

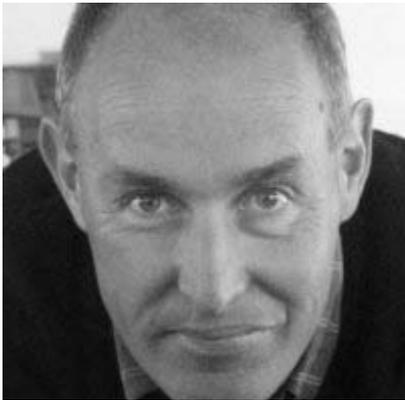


African Risk Capacity: An African-led Financial Pool Providing Quick Response to Droughts and Floods for African Countries

UN-Spider Expert meeting
Bonn, June 6, 2014



Peter Hoefsloot



Architect of ARC software (Africa RiskView); working with 3 software developers

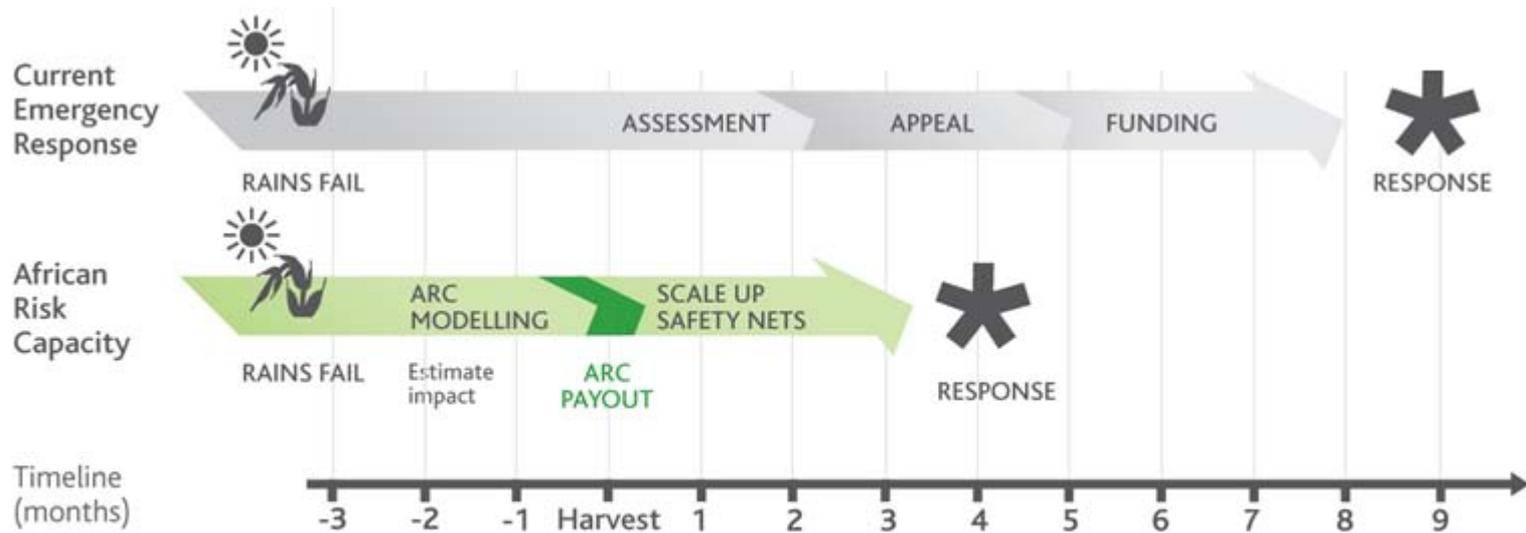
With ARC since inception in 2007

Based in the Netherlands with frequent trips to Africa for training of countries

Expertise: Agriculture – Water – Remote Sensing - GIS

ARC Overview

Improved Disaster Response



Source: Clarke/Hill, Cost-Benefit Analysis of the African Risk Capacity Facility.

African Risk Capacity (ARC)



ARC is developed jointly by the **African Union Commission** and **UN World Food Programme**



Two-entity structure:

- **ARC Agency**, a Specialised Agency of the African Union created by treaty. Based in Johannesburg
- **ARC Insurance Company Limited**, an insurance company based in Bermuda
- **Drought cover** is established. **Flood cover** underway.

