AGROCLIMA-SSP v1.1

A tool for Scientific Support to Policies for strategy assessment in agricultural systems under climate change scenarios

Margarita Ruiz-Ramos, Alfredo Rodríguez and M. Inés Mínguez

XIth ESA Congress
Aug 29th - Sept 3rd 2010, Montpellier, France

What are AGROCLIMA-SSP tools?

- Tools for assessment of CC related issues
- Data bases
- Browser and viewer of results
- Friendly synthesis of large content but avoiding generalisation
- Open experiments → feedback for new versions →

FAMILY OF CUSTOMIZED TOOLS

What are AGROCLIMA-SSP tools?

- The aim is to involve agronomists/crop modellers with the decision maker/planner → presenting complex modelling chains
- It is not a simulation platform
- The tool is not open → New versions needed for new combinations RCM-Crop-management

Climate scenarios from RCMs

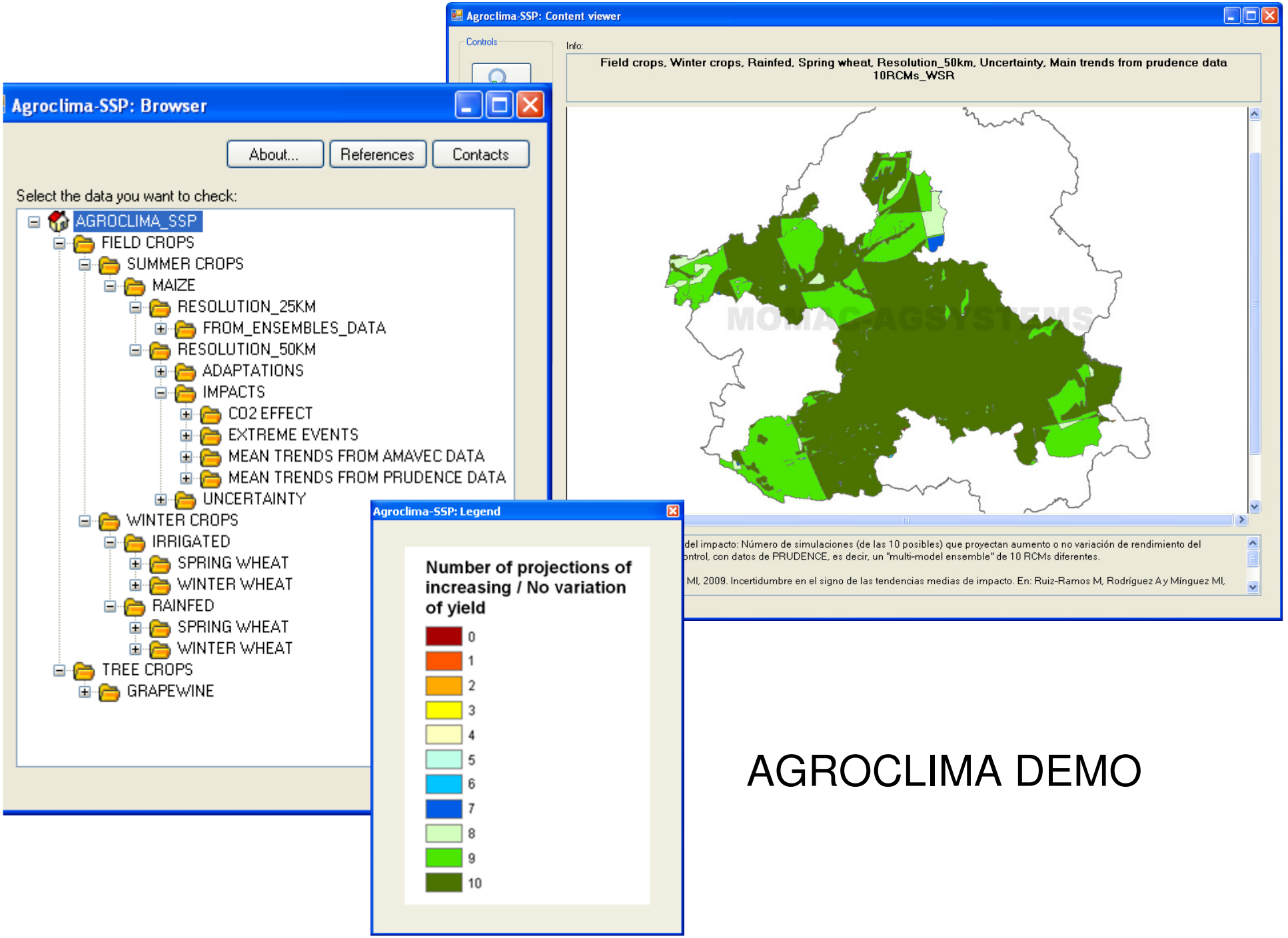
- **PRUDENCE: multi-model ensemble**
  - 10 RCMs nested in HadAM3H, 50 km
  - Control run (1960-1999) and scenario SRES A2 (2070 - 2100)
- **AMAVEC: mixed-physics ensemble**
  - 5 parameterisations of PROMES RCM
  - 1 decade of PRUDENCE
- **ENSEMBLES: multi-model ensemble**
  - 14 RCMs, 25 km
  - Continuous simulation 1950-2050, SRES A1B

