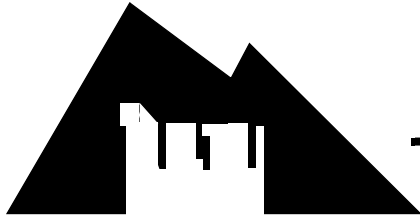


# *The RAL Seminar Series*



**NCAR**

## **Wind Plant Large-Eddy Simulation Efforts at NREL**

by

**Matt Churchfield**

National Wind Technology Center  
National Renewable Energy Laboratory

*Thursday, February 16, 2012  
Foothills Lab Building 2, Room 1022  
11:00 a.m.*

We have been performing large-eddy simulations of flow through wind plants. The first step of the process is to perform a precursor large-eddy simulation of the canonical atmospheric boundary layer. Once it is fully developed, we save data that is used as the inflow conditions for the wind plant computational domain. The wind turbines are modeled as variable-speed, rotating actuator lines, which have also been coupled with NREL's aeroelastic code, FAST. In our talk, we will provide an overview of our methodology, we will show results of how simulated power production and mechanical loads change as atmospheric stability changes, and we will show results from a simulation of the operational 48 turbine Lillgrund wind plant.