robbin.bastiaansen@gmail.com

Robbin Bastiaansen

Currently

Finishing my Master
at Leiden University

Next Year

PhD-student
at Leiden University

Adaptive Semi-Strong Ecosystem Dynamics

Supervisors:

- Arjen Doelman
- Martina Chirilus-Bruckner

Desertification

Main theme:

Desertification

Main theme:

Desertification

Main theme:

Main scientific questions in this field:

- How did this happen?
- How can we prevent it?
- How can we predict it?

Desertification - Mathematics

Process is modeled with a Reaction-Diffusion equation

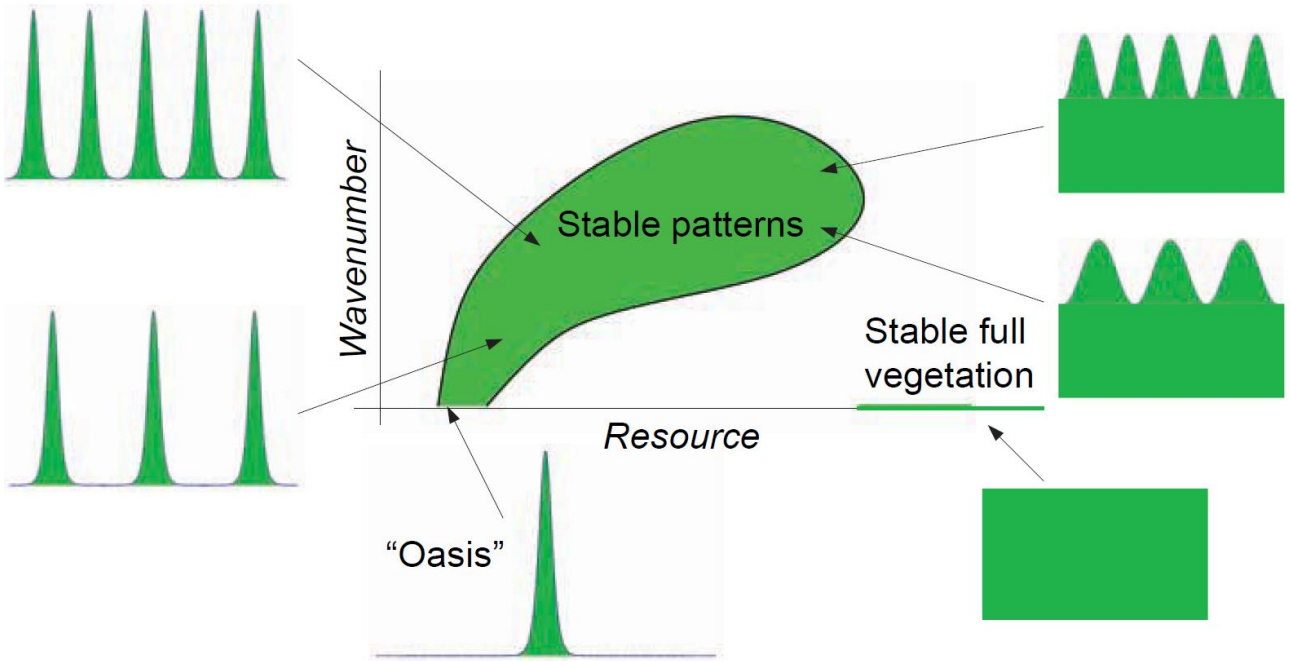
e.g. Gray-Scott model

The amount of rainfall determines the vegetation patterns

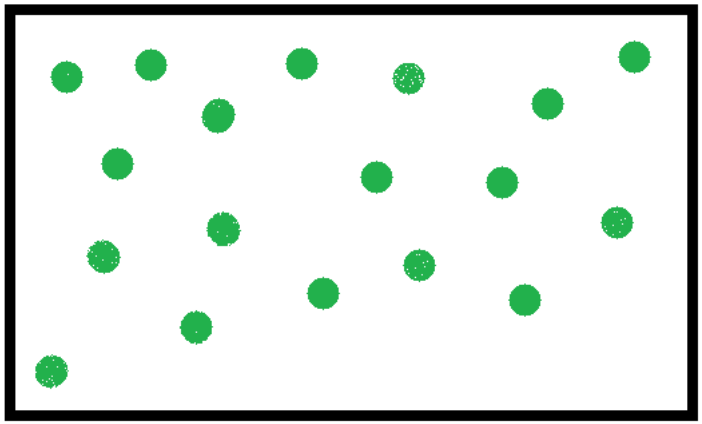
Desertification - Mathematics

Process is modeled with a Reaction-Diffusion equation
e.g. Gray-Scott model

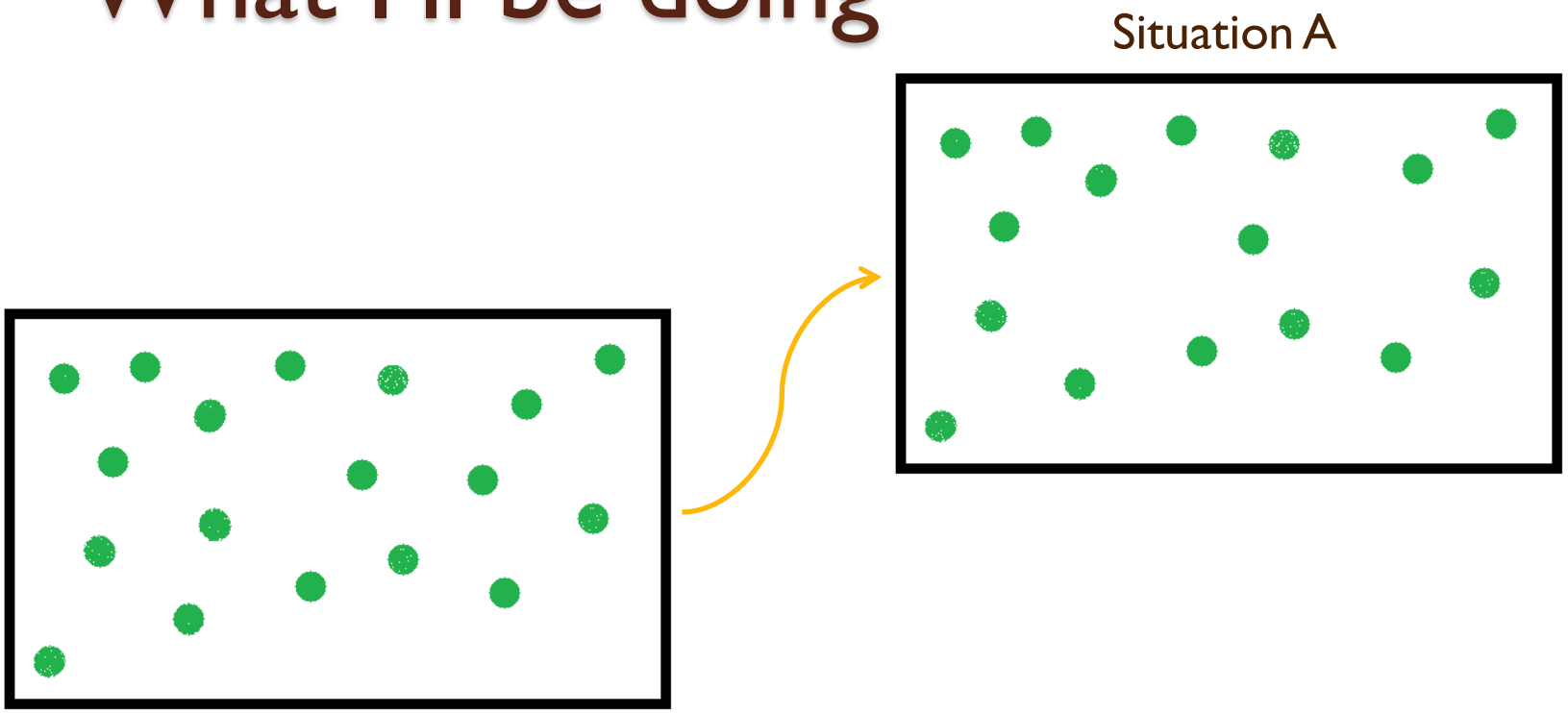
The amount of rainfall determines the vegetation patterns



