World Meteorological Organization

Weather • Climate • Water

Future of GDPFS – Congress 17 Directives and Applications

37th EWGLAM & 22nd SRNWP

Belgrade

5-8 Oct 2015

Abdoulaye Harou, Chief DPFS

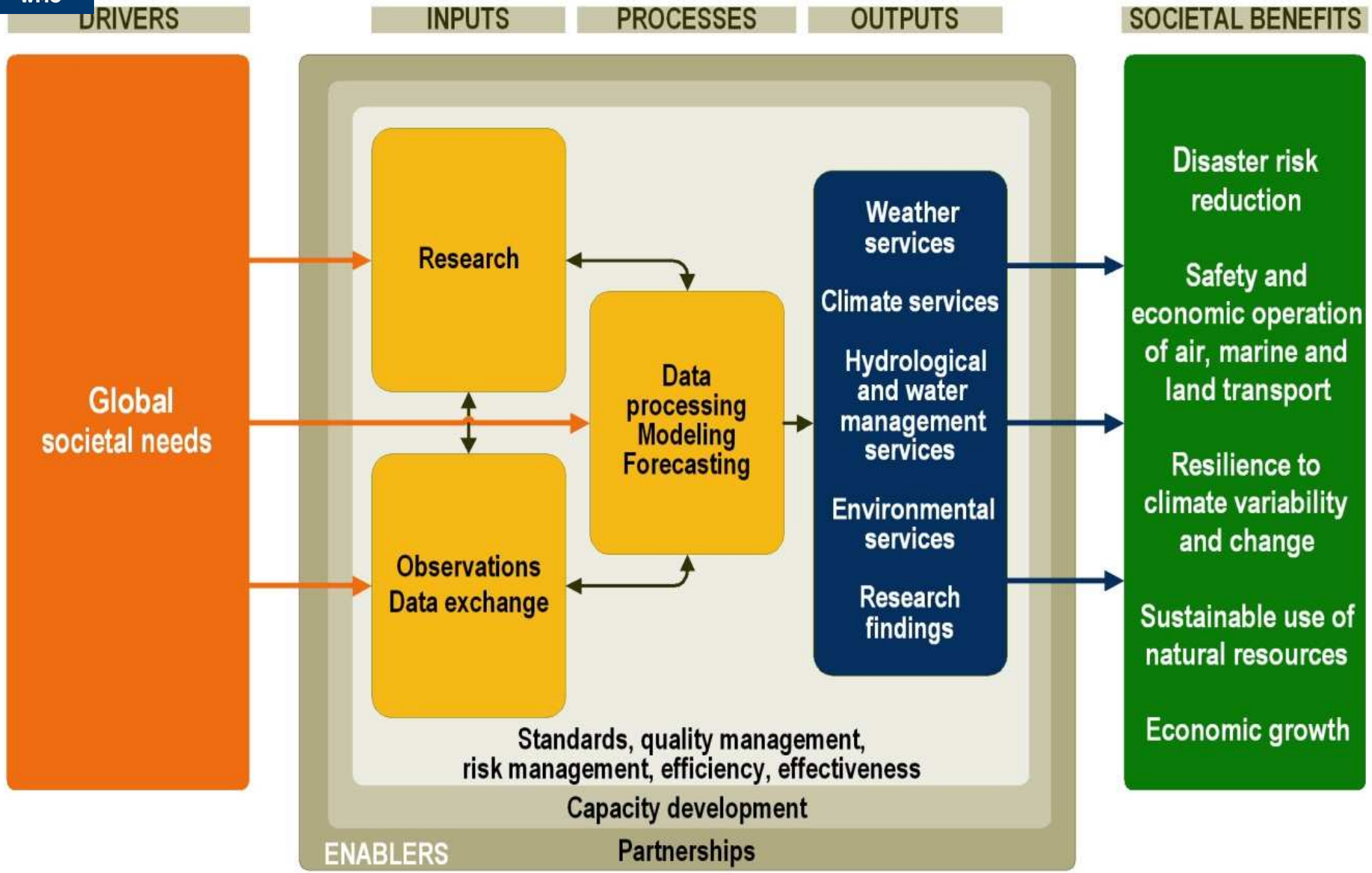
WMO/WDS

The World Weather Watch (WWW)

