

# Presentation of the UTM5 environmental dataset

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## Introduction

The UTM5 environmental dataset contains 157 descriptive environmental variables for the 1375 5x5 km UTM/MGRS squares covering Belgium. The MGRS grid is widely used in Europe for biodiversity monitoring projects. MGRS stands for “Military Grid Reference System” and uses the “UTM” ie “Universal Transverse Mercator” coordinate reference system (CRS). See for example [here](#) for more information on this grid.

These descriptive variables can be divided in several main groups detailed hereafter:

- MGRS grid ID and coordinates (columns 1-5)
- Administrative regions (columns 6-10)
- Natural regions (columns 11-21)
- Soil data (columns 21-33)
- Worldclim : altitude and climatic data (columns 34-125)
- Corine Land Cover (clc) : land cover data (columns 126-157)

These data can be reproduced from the raw data with the `UTM5data_CreateData.R` R script.

## Description of the datasets

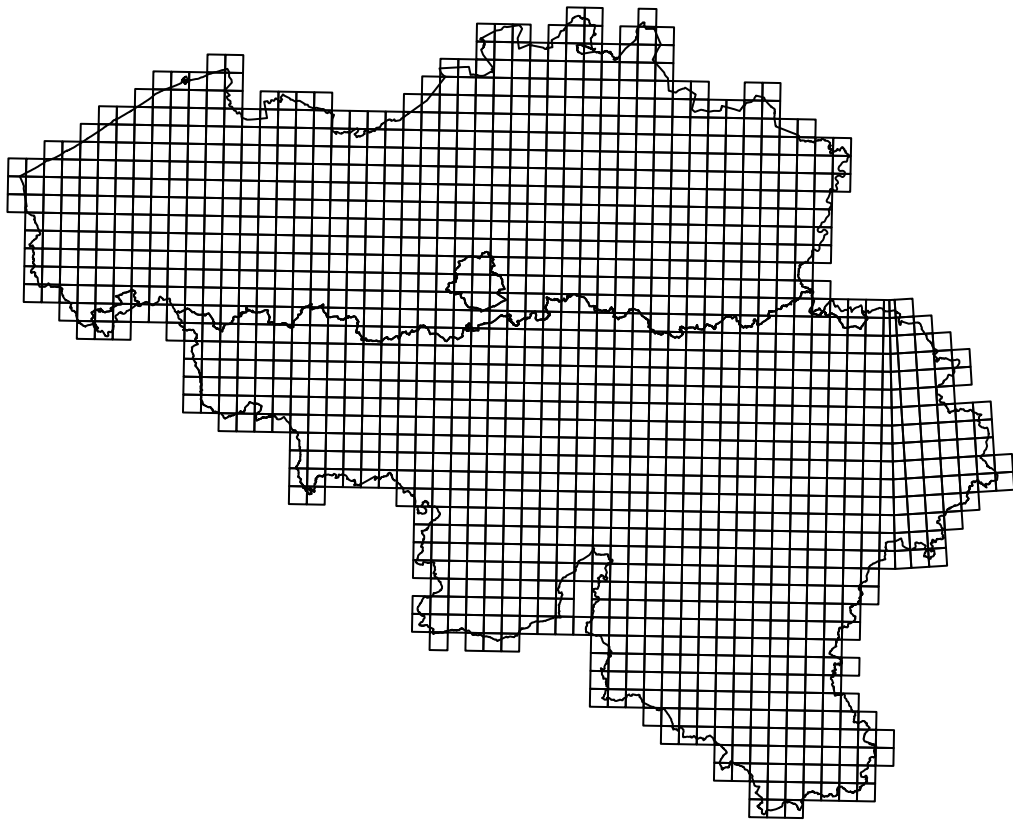
### MGRS grid ID and coordinates (columns 1-5)

The 5x5 km MGRS grid are non standard ones but are frequently used in small sized countries like Belgium or Switzerland. Each grid square is identified by an alphanumeric code like 31UFR215505 that represents the standard 100x100m square at the center of the 5x5 km square.

We provide the following information :

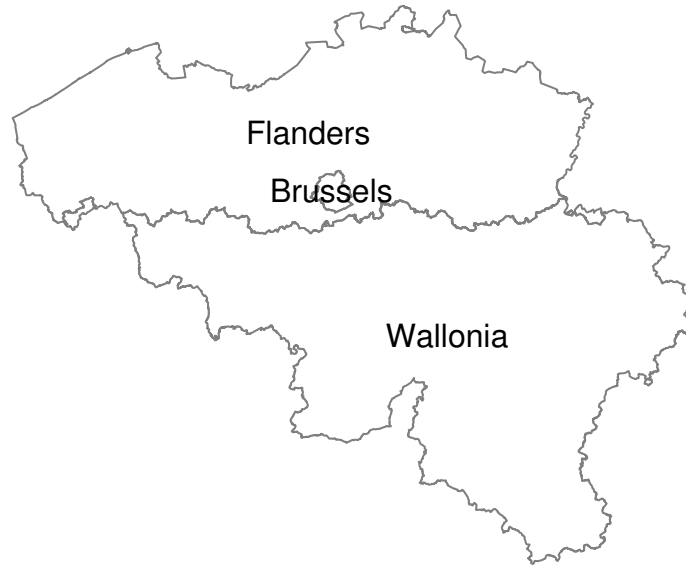
- MGRS : id code of the square
- X Y : projected coordinates of the center of the square in meters (Belgian Lambert 1972 crs EPSG 31370)
- long lat : unprojected geographic coordinates in degrees (WGS84)

Graphical representation. Note that some “grid squares” are not real squares in the eastern part of Belgium (this is due to the transfiton between the 31U and 32U zones)



## Administrative regions (columns 6-10)

- Brussels, Flanders, Wallonia : surface (in km<sup>2</sup>) of each of the main administrative regions in Belgium for each square.
- region : administrative region with the main surface in each square
- Belgium : sum of the surfaces of the 3 regions



## Natural regions (columns 11-21)

Simplified natural region data. The columns 11-20 provide the proportion (in %) of the Belgian surface for each natural region. NB : this does not take into account the surfaces that are outside Belgium.

The column “naturalRegion” provides the natural region with the main surface in each square.

NB : The “Famenne” region includes the regions “Fagne” and “Calestienne”.

Map of the natural regions :



## Soil data (columns 21-33)

The soil data (columns 21-23 beginning with “soil”) are derived from a vectorial spatial dataset for Belgium (Maréchal & Tavernier 1974) with 63 soil categories (Tavernier\_Bel.shp). These 63 categories have been grouped into 11 main types. The correspondance between the original types and the grouped ones can be found the the file libSoil.csv.

