World Meteorological Organization

Weather • Climate • Water

The WMO Severe Weather Forecasting Demonstration Project (SWFDP):

its framework, implementation and future directions

Implementation in West Africa

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Why a project on severe weather forecasting?

The basic Mandate of NMHSs:

To provide meteorological information for protection of life, livehoods and property, and conservation of the environment

Why a project on severe weather forecasting?

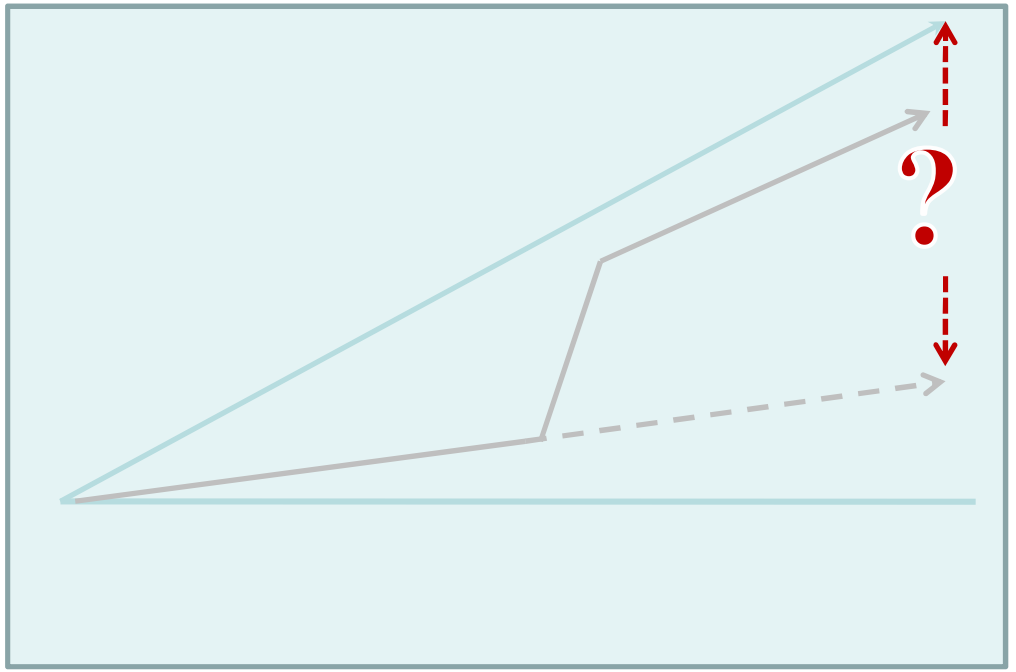
- Dramatic developments in weather and climate prediction science

- Leading to improved alerting of hydro-meteorological hazards, at ever-increased precision, reliability, and lead-times of warnings

- Developing countries, including LDCs and SIDSs, saw little progress

- Increasing gap in application of advanced tools and technology in forecasting and early warnings

- WMO SWFDP attempts to close this gap, by applying the *'Cascading Forecasting Process'* (regional frameworks)



Vision

WM Congress provided vision for improving severe weather forecasting and warning services in developing countries

"NMHSs in developing countries are able to implement and maintain reliable and effective routine forecasting and severe weather warning programmes through enhanced use of NWP products and delivery of timely and authoritative forecasts and early warnings, thereby contributing to reducing the risk of disasters from natural hazards."

Cg-15 (2007) & Cg-16 (2011)

Realizing the Vision

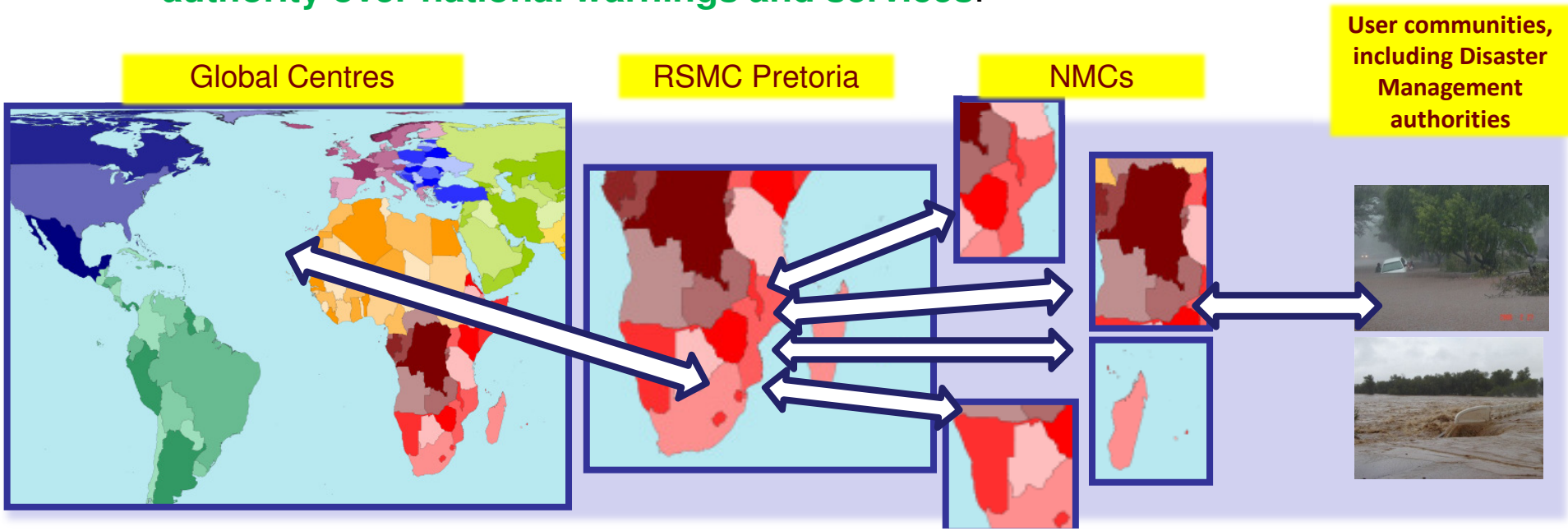
Through Collaboration between GDPFS Centres and involvement of Public Weather Services (PWS) and other Programs