- The World Weather Watch (WWW) Programme facilitates the development, operation and enhancement of worldwide systems for observing and exchanging meteorological and related observations, and for the generation and dissemination of analyses and forecast products, as well as severe weather advisories and warnings, and related operational information.
- Three core components of the WWW Programme
  - Global Observing Sytem (GOS)→expanded to WIGOS
  - Global Telecommunicatioon System (GTS)→ expanded to WIS
  - Global Data Processing and Forecasting System --→ Expanded to …..??

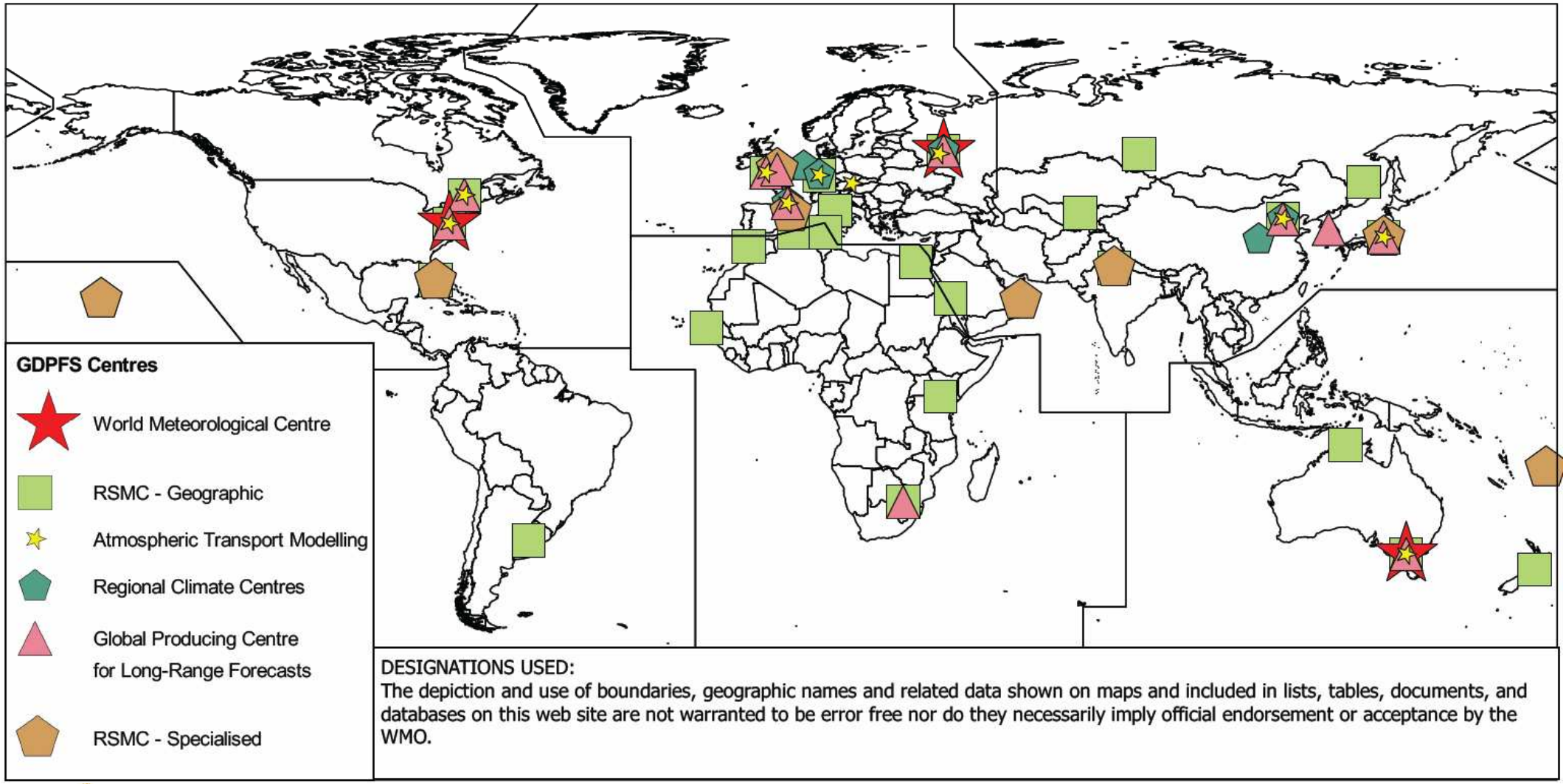
The GDPFS

- The GDPFS is the world-wide network of operational centres systems operated by WMO Members, targeting mainly atmospheric weather forecasting by using Numerical Weather Prediction (NWP) and Ensemble Prediction System (EPS) technics, thus providing services to a myriad of users.
- It is at the heart (engine room) of the WMO operational system. In order to support adequately WMO high priorities (DRR, GFCS, WIGOS/WIS, Aviation Service, Polar and High Mountain, Capacity Development, WMO Good Governance), the GDPFS needs also to evolve, be flexible and adaptable so that it can respond efficiently to current and emerging needs.


DRIVERS
INPUTS
PROCESSES
OUTPUTS
SOCIETAL BENEFITS
Global societal needs
Research
Observations Data exchange
Data processing Modeling Forecasting
Weather services
Climate services
Hydrological and water management services
Environmental services
Research findings
Disaster risk reduction
Safety and economic operation of air, marine and land transport
Resilience to climate variability and change
Sustainable use of natural resources
Economic growth
Standards, quality management, risk management, efficiency, effectiveness
Capacity development
ENABLERS
Partnerships

GDPFS Centres

- Network of Global, Regional and Specialised Centres



Drivers for a progressive change

- Users' needs are becoming more and more sophisticated and varied while the technology is evolving at high pace. Need a "new kitchen room" for GDPFS.
