AICHA: Adaptation of Irrigated Agriculture to Climate Change in South India

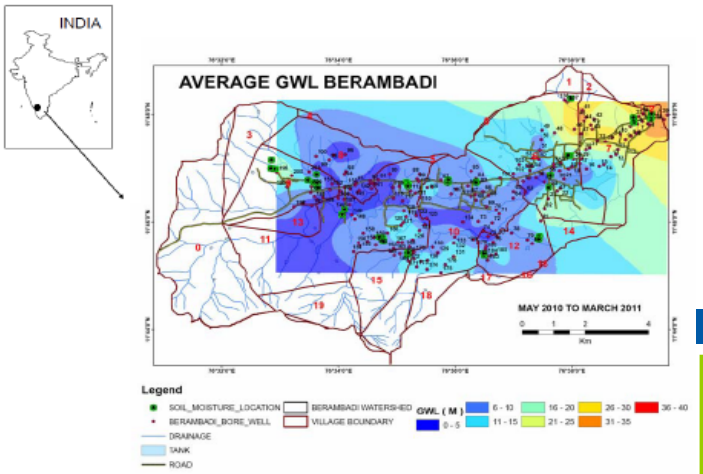
A multi-disciplinary project to explore long-term adaptation of irrigated agriculture, building upon scenarios of innovative agricultural systems and water management policies

Research Units

Agronomy and hydrology
UMR 1069 SAS Rennes
Indo-French Cell on Water Science (LMI-IFCWS, IRD, IISc)
UMR 1248 AGIR Toulouse
University of Agricultural Sciences (UAS), Bangalore
Ashoka Trust for Research in Ecology and the Environment (ATREE) Bangalore

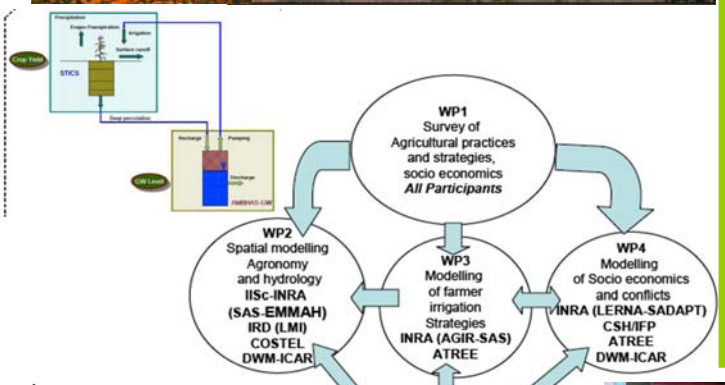
Social sciences
Centre des Sciences Humaines (CSH) New Delhi
UMR 1081 LERNA Toulouse
UMR 1048 SADAPT Versailles
Institut Français de Pondichéry (IFP)

Remote sensing and spatial data analysis
UMR 1114 EMMAH Avignon
UMR COSTEL Rennes



In a context of climate change and increasing dependence of agriculture on groundwater, reliable methods are required for sustainability assessment of current and alternative agricultural systems. The AICHA project will use a combination of models (in agronomy, hydrology, economics) to build scenarios of innovative agricultural systems and water management policies. Methods used include remote sensing, field surveys, modeling of farmer decisions, and the design of an interlinked agro-hydrological model for feedback effects of water availability on the adaptation of cropping systems. Agronomic feasibility and socio-economic benefits of the scenarios will be examined by considering issues of policy implementation (water management rules, …), conflicts of water and land use, and inequality and welfare

5 work packages in aronomy, hydrology, economics and sociology



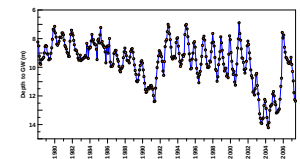
WP1. Surveys of agricultural practices and strategies, and socioeconomic forcing
- Identification of current agricultural practices including cropping systems, irrigation and fertilisation practices

WP2. Spatial modelling.
- Coupling a Soil-Vegetation-Atmosphere Transfer model (STICS) with a spatially distributed hydrological model, accounting for feedbacks between groundwater resources and irrigation

WP3. Modelling of farmers' irrigation strategies
- Identify and characterize agricultural practices impacting water withdrawals, capturing the diversity of agricultural practices in irrigated areas
- Develop a model to simulate the amount of water withdrawn for irrigation

WP4. Socio-economic aspects of water management: sharing rules, policies, conflicts and inequalities
- Explore the relevance and performance of economic instruments for demand-side water management
- Assessment of conflicts among water users, by using focus group discussions, key informant interviews, and content analysis
- Analyse consequences of adaptation to climate change in terms of agricultural household welfare.

WP5. Building alternative scenarios of sustainable cropping systems
- Construct innovative scenarios of land use and cropping systems by sharing the scientific results of agronomical, hydrological and socio-economic aspects



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