World Meteorological Organization

Working together in weather, climate and water

WMO

Strengthening Regional Cooperation to Support Forecasting with Multi-Hazard Approach in RA IV

SWFDP – concepts and lessons

Mr Peter Chen

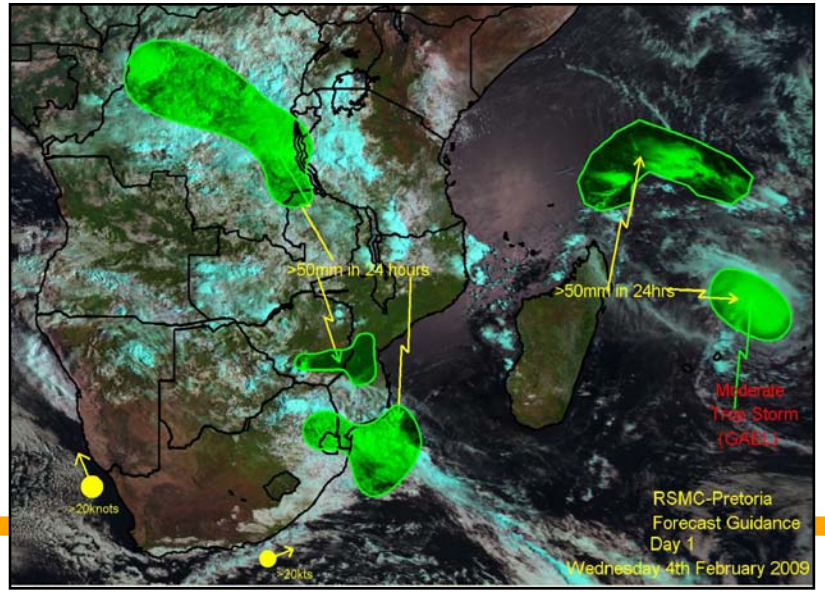
Chief, Data-Processing and Forecasting System Division, WMO

