

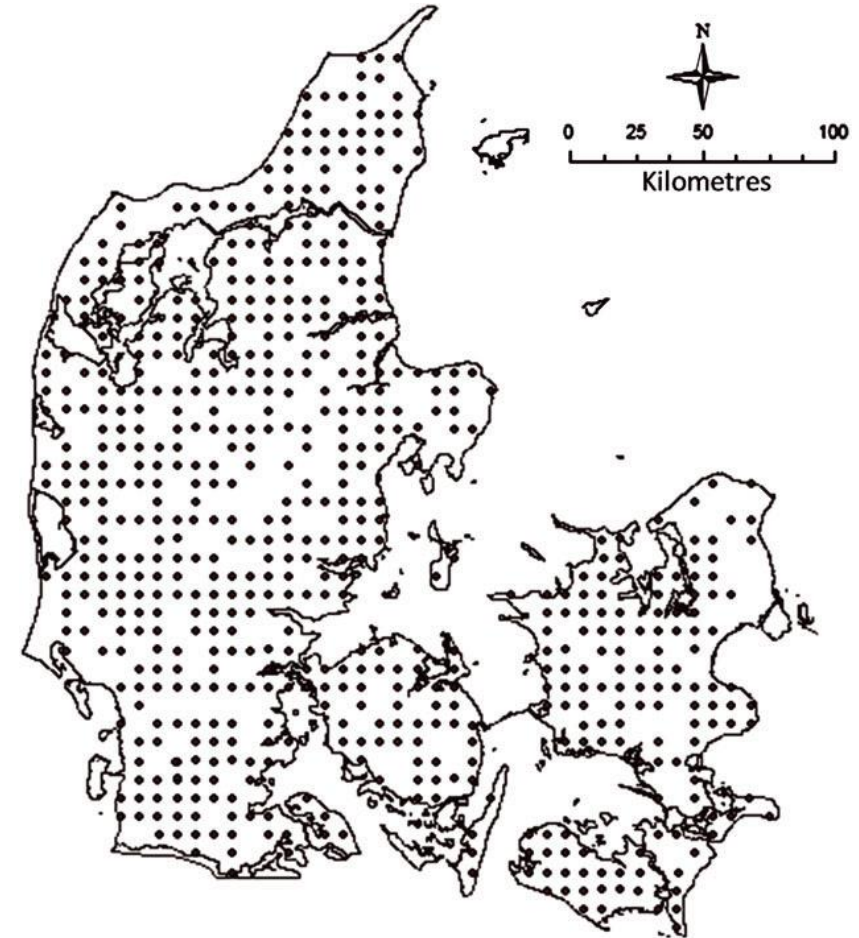
CHANGES IN DANISH AGRICULTURAL SOIL SOC INVENTORY BETWEEN 2008 AND 2018

Laura Sofie Harbo, PhD student
Department of Agroecology
Aarhus university

Jørgen E. Olesen
Lars Elsgaard
Zhi Liang

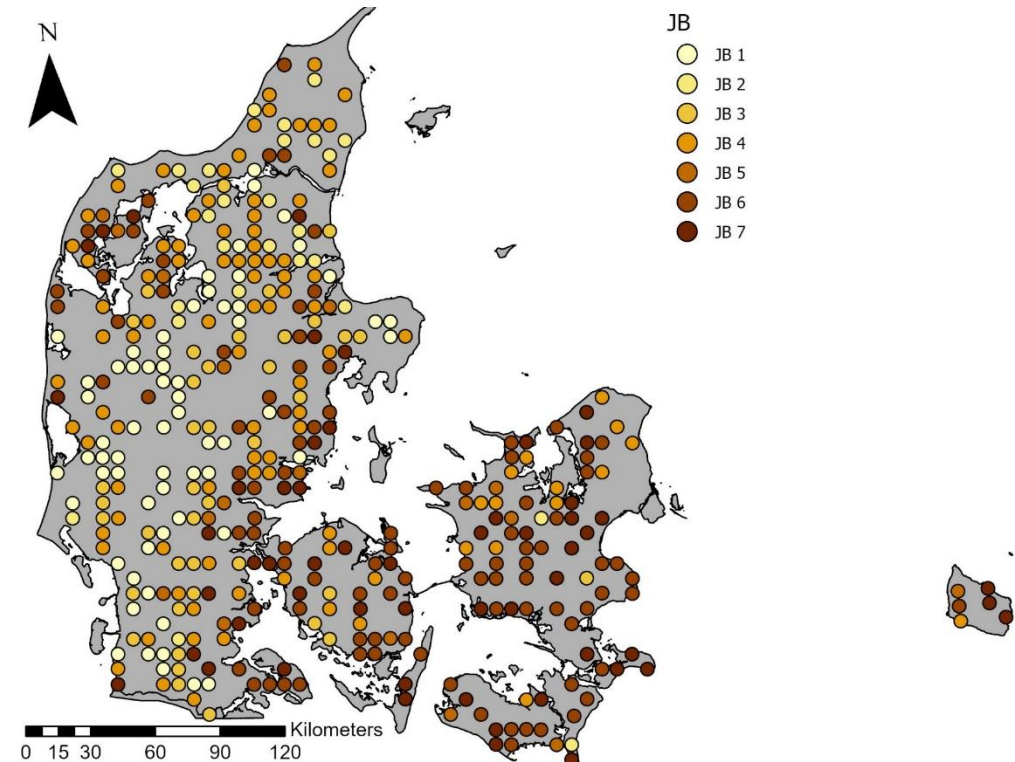
THE DANISH SOIL MONITORING NETWORK

- Established in 1986
- Sampling approx. every 10 years
 - 1986, 1997, 2008, 2018
- 7 km x 7 km grid
- Initially approximately 600 sites
- New sampling procedure introduced in 2008
 - 395 sites present in both 2008 and 2018



