

# Hydrologisk modellering med N-transport

... og kvælstofretention

**Rasmus Rumph Frederiksen**

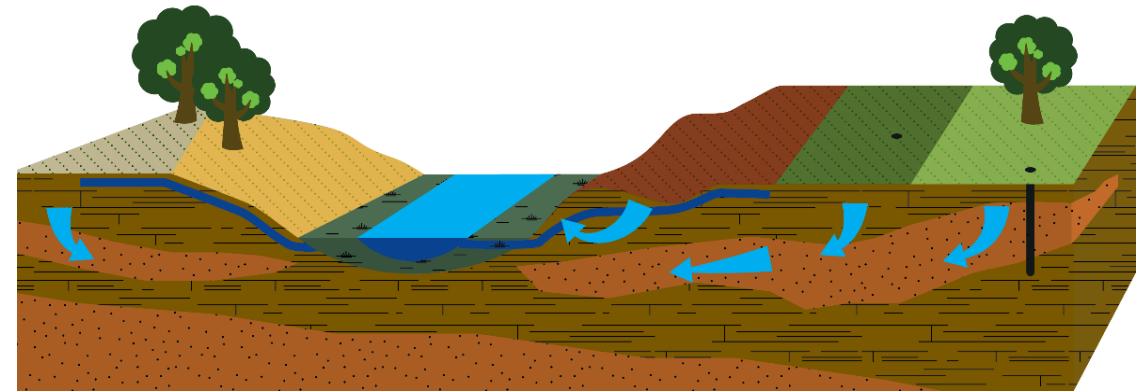
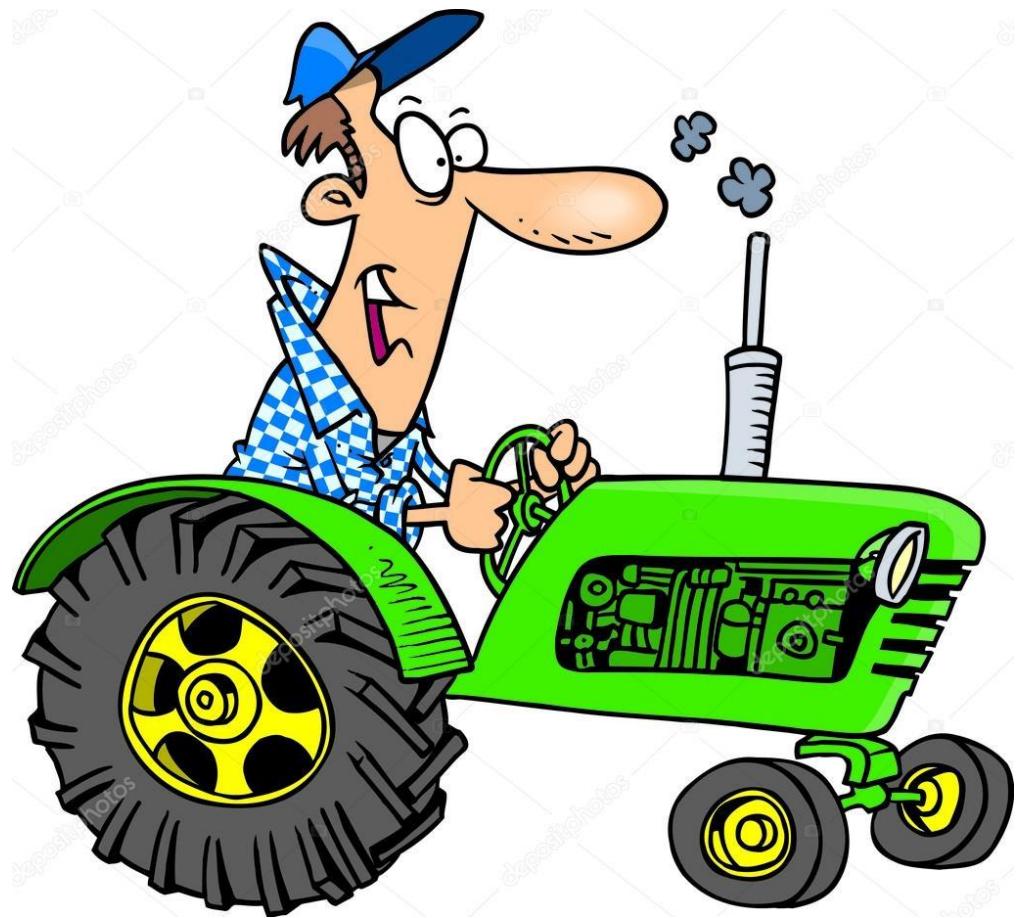
Postdoc

HydroGeofysikGruppen (HGG)

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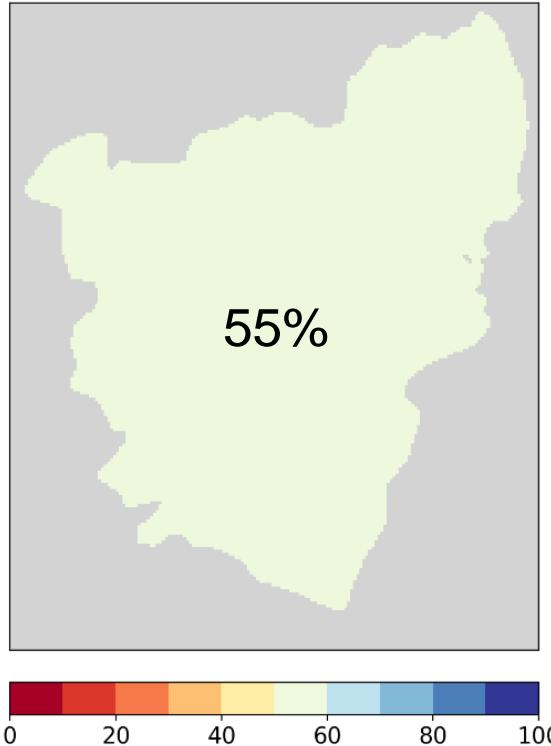
# Baggrund og motivation



Målrettet regulering kræver, at vi går fra oplandskort til mere detaljerede kort over kvælstofretentionen

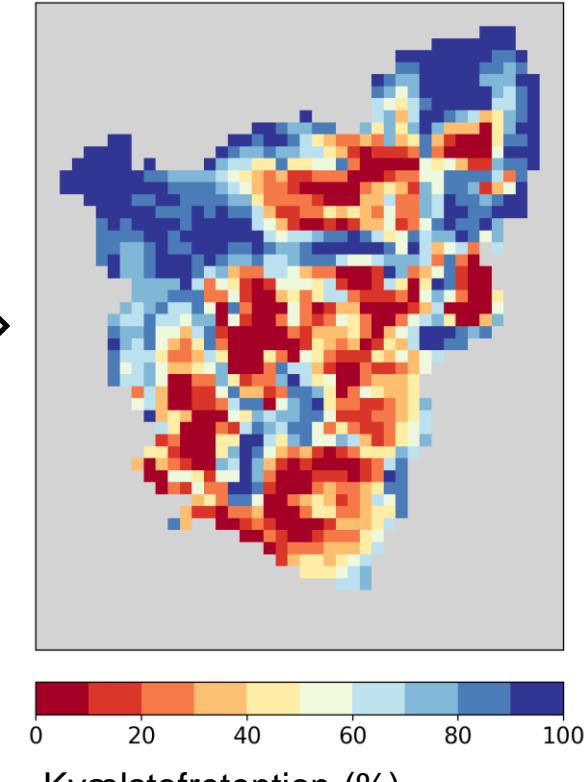


Oplandskort



MapField ☺

Detaljeret kort



# MapFields fem trin til et detaljeret retentionskort

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- The diagram illustrates the five-step process for creating a detailed retention map using MapFields. It features a vertical list of steps, each preceded by a large, light-grey arrow pointing to the right. The first four arrows have blue circular callouts at their bases containing white numbers (1, 2, 3, 4). The fifth arrow has a blue circular callout at its base containing a white number (5), which is also repeated in a smaller circle near the tip of the arrow.
- 1 Sammenfatning af eksisterende viden
  - 2 Skanning af undergrunden
  - 3 Vand- og jordprøvetagning
  - 4 Opsætning af hydrogeologiske og hydrogeokemiske modeller
  - 5 Beregning af retentionskort