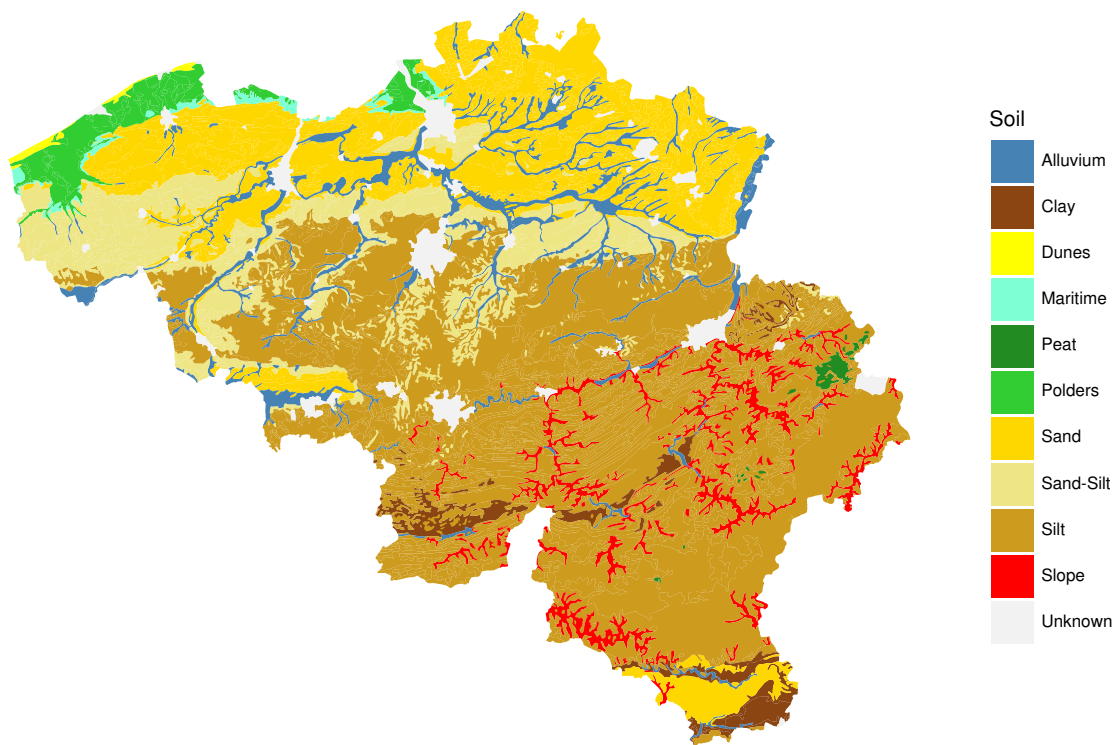
The soil\_xx columns provide de proportion (in %) of the Belgian surface for each soil category. NB : the surface outside Belgium is not taken into consideration.

The column “soil” provides the soil type with the main surface in each square.

NB : the “unknown” soil category corresponds mainly to highly urbanized areas. There were a few UTM squares for which the extraction of soil data was not possible due to geometry problems. These squares have “NA” (Not Available) values for soild data.

Maréchal R. & Tavernier R., 1974. Pédologie – Commentaire des planches 11A (extraits de la carte des sols) et 11B (associations de sols) de l’Atlas de Belgique. Gand, Belgique : Commission de l’Atlas, Comité National de Géographie.

Map :



## Worldclim : altitude and climatic data (columns 34-125)

The altitude and climatic data have been extracted from the [worldclim](#) dataset. These data are interpolated data (1060-1990 or 1970-2000) with a resolution of 30 seconds ( $<1\text{km}^2$ ) with a value for each month of the year. For each  $5\text{km}^2$  UTM grid squares we have extracted the  $\sim 1\text{km}^2$  worldclim data and computed their mean

- alt : altitude in meters above sea level
- bio01-bio19 : bioclimatic variables (see below)
- prec01-prec12 : precipitations in mm from January (prec01) to December (prec12)
- tmax01-tmax12 : maximum temperature in °C
- tmean01-tmean12 : average temperature in °C
- tmin01-tmin12 : minimum temperature in °C
- srad01-srad12 : solar radiation in  $\text{kJ}/(\text{m}^2 \text{ day})$
- wind01-wind12 : wind speed in m/s

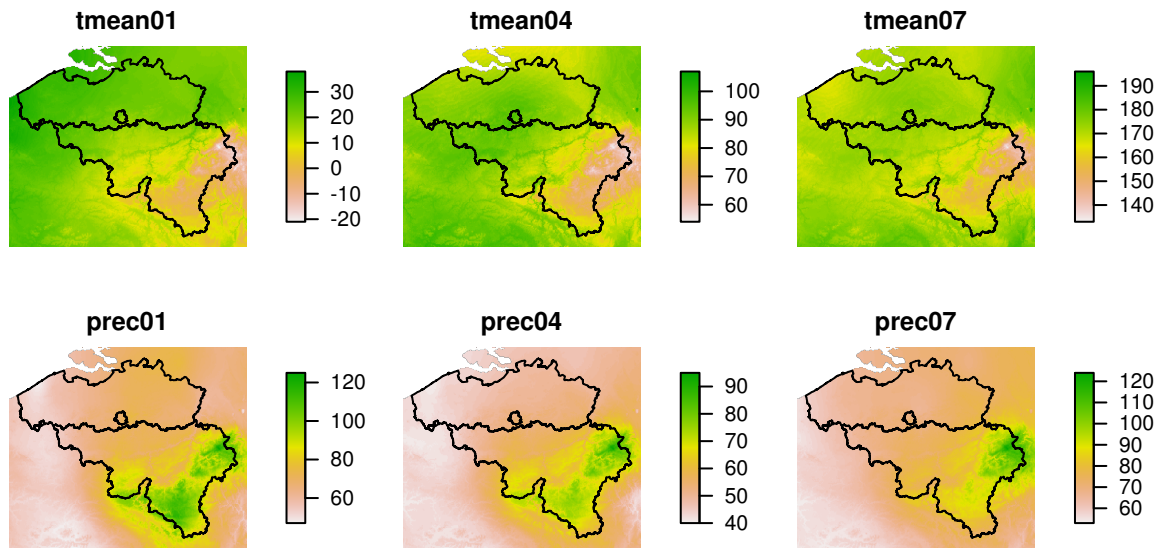
The solar radiation and wind data have been extracted from the beta release (1 June 2016) of worldclim version 2 available [here](#). The other variables are from worldclim 1.4 available [here](#) (tile 16 for Belgium).

The “bioclimatic” variables are 19 climatic variables derived from the other climatic data that are often interesting for species distribution modelling and other biological dataset. See [here](#) for more information.

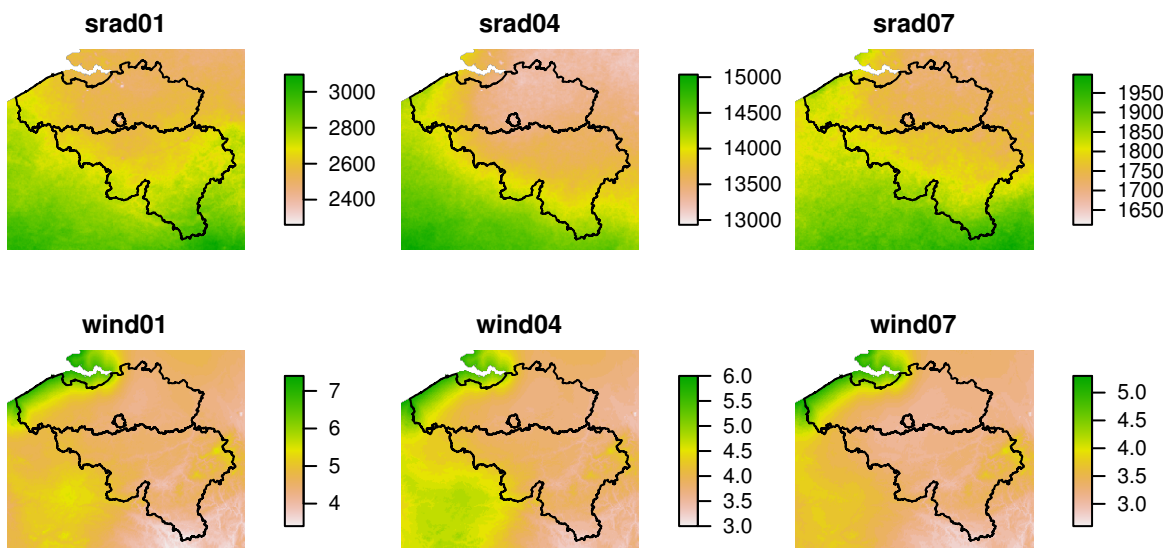
Copy/paste from bioclim webpage :

