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SOIL SPATIAL VARIABILITY AT MONOPILE SCALE

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Offshore monopiles design requires the assessment of soil spatial variability within the foundation zone of influence. At wind farm scale, assessment of soil variability at a local scale (or sub-site scale) can be based on a site investigation strategy designed to include acquisition of geodata at nested location clusters. This lecture presents a quantification of sub-site soil spatial variability in two ways: (i) estimating lateral coefficient of variation, and (ii) estimating horizontal and vertical scales of fluctuation (or correlation lengths), of CPT net cone resistance data from nested location clusters. The lecture also presents some guidance on how to use this information in design, allowing for multiple design approaches for wind turbine generator (WTG) with the premises that the detailed design phase will require at least one investigation location per actual WTG location.