MEMBER REPORT

ESCAP/WMO Typhoon Committee
42nd Session

25 – 29 January 2010
Singapore

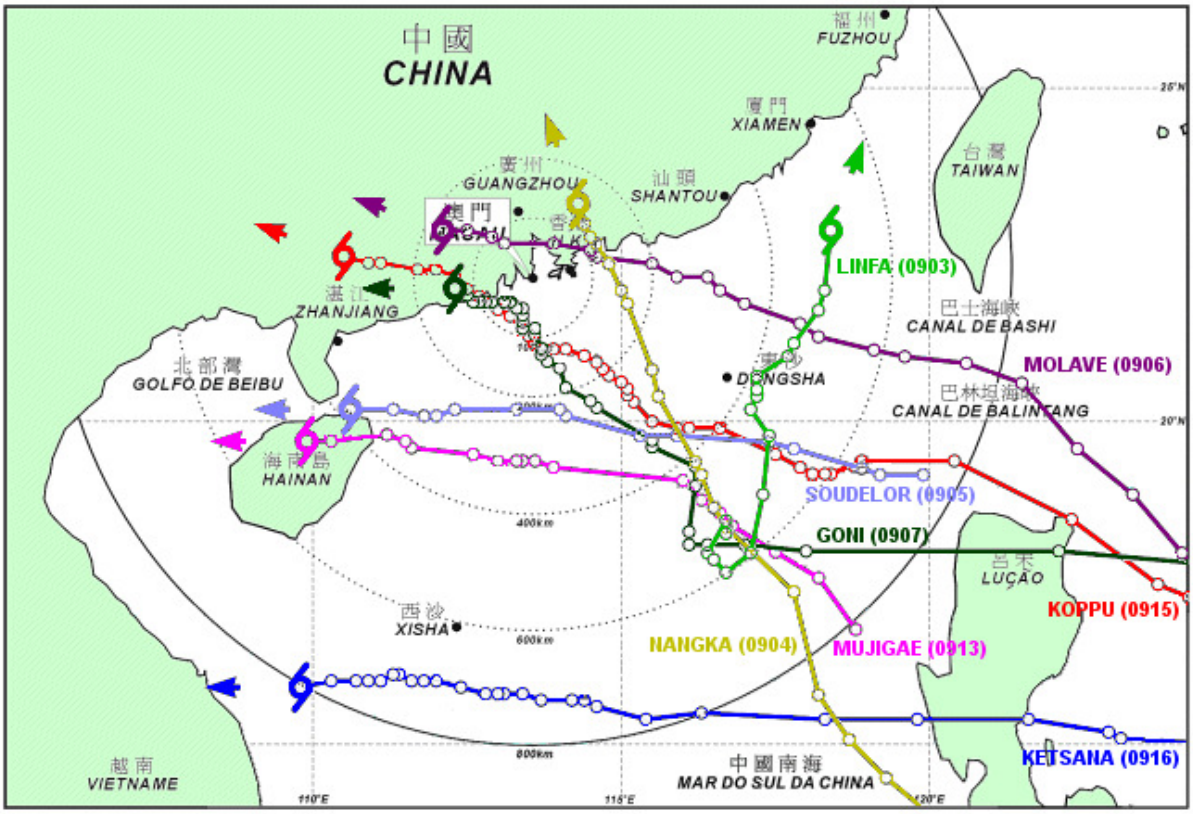
(Macao, China)

CONTENTS

I. Overview of tropical cyclones which have affected/impacted Member's area in 2009

1. Meteorological Assessment (highlighting forecasting issues/impacts)

Eight tropical cyclones affected Macao in the calendar year of 2009, including Linfa (0903), Nangka (0904), Soudelor (0905), Molave (0906), Goni (0907), Mujigae (0913), Koppu (0915) and Ketsana (0916) successively. This annual number of tropical cyclones was higher than the annual average of 5.68, and there were 2 tropical cyclones, Goni and Koppu, that necessitated the hoisting of Tropical Cyclone Signal No. 8.



STS "Linfa"(0903)

On 18 June, a tropical depression developed into a tropical storm at the west of Luzon, the Philippines and was named Linfa (0903). It was moving northwards and intensified into a severe tropical storm on 20 June. Linfa was closest at about 410 km east-southeast of Macao at 16:00 L.T. on 20 June. It weakened into a tropical storm after making landfall over Jinjiang, Fujian Province on 21 June, and then dissipated gradually on 22 June.

