



BIOPORE

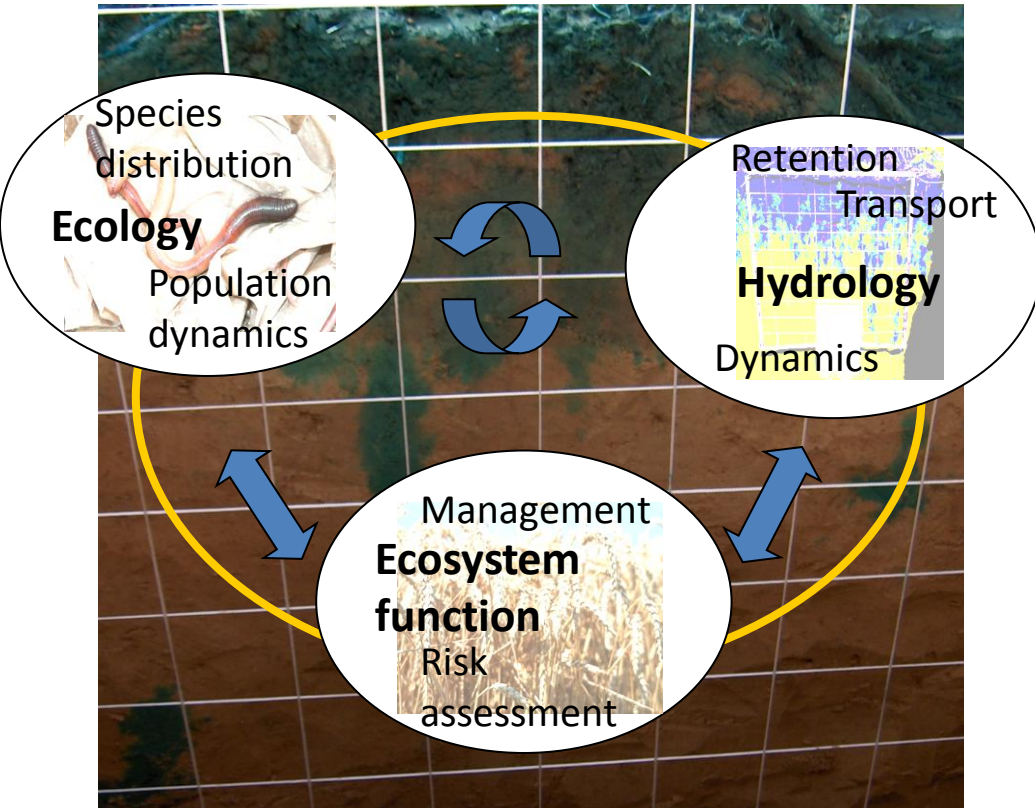


Linking earthworm species distribution to macropore flow

Loes van Schaik

Biopore project

Boris Schröder and Erwin Zehe:



BIOPORE specific tasks:

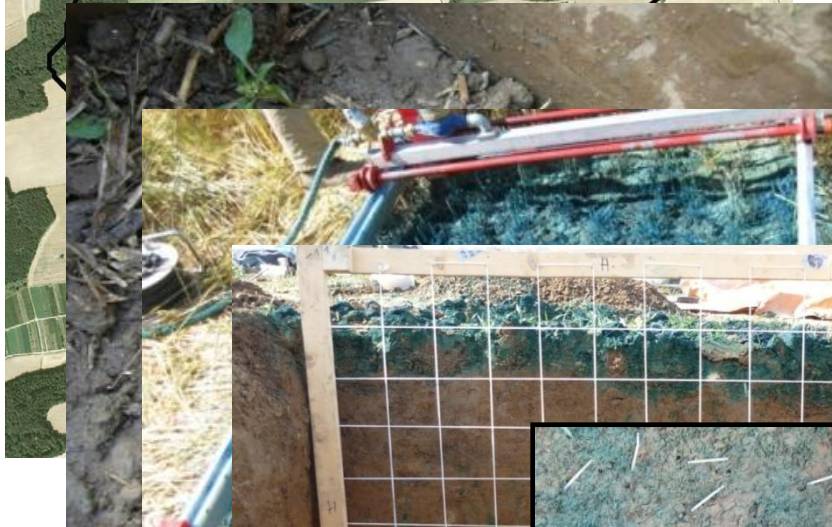
- Spatial earthworm distribution patterns => Juliane Palm
- Small scale population dynamics
- Flow and transport in structured soils => Julian Klaus
- Coupling earthworm distribution with hydrological modelling
- Spatiotemporal patterns of transport and degradation of agrochemicals considering feedbacks between earthworms and hydrology

