



Research Institute of Organic Agriculture (FiBL)
www.fibl.org



It's good to have you here.

We're starting soon.

Further Information

You can also browse FiBL publications and further information on the topic in the thematic meeting area.



Quantitative modelling: Key aspects of models

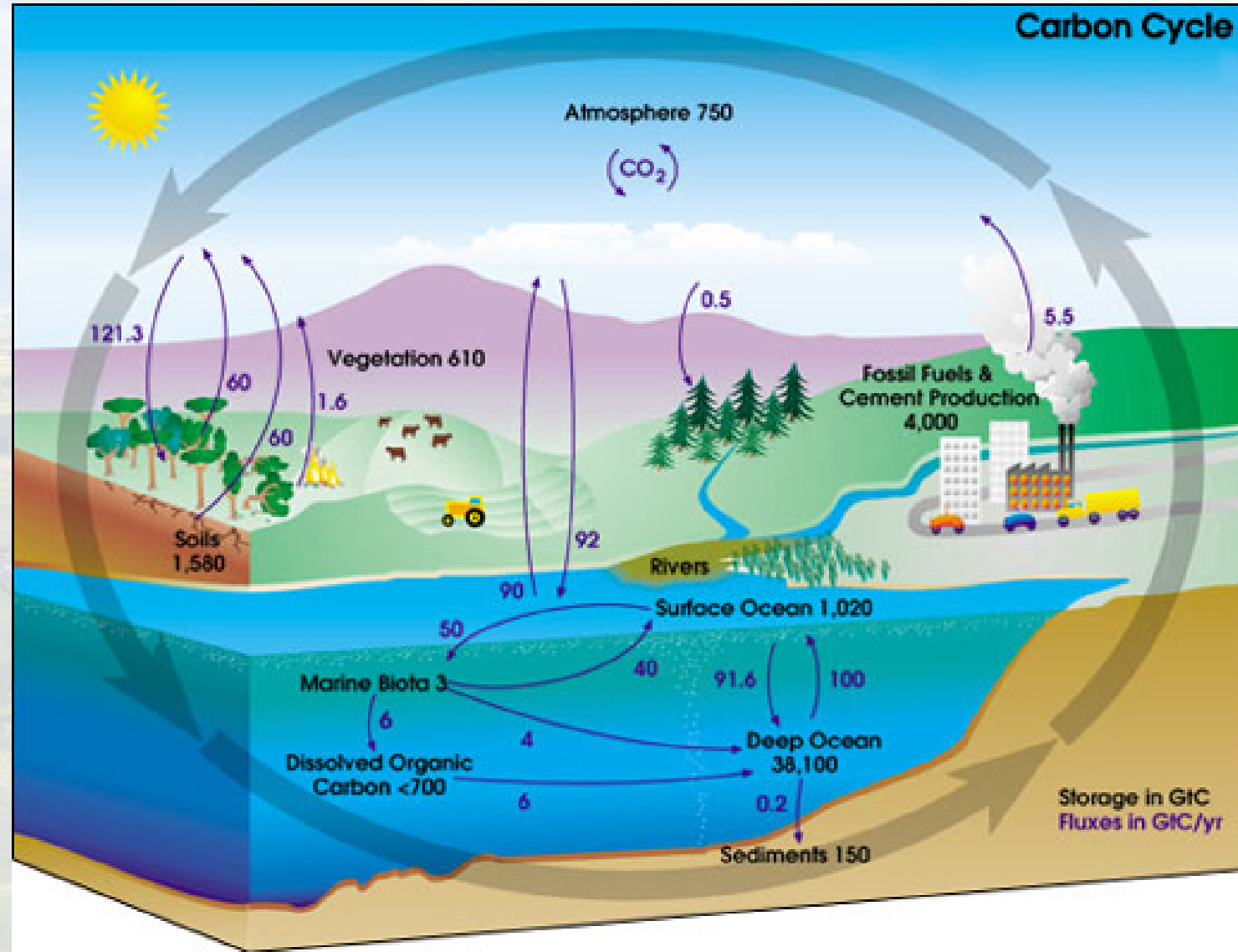
What can models deliver? Where are their limits?

Anita Frehner, Michael Thompson, Simon Moakes, Mareike Weiner, Anja Heidenreich, Adrian Mueller, Sibylle Stöckli, Eva Winter, Christian Grovermann, Catherine Pfeifer, Christian Schader

How will our future diets contribute to global warming and associated impacts?

