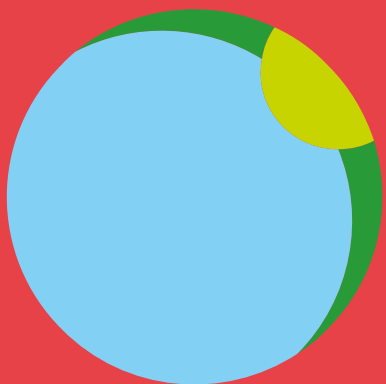


NPPL-Bodemscans



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Talent for development

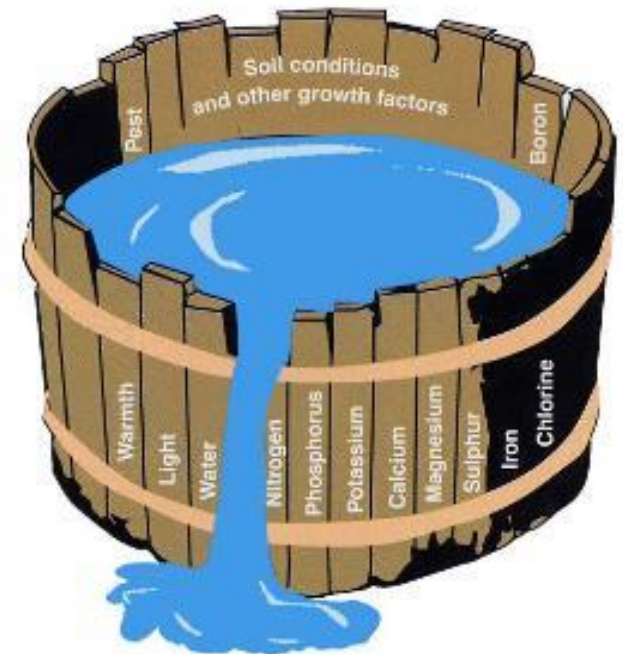
Waarom bodemscans?

Doelstelling:

- In kaart brengen relevante eigenschappen

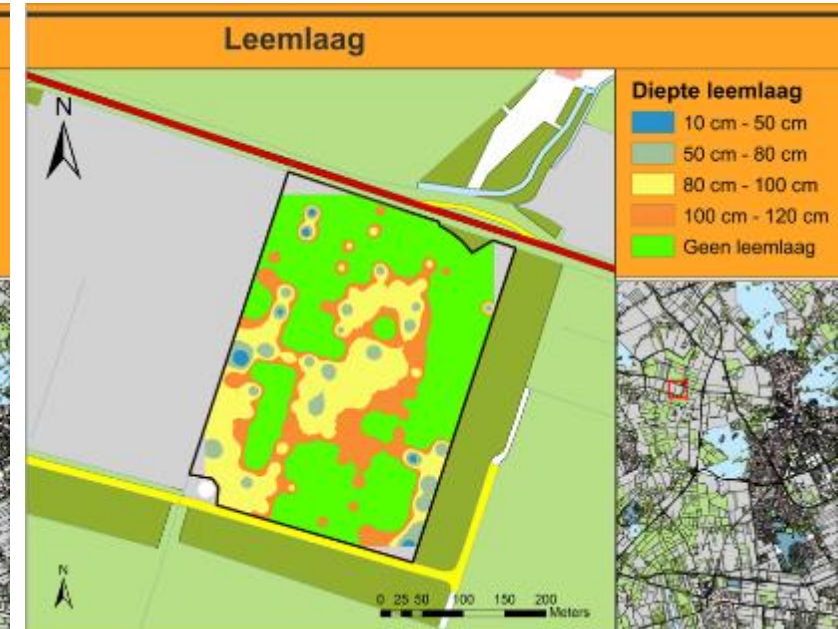
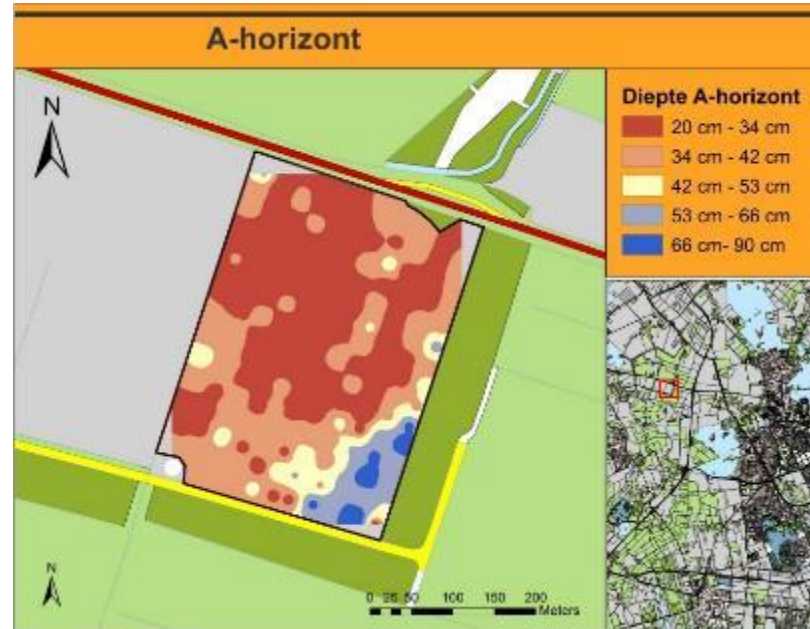
"Hoe kunnen percelen het best in kaart gebracht worden, zodat er informatie beschikbaar komt waarop aangestuurd kan worden met taakkaarten?"

- Karteringstechnieken:
 - Landschappelijk
 - Bodemscan
 - Hoogtekaart/kennis ondernemer

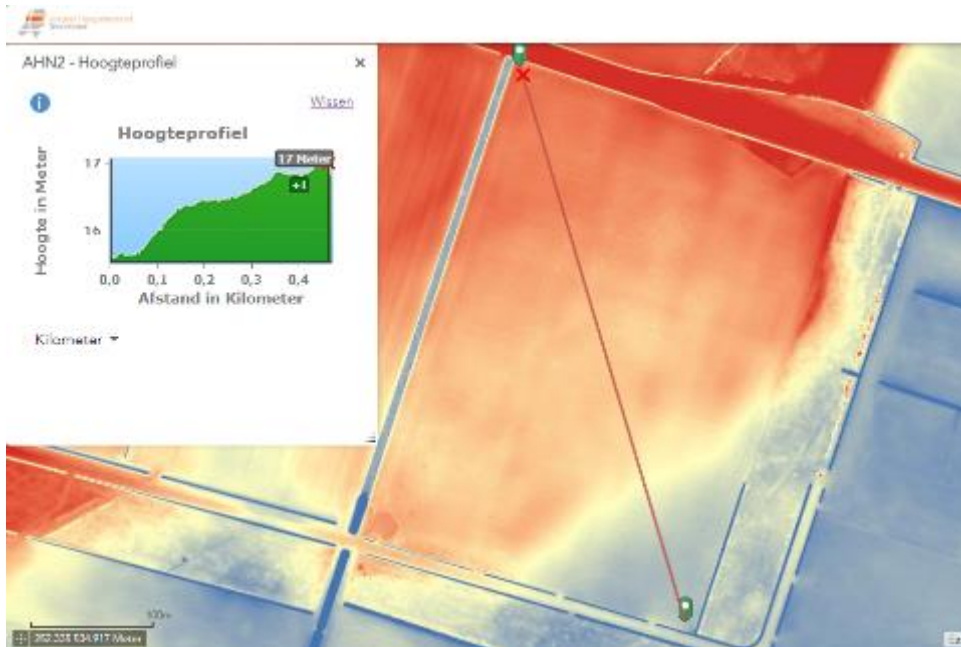


Perceel

- Landschappelijke kartering
 - 1: 2 000
- Bodemscan
- Kennis van de ondernemer
 - Hoogtekaart
 - AHN.nl

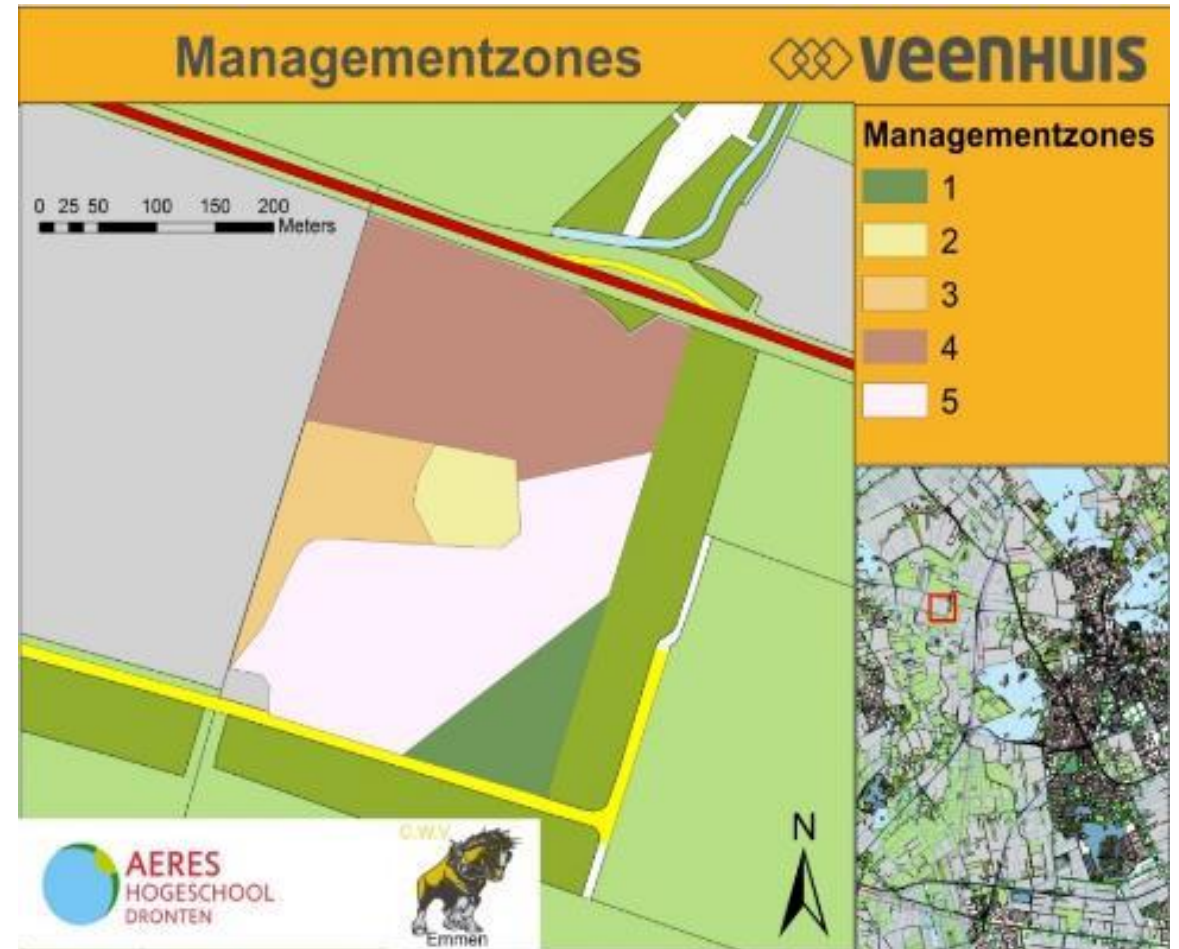


Management zones



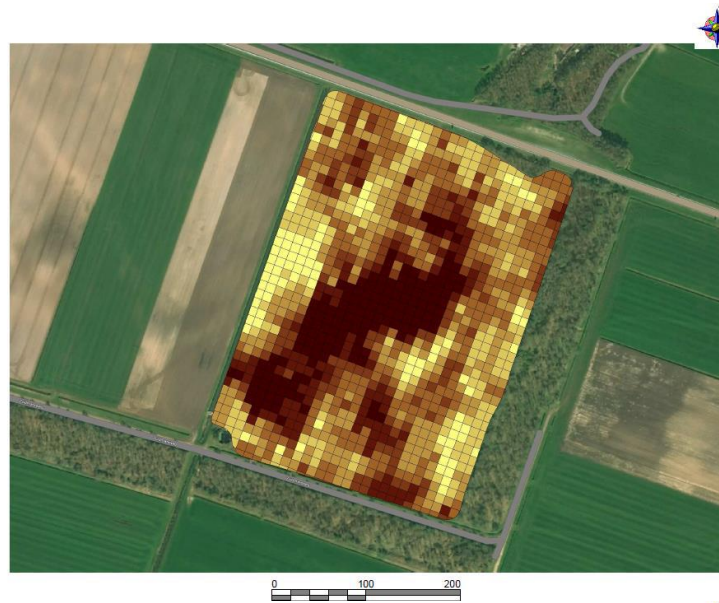
Belangrijkste
bodemeigenschappen:

- pH
- Organische stof-gehalte
- Bewortelingsdiepte
- Vochtlevering



Veris-scan

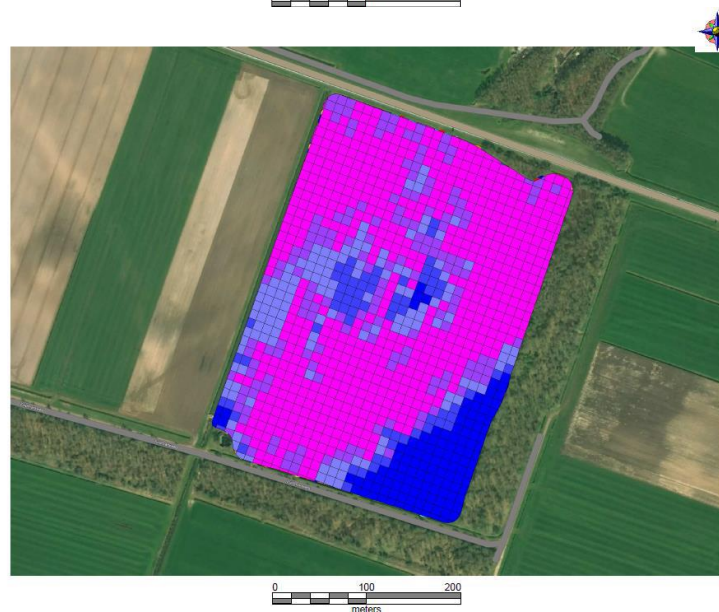
Organische
stofgehalte



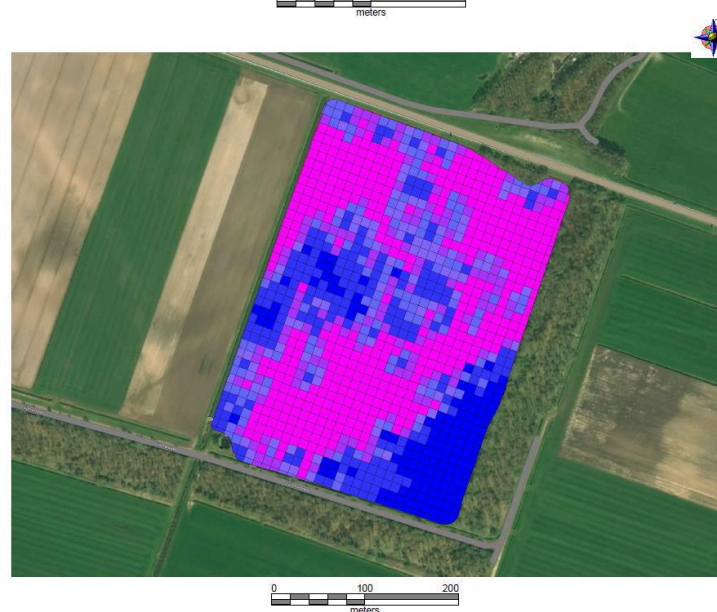
pH-waarde



EC 0-30 cm



EC 0-90 cm





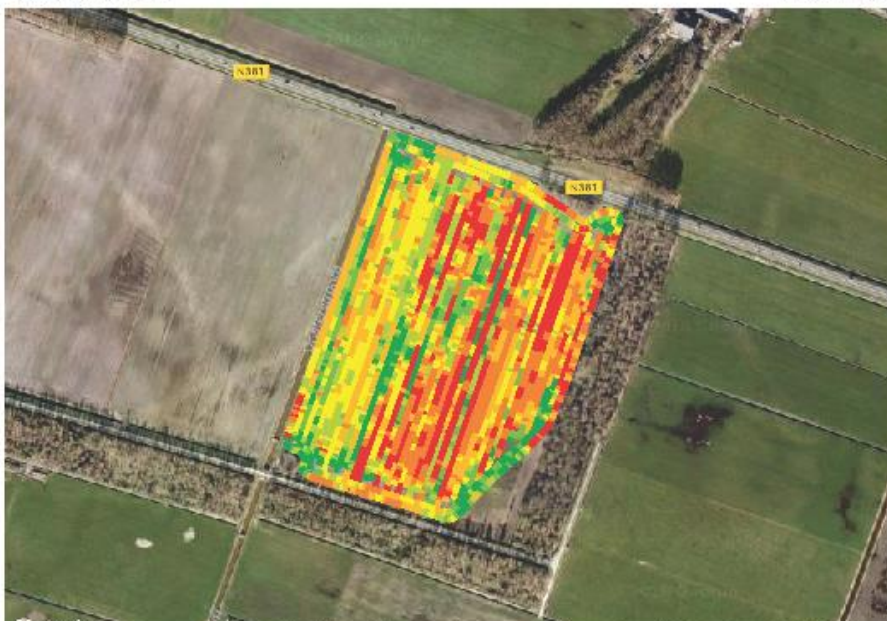
Mijn bewerkingen

2018 Grasland: Oogst

Laag: Droge opbrengst

Achter silo

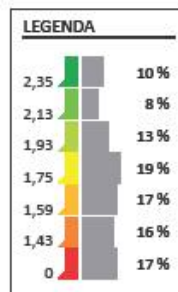
demo | Hilhorst



Google Kaartgegevens ©2018 Google Afbeeldingen ©2018, Aerodata International Surveys, DigitalGlobe, GeoBasis-DE/BKG, GeoContent

Werkdatums: 06-06-2018 - 06-06-2018

AGRONOMISCHE GEGEVENS	
DROOG GEWICHT	GEM. NAT GEWICHT
19,71 t	2,68 t/ha
GEM. DROOG GEWICHT	GEM. ADF
1,78 t/ha	22,51 %
GEM. MSTR	GEM. NDF
33,49 %	35,66 %
GEM. SNELHEID	GEM. PROTEÏNE
14,02 km/h	17,28 %
BEWERKT GEBIED	GEM. SUIKER
11,05 ha	14,22 %
NAT GEWICHT	
29,64 t	



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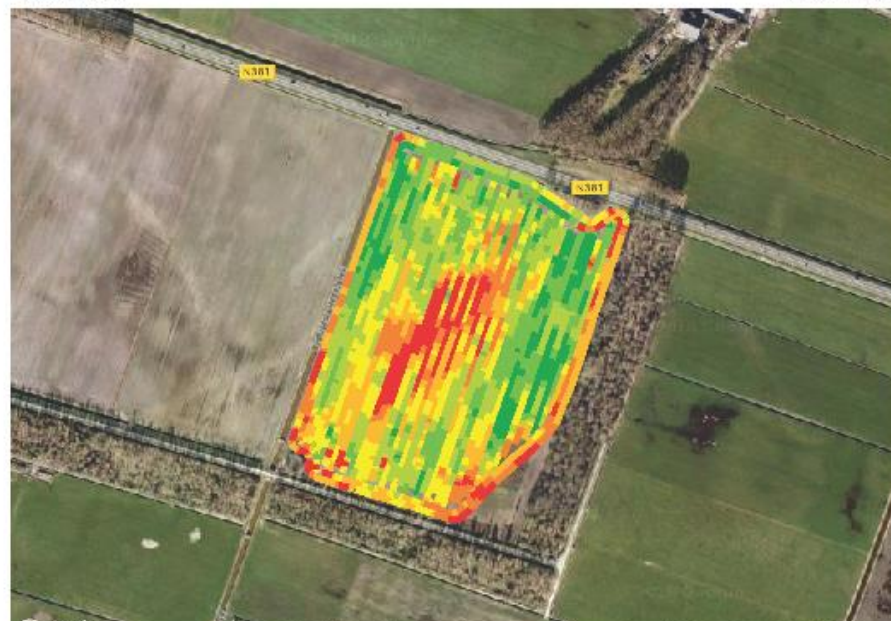
Mijn bewerkingen

2018 Grasland: Oogst

Laag: Ruw eiwit

Achter silo

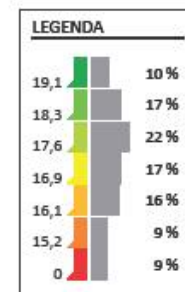
demo | Hilhorst



Google Kaartgegevens ©2018 Google Afbeeldingen ©2018, Aerodata International Surveys, DigitalGlobe, GeoBasis-DE/BKG, GeoContent

Werkdatums: 06-06-2018 - 06-06-2018

AGRONOMISCHE GEGEVENS	
DROOG GEWICHT	NAT GEWICHT
19,71 t	29,64 t
GEM. DROOG GEWICHT	GEM. NAT GEWICHT
1,78 t/ha	2,68 t/ha
GEM. MSTR	GEM. PROTEÏNE
33,49 %	17,28 %
GEM. SNELHEID	MAX EIWIT
14,02 km/h	20,6 %
BEWERKT GEBIED	
11,05 ha	



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Opbrengst

Bodem en precisielandbouw

- Mogelijkheden bodemscans inzichtelijk maken
 - Passieve Gamma Bodemscanner – E.H. Loonstra
 - EM38 – LoonwerkGPS
 - Veris scan – Vantage Agrometius
 - SoilXplorer – CNH
 - Bioscope
- Focus op
 - Lutum (kleigehalte)
 - Organische stof
 - pH

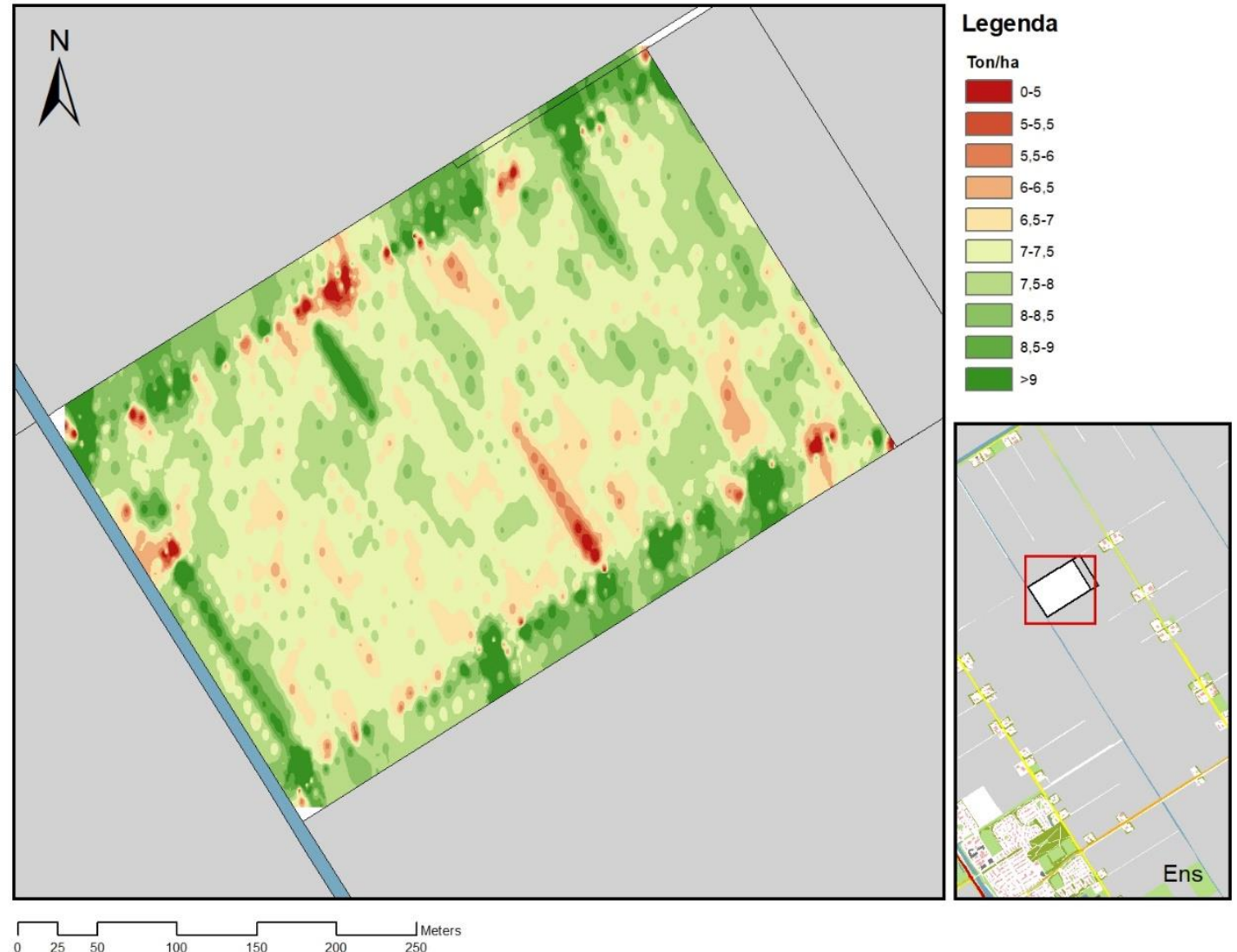
Het perceel

Akkerbouwbedrijf Sturm (Ens),
14 ha

Lichte zavel, kalkrijk, 2-3 % o.s.

