

Severe Weather Forecasting Demonstration Project (SWFDP) in RA II (Asia)

including

SWFDP Regional Subproject in Southeast Asia

DPFS Division, WMO Secretariat



WMO OMM

World Meteorological Organization

Organisation météorologique mondiale

Vision

WM Congress provided vision on NWP strategy to improve 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)

Realizing the Vision

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

To

Implement 'Cascading Forecasting Process'
through SWFDP

(from Global to Regional to National)

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

PSG has developed following two documents to detail overall project plan and provide guidelines for developing SWFDP Regional Subprojects

- *SWFDP Overall Project Plan*
- *SWFDP Guidebook for Planning Regional Subprojects*

(http://www.wmo.int/pages/prog/www/DPFS/Meetings/RAII-SeA-SWFDP-RSMT_HaNoi2015/DocPlan_000.html)



SWFDP Implementation process

Four Phases approach

Phase I: Overall Project Planning:

Establish regional partnerships including:

- Strong commitment by the participating Members (NMHSs) in a geographical area
- Identification & commitment of the possible Global and Regional Centres
- the types of severe weather to focus on (starting with a few top hazards)
- Preparation of products by global and regional centres

Phase II: Regional Subproject Implementation Planning and Execution:

- Establishing Regional Subproject Management Teams (RSMT)
- Regional & National Implementation Plans (RSIPs & IPs)
- Start prototype demonstration focusing on short to medium-range forecasting and warning services (1-2 years)
- Capacity development through specialized training programmes on forecasting and service delivery
- Submission of Quarterly Progress Reports by the NMHSs (verification, feedback, tracking etc.)

SWFDP Implementation process

Four Phases approach

Phase III: Evaluation of the SWFDP Regional Subproject and broaden (return to I or II if necessary):

- Evaluation of the progress reports
- Tracking and analysis for further improvement
- More countries, more hazards
- 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 Regional Subprojects (ongoing)

- **SWFDP-Southern Africa** (Fully operational and sustained (Phase-IV))
16 countries; RSMC Pretoria, RSMC-TC La Réunion
- **SWFDDP-South Pacific Islands** (in full demonstration (Phase-III))
9 Island States; RSMC Wellington, RSMC-TC Fiji
- **SWFDP-Eastern Africa** (In full demonstration (Phase-III))
7 countries; RSMC Nairobi, RFSC Dar Es Salaam
- **SWFDP-Southeast Asia** (In demonstration phase since January 2016 (Phase-II))
5 countries; RFSC Hanoi, RSMC-TC Tokyo, RSMC-TC New Delhi
- **SWFDP-Bay of Bengal** (ready for demonstration phase)
9 countries; RSMC New Delhi (including for TC)
- **SWFDP-Central Asia** (in development (Phase-II))
4 countries; RSMC Tashkent

Several WMO programmes (i.e. GDPFS, PWS, TCP, DRR, MMO, AgM, SP, ETR, CD, LDC, RP, and WWRP) and WMO Technical Commissions (i.e. CBS, CAgM, CHy, JCOMM, and CAS)

Contributing Global Centres include: UKMO, ECMWF, NOAA/NCEP, ABoM, CMA, KMA, JMA, IMD, RosHydromet, EUMETSAT
Involving 48 developing countries (29 of which are LDCs/SIDS)



