PUBLIC ONLINE UPDATABLE HYDROSTRATIGRAPHIC GEOLOGICAL MODEL USED FOR GROUNDWATER ADMINISTRATION IN DENMARK – A ROAD TRIP AND LESSONS LEARNED

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During the last more than 20 years, a focused groundwater mapping campaign have been going on in Denmark. Databases containing borehole- and geophysical data have been made and refined. Existing geophysical methods have been optimized and new ones have been developed. These data are key in the hydrostratigraphical model building, which has been central in the campaign. More than 400 individual models have been made in designated areas, many are overlapping, and, in several areas, multiple models of different origin exist. In total, the most of Denmark was modeled but at different setup and premises.

In 2018 it was decided by the government, that these models should be combined into one single model – not an easy task keeping in mind the different nature of the models (number of layers, extent, data input).

Four consultancy companies and software companies were assigned the task to integrate all models into one. In addition, a future-proof main stratigraphy for the entire country should be defined. Today a single model has been compiled. The model is accessible through the web-based data management platform GeoCloud and is continuously being updated using services provided by this platform. These services allow for a multi-user access and quality assurance by designated users when model updates are made.

This talk discusses challenges met, the workflow and the process of combining existing models into one single model. We describe how the main stratigraphy was defined, and how the existing models was evaluated, quality assured and prioritized. We also come around considerations about interpretation strategy (the model is based on interpretation points) and interpolation. Tools developed prior to, and during the process, are discussed, e.g., tools used to cut parts of layers in models in cases where the entire model shouldn't be used, tools to secure smooth boundaries between different models combined, tools for sharing and updating data during the process etc. All allowing a smooth and efficient workflow with up to 12 geologists working at the same project at the same time.

We also show how the final model is made public and used to prioritize where new mapping must be done, including geophysics and boreholes, and finally how future updates are done.