**Group Project: Swiss Breeding Birds**

Participants of the group project „Swiss breeding birds“ will work on a species distribution model (SDM) of breeding birds in Switzerland. The Swiss Ornithological Institute in Sempach kindly provides bird observation data and environmental variables for this project.

The provided bird observation data is a sample from the data set that was collected during field work (2013-2016) for the latest Atlas of Swiss breeding birds (Knaus et al., 2018). Environmental data are official data from the Swiss federal statistical office, distributed by the Swiss Ornithological Institute.

Bird observation data was collected by hundreds of volunteers and also some professional birders, between 2013-2016, following an experimental design where a random sample of a total of about 2300 1 km2 plots were re-visited 2-3 times throughout one breeding period within the project duration. These atlas squares are spread across Switzerland (see map). A detailed description of the methods can be found in the breeding bird atlas from page 50 onwards. A table of the environmental variables that were used in the Atlas can be found on page 68. For data propriety reasons, only 15 of the official set of 16 variables can be provided here.

The sample provided for this project contains data from 131 different species and is in presence-only format. However, since during field work, any potential Swiss breeding bird had to be recorded, we can infer observed absence if a species is part of the entire data set, but not on the list of a particular atlas square. (It may be possible to later obtain count data if the group decides it be relevant for their project.) The last four columns in the bird data correspond to survey square IDs, based on the official Swiss grid classification; hence it corresponds to the grid of the environmental variables and enables you to link the two data sets

**Links:**

Swiss Ornithological Institute: <https://www.vogelwarte.ch/en/home/>

Swiss breeding bird atlas 2013-2016 (Knaus et al., 2018): <https://www.dropbox.com/s/46s6x2tg16be3k1/SwissBreedingBirdAtlas_2013_2016.pdf?dl=0>

SDM

<https://damariszurell.github.io/SDM-Intro/>

TMB

<https://www.youtube.com/watch?v=A5CLrhzNzVU>

<https://www.youtube.com/watch?v=M8dR3mvZ5vc>

not sure about these:

<https://sites.google.com/site/tmbisec2018/home>

GlmmTMB spatial:

<https://cran.r-project.org/web/packages/glmmTMB/vignettes/covstruct.html>