

Wolf Mooij  
(NIOO/WUR)



Jeroen de Klein  
(WUR)



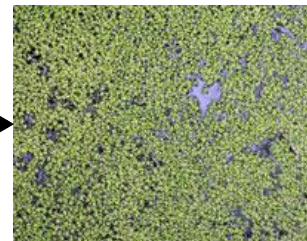
Jan Janse  
(PBL)



Jan Kuiper



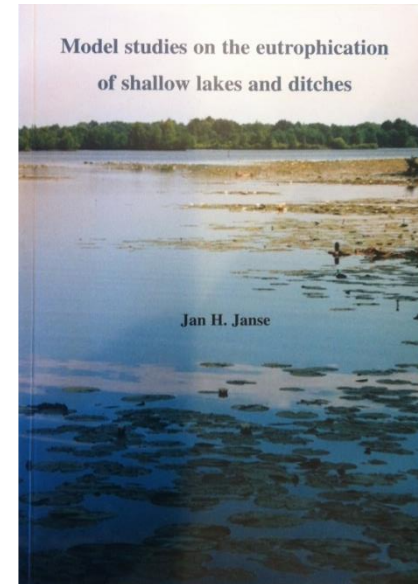
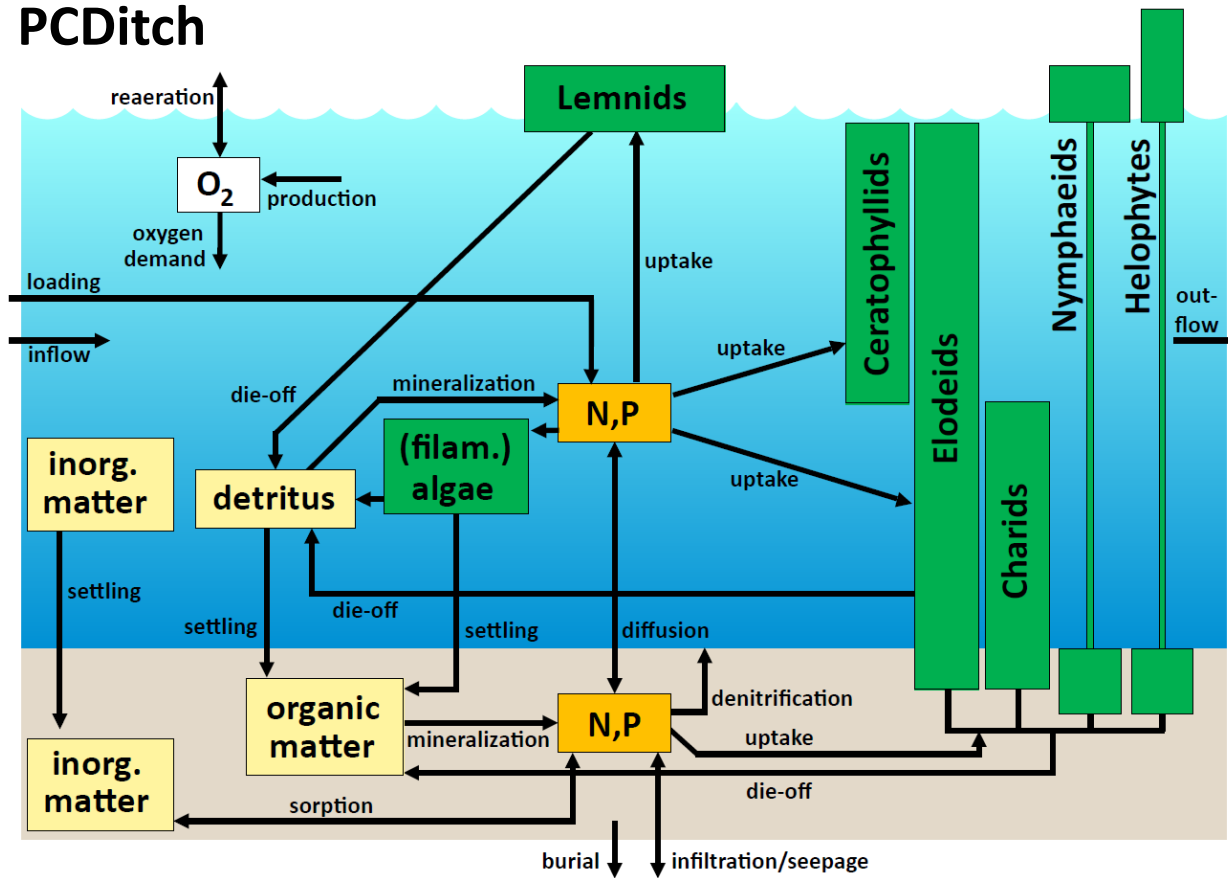
Annette Janssen