- There is a requirement to move to Impact Based Forecasting and Risk Based Warnings …Requires the integration of non conventional information (exposure, vulnerability) into the GDPFS
- Emerging requirements from the services-oriented programmes, such as aeronautical, marine, agriculture, health, and public weather services, as well as requirements from a wide range of hydrometeorological-related emergencies, or from implementing disaster mitigation strategies, require an enhanced integrated, holistic and seamless Data-processing and Forecasting System in order to be relevant to users' decision-making

Congress 17 directives

- Resolution 4.1(1)/1 (Cg-17) – Towards a Future enhanced integrated and seamless WMO Data-Processing and Forecasting System.
- *Resolution 4.1(1)/2 (Cg-17) – Adoption of the Roadmap for the introduction of the new Manual of the Global Data-processing and Forecasting System (GDPFS) (WMO-No. 485)* and Authorizing EC to approve before Cg18. - the Manual is a single source of technical regulations for all operational data processing and forecasting systems of WMO Members. It includes the criteria for the designation of Met Centres.

Cg 17 additional relevant directives

- Develop guidelines on High Res NWP addressing implementation, application for severe weather forecasting as well as data assimilation. Outline for the guidelines on high-resolution NWP developed.
- Explore the possibility for setting up regional consortia for Limited Area Model (LAM) to facilitate access to high resolution NWP while building capacity of participating Members through training and development assignments.
- Members and RAs in coordination with, WMO Secretariat, CBS and other related technical commissions, to gather lessons learned and best practices and develop guidelines on nowcasting techniques for the benefit of all WMO Members. Congress also noted that it would be a significant contribution to seamless data processing and forecasting endeavor

