Current Activities and Future Plans of NMSC/KMA

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Introduction of NMSC

Fig. 1. The front view of NMSC building constructed at the Gwanghyewon-myeon in 2009.

❖ Organization & Personnel

- Composed of 3 divisions and 1 team (Satellite Planning division, Satellite Operation division, Satellite Analysis division, Next-generation Satellite Developing team)
- More than 120 staffs and researchers are working

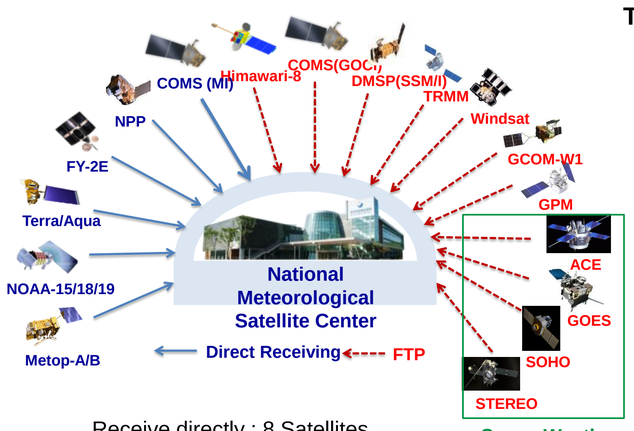
❖ Mission

- To support KMA mission : prompt, more accurate and valuable meteorological services for public safety and climate adaption

☞ **To ensure the continuity of the satellite observations that are vital inputs to the weather, climate and environmental services for the benefits of the citizens and the economy**

❖ Goals

- To operate timely COMS, to gather reliable satellite data on weather and climate and to deliver them to other agencies and countries
- To develop a broad range of products from their observations based on innovative algorithms for timely warning and support public and private decision making for our social and economic wellbeing as a science-based services agency.



Receive directly : 8 Satellites
Land-Line : 12 Satellites

Table 1. Geo and Leo satellites received in NMSC.

Method	Sat. Type	Satellite and Sensors
Direct Readout (8)	Geo	COMS(MI), FY-2E(S-VISSR)
	Leo	NOAA-16,18,19 (AVHRR, MHS, AMSU) Terra/Aqua (MODIS) Metop (AVHRR, IASI) NPP(ATMS, CrIS, VIIRS)
FTP via Landline (12)	Geo	COMS(GOCI), Himawari-8(AHI)
	Leo	DMSP (SSMI/S), CORIOLIS (Windsat) Metop (ASCAT), TRMM(TMI), GPM, GCOM-W1, etc.

Current satellite & Products

❖ **NMSC/KMA has begun official service of the COMS MI data since April 1st, 2011. Since that time, NMSC has been under the normal operation for 24 hours a day pauselessly.**

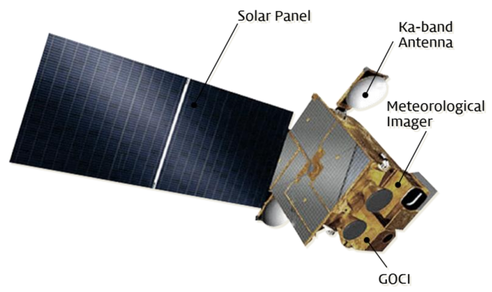
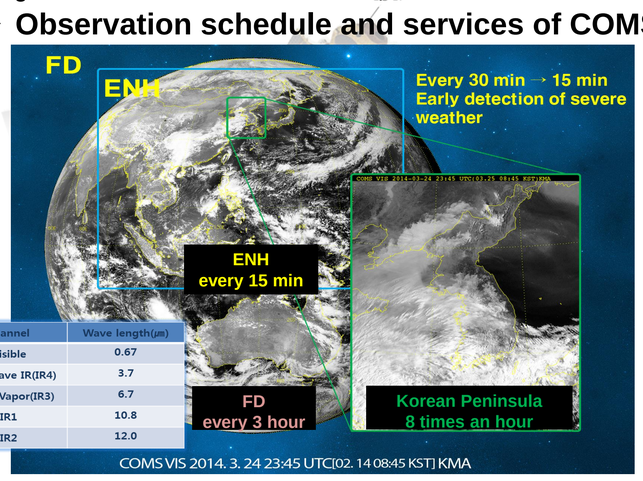


Fig. 2. COMS satellite launched on 27, June 2010.

❖ COMS (Communication, Ocean, & Meteorological Satellite)

- Payloads
  - MI(5-channels VIS/IR Meteorological Imager)
  - GOCI(Geostationary Ocean Color Imager)
- Launch : 27/06/2010
- Orbit : 128.2° E
- Lifetime estimated : 2011 - 2018

❖ Observation schedule and services of COMS



channel	Wave length(㎛)
Visible	0.67
Shortwave IR(IR4)	3.7
Water Vapor(IR3)	6.7
IR1	10.8
IR2	12.0

➢ COMS MI data Service via Satellite

- Broadcast to M/SDUSs(Medium/Small-scale Data Utilization Stations)
- Format : H/LRIT(High/Low Rate Information Transmission)

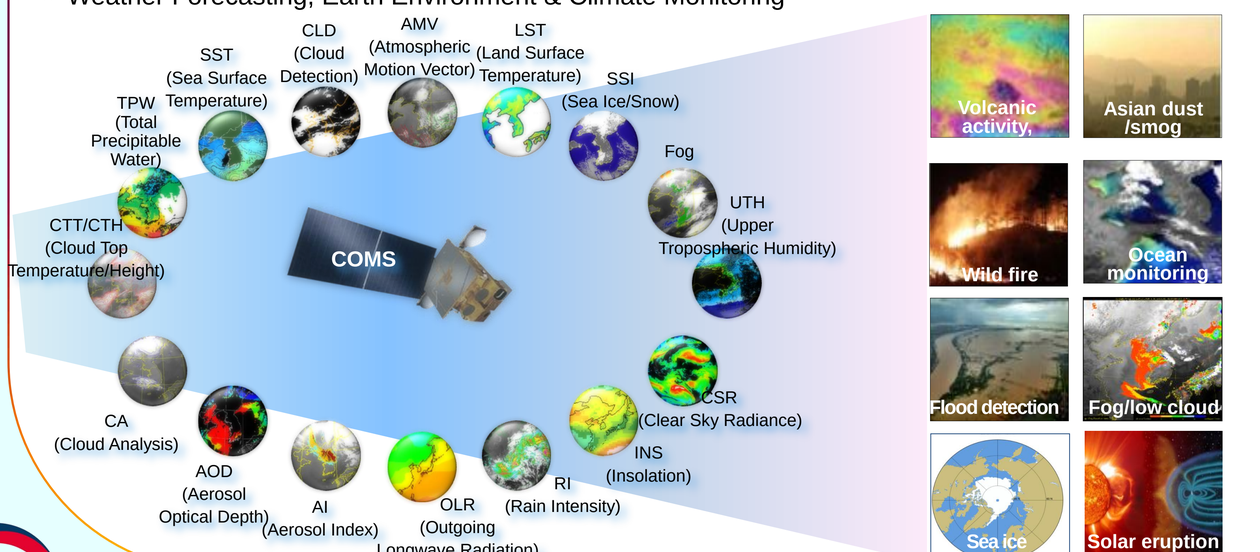
➢ Service via Landline

- **[Website]** KMA/NMSC Homepage, DCPC-NMSC (open to registered users)
- **[FTP]** Access to NMSC FTP server (open to organization with MOU)

http://dcpc.nmsc.kma.go.kr

❖ 16 baseline products of COMS are developed for 7years(2003~2010) and operated since 2011

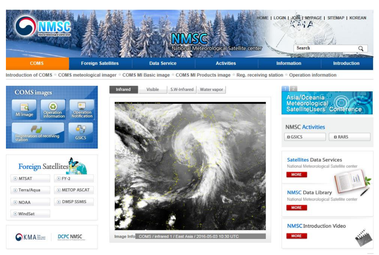
- Weather Forecasting, Earth Environment & Climate Monitoring



Activities as CoE Korea

❖ Background and Primary function

- NMSC/KMA was approved as a Centre of Excellence (CoE) in satellite meteorology and its supporting Satellite Operator and Agency in 2009 and has been a member of WMO/CGMS VLab group, in accordance with the successful launch and operation of