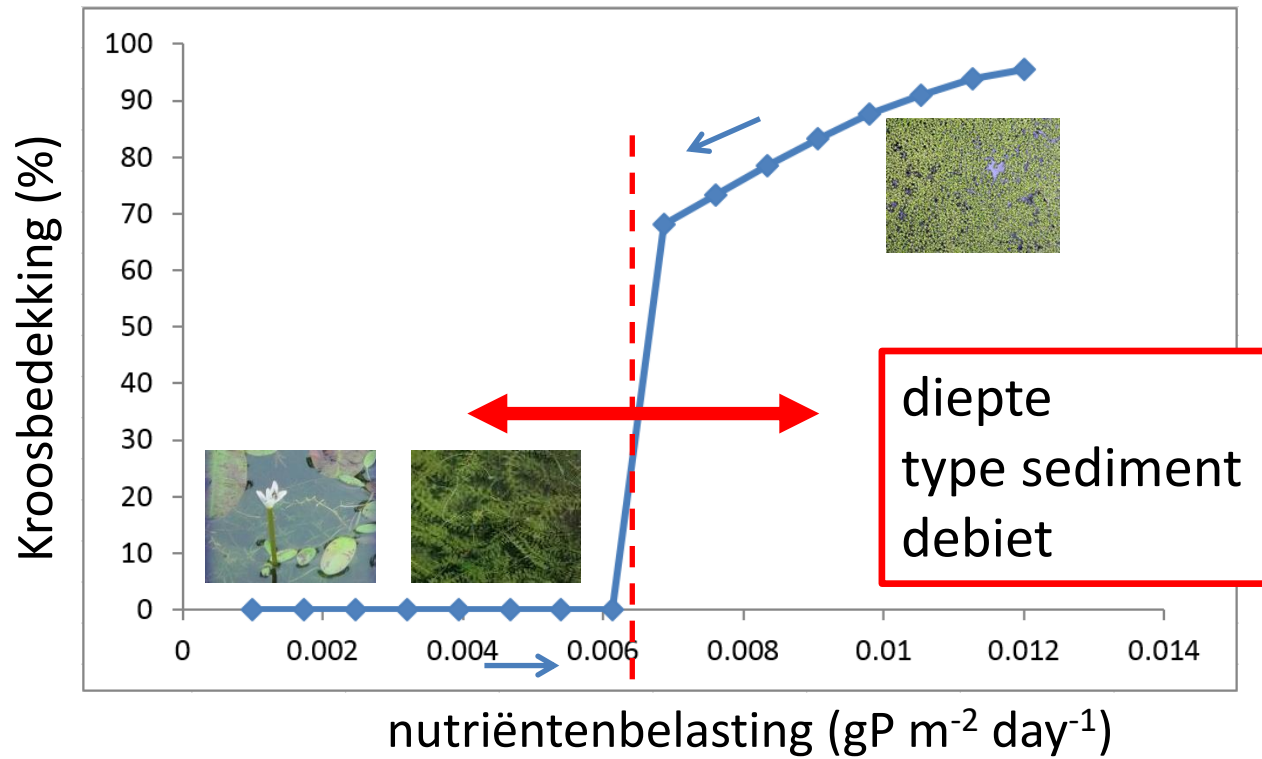
Hoe makkelijk kom je van kroos af:

- Houdt kroos zichzelf in stand / is het een alternatieve stabiele toestand?
- Kun je kroos tegengaan door de N belasting te verlagen?
- Hoe zit het ruimtelijk: hangt de kans op kroos af van de ligging van de sloot?

