

Data for ENM/SDM

Emilio Berti

Two types of data are required for ENM/SDM:

1. Species occurrence data.
2. Environmental data.

Species occurrence data

Species occurrence data record the occurrence of species geographically. The most known source of occurrence data are the Global [Biodiversity Information Facility \(GBIF\)](#) and [iNaturalist](#).

Note

GBIF is a data *aggregator*, pulling data also from iNaturalist.

Occurrence data usually record only the presence of species, i.e. the species was detected at that location, due to the absence of species being extremely difficult to record. However, because most ENMs require presence **and** absence data, absences are usually simulated assuming an underlying ecological process. We will cover this in more detail in the subsequent sections.

Environmental data

ENM/SDM usually investigate the effect of climatic variables on species distribution. Although other environmental covariates can be included, such as pH, landcover type, etc., this course focuses only on climatic variables, which are always accounted for in ENM/SDM. Climate is the probability density function of weather events, such as average, minimum, and maximum temperature (K) and precipitation (mm). Because many centers and research institutes model climate, climatic data can be accessed from a large variety of sources. In addition, bioclimatic variables are often derived from raw climate data and aggregated into long-term (e.g., 30 years) averages. These *bioclimatic normals* are often the climatic layers used in ENM/SDM. Some of the most used databases for bioclimatic normals are [WorldClim](#), [CHELSA](#), and [PRISM](#).

i Note

Climate data differ widely in how they are derived. They are not inter-changeable and often lead to different results.