MEMBER REPORT

ESCAP/WMO Typhoon Committee
8th Integrated Workshop/2nd TRCG Forum

THAILAND

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I. Overview of tropical cyclones which have affected/impacted Member's area in 2013

1. Meteorological Assessment (highlighting forecasting issues/impacts)

During 1 January to 18 October 2013 there were three tropical cyclones over the West Pacific and South China Sea that posed severe effects to Thailand namely TD2, Wutip (1323), and Nari (1325). Tracks of Tropical Cyclones affecting Thailand in 2013 are shown in Figure 1.

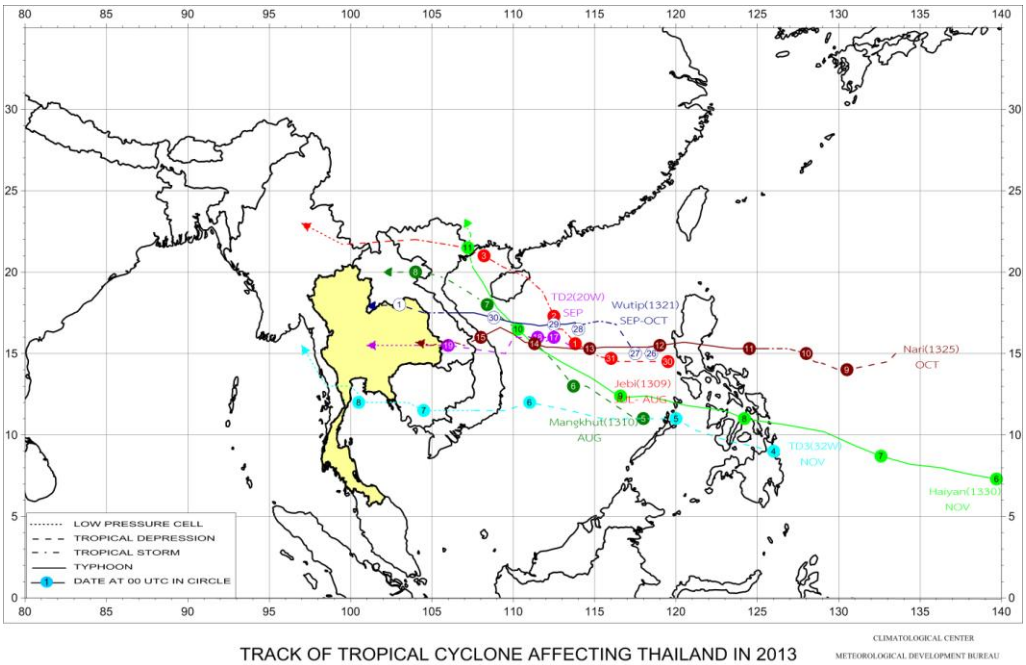

Figure1 Tracks of Tropical Cyclones affecting Thailand in 2013

Tropical Depression (TD2)

At 1300 UTC on 16 September, TD2 originated from low pressure area in South China Sea at 15.5 °N and 113.5 °E with maximum wind speed of 55 km/hr. The storm moved generally westward, making landfall on the central provinces of Viet Nam on early morning of 19 September, passing over Laos PDR and then moving into Thailand at Ubon Ratchathani at 0300UTC. After that it moved westward passing Amnat Charoen and Yasothon provinces and the central part of country.

It produced abundant rainfall in upper Thailand with heavy rainfall in many areas and very heavy rainfall in some areas mainly in lower northeastern, central and eastern parts. The highest daily rainfall of 279.5 mm was recorded at Muang district of Surin province on 19 September. Flash floods were reported at Kamphang Phet, Tak, Nan, Phetchabun, Phitsanulok, Khon Kaen, Ubon Ratchathani, Surin, Si Sa Ket, Nakhon Ratchasima, Amnat Charoen, Buri Ram, Nakhon Sawan, Lop Buri, Kanchanaburi, Sa Kaeo,

Prachin Buri and Nakhon Nayok provinces during late period. The river overflowed its banks at Uthai Thani province on 11 September, at Phra Nakhon Si Ayutthaya and Ang Thong provinces on 17 September and at Kamphang Phet province on 19 September.

