



Research Group  
Ecosystem Management  
University of Antwerp



# ECOSYSTEM MANAGEMENT RESEARCH GROUP

Prof. Dr. Patrick Meire

Prof. Dr. Stefan Van Damme (0.1)

Prof. Dr. Ir. Filip Meysman

Prof. Dr. Bart Van de Vijver (0.15)

Prof. Dr. Stijn Temmerman

Prof. Dr. Tom Ysebaert (0.05)

Prof. Dr. Rudy van Diggelen

~20 PhD students

~8 post-doc researchers

~6 lab and field technicians

# What are we doing?

Fundamental ecological  
research

with application to:

- nature management, conservation and restoration
- Integrated water resources management
- Ecosystem based mitigation and adaptation to global change

e.g. Tidal marsh restoration



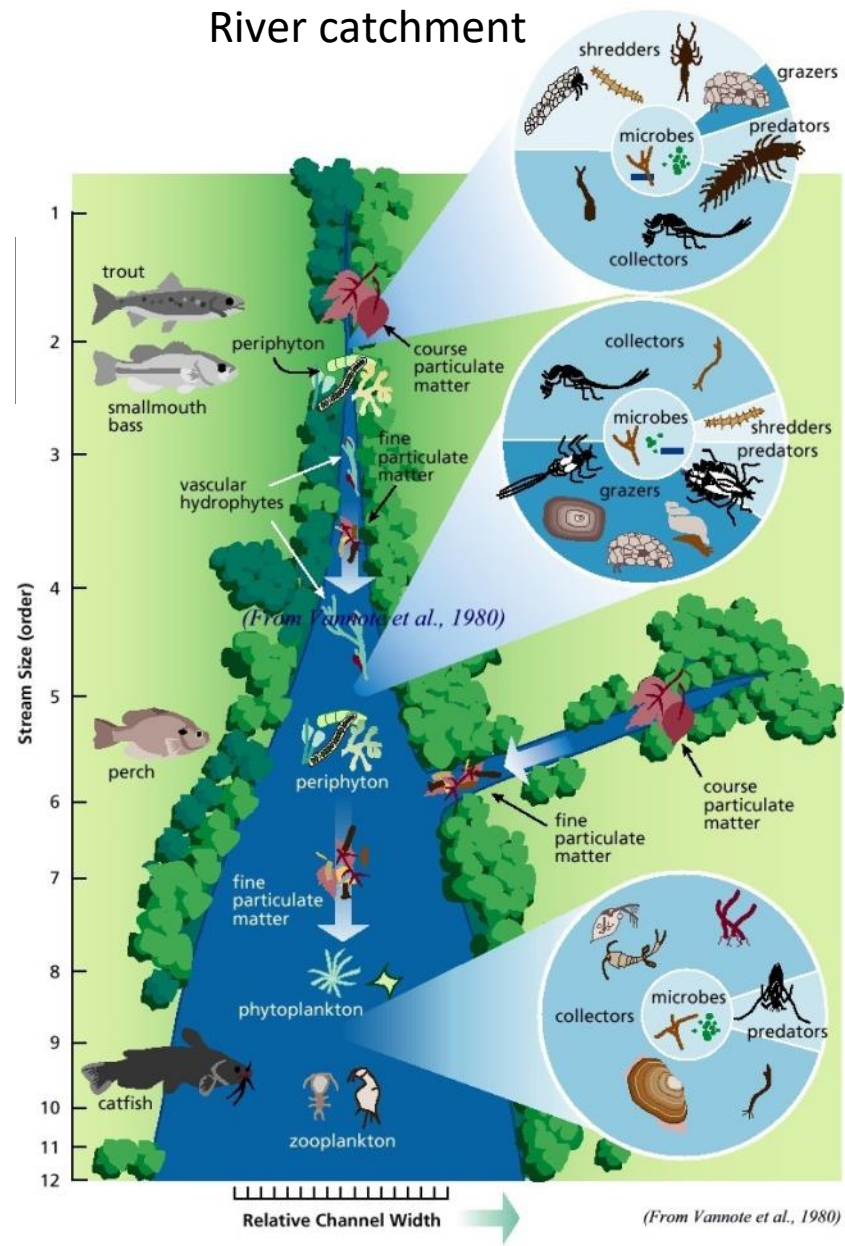
e.g. Floodplain restoration



# Which ecosystems?

Water-related ecosystems along the river continuum to the open ocean

- Wetlands
- Rivers
- Estuaries
- Coastal seas
- Ocean





# Which ecosystems?



Wetlands, prof. Van Diggelen



# Which ecosystems?



Rivers and estuaries,  
prof. Meire, prof. Temmerman

# Which ecosystems?



Coastal seas, ocean & seafloor,  
Prof. Filip Meysman



# Where do we study this?



Bierbza, Poland



