 Cultural Heritage Agency of The Netherlands
Ministry of Education, Culture and Science

Now you see it, Now you don't

Integrating remote-sensing
with historical data in
changing environments

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Now you see it, Now you don't



- Marine landscape dynamics
- Modern surveying techniques
- Historic surveys and maps
- Modelling historic data
- Towards a new indicative map of threats and possibilities

2/26

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Marine landscape dynamics




Abbildung der fast übernatürlich hohen Wasserflut am Christ-Tag 1717 und am 25. Vorming 1718.

North Sea

Even whole coastlines can change overnight

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Marine landscape dynamics

Before closure of the *Afsluitdijk*

1925



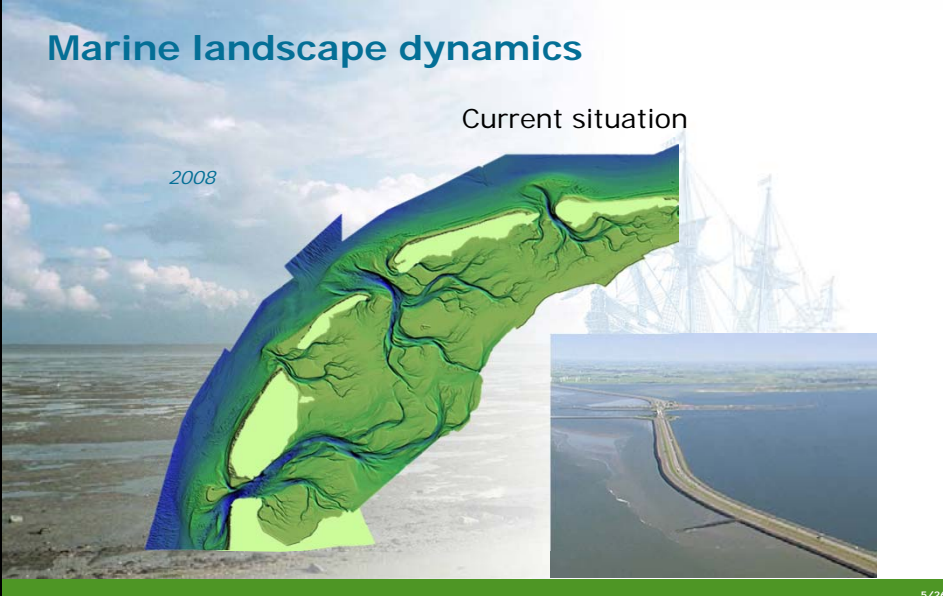
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Marine landscape dynamics

2008

Current situation



5/26

Detailed description: This slide features a green header with a logo and contact information. The main content area has a white background with the title 'Marine landscape dynamics'. Below the title, there are three visual elements: a 3D bathymetric map of a coastal area labeled '2008' showing depth contours in shades of green and blue; a photograph of a large, multi-masted sailing ship; and an aerial photograph of a long, narrow dike or barrier extending into the sea. The slide number '5/26' is in the bottom right corner.

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Modern surveying techniques

Sidescan sonar





6/26

Detailed description: This slide features a green header with a logo and contact information. The main content area has a white background with the title 'Modern surveying techniques'. Below the title, there are three visual elements: a photograph of a yellow and blue survey vessel; a photograph of a person on a boat operating a sidescan sonar device; and a 3D diagram showing a ship's perspective of the seabed with a yellow rectangular area indicating the sonar's scanning range. The slide number '6/26' is in the bottom right corner.

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Modern surveying techniques

Monitoring change...



WGS 84 **1811.3**

7/26

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Modern surveying techniques

...for safety



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Modern surveying techniques

...and in great detail,

9/26

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Modern surveying techniques

so we can monitor wreck positions

Seger van den Brenk

Rijksdienst voor het Cultureel Erfgoed
Ministerie van Onderwijs, Cultuur en
Wetenschap

MACHU (Managing Cultural Heritage Underwater)

Education and Culture
Culture 2000

10/26

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Modern surveying techniques

Line7

Specially targeted seismic for shallow depth covered landscapes

Seismic HighDensity3D data

sondering 8 sondering 10
sondering 9

Processed deep penetrating seismic for oil industry

UNIVERSITY OF BIRMINGHAM

Deltares
Enabling Delta Life

10 km

PGS

11/26

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Modern surveying techniques

Covered up landscapes

Europe's Lost World
The rediscovery of Doggerland
by Vincent Gaffney, Simon Fitch & David Smith

