



PEACE, PROSPERITY AND  
REGIONAL INTEGRATION

# SATELLITE AND WEATHER INFORMATION FOR DISASTER RESILIENCE IN AFRICA (SAWIDRA): EASTERN AFRICA

By

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## BACKGROUND

- Much of Eastern Africa is arid or semi arid and experiences high inter-annual climate variability;
- Risk and vulnerability to weather/climate extreme events is increasing in the region due to climate change, increasing population, and land use changes;
- Over 70% of disasters related to natural hazards in eastern Africa are Hydro-meteorological (Source: WMO);
- Frequency & intensity of weather / climate extreme events are expected to increase due to climate change;
- Hence, the need for early warning of high-impact weather events for early actions in resilience building.

## BACKGROUND (CONT'D)

- The Summit of the Heads of State and Government of EAC and IGAD on the Horn of Africa Crisis, held in Nairobi, Kenya, on 9 September 2011, decided to:
  - Enhance the provision of timely and actionable Early Warning information to all actors by strengthening the IGAD Climate Prediction and Applications Centre (ICPAC);
  - Develop the Horn of Africa Regional Disaster Resilience and Sustainability Strategy Framework, to reduce the impact of disasters in the region with full consideration of existing frameworks and programmes of action.

## PROBLEM DEFINITION

- Severe weather refers to any dangerous meteorological phenomena with the potential to cause damage, serious social disruption, or loss of human life. Types of severe weather phenomena vary, depending on the latitude, altitude, topography, water bodies and atmospheric conditions.
- In Eastern Africa, extreme precipitation (or lack of it) resulting in floods or drought; extreme temperatures; strong winds, frosts; dust storms; thunderstorms; lightning; poor visibility; and tropical cyclones among others; constitute severe weather events.

## OVERALL GOAL AND OBJECTIVES

- The overall Goal of this project is to enhance the use of high resolution satellite data to generate severe weather forecasts in support of Disaster Risk Management (DRM) in Eastern Africa.
- **Objectives:**
  - ✓ To enhance NWP regional capacities including acquisition and assimilation of high resolution satellite data;
  - ✓ To enhance capacities of the NMHSs in eastern Africa to receive NWP model datasets or to run national-scale NWP models in order to provide improved early warnings of extreme weather events to their respective DRM agencies;
  - ✓ To demonstrate the use of severe weather forecasts in flood risk management and share experiences among all NMHSs as well as to make use of lessons learned for upscaling in the region.
  - ✓ To support Regional Climate Outlook Forums and strengthen DRM activities in the region.

## PROJECT DESIGN

- ICPAC intends to use high resolution satellite (RARS) products for data assimilation to improve initial conditions for NWP high resolution severe weather forecasts across the eastern Africa region.
- To improve the resolution of small-scale forcing, ICPAC will undertake the nesting technique for some key features in specified hotspot areas.
- The characteristic horizontal grid resolution and domain size will however be dictated by three constraints: The dimensionality of the forcing; the scale of the response to the forcing; and the available computing resources.

## ICPAC'S MODELING RESOURCES

- 30 Mbps High-speed internet connectivity;
- State-of-the-art 20-node computer cluster
- Powerful Workstations;
- Modelling and IT experts;
- In process to purchase 32 node high performance computer cluster through ISACIP.  
(32 nodes: 1 Master, 1 Backup and 30 processing nodes)

## EXPECTED IMPACTS AND OUTCOMES

- The impact will be improved livelihood through reduction of risks related to severe weather events in building resilience and adaptation capacity of the communities.
  - **The expected outcomes by components are:**
    - Component 1:** Improved core capacities of ICPAC to provide severe weather forecasts to meet the needs of NMHSs and DRM sector.
    - Component 2:** Effective use of hydro-meteorological services and real-time early warning systems (EWS).
    - Component 3:** Reinforced GHACOF as world class climate risk mitigation platform.
    - Component 4:** Improved core capacities of NMHSs to provide early warning of severe weather events to meet needs of national DRM agencies.
    - Component 5:** Successfully implemented project according to the project implementation plan
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## BENEFITS

- The project will benefit sectors that are susceptible to high-impact weather and highly vulnerable to climate variability and change;
- Improved use of weather/climate information in disaster risk management and climate change adaptation;
- Expansion of knowledge base to facilitate informed decision making in weather/climate related issues;
- Integration of weather/climate information in environment monitoring, disaster risk management and climate change adaptation in resilience building for sustainable development in eastern Africa.

## BENEFICIARIES AND STAKEHOLDERS

- The general public, especially the vulnerable 40% of the regional population who are exposed to hydro-meteorological hazards;
- IDDRSI whose main goal is to enhance disaster resilience and sustainability in order to have a peaceful and prosperous region free from disaster emergencies by 2027;
- Direct beneficiaries are: ICPAC, which will host and implement the project, NMHSs, and DRM/civil protection agencies;
- Other beneficiaries are stakeholders in sectors that are sensitive to severe weather and highly vulnerable to climate variability and change such as agricultural, water, energy, health and infrastructure.

# THANK YOU VERY MUCH!

