



Comparing Downscaling Methods for Wind Energy Resource Assessment

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To estimate the wind energy resources of a particular geographic region with inadequate observations, large-scale wind patterns (i.e. from reanalysis) are usually “adjusted”, or “downscaled”, to provide an improved representation of smaller scales. Many dynamical and mixed statistical-dynamical methods are currently used to provide high-resolution (5 km grid increments, or less) wind climatographies for wind energy resource assessment. We present a comparison of the local wind climatographies obtained by using various common dynamical and statistical-dynamical methods. The methods include random sampling, classifications based on local large-scale geostrophic wind and atmospheric stability and classifications based on the synoptic pattern using various clustering algorithms. The wind climate of the eastern Mediterranean that is simulated by a nested mesoscale model is considered as the true climatology against which the results of the different downscaling methods are compared.