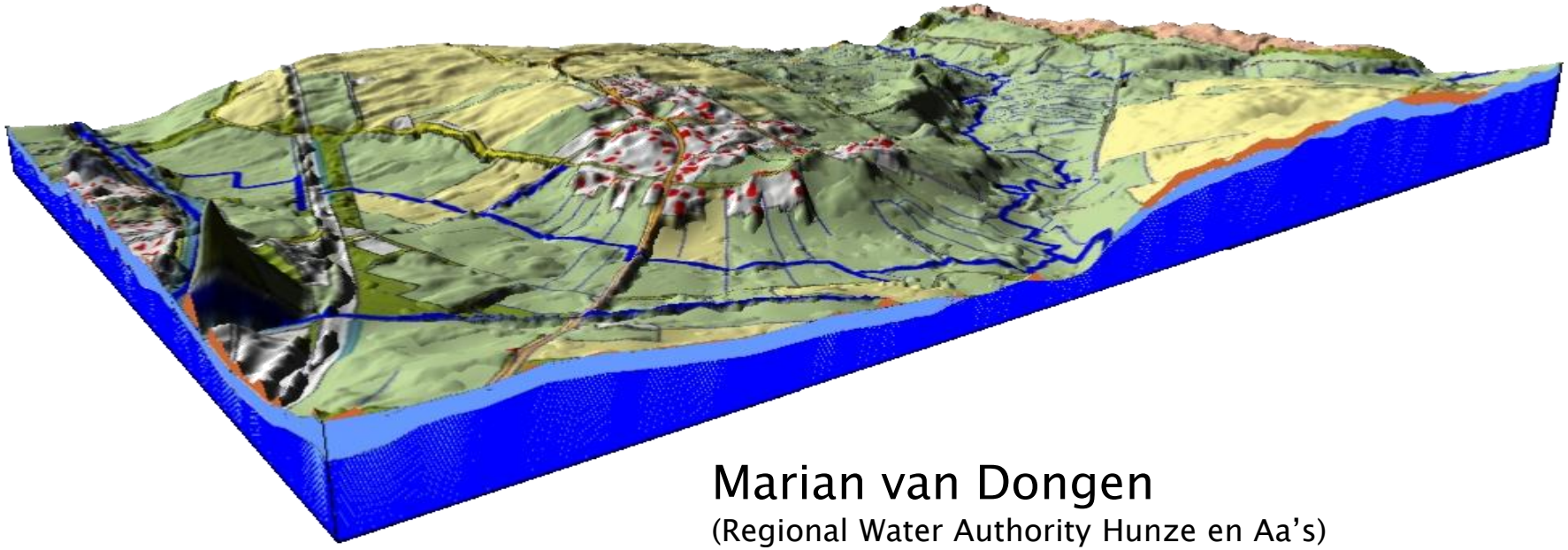
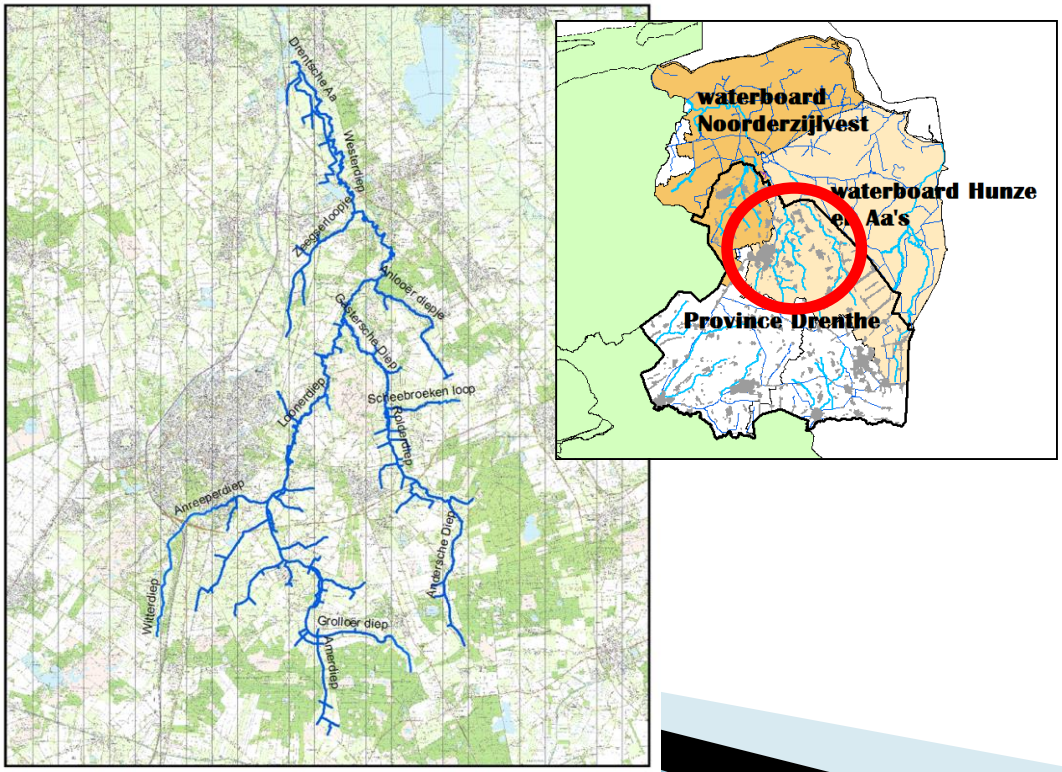
Climate proof Drentsche Aa

