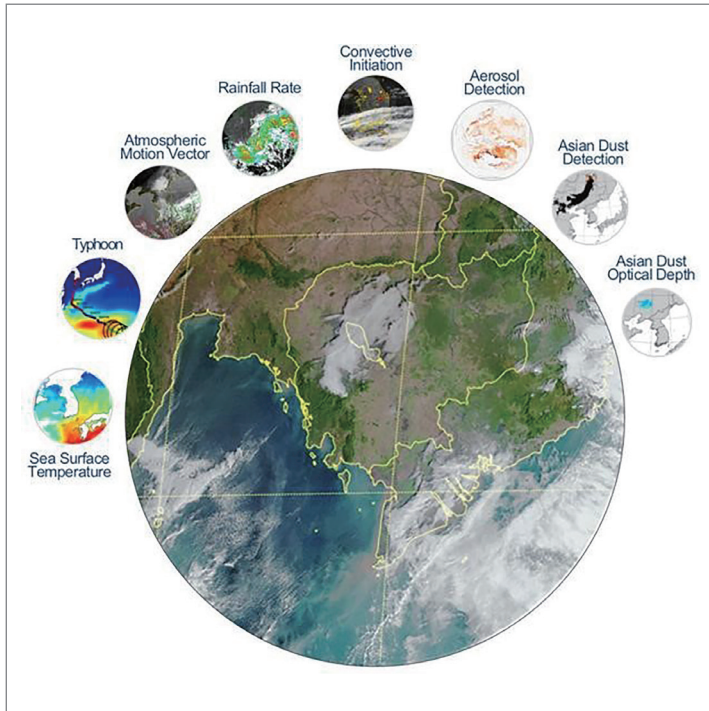


Support of the GEO-KOMPSAT-2A Receiving and Analysis System in Cambodia



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 draughts 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

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?

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.

COMS		GK2A Satellite	
Launched in June, 2010 		Taking over the role of the COMS 	
1 Communication Payload 2 Ocean Payload 3 Meteorological Payload		Basic Specification	
Payload	Meteorological payload, space weather payload	No. of Channels	16 channels, 3 types of space weather channels
Weight	2,849kg	Lifespan	10 years

Improvement of spatial resolution	Increase of observation frequency	Increase of the number of channels
Visible 1km → 0.5km Infrared 4km → 2km 		

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 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.

Primary Products(23 types)									
Cloud Detection	Atmosphere Instability Indices	Vertical Humidity Profile	Vertical Temperature Profile	Atmospheric Motion Vector	Total Column Ozone	Convective Initiation	Rainfall Rate	Cloud Phase	Cloud Top Height
Fog	Sea Surface Temperature	Land Surface Temperature	Snow Cover	Sea Ice	Aerosol Detection	Dust Aerosol Detection	Volcanic Ash Detection	Aerosol Optical Depth	Dust Aerosol Optical Depth
Radiation	Cloud Top Temperature	Cloud Top Pressure	Secondary Products(29 types)						

- Forest Fire
- Vegetation Index
- Fractional Vegetation Cover
- Land Surface Emissivity
- Surface Albedo

- Snow Depth
- Sea Surface Current
- Cloud Type
- Cloud Amount
- Cloud Optical Depth

- Cloud Effective Radius
- Cloud Liquid Water Path
- Cloud Ice Water Path
- Cloud Layer/Height
- Probability of Rainfall

- Potential Accumulated Rainfall
- Angstrom Exponent Product
- Visibility
- Reflected Shortwave Radiation(TOA)
- Downward Shortwave Radiation(surface)

- Absorbed Shortwave Radiation(surface)
- Downward Longwave Radiation(surface)
- Upward Longwave Radiation(surface)
- Outgoing Longwave radiation(TOA)
- Icing

- Overshooting Top
- SO2 Detection
- Total Precipitable Water
- Tropopause Folding
- Turbulence Detection

▲ 52 types of meteorological products