les dossiers d'AGROPOLIS INTERNATIONAL

Expertise of the scientific community in the Occitanie area (France)

COMPLEX SYSTEMS From biology to landscapes



Complex-free water management – modelling and simulating complex systems without a computer

Researchers at the G-EAU joint research unit (UMR) are striving to develop companion modelling tools for integrated water management (see previous article on p. 64), with a view to facilitating its adoption, dissemination and use. The Wat-A-Game (WAG) kit produced in 2012 is designed to make participatory modelling and simulation more widely available, while empowering stakeholder groups and reducing the need for expert intervention. It provides material and methodological resources to analogically represent, design and simulate (with maps and marbles) watersheds, their resources and dynamics, users and practices, managers, rules and tools in the form of role-playing games.WAG includes an initiation kit, a methodological database used by actors to produce their

own models, an IT infrastructure to structure the necessary knowledge and exchange experience, along with a database of local cases (>80) that can be queried and sometimes reused.

There are presently about 100 applications in some 20 countries, ranging from demonstration prototypes to finished packages.WAG can be applied to a wide range of situations in terms of scale (from community to large catchment area), issues and resources (water resources, pollution, floods, erosion, biodiversity, livestock, etc.). It assumes that all actors are able to co-construct models of their environment and the effects of their actions, and then to consider the conditions required for change (new



▲ Modelling session in Senegal with the WAG toolkit. © Géraldine Abrami ▶ WAG initiation kit (INI-WAG). © Benjamin Noury



practices, regulations). It is part of the COOPLAAGE package, which provides a set of simple, robust and easily adaptable tools and methods for implementing participatory workshops on modelling, simulation, planning, monitoring and assessment. COOPLAAGE also includes mechanisms for participatory planning, a tool for revealing and discussing legal principles, and a methodological framework for participatory monitoring and assessment. A network of facilitators trained on COOPLAAGE tools was launched in 2017 at COP 22.

Contacts: N. Ferrand, nils.ferrand@irstea.fr and G.Abrami, geraldine.abrami@irstea.fr (UMR G-EAU) For further information: www.watagame.info http://cooplanet.watagame.info

Participatory modelling and simulation on health issues

Zoonotic diseases—infectious diseases transmitted between animals and humans-drug resistance and environmental pollution are now major public health problems worldwide. The latter are closely linked to global environmental and socioeconomic change and trends, as well as to territorial-scale production system transformations. Health management is therefore becoming a complex issue to be addressed in close collaboration with veterinary public health, agriculture and environment specialists. Further uncertainties are arising and new social actors from civil society are emerging on the scene alongside conventional public health decision makers, thus complicating decision-making processes.



This complexity calls for adequate methods that will promote the joint expression of all viewpoints. The participatory modelling and simulation approach incorporates heterogeneous knowledge from all actors focused on the same problem. This facilitates co-construction of a shared representation of the studied system while generating scenariosartefacts of possible forthcoming situations. This approach highlights the uncertainties and then enables capacity building and training on risk management, decision making and responsibility sharing. Participatory modelling and simulation is a pragmatic solution to mainstream health into land planning policies. This approach uses different tools, such as

role-playing games and computer simulations. These tools were first developed for renewable resource management by the ComMod collective, and the ComAcross project (EuropeAid) has successfully implemented the approach by tailoring it to health issues in Thailand, Laos and Cambodia.

Contacts: R. Duboz, raphael.duboz@cirad.fr and A. Binot, aurelie.binot@cirad.fr (UMR ASTRE) For further information on the ComMod collective: www.commod.org ComAcross project: www.onehealthsea.org/comacross

A role-playing game session with villagers in Cambodia on the prevention of two encephalitis diseases—Japanese encephalitis and Nipah virus-and on investigating new control measures.

Complex systems

65

© ComAcross EuropeAid project – CIRAD 2017