To

Implement 'Cascading Forecasting Process' (from Global to Regional to National) through Severe Weather Forecasting Demonstration Project (SWFDP)

SWFDP Cascading Forecasting Process – efficient delivery of GDPFS

- *Global NWP* centres to provide available NWP/EPS and sat-based products, including in the form of probabilities, cut to the project window frame;
- *Regional centres* to interpret information received from global centres, prepare daily guidance products (out to day-5) for NMCs, run limited-area model to refine products, maintain RSMC Web site, liaise with the participating NMCs;
- ***NMCs* to issue alerts, advisories, severe weather warnings; to liaise with user communities, and to contribute feedback and evaluation of the project;**
- ***NMCs* have access to all products, and maintained responsibility and authority over national warnings and services.**



SWFDP Main Goals

- Implement the WMO's GDPFS three-level system – the '*Cascading Forecasting Process*'
  - ✓ International collaboration among operational centres at global, regional and national levels
  - ✓ Improve the skill of products from WMO operational centres through feedback and forecast verification
  - ✓ Continuous learning and modernization
  - ✓ Address the needs of groups of "like-countries"

- Improve lead-time of Warnings
- Improve interaction of NMHSs with their users
- Identify areas for improvement and requirements for the WMO Basic Systems

SWFDP Strengths

- Cost effectiveness;
- Simplicity;
- NMHSs need good internet only;
- Highly operational;
- Capacity development through specialized training programme
- improved forecasts and lead-time of warnings

SWFDP framework and guidance

SWFDP is organized within the Commission for Basic Systems (CBS) and taken care of by a Project Steering Group (PSG) established by CBS at WMO

REFERENCE DOCUMENTS:

- *SWFDP Overall Project Plan (rev. 2010)*
  http://www.wmo.int/pages/prog/www/DPFS/Meetings/RAII-SeA-SWFDP-RSMT_Hanoi2011/documents/SWFDP_OverallPP_Updated_22-04-2010.pdf

- *SWFDP Guidebook for Planning Regional Subprojects (rev. 2010)*
  http://www.wmo.int/pages/prog/www/DPFS/Meetings/RAII-SeA-SWFDP-RSMT_Hanoi2011/documents/SWFDP_Guidebook_Updated_22-04-2010.pdf

SWFDP Implementation process

Four Phases approach

Phase I - Overall Project Planning: This phase includes the preparatory work necessary to prepare the project specifications, and to identify the possible participating centres and to select suitable regional subprojects according to the geographical area, the type of severe weather and the chosen period for the experimentation.

Phase II: Regional Subproject Implementation Planning and Execution.

- Preparation of the detailed specifications (data and products to be exchanged, performance measurements, reviewing and reporting)
- Country Reps (RSMT) develop subproject implementation plan, including a training programme, and to manage its implementation and then to carry out the Demonstration.
-

SWFDP Implementation process

Four Phases approach

Phase III: Evaluation of SWFDP Regional Subproject :

- Evaluation of the progress reports
- Tracking and analysis for further improvement
- Continuous evaluation, training and reporting

Phase IV: Regional Subproject Long-term Sustainability and Future Developments:

- Sustain operations and expand partnerships through continuous development, regular trainings and sharing knowledge.
- Future capability and technology developments, and to foster broadening of activities in synergy with other WMO Programmes.
- **Responsibility of management to be taken by the concerned Regional Association**

SWFDP Implementation – How to initiate it

- Constituent Body to express interest (RAs, TCs, EC and Congress)
- Funding availability from donors
- Commitments of participating Countries
- Identification and commitment of a Regional entity to take on responsibilities for the operational phase of the project

SWFDP Training Programmes

Based on the regional and national needs, the following approach is followed for designing the SWFDP training programmes