Breaking records of daily rainfall in September

Station	New Record 2013		Previous Record		Start since
	Rainfall (mm)	Date	Rainfall (mm)	Date / Year	
Ubon Ratchathani	172.6	18	144.8	10/2001	1951
Ubon Ratchathani	160.8	18	130.0	18/1974	1970
Surin	**279.5***	19	104.5	28/1973	1951
Surin	240.9	19	142.3	12/1976	1969
Prachin Buri	159.9	19	126.3	19/1985	1970
Sa Kaeo	129.4	19	110.1	28/2012	2000

Remark: * The new highest record of the station

Typhoon Wutip (1321)

Typhoon Wutip was the second tropical cyclone which crossed over the country. The storm originated from disturbance over central South China Sea on west of Luzon, the Philippines on 25 September at night time. It intensified to tropical depression at 15.0 °N and 118.5 °E at 0600UTC on 27 September and to tropical storm at 16.8 °N and 116.3 °E and at 1200UTC and finally to Typhoon Wutip, centering at 16.9 °N and 113.8 °E. After making landfall on 29 September on the central provinces of Viet Nam, it rapidly weakened to the tropical depression and centered over Laos PDR on the same day and then moved to Thailand, where it downgraded from a typhoon to a tropical depression as shown in Figure 2.

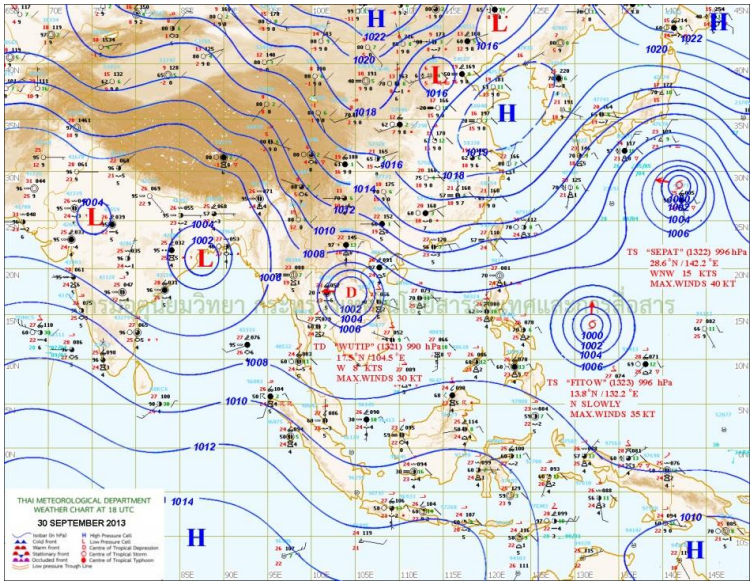

Figure2 Synoptic chart at 0100 UTC on 1 October 2013, showed the center of tropical depression which downgraded from Typhoon Wutip and passed over Nakhon phanom province.

It brought scattered to fairly widespread rain to upper Thailand with heavy to very heavy rainfall in some areas. The maximum daily rainfall of 187.6 mm was recorded at Muang district of Prachin Buri province on 29 September. Floods were reported at Phetchabun, Phitsanulok, Phichit, Surin, Si Sa Ket, Amnat Charoen, Buriram, Phra Nakhon Si Ayutthaya, Uthai Thani, Chai Nat, Lop Buri, Chachoengsao, Sa Kaeo and Prachin Buri provinces.

Typhoon Nari (1325)

The storm originated from disturbance over West Pacific approximately 1,300 km west of Manila city, the Philippines on 8 October at afternoon, intensified to tropical depression and moved slowly westward to 14.4 °N and 120.0 °E and continued intensifying to tropical storm at 1200UTC on 9 October and become Typhoon center at 15.3 °N and 125.4 °E at 0100UTC on 11 October. The maximum wind speed near the center was about 140 km/hr. The storm crossed over central Luzon Island, the Philippines to South China Sea and continued moving westward and making landfall at Da Nang, Viet Nam at 0600UTC of 15 October then downgraded to tropical storm at 1000UTC and to tropical depression at 2200UTC on the same day. The storm later became active low pressure cell before covering the lower northeastern, lower northern and central parts of Thailand on 16 and 17 October, respectively.

