STEROPES: Developing a farm-scale sampling strategy to improve the accuracy of Sentinel-2-derived SOC estimations at field-scale

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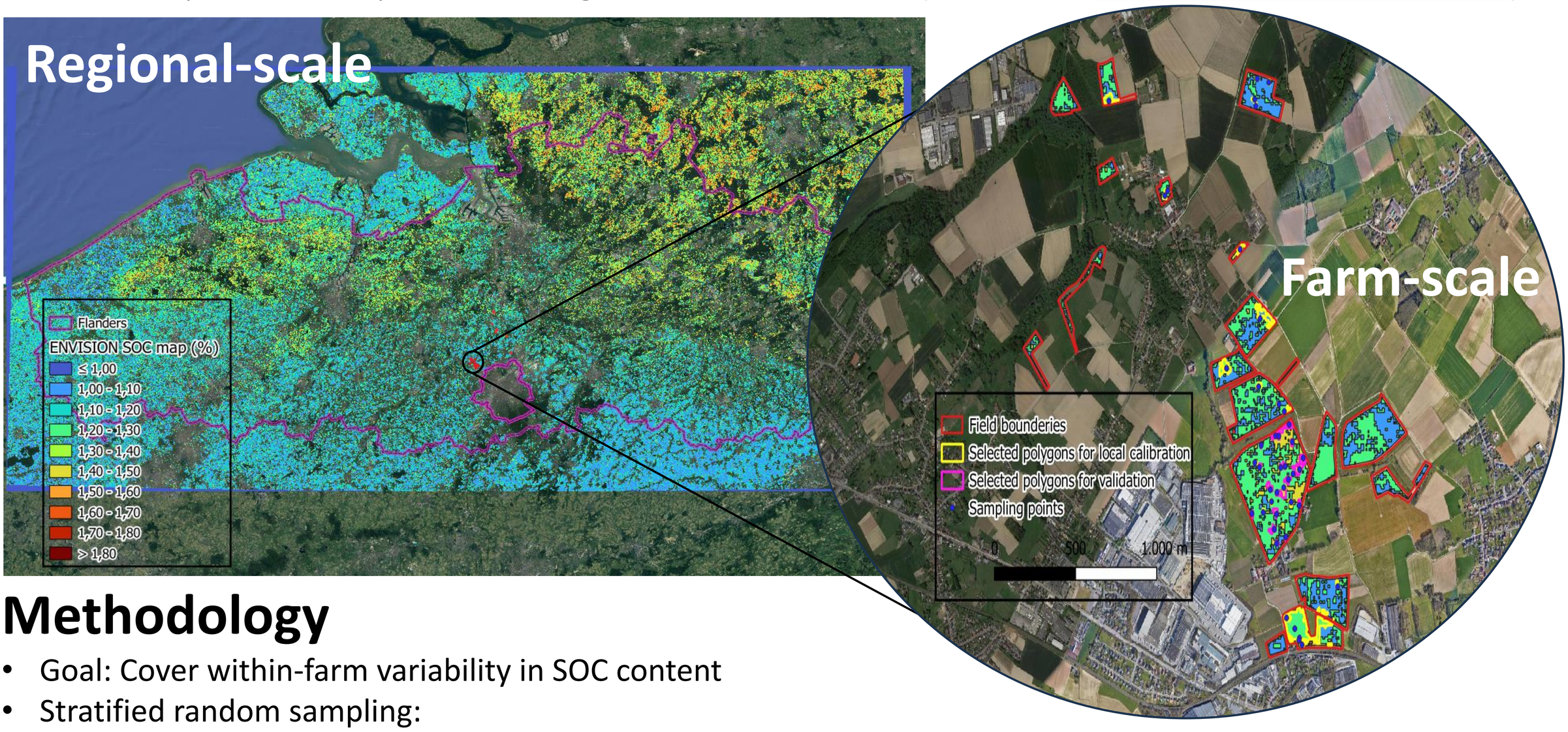
Introduction

- Satellite-derived SOC content estimation
- Horizon 2020 ENVISION project (https://envision-h2020.eu/)
  => Cropland SOC map Flanders, Belgium

Objective

- Development of a cost-efficient farm-scale sampling strategy for local recalibration of the ENVISION model (output) to improve the accuracy of field-scale SOC estimation (STEROPES - https://ejpsoil.eu/soil-research/steropes)



Methodology

- Goal: Cover within-farm variability in SOC content
- Stratified random sampling:
  1) Divide regional SOC map into even SOC content classes (0.1% interval)
  2) Clip new SOC class layer on parcel boundaries + 10 m buffer
  3) Removal of polygons ≤150 m^2
  4) Random selection of a pre-described number of polygons per SOC class (n = 24)
  5) Removal of 4 m buffer zone from selected polygons
  6) Random selection of one sampling point per selected polygon
- Recalibration model (output) at farm-scale
- Repeat of steps (4) to (6) at one field for field-scale validation (n = 20) of the locally recalibrated ENVISION model (output)

Next steps

- Test at two arable farms in Flanders with variation in diversity of soil types
- Eight 0-10 cm and 10-30 cm soil subsamples per experimental plot (10mx10m Sentinel-2 pixels), analyzed with a Skalar C/N-Analyzer Primacs SNC100-IC
- Sensitivity analysis of the optimal number of samples at farm-scale for local recalibration of the ENVISION model (output)

EJP SOIL STEROPES

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