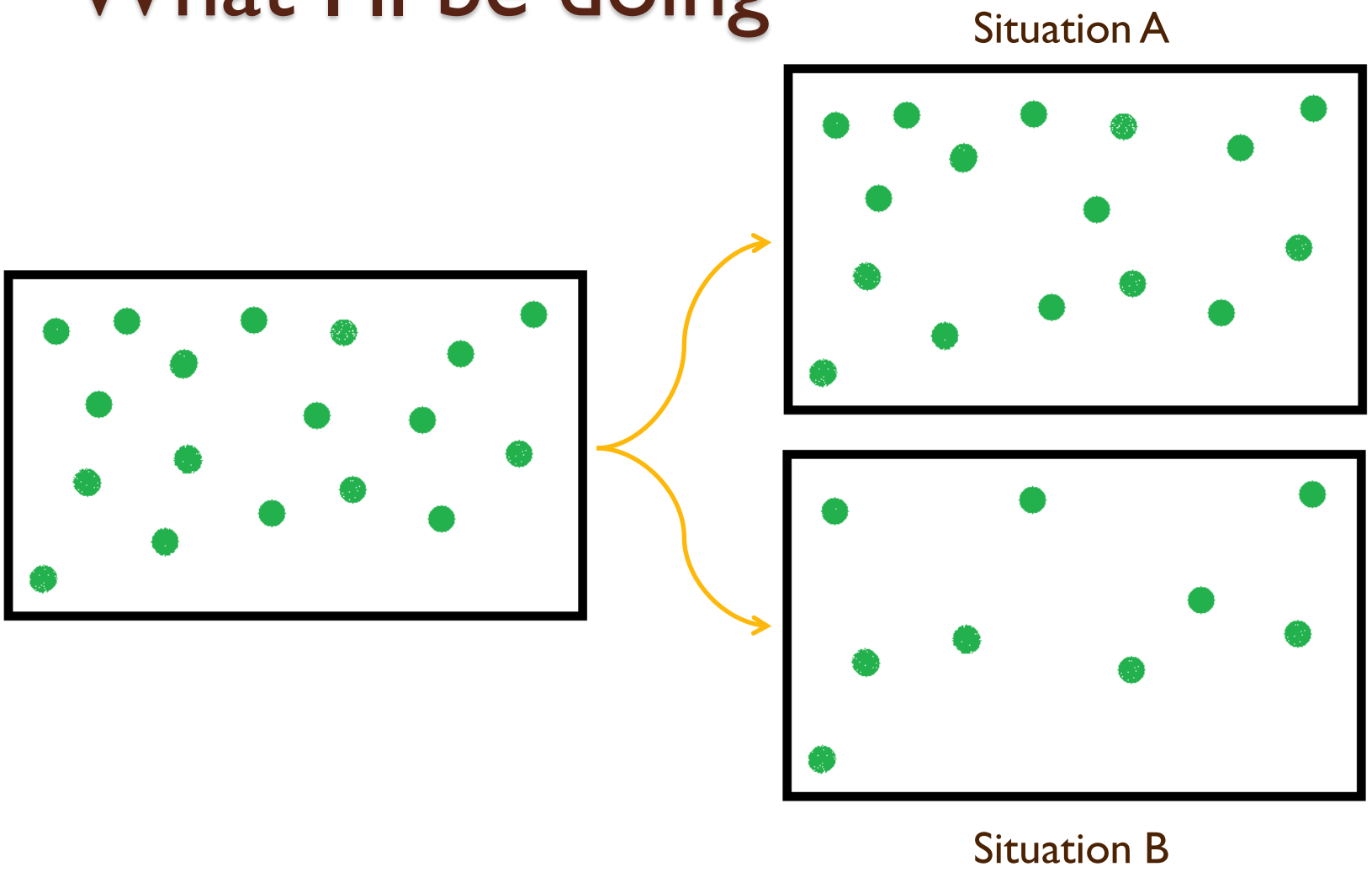
What I'll be doing



What I'll be doing



What I'll be doing



Main question:
Which situation are we dealing with?

Mathematical Approach

- Patch = pulse in reaction-diffusion equation
- Reduce PDE to an N-dimensional dynamical system for the location of all N patches

$$\dot{P_k} = I_k(P_1, \ldots, P_N, \mu(\tau)), k = 1 \ldots N$$

- Study this system
  - Especially its eigenstates

Robbin Bastiaansen

robbin.bastiaansen@gmail.com

Adaptive Semi-Strong Ecosystem Dynamics