ARC Agency



ARC Agency provides and enforces standards for its Member countries:

- Established by treaty, negotiated by 41 Member States in November 2012
- Managed by Governing Board, chaired by Dr Ngozi Okonjo-Iweala, Minister of Finance of Nigeria

ARC Agency



In 2013-14 worked with six countries towards participation in the **first insurance pool**:

- Kenya, Malawi, Mauritania, Mozambique, Niger and Senegal

Starting to work with **8 more countries** for 2015

Aims to reach **20 countries by 2019** by providing coverage against drought and flood



24 ARC Signatories

Three ARC Pillars



Through its structure, ARC bring together three critical elements for participating countries:

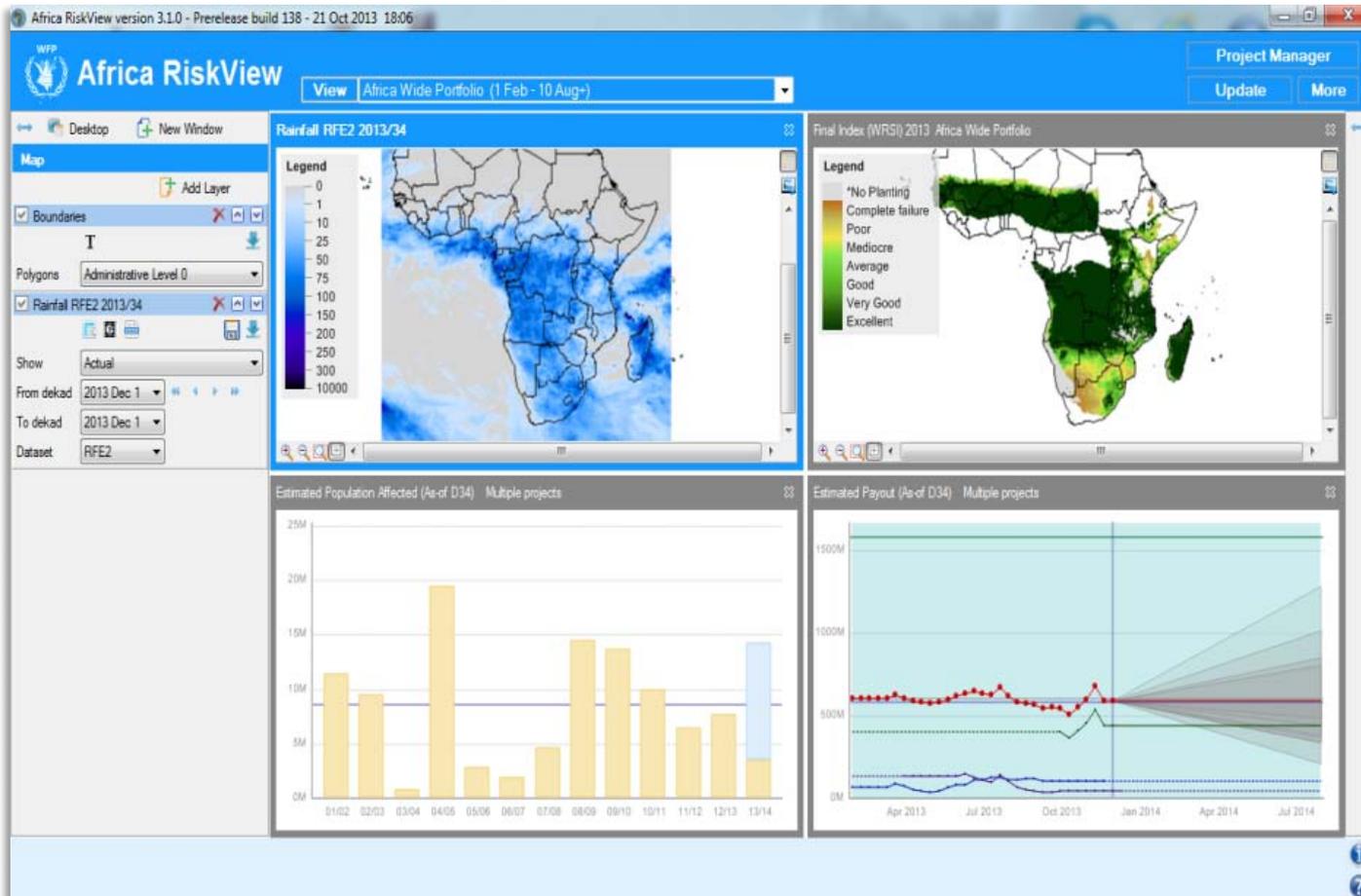
- **Early Warning:** *Africa RiskView*
- **Insurance:** Index-based insurance and risk pooling
- **Response:** Contingency Planning

