

Spatio-temporal dynamic soil compaction risk assessment

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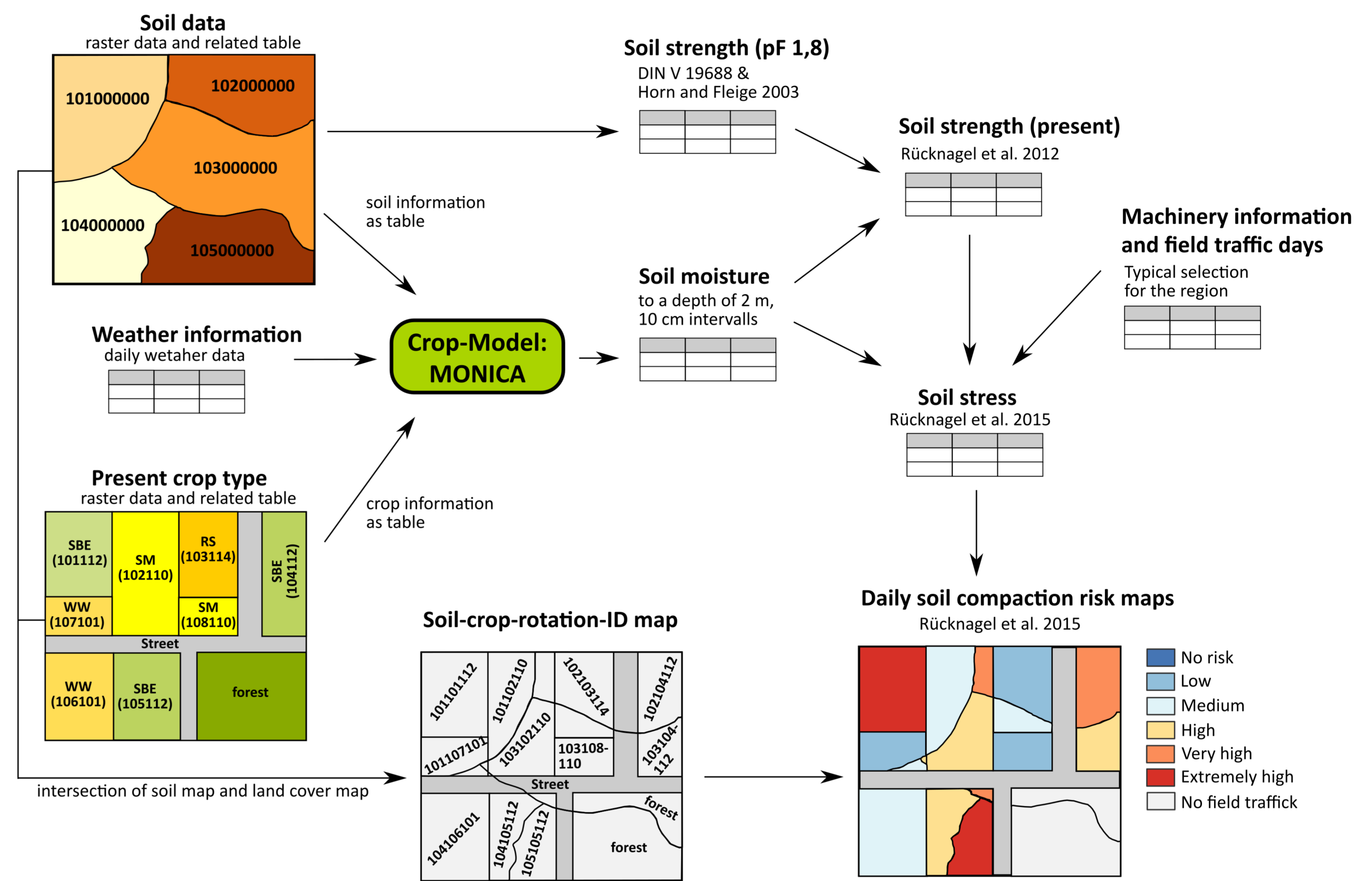
Objectives:

Soil compaction by field traffic is one of the main threats to agricultural soils. To mitigate undesirable effects of field traffic, it is important to know where, when and to what extent soil compaction may occur. This study shows a new approach to model soil compaction risk at different scales. The developed **SaSciA-model (Spatially explicit Soil Compaction risk Assessment)** combines

- (i) soil, weather, crop type and machinery information,
- (ii) a soil moisture model and
- (iii) soil compaction models to compute daily maps of soil compaction risk.

