

SWFDP-SA: Progress and Phase 4 Concepts

Eugene Poolman

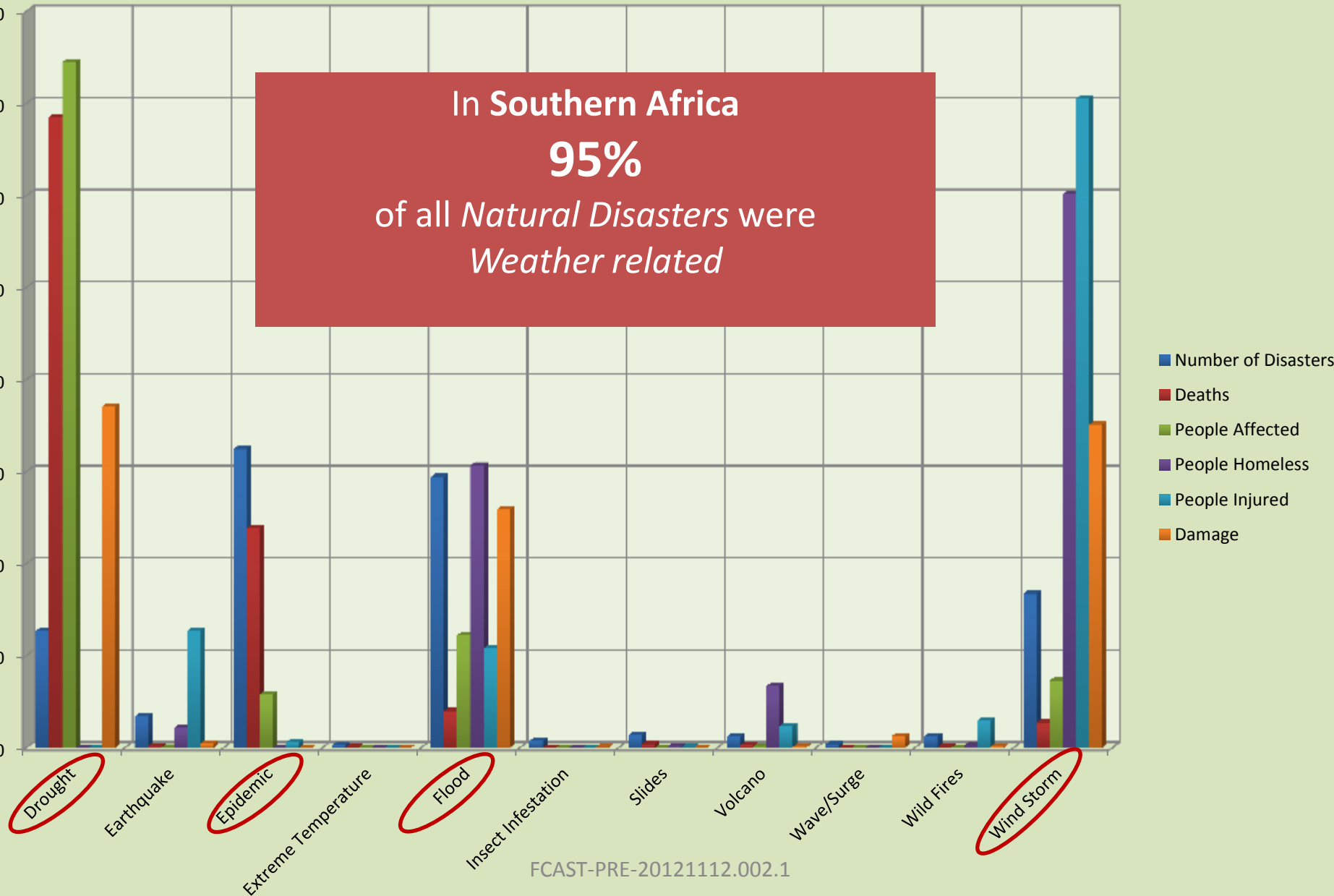
RSMC Pretoria

THE NEED FOR REGIONAL EARLY WARNING SYSTEMS

% IMPACT OF NATURAL DISASTERS ON SOUTHERN AFRICA: 1920-2008

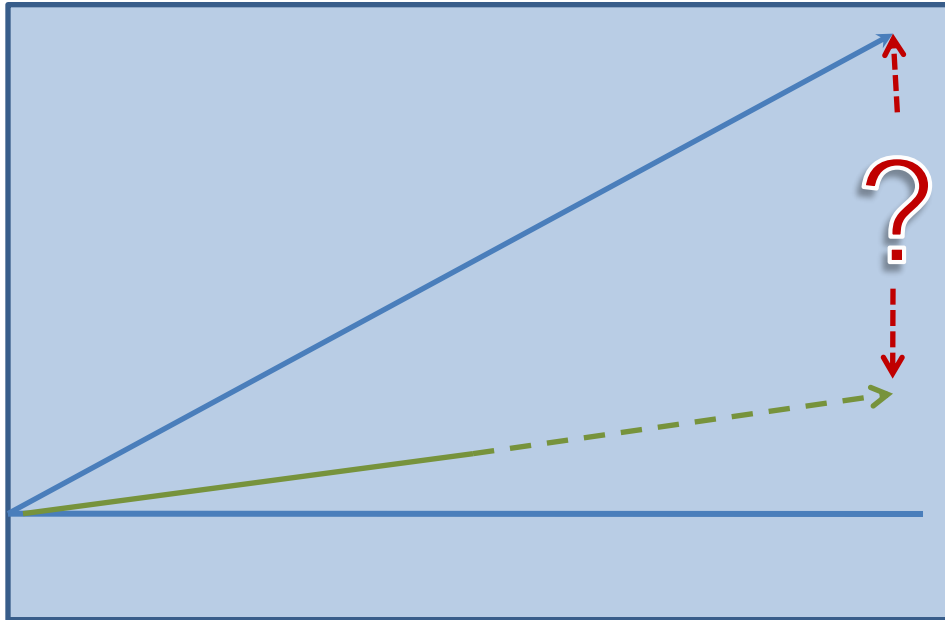
(Source: CRED)