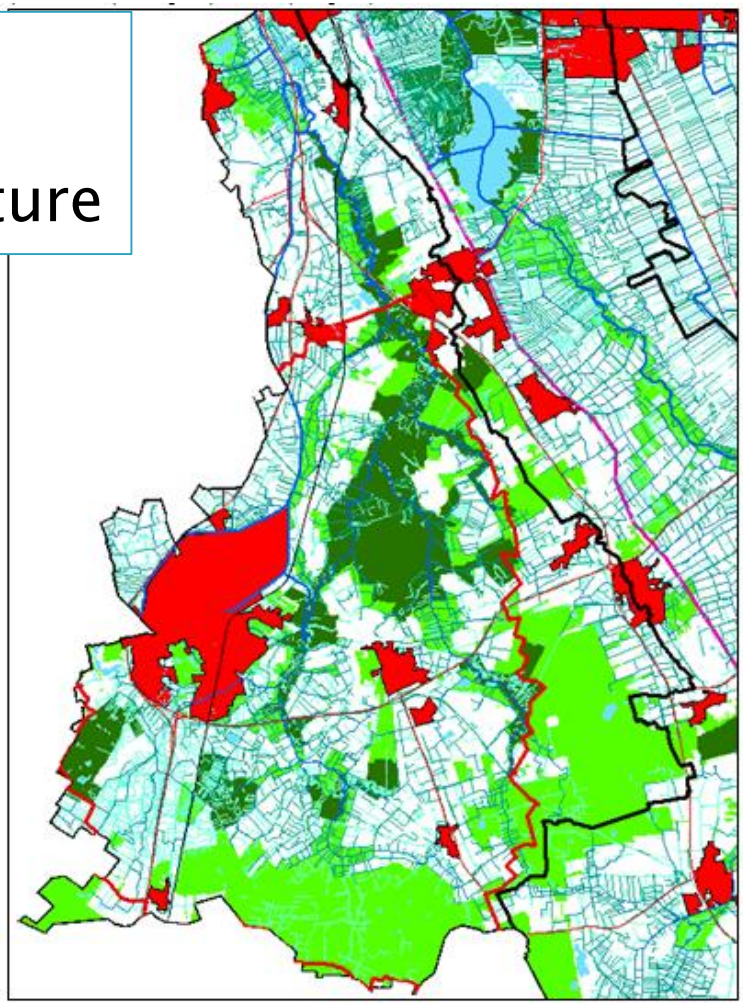


Marian van Dongen
(Regional Water Authority Hunze en Aa's)

Pilot area Drentsche Aa

- high plateau with a small river
- Catchment 300 km2
- mix of nature (N2000) and agriculture





Challenge:
how to make Drentsche Aa climate proof

Climate change issues:

- Increasing drought influences targets Nature 2000 area ánd possibilities for agriculture
- More risk on pollution river through run off and leaching nutrients and pesticides

Modeling

Ground water model study to determine:

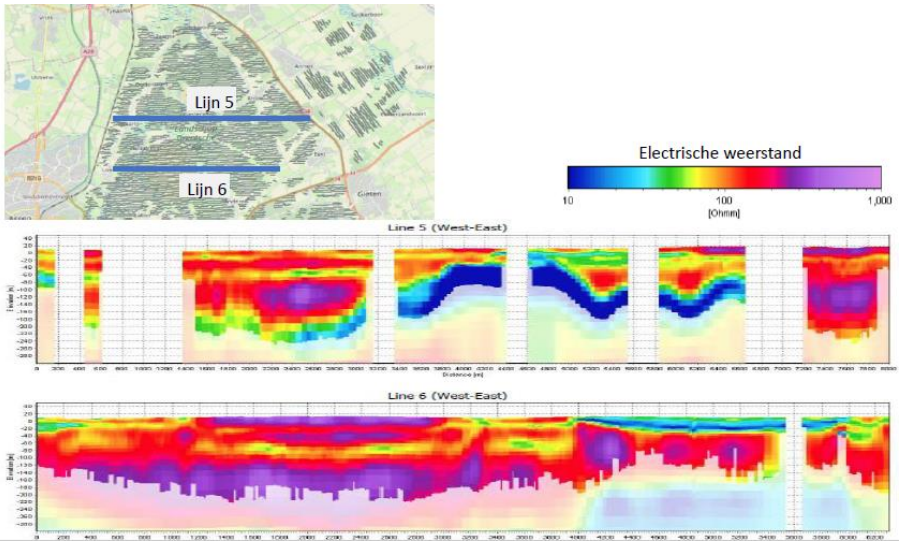
- Effect of climate change on wet nature in river valley
- Effective mitigation measures for nature
- Areas for sprinkling from ground water (mitigating measure for agriculture)
  (determine buffer zones around nature)

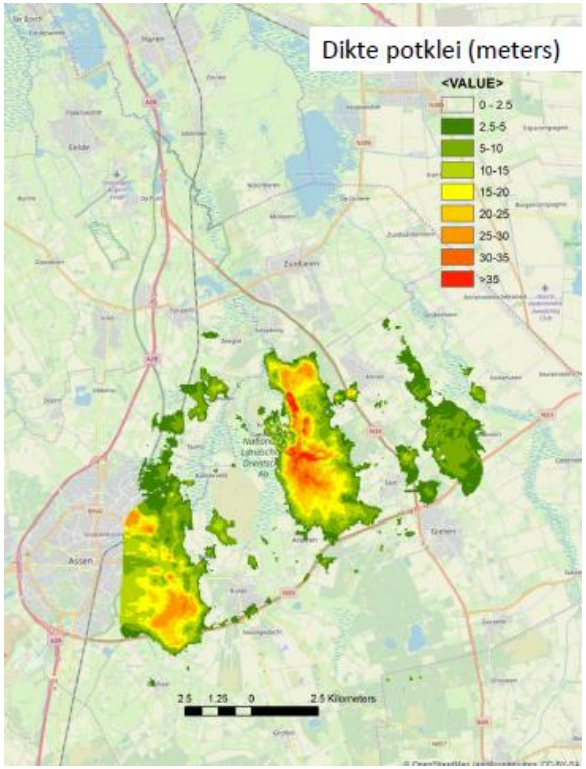
Waterquality model to determine:

- Risk maps (sources and routes of N and P and pesticides)
- Traveling time research
- Best measures (like bufferzones, sustainable soil management)
- The impact of climate change on leaching/ run off

SkyTem:

- Skytem data collected in Topsoil
- Data will be used to actualize models in the future





Climate Change Scenarios

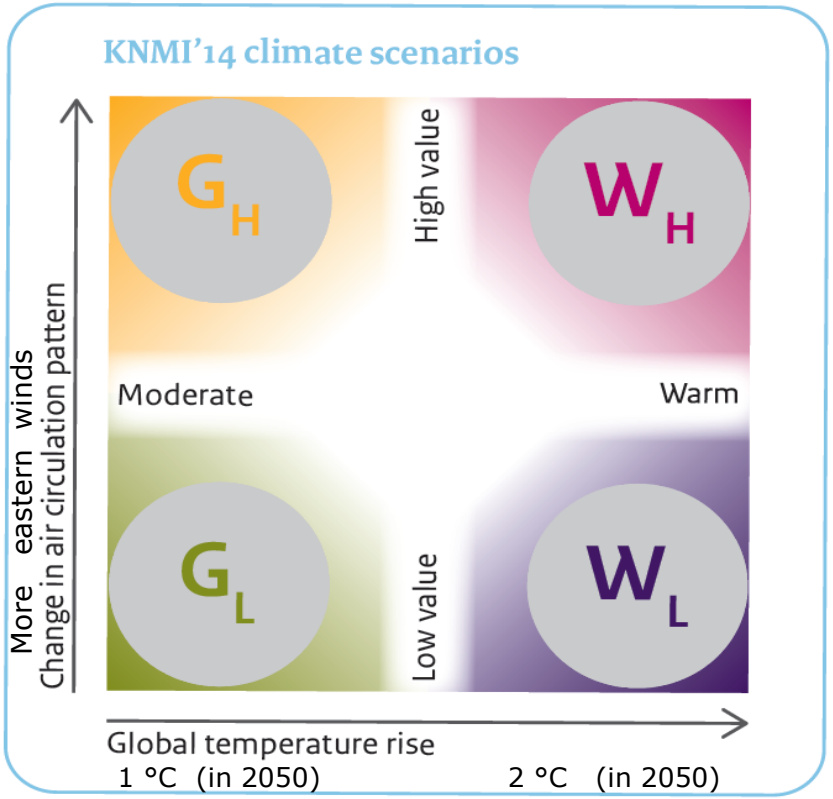
Water quantity (for drought problems):