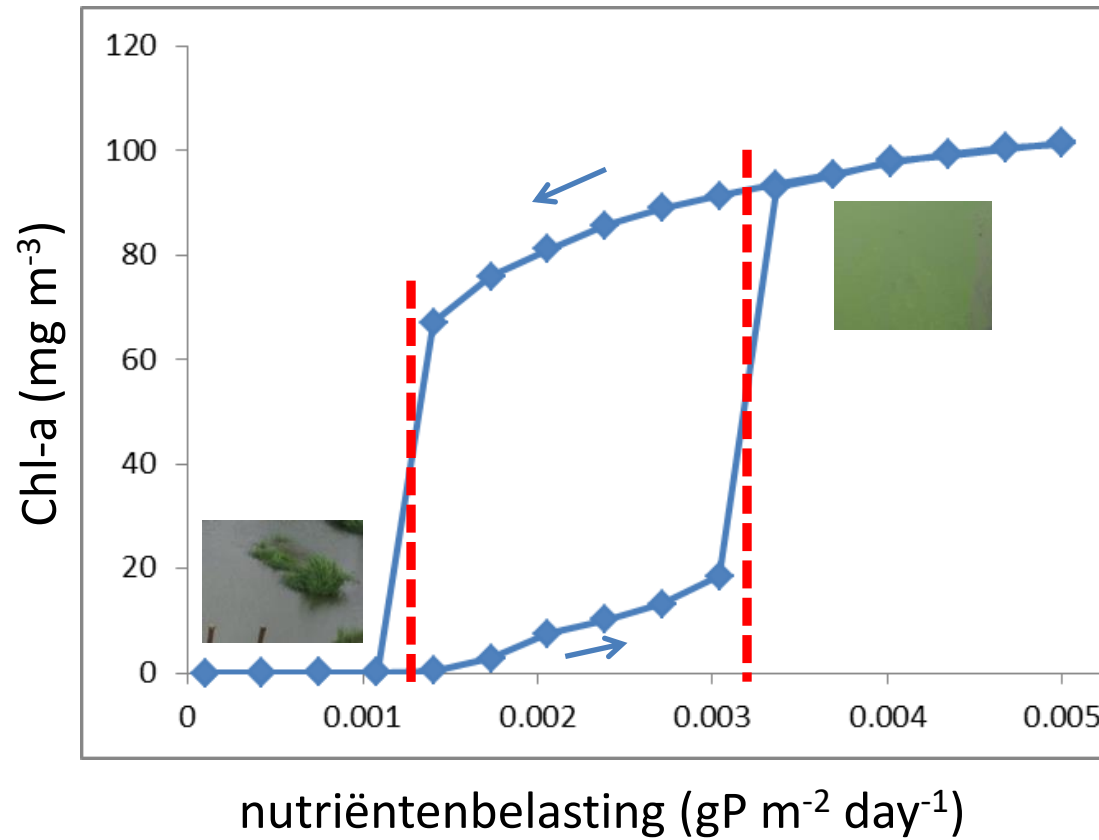
# PCDitch



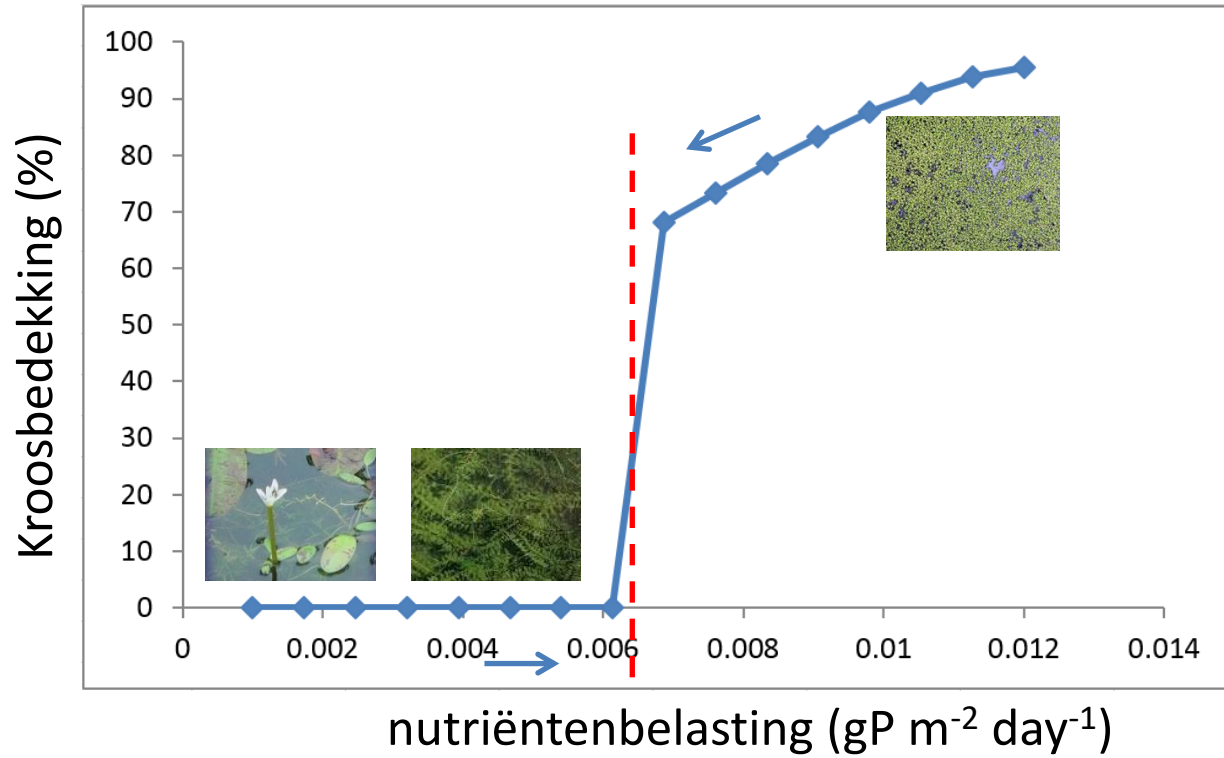
## PCDitch



## PCLake



## PCDitch



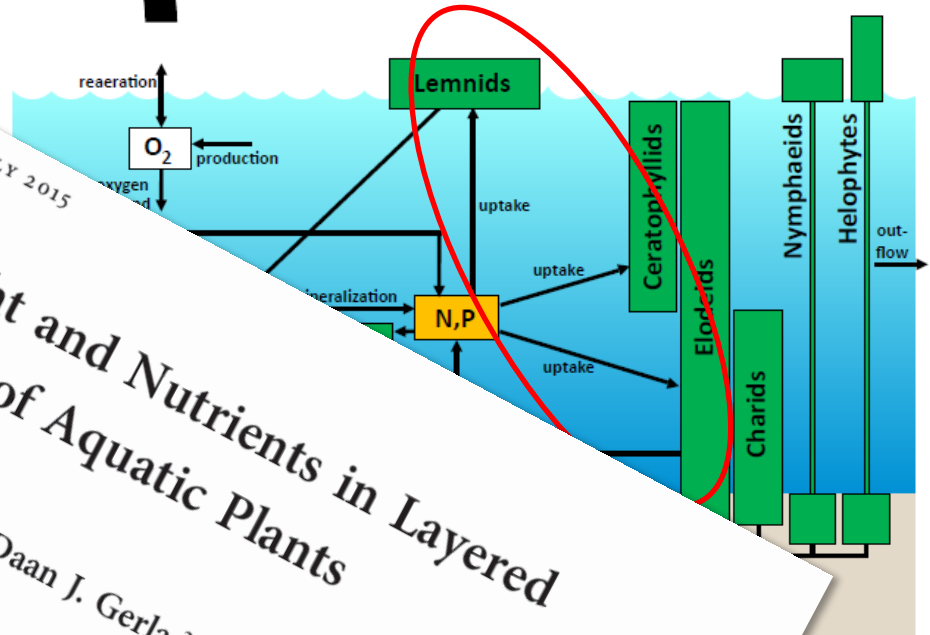


# Competition for Light and Nutrients in Layered Communities of Aquatic Plants

Luuk P. A. van Gerven,<sup>1,2,\*</sup>  
and Wolf M. Mooij<sup>1,2</sup>

Jeroen J. M. de Klein,<sup>2</sup> Daan J. Gerla,<sup>3</sup> Bob W. Kooij,<sup>4</sup> Jan J. Kuiper,<sup>1,2</sup>

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- lage nutriëntenbelasting: kroos houdt zichzelf in stand
- hoge nutriëntenbelasting: kroos kan zichzelf niet in stand houden
- middelmatige nutriëntenbelasting: kroos kan zichzelf niet in stand houden (ondergedoken plant laat genoeg nutriënten vrij om zichzelf in stand te houden)