In Southern Africa
95%
of all *Natural Disasters* were
Weather related

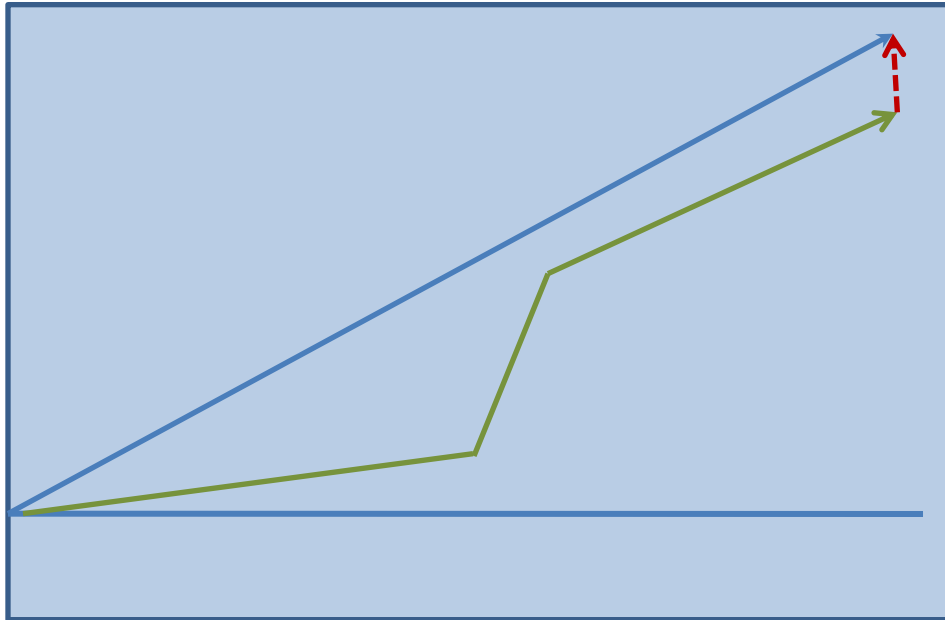


Enhancing the EWS in Southern Africa

- Dramatic developments in weather forecasting science over the past decades
- Increasing gap in developing countries of application of modern forecasting technology (NWP, EPS) in early warnings



Enhancing the EWS in Southern Africa



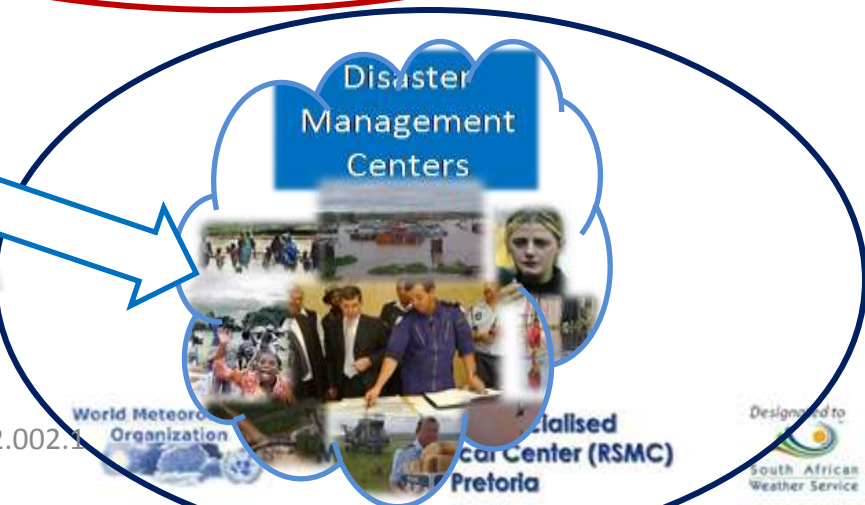
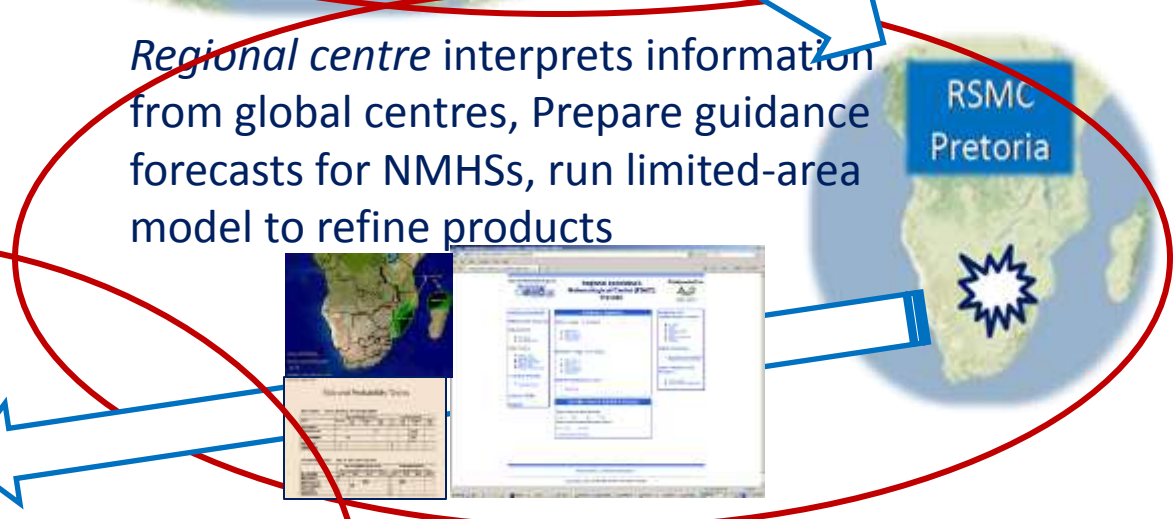
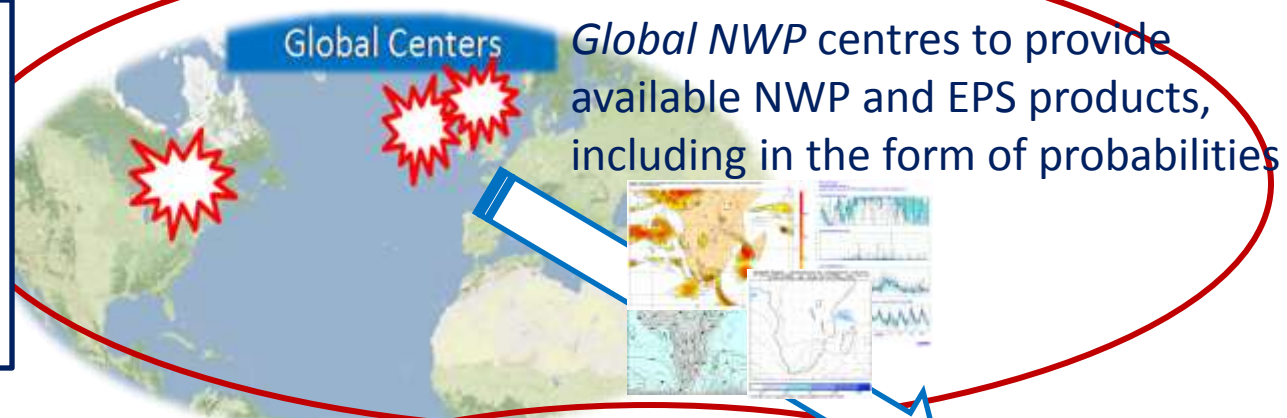
- Dramatic developments in weather forecasting science over the past decades
- Increasing gap in developing countries of application of modern forecasting technology (NWP, EPS) in early warnings
- *There is a need to support developing countries to close this gap*
- *Hence, the need for Regional EWSs*