2018: Wintertarwe & Zomergerst
2019: Uien

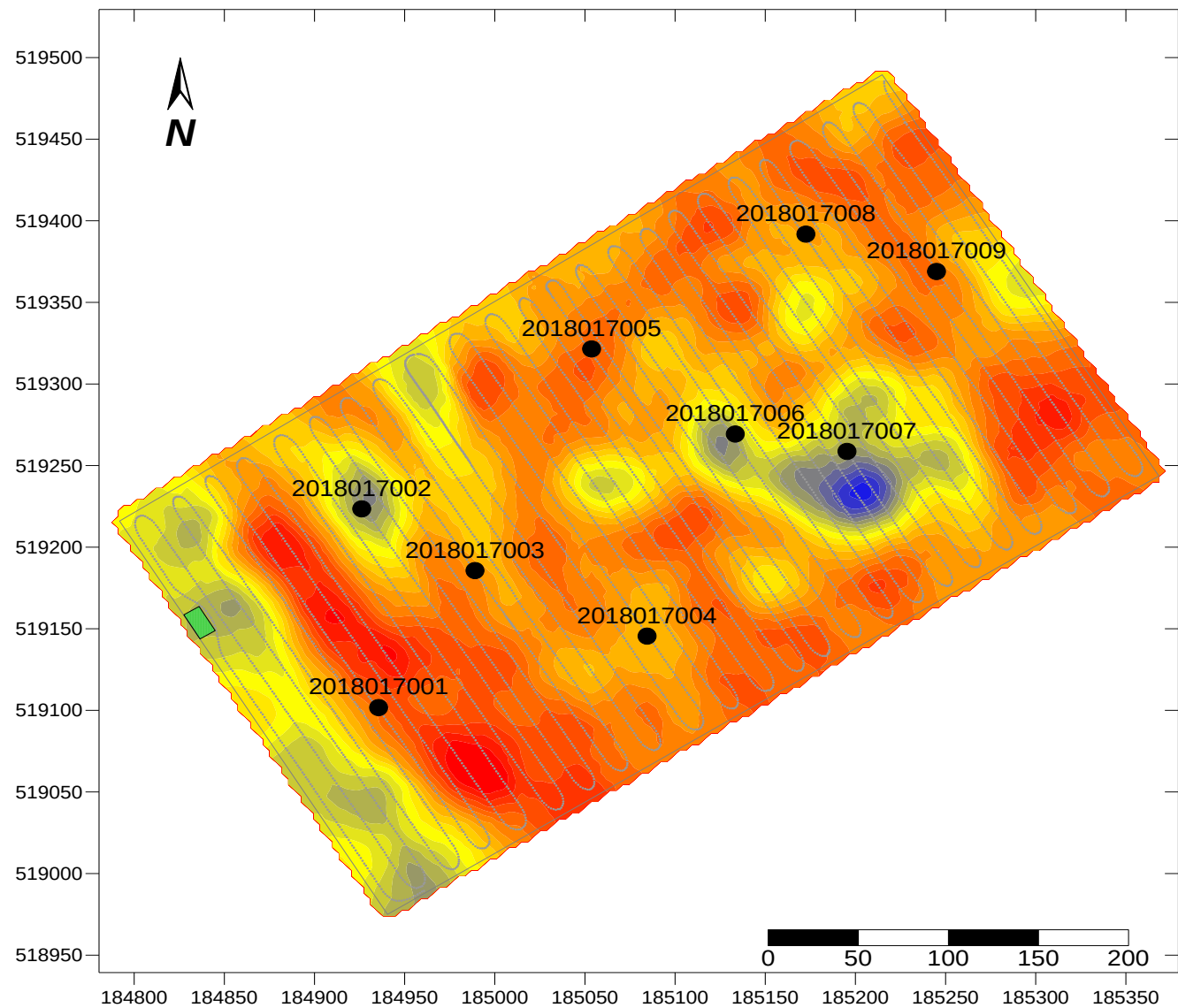
Huiskavel Sturm - Opbrengst Zomergerst 2018



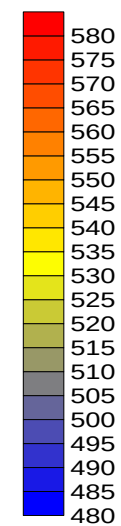
Passieve Gamma Bodemscanner – E.H. Loonstra

Op basis van gammastraling en referentiemonsters diverse kaartlagen met bodemparameters, waaronder:

- Gammastraling
- Bulkdichtheid
- Lutum
- Kalk
- Organische stof
- pH



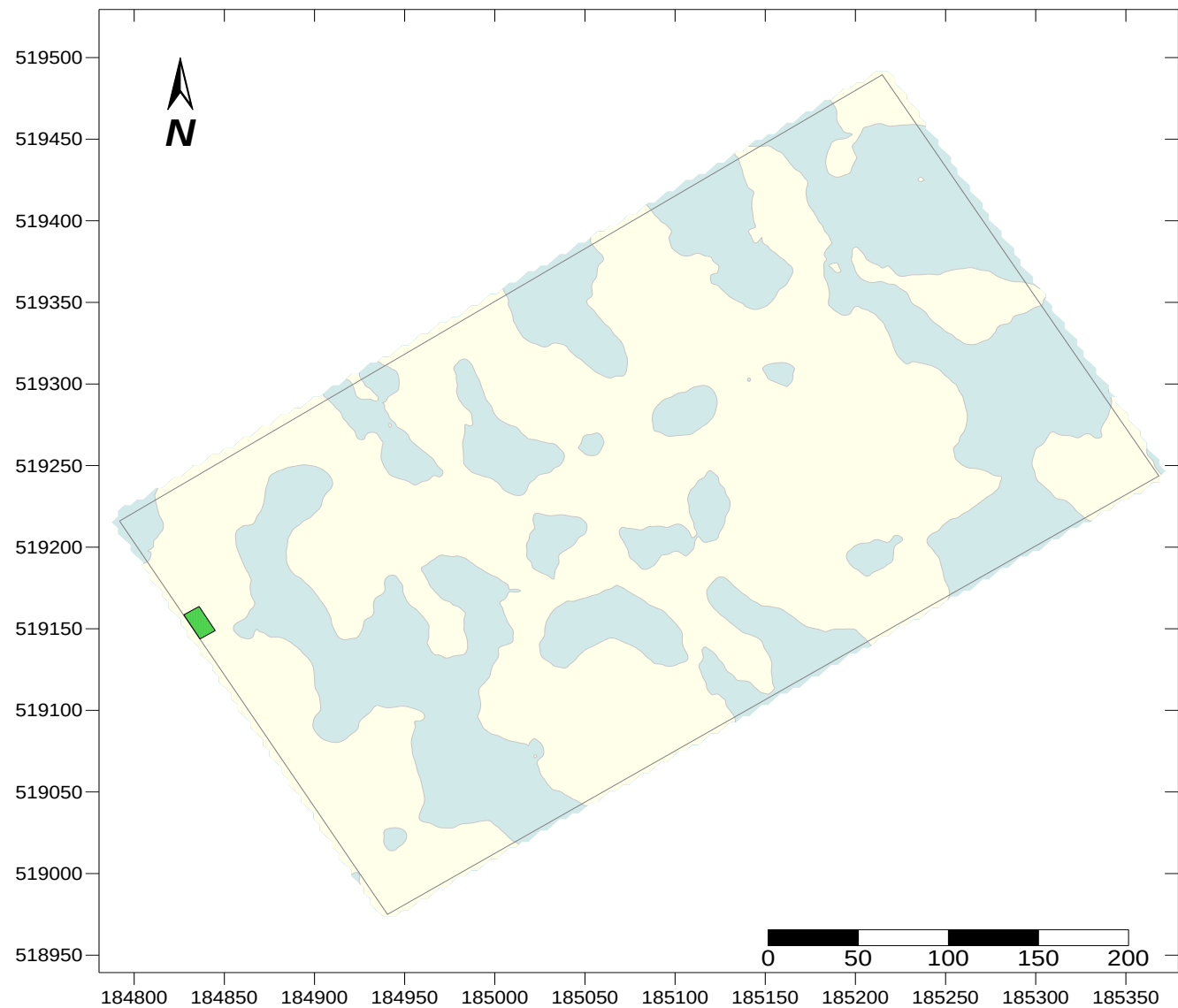
Naam: Aeres HS / mts Sturm
Perceel: Q49 gerst & tarwe 2018
Omvang: 14,4 ha
Projectie: Total Counts
Gemiddelde: 549.6



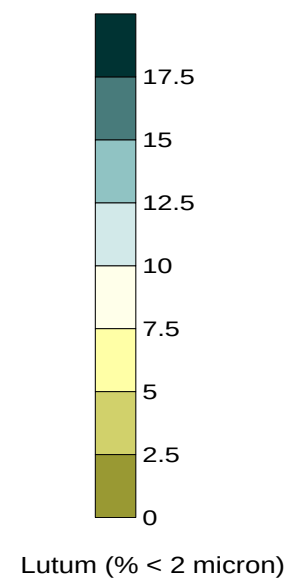
Total Counts (hits/seconde)

E.H. Loonstra © 2018

201801701

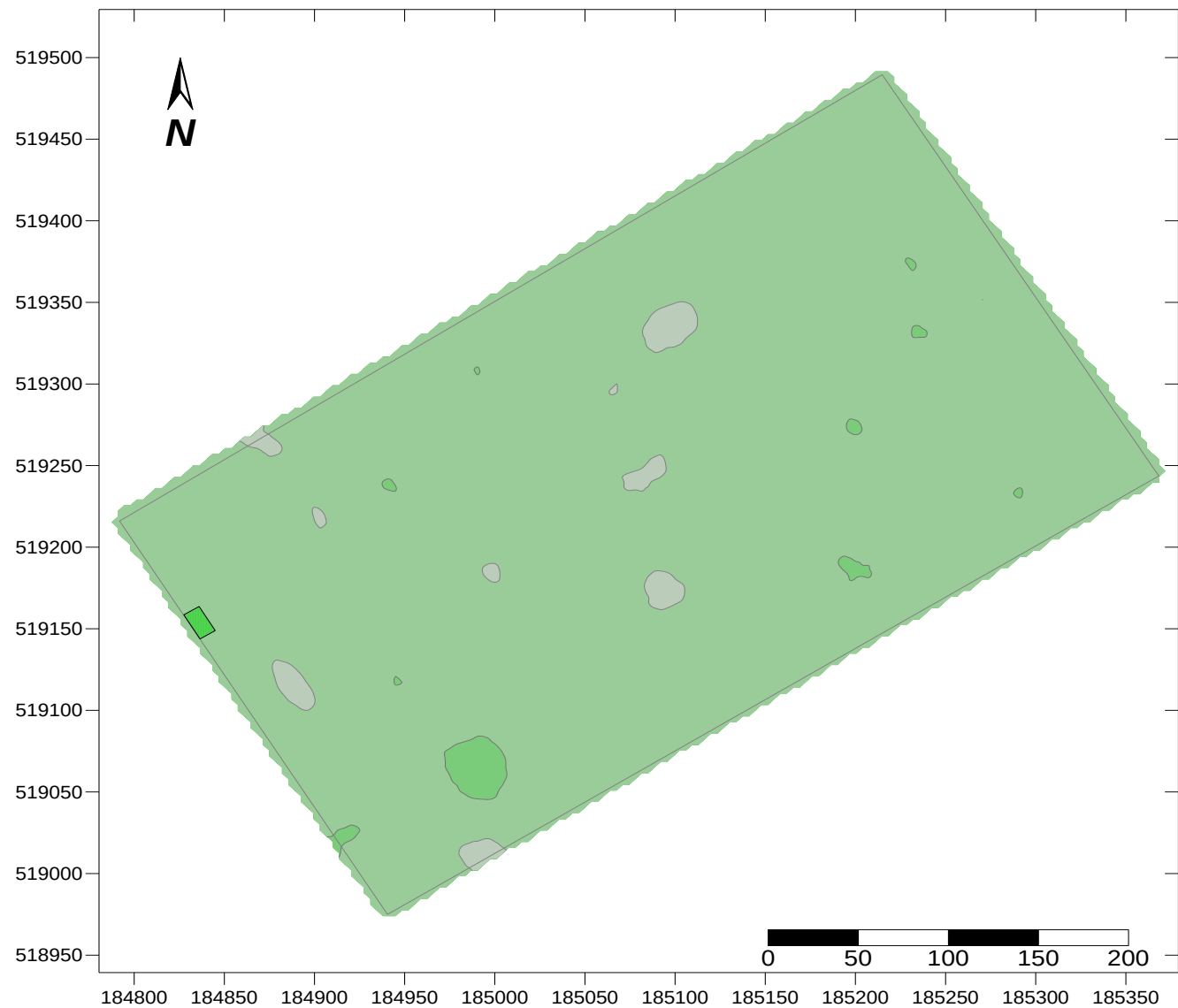


Naam: Aeres HS / mts Sturm
Perceel: Q49 gerst & tarwe 2018
Omvang: 14,4 ha
Projectie: Lutum
Gemiddelde: 9.8