Next Steps - some ideas

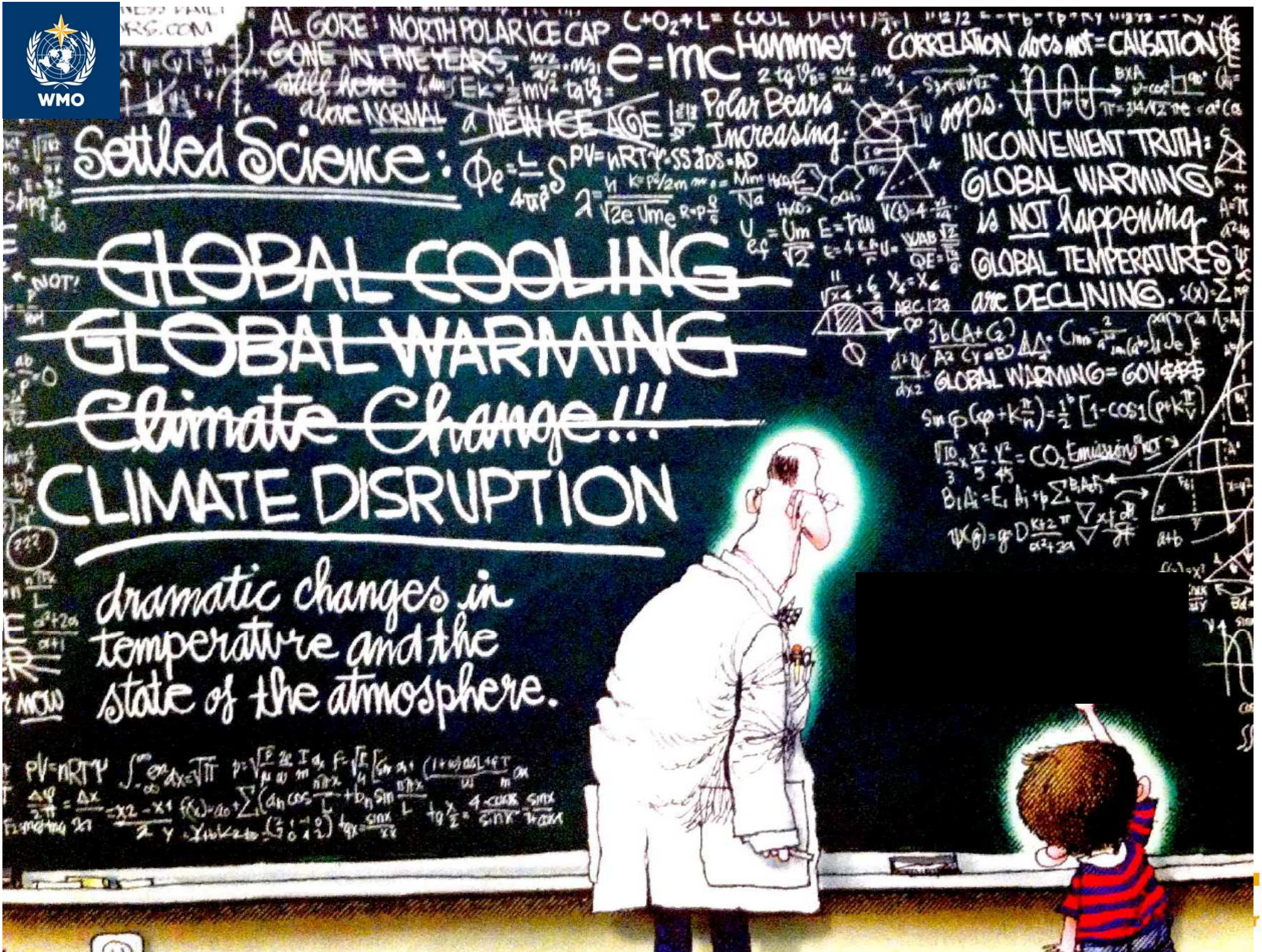
- Future Enhanced and integrated Seamless DPFS:
  - Meeting of Experts early next year to tackle this issue and to determine a way forward for discussion at CBS in Nov 2016
- Regional LAM Consortium
  - Learning from existing examples and working with Experts, develop guidelines on how to set up a LAM Corsortium
- Guidelines on Nowcasting Techniques
  - TT will be established early 2016 to begin the work