- *Two-week SWFDP training workshops for each region (such training workshops are preferably held every year and rotated among the participating countries in a region)*
- *RSMC Training Desk (e.g. at RSMC Pretoria Training Desk for countries in Southern Africa)*
- *In-country training (e.g. for countries in Southwest Pacific)*

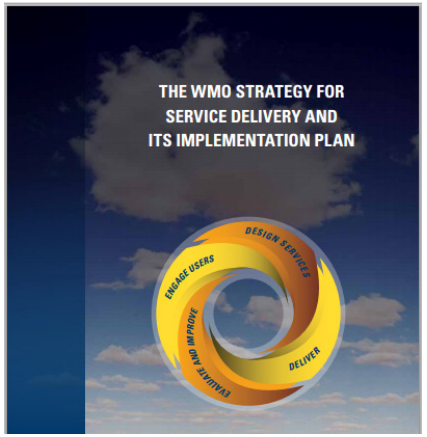
SWFDP Training Programmes

In addition:

- ECMWF annual training for WMO Members
- DWD annual training on COSMO (aligned with SWFDP)
- Regional Training Centres (training programmes on forecasting aligned with the SWFDP)
- *Others, e.NOAA/NWS, Meteo-France*

WMO SSD and its IP

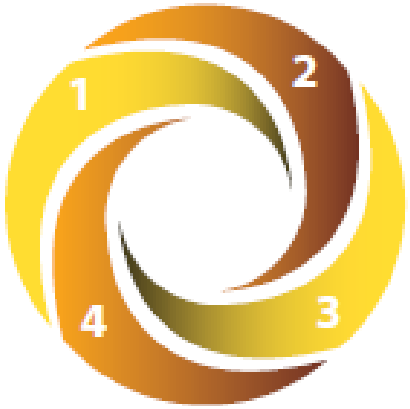
- Defines 4 stages of a cycle for delivering service



The four stages of a continuous, cyclic process for developing and delivering services are:

(1) User engagement and developing partnerships

(2) Service design and development

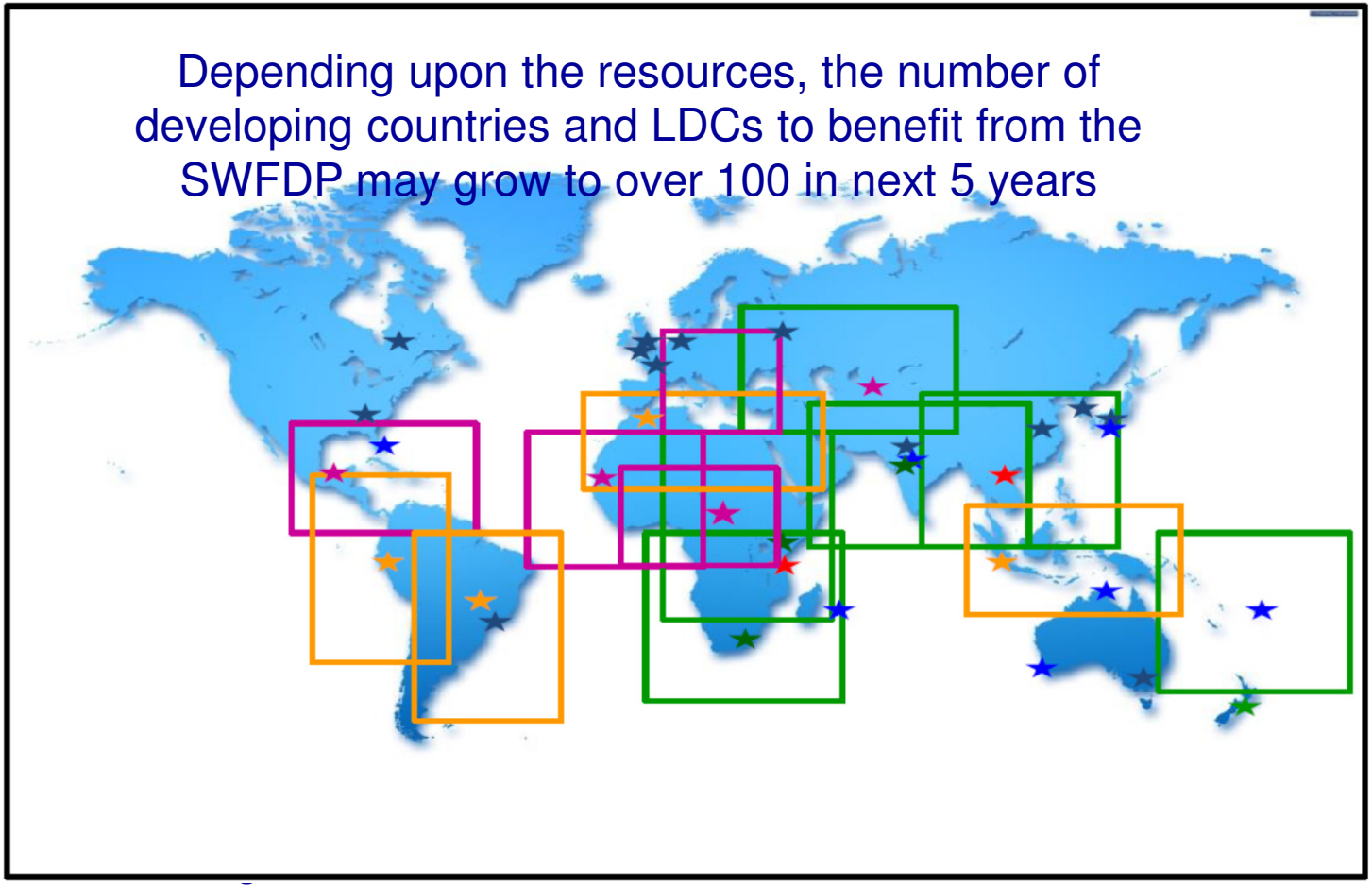


(4) Evaluation and improvement

(3) Delivery

SWFDP: Existing projects and Future directions

Depending upon the resources, the number of developing countries and LDCs to benefit from the SWFDP may grow to over 100 in next 5 years



Green color boxes represent the domains of existing SWFDP regional subprojects. **Pink** and **Orange** color boxes signify the regions for future SWFDP subprojects which will be developed within next 1-2 years and 3-5 years respectively. Contributing Global Centres and RSMCs /RFSCs are also shown for each of the SWFDP regional subprojects.

- Cost effective;
- Simplicity;
- NMHSs need internet only;
- Highly operational focus;
- Capacity development with improved forecasts and lead-time of warnings

SWFDP RA-I-West Africa

- Le conseil régional I (Afrique), à sa seizième session (Praia, Cabo Verde, février 2015), a invité le Secrétaire-général de l'Organisation mondiale de météorologie (OMM) et la Commission des systèmes de base (CSB)à envisager d'étendre le programme de prévision des conditions météorologiques extrêmes au reste de l'Afrique, en commençant par l'Afrique de l'Ouest.
- Le Congrès de l'OMM, à sa 17ième session (Genève, Suisse, mai-juin 2015) a donné son aval

Stage de formation sur les services d'alerte et de prévision des conditions météorologiques extrêmes en Afrique de l'Ouest et en Afrique Centrale

Novembre 2015

(Initial funding from KMA)

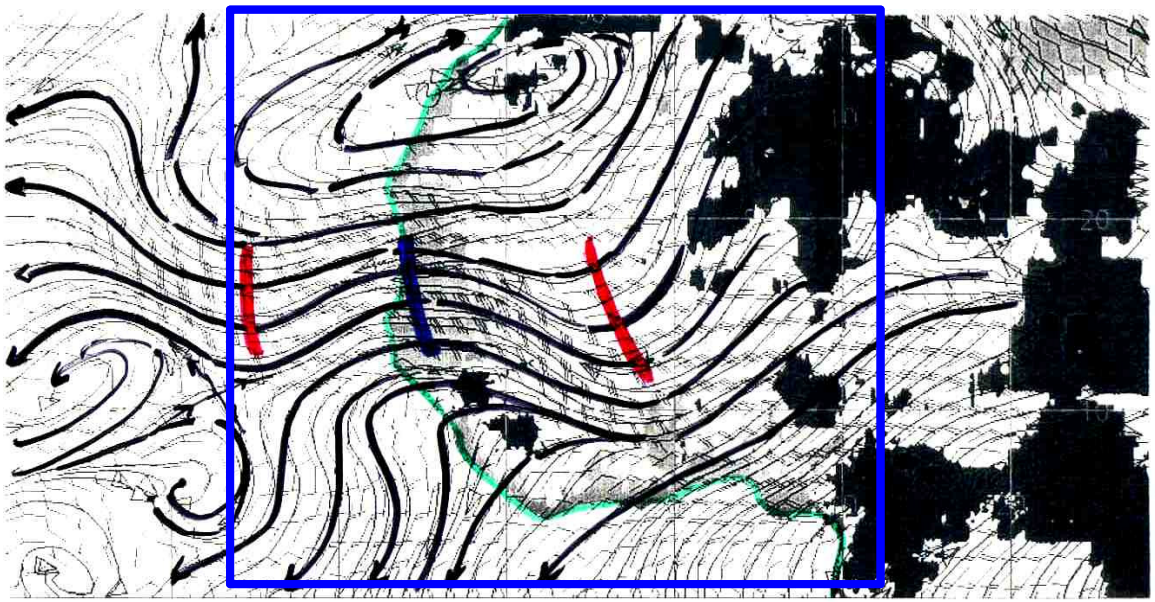
Stage de formation sur les services d'alerte et de prévision des conditions météorologiques extrêmes en Afrique de l'Ouest et en Afrique Centrale

- Les principaux objectifs du stage sont :
- 1) d'apprécier les capacités opérationnelles des pays de l'Afrique de l'Ouest et Centrale en ce qui concerne la préparation et la diffusion des alertes et prévisions et ;
- 2) de former le personnel à l'utilisation des produits de prévision des conditions météorologiques extrêmes et aux services météorologiques destinés au public.

