

CALCULATION OF CLIMATIC REFERENCE VALUES AND THEIR USE FOR AUTOMATIC OUTLIER DETECTION IN METEOROLOGICAL DATASETS

Tellez, B.; Cernocky, T.; Terradellas, E. e-mail: bea@inm.es

Centro Meteorológico Territorial en Cataluña, Instituto Nacional de Meteorología, Spain.



ABSTRACT

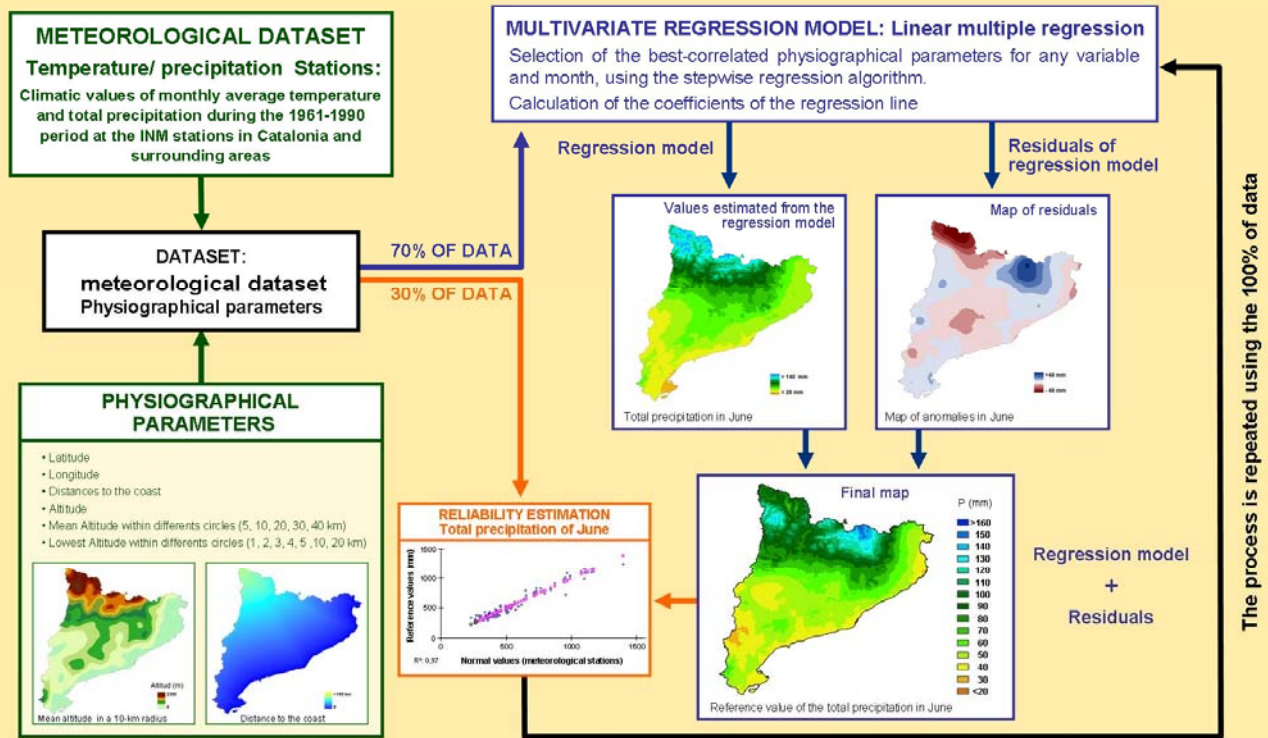
There are a large variety of techniques to produce digital maps of climatic parameters. There is no perfect method for spatial interpolation of data; there is also no single solution for interpolation in a particular case. The selection of the most suitable method has to be made according to the characteristics of the given case. In this work, the reference values for Catalonia of the monthly and annual average air temperature and total precipitation have been calculated.

The meteorological dataset used in the study contains monthly data averaged over a 30-year period from 302 pluviometric and 132 thermometric stations. The auxiliary geographical information, such as distance to sea or smoothed values of altitude, has been retrieved using a GIS from a digital elevation model with a 200-m resolution. The representation is carried out using a combination of statistical and deterministic methods of interpolation. In order to estimate the uncertainty, the initial data sample is split into two parts that are, respectively, used for estimation and validation. The resulting maps, obtained using the method described above, were subsequently used in the automatic outlier detection in meteorological datasets. The outliers are identified after comparing values from a given meteorological dataset with their corresponding climatic reference values.

