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Scientific Steering Committee
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Climate, Land Use and Stakeholders:
learning to act in a climate-change world

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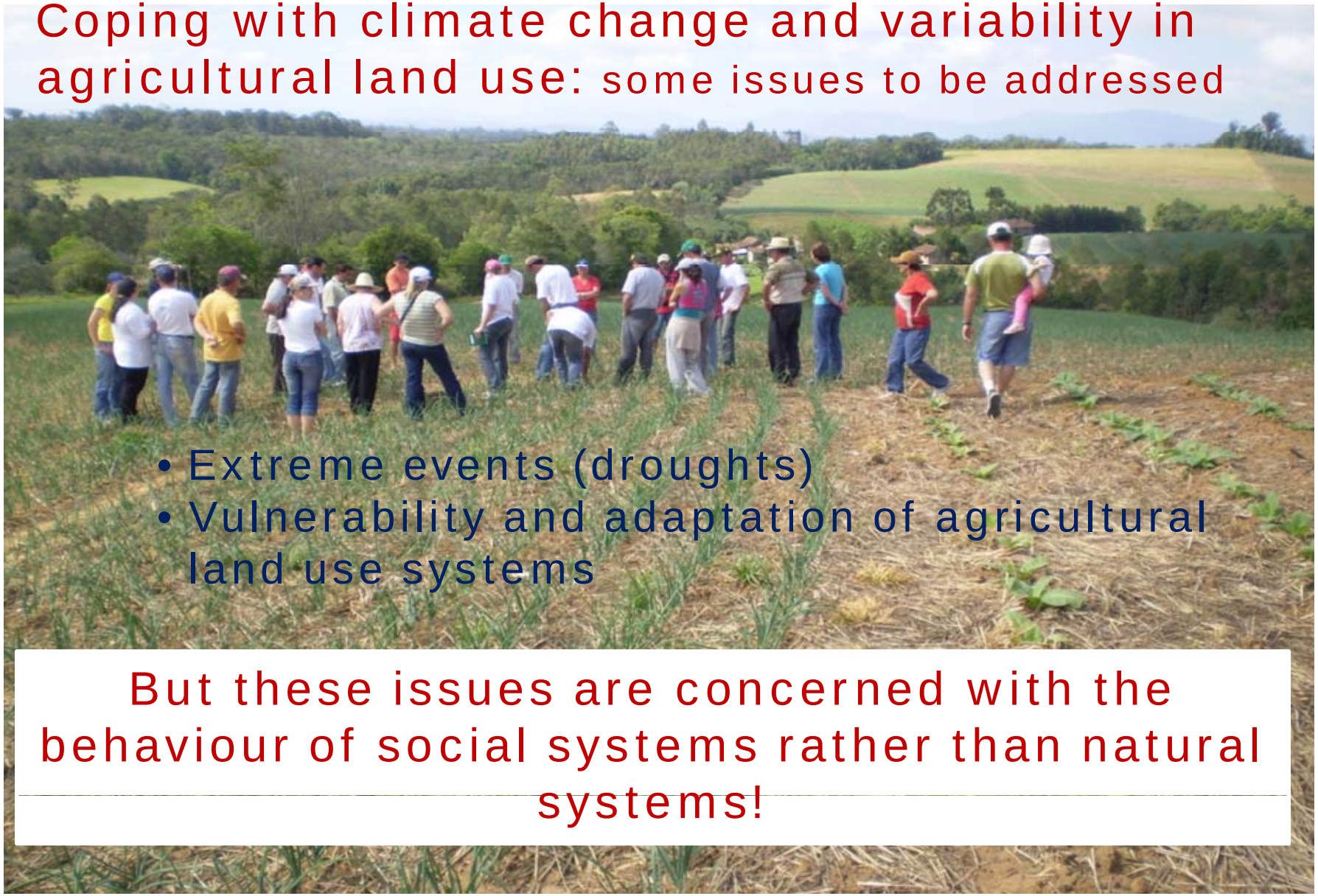
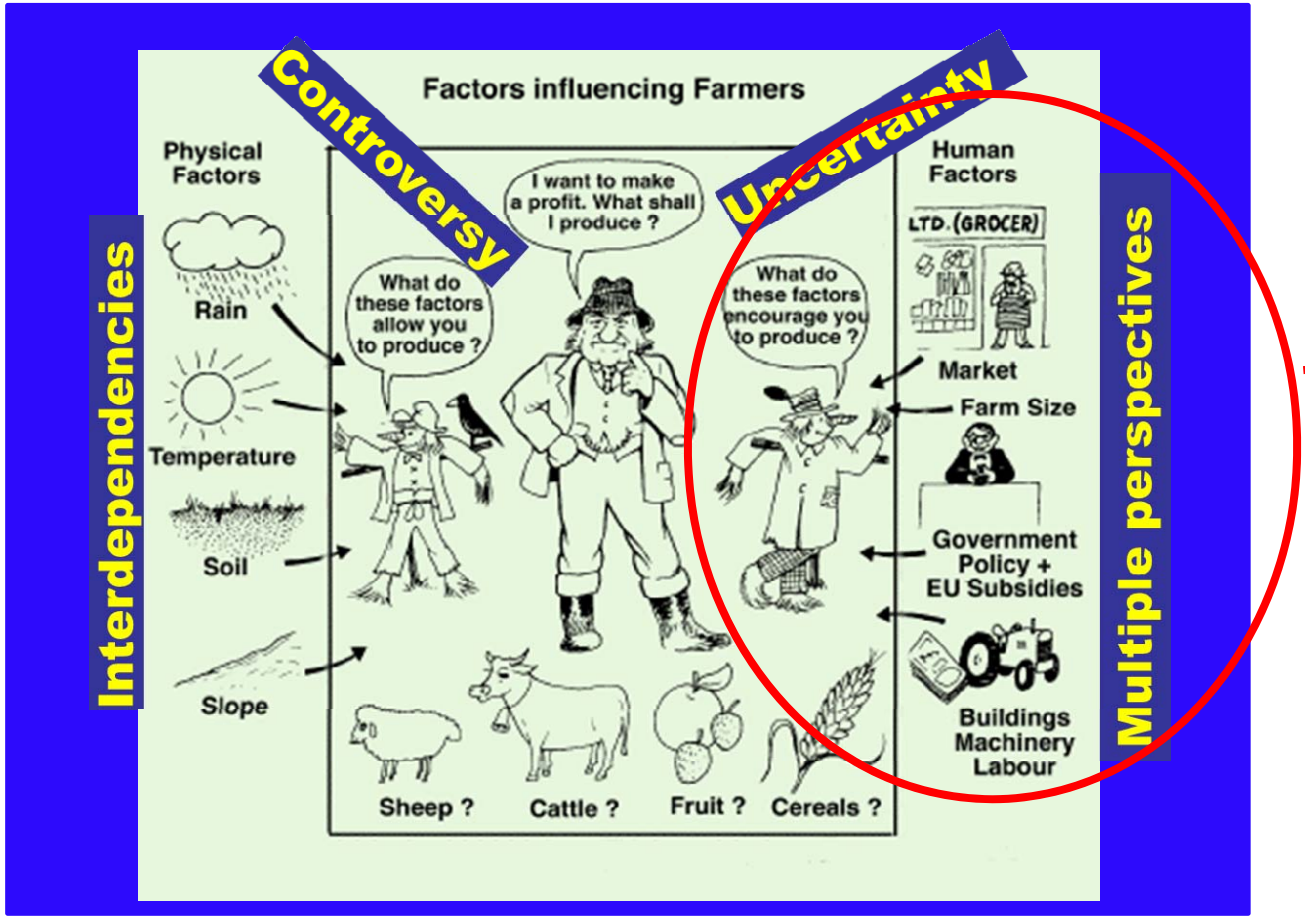
Coping with climate change and variability in agricultural land use: some issues to be addressed