Signal No. 1 had been hoisted for 23 hours and only moderate winds were recorded since Linfa was relatively far away from Macao.

Date	Time*	Signal Hoisted
20/JUN	10:30	No.1
21/JUN	09:30	All signals lowered

TS "Nangka"(0904)

On 23 June 2009, a tropical depression developed into a tropical storm at the east of the Philippines over the Pacific and was named Nangka (0904). Nangka entered the South China Sea on 25 June after crossing the Philippines on 24 June and was moving northwestwards steadily. Nangka was closest at about 130 km northeast of Macao at 02:00 L.T. on 27 June, and it made second landfall nearby Huilai County, Guangdong Province before dawn on 27 June. Nangka weakened into a tropical depression and dissipated over inland gradually.

The maximum sustained winds of Nangka were below 70 km/h, no gale winds were recorded even it was relatively close to Macao. Hence, the highest signal hoisted during its passage was No. 3 only.

Date	Time*	Signal Hoisted
26/JUN	07:15	No.1
26/JUN	19:00	No.3
27/JUN	07:00	All signals lowered

TS "Soudelor"(0905)

A tropical depression developed into a tropical storm over the South China Sea on 11 July and was named Soudelor (0905). It was moving west-northwestwards or westwards steadily. Soudelor was closest at about 220 km south of Macao at 18:00 L.T. on 11 July. Soudelor was approaching Leizhou Peninsula after skirting south of Macao before dawn next day. It made landfall over the northern part of Wenchang in Hainan Province on 13 July. The landward Soudelor weakened into a tropical depression and dissipated gradually.

The hourly maximum wind speed of 47.3 km/h was recorded just after Soudelor had skirted south of Macao at 19:00 on 11 July.

Date	Time*	Signal Hoisted
10/JUL	22:00	No.1
11/JUL	19:00	No.3
12/JUL	07:00	All signals lowered

Typhoon "Molave"(0906)

On 16 July, a tropical depression developed into a tropical storm at the northeast of Luzon, the Philippines and was named Molave (0906). As Molave was moving north-northwestwards, it further enhanced into a severe tropical storm and then a typhoon on 17 and 18 July respectively. After passing the Balintang Channel, Molave was approaching the eastern coast of Guangdong Province. Finally, Molave made landfall at 120 km east-northeast of Macao, nearby Shenzhen on 19 July. It was closest when it skirted 60 km north of Macao at 05:00 L.T. on the same day. Later on, it weakened gradually due to the terrain friction and dissipated rapidly.

The highest signal hoisted was only No. 3 as gale winds were recorded for a short span of two hours on the bridges.

Date	Time*	Signal Hoisted
17/JUL	23:00	No.1
18/JUL	18:30	No.3
19/JUL	12:30	All signals lowered

STS "Goni"(0907)

On 1 August 2009, a tropical depression formed at the east of the Philippines over the Pacific. On 3 August, this fast-moving tropical depression turned northwards significantly and was approaching the South China coastal areas. It then intensified into a tropical storm at about 340 km southeast of Macao and was named Goni (0907). Goni was heading to Macao in the north-northwest direction when it further enhanced into a severe tropical storm. It was closest at about 55 km south-southwest of Macao at 22:00 L.T. and finally made landfall nearby Taishan, Guangdong Province in the morning on 5 August. Goni further weakened into a tropical storm and a tropical depression successively, and hovered around the western coast of Guangdong Province in the evening on 6 August.

Goni re-deepened into a tropical storm and was moving south-southwestwards slowly in the morning on 8 August. On 9 August, the low level circulation centre of Goni veered to the east and dissipated gradually.

The Storm Surge Warning Red Signal and Yellow Signal were effective at 04:00 L.T. and 05:00 L.T. respectively on 5 August, and were cancelled at 11:00 L.T. on the same day. Those were the first storm surge warnings issued since the new launching in 2009.