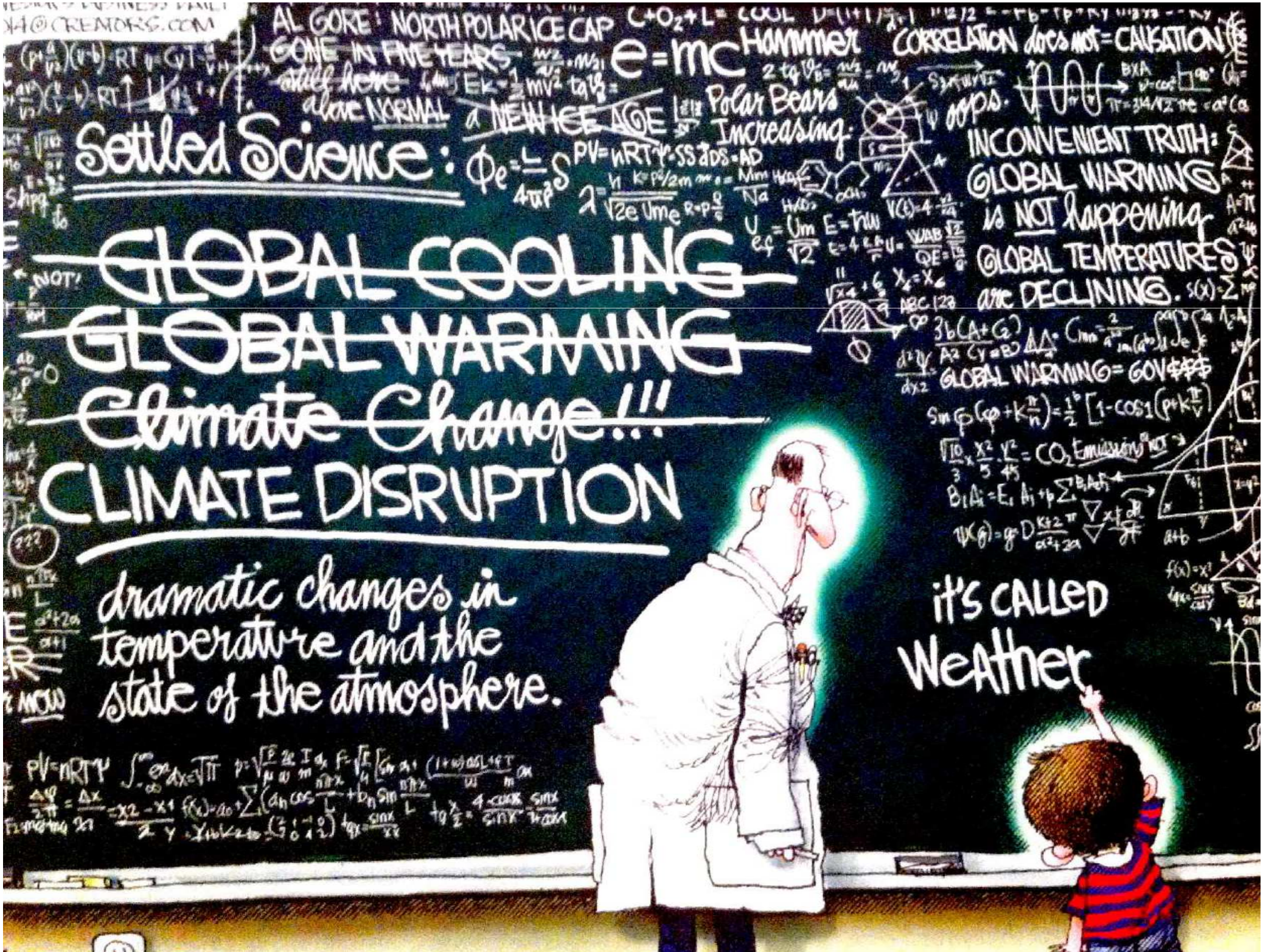
We are doing all this to support DRR,

in particular Weather related –

DRR is one of the / priorities of WMO

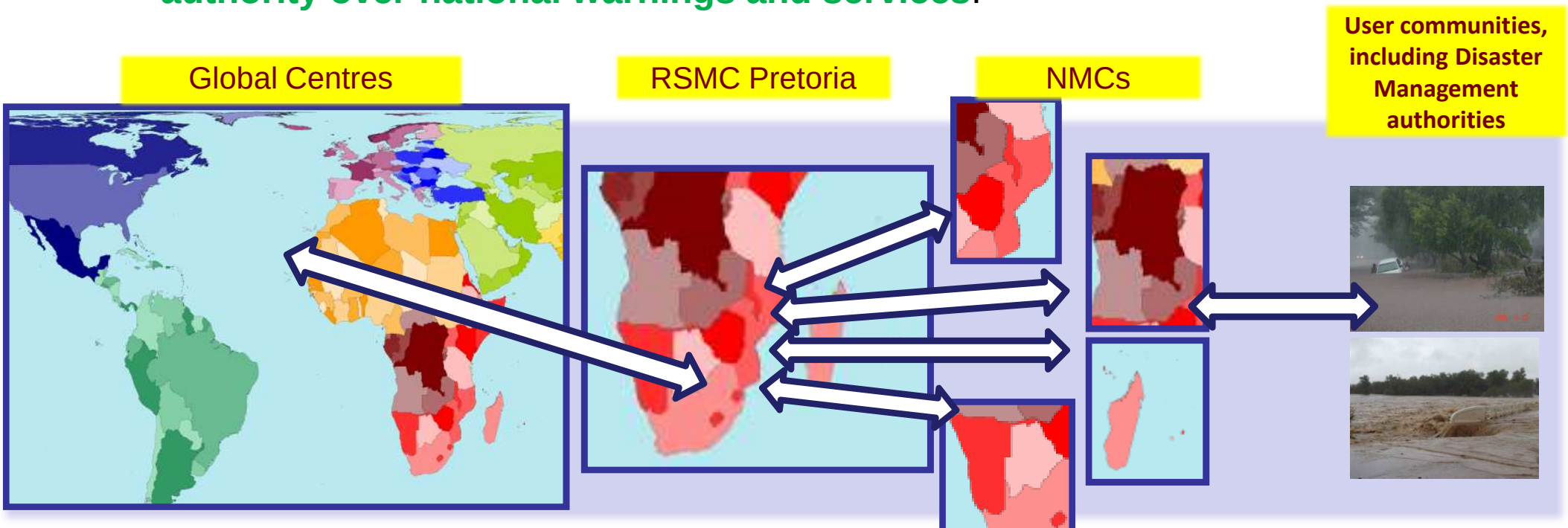
For next Fiscal Period (2016-2019)


AL GORE: NORTH POLAR ICE CAP GONE IN FIVE YEARS
still here
e=mc Hammer
CORRELATION does not = CAUSATION
Settled Science:
alive NORMAL
a NEW ICE AGE
Polar Bears Increasing
oops.
INCONVENIENT TRUTH:
GLOBAL WARMING
is NOT happening
GLOBAL TEMPERATURES
are DECLINING.
GLOBAL COOLING
GLOBAL WARMING
Climate Change!!!
CLIMATE DISRUPTION
GLOBAL WARMING = GOV$$$
dramatic changes in temperature and the state of the atmosphere.


AL GORE: NORTH POLAR ICE CAP GONE IN FIVE YEARS
still here
alive NORMAL
e=mc Hammer
CORRELATION does not = CAUSATION
A NEW ICE AGE
Polar Bears Increasing
oops.
Settled Science:
INCONVENIENT TRUTH: GLOBAL WARMING is NOT happening
GLOBAL TEMPERATURES are DECLINING.
GLOBAL COOLING
GLOBAL WARMING
Climate Change!!!
CLIMATE DISRUPTION
GLOBAL WARMING = GOV$$$
dramatic changes in temperature and the state of the atmosphere.
it's CALLED Weather

