Microscale wind simulations and wind resource assessment
Microscale wind simulations using Reynolds Averaged Navier-Stokes (RANS) and Large-Eddy Simulation (LES) turbulence models are employed to assess wind resource availability and to study the complex boundary layer in complex terrains for wind resource assessment (wind farm modelling) and short-term wind forecasts.

**Summary**

In wind energy, numerical modeling has become a key tool for industry at several stages, from early wind resource assessments to the operational forecast of high-resolution winds in complex terrains. Coupling mesoscale meteorological models (WRF) with Computational Fluid Dynamics (CFD) allows for high-resolution microscale wind forecasts on complex terrains.

**Objectives**

- Wind resource assessment
- Wind farm modelling
- Operational forecast of high-resolution winds in complex terrains coupling mesoscale meteorological models (WRF) with CFD