- Extreme events (droughts)
- Vulnerability and adaptation of agricultural land use systems

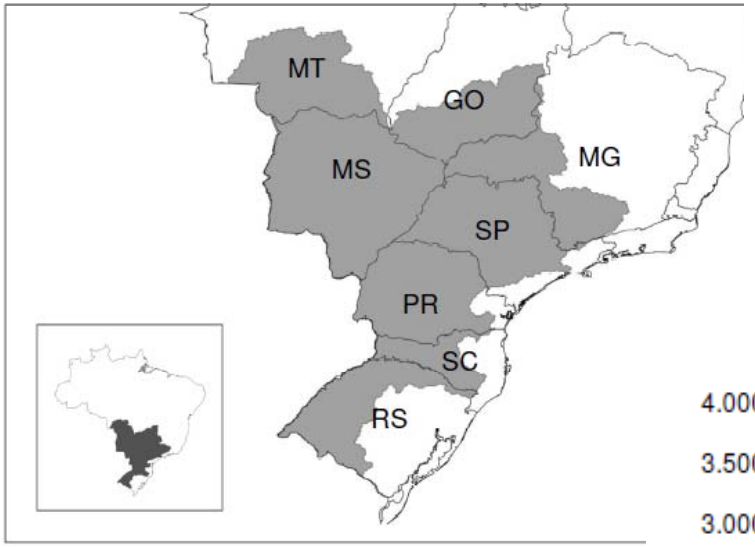
But these issues are concerned with the behaviour of social systems rather than natural systems!

