



bron: RWS / J.v.Houdt



# Story of the Meuse

Liege

6th Symposium on the hydrological modelling of the Meuse basin

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# Story of the Meuse

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# Content

- Background and Objective
- How was it made
- Result
- Application

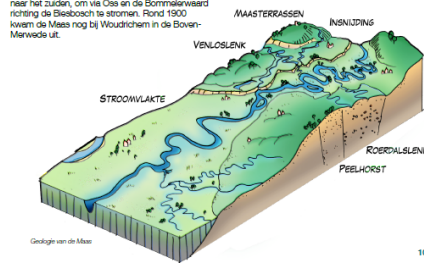
## 3.1 DE GEOLOGIE

De schied van miljoenen tot duizenden jaren

Dikke grindpakketten, hoog boven de rivier verheven terrassen, de afwisseling van smalle en brede velden. Deze bijzondere kenmerken van de Maas zijn het gevolg van de geologische ontstaansgeschiedenis.

Vanaf de bron tot aan Verdun is het stroomgebied van de Maas opvallend smal. De rivier ligt hier ingeklemd tussen twee berggrijpen van heid gesteente. Verder stroomafwaarts stroomt de Maas door de Ardennen. Toen dit oude gebergte omhoog kwam, sneed de Maas zich steeds dieper in. Tegelijkertijd verhoogde de rivierloop in Limburg geleidelijk naar het westen. Dit zien we terug in het landschap in de vorm van de Meesterrassen. Het oudste en hoogste terras is 700.000 jaar oud, het jongste 70.000 tot 12.000 jaar. Er zijn maar liefst 51 terrassen teruggevonden.

Tussen de Nederlandse zuidgrens en Nijmegen lopen verschillende breuken door de aardkorst. De belangrijkste is langs de Maas ingeslet – op de ene plaats sneller dan op de andere – of juist opgehouden. In de laaggelegen Roerdalslenk en Venlooslenk let de Maas het grove sediment uit de Ardennen bezinken. Daar vinden we nu dikke grind- en zandpakketten.