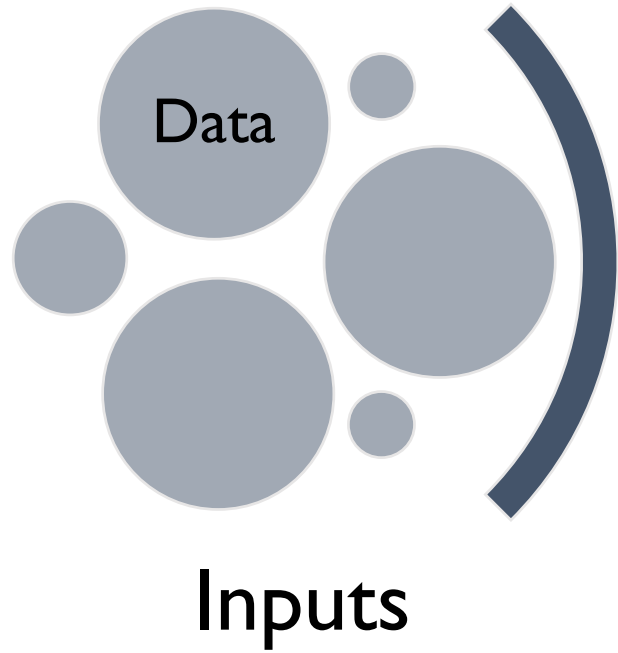






Source: NASA Earth Observatory

Key aspects of models





Climate-friendly agriculture

Topical inputs



Interactive part



Virtual whiteboard

<https://tinyurl.com/bajymu49>

Geographical scope

Thematic scope





Carbon Footprinting



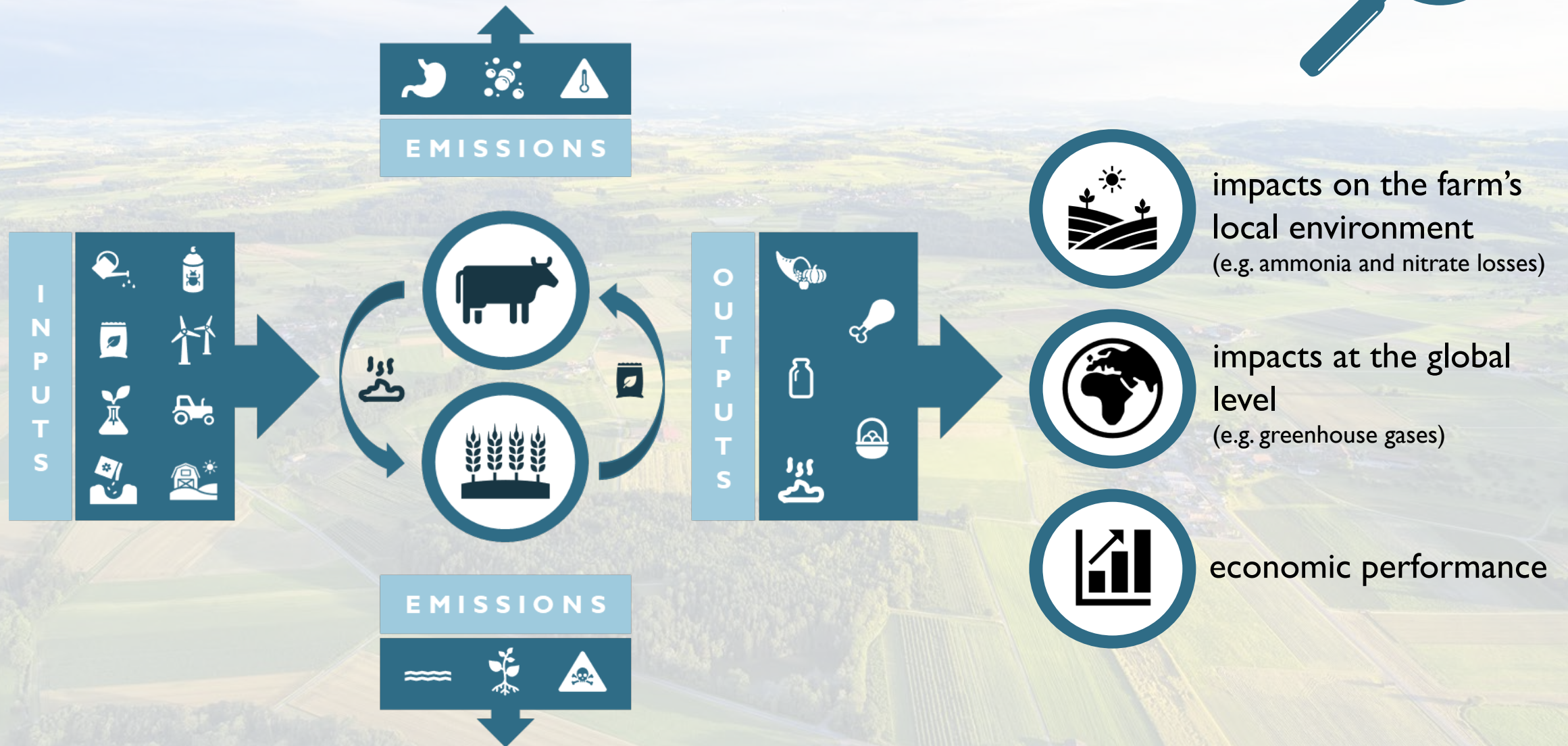
One liter of milk →
1.3 kg CO₂-eq. emissions







