TNO innovation for life

Geological Surveying in the Netherlands

trends and perspectives

M.J. van der Meulen

September 17, 2013
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Geological Surveying NL

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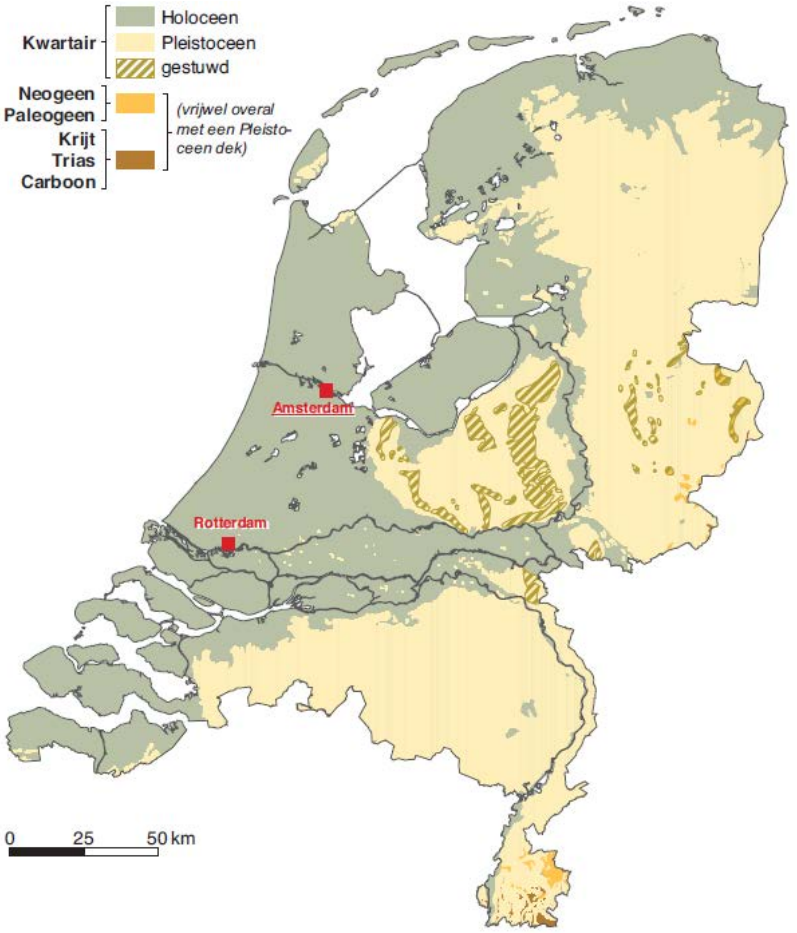
geology of the Netherlands

- small European country
  - high population density
  - high land use intensity
  - high degree of urbanisation
- 60% coastal and fluvial lowlands
- **earth resources**
  - energy, groundwater
  - construction materials
  - salt, silica sand

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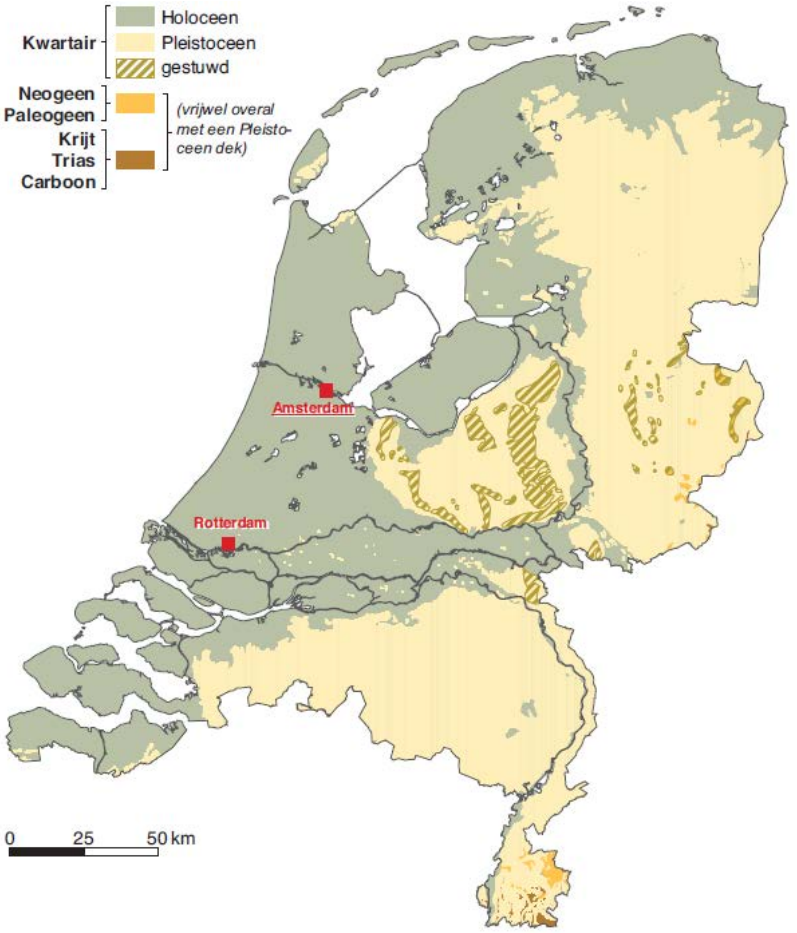
geology of the Netherlands