Combined earthworm - infiltration measurements: 1



At 16 locations in the Weiherbach Catchment (approx. 3.5 km²) :

- earthworm extraction;
- dye tracer rainfall experiments with approx. 43 mm/h on 1 m²;
- profile excavation (3 vertical, 3 horizontal);
- macropore counting and labeling in size groups (<2 mm, 2-6 mm, >6 mm) and stained or non-stained;
- environmental predictors;
- soil physical measurements.



Infiltration patterns

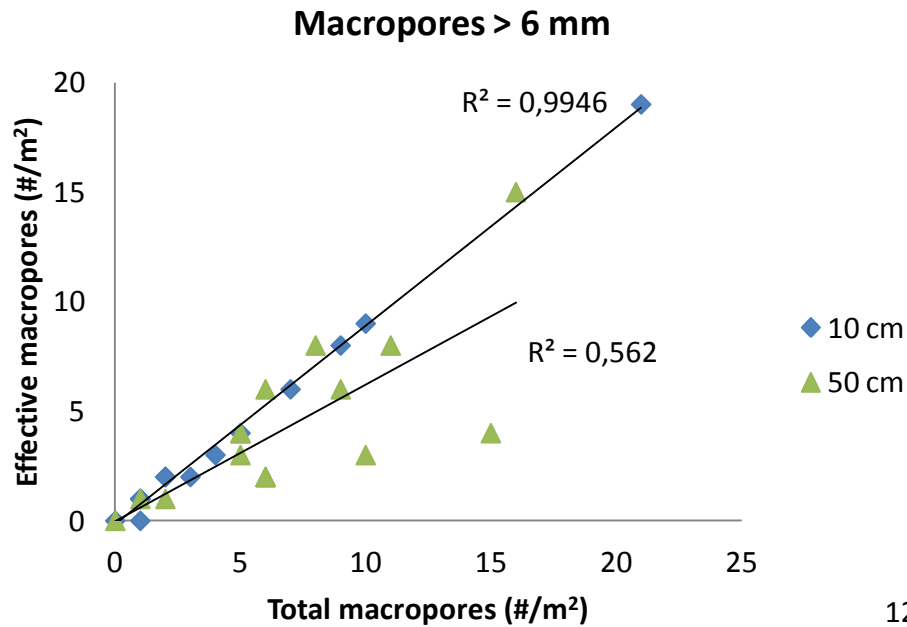
Note: total infiltration is the same for each profile!!!

Variation in:

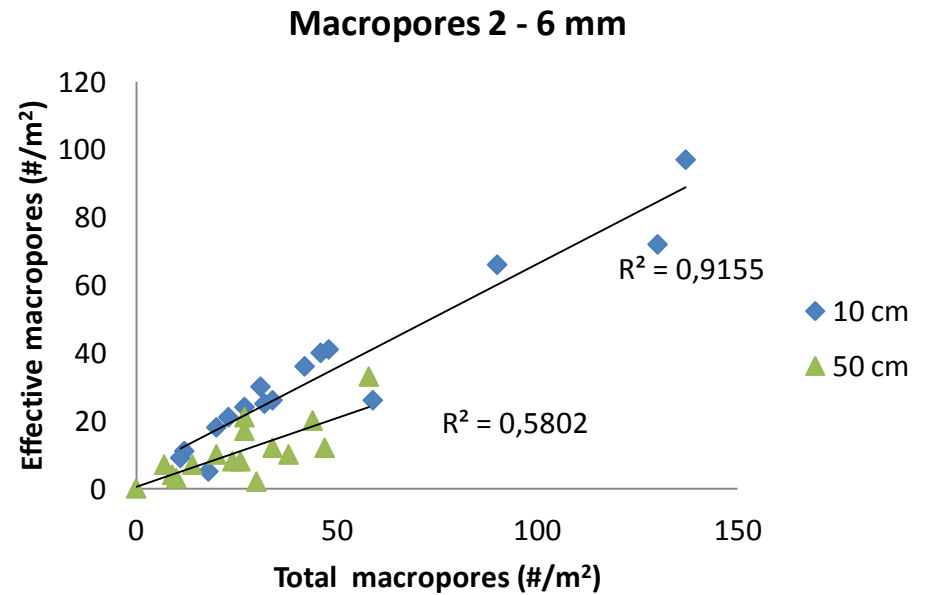
- homogeneous infiltration at soil surface
- pattern of macropores
- interaction between macropores and soil



Macropore effectivity

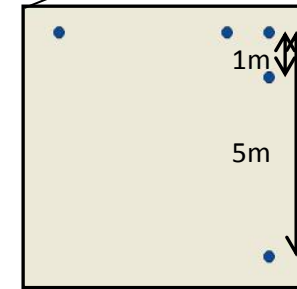
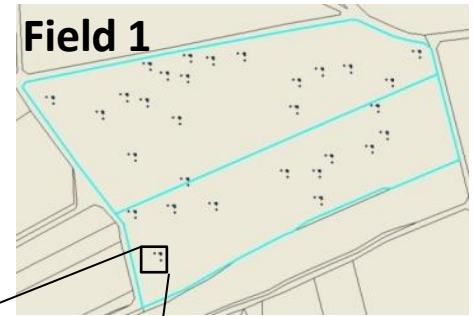
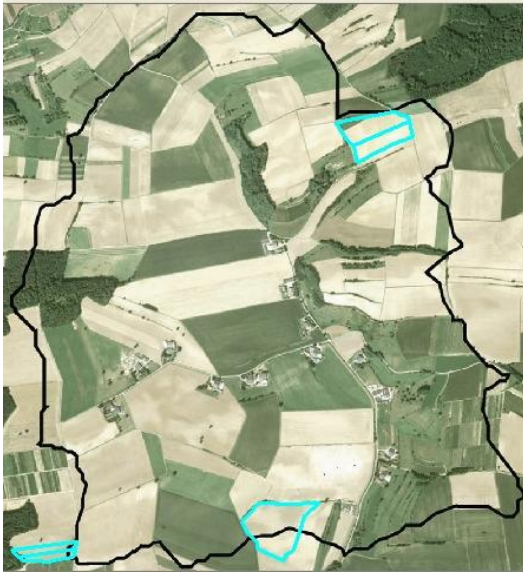


Effectivity decreases with pore size and soil depth



Combined earthworm - infiltration measurements: 2

Small scale variability October 2010



At 16 plots per field additional measurements:

- Rainfall experiments with Brilliant Blue[®]
- Excavation of three horizontal profiles (50 × 50 cm) at 10, 30 and 50 cm depth
- Macropore countings and labelling into size groups (<2 mm, 2-6 mm and >6 mm) and stained or non-stained.

Macropore parameterisation

What is needed.....

- Macropore density, spatial distribution, and connectivity...???
- Matrix characteristics
- Interaction between macropores and matrix....

use of earthworm distribution models of different ecological types
measurements on soil cores
infiltration profiles

