Delft3D-Geotool for statistical models of the subsurface

This part of the work was also undertaken with our partners the Norwegian Regnesentral (NR)

Subsurface geology is a large source of uncertainty in groundwater modelling. Can we improve the representation of natural geology in subsurface models, but using subsurface trends extracted from process-based models? We generated a 3D delta of sand and mud deposits using a process-based model Delft3D. We show how, together with measured borehole data, the modelled depositional trends can be used to statistically model subsurface geology. To complete the workflow, the resulting geological model is used to simulate groundwater.

Output

- A new, innovative, workflow was successfully implemented: From process-based model for local variogram extraction to groundwater modelling.
- Local (spatially varying) variograms and a traditional, uniform variogram delivered similar groundwater modelling results in this case study. This shows that using the local variogram method does not provide benefits in all cases
- Further research needs to assess when the use of local variograms will benefit geological modelling of the subsurface. Local variograms may deliver improved results compared to traditional variograms only when e.g. permeability differences are large

Delft3D-GeoTo... Concept.docx

Back to project overview