Date	Time*	Signal Hoisted
3/AUG	16:00	No.1
4/AUG	11:00	No.3
4/AUG	19:00	No. 8NE
4/AUG	23:00	No. 8SE
5/AUG	05:30	No.3
5/AUG	18:00	All signals lowered

TS "Mujigae"(0913)

On 10 September, a tropical depression developed into a tropical storm at about 390 km over the South China Sea and was named Mujigae (0913). It was moving west-northwestwards at 20 km/h and crossing the northern part of the South China Sea. Mujigae was closest at about 310 km south of Macao at 16:00 L.T. on the same day. Mujigae made landfall over Wenchang in Hainan Province on 11 September. It moved westwards and reached the Gulf of Beibu after crossing the northern part of Hainan Province. On 12 September, the landward Mujigae weakened into a tropical depression and dissipated gradually over Vietnam.

The life cycle of Mujigae was shorter than 1 week and it brought Macao with neither gale winds nor heavy rains.

Date	Time*	Signal Hoisted

10/SEP	05:45	No.1
10/SEP	17:45	No.3
11/SEP	09:45	All signals lowered

Typhoon "Koppu"(0915)

A tropical depression developed into a tropical storm over the South China Sea on 14 September. It was named Koppu (0915). Koppu was heading to the South China coastal areas by moving west-northwestwards at about 20 km/h. Later, it further enhanced into a severe tropical storm and then a typhoon rapidly. Koppu was closest at about 70 km south-southwest of Macao at 03:00 L.T. on 15 September. It made landfall nearby Taishan, Guangdong Province early that morning, and then weakened into a severe tropical storm and tropical storm successively later on 15 September. Koppu finally dissipated in Guangxi Province over inland.

The Storm Surge Warning Black Signal, the highest storm surge warning signal, had been effective for nine and a half hours. Water level of 1.15 m above the pavement was recorded at Porto Interior district.

Date	**Time***	**Signal Hoisted**
13/SEP	18:45	No.1
14/SEP	13:30	No.3
14/SEP	20:30	No. 8NE
15/SEP	03:00	No. 8SE
15/SEP	09:30	No.3
15/SEP	16:00	All signals lowered

Typhoon "Ketsana"(0916)

On 26 September, a tropical depression developed into a tropical storm and was named Ketsana (0916). It was moving west-northwestwards and entered the South China Sea after crossing Luzon, the Philippines. Ketsana enhanced into a severe tropical storm on 27 September. On 28 September, it further intensified into a typhoon and was closest at about 710 km south-southwest of Macao at 13:00 L.T. Finally, Ketsana made landfall in Vietnam and weakened into a severe tropical storm on 29 September. Ketsana further downgraded into a tropical storm on 30 September. It moved towards inland and dissipated consequently.

Although Ketsana was relatively far away from Macao, Signal No. 3 was hoisted as strong winds of 42.7 km/h were recorded under the conjunction effect with the anti-cyclonic flow from Mainland China.

Date	**Time***	**Signal Hoisted**
27/SEP	22:15	No.1
28/SEP	13:30	No.3
29/SEP	04:00	All signals lowered

*All time mentioned above is local time

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

Tropical Cyclone	Rainfall During TC Signal Hoisting Period (mm)	Storm Surge Warning issued	Local Flooding (m)**
Linfa (0903)	4.8	nil	nil
Nangka (0904)	6.2	nil	nil
Soudelor (0905)	13.0	nil	nil
Molave (0906)	103.2	nil	nil
Goni (0907)	102.0	Red Signal Yellow Signal	0.1
Mujigae (0913)	9.4	nil	nil
Koppu (0915)	105.8	Black Siganl	1.15
Ketsana(0916)	39.4	nil	nil

** Water level above the pavement recorded at Porto Interior.

In response to the social needs after the great financial losses inflicted by the storm surge of Hagupit last year, the Storm Surge Warning was launched on 7 April 2009, with the readiness of the new automatic flooding monitoring system, which consists of 9 land- and 2 seashore-water level stations and 1 tide and wave recorder, and the storm surge forecast model imported from JMA.

The approach of Goni necessitated the first historical issue of the Storm Surge Warning, with the Red Signal followed by the Yellow Signal. Slight local flooding occurred with water level record of 0.1 m above pavement.

With the successful forecast of storm surge induced by Koppu and the effective dispatch of the Black Signal to both the government and private sectors, the financial losses reported approximated to zero, thought water level of 1.15 m above the pavement was recorded at Porto Interior, the most low-lying district in Macao.

