European Vegetation Archive

Data Request Form

To obtain data from the European Vegetation Archive (EVA), including the ReSurveyEurope Database, please first enquire the EVA database administrator Ilona Knollová (ikuzel@sci.muni.cz) whether the data that meet your needs are available. If they are, please fill in the form below and submit it to Ilona or another member of the EVA Coordinating Board (or ReSurveyEurope Board if you ask for data from the ReSurveyEurope Database).

- Applicant's name:

  Wanben Wu

- Applicant's institutional address:

  Center for Ecological Dynamics in a Novel Biosphere (ECONOVO), Department of Biology, Aarhus University, Ny Munkegade 114, DK-8000 Aarhus, Denmark

- Applicant's e-mail:

  Wanben.wu@bio.au.dk

- Project title:

  European Light Landscape: Patterns, Drivers, and Biodiversity Implications

- Are you asking for core EVA data (non-repeated vegetation surveys) or for ReSurveyEurope data (repeated vegetation surveys)?

  Both the core EVA data (non-repeated vegetation surveys) and ReSurveyEurope data (repeated vegetation surveys)

- Brief description of the aims and methods of the study:

  Project aims—

  1. Simulate pan-European light availability: Develop high-resolution estimates of light availability across Europe using the EVA survey database combined with multi-source, multi-temporal remote sensing data and machine learning.
  2. Analyse patterns and trends: Evaluate spatial and temporal trends in light availability across different biogeographic regions, land management practices, rewilding (land abandonment) areas, and protected zones.
  3. Identify key determinants: Investigate how factors such as climate, disturbances, land management, and human activities influence and reshape light availability.
  4. Biodiversity Impacts of Light Availability: Examine how the spatial patterns and temporal trends in light availability influence biodiversity. This objective involves integrating plant and bird diversity data with high-resolution light measurements to assess how variations in light—both in distribution and over time—affect species richness and community composition across diverse ecosystems.

  Methods—

  To simulate wall-to-wall light availability across Europe, we will first estimate plot-level light conditions using EVA data and Ellenberg-type indicator values. These plot-scale estimates will serve as training and validation samples for our broader pan-European model. By integrating data from Landsat, PALSAR, Sentinel-1, and Sentinel-2 with

advanced machine learning techniques (Random Forest and XGBoost), we will generate a high-resolution (10–30 m) time series product of light availability spanning from 1985 to 2024.
For pattern analysis, we will examine changes in light availability across Europe from 1985 to 2024. Our study will compare patterns and trends among various biogeographic regions and different types of land management, including primary forests, naturally regenerating forests, plantations, protected areas, and abandoned lands.
To determine the primary drivers of light availability, we will employ explainable machine learning models, such as random forests. These models will assess the impact of climate variables, disturbances (including wildfires, droughts, windstorms, and human activities), land managements (protection, land abandonment, plantation), human activities (grazing) to identify which factors have most significantly reshaped the light environment in Europe over the past decade.
To explore how light availability patterns and trends affect biodiversity, we will integrate plant and bird diversity data. We will examine how the spatial distribution and heterogeneity of light availability influence biodiversity metrics, assessing potential impacts on both plant and bird communities across diverse landscapes.

- Will someone else be involved in data editing or analysis in addition to the applicant?

Direct collaborators at Aarhus University: Robert Buitenwerf, Jens-Christian Svenning, Pang, Sean E. H.

- Estimated time of delivery of results (e.g., manuscript submission):

2025 for aims 1-3, 2026 for aim 4

- Geographic area needed (e.g., countries or range of geographic coordinates):

All of Europe

- Do you need plots to be georeferenced? If so, what is the minimum accuracy of plot location (in metres or kilometres) needed for your project?

Yes. Minimum accuracy should be < 10 km.

- Vegetation types needed (syntaxa):

All vegetation types

- Other data selection criteria:

NA

- Envisaged publications:

Two to three scientific articles in international journals whose scope encompasses macroecology, global change research, and conservation (e.g., Global Change Biology, Nature Ecology & Evolution, PNAS)

- Data deposition. Some journals require data used for the analysis to be stored in a public repository to ensure the repeatability of the analysis. According to EVA Rules, you are not allowed to store the original

vegetation-plot data obtained from EVA. However, if you plan to publish in such a journal, you may deposit a reduced EVA-derived dataset that (1) would make it possible to repeat the analysis published in the paper and (2) does not contain any information not used in the analysis. For example, such a dataset can contain only a subset of species (e.g., only angiosperms or only neophytes), or replace species names with codes, or replace species cover values with presences/absences, or remove all the header data, or replace the exact plot coordinates by coarse grid-cell coordinates etc. If you plan to deposit reduced information from vegetation plots, please describe here what might be deposited. If the project developed so that you needed to deposit more information than specified here, you would need to ask specific permission from the Custodians of the EVA databases used in your analysis before the dataset is deposited.

