



Towards transformational climate change adaptation in the agriculture sector using climate and agrometeorological information

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Transformational Climate Change Adaptation

- Funding – Green Climate Fund and others
 - Long-term
 - Beyond “development” project
 - Beyond one-time investment
 - Innovation – accessible for smallholder farmers
- 




Elements that support transformational changes

- Evidence-based
 - Link with policies
 - Scaling-up / replication
 - Capacity development / knowledge sharing
 - Enabling environment
- 




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Any climate change adaptation programme/project should be supported by robust evidences.





There are many types of evidences that support climate change adaptation.



- 
- Past climate, and its impacts on local agriculture
 - Future projected climate and its impacts on local agriculture
 - Characterization of vulnerability to climate change and other factors
 - GHG emissions
 - Identification and appraisal of potential adaptation practices
 - Trials, Socio-economic econometric analysis, cost-benefit analysis, biophysical models, etc
 - Effectiveness of adaptation interventions → monitoring and evaluation


- Past climate, and its impacts on local agriculture
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MOSAICC




- Modelling System for Agricultural Impacts of Climate Change – a collaborative platform





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We aim to contribute to national policy planning and programmes/projects on climate change, agriculture, and food security.

- National Adaptation Plan
- Climate-Smart Agriculture
- Agriculture Investment Plan
- National Climate Change Policy
- NDC – Nationally Determined Contribution
- National Communication to UNFCCC

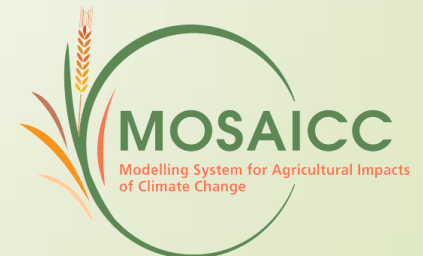


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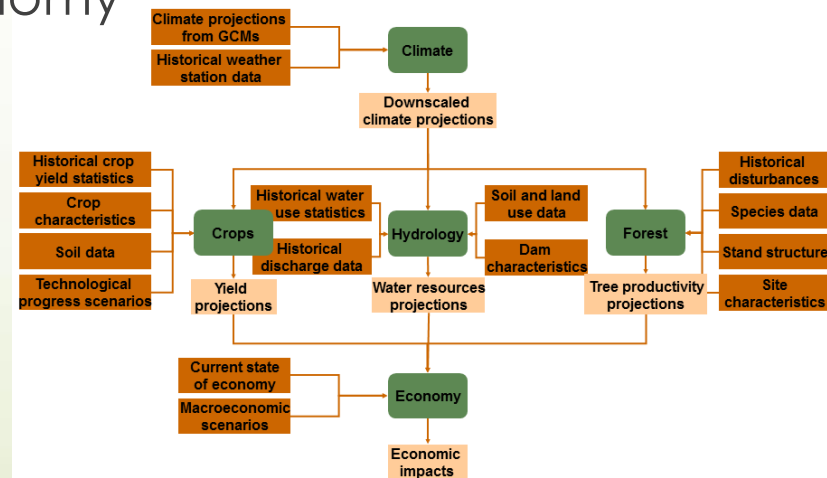
Focus on National Level

- National level with sub-national disaggregation.
- Highlights different adaptation needs within the country
- Philippines, Peru, Morocco, Malawi, Zambia, Indonesia, Paraguay, Uruguay, and more



Interdisciplinary approach

- The challenge of climate change and food security cuts across disciplines
 - Many sub-sectors, including livestock, fisheries, aquaculture
 - Biophysical, social and economic
- Integrated modelling system
 - Climate downscaling, crops, forest, river water, national economy





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Country-driven approach


- **By** national scientists
- **With** country's own data
- **For** country's information needs



Capacity development

- Capacities need to be internalized in the country for supporting long-term climate change adaptation development pathway
- A series of training workshops
- Trained experts are supported by international scientists





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Stakeholder involvement

- Interdisciplinary working group
 - Scientists
 - Different disciplines
 - Data providers
 - Policy makers
 - Different ministries and institutes
- Academic studies designed to meet the needs of stakeholders e.g. policy makers



Project Steering Committee
Chaired by Ministry of Agriculture
With: Ministry of Env,
National Weather Service, etc



National Project Manager
(consultant)

National Project Coordinator
(assigned by main counterpart
ministry)