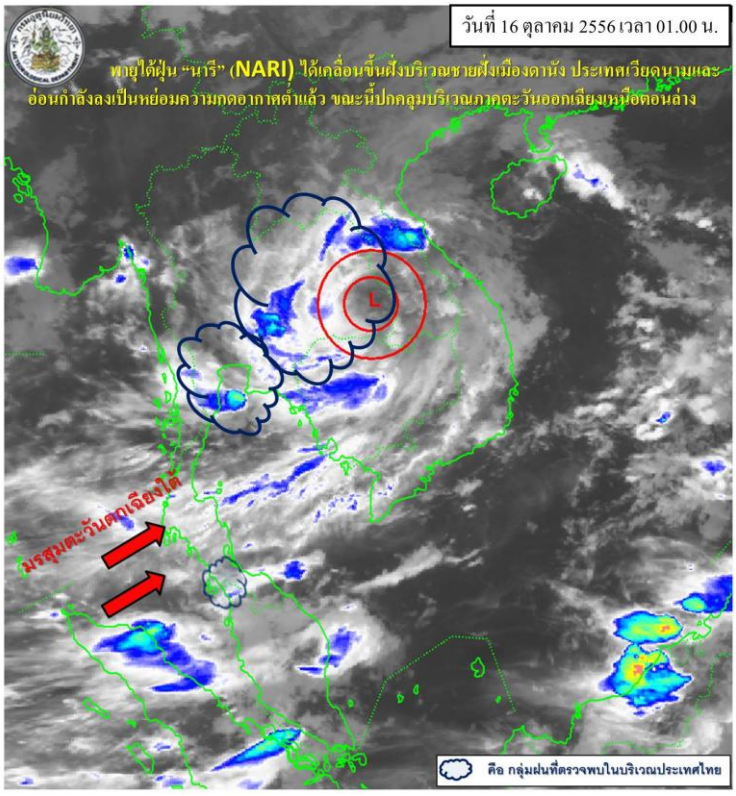

Figure 3 Infrared satellite image from MTSAT-1R at 0100UTC on 16 October, showed Lower Pressure area over Thailand

After Vietnam, Nari moved over central Laos PDR and eastern Thailand. The highest daily rainfall of 138.0 mm was recorded at Wang Chin in Phrae province on 17 October. Floods were reported at NaKhon Ratchasima, Kanchana Buri, Chachoengsao, Chonburi, Pathum Thani, Nontha Buri and Samut Prakan provinces, especially in Prachin Buri province.

2. Hydrological Assessment (highlighting water-related issues/impacts)

The tropical depressions and tropical storms of year 2013 have caused floods in some regions of Thailand. The RID was responsible for monitoring, forecasting and mitigation of flood situation.

The tropical depression during September 2013, caused the water levels in Prachinburi river at Sakaew and Prachin Buri Provinces, as well as in Mun river at Burirum, Surin and Ubon Ratchathani Provinces to rise up and overflow their banks.

Prachinburi river:

At Krabin Buri, it started to overflow its banks on 21 September and reached its peak on 9 October and was back to normal on 20 October: a total of one month flood situation.

At Srimahaphod, it reached its peak on 10 October and back to normal on 15 October: about 2 weeks flood situation.

At Muang Prachinburi, it started to overflow its banks on 28 September and reached to peak on 11 October and back to normal on 23 October: about one month flood situation.

Mun river:

In Surin province, it started to overflow its banks on 23 September and reached its peak on 29 September and back to normal at the beginning of November.

In Burirum province, it started to overflow its banks on 23 September and reached its peak on 29 September and back to normal at the beginning of November.

In Ubon Ratchathani Province, it started to overflow its banks on 22 September and reached its peak on 3 October and back to normal at the beginning of November.

More than one month of flood situation in all the three provinces above-mentioned.

3. Socio-Economic Assessment (highlighting socio-economic and DRR issues/impacts)

Between July and November 2013, tropical cyclones brought torrential rains to northern, northeastern, central and central parts of the country. In overall, 38 provinces across Thailand have been affected by floods, killing 36 people. Over 3 million people have become flood victims and 3.1 million rais of farmland has been damaged.

