READ ME

The complete dataset with temporal and spatial resolution of one day and one km² is freely available at: http://www.landnutzung.at/Ergebnisse.html.

The datasets include:

- austria_cluster.mdb: Microsoft Office Access database giving the location of climate clusters in the Austrian territorial grid
- austria_cluster.*: location of climate clusters in the Austrian territorial grid in GIS-readable format
- *.zip: zipped daily climate data in the period 1975-2007 and 2008-2040 for climate clusters in ASCII format.

Identification of grids and appropriate cluster numbers are in austria_cluster.mdb. The grid projection is ETRS 1989 LAEA with one km² resolution. ObjectID gives a running identification number. Cellcode gives the grid code in meters and is unique. For example, 1kmE4285N2683 stands for X-coordinate (East of Origin) 4285000 meter, and Y-Coordinate (North of Origin) 2683000 meter. The grids are also given in the corresponding decimal degrees of latitude and longitude. PGNR is the index number of the respective municipality, GRIDCODE is the climate cluster number and ELEV is the sea level in meters per grid (latter is missing on the Austrian border).
Each one km² grid contains information on the municipality and climate clusters (Majority). The sea level is based on the Shuttle Radar Topography Mission (SRTM) 90 m digital elevation model (http://www.mapmart.com/DEM/InternationalDEMBundle.htm).
The same information is included in the file named austria_cluster.shp. This is the shape file (Polygon), which can directly be read into GIS. The file Austria_cluster.lyr is the respective layer file and represents the colored climate clusters.

xxxx is the number of climate cluster based on the data in the period 1961-1990. The numbers of climate clusters are kept for the period 2008-2040 even if the climate conditions in the clusters change due to rising temperatures and different precipitation patterns.

Climatic conditions for the period 1975-2007 have been constructed. We have selected three out of 30 bootstrap re-allocations for the past, where the average temperature (mean of minimum temperature and maximum temperature) for the period 1975-2007 is at its maximum (yy=01), average (yy=02), and minimum (yy=03).

In total, three zipped files (for each scenario one zipped file) are available, where each of them contains data for the 60 climate clusters.

For example, the file 070503pa.dly in the zipped file xxxx03pa.zip refers to:

    xxxx = 0705   Cluster number 705,
    yy   = 03   temperature scenario 03 (minimum
    temperature scenario),
    'pa' = in the past.

Furthermore, temperature and precipitation scenarios have been developed to build a climate change spectrum for the period 2008-2040.
We have again selected three out of 30 bootstrap re-allocations for the future, where the average temperature (mean of minimum temperature and maximum temperature) for the period 2008-2040 is at its maximum (yy=01), average (yy=02), and minimum (yy=03).

These three temperature scenarios with the corresponding data of solar radiation, precipitation, relative humidity and wind are the basis for exogenously assumed changes in precipitations (only for the period 2008-2040). The daily precipitation data of all three temperature scenarios have been manipulated such that we have

(i)   left precipitations without manipulations,
(ii)   added 5%, 10%, 15%, or 20% of the daily precipitation,
(iii) subtracted 5%, 10%, 15%, or 20% of the daily precipitation,
(iv)   increased daily winter precipitation (September to February) by adding 5%, 10%, 15%, or 20% and decreased daily summer precipitation (March to August) such that the annual precipitation sums remain unchanged, and
(v)   increased daily summer precipitation by adding 5%, 10%, 15%, or 20% and decreased daily winter precipitation such that the annual precipitation sums remain unchanged.

The precipitation scenarios:

zz=01: unchanged precipitation of corresponding temperature scenario
zz=02: + 5% of daily precipitation
zz=03: +10% of daily precipitation
zz=04: +15% of daily precipitation
zz=05: +20% of daily precipitation
zz=06: - 5% of daily precipitation
zz=07: -10% of daily precipitation
zz=08: -15% of daily precipitation
zz=09: -20% of daily precipitation
zz=10: + 5% of daily winter precipitation

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zz=11:   +10% of daily winter precipitation
zz=12:   +15% of daily winter precipitation
zz=13:   +20% of daily winter precipitation
zz=14:   + 5% of daily summer precipitation
zz=15:   +10% of daily summer precipitation
zz=16:   +15% of daily summer precipitation
zz=17:   +20% of daily summer precipitation
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The temperature and precipitation scenarios constitute our climate change spectrum for Austria and the period 2008-2040.

In total, 51 zipped files (for each scenario one zipped file) are available for the period 2008-2040, where each of them contains data for the 60 climate clusters.

For example, the file 07050306.dly in the zipped file xxxx0306.zip refers to:

    xxxx = 0705   Cluster number 705,
    yy   = 03   temperature scenario 03 (minimum
    temperature scenario), and
    zz   = 06   precipitation scenario 06 (- 5% of daily
    precipitation).

The data content of *.dly files is:
```
year                      column 1
month                     column 2
day                       column 3
solar radiation [MJ/m²]   column 4
maximum temperature [°C]  column 5
minimum temperature [°C]  column 6
precipitation [mm]        column 7
relative humidity [0-1]   column 8
wind speed [m/s]          column 9
```

The data should be cited as:
Strauss F., H. Formayer, V. Asamer, and E. Schmid. 2010. Climate change data for Austria and the period 2008-2040 with one day and km² resolution, Diskussionspapier DP-48-2010, Institut für nachhaltige Wirtschaftsentwicklung, Universität für Bodenkultur Wien.

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