

Sub-task Number: AG-07-03b

Sub-task Title: Agricultural Risk Management

Overarching Task: Global Agricultural Monitoring

Area: AGRICULTURE

Related Community of Practice: Global Agricultural Monitoring

Relevant Committee: TBD

Related Targets: (to be included in 2009)

Sub-task Definition (as given in the 2009-2011 Work Plan):

Develop and improve analytical tools and methods for agriculture risk assessment, particularly for crop failure. Establish common standards and formats. Facilitate the implementation of pilot-projects linking Earth system (weather and climate) models to end-user application models (such as crop-yield models) to improve food-supply prediction.

Leads (GEO Member or PO, Entity carrying out the work, Contact: e-mail):

WMO (CLW/AGM), Point of Contact: Robert Stefanski, RStefanski@wmo.int

Motivation/Background

Decision making in agricultural production is a complex process in which many risks need to be evaluated for an informed decision to be made. In many parts of the world, weather and climate are two of the biggest production risk and uncertainty factors impacting on agricultural systems performance and management. Extreme climatic events such as severe droughts, floods, cyclonic systems and wind disturbances strongly impede sustainable agricultural development. Hence weather and climate variability is a major component in evaluating all environmental risk factors and risk management decisions. Coping with agrometeorological risk and uncertainties is the process of measuring or otherwise assessing agrometeorological risks and uncertainties and then developing strategies to cope with these risks.

One of the most important risk management strategies is improved use of climate knowledge and technology, which includes the development of monitoring and response mechanisms to current and forecasted weather and climate. By providing new, quantitative information about the environment within which the farmers operate or about the likely outcome of alternative or relief management options, uncertainties in crop productivity can be reduced. Quantification of methodologies is essential. Computer simulations are effective analytical tools and may be particularly useful to quantitatively compare alternative management and relief options in areas where seasonal climatic variability is high and/or that are prone to extremes. Some measures used to reduce the impacts of the variability of climate resources on crop production include: irrigation, water harvesting, windbreaks, frost protection, microclimate management and manipulation, use of seasonal to interannual climate forecasts to adjust planting dates, crops and/or varieties, and predict pests and disease pressure, improved application of medium-range weather forecasts and crop insurance.

Outputs (e.g. products and services which result from the activities of the Task/sub-task; outlined in the form of deliverables with timelines)

Planned:

In this period, Task members will focus on the following outputs:

Output 1: Agricultural Risk Management Chapter for Best Practices Document

Output 2: A set of tools for agricultural risk assessment based on extreme weather and climate variability scenarios and their integration and combination with remotely sensed data.

Output 3: Demonstration of the potential effectiveness of an operational weather/climate forecast system for food security.

Activities (operations or work processes through which resources are mobilized to produce specific outputs; outlined in the form of milestones including timelines)

- Sub Task 1. Agricultural Risk Management Best Practices Document to be completed (WMO Oct 09)
 - WMO has started work on the Risk Assessment and Forecasting Chapter.
- Sub Task 2. Develop pilot projects to review and collect case studies demonstrating risk assessment analyses and quantitative comparison to standard, benchmark practices
 - 2a: Review and develop standards for estimating missing weather and climate data to ensure complete input datasets for crop simulation models.
 - 2b. Use output from WMO Commission for Agricultural Meteorology (CAgM) Expert Team on Drought and Extreme Temperature (Beijing, 16-19 Feb 2009).
 - WMO is organizing a Workshop on Indices and Early Warning Systems for drought to be held in Lincoln, NE, USA from 8-11 December 2009. The main objectives of the workshop are to develop a consensus standard index for each of the three types of drought (meteorological, agricultural, and hydrological) and to develop guidelines for Members in implementing and improving drought early warning systems.
- Sub Task 3: Develop pilot-projects integrating Earth system model information (data and forecasts) to end-user application models (crop-yield models, pest-crop models) in order to improve food-supply prediction for agriculture
 - 3a: Focus on improving the integration of weather / climate information (data and forecasts) into the existing Famine Early Warning systems (e.g. FEWS, FAO GIEWS). This complements GEO AG-07-03a Sub Task 4f - Coordinated Data Initiative for Global Agricultural Monitoring (CDIGAM) – (WMO)
 - 3b. Develop synergies between existing projects from WMO and Task members organizations with this Sub Task.
 - 2b. Use output from WMO Commission for Agricultural Meteorology (CAgM) Expert Team on Drought and Extreme Temperature (Beijing, 16-19 Feb 2009).
 - WMO has liaised with FEWSNET to arrange country FEWSNET staff to participate in two meetings to discuss meteorological data issues.
- Sub Task 4: Develop pilot project to develop and improve analytical tools to assess the impacts of extreme events and climate variability on agriculture
- Sub Task 5: Conduct a workshop based on available resources to promote the exchange of ideas on agricultural risk management
- Sub Task 6: Advocate funding from donors for ongoing research and operational implementation of pilot projects on agricultural risk management