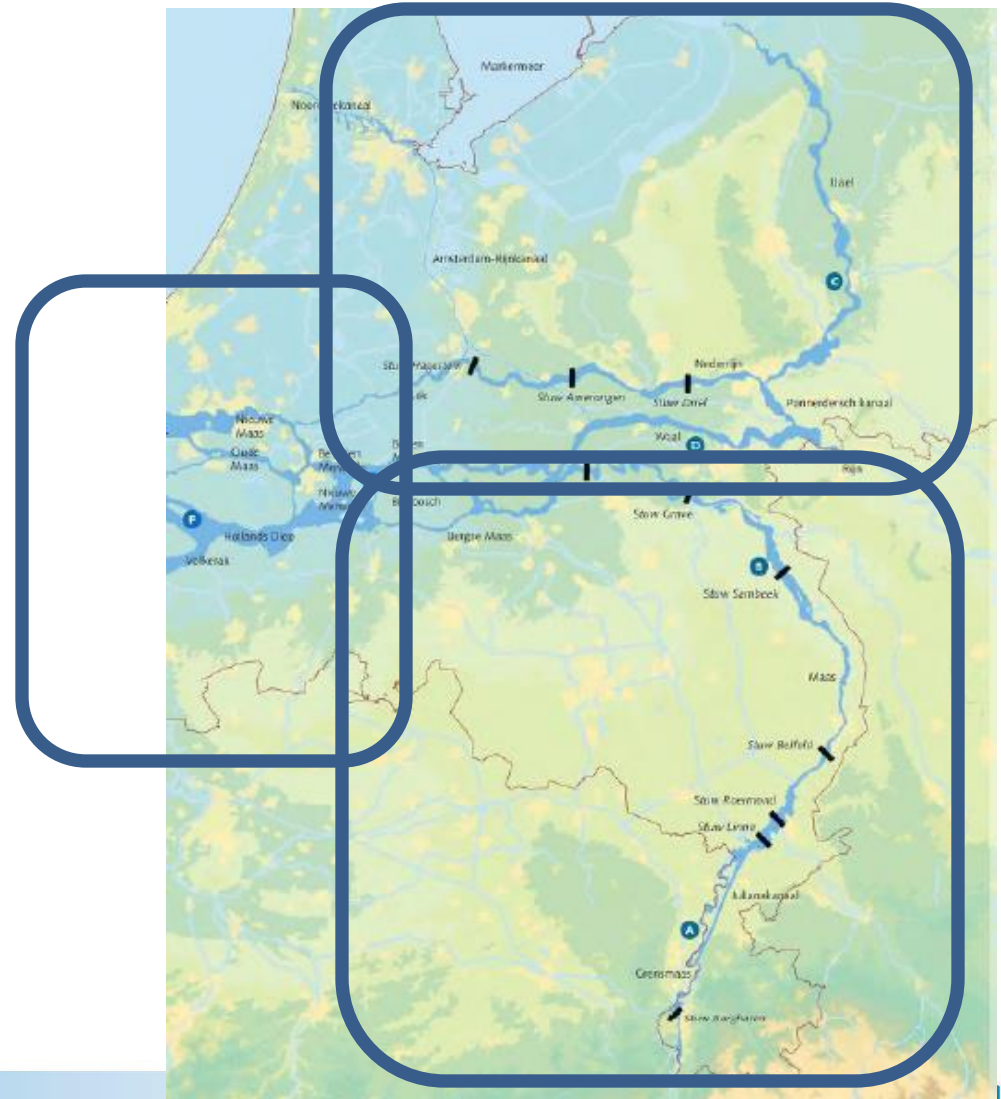


## INHOUDSOPGAVE




<https://www.helpdeskwater.nl/onderwerpen/waterveiligheid/programma-projecten/rivierkennis/verhaal-maas/>

# Background





# Background

## Het verhaal van de Rijn-Maasmonding

Datum: 10 februari 2010  
Versie: 1.0  
Status: definitief



Het Verhaal van de Rivier  
een eerste versie



**HET VERHAAL VAN DE MAAS**

De Maas uit balans?

# Objective

- Increase understanding
  - Geology
  - Hydrology
  - Morphology
  - Ecology
  - Man at work (use and impacts)
- Share understanding
- Coherent vision on sustainable use and management