SWFDP RA-I-West Africa

Potential areas of Focus :

- Strong winds
- Heavy rains/dry spells (African monsoon)
- Dust events
- Hazardous waves



•Countries in West Africa ?

•Regional Centres ?

(RSMC Dakar ? Other centres/organizations to support Dakar? ACMAD, ASECNA, NIMET)

•Global Centres ?

(ECMWF, MeteoFrance, NOAA/NCEP?)

SWFDP: West Africa

- Challenges
  - Very large area with many countries
  - Language (French and English)
  - Support (RSMC, Dakar, Senegal)

SWFDP: West Africa

- Question of the roles of ASCECNA

Steering Group-SW | My Drive - Google | SWFDP Meeting, D | DocPlan | Tropical Cyclone Pr | How Many Countri | Seasonal precipitat

www.acmad.net/new/

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SEASONAL PRECIPITATION FORECAST FOR SEP- OCT - NOV 2015

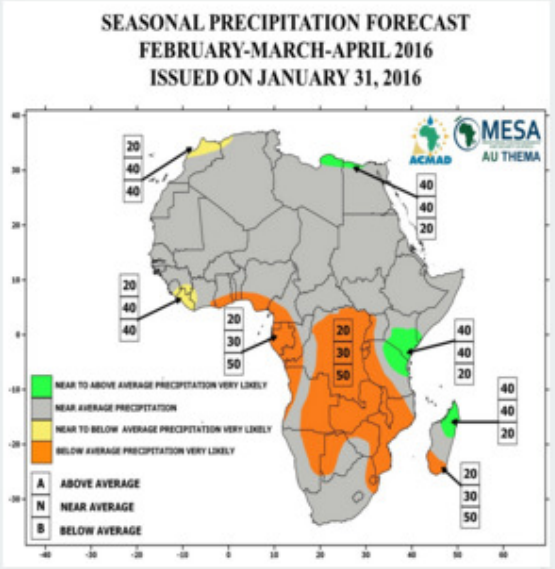
Climatologists experts, agro-meteorologists and hydrologists from African Centre of Meteorological Applications for Development (ACMAD), AGRHYMET Regional Centre, the National Agency of Civil Aviation and Meteorology of Senegal, representatives from National Meteorological and Hydrological Services of west and central Africa in charge of monitoring and developing information on the agro climatic, rainfall and hydro meteorological campaign and representatives from Basin Organizations in the sub region, met from 4 to 8 May 2015 in Dakar, Senegal to develop seasonal forecasts on rainfall, agro and hydro climatic characteristics for 2015 rainy season and thus facilitate their application to food security and water resources management.

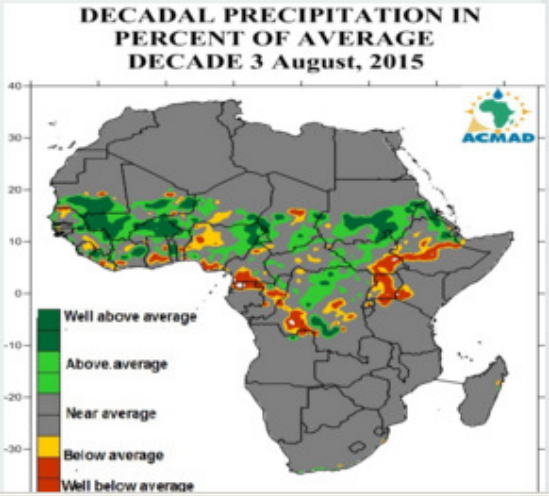
They benefited from the technical expertise of representatives of the World Meteorological Organization (WMO), the International Research Institute for Climate and Society (IRI , New York) and the University of Reading in England.

The seasonal forecast is the result of a consensus around products made by forecasting models and current

Products

- Seasonal Climate Outlook PRESANORD 09
- Seasonal Climate Outlook PRESANORD 08
- Seasonal Climate Outlook PRESAC 08
- Seasonal Climate Outlook PREASS-01
- Seasonal Climate Outlook PREASGG-02
- Seasonal Climate Outlook SWIOCOF-03
- Seasonal Climate Outlook SWIOCOF-04
- Long range forecasting product for Africa September-October-November/October-November-December 2015
- ITD & ITCZ positions
- Heavy rain/flood risk
- High Impact Weather
- Weekly monitoring rainfall
- Analysis & forecast WASA
- Analysis & forecast SASA
- Vigilance Meningist bulletin
- Dekadal Climate Bulletin
- Monthly climate bulletin