UNIVERSITY OF BIRMINGHAM

PGS Petroleum Geo-Services

12/26

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Modern surveying techniques

A 3D visualization of a meandering river system. The top surface shows a 'Holocene meandering river system' with a 'dendritic river system' branching off. Below the surface, a 'Weichselian glacial tunnel valley' is shown as a deep, narrow channel. The visualization is attributed to the 'UNIVERSITY OF BIRMINGHAM' and includes a '5km' scale bar. A faint image of a sailing ship is visible in the background.

SPLASHCOS
Submerged Prehistoric Archaeology and Landscapes of the Continental Shelf

13/26

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Historic surveys and maps

Two historical nautical charts are shown. The left chart is a detailed chart of a coastal area with various islands and reefs, including labels like 'HOLLEN', 'RISPEL', 'BREEHORA', and 'WIEAINE'. The right chart is a larger-scale chart of a coastal area with a red box highlighting a specific section. The year '1905' is printed below the charts.

1905

14/26

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Historic surveys and maps

1584

15/26

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Historic surveys and maps

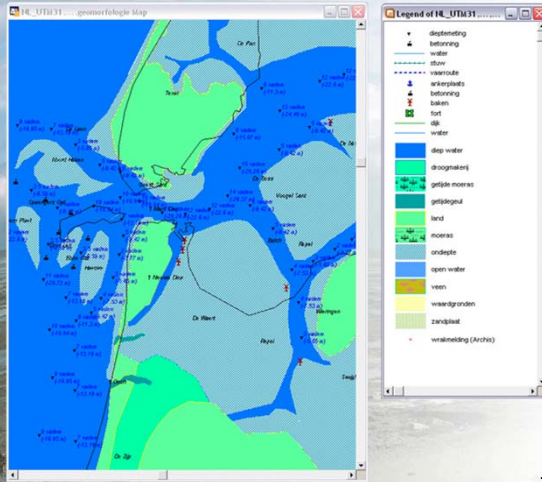
1584 in GIS...

16/26



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Historic surveys and maps

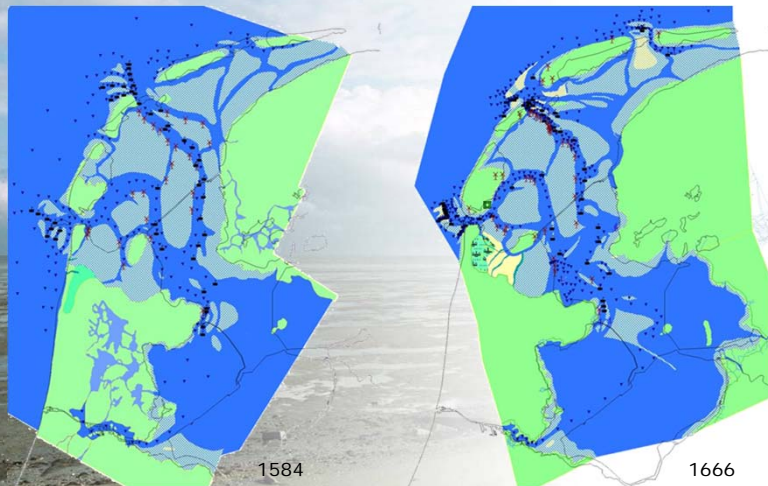


17/26



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Historic surveys and maps



18/26

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Modelling historic data

Normalize the legend ranges

19/26

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Modelling historic data

model of the modern bathymetry

20/26

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Modelling historic data

land
tide-land
shoals
deep water trenches

model of the 17th century bathymetry

21/26

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Modelling historic data

16th C 17th C 18th C

19th C 20th C before closure present

land
tide-land
shoals
deep water trenches

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Towards a new indicative map of threats and possibilities