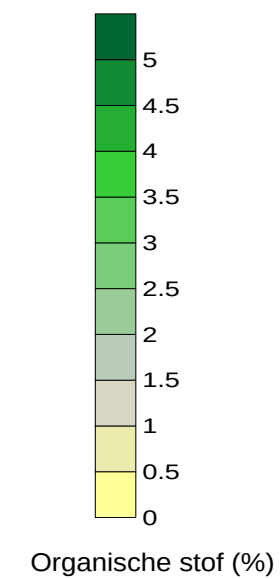


E.H. Loonstra © 2018

201801701

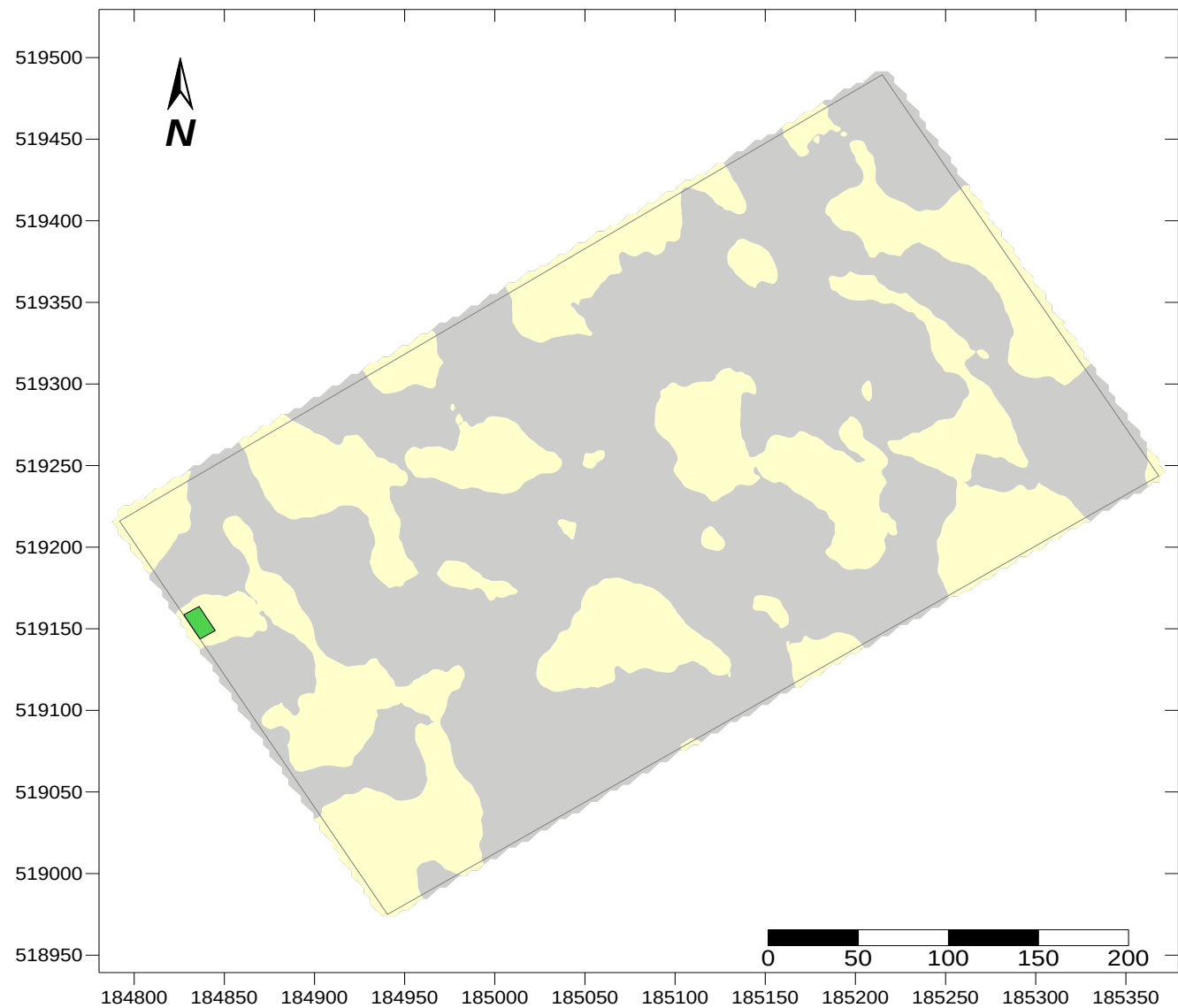


Naam: Aeres HS / mts Sturm
Perceel: Q49 gerst & tarwe 2018
Omvang: 14,4 ha
Projectie: Organische stof
Gemiddelde: 2.2

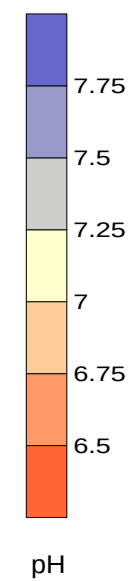


E.H. Loonstra © 2018

201801701



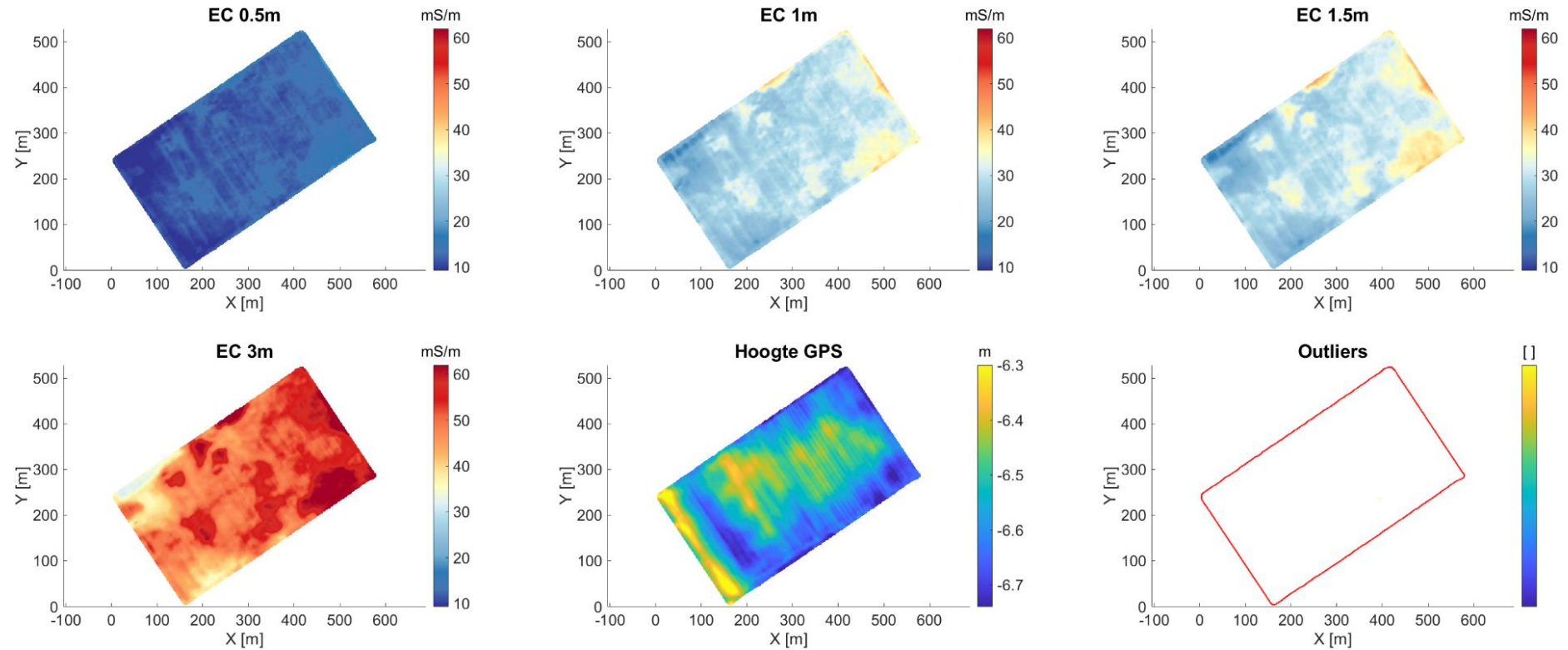
Naam: Aeres HS / mts Sturm
Perceel: Q49 gerst & tarwe 2018
Omvang: 14,4 ha
Projectie: pH
Gemiddelde: 7.3



