Ensemble Wind Forecasting Based on the HARMONIE Model and Adaptive Finite Elements in Complex Orography

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Ensemble forecasting [1] is a methodology to deal with uncertainties in the numerical wind prediction. In this work we propose to apply ensemble methods to the adaptive wind forecasting model presented in [2].

The wind field forecasting is based on a mass-consistent model and a log-linear wind profile using as input data the resulting forecast wind from Harmonie [3], a Non-Hydrostatic Dynamic model used experimentally at AEMET with promising results[4]. The mass-consistent model parameters are estimated by using genetic algorithms [5]. The mesh is generated using the meccano method [6] and adapted to the geometry.

The main source of uncertainties in this model is the parameter estimation. For this reason, the model parameters are perturbed to achieve a more reliable wind forecast.

This work presents the results of the model applied in Gran Canaria island using Harmonie data for days from 20 to 23 of February 2010, and its comparison with some experimental data obtained by the AEMET in their meteorological stations.

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