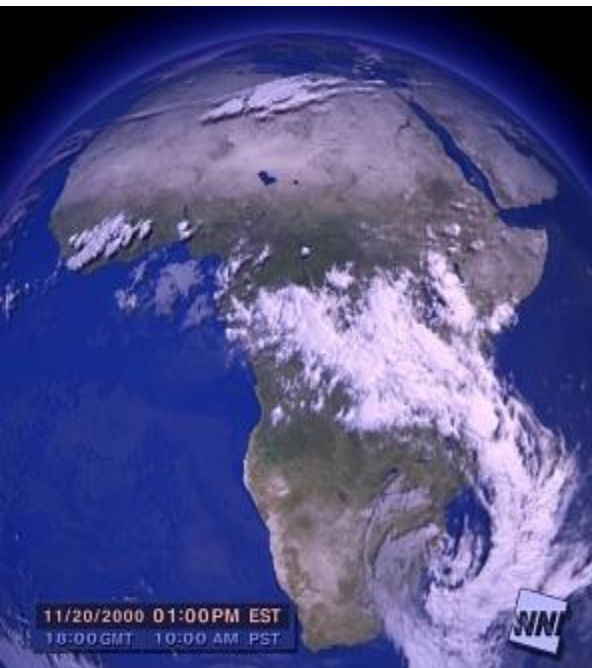


African Risk Capacity Project

Towards a Natural Disaster Risk Management System for Africa



The Challenge:



- **Africa must transition from managing crises to managing risks**
 - Increased frequency of natural disasters driven by climate change will result in higher risk of hunger and malnutrition in Africa's most vulnerable populations
 - Funding is secured on a largely *ad hoc* basis after disaster strikes and only then can relief be mobilized toward the people who need it most
 - Lives are lost, assets are depleted, resources are diverted undermining progress towards development goals.
 - A continental disaster management system would seek to allocate certain resources against probable but uncertain risks

Three products to address this challenge:

1. African Risk Capacity: Pan-African Disaster Risk Pool
Efficient weather-related food security risk management through risk pooling and sharing across regions
2. *Africa RiskView* Software Platform
A financial management tool for decision makers
3. Climate Change Stress Tests
Stressing today's risk by future climate scenarios

Pan-African Disaster Risk Pool



- Establishing an African-owned contingency fund for sovereign risk would provide participating governments with immediate cash in the event of an extreme drought, flood or cyclone.
- It is unlikely that extreme weather events will happen simultaneously in every country and in all regions on both sides of the equator
- Early modelling results show climatic diversity across Africa creates a powerful portfolio affect of 50%, reducing the contingency funding requirement for drought by half:
 - If African countries were to pool their drought risk, the pool's capital requirement would be half the sum of each country creating their own reserves – making Pan-African solidarity in creation of a disaster risk pool an attractive financing mechanism in support of African food security.

Experience from the Caribbean



- **CARICOM Heads of Government, assisted by the World Bank, established a contingent fund in 2007 in order to respond in a more timely and efficient manner to hurricanes and earthquakes.**
- **Under the Caribbean Catastrophe Risk Insurance Facility (CCRIF), payment is triggered by the intensity of the event, rather than being a function of the damage incurred, ensuring quick payment**
- **CCRIF is backed by a Multi-Donor Trust Fund (WB) combined with reinsurance and financial contracts with the international markets**
- **Board comprised of participating country and relevant international organization representatives makes major decisions affecting the CCRIF.**

Decisions and Proposal to Heads of State



- **A Pan-African Disaster Risk Pool for Food Security is priority for the AUC, which is shepherding the program through the appropriate policy organs of the African Union.**
- **Stakeholders' Meeting – 25 March 2010, Addis Ababa**
- **Finance Ministerial – 29-30 March 2010, Lilongwe**

The Conference of Ministers resolved to “**Support** efforts towards enhancing national and regional capacities to mitigate exposure to disaster risk through institutionalizing effective financial and other instruments such as strategic grain reserves, budgeted contingency funds as well as through sharing risk across regions.”
- **Disaster Risk Reduction Ministerial – 16 April 2010, Nairobi**

The Conference of Ministers: “Call[ed] upon Member States to explore the feasibility of continental financial risk pooling in working towards the creation of an African-owned, pan-African Disaster Risk Pool, building upon existing and emerging tools and mechanisms for financing disaster risk reduction.”
- **Summit of the African Union – 25-27 July 2010, Kampala**

15th Ordinary Session of the Assembly: endorsement by Heads of State.

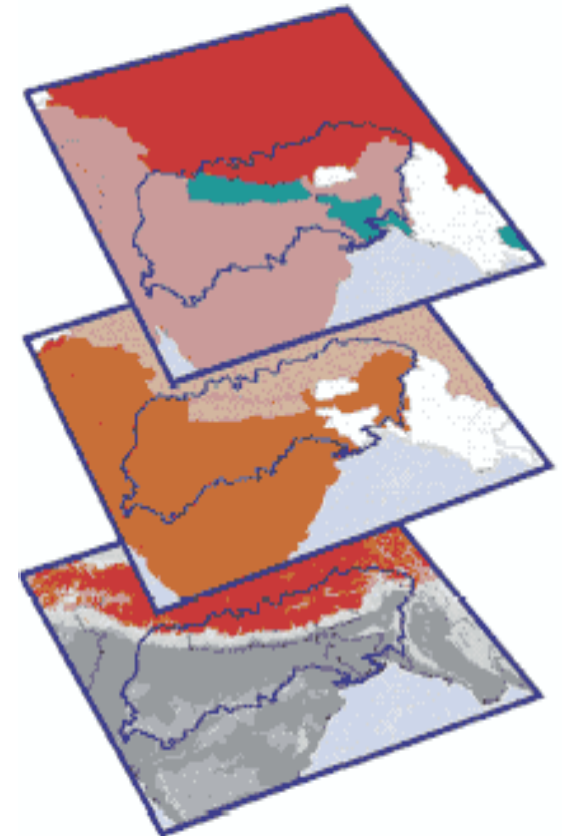
Tool to Achieve Africa's Development Goals

- **The AU is pursuing multiple strategies towards food security, climate change resilience and disaster risk reduction. The Risk Pool provides an elegant way to link the three in a cost-efficient and innovative manner.**
- **President Mutharika's Vision for a Food Secure Africa in 5 Years**
 - The Risk Pool is outlined as part of the AUC strategy to support the President's vision as a system to protect investments in agricultural productivity.
- **CAADP Pillar III**
 - Pillar III outlines the need for enhanced risk management and improved emergency response. Identifying, analyzing, quantifying and financing risk are prerequisites for achievement of these objectives.
- **AU Climate Change Adaptation Strategy**
 - Ahead of COP 16, the AUC is developing a continental strategy of which the risk pool will be part. Additionally, linkages are being explored with ClimDev Africa for building national capacities to use climate information effectively for decision-making.

Africa RiskView: Quantifying & Monitoring Risk

Underpinning the risk pool is knowledge about how to manage risk, utilize “best-of-breed” information and communication technology and well as earth observation tools.