Houdt kroos zichzelf in stand / is het een alternatieve stand? **Nee**

# Kun je kroos/eutrofiëring tegengaan door de N belasting te verlagen?

N belasting ↓  
↓  
dominantie van  
 $N_2$ -fixers (blauwalgen)  
↓  
pompen veel N via lucht  
in water  
↓  
P blijft limiterend (uiteindelijk)  
↓  
sturen op N heeft geen zin



N belasting ↓  
↓  
 $N_2$ -fixers komen in  
beperkte mate op  
↓  
pompen onvoldoende N  
via lucht in water  
↓  
N wordt limiterend  
↓  
sturen op N is zinvol

Hoe zit het in sloten?

N belasting ↓ → *Azolla* dominantie?  
Houdt *Azolla* het systeem P-gelimiteerd?

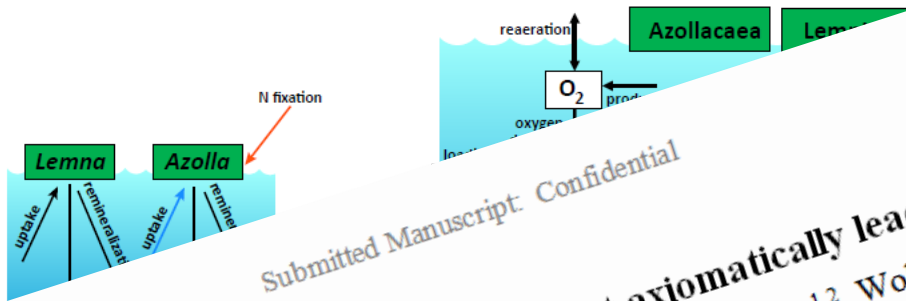


$N_2$ -fixer



kroosvaren  
(*Azolla*)