Farm scale assessment







Landscape assessments

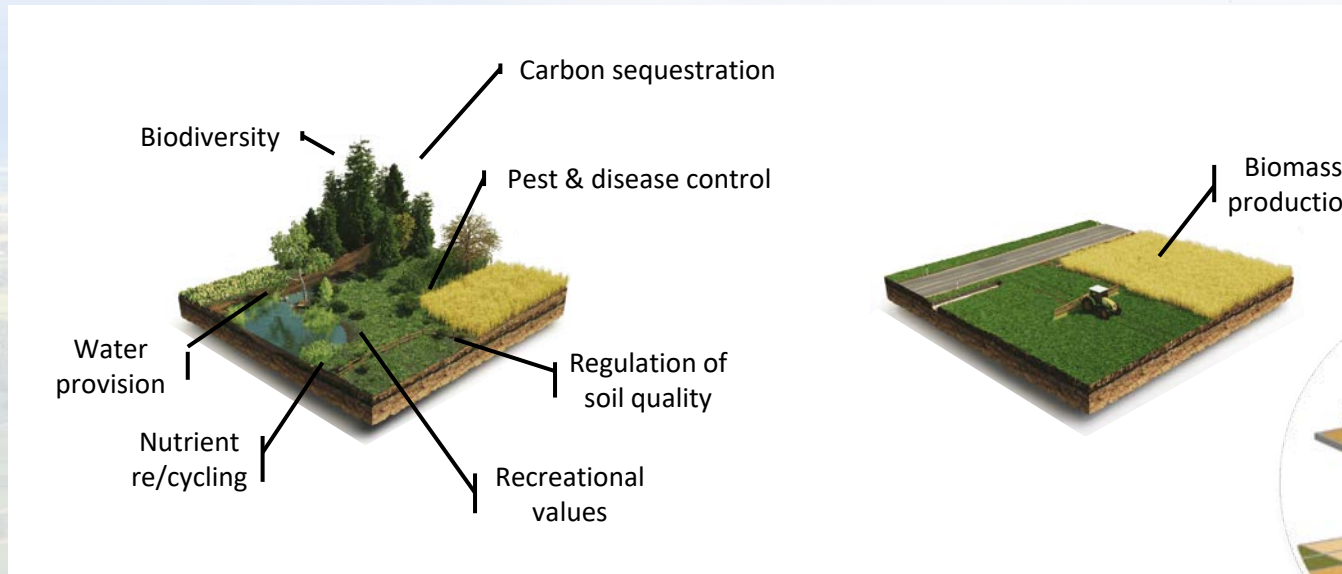
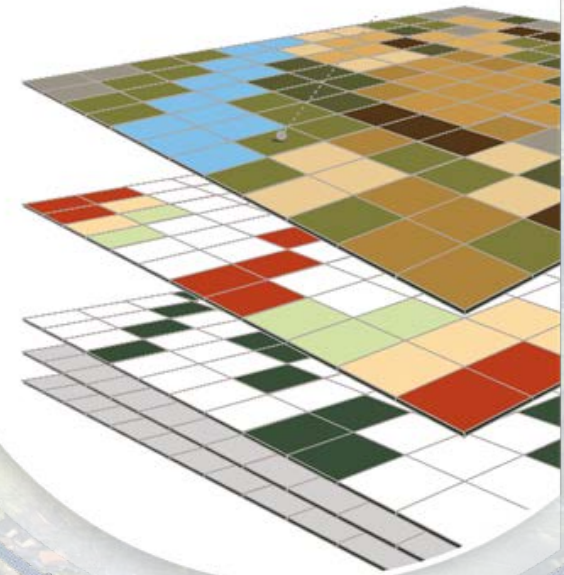
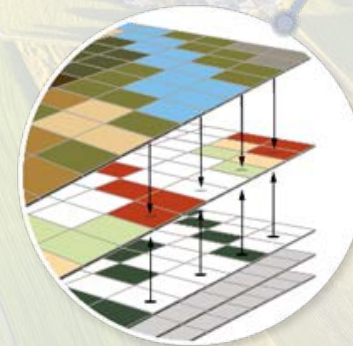
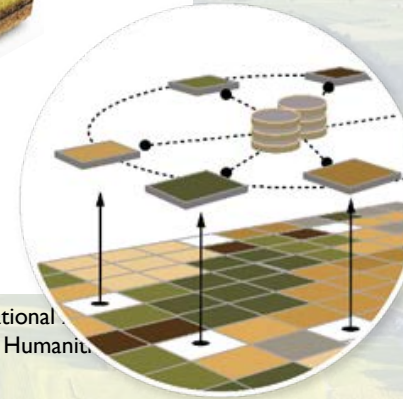
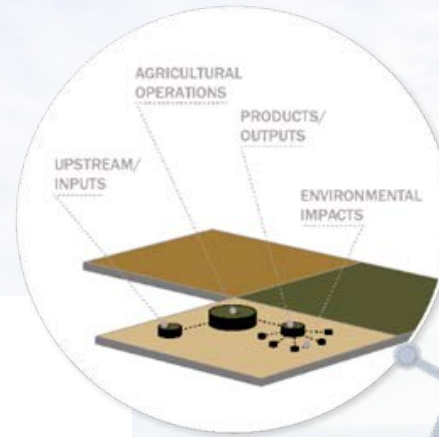


Image: German National Academy of Sciences Leopoldina, acatech – National Science and Engineering, the Union of German Academies of Sciences and Humanities

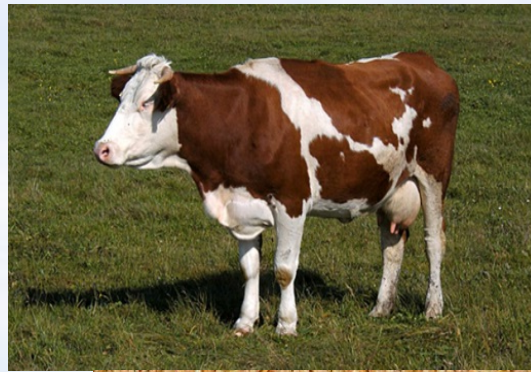
- Climate change mitigation
- Climate change adaptation