- **HAZARD:** Weather Indicators
 - **VULNERABILITY:** Food Security Profiles
 - **EXPOSURE:** Response Costs per Person
- **Africa RiskView** is an open software platform that translates satellite-based rainfall information into near real-time needs and costs estimates so that decision makers can take action:
- Before a season begins, *Africa RiskView* estimates average and worst-case costs
 - During a season it can monitor costs as the season progresses for every first-level administrative district



Risk Pool Key to Implementation of DRR

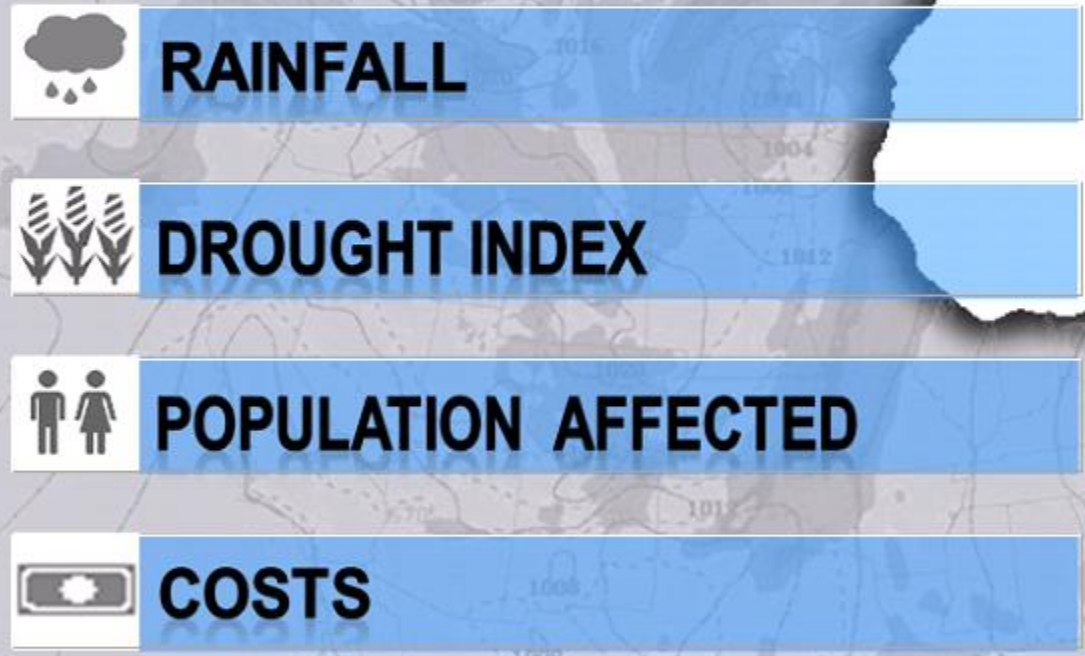
- **The Risk Pool helps us to meet the following stated objectives in the DRR Regional Strategy for Africa, in line with the Hyogo Framework to 2015**
- **Strengthening capacities of AUC & RECs to implement this strategy**
 - *Africa RiskView* software and technical capacity building in weather risk analysis would enhance the ability of experts in the the regional institutions to address food security risks in more targeted fashion.
- **Improve identification and assessment of disaster risk**
 - *Africa RiskView* software could act as a “system of record” for weather and vulnerability data at the sub-national, national and regional levels.
 - Use of the software and methodology by multiple Member States initiates one of many processes towards standardization of statistical information on potential hazards, impacts and exposure.
- **Integrate disaster risk reduction in emergency response management**
 - A capitalized Pan-African Disaster Risk Pool would serve as an emergency fund for food security to provide immediate liquidity (cash) directly following a natural disaster.

Africa RiskView Screen Shots

Africa RiskView

[Update Data](#) | [Advanced Tools](#) | [About](#)

East Africa Second Season



Africa RiskView

[Update Data](#) | [Advanced Tools](#) | [About](#)

- East Africa Second Season
- East Africa First Season
- East Africa Rangeland
- East Africa Second Season
- East Africa Third Season
- Southern Africa Main Season**
- West Africa Main Season
- West Africa Rangeland