Crop & cropping systems

- Crop modelling
  - Compensatory effects of CC→Impact sign
  - Crop models: CERES, STICS, CROPSYST
  - Reference crops→ indicators, growing season, no N stress, no biotic stress
    - Trees: Grapevine
    - Field crops: rainfed and irrigation
      - Summer: maize
      - Winter: wheat (autumn-sown spring & winter cultivars)
  - Outputs: RELATIVE changes
    - Yield, biomass, phenology, water use (ET, irrigation)
    - Extreme events: temperature and precipitation → climate-phenological indexes
- Feed back info to RCMs
- Adaptation strategies
- Uncertainty evaluation

Browser structure

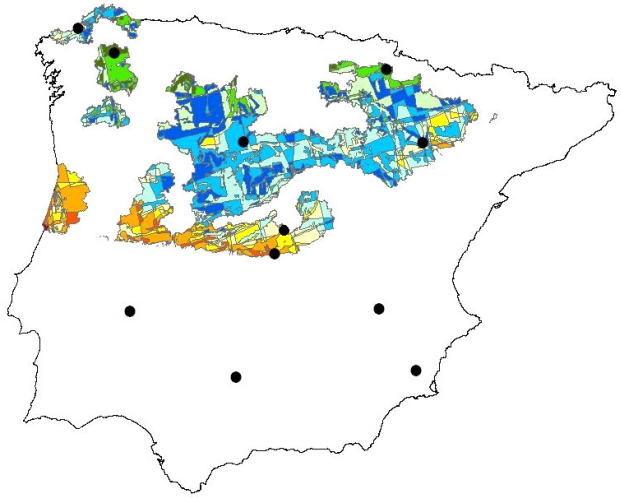
- Climate → summary
- Impacts → PRUDENCE, AMAVEC
  - Mean and variability
  - Extremes
  - CO_2 effect
- Uncertainty—degree of coincidence
  - Sign of impact
  - Magnitud of impact: time series
  - Extremes
  - Soils
- Adaptation
  - Quantification of autonomous adaptation
  - Identification of strategies for genetics: phenophases duration, yield components
  - Extent of application: Maize *vs* wheat
- Conclusions
  - Summary and interpretation of results

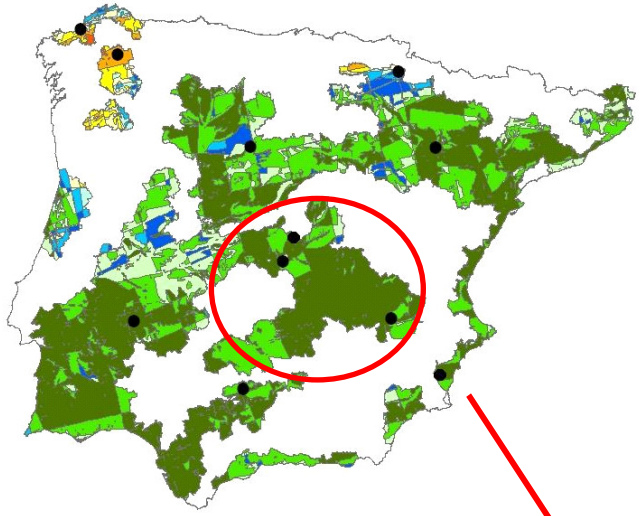


AGROCLIMA DEMO

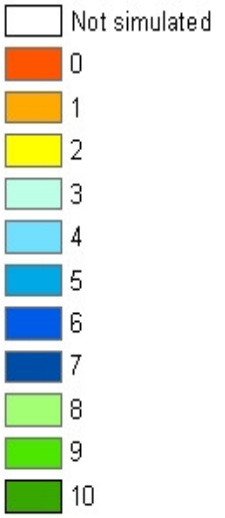
Results: Uncertainty

- Sign of impact
- Impact magnitude





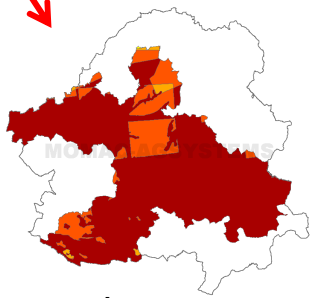
Nb of RCMs predicting Yield increase



Rainfed Winter Wheat

Rainfed Spring Wheat

Irrigated Maize



Ruiz-Ramos, Domínguez, Mínguez and Gaertner (2010) EGU
Ruiz-Ramos and Mínguez (in press, doi 10.3354/cr00933) Climate Research

AGROCLIMA-SSP for Co-Innovation

- Phase I: construction of the tool to organise, interpret results
- Presentation or distribution of AGROCLIMA v.1.1 to administration, extension services, insurance companies, etc
- Phase II: incorporating user's feedback → open experiments → new versions: Phase I

- Thank you!