SWFDP-SA: OVERVIEW

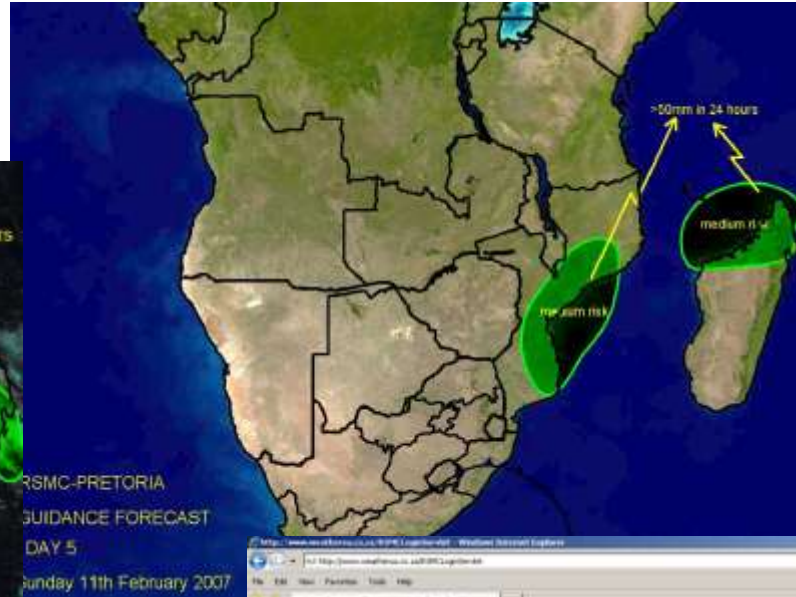
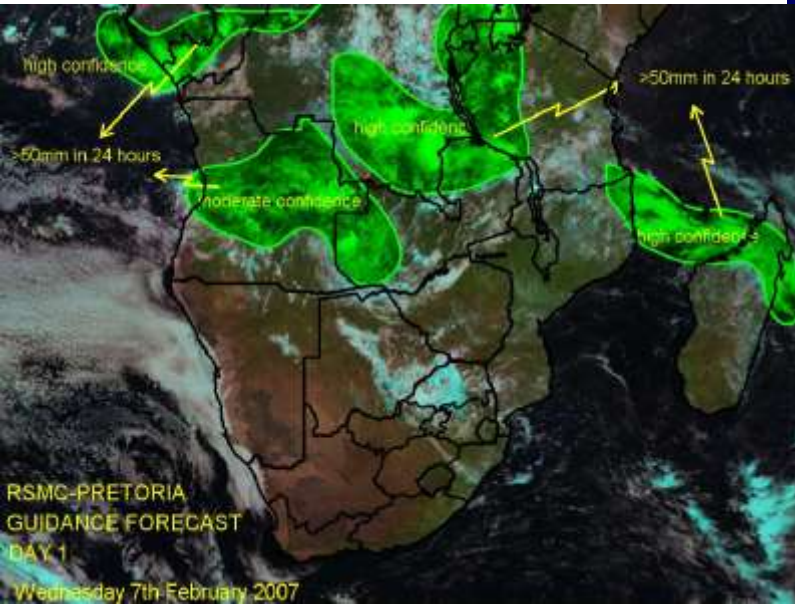
Aim of the WMO SWFDP Program

- To improve ability of National Meteorological Services (NMSs) to forecast severe weather events for the next 5 days using existing technology – to close the technology gap
- To improve interaction of NMSs with Disaster Management Agencies
- SWFDP is about *enhancing delivery of warning services as adaptation against a likely increase of disasters due to climate change and socio-economic vulnerabilities*

SWFDP Cascading Process



Examples of SWFDP Guidance Products from RSMC Pretoria



World Meteorological Organization
Regional Specialized Meteorological Center (RSMC) Pretoria
Designated to South African Weather Service

