GEOSS Agricultural Risk Management Task (AG-07-02)

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Presentation

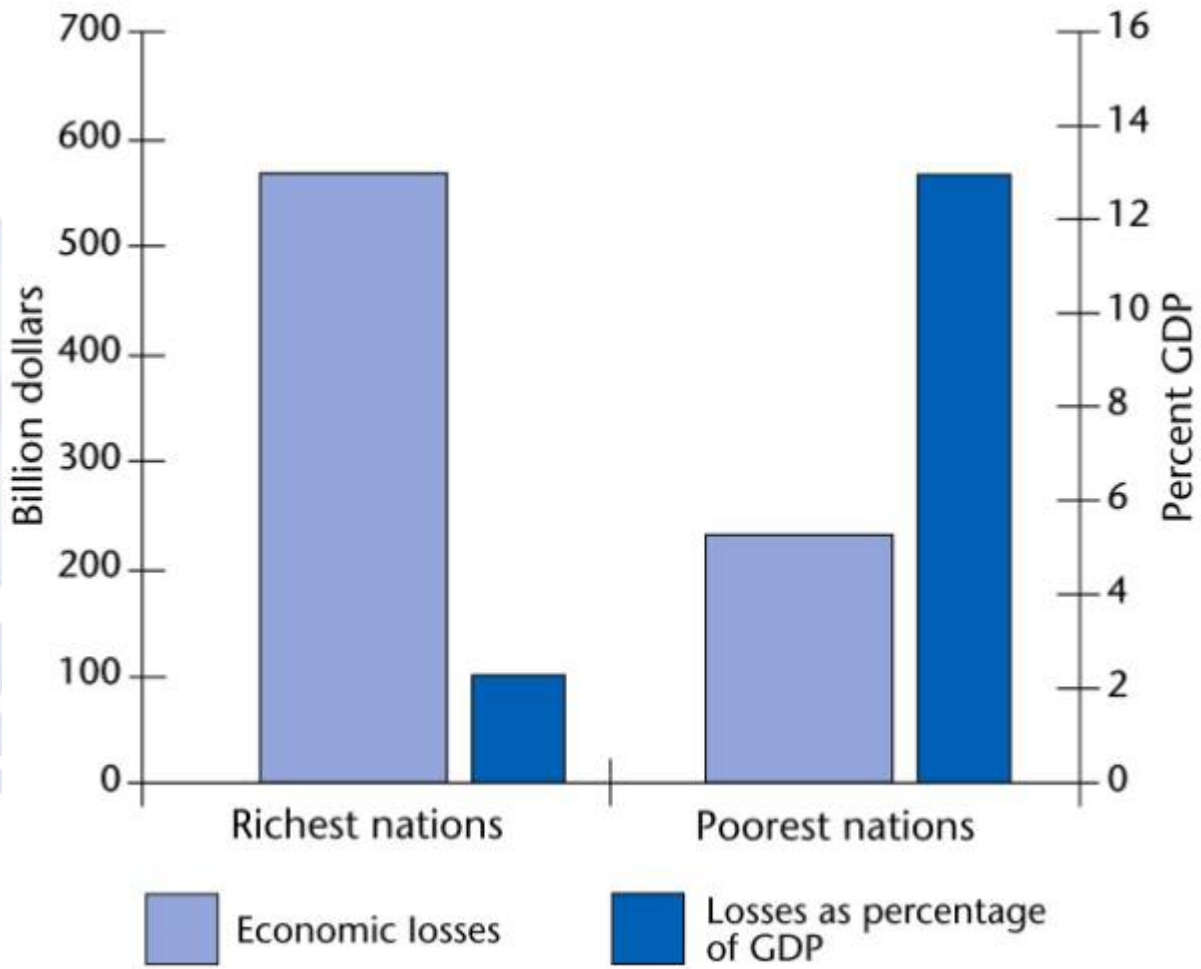
- Introduction
- Major goal of the task
- Description of the work to be performed
- Outputs and deliverables
- Current status

Introduction

Risk and Uncertainty

- Risk = chance of something happening that will impact on your objectives
- Chance = uncertainty
- Uncertainty → Risk
- Risk management involves managing uncertainty

Developing Countries are Hit the Hardest …



For decision-making

–Risk Assessment: Monitoring defines the nature of the risk

–Risk Perception and Choice: Monitoring affects choices

–Risk Management: Monitoring leads to alternate strategies

Overall: Increased monitoring will reduce the uncertainty and the ambiguity now embedded in the process

Risk management strategies….