# Sammenfatning af eksisterende viden

- 1
- 2
- 3
- 4
- 5



# Skanning af undergrunden

- 1
- 2
- 3
- 4
- 5

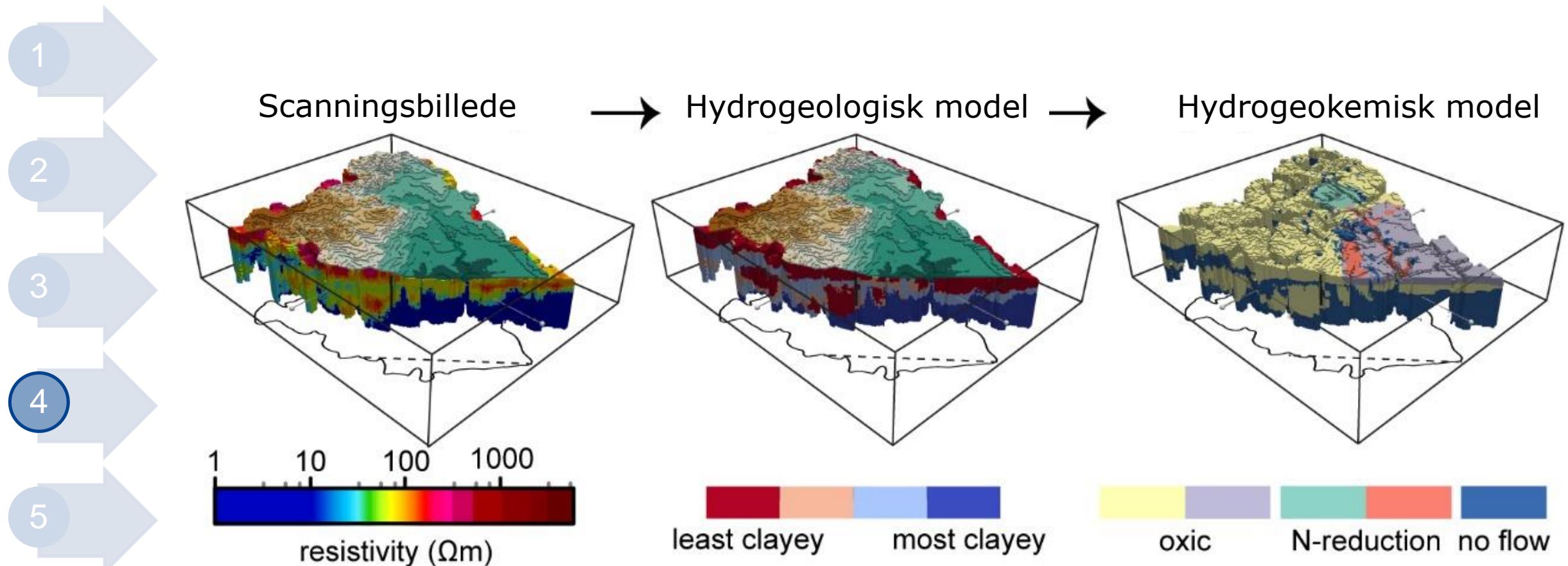


# Vand- og jordprøvetagning

- 1
- 2
- 3
- 4
- 5



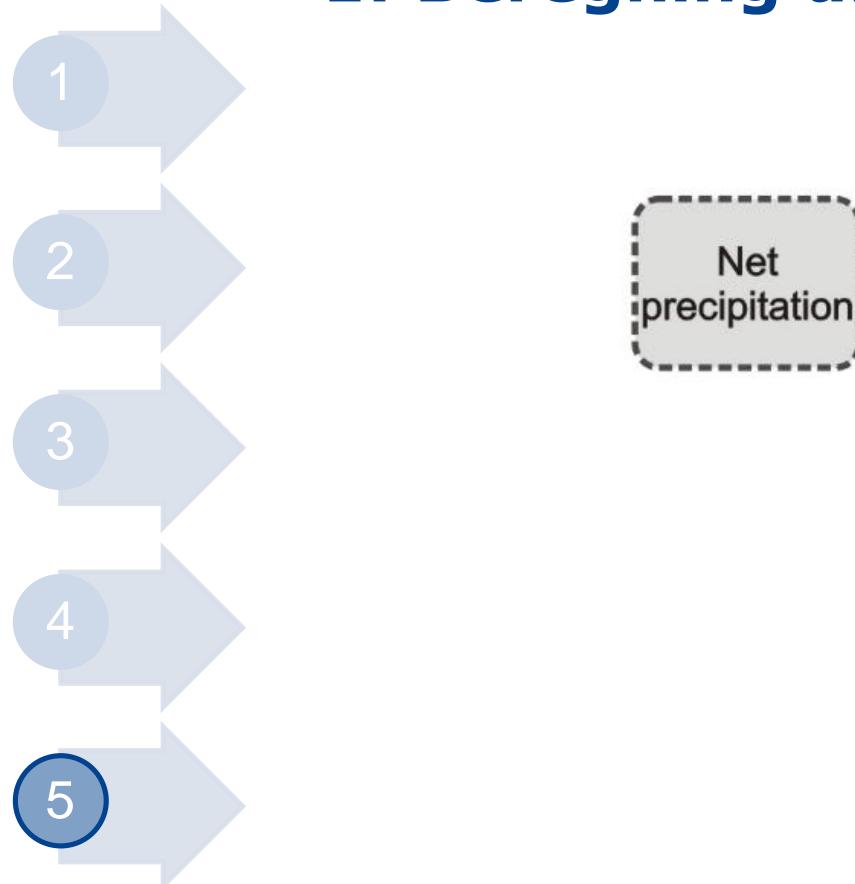
# Opsætning af hydrogeologiske og hydrogeokemiske modeller



Kim et al. (under review at Stoten)

