

**Satellite And Weather Information
for Disaster Resilience in Africa
(SAWIDRA)/RARS**

Benjamin Lamptey, PhD

ACMAD

blamptey@gmail.com

EU funding and overall context

1. EUR 80 million Intra-ACP Programme “Building Disaster Resilience to Natural Hazards in Sub-Saharan Africa” (Financing Agreement 02/496), with 5 “Expected Results”
 2. EUR 20 million for Result #3 “Improve met capacity for early warning” as a contribution to the Climdev Africa Special Fund, subject to a Contribution agreement between the EU and AfDB,
 3. ClimDEV Africa is a tri-partite African initiative (AfDB – AU - UN-ECA) with a Steering Committee, in charge of approving various Climdev Africa projects (CDSF Work Plan)
- Status:
 1. EU-ACP Financing Agreement – February 2014 (5 years duration)
 2. Contribution agreement between EU-ACP signed on 30 July 2014
 3. New CDSF Work Plan now include “Result #3 projects”

Component#3 of the ACP-EU Programme

- The Component #3 of this Programme is formulated as follows: *“Core capacities of the specialized national and Regional Climate Centres (RCCs) are improved, to meet the needs of DRM agencies and socio-economic sectors for effective use of weather and climate services and community-focused and real-time early warning systems (EWS).*
- **5 “Results #3” projects identified:**
 - **A continental one (ACMAD) with all “centralised activities”:** RARS network, NWP with data assimilation
 - **4 regional projects (AGRHYMET, ICPAC, SADC-CSC and Central Africa RCC) -> NWP downscaling, support to NMHS**
- *Tentative Schedule:*
 - *Proposal Assessment by AfDB: ??????*
 - *Implementation 201?-end 201?*

Continental ACMAD project: Main activities

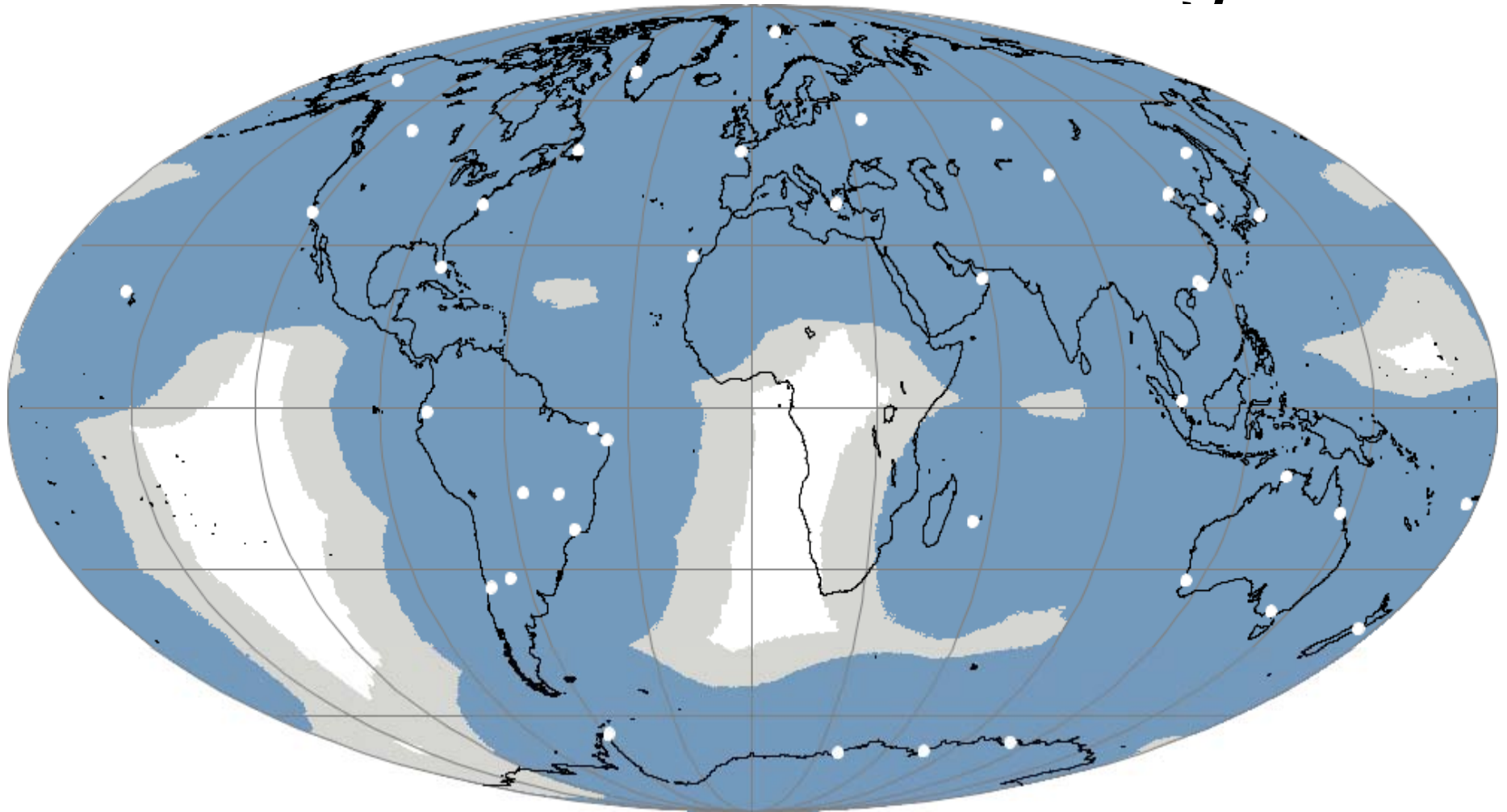
- **NWP:** Procurement, installation and validation, maintenance and operations of HW and SW infrastructure for a continental wide Numerical Weather Prediction (NWP) model at 12km resolution, including **assimilation of in-situ and RARS** data. Access to global NWP model data from an established global NWP centre (for boundary conditions).
- **RARS:** Procurement, installation, maintenance and operation of RARS infrastructure and related software (inc. operation and maintenance), technical coordination for the joint operations.
- **Data dissemination:** delivery of:
 - NWP model outputs to forecasters
 - NWP initial/boundary conditions to the RCC and the NMHS (can make specialized request not easy with global centres)
 - Products to continental partners (e.g. Early Warning bulletin)
- **Capacity building** and scientific aspects:
 - Engaging with global and regional specialized meteorological centres, universities
 - Training forecasters, modelers
 - Value added training
- **Project management** (inc. hiring of a technical assistance team)

