The use of remote sensing and agrometeorological modelling for crop monitoring, damage and risk assessment in Belgium

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BEODayS
Feluy, 20/11/2013
Higher occurrence of extreme weather events
Excess rainfall in August 2006 in Belgium
Exceptional drought in early spring 2011
 CONTEXT

 CLIMATE CHANGE

- Instability of farmers income
- Increasing demand for information from the agricultural sector (ministries, policy makers, farmers' unions, etc.) and from citizens through the press or media
Natural phenomena of exceptional character or intensity

Massive and unforeseen pests that cause significant and widespread destruction of land, crops or harvest
In Belgium the **Agricultural Calamity Fund**, managed by the Federal Public Service Economy, provides compensations in case of a calamity.

The Calamity Fund will be transferred to Flanders – Wallonia in 2014.

Additional risk management tools (e.g., insurances) have to be developed according to the European legislation.
AGRICULTURAL CALAMITY

Exceptional character of a weather event?

- Return period higher than 20 years
- Frequency checked by IRM/KMI, global assessment of the affected area
YES BUT ...

- Analysis of meteorological parameters only
- Not taken into account: development stage & sensitive period(s) of the crop
Exceptional character of a weather event?

YES BUT ...

- Lack of **objectivity** and **consistency** in the handling of damage claims (different municipalities, provinces)
- Difficulties in **assessing the damage**
Exceptional character of a weather event?

- ... often contradictory information shared
ADASCIS

Earth Observation to support Agricultural Damage Assessment in Crop Insurance Schemes

www.adascis.be
ADASCIS project

CROP DAMAGE AND RISK ASSESSMENT

- End user: FPS Economy, Agricultural Calamity Fund
- Interest of insurance sector and regional agriculture administrations for the set-up of agricultural insurances
ADASCIS project

CROP DAMAGE AND RISK ASSESSMENT

- Set of relevant indicators reflecting crop damages
- Based on EO and meteorological data and agrometeorological models (B-CGMS: Belgian Crop Growth Monitoring System)
- Return period estimation
ADASCIS project

WEB BASED GEO-INFORMATION TOOL

Viewing and analyzing information for
- Crop monitoring
- Damage assessment
- Risk assessment
Monitoring during the growing season “pre-disaster”
Damage assessment after the growing season, “post-disaster“
Damage assessment after the growing season, “post-disaster”
Risk assessment over several years

Risk maps

Occurrence of damage over the years. Count deviations below damage threshold in "sensitive period"
ADASCIS web tool

EO

METEO

AGRO

METEO

SDVI-JAPAR
D3 July 2006

LTA

LTA

LTA

01-sept-09 01-oct-09

01-sept-09 01-oct-09

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Results

Selection of relevant crop damage and risk indices derived from meteorological data, agrometeorological models and (low to medium resolution) remote sensing information
Results

- These indices provide information at municipality level for the identification of problem areas by comparing the current situation with historical data and for risk assessment by looking at crop damage frequency in the past
Results

- In the frame of the ADASCIS project a pre-operational web tool was developed to allow the users to visualize and analyze the various crop damage and risk indices in the form of maps and graphs.
Results

The ADASCIS web tool allows FPS Economy to identify calamity areas and to decide on the eligibility of compensation claims.
Results

- The pre-operational tool was used during the 2011 growing season to assess the extent and the intensity of the spring drought.
Perspectives

Clear interest from the Flemish and Walloon agriculture administrations and the insurance sector

- The service will make it possible to define the requirements for the development of insurance products which meet the needs of the private sector (insurers, farmers) and public administrations.
Use of ADASCIS tool

AGROMETEOROLOGICAL BULLETIN

- Provides information on meteorological conditions, overall development of the crops (from EO and modelling), yield forecasts
- Could be improved thanks to ADASCIS results
Résumé
Le retard de croissance observé fin avril, lors du dernier bulletin, n'a toujours pas été résorbé. Les conditions météorologiques des mois de mai et juin furent globalement bonnes sans être exceptionnelles. Les modèles donnent pour l'instant des prévisions proches des rendements moyens 2007-2011 pour la plupart des cultures, à l'exception de la betterave qui est annoncée en hausse. À ce stade, tout semble encore d'avoir des rendements exceptionnels.

Samenvatting
Thank you for your attention