Mapping soil physical properties in Denmark using FOOTPRINT

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Background

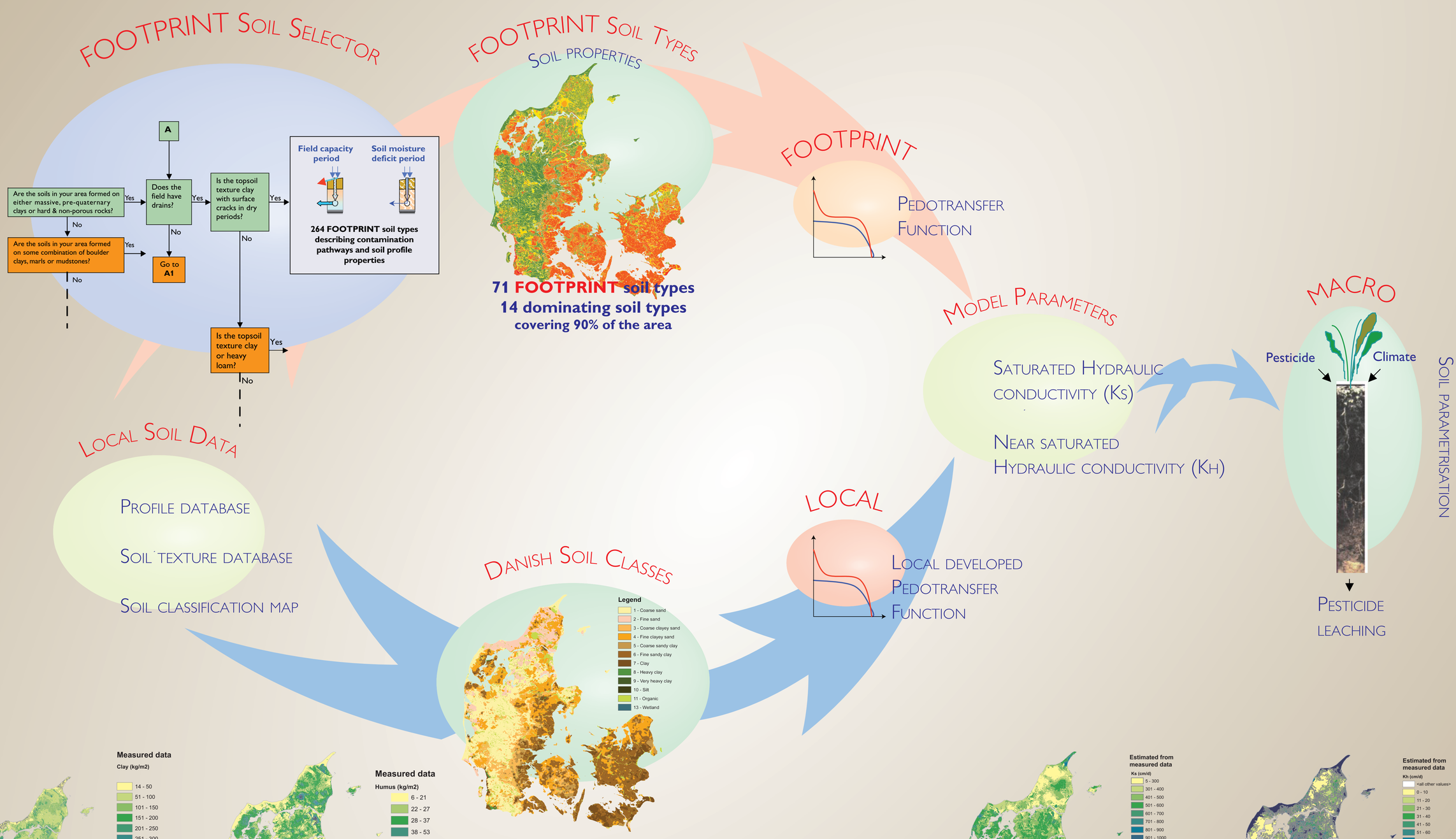
Large scale application of pesticide leaching models have become increasingly important for identifying vulnerable areas with respect to leaching risk of pesticides. Parameterising these pesticide leaching models at the regional and national scale, however. poses a major challenge. The **FOOTPRINT** approach for soil type classification and subsequent soil hydraulic parameterisation is assessed for a Danish case study

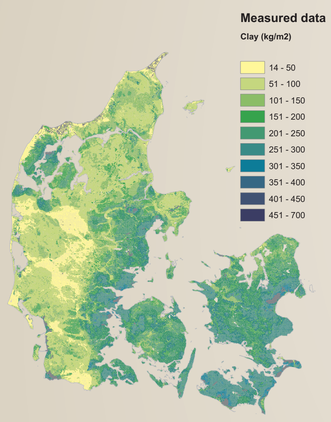
Objectives

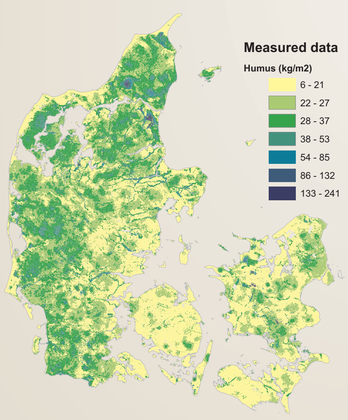
- Assessing whether the **FOOTPRINT** soil classification system using the Footprint Soil selector is representative of Danish conditions
- Assessing whether the **FOOTPRINT** predictions of hydraulic parameters are representative of Danish conditions.

