KMI's Meteorological Official Development Assistance Projects

Korea Meteorological Administration

KMI Korea Meteorological Institute

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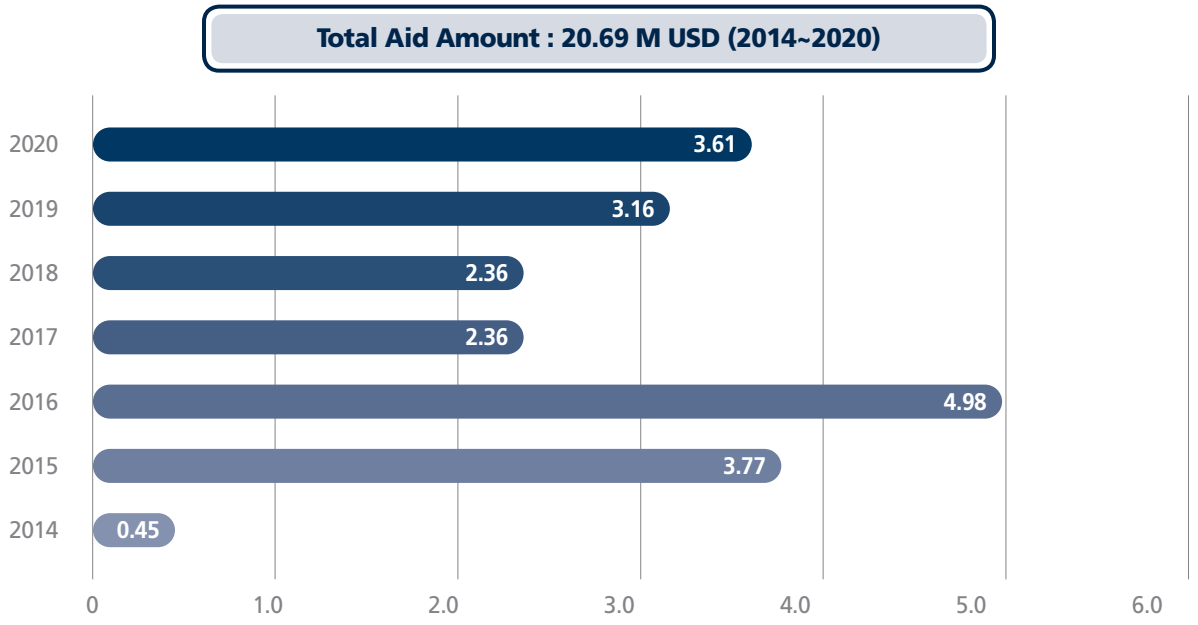
KMI's Meteorological ODA Projects

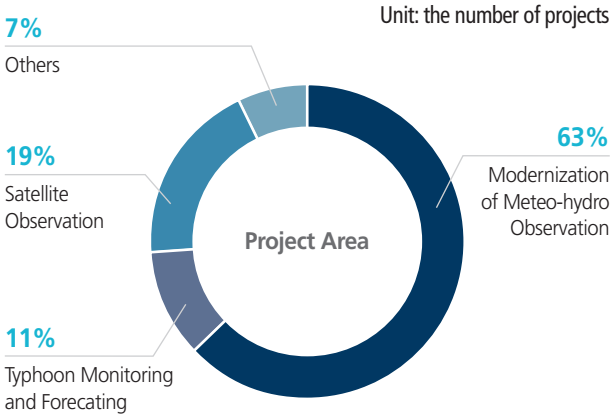
The Korea Meteorological Institute (KMI) contributes to the response to climate change and extreme weather events in developing countries by implementing meteorological modernization projects. The KMI has carried out ODA projects in 8 developing countries since 2014, with total aid amount of USD 20.69M.

Total Aid Amount	ODA Partner Countries	Number of staff members from the Global Training
20.69 M USD	8	290



Project Area

Modernization of Meteo-hydro Observation (63%) is the most implemented ODA project, followed by Satellite Observation (19%) and Typhoon Monitoring and Forecasting (11%)



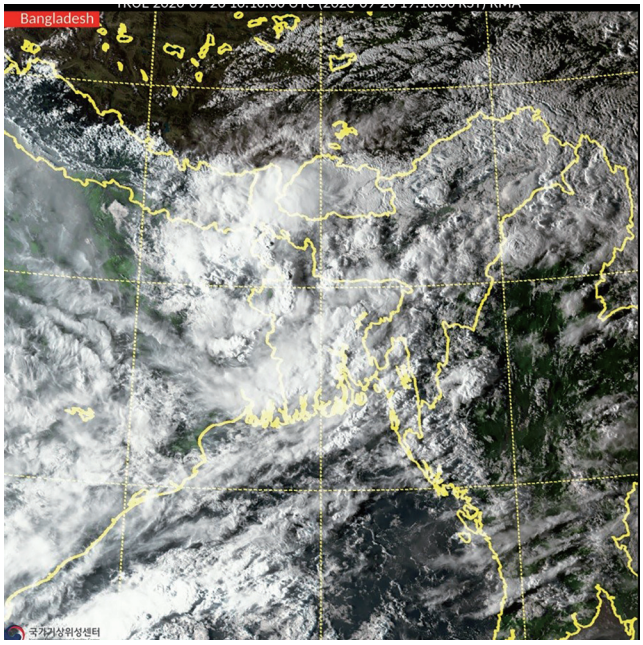
KMI's Meteorological ODA Projects

ODA Partner Countries

List of Projects

No.	Country	Project	Period
1	Lao PDR	Installation of Typhoon Monitoring and Forecasting Integrated Platform in Lao PDR	'20~'23
2	Cambodia	Support of the GEO-COMPSAT Receiving and Analysis System in Cambodia	'20-'23
3	Cambodia	Installation of the Automated Weather Observation System for Forecasting and Waming of Natural Disaster in cambodia	'19~'22
4	Bangladesh	Support of the GEO-COMPSAT Receiving and Analysis System in Bangladesh	'19~'21
5	Mongolia	Installation of the Automated Weather Observation System for Forecasting and Waming of Natural Disaster in Mongolia	'17~'19
6	Myanmmar	Modernization of Forecasting and Waming System for Natural Disaster in Myanmar	'17-'19
7	Myanmmar	The Master Plan for the Advancement of National Meteorological System in Myanmar	'15~'16
8	China	Improving Operation capacity for Observation Network of Sand and Dust Storm/Particulate Matter in China	'15~'18
9	Vietnam	Modernization of Forecasting and Waming System for Natural Disaster in Vietnam	'14~'16
10	Ethiopia	Disaster Risk Reduction through Installation of Meteorological Observation and Early Waming System in Ethiopia	'14~'18

Support of the GEO-KOMPSAT-2A Receiving and Analysis System in Bangladesh



Project Background

Bangladesh is often affected by various natural disasters such as cyclones and associated storm surges, severe thunderstorms, nor'westers or tornadoes, heat waves, cold waves and heavy rainfall. The country also commonly experiences local heavy rainfalls. Most of these natural hazards or disasters are meso-scale in nature and associated with rainfall. However, it has difficulties responding to real rainfall climate because of a lack of dense rain gauge network, which is in high demand from users and stakeholders of Bangladesh Meteorological Department (BMD). Quantitative forecasting of rainfall and its verification also becomes very difficult due to the absence of high resolution observation.

BMD is responsible for providing various types of meteorological information to the government, private and public agencies, and the public to reduce the risks of disasters effectively, as well as to ensure safe navigation in water ways (inland and sea voyage), tourism, driving etc. In this situation, utilization of satellite information and high resolution NWP model's simulated rainfall are urgently required to fulfill the demands of clients.

