

Wood, Benjamin; Kessler, Holger. 2021 Model creation based on digital borehole records and interpreted geological cross-sections. In: Turner, Alan Keith; Kessler, Holger; van der Meulen, Michiel J., (eds.) *Applied Multidimensional Geological Modeling*. Wiley Blackwell, 235-246.

In the borehole and cross-section method, stratigraphic surfaces are constructed between stratigraphic correlation lines from a network of manually constructed cross-sections. The borehole and cross-section-based method is based on tools and concepts familiar to every geologist – namely, conceptualization, borehole interpretation, mapping, and cross-section drawing. This chapter presents the method as deployed at the British Geological Survey, in terms of its workflow, applications, advantages, and limitations. The Geological Surveying and Investigation in 3 Dimensions (GSI3D) model construction workflow consists of three stages: model building, model computation, and model analysis. The chapter discusses four geological scenarios that are difficult to resolve with a cross-section-based approach to modeling. These include: laterally non-continuous deposits, thin units, faults, and folds. Although the basic methodology has been described using the GSI3D software as a convenient example, several options are available for developing models using boreholes and interpreted cross-sections.