Estimation of rainfall in Senegal using Self-Organizing Map

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The aim of this work is to develop a statistical methodology for estimating rainfall in Senegal at the scale of square mesh reanalysis of the American Centre NCEP2 (2.5°). This methodology is based on partitions obtained by applying Self-Organizing Maps, an unsupervised learning method of neural network, on a database composed of pixels which are described by atmospheric variables of NCEP2 selected using a statistical procedure. We gradually added through this methodology geophysical information on the geography and seasonality of rainfall in Senegal. An approach for predicting rainfall in Senegal has been deduced from this methodology. This helps to improve the estimate and forecast of high values of these rains over Southern Senegal provided from the European Centre for Medium-Range Weather Forecasts (ECMWF).

Keywords: estimation, prevision, rainfall, Self-Organizing Maps, Senegal.