ARC Drought Index: *Africa RiskView*

Africa RiskView



Africa RiskView (ARV) is the software application developed to underpin the ARC index-based drought insurance contracts



Includes large historical data archive

Software is licensed but free

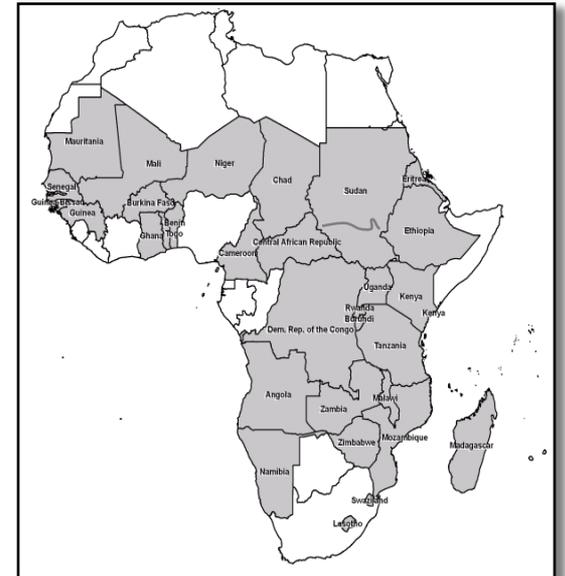
Anyone can request license

Africa RiskView



ARV translates satellite-based rainfall information into estimates of drought-affected populations and response costs to assist them for past and current rainfall seasons

- ✓ Standardised pan-African approach covering 32 countries and seven rainfall seasons
- ✓ 100% objective and replicable
- ✓ Only varying component rainfall
- ✓ Uses well-accepted drought model



Rainfall

**Drought
Index**

**Estimated
Populations
Affected**

**Estimated
Response
Costs**

Satellite-based Rainfall Estimates



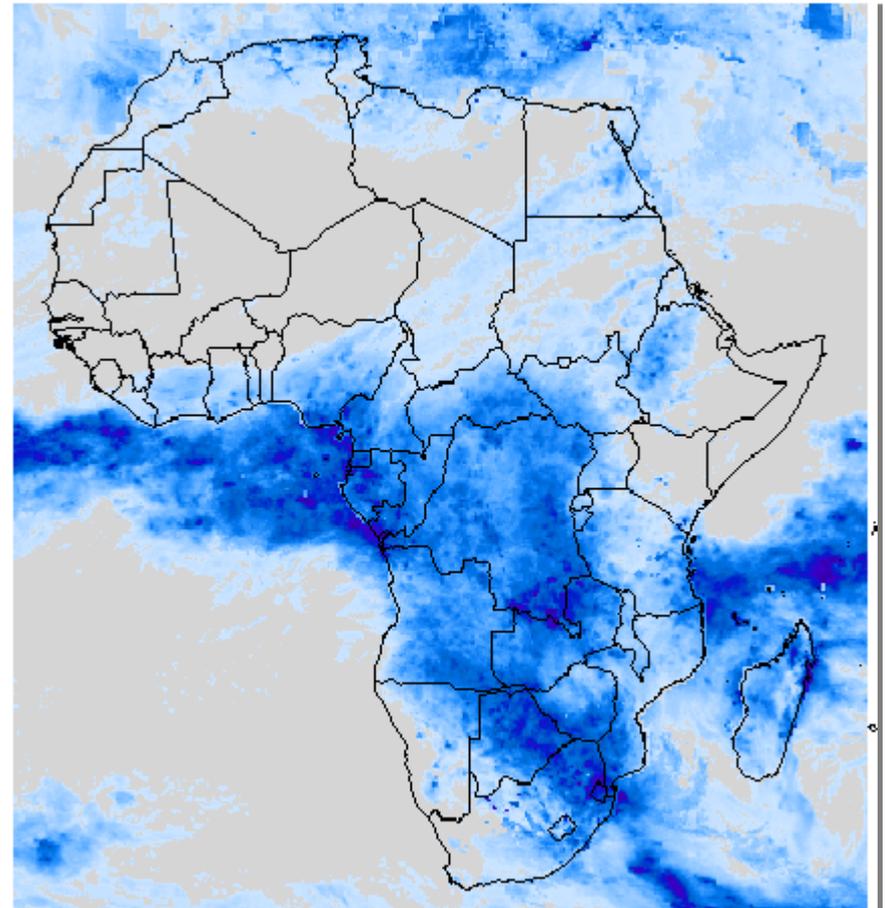
ARV contains three satellite-based rainfall datasets