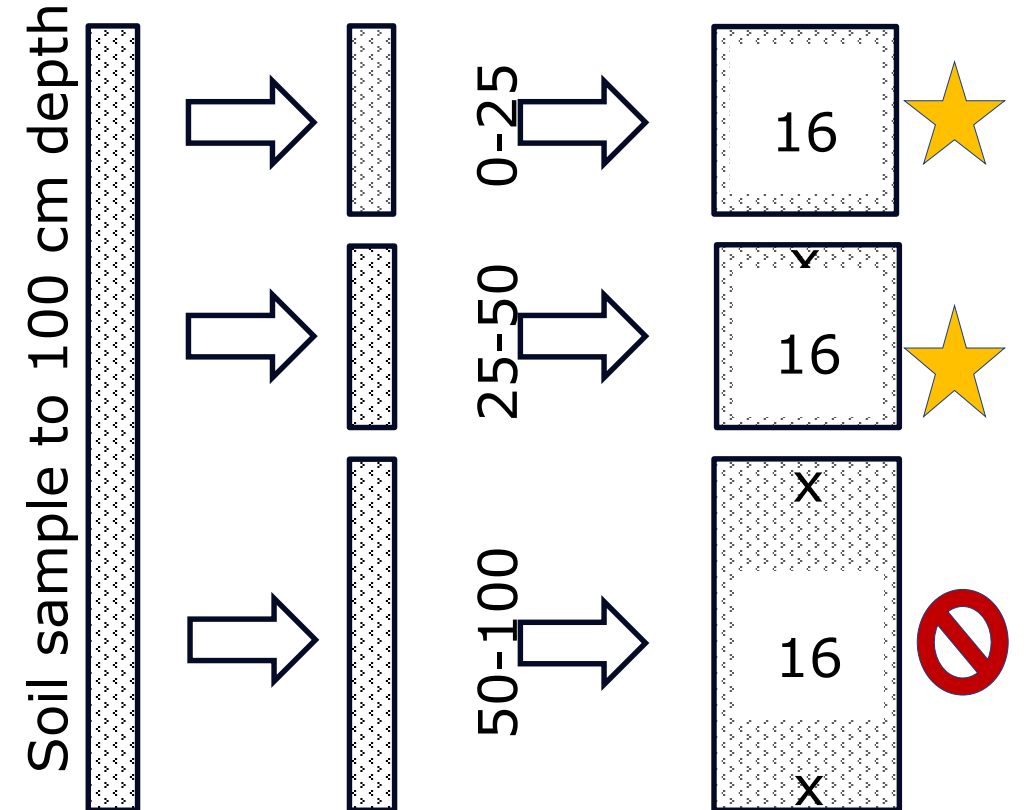
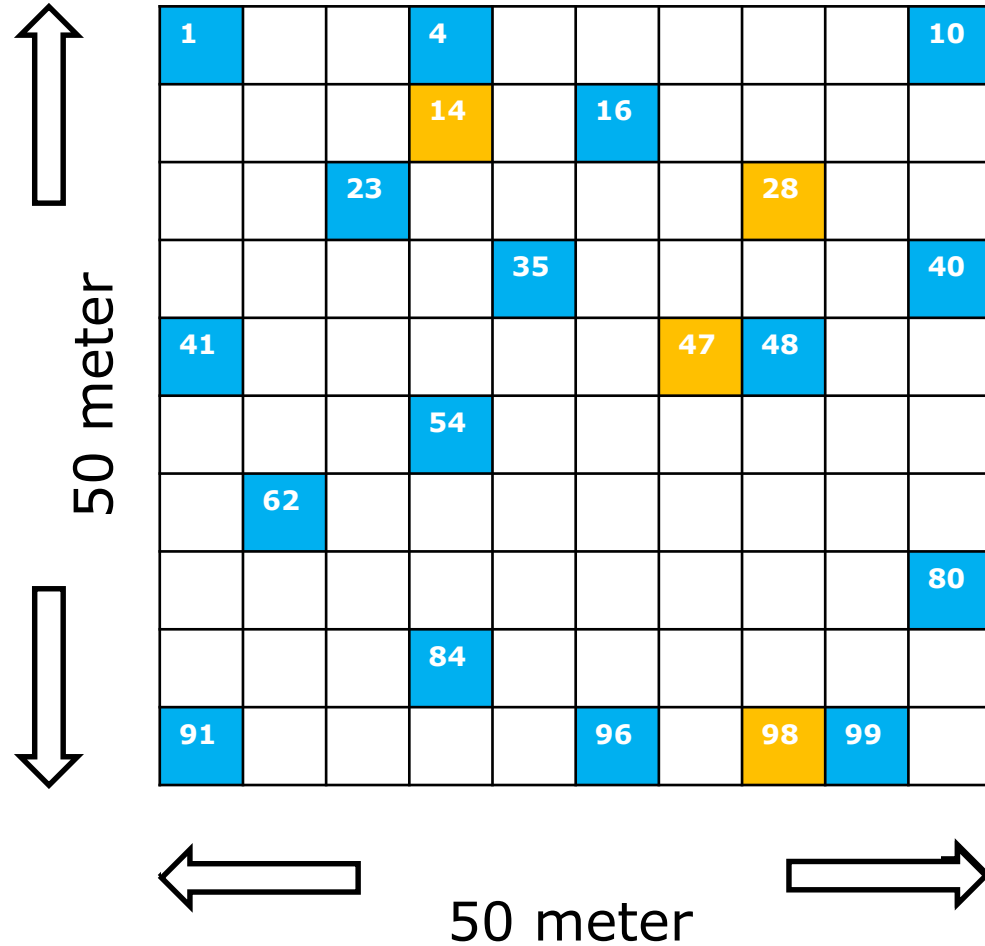
DANISH SOIL CATEGORIZATION

- Soil in Denmark is generally low in C, and quite sandy.
- National categorization: JB 1 (0 – 5 % clay) – JB 7 (15 – 25% clay)
 - JB 10 is 45 – 100% clay, but very rare, and not included
- Soil is more sandy in the western parts of Denmark, and becomes more clayey in the Eastern part of Denmark.