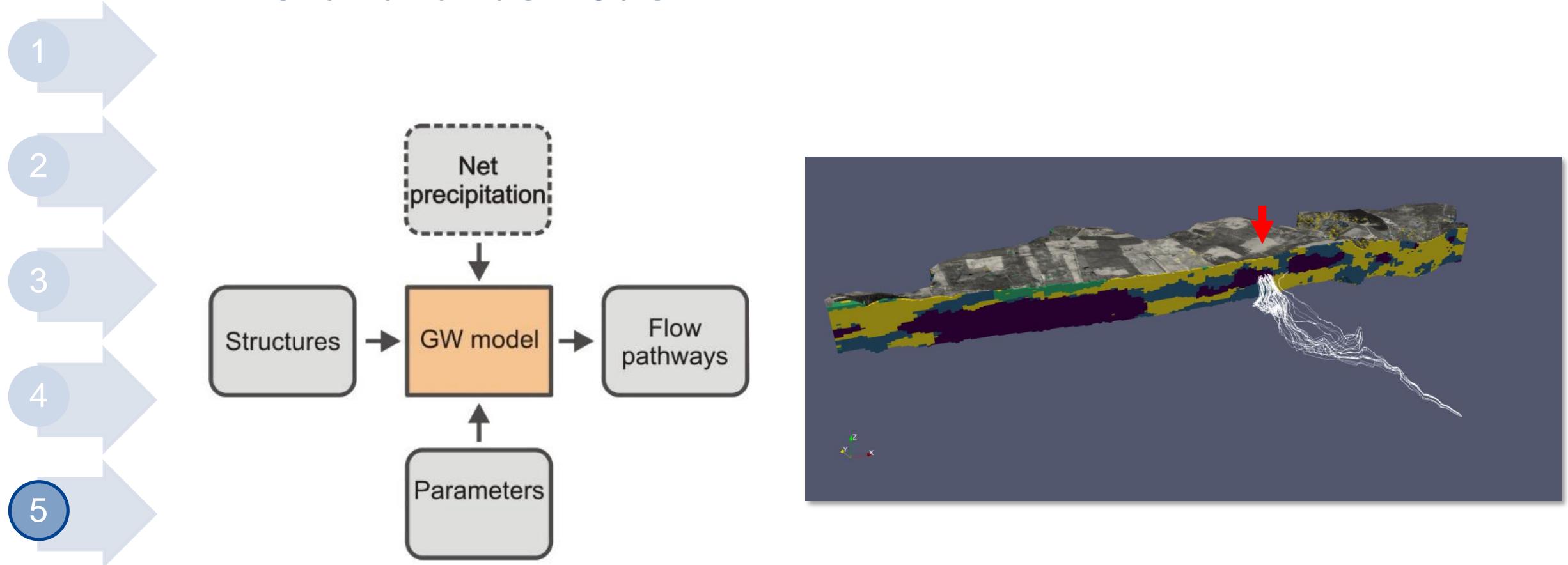
# Beregning af retentionskort

## 1: Beregning af nettonedbør



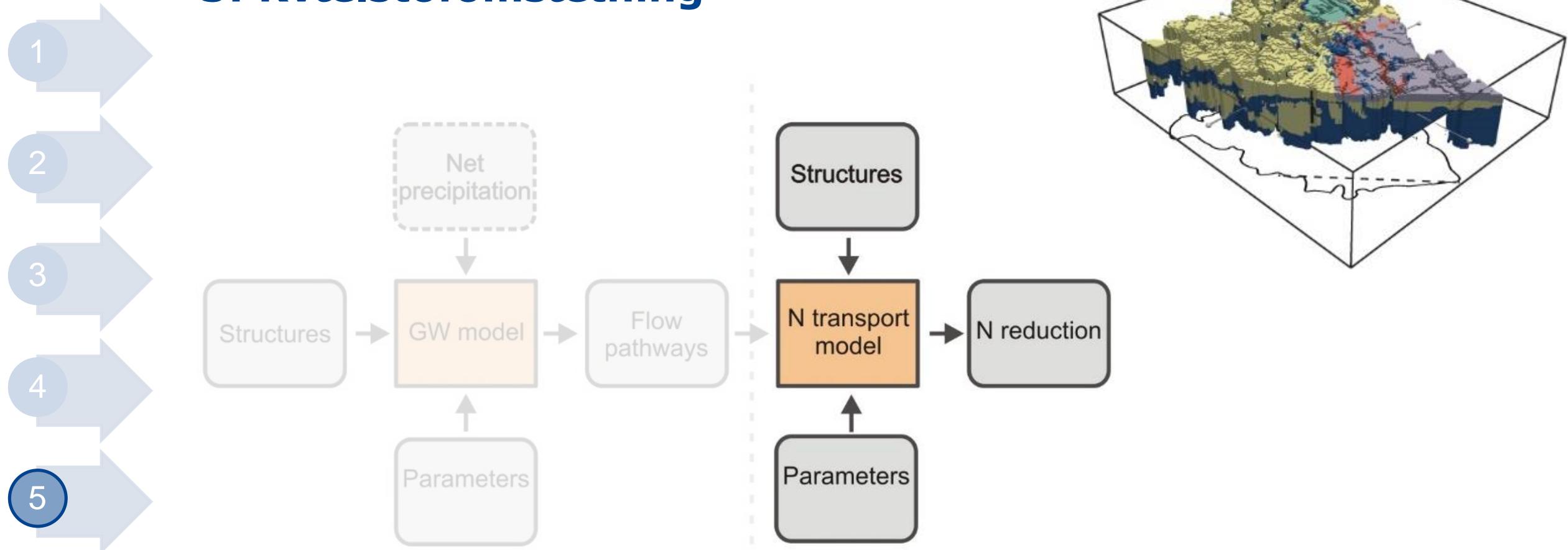
# Beregning af retentionskort

## 2: Grundvandsmodel



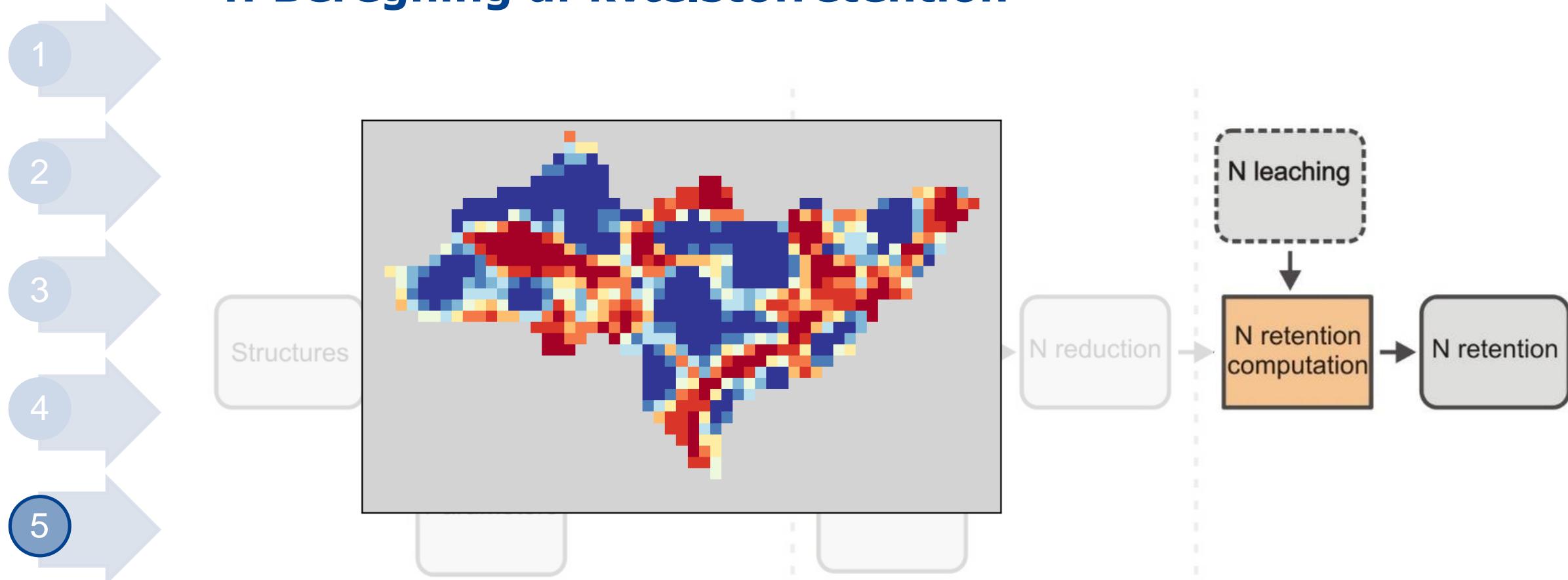
# Beregning af retentionskort

## 3: Kvælstofomsætning



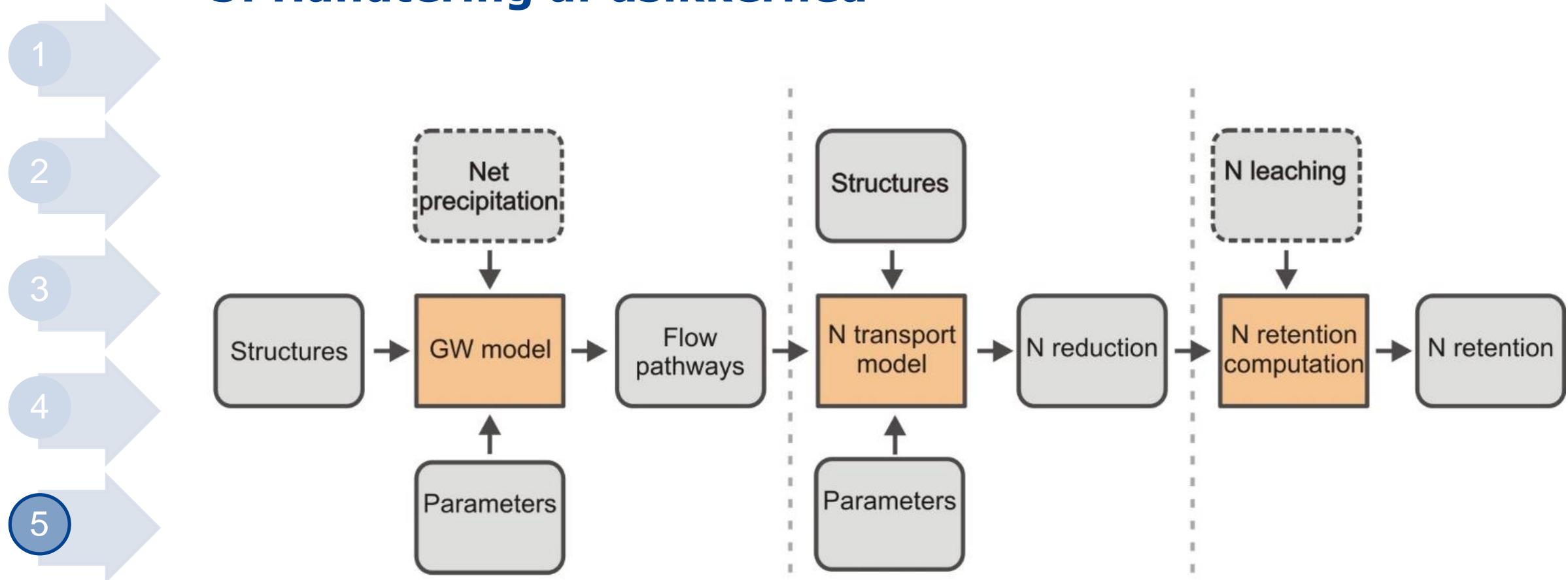