How do farmers use climate data? The complexity of decision making



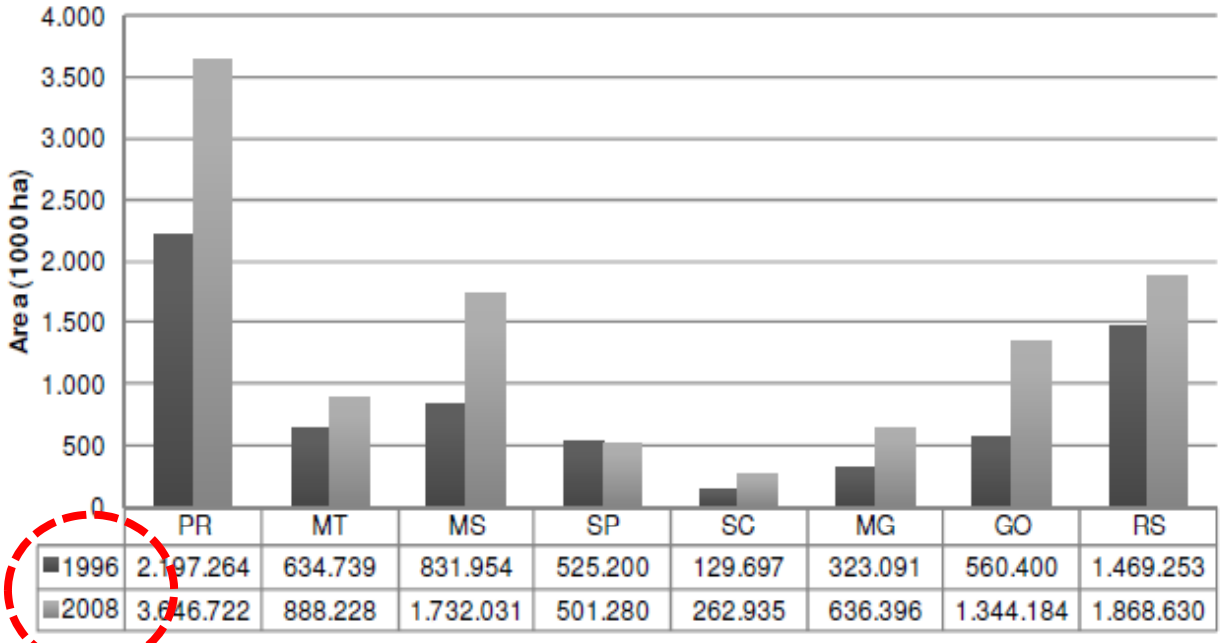
economic drivers

EXPERIENCING SITUATIONS OF COMPLEXITY



Source: Based on CLARIS LPB dataset (http:/www.claris-eu.org. Acces 2011)

Current dynamics of land use change in Brazilian LPB



	PR	MT	MS	SP	SC	MG	GO	RS
1996	2.197.264	634.739	831.954	525.200	129.697	323.091	560.400	1.469.253
2008	3.646.722	888.228	1.732.031	501.280	262.935	636.396	1.344.184	1.868.630

Fig11. Area cultivated with soybean in 1996 and 2008 in the Brazilian LPB (the numbers at x-axis indicate the area in hectares for each state)

(Vasconcelos et al, 2011 – unpublished)

The influence of climate drivers...

with consequences on...

Embedding climate information into products, *tools*, ...

- Example: crop modelling (DSSAT) ...

