



Direct Push supported geotechnical and hydrogeological characterisation of an active sinkhole area

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Sinkholes represent a natural geologic hazard in areas where soluble layers are present in the subsurface. A detailed knowledge of the composition of the subsurface and its hydrogeological and geotechnical properties is essential for the understanding of sinkhole formation and propagation. This serves as base for risk evaluation and the development of an early warning system. However, site models often depend on data from drillings and surface geophysical surveys that in many cases cannot resolve the spatial distribution of relevant hydrogeological and geotechnical parameters sufficiently. Therefore, an active sinkhole area in Münsterdorf, Northern Germany, was investigated in detail using Direct Push technology, a minimally invasive sounding method. The obtained vertical high-resolution profiles of geotechnical and hydrogeological characteristics, in combination with Direct Push based sampling and surface geophysical measurements lead to a strong improvement of the geologic site model. The conceptual site model regarding sinkhole formation and propagation will then be tested based on the gathered data and, if necessary, adapted accordingly.