4. Regional Cooperation Assessment (highlighting regional cooperation successes and challenges)

The achievement of the radar composite project, which under the Typhoon Committee (WMG) AOP 7, is the development of source codes which python scripts for conversion from UF (universal format) or VOL (in xml format) to GRIB2 format and converted GRIB2 data at the lowest level (EIL) for selected 3 radars: Phuket, Krabi and Sathing Pra Radar stations as the pilot sites for the composite map as shown in Figure 4. Following with RSCM Tokyo conducts training for two radar experts from TMD on 25 – 28 November 2013.

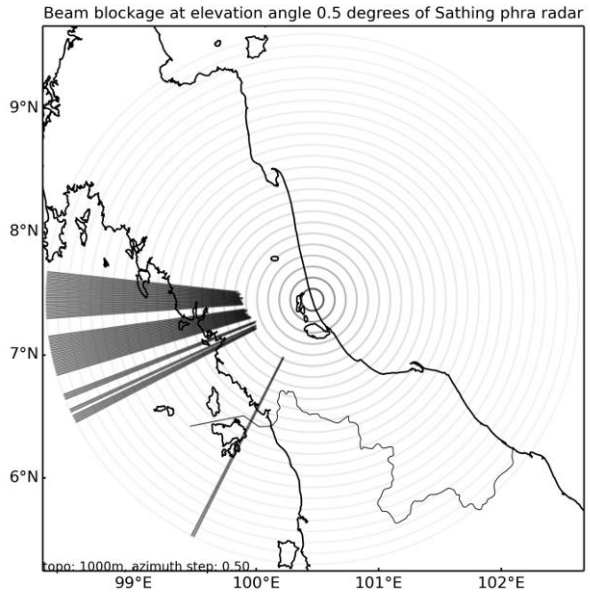

Figure 4 Beam blockage at elevation angle 0.5 degree of Sathing phra radar

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II. Summary of progress in Key Result Areas

Title of item: **Reduced Loss of Life from Typhoon-related Disasters**
Strategic Goal 1: To enhance cooperation among TC Members to reduce the number of deaths by typhoon-related disasters by half in the ten years of 2006 – 2015 (using the ten years of 1990 - 1999 as the base line).

Meteorological Achievements/ Results

Marine Meteorological Disaster Warning System

Thai Meteorological Department (TMD) has been making an effort to improve the efficiency of wind-wave and ocean current predictions in the Gulf of Thailand and Andaman Sea. In addition, marine meteorological disaster warning system, similar to storm surge and tsunami warning system, was created to prevent and avoid the damages from ocean disasters to ships, fishing boats, trawlers, oil rigs, people living near shores and others. An attempt to improve its efficiency has been carried on.

