A mathematical look at a physical power prediction model

This article takes a mathematical look at a physical model used to predict the power produced from wind farms. The reason is to see whether simple mathematical expressions can replace the original equations and to give guidelines as to where simplifications can be made and where they cannot. The article shows that there is a linear dependence between the geostrophic wind and the local wind at the surface, but also that great care must be taken in the selection of the simple mathematical models, since physical dependences play a very important role, e.g. through the dependence of the turning of the wind on the wind speed. Copyright

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