Tidal marshes, Belgium









Mangroves, Ecuador



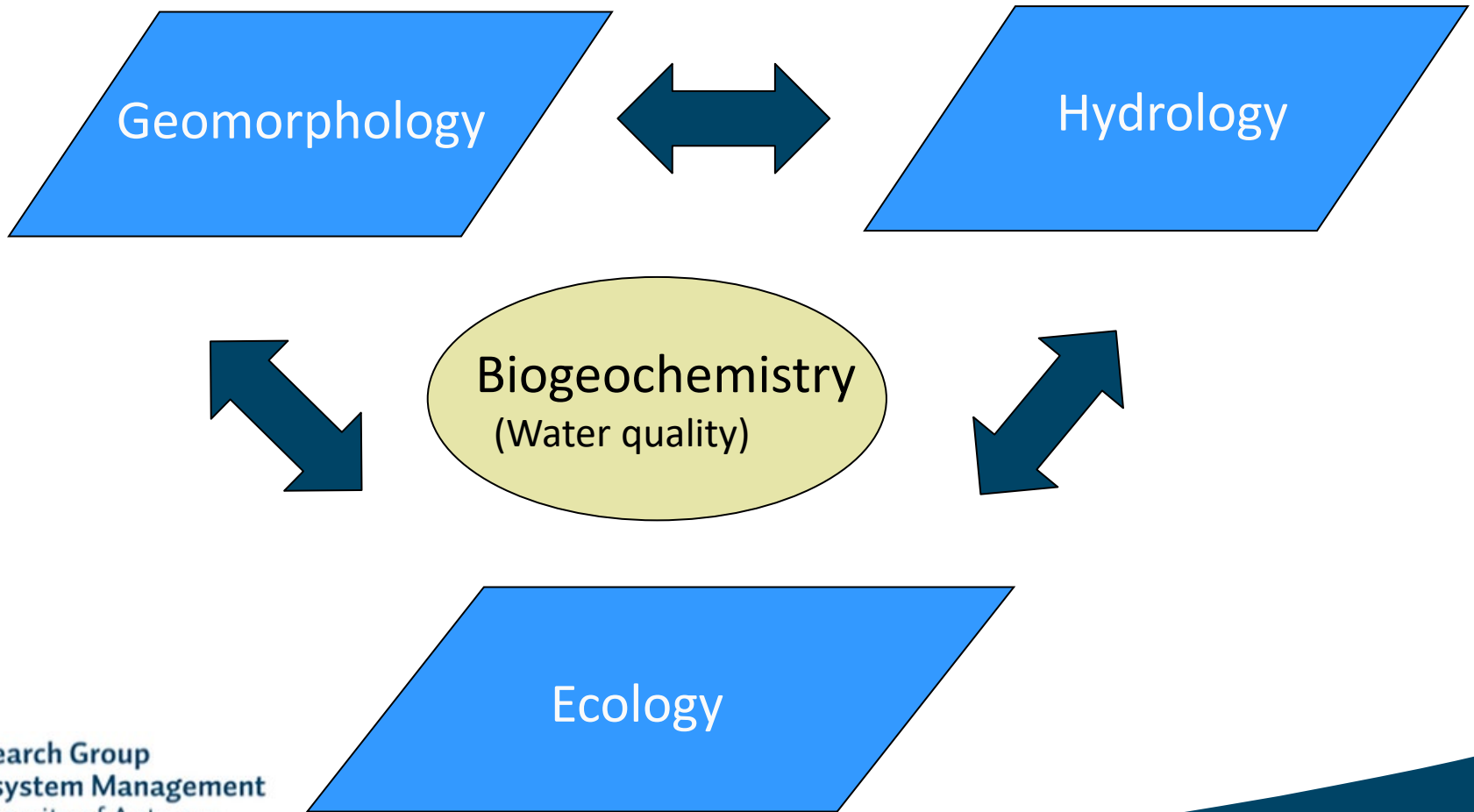
Okavango, Botswana

## University of Antwerp - ECOBE Research

-  Congress
-  Fieldwork
-  Research Stay
-  Student Field Course
-  Workshop
-  ECOBE HQ

...and many more places!

# Which scientific fields/domains?





# Domains for master student projects (MP / IP)

- Next slides = general overview of domains for MP & IP
- Each domain has contact person → please talk to contact person & co-workers for specific topics within domain
- For overview of specific topics: Please visit our website:  
<https://www.uantwerpen.be/en/rg/ecobe/education/master-projects-biology/>
- All topics are part of larger research projects
- Always supervised by a prof & assistant (post-doc, PhD student)

# Wetlands: Conservation & Restoration

Contact: [ruurd.vandiggelen@uantwerpen.be](mailto:ruurd.vandiggelen@uantwerpen.be)

- Terrestrial wetlands
- Restoring wetlands: ecosystem development in relation to hydrology and soil
- Specific fields:
  - Soil chemistry incl. nutrient dynamics
  - Soil micro-organisms
  - Plant traits
- Methods: field measurements, greenhouse experiments, chemical analyses





# Small rivers: Aquatic ecology

Contact: [jonas.schoelynck@uantwerpen.be](mailto:jonas.schoelynck@uantwerpen.be)

- (Lowland) rivers and riparian zones
- Role on water quality and quantity
  - How do water plants influence nutrient cycles?
  - How do they influence the river draining capacity?
  - How do they adapt to abiotic stress (e.g. water flow)?
- Interactions between vegetation, water flow, geomorphology at plant scale to river reach scale
- Methods: field work, lab & flume experiments, modelling



# Estuaries: biogeochemistry & restoration

Contact: [patrick.meire@uantwerpen.be](mailto:patrick.meire@uantwerpen.be)

- Estuaries are heavily impacted by pollution & habitat loss
- Water quality = complex interaction of microbial processes, plankton production and grazing, and fluxes between water and marshes
- Restoration projects are carried out in the estuary and we monitor success by following plant & animal populations
- We study the impact of major changes on system functioning:
  - \* Climate change
  - \* Changes in water management
- Methods: field work, modelling, data analysis, experiments



