Objectives

Task 3: Wind Farms

Analyse and simulate wind farms and farm to farm interaction subject to

- Wind shear/stratification

- Turbulent inflow

- Different wind directions

- Wind veer

Overall goals:

- Understanding of flows in wind farms

- Development of optimization tools for farm siting

Milestones Task 3

- **M13**: LES simulations of wind farms; Comparisons to experiments. **Month 24.**

- **M14:** Low-dimensional turbulence model for wind farms. **Month 36.**

- **M15:** LES simulations subject to neutrally stable ABL . **Month 36.**

- **M16**: Simulation of influence of stratification on wind farm performance. **Month 48.**

- **M17:** Simulation of mutual influence between two wind farms. **Month 60.**

Status Task 3

- **M13**: LES simulations of wind farms; Comparisons to experiments **Month 24.**
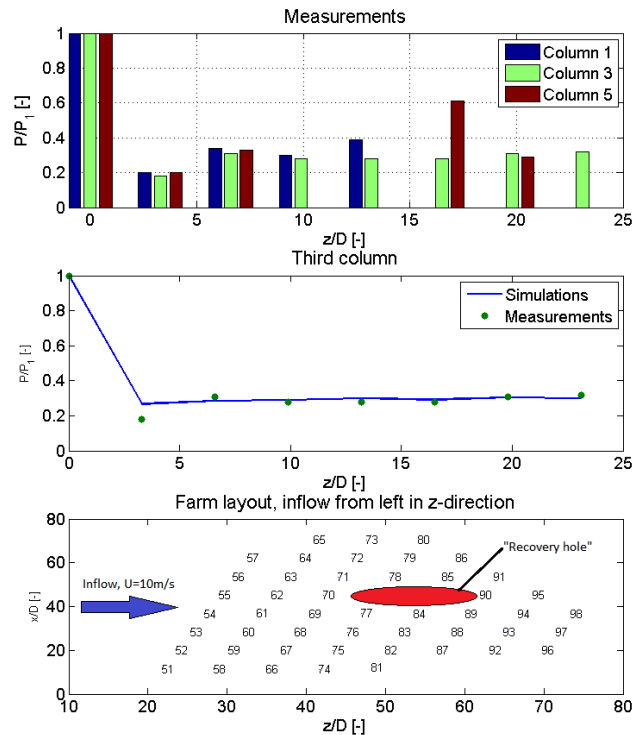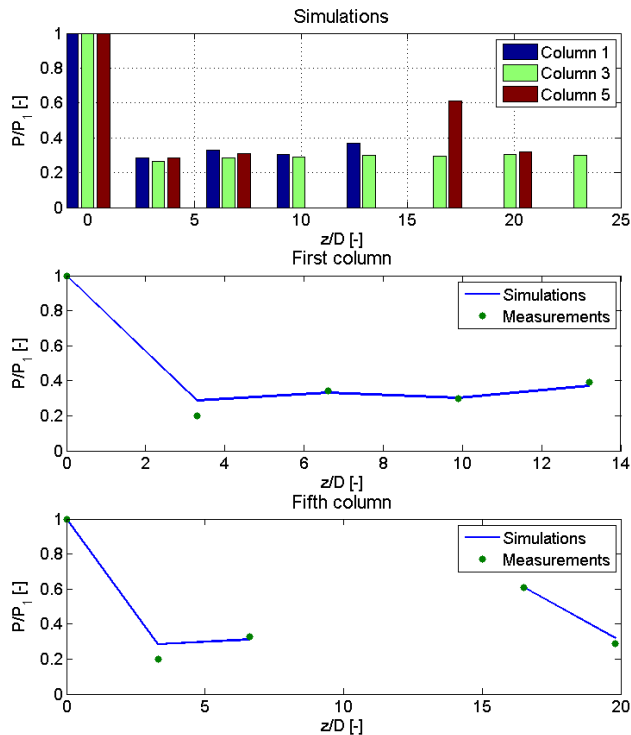
Comparison between computations and experiments of the Lillgrund wind farm

Planes 2012: Task 3

M14: Low-dimensional turbulence model for wind farms. **Month 36. Status:**
o   Preliminary results achieved from simulations using periodic boundary conditions
o   Computed results employed to derive reduced-order model
o   Parametrical study will be carried out by changing distance between the turbines, including wind shear and ambient turbulence

M15: LES simulations subject to neutrally stable ABL . **Month 36. Status:**
o   Energy equation implemented in the EllipSys/AL/Flex code
o   Simple cases, such as heat/mass transfer in cavity, used as preliminary test case

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