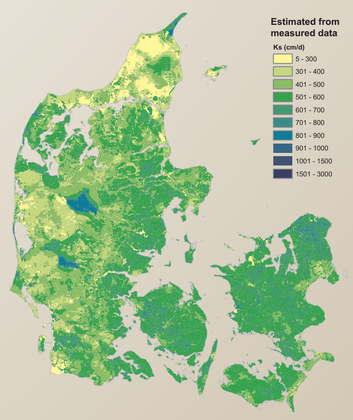
Method

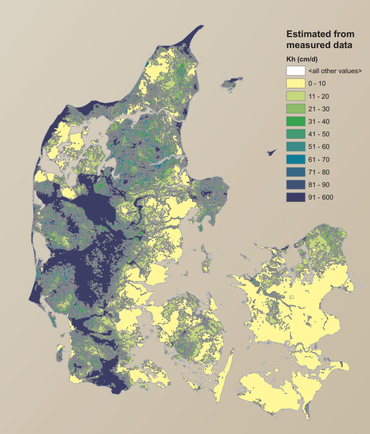
- Soil properties: Spatial distribution of Footprint soil types is determined by applying the **FOOTPRINT** Soil selector. Required data on soil properties is extracted from the national soil databases and expert knowledge on the spatial distribution of the lower boundary condition (water flow pathways). Soil properties (clay and humus content in the upper 1 meter) assessed from the **FOOTPRINT** approach are subsequently compared with measured data.
- Hydraulic parameters for MACRO parameterisation: Spatial distribution of hydraulic parameters (saturated conductivity, Ks, and near-saturated conductivity, Kh) estimated using the **FOOTPRINT** approach, is compared with predicted values for Denmark derived from Neural Network-based PTF values for both sandy and clayey/loamy data.





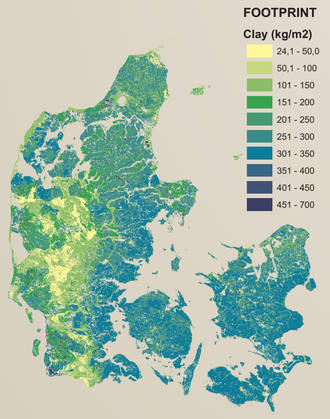


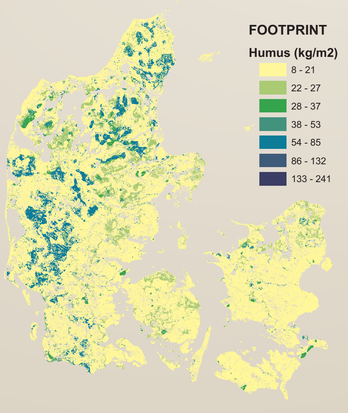


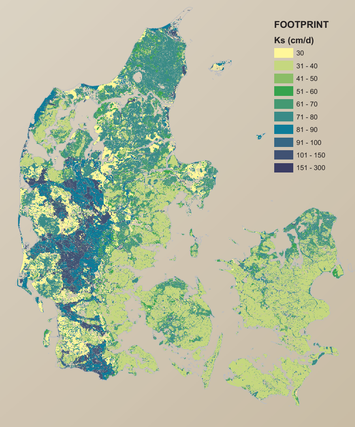


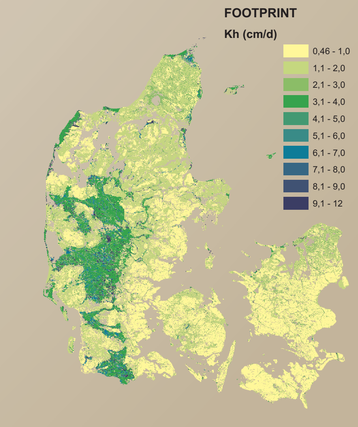
Conclusions

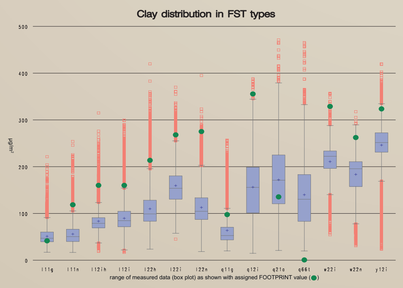
- Spatial patterns of soil properties classified from **FOOTPRINT** were consistent with measured data for sandy soils and less so for clayey/loamy soils.
- Spatial variability of hydraulic model parameters derived from the **FOOTPRINT** approach compared well to experimental data on the sandy soils, whereas refinement is needed for the clayey/loamy soil

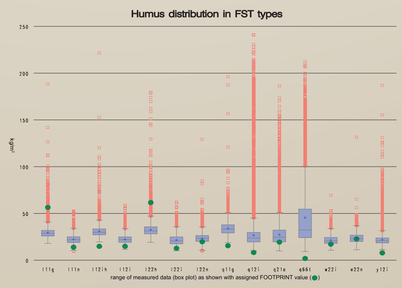












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