A Neural Network based approach for the downscaling of precipitation fields.

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A collection of one year daily forecast with MM5 mesoscale model has been used to investigate the possibility to downscale at an horizontal resolution of 3 kilometres the precipitation fields obtained with MM5 simulation carried out with an horizontal resolution of 27 kilometres. The input pattern of the multi-layer Neural Network is built with information of terrain, landuse and predicted precipitation in 4 adjacent grid points of MM5 grid. The preliminary results obtained for a domain of complex orography show as the proposed technique is suitable to obtain a realistic downscaled precipitation field. Emphasis is given to the possible application of the methodology for the coupling of hydrological and meteorological model or for the downscaling of precipitation fields simulated by GCM climatic model to investigate the effects at hydrological scale of climate change.