

MERINOVA

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

DURATION OF THE PROJECT
01/06/2012–31/05/2016

BUDGET
929.147€

KEYWORDS

Risk, Agriculture, Meteorology, Vulnerability, Environmental Modelling

CONTEXT

Devastating weather-related events have captured the interest of the general public in Belgium. Extreme weather events such as droughts, heat stress, rain storms and floods are projected to increase both in frequency and magnitude with climate change. Since more than half of the Belgian territory is managed by the agricultural sector, extreme events have significant impacts on agro-ecosystem services and pose severe limitations to sustainable agricultural land management. The perspective of rising risk-exposure is exacerbated further by more limits to aid received for agricultural damage and an overall reduction of direct income support to farmers. Current knowledge gaps related to the occurrence of extreme events and the response of agro-ecosystems need to be addressed in conjunction with their vulnerability, resilience and adaptive capacities.

PROJECT DESCRIPTION

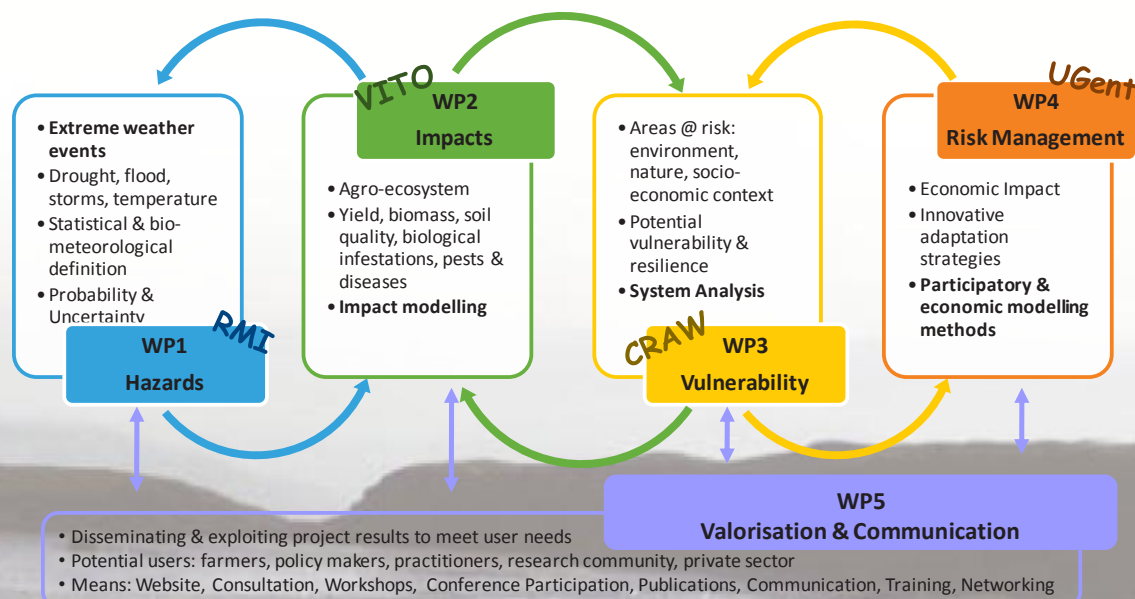
Objective

The research hypothesis is that meteorological risks act as drivers of environmental innovation in agro-ecosystem management. The major objectives of the MERINOVA 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.

Methodology

The proposed project 'MERINOVA' deals with risks associated with extreme weather phenomena and with risks of biological origin such as pests and diseases. 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.



INTERACTION BETWEEN THE DIFFERENT PARTNERS

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.

EXPECTED RESULTS

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.

PARTNERS

VITO assumes the role of coordinator of the MERINOVA project.

- RMI is in charge of characterising extreme weather events and their spatio-temporal distribution across Belgium (WP1).
- VITO is responsible for modelling the impact of extreme weather events on agro-ecosystems and their services (WP2).
- CRA-w is responsible for spatially assessing the vulnerability of agro-ecosystems in Belgium (WP3).
- UGent leads all activities related to risk management (WP4).

All partners are responsible for dissemination activities (WP5).

CONTACT INFORMATION

Coordinator

Anne GOBIN

Environmental Modelling Unit
VITO NV
Boeretang 200, 2400 MOL, Belgium
Tel + 32 14 33 67 75
Fax +32 14 33 67 99
anne.gobin@vito.be
www.vito.be

Partners

Robert OGER

Centre wallon de Recherches
agronomiques
Agriculture et Milieu naturel
Systèmes agraires, Territoire et
Technologies de l'Information
Rue de Liroux 9
5030 GEMBLoux, Belgium
tel +32 (0)81 626 578
fax + 32 (0)81 626 559
oger@cra.wallonie.be
www.cra.wallonie.be

Hans Van de Vyver

Koninklijk Meteorologisch Instituut van
België (KMI) /
Institut Royal Météorologique de Belgique
(IRM)
Ringlaan 3 - Avenue Circulaire 3
1180 BRUSSEL - 1180 BRUXELLES,
Belgium
hvyver@oma.be
www.meteo.be/

Guido Van Huylenbroeck

Vakgroep Landbouweconomie
Faculteit Toegepaste Biologische
Wetenschappen
Universiteit Gent (UGent)
Coupure Links 653
9000 GENT, Belgium
Tel: + 32 (0) 9 264.5926
GSM: 0497068930
E-mail:
Guido.vanhuylenbroeck@ugent.be
www.ugent.be/bw/agricultural-economics

Follow-up Committee

For the complete and most up-to-date composition of the Follow-up Committee, please consult our Federal Research Actions Database (FEDRA) by visiting <http://www.belspo.be/fedra>

