


5500 voor Chr.

Cultural Heritage Agency  
Ministry of Education, Culture and Science

**Mapping the Holocene coastal development of the Netherlands**

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The slide features a map of the Netherlands on the left, showing a complex network of rivers and coastal features in various colors (blue, green, yellow, orange, red, pink). The text '5500 voor Chr.' is positioned above the map. On the right, there is a green background with the Cultural Heritage Agency logo and name, the title 'Mapping the Holocene coastal development of the Netherlands', and the author's name and email address.




Outline

- Data
- Holocene palaeogeography in 2D maps
- Recent developments in detailed 3D mapping
- Discussion

Photo: Rudi Steenbruggen

The slide has a green header with the Cultural Heritage Agency logo. Below it is a photograph of a coastal landscape with a row of weathered wooden posts extending into the water. The text 'Outline' is in blue, followed by a bulleted list of topics. The photo credit 'Photo: Rudi Steenbruggen' is at the bottom right.




## Data categories

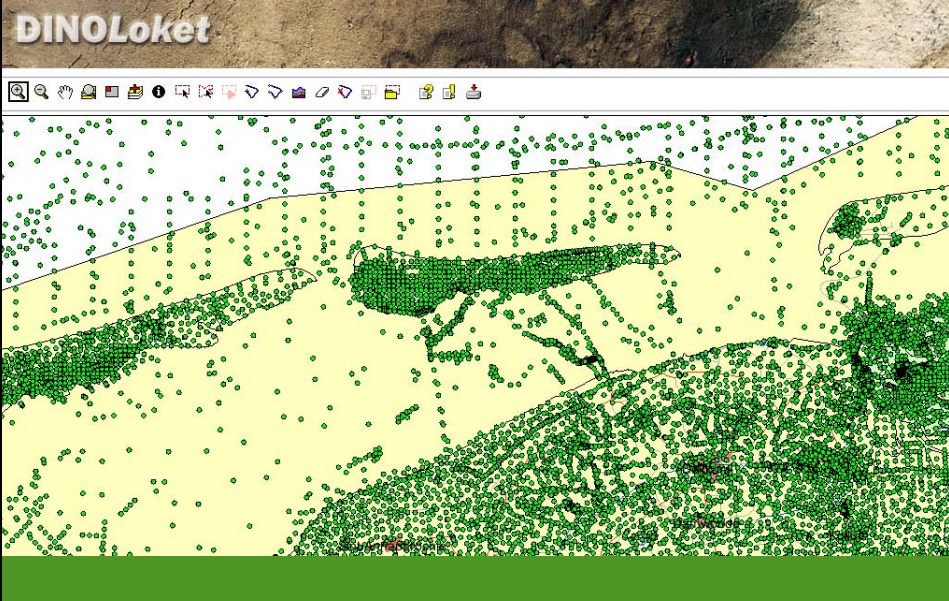
- Borehole data
- Archaeological data
- Historical data
- Remote sensing data
- Expert knowledge

Photo: Henk Weerts


This slide features a green header with a logo on the right. The main content is overlaid on a photograph of a sandy dune landscape with green grass in the foreground and a cloudy sky. The text is in a light blue and white color scheme.



## DINOLoket





The screenshot shows a web browser interface for 'DINOLoket'. At the top, there is a green header with a logo. Below it is a toolbar with various icons for map navigation and data manipulation. The main area displays a map with a yellow background, overlaid with numerous green dots representing data points. A large, dark green silhouette of a dinosaur is centered on the map. The map also shows some black lines representing boundaries or paths.