9 June 2016

Submitted Manuscript: Confidential



# **N<sub>2</sub>-fixation in aquatic ecosystems does not axiomatically lead to P limitation**

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## **Affiliations:**

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Azolla kan

- N<sub>2</sub>-fixeren
- in geval

→ sloot wordt

Leidt sturen op

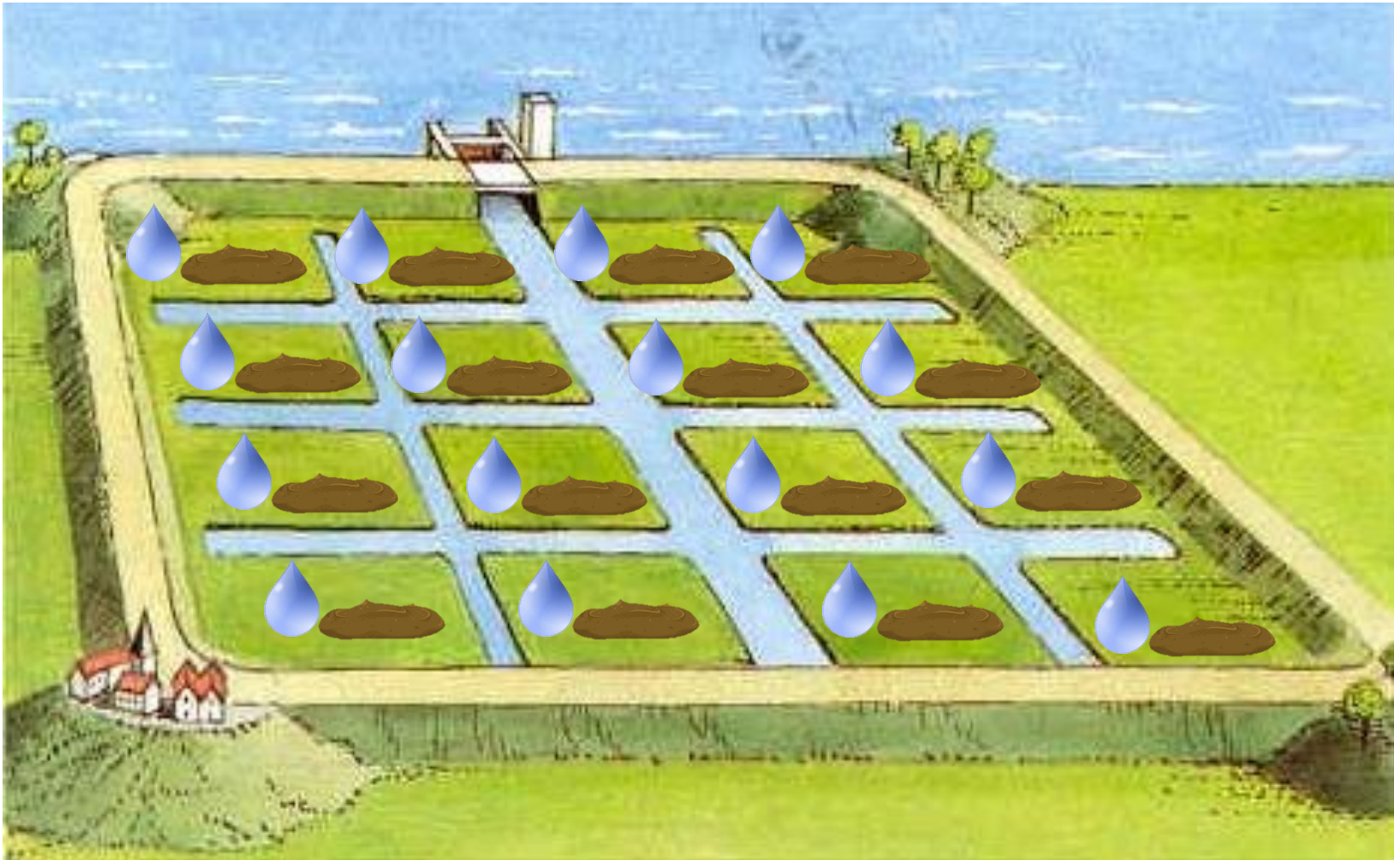
- in veel N-ge
- teveel aan P

...niet komt nauwelijks Azolla voor  