Marine Meteorological Disaster Warning System Project

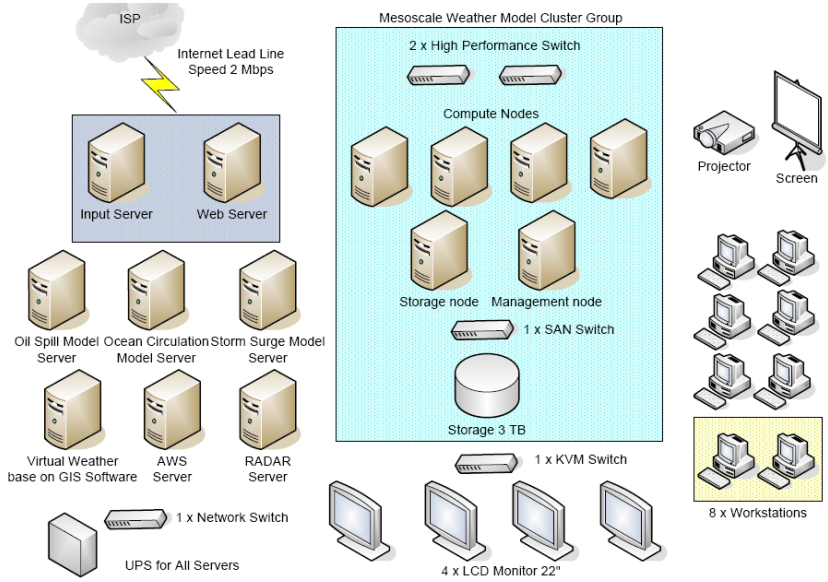

Figure 5 Diagram of Marine Meteorological Disaster warning System

The Meteorological Telecommunication

There are two communication networks in the TMD to fulfill our work: domestic and international networks. TMD has been using domestic network, mainly through terrestrial communication, to collect observation data and disseminate local weather forecast including warnings to corresponding weather stations entire country.

The international network, called GTS (Global Telecommunications System) network, is a dedicated communication network for the transmission of

meteorological data from weather stations, satellites and numerical weather prediction centers. This GTS network has been standardized by WMO. TMD has ten direct GTS connections to other countries throughout Asia. This network is also mainly use terrestrial communication through the message switching system. Furthermore, the new WMO information system (WIS) has been installed to meet the needs of all WMO and related international programs.

The South East Asia Meteorological Telecommunication Center, RTH Bangkok has been upgraded to support both new code, TDCF (Table Driven Code Form), and old format, TAC (Traditional Alphanumeric Code) to be exchanged in GTS network. Due to the increasing amount of data in the network, the heavier traffic data are better taken care of in this new system.