The model was applied at field and regional scale in northern Germany. At field scale, field traffic and soil moisture were measured to generate spatially high-resolution input parameter. At regional scale, open access soil and weather data were used; present crop type was derived by satellite data (Landsat 8, Sentinel-2A).

Structure of the SaSciA-model:

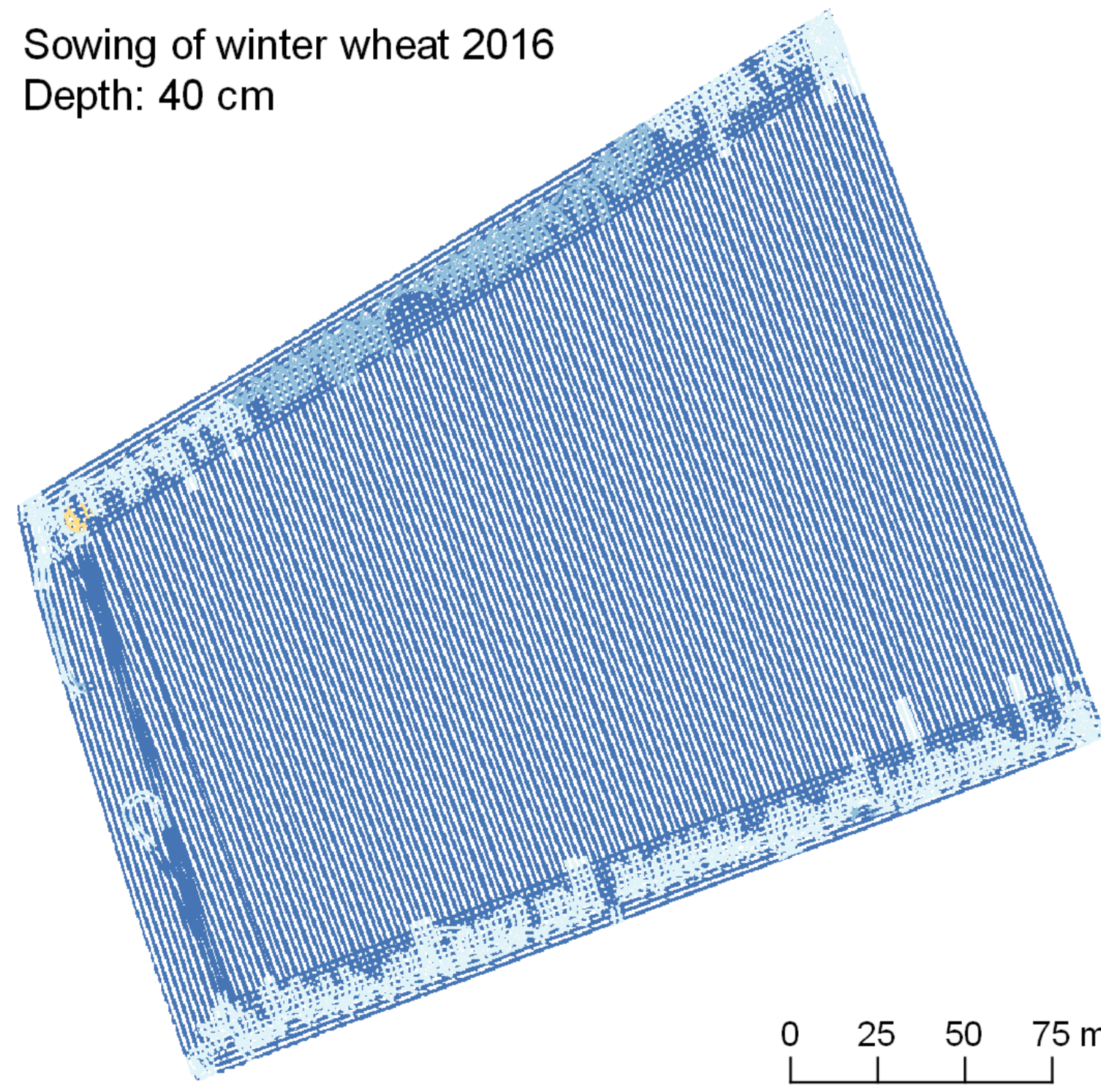
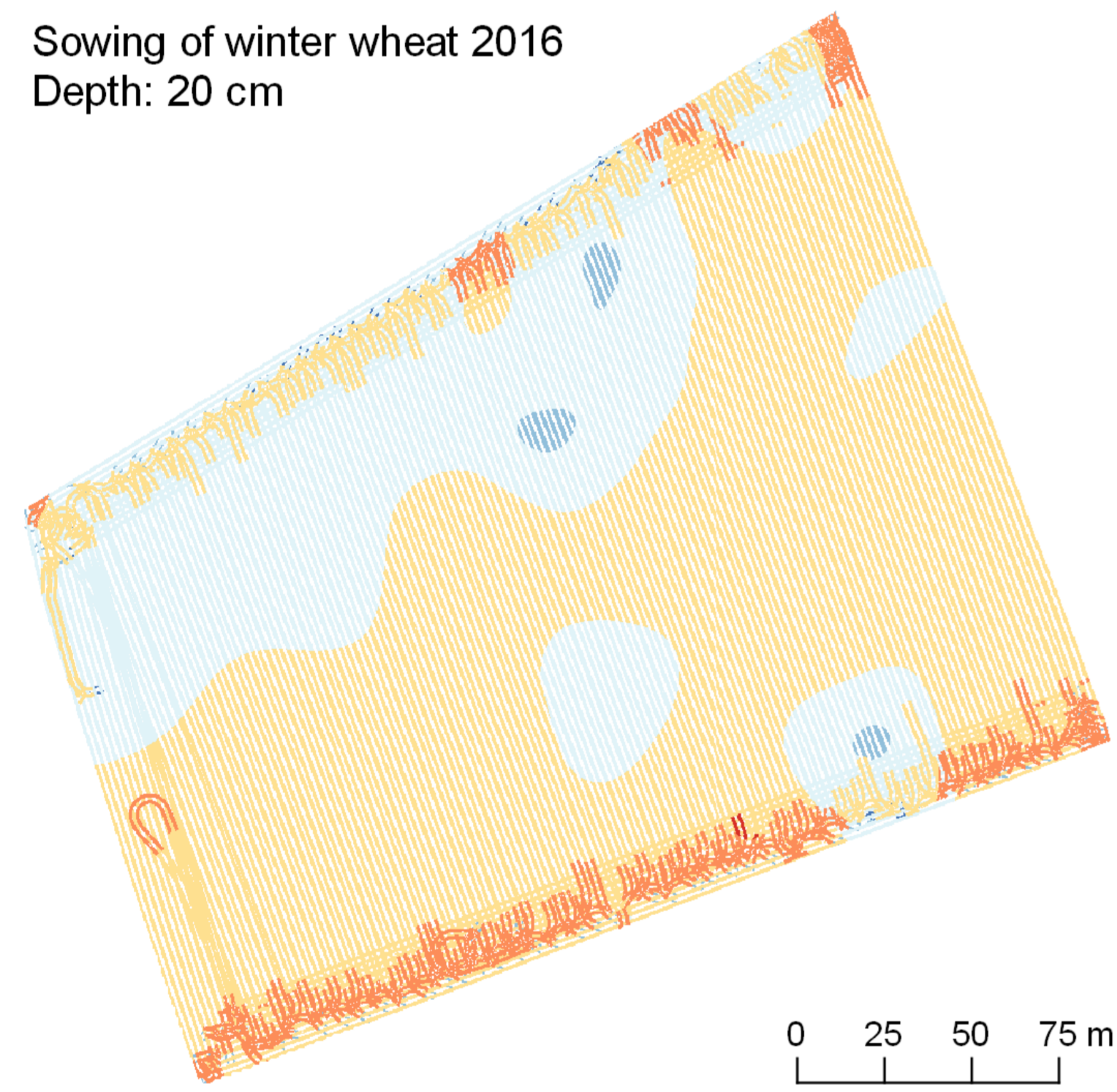