# Estuaries & Coasts: bio-geomorphology

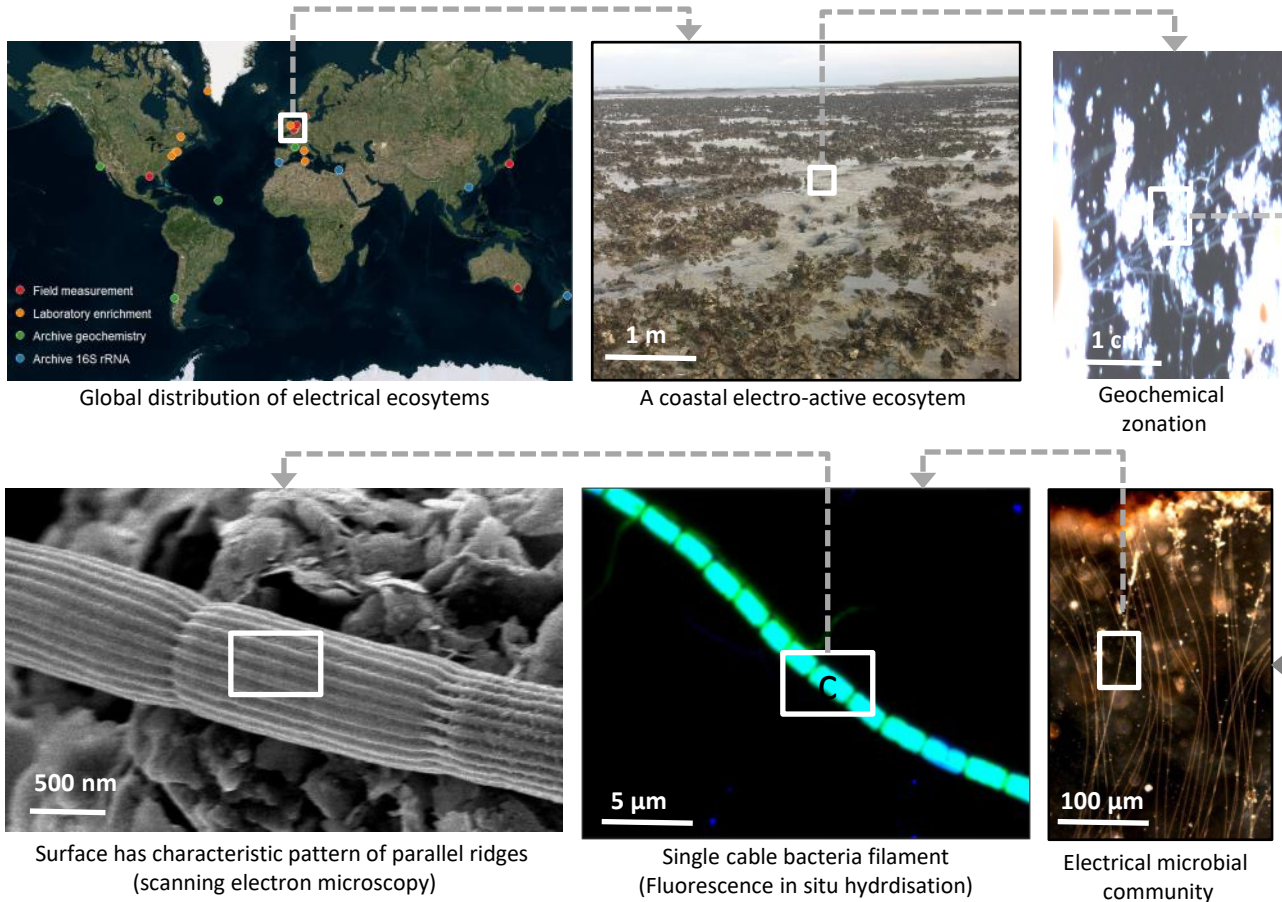
Contact: [stijn.temmerman@uantwerpen.be](mailto:stijn.temmerman@uantwerpen.be)

- Tidal marshes & Mangroves: key ecosystem services
- Interactions with **Climate Change?**
  - Their capacity to survive sea level rise?
  - Their capacity to sequester CO<sub>2</sub> into soil C?
  - Their capacity to survive & reduce waves, storm surges & erosion? → **Nature-based adaptation & mitigation**
- Interactions between vegetation, water flow, sediment & soil C at plant scale to landscape scale
- Methods: field study, GIS, or computer modelling