- Avoid dangers
- Prevent/reduce the frequency of impacts
- Control/reduce consequences (adaptation measures)
- Transfer the risk (e.g. insurance)
- Respond appropriately to incidents/accidents (e.g. disaster management)
- Recover or rehabilitate asap (e.g. media response)

Major goal of the GEOSS Agricultural Risk Management Task

Develop and improve analytical tools and methods for agricultural risk assessment, particularly for crop failure, and establish common standards and formats

Description of the work to be performed

- Establishment of operational monitoring systems for extreme events such as crop water stress and early warning of locust infestations.
- Improving food-supply prediction from agriculture and aquaculture by implementation of pilot-projects linking Earth system model forecasts to end-user application models (such as crop-yield simulation models)
- Developing case studies demonstrating risk assessment analyses, and quantitative comparisons to standard, benchmark practices.

Description of the work to be performed

- Documentation of techniques developed in the proposed case studies for broader use.
- Conducting a workshop in 2008 to promote the exchange of ideas and results between scientists from the agricultural and geophysical communities on agricultural early warning systems.
- Advocating funding from donor countries for the ongoing research and operational implementation of an agricultural early warning system for food security in developing countries.

Outputs and Deliverables

- A set of tools for agricultural risk assessment based on remotely sensed and in-situ data and their integration and combination.
- Demonstration of the potential effectiveness of an operational forecast system for food security

Current Status

- An International Workshop on Agrometeorological Risk Management: Challenges and Opportunities was organized from 25 to 27 October 2006 in New Delhi, India.
- A number of strategies were identified to cope with risks.

Recommendations

- Risk management
- Risk management tools
- Research needs
- Policy issues
- Emphasis on user needs
- Communication
- Marketing