# Beregning af retentionskort

## 4: Beregning af kvælstofretention

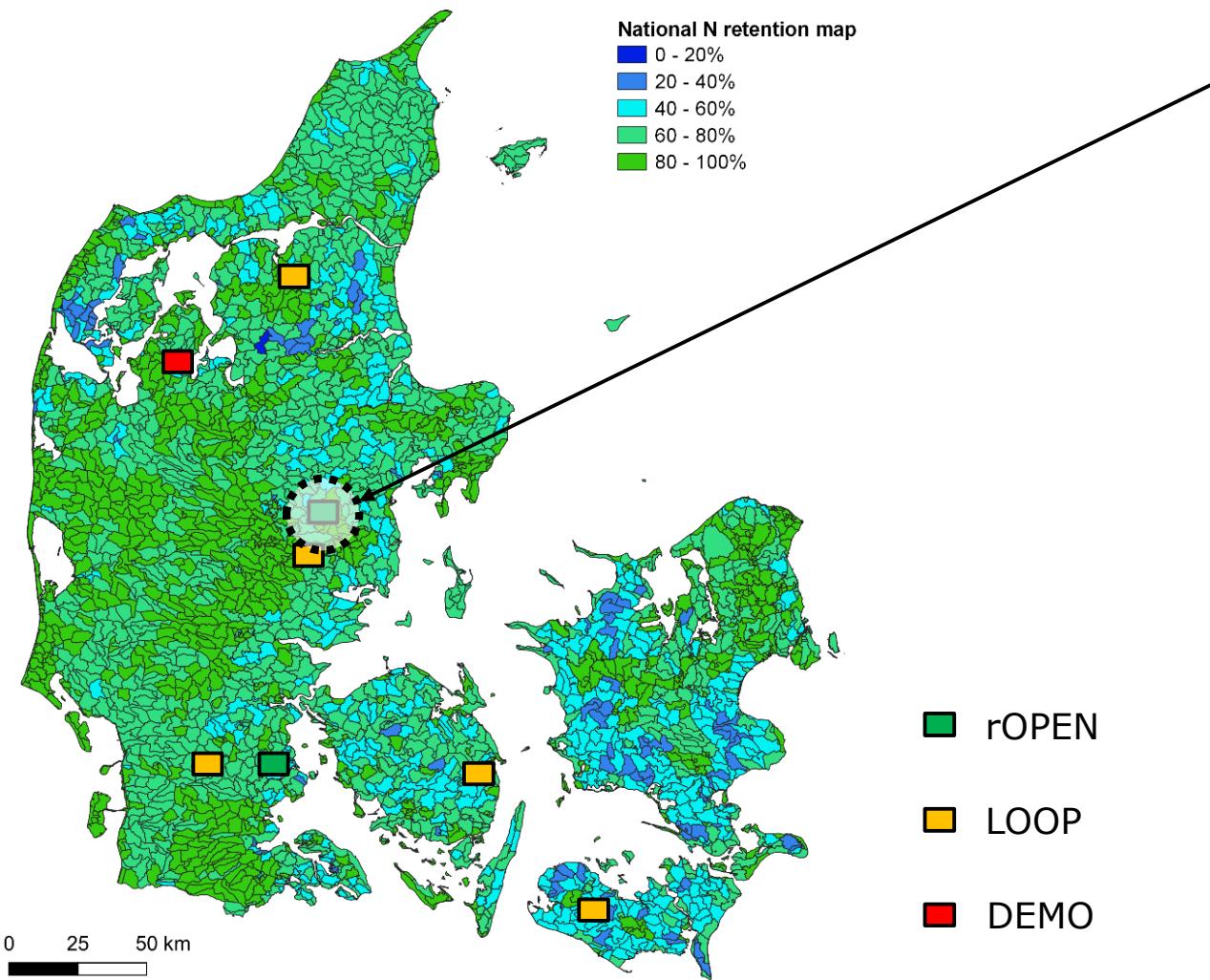


# Beregning af retentionskort

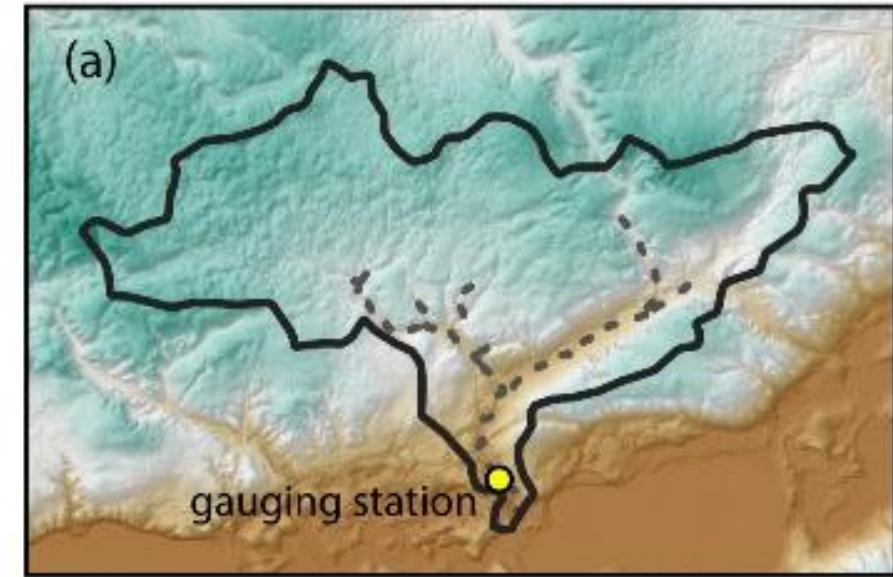
## 5: Håndtering af usikkerhed



# Kortlagte ID15 oplande



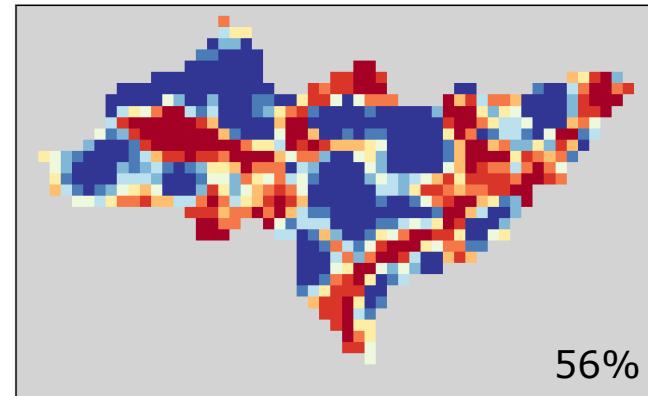
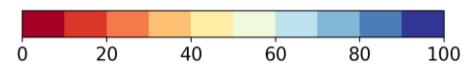
Javngyde