Access to Polar Orbiting satellite

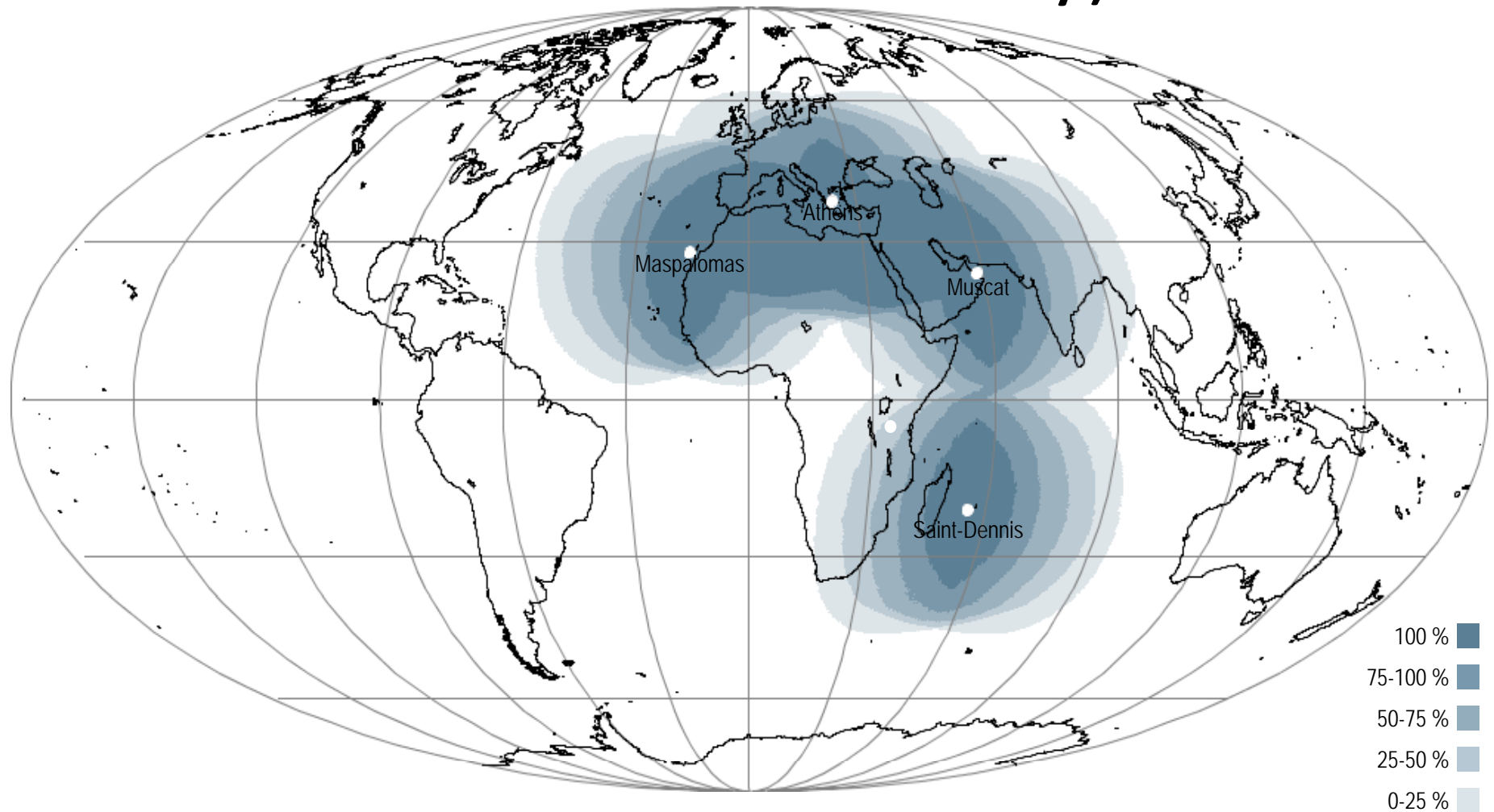
- Some Metop Level-2 products are available through EUMETCast-Africa (e.g. ASCAT Level 2 soil moisture, ocean related products)
- Possibility for direct access of all data, through HRPT/AHRPT stations
- WMO RARS concept: coordinated real-time access to polar orbiting meteorological satellites (NOAA, EUMETSAT, CMA) for weather forecasting application (NWP) – see http://www.wmo.int/pages/prog/sat/rars_en.php)