Strategies to cope with risks

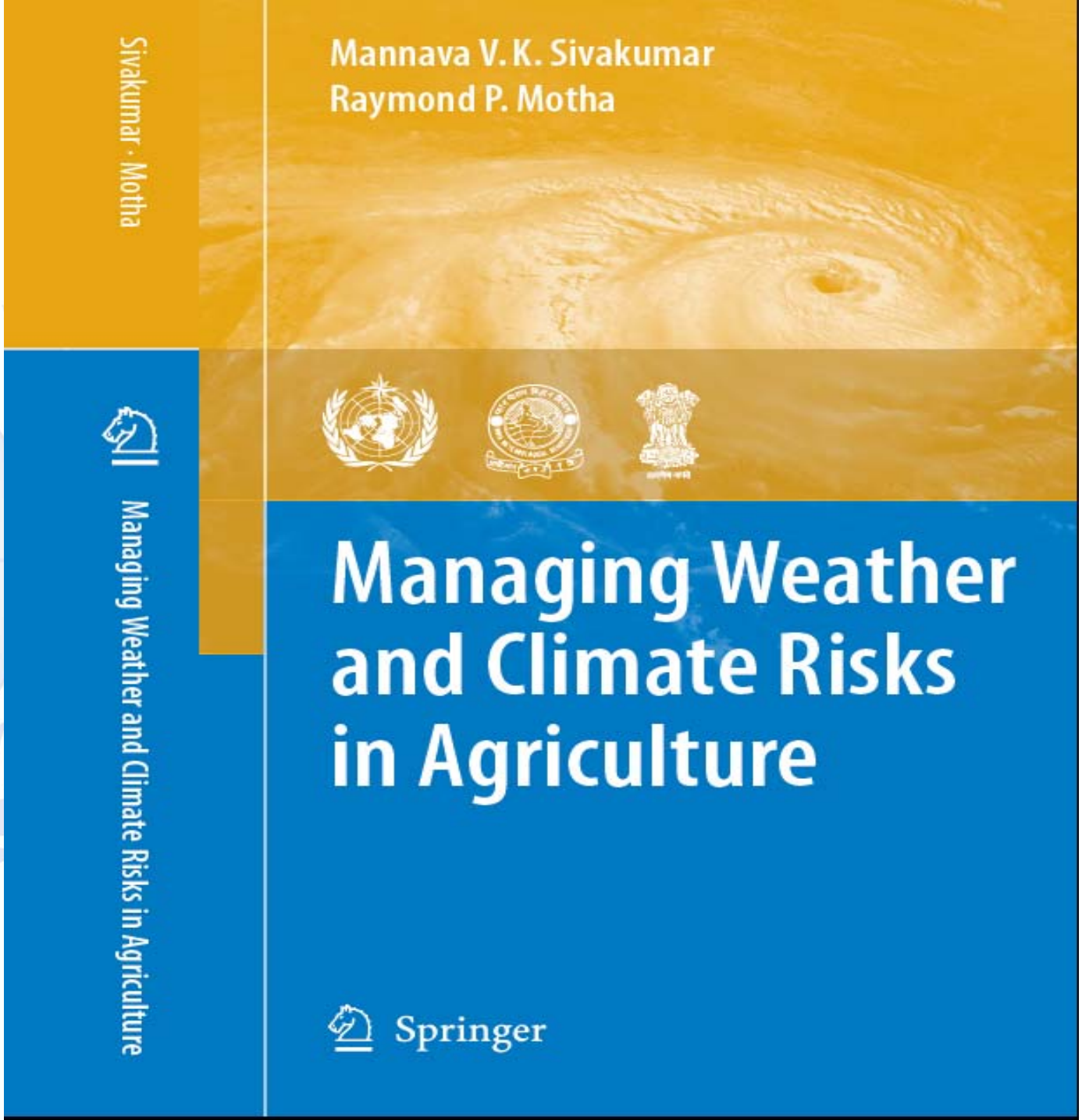
- Use of seasonal forecasts in agriculture, forestry and land management to assist alleviation of food shortages, drought and desertification.
- Use of integrated agricultural management and crop simulation models with climate forecasting systems
- Improve water management and increase the efficient use of water through crop diversification and better irrigation.
- Application of local indigenous knowledge.
- Combine locally adapted traditional farming technologies, seasonal weather forecasts and warning methods.

Challenges to Coping Strategies

- Impact of different sources of climate variability and change on the frequency and magnitude of extreme events.
- Lack of systematic data collected from disasters impeded future preparedness
- Lack of effective communication services for the timely delivery of weather and climate information to enable effective decision making.

