Session 5.
Modelling of heatflow
Why modelling?

- Evaluate the potential for vertical GHE in Denmark by extrapolating knowledge from existing plants
- Evaluate effects from GHE installation on the ambient groundwater system
Dynamic system

- Exchange with aquifer
- Well configuration
- Properties of grout and aquifer
- Horizontal and vertical temperature profile
- Groundwater flow
Varying hydrogeological settings

- Varying thermal properties
- Varying groundwater flow velocities
Seasonal and short terms variation in heat/cooling demand
Expected workshop output

• Input to modelling strategy
  – What to consider:
    • Varying (hydro-)geology, i.e. varying thermal properties and flow velocities
    • Near/far field heat transport
    • Short term transport or local equilibrium
    • Coupling between GHE and surface installation to account for varying demand for heating/cooling
Expected workshop output

• Pros and cons of different software systems
  – Simulation of relevant processes
  – Simulation at different scales
  – Near and far field heat transport
  – Coupling of underground heat transport and surface installations
  – Ease of use

• Expected software system:
  – Feflow
  – Coupling to Trnsys?
Expected workshop output

• Output from modelling
  – Tabularised/type curves based on sensitivity study
  – Recommendations of software/tools