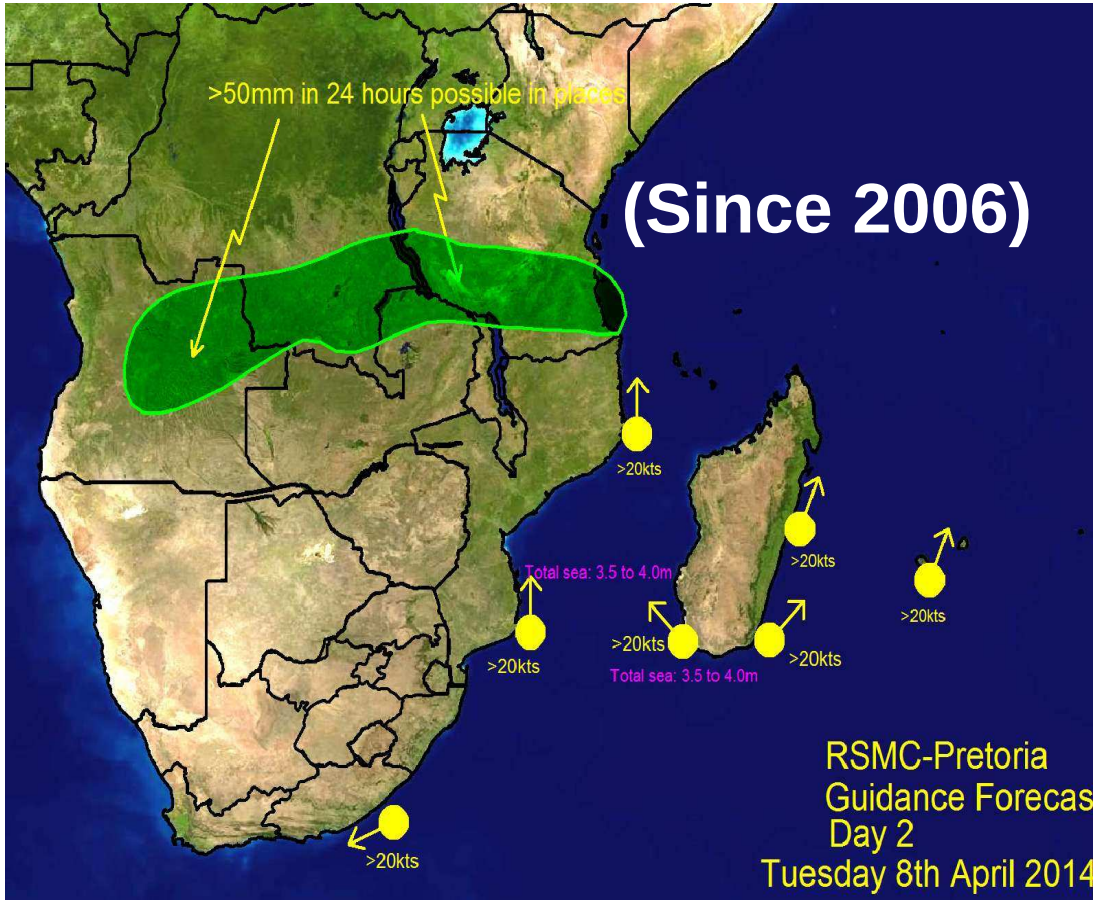
SWFDP Cascading Forecasting Process – efficient delivery of GDPFS

- *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 in RA I– Southern Africa

16 Countries: Angola, Botswana, Democratic Republic of the Congo, Malawi, Mauritius, Madagascar, Mozambique, Namibia, Lesotho, Seychelles, South Africa, Swaziland, Tanzania, Zambia, Zimbabwe, Comoros



(Supported by Norwegian funds)

