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MERINOVA: Meteorological risks as drivers of environmental innovation in agro-ecosystem management

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The BELSPO funded project 'MERINOVA' deals with risks associated with extreme weather phenomena and with risks of biological origin such as pests and diseases. The major objectives of the proposed project are to characterise extreme meteorological events, assess the impact on Belgian agro-ecosystems, characterise their vulnerability and resilience to these events, and explore innovative adaptation options to agricultural risk management. The project comprises of five major parts that reflect the chain of risks:

(i) Hazard: Assessing the likely frequency and magnitude of extreme meteorological events by means of probability density functions;
(ii) Impact: Analysing the potential bio-physical and socio-economic impact of extreme weather events on agro-ecosystems in Belgium using process-based modelling techniques commensurate with the regional scale;
(iii) Vulnerability: Identifying the most vulnerable agro-ecosystems using fuzzy multi-criteria and spatial analysis;
(iv) Risk Management: Uncovering innovative risk management and adaptation options using actor-network theory and fuzzy cognitive mapping techniques; and,
(v) Communication: Communicating to research, policy and practitioner communities using web-based techniques.

The different tasks of the MERINOVA project require expertise in several scientific disciplines: meteorology, statistics, spatial database management, agronomy, bio-physical impact modelling, socio-economic modelling, actor-network theory, fuzzy cognitive mapping techniques. These expertises are shared by the four scientific partners who each lead one work package.

The MERINOVA project will concentrate on promoting a robust and flexible framework by demonstrating its performance across Belgian agro-ecosystems, and by ensuring its relevance to policy makers and practitioners. Impacts developed from physically based models will not only provide information on the state of the damage at any given time, but also assist in understanding the links between different factors causing damage and determining bio-physical vulnerability. Socio-economic impacts will enlarge the basis for vulnerability mapping, risk management and adaptation options. A strong expert and end-user network will be established to help disseminating and exploiting project results to meet user needs.