



High resolution daily gridded precipitation dataset for Spain

Roberto Serrano-Notivol (1,2), Santiago Beguería (1), Miguel Ángel Saz (2), José María Cuadrat (2), Luis Alberto Longares (2), and Martín de Luis (2)

(1) Estación Experimental de Aula Dei, Consejo Superior de Investigaciones Científicas (EEAD-CSIC), Zaragoza., (2) Zaragoza, Geography and Regional Planning, Zaragoza, Spain (rs@unizar.es)

A daily gridded precipitation dataset covering Spain for the period 1950-2012 is presented. The input observational dataset includes data from 12,858 stations from the Spanish Meteorological Agency (AEMET), completed by data from regional meteorological services and public departments of agriculture (Meteocat, Navarre Government and Ministry of Agriculture) and water agencies (Automatic Hydrological Information System of Ebro, Júcar, Segura, Guadalquivir, Cantábrico, Duero, Miño-Sil, Tajo and Hidrosur). The process of grid creation was divided into four stages: 1) Computing of two reference values (RV) to each observation: a binomial prediction (BP) estimating the probability of occurrence of a wet day and a magnitude prediction (MP) referred to the amount of precipitation; 2) Quality control of input data by comparing original values with RV; 3) Gap-filling of the original series using RV obtained from the cleaned dataset; and 4) Estimating new daily precipitation values in a regular set of coordinates. We used a 5x5 km spatial resolution grid covering the Spanish Iberian Peninsula, the Balearic Islands and the Canary Islands. Under this approach all the available information can be used for computing the daily RV, without the need to reject short or interrupted data series. We used multivariate logistic regression using as covariates the geographic information related to the original observations (altitude, latitude and longitude). As an example of application four extreme daily precipitation indices were computed for each grid cell, and their temporal trends were calculated: maximum consecutive dry days (CDD); maximum consecutive wet days (CWD); and two modified indices showing the average percentage of contributed precipitation by the 95th (R95pPerc) and 99th (R99pPerc) percentile.