E.H. Loonstra © 2018

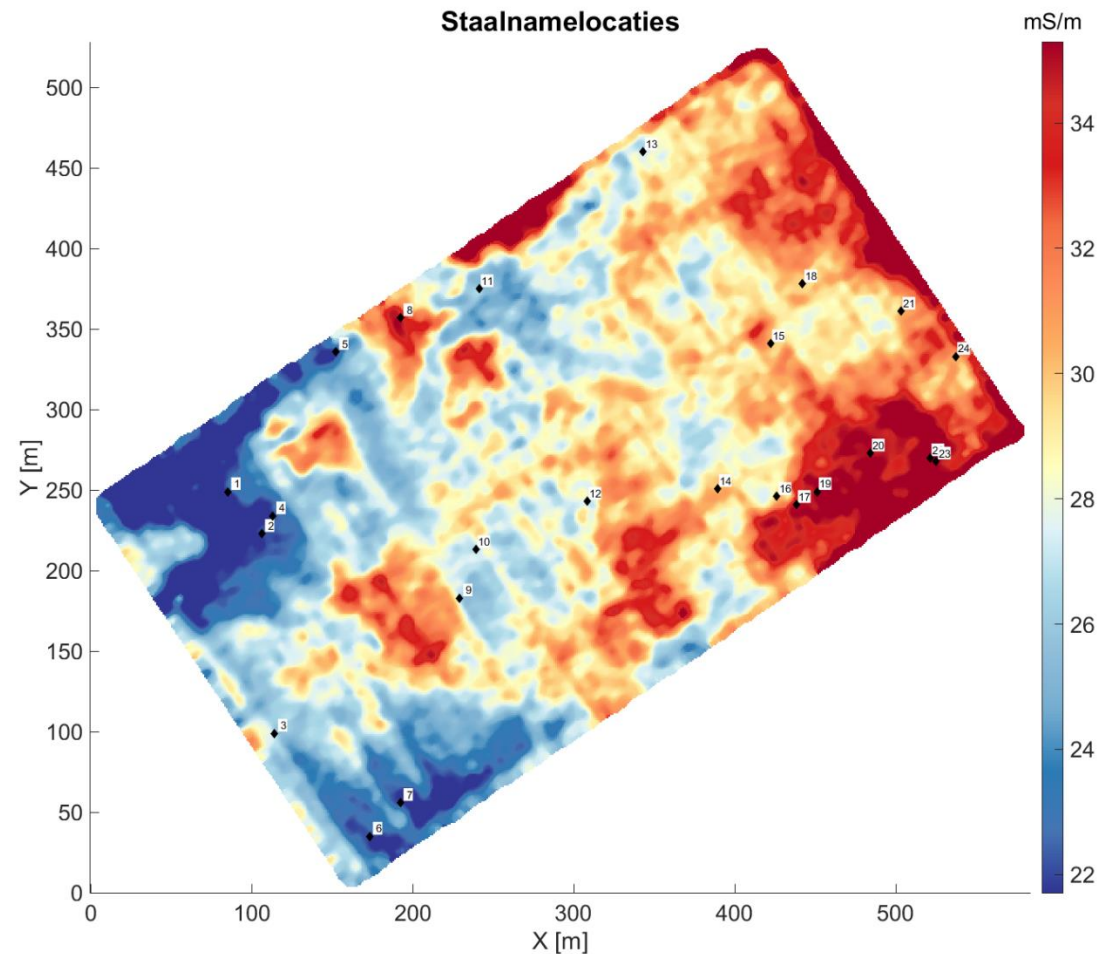
201801701

LoonwerkGPS – EM38

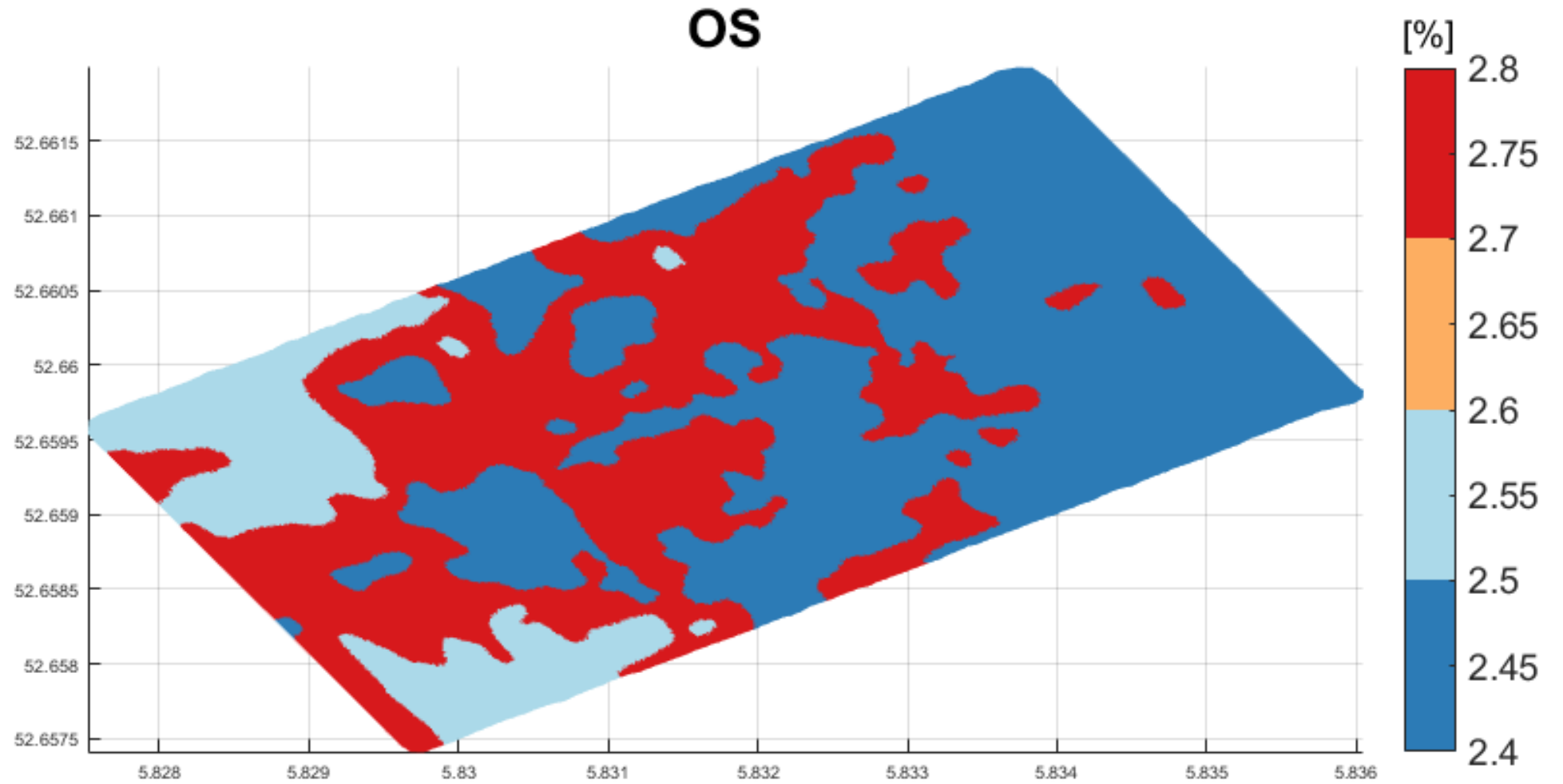


LoonwerkGPS

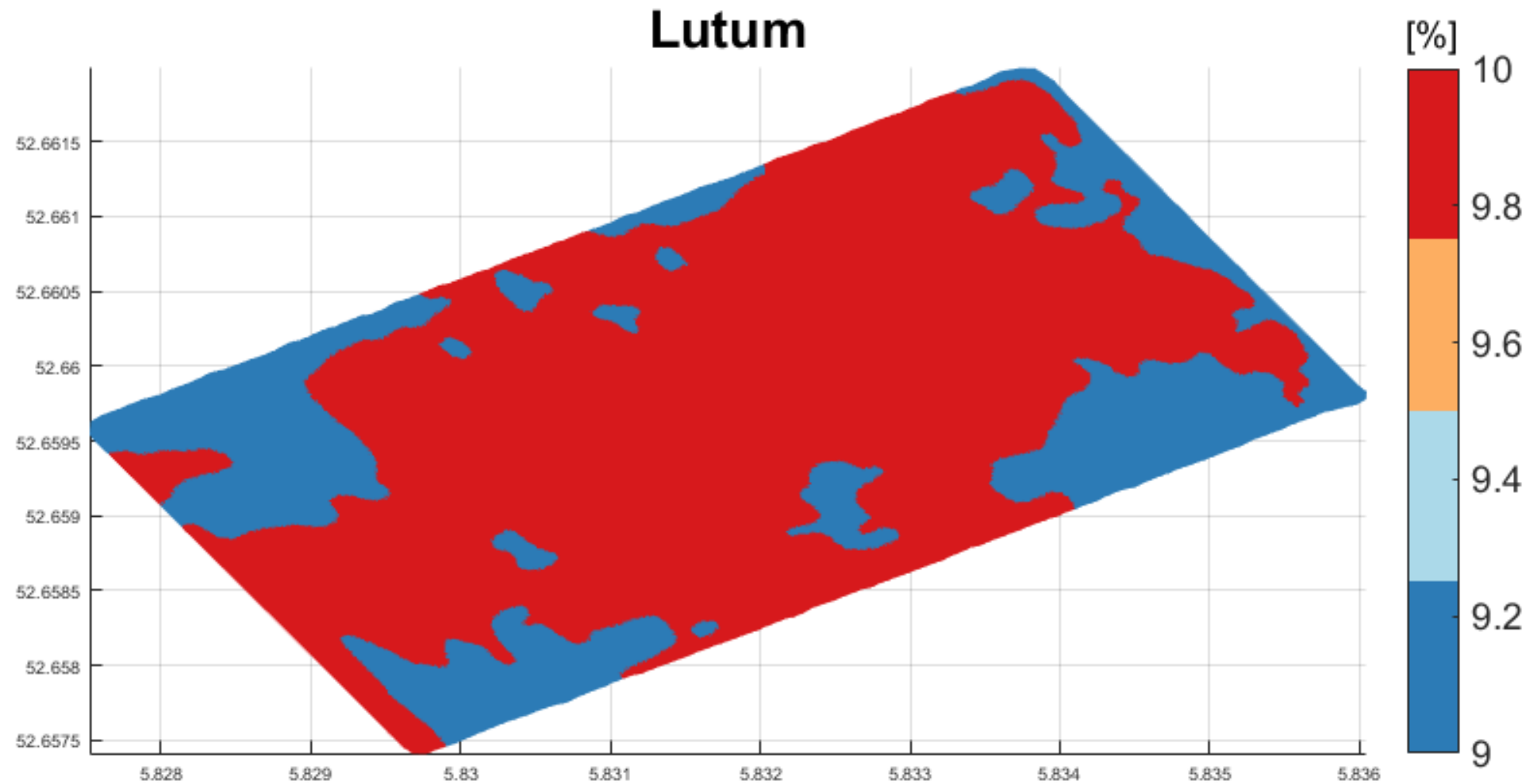
Op basis van referentiemonsters aanvullende kaarten voor lutum, o.s. en pH



LoonwerkGPS

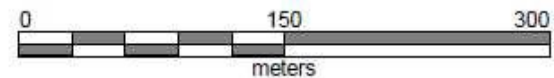
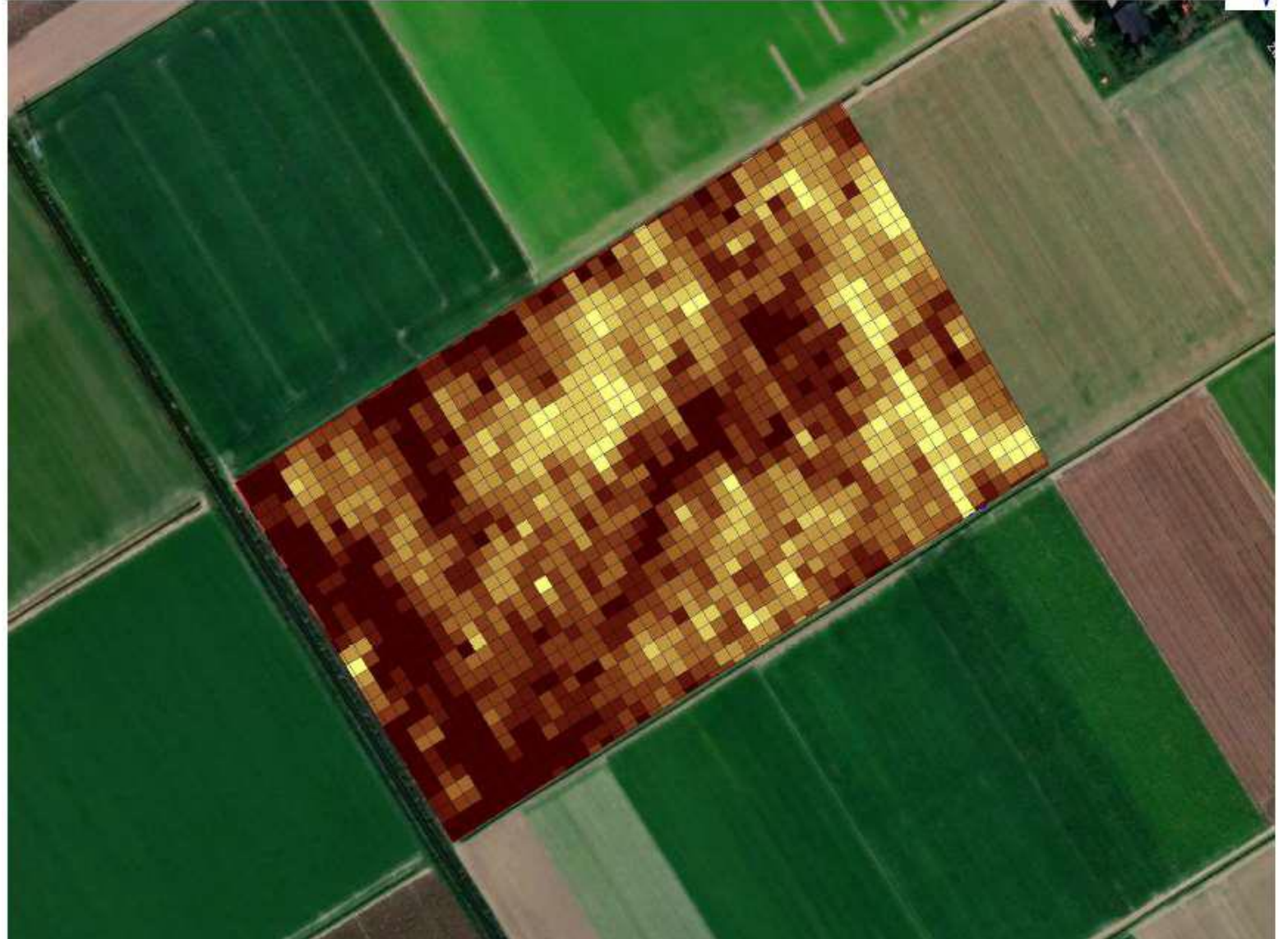


LoonwerkGPS



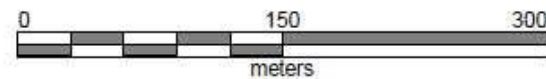
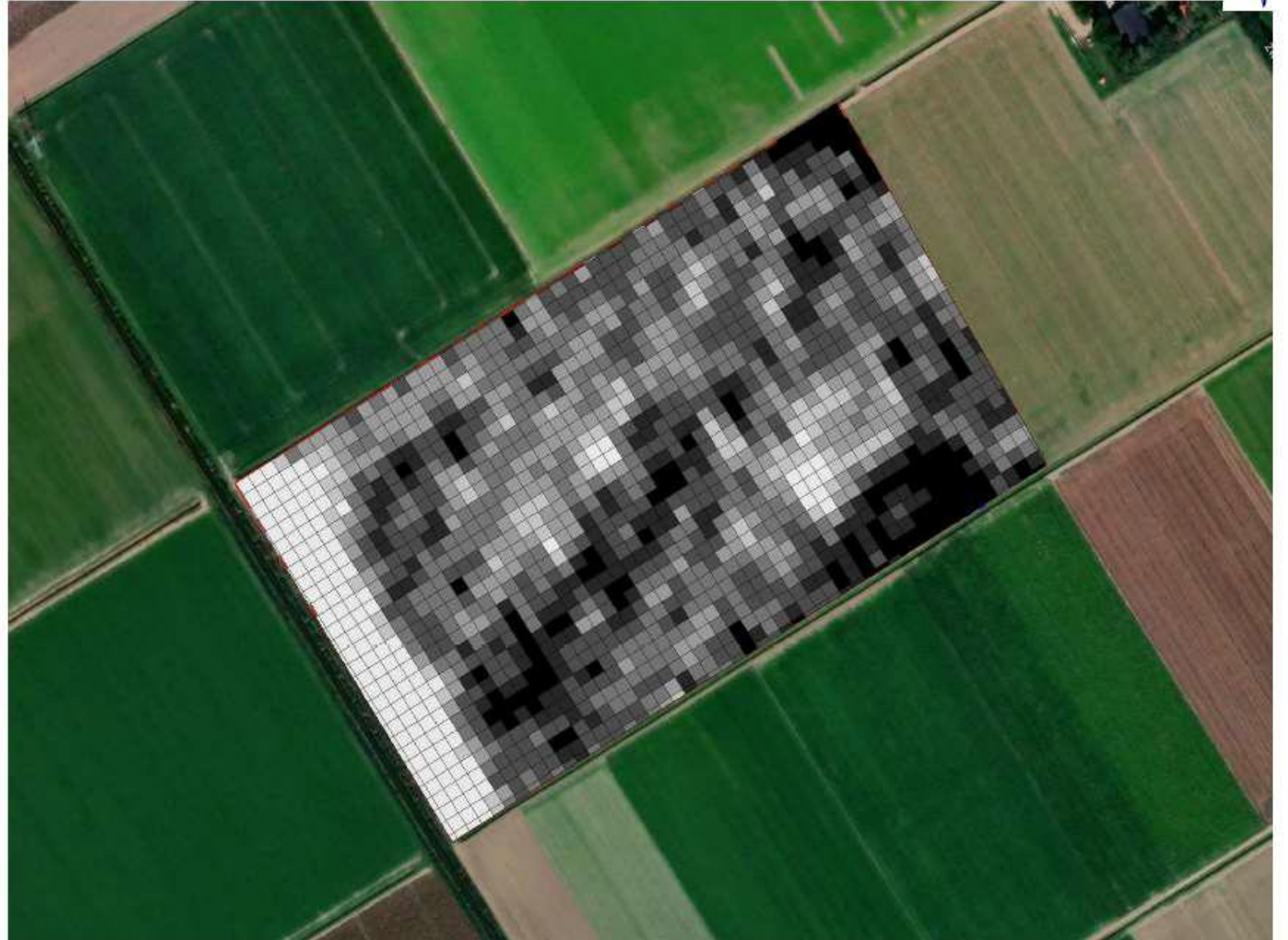
Veris - Agrometius