SWFDP Regional Subprojects

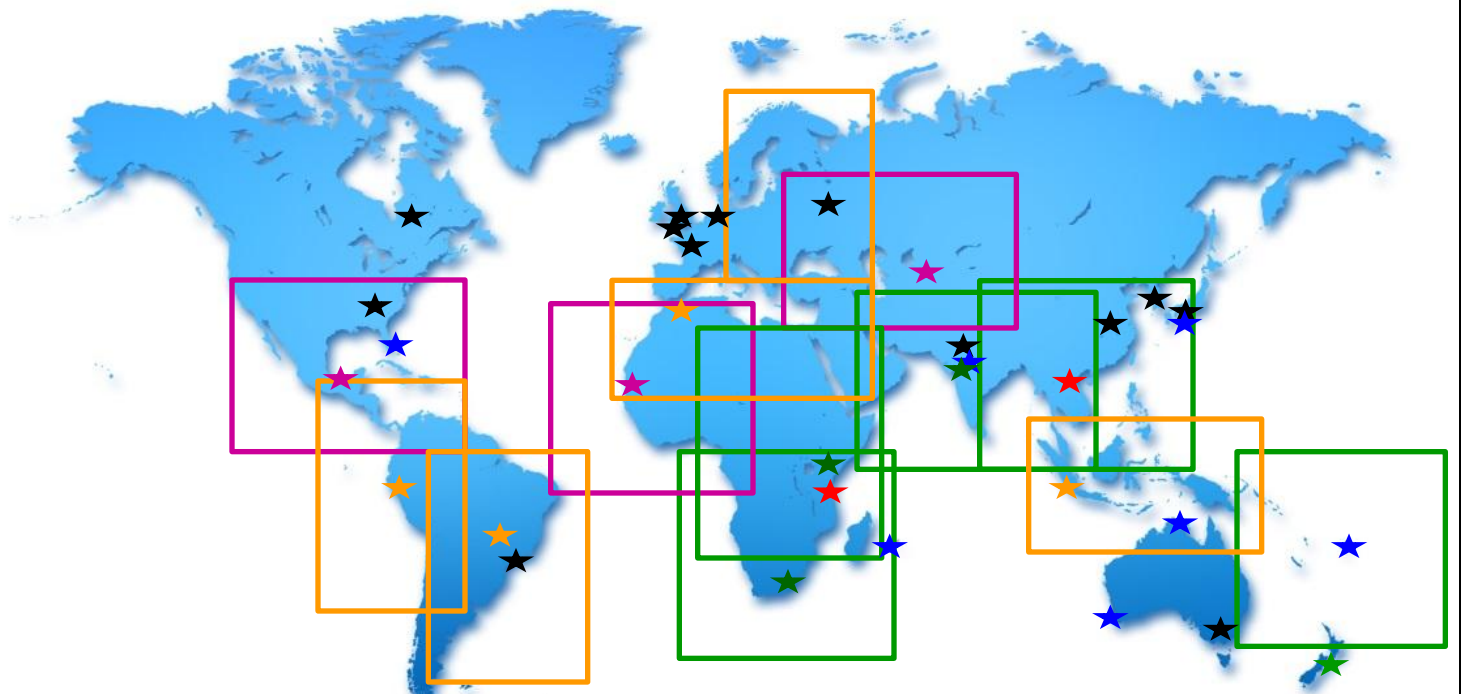
(ongoing subprojects and future directions)

SWFDP

Strengths

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

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 - the domains of existing SWFDP regional subprojects.

Pink and **Orange** color boxes - the regions for future SWFDP subprojects which will be developed within next 1-2 years and 3-5 years respectively.



SWFDP Synergies

SWFDP linkages are developed with various programmes and projects wherever appropriate

- Tropical Cyclones Programme
- SAT-Nowcasting
- **HWR-Flash Flood Guidance Systems (FFGS)**
- MMO-Coastal Inundation Forecast Demonstration Project (CIFDP)
- *WWRP*

Capacity Development through 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 held regularly and preferably 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)*



Capacity Development through 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)
- NOAA/NCEP Desks

Capacity Development through SWFDP Training Programmes

- In 2014, 103 personnel (including forecasters, hydrologists, representatives of disaster management agencies and media) were trained in Southern Africa, Eastern Africa and Southeast Asia.
- In 2015, around 200 personnel (including forecasters, hydrologists, representatives of disaster management agencies and media) were trained in Southern Africa, South Pacific, Eastern Africa, Southeast Asia and Bay of Bengal.



SWFDP Regional Subprojects

in RA II (Asia)

SWFDP – Southeast Asia

(RFSC Ha Noi web portal since 2011)

The screenshot shows the web portal interface for the Regional Forecasting Support Centre (RFSC) Hanoi. The header includes the WMO logo and the NCHMF logo (National Center for Hydro Meteorological Forecasting). The main content area displays a risk map for day 1 from 12z 22/04/2015 to 12z 23/04/2015. The map shows Southeast Asia with various weather hazards indicated by colored patterns. A key on the right side of the map defines the symbols: green diagonal lines for Rainfall >50mm/24h, solid green for Rainfall >100mm/24h, red diagonal lines for Strong winds > 30kts, and solid orange for Strong winds > 50kts. The map shows a significant area of heavy rain (green) over central Vietnam, including the Hanoi region. Other cities labeled on the map include Bangkok, Phnom Penh, Ho Chi Minh City, and various locations in the Philippines and Taiwan.

Demonstration phase since January 2016

7 countries:
Cambodia
Lao PDR
Viet Nam
Philippines
Thailand

Regional Centres:

RFSC Ha Noi (Lead centre)
RSMC Tokyo (typhoon forecast support)
RSMC New Delhi (TC forecast support)

Global Centres:

CMA, JMA, KMA, ECMWF and
DWD (for LAM support)

Hazards:

Heavy rain, strong wind, high seas and

swell



WMO OMM

SWFDP- RA II Bay of Bengal

(development planning started in 2012, now ready to start demonstration)



Focus on: Heavy precipitation strong winds, thunderstorm, and associated hazards (e.g. flooding, landslides, storm surges, swell)

Domain: 10° S, 35° N, 45° E and 110° E

Global Centres:

IMD, ECMWF, UKMO, NOAA/NCEP (NWP guidance material, satellite products)

Regional Centres: RSMC New Delhi

9 Countries: Bangladesh, Bhutan, India, Maldives, Myanmar, Nepal, Pakistan, Sri Lanka & Thailand

Demonstration phase likely to start in 2017

(Funding from UN ESCAP through RIMES during 2012-2015)