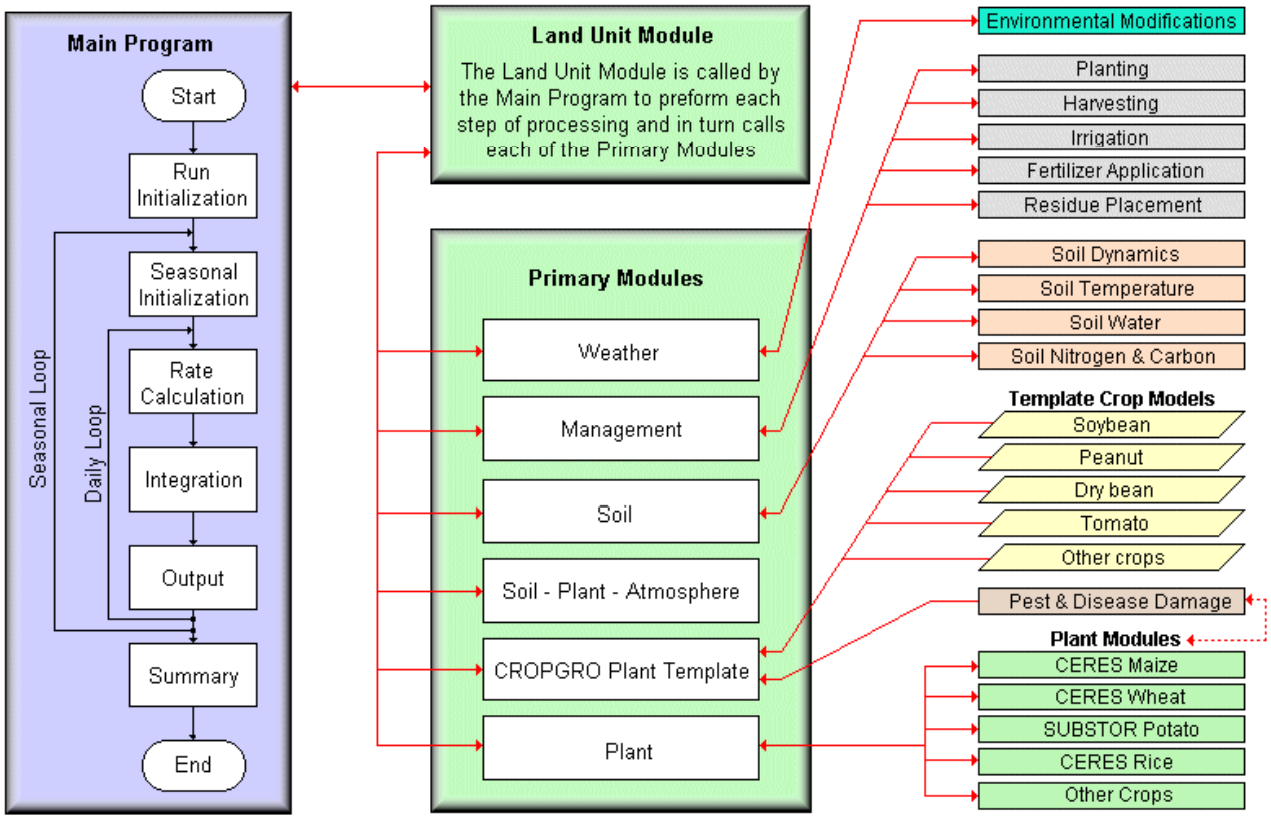
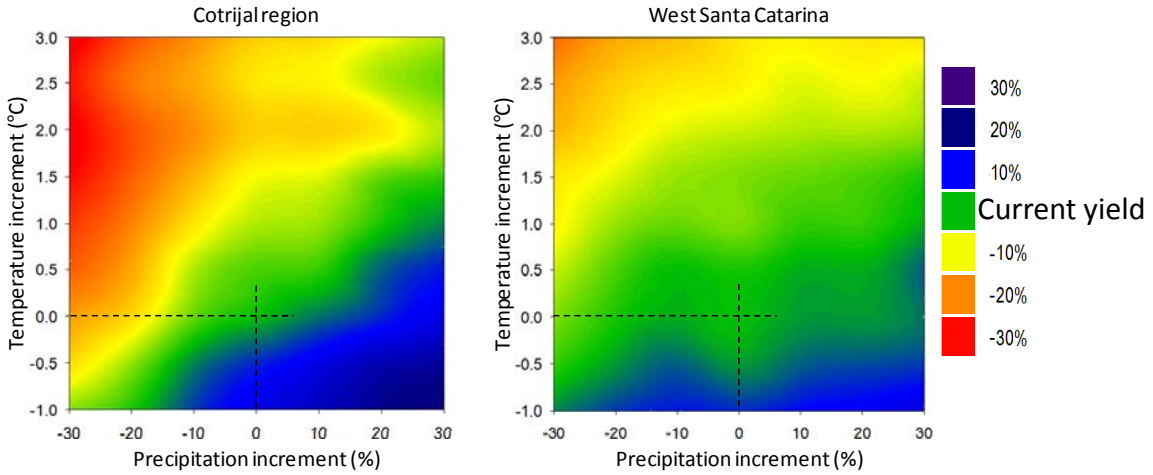