# N-retention og usikkerhed for Javngyde

120 x 120 m

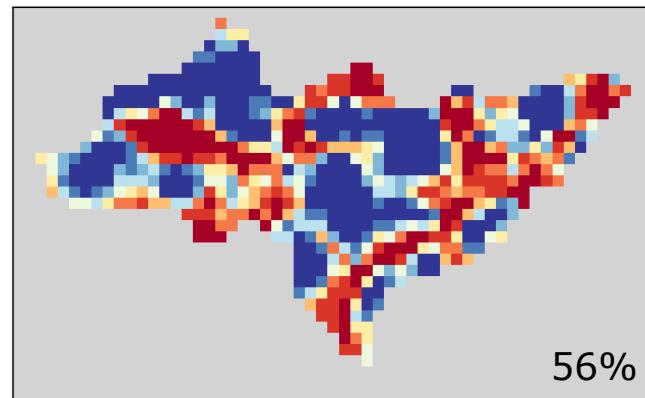
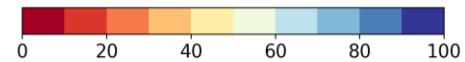
N-retention (%)



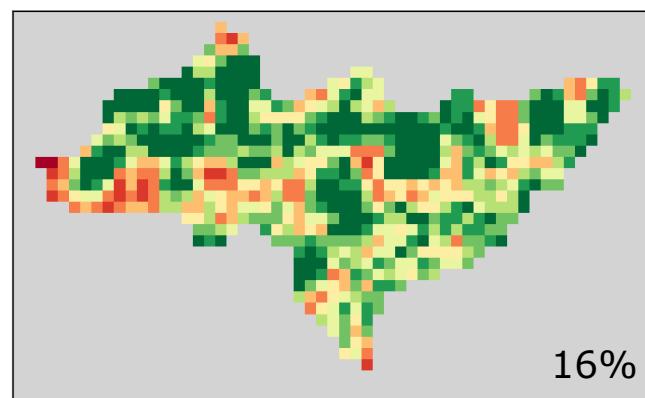
# N-retention og usikkerhed for Javngyde

120 x 120 m

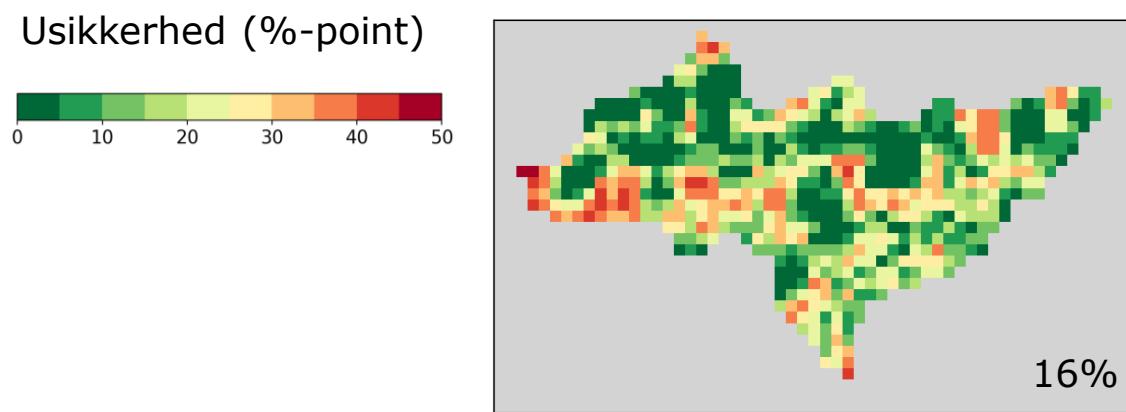
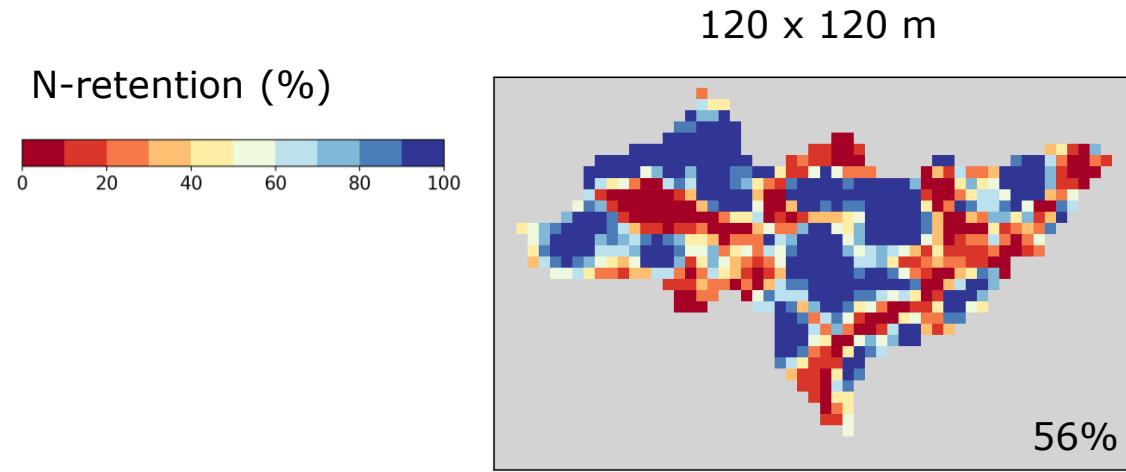
N-retention (%)



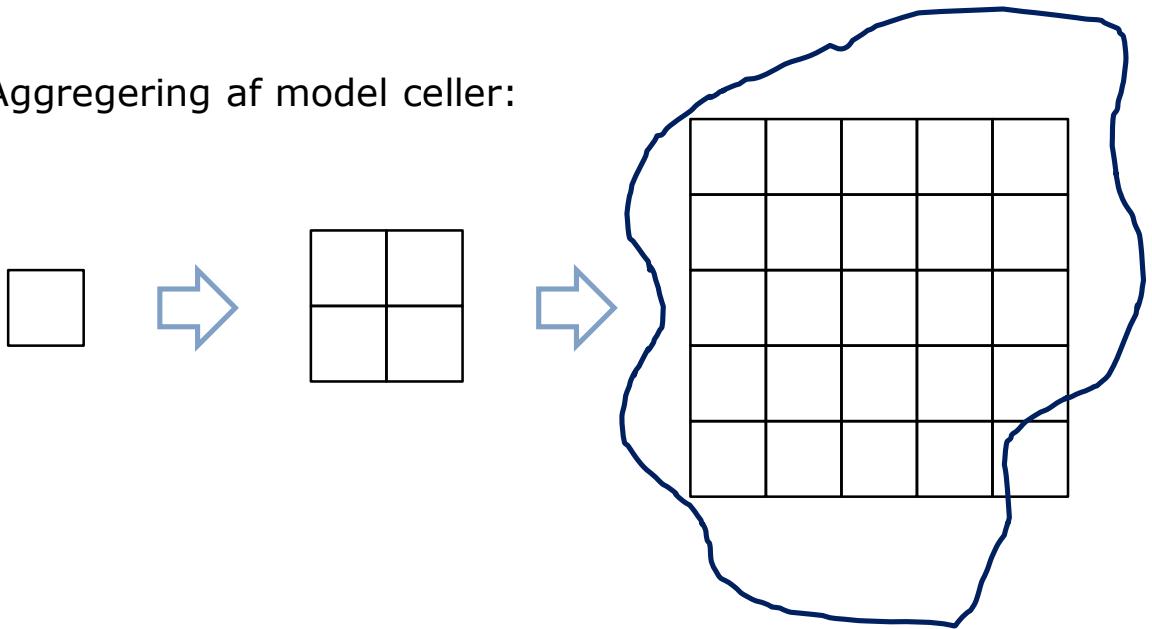
Usikkerhed (%-point)



