

AgMIP Coordinated
Global and Regional Assessment of
Climate Change Impacts on Food
Security and Agriculture

Building Blocks and Challenges

Regional Panel: Europe

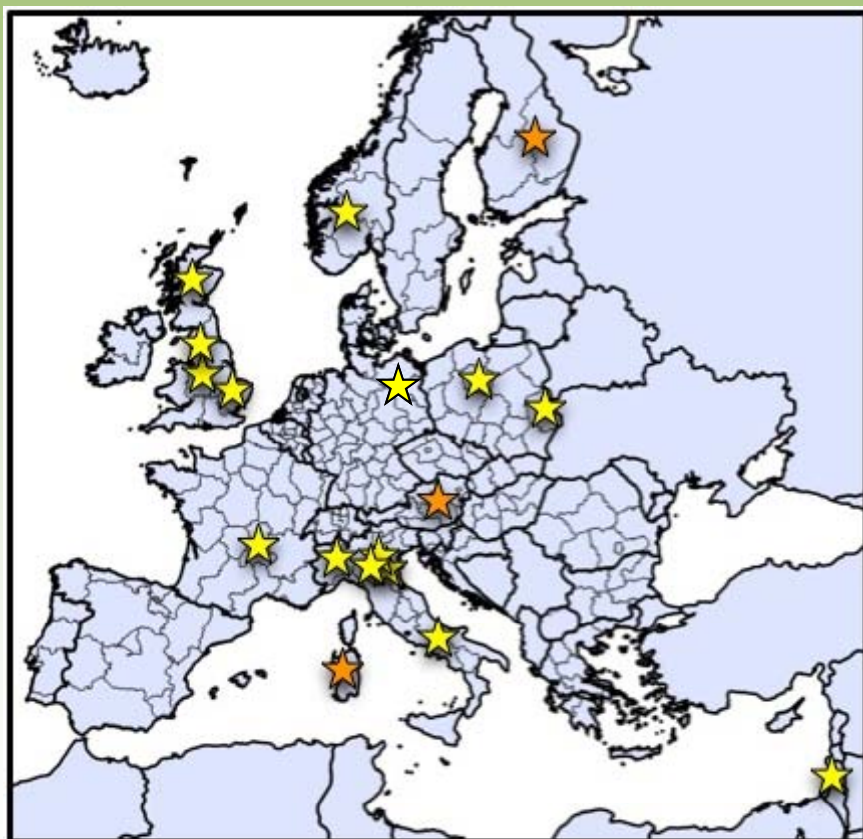
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¹Austrian Institute of Economic Research, Vienna

Aspen, 15 Sept. 2015



MACSUR participants and case studies



18 countries

- Austria
- Belgium
- Czech Republic
- Denmark
- Estonia
- Finland
- France
- Germany
- Hungary
- Israel
- Italy
- Netherlands
- Norway
- Poland
- Romania
- Spain
- Sweden
- UK

→71 organizations, 300 scientists

www.macsur.eu/index.php/regional-case-studies/



MACSUR's aims & mission

- to improve and integrate **models**
crop and livestock production, farms, and national & international agri-food markets
- to analyze the effects of climate change for **farming** in European regions
- to identify risks for farmers and effective **mitigation and adaptation options**
- to analyze consequences of mitigation and adaptation for farming **competitiveness**, the **environment** and **rural development**



MACSUR's structure / themes

Financed by national authorities and coordinated in the EU level initiative of JPI-FACCE

- **CROPM:** crop modelling and improvement
 - many partners are strongly integrated in the AgMIP research community
- **LIVEM:** livestock (system) modelling
 - Main focus so far: establishing a strong network
- **TRADEM:** global/national/farm economic models
 - partners with global models are strongly integrated in the AgMIP research community