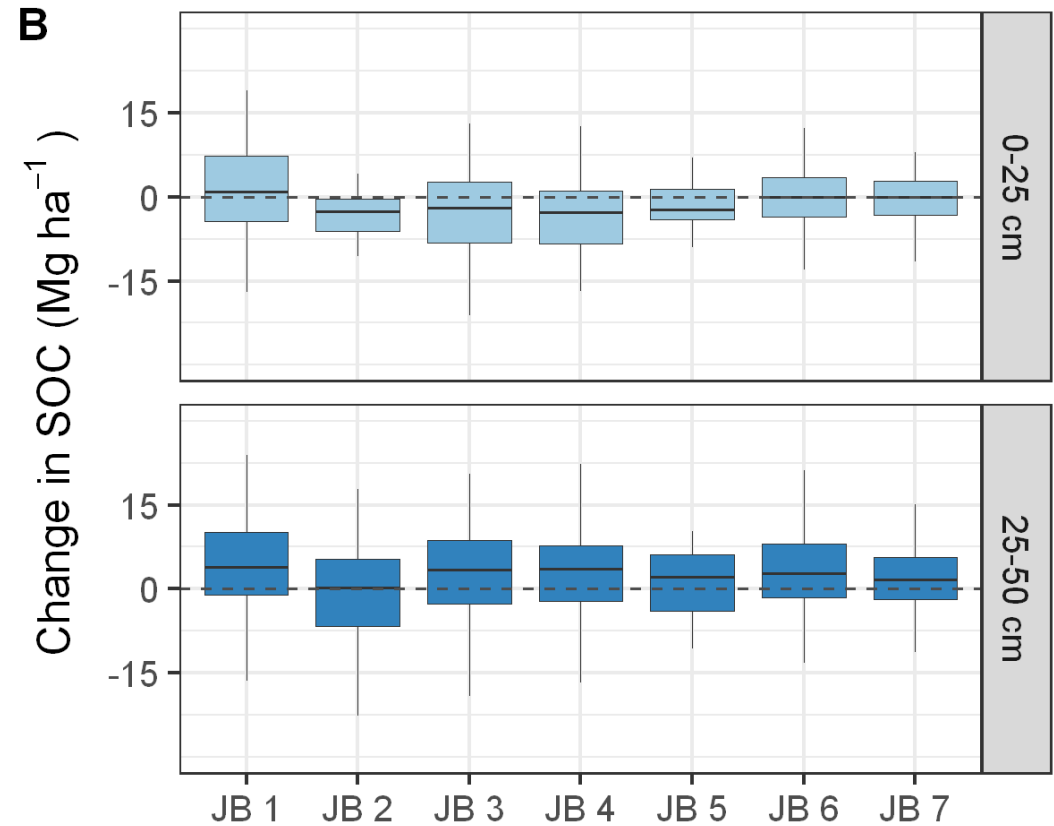
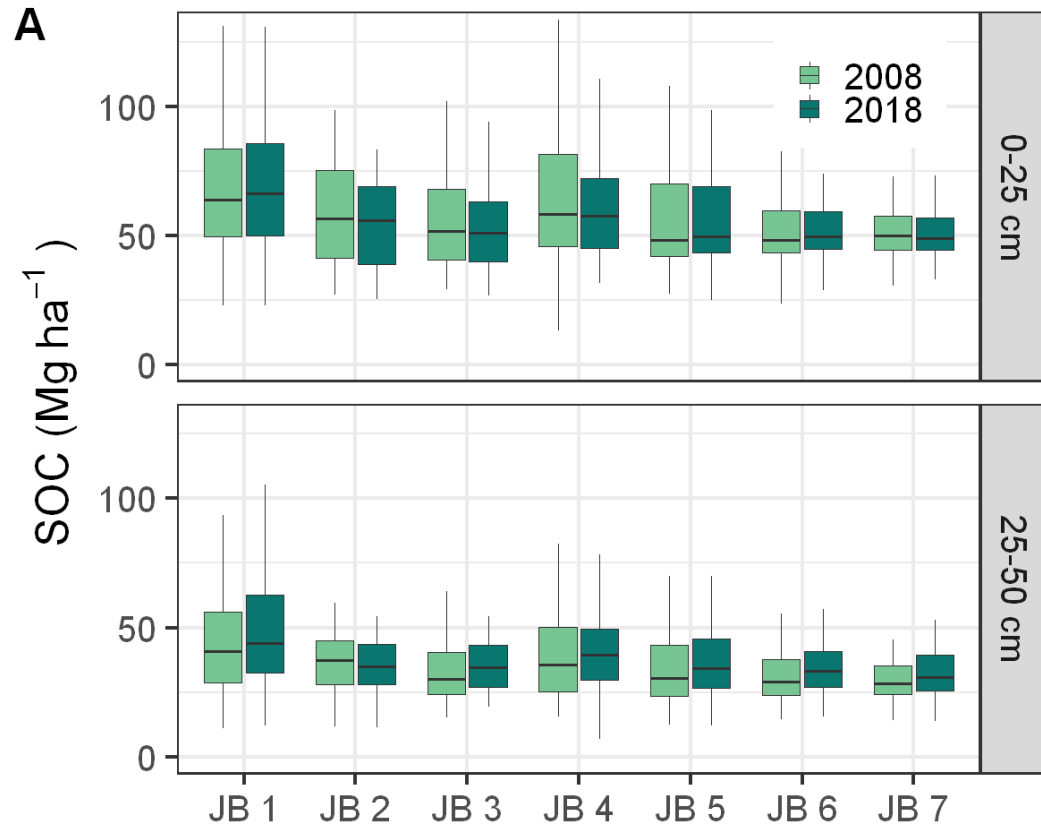