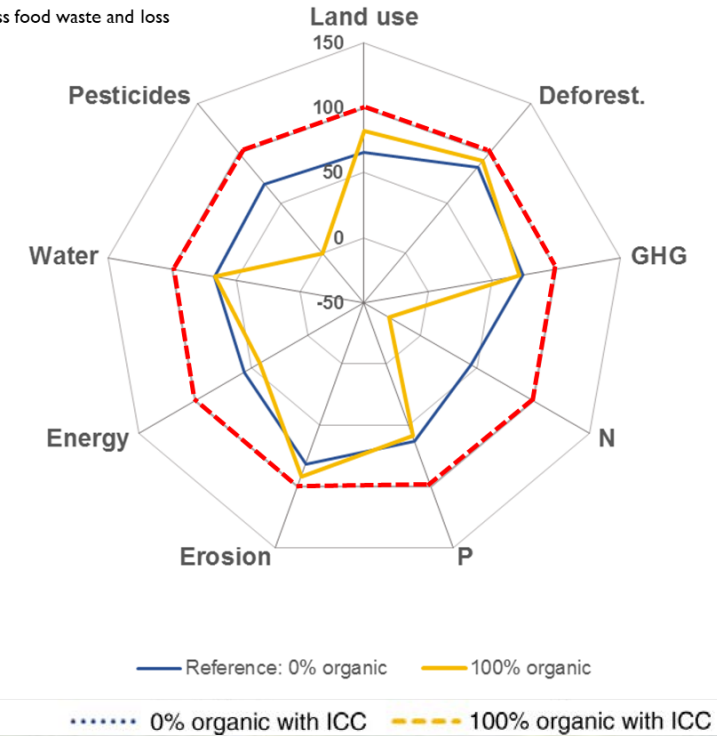




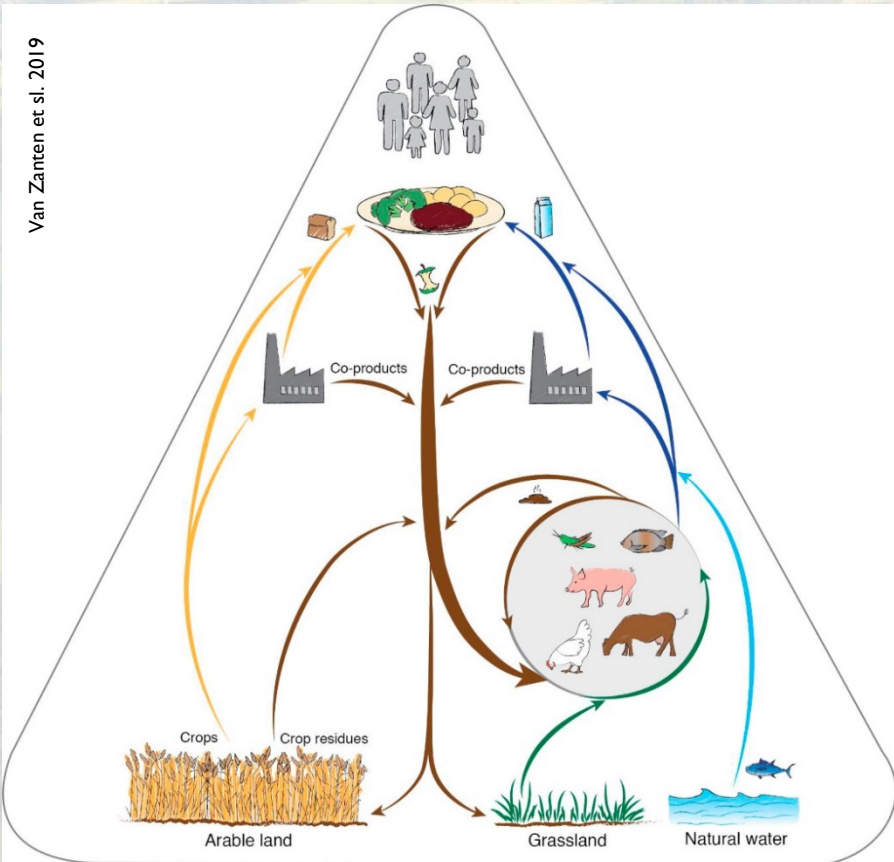
Food systems and consumption



100% food competing feed reduction
50% less food waste and loss



Van Zanten et al. 2019

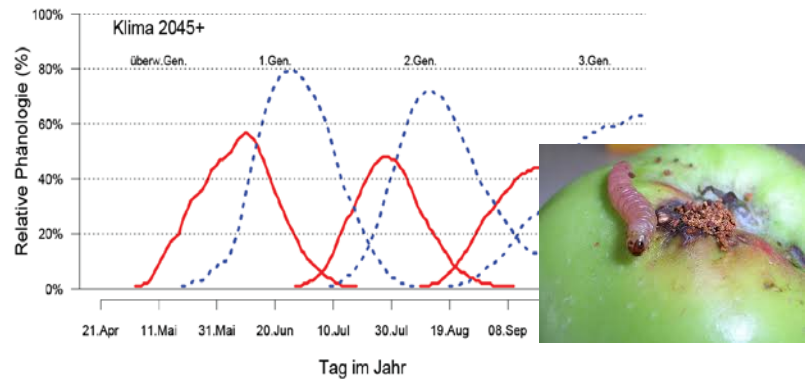


- Production vs. Consumption
- Efficiency vs. Sufficiency

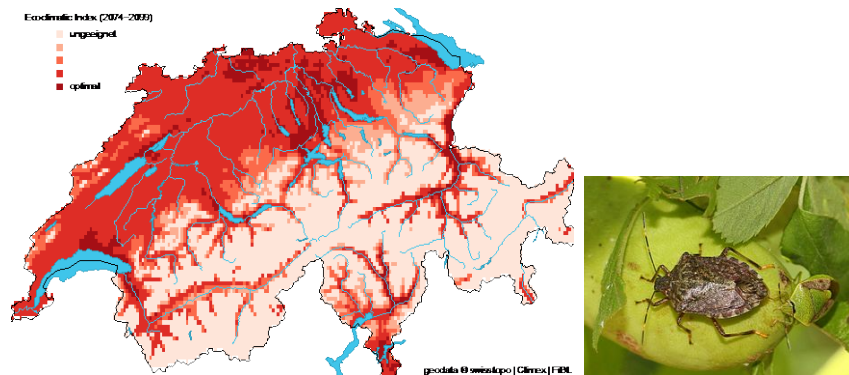


Modelling the effect of climate change on agricultural pests: Sustainable adaptation measures