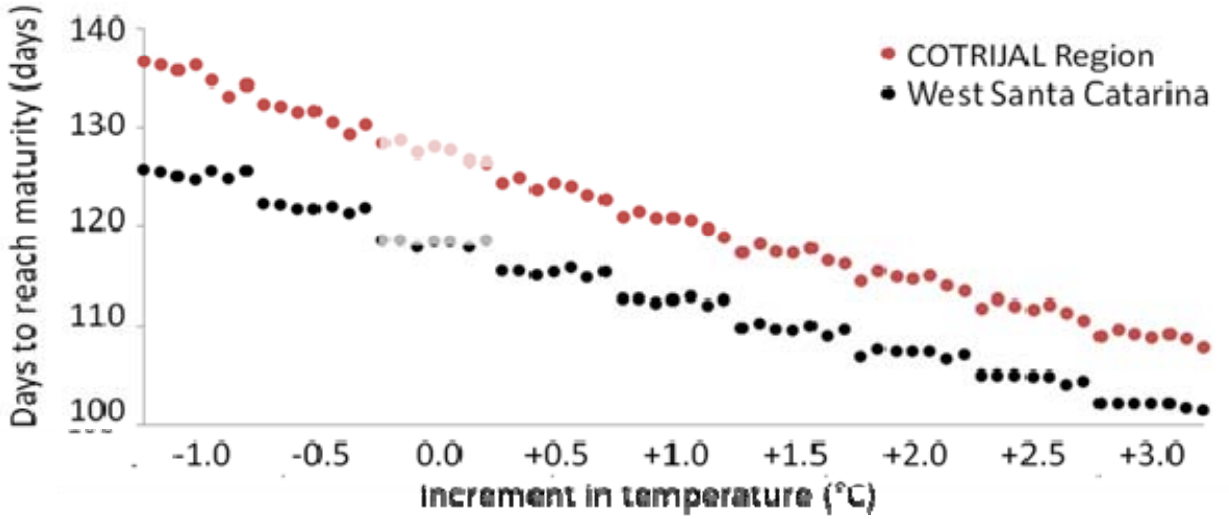
Figure 1. Overview of the components and modular structure of the DSSAT cropping system model.

... to assist decision making?

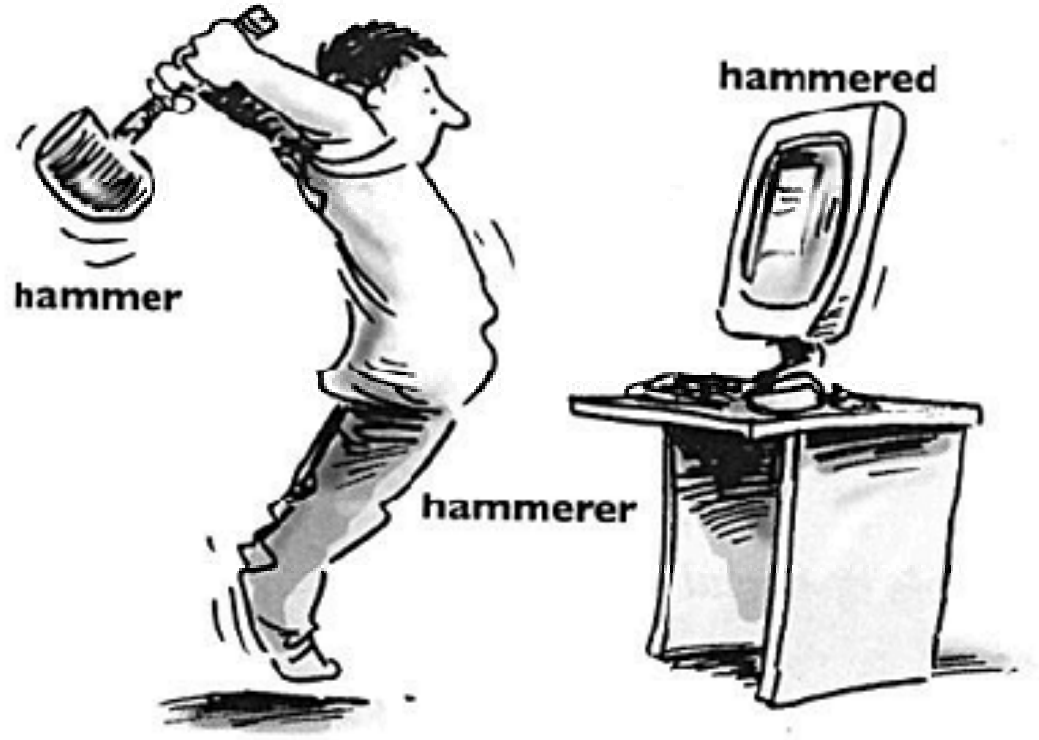
Adopting DSSAT to make simulations...