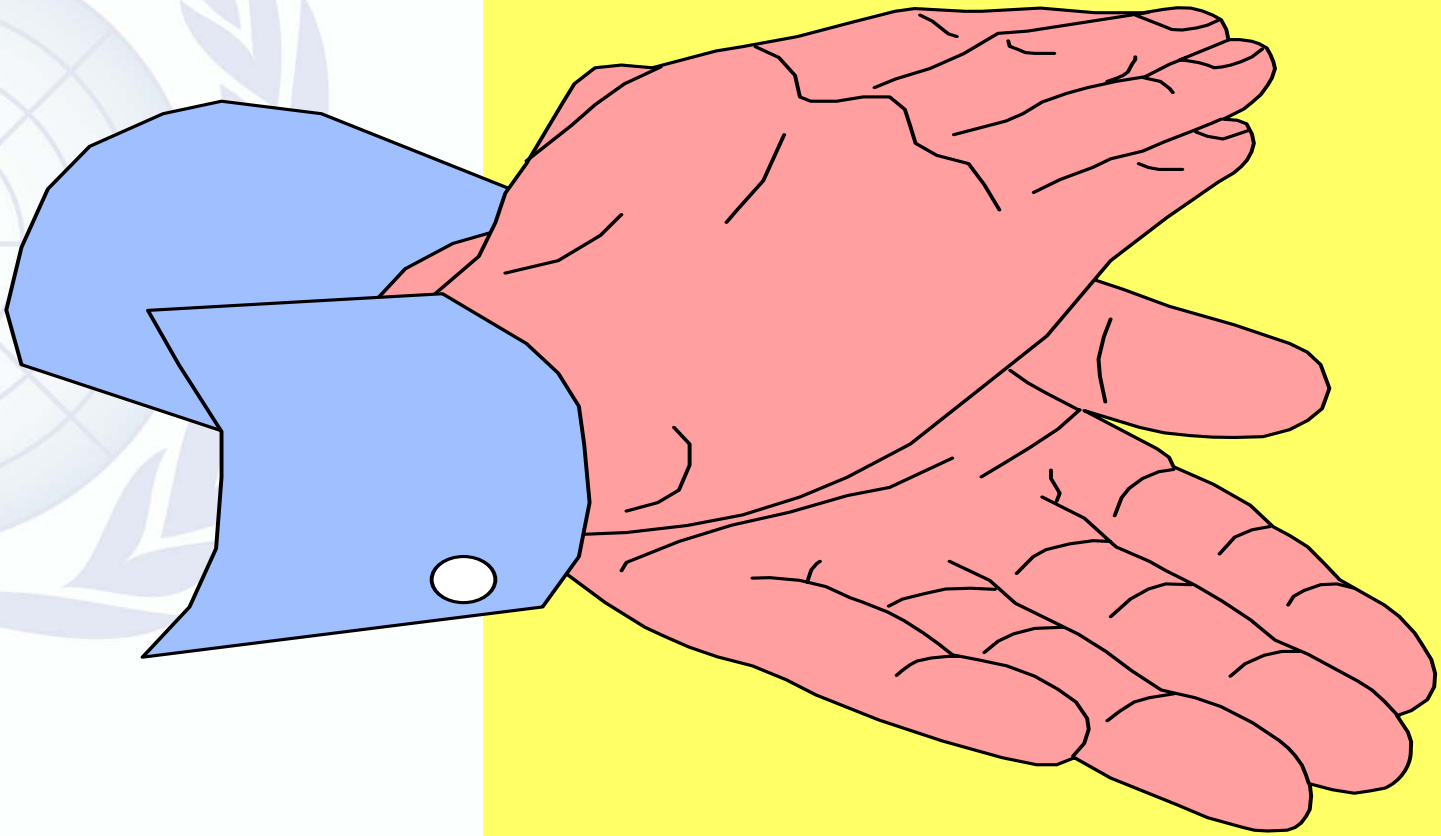
Policy options to cope with risks

- Contingency planning
- Use of crop simulation modelling
- Use of agrometeorological services.


Sivakumar · Motha
Managing Weather and Climate Risks in Agriculture
Mannava V. K. Sivakumar
Raymond P. Motha
Managing Weather and Climate Risks in Agriculture
Springer

WMO
OMM

Thank you very much for your attention



Risk Management

- Develop a pro-active risk-based management approach to deal with the adverse consequences of weather extremes and climate anomalies which includes risk scoping, risk characterization and evaluation, risk management and monitoring and review.

- Emphasize preparedness planning and improved early warning systems to lessen societal vulnerability to weather and climate risks.

- Provide accurate, timely, consistent, and widely-available information to optimize decisions relative to the risks and uncertainties within the global agricultural production and distribution system.

Risk Management Tools

- Promote use of decision-support systems as risk management tools

- For medium and low input systems in the developing countries, crop or agro-ecosystem modeling should be used to guide general decision-making on a higher institutional or farm advising level.

- Current and future trends of simulation model outputs should be analysed for sensitivity to climatic hazards of different agricultural systems and defining specific critical thresholds according to farming characteristics in agricultural areas.

Risk Management Tools

- Risk assessment and risk management models supporting coping strategies for integrated pest management could be used in a prototype conceptual framework that can be utilized in other agricultural-related risk approaches.

- Statistical forecasting tools to link observed weather data to crop yields in major crop-producing regions should be developed

- Emergency response system (ERS) based on advanced Information Technology (IT) such as information network, simulation models, tools for GIS and remote sensing could be developed to address agricultural hazards and early warning.