## Archaeological data

- ARCHIS II, Cultural Heritage Agency of the Netherlands  
<http://archis2.archis.nl/archisii/html/index>





## Remote sensing data

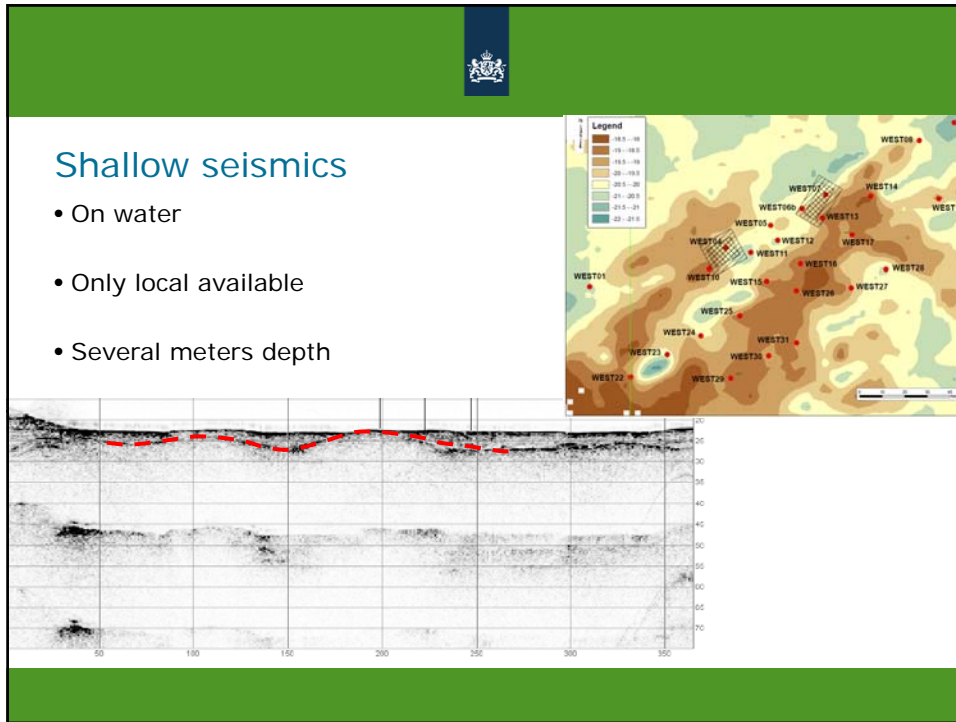
- Laser altimetry (land surface)
- Shallow seismics (water)
- Deep 3D seismics from oil companies (water and land)

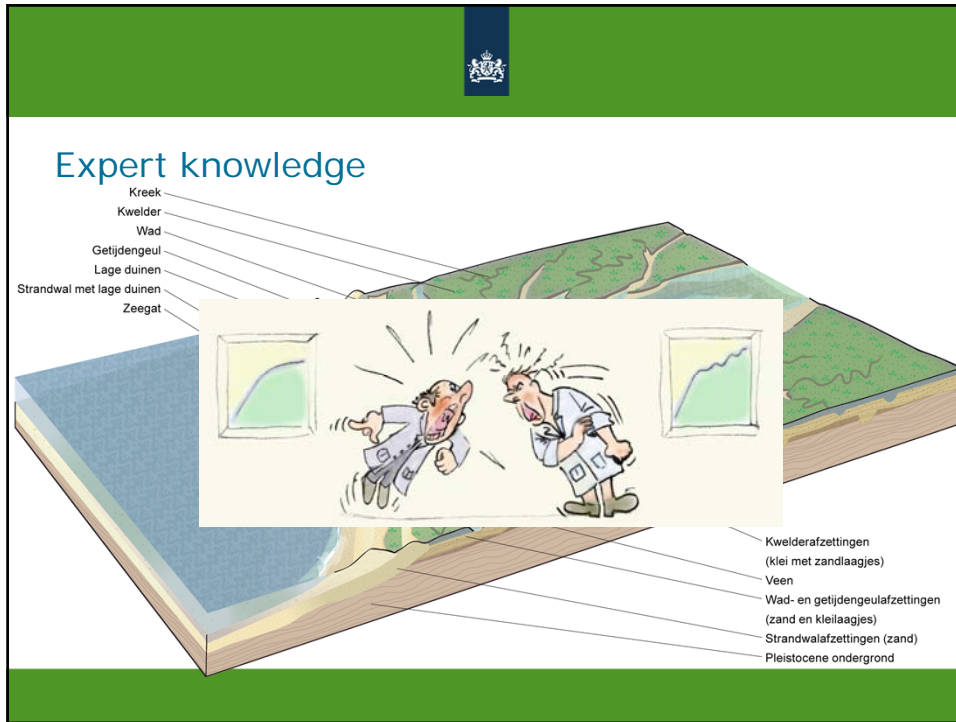


## Laser altimetry

- Nationwide, m-scale (horizontal), cm- scale (vertical).
- Generation 2 available in 2012







The Netherlands in the Holocene  
9000 voor Chr.