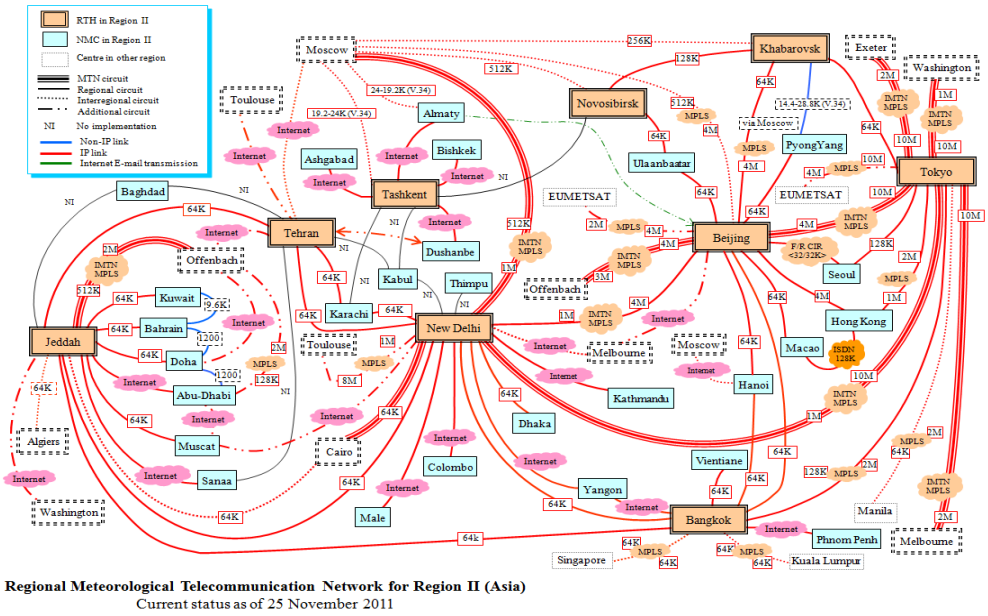

Figure 6 GTS Network for RA II

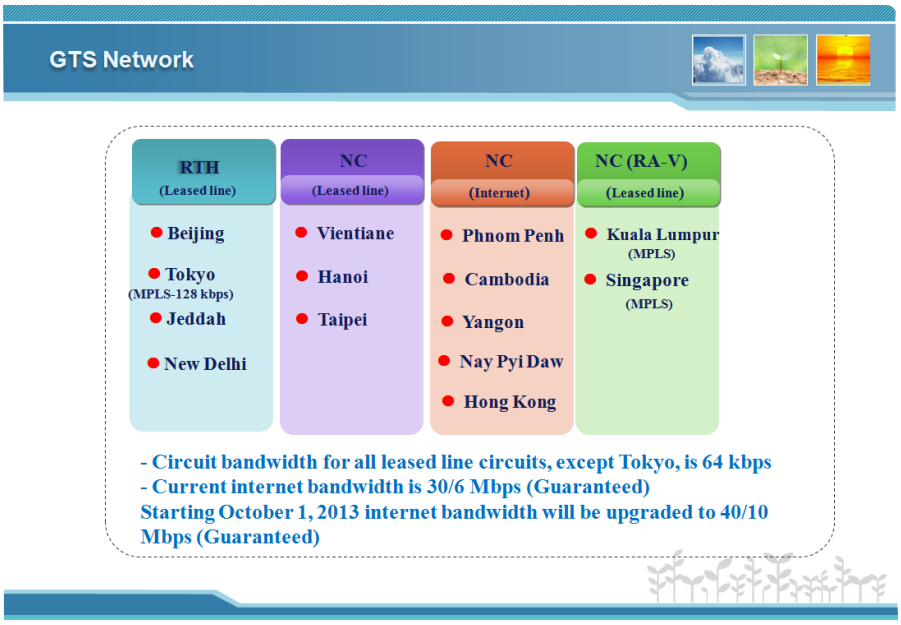

Figure 7 GTS Network for RTH Bangkok

Domestic Communication Center or Meteorological Communication Network (METNET) has also been upgraded to be more effective and efficient.

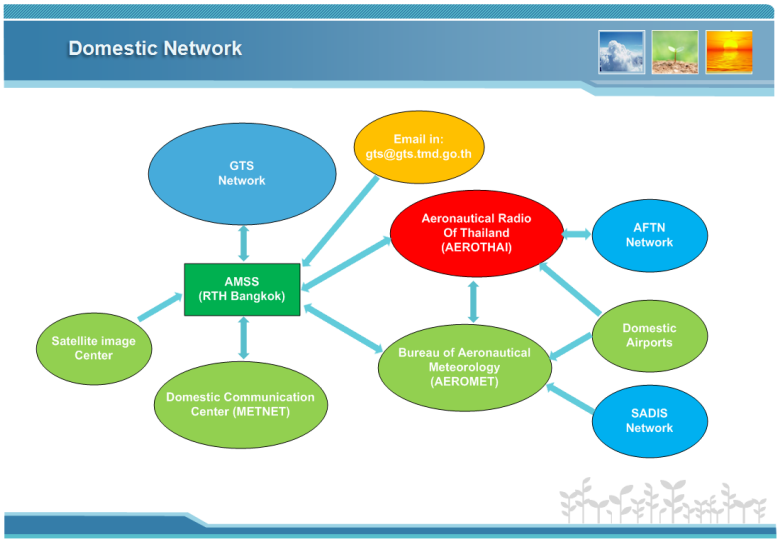

Figure 8 Domestic Network for RTH Bangkok

The progress of WIS (WMO Information System) implementation for Bangkok DCPC is in the process of preparing WIS demonstration document including validation of relevant technical requirements with GISC Tokyo. The full operation of Bangkok DCPC will be started by the end of 2013. According to the plan, the minimum area of responsibility of new Bangkok DCPC WIS Portal will correspond with current GTS network. Additional products from the center will be chosen, developed and disseminated through our WIS Portal. Internet speed was also upgraded to 6 Mbps (guaranteed) to cope with high volume of data through WIS Portal and internet traffic for GTS network. For the purpose of GISC Tokyo (JMA) and GISC Offenbach (DWD) backup plan, the subscription to DCPC Bangkok of GISC Offenbach under the DCPC Bangkok area of responsibility has already been established.