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

As of November 2009, there a total of eight tropical cyclones attacked Macao this year. The damage figures they caused are shown in Table 1 as below, in which, the damage resulting from typhoon Koppu is the most in terms of number and effect. The combined effect of storm surge and high tides resulted in a back flow of seawater, seriously flooding the coastal and low-lying areas. Flooding reached a depth of 1.15 meters. As a result, some areas endured blackouts when some of the power distribution boxes broke down. Citizens in these areas suffered from property damage.

Date/Time		Name	The Highest Signal Hoisted	Incidents (cases)							
Start	End			Flooding	Fallen Trees	Billboards/ Awnings/ Windows/ Walls (Collapsed/ Tottering)	Scaffolding/ Fencings/ Crane (Collapsed/ Tottering)	Power cables/ Lampposts (Collapsed/ Tottering)	Death	Injuries	Others
20-6-09 10H30	21-6-09 09H30	LINFA (0903)	1	0	0	0	0	0	0	0	0

26-6-09 07H15	27-6-09 07H00	NANGKA (0904)	3	0	0	1	0	0	0	0	0
10-7-09 22H00	12-7-09 07H00	SOUDE-LOR (0905)	3	0	0	3	0	0	0	0	0
17-7-09 23H00	19-7-09 12H30	MOLAVE (0906)	3	0	8	7	2	0	0	0	2
04-8-09 19H00	05-8-09 05H30	GONI (0907)	8	0	8	10	4	2	0	0	1
10-9-09 05H45	11-9-09 09H45	MUJIGAE (0913)	3	1	0	0	0	0	0	0	0
13-9-09 18H45	15-9-09 16H00	KOPPU (0915)	8	7	29	53	9	2	0	5	45
27-9-09 22H15	29-9-09 04H00	KETSANA (0916)	3	0	1	1	0	0	0	0	1

Table 1: Damage figures caused by typhoons in Macao during the year.

There were several issues of rainstorm warnings this year. From the damage figures shown in the table 2 as below, flooding and landslips were the major impacts of heavy rainfall in Macao.

Date	Duration	Incidents (cases)									
		Flooding	Fallen Trees	Building collapsed/ Concrete fallen	Billboards collapsed or tottering	Scaffolding collapsed or tottering	Windows collapsed or tottering	Awning collapsed or tottering	Landslips	Casualties	Others
25-04-09	06H50-10H30	15	0	0	0	0	0	0	2	0	0
20-05-09	18H05-19H30	0	0	0	0	0	0	0	1	0	1
23-05-09	14H00-15H10	9	1	0	0	0	0	0	1	0	2
24-05-09	09H57-12H00	4	0	1	0	0	0	0	0	0	2
09-06-09	11H05-12H45	0	0	0	0	0	0	0	0	0	0
04-07-09	22H05-23H10	1	0	0	0	0	0	0	0	0	0
11-08-09	05H50-07H20	0	0	0	0	0	0	0	0	0	1
14-08-09	02H10-03H10	6	0	0	0	0	0	0	0	0	0

Table 2: Damage figures caused by rainstorms during the year.

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

Nil.

II. Summary of progress in Key Result Areas (For achievements/results which apply to more than one Key Result Area, please describe them under the most applicable Key Result Area. Then, at the end of the description, place in parentheses ( ) the other applicable Key Result Areas)

1. Progress on Key Result Area 1: Reduced Loss of Life from Typhoon-related Disasters. (List progress on the Strategic Goals and Associated Activities in the Strategic Plan and progress on the 2009 Typhoon Committee Annual Operating Plan goals)

a. Meteorological Achievements/Results

A new EEC dual-polarization X-band Doppler radar was purchased. It is still under testing, after the installation in the end of 2009, and is expected to put into operation before the rainstorm and typhoon seasons of 2010.

b. Hydrological Achievements/Results

Cooperation among different government organizations for the establishment of an automatic water level monitoring system has completed and the Storm Surge Warning was launched on 7 April 2009.

c. Disaster Prevention and Preparedness Achievements/Results

In respect of reducing loss of life from typhoon-related disasters, the Slope Safety Group, formed by relevant departments and organizations from the Government or private sector, has inspected all the 183 slopes and classified them into 3 categories, namely Low, Medium or High Risk Slope. Maintenance and reinforcement works are being carried out and prioritized in terms of risk.