Each provides 10-day rainfall imagery at 10x10 km resolution across Africa from 1983:

- RFE2 from US NOAA (2000-present)
- ARC2 from US NOAA (1983-present)
- TAMSAT from Reading Uni. (1983-present)

Pre-loaded archive, updated every 10 days automatically from FTP sites

Countries select the dataset during customization round



Why does ARC use satellite based rainfall data?



- ARC's primary ability is to disburse funds quickly, therefore ARC needs real-time rainfall data
- Rainfall data need to be objective and transparent, impossible to manipulate.
- Rainfall estimates are available for the whole continent, ensuring comparability across countries.
- Rainfall data need to be free of charge

Example Kenya

Drought Index: WRSI

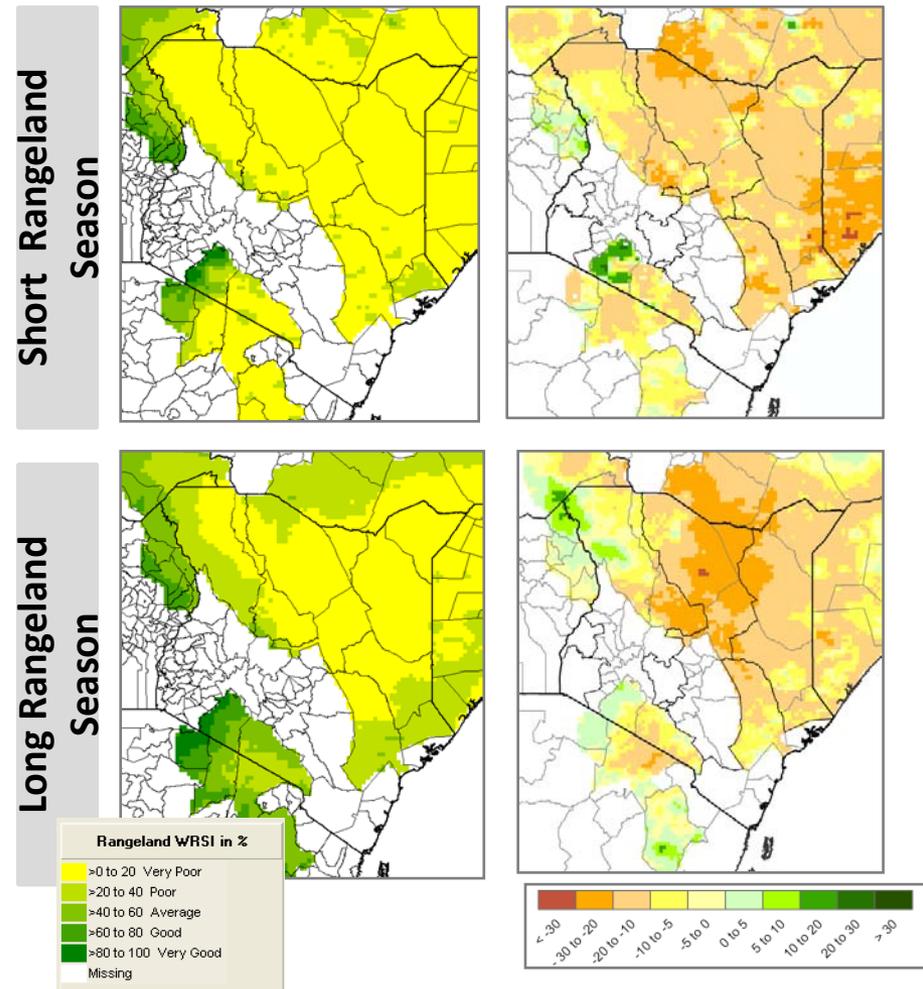


Africa RiskView uses FAO's crop model, the **Water Requirement Satisfaction Index, WRSI**

- Calculates crop water requirement compared to water availability.
