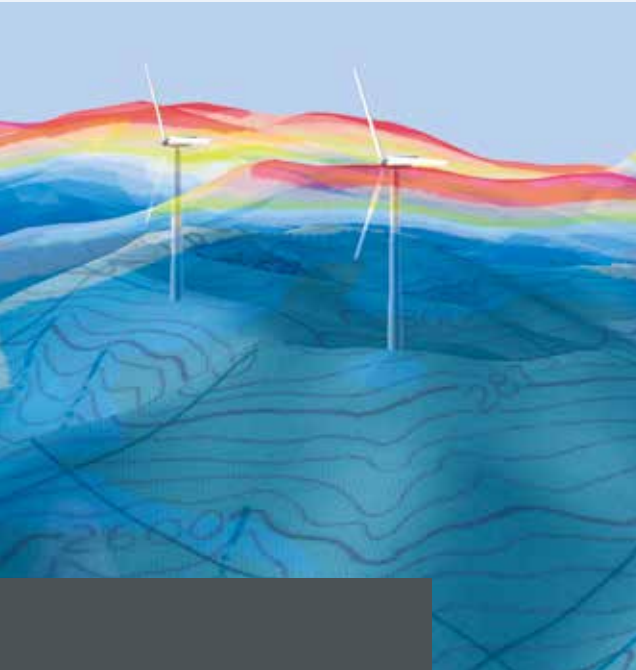
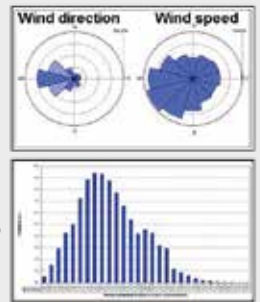
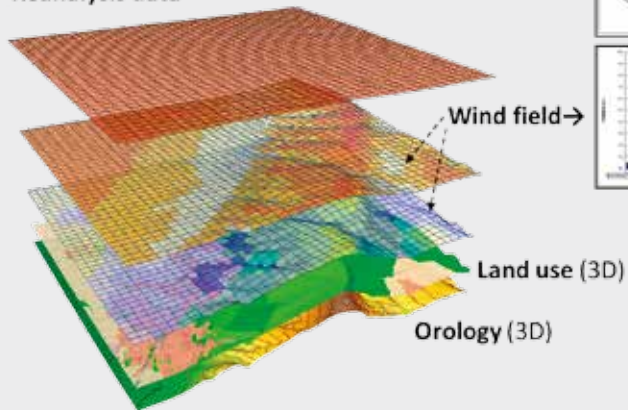




# Wind Field Simulation with 3D Flow Model FITNAH



Reanalysis data



## Wind Field Simulation with the Flow Model FITNAH-3D

FITNAH (Flow over Irregular Terrain with Natural and Anthropogenic Heat sources) is a meteorological three-dimensional non-hydrostatic model for the simulation of wind fields. It is applicable in all terrain types including very complex topography. It has explicit modules for both flow over forests and urban areas. Evolved from a sophisticated research model FITNAH is continually refined to meet the high requirements in the field of wind energy.

### Model input data

- + Meteorology: Global upper level wind data from reanalyses, meso-scale model output and in-situ measurements
- + Land use: ATKIS data, topographical maps, global or regional land-use products, satellite images, complemented by site surveys
- + Orography: Digital elevation models derived from topographical maps or remote sensing data.

### Advantages of FITNAH-3D

- + Realistic modelling of flow over complex orography
- + Explicit modelling of forests and shrubs
- + Modelling of urban structures, settlements, industrial areas
- + Model equations include Coriolis Force, modelling of wind veer
- + Wind statistics (wind speed and direction distribution) at every grid point
- + Wide range of possible grid resolutions and model domains
- + Wind mapping from small (wind park) to very large areas (country)
- + Assessment of turbulence and flow inclination
- + LiDAR error correction in complex terrain and error map for optimal LiDAR positioning