- 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

Maps of mean temperature and precipitation in January, April and July

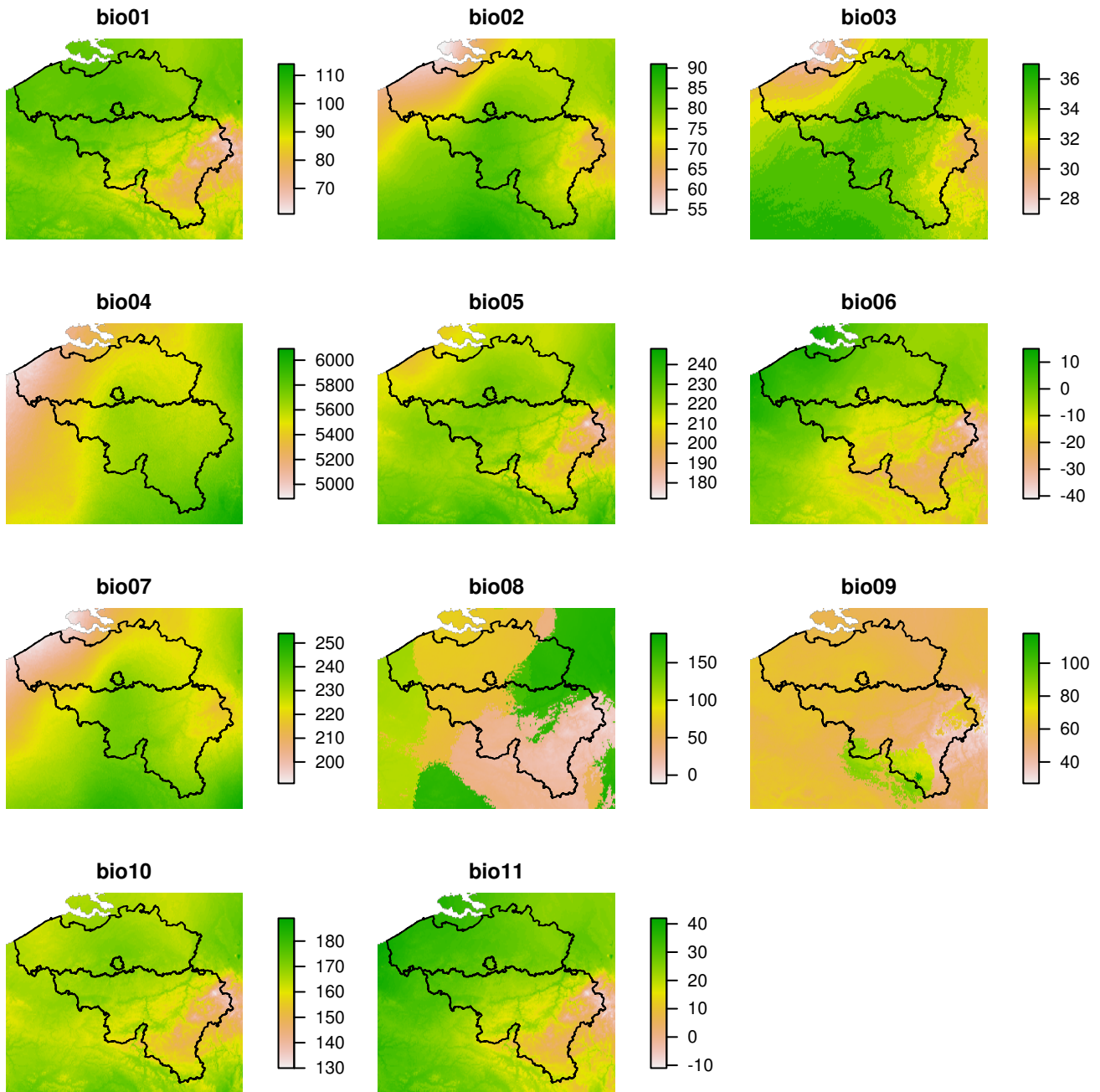


Maps of solar radiation and wind speed in January, April and July

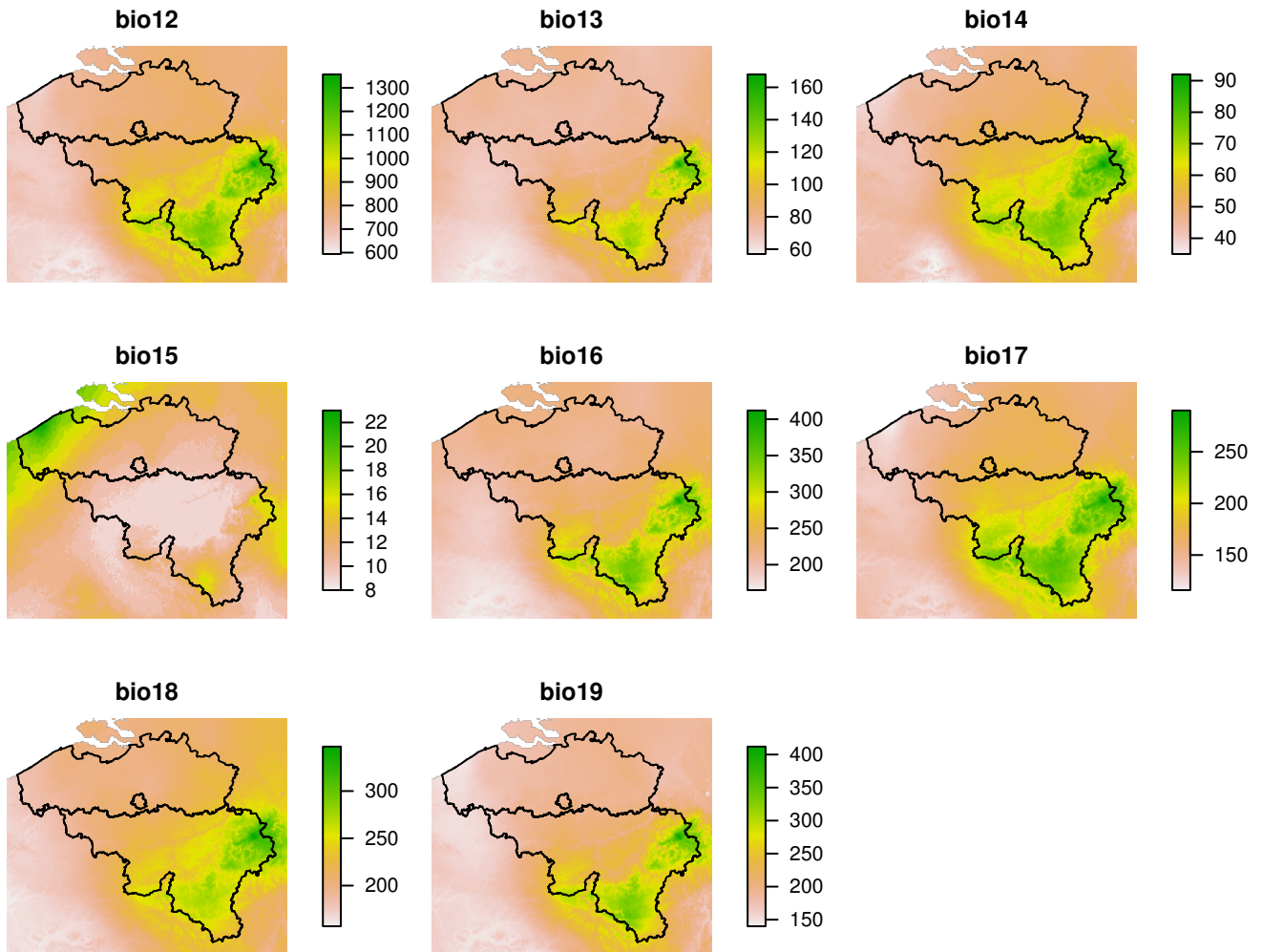




Maps of the temperature related bioclim variables



Maps of the precipitation related bioclim variables



## Corine Land Cover (clc) : land cover data (columns 126-157)

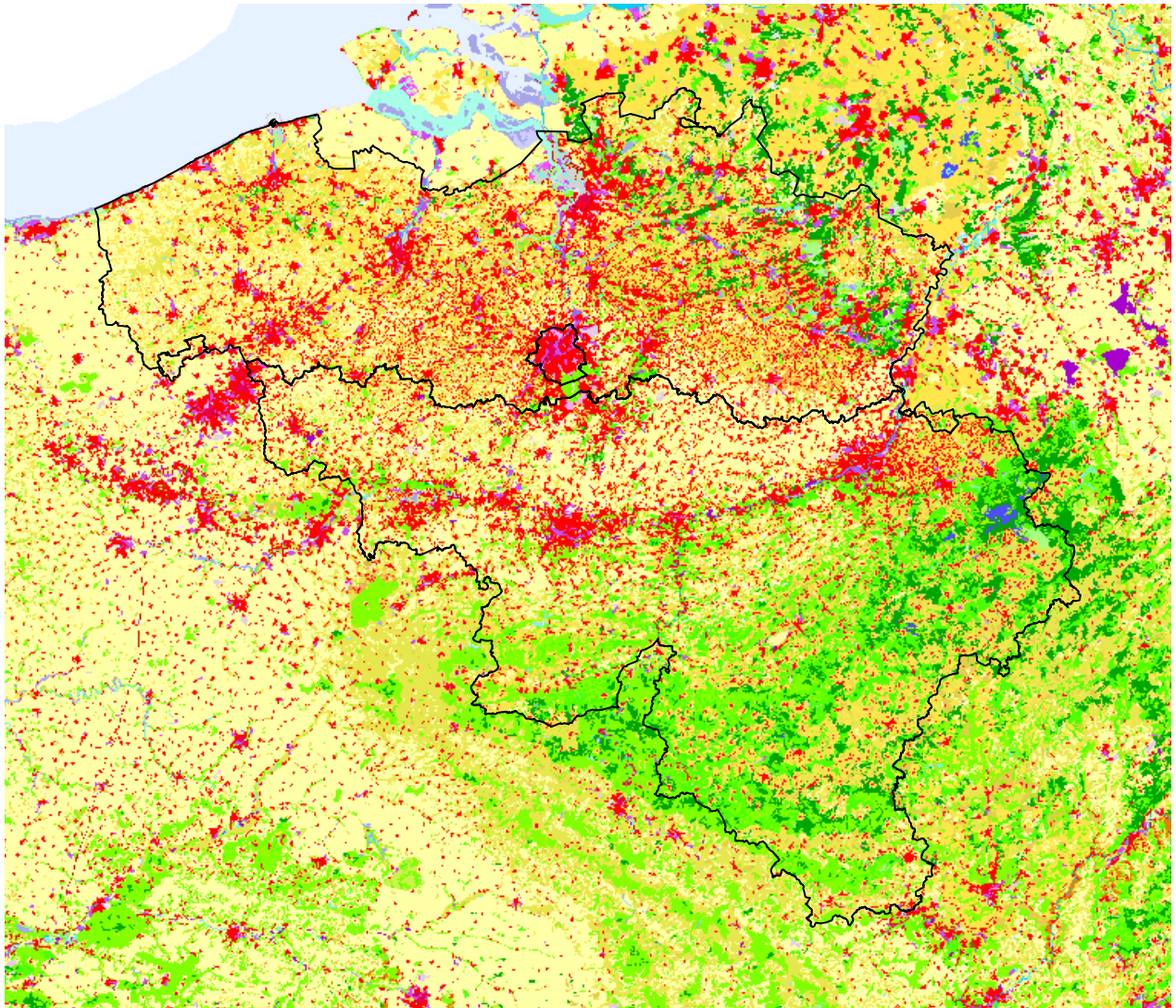
We used the 100m Corine land cover raster data 2000 available [here](#). We extracted the 100m<sup>2</sup> values for each 5km<sup>2</sup> UTM grid squared, counted the number of squares for each category and computed the proportion (in %) of the total number. These values are then an estimate of the proportion of the total square surface (not only the Belgian part of the square) covered by each land cover.

The Corine land cover classes have 3 levels of precision and are codified with 1 to 3 numbers. The first number corresponds to the coarser categories (1 = urbanized areas, 2 = agriculture, 3 = forests and natural areas, etc...). The 2nd and 3rd numbers provide increasing precision information.