Other project
components

Technical working group
for CC assessments

Climatologists

Crop Scientists

Leader of TWG

Economists

Foresters

Hydrologists

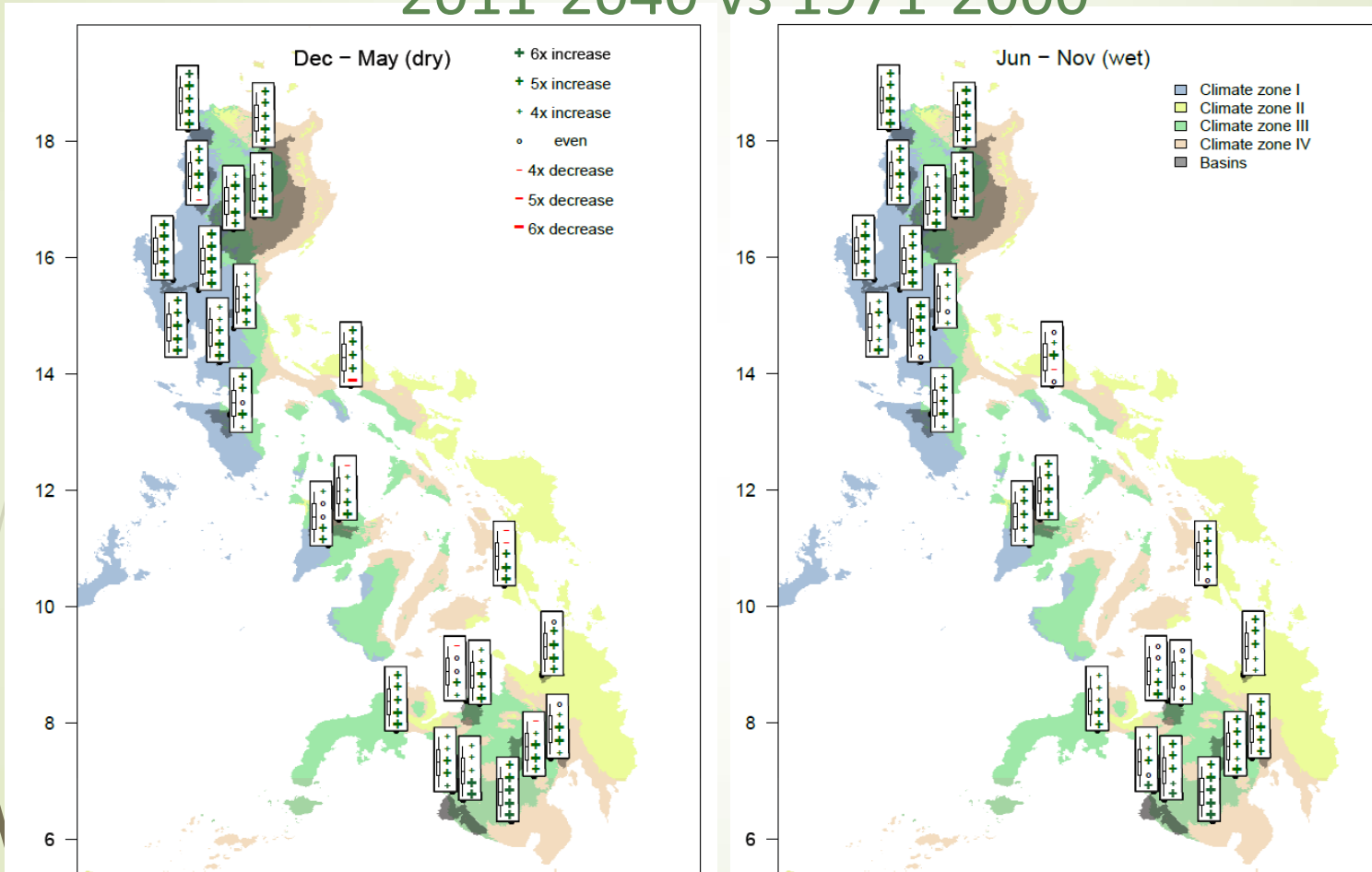
Data Providers

Policy makers

Trainers
(international
scientists)