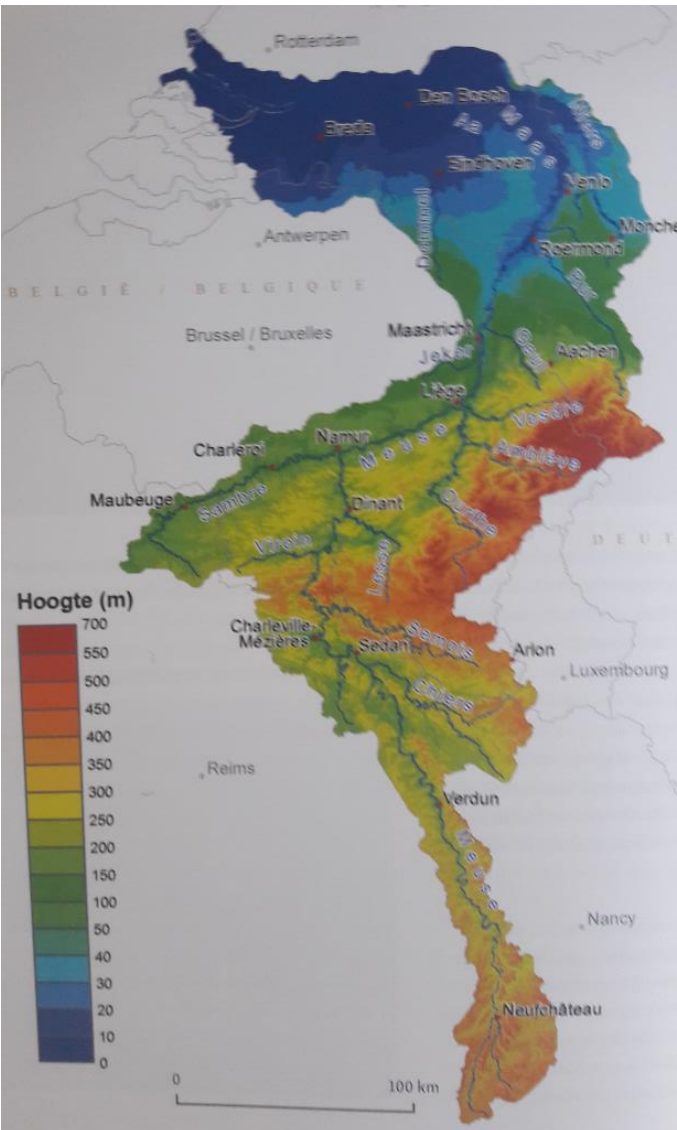
## Het verhaal van de Rijn-Maasmonding

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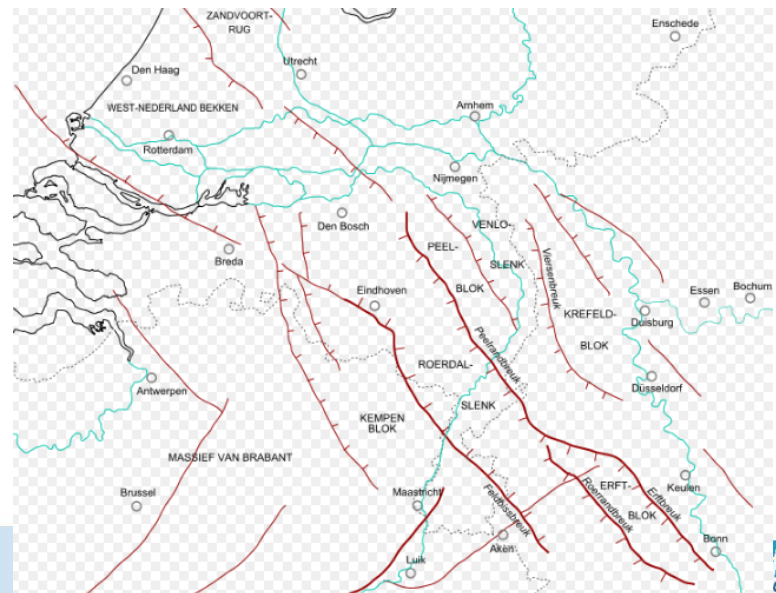




# What's the Story? Genesis

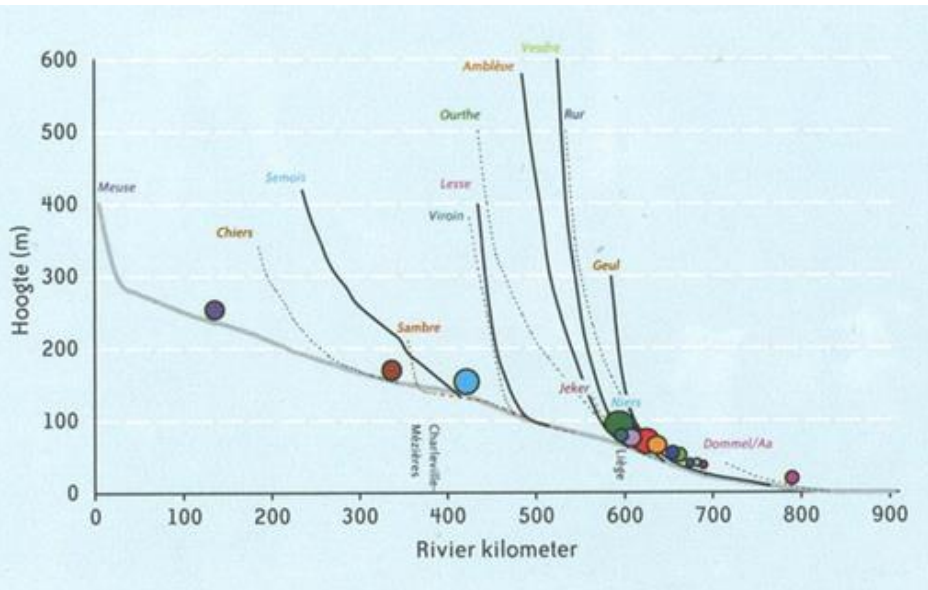


- Incision Ardennes
- Ridge on south west in France
- Beheaded by Mosel
- Tectonic in the Netherlands