George Town, Cayman Islands, 7 March 2011

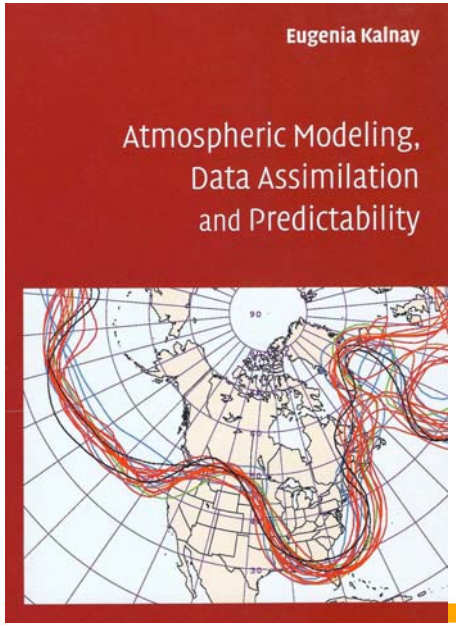
SWFDP - Outline

1. Basic concepts
2. SWFDP implementation
3. Lessons, so far

SWFDP-Southern Africa



Numerical simulations of the atmosphere



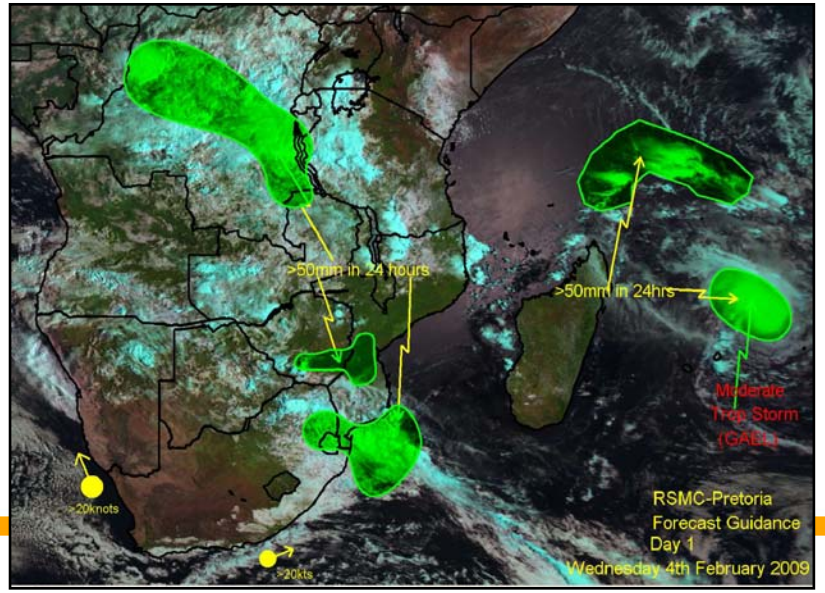
"In general, the public is not aware that our daily weather forecasts start out as initial value problems on the major national weather services supercomputers. Numerical weather prediction provides the basic guidance for weather forecasting beyond the first few hours."

- Eugenia Kalnay (2009)

SWFDP – Societal Goals

1. Safety of life
2. Protection of property
3. Security of livelihoods

SWFDP-Southern Africa



Severe Weather Forecasting Demonstration Project (SWFDP)

Vision for improving severe weather forecasting and warning services in developing countries (*Cg-XV, 2007*)

"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."

WMO Strategic Thrusts

- ✓ *Improved Service Quality and Service Delivery*
  - ✓ Improved delivery and access to high quality weather, water, related environmental predictions, information, and services
  - ✓ Reduced risks and potential impacts of hazards
- ✓ *Strengthening Capacity Building*

Severe Weather Forecasting Demonstration Project (SWFDP)

SWFDP Main Goals

- ✓ Improve Severe Weather Forecasting
- ✓ Improve lead-time of warnings
- ✓ Improve interaction of NMHSs with users, including media, disaster management and civil protection authorities, and user communities in the various socio-economic sectors (e.g. agriculture, fisheries, etc.)

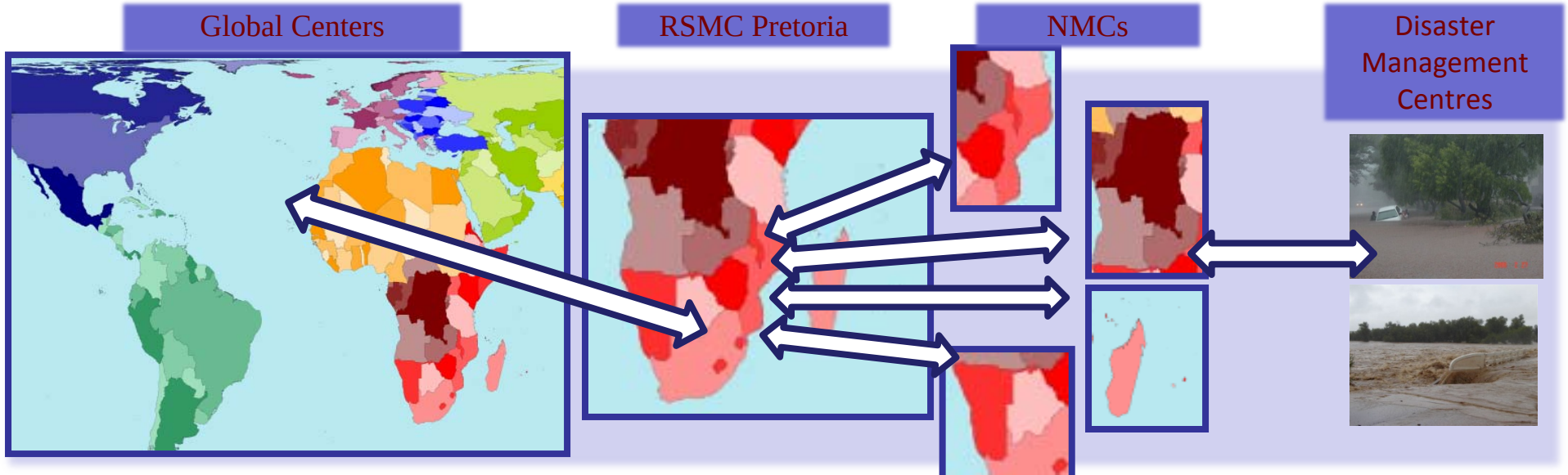
SWFDP provides a practical and beneficial platform for preparation and dissemination of multi-hazard, early warnings