- small European country
  - high population density
  - high land use intensity
  - high degree of urbanisation
- 60% coastal and fluvial lowlands
- **challenges**
  - water
  - lowlands, subsidence
  - ground conditions



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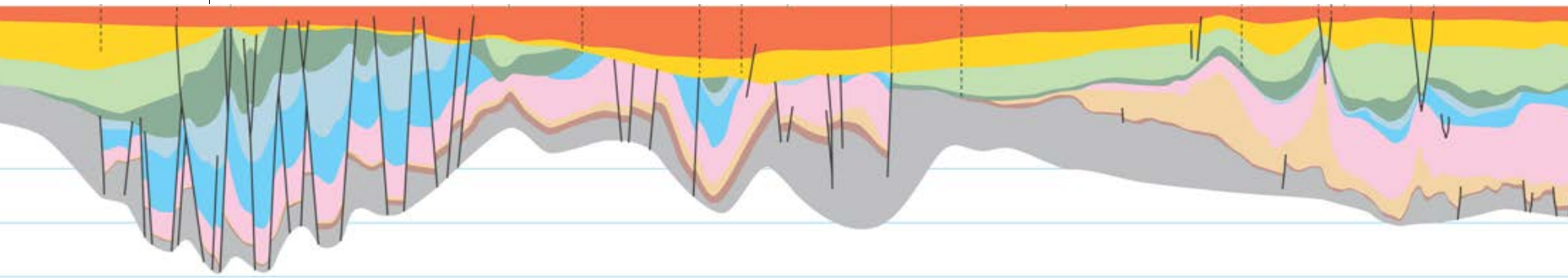
Geological Survey of the Netherlands

- geoscientific data, information and knowledge for
  - management of **earth resources**
  - **reduction of risks and costs** associated with geohazards and adverse ground conditions

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Geological Survey of the Netherlands

- core asset: **DINO** (national repository)
  - borehole **data**
  - geophysical and geochemical data
  - **models** (interpretations → predictions)

- national coverage, high data density
- own and third-party data
- standardized
- freely accessible

http://www2.dinoloket.nl/ondergrondgegevens

Ondergrondgegevens | Din...