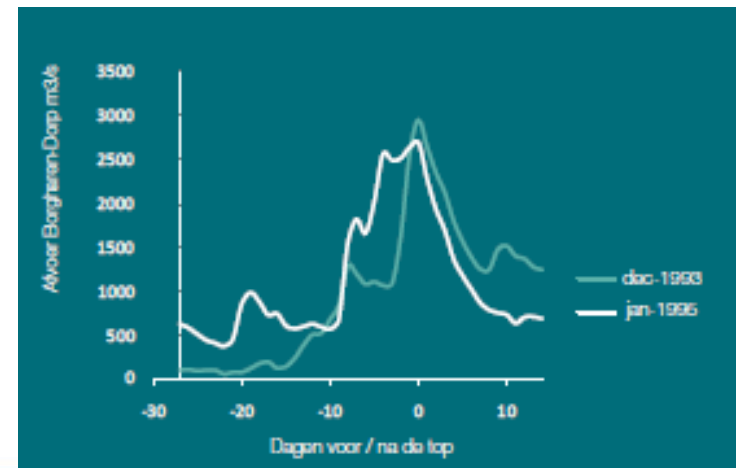
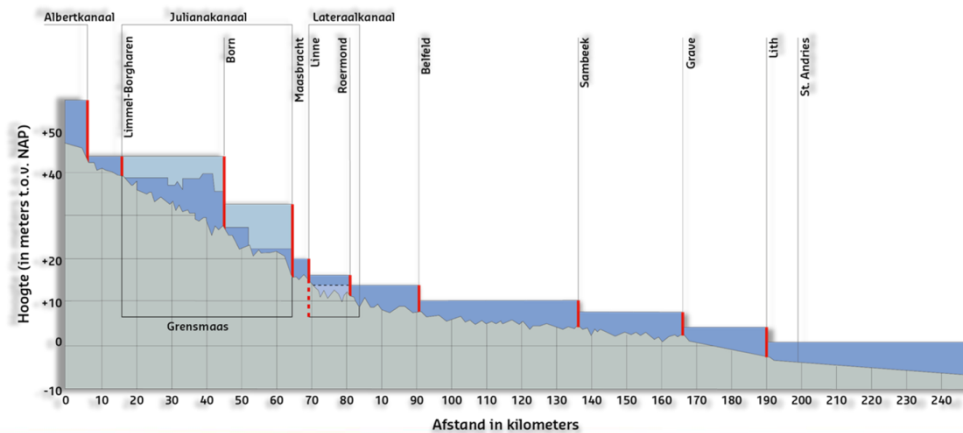




# What's the Story? Hydrology

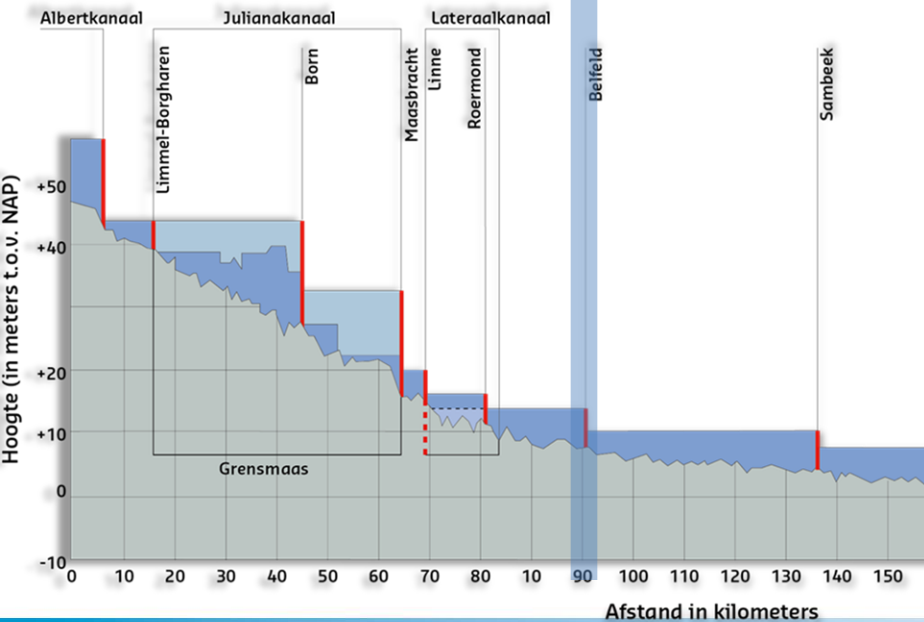
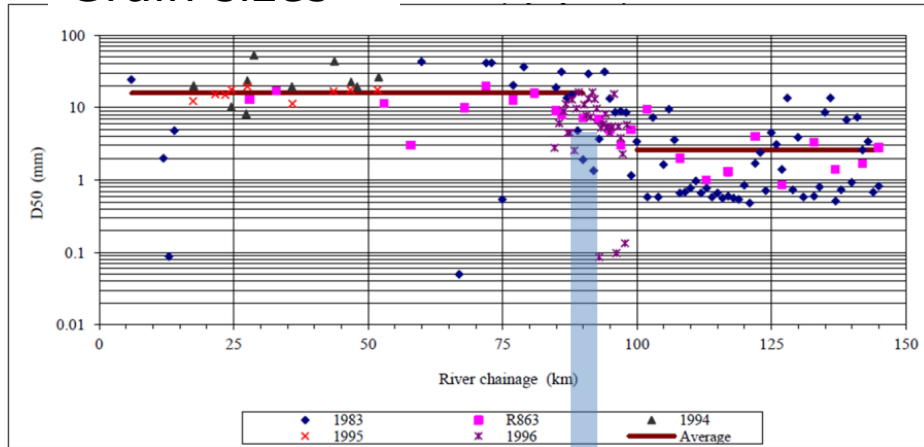


