



Ministry of Agriculture and Livestock Development  
State Department for Crop Development  
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Emergency Locust Response Program  
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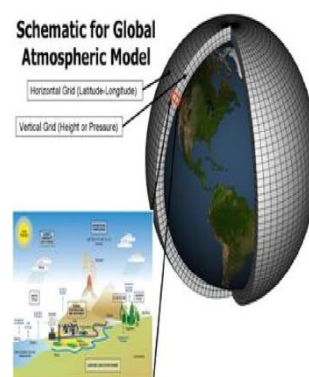
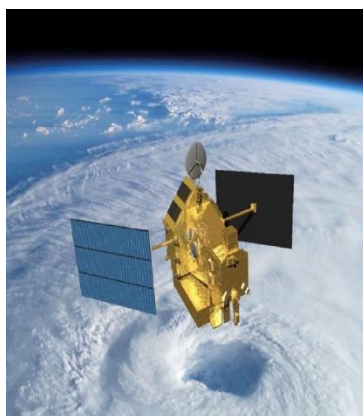
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## Sustainable Agricultural Livelihood Restoration, Rehabilitation and Resilience in Kenya

### Training Manual

#### 2.1.1 SUB-MODULE 1: CLIMATE INFORMATION SERVICES

Climate Information is the data or knowledge about past, present and future climate conditions. Its interest is in understanding the implications of this information on development, people's livelihoods and the environment. It provides information relevant for designing and mainstreaming adaptation measures. It facilitates for short, mid or long-term adaptation planning. It also helps in facilitating early warning systems on climate issues.



Met Station Satellite Instrument Models

#### *Types of Climate Information*

- Real time meteorological data - describes present weather
- Historical meteorological data - describes historical climates
- Future weather/climate - short/medium range weather forecast, and long range climate predictions

They are in the scales of

- Global
- Regional climates
- Microclimate (local scales)
- Small-scale climates are referred to as microclimates

They are sourced from

- Weather stations (KMS, WMO, NOAA....)
- Satellite data (Instruments such as RADAR, Infrared.....)
- Reanalysis data – Use of climate models (NCEP, NCEP2, ERA Interim.....)
- The data are processed and interpreted for decision making activities such as adaptation planning



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Why focus on climate information?

- Understanding climate information is critical for decision making – planning.
- Climate information can be confusing and sometimes creates conflicts.
- Impacts of climate change (and related adaptation measures) can be obtained from climate information (i.e. scenarios of the future climate).
- Climate Change and CV places significant stress to food production and availability.
- Growing demand for food and energy places additional pressure on the food systems and the natural resources.
- Building resilience to climatic shocks requires clear climate information.
- Decision-making use information for short, medium, and long-term adaptation measures.
- Therefore, there is need to improve the availability, quality and use of climate information.
- There is a growing demand by stakeholders for better climate information.

#### ***Communicating Climate Information – Issues to Consider***

- Communication channels between producers and users - accessible, effective, timely and bidirectional.
- Communication language, style and channel - consider social roles, inequalities, levels of literacy, numeracy, and fluency in a given language.
- Packaging of climate information -tailored to specific users 'capacities and needs.
- Style and visual packaging - contribute to understanding, even by those who are not literate.
- Communications systems – take note of the systems that already exist at local level.
- Information access and use - determine gender access and use rights of information in the specific communities.

#### ***Contribution of Climate Services to Climate Smart Agriculture***

Comprises of productivity, adaptation and mitigation;

##### ***Productivity.***

- Adequate and timely info - increase productivity.
- It is a basis for planning.
- It supports decision-making; options to invest in, when and how much.

##### ***Adaptation Through Risk Management***

- Enables farmers to manage the negative impacts of weather-related risks in poor seasons better, while also taking greater advantage of average and better than average seasons.
- Flexibility to switch from one strategy to another or to combine strategies - adjust their plans as climate stressors and shocks unfold.