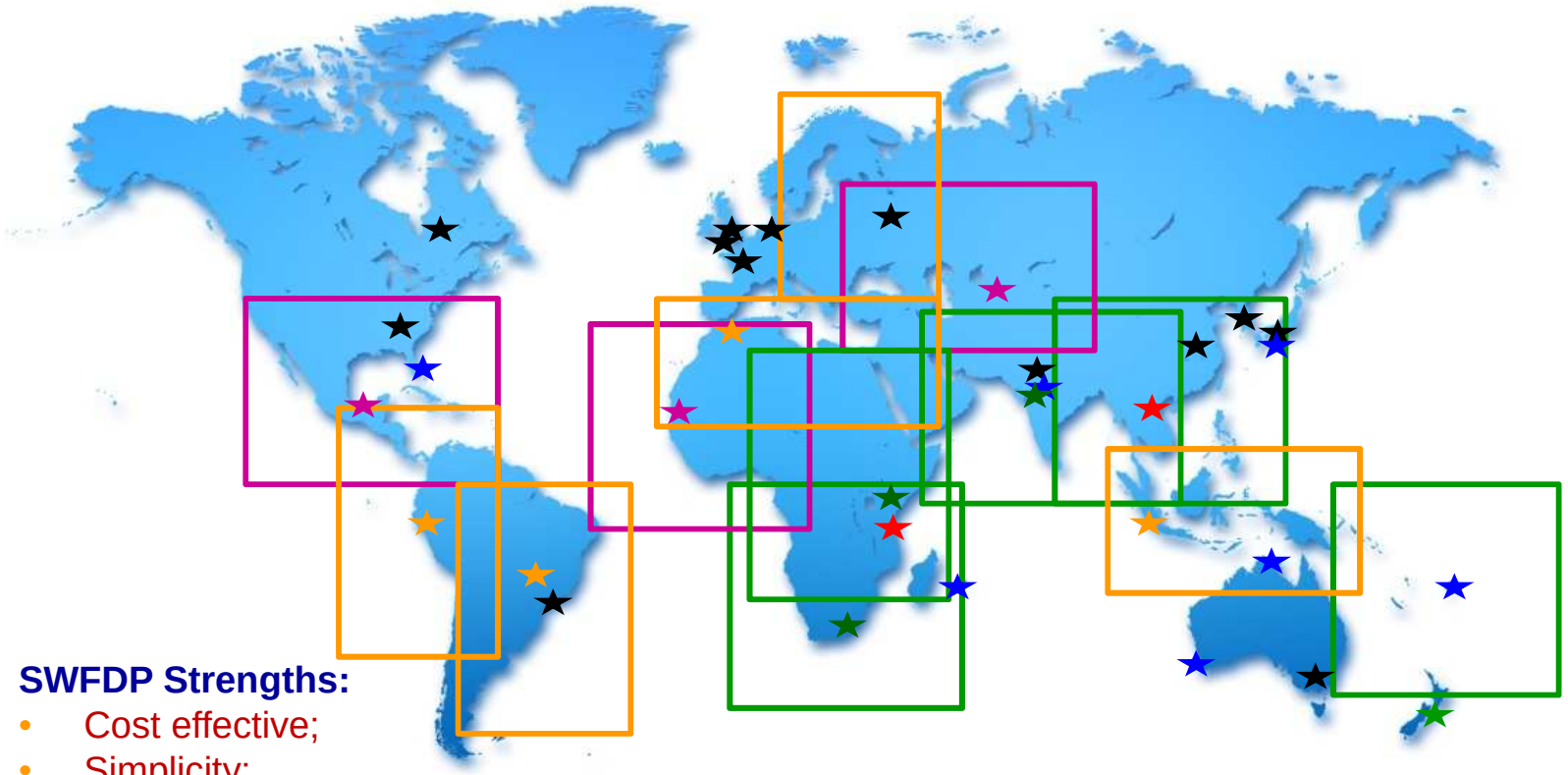
Global Centres: ECMWF, UKMO, NOAA/NCEP (NWP guidance material), MSG satellite products (EUMETSat products)

Regional Centres: RSMC Pretoria (supported by UKMO and DWD), RSMC La Reunion

SWFDP: Existing projects and Future directions

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.

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



SWFDP Strengths:

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

World Meteorological Organization

Weather • Climate • Water

Thank You

DPFS Division, WDS

Abdoulaye Harou, Chief , DPFS Division (AHarou@wmo.int)

Alice Soares, Scientific Officer (Asoares@wmo.int)

Ata HUSSAIN, Project Coordination Officer (AHussain@wmo.int)

Pascale Gomes, Senior Secretary (PGomes@wmo.int)