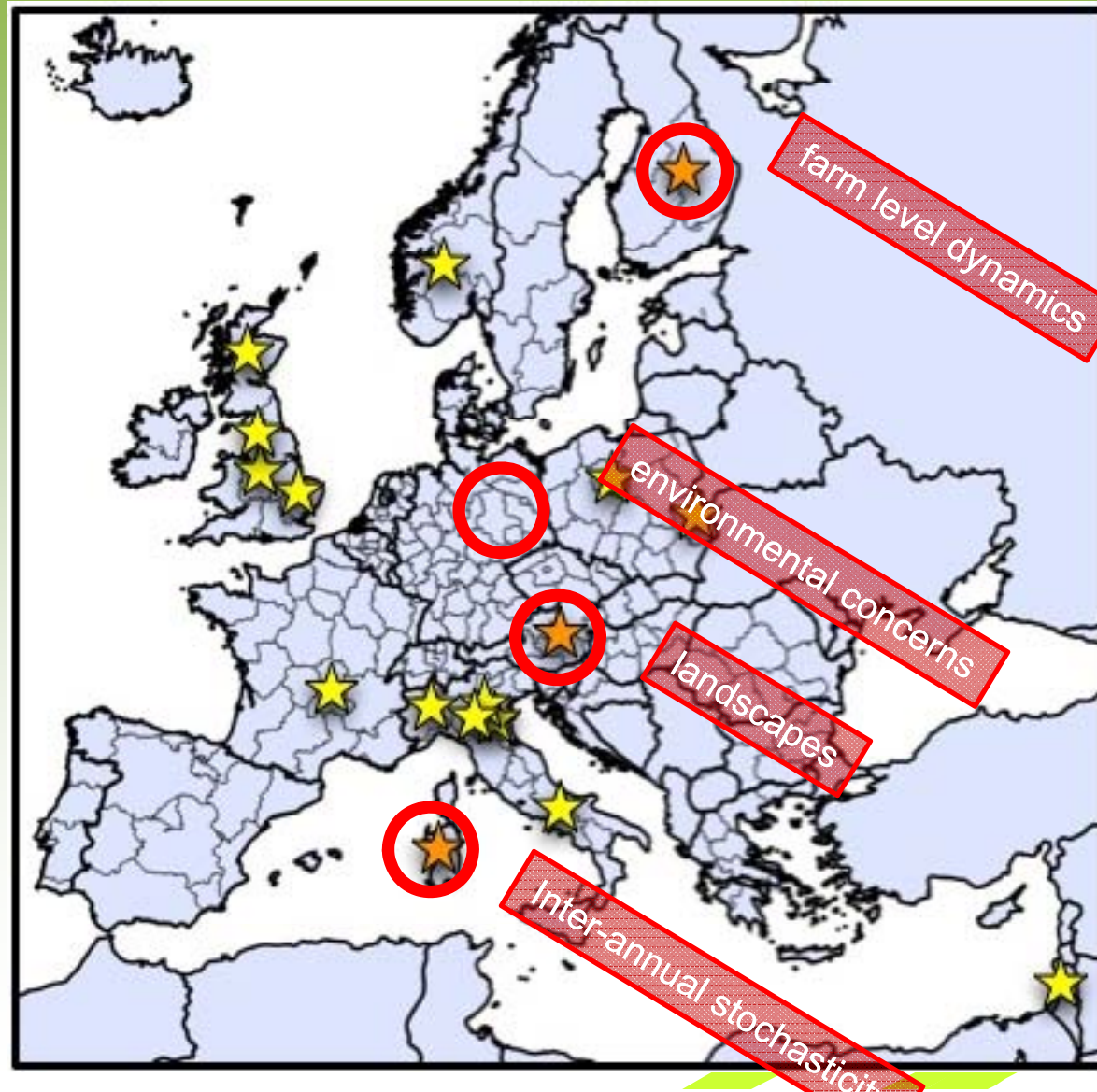
Climate change is different...



- A multidimensional global change phenomenon that impacts (global) markets, (national) policies and (local) natural production conditions
- Impacts on livestock, plant production and natural resources
- Regional heterogeneity creates winners and losers
- Changes are outside the ranges observed in the past
- Changes are not always continuous and difficult to detect for farmers (-> noise of weather variability)
- Impacts are uncertain
- > **Business as usual decision making may no longer be viable**



Focus of selected econ models





selected econ models: characteristics

Bio-economic farm model	Origin	Type	Optimization	Representation
MODAM	DE	LP	multi-objective (e.g. gross margin)	typical farms
FAMOS[space]	AT	MIP	max. gross margin	all farms in landscape
Demcrop	FI	NLP	max. profits (dynamic), risk considered	representative farms
Hybrid TRF	IT	NLP	max. gross margin (inter-annual dynamic), PMP	territorial with representative farms (TRF)



Adaptation options in economic models

Option	MODAM	FAMOS[space]	Demcrop	Hybrid TRF
Crop rotation choices	y	y	y	y
Cultivar/crop variety choice	n	n	y	y
Cover crops	y	y	y	y
New crops and cultivars	y	n	y	n
Tillage options	y	y	n	y
Fertilization options	y	y	y	y
Liming	n	n	y	n
Weed & pest management	n	n	y	n
Irrigation	y	y	n	y
Landscape elements	n	y	y	y
Buffer strips and catch crops	y	n	n	n
Afforestation/Deforestation	n/n	y/n	n/n	n/n
Grassland conversion	n	y	n	y
Livestock herd size, feed choices	y	y	n	y



MACSUR: the way ahead

- **New phase:** mid 2015 to mid 2017
- **Modified structure:** governance and partners
- **New work agenda:**
 - explicit co-operation with AgMIP
 - cross-cutting activities (selection):
 - regional case studies based on integrated modelling approaches / impact assessments
 - development of RAPs for Europe / overall scenario development
 - variability and extreme events / farm scale risk assessment
 - consumer behaviour