SWFDP- RA II Central Asia

Technical Planning Workshop held in Almaty, Kazakhstan on 25-27 April 2015

SWFDP Workshop on analysis and interpretation of NWP products, Moscow, Russia, 6-10 July 2015

Focus

Heavy Rain and associated hazards (e.g. flooding)
Heavy Snow
Strong winds
Snow storms/blizzards
Extreme temperatures
Dry spells

Domain

29° N - 60° N
25° E - 90° E
For Mountainous Region
36° N - 45° N
63° E - 82° E

Regional Centre

RSMC Tashkent

Global Centres

RosHydromet, ECMWF
CMA, JMA, KMA

Participating Countries

Kazakhstan, Kyrgyzstan, Tajikistan & Uzbekistan



Project web portal in Russian language & pilot demonstration phase since 1st October 2015

Funding: World Bank

SWFDP-Southeast Asia

(Summary of Activities)

- Technical Planning Workshop on SWFDP development for Southeast Asia (Ha Noi, Viet Nam on 2-5 February, 2010)
- A meeting to develop a strategy for preparing a draft Regional Subproject Implementation Plan (RSIP) for Southeast Asia (Tokyo, Japan, 17-18 September, 2010)
- The project website (RFSC Ha Noi web portal) was also developed in 2011
- First meeting of Regional Subproject Management Team (RSMT) for SWFDP-Southeast Asia (Ha Noi, Viet Nam, 10-13 October, 2011)
- Second meeting of Regional Subproject Management Team (RSMT) for SWFDP-Southeast Asia (Ha Noi, Viet Nam, 11-14 August 2015)
- Demonstration phase since 1 January 2016



SWFDP-Southeast Asia

(Training Activities)

- First two-week SWFDP-Southeast Asia Training Workshop on Severe Weather Forecasting (GDPFS) and Warning Services (PWS) (Hong Kong, China, 4-15 July, 2011)
- Second two-week SWFDP-Southeast Asia Training Workshop on Severe Weather Forecasting (GDPFS) and Warning Services (PWS) (Macao, China, 8-19 April, 2013)
- Third two-week SWFDP-Southeast Asia Training Workshop on Severe Weather Forecasting (GDPFS) and Warning Services (PWS) (Quezon City, Philippines, 2-13 June 2014)
- Fourth two-week SWFDP-Southeast Asia Training Workshop on Severe Weather Forecasting (GDPFS) and Warning Services (PWS) (Bangkok, Thailand, 14-25 September 2015)

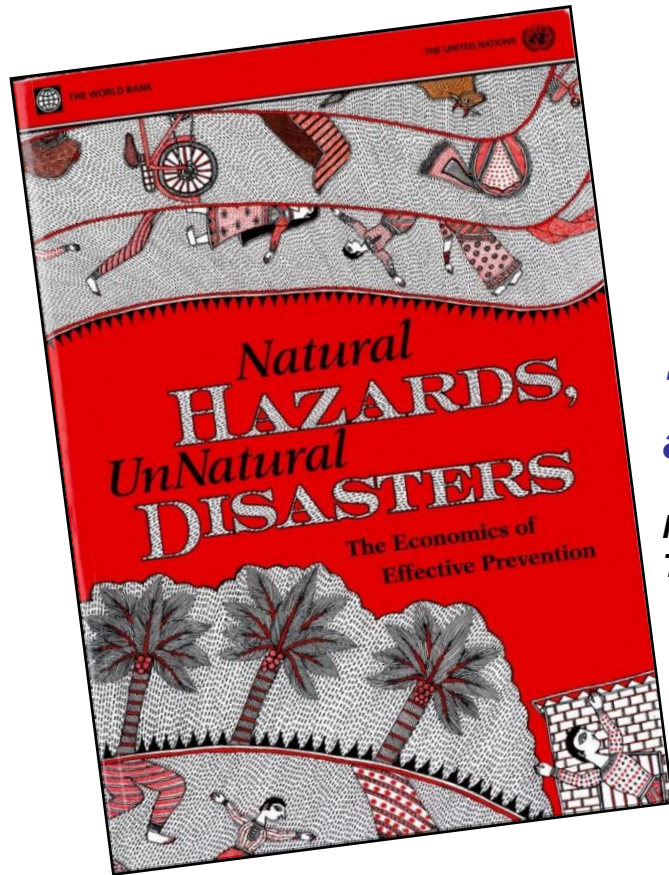


SWFDP and FFGS

As flash flood is a derived hazard occurred due to heavy rainfall at local level

- Twinning of SWFDP-Southern Africa with SARFFGS since 2014
- Simultaneous development of SWFDP-Central Asia and CARFFGS since 2015
- Twinning of SWFDP-Bay of Bengal and FFGS in South Asia (in planning)
- Twinning of SWFDP-Southeast Asia and MRCFFGS (in planning)

Thank you!



“Spending on improving weather forecasting and sharing data have high returns.”

*Natural Hazards UnNatural Disasters –
The Economics of Effective Prevention, WB, UN (2011)*

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