- How floods and draughts develop
- Propagation through the Netherlands



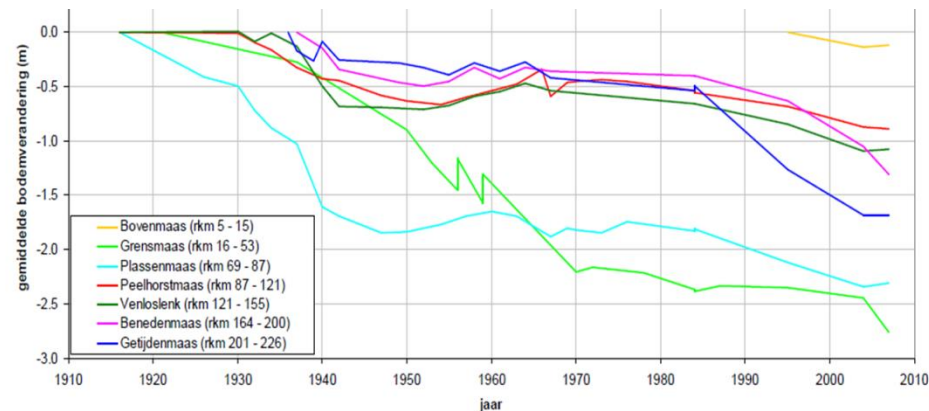
# What's the Story? Morphology

## Grain sizes



- Large variation in slopes and bed composition
- From gravel to fine sand
- Sediment mining
- Dredging for navigation
- Ongoing bed 'erosion' whole Meuse

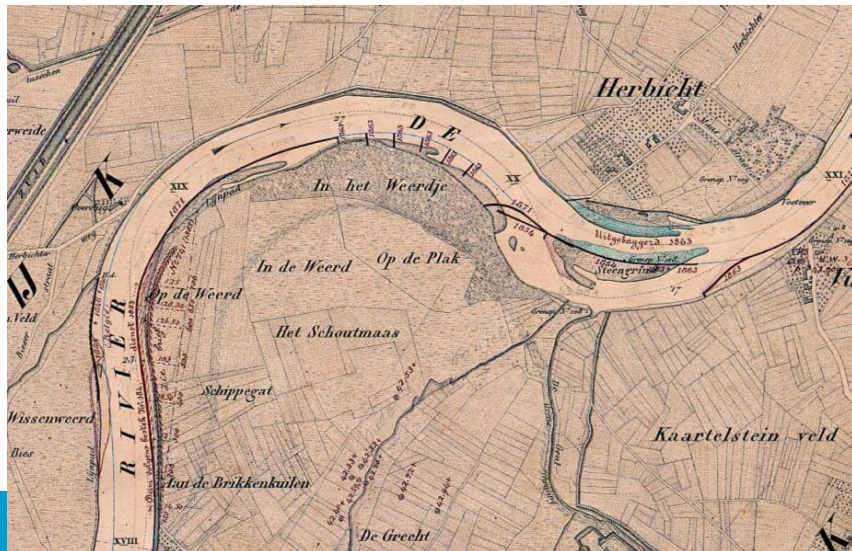
## Bed erosion for river reaches in time



# What's the Story? Ecology



- Variation water levels reduced (weirs)
- Natural banks and islands disappeared
- Water quality
- Seepage processes
- Aquatic versus terrestrial

