

The wind climate measured in a point could be described as the regional wind climate of the zone forced by local effects derived from topography, roughness and obstacles in the surrounding area. This paper presents a method that allows to find fuzzy relations between the local wind climate in a location and the topography of the surrounding area. The fuzzy systems used in this work will be focused to modify the regional wind direction evaluating the slopes of the terrain around the target point and, finally, giving a possible distribution of observed directions. The comparison between this distribution and the real one, extracted from measurements of a meteorological station placed in the studied location, will be used by Genetic Algorithms as a fitness value to rank an initial population of fuzzy systems. Then, applying evolutive operators, this population will be improved and an optimized fuzzy system will be obtained. As it is possible to infer from the observation of the results of this process, a fuzzy knowledge of the local wind conditions is acquired. Although the obtained fuzzy system is trained to work in a very particular problem, the method to design a new one more versatile is essentially the same, and it could help to reduce the time and the costs of the wind resource assessment and wind downscaling processes.