This slide features a green header with a white crest. The title "The Netherlands in the Holocene" is in blue, with "9000 voor Chr." below it. The map shows a landscape with a river network and a deer in a field.

The Netherlands in the Holocene  
5500 voor Chr.



This slide features a green header with a white crest. The title "The Netherlands in the Holocene" is in blue, with "5500 voor Chr." below it. The map shows a forested landscape.

The Netherlands in the Holocene

2750 voor Chr.



This slide features a green header with a white crest on the right. Below the header, the title "The Netherlands in the Holocene" is displayed in blue. Underneath the title, the text "2750 voor Chr." is written in blue. The main content consists of two parts: on the left, a map of the Netherlands showing a complex network of rivers and land parcels in various colors (brown, yellow, green, blue); on the right, a photograph of a sandy beach with green grasses in the foreground and a cloudy sky in the background.

The Netherlands in the Holocene

1500 voor Chr.



This slide features a green header with a white crest on the right. Below the header, the title "The Netherlands in the Holocene" is displayed in blue. Underneath the title, the text "1500 voor Chr." is written in blue. The main content consists of two parts: on the left, a map of the Netherlands showing a complex network of rivers and land parcels in various colors (brown, yellow, green, blue); on the right, a photograph of a wide river with green trees on the banks and a cloudy sky in the background.










### Recent developments in detailed 3D mapping

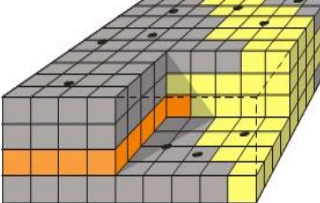
- TNO | Geological Survey of the Netherlands
- Geological mapping of the Netherlands – funding by several ministries, Research program for several years
- 3D-top; detailed 3d-lithological model of the upper 30 m
- Voxel size 100 \* 100 \* 0.5 m
- Geostatistical model, including uncertainties of the model




### 3D-top

3D sub-surface model of the Netherlands

- Nationwide (> 40,000 km<sup>2</sup>)
- Upper 30 m
- Voxels of 100 \* 100 \* 0,5 m
  - > Each voxel: lithostratigraphical unit + uncertainty
  - > Lithology (gravel, sand, loam, clay, peat) + uncertainty
  - > Geohydrological, geophysical and geochemical properties
  - > *Future: Archaeological expectation, Age*
    - » 2012: Joint pilot-project by TNO and RCE