SWFDP Regional Subprojects

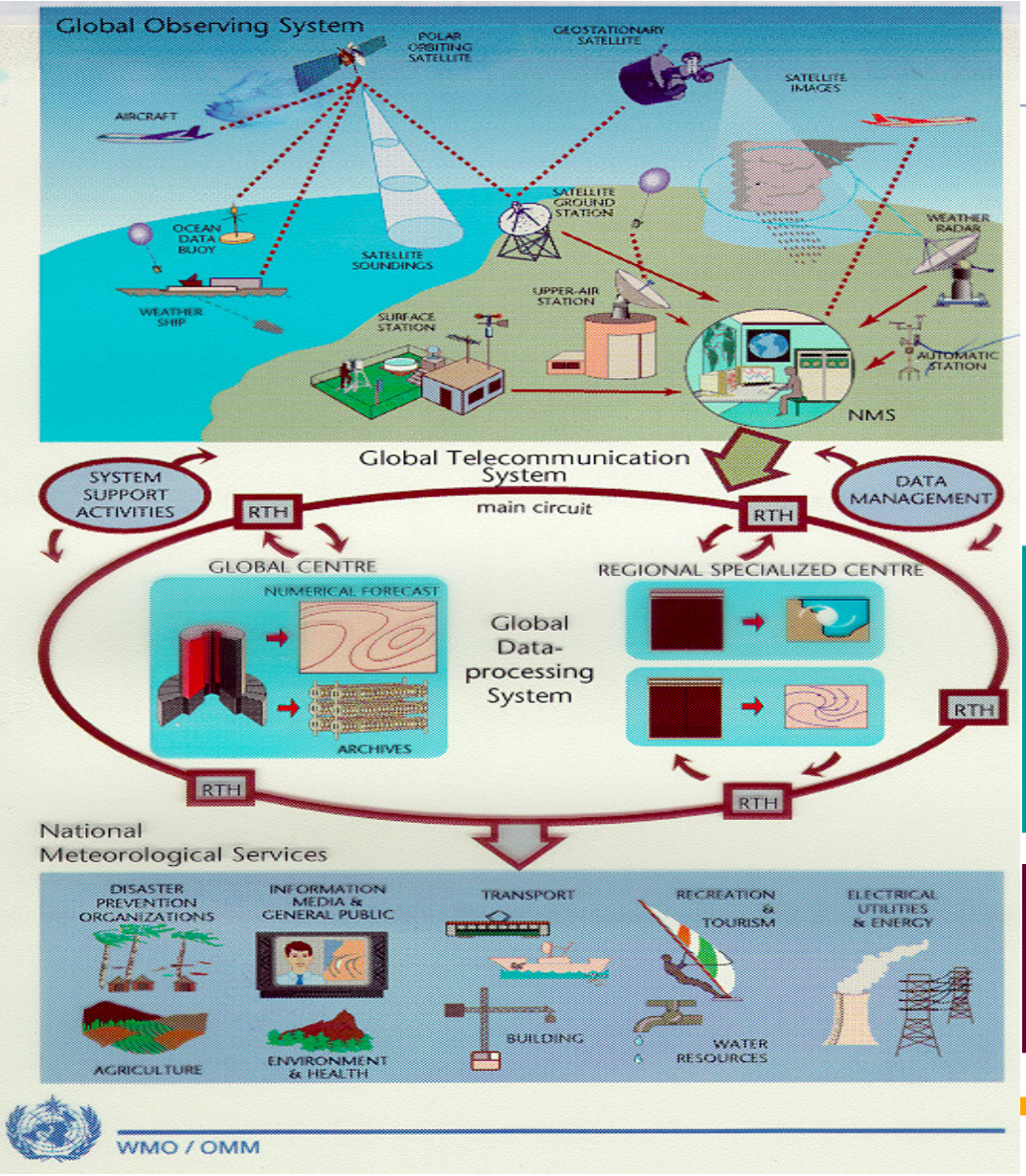
- ✓ Southern Africa (ongoing; 16 countries; RSMC Pretoria)
- ✓ South Pacific Islands (ongoing; 9 Island States; RSMC Wellington)
- ✓ Southeast Asia (development in progress; 4 countries; possible start-up 2011)
- ✓ Eastern Africa (development in progress; 6 countries; possible start-up 2011)
- ✓ Bay of Bengal (development 2011)