- Linearly related to yield
- Can be applied to crops and rangeland
- Updated every 10 days
- Simple water balance model used by most operational early warning systems in Africa

Drought defined when the WRSI falls below its normal benchmark in an area

- ✓ **Countries set WRSI parameters and benchmarks that match their existing systems and correlate well to yields**



Population Affected Estimates

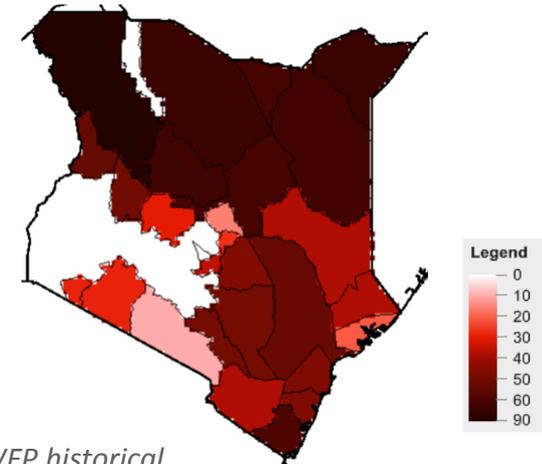


The population is divided into drought risk categories (based on information extracted from household survey data)

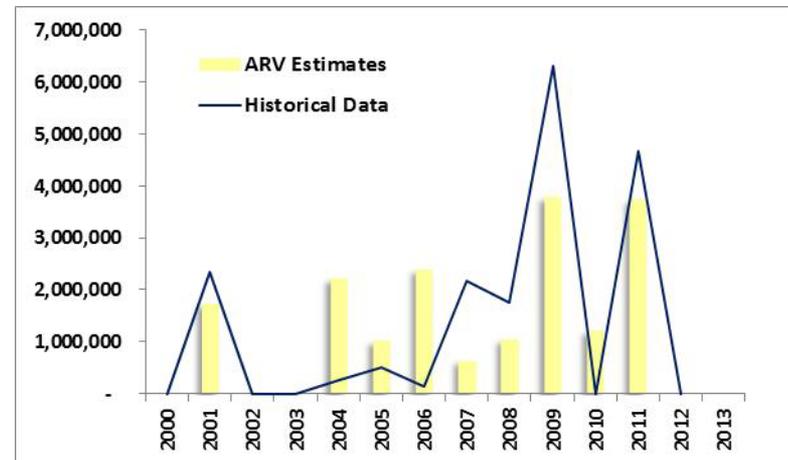
If a mild, medium or severe drought occurs, ARV generates estimates of the people *directly* affected

Example: Kenya

% Vulnerable to Mild, Medium and Severe Drought



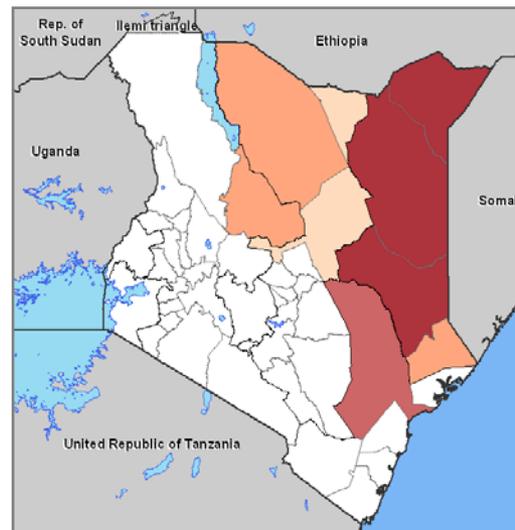
Example: ARV vs WFP historical data for Kenya long rains season – correlation 74%