 **RAINFALL**

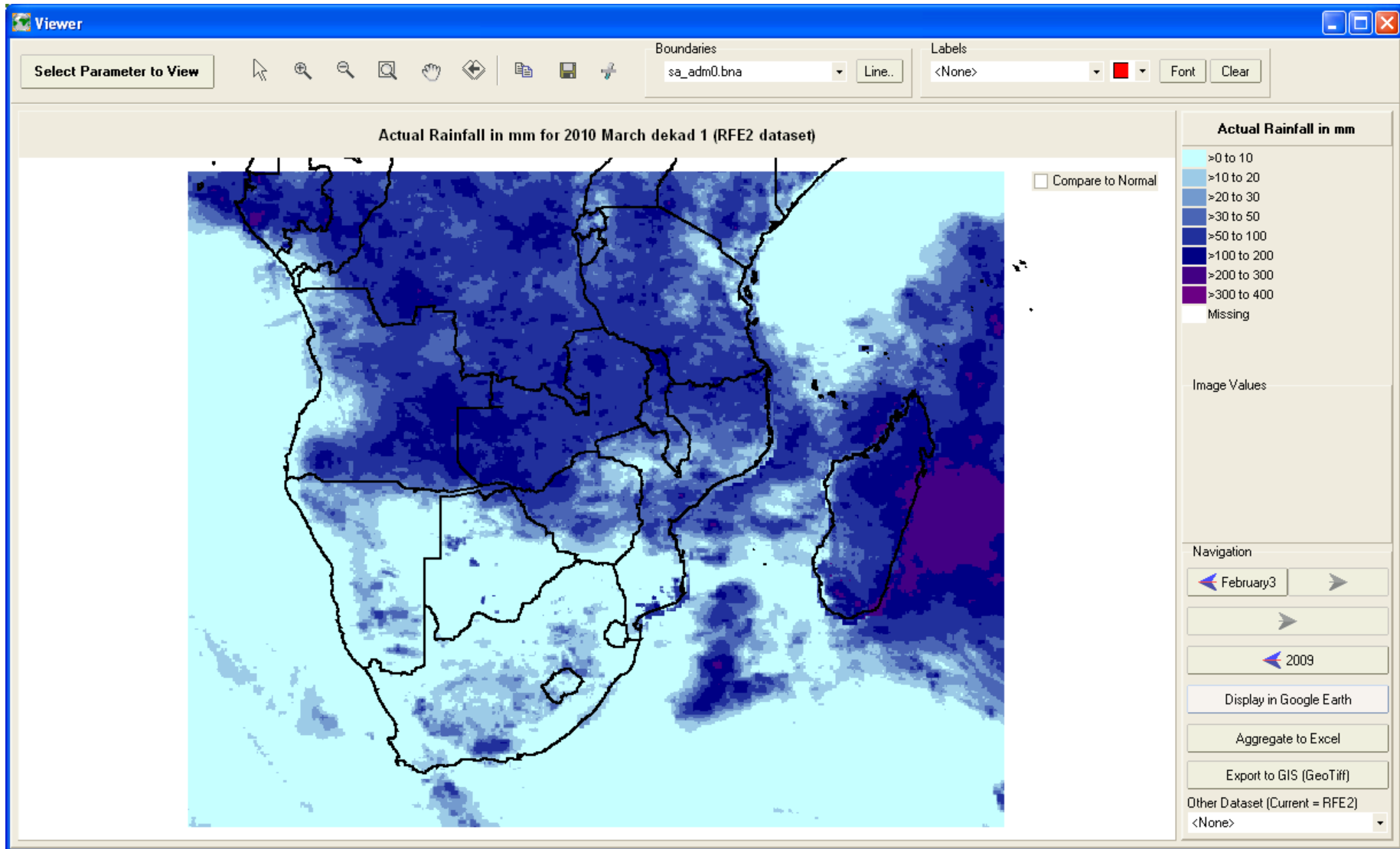
 **DROUGHT INDEX**

 **POPULATION AFFECTED**

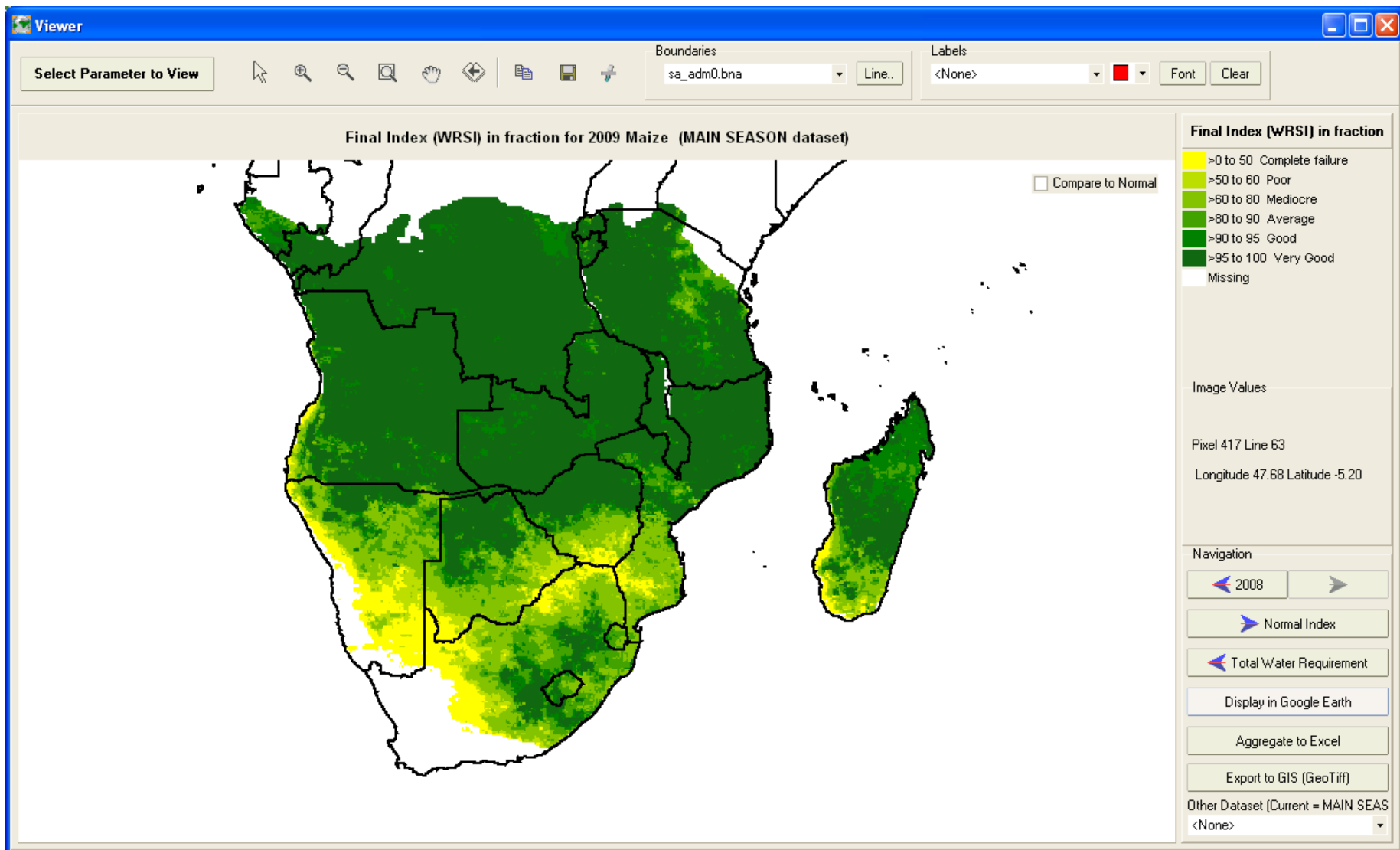
 **COSTS**



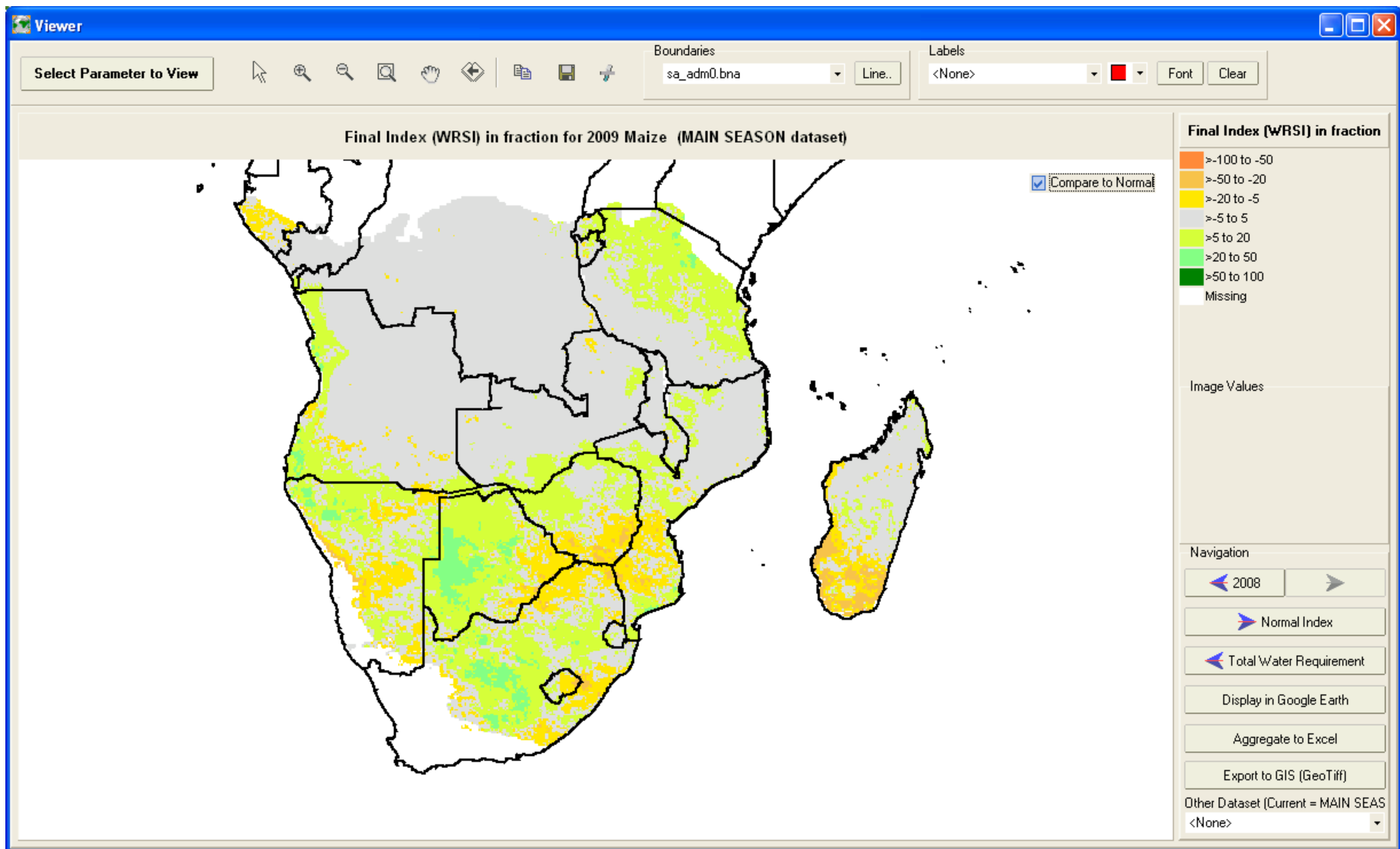
Southern Africa: Rainfall



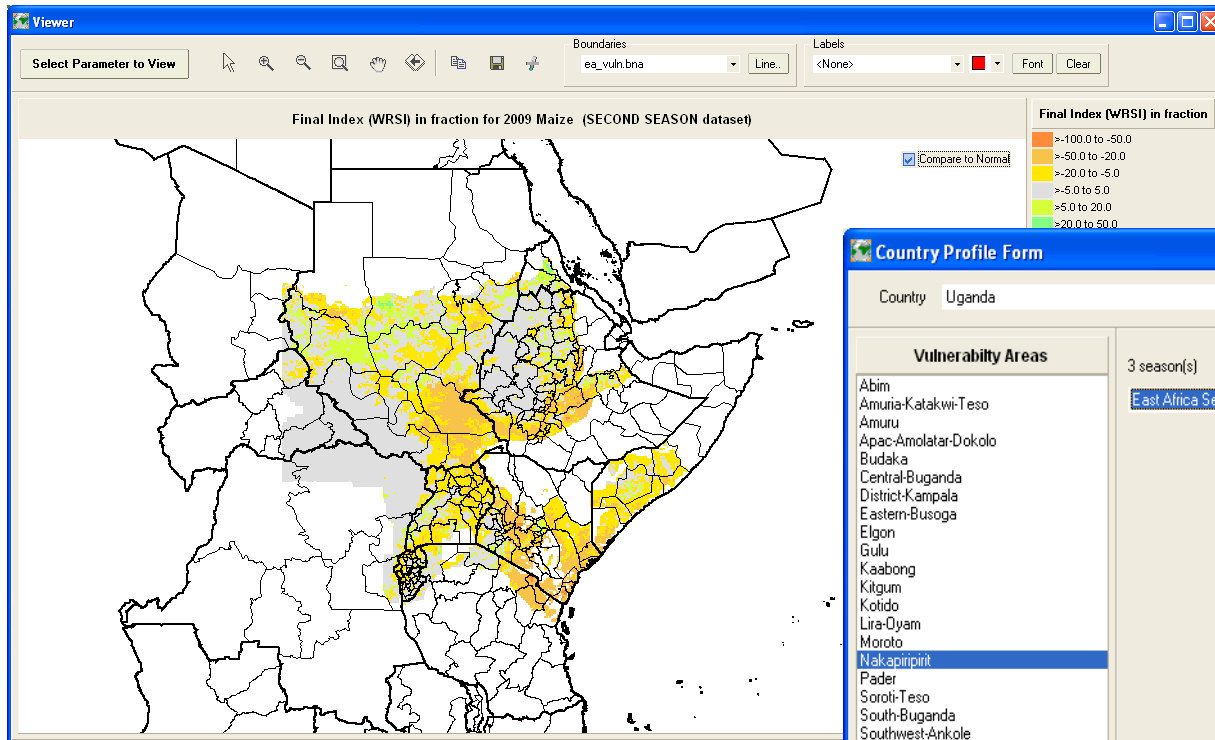
Drought Indicator: WRSI



WRSI Compared to Normal: 2009/10 Season



Defining Vulnerable Populations: CFSVA and Other Surveys



Country Profile Form

Country: Uganda

3 season(s)

East Africa Second Season

Vulnerability Areas

- Abim
- Amuria-Katakwi-Teso
- Amuru
- Apac-Amolatar-Dokolo
- Budaka
- Central-Buganda
- District-Kampala
- Eastern-Busoga
- Elgon
- Gulu
- Kaabong
- Kitgum
- Kotido
- Lira-Oyam
- Moroto
- Nakapiripirit**
- Pader
- Soroti-Teso
- South-Buganda
- Southwest-Ankole
- Southwest-Kigezi
- Western-Kasese-Bundi
- Western-Toro-Bunyoro
- West Nile

