Cland

Research Line 2.2 Optimizing food production systems under climate and environmental pressure

M. Tichit - INRA & J. Tournebize - IRSTEA (coord.)

The question

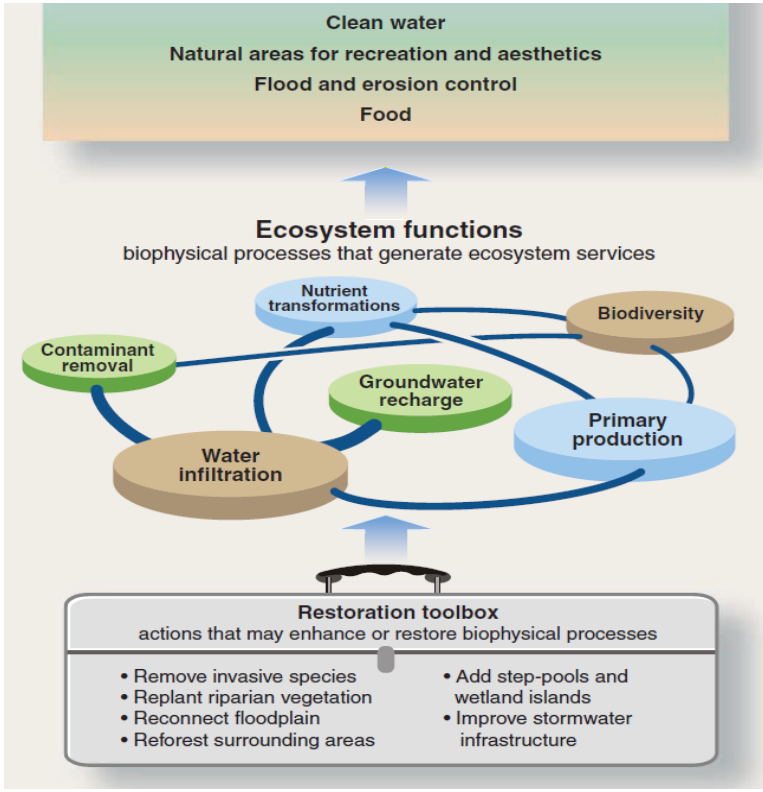
- how **current trade-offs** btw food production (crop/animal), ecosystem services and environmental impacts **will be modified by climate change**?

PhD projects (1/3)
Corentin Pinsard

- *A modelling framework based on viable control theory for assessing resilience properties across Europe*
  - Quantify the potential of resilience in different areas of Europe and analyse its relationship with ecosystem service multifunctionality and agricultural productivity
  - Develop a viable control model to reveal land use allocations which enhance the resilience of farming systems
  - Explore, with scenarios, different land use alternatives and assess their consequences on resilience / efficiency trade-off
  - Lead M Tichit / F Accatino and S. Martin (IRSTEA) collab with Raja Chakir

PhD project (2/3)

- *Development of a land use optimization model for water quality, food production and biodiversity*
  - Define interactions btw ecosystem services
  - Contribution of pressures (land use, climate change) on ecosystem services → integration / conceptualization
  - Scenari on future changes according to societal objectives in terms of ES and climate change
  - Lead J Tournebize (IRSTEA) / P Martin (AgroParisTech)



Palmer 2018

PhD projects (3/3)

- *The role of ruminants in climate-smart and circular food production*
  - Quantify food / ecosystem services and negative impacts delivered by ruminant systems across EU and their **drivers**
  - Build a dynamic model to explore which systems can fulfil a desirable mix of ES under climate change
  - Lead M Tichit with J Chang (to be discussed)

Postdoc project (2y)

- *Multi criteria optimization for complex trade-offs analysis between food production, ecosystem services and biodiversity under climate change*

  - Focus = global and European scales
  - Explore what-if and target-seeking scenarios, taking into account different possible climate change scenarios
  - Collab (through P Leadley) with IPBES expert group on scenarios and models)
  - The position is now open
  - Lead F. Accatino/ M Tichit collab with C1 with P. Leadley, B. Gabrielle and Raia Massad

Mini workshops

- Scenarios (26 oct 2018) (annoucement coming)
- Viability theory (2019/2020) with ISC / LISC / EcoPub (inviting Georges Zaccour HEC Montreal)