DINOloket

Data en Informatie van de Nederlandse Ondergrond

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Uw bestelling
0 gegevens

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ZOEKEN

U bent hier: Home / Ondergrondgegevens

KAART | DATAOVERZICHT | BESTELLING

Reset | Rechthoek | Polygoon | Wissen

Inhoud | Legenda

DOMEINEN

Geologisch onderzoek

- [ ] Geotechnisch sondeeronderzoek

Booronderzoek

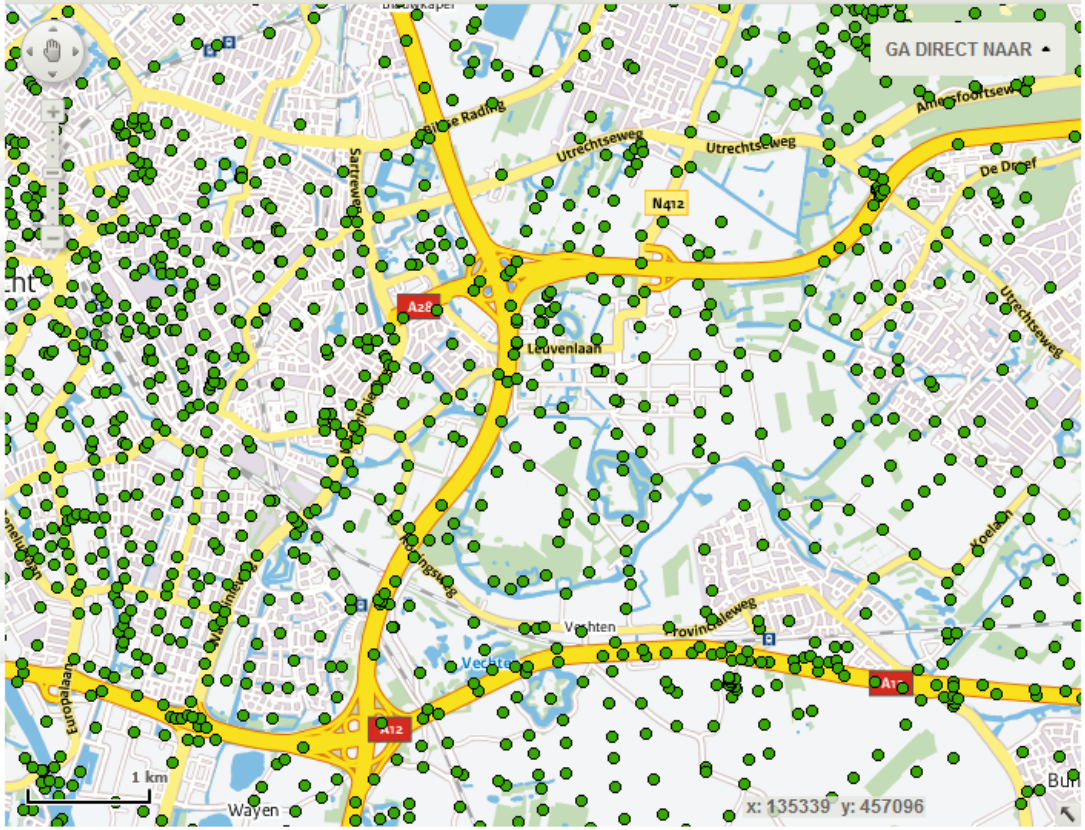
- [x] Boormonsterprofiel
- [ ] Boormonsterfoto
- [ ] Boorgatmeting
- [ ] Chemische analyse
- [ ] Korrelgrootte analyse

Zeebodemonderzoek

- [ ] Monsterbeschrijving
- [ ] Chemische analyse
- [ ] Korrelgrootte analyse

Archeologisch onderzoek

Grondwateronderzoek



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TNO innovation for life | ALTERRA WAGENINGEN UR | Ministerie van Infrastructuur en Milieu


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where do we stand?

- **layer and voxel models**
  - **predictions** of the architecture and properties of the subsurface
  - **application-oriented**
  - **systematic** production, national coverage
  - 2D maps (arbitrary) derived products

- **drivers / applications**
  - traditionally: hydrocarbon and groundwater resources
  - new: **built environment**, sustainable geo-energy, underground storage

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trends and enabling factors (NL)

(shallow subsurface)

1 1990

digitisation of data

2 2000

new vision + roadmap

1 : 50k mapping suspended

database redesign (DINO)

merger RGD + TNO

new lithostratigraphy

first layer models

consistency geology / hydrogeology

first voxel models (pilot)

systematic voxel modelling

parametrisation

uncertainty

2010

BRO

redefinition GSN

3

+ upgrade


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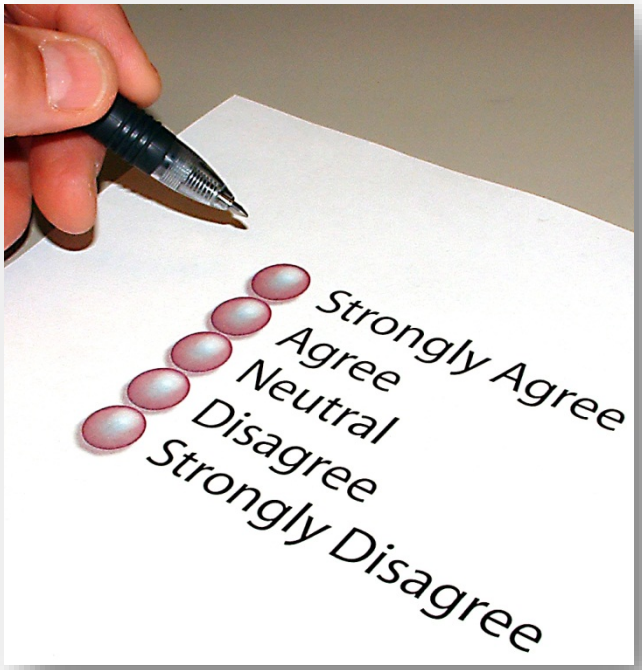
BRO key-register for the subsurface

- DINO is to become an official government register
- by law, government bodies will have to fill and consult our database
- “acquire once, use many times”
- data and models
- operational in 2015

- more use by more users
- higher expectations
  - accountability, reproducibility
  - detail, resolution
  - reliability, credibility
- quality project

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where do we go?

- geomodelling in a dynamic context
- accounting for processes
- especially on human timescales

- subsidence
- human effects
- groundwater flow
- sediment dynamics


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where do we go?

- using third party data → using their knowledge
  - feedback
- more focus on the urban environment
  - artificial grounds, underground infrastructure
  - delivering information for 3D planning
- 4D → 5D (scale)