Guidance Products

- Short range (1-3 Days)
 - Sea Level
 - Sea Level
 - Sea Level
 - Sea Level
- Medium range (3-5 Days)
 - Sea Level
 - Sea Level
 - Sea Level
 - Sea Level

Other Services and Products

- SWFDP Evaluation Form
- Satellite-based Rainfall Estimates
 - Hydro-Estimator Rainfall Totals
 - Hydro-Estimator Rainfall Totals De-Drop

Risk and Probability Tables

Risk Tables: DAY 1: Sunday 7th January 2007

RISK	HEAVY PRECIPITATION				STRONG WINDS			
	No risk	Low risk	Medium risk	High risk	No risk	Low risk	Medium risk	High risk
Botswana	X				X			
Madagascar				W			Cent W Coast	Cent coast
Mozambique		NE						
Tanzania	X				X			
Zimbabwe	X				X			

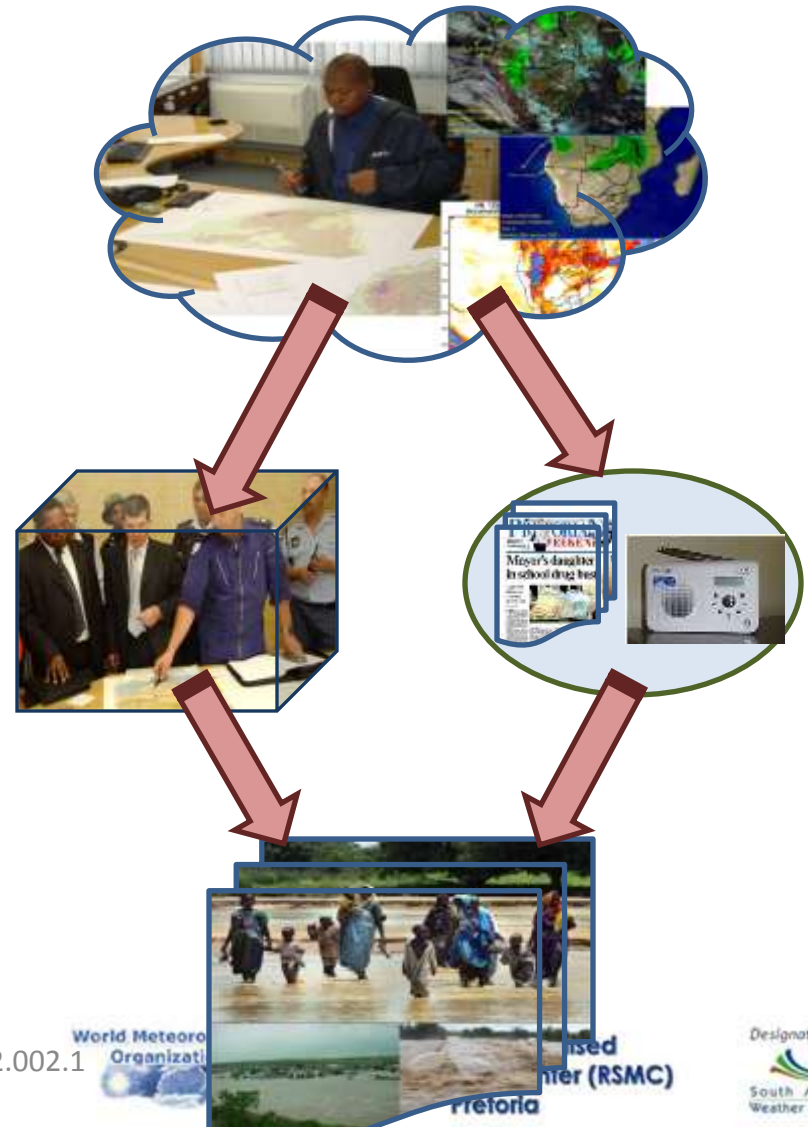
Probability Tables: DAY 3: 09th January 2007

Probability	HEAVY PRECIPITATION (exceeding threshold 50 mm/8 hrs)				STRONG WINDS (exceeding threshold 20 kts)			
	<10%	30%	60%	>80%	<10%	30%	60%	>80%
Botswana	X				X			
Madagascar				NW			NW	
Mozambique		NE			X			
Tanzania	X				X			
Zimbabwe	X				X			

FCAST-PRE-20121112.002.1

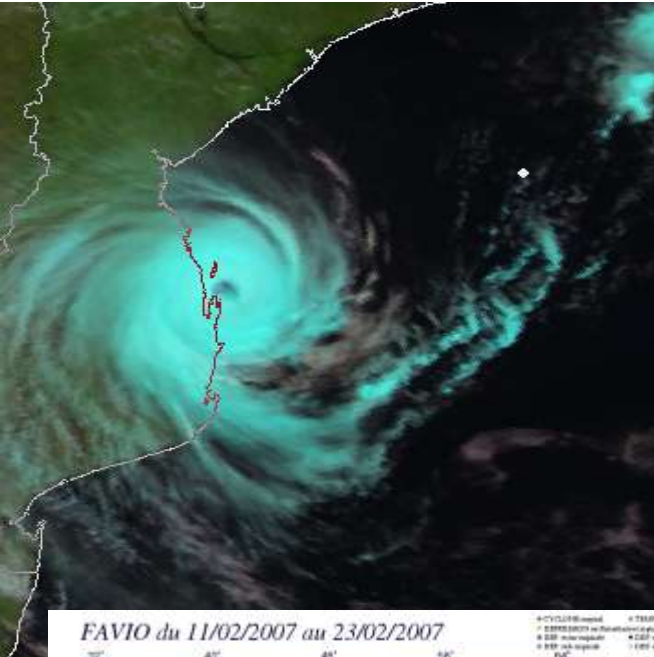
Warnings from National Meteorological Services

- NMSs evaluate model products supported by RSMC guidance products
- Issue warnings if needed against their own in-country criteria for severe weather
- Provide disaster management with up to 5 days lead-time of expected major hazards
- Coordinate with media for end-user dissemination