CODE	LABEL1	LABEL2	LABEL3
111	Artificial surfaces	Urban fabric	Continuous urban fabric
112	Artificial surfaces	Urban fabric	Discontinuous urban fabric
121	Artificial surfaces	Industrial, commercial and transport units	Industrial or commercial units
122	Artificial surfaces	Industrial, commercial and transport units	Road and rail networks and associated land
123	Artificial surfaces	Industrial, commercial and transport units	Port areas
124	Artificial surfaces	Industrial, commercial and transport units	Airports
131	Artificial surfaces	Mine, dump and construction sites	Mineral extraction sites
132	Artificial surfaces	Mine, dump and construction sites	Dump sites
133	Artificial surfaces	Mine, dump and construction sites	Construction sites
141	Artificial surfaces	Artificial, non-agricultural vegetated areas	Green urban areas
142	Artificial surfaces	Artificial, non-agricultural vegetated areas	Sport and leisure facilities
211	Agricultural areas	Arable land	Non-irrigated arable land
212	Agricultural areas	Arable land	Permanently irrigated land
213	Agricultural areas	Arable land	Rice fields
221	Agricultural areas	Permanent crops	Vineyards
222	Agricultural areas	Permanent crops	Fruit trees and berry plantations
223	Agricultural areas	Permanent crops	Olive groves
231	Agricultural areas	Pastures	Pastures
241	Agricultural areas	Heterogeneous agricultural areas	Annual crops associated with permanent crops
242	Agricultural areas	Heterogeneous agricultural areas	Complex cultivation patterns
243	Agricultural areas	Heterogeneous agricultural areas	mainly agriculture with natural areas
244	Agricultural areas	Heterogeneous agricultural areas	Agro-forestry areas
311	Forest/semi natural areas	Forests	Broad-leaved forest
312	Forest/semi natural areas	Forests	Coniferous forest
313	Forest/semi natural areas	Forests	Mixed forest
321	Forest/semi natural areas	Scrub/herbaceous vegetation associations	Natural grasslands
322	Forest/semi natural areas	Scrub/herbaceous vegetation associations	Moors and heathland
323	Forest/semi natural areas	Scrub/herbaceous vegetation associations	Sclerophyllous vegetation
324	Forest/semi natural areas	Scrub/herbaceous vegetation associations	Transitional woodland-shrub
331	Forest/semi natural areas	Open spaces with little or no vegetation	Beaches, dunes, sands
332	Forest/semi natural areas	Open spaces with little or no vegetation	Bare rocks
333	Forest/semi natural areas	Open spaces with little or no vegetation	Sparsely vegetated areas
334	Forest/semi natural areas	Open spaces with little or no vegetation	Burnt areas
335	Forest/semi natural areas	Open spaces with little or no vegetation	Glaciers and perpetual snow
411	Wetlands	Inland wetlands	Inland marshes
412	Wetlands	Inland wetlands	Peat bogs
421	Wetlands	Maritime wetlands	Salt marshes
422	Wetlands	Maritime wetlands	Salines
423	Wetlands	Maritime wetlands	Intertidal flats
511	Water bodies	Inland waters	Water courses
512	Water bodies	Inland waters	Water bodies
521	Water bodies	Marine waters	Coastal lagoons
522	Water bodies	Marine waters	Estuaries
523	Water bodies	Marine waters	Sea and ocean
999	NODATA	NODATA	NODATA
990	UNCLASSIFIED	UNCLASSIFIED LAND SURFACE	UNCLASSIFIED LAND SURFACE

CODE	LABEL1	LABEL2	LABEL3
995	UNCLASSIFIED	UNCLASSIFIED WATER BODIES	UNCLASSIFIED WATER BODIES
990	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED

Corine Land Cover map (red = clc1 urbanized areas, brown = clc2 agriculture, green = clc3 forests and natural areas,...)



## Summary of the whole dataset

```

##          MGRS          x          y          long          lat          Brussels
## 31UDS675525: 1  Min.    : 21370  Min.    : 22664  Min.    :2.534  Min.    :49.51  Min.    : 0.0000
## 31UDS675575: 1  1st Qu.:125788  1st Qu.:112268  1st Qu.:4.026  1st Qu.:50.31  1st Qu.: 0.0000
## 31UDS675625: 1  Median :180007  Median :150775  Median :4.790  Median :50.66  Median : 0.0000
## 31UDS725275: 1  Mean    :171935  Mean    :147161  Mean    :4.675  Mean    :50.63  Mean    : 0.1183
## 31UDS725325: 1  3rd Qu.:224957  3rd Qu.:188884  3rd Qu.:5.421  3rd Qu.:51.01  3rd Qu.: 0.0000
## 31UDS725375: 1  Max.    :297143  Max.    :243841  Max.    :6.435  Max.    :51.50  Max.    :25.0100
## (Other)      :1369                                     NA's    :1
##          Flanders          Wallonia          region          Belgium          Ardenne          Campine
## Min.    : 0.000  Min.    : 0.00  Brussels: 7  Min.    : 0.00  Min.    : 0.000  Min.    : 0.000
## 1st Qu.: 0.000  1st Qu.: 0.00  Flanders:600  1st Qu.:24.99  1st Qu.: 0.000  1st Qu.: 0.000
## Median : 0.000  Median :11.98  Wallonia:767  Median :25.00  Median : 0.000  Median : 0.000
## Mean    : 9.887  Mean    :12.30  NA's      : 1  Mean    :22.31  Mean    : 4.152  Mean    : 3.051
## 3rd Qu.:25.010  3rd Qu.:25.00  3rd Qu.:25.01  3rd Qu.: 0.000  3rd Qu.: 0.000  3rd Qu.: 0.000
## Max.    :25.020  Max.    :25.02  Max.    :25.02  Max.    :25.010  Max.    :25.020
## NA's    :1      NA's    :1      NA's    :1
##          Condroz          Dunes          Famenne          Lorraine          Meuse          Polders
## Min.    : 0.000  Min.    : 0.00000  Min.    : 0.000  Min.    : 0.0000  Min.    : 0.00000  Min.    : 0.000
## 1st Qu.: 0.000  1st Qu.: 0.00000  1st Qu.: 0.000  1st Qu.: 0.0000  1st Qu.: 0.00000  1st Qu.: 0.000
## Median : 0.000  Median : 0.00000  Median : 0.000  Median : 0.0000  Median : 0.00000  Median : 0.000
## Mean    : 2.595  Mean    : 0.06957  Mean    : 1.189  Mean    : 0.6194  Mean    : 0.05811  Mean    : 0.808
## 3rd Qu.: 0.000  3rd Qu.: 0.00000  3rd Qu.: 0.000  3rd Qu.: 0.0000  3rd Qu.: 0.00000  3rd Qu.: 0.000
## Max.    :25.010  Max.    :11.74000  Max.    :25.010  Max.    :25.0000  Max.    :14.09000  Max.    :25.020
##
##          Limoneuse          SabloLimoneuse          naturalRegion          soil_Alluvium          soil_Clay          soil_Dunes
## Min.    : 0.00  Min.    : 0.000  Limoneuse      :382  Min.    : 0.000  Min.    : 0.000  Min.    : 0.000
## 1st Qu.: 0.00  1st Qu.: 0.000  Ardenne        :275  1st Qu.: 0.000  1st Qu.: 0.000  1st Qu.: 0.000
## Median : 0.00  Median : 0.000  Campine        :186  Median : 0.000  Median : 0.000  Median : 0.000
## Mean    : 6.53  Mean    : 3.225  SabloLimoneuse:186  Mean    : 6.026  Mean    : 2.623  Mean    : 0.52
## 3rd Qu.:15.76  3rd Qu.: 0.000  Condroz        :156  3rd Qu.: 7.195  3rd Qu.: 0.000  3rd Qu.: 0.000
## Max.    :25.02  Max.    :25.020  Famenne        : 70  Max.    :100.000  Max.    :100.000  Max.    :100.000
## (Other)      :120  NA's      :8  NA's      :8  NA's      :8
##          soil_Maritime          soil_Peat          soil_Polders          soil_Sand          soil_Sand.Silt          soil_Silt
## Min.    : 0.0000  Min.    : 0.0000  Min.    : 0.000  Min.    : 0.00  Min.    : 0.00  Min.    : 0.00
## 1st Qu.: 0.0000  1st Qu.: 0.0000  1st Qu.: 0.000  1st Qu.: 0.00  1st Qu.: 0.00  1st Qu.: 0.00
## Median : 0.0000  Median : 0.0000  Median : 0.000  Median : 0.00  Median : 0.00  Median : 51.70
## Mean    : 0.8924  Mean    : 0.3116  Mean    : 3.005  Mean    : 20.86  Mean    : 12.39  Mean    : 45.61
## 3rd Qu.: 0.0000  3rd Qu.: 0.0000  3rd Qu.: 0.000  3rd Qu.: 35.13  3rd Qu.: 9.05  3rd Qu.: 88.06
## Max.    :98.3700  Max.    :71.7700  Max.    :100.000  Max.    :100.00  Max.    :100.00  Max.    :100.00
## NA's    :8      NA's    :8      NA's    :8      NA's    :8      NA's    :8
##          soil_Slope          soil_Unknown          soil          alt          bio01          bio02
## Min.    : 0.000  Min.    : 0.000  Silt          :708  Min.    : -2.45  Min.    : 65.34  Min.    :56.68
## 1st Qu.: 0.000  1st Qu.: 0.000  Sand          :316  1st Qu.: 22.57  1st Qu.: 89.89  1st Qu.:71.90
## Median : 0.000  Median : 0.000  Sand-Silt:160  Median : 86.47  Median : 96.85  Median :76.65
## Mean    : 4.437  Mean    : 3.318  Polders      : 44  Mean    :159.78  Mean    : 94.15  Mean    :75.23
## 3rd Qu.: 0.235  3rd Qu.: 0.000  Alluvium     : 35  3rd Qu.:262.11  3rd Qu.:100.73  3rd Qu.:79.88
## Max.    :100.000  Max.    :100.000  (Other)      :104  Max.    :650.06  Max.    :103.50  Max.    :84.00
## NA's    :8      NA's    :8      NA's    : 8
##          bio03          bio04          bio05          bio06          bio07          bio08
## Min.    :28.68  Min.    :4920  Min.    :179.2  Min.    : -37.200  Min.    :192.8  Min.    : 1.56
## 1st Qu.:32.21  1st Qu.:5455  1st Qu.:212.0  1st Qu.: -15.170  1st Qu.:219.9  1st Qu.: 27.30
## Median :33.50  Median :5574  Median :217.8  Median : -6.780  Median :225.4  Median : 69.85
## Mean    :33.09  Mean    :5521  Mean    :215.8  Mean    : -8.068  Mean    :223.9  Mean    : 74.26
## 3rd Qu.:34.00  3rd Qu.:5647  3rd Qu.:221.8  3rd Qu.: -1.345  3rd Qu.:231.9  3rd Qu.:106.67
## Max.    :35.00  Max.    :5876  Max.    :228.7  Max.    : 12.800  Max.    :239.1  Max.    :169.95