Effect on seasonal phenology



Effect on potential distribution



Early warning system
Plant protection strategies

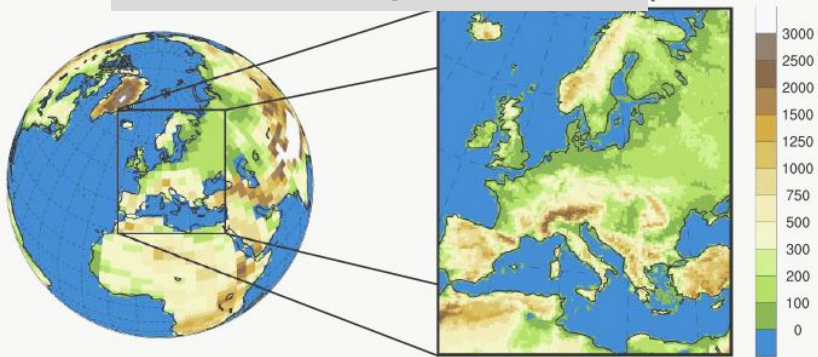
Climate change
Adaptation



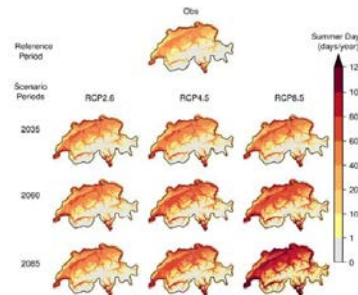
Climate models for agricultural pests: mismatch of scales

How will the climate be at my place in 2060?

Climate change scenarios



Localized climate change scenarios
www.nccs.ch

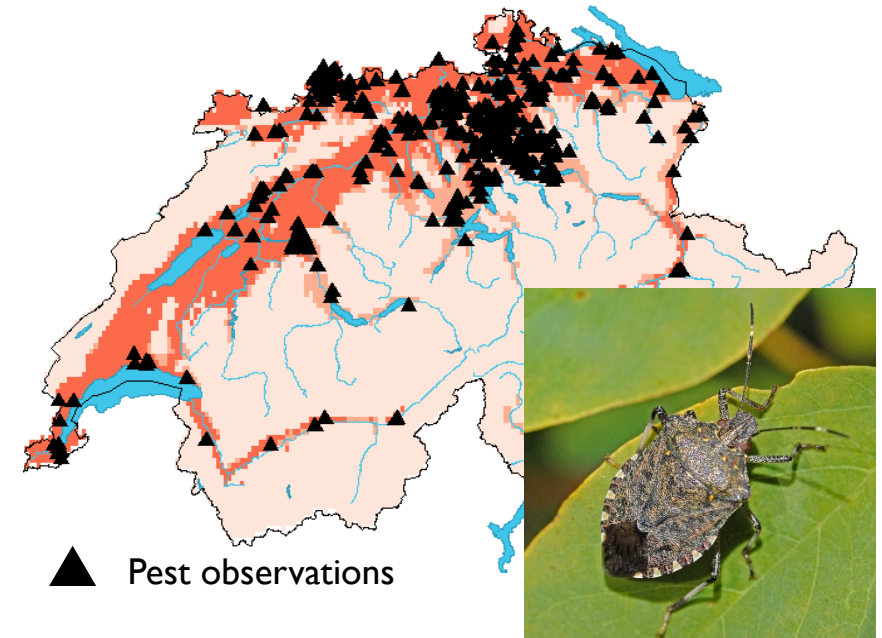


Handling localized climate change data



Developing seasonal pest forecasting models

How does the pest responds to weather variables?



▲ Pest observations

Brown marmorated stink bug (*Halyomorpha halys*)



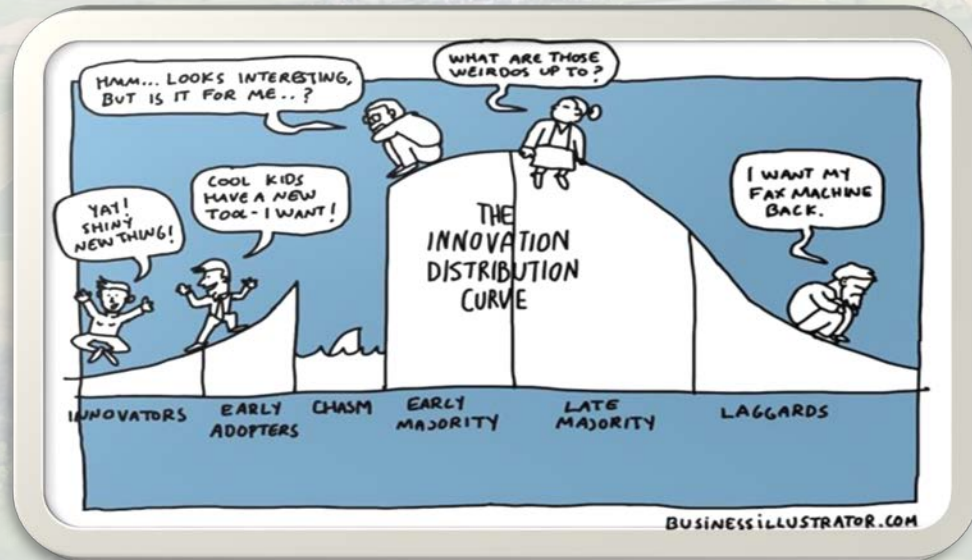


Agent based modelling: Decision making

Captures:

Individual behavior
(Heterogeneity)

Interactions between agents



Challenges:

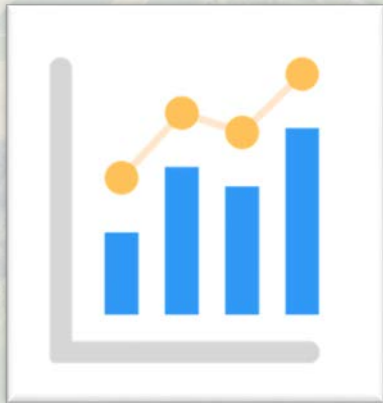
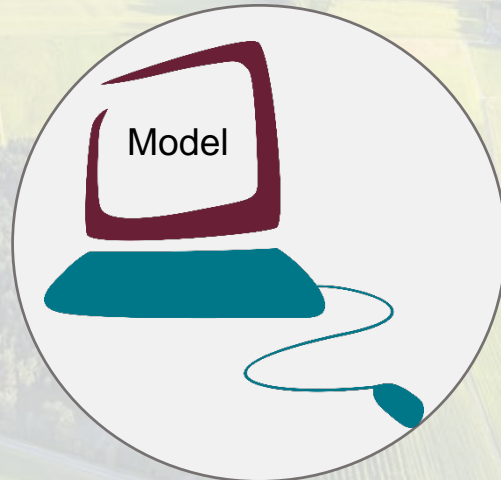
Data intensive

Different views – how to
realistically model decision
making?

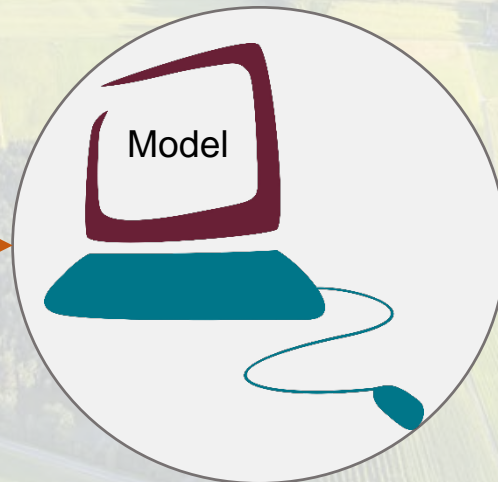
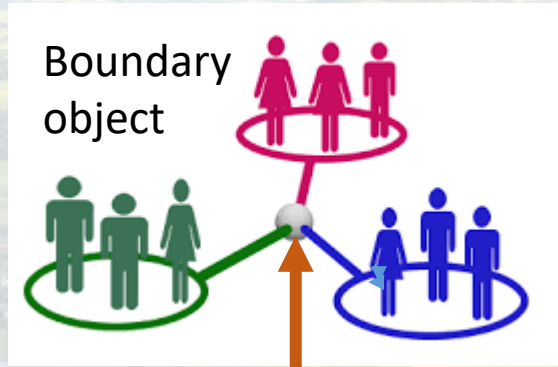




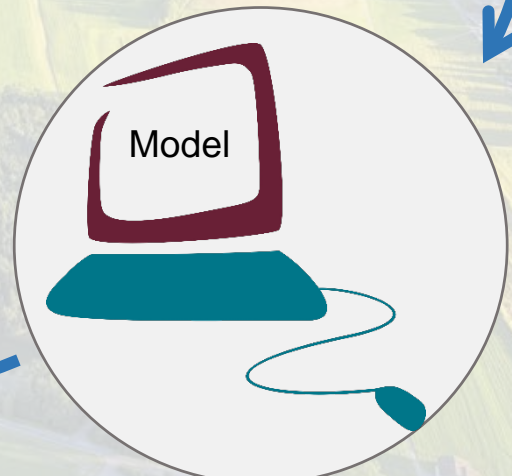
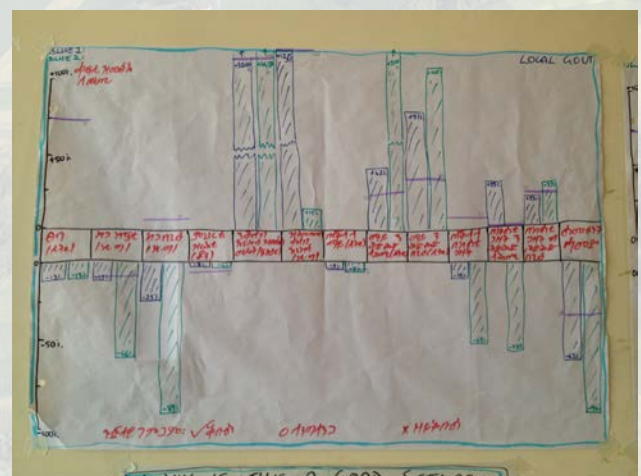
Collaborative serious gaming



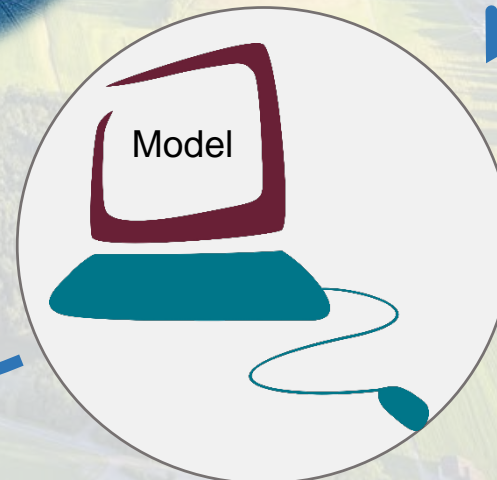
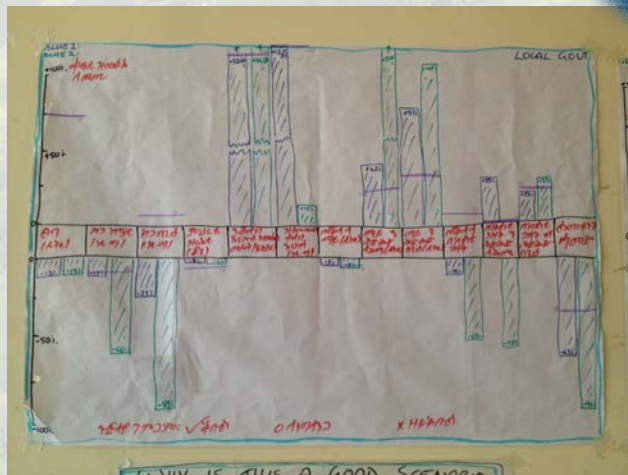
Collaborative serious gaming