Modelled soil compaction risk with SaSciA:

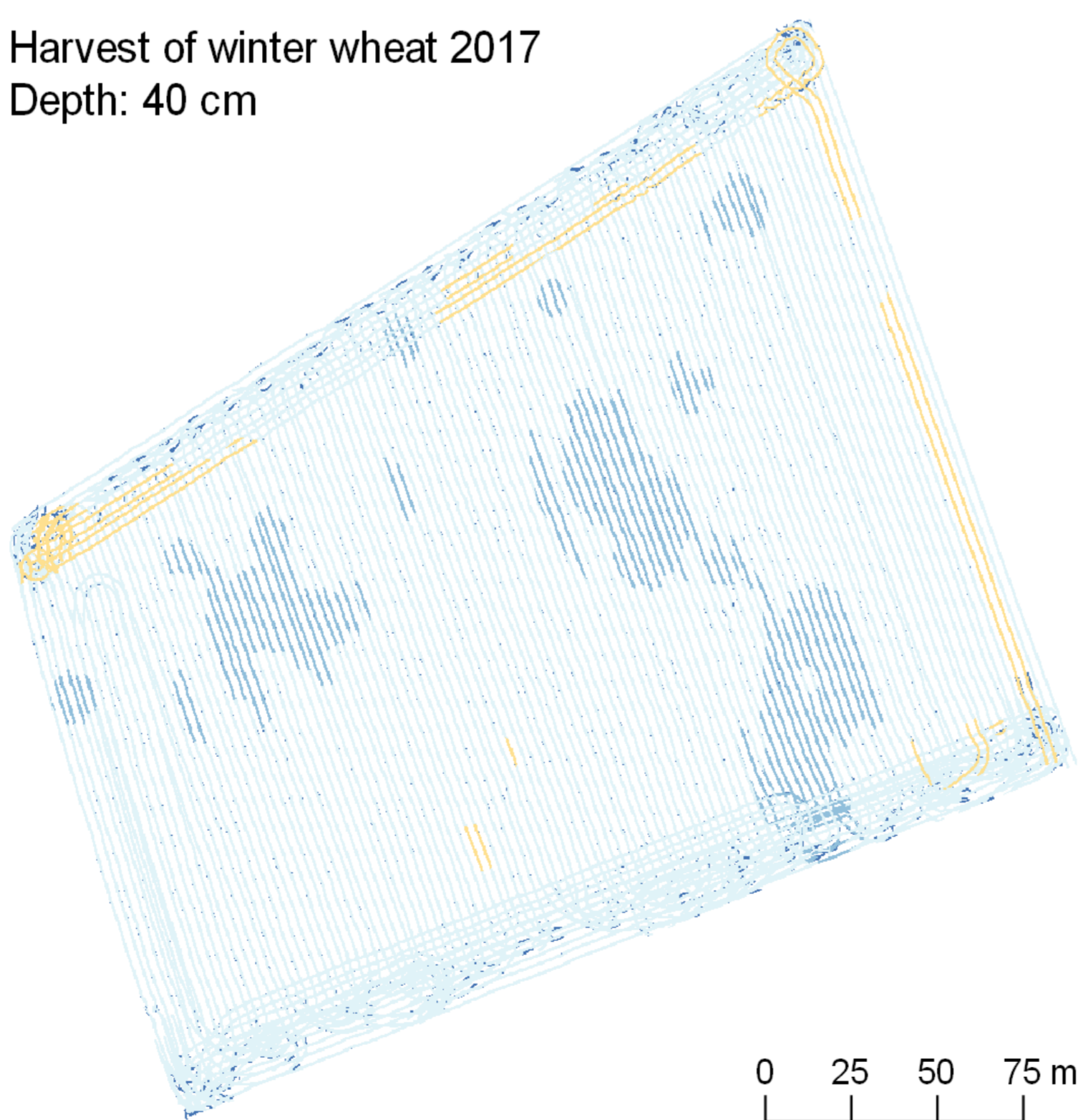