Example: Tropical Cyclone Favio

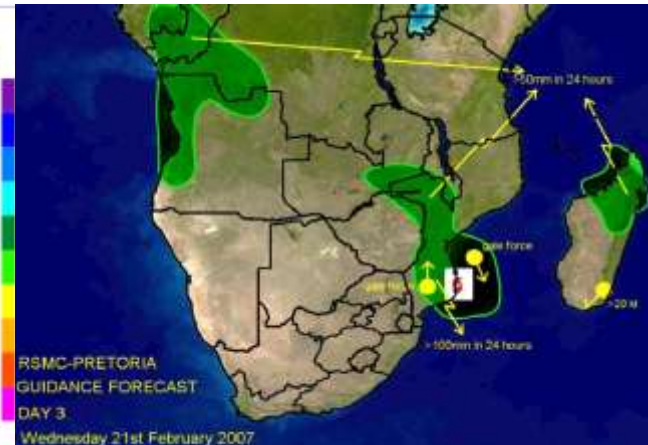
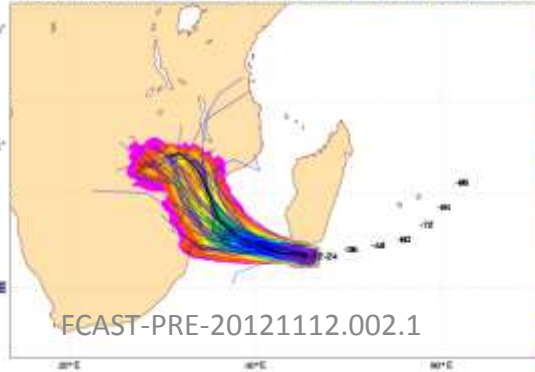
20-24 Feb 2007



- TC Favio caused widespread damage over Mozambique and Zimbabwe
- The consistency of model forecasts provided confidence to RSMC Pretoria to issue guidance to NMCs on potential landfall and movement 5 days in advance
- The model forecast proved to be quite accurate with landfall at Vilancoulos, moving to Eastern Zimbabwe



20070219 12 UTC
Probability that FAVIO will pass within 120km radius during the next 120 hours
tracks: black=OPER, green=CTRL, blue=EPS numbers: observed positions at t+ jh



Impact of Tropical Cyclone Favio

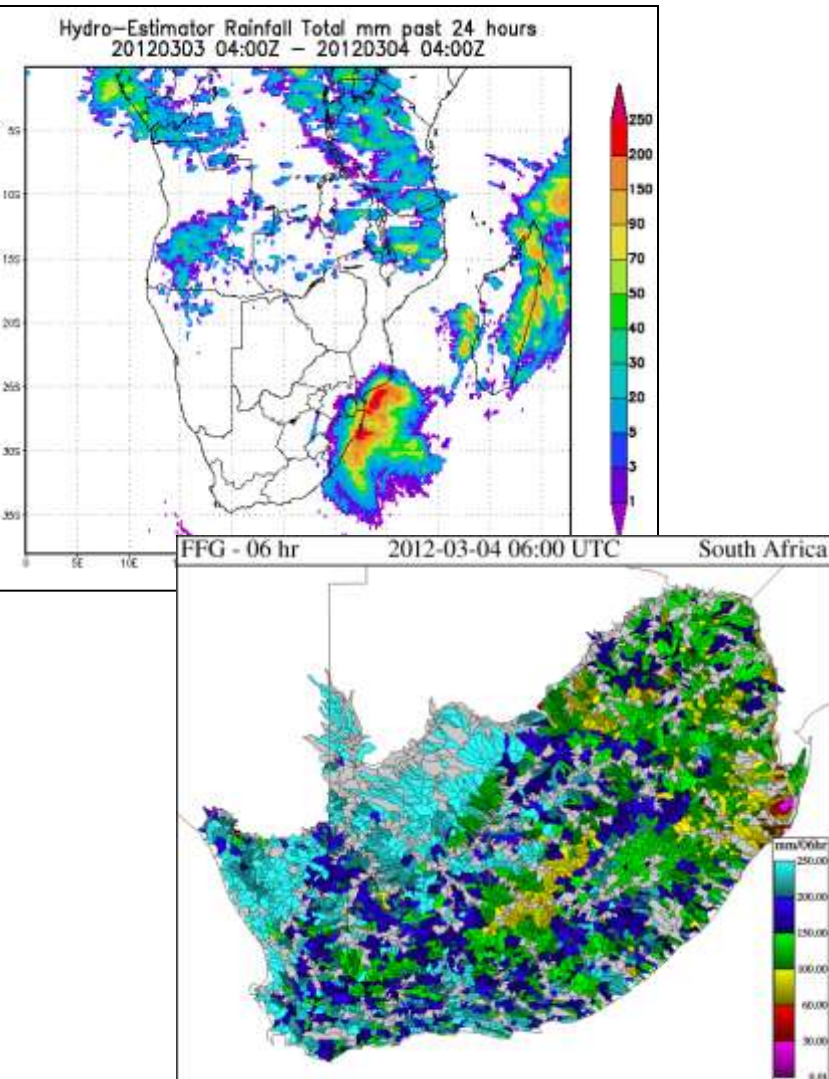


- In both Mozambique and Zimbabwe the NMCs agreed with the guidance products and issued warnings up to 5 days in advance to disaster management departments
- Both countries responded early:
 - Provinces were put on alert levels 2 - 3 days in advance
 - The public responded well and major loss of life were prevented