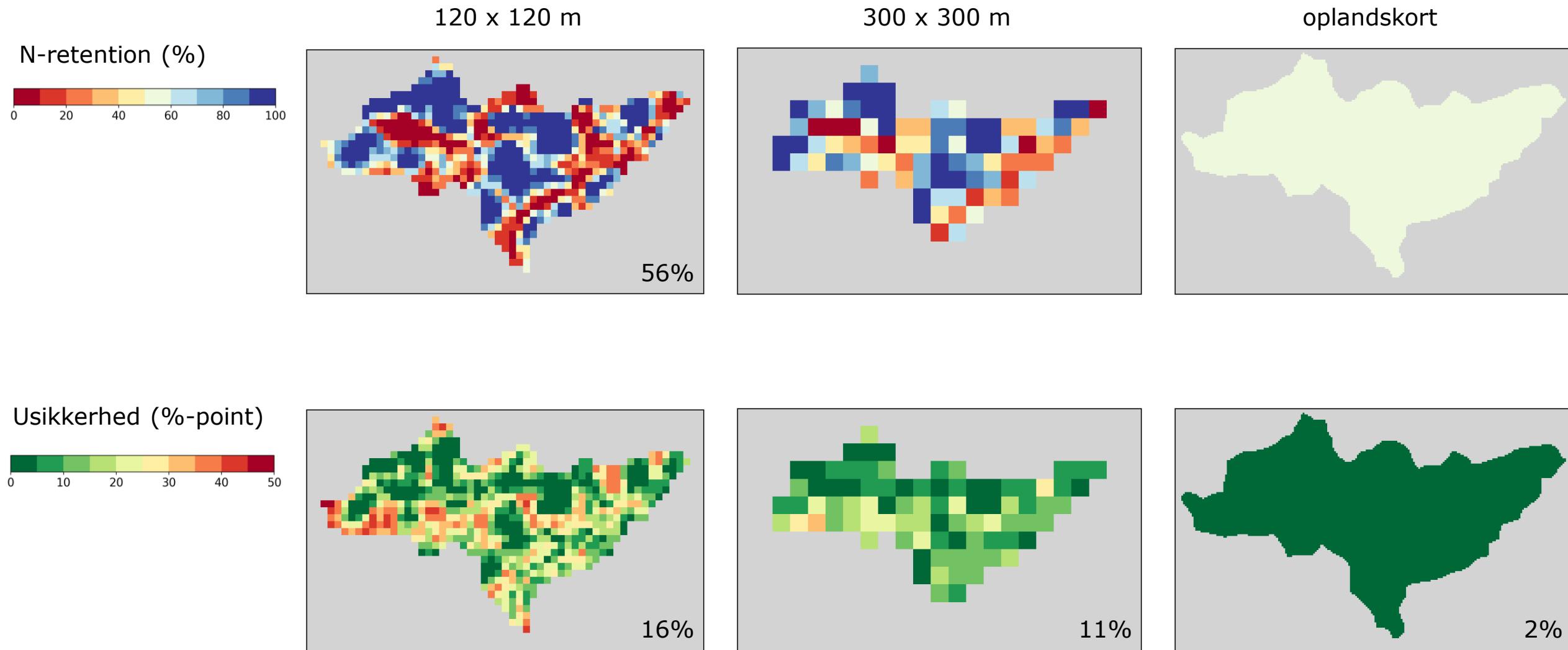
# N-retention og usikkerhed for Javngyde



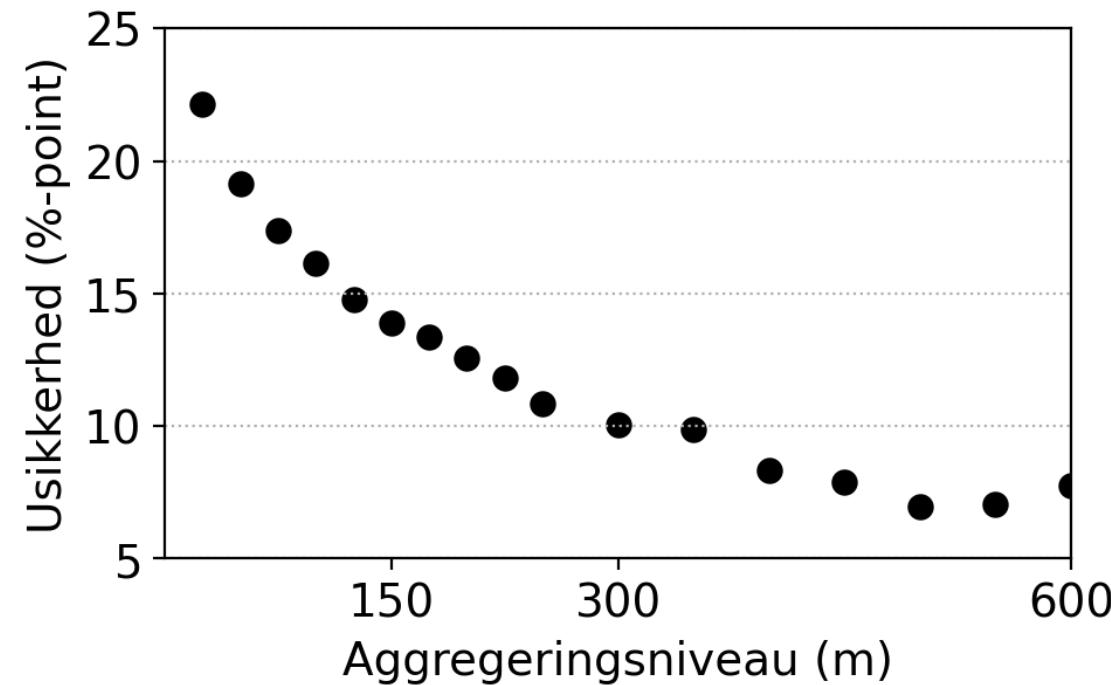
Aggregering af model celler:



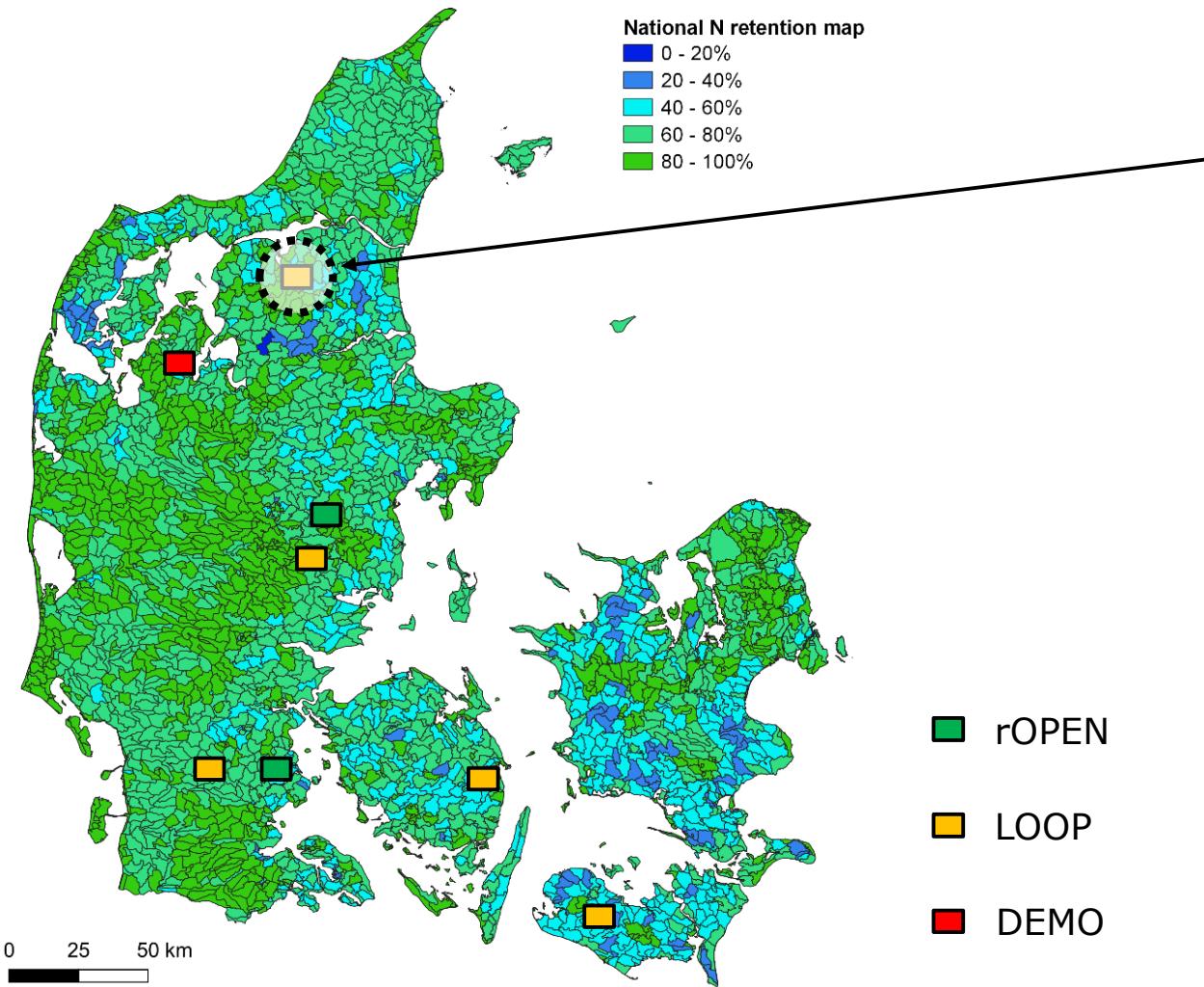
# N-retention og usikkerhed for Javngyde



