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Getting ready for crops' adaptation to climate change in France ; two complementary experiences : what lessons can we draw from them ?

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The french agriculture is a sector particularly concerned by climate change: the scale of the already observed impacts and the expected climatic evolutions prevent any hesitation on the necessity of an adaptation of agriculture. This assessment is simultaneously shared by the scientific, political as well as the economic communities. However, a generalized and organized movement of adaptation of agriculture has difficulty in emerging in France and maybe in other countries, while past decades have seen the development of research projects and publications on the adaptation to climate change.
Two parallel initiatives have been run in France over the past 5 years, that happen to share the same name while not involving the same actors: an observatory of climate change and agriculture functioning (ORACLE: Observatoire Régional sur l'Agriculture et le Changement Climatique), and a nationally funded research project that explores with various tools risks and opportunities for agro-ecosystems in the future in France (ORACLE: Opportunities and Risks of Agrosystems & forests in response to CLimate, socio-economic and policy changEs in France). The Observatory is carrying on a regional analysis of historical trends of both climatic and agricultural variables. It has for ambition to help the agricultural world to better integrate the evolution of climate into its decision-making, for purposes of adaptation as well as mitigation. The observatory is run since year 2011 in the Poitou-Charentes region and is now being implemented in other regions in France (Aquitaine, Pays de la Loire, Champagne Ardennes, Normandie). The research project has looked into the impacts of various scenarios of climate change through the use of various techniques : mechanistic models (Calvet et al. 2013, Wu et al. 2016) and eco-climatic indicators (Caubel et al. 2015). Informations regarding risks and opportunities for large crops in France is in the process being assessed though those tools and results.
Both projects have identified weaknesses regarding the appropriation of their findings by the economic players. This is why we propose to revitalize the adaptation of French agriculture to climate change via four ways of action:
• Set-up an organization at the national level to improve the distribution and use of any available study, indicator, tool, . . . ;
• Improve and better coordinate students' and professionnal training to increase the skills of actors of the agricultural world and fasten the flow of information-findings-tools ;
• Work on what 'transfer of knowledge' means when going from scientists to actors. We suggest the start of a mid-term virtuous circle (5 - 7 years) that will allow to understand the observed changes, test our tools and indicators on observed climate and analyze the various climate change scenarios provided ;
• Specify the improvements to be operated in national planning texts, such as the 'Plan national d'adaptation au changement climatique' that has been elaborated by the Ministry of Environment and Sustainable Development.