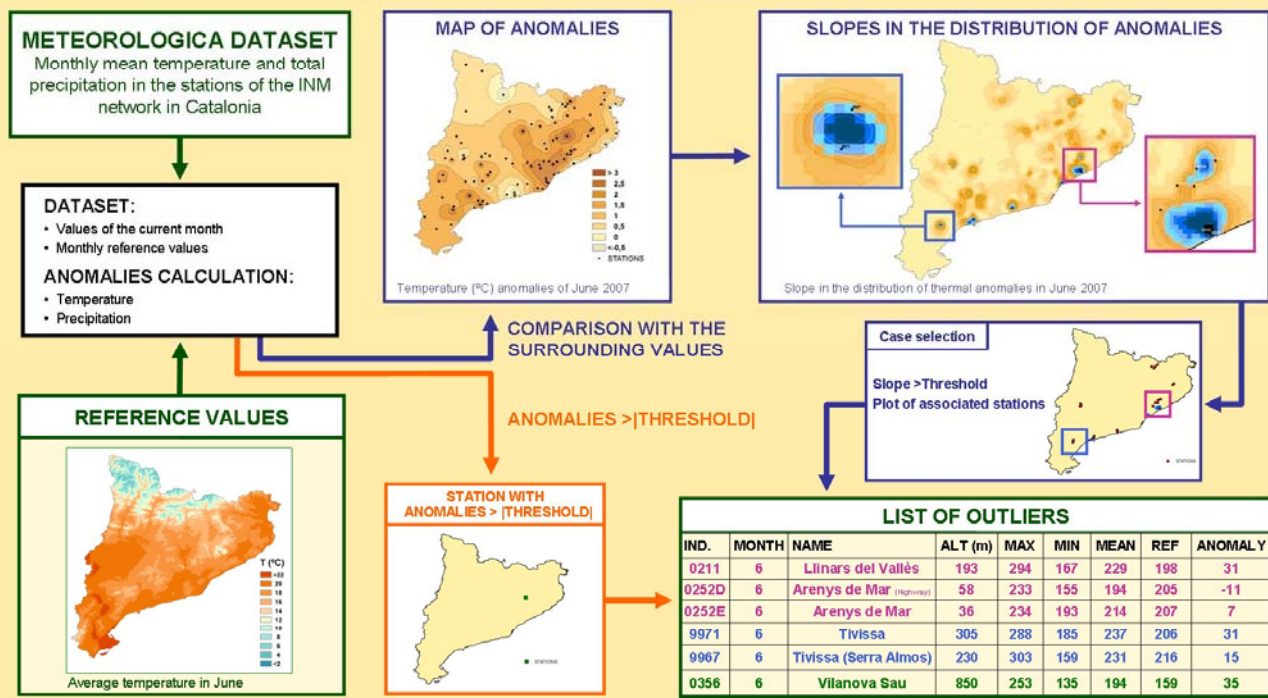
Two examples are displayed here. The map of reference values of monthly precipitation in June and the process of outlier detection in the temperature records of June 2007.



CALCULATION OF REFERENCE VALUES



APPLICATION



REF.

Bisquerra, A. (1989). *Introducción conceptual al análisis multivariante (Vol. 1)*. PPU, Barcelona

Instituto Nacional de Meteorología (2000). *Valores normales de precipitación y temperatura de la Red Climatológica (1961-1990)*. Serie Monografías.

Lhotellier, R. (2005). *Spatialisation des températures en zone de montagne alpine*, Ph. D. Thesis, Université Joseph Fourier, Grenoble, 350 p.

Ninyerola M., Pons X., Roure JM. (2007). "Objective air temperature mapping for the Iberian Peninsula using spatial interpolation and GIS". *International Journal of Climatology* 27: 1231-1242.

Tveito, O. and others (2006). *Cost 719 Final Report*. "Spatialisation of climatological and meteorological information by the support of GIS".