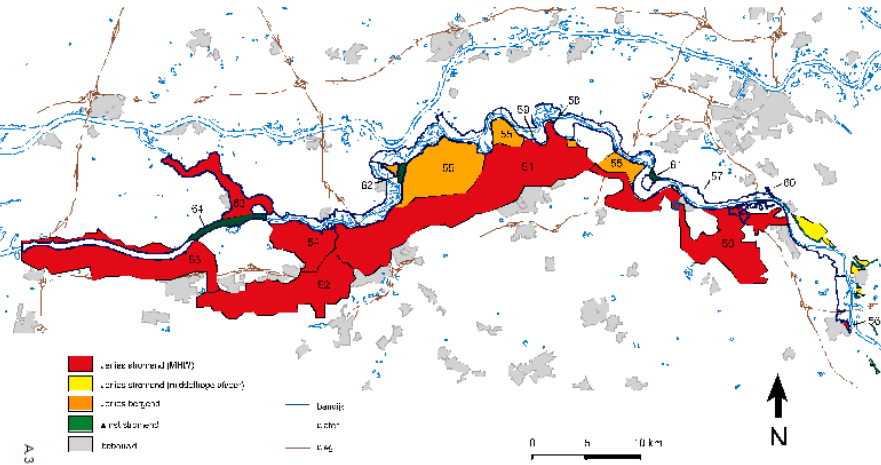




# Out of Balance

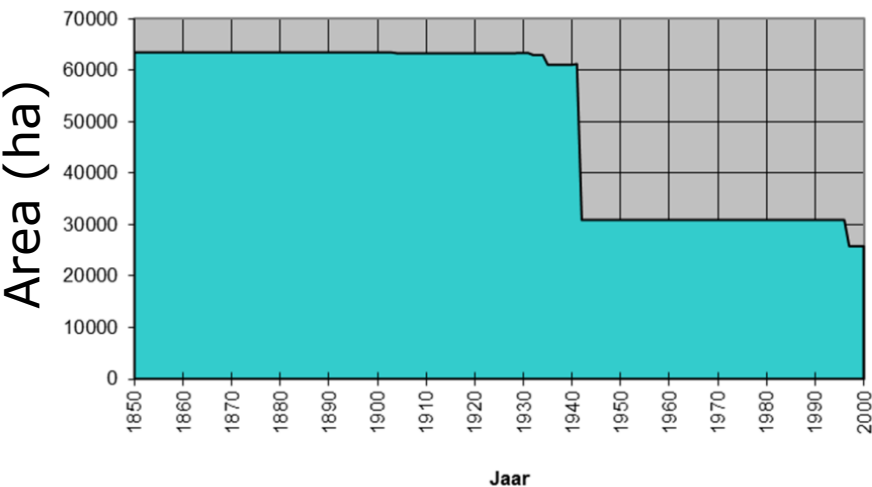
## Previous flood area

Cuijk - Keizersveer

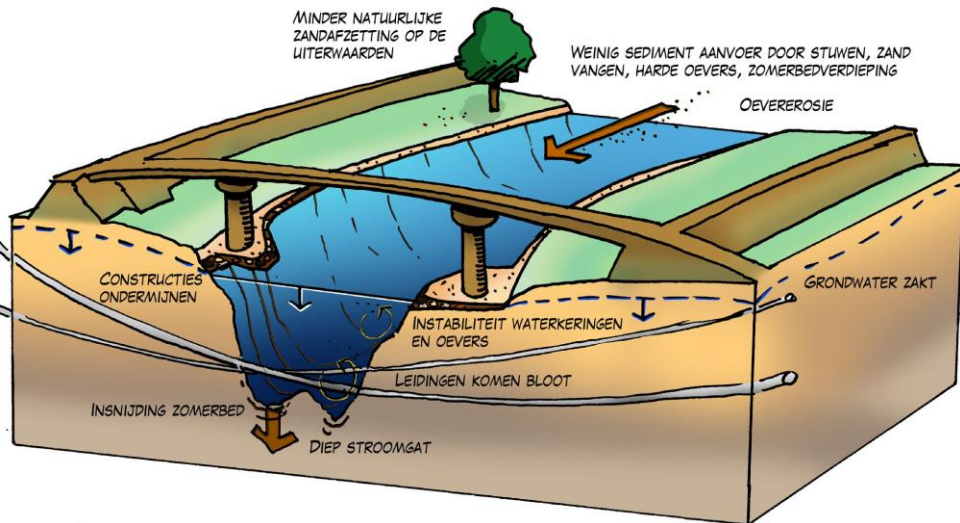