Population: 190241

PercentageMild: 8

PercentageMedium: 62

PercentageSevere: 79

PercentageNotVulnerable: 21

TriggerMild: 90

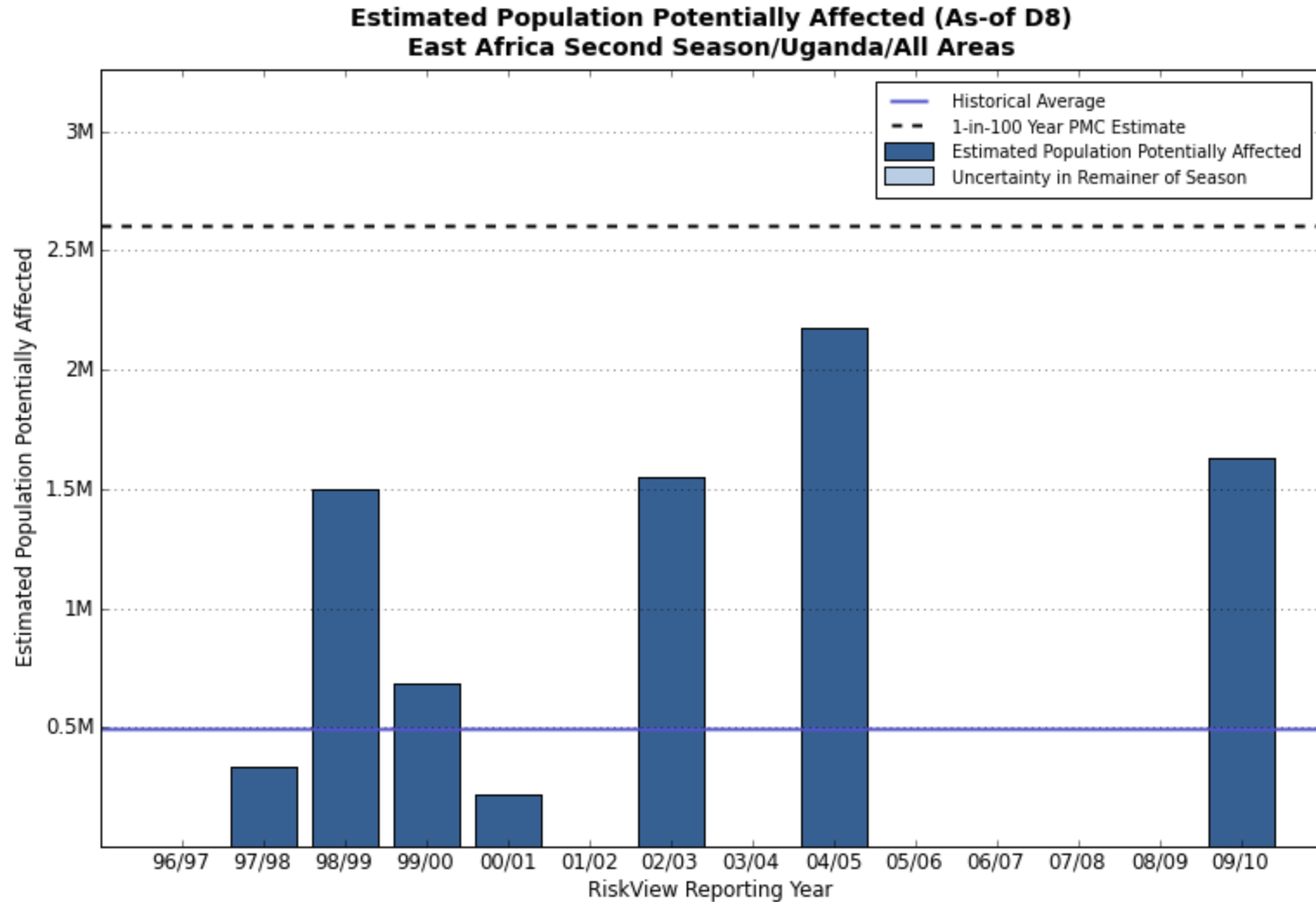
TriggerMedium: 80

TriggerSevere: 70

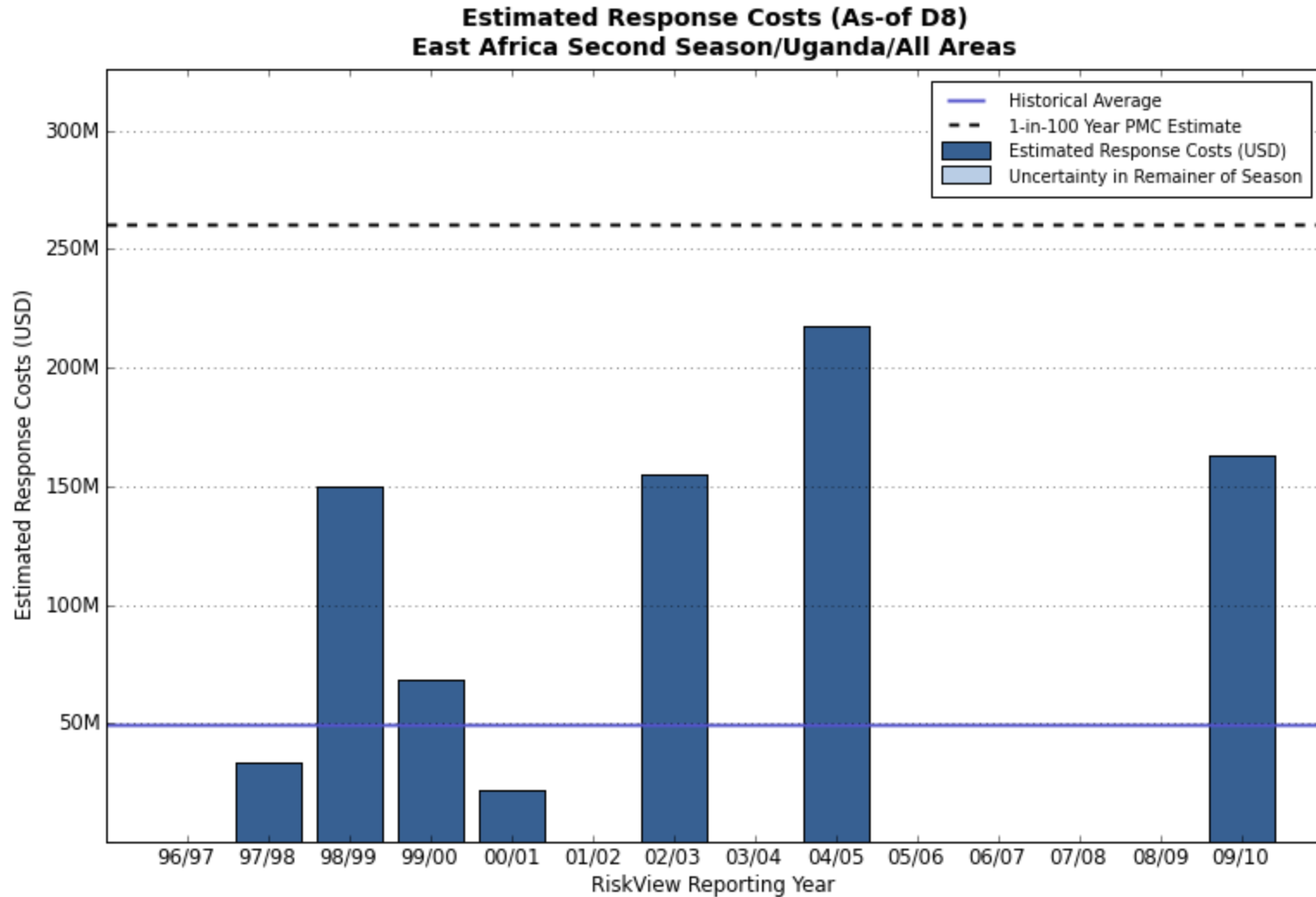
CostPerBeneficiary: 100

Local Capacity: 0

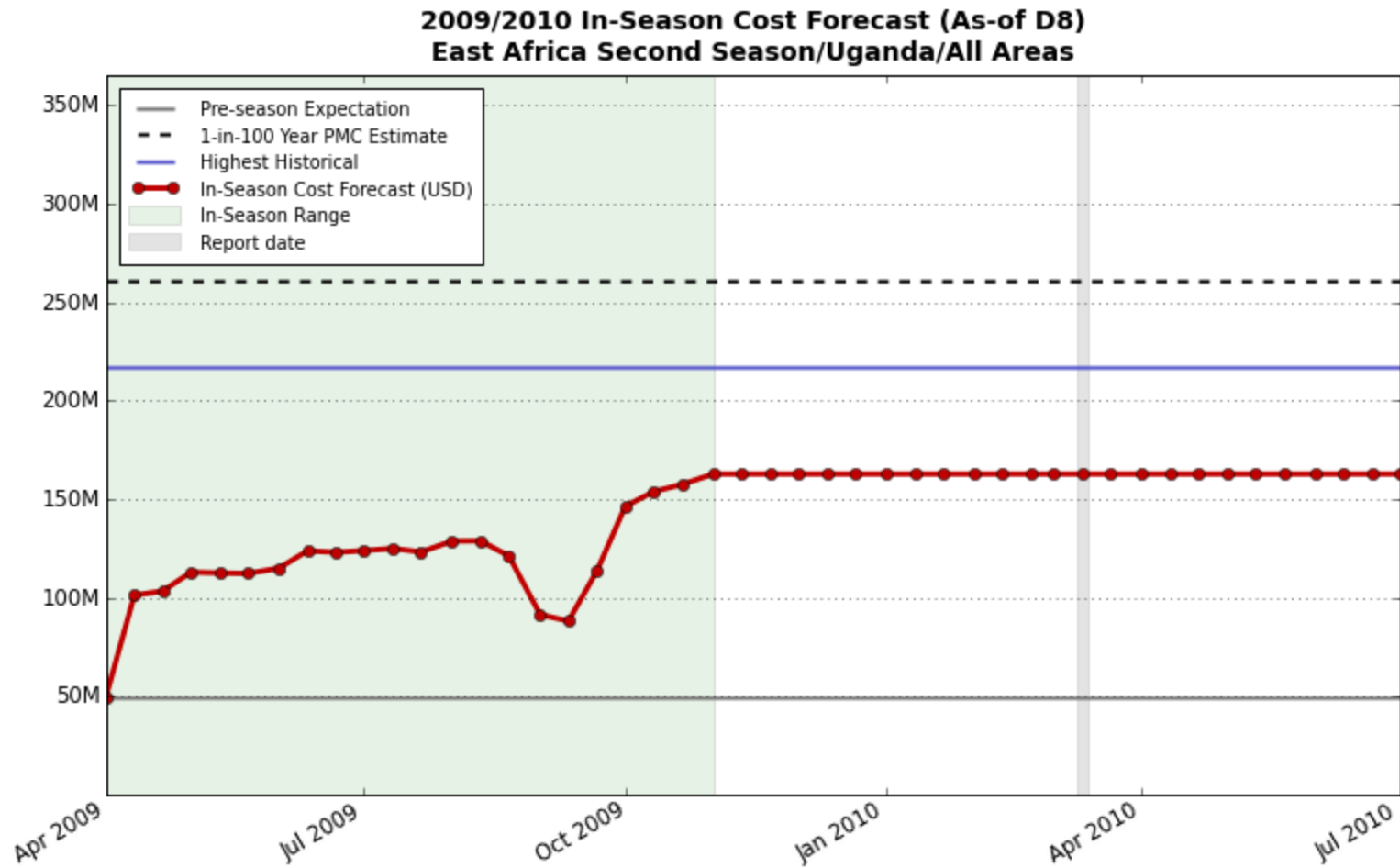
Estimated Population Potentially Affected: Uganda Example



