

Unique new dataset **CLIMBER: Climatic niche characteristics of the butterflies in Europe**

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This image shows *Colias hecla*, a cold-adapted species (species temperature index = -2.3°C) of arctic regions in Eurasia and North America. Credit: Jostein Engdal

Scientists from the Helmholtz Centre for Environmental Research – UFZ present [CLIMBER: Climatic niche characteristics of the butterflies in Europe](#) – a unique dataset on the climatic niche characteristics of 397

European butterflies representing impressive 91% of the European species. The information provided in this dataset is of great relevance for basic and applied ecology and provides a combination of high quality standards and open access, data ready to use for a broad range of applications. The data paper describing the characteristics of the compilation was published in the open access journal *ZooKeys*.

Global change seriously threatens biodiversity at all organisational levels ranging from properties of single species, through communities and species assemblages to whole ecosystems including the provision of ecosystem services for human well-being. Detailed information on species' ecological niche characteristics is indispensable for a better understanding of the relationship between the occurrence and performance of wild species and their environment and, moreover, for an improved assessment of the impacts of global change.

Knowledge on species characteristics such as habitat requirements is already available in the ecological literature for butterflies, but information about their climatic requirements is still lacking. The new CLIMBER dataset attempts to fill this gap by providing unique information on the climatic niche characteristics of 397 European butterflies. These characteristics are obtained by combining detailed information on butterfly distributions in Europe, which also led to the 'Distribution Atlas of European Butterflies' (Kudrna 2002), the 'Climatic Risk Atlas of European Butterflies' (Settele et al. 2008) and the 'Distribution Atlas of Butterflies in Europe' (Kudrna et al. 2011).



This image shows *Danaus plexippus*, a warm-adapted species (species temperature index = 16.0°C) which breeds in Europe only in Southern Spain and Macaronesian islands. Credit: Martin Wiemers

The application potential of this database ranges from theoretical aspects such as assessments of past niche evolution or analyses of trait interdependencies to the very applied aspects of measuring, monitoring and projecting historical, ongoing and potential future responses to [climate change](#) using butterflies as an indicator. Good knowledge of the ecological characteristics relevant for the reaction of species and communities to particular drivers of global change is needed, which can then be utilised as powerful indicators for conservation planning and action.

"By combining a comprehensive database on the distribution of European [butterflies](#) with publicly available climatic data in combination with a constantly high level of quality control at crucial steps of the data

generation, CLIMBER represents a unique and ready-to-use dataset for a broad variety of potential applications, "comments Dr. Oliver Schweiger, Helmholtz Centre for Environmental Research – UFZ.



This image shows *Papilio machaon*, a species with intermediate temperature requirements (species temperature index = 9.3°C) and a very broad temperature niche (ranging from -3.1°C to 18.6°C) which occurs in most regions in Europe. Credit: Martin Wiemers

"By providing public access to this dataset, we hope to contribute to improvements of the scientific understanding of how climate change affects [species](#) and communities and to improve monitoring and conservation actions for climate change mitigation," he adds on the choice of open access for the dataset.

More information: Schweiger O, Harpke A, Wiemers M, Settele J (2013) CLIMBER: Climatic niche characteristics of the butterflies in Europe. *ZooKeys* 367: 65-84. [DOI: 10.3897/zookeys.367.6185](https://doi.org/10.3897/zookeys.367.6185) .
Resource ID: GBIF key: www.gbif.org/dataset/e2bcea8c-...5e-a4ae-af282b4ea1c5

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