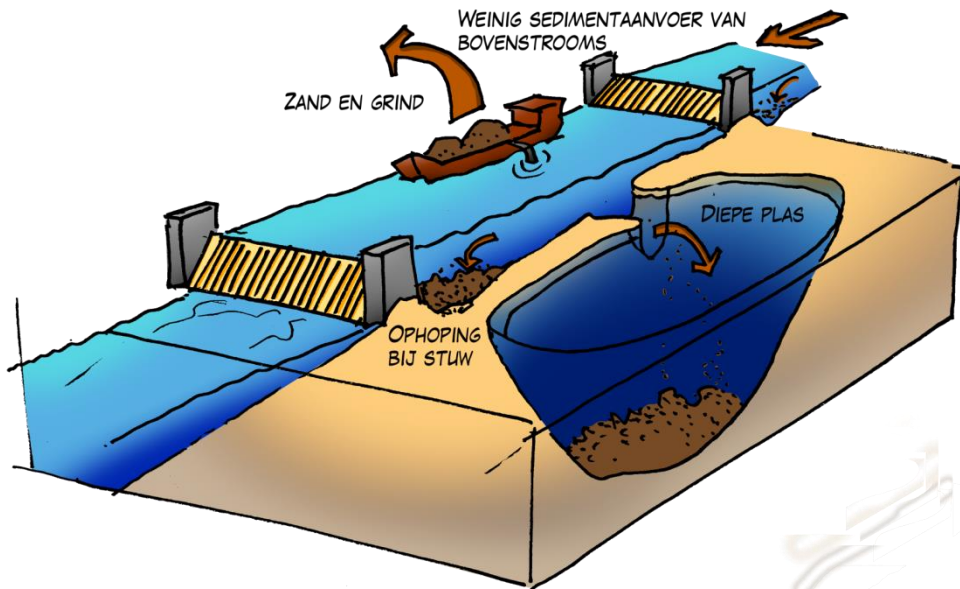


- Loss of Space
- Erosion and sediment balance
- Unnatural low flow – shortages
- Characteristic nature disappeared and water quality under pressure