Changes in maiz yield (%) accoding different combinations of changes in temperature and rainfall for two sites. The intersection of the dotted lines indicates current yield (100%).

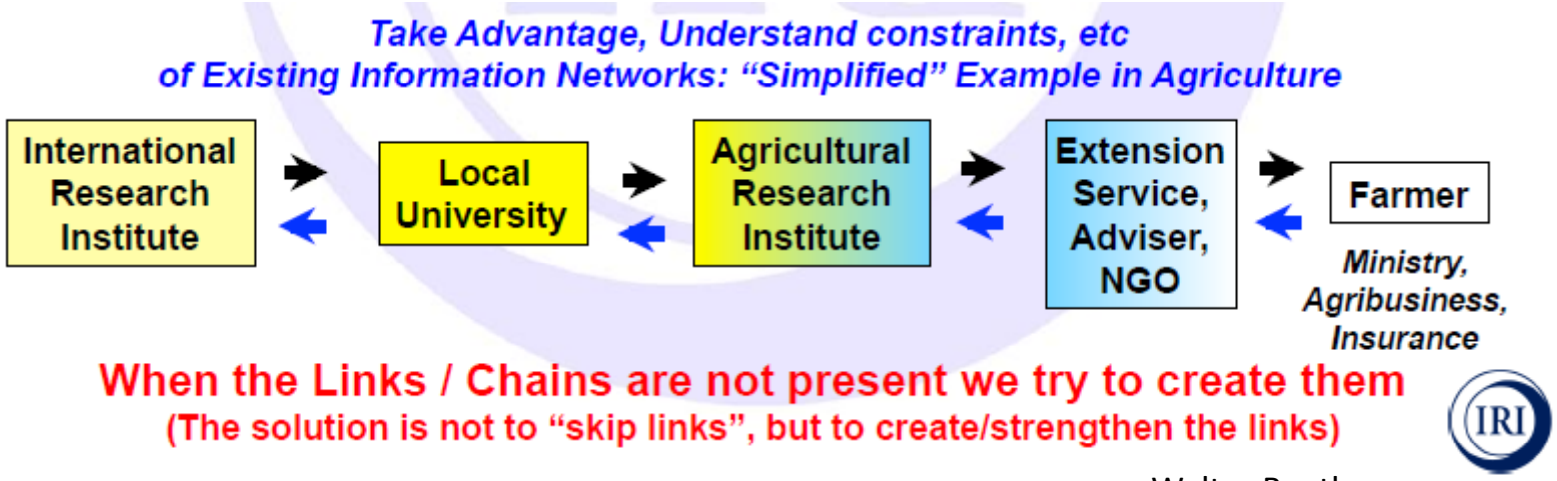


The relational dynamic between user, methodology and situation



(Ison, 2010)