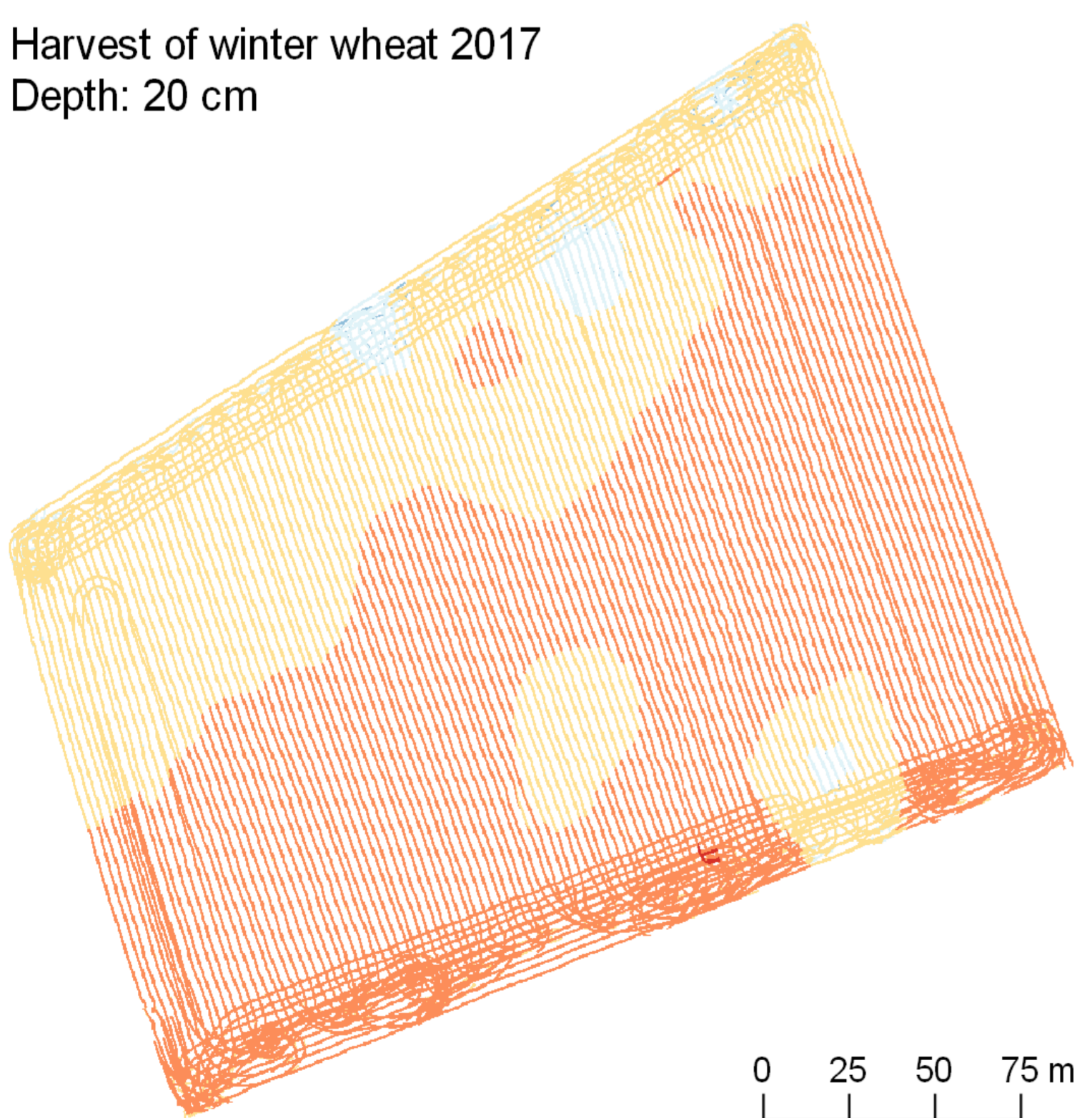
SaSciA at field scale:

SaSciA at regional scale:

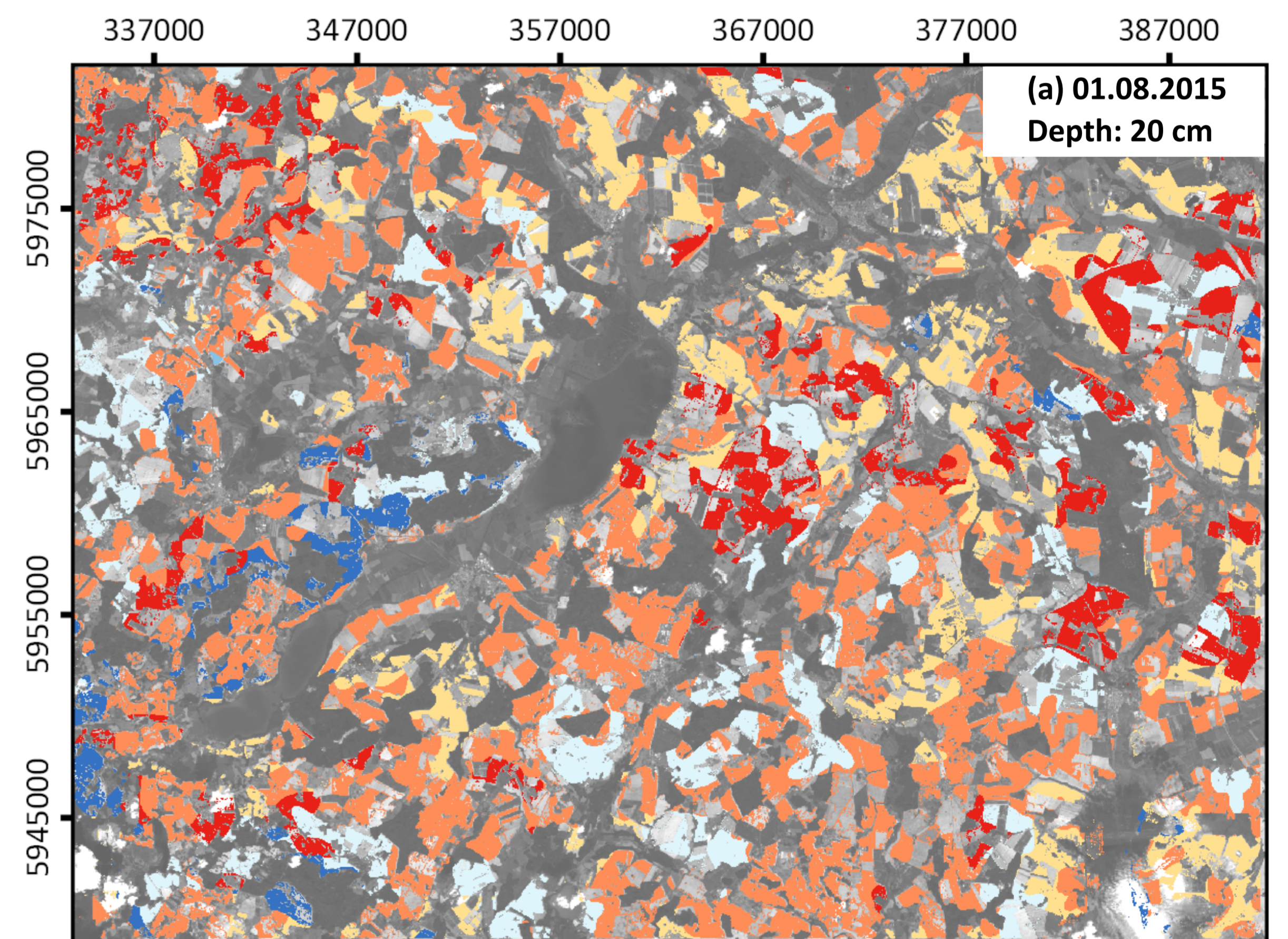
Sowing



Harvest



After heavy rainfall



Two weeks later