Resources (indication of resources – e.g. financial, human – contributed by GEO Members or Participating Organizations to produce outputs)

i) This Task will primarily use the previous and existing activities of the WMO Commission for Agricultural Meteorology (CAgM) to accomplish the Tasks. There are two CAgM Expert Teams which are focusing on the operational agrometeorological tools.

ii) Contributions will be solicited from Task members and will focus on complementary activities and outputs.

Architecture and Data Component

1) Please briefly describe any task-related Earth observation resources (data set, system, website/portal) and any related Web Service interfaces that are contributed to GEOSS. State whether these items are or will be registered with the GEOSS Component and Service Registry for access via the GEO Web Portals, and whether any associated standards or other interoperability arrangements will be registered in the Standards and Interoperability Registry.

2) Please also describe what data and information your activity/system needs that you would request to be accessible through the GEOSS Common Infrastructure.

Capacity Building Component

(capacity building is defined to include the development of capacity related to: (i) Infrastructure and technology transfer (Hardware, Software and other technology required to develop, access and use EO); (ii) Individuals (education and training of individuals to be aware of, access, use and develop EO) and (iii) Institutions – building policies, programs & organizational structures to enhance the value of EO data and products).

1) In accordance with the above definition does this Task have a capacity-building component? If so, please provide a short description of this component including a description of end users.

Capacity building will be coordinated with Task Ag 0703c and with any ongoing WMO Commission for Agricultural Meteorology capacity building activities. For this task, end-users are farmers, agricultural extension agents, and government policy makers.

2) Have any additional CB needs for this Task been identified? Please provide a short description.

As this Task develops, CB needs will be highlighted and identified.

User Engagement Component

(please briefly describe to what extent end users are engaged in this Task and influence the nature of the outputs produced)

The WMO Commission for Agricultural Meteorology has a number activities that involve end-users and these activities will be coordinated with this Task.

Science and Technology (S&T) Component

1) Please briefly describe the elements of scientific research or technological development contained in this Task.

Since the WMO Commission for Agricultural Meteorology provides technical advice to WMO members, this will be coordinated with the Task.

2) In relation to the S&T component(s) of this task, please describe gaps, priorities, continuity needs, barriers, scientific expertise and additional resource needs (this information will be used for developing a gaps and needs assessment in Task ST-09-01)

The task has already identified a gap in standards in Sub Task 2a which will review and develop standards for estimating missing weather and climate data to ensure complete input datasets for crop simulation models. Other gaps will be identified as the Task continues its work.

Members and POs' Contributions to Outputs and Activities above:

(Input is optional. This section gives the chance to Members and POs to provide more details (3-5 lines) on their individual activities, making a clear connection with the Outputs and Activities outlined above).

Greece

Centre of Technological Research: Development of tools for the prediction of future trends in agricultural production based on environmental data (i.e. weather data, groundwater pollution data).

USA

NOAA: The STAR website provides Early drought detection, monitoring the area, intensity, and duration. This is the first step of Food security for decision makers.

Participation (Table to be filled in 2009):

Type	Member or PO	Representing	Contact Name	EmailAddress
Lead(PoC)	WMO	CLW/AGM	Robert Stefanski	RStefanski@wmo.int
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