```

```

##
##      bio09          bio10          bio11          bio12          bio13          bio14
## Min.   : 35.05    Min.   :135.4    Min.   : -7.44    Min.   : 651.7    Min.   : 68.59    Min.   :37.00
## 1st Qu.: 54.73    1st Qu.:161.4    1st Qu.:17.77    1st Qu.: 775.2    1st Qu.: 75.00    1st Qu.:49.09
## Median : 59.75    Median :165.2    Median :25.48    Median : 815.9    Median : 77.70    Median :54.23
## Mean   : 59.13    Mean   :163.4    Mean   :23.26    Mean   : 860.4    Mean   : 85.64    Mean   :56.83
## 3rd Qu.: 62.32    3rd Qu.:167.8    3rd Qu.:30.26    3rd Qu.: 945.5    3rd Qu.: 92.08    3rd Qu.:64.86
## Max.   :107.91    Max.   :172.2    Max.   :40.68    Max.   :1284.5    Max.   :153.82    Max.   :88.53
##
##      bio15          bio16          bio17          bio18          bio19          prec01
## Min.   : 8.980    Min.   :193.6    Min.   :117.3    Min.   :176.8    Min.   :148.6    Min.   : 47.33
## 1st Qu.: 9.835    1st Qu.:215.9    1st Qu.:165.1    1st Qu.:201.0    1st Qu.:188.0    1st Qu.: 65.25
## Median :11.000    Median :223.5    Median :177.6    Median :219.8    Median :199.5    Median : 71.11
## Mean   :11.663    Mean   :243.5    Mean   :185.6    Mean   :225.6    Mean   :218.3    Mean   : 74.52
## 3rd Qu.:12.880    3rd Qu.:265.6    3rd Qu.:209.3    3rd Qu.:246.5    3rd Qu.:246.6    3rd Qu.: 83.05
## Max.   :23.000    Max.   :384.4    Max.   :277.0    Max.   :331.6    Max.   :380.6    Max.   :117.31
##
##      prec02          prec03          prec04          prec05          prec06          prec07
## Min.   : 38.73    Min.   :37.00    Min.   :40.67    Min.   :44.00    Min.   : 47.00    Min.   : 57.80
## 1st Qu.: 50.00    1st Qu.:62.99    1st Qu.:49.12    1st Qu.:60.38    1st Qu.: 68.93    1st Qu.: 68.31
## Median : 56.69    Median :68.20    Median :54.23    Median :68.33    Median : 76.21    Median : 73.53
## Mean   : 61.54    Mean   :67.74    Mean   :56.95    Mean   :68.37    Mean   : 75.90    Mean   : 75.98
## 3rd Qu.: 71.30    3rd Qu.:73.89    3rd Qu.:64.94    3rd Qu.:77.29    3rd Qu.: 83.89    3rd Qu.: 81.20
## Max.   :109.53    Max.   :93.84    Max.   :89.63    Max.   :93.55    Max.   :105.69    Max.   :118.20
##
##      prec08          prec09          prec10          prec11          prec12          tmax01
## Min.   : 55.80    Min.   :60.04    Min.   :62.93    Min.   : 66.54    Min.   : 58.41    Min.   : 2.80
## 1st Qu.: 65.02    1st Qu.:65.00    1st Qu.:70.48    1st Qu.: 72.24    1st Qu.: 70.00    1st Qu.:34.63
## Median : 69.79    Median :67.00    Median :73.08    Median : 76.60    Median : 74.25    Median :44.88
## Mean   : 72.99    Mean   :69.15    Mean   :73.84    Mean   : 81.25    Mean   : 82.21    Mean   :40.22
## 3rd Qu.: 80.53    3rd Qu.:72.89    3rd Qu.:76.33    3rd Qu.: 89.05    3rd Qu.: 91.92    3rd Qu.:48.20
## Max.   :107.69    Max.   :88.61    Max.   :93.45    Max.   :113.20    Max.   :153.82    Max.   :58.73
##
##      tmax02          tmax03          tmax04          tmax05          tmax06          tmax07
## Min.   :23.60    Min.   : 55.70    Min.   : 96.43    Min.   :137.2    Min.   :174.3    Min.   :179.2
## 1st Qu.:52.35    1st Qu.: 87.81    1st Qu.:123.64    1st Qu.:166.2    1st Qu.:197.9    1st Qu.:211.1
## Median :59.76    Median : 92.40    Median :129.38    Median :173.1    Median :205.4    Median :217.7
## Mean   :56.21    Mean   : 90.53    Mean   :128.02    Mean   :171.0    Mean   :203.6    Mean   :215.4
## 3rd Qu.:62.06    3rd Qu.: 96.33    3rd Qu.:134.63    3rd Qu.:177.4    3rd Qu.:210.4    3rd Qu.:221.7
## Max.   :67.06    Max.   :104.00    Max.   :143.35    Max.   :185.4    Max.   :220.2    Max.   :228.7
##
##      tmax08          tmax09          tmax10          tmax11          tmax12          tmean01
## Min.   :176.4    Min.   :156.6    Min.   :110.0    Min.   : 47.76    Min.   :16.86    Min.   : -17.38
## 1st Qu.:210.9    1st Qu.:187.0    1st Qu.:136.8    1st Qu.: 75.09    1st Qu.:44.45    1st Qu.: 9.30
## Median :216.7    Median :192.1    Median :145.6    Median : 85.14    Median :53.27    Median : 18.74
## Mean   :214.0    Mean   :190.1    Mean   :141.7    Mean   : 82.12    Mean   :50.47    Mean   : 15.84
## 3rd Qu.:220.1    3rd Qu.:196.3    3rd Qu.:148.7    3rd Qu.: 90.94    3rd Qu.:59.02    3rd Qu.: 23.00
## Max.   :225.9    Max.   :206.2    Max.   :155.1    Max.   :101.70    Max.   :68.07    Max.   : 35.73
##
##      tmean02          tmean03          tmean04          tmean05          tmean06          tmean07
## Min.   : -1.96    Min.   :22.54    Min.   :57.02    Min.   : 95.18    Min.   :129.6    Min.   :139.3
## 1st Qu.:23.12    1st Qu.:48.72    1st Qu.:81.52    1st Qu.:121.25    1st Qu.:151.6    1st Qu.:166.3
## Median :29.71    Median :55.27    Median :86.96    Median :125.52    Median :156.0    Median :170.4
## Mean   :27.72    Mean   :53.05    Mean   :84.77    Mean   :123.50    Mean   :154.5    Mean   :168.4
## 3rd Qu.:34.37    3rd Qu.:59.70    3rd Qu.:90.42    3rd Qu.:127.99    3rd Qu.:159.1    3rd Qu.:172.8
## Max.   :41.70    Max.   :64.00    Max.   :96.96    Max.   :133.35    Max.   :165.4    Max.   :176.9
##