Risk Management Tools

- Climatic risk zoning could be used for quantifying climate-plant relationships and the risk of meteorological extremes in agricultural financing programs.

Research Needs

- Local indigenous knowledge has been blended with specific and important weather patterns in a cultural tradition in many poor, rural areas. Introducing new scientific-based weather/climate forecast services, which provide accurate and reliable outlooks into this cultural system may help farmers improve yields and cope with risks.

- There is an essential need for the development of standards, protocols, and procedures for the international exchange of data, bulletins, and alerts for some types of agricultural hazards. WAMIS offers the potential to assist with this technology transfer.

Research Needs

- The application of seasonal forecasts for crop management strategies, risk management planning, and national policy implications needs to be considered, as these outlooks become more accurate and reliable.

- Developing methods for screening satellite imagery to identify crop-specific impacts of weather in crop regions around the world should be research priority.

- For effective management systems to be put into place, integrated climate-crop modeling systems need to be developed at the appropriate farm or regional scale suitable for the decision-makers needs.

Policy issues

- In many developing countries, the inability of poor in rural areas to gain access to support mechanisms in terms of technical expertise or technological innovations, including formal sources of credit or crop insurance, requires urgent attention.

- Agrometeorological services and support systems for agrometeorological services should be strengthened for effective management of weather and climate risks.

- Aspects of drought contingency planning, drought preparedness, and drought impact assistance policies need to be urgently considered as to their future effectiveness under long-term climate change.

Policy issues

- Drought contingency plans on paper should be translated into an effective policy covering the range of activities required to address short and long-term consequences. Effective and interactive management systems need to be set in place.

- Public-private partnership models need to be further explored in order to ‘mainstream’ drought risk management. Involving the development of risk management tools and approaches within the context of overall rural livelihood strategies, integrating risk arising from markets and threats to the natural resource base. It also involves communicating risk management knowledge through functional, existing communication networks of farmers and other landholders, rather than pursuing specific communication programs.

Policy issues

- The concept of a drought mitigation and monitoring center, coordinated by both meteorological and agricultural agencies at national and state levels, to define standards and policy for monitoring and mitigation of drought at both state and national levels should be promoted.

- A scientific desertification monitoring and evaluation system involving all appropriate sectors including agriculture, forestry, water conservation, environmental protection, meteorological and natural resource conservation should be established.

- Measures to combat desertification must be vigorously pursued. These include: shelterbelts, windbreaks, converting cropland to forests, grazing prohibition, grassland construction, water-saving irrigation project, and integrated ecological agro-forest measures or integrated ecological agro-economic measures.

Emphasis on User Needs

- Develop clear and useful guidelines on the exact nature of agrometeorological products needed for local user communities

- Strengthen the use of intermediaries in training farmers and the use of information technologies fit for target groups.

- Implement an effective user-driven delivery system comprising of decision support tools and the training of users on their application at critical decision points in farming.

Communication

- Communication and dissemination are critical links to the transfer of early warning information to the right decision-makers. For disseminating warnings Internet is an useful medium for expanding coverage and reducing time lags and its active use should be promoted.

- Enhancements in communication channels for the improved dissemination of agricultural meteorological information must take into account the literacy levels of users, socio-economic conditions, level of technological development, and accessibility to improved technology and farming systems.

- For effective inter-sectoral and multi-stages communication of risk, appropriate involvement of communication pathways and common dialogue between scientists, managers, and communities should be promoted.

Communication

- A documentation of the many and varied types of management strategies to cope with agrometeorological risks and uncertainties should be posted on WAMIS web server.

- Methodologies and tools to assess precipitation anomalies and drought should be posted on the WAMIS web server for potential application elsewhere.

- Efficient irrigation water management plays a key role in agricultural productivity and also protects the soil health. Proper and timely agro-advisories related to irrigation scheduling, fertilizer management helps the farmers in better planning of agricultural operations.

Marketing

- The entire global agricultural economy encounters price, income and other forms of risk related to weather uncertainty. Increased interdisciplinary collaboration between meteorologists, agronomists, and economists can improve the quality of information upon which agriculture-related businesses and agricultural policy-makers around the world depend.