Country survey
heterogeneity

Country Pays	No. of forecasters (Male/Female) No. de prévisionnistes (Homme/Femme)	No. of IT staff (Male/ Female) No. des personnel IT (Homme/Femme)	TV Presenters (Male/Female) Présentateurs Telé (Home/Femme)	Major exreme events Evènements météorologiques extrèmes	Operations days 7/7, 5/7 ... Jours des opérations : 7/7 ; 5/7	Operations hours: 24/24; 18/24; 12/24 Opérations heures : 24/24 ; 18/24 ; 12/24	All forecasts issued Toutes les prévisions émises	Challenges in Forecasting Défis de la prévision	Does your Service supply weather warnings to the public? (yes/No)	Does your Meteorological have a PWS unit? (Yes/No) If "yes, how many people in the unit? Est-ce que votre service météorologique a une unité PWS? (Oui/Non) Si "oui, combien de personnes dans l'unité?	List all the communication channels used to deliver services to users (e.g. TV, Radio) Listez tous les canaux de communication utilisés pour fournir des services aux utilisateurs (par exemple, télévision, radio)	List the challenges of service delivery in your Meteorological Service Dressez la liste des défis de la prestation de services dans votre Service météorologique	Other issues autres enjeux	Your Name	Email address

Next steps

- Technical Planning Workshop likely in 2016

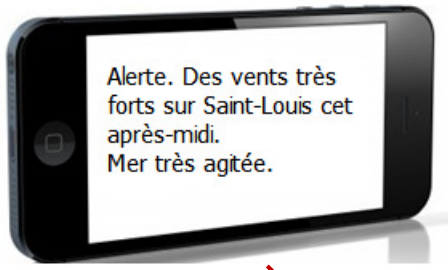
In the meantime

- Marinemet project to strenghten Dakar RSMC
- http://www.anacim.sn/meteo/rsmc-dakar/
- Service delivery

Passerelle SMS

1

2



3 3 3

ANNEES	pertes en vies humaines et portées disparues	Pertes en matériels CFA
2011	124	240 419 500
2012	52	21 850 000
2013	89	92 203 000
2014	110	57 677 000
TOTAL	375	412 149 500
Moyenne / an	94	103 037 375

Légende:

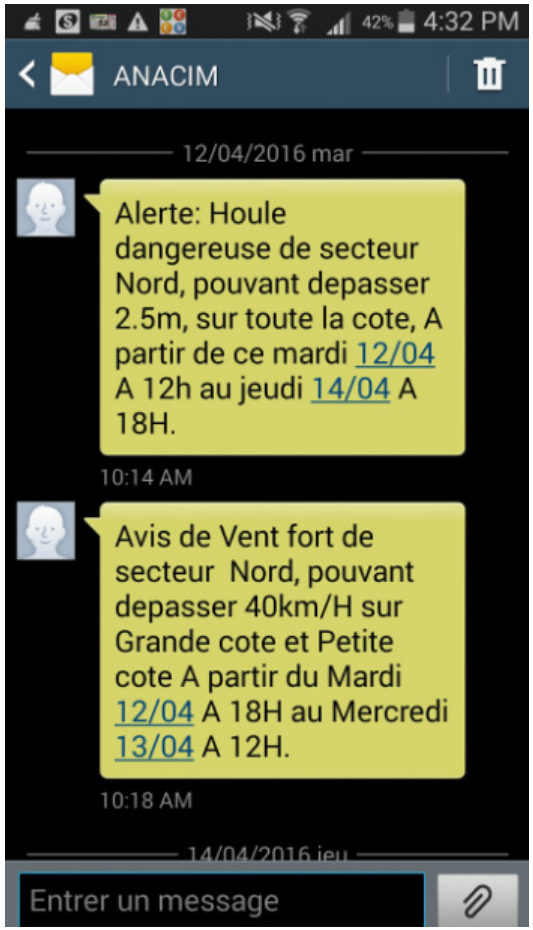
1: Envoi d'un SMS depuis le mobile client avec le mot-clé « Alerte »

2: Transfert de la demande au modem par la passerelle

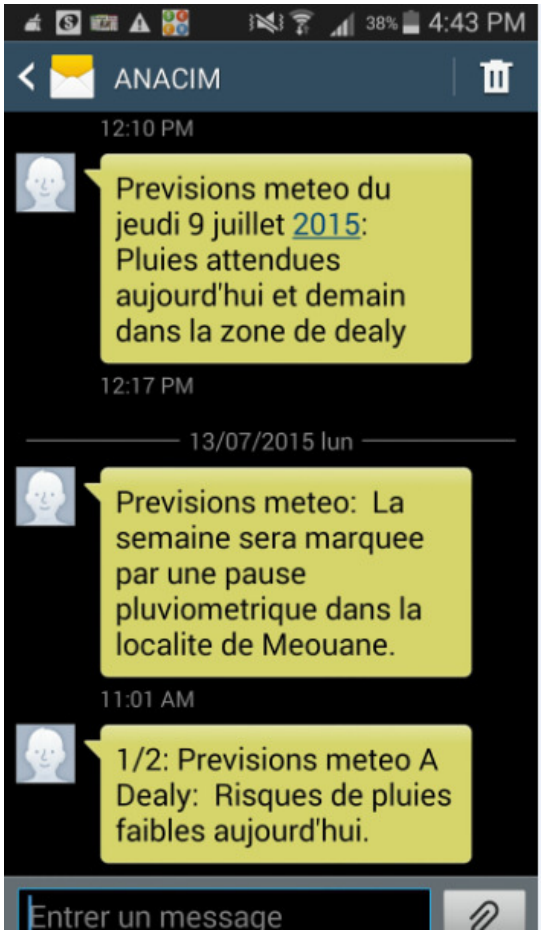
3: Modem transfert le message aux destinataires renseignés