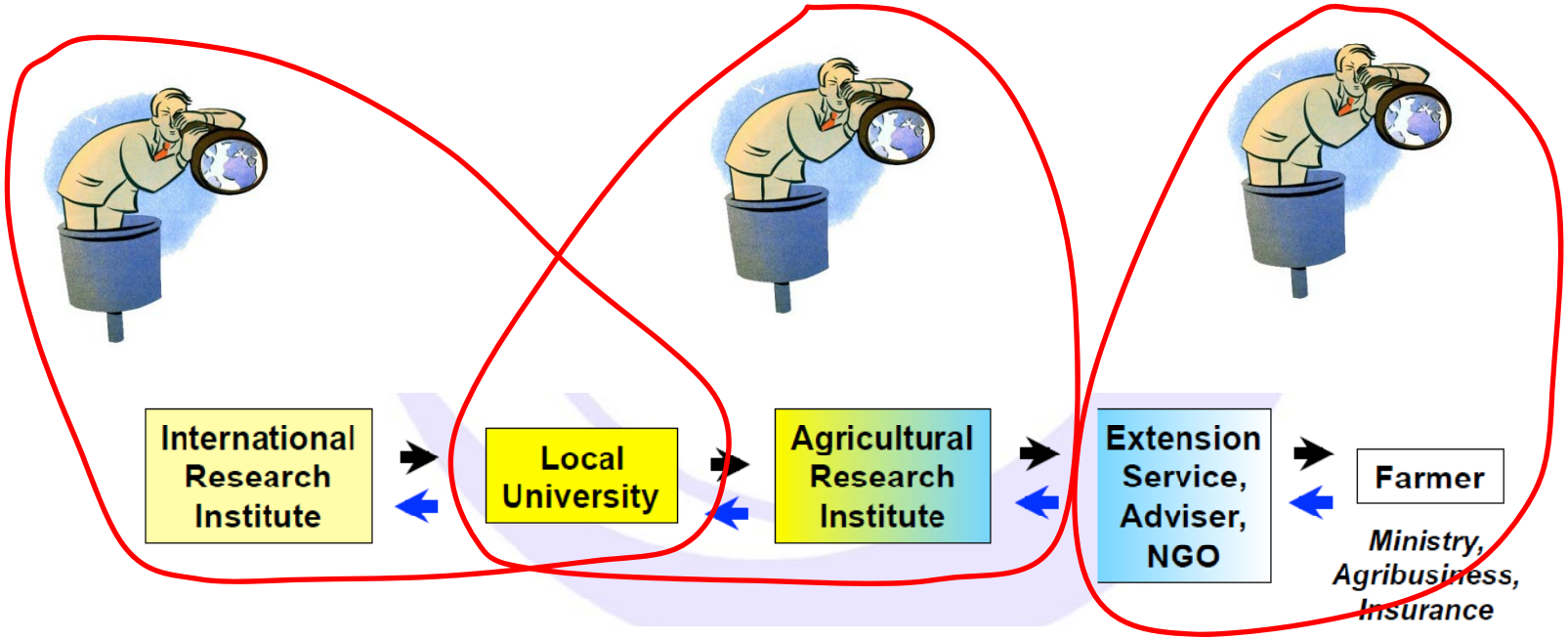
From *chains of knowledge* to *learning systems* for situation transformation in providing climate information



Walter Baethgen

BUT ..."very often, institutional arrangements fail to create spaces for participatory learning, or fail to institutionalise the benefits..."

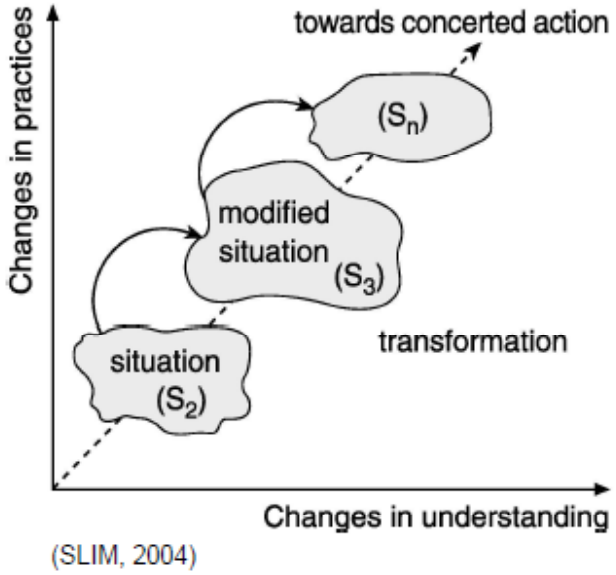
A systems view recognizes multiple stakeholders with multiple viewpoints and partial understandings of the "situation"....



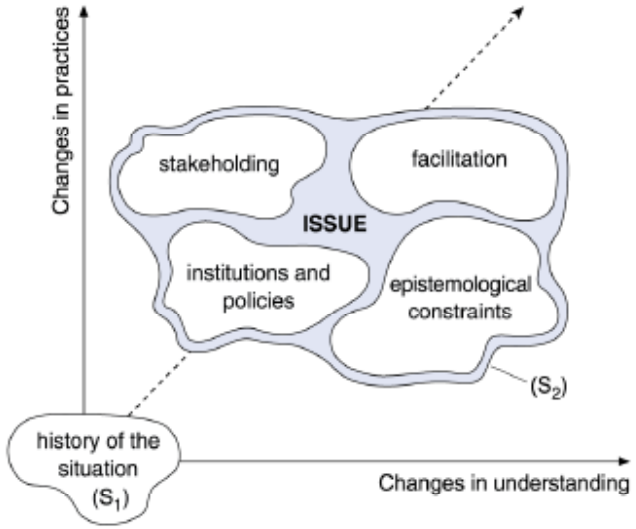
Learning to transform a situation

Social learning [for situation transformation]: a process of socially constructing an issue by ***stakeholders*** in which their understandings and practices change so as to **transform** the messy situation through **concerted action**

[based on Collins, 2010]

