Environmental and Bioclimatic variables from MadaClim web site (<https://madaclim.cirad.fr/)>.

**ENVIRONMENTAL VARIABLES**

1 Altitude (m)

2 Slope (in degree)

3 Aspect (clockwise from North, in degree)

4 Solar radiation (Wh.m-2.day-1)

5 Geology (Kew Botanical Garden, 1997)

6 Soil (Delenne & Pelletier, 1981)

7 Vegetation (Kew Botanical Garden, 2007)

8 Watersheds (Pearson, 2009)

9 Percentage of forest cover for the year 2010 (%).

**BIOCLIMATIC VARIABLES**

Bioclimatic variables are derived from the monthly temperature and precipitation values in order to generate more biologically meaningful variables. The bioclimatic variables represent annual trends (e.g., mean annual temperature, annual precipitation), seasonality (e.g., annual range in temperature and precipitation) and extreme or limiting environmental factors (e.g., temperature of the coldest and warmest month, and precipitation of the wet and dry quarters). A quarter is a period of three months (1/4 of the year).

They are coded as follows:

Bioclimatic variable description

bio1 Annual mean temperature

bio2 Mean diurnal range (mean of monthly (max temp - min temp))

bio3 Isothermality (BIO2/BIO7) (× 100)

bio4 Temperature seasonality (standard deviation × 100)

bio5 Max temperature of warmest month

bio6 Min temperature of coldest month

bio7 Temperature annual range (BIO5-BIO6)

bio8 Mean temperature of wettest quarter

bio9 Mean temperature of driest quarter

bio10 Mean temperature of warmest quarter

bio11 Mean temperature of coldest quarter

bio12 Annual precipitation

bio13 Precipitation of wettest month

bio14 Precipitation of driest month

bio15 Precipitation seasonality (coefficient of variation)

bio16 Precipitation of wettest quarter

bio17 Precipitation of driest quarter

bio18 Precipitation of warmest quarter

bio19 Precipitation of coldest quarter