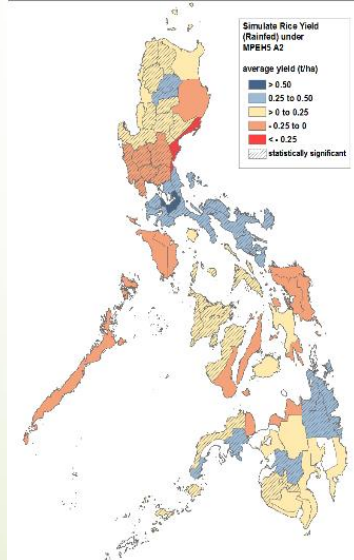
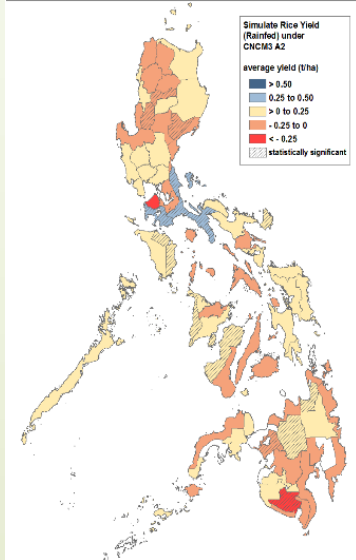
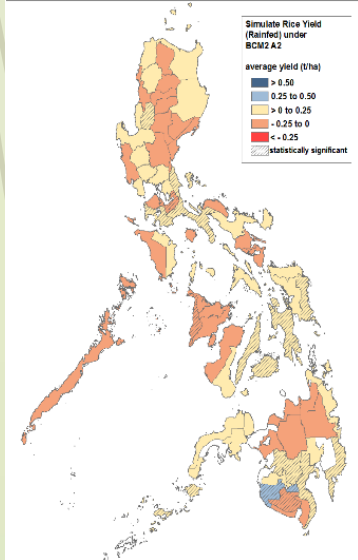
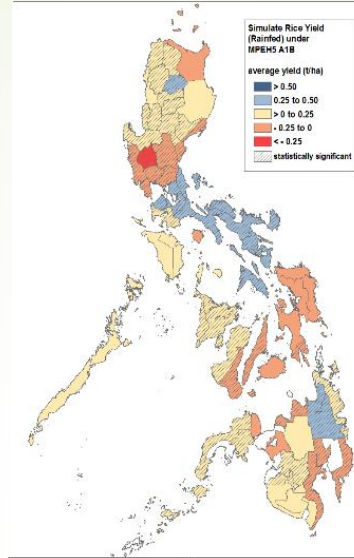
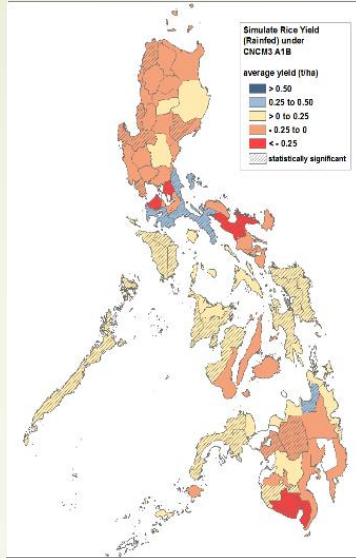
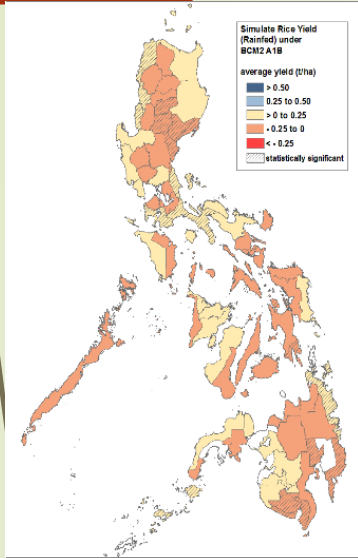
FAO technical
officers

Changes in discharge by season and agreement among 3 GCMs x 2 emission scenarios 2011-2040 vs 1971-2000



Which regions are more affected by river flow changes, and irrigation potential?