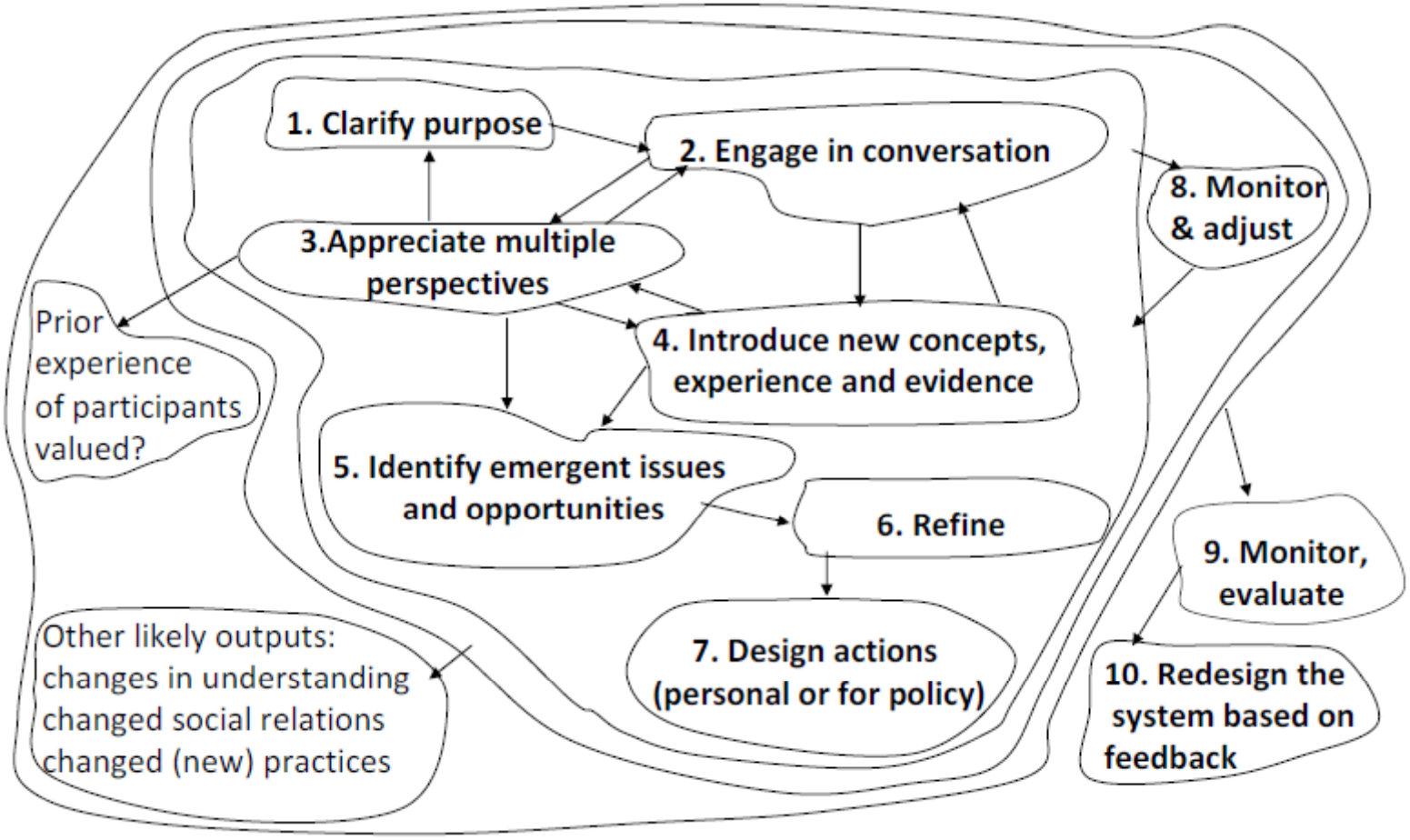


(SLIM, 2004)



*The **purpose of learning** is to help stakeholders recognise the diversity of mental models and to see the situation as one system in which they are interdependent with others in order to bring about situation transformation*

Designing learning systems using systems ideas



[based on Collins, 2010]

Summarizing...

1. (Agricultural) land use is the result of a complex decision making process that includes climate information (to some extent)

2. Climate information embedded into tools like DSSAT (for crop modelling) has been adopted mostly for research purposes (and not in decision making)

3. The effectiveness of the "chain of knowledge" for decision making depends on its integration into a learning system for situation transformation

4. The use of climate information in decision making is an emergent property of stakeholders' participation in the social learning process enacted through the formulation of a problem-determined system of interest (systemic action research as a reserch framework)