# Marine ecology and biogeochemistry

## Microbial electricity research: from the global scale to the nanoscale

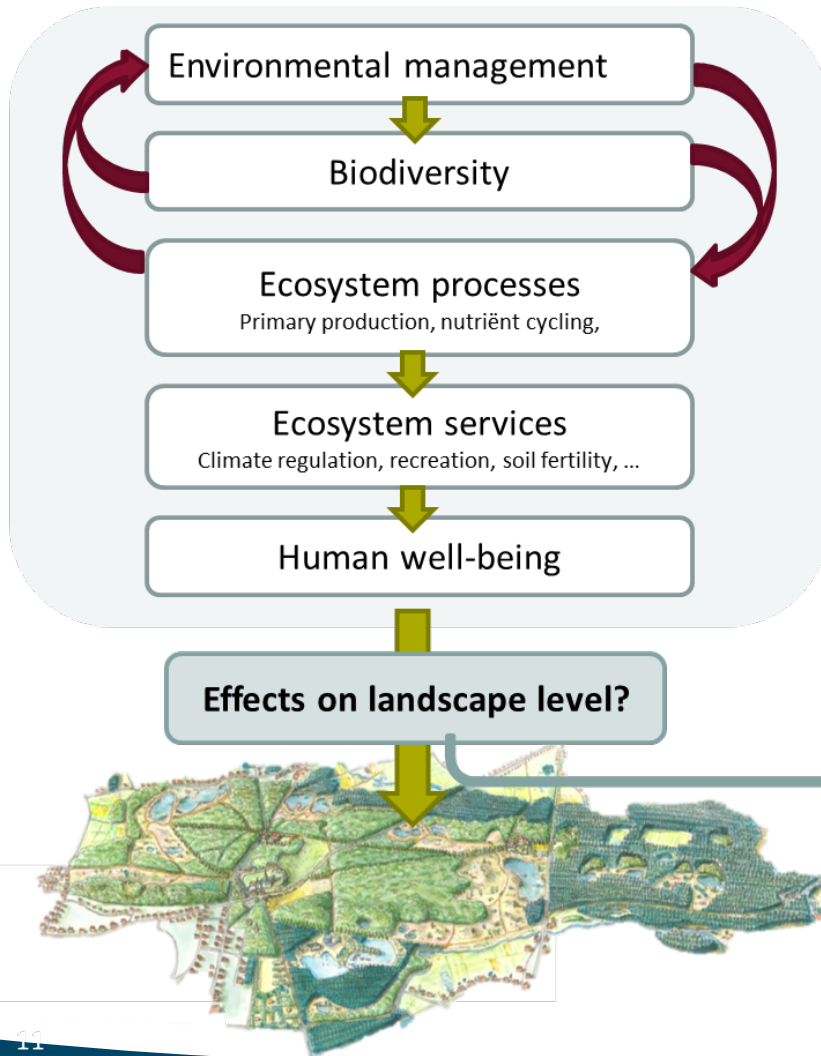
Contact:  
[filip.meysman@uantwerpen.be](mailto:filip.meysman@uantwerpen.be)





# Ecosystem Services

Contact: [jan.staes@uantwerpen.be](mailto:jan.staes@uantwerpen.be)



## Research questions

- How to measure the different ecosystem services?
- What is the effect of management on ecosystem service delivery?
- How to integrate the concept in land-use planning and policy?

→ Provide “proof of concept”!

Fieldwork, monitoring, modeling in different case studies in Flanders.

# Diatoms: from Antarctica to sea turtles

Contact: [bart.vandevijver@plantentuinmeise.be](mailto:bart.vandevijver@plantentuinmeise.be)

- Diatoms are one of the most diverse algal groups worldwide
- Antarctic freshwater and terrestrial habitats harbor a very diverse diatom flora characterized by a lot of endemic (often non-described) species
- Very important constituent of epizoic communities on marine vertebrates such as sea turtles and manatees
- We study the diversity, ecology and biogeography of
  - \* epizoic diatoms on marine vertebrates
  - \* non-marine diatoms in the Antarctic realm
- Methods: microscopy (LM & SEM), multivariate statistics



Ecobe

Ready for some amazing science?