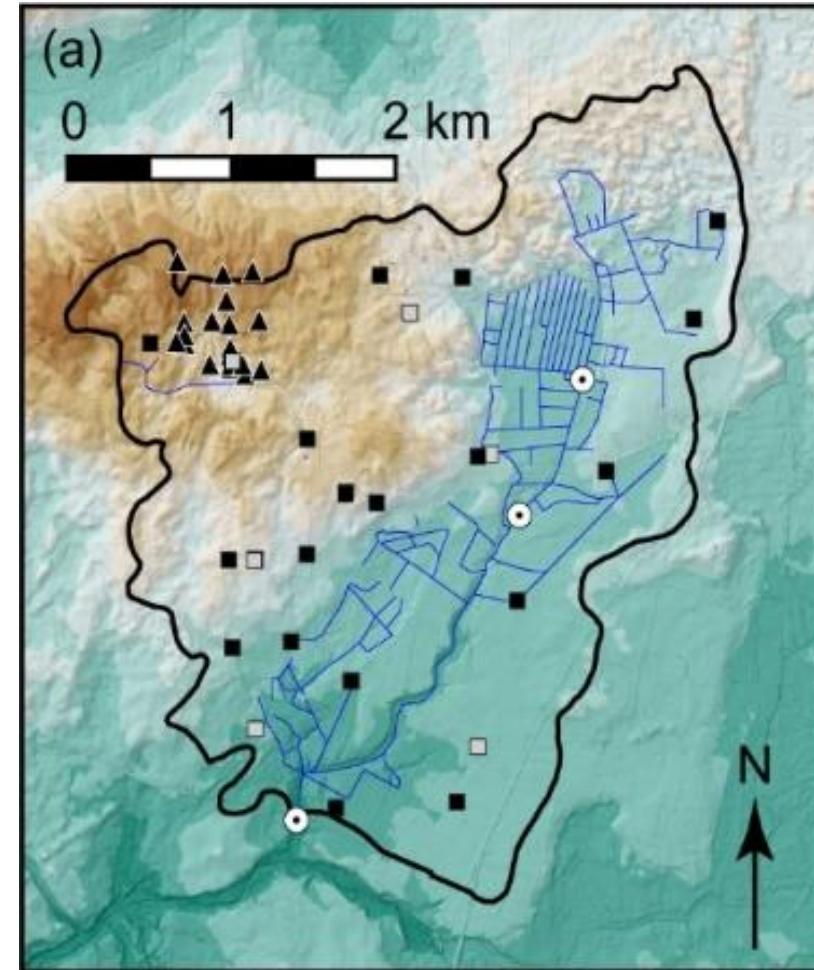
# N-retention og usikkerhed for Javngyde



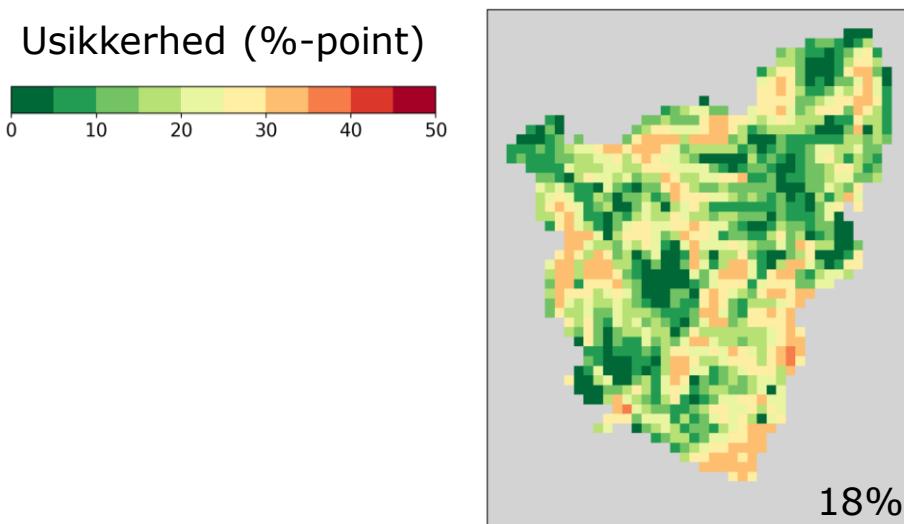
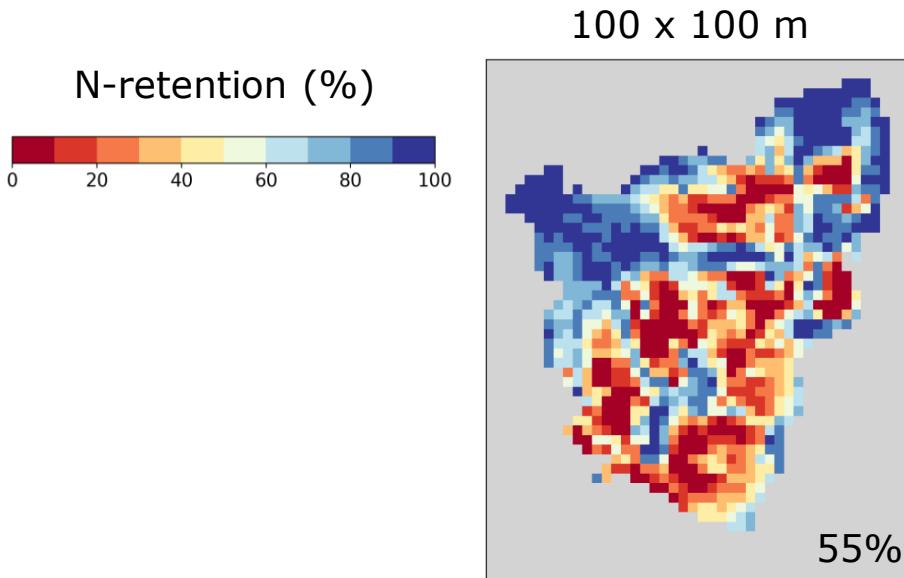
# Kortlagte ID15 oplande



