



**modextreme**  
agriculture facing extreme climatic events

**DG AGRI LUNCHTIME SESSION**

**EU-FP7 MODEXTREME**

**MODelling vegetation response to EXTREMe  
Events**

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**DG AGRI LUNCHTIME SESSION**  
**September 20, 2016**



# Project outline

(November 2013-October 2016)

## ■ Challenge:

- To help the European (and non-European) agriculture **to face extreme weather events** by improving the capability of biophysical models simulating plant responses to integrate weather extremes (such as heat waves, cold shocks, droughts, frost)?

## ■ Approaches:

- Development of **generically usable software units** implementing libraries of models
- Extension of the **multi-model platform for plant growth and development** simulations (BioMA) used by the European Commission Joint Research Centre (MARS: Monitoring Agricultural ResourceS)

## ■ Main objectives:

- Improve **yield monitoring and forecasting** systems (scientific)
- Novel (reusable) **libraries of models** (technological)





# Consortium partners

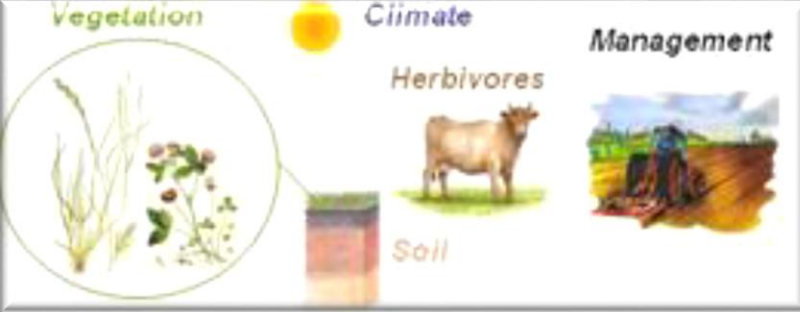
(18 organizations, 14 countries)



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# Modelling solutions

Initial values

Parameters

**Inputs**  
(climate, soil, management)

PaSim

GRAPE

CropSyst

AQUACROP

OLIVECAN

WARM

WOFOST

...

**Outputs**  
(yield, aboveground biomass, flowering date, ...)

Grassland

Tree

Crop



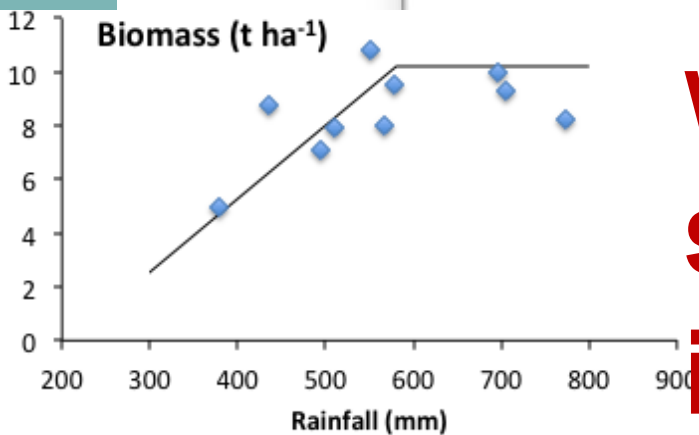
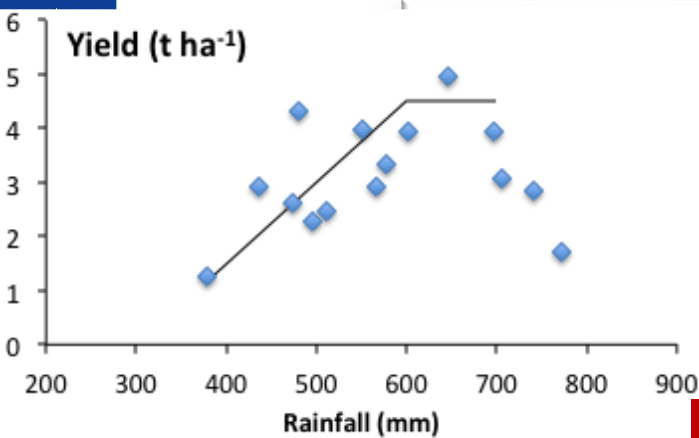
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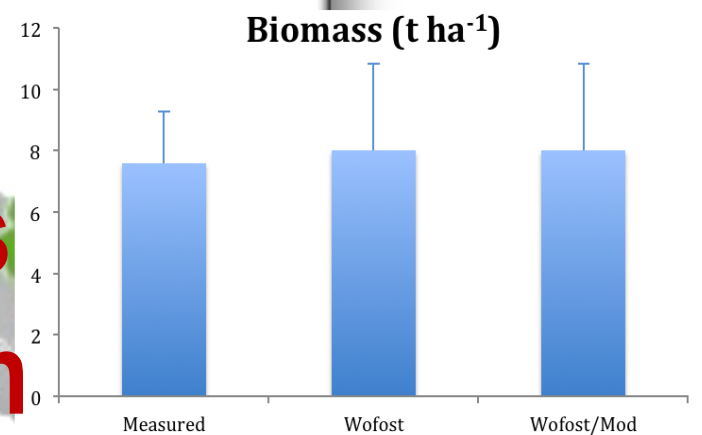
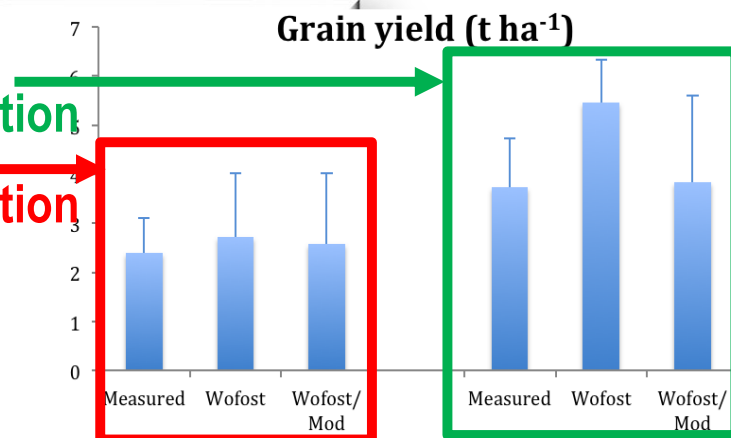
# Field datasets in MODEXTREME