Résultat

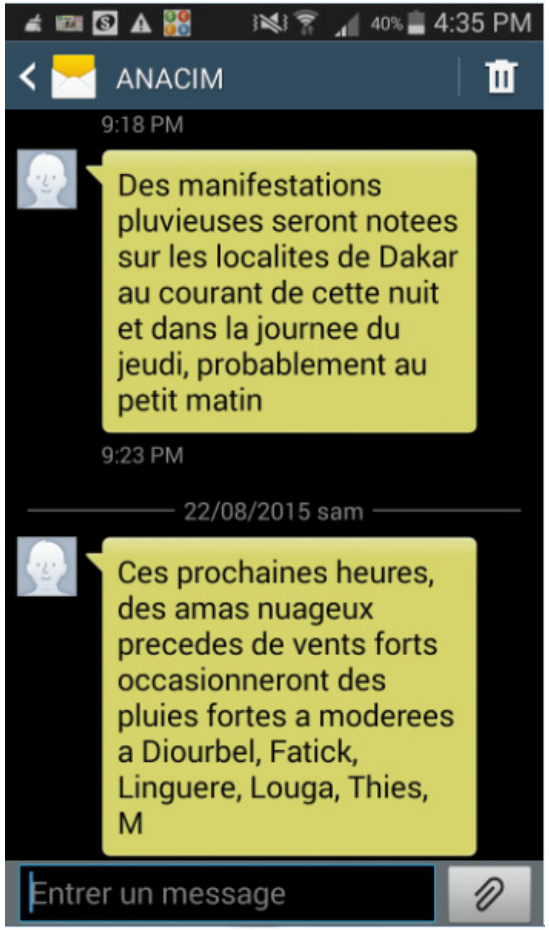
Pêche



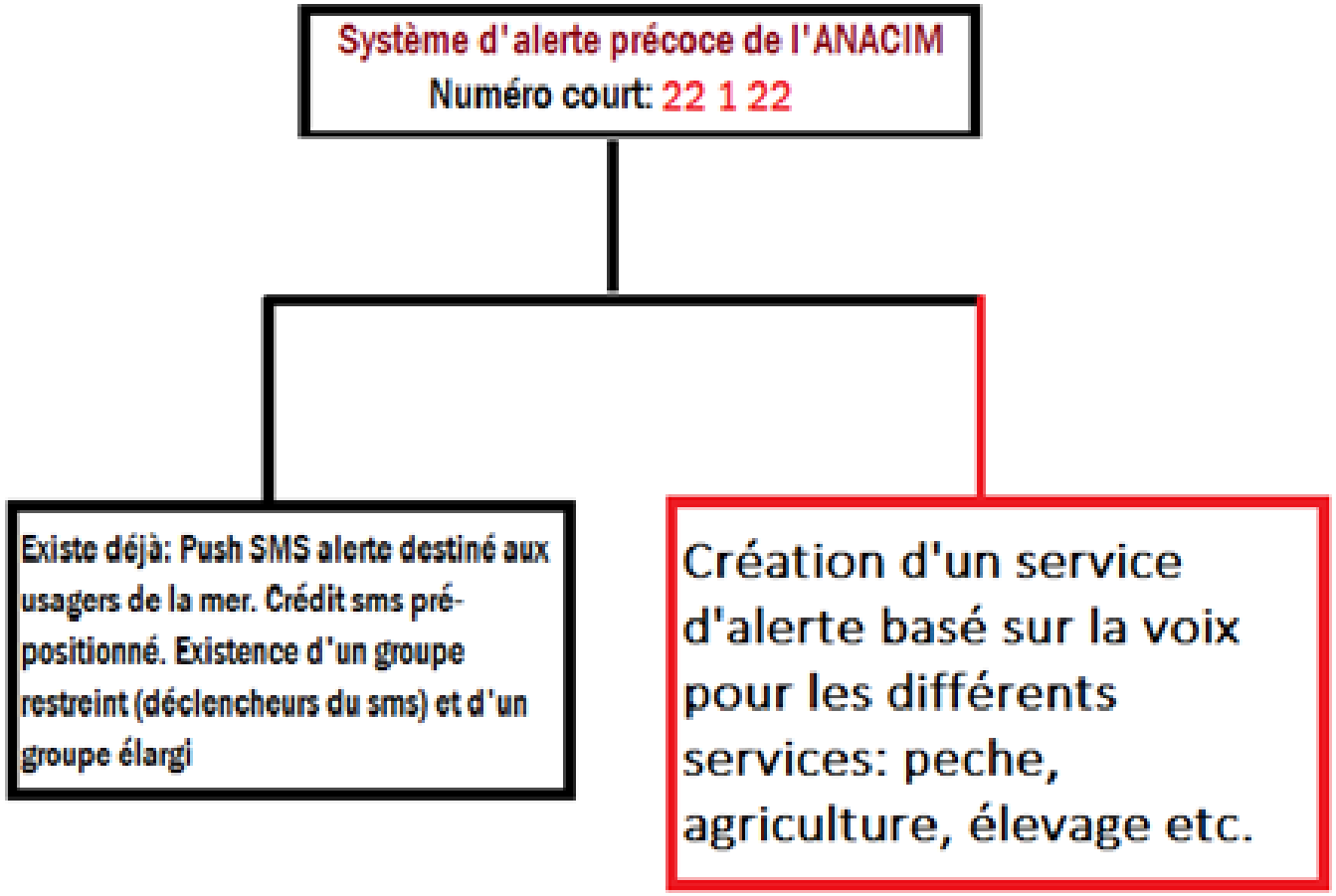
Agriculture



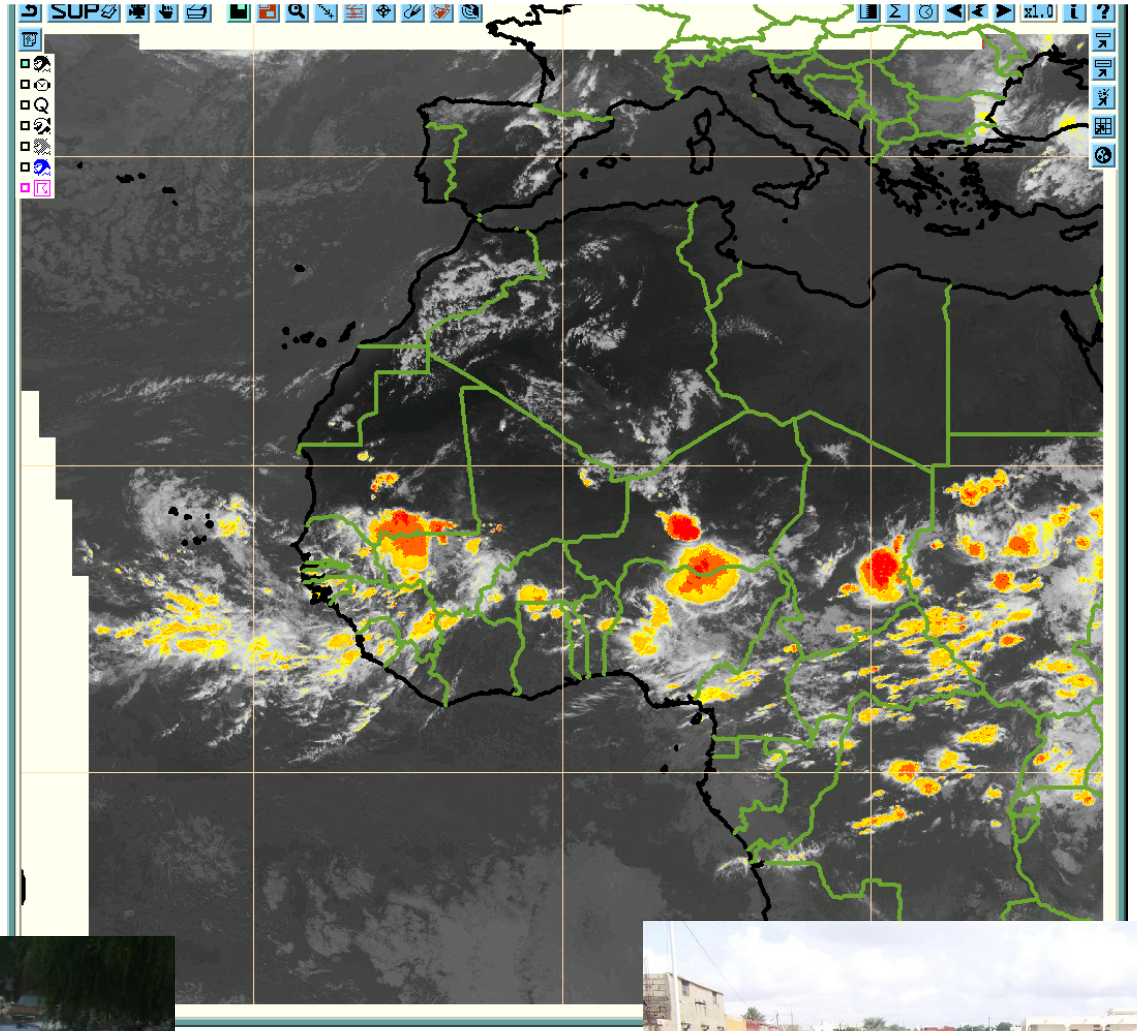
Lutte contre les inondations



Perspectives (1/2)



NB: Le service Alerte/Voix connaitra une phase test durant la 1ère année afin de l'évaluer et le renforcer.



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Thank You