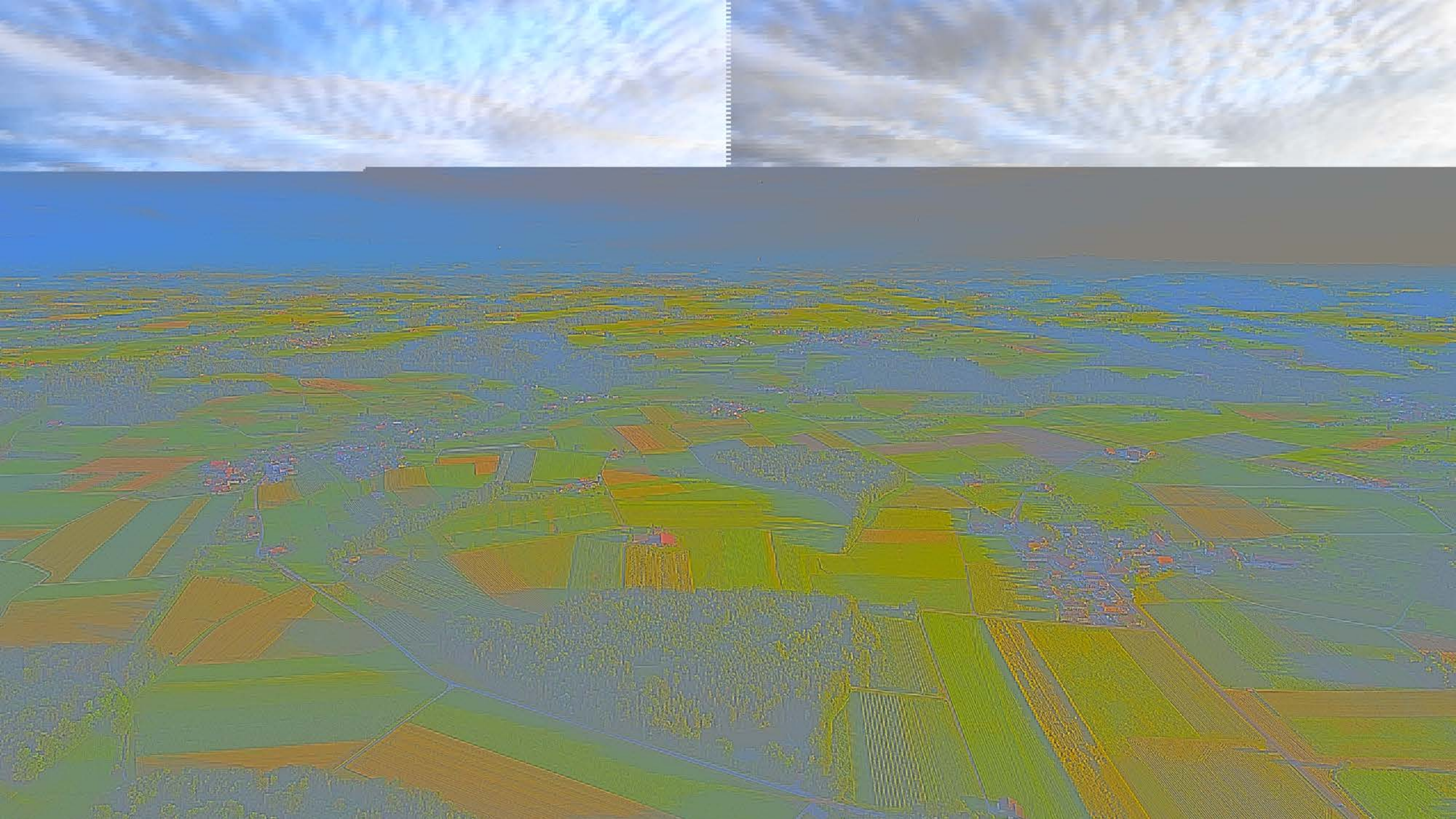


Collaborative serious gaming in Burkina Faso



Collaborative serious gaming in Burkina Faso

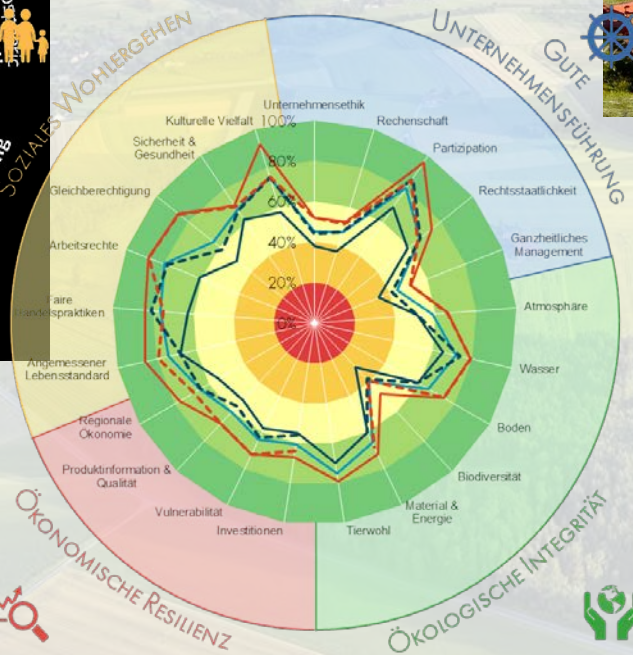
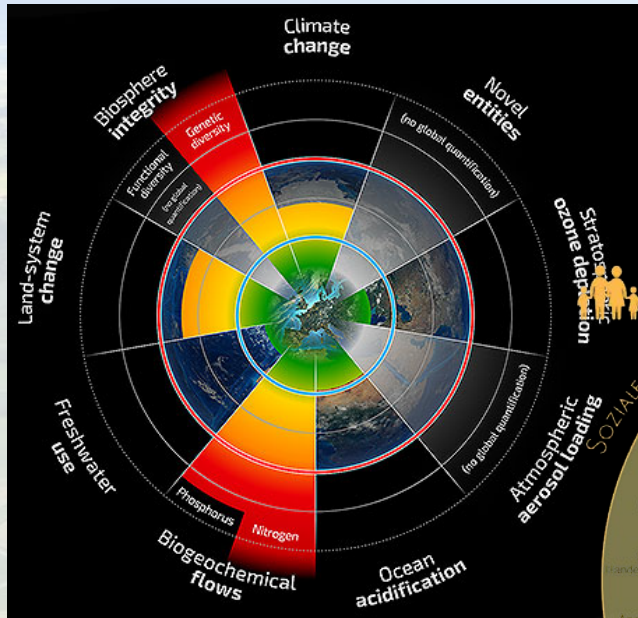