# Durum wheat simulations in Southern Italy

validation  
calibration



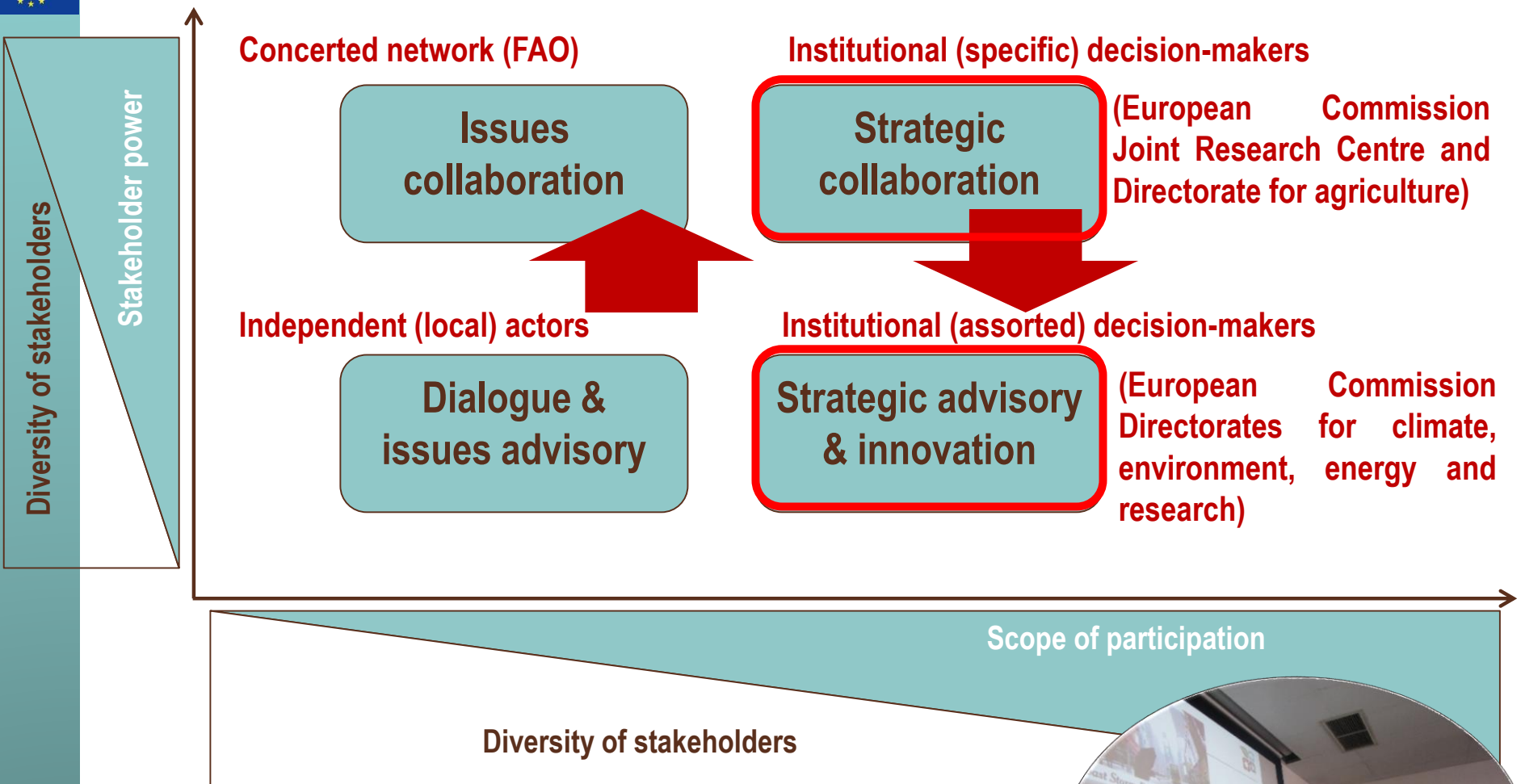
Observed  
data

Crop model  
WOFOST

existing

modified









# SCIENCE WORKSHOP



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# Spatial and temporal patterns of agriculturally relevant extreme events in Europe

*Pierluigi Calanca* - Agroscope, Zurich (Switzerland)

## Climate indicators to anticipate extreme yield losses

*David Makowski* - French National Institute for Agricultural Research, Grignon (France)

## BioMA platform tools and applications

*Marcello Donatelli* - Italian Council for Agricultural Research and Analysis of Agricultural Economics, Bologna (Italy)

## Agricultural production forecasts at EU level

*Roberto Confalonieri* - University of Milan (Italy)



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