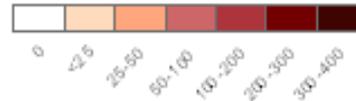
Response Costs

Response cost =
Population affected x
response costs per person

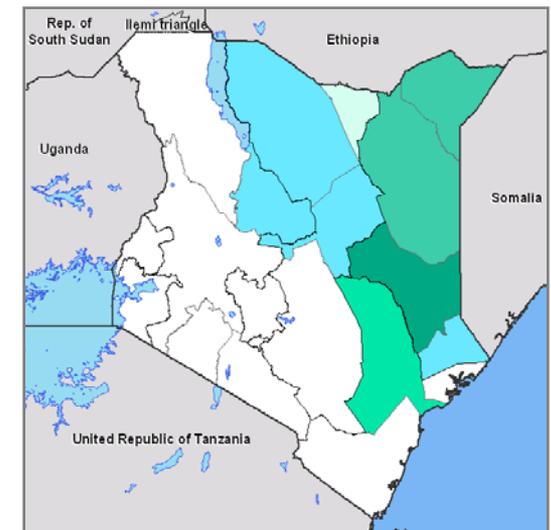
Population Affected



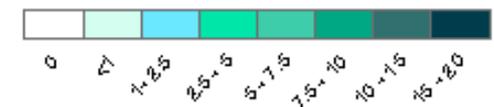
Estimated population affected (th)



Response Costs



Estimated response costs (in million US\$)



Operations Plan



**Kenya drought operational plan was approved by the
ARC Governing Board in March 2014**



KENYA DROUGHT OPERATIONS PLAN
2013-14

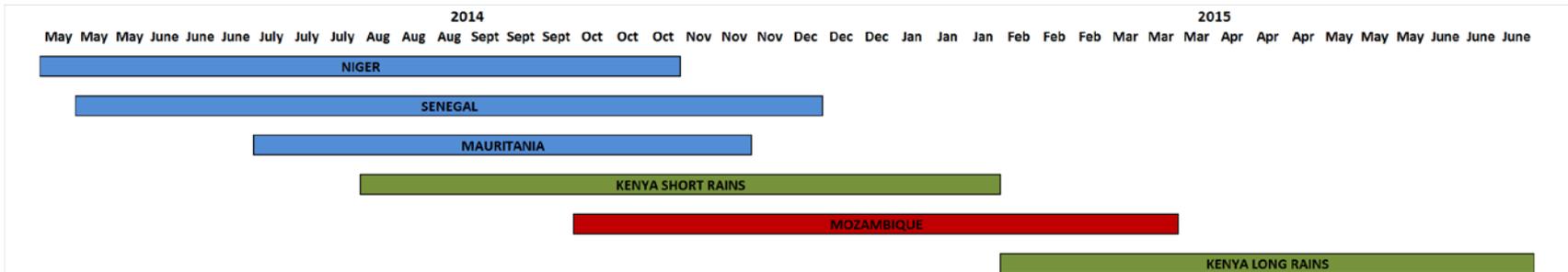
SUBMISSION TO THE AFRICAN RISK CAPACITY
OCTOBER 2013

2014 Premium payments Pool 1.



Premium income for 2014 to be \$17.5 million for the five countries, six seasons for an insurance portfolio with a May 1st inception date:

- Kenya: USD 9 million
- Mauritania: USD 1.4m
- Mozambique: USD 0.5m
- Niger: USD 3m
- Senegal USD 3.6m



Recommendations



- High resolution imagery not suitable for drought monitoring on country/continent scale.
- Play. Make experimental products and automate early.
- Listen to feedback from end-users. More important than scientific acknowledgement.
- Be on the look-out for spin-offs. ARC spinoff: helping Ethiopian pastoralist farmers to find good grazing grounds using NDVI.