O.S.-gehalte: 2,2% - 3,6%



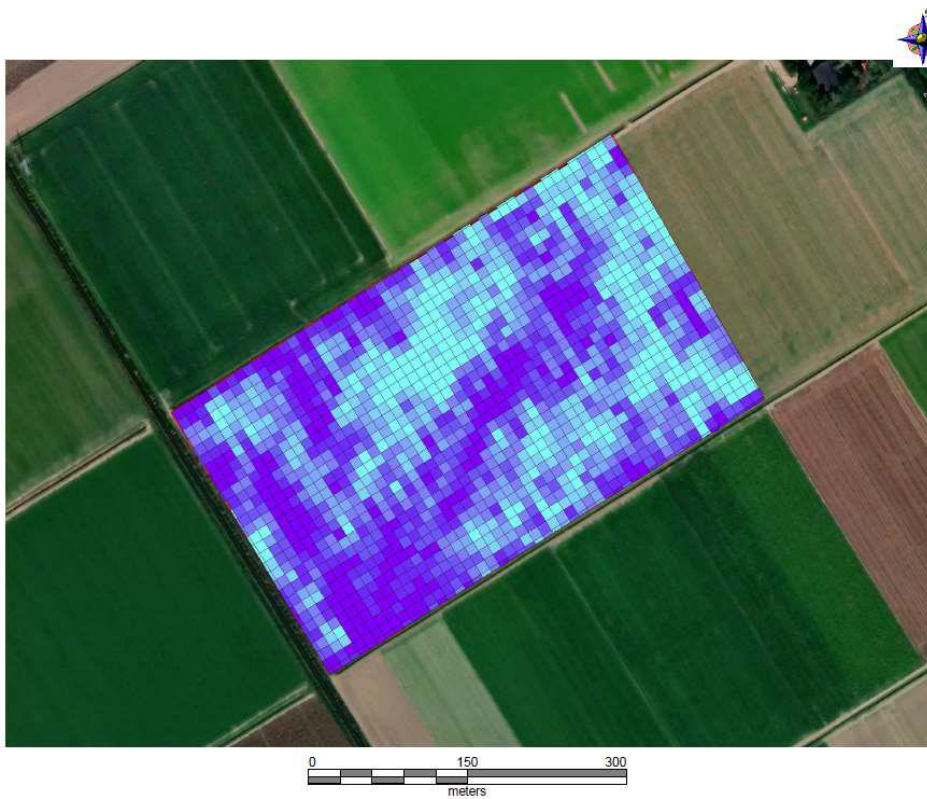
Veris - Agrometius

Lutum-gehalte: 7,7% - 14,4%

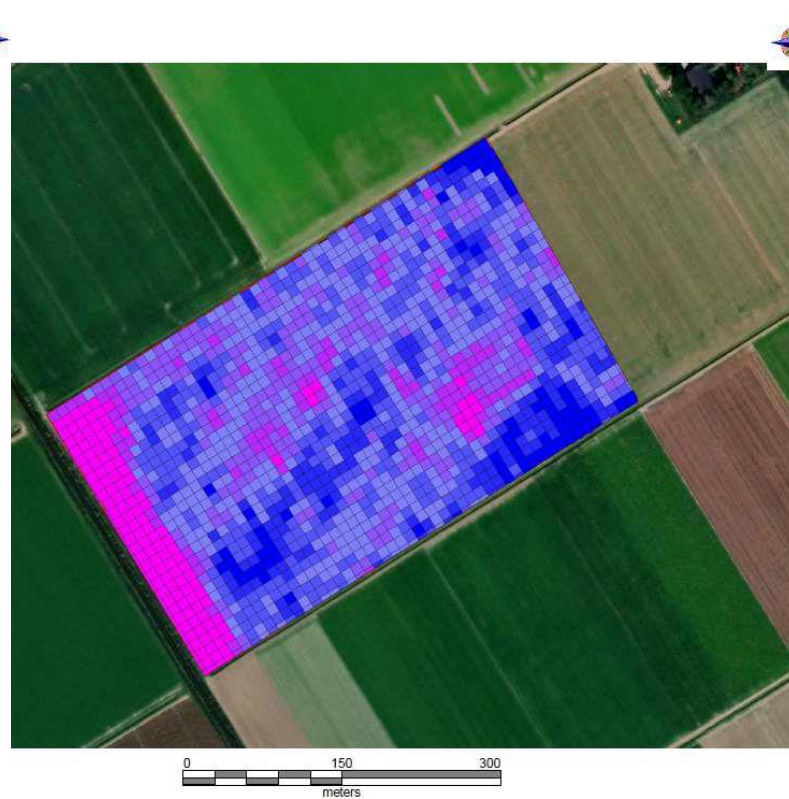


Veris - Agrometius

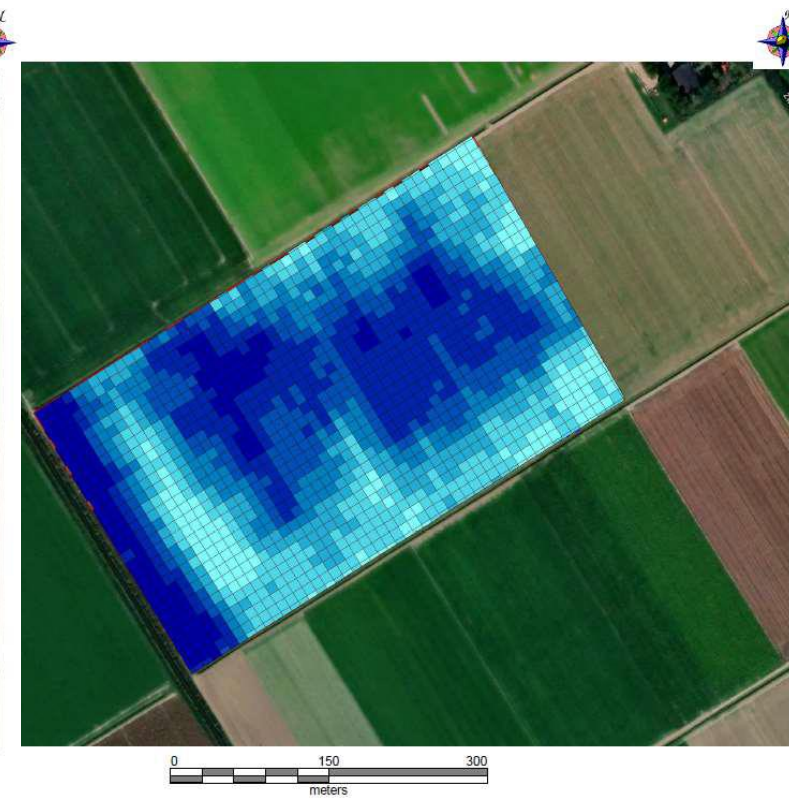
CEC



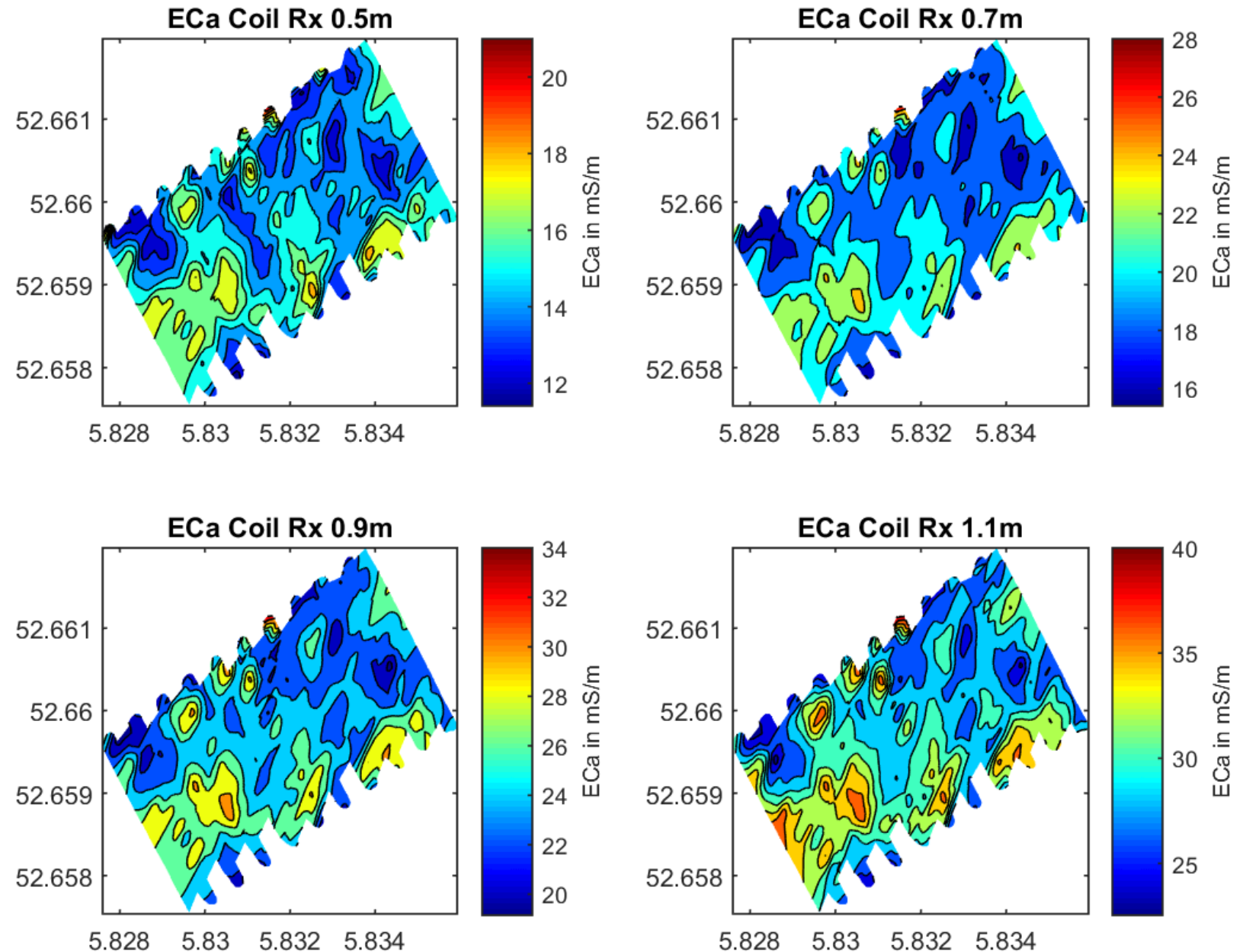
EC 0-30 cm & 0-90 cm



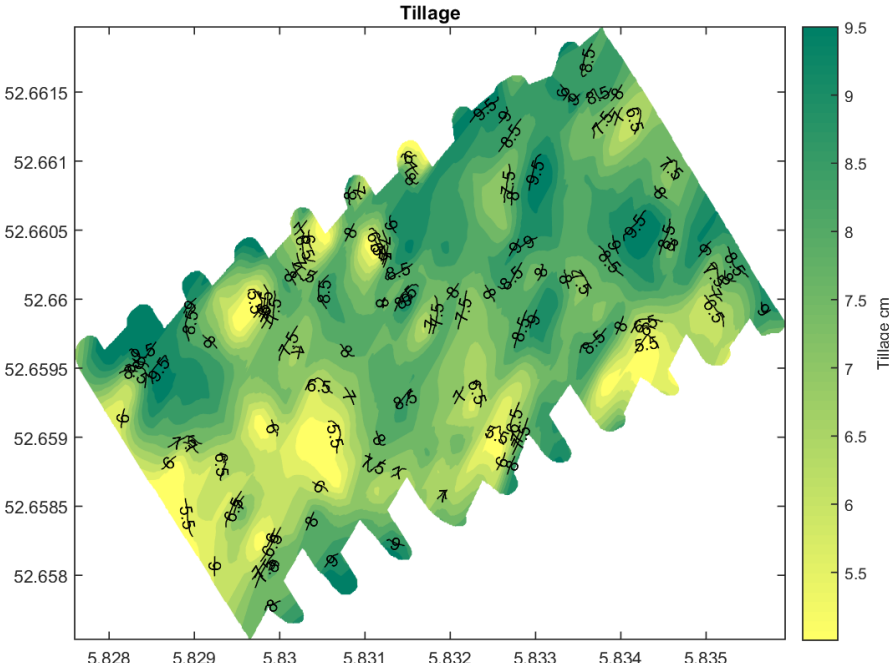
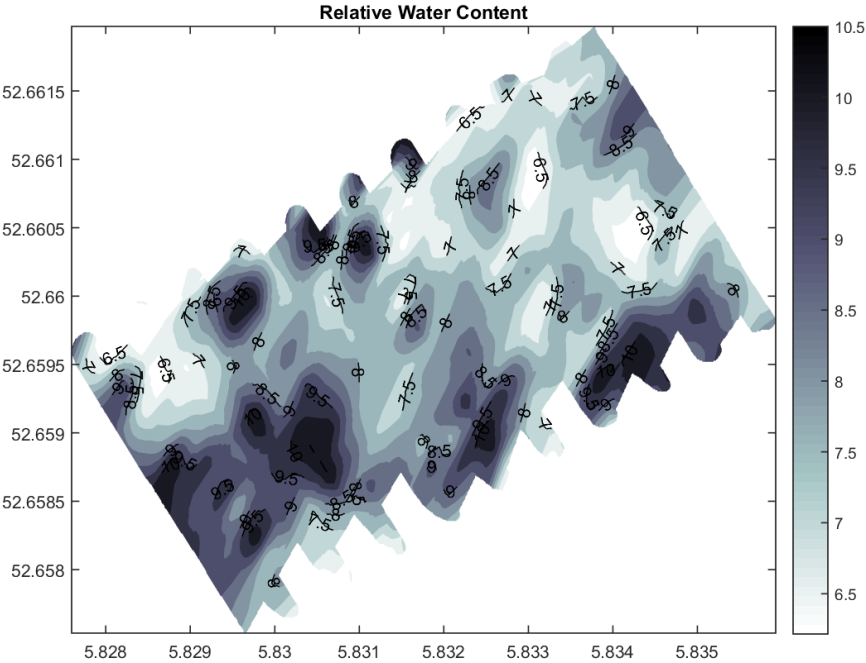
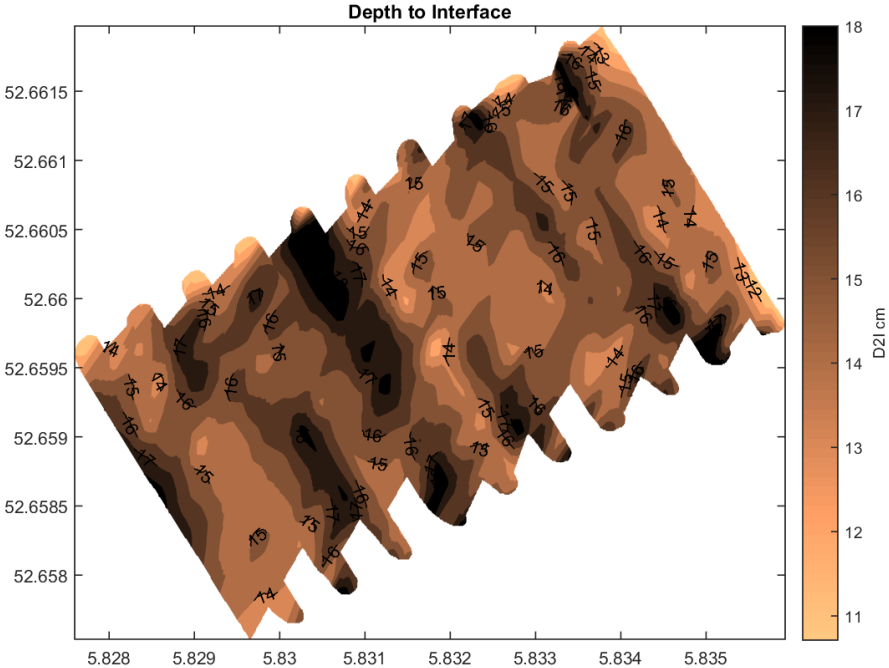
Hoogtekaart



