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:

  Mary Carolina García Lino[1,2] & Manuela Winkler[2,1]

- Applicant's institutional address:

  [1]GLORIA co-ordination, Institute for Interdisciplinary Mountain Research, Austrian Academy of Sciences, Vienna, Austria.
  [2]GLORIA co-ordination, Department of Ecosystem Management, Climate and Biodiversity; BOKU University, Vienna, Austria

- Applicant's e-mail:

  marycarolina.garcia.lino@oeaw.ac.at / manuela.winkler@boku.ac.at

- Project title:

  Increasing alpha diversity accompanied by decreasing beta diversity on Europe's mountain tops is driven by climate change

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

  Non-repeated vegetation surveys and ReSurveyEurope data

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

  We aim at disentangling the influence of climate change, N-deposition, land-use as well as species pools, biome and topographic variability on changes in plant diversity across spatial scales on European GLORIA (Global Observation Research Initiative in Alpine Environments; www.gloria.ac.at). We will assess plant alpha, beta and gamma diversity at the taxonomic, trait and phylogenetic level.

  Methods
  To evaluate the effect of climate change and other drivers on alpine plant diversity in Europe, we will use plant monitoring data from the GLORIA data set from 34 regions and with 2 to 4 resurveys from 2001 to the present. We will use the alpha, beta and gamma diversity at the taxonomic, trait and phylogenetic level as response variable.

  The following predictor variables will be included:

  - Species pool: data on species pools of European to Mediterranean mountain ranges have been compiled from EVA (Jimenez-Alfaro et al. 2021) and needs to be complemented for boreal and arctic regions.
  - Area of species' occupancy: GBIF Climate data will be extracted from ERA5, CHELSA and CRU

- Nitrogen-deposition will be estimated based on the European Monitoring and Evaluation Programme (EMEP) data.
- as proxies for direct human pressures (grazing, tourism), we will use HANPP data (Matej et al. 2025) and density of roads/trails around the summit
- Topographic variability will be calculated from digital elevation models (resolution 1-5m) for GLORIA regions.
- Size of alpine areas will be based on a combination of Testolin et al. 2020 and Snethlage et al. 2022
- Species traits (plant height, growth form) will be compiled from the TRY database, thermophilization will be taken from the GLORIA database.

To test the influence of these drivers on plant diversity and community we will use (generalized) linear mixed-effects models (GLMMs and LMMs) and structural equation modelling (SEM)

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

Yes: a master student (NN) supervised by Manuela Winkler, Borja Jímenez Alfaro

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

We plant to submit the publication in October 2026

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

We kindly request alpine vegetation plot data covering the area extending from the treeline to the nival ecotone in the following countries:

Czech Republic, Georgia, Iceland, Kingdom of Denmark (Faroe Islands, Greenland) Norway, Sweden, United Kingdom (Scotland).

- 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, if it is possible best achievable accuracy (meters)

- Vegetation types needed (syntaxa):

R Grasslands and lands dominated by forbs, mosses or lichens

R12 Cryptogam- and annual-dominated vegetation on siliceous rock outcrops
R13 Cryptogam- and annual-dominated vegetation on calcareous and ultramafic rock outcrops
R16 Perennial rocky grassland of Central and South-Eastern Europe
R 17 Heavy-metal dry grassland of the Balkans
R1A Semi-dry perennial calcareous grassland (meadow steppe)
R1G Iberian oromediterranean siliceous dry grassland
R1H Iberian oromediterranean basiphilous dry grassland
R1J Cyrno-Sardean oromediterranean siliceous dry grassland
R1K Balkan and Anatolian oromediterranean dry grassland
R1M Lowland to montane, dry to mesic grassland usually dominated by Nardus stricta (maybe)
R1T Azorean open, dry, acid to neutral grassland
R23 Mountain hay meadow
R31 Mediterranean tall humid inland grassland

R 34 Submediterranean moist meadow
R37 Temperate and boreal moist or wet oligotrophic grassland
R4 Alpine and subalpine grasslands (all)
R52 – Forest fringe of acidic nutrient-poor soils
R56 Montane to subalpine moist or wet tall-herb and fern fringe
R72 Hemiboreal and boreal wooded pasture and meadow
S Heathlands, scrub and Tundra
S1 Tundra (all)
S2 Arctic, alpine and subalpine scrub (all)
S31 Lowland to montane temperate and submediterranean Juniperus scrub
S4 Temperate heathland
S42 Dry heath
S75 Eastern Mediterranean Mountain hedgehog-heath
S91 Temperate riparian scrub
S92 *Salix fen* scrub

U Inland habitats with no little soil and mostly with sparse vegetation
U2 Screes
U3 Inland cliffs, rock pavements and outcrops
U4 Snow or ice-dominated habitats
U5 Miscellaneous inland habitats usually with very sparse or no vegetation
U6 Recent volcanic features
U7 Unvegetated or sparsely vegetated gravel bars

T Forest and other wooded land
T1C Temperate and boreal mountain Betula and *Populus tremula* forest on mineral soils
T1D Southern European Mountain Betula and *Populus tremula* forest on mineral soils
T12 *Alnus glutinosa*–Alnus incana forest on riparian and mineral soils
T11 Temperate Salix and *Populus riparian* forest
T34 Temperate subalpine Larix, *Pinus cembra* and *Pinus uncinata* forest
T39 Mediterranean and Balkan subalpine *Pinus heldreichii–Pinus peuce* forest
T3F Dark taiga
T3H Larix light taiga
T31 Temperate Mountain *Picea forest*
T32 Temperate Mountain *Abies forest*
T33 Mediterranean mountain *Abies forest*
T35 Temperate continental *Pinus sylvestris* forest
T3G *Pinus sylvestris* light taiga

- Other data selection criteria:

Vascular plants

- Envisaged publications:

We expect to generate one publication

- 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.

> We are aware of the EVA rules. If data deposition in a public repository is required, we will deposit reduced dataset derived from EVA that is sufficient to reproduce the analyses. Species names will be replaced by codes, and no original additional information beyond that used in the analyses will be included.

- **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.

> no

- **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.

> Authorships are based on research contributors with concept and hypothesis, data harmonization, and analysis interpretation. Data contributors will be acknowledged cited according to EVA and GBIF guidelines; co-authorship will be offered where substantial scientific input is provided.

- **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.

> ReSurveyEurope: GLORIA_001, GLORIA_002 (custodian Manuela Winkler)

- 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.

[Vienna, 26.01.2026]

[Mary Carolina García Lino & Manuela Winkler]