Tropical Cyclone IRINA- 4 March 2012

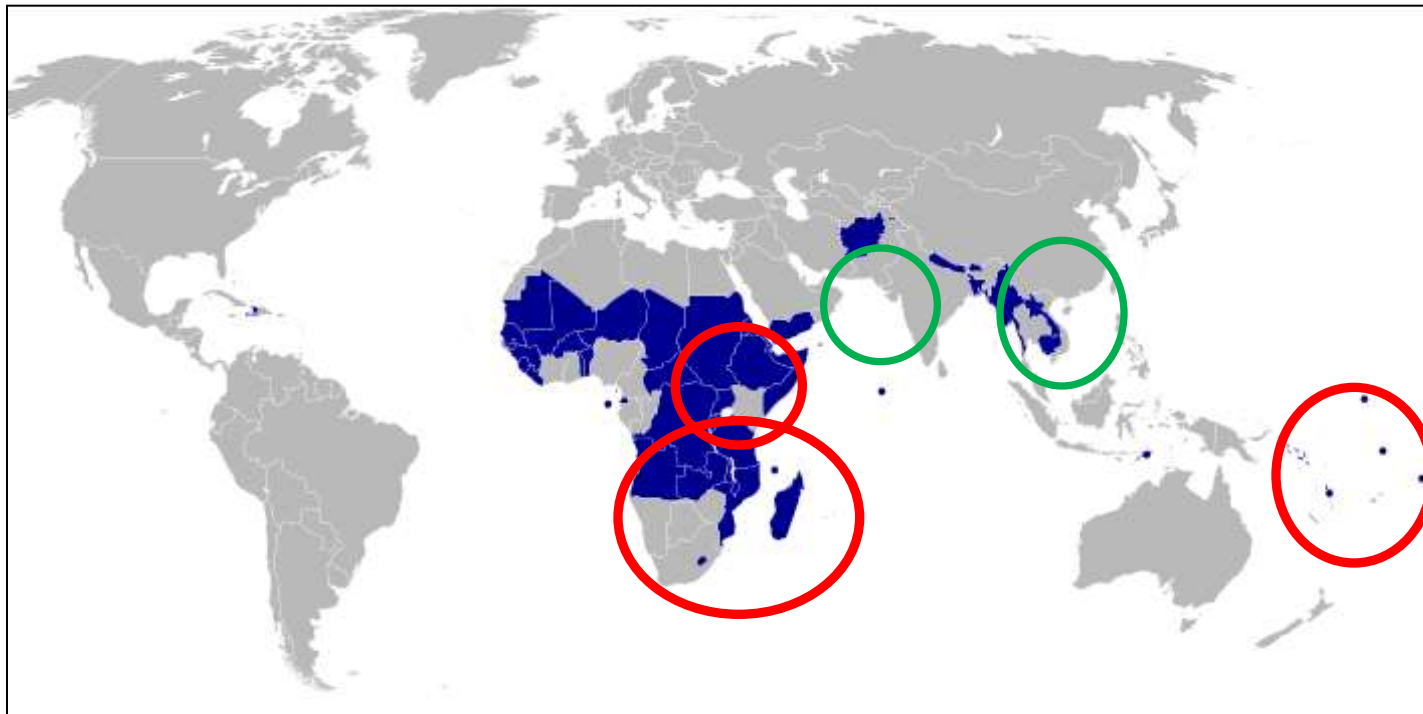
Example of collaboration in SWFDP between forecasters of RSMC Pretoria and the NMSs of Swaziland and Mozambique



- RSMC-Pretoria issued guidance forecasts for potential impact around northern KZN, Swaziland, Maputo region
- NMSs of Swaziland and Mozambique and RSMC Pretoria were in regular contact via email on the progress and uncertainty of the landfall
- Disaster Management centres of the 3 countries were kept up to date by their NMSs

International Impact of SWFDP

- The SWFDP concept is now also implemented by WMO in the Southern Pacific islands and East Africa, and WMO is targeting at least 2 new regions, all based on the success in Southern Africa



SWFDP: PHASE 4 CONCEPTS AND IMPACT ON SOUTHERN AFRICA

Evolution of the SWFDP-SA Project

- Phase 1: July 2006 – Oct 2006
 - started with a planning meeting in Aug 2006 in Pretoria, South Africa, followed by the first regional training session in November 2006 in Pretoria, South Africa
- Phase 2: Nov 2006 – Nov 2007
 - The demonstration phase based on 5 NMCs, RSMC, 3 Global Centres
- Phase 3: Dec 2007 – Dec 2011
 - MASA requested WMO to roll SWFDP out to the entire region, based on the successes of the demonstration phase
 - The SWFDP activities was rolled out to all 16 Southern African countries