...niet voor Azolla dan gebrek aan N

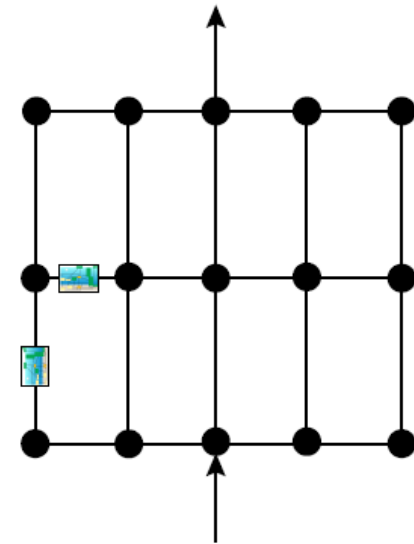
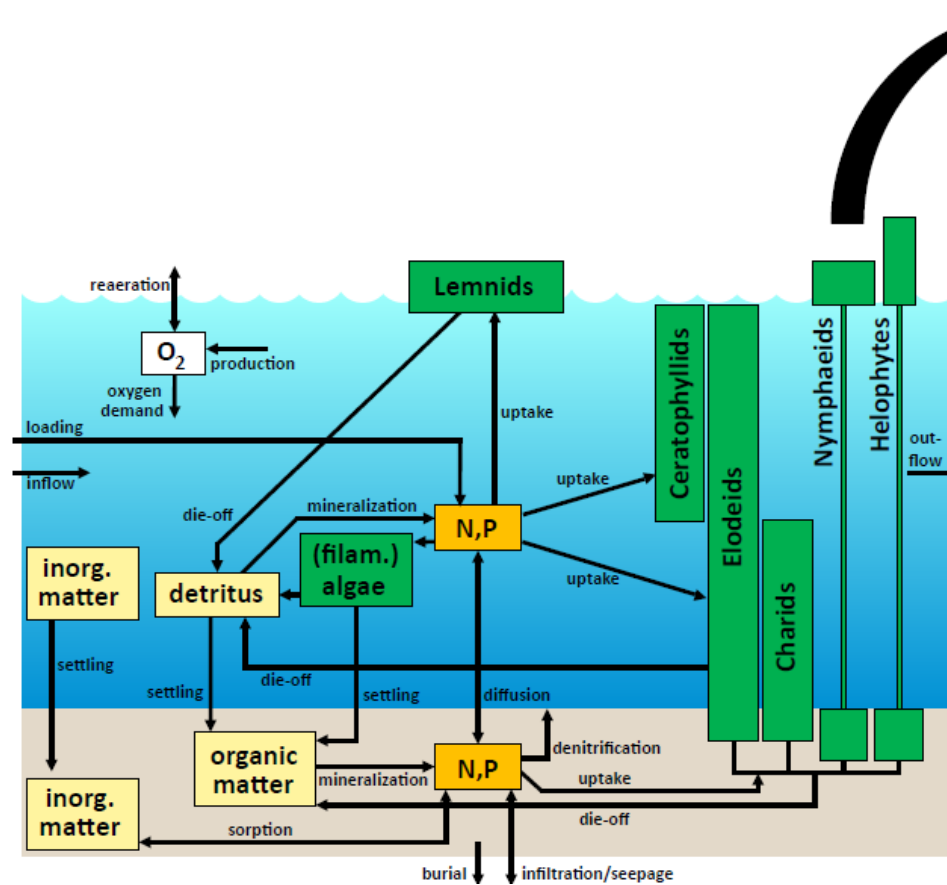
→ sturen op N om kroos tegen te gaan lijkt zinvol

Hoe zit het ruimtelijk: hangt de kans op kroos af van de ligging van de sloot?





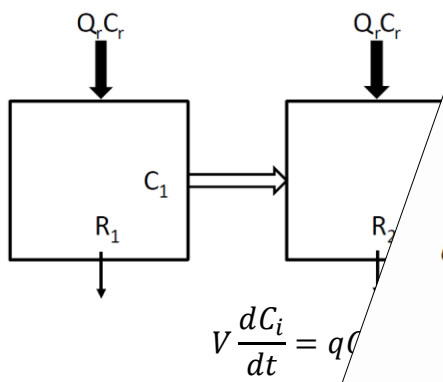
Toenemende water- en nutriëntenstroom richtingemaal



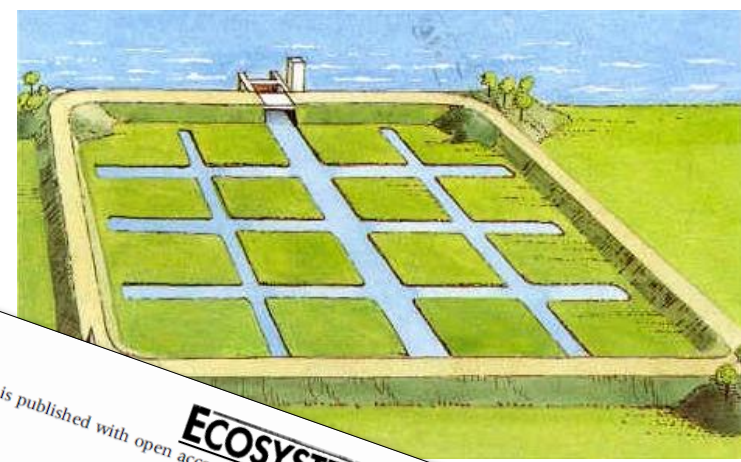
**PCDitch-1D**  
(koppeling met SOBEK)



