



Comparison of interpolation procedures to map fog frequency: application in the Aragón region (North-East Spain)

S.M. Vicente-Serrano (1), M.I. Vega-Rodríguez (1), J. I. López-Moreno (1) and S. Beguería (2)

(1) Instituto Pirenaico de Ecología, Spain, (2) Estación Experimental de Aula Dei, Spain
(svicen@ipe.csic.es/Phone:+34976716141)

Although several procedures have been used to map climate variables such as precipitation and temperature other important parameters have received less attention. Fog frequency is very important for several ecological processes in semi-arid regions, for road and air traffic security and for quality of life and health of citizens. In this research different spatial interpolation techniques have been used to map the monthly frequency of fogs in the Aragón region (North-East Spain) by means of Geographic Information Systems. For this purpose the data from 258 observatories that cover different environments in the region were used. Among the methods applied, geostatistical methods (kriging) provided the lowest accuracy, ordinal least square regression-based interpolation and linearised regression methodology, using geographical and topographical independent variables, improve the map quality compared to geostatistics. Nevertheless the highly local characteristics of fogs make difficult to obtain reliable maps. A new method that combines Generalized Additive Models and Tree Regression models was also used for mapping the frequency of fogs. The method improves noticeably the quality of maps, explaining a higher percentage of the spatial variance than other methods and considering in more depth the local characteristics that finally determine the spatial location of fogs.