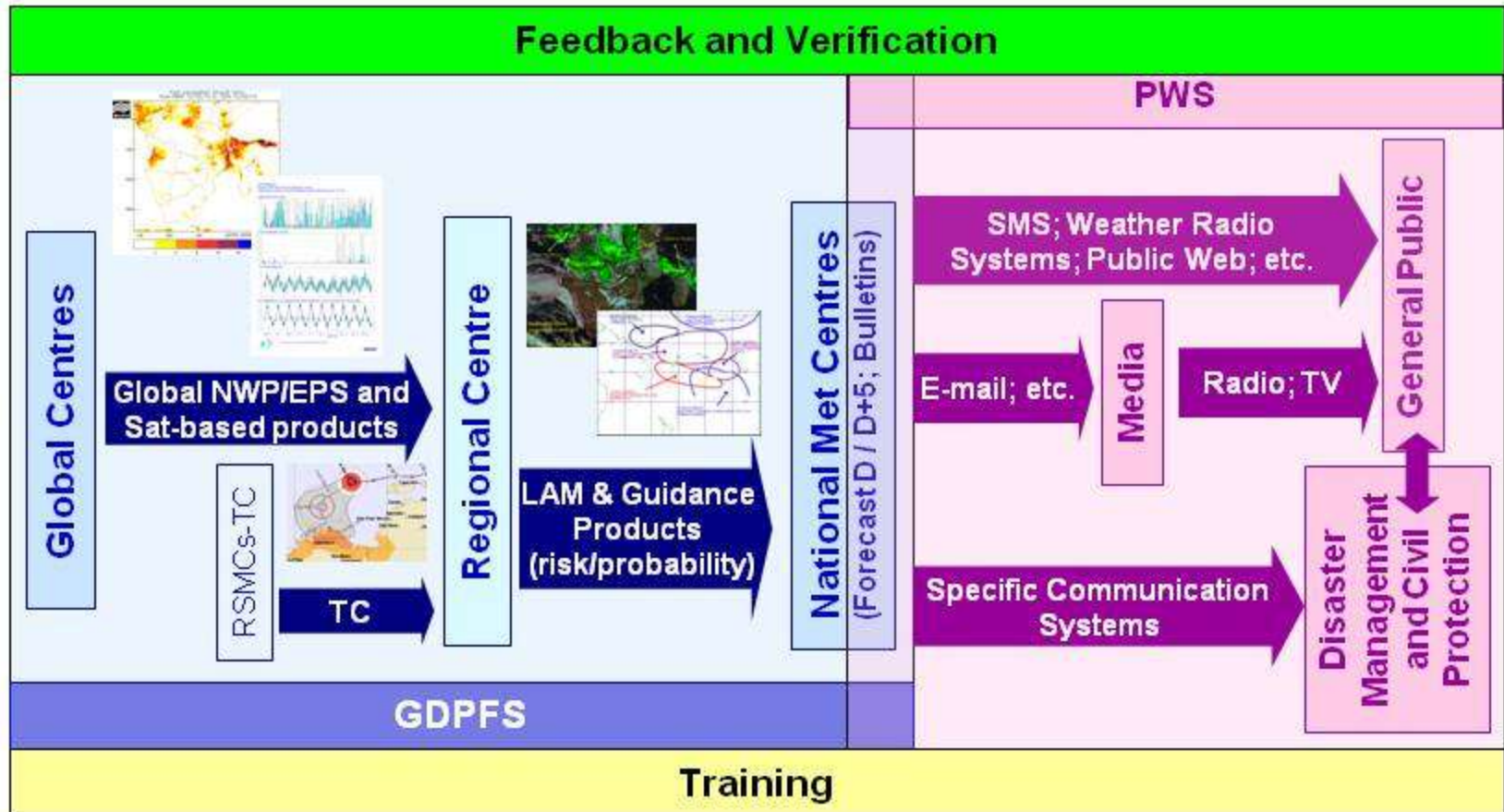
Evolution of the SWFDP-SA Project: Phase 4

- Phase 4: Jan 2012 - ?
 - Long-term sustainability and continuous development phase
 - SWFDP-SA oversight has been transferred from WMO to MASA
 - Embracing other warning system into the basic framework established by SWFDP – flash flooding through SARFFG, etc.
- Recognized that some countries need more help to fully benefit from SWFDP = specific efforts will continue to support those countries
- SWFDP developed a framework for collaboration among NMSs, and with their disaster management structures and media to be used by other programmes