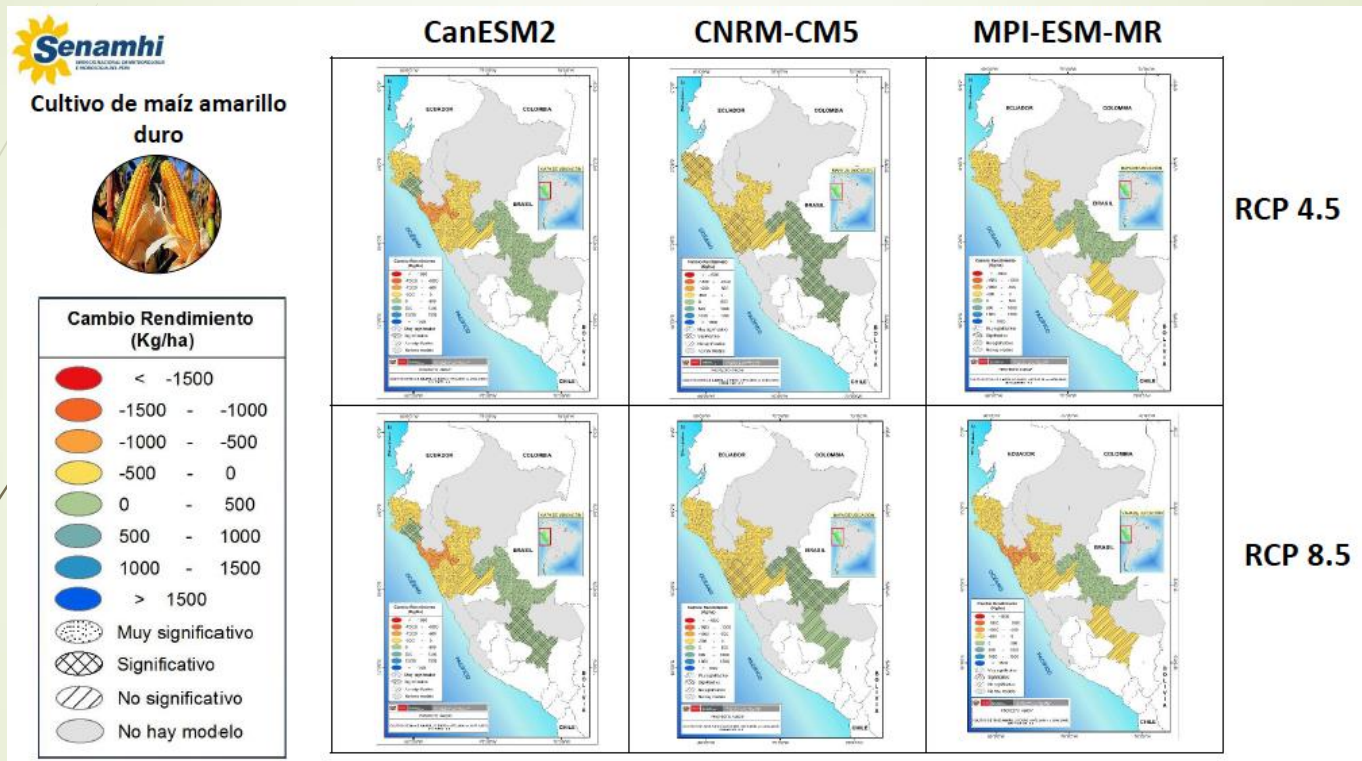
Rainfed rice yield change 2011-2040 vs 1971-2000




Which regions are more affected than other regions by crop productivity changes? →

What are the priorities for adaptation interventions, resource allocation, and investments?

Peru – corn yield projection



Which crops are more vulnerable and where? →
 What are optimal crop mix?



Answering these questions aid policy makers.

- ▶ How government should allocate resources.
- ▶ How long-term agriculture development plan should be.
- ▶ How to formulate CC adaptation projects.
- ▶ Research and development

Combining Top-down and bottom-up approaches

- Top-down – MOSAICC
- Bottom-up – vulnerability assessment considering socio-economic factors along with climate factors
- AMICAF – Philippines and Peru (phase 1), currently Indonesia and Paraguay (phase 2)





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Plant disease risk warning


- Real-time agrometeorological monitoring from weather stations
- Disease model by plant pathologist
- Weather forecast
- Combined with satellite observation
- Macedonia, Georgia, Tajikistan
- National Hydrometeorological Service



Mobile technology for communicating information

- Weather forecast, agrometeorological condition, and essential information for on-farm decisions
- What to plant? When to plant? When to harvest?
- SMS, Smartphone app
- Extension workers
- Feedback mechanism and crowd-sourcing
- Senegal and Rwanda



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Summary



- Promote evidence-based adaptation
- Policy makers and project formulators are looking for information to underpin policies and project objectives; role for science community
- Beyond crops
- Scales matter
- Stakeholder involvement
- Collaboration with FAO?

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