In order not to cause any of casualties by the fallen objects such as trees or billboards due to the strong winds of typhoon, a government department, named Civic Municipal Affairs (IACM), enhanced its inspections and has given proper treatment to those risky trees and billboards.

Uplift of power facilities
Source: CEM

Since some of power distribution boxes in low-lying areas emitted smoke or on fire due to immerse in flooding, the power company is now gradually kicking off improvement works, including further uplifting the positions of those boxes and replacing some old cables, to avoid the similar occurrences in the future.

d. Research, Training, and Other Achievements/Results

Two woman forecasters received five-day on-job training at the Central Forecasting Office of Hong Kong Observatory in October 2009, covering the area of tropical cyclone forecasts and warnings.

One forecaster participated in the TC Roving Seminar held in Nanjing, China on 16-19 September 2009, focusing on topics of analysis and forecasting of high-impact weather associated with tropical cyclones, formulation and compilation of tropical cyclone warning messages, and communication and broadcasting of warning messages.

Twenty-one meteorological personnel completed a five-day training course provided by the EEC radar company.

e. Regional Cooperation Achievements/Results

The Cooperation Arrangement between Macao Meteorological and Geophysical Bureau (SMG) and Zhuhai Meteorological Bureau was signed on 6 June 2009, highlighting meteorological data exchange and co-weather-briefing especially during the passage of tropical cyclones.

f. Identified Opportunities/Challenges for Future Achievements/Results

Closer cooperation with Zhuhai Meteorological Bureau, as well as other meteorological organizations in the Pearl River Delta region, is aimed and needed to carry out.

2. Progress on Key Result Area 2: Minimized Typhoon-related Social and Economic Impacts. (List progress on the Strategic Goals and Associated Activities in the Strategic Plan and progress on the 2008 Typhoon Committee Annual Operating Plan goals)

a. Meteorological Achievements/Results

Please refer to Key Result Area 1(a).

To enhance the efficiency of information dispatch during severe weather, especially tropical cyclones, among SMG and different organizations within Civil Protection Framework and under the Secretary for Transport and Public Works, a restricted page was constructed on Informac, the government intranet, for decision makers so as to promote better awareness and preparedness.

b. Hydrological Achievements/Results

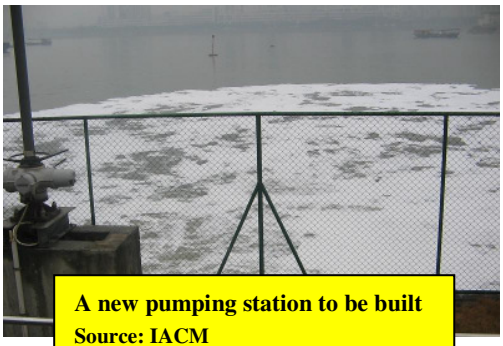
Please refer to Key Result Area 1(b).

c. Disaster Prevention and Preparedness Achievements/Results

Flooding taking place at coastal and low lying areas is one of the major impacts of typhoon, inducing causing to the residents and shops in these areas loss of property and certain inconvenience. For this reason, Macao Government plans to expand the pumping station in Taipa and build a new station in the Inner Habour to upgrade the capacity of pumping out storm water during typhoons. In addition, the government has also made efforts to strengthen the capability of storm water drainage by implementing a phased improvement work on the drainage network these years.

Flooding resulted from Koppu
Photo by: SMG

Improvement work on network
Source: DSSOPT



A new pumping station to be built
Source: IACM

The IACM has worked closely with the franchise company for fighting floods by clearing up the drainage before and immediately after typhoon, and disposing promptly all wastes brought to the streets by floods and strong winds, to ensure the water discharge and get the entire operation of the city back to normal earlier.

Clearance of sewers
Source: IACM

Clearance of drainage outlets
Photo by: SMG

Disposal of wastes immediately after typhoon
Photo by: SMG

The power company continued to improve the power networks to better cope with flooding in the future and reduce its impact on the society and also citizens' losses.