1925

morphological change 1925 - 2005

2005

Scheurrak site

Burgzand site

Periplus Group

Seger van den Breuk

23/26

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Towards a new indicative map

threats

- much deposition
- much erosion

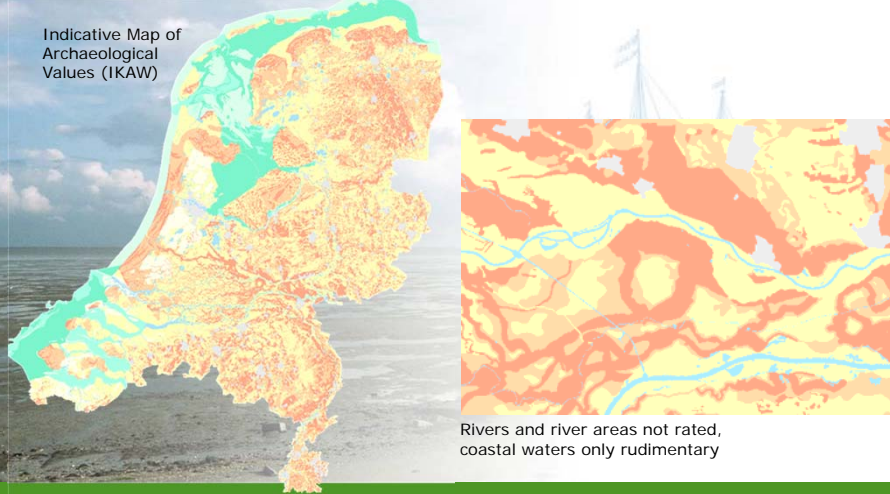
model of the differences between the 17th century and the present day

24/26

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Towards a new indicative map

Indicative Map of Archaeological Values (IKAW)

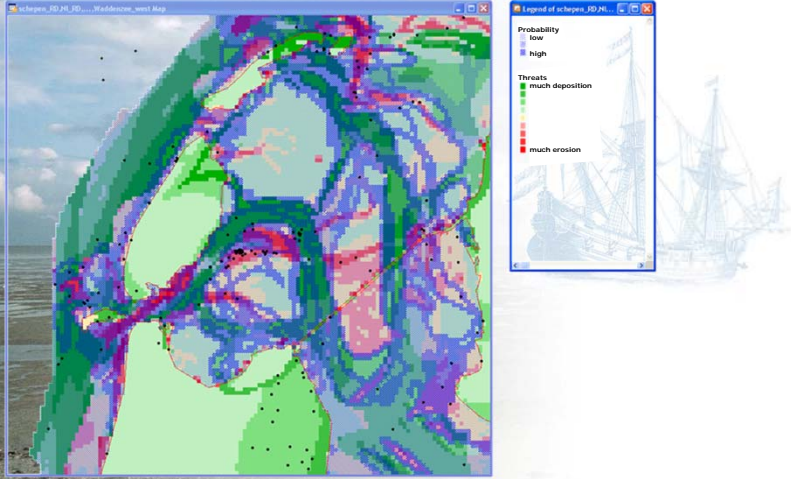


Rivers and river areas not rated, coastal waters only rudimentary

25/26

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Towards a new indicative map



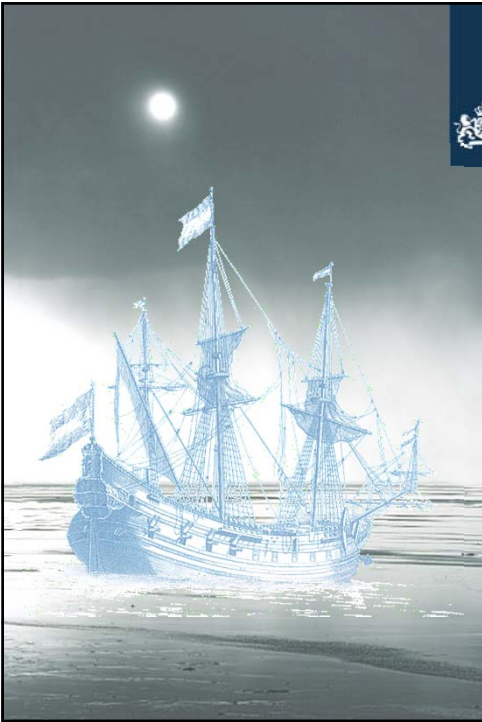
Legend of schepers JD Nl...


- Probability
- low
- high

Threats

- much deposition
- much erosion

26/26





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**Now you see it,
Now you don't**

Thank you for your attention