SAMPLING METHOD

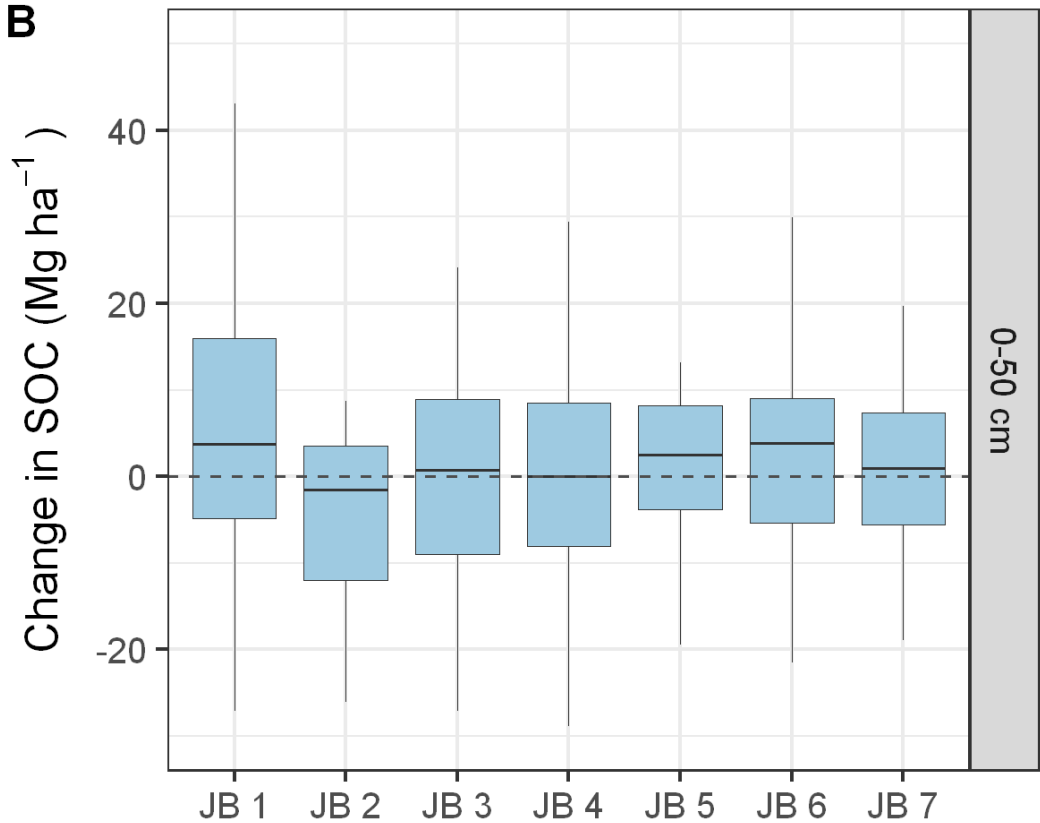
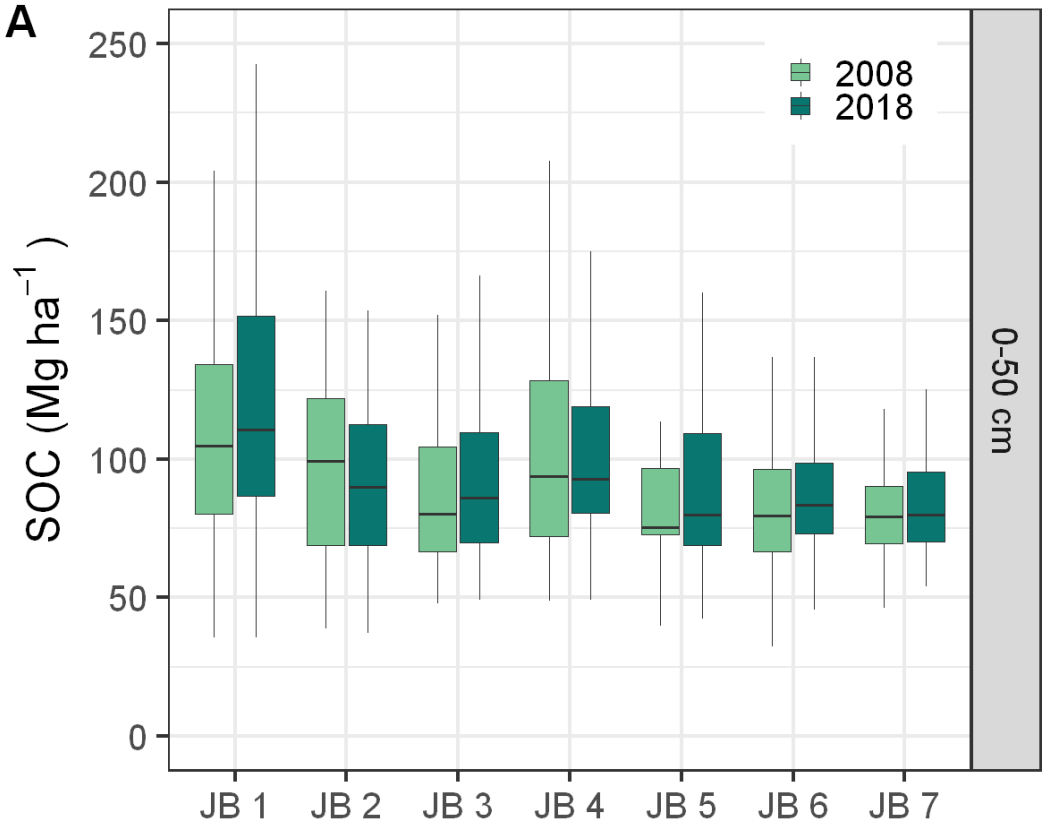
$$SOC = OrgC\% * bulk\ density * depth * (1 - stone\ fraction)$$



