Abstracts

Theme 1: Scientific backbone of the North Sea ecosystem: adequacy of the knowledge base?

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Need of a 3D geological framework underpinning marine exploitation strategies

Within the framework of the BELSPO Brain-be project TILES (Transnational and Integrated Long-term Marine Exploitation Strategies) 3D geological voxel models of the subsurface (up to -30m) of the southern part of the North Sea are being developed. Voxels are 3D pixels or cuboids, which are here filled primarily with geological data from boreholes and seismic lines. Each voxel in the model describes a unique value of one of 7 lithological classes ranging from clay to gravel, or the occurrence probability of it. As such, detailed information on the availability of different sediment types is provided, including their volumes, e.g., in blocks of 200*200*1m, or even 100*100*0.5m for local case studies. Additionally, uncertainties in the data sources are classified, and major data and knowledge gaps identified. Such a geological framework is the fundament of a more sustainable use of marine resources. Examples relate to determining the depths of major substrate-bound habitat changes, as well as optimal selection of areas where sufficient material can be found for a specific purpose (e.g., for beach nourishment or industrial use).

Keywords: Resource estimation, 3D Voxel model, North Sea, sand extraction