- Elke sloot heeft deze tekans op kroos
- Simpel nutriëntenm...et waarom



- Echter, kans o
- slootken
  - belasting



# How Regime Shifts in Connected Aquatic Ecosystems Are Affected by the Typical Downstream Increase of Water Flow

Luuk P. A. van Gerven,<sup>1,2\*</sup> Jan J. Kuiper,<sup>1,2</sup> Jan H. Janse,<sup>1,3</sup> Annette B. G. Janssen,<sup>1,2</sup> Michel Jeuken,<sup>4</sup> Wolf M. Mooij,<sup>1,2</sup> and Jeroen J. M. de Klein<sup>2</sup>

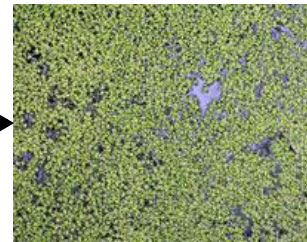
<sup>1</sup>Department of Aquatic Ecology, Netherlands Institute of Ecology (NIOO-KNAW), P.O. Box 50, 6700 AB Wageningen, The Netherlands; <sup>2</sup>Aquatic Ecology and Water Quality Management Group, Department of Environmental Sciences, Wageningen University, P.O. Box 47, 6700 AA Wageningen, The Netherlands; <sup>3</sup>PBL, Netherlands Environmental Assessment Agency, P.O. Box 303, 3720 AH Bilthoven, The Netherlands; <sup>4</sup>Deltares, P.O. Box 177, 2600 MH Delft, The Netherlands

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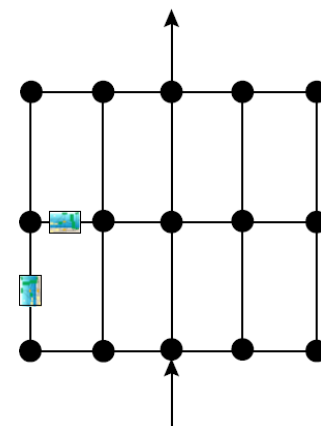
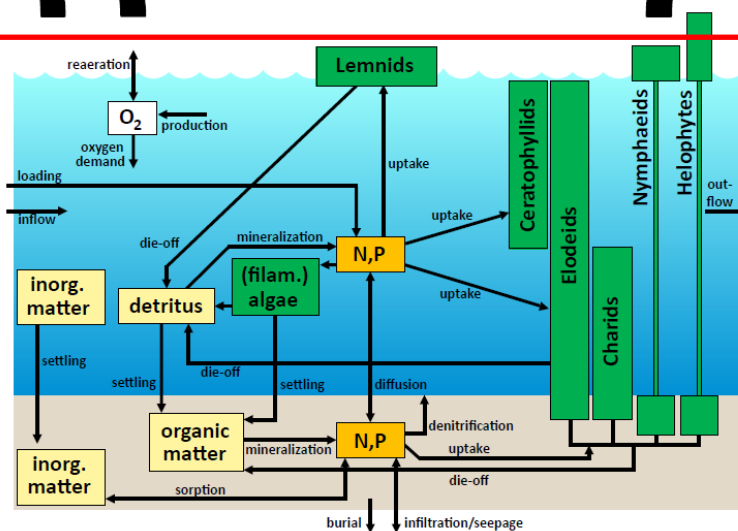
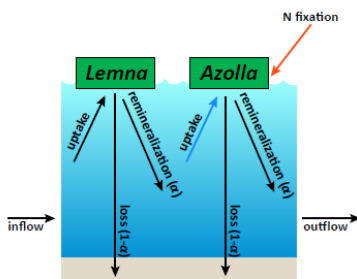
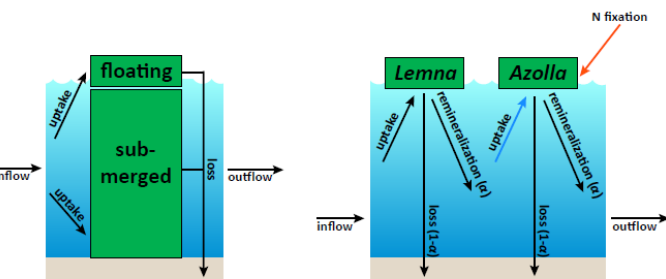
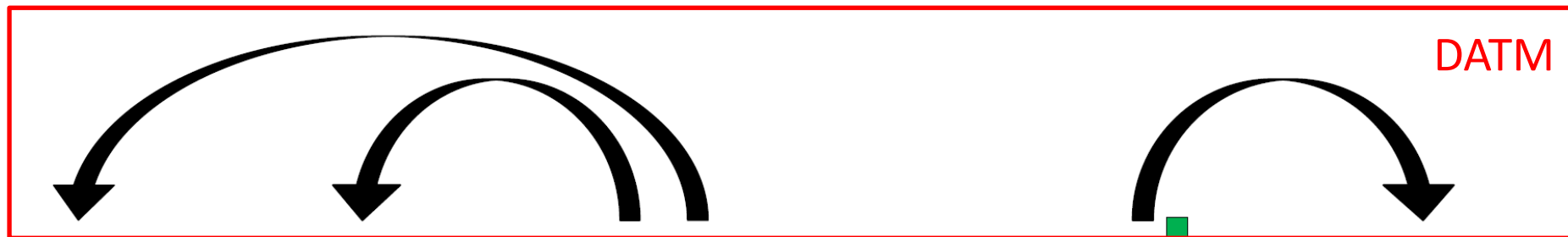
**ECOSYSTEMS**