CHANGES IN SOC 2008-2018 BY LAYER



CHANGES IN SOC 2008-2018 IN TOTAL

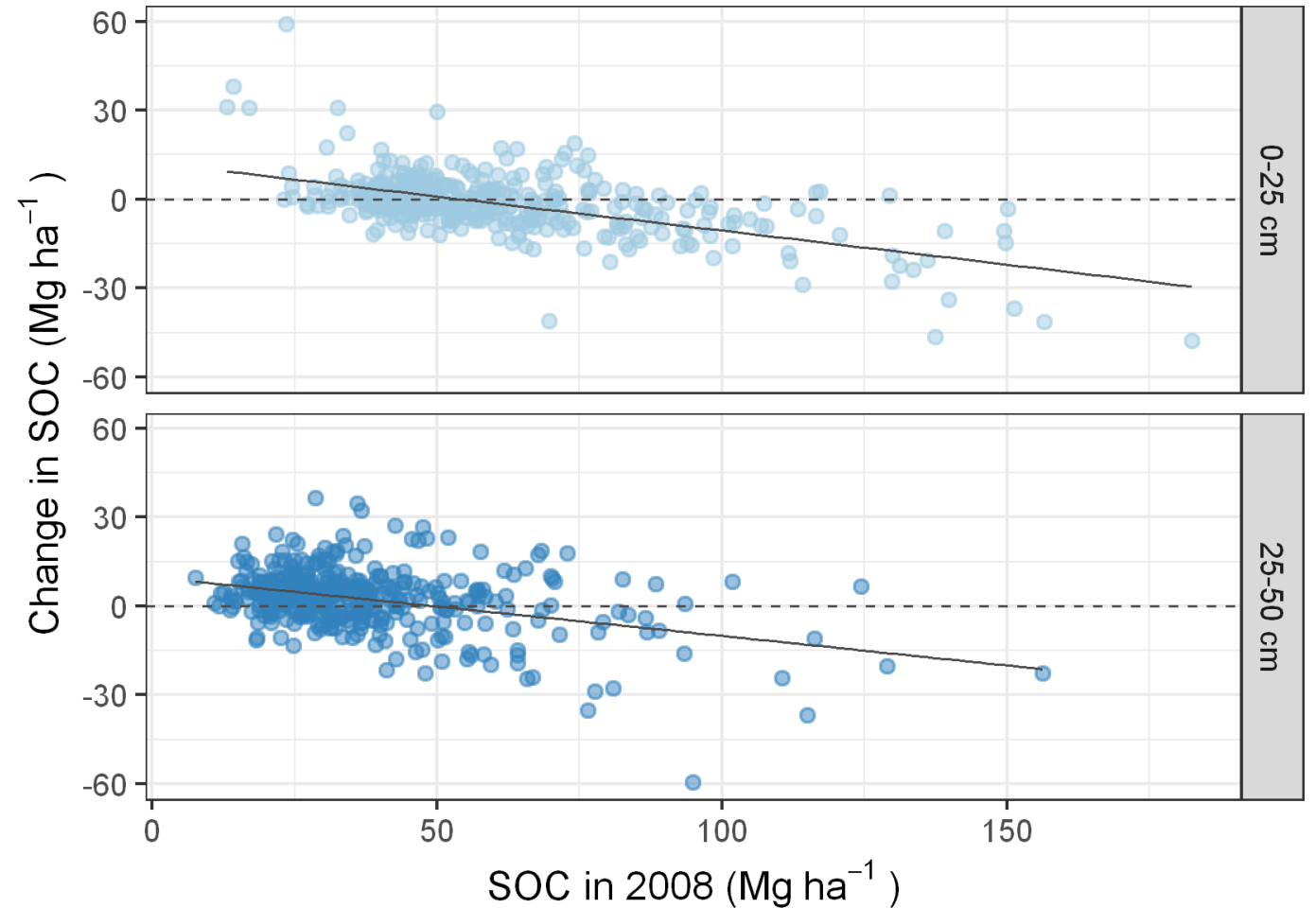


GEOGRAPHIC DISTRIBUTION

—
Maps has been removed.

POOL SIZE AND POTENTIAL CHANGES

- Smaller SOC pools have greater potential for carbon sequestration
- The larger the SOC pool, the greater the potential for future SOC loss
- Larger SOC pools require larger inputs to maintain their size, let alone further sequestration.



EFFECT OF LAND USE

- Previous research in the Danish national soil monitoring network shows positive effects of :
 - Grass / ley
 - Cattle manure
 - Autumn/winter crops with straw incorporation
- **Red thread**: addition of organic material, longer time, depth
- Analyses of most recent data is under way

Maps has been removed.