```

```

##      tmean08      tmean09      tmean10      tmean11      tmean12      tmin01
## Min.   :137.6   Min.   :117.5   Min.   : 77.46   Min.   :25.24   Min.   :-2.53   Min.   :-37.200
## 1st Qu.:165.2   1st Qu.:140.8   1st Qu.: 98.51   1st Qu.:48.76   1st Qu.:20.96   1st Qu.: -15.170
## Median :170.1   Median :147.6   Median :107.43   Median :57.82   Median :28.94   Median : -6.780
## Mean   :167.9   Mean   :145.8   Mean   :104.83   Mean   :55.77   Mean   :27.20   Mean    : -8.068
## 3rd Qu.:172.8   3rd Qu.:153.5   3rd Qu.:112.96   3rd Qu.:64.10   3rd Qu.:34.70   3rd Qu.: -1.345
## Max.   :176.2   Max.   :156.9   Max.   :118.73   Max.   :75.70   Max.   :46.07   Max.    : 12.800
##
##      tmin02      tmin03      tmin04      tmin05      tmin06      tmin07
## Min.   :-26.9600   Min.   :-10.360   Min.   :17.84   Min.   :53.50   Min.   : 85.6   Min.   :100.0
## 1st Qu.: -5.5650   1st Qu.: 9.825   1st Qu.:36.00   1st Qu.:70.80   1st Qu.:101.6   1st Qu.:117.1
## Median : -0.1400   Median : 17.500   Median :43.43   Median :78.62   Median :107.7   Median :123.3
## Mean   : -0.2938   Mean   : 16.060   Mean   :42.02   Mean   :76.52   Mean   :105.9   Mean   :121.9
## 3rd Qu.: 6.0800   3rd Qu.:23.885   3rd Qu.:49.84   3rd Qu.:82.04   3rd Qu.:110.7   3rd Qu.:126.7
## Max.   : 18.7000   Max.   : 30.390   Max.   :56.90   Max.   :92.67   Max.   :117.2   Max.   :136.5
##
##      tmin08      tmin09      tmin10      tmin11      tmin12      srad01
## Min.   : 99.27   Min.   : 79.00   Min.   :45.38   Min.   : 3.22   Min.   :-21.440   Min.   :2407
## 1st Qu.:117.09   1st Qu.: 94.89   1st Qu.:60.13   1st Qu.:22.48   1st Qu.: -2.045   1st Qu.:2560
## Median :122.84   Median :101.80   Median :69.98   Median :31.04   Median : 5.120   Median :2625
## Mean   :122.36   Mean   :101.94   Mean   :68.43   Mean   :29.92   Mean   : 4.429   Mean   :2637
## 3rd Qu.:127.39   3rd Qu.:109.43   3rd Qu.:76.73   3rd Qu.:37.73   3rd Qu.: 10.820   3rd Qu.:2697
## Max.   :139.50   Max.   :122.18   Max.   :90.00   Max.   :50.00   Max.   : 24.250   Max.   :2977
##                                     NA's   :2
##      srad02      srad03      srad04      srad05      srad06      srad07
## Min.   :4755   Min.   :8247   Min.   :13178   Min.   :16839   Min.   :17647   Min.   :16972
## 1st Qu.:4907   1st Qu.:8492   1st Qu.:13430   1st Qu.:17137   1st Qu.:18091   1st Qu.:17451
## Median :4989   Median :8722   Median :13636   Median :17263   Median :18286   Median :17771
## Mean   :5029   Mean   :8739   Mean   :13666   Mean   :17260   Mean   :18324   Mean   :17826
## 3rd Qu.:5113   3rd Qu.:8913   3rd Qu.:13872   3rd Qu.:17355   3rd Qu.:18467   3rd Qu.:18131
## Max.   :5593   Max.   :9585   Max.   :14433   Max.   :18207   Max.   :19604   Max.   :19447
## NA's   :2     NA's   :2     NA's   :2     NA's   :2     NA's   :2     NA's   :2
##      srad08      srad09      srad10      srad11      srad12      wind01      wind02
## Min.   :15123   Min.   :10497   Min.   :6297   Min.   :3071   Min.   :1824   Min.   :3.550   Min.   :3.2
## 1st Qu.:15444   1st Qu.:10764   1st Qu.:6456   1st Qu.:3167   1st Qu.:1949   1st Qu.:4.380   1st Qu.:4.0
## Median :15630   Median :10956   Median :6564   Median :3205   Median :2007   Median :4.500   Median :4.5
## Mean   :15649   Mean   :10994   Mean   :6580   Mean   :3213   Mean   :2029   Mean   :4.664   Mean   :4.2
## 3rd Qu.:15792   3rd Qu.:11154   3rd Qu.:6696   3rd Qu.:3252   3rd Qu.:2082   3rd Qu.:4.800   3rd Qu.:4.4
## Max.   :16537   Max.   :11990   Max.   :7054   Max.   :3487   Max.   :2375   Max.   :7.170   Max.   :6.3
## NA's   :2     NA's   :2     NA's   :2     NA's   :2     NA's   :2     NA's   :2
##      wind03      wind04      wind05      wind06      wind07      wind08
## Min.   :3.520   Min.   :3.290   Min.   :3.020   Min.   :2.790   Min.   :2.820   Min.   :2.610
## 1st Qu.:4.120   1st Qu.:3.720   1st Qu.:3.380   1st Qu.:3.200   1st Qu.:3.160   1st Qu.:2.970
## Median :4.200   Median :3.830   Median :3.490   Median :3.300   Median :3.240   Median :3.060
## Mean   :4.351   Mean   :3.979   Mean   :3.619   Mean   :3.421   Mean   :3.382   Mean   :3.184
## 3rd Qu.:4.430   3rd Qu.:4.090   3rd Qu.:3.700   3rd Qu.:3.490   3rd Qu.:3.420   3rd Qu.:3.240
## Max.   :6.300   Max.   :5.880   Max.   :5.480   Max.   :5.200   Max.   :5.200   Max.   :5.010
## NA's   :2     NA's   :2     NA's   :2     NA's   :2     NA's   :2     NA's   :2
##      wind09      wind10      wind11      wind12      clc1      clc10
## Min.   :2.720   Min.   :2.940   Min.   :3.07   Min.   :3.340   Min.   : 0.0000   Min.   : 0.0000
## 1st Qu.:3.240   1st Qu.:3.520   1st Qu.:3.88   1st Qu.:4.200   1st Qu.: 0.0000   1st Qu.: 0.0000
## Median :3.360   Median :3.680   Median :4.04   Median :4.350   Median : 0.0000   Median : 0.0000
## Mean   :3.493   Mean   :3.812   Mean   :4.16   Mean   :4.483   Mean   : 0.1724   Mean   : 0.1341
## 3rd Qu.:3.550   3rd Qu.:3.920   3rd Qu.:4.26   3rd Qu.:4.600   3rd Qu.: 0.0000   3rd Qu.: 0.0000
## Max.   :5.630   Max.   :6.100   Max.   :6.70   Max.   :6.970   Max.   :29.0100   Max.   :22.6200
## NA's   :2     NA's   :2     NA's   :2     NA's   :2
##      clc11      clc12      clc16      clc18      clc19      clc2