SWFDP Cascading Forecasting Process

- *Global NWP* centres to provide available NWP and EPS products, including in the form of probabilities, cut to the project window frame;
- *Regional centres* to interpret information received from global NWP 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 Disaster Management, 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.



WMO Operational Networks



189 NMHSs: satellites, land, ships, buoys, and aircraft contribute to Global Observing every day

Global Telecom with Regional Hubs – becoming the WMO Information System

The GDPFS: Regional Specialized Meteorological Centres (RSMC), and National Centres

PWS: NMHSs deliver wx forecasting and early warning services

World Weather Watch

S-W-F-D-P

SWFDP

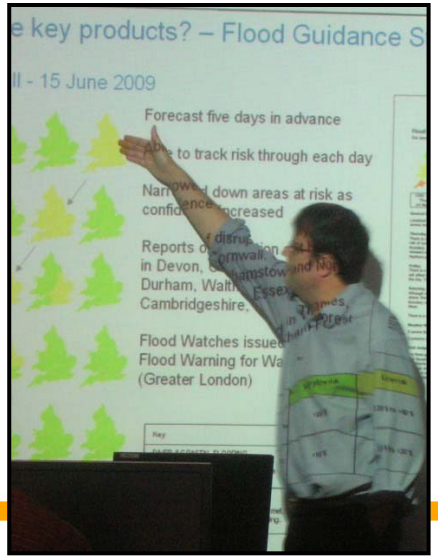
What's needed?

> One RSMC to play central SWFDP regional role

> Focused Training: NWP/EPS, and dissemination and communication of warnings

> Internet access to dedicated RSMC Website and portal

> Project accountability for all participating centres (commitment)



Under the guidance of the
CBS Steering Group on SWFDP

SWFDP - General Lessons

Extracted from CBS-XIII (2009)

- Accelerated technology transfer of NWP/EPS tools into developing countries

- **Continuous learning by forecasters**

- Tight cycle of demonstration, adapting to regional and national needs, evaluation, and implementation

- **Contributing to learning practical probabilistic forecasting methods**

- Increased visibility, credibility, and value of meteorological services

- **New role for WMO regional centres (RSMC) in severe weather forecasting for the region**

SWFDP - General Lessons

- *our experience*

• Regional partnerships: collective needs, motivation, buy-on, ownership, champion(s)

• SWFDP “Cascading” process - an after-burner for technology transfer, creating and boosting results

• Introduction of probabilistic forecasting to extend the lead-time and usefulness of predictions, especially of severe and high impact weather phenomena

• Predicting severe weather needs technical tools in the very short-range (< 12 hours)

