Real evapotranspiration over grass and sandy loam in mm

The real evapotranspiration is calculated with the model AMBAV, which was developed at the agro meteorological research center at Braunschweig. More details of the model are listed under http://link.springer.com/chapter/10.1007/978-1-4020-4479-3_2#page-1

Using the Penman-Monteith formula, the evaporation calculation is based on hourly meteorological input data as well as realistic assumptions on plant development stages and root densities. Dependent on the soil moistures in different depths, the stomata resistance is calculated. The potential evapotranspiration is hereby reduced to the real evapotranspiration. The calculations are made for the locations of DWD weather stations, whose measurement data are input to the model.

To make the grids comparable, always the same 315 stations are used for the interpolation for the entire period from 1991 to now. Gaps in the input data sets were filled by data from adjacent stations. Special parameters like global radiation are derived from measured sunshine duration at the location.

The results at locations are interpolated by optimal linear regression over geographical coordinates and height for 16 different over lapping regions in Germany. Depending from distances to the center of the regions, the regression coefficients were weighted and result computed for each grid point. To ensure that all values are exactly reproduced at a given location, all differences which are not declared by the regression are additionally distributed over a triangulation. The gridded data are given in Gauss Krüger coordinates. Dividing the model output values by 10 yields the correct value in mm. The definitions of the grid are described in the first six lines of each file. The grid can be imported directly into ArcGis.

The regional representation of the result depends strongly from the amount of used stations and uncertainly special in mountains may be not correct.