



3D seismic data and attributes applied to redeposited Upper Cretaceous chalk of the North Sea

J. Bruun (1), L. Nielsen (1), F. Surlyk (1) and A. Uldall (2)

(1) Department of Geography and Geology, University of Copenhagen, Denmark
(Janus@geol.ku.dk / Phone: +45 35 32 24 06), (2) Maersk Oil, Copenhagen, Denmark

3D seismic data are used to analyse the Upper Cretaceous Chalk Group in the North Sea. The Chalk Group was formed by settling of coccolithophorid and other planktonic skeletal remains, and some of the deposits were subsequently redeposited by a wide range of processes seen on seismic data as irregularities and discontinuities. 3D seismic attributes such as dip/azimuth, coherency and spectral decomposition are used to visualize the geometry of depositional features. This helps to improve interpretation of depositional features and relate them to processes of redeposition. The main study area is a horst block located in the UK North Sea, where Late Cretaceous eastward tilting along with differential subsidence and withdrawal of Zechstein halite also affected the area. In order to obtain better understanding of the seismic response of chalk and redeposited chalk, full-waveform finite-difference modeling is used to construct synthetic seismic cross sections for different representative geologic 2D models of chalk and redeposited chalk. This helps to improve the geological interpretation of the seismic data.