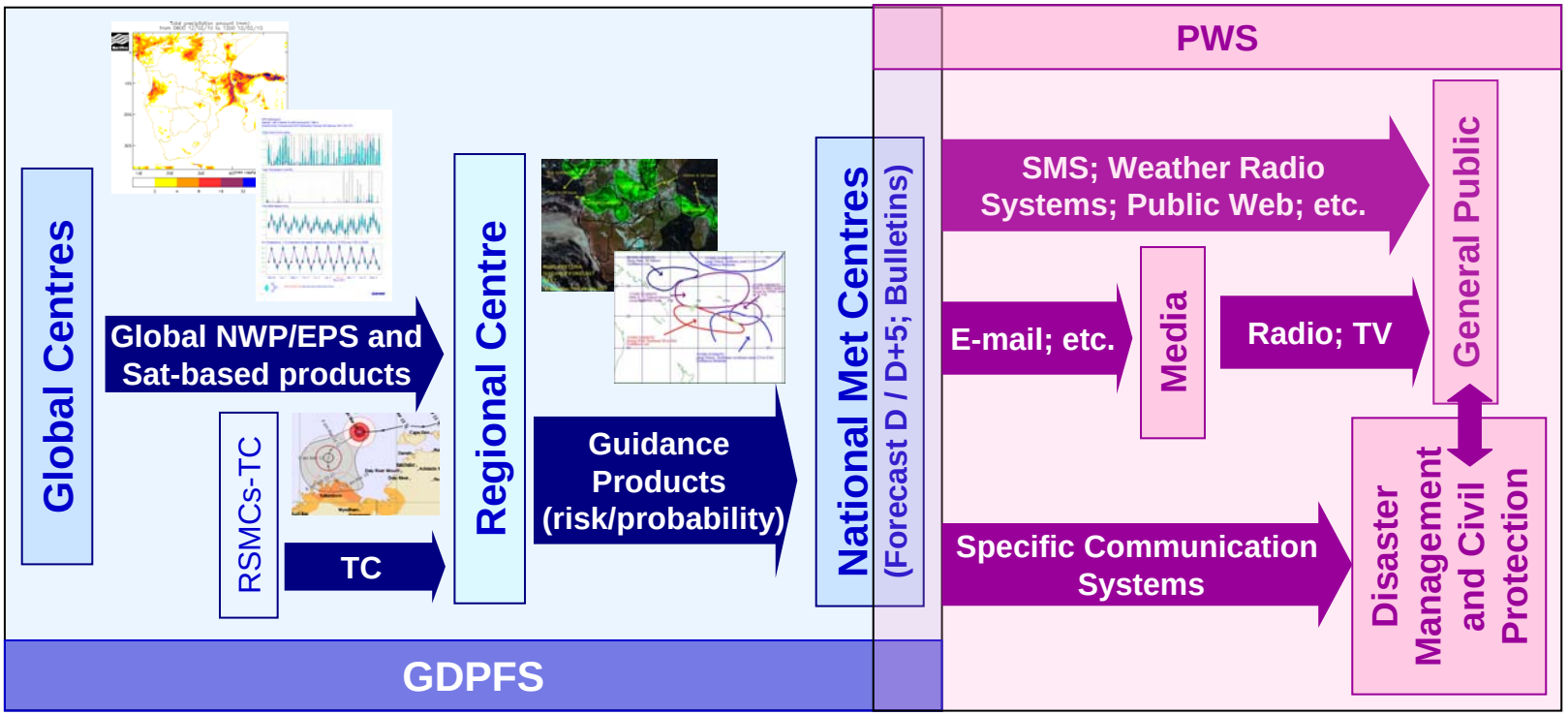
• Performance of NWP could be improved for region-specific needs, through feedback, verification, and documented case studies