Since telecommunications services failure had taken place during the typhoon in the past, in this regard, the telecommunication company was requested to improve their services by any means and establish some relevant emergency contingency plans to reduce the impact on their users and also avoid any postponement of rescue works due to an unexpected networks failure.

d. Research, Training, and Other Achievements/Results

Although group visits had been suspended for several months due to HINI, 627 students and citizens were recorded visiting SMG headquarters in 2009, to have better understanding of our operation and the meaning of different warnings hoisted/issued.

e. Regional Cooperation Achievements/Results

Please refer to Key Result Area 1(e).

f. Identified Opportunities/Challenges for Future Achievements/Results

Please refer to Key Result Area 1(f).

3. Progress on Key Result Area 3: Enhanced Beneficial Typhoon-related Effects for the Betterment of Quality of life. (List progress on the Strategic Goals and Associated Activities in the Strategic Plan and progress on the 2009 Typhoon Committee Annual Operating Plan goals)

a. Meteorological Achievements/Results

Nil.

b. Hydrological Achievements/Results

Nil.

c. Disaster Prevention and Preparedness Achievements/Results

Please refer to Key Result Areas 1(c) and 2 (c).

Macao Government continued to improve Macao's social services and facilities, including establishment of a complementary center for victims of disaster, improvement of all centers' facilities, food and other related services for victims.

d. Research, Training, and Other Achievements/Results

Nil.

e. Regional Cooperation Achievements/Results

Nil.

f. Identified Opportunities/Challenges for Future Achievements/Results

Nil.

4. Progress on Key Result Area 4: Improved Typhoon-related Disaster Risk Management in Various Sectors. (List progress on the Strategic Goals and Associated Activities in the Strategic Plan and progress on the 2009 Typhoon Committee Annual Operating Plan goals)

a. Meteorological Achievements/Results

Nil.

b. Hydrological Achievements/Results

Nil.

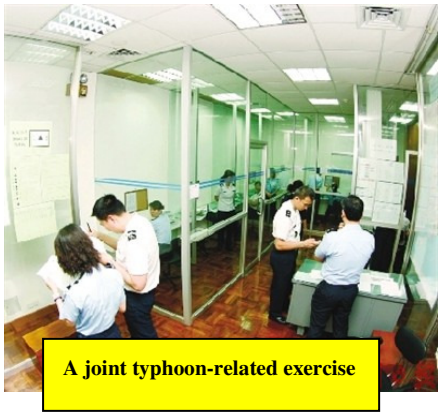
c. Disaster Prevention and Preparedness Achievements/Results

To enhance the members' disaster response capabilities in Civil Protection System and improve the communications and cooperation between members, the Macao Security Forces Coordination Office continued to carry out the following prevention activities prior to the coming of the typhoon season:

- Reviews on all emergency contingency plans and update of any necessary information.
- A large-scale joint exercise with all members involved in Civil Protection System was conducted, so as to test the operation procedures of the Typhoon Emergency Plan and draw out any weaknesses for amendment.
- An annual conference with all members involved to review all typhoon-related mechanisms and measures, and seek solutions to the problems found in the join exercise stated above, was held.
- The promotion works on typhoon prevention by distribution of the typhoon-related brochures or booklets, and advertising on TV and Radio,

were continuously carried out.

- The importance of establishing any necessary emergency contingency measure in various fields in advance is recognized. In this regards, jointly with the power company and some other relevant government departments, the Office is now establishing a measure entitled "Emergency Power Rationing Procedure", to ensure reliable power supply and cope with all occurrences of large-scale blackout in any circumstances.



A joint typhoon-related exercise

Civil Protection Annual Meeting

Apart from the activities stated above, a series of other works were taken by the Security Forces Coordination Office in collaboration with the members in the Civil Protection System for enhancing the effectiveness of the system as well as improving the smoothness of its operation. For examples:

- A newly set-up department, namely "Traffic Affairs Bureau", has been included into the Civil Protection System, to facilitate the operation of the system by coordinating and helping all related issues and measures, and reporting all update news about the traffic, particularly during the typhoon.
- Meetings were held with relevant government departments and the power company. Discussions on the emergency plans relating to the power supply and the solutions to the blackouts caused by flooding were made.
- Measures, which are useful to the works on disposal of fallen objects, mainly trees and billboards, were reviewed, and methodologies for flood improvement were also discussed.
- An additional meeting to review the typhoon "Koppu" and seek improvement on the Civil Protection System and all related mechanisms was held with all members concerned.
- The further improvement on the mechanism for dissemination of typhoon-related news and reports on related incidents was discussed with the Government Information Bureau.
- For the comprehensive development of the Civil Protection System, a study on the possibility of including a newly formed government department, namely Environmental Protection Bureau, into the system, has started.