- Policy development: worst case CC scenario
  most extreme dry scenario in 2050 (W_H)

- Stakeholder participation:
  recent extreme dry year (2018)
  (easier in communication, NZV)

Water quality

- Determine no-regret measures:
  Most moderate CC scenario
  (2050 G_L)



Stakeholder involvement:

- Create support from stakeholders:
  - Support for issues to be studied
  - trust in models used
  - support for final conclusions & follow-up actions

- Use output from meetings with stakeholder to determine best measures to be taken/ to be calculated

- Feed back of model results to stakeholders

- Take stakeholders advise serious, adapt your study to it!
  (flexible budget and time planning!?!)

Policy maker meets farmers

Main results waterquantity

- Raise river beds
- Change coniferous forest into deciduous forests
- shallower & more intensive tube drains
- Irrigate from groundwater: more than 500 m from wet nature (max. 50 mm/year)

Main results waterquality

Heavy rainfall after applying pesticides (up to a week or even more) will give more leaching of pesticides

Permanent bufferzones (~4 m breed)
can diminish leaching
up tot 25 – 30 %

Follow up waterquantity

- Raising river beds:
  pilot for 7 km; starts 2020

- Legislation sprinkling from groundwater: (2022)
  Stakeholder meeting: 4 November 2019
  (will be continued in Topsoil II)

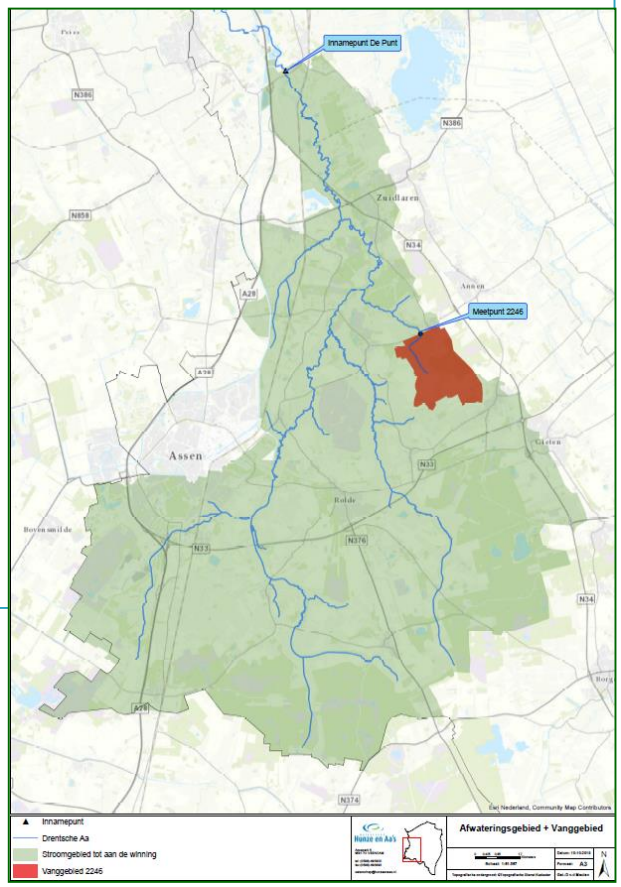
- Shallower and more intensive drain tubes:
  Detailed implementation study: started in 2019

- More flexible policy for nature types (+ forests):
  (2020 -…?)
  meeting at Province Drenthe 29-5-2019

Follow up waterquality

(will be continued in Topsoil II)

- Plotemissionplan on measures for each farmer
- Subcatchment based approach:
  80 % of farmers participate
- Measures taken in 2020-2021
- Monitoring effect on waterquality



Lessons learned from Topsoil

- Skytem/TTEM: how to collect new geological data (DK)
- New machines to diminish runoff: Wonderwheel (UK)
- New measures to reduce flood risk in Urban Areas
- New approach to reduce leaching under maize (GE)

- More integrated approach: waterquality & Quantity
- How to organise stakeholder participation (UK)
- How to deal with Climate Change Scenarios (All)

- How to organise Legislation of groundwater extraction (All)

- How European rules & directives are being developed

Thank you for your attention




provincie Drenthe

Waterschap Hunze en Aa's

Waterschap Noorderzijlvest