SoilXplorer – CNH



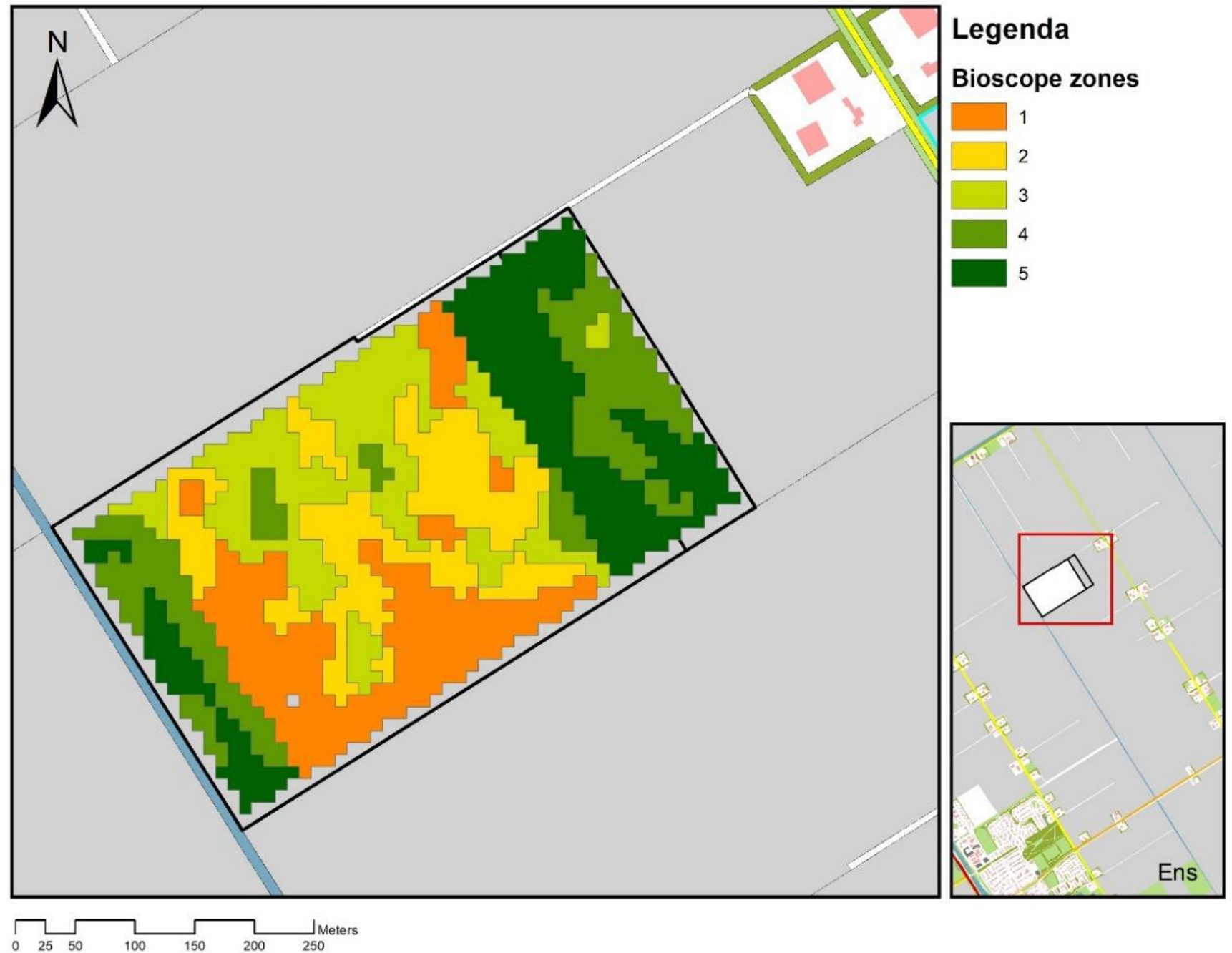
SoilXplorer – CNH



Bioscope

Bioscope

Bewerkte satelietbeelden



Grondmonsters

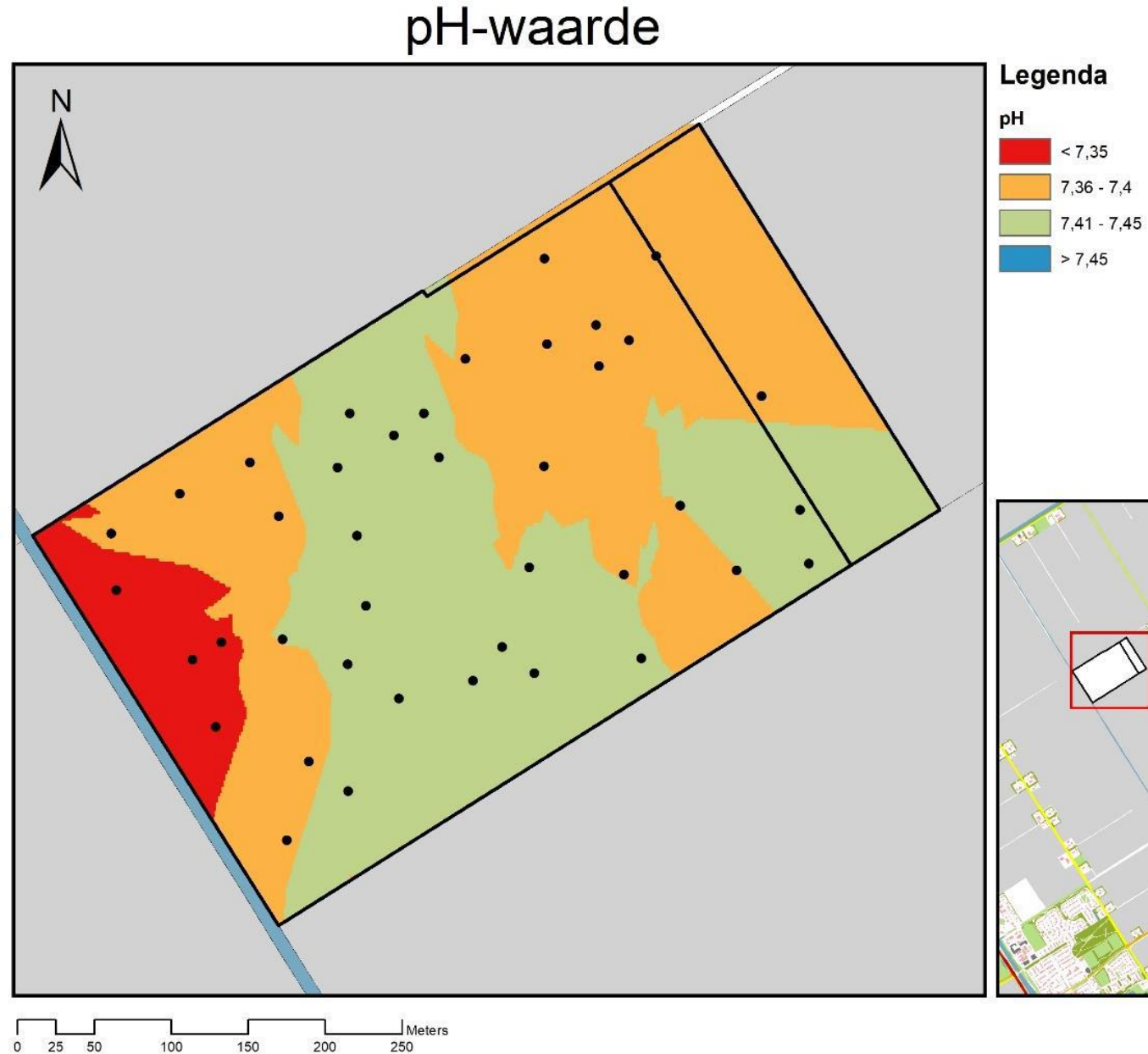
40 grondmonsters (willekeurig verdeeld)

Monstername RTK-GPS locatie

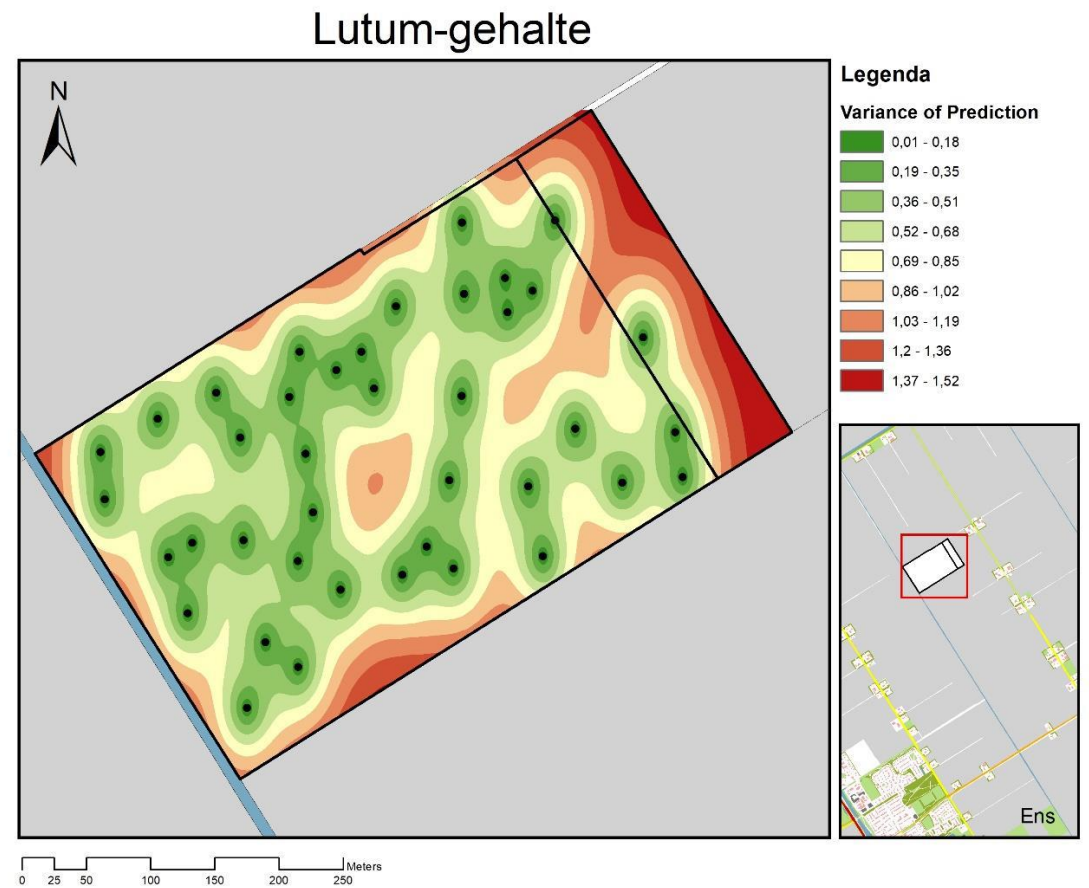
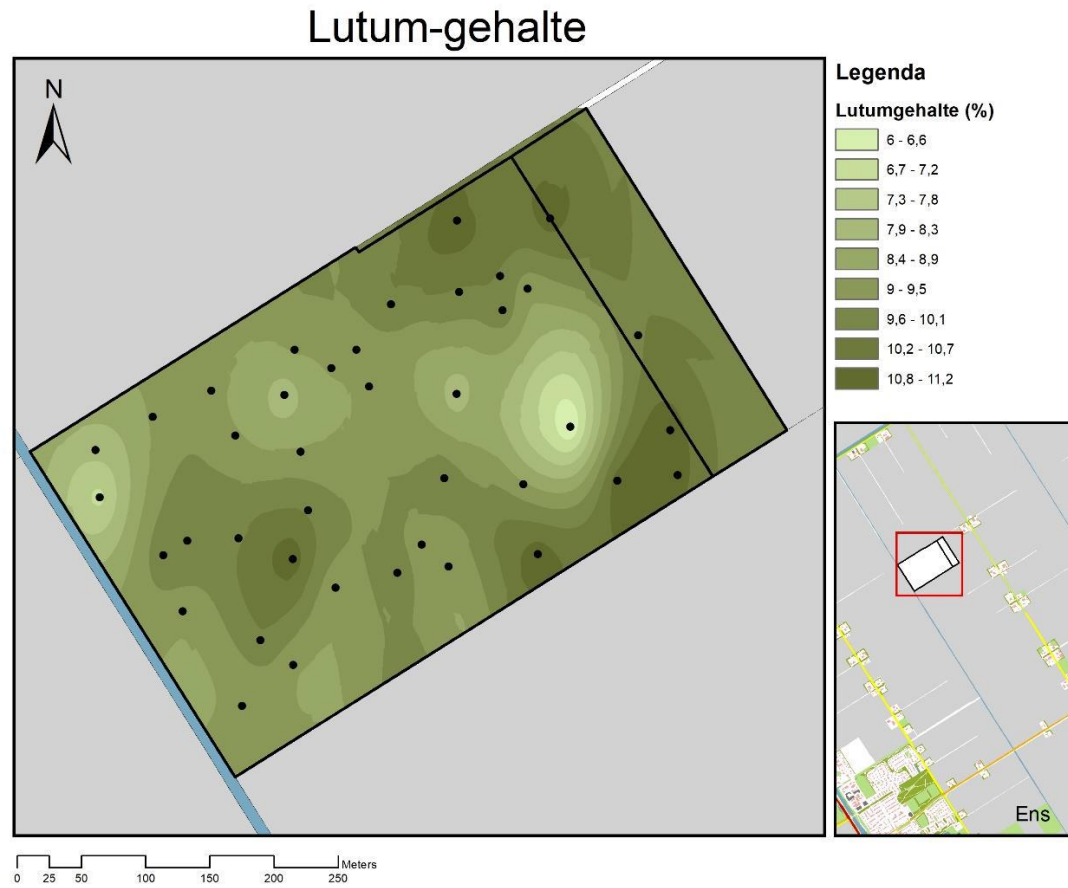
Analyse door Eurofins