## Flood plain area through the years

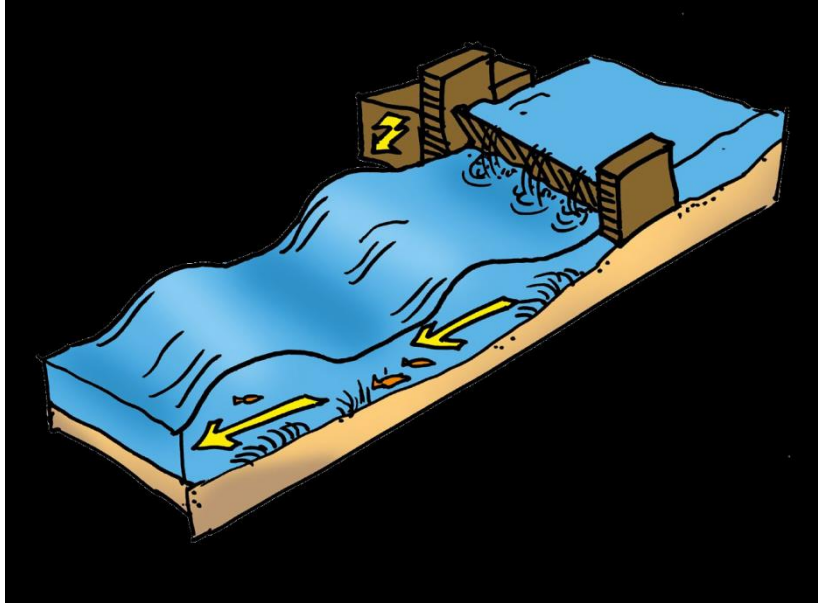


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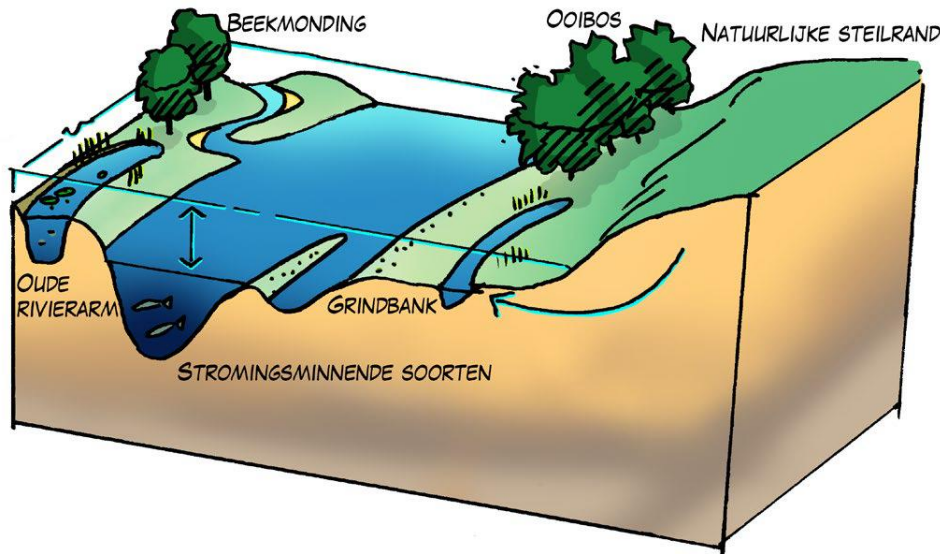
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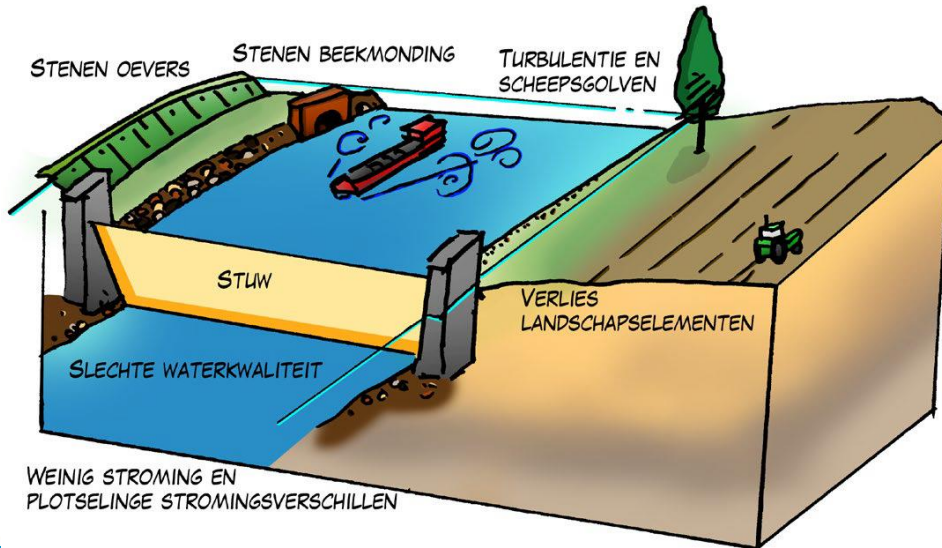
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# Out of Balance



- Loss of Space
- Erosion and sediment balance
- Unnatural low flow – shortages
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## Lessons learned/guiding principles

1. Maintain and increase flood area → safety
2. Sediment Resources Management → stop mining
3. Safeguard sufficient and clean water → buffering in droughts, weir operation
4. Combine/intertwine navigation and ecology where win-win and separate where possible
5. Create room for natural succession and cyclic rejuvenation → extra room for the river?
6. Exploit, preserve and reinforce characteristic landscape forms and values → genius of the place

## Future: Story is input for

- Public debate on the development of and direction for the Meuse
- Policy and management tasks
- New plans: Delta Programme / Integrated Management Meuse / Nature visions
- Research Programme Meuse



## Happy end?

- Stakeholders are informed and more aware
  - The story continues because the Meuse deserves it
  - With experts/stakeholders from the whole catchment?
- 
- An aerial photograph of a river delta, likely the Meuse river, showing a complex network of water channels and sandy banks. In the background, a landscape with green fields and several wind turbines is visible under a cloudy sky. The text is overlaid on the left side of the image.





Thank you for your attention!