P55 The value of WRF in renewable energy assessment and forecasting.

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Wind energy projects require both preconstruction long-term retrospective assessments on the energy resource available at the prospective site ("energy assessment"), and operational short-term forecasts of energy expected at an existing site ("energy forecasting"). Fifteen years ago, both of these endeavors were addressed with less meteorological, more engineering-based approaches, such as statistical models, simple wind flow models, or computational fluid dynamics models (CFD). In other words, they were focused more on local wind effects rather than on the weather that drives the wind. However, the industry has gradually come to recognize the fundamental role that weather plays, at all space and time scales, in determining the wind at a location, and has thus become increasingly reliant on mesoscale models such as WRF. This presentation will provide a brief background on the role of WRF in renewable energy assessment and forecasting, and the global datasets that are used to drive the WRF simulations (global forecast models and reanalyses). We will also show results of validation and method intercomparison studies to demonstrate the value and importance of using mesoscale modeling, and WRF in particular, as a staple component of wind energy assessment and forecasting, compared to conventional methods.