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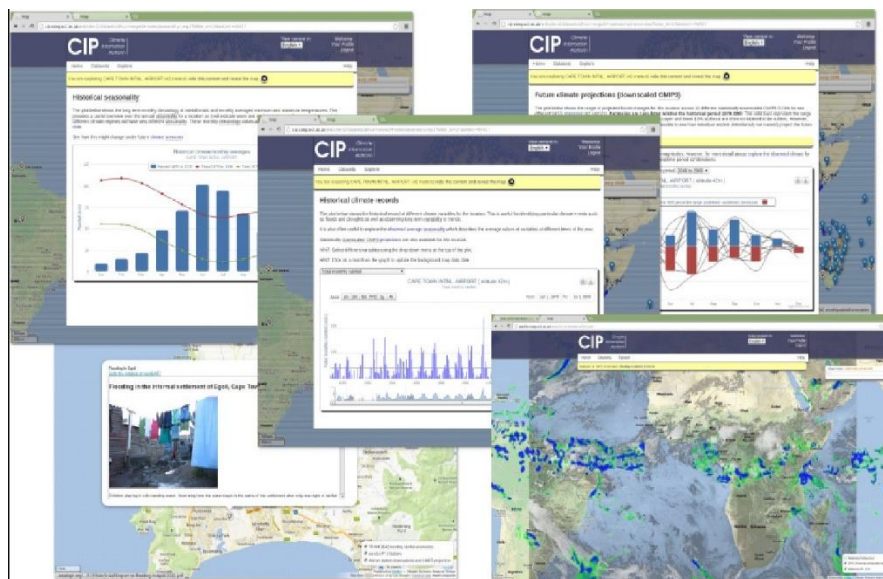
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#### Mitigation

- Information supports efficient use of fertilizers - reducing emissions of GHGs.
- There is increased demand and sources for Climate information globally.



Climate Information Platform

#### Direct Effects

- Complete crop failure from delayed rains or limited rains or rainfall failure
- Reduction of crop and livestock yield.
- Decreasing availability of water for crop production, drinking, livestock use and drying of water sources.
- Increasing frequency of droughts leading to crop failures, loss of pastures, loss of livestock and livestock feed supplies.
- Occurrence of frost and abrupt cold temperatures affects crop in various counties.
- Loss of property and sources of livelihood from extreme weather events such as flash flood, windstorm, hailstorms and landslides.
- Insurgence of new pest and diseases in crops such as the Rice Blast Disease, Grey Leaf Spot of Maize and Fall Armyworm and prevalence livestock diseases and parasites.
- Loss of seeds and planting materials for next season planting.



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- Land degradation and loss of soil fertility due to erosion of topsoil and runoff sparked by incessant rainfall.
  - Damages to key infrastructures like bridges disconnect people from far flung remote areas making them highly vulnerable to food insecurity.
  - Overall degradation of natural resources.
  - Loss of agro-biodiversity and disruption of traditional seed systems.

#### ***Indirect Effects***

- Increased crop failures and livestock deaths will lead to decreased domestic food production resulting in the increased imports of food.
- Increase in prices of essential commodities will drive poor farmers to further poverty.
- Increased incidence of pest and diseases on humans and animals affect their health.
- Increased drudgery and workload on rural women due to declining access and degradation of natural resources.
- Disruption of the local seed system puts pressure on women who take the lead role in seed saving, seed selection and conservation of crop and varieties.
- Increased rural- urban migration and fallowing of agricultural land.
- Crop failures causes increased workload on women who are the caregivers and responsible for feeding the family.
- Reduced agricultural productivity implies lost economic opportunities at the household level and nationally.

The negative impacts of climate change and climate variability on agricultural production, can be avoided through using appropriate adaptation measures which includes improved weather and early warning systems, risk management approaches and the Climate Smart (CC) and Conservation Agriculture (CA) technologies and management practices.