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A “multiple lines of evidence approach” for site characterization and high-resolution 3D geological modelling/risk assessment of PFAS contaminated sites in Sweden and Israel.

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Sites contaminated with Per- and PolyFluoroAlkyl Substances (PFAS) possess a major challenge from a remediation point of view. In order to choose the best technologies for various conditions and document the efficiency of the remediation actions, it is essential to provide the optimal overview of the geological/hydraulic conditions at the contaminated site.

Constructing models with adequate degree of details, dense data coverage with high-quality data is necessary. Many studies rely of few data sources; resulting in relatively sparse data, however, in this study, we demonstrate how multiple different data sources may be combined in order to gain new insight on the geological history, which is central to the subsequent 3D geological modelling. The analyses in this study include (I) GIS analysis (Geomorphology/geology/aerial photos/high resolution elevation models), (II) Detailed borehole analysis (geotechnical, petrographic and textural analyses), (III) Spear auger mapping, (IV) Hydraulic test/analysis, (V) Chemical analysis, (VI) 3-d geological modelling.

All data will be incorporated in Geos´ GIS platform, GeoAtlasLive, allowing visualization of GIS layers, the geological model and hydraulic, chemical, data related to water and soil sampling points in a 3-D framework, thus allowing the optimal overview of multiple data in order to optimize the design for optimal monitoring and remediating strategies.

The model also forms the framework for detailed analysis of multiscale (lab-field scale) studies of contaminant transport/degradation processes in order to evaluate efficiency and risk assessment of various remediation approaches.