d. Research, Training, and Other Achievements/Results

Nil.

e. Regional Cooperation Achievements/Results

Nil.

f. Identified Opportunities/Challenges for Future Achievements/Results

Nil.

5. Progress on Key Result Area 5: Strengthened Resilience of Communities to Typhoon-related Disasters. (List progress on the Strategic Goals and Associated Activities in the Strategic Plan and progress on the 2009 Typhoon Committee Annual Operating Plan goals)

a. Meteorological Achievements/Results

Nil.

b. Hydrological Achievements/Results

Nil.

c. Disaster Prevention and Preparedness Achievements/Results

Government officials and representatives of community associations visited the affected districts to collect opinions and facts on the impact of Koppu and typhoons in general, aiming at enhancing communications between the government and the communities.

Visits to the flooding affected districts
Source: IACM

d. Research, Training, and Other Achievements/Results

Nil.

e. Regional Cooperation Achievements/Results

Nil.

f. Identified Opportunities/Challenges for Future Achievements/Results

Nil.

6. Progress on Key Result Area 6: Improved Capacity to Generate and Provide Accurate, Timely, and understandable Information on Typhoon-related Threats. (List progress on the Strategic Goals and Associated Activities in the Strategic Plan and progress on the 2009 Typhoon Committee Annual Operating Plan goals)

   a. Meteorological Achievements/Results

      Please refer to Key Result Area 1(a).

      Internal working procedures during tropical cyclones approaching at the Meteorological Watch Centre of SMG was revised annually in early year and resulted in more frequent and timely information of tropical cyclones and their warnings released to the public through television, radio, mobile phones, etc.

   b. Hydrological Achievements/Results

      Please refer to Key Result Area 1(b).

      The Storm Surge Warning provided information of effective period, maximum height of water level predicted and affected districts expected, that should be announced at least 6 -12 hours ahead.

      Display of water data from the automatic water level monitoring system is still under development with the aim of providing legible products to all users.

   c. Disaster Prevention and Preparedness Achievements/Results

      Dissemination of all real time typhoon-related information has been continuously carried out via such means as newspaper, TV, radio and cell phone. Besides, the information has also been shown on the display screens/LED information boards installing in various immigration checkpoints, and widely expanding in most of major avenues or government departments.

      In order to let the public get easier access to and understand much more about the information on the civil protection related issues and relative impacts on the society, Macao Security Forces Coordination Office has started the construction of a relative website.

A draft layout of the website

Creating of a platform for exchanging any timely emergency incidents in pre-defined scale with relevant government departments or agencies of Guangdong Province and Macao, and sharing with each others all related information, including the information on natural disasters and relevant emergency mechanisms, is now being undertaken.

The 1st meeting of Exchange of Timely Emergency Incidents and Information Sharing

d. Research, Training, and Other Achievements/Results

Please refer to Key Result Area 1(d).

The public weather server (PWS) had been set up to provide unique and timely meteorological data, especially tropical cyclone information, easily accessed and downloaded both by the government organizations and mass media themselves.

All the mobile phone users can apply for the tropical cyclone warnings through SMS free of charge, after a revised arrangement made between SMG and the four mobile phone companies in Macao.

RSS, e-ME (e-mails to registered users) and InfoMet (a software run on top of Microsoft Windows System) were first open to internet users to obtain timely tropical cyclones and severe weather warnings.

The new meteorological office at Macao-Hong Kong Ferry Terminal for easy access of ship companies and tourists, especially during tropical cyclone signals hoisted, was officially open on 10 December 2009.

e. Regional Cooperation Achievements/Results

Please refer to Key Result Area 1(e).

f. Identified Opportunities/Challenges for Future Achievements/Results

Please refer to Key Result Area 1(f).

