid.org/0000-0002-5224-0992

Contact for the dataset: Manuela Hirschmuglhttps://orcid.org/0000-0002-5224-0992

Link(s) to existing information/documentation on the dataset(s):

- Kirchmeir, H., Vandekerkhove, K., Di Filippo, A., Priori, S., Di Fiore, L., & Vanhaecht, R. (2023). Mapping guideline and field survey protocol for the Assessment of Old-Growth status and Ecosystem Services (Biodiversity & Carbon) in Beech Forests: LIFE PROGNOSES - ACTION A.1.21 Field Mapping and Testing of Indicators : final version June 2023. https://doi.org/10.21436/inbor.97064651
- Vanhellemont, M. (2025). LIFE PROGNOSES WP1 & WP2: Methods and Site Descriptions.: https://doi.org/10.21436/inbor.121256273

Location of dataset during the project: local storage at Joanneum Research

Responsible person: Manuela Hirschmugl

Dataset is to be published on a repository: Zenodo (final version) DOI to be assigned
License: open access

Publication of the data

Latest at the end of the project or with publication of the respective scientific paper (whatever comes first), all datasets collected in PROGNOSES will be published in an open, community-recognized data repository (Zenodo) with a Digital Object Identifier (DOI) to ensure long-term availability, with the licences specified with each dataset.

For the datasets with restricted access, a specific allowance/denial procedure will be followed if a data request is received. For this, specific structures and responsibilities are assigned.
The following responsibilities are assigned:

Contact point: person assigned in the ZENODO repository as the contact point for use of the dataset: everyone who wants to use the dataset (also project partners) will be directed to this person.

Data owner: contact person for a data subset from a specific site: for every site (12) a 'data owner' is appointed by the local team/project partner.

PROGNOSES Database Custodian Board (PDCB): all data owners of the different sites are a member of this board, and are informed about any data request that involves data they provided.

Procedure:

- The contact point is alerted that a data request is standing.
- The contact point forwards the request to the involved members of the PDCB.
- The PDCB decides (majority vote- both in partners and data size) to agree/disagree with the delivery and use of the dataset and on the conditions of use (acknowledgement, co-authorship,...).
- Individual data owners can still decide to opt out at this point : his/her subset of data is not transmitted to the requester.
- Dataset (excluding the opt-outs) is delivered to the requester, under the overall terms of use.

Time Horizon

The raw datasets will remain 'restricted access' with the abovementioned procedure until December 31, 2030 (5 years). During this time period, the procedure above is followed. After this, data providers will be informed that the data will be set to open access (CC BY NC ND).

At that time, data providers, especially the external partners (data not financed by PROGNOSES) can decide to have their data removed.