CrossMark





- Houdt kroos zichzelf in stand / is het een alternatieve stabiele toestand? **Nee**
- Kun je kroos tegengaan door de N belasting te verlagen? **Ja**
- Hoe zit het ruimtelijk: hangt de kans op kroos af van de ligging van de sloot?  
**Nee (in de basis niet)**



model complexity

# Database Approach To Modelling



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## Advantages of concurrent use of multiple software frameworks in water quality modelling using a database approach

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Sebastiaan A. Schep<sup>3</sup>, Sven Teurlincx<sup>1</sup>, Christophe Thiange<sup>8</sup>, Dennis Trolle<sup>12</sup>,  
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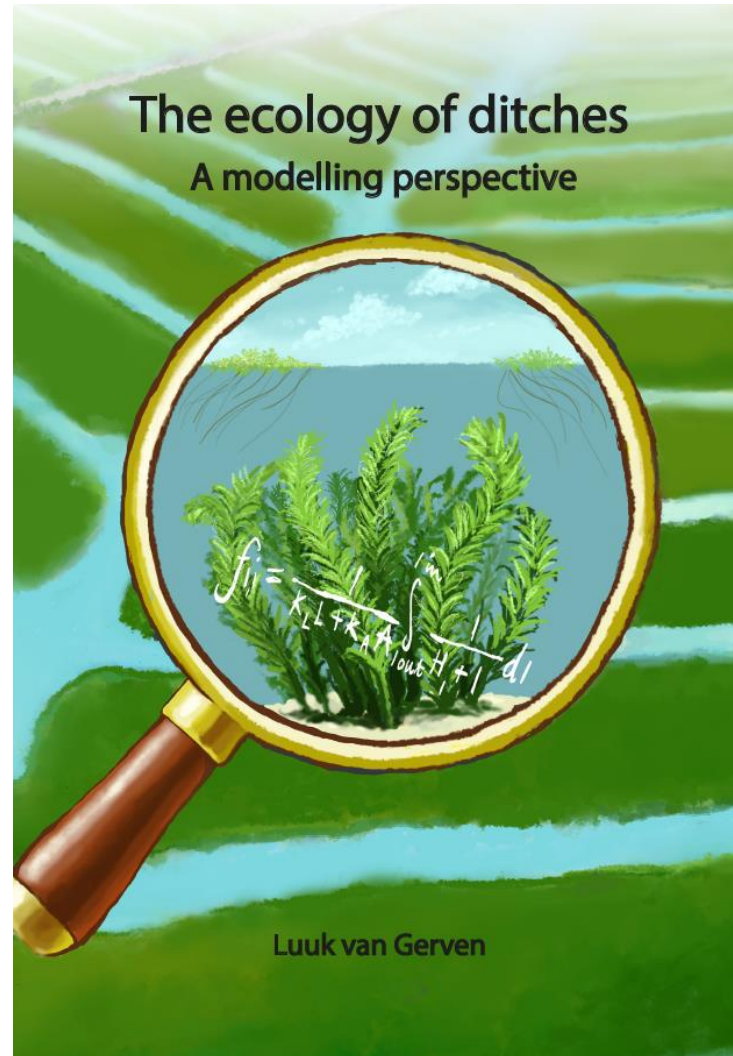
Betty Lischke<sup>a</sup>, Sven Teurlincx<sup>a, b</sup>, Egbert H. van Nes<sup>a, b</sup>,  
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ELWAQ

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