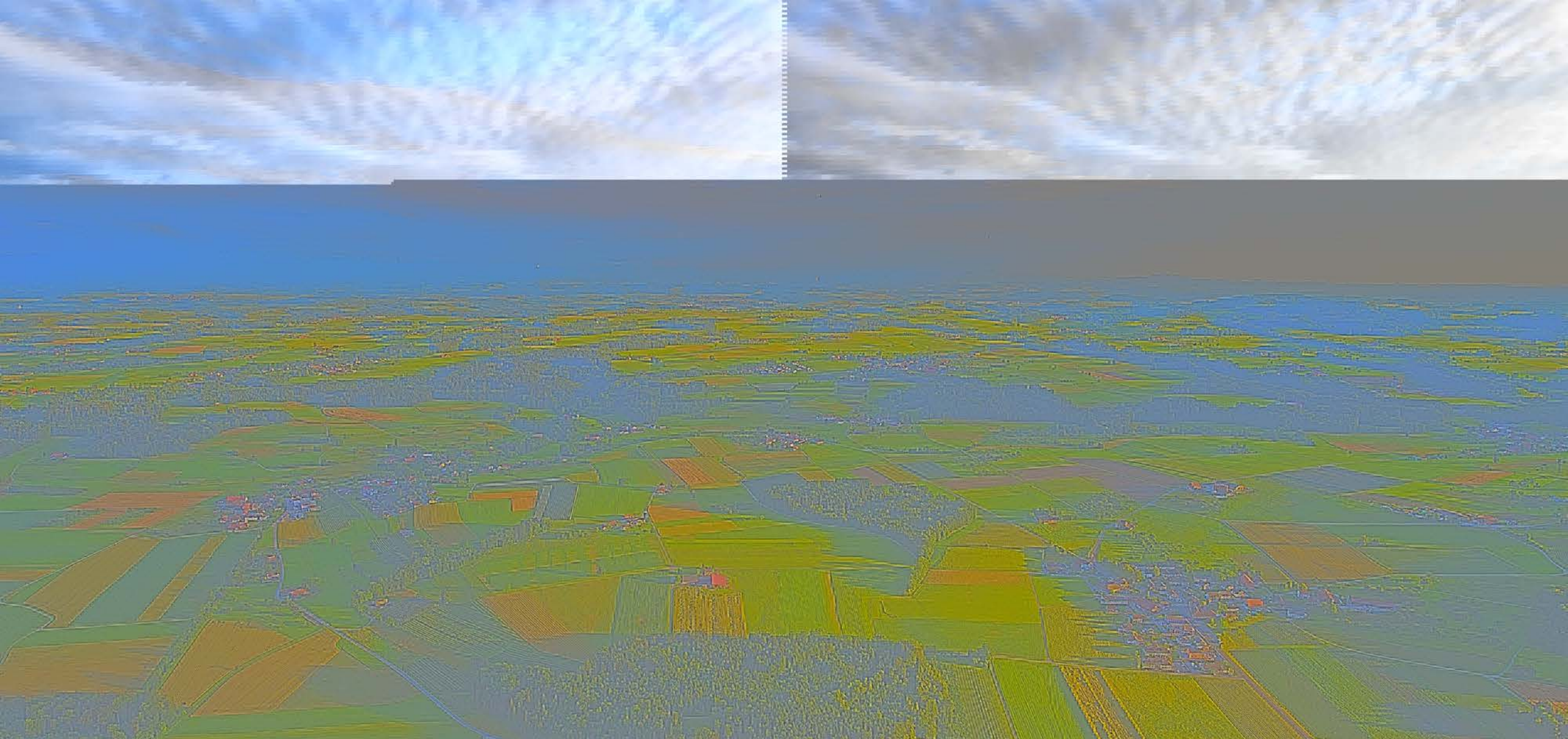
Translating science to practice

Multi-criteria decision support systems considering trade-offs and synergies



— Min - - - Schlechtester — Mittelwert - - - Bester — Max





Interactive part

Wrap up and conclusions

- Geographical and thematic scope
- Efficiency / consistency / sufficiency
- Models as boundary objects
- Trade-offs and synergies



FiBL online



www.fibl.org



www.bioaktuell.ch



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Contact

Research Institute of Organic Agriculture (FiBL)
Ackerstrasse 113
Postfach 219
CH-5070 Frick
Switzerland

Phone +41 62 865 72 72

info.suisse@fibl.org
www.fibl.org