Severe Weather Forecasting Demonstration Project (SWFDP) main components

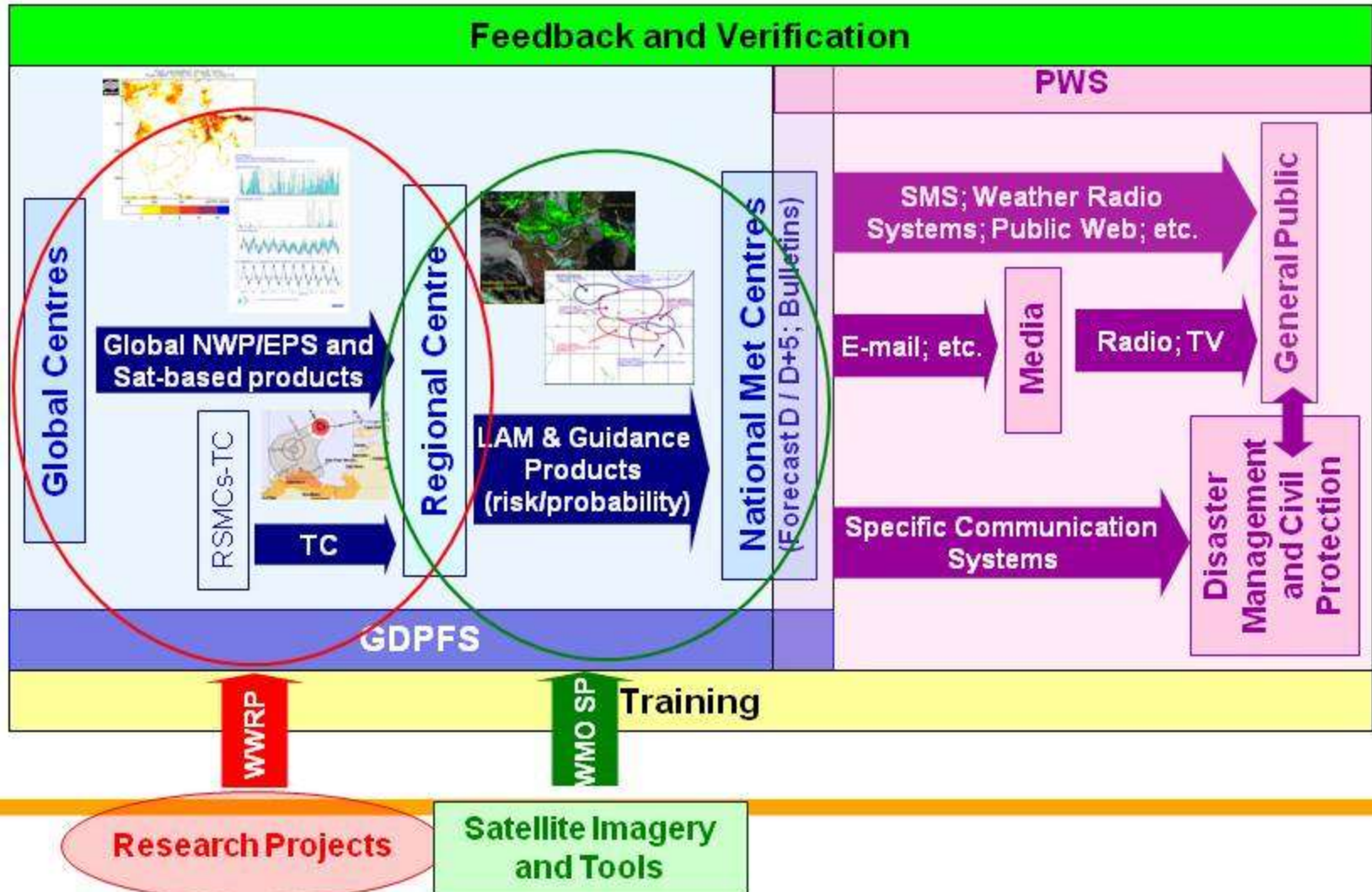
Phases 1 and 2





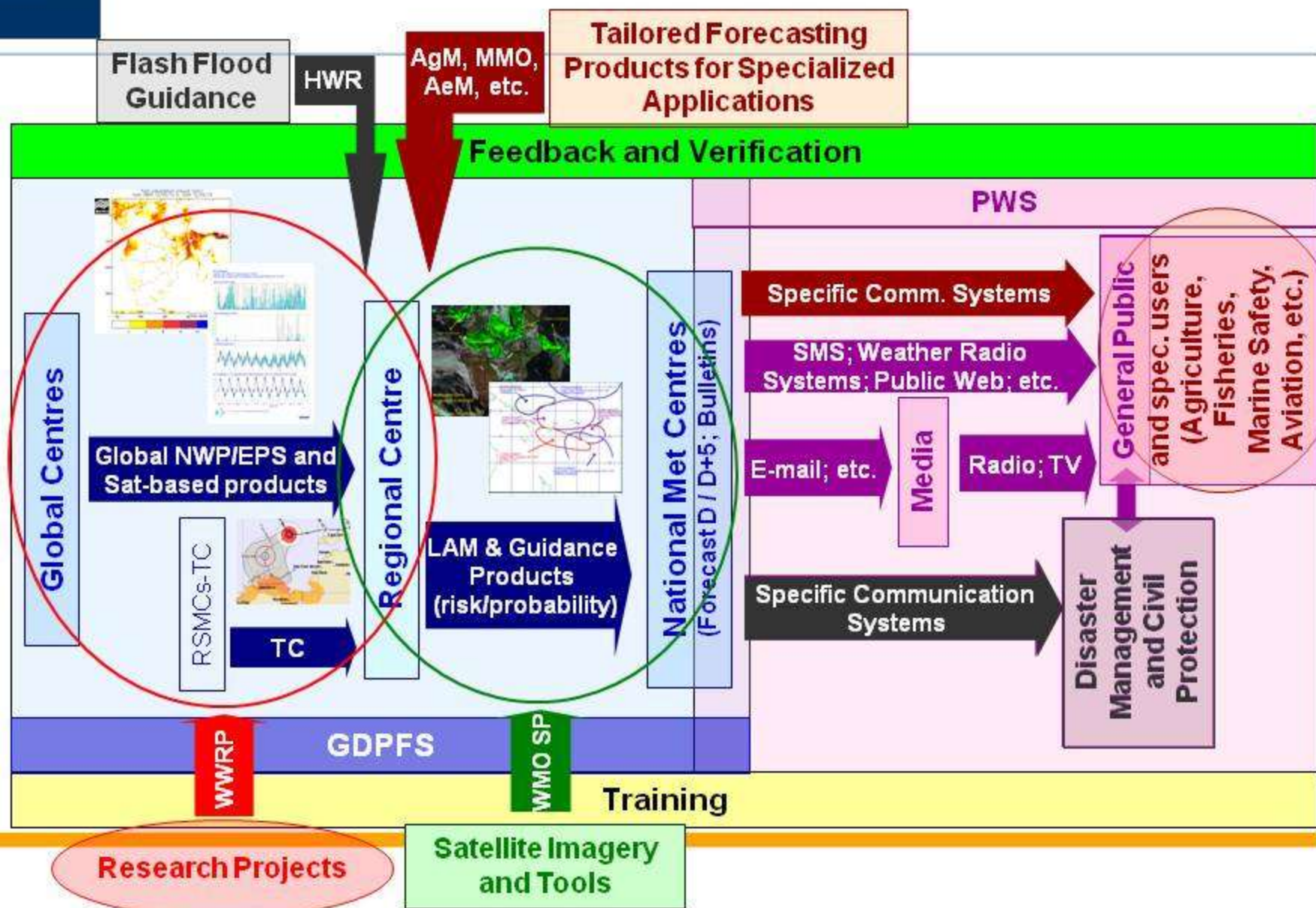
Severe Weather Forecasting Demonstration Project (SWFDP) main components

Phase 3 (more countries, more severe weather hazards)





Phase 4 – sustainability and development



Impact of Phase 4 on SWFDP-SA

- Future sustainability is uppermost
- Management moved from WMO to MASA
- WMO still requires general reporting from the region to assess if there is a need for specific support activities
- The strong SWFDP “brand” in WMO circles can still be used and should benefit the region as other activities are linking up with the SWFDP programme: we will not miss on new developments provided to SWFDP subprojects
- Further development and expansion to other hazards or sectors should be done

➤ ***This is just the beginning of an exciting new era – depends on you***

Some Future Development needs for SWFDP-SA

- Disaster management collaboration in various countries still need to be strengthened
- Application at local level to be improved: dissemination and end-user response (Buzi-river example in Mozambique, others?)
- Important to develop a seamless warning system from seasonal (SARCOF) to daily (SWFDP) to hourly (SARFFG) providing useful end-user products
- Some applications into new sectors envisaged:
 - Hydromet applications
 - Agromet applications
 - Coastal inundation issues

Questions?