Country update of 3D modelling activities in Denmark

Update on 3D activities in Denmark

• 3D geological modelling activities at
  • Consulting engineers
  • Waterworks
  • Authorities
  • GEUS

• Multiple modelling purposes:
  • Groundwater resources and vulnerability
  • Climate change issues
  • Urban planning and geotechnical projects
  • Raw materials/minerals prospecting
  • Soil- and groundwater contamination
  • Geothermal energy
  • Oil/gas related 3D modelling

• In GEUS we
  • Explore different 3D modelling approaches
  • Work on optimizing workflows
  • Work on concepts for practicable uncertainty assessments
GEUS activities related to national 3D models

- Development of a 3D database for the national 3D geological model (Presentation by Christian B. Pedersen)
- Updating 3D hydrostratigraphic input for the national hydrological model (‘DK-model’; The Danish EPA)

5th European Meeting on 3D Geological Modelling
May 21st – 24th 2019 - Bern - Switzerland
GEUS: Local/regional 3D geological modelling projects

• Denmark:
  • Research projects: Detailed 3D models for groundwater modelling, contaminant transport modelling or urban subsurface planning
  • 3D models in consultancy or partnership projects with participation by waterworks and regional/local authorities (Presentation by Anders Kallesøe)

• Greenland:
  • 3D modelling tied to the application of oblique photogrammetry to map out geological structures as detailed 3D polylines
  • Onshore 3D models for reservoir analogues for offshore basins for the oil industry

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- Characterizing a contaminated site at the city of Grindsted: Detailed layer-cake modelling (Maurya et al. 2018)
- 3D model of buried tunnel valleys at Kasted (combined voxel/layer) (Høyer et al. 2015)
- 3D multi-point statistics (MPS) modelling in SW Denmark (Høyer et al. 2017)
- A high-resolution 3D geological voxel DL model at the fill site (Høyer et al. 2019)
- 3D model of complex faulted and folded strata at Kilen in NE Greenland (Svennevig et al. 2016, 2017)
Looking ahead, we focus on…….

• Continued work on 3D modelling in research and consultancy projects with a focus on development of new methods and approaches
• Uncertainty assessments
• Stressing the importance of keeping 3D geological models dynamic and up-to-date
Thank you for listening!