OpenFOAM for Wind turbine simulation and from C3SE a SNIC centre point of view

Johanna Matsfelt

OUTLINE

PhD project

- SOWFA by NREL

- Wind power in forest - the effects of clearing
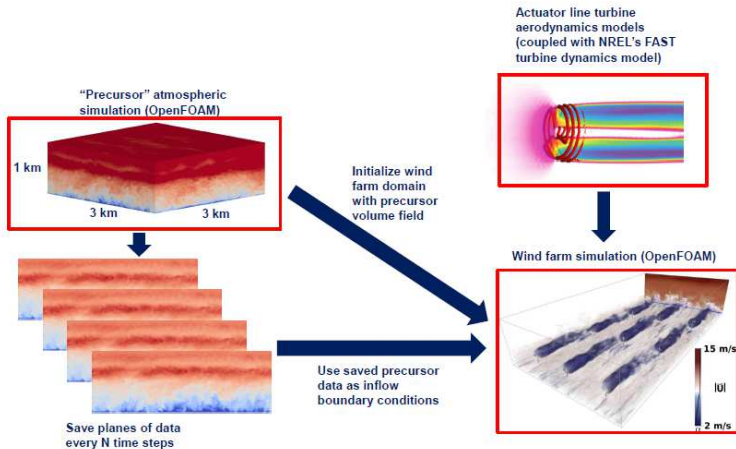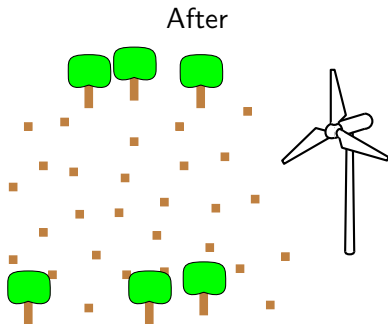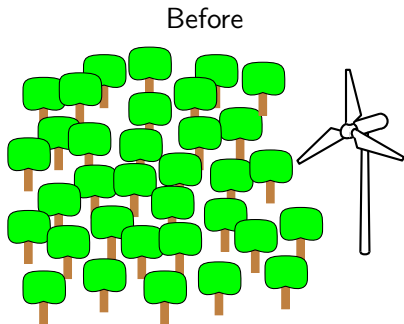
- Offshore extreme event

SOWFA by NREL

FIGURE: Overview SOWFA, source NREL

The effects of clearing

Before

After

The effects of clearing

Implementation steps:

- Topology of the ground in the simulation

- Forest drag term

Testsite A:

- Met mast data before and after clearing forest
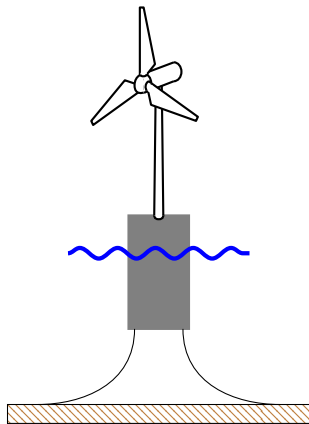
- No wind turbines

Testsite B:

- LiDAR data before and after clearing forest

- Wind turbines

OFFSHORE EXTREME EVENT

FAST (Aeroelastic solver)
Mooring module:

- Only linear model

- Implement nonlinear model developed
  Shipping and Marine Technlogy at
  Chalmers

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OUTLINE

C3SE

- What is C3SE?

- Concerns

- Here are we now

- Where we want to be

What is C3SE?

- C3SE centre for scientific and technical computing at Chalmers

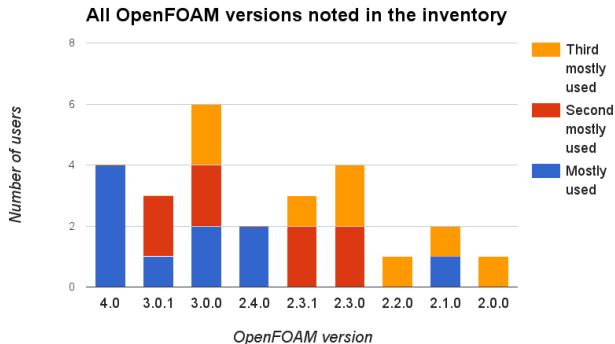- One of six SNIC centres

- Compute cluster Hebbe

- My role at C3SE

FIGURE: Hebbe, source C3SE

Concerns

- Number of files generated when running in parallel

- Installation files

- Installations by users and the NOBACKUP area
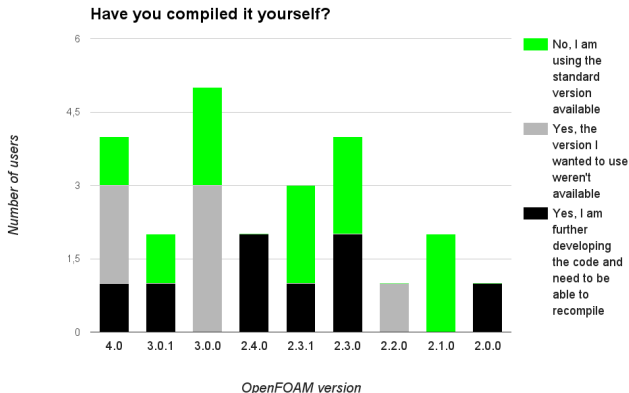
- Number of versions

Here are we now

- OpenFOAM inventory

- Decrease number of versions used

All OpenFOAM versions noted in the inventory

WHERE WE WANT TO BE

- Main installation by C3SE

- Users link their own work

Have you compiled it yourself?

OpenFOAM version

Legend:
- No, I am using the standard version available
- Yes, the version I wanted to use weren't available
- Yes, I am further developing the code and need to be able to recompile

Thanks for your attention

Figure: Hebbe, source C3SE