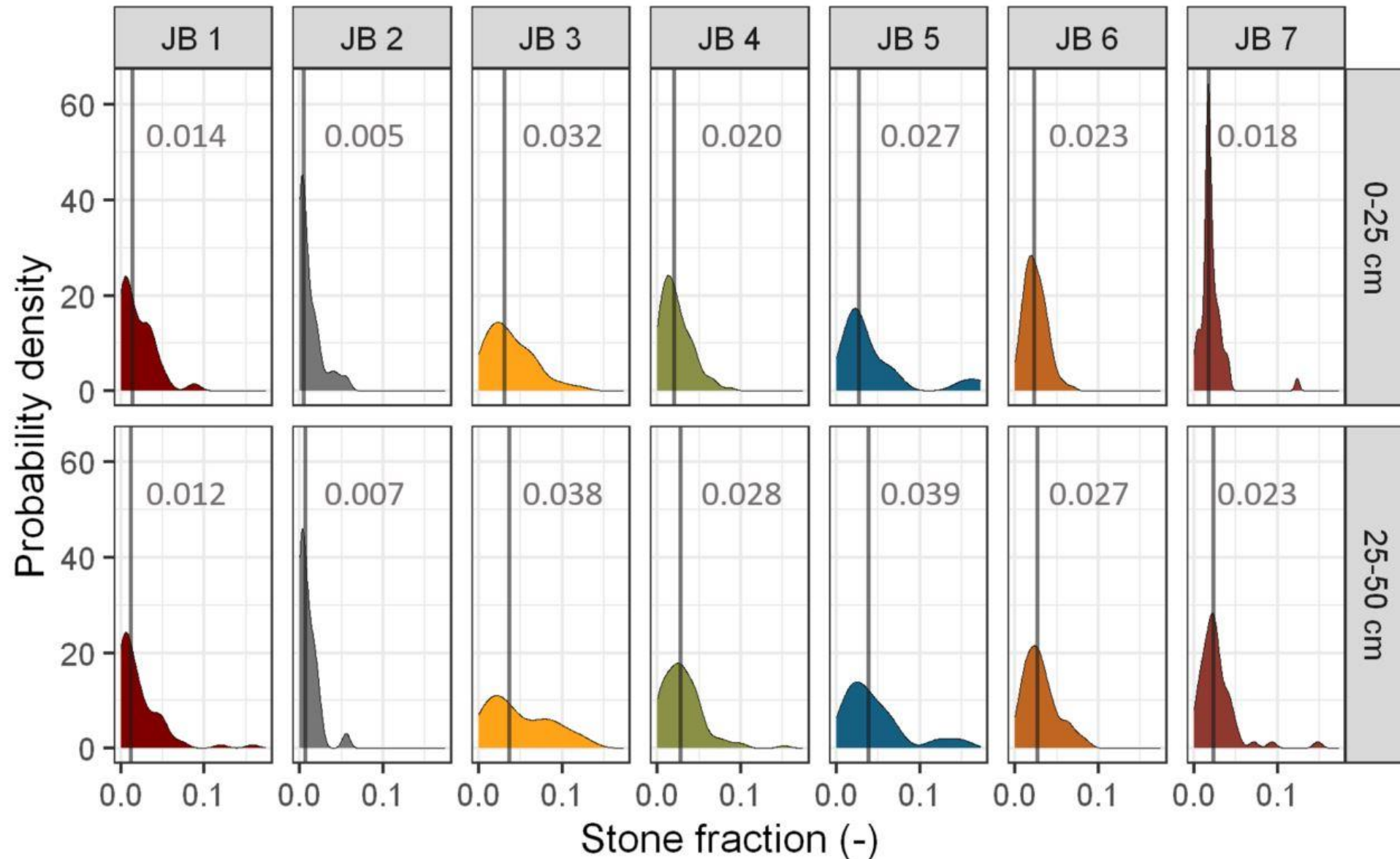
CONCLUSION

- Overall, a gain in SOC for 0-50 cm for Danish agricultural soils
- Losses in 0-25 cm outweighed by gains in 25-50 cm
- Relationship between soil texture and SOC pool overshadowed by management effects
- Large SOC pools are more vulnerable to losses



AARHUS
UNIVERSITY

Median stone fraction varies between 0,5 - 3,9 percent



Site specific bulk density varies from the mean value

