Dune formation and vegetation development under dynamic coastal defence

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WAGENINGEN UR
For quality of life

Introduction

- dynamic coastal defence (dynamic preservation)
  - natural dynamics
  - sand nourishments

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- new dune growth
  - nature conservation (Natura 2000)
  - coastal safety
  - recreation

- Where, when and how?

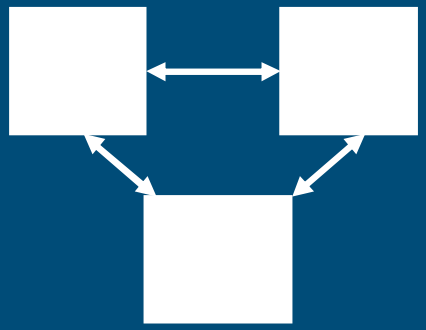
Research question

- Does dynamic coastal defence lead to an increase in the ecological value of the landscape and to a wider, safer, dune area?
- What is the effect of sand supply and climate change on:
  - young dune formation
  - associated vegetation development

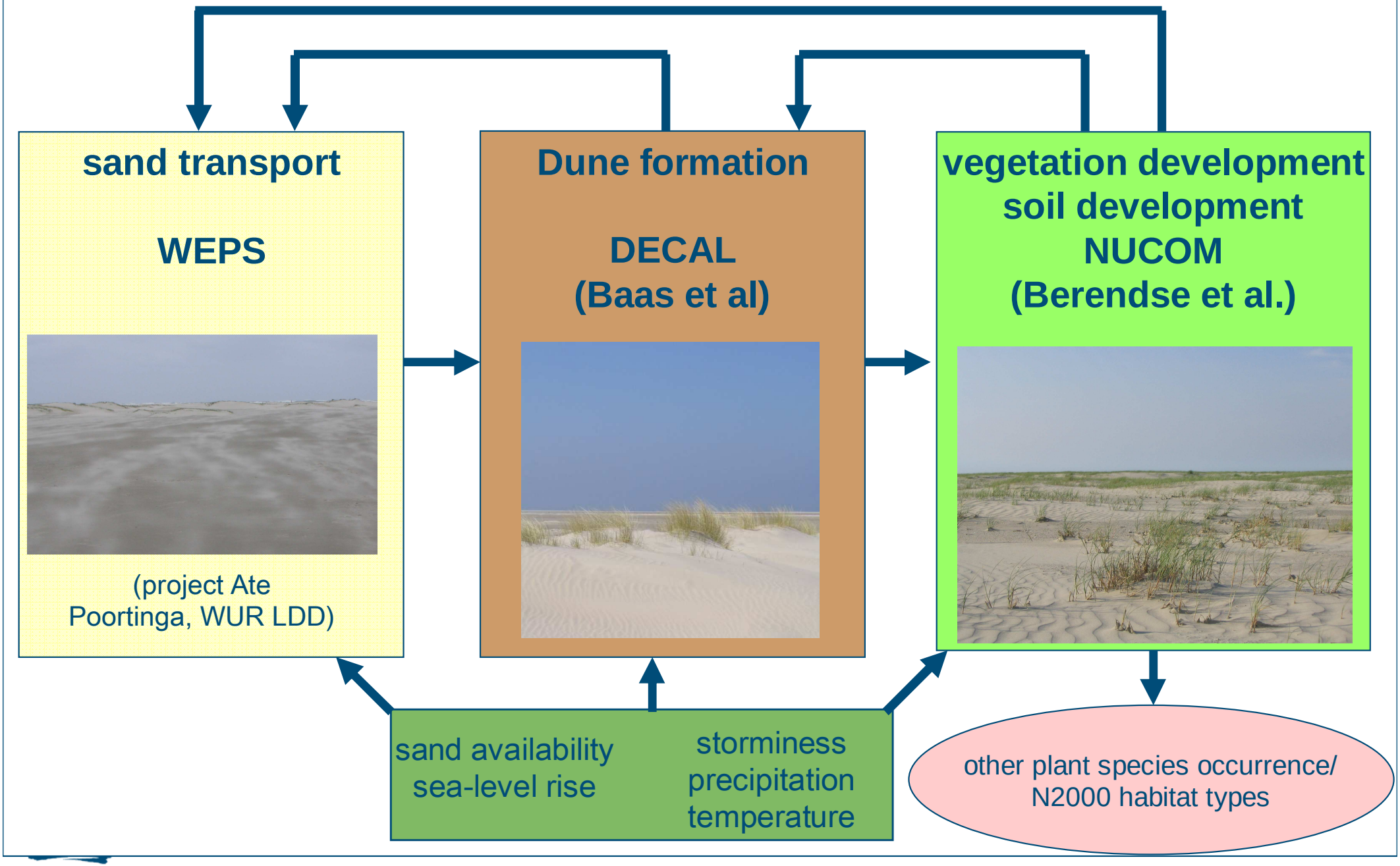
example: Schiermonnikoog