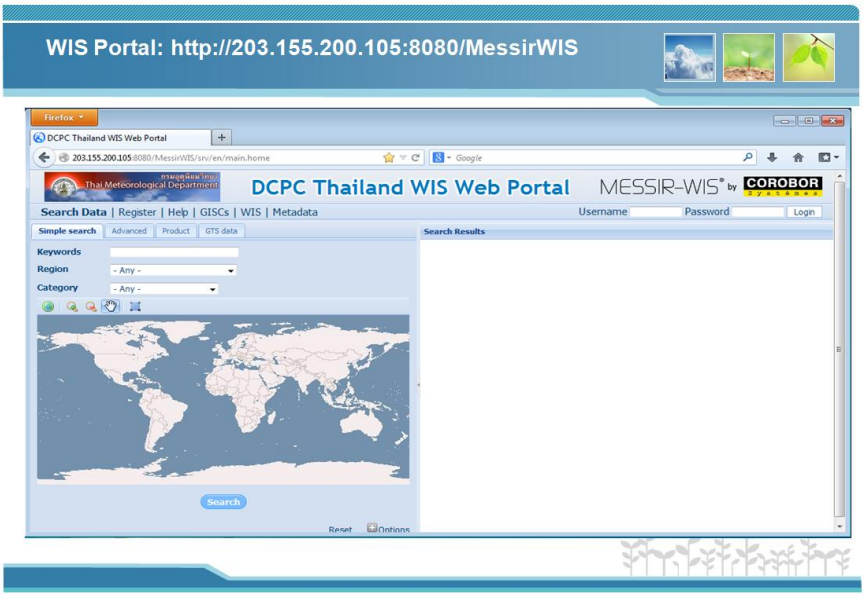

Figure 9 DCPC Bangkok WIS Portal

The new Volmet system was also installed to replace the outdate system. This new sophisticated system has been serving effectively and more flexible for many years to come.

Bureau of Aeronautical Meteorology

To secure the safety, regularity and efficiency of domestic and international aviation operations in Thailand , TMD has installed the Light Detection and ranging (LIDAR) and Radar Wind Profiler**.**

Disaster Risk Reduction Achievements/Results

The key agency working on disaster preparedness and protection of vulnerable communities against typhoon-related disasters is, according to the National Disaster Prevention and Mitigation Act B.E.2007, is Department of Disaster Prevention and Mitigation (DDPM). DDPM has been working in close collaboration with other agencies such as Thai Meteorology Department, Royal Irrigation Department, and National Disaster Warning Centre.

The National Plan for Disaster Prevention and Mitigation 2009-2014 is the core document used as the strategic guideline for disaster risk management. The plan has the provision that addresses how to protect the people living in the vulnerable communities.

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Title of item: **Enhanced beneficial typhoon-related effects for the betterment of quality of life**

Strategic Goal 3a: To identify and explore the beneficial use of rainfall brought by typhoon-related impact

Disaster Risk Reduction Achievements/Results

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Title of item: **Improved Typhoon-related Disaster Risk Management in Various Sectors**

Strategy Goal 4b: To strengthen capacity of the Members in typhoon-related disaster risk management in various sectors

Disaster Risk Reduction Achievements/Results

In 2013, Department of Disaster Prevention and Mitigation has signed MOU with UNDP to implement the 3-year project on Disaster Risk Reduction. Four priorities of this projects are: (1) Building Capacity of DRR (2) Formulation of Disaster Response Standard Operating Procedure (3) Implementation of Post Disaster Need Assessment and (4) Standardization of Disaster Criteria.

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Title of item: **Strengthened Resilience of Communities to Typhoon-related Disaster**

Strategy Goal 5b: To promote education, training and public awareness of typhoon-related disasters among the Members

Disaster Risk Reduction Achievements/Results

In 2013, DDPM in collaboration with Ministry of Education and other relevant agencies continued the implementation of the project on strengthening the capacity of teachers and school personnel on disaster risk reduction. The project also includes training to students especially in schools located in disaster-prone areas.

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Title of item: **Improved capacity to generate and provide accurate, timely and understandable information on typhoon-related threats**

Strategic Goal 6c. To enhance capacity of Members' typhoon-related observation and monitoring

Disaster Risk Reduction Achievements/Results

Since 2006, DDPM has implemented a project called "Mr. Disaster Warning" to be a mechanism to save lives of the people from hazard such as landslide. This project provides training to volunteers in landslide disaster warning.

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Summary Table of relevant KRAs and components (please tick boxes, can be more than one, as appropriate):

KRA =	1	2	3	4	5	6	7
Meteorology	X						
Hydrology							
DRR	X		X	X	X	X	
Training and research					X		
Resource mobilization or regional collaboration							

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