



# **Conclusions from WMO ICT Meeting**

# Conclusions (1)

- Observational evidence shows that agriculture, forestry and fisheries are now being affected significantly by climate change and more specific information on the nature of future impacts is now becoming available.
- Vulnerability to climate change can be exacerbated by the presence of other stresses such as population increase, poverty, degradation of natural resources, over-fishing etc., especially in developing countries
- Many impacts can be avoided, reduced or delayed and vulnerability of affected communities can be reduced by implementing suitable adaptation measures.

# Conclusions (2)

- There is a lack of appreciation and use of indigenous knowledge at local level to reduce impacts and adapt to climate change.
- There are obstacles in using the recommended adaptation practices because of lack of attention to possible social disruptions while changing traditional customs and in an environment of political and economic instability.
- Despite the need for climate friendly farming technologies, there is a clear lack of research and education targeted towards subsistence farming and lack of guidance on climate change adaptation.

# Conclusions (3)

- There is confidence with GCMs projections for temperature but uncertainty in regional (seasonal) precipitation and climate extremes. GCMs have some incomplete/missing processes and feedbacks eg., vegetation, carbon cycle etc., GCMs do not simulate climate variability well eg., ENSO, monsoons, ITCZ, SPCZ etc.,
- There is a lack of useful Regional Climate Models (RCMs) and downscaling of climate change scenarios for local applications as well as capacity to use them particularly for small islands (SW Pacific, Caribbean, North Pacific, Indian Oceans), South America, and Africa.

# Conclusions (4)

- Current research and development (R&D) activities, especially in the developing countries, are insufficient in understanding and developing strategies to reduce the impacts of ENSO-induced climate variability.
- In recent years, significant advances have been made in the development of seasonal-to-interannual climate forecasts, but their operational applications in agriculture have been hampered by lack of information on the accuracy, timing, interpretation, understandability and communication in local languages.

# Conclusions (5)

- Traditional insurance markets and informal lending systems in villages are inadequate in preparing for climate change. There is a lack of risk management tools eg., insurance markets, for agriculture, forestry and fisheries, in particular in developing countries.
- Currently the government policies to address climate change impacts and adaptation measures are inadequate to meet the urgent need for climate change adaptation.



# **Recommendations from WMO ICT Meeting**

# Recommendations - Research

- Enhance the national predictive capabilities, and their understanding of the interactions between climate change, and the relevant preventive and mitigating mechanisms in agriculture, forestry and fisheries.
- Carry out research to identify highly vulnerable micro environments and communities and provide them with coping strategies.
- Conduct research on the development of precision farming technology to ensure an efficient utilization of resources, especially water and nutrients in crop production.

# Recommendations – Research (2)

- Promote the in-country capability to use Regional Climate Models and develop downscaled climate change scenarios eg., in collaboration with weather generator developers from the Southeast Climate Consortium (SECC).
- Develop scenarios based on daily values for agricultural impact assessments.
- Revise agroecological zoning, where necessary, in the light of projected climate change.

# Recommendations – Climate Forecasting

- Provide climate forecast information that is accurate, timely, useful and relevant for different climate-sensitive activities in agriculture including advisories for the farmers on the onset/length of growing season, sowing dates, rainfall amount and distribution.
- Promote farmer adoption of seasonal to inter-annual climate forecasts, there is a need to generate quantitative evidence of their usefulness eg., through cost-benefit analysis.

# Recommendations – Climate Forecasting (2)

- Encourage investigations of the usefulness of seasonal and decadal forecasts to support adaptation planning through downscaling seasonal to decadal forecasts and improving their skill for precipitation and extremes.
- Enhance climate forecasting applications in natural disaster management through collaborative research with other physical and social sciences.

# Recommendations – Capacity Building

- Promote and sustain national scientific capacity of the relevant departments and institutions through improved access to technical and financial resources to strengthen climate monitoring and predictive capabilities.
- Improve the capacity to develop early warning systems, drought risk management, climate monitoring etc.,
- Encourage staff and student exchange in the applications of seasonal forecasts in agriculture, e. g. Southeast Climate Consortium (SECC) in USA.
- Collect and disseminate information on technology transfer, indigenous knowledge and farmer training programs to identify and scale up good management practices.

# Recommendations – Agriculture

- Develop effective pest and disease control methods and preventive measures to cope with the changing climate.
- Improve technologies for efficient management of land, water, and crops in the light of the changing farm environment.
- Mitigate the impact of natural disaster and climate change on agriculture, forestry and fisheries through appropriate practices and policies.

# Recommendations – Agriculture (2)

- Promote the implementation of agricultural practices that are consistent with the principles of the sustainable development: minimum tillage, agro-silvo-pastoral systems, intercropping, rotation, use of residues etc.,
- Promote more active participation of local communities through more effective information delivery and communication systems, taking into account the sources of information they use, consider and trust.

# Recommendations – Farmer-Adaptation

- Promote implementation of adaptation strategies such as:
  - Improved varieties that resist heat, drought, pests and diseases;
  - Changes in cropping patterns;
  - Afforestation;
  - Improved water and land management
  - Diversification into non-farm activities
  - Crop insurance
  - Improved management of or access to markets and finance (e.g., microcredit)

# Recommendations – Farmer-Adaptation (2)

- Develop and recommend ways to best use the information already available to promote on-farm decision making and adapt to climate change by:
  - Strengthening, consolidating, updating recommendations on ‘best practices’ for applying climate model data in impact assessments
  - Promoting robust adaptation measures based on these eg., hedging, guidance/advice on skill and confidence of climate projections across agriculture, forestry and fishery sectors.