# Distributional Modelling in R

## 04 - Continuous Distributions - Exercises

In this example we analyze weather data obtained from German meteorological stations, provided by the Deutscher Wetterdienst (DWD, https://www.dwd.de/). A precompiled R data frame can be download with the following R code

```
R> download_data <- function(data = "WeatherGermany10.rds.rds") {
+     file <- paste0("https://nikum.org/dmr/Data/", data)
+     tdir <- tempfile()
+     dir.create(tdir)
+     download.file(file, file.path(tdir, data))
+     return(readRDS(file.path(tdir, data)))
+ }
R> WeatherGermany10 <- download_data("WeatherGermany10.rds")
```

1. Firstly, subset the dataset to include only observations from the city of Munich. The objective is to establish a suitable model for explaining the maximum wind speed.

2. Next, identify an appropriate distribution for the response variable `Wmax`. Present a histogram of the response also displaying estimated densities from intercept-only models for the top three candidate distributions.

3. Subsequently, incorporate temporal information into the models to develop a climatology model for the maximum wind speed. Assess whether there is a discernible trend indicating an increase in maximum wind speed over time.