```

```

## Min. : 0.0000 Min. : 0.00 Min. : 0.0000 Min. : 0.00 Min. :0.0000000 Min. : 0.00
## 1st Qu.: 0.0000 1st Qu.: 1.94 1st Qu.: 0.0000 1st Qu.: 2.48 1st Qu.:0.0000000 1st Qu.: 5.28
## Median : 0.0000 Median :13.49 Median : 0.0000 Median : 9.03 Median :0.0000000 Median :12.31
## Mean : 0.6084 Mean :21.77 Mean : 0.2705 Mean :12.19 Mean :0.0002036 Mean :15.61
## 3rd Qu.: 0.5800 3rd Qu.:34.78 3rd Qu.: 0.0000 3rd Qu.:17.52 3rd Qu.:0.0000000 3rd Qu.:22.36
## Max. :12.0400 Max. :98.92 Max. :31.5300 Max. :76.88 Max. :0.2800000 Max. :77.20
##
## clc20 clc21 clc23 clc24 clc25 clc26
## Min. : 0.000 Min. : 0.000 Min. : 0.000 Min. : 0.000 Min. : 0.000 Min. : 0.00000
## 1st Qu.: 6.695 1st Qu.: 1.100 1st Qu.: 0.000 1st Qu.: 0.000 1st Qu.: 0.000 1st Qu.: 0.00000
## Median :15.140 Median : 4.120 Median : 1.960 Median : 0.000 Median : 1.520 Median : 0.00000
## Mean :17.131 Mean : 5.928 Mean : 7.269 Mean : 5.229 Mean : 8.213 Mean : 0.03633
## 3rd Qu.:25.115 3rd Qu.: 8.655 3rd Qu.: 9.325 3rd Qu.: 5.740 3rd Qu.:12.475 3rd Qu.: 0.00000
## Max. :76.200 Max. :41.000 Max. :74.670 Max. :82.680 Max. :63.900 Max. :14.59000
##
## clc27 clc29 clc3 clc30 clc35 clc36
## Min. : 0.0000 Min. : 0.0000 Min. : 0.000 Min. : 0.0000 Min. : 0.0000 Min. : 0.0000
## 1st Qu.: 0.0000 1st Qu.: 0.0000 1st Qu.: 0.000 1st Qu.: 0.0000 1st Qu.: 0.0000 1st Qu.: 0.0000
## Median : 0.0000 Median : 0.0000 Median : 0.000 Median : 0.0000 Median : 0.0000 Median : 0.0000
## Mean : 0.5736 Mean : 0.5546 Mean : 1.578 Mean : 0.0626 Mean : 0.1309 Mean : 0.1455
## 3rd Qu.: 0.0000 3rd Qu.: 0.0000 3rd Qu.: 1.640 3rd Qu.: 0.0000 3rd Qu.: 0.0000 3rd Qu.: 0.0000
## Max. :45.9800 Max. :26.5900 Max. :23.520 Max. :10.0700 Max. :12.7300 Max. :52.1200
##
## clc37 clc39 clc4 clc40 clc41 clc43
## Min. : 0.00000 Min. : 0.00000 Min. : 0.0000 Min. :0.000 Min. : 0.0000 Min. : 0.0000
## 1st Qu.: 0.00000 1st Qu.: 0.00000 1st Qu.: 0.0000 1st Qu.:0.000 1st Qu.: 0.0000 1st Qu.: 0.0000
## Median : 0.00000 Median : 0.00000 Median : 0.0000 Median :0.000 Median : 0.0000 Median : 0.0000
## Mean : 0.04177 Mean : 0.05761 Mean : 0.3245 Mean :0.196 Mean : 0.3351 Mean : 0.1235
## 3rd Qu.: 0.00000 3rd Qu.: 0.00000 3rd Qu.: 0.0000 3rd Qu.:0.000 3rd Qu.: 0.0000 3rd Qu.: 0.0000
## Max. :36.21000 Max. :11.43000 Max. :15.6900 Max. :7.770 Max. :20.2100 Max. :33.1500
##
## clc44 clc5 clc6 clc7 clc8 clc9
## Min. : 0.0000 Min. : 0.0000 Min. : 0.0000 Min. : 0.0000 Min. :0.00000 Min. : 0.0000
## 1st Qu.: 0.0000 1st Qu.: 0.0000 1st Qu.: 0.0000 1st Qu.: 0.0000 1st Qu.:0.00000 1st Qu.: 0.0000
## Median : 0.0000 Median : 0.0000 Median : 0.0000 Median : 0.0000 Median :0.00000 Median : 0.0000
## Mean : 0.6075 Mean : 0.1805 Mean : 0.1713 Mean : 0.2569 Mean :0.04672 Mean : 0.04672
## 3rd Qu.: 0.0000 3rd Qu.: 0.0000 3rd Qu.: 0.0000 3rd Qu.: 0.0000 3rd Qu.:0.00000 3rd Qu.: 0.0000
## Max. :93.8100 Max. :29.3500 Max. :15.6200 Max. :13.6300 Max. :5.64000 Max. :21.8000
##

```