Estimated Response Costs: e.g. \$100 per person

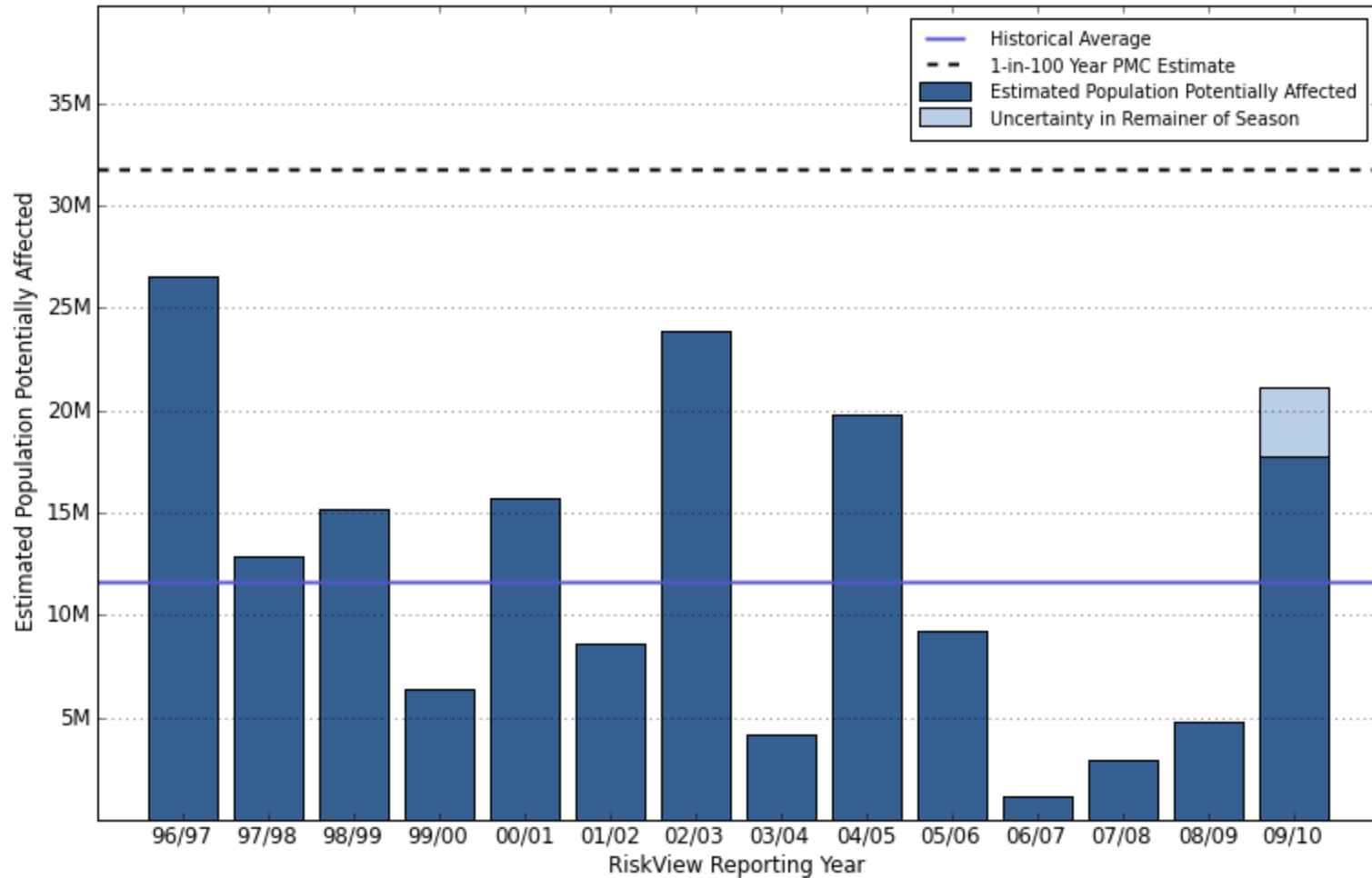


Monitoring Costs In-Season: Uganda Example

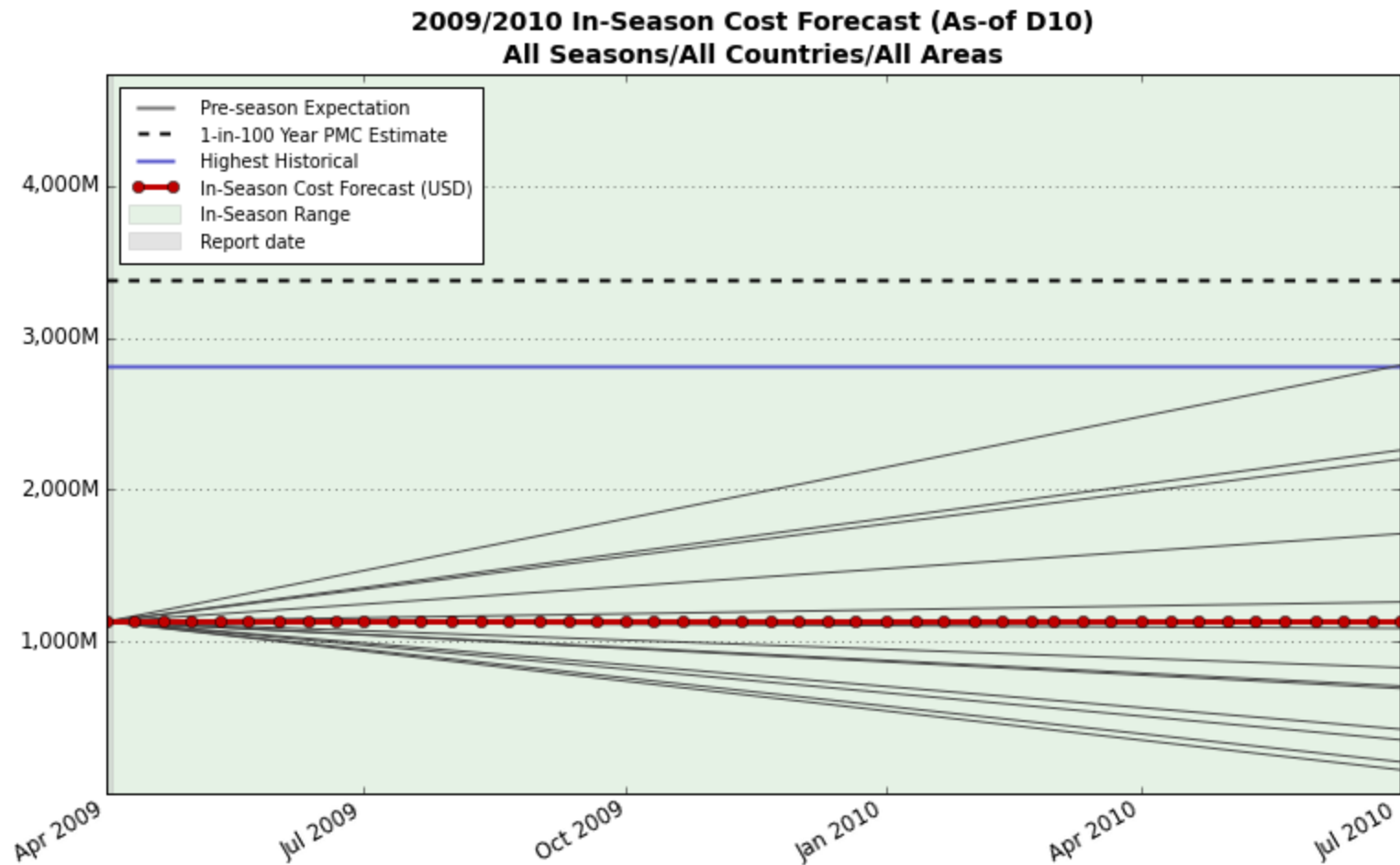


Estimated Population Potentially Affected: All Seasons in SSA

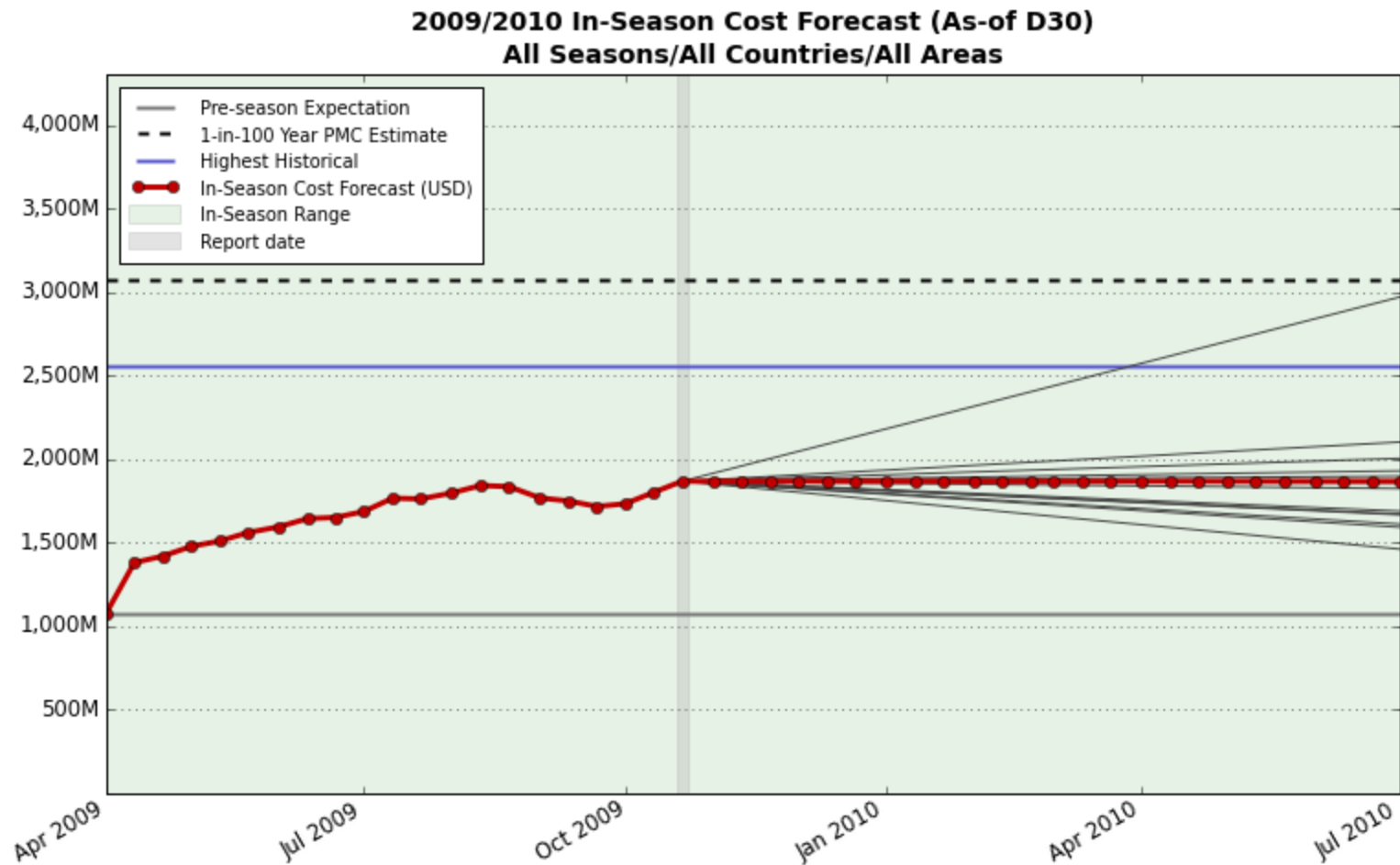
**Estimated Population Potentially Affected (As-of D8)
All Seasons/All Countries/All Areas**



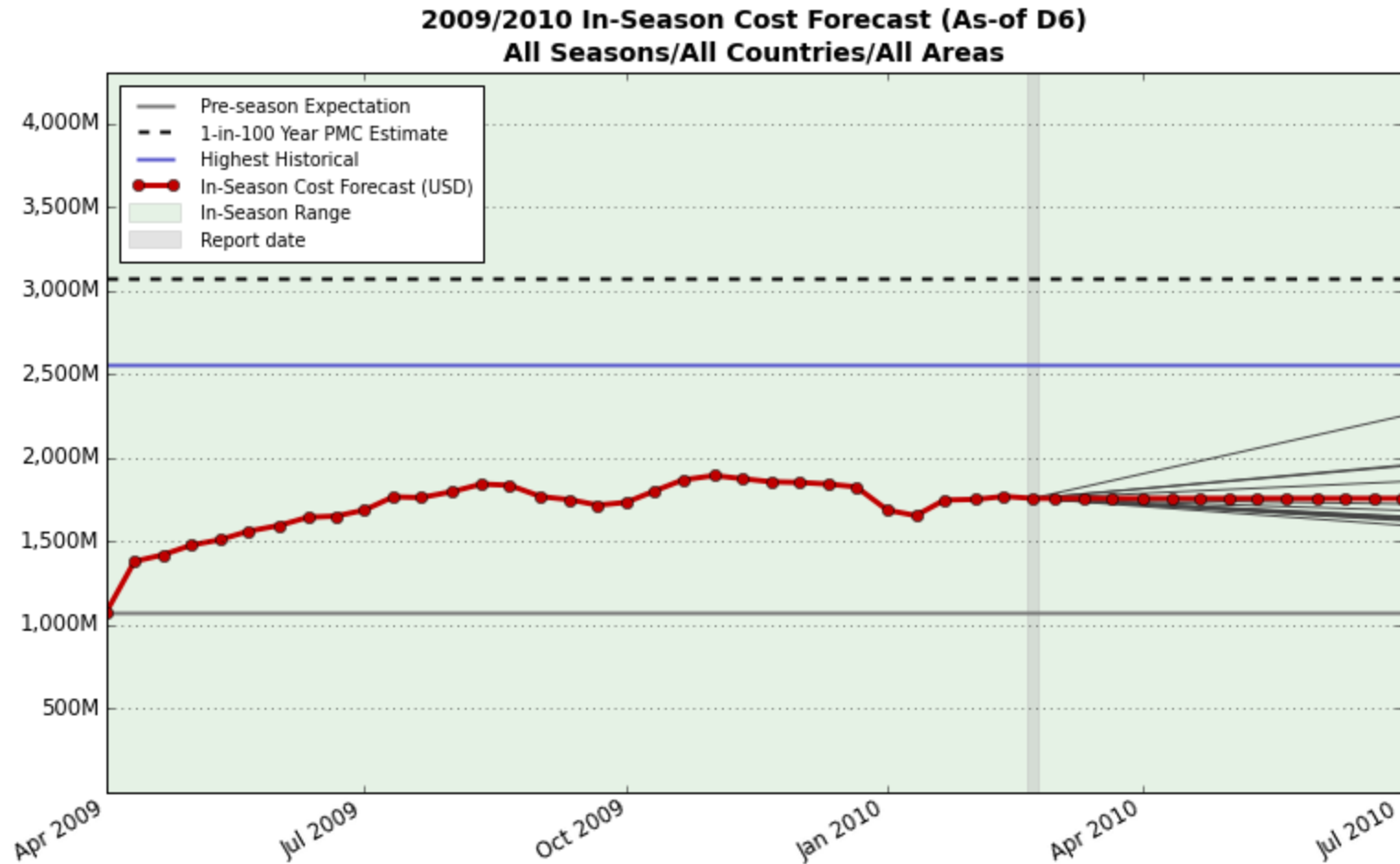
Monitoring Costs In-Season: All Sub-Saharan Africa



Monitoring Costs In-Season: All Sub-Saharan Africa



Monitoring Costs In-Season: All Sub-Saharan Africa



Climate Change Stress Tests



- **Understanding the expected and maximum costs of weather-related events that can occur in the coming season also opens opportunities for understanding the future**
 - How might climate change impact future response costs across the continent?
 - Where should investments be directed for increasing productivity and catalyzing market development?
 - And what are realistic benchmarks for investments in disaster risk reduction?