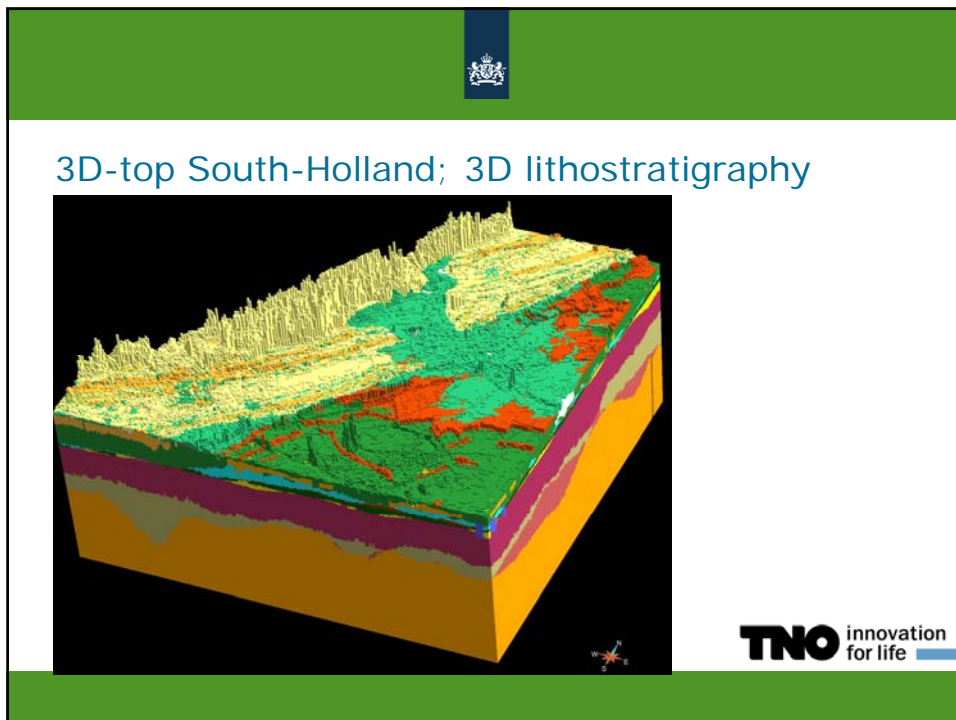
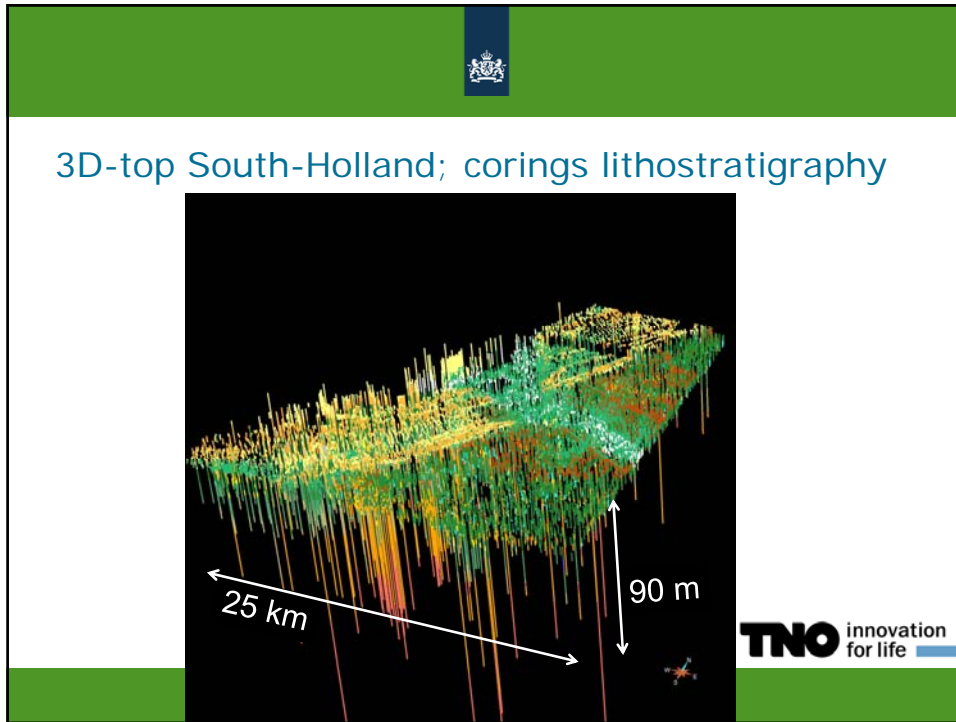