Current RARS coverage



Inter-regional connection (EARS “around Africa” only)



RARS Africa (1)

- 4 RARS stations – Niamey, Nairobi, South Africa and Gabon
- Operationally independent from EARS but complementary
- Detailed network architecture need design study (telecomm, central facility)
 - Cannot be as ambitious as EARS
 - Sustainability is key: hosting conditions, maintenance and operational aspects (telecom) are a driving factor for cost and thus sustainability
- Letters of consent to formally host the stations have been received from Gabon and Nairobi
- Frequency survey to assess suitability of frequencies have been conducted (Nairobi, Gabon, Niamey)
 - Niamey is seeking a second opinion through a private company

RARS Africa (2)

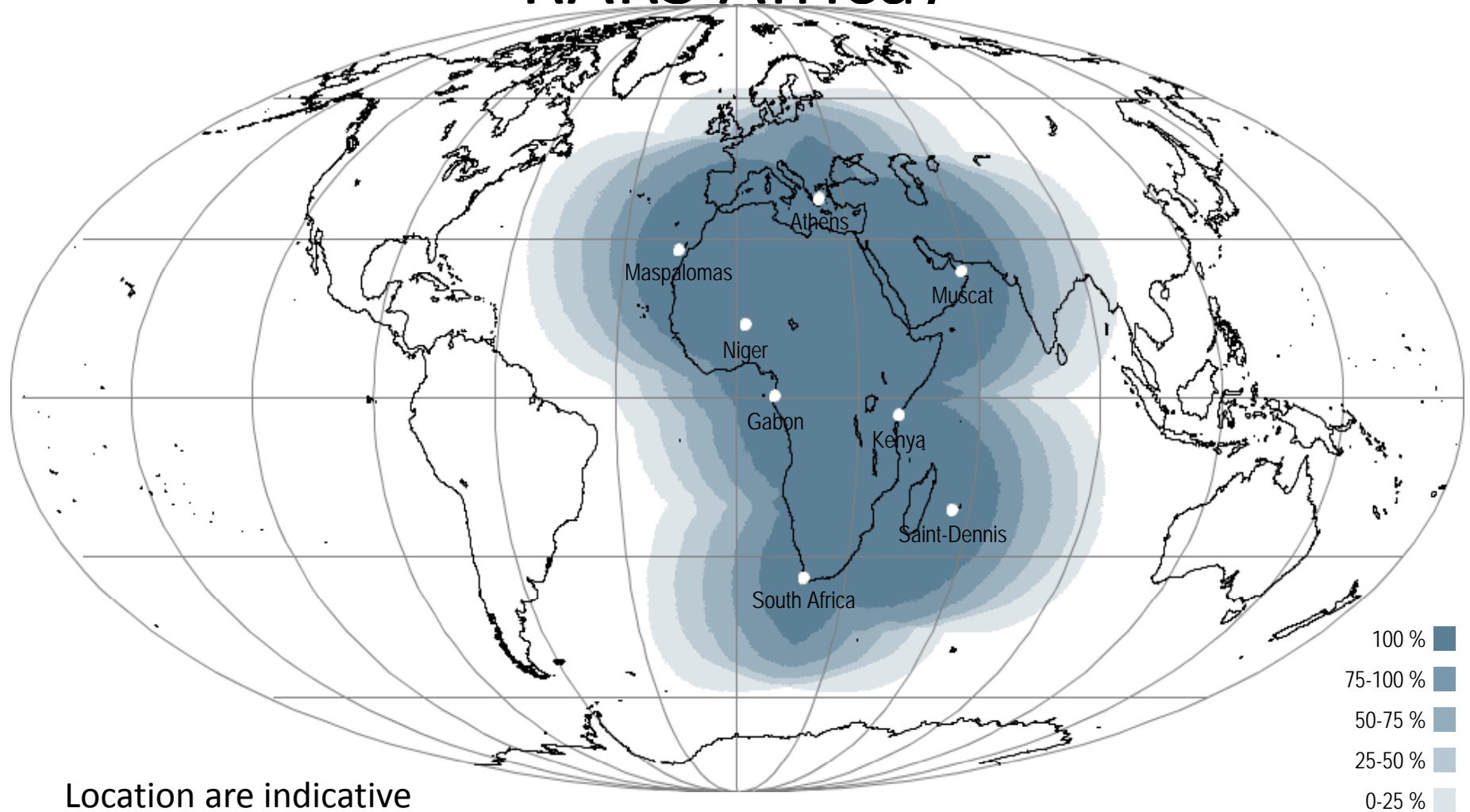
- Letter of consent expected from South Africa (SANSA)
- Next activity after formal letters of consent is signing of MoU
- Applications for most of the positions have been collected
- Applications for Technical Assistance for RARS and NWP drafted but not submitted to AfDB as the project number is needed. Thus, can be done after the grant is signed.