The original vegetation-plot data obtained from EVA will not be stored or made available alongside any publications for which it was used for. Only derived data or intermediate results will be stored or made available (in a format for which the original data cannot be reconstructed). In cases where the target journal requires full reproducibility, simulated data (no species or plot ID) based on a subset of the original EVA data will be provided; data properties will be in accordance to the EVA data usage rules.

- Plant trait data from the TRY consortium. If you plan to combine your analysis of vegetation-plot data with plant trait data, you can also request a dataset of 18 gap-filled traits for a large number of plant taxa prepared by the TRY consortium. These traits include Leaf area, Specific leaf area, Leaf fresh mass, Leaf dry matter content, Leaf C, Leaf N, Leaf P, Leaf N per area, Leaf N:P ratio, Leaf delta15N, Seed mass, Seed length, Seed number per reproductive unit, Dispersal unit length, Plant height, Stem specific density, Stem conduit density, and Conduit element length. This dataset can be provided to you by the EVA manager together with the vegetation-plot data. If you use this dataset, you must inform about your project the TRY data contributors who might be potentially interested and invite them as potential co-authors, assuming they will make an intellectual contribution to your paper. The list of the TRY data contributors will be sent to you together with the gap-filled trait dataset.

Yes

- Specification of the co-authorship arrangements in publications based on the requested data. Note that the EVA Rules recommend that co-authorship is offered to a representative of each database providing data that are particularly important for the project (e.g., a relatively large proportion of the final dataset used in the analyses or data from unique vegetation types or under-represented geographic areas). This database representative should be an expert in the topic of the project (not necessarily the custodian or deputy custodian), and this person should contribute to the project more than just by providing the existing data, e.g. by intellectual contribution to the concept of the paper, preparation of new data, or helping with data analysis, interpretation of the results or writing parts of the paper (see the IAVS Code of Professional Ethics: https://www.iavs.org/page/governance_code-of-proffesional-ethics). The project leader should enable active participation by regularly informing potential co-authors about the progress of the project from its early stage. The project leader should also make final co-authorship arrangements based on the real input of the individual contributors.

Co-authorship is extended to one representative of each EVA database (Custodian or delegated custodian) who registers for this project in the EVA online form and provides >2% of the final number of plots or fewer data from biogeographically important regions that are not represented in other databases. Co-authors will be asked to provide intellectual contribution in the interpretation of the results and commenting on the manuscript before submission. All other data contributors (custodians) of EVA will be acknowledged in the resulting publications.

- Eligibility of the applicant to receive EVA or ReSurveyEurope data. Specify to which EVA or ReSurveyEurope database the applicant has contributed; if the applicant is not the custodian or deputy custodian of an EVA or ReSurveyEurope database, give a name of a custodian or deputy custodian who supports this data request.

  This data request is supported by Jens-Christian Svenning, Deputy Custodian of The Nordic Vegetation Database, EU-00-018

- I agree with the terms of EVA Data Property and Governance Rules as approved on 26 May 2012 (http://euroveg.org/download/eva-rules.pdf).
- If I ask for ReSurveyEurope data, I agree with the terms of ReSurveyEurope Data Property and Governance Rules as approved on 6 April 2022 (http://euroveg.org/download/resurveyeurope-rules.pdf).
- In any result obtained based on EVA core data (non-repeated vegetation surveys), I will cite the EVA report article (Chytrý et al. 2016; https://doi.org/10.1111/avsc.12191). In any result obtained based on the ReSurveyEurope data (repeated vegetation surveys), I will cite the ReSurveyEurope report article as soon as it is published. In addition, I will cite individual source databases used in my project (if possible, in the list of References; if not possible, at least as a list of databases in the electronic supplementary material).
- If I ask for the plant trait data from TRY, I agree to invite to my project the TRY data contributors following the list received from the EVA database manager.

Aarhus, Denmark, 25th February 2025

Wanben Wu