The present SMG website (http://www.smg.gov.mo) and the Informac will be enriched with more tropical cyclone information open to the public, especially the radar and satellite imagery in 2010.

7. Progress on Key Result Area 7: Enhanced Typhoon Committee's Effectiveness and International Collaboration. (List progress on the Strategic Goals and Associated Activities in the Strategic Plan and progress on the 2009 Typhoon Committee Annual Operating Plan goals)

a. Meteorological Achievements/Results

SMG has continued supporting the Typhoon Committee research project of "Assessment of impacts of climate change on tropical cyclone frequency and intensity in the Typhoon Committee region". An expert meeting was held in Macao, on 14-15 December 2009.

SMG participated in the 1st TRCG Technical Forum held in Jeju, Republic of Korea on 12-15 May 2009; the Integrated Workshop of Building Sustainability and Resilience in High Risk Areas of the Typhoon Committee: Assessment and Action, in Cebu, the Philippines, on 14-18 September 2009; and the AWG small meeting in Macao, on 16-17 December 2009.

b. Hydrological Achievements/Results

Please refer to Key Result Area 7(a).

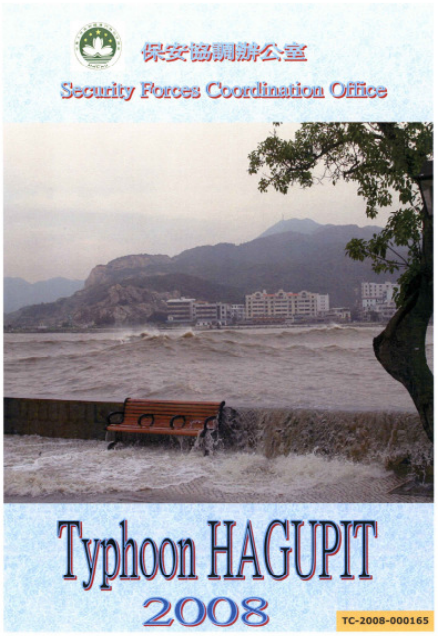
c. Disaster Prevention and Preparedness Achievements/Results

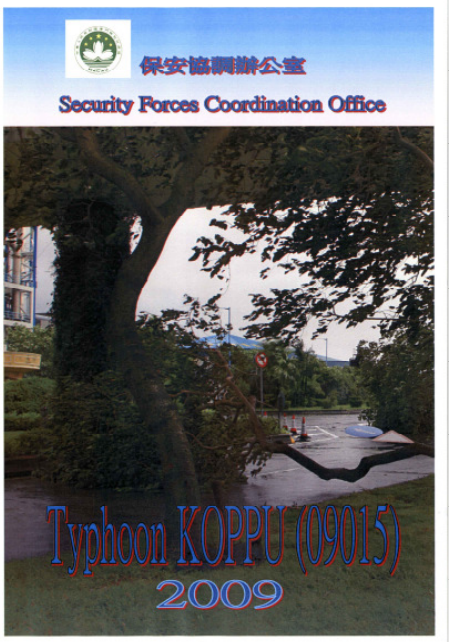
In order to share typhoon-related information with members and learn from them, the Security Forces Coordination Office continued to join actively in the meetings organized by the Typhoon Committee as well as the Working Groups of TC. The following are the meetings in which the representatives of the office participated over the year.

- 19 to 24 January 2009, 41st Session of Typhoon Committee
- 28 to 29 April 2009, 4th DDP Meeting
- 14 to 18 September 2009, Integrated Workshop - Building Sustainability and Resilience in High Risk Areas of the Typhoon Committee: Assessment and Action

Three of TC meetings

The Security Forces Coordination Office also continued to support to the WGDPP as well as its activities by contributing Macao's reports on typhoons "Hagupit" and "Koppu" to the working group for making a publication of typhoon-related impacts and measures taken to combat the related disasters in TC member counties or regions.





d. Research, Training, and Other Achievements/Results

Nil.

e. Regional Cooperation Achievements/Results

Nil.

f. Identified Opportunities/Challenges for Future Achievements/Results

Macao continues contributing the Endowment Fund to support the operation of Typhoon Committee Secretary for another 4 years.

III. Resource Mobilization Activities

Nil.

IV. Update of Members' Working Groups representatives

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5. Resource Mobilization Group

Nil.