RARS Africa (3)

Email sent May 26, 2016; Reminder email June 15, 2016 but no response

- Need to have a sustainability plan now
- What ownership model should be adopted after the project?
- Each Space Agency should work out estimated operating cost (in euros) so we can have an idea of the spread of the cost
- The Space Agencies should study Component 1 (RARS) and make observations.
- Need face to face meeting among us to discuss issues. ACMAD suggested side meeting during 12th EUMETSAT Users (September 2016).

Inter-regional connection (EARS & RARS Africa)



Abbreviations

- RARS – Regional Advanced Retransmission Services
- ATOVS – Advanced TIROS Operational Vertical Sounder
- TIROS – Television and Infrared Observational Satellite
- EARS – EUMETSAT Advanced Retransmission Service
- ASCAT – Advanced Scatterometer

- HRPT/AHRPT –High Resolution Picture Transmission

Value Chain to implement

Research -> Operations -> Applications

DRM Platform (1)

- Global, Regional and National
- The scale determines type of data, recipient, frequency, spatial resolution before, during and after the disaster
- Frontline action
- How are they organized?
- Are they operational?
- How do the different components react before, during and after a disaster?
- Do a simulation exercise to test reaction of components

DRM Platform (2)

- What lessons could be learnt from other continents
 - How do they access products?
 - What type of data do they access?
 - What are the time and space scales of the data?
 - What is the accuracy of the data?

Expectations at different levels

- Continental
 - “Global overview” of the disasters and what kind of information can we provide
 - Do we have a visualization of the sub-regional kind of disasters?
 - Develop tools that could be adopted for the various regions
- Regional
 - The strength of the regional centre is to put regional perspective that is seamless with the continental
 - Regional centres should have activities at the national level
 - Regional centres should feedback ACMAD
- National
 - An NMHS should have a desktop that provides a channel of communication (2-way) that goes all the way to the continental level.

Role of Regional Centres (1)

- Regional Centres run model a 4 km resolution over their region
- Regional Centres work with NMHSs to generate demand driven products
- Generate minimum products for countries without capabilities
- Products from regional centres give a regional view
- NMHSs must confirm the regional product is relevant at national scale – monitor cost of damage, loss of human life, etc

Role of Regional Centres (2)

- NMHSs should follow the weather systems and inform decision-makers and public of trajectory of these systems
- Regional Centres should feedback to ACMAD
- Construct database of satellites data, impacts on economy, society and environment
- The culture, religion and perception of the people should be taken into account in disseminating information
 - Need to have Social Scientists involved