Project Summary

Duration: 2019-2021 (3 years)

Management Agency:
Korea Meteorological Administration (KMA)

Implementing Agency:
Korea Meteorological Institute (KMI)

Beneficiary Agency:
Bangladesh Meteorological Department (BMD), Ministry of Defense (MOD)

Funding Source: KMA

Target Location: Bangladesh (Dhaka)

Project Budget: 2.5 M USD

Contact:
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Korea Meteorological Institute

Project Objectives

The objectives of the project "Support of the GEO-KOMPSAT-2A Receiving and Analysis System in Bangladesh" (hereinafter referred to as "the Project") are to improve responses to natural disasters and reduce damage to residents by collecting information through a meteorological satellite, GEO-KOMPSAT-2A (hereafter "GK2A"), receiving and analysis system in Bangladesh.

Implementation Status

An expert group consisted of experts from the National Meteorological Satellite Center (NMSC) and the Korea Meteorological Institute (KMI) conducted a preliminary technical investigation in July 2019. And a service provider was selected in April 2020. KMI provided online training on capacity building for a working-level group of BMD in November 2020.

Key Activities

- Investigating the meteorological status and relevant infrastructure for meteorological satellite utilization in Bangladesh
- Selecting a service provider for the installation of GK2A receiving and analysis system
- Installing GK2A receiving and analysis system
- Supporting the operation of the system and data analysis through capacity building such as training programs and experts secondment

Expected Results

Expected outputs after the successful completion of the Project are:

- Enhanced quality of weather observation forecasting;
- Improved early warning system for meteorological disasters; and
- Enhanced capacity of BMD

▲ Preliminary technical investigation, July 2019

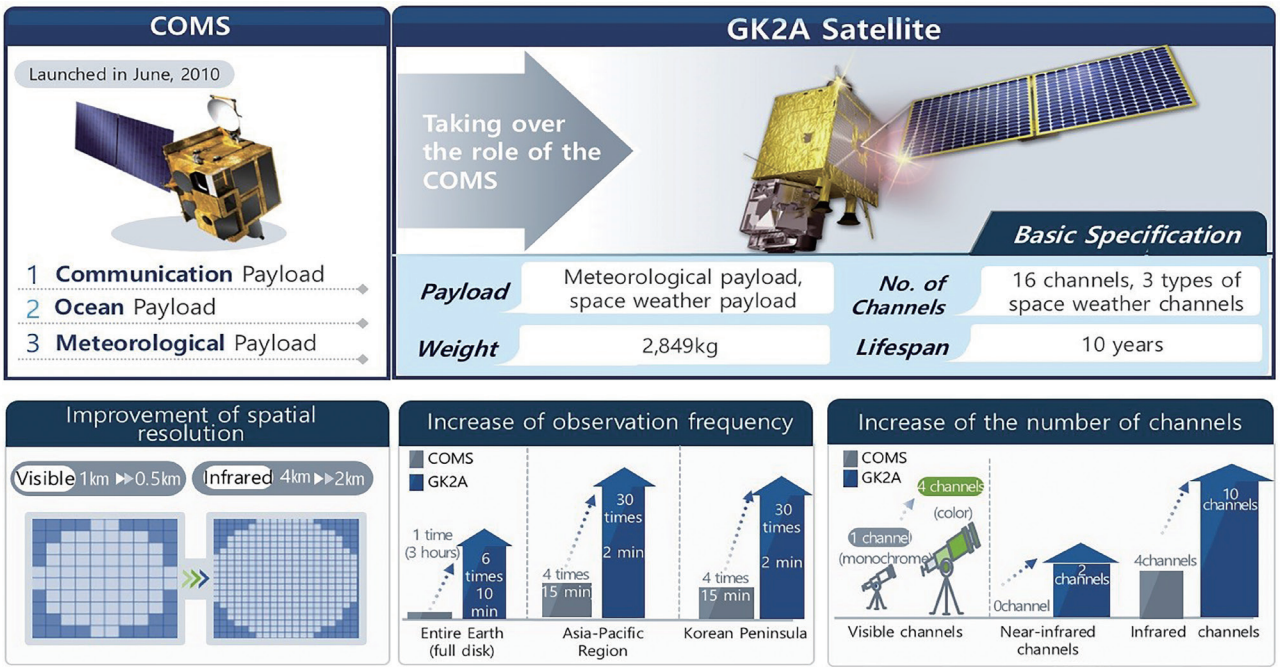
▲ Invitational training for policy makers, December 2019

"This project is of great significance because the latest satellite technology is applied to the existing Bangladesh weather observation infrastructure. I would like to express my gratitude to the Korea Meteorological Administration and Korea Meteorological Institute of Technology."

- Shamsuddin Ahmed, Director General, BMD -

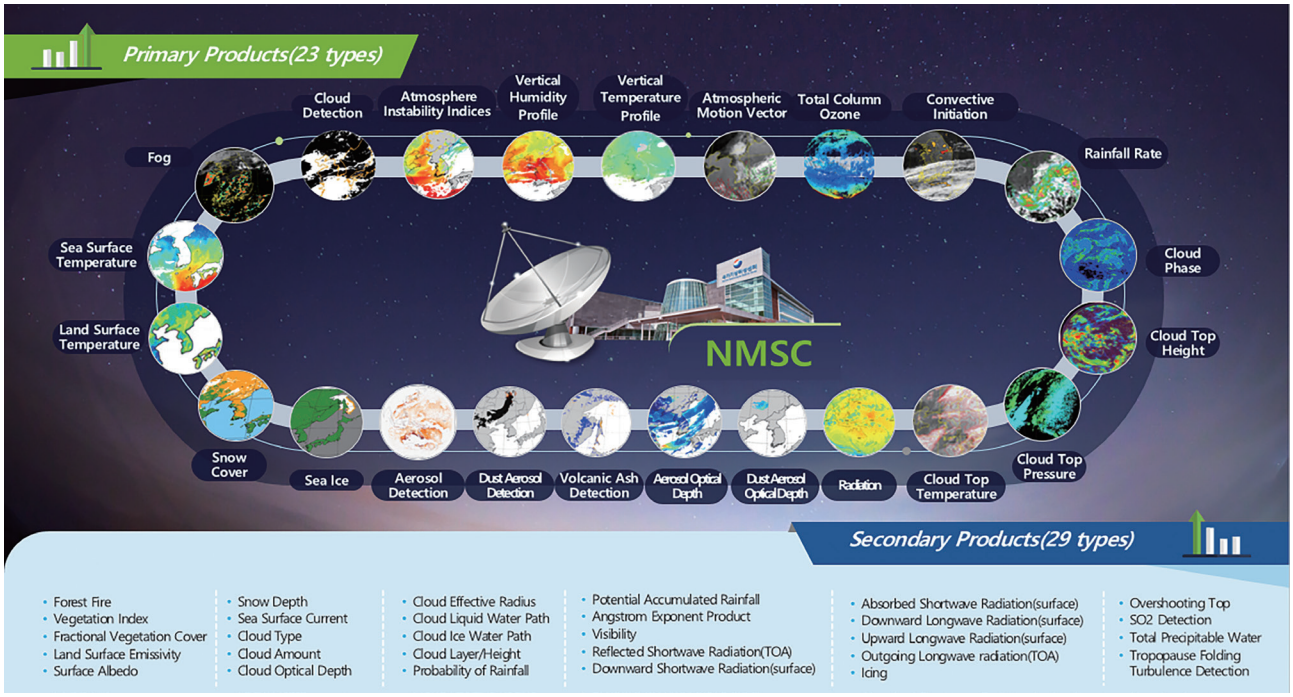
What is GEO-KOMPSAT-2A Receiving and Analysis System?

GK2A Satellite is the next generation geostationary meteorological satellite that took over the meteorological roles of Communication, Ocean and Meteorological Satellite (COMS) and performs meteorological and space weather observation tasks.



GK2A launched on December 5, 2018 is available for diverse observations owing to its 16 channels, which was increased from previous 5 channels of COMS.

GK2A also allows to observe the entire sectors at 10-minute intervals, enabling speedier monitoring of severe weather phenomena to reduce the impacts of meteorological disasters. In addition, its high performance meteorological sensor (AMI) provides more precise observations. GK2A will produce a total of 52 types of meteorological products.



▲ 52 types of meteorological products

Installation of the Automated Weather Observation System for Forecasting and Warning of Natural Disaster in Cambodia

Project Background

Since almost all activities of the economy are closely linked to weather and climate, worsening impacts of meteorological phenomena and hazards caused by changing climate patterns have made various economic sectors begin to appreciate the value of weather forecasts. The extreme weather events in recent years are precursors of the impacts of seasonally, locally and globally changing climate. Between 1990 and 2016, nine major floods and four major droughts affected more than 20 million people in Cambodia. The impacts will be exacerbated and will continuously affect all sectors in the country. Hence, the Department of Meteorology (DOM) will expand its capacity through this project to meet the emerging needs of various economic sectors.

Project Objectives

The objectives of the project are to improve responses to natural disasters and reduce damage to residents by building a real-time meteorological observation system in Cambodia.

Key Activities

- Investigating the meteorological status and relevant infrastructure conditions in Cambodia
- Conducting field investigations on weather stations in Cambodia
- Installing 27 Automatic Weather Stations(AWSs) in Cambodia
- Installing power systems (solar cells and rechargeable batteries) at the weather stations
- Developing a data receiving system at the Ministry of Water Resources and Meteorology (MOWRAM) in Phnom Penh

Project Summary

Duration: 2019-2022 (4 years)

Management Agency:
Korea Meteorological Administration (KMA)

Implementing Agency:
Korea Meteorological Institute (KMI)

Beneficiary Agency:
Department of Meteorology (DOM), Ministry of Water Resources and Meteorology (MOWRAM)

Funding Source: KMA

Target Location: 27 weather stations in Cambodia

Project Budget: 3 M USD

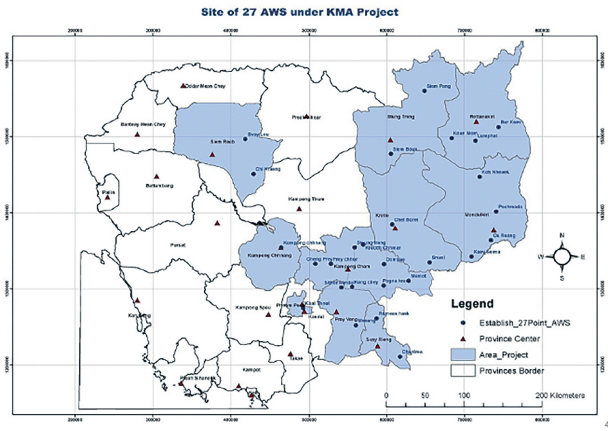
Contact: KIM Dowan, Deputy project manager, camcam08@kmiti.or.kr

Korea Meteorological Administration KMI Korea Meteorological Institute

- Developing a data analysis and display system to support weather forecasting
- Supporting the operation of the system through training programs

Where we Work

The target sites of the project are 11 provinces and 27 weather stations in Cambodia



- 11 provinces:

Phnom Pen, Kompong Chhnang, KomPong Cham, Tboung Cham, Stung Treng, Kratie, Mondulkiri, Rottanakiri, Svay Reng, Prey Veng, Siem Reab

- 27 weather stations:

Kbal Thnol, Kompong Chhnang, Cheng Prey, Prey Chhor, Steung Trang, Memot, Krouch Chhmar, Dombae, Pogna Kraeh, Kong Chey, Siem Pang, Siem Bouk, Chet Borei, Snuol, Kaev Seima, Ou Reang, Peachreada, Koh Nheaek, Bar Kaev, Lemphat, Koun Mom, Chantrea, Romeas Haek, Sithor Kandal, Mesang, Chi Kraeng, Svay Le

Implementation Status

A preliminary technical survey was conducted at the 27 project sites in 2019. Based on the survey results, the Korea Meteorological Institute (KMI) is currently undertaking civil engineering works to construct the foundations for the 27 sites. A system installation company was selected in April 2020.

The Korea Meteorological Administration (KMA), KMI and DOM signed a MoU on December 9, 2019. Three capacity building programs were provided by KMA and KMI for both a working group and policy makers in MOWRAM in March and September 2019 and September 2020 to enhance capacity to operate meteorological observation system and advanced forecasting techniques. A total of 32 participants completed the training.

Expected Results

The project is expected to reduce economic and social damage caused by meteorological disasters by reducing collection time of observed data and improving accuracy.

▲ Capacity building training, 2019

▲ Civil works to construct a foundation, 2020

"Cambodia is currently operating 135 weather stations, 59 AWS and 1 radar. However, there are gaps between observation times. MOWRAM hopes to strengthen our weather observation capacity through this project."

- Lim Kean Hor, the minister of MOWRAM -

Automatic Weather Station (AWS)

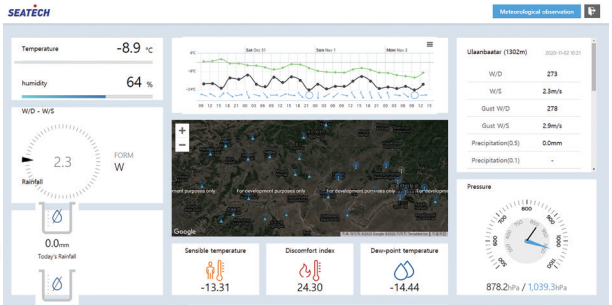
AWS

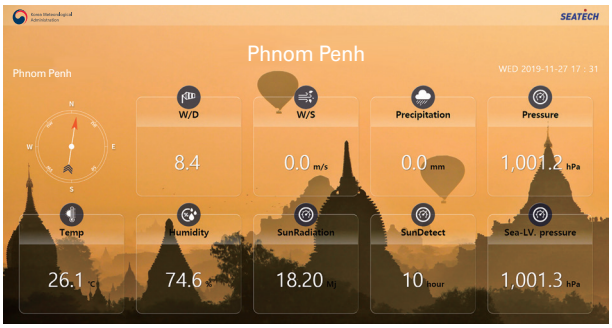
Observe weather every minute with AWS sensors (temperature, humidity, air pressure, wind direction/ speed, precipitation, aspirator)

Department of Meteorology (DOM)

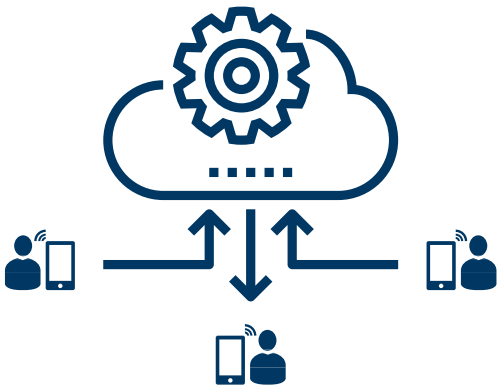
Transfer weather information to Department of Meteorology (DOM) in Cambodia

Analysis / Display / Monitoring system



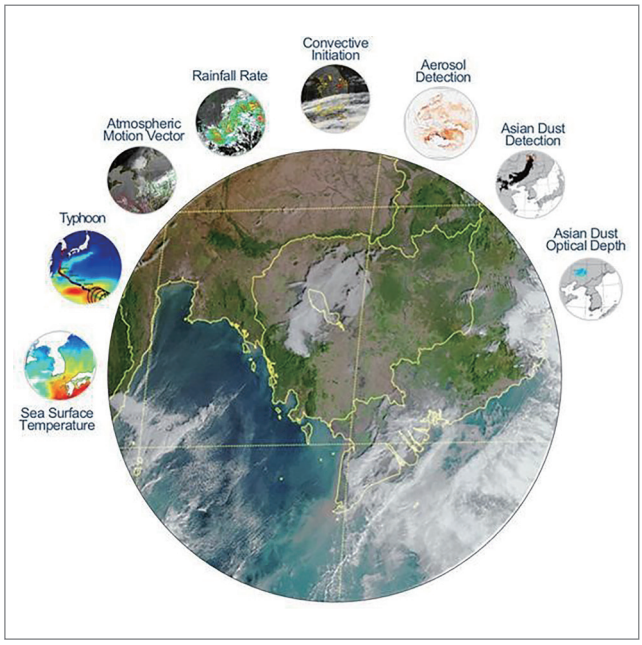


People in Cambodia



Provide weather forecast to public through Media, SNS etc.

Support of the GEO-KOMPSAT-2A Receiving and Analysis System in Cambodia



Project Background

As Cambodia has a southwest monsoon which causes heavy rainfall during the rainy season from May to November, the country experiences periodic floods and draughts. Between 1990 and 2016, nine major floods and four major droughts affected more than 20 million people in Cambodia. Climate change is expected to intensify the impacts from heavy rain. As a national meteorological service provider and water resource management authority, the Ministry of Water Resources and Meteorology (hereafter "MOWRAM") observes, analyzes and provides weather information to the public and relevant authorities, as well as to disaster risk management and climate-sensitive sectors such as agriculture, water and energy.

Given that Cambodia has strong climatological needs to adequately respond to natural disasters such as flood and draught and has limited capacity in its meteorological infrastructure as well as human resources, the country clearly requires technical assistance and capacity building for strengthening meteorological capacity.

Project Summary

Duration: 2020-2023 (4 years)

Management Agency:
Korea Meteorological Administration (KMA)

Implementing Agency:
Korea Meteorological Institute (KMI)

Beneficiary Agency:
Department of Meteorology (DOM), Ministry of Water Resources and Meteorology (MOWRAM)

Funding Source: KMA

Target Location: Cambodia (Phnom Penh)

Project Budget: 3 M USD

Contact:
SEO Sungyoung, Manager, ssy1308@kmiti.or.kr

Korea Meteorological Administration

KMI Korea Meteorological Institute

Project Objectives

The objectives of the project are to improve responses to natural disasters and reduce damage to residents by building a meteorological satellite, GEO-KOMPSAT-2A (hereafter "GK2A") receiving and analysis system in Cambodia.

Key Activities

- Investigating the meteorological status and relevant infrastructure for meteorological satellite utilization in Cambodia
- Selecting a service provider for the installation of GK2A receiving and analysis system
- Installing GK2A receiving and analysis system
- Supporting the operation of the system and data analysis through capacity building such as training programs and experts secondment

Implementation Status

The Korea Meteorological Administration (KMA), Korea Meteorological Institute (KMI) and the Ministry of Water Resources and Meteorology (MOWRAM) have held a MoU signing ceremony by videoconference on September 23, 2020. Online training for 13 high-level officials of MOWRAM was successfully conducted. Since a preliminary technical investigation was delayed due to COVID-19, KMI, instead, conducted a site investigation with a written checklist with help of DOM.

Expected Results

GK2A will provide nationwide meteorological information with high-resolution satellite images and high-speed data transfer. It produces 52 types of primary and secondary products such as cloud detection and sea surface temperature, which would be critically used in disaster risk management as well as decision making in many sectors.

- Installing system for GK2A data receiving and analysis in real time
- Improving expertise in satellite observation data utilization and system operation of MOWRAM staff
- Launching a pilot system for GK2A data utilization to support climate related sectors

▲ Online training for 13 high-level officials from October 12 to 16, 2020

"This project will improve the knowledge, skills and experience of technicians and forecasters to utilizing satellite imageries for forecasting and warning of natural disasters and to develop the capacity of weather observation instruments in Cambodia. Furthermore, the project will support to deal with natural disaster as well as climate change issues in Cambodia especially in rural areas."

- H.E. Pohn Sachak, Secretary of State, MOWRAM -

What is GEO-KOMPSAT-2A Receiving and Analysis System?

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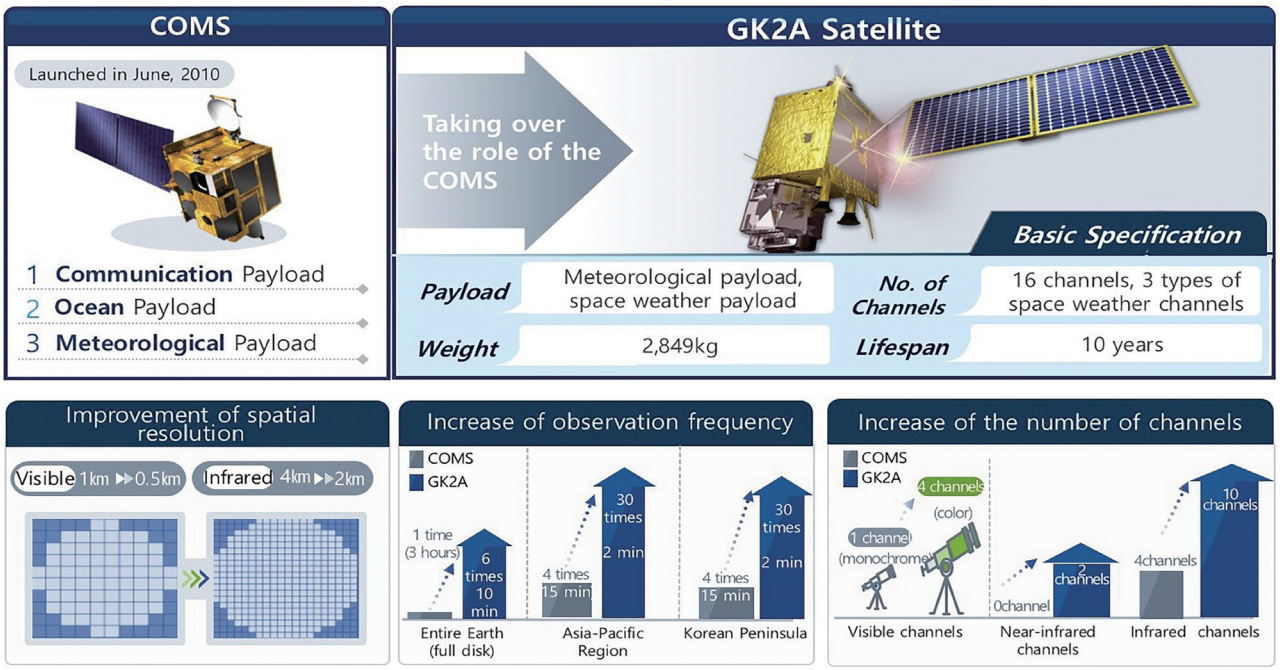

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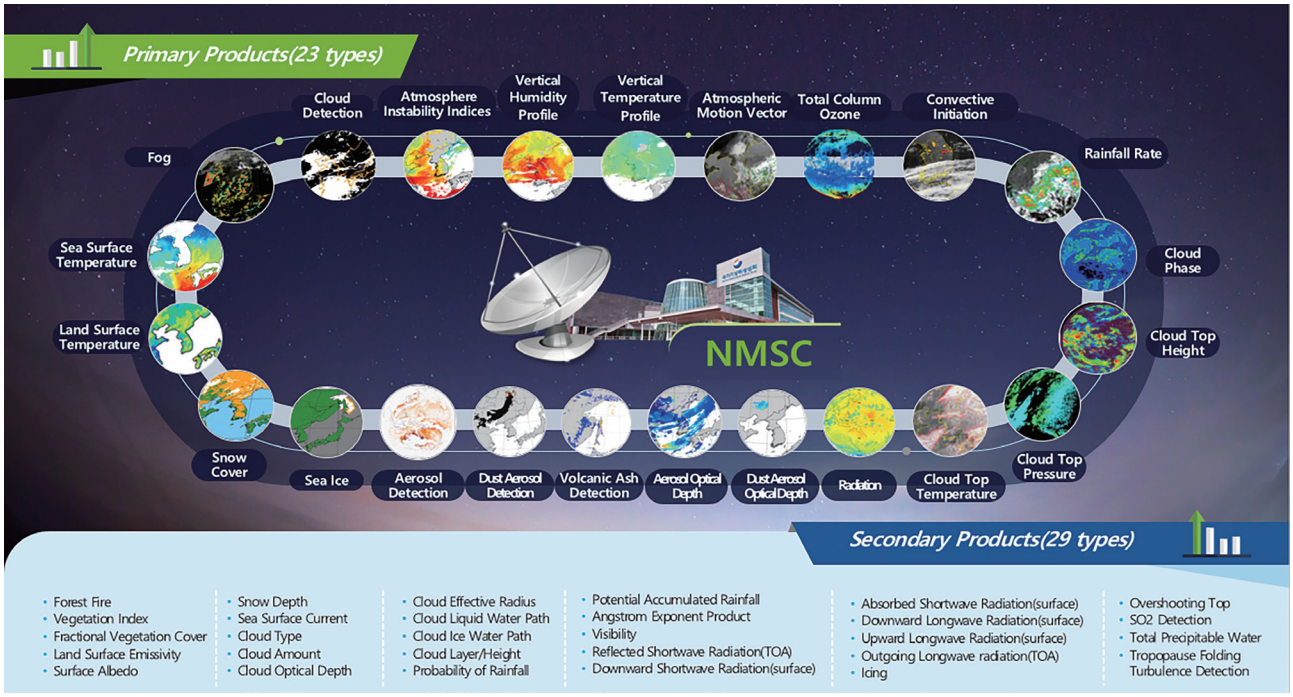
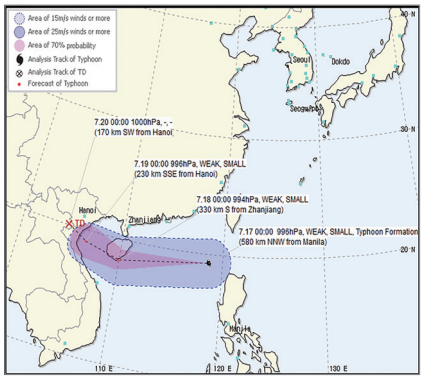
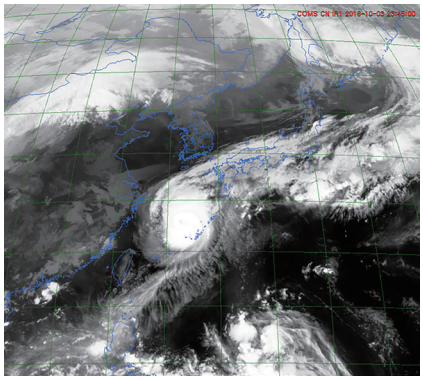


▲ 52 types of meteorological products

Enhanced Severe Weather Response utilizing an Integrated Typhoon Monitoring and Forecasting Platform in Lao PDR





Project Background

Floods, droughts, and typhoons are the dominant hazards in Lao PDR, posing serious challenges to water resources management and poverty alleviation in the country.

Lao PDR is still predominantly rural with most of the population being subsistence farmers. With risks being particular high for the poor and vulnerable, the floods and droughts cause loss of life, damage agricultural production, and threaten livelihoods. In the absence of a well-functioning monitoring and forecasting system, extreme weather events have been increasing over the years.

In particular, typhoons can cause severe flooding with intense rainfall and storm surges. Therefore, typhoon monitoring and forecasting is a priority for sustainable future development in Lao PDR.

Project Objectives

The objectives of the project are to enhance response capacity to typhoon hazards, reduce economic damage, and improve safety of people in Lao PDR by monitoring and forecasting typhoons with Typhoon Operation System (TOS) and GEO-KOMPSAT-2A (GK2A) receiving and analysis system. GK2A is Korea's second geostationary meteorological satellite launched in 2018.

Key Activities

- Investigating the meteorological status and relevant infrastructure for integrated typhoon monitoring and forecasting platform in Lao PDR
- Selecting a service provider for the installation of TOS and GK2A receiving and analysis system

Project Summary

Duration: 2020-2023 (4 years)

Overall Management Agency:
Korea Meteorological Administration (KMA)

Implementing Agency:
Korea Meteorological Institute (KMI)

Beneficiary Agency:
Department of Meteorology and Hydrology of Lao PDR (DMH), Ministry of Natural Resources and Environment (MONRE)

Funding Source: KMA

Target Location: Lao PDR (Vientiane)

Project Budget: 3.4 M USD

Contact:
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Korea Meteorological Administration
KMI Korea Meteorological Institute

- Installing TOS and GK2A receiving and analysis system
- Supporting the operation and management (O&M) of the systems and data analysis through capacity building such as training programs and experts secondment

Expected Results

Key weather-dependent and water-related sectors in Lao PDR will significantly benefit from the improved lead times and reliability of severe weather forecasts, and the issuing of warnings. The economic benefits will be significant considering the fact that Lao PDR's economy is based on agricultural and natural resources. Improved disaster warnings and increased opportunity for improved disaster risk management by this project will significantly enhance the security of property, livelihoods, and well-being of the population. The project is expected to produce the following outputs:

- Significant improvement in lead times for issuing severe and extreme weather warnings
- Significant improvement in the quality and reliability of forecasts and its impacts
- A greater respect and appreciation from government agencies, business sectors and the public for the services and role of DMH in Lao PDR
- Enhancement in regional collaboration and capacity as well as improvements in regional high impact weather forecasts
- Expansion and improvements in technology through greater use and application at the regional level
- Significantly reduced impacts and losses caused by natural disaster-driven weather events thanks to much quicker recovery time

Implementation Status

The Korea Meteorological Administration (KMA), the Korea Meteorological Institute (KMI) and the Department of Meteorology and Hydrology of Lao PDR (DMH) signed a MoU on August 19, 2020. KMA and KMI provided a capacity building program from August 17 to 21, 2020 for 10 policy makers of the Ministry of Natural Resources and Environment (MONRE) in Lao PDR to enhance their understanding of the project as well as capacity of meteorological services and disaster management. Due to COVID-19, the training was held online.

As a preliminary technical survey has been delayed due to the spread of COVID-19, online survey was conducted to identify the current status of meteorological infrastructure in DMH.

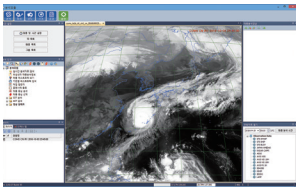
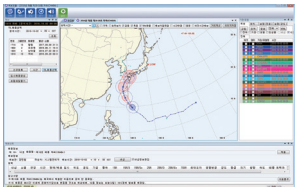
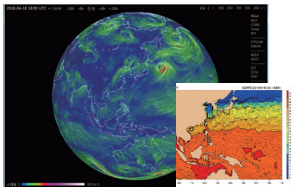
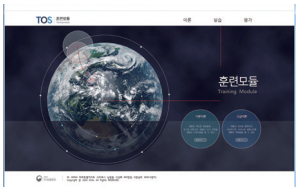
▲ Online training for 10 policy makers from August 17 to 21, 2020

"On average, 2-3 tropical cyclones a year affect LAO PDR directly and indirectly. The country needs modernized forecast system to monitor those cyclones. DMH hopes to enhance forecast accuracy through this project."

- Outhone Phetluangsy, the director-general of DMH -

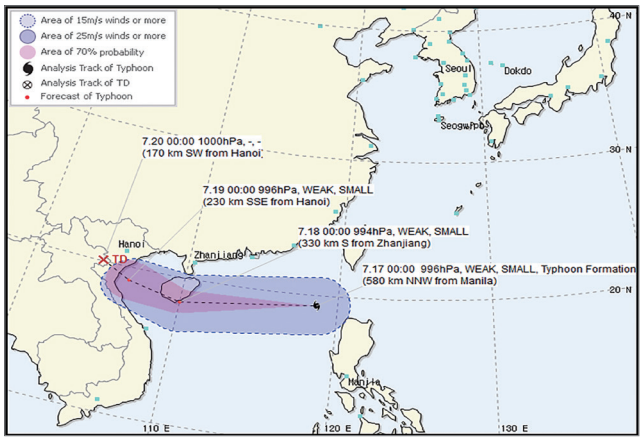
What is Typhoon Operation System (TOS)?

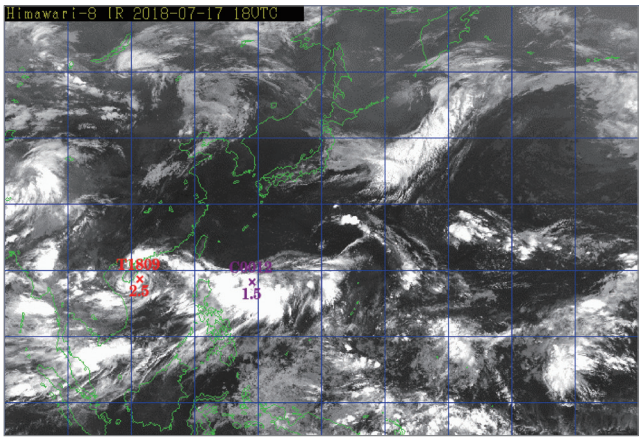
Typhoon Operation System (TOS) is an integrated platform for typhoon operation procedures including Analysis, Forecast, Statistics and Training.

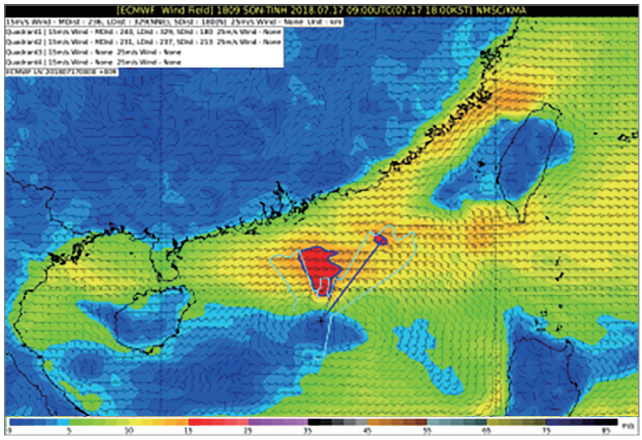
Analysis Module	Forecast Module	Statistics Module	Training Module
			
Aggregate observation data Real-time analysis → Forecast initial value	Refer to ensemble model predictions Produce curved forecast track	Administrate statistical information Monitor TC genesis, intensification & decay Auto alarming recordbreaking events	Theory-Case bilateral training Register training TC case at forecast operation

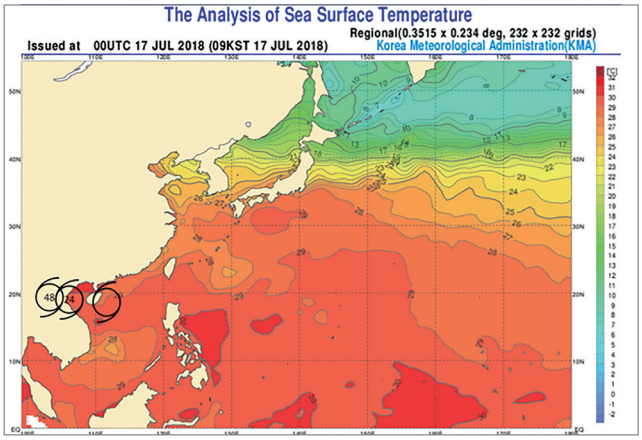
Tropical cyclone 'SON-TIHN' analysis by TOS

KMA analyzed tropical cyclone 'SON-THNH' by TOS. SON-THIN is tropical cyclone that devastated Vietnam and Lao PDR in July 2018.

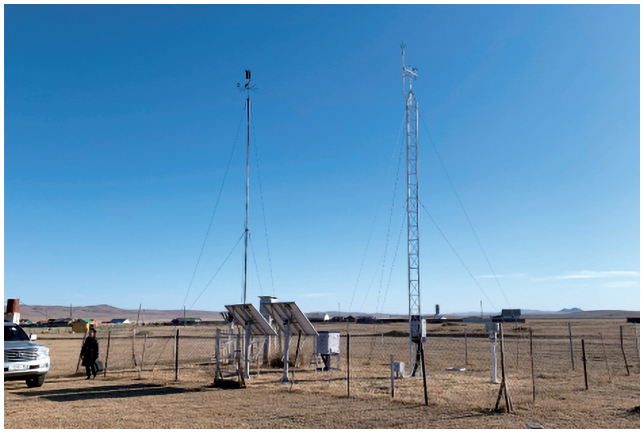








Installation of the Automated Weather Observation System in Mongolia



Project Background

Mongolia frequently experiences natural disasters such as dzud (heavy snow with severe cold conditions), strong wind, cold rain and drought. The zud in 2009 and 2010 killed nine million cattle and forced many herders to move to the city of Ulaanbaatar for a better life. To reduce effects from natural disasters, the Government of Mongolia needed to enhance its capacity for delivering accurate forecasts and weather information by modernizing its weather observation system.

In this context, the modernized national weather observation system was highly required in Mongolia to improve the accuracy of weather forecasts and warnings of natural disasters.

Project Objectives

The objective of this project is to improve response capacity to natural disasters and reduce damage to residents by building a real-time meteorological observation system in Mongolia.

Key Activities

- Conducting a field investigation on weather stations to obtain information about the meteorological status and related infrastructure conditions in Mongolia
- Installing 32 Automatic Weather Stations(AWSs) in Mongolia
- Installing power systems (solar cells and rechargeable batteries) at the weather stations
- Developing a data receiving system at the data center in Ulaanbaatar and a data analysis and display system to support weather forecasting
- Supporting the operation of the systems through training programs

Project Summary

Duration: 2017-2019 (3 years)

Management Agency:
Korea Meteorological Administration (KMA)

Implementing Agency:
Korea Meteorological Institute (KMI)

Beneficiary Agency:
National Agency for Meteorology and Environment Monitoring (NAMEM) of Mongolia

Funding Source: KMA

Target Location: 32 weather stations in Mongolia

Project Budget: 4 M USD

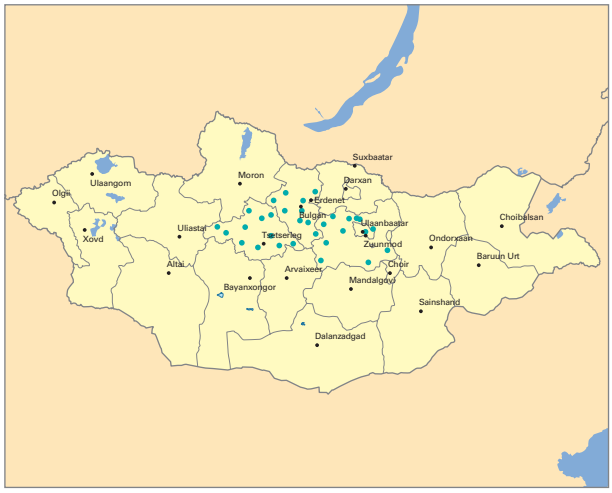
Contact:
KIM Dowan, Manager, camcam08@kmiti.or.kr

Korea Meteorological Administration

KMI Korea Meteorological Institute

Where We Work

The target sites of the project are six provinces and 32 weather stations in Mongolia.



- 6 provinces: Ulaanbaatar, Tuv, Bulgan, Khovsgol, Bayan-Olgii, Arkhangai
- 32 weather stations: Ulaanbaatar, Partizan, Ulziit, Terelj, Zaluuchuud, Batsumber, Bayanjargalan, Bayantsagaan, Bornuur, Delgerkhaan, Zaamar, Algalant, Undurshireet, Saikhan, Orkhon, Khishig-Undur, Khangal, Bayan-Agt, Burenkhangai, Bulgan, Bayannuur, Bugat, Jargalant, Battsengel, Undur-Ulaan, Khairkhan, Khangai, Khashaat, Khotont, Tsetseleg Post, Tsahir, Tsetserle g Station

Outputs

- Installed 32 AWSs and analysis, display and monitoring system
- Trained 35 staff from NAMEM through capacity building programs
- High quality observation data collected from AWS system

Outcomes

- Enhanced work efficiency through the AWS installation
- Enhanced weather forecasting and disaster preparedness and response capacity of NAMEM

▲ Invitational training for staff from NAMEM in April 2019

"Since the AWSs were installed at 32 weather stations in Mongolia through this project, they have been working very well without any problem. The project was very helpful for modernizing weather observation system and enhancing the accuracy of weather forecasts and warnings of natural disasters. I would like to express my gratitude to the KMA and KMI."

- Sevjid Enkhtuvshin, Director-General of NAMEM -

Automatic Weather Station (AWS)

AWS

Observe weather every minute with AWS sensors (temperature, humidity, air pressure, wind direction/ speed, precipitation, aspirator)

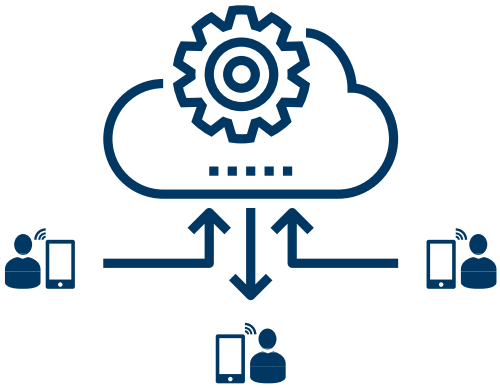
National Agency for Meteorology and Environment Monitoring (NAMEM) of Mongolia

NAMEM

Transfer weather information to NAMEM in Mongolia

Analysis / Display / Monitoring system

People in Mongolia



Provide weather forecast to public through Media, SNS etc.

Establishment of Master Plan for the Advancement of National Meteorological System in Myanmar

Project Background

Myanmar is one of the vulnerable countries to climate change and its adverse effects such as intense and sever natural disasters. In 2008, Cyclone Nargis hit the south-central region of Myanmar with a wind speed of 52.7 m/s. As many as 20,000 houses were destroyed in Yangon only. According to an official report, Nargis left 77,738 people dead and 55,917 went missing.

Increasing economic, social and environmental impacts from natural disasters have required Myanmar to enhance its capacity in natural disaster monitoring and forecasting.

As a national meteorological service provider, the Department of Meteorology and Hydrology (DMH) under the Ministry of Transport in Myanmar is responsible for providing weather and climate information for natural disaster monitoring and forecasting. In this regard, there was increasing demand for the DMH to establish a long and medium term plan for the national meteorological system improvement to provide weather and climate information in a more accurate and timely manner.

The Korea Meteorological Administration (KMA) has supported the DMH in establishing a master plan for the advancement of the national meteorological system with its own experience and knowledge obtained during the process of rapid modernization and development of the national meteorological system.

Project Objectives

The objective of this project is to establish a master plan to support the modernization of forecasting and warning system for natural disasters in Myanmar.

Project Summary

Duration: 2015-2016 (2 years)

Management Agency:
Korea Meteorological Administration (KMA)

Implementing Agency:
Korea Meteorological Institute (KMI)

Beneficiary Agency:
Department of Meteorology and Hydrology (DMH), Ministry of Transport

Funding Source: KMA

Project Budget: 0.6 M USD

Korea Meteorological Administration

KMI Korea Meteorological Institute

Key Activities

- Establishing a strategic plan for the advancement of national meteorological observation system
- Designing a comprehensive weather and climate forecasting system customized to Myanmar
- Developing a meteorological information delivery system for the government, public and private sector
- Establishing a plan for capacity building

Outputs

- The established master plan to support the modernization of forecasting and warning system for natural disasters in Myanmar
- Trained 10 meteorological professionals in Myanmar through capacity building

Outcomes

- Enhanced institutional capacity by having a national meteorological modernization plan
- Enhanced capacity of meteorological professionals in Myanmar for forecasting and natural disaster response

▲ Meeting with the Ambassador of Korea to Myanmar

▲ Field investigation at DMH Headquarters

▲ KMA/KMIPA-DMH-implementing agency meeting

▲ Presentation of project master plan 2016

"The ODA project by Korea will be an important opportunity for the meteorological development in Myanmar."

- Dr. Hrin Nei Thiam, Director General of DMH -

Modernization of Forecasting and Warning System for Natural Disaster in Myanmar

Project Background

The Department of Meteorology and Hydrology (DMH) of the Ministry of Transport of Myanmar has established a master plan for the advancement of the national meteorological system in Myanmar with the support of the Korea Meteorological Administration during the period of 2014-2016.

The master plan provides action plans for the national meteorological advancement by suggesting institutional and infrastructural improvement in the overall meteorological process, such as weather observation, communication, forecasting, applied meteorology, climate statistics and data management. Its road map consists of three phases depending on priority and urgency.

Establishing a real-time weather observation and analysis system by automatizing national observation networks was selected as a priority project from the master plan. It is because observation is the most basic and important step in providing accurate and reliable data for forecasts and analysis. In this regard, the DMH has decided to implement a pilot project titled "Modernization of Forecasting and Warning System for Natural Disaster in Myanmar" with the support of the Korea Meteorological Administration and the Korea Meteorological Institute.

Project Objectives

The objective of the project is to improve the response capacity to natural disasters and reduce damage to residents by building a real-time meteorological disaster monitoring system and providing early warnings in Myanmar.

Project Summary

Duration: 2017-2019 (3 years)

Management Agency:
Korea Meteorological Administration (KMA)

Implementing Agency:
Korea Meteorological Institute (KMI)

Beneficiary Agency:
Department of Meteorology and Hydrology (DMH)

Funding Source: KMA

Target Location: 40 weather stations in Myanmar

Project Budget: 4 M USD

Contact:
Dowan Kim, Manager, camcam08@kmiti.or.kr

Korea Meteorological Administration

KMI Korea Meteorological Institute

Key Activities

- Investigating the meteorological status and relevant infrastructure conditions in Myanmar
- Installing auxiliary power systems (solar cells and rechargeable batteries) at the observation sites
- Supporting the operation of the systems through training programs
- Developing a data analysis and display system to support weather forecasting
- Conducting field investigations on weather stations in Myanmar

Where We Work

The project sites of the project were 40 weather stations in Myanmar

- 40 weather stations: Myingyan, Nyaung Oo, Kyeik-Kha-me, Yay, Myeik, Shwesaryan, Hlaing-dat, Yezin, Hlaing-bwe, Myawady, Dagon University, Nay Pyi Taw Council, ELA Airport, Homalin, Katha, Tada-U, Kalaywa, Naung Cho, Ye U, Shwebo, Myinmu, Sagaing, Kyaukse, Pyinoolwin, Pakokku, Mogaung, Meikhtila, Nyaung Shwe, Minbu, Taungdwingyi, Yamethin, Pinlaung, Phyu, Theinzayet, Khayan, Thaton, Belin, Kawkayeik, Kyun Chan Kone, Launglone

Outputs

- Installed 40 ASOS equipment and systems
- Good quality observation data from ASOS equipment and systems
- Trained 22 meteorological professionals in Myanmar

Outcomes

- Improved response capacity to natural disasters and reduced damage by building a real-time meteorological disaster monitoring system
- Enhanced capacity of meteorological professionals in Myanmar for forecasting and natural disaster response

▲ AWS installation site in Homalin

"We hope that this project will be of great help to Myanmar, an agricultural country, and continue to cooperate in technological exchange and education so that the people of Myanmar can better understand and use the data produced by DMH."

- Daw Khin Cho Cho Shein, Deputy Director General of DMH -

Automatic Weather Station (AWS)

AWS

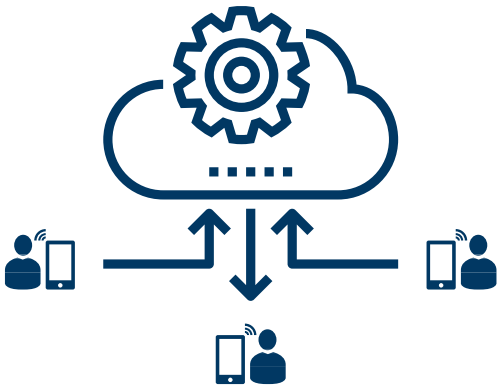
Observe weather every minute with AWS sensors (temperature, humidity, air pressure, wind direction/ speed, precipitation, aspirator)

Department of Meteorology and Hydrology (DMH)

Transfer weather information to DMH in Myanmar

Analysis / Display / Monitoring system

People in Myanmar



Provide weather forecast to public through Media, SNS etc.

Modernization of Forecasting and Warning System for Natural Disaster in Vietnam

Project Background

Vietnam is one of the most disaster-prone countries in Asia. The country often experiences various types of natural disasters such as tropical cyclones, floods, flash floods, heavy rains, drought, landslides, thunderstorms and whirlwind.

In particular, the northeast region of Viet Nam is affected by an average of 1-2 storms, 3-4 typhoons and tropical monsoon, directly and indirectly. Directly-affected storms usually occur in the period of July-September with a total frequency of 78%.

In general, hydro-meteorological forecasts in Vietnam have relied on traditional methods. The reliability of them were not high and the forecast range were narrow.

Warnings and forecasts of hazardous weather phenomena play a very important role in fighting and preventing the impacts from natural disasters, to reduce the loss of life and property of local people. Therefore, the investment in the project "Modernizing the Natural Disaster Warning and Forecasting System in the Northeast Meteorological Observatory" was essential.

Project Objectives

The objective of this project is to enhance hydro-meteorological monitoring and forecasting capacity of the National Hydro-Meteorological Service and the Northeast Meteorological Observatory especially in responding to and mitigating damage caused by natural disasters, by modernizing the hydro-meteorological sector.

Key Activities

- Investigating the meteorological status and the related infrastructure conditions of Viet Nam
- Conducting a field investigation on meteorological and hydrological station network in northeastern Vietnam

Project Summary

Duration: 2014-2016 (3 years)

Management Agency:
Korea Meteorological Administration (KMA)

Implementing Agency:
Korea Meteorological Institute (KMI)

Beneficiary Agency:
Vietnam Meteorological and Hydrological Administration (VNMHA)

Funding Source: KMA

Target Location:
25 meteorological stations and 25 hydrological stations in Northeastern regions of Vietnam

Project Budget: 4 M USD

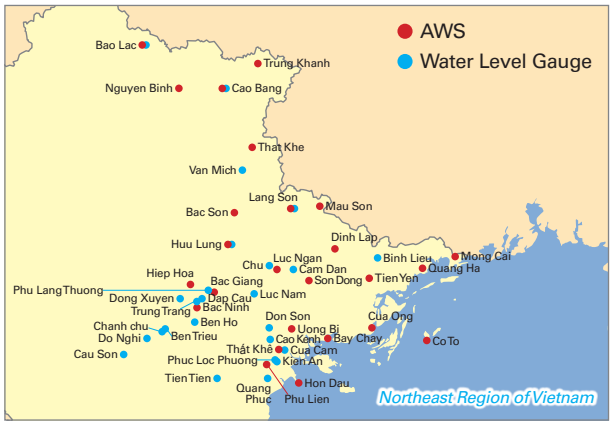
Contact:
SHIN Woongchul, Deputy Project Manager,
thishin@kmiti.or.kr

Korea Meteorological Administration

KMI Korea Meteorological Institute

- Installing AWSs at 25 meteorological stations in northeastern Vietnam
- Installing automatic water level observation equipment at 25 hydrological stations in Northeastern Vietnam
- Installing power systems (solar cells and rechargeable batteries) at the observation stations
- Developing forecasting analysis display system
- Supporting the operation of the systems through training programs

Where We Work



The project sites were 25 weather stations, 25 automated hydrological stations in Northeastern Vietnam.

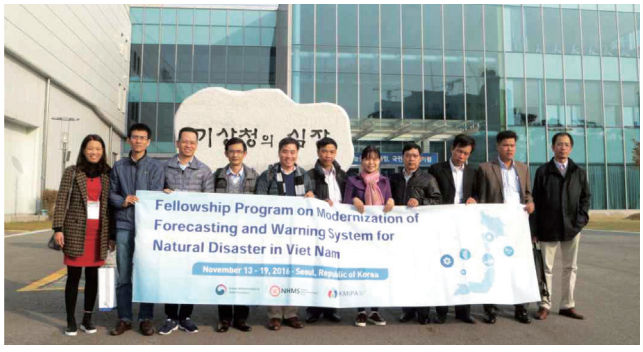
- 25 weather stations: Bac Ninh, Hiep Hoa, Bac Giang, Son Dong, Cua Ong, Bay Chay, Uong Bi, Hon Dau, Phu Lien, Mong Cai, Quang Ha, Tien Yen, Dinh Lap, Co To, Luc Ngan, Huu Lung, Mau Son, Bac Son, Bao Lac, Nguyen Binh, Cao Bang, Trung Khanh, That Khe, Lang Son, Thất Khê
- 25 hydrological stations: Cua Cam, Kien An, Binh Lieu, Cam Dan, Ben Trieu, Don Son, Lang Son, Huu Lung, Van Mich, Cao Bang, Bao Lac, Cau Son, Phuc Loc Phuong, Luc Nam, Ben Ho, Dap Cau, Phu Lang Thuong, Trung Trang, Tien Tien, Do Nghi, Dong Xuyen, Chu, Chanh chu, Cao Kenh, Quang Phuc

Outputs

- Installed AWSs at 25 weather stations, automatic water level observation equipment at 25 hydrological stations, monitoring system and flood forecasting system
- Trained 32 staff from NHMS through capacity building programs
- High quality observation data collected from AWS system

Outcomes

- Enhanced work efficiency through the installation of AWS
- Enhanced weather forecasting and disaster preparedness and response capacity of NHMS



▲ Invitational training

▲ Hand-over signing ceremony

"Two years ago, the northeastern region of Vietnam used to observe weather manually. However, after the installation of Automatic Weather Stations (AWS) and automatic water level observation equipment through this project, Vietnam is able to reduce damage from natural disasters. NHMS will work hard to operate the system effectively and ensure the sustainability of the project. I would like to express my gratitude to the KMA and KMI."

- Dinh Thai Hung, head of international cooperation division, VNMHA -

Automatic Weather Station (AWS)

AWS

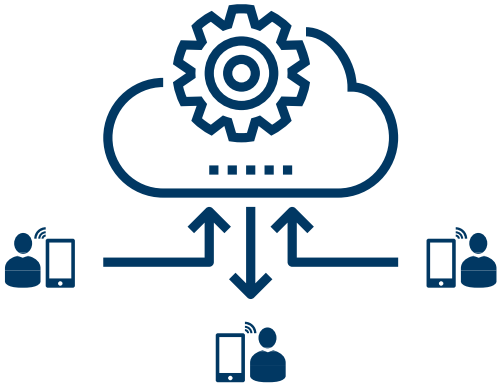
Observe weather every minute with AWS sensors (temperature, humidity, air pressure, wind direction/ speed, precipitation, aspirator)

Vietnam Meteorological and Hydrological Administration (VNMHA)

Transfer weather information to VNMHA in Vietnam

Analysis / Display / Monitoring system

People in Vietnam



Provide weather forecast to public through Media, SNS etc.