- **The first step is to first understand whether *current* climate model output data can be used as a meaningful input into *Africa RiskView* to help answer these questions**

Background & Approach



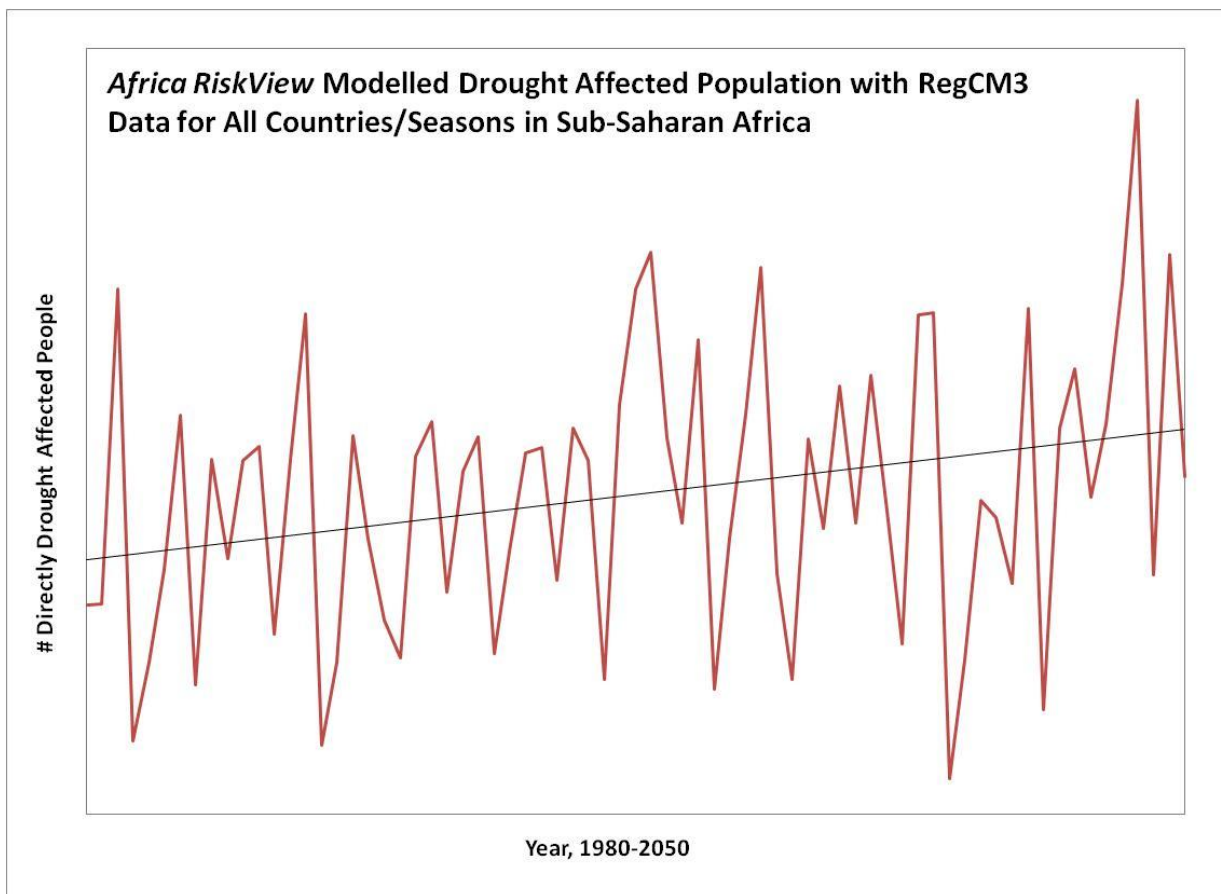
- **Evaluating the impact of climate change on agriculture by using climate model output is prone to multiple sources of uncertainty, particularly in Africa:**
 - Model ability to replicate current climate accurately, compounded by a poor observation network to validate results
 - Crop models require variables that are not always produced by models
 - State of the art climate models work on 50-250 km spatial scales with therefore limitations at the local/micro-climate scale
 - However large-scale fluctuations in atmospheric circulation (e.g. ENSO) better captured by the models coexist with small scale features and represent a major driver for the latter
- **In summary the skill of climate models as an input to impact models, particularly in the field of agriculture in Africa, is unclear**
- ***Africa RiskView* focuses on the pan-African scale and with historical data it shows good agreement with past droughts and emergencies across the continent**
 - Therefore comparing climate models to historical data in *Africa RiskView* creates a unique opportunity to explore the uncertainties in the projection of climate variability from climate models on agriculture and food security

Selecting Model Output



- **A limited set of climate models have been selected according to the following criteria:**
 - Data available at daily or 10-day frequency
 - Availability of all required data to produce PET and rainfall input for ARV
 - Availability of data for present climate and 2001-2050 for different scenarios
 - Possibility of comparing global and regional downscale models
- **The dataset selected for processing through *Africa RiskView* are as follows:**
 - ECMWF ERA40 – reanalysis to provide a benchmark of present climate;
 - NCAR CCSM3 – simulations for present climate and scenarios A1B and A2;
 - ECHAM5-MPIOM – simulations for present climate and scenario A1B;
 - RegCM3 – regional downscaling of the ECHAM5-MPIOM simulations
 - Climate model statistical properties over the present climate – variability of costs, frequency of extreme events, trends – will be analysed to observe what they project for the future (up to 2050) in the context of how they perform with today
- **More models as they are available will further contribute to a more systematic understanding of the range of uncertainty that exists in estimating food security needs and costs in Africa under climate change scenarios.**

Example: Using RegCM3 in *Africa RiskView*



- To produce the results above all other factors important for estimating food security, apart from PET and rainfall, are held constant
- Note these are preliminary results, based on current *Africa RiskView* settings, shown for illustration purposes only. *Africa RiskView* settings may change going forward and current results still need to be analysed further.

- **Questions still to be answered:**
 - How does 1980-2000 compare to the present climate? i.e. ERA-40 or other observed datasets (e.g. RFE)
 - What can we say about the model uncertainties?
 - Which countries and seasons appear to be the hot spots?
 - What do the other models say for 2000-2050?
 - How do they compare to the present climate?
 - What other aspects should we consider in addition to climate, e.g. population growth, adaptation, vulnerability feedbacks etc.?

The Way Forward



- **Africa RiskView online version available December 2010**
- **Exploring integration with ClimDev**
- **Enhanced engagement with interested Member States**
 - Technical assistance and capacity building to governments leading to a critically aware informed decision to participate in a risk pool. This includes:
 - Refinement of underlying model with countries and their partners
 - Adapting each to the country's weather risk profile, capacity and national disaster risk management plans and early warning processes
 - Development of defined contingency plans
 - Alignment with other country-level institutional processes
- **Pursuit of a formal mandate to establish the ARC by Heads of State at the January 2011 Summit**
- **Negotiated participation of a group of national governments in an initial risk pool for the June 2011- June 2012 agricultural risk season**



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