pH waarde

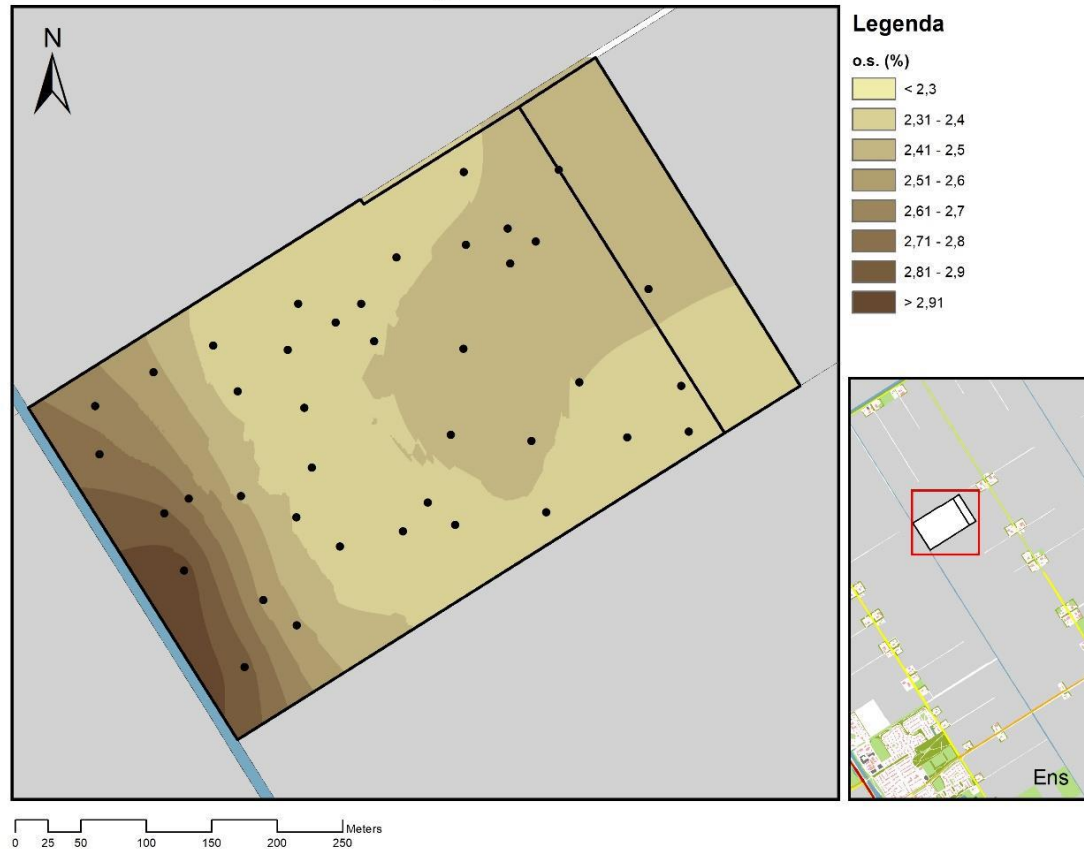


Lutum gehalte

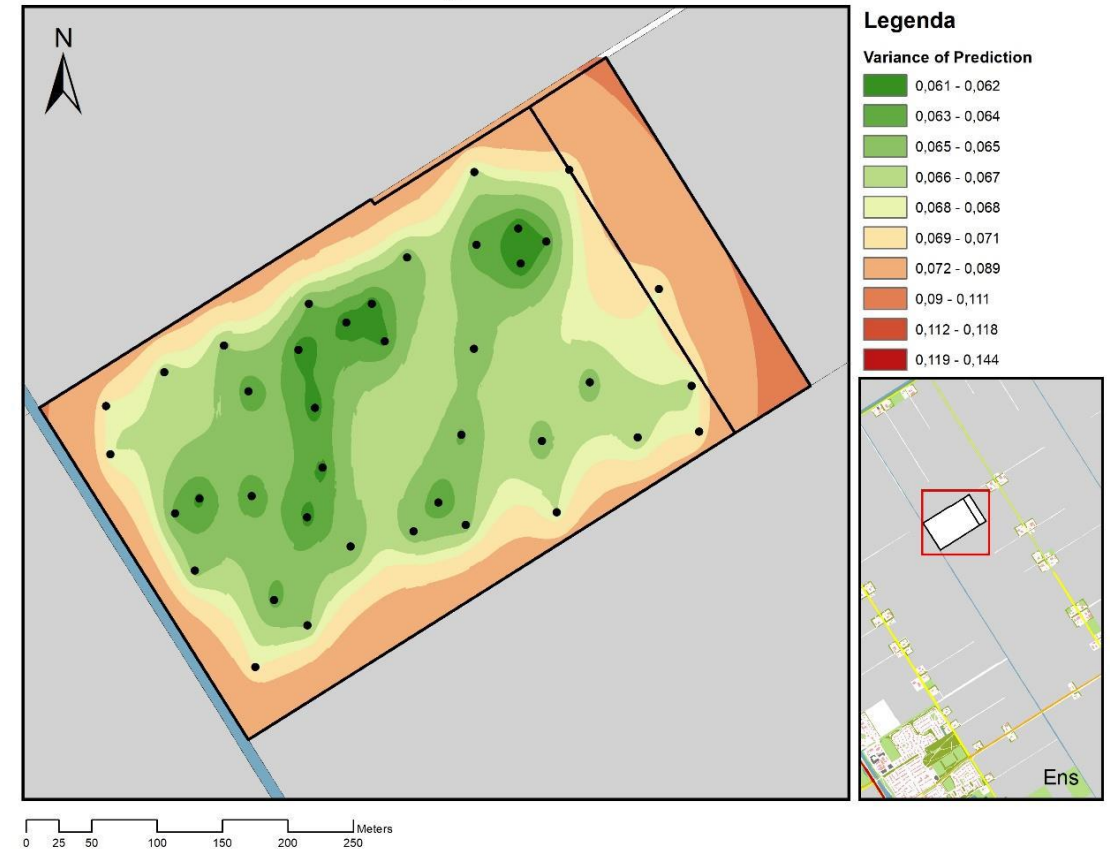


Organische stof gehalte

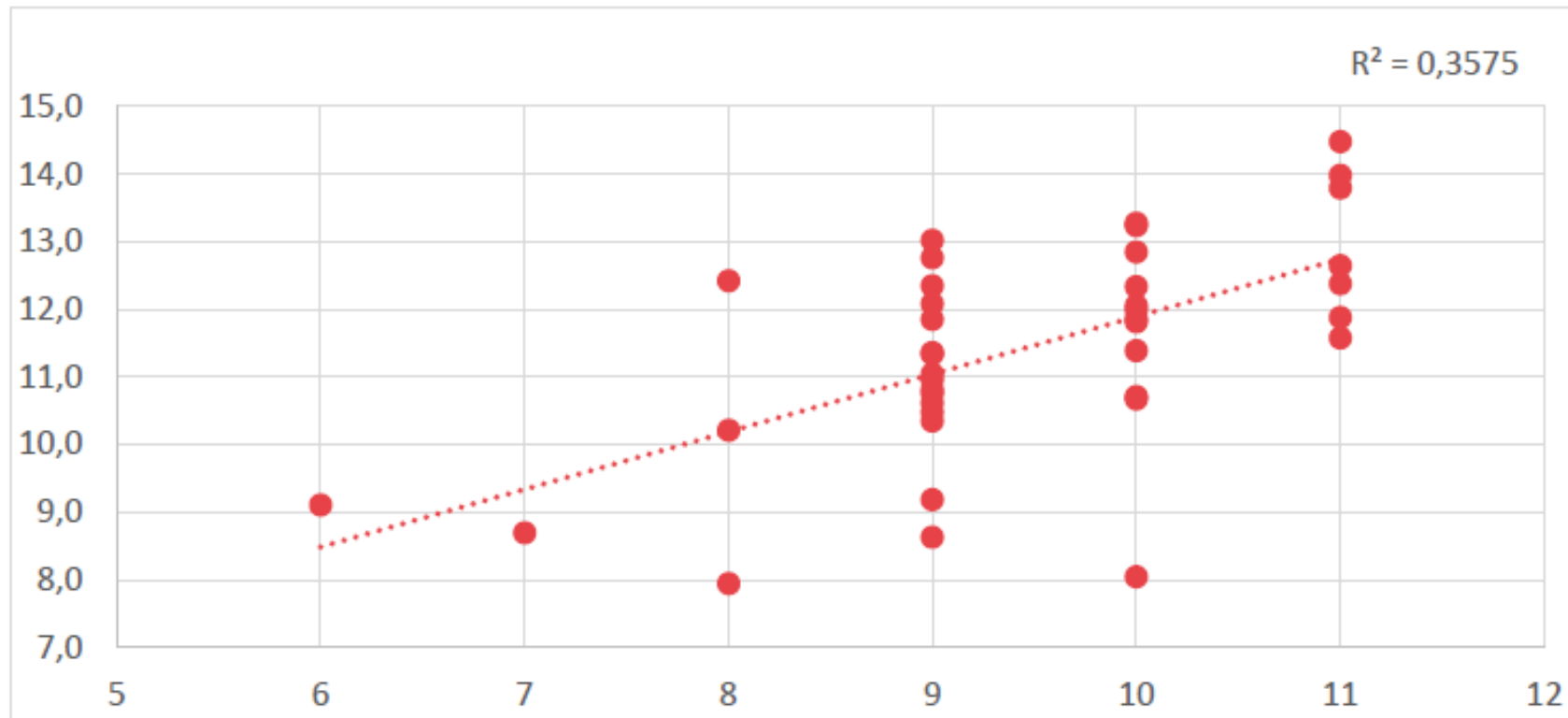
O.S.-gehalte



O.S.-gehalte



Vergelijking met Eurofins analyses



Figuur 3.23: Spreidingsgrafiek van de waarden van de lutumgehalten volgens de referentiemonsters (x-as) tegen de waarden van de bodemscan kaart (y-as).

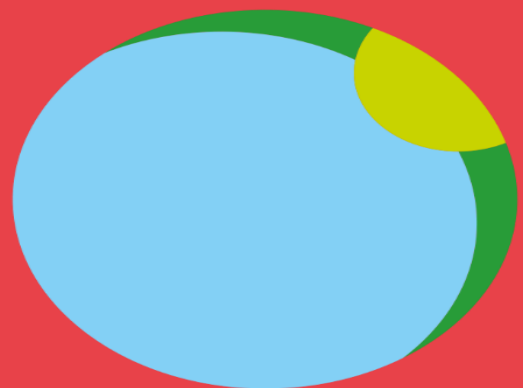
Vergelijking met Eurofins analyse

Tabel 4.1: Waarden van de RMSE voor de verschillende bodemscans in vergelijking met een 'mengmonster'.

	pH	O.S.	Lutum
Mengmonster	0,076	0,301	1,094
Loonstra	0,178	0,413	1,000
LoonwerkGPS	0,077	0,379	1,285
Veris	-	0,440	2,339

Tabel 4.2: Waarden van de R^2 voor de verschillende bodemscans in vergelijking met referentie grondmonsters.

	pH	O.S.	Lutum
Loonstra	0,00	0,02	0,34
LoonwerkGPS	0,00	0,00	0,03
Veris	-	0,12	0,36



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