Methods

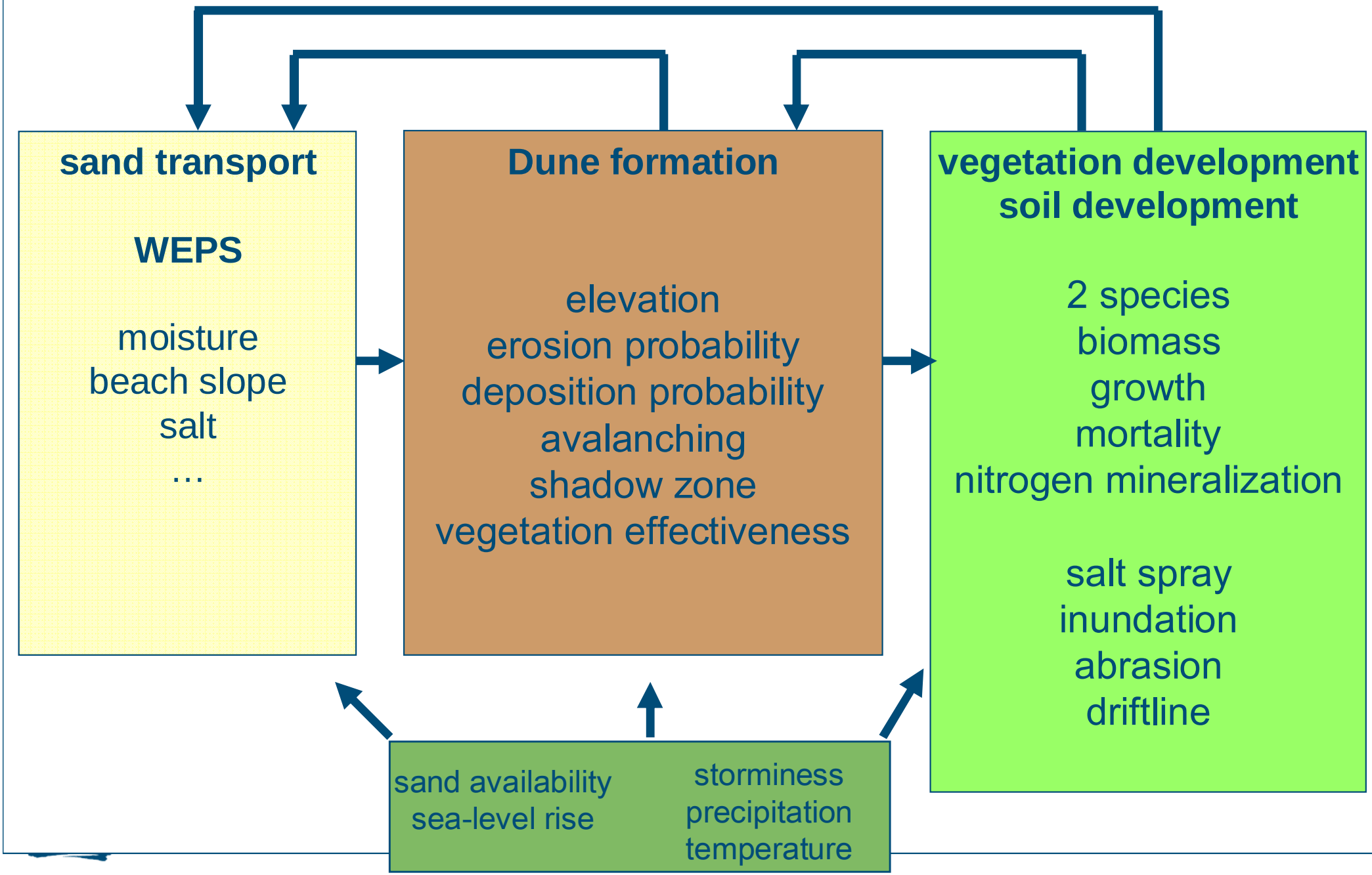
- spatial model
  - vegetation
  - dune formation
  - (sand transport)
- field
  - parameterization
  - testing
  - Wadden Sea → extrapolate



Model structure



Model processes



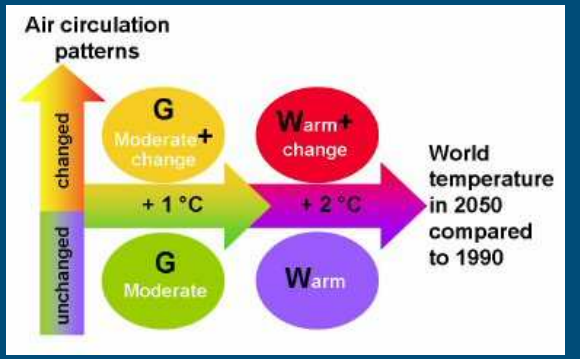
Field data

- fieldwork: parameterization
  - sand trapping by vegetation
  - response of vegetation to burial
- existing data: model testing
  - vegetation maps
  - Jarkus
  - LIDAR (AHN)
  - aerial photographs

Scenarios

- sand nourishment
  - planned and actual nourished volumes
  - Rijkswaterstaat

- climate change
  - KNMI scenarios
  - sea level rise scenarios



To do

- model building
  - adapt separate modules
  - program model
  - integrate modules
- parameterization
- model testing
- scenario simulation