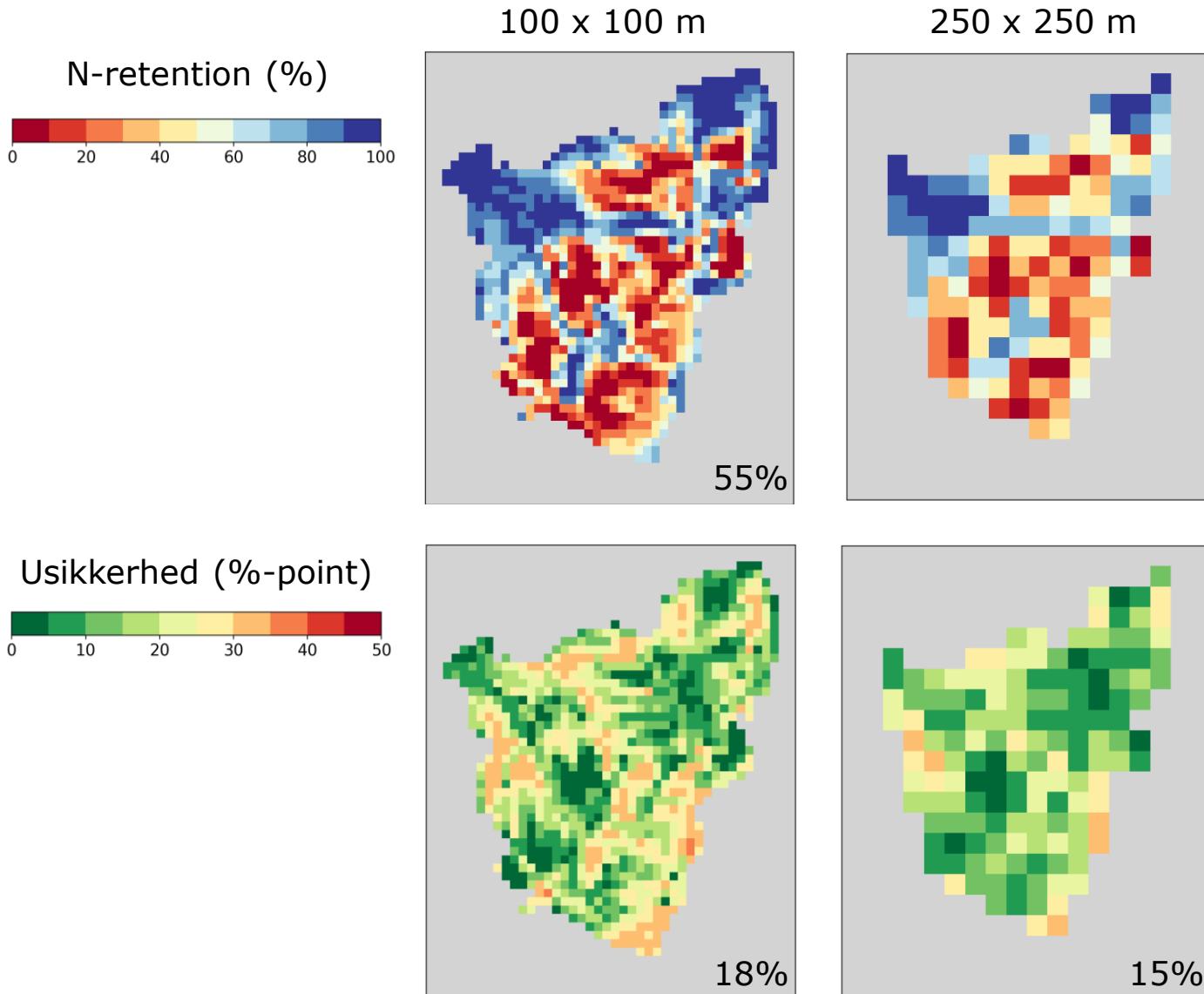
LOOP2/Oddersbæk



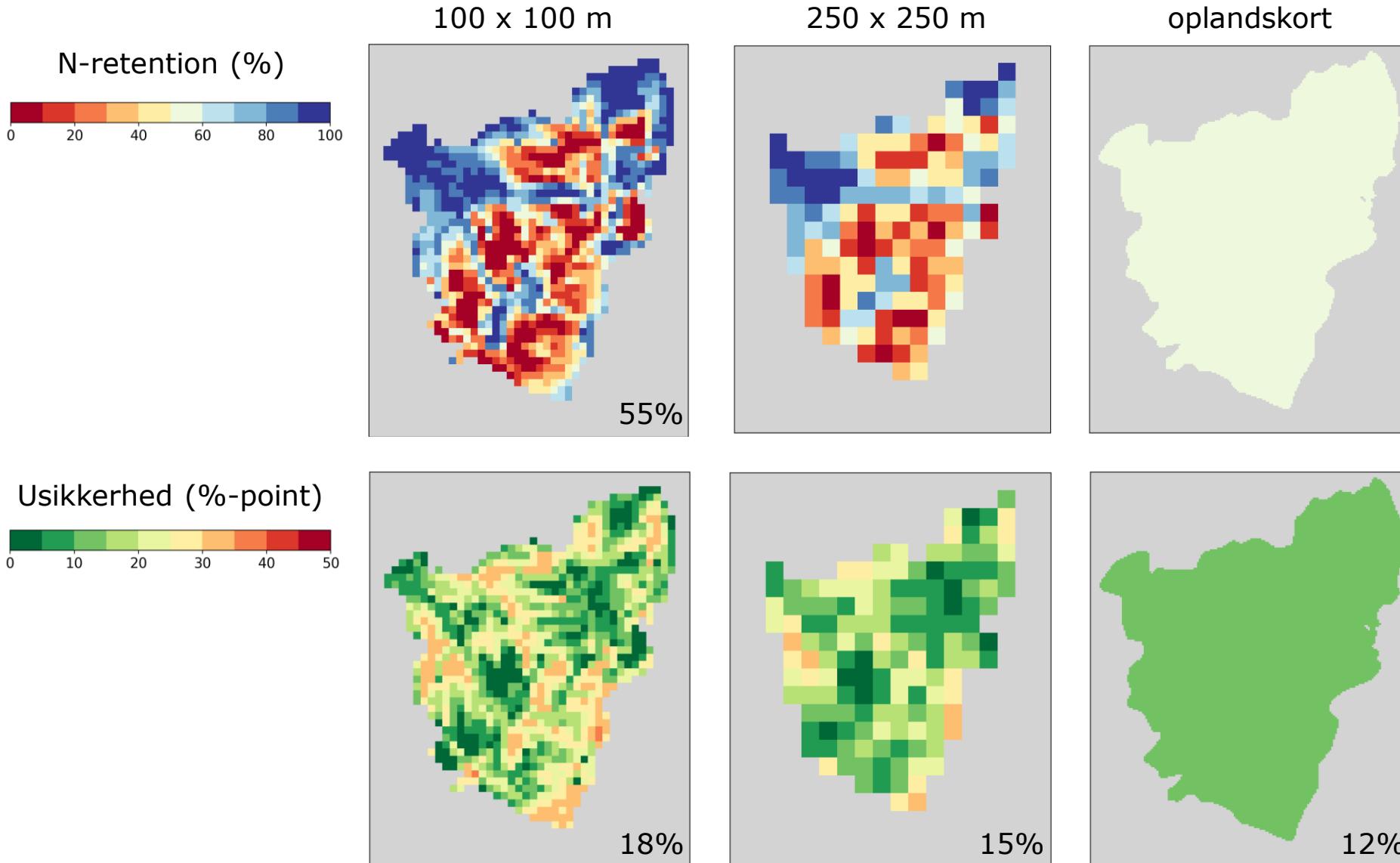
# N-retention og usikkerhed for LOOP2



# N-retention og usikkerhed for LOOP2



# N-retention og usikkerhed for LOOP2



# Opsummering

- Koncept til beregning af et detaljeret retentionskort
- Data, data, data
- Forbedret beskrivelse af hydrogeologiske forhold
- Forbedret beskrivelse af hydrogeokemiske forhold
- Fuldt integreret usikkerhedsanalyse
- Effektiv og data-drevet modellering