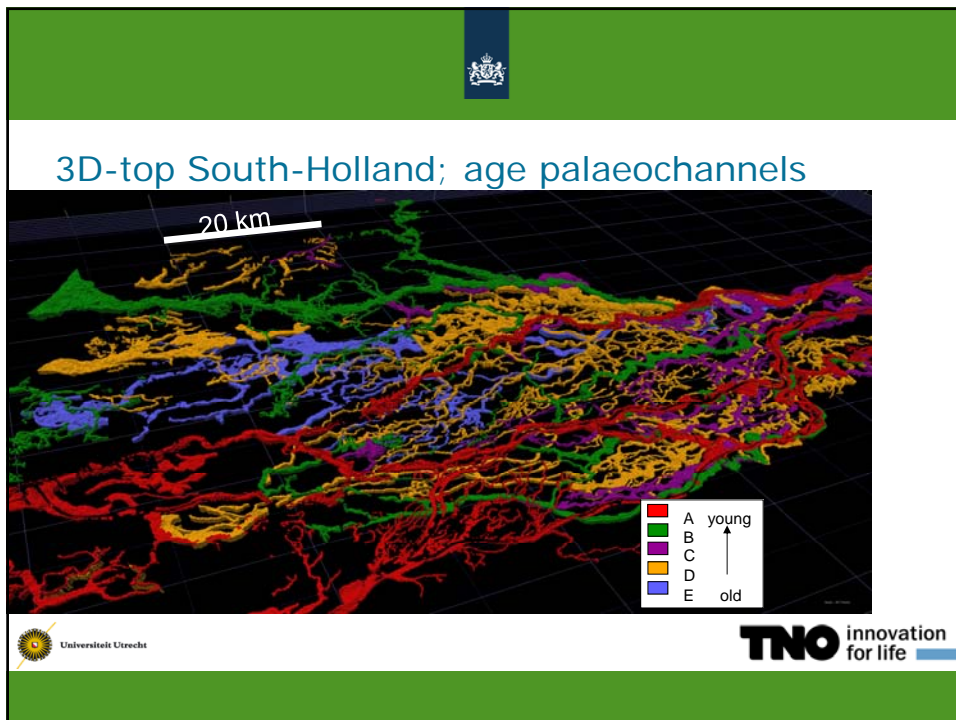
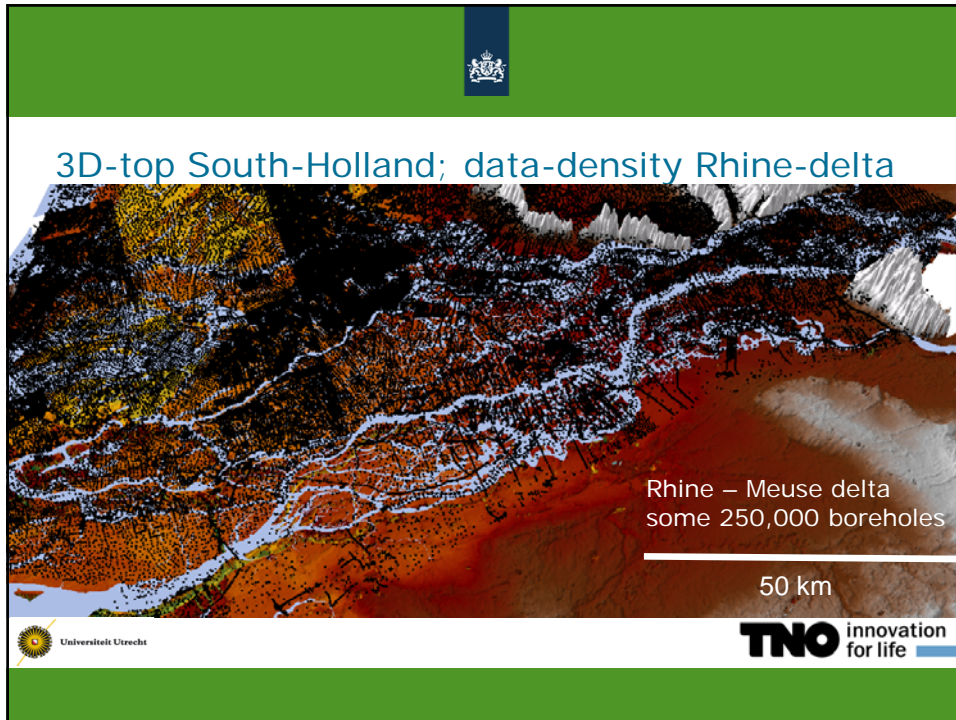



### 3D-top South-Holland











### Dutch Wadden Sea area

- 2012: start pilot-project TNO – RCE
- Problem: data-density of boreholes is much lower
- Opportunity: integration with archaeological data from scratch