SWFDP – Opportunities

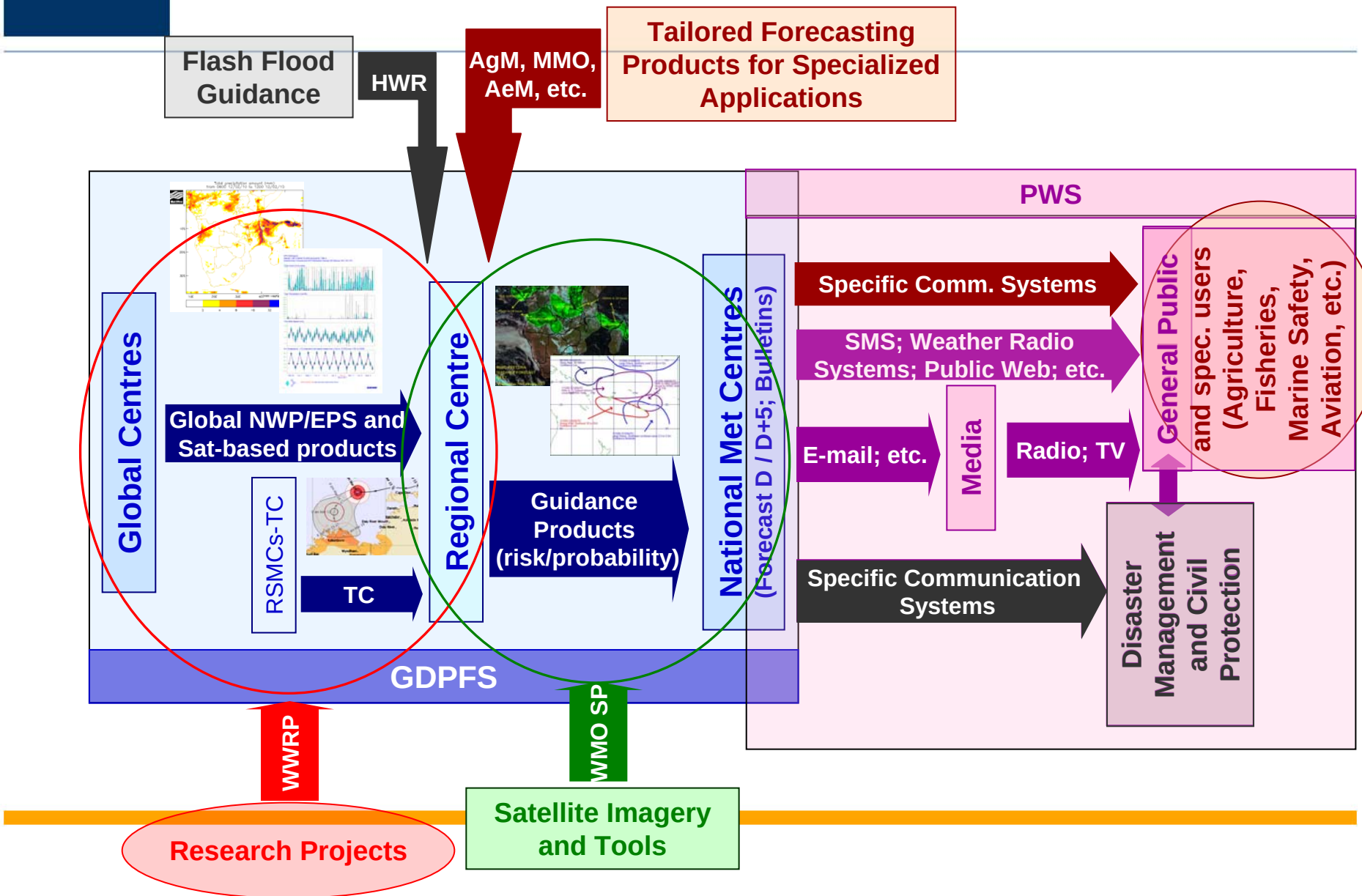
Strategic :

- ✓ Multi-hazard, early-warnings
- ✓ Capacity building for LDCs *(managing the "gap")*
- ✓ Introducing promising R&D outputs (e.g. TIGGE, Nowcasting, Verification Methods)
- ✓ Cross-programmes, Results focused
- ✓ Beyond meteorological hazards (high impact weather)
  - ✓ E.g. fires, industrial disasters (Emergency Response)
- ✓ Adaptation to climate variability and change ("no-regrets")

Severe Weather Forecasting Demonstration Project (SWFDP) main components



SWFDP links and synergies



SWFDP - Improving severe weather forecasting and warning services

" … next decade will continue to bring improvements, especially in … detailed short-range forecasts, using storm-scale models able to provide skillful predictions of severe weather;

…

"… improvement in the usefulness of medium-range forecasts, especially through use of ensemble forecasting;"

- Eugenia Kalnay (2009)

Tell us how to fish

Show us how to fish

Fish with us

Thank you!

pchen@wmo.int