Geophysical Research Abstracts
Vol. 12, EGU2010-7602, 2010
EGU General Assembly 2010


# Simulation of detailed wind flow over a high complex terrain using a computational fluid dynamics model, CFD_NIMR_SNU, for the support of micrositing

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In order to encourage wind energy industry in Korea, it is required to develop accurate and detailed wind information. Although 1 km- high resolution wind maps over the Korean Peninsula had been developed, the determination of the wind conditions at the intended site of the wind turbines remains an important task that cannot be solved by means of the available large-scale wind maps alone. Especially, wind has a large spatial variability over highly complex terrain. To quantify mean wind and turbulence characteristics in any planning area for the installation of wind turbines, a CFD model can be used. We used CFD_NIMR_SNU, which has developed by National Institute of Meteorological Research and Seoul National University since 2004. It has a capability of calculating thermodynamic equations for the support of locally driven wind fields.
In this study, the characteristics of spatial wind and turbulent flow ware analyzed using the CFD_NIMR_SNU in a complex terrain area, which has a plan for installing wind power plants. Results from this study, the topographic effects were shown well on mean wind fields. Especially, the maximum wind speed was observed over the mountain area, and turbulent kinetic energy is more uniform at higher altitude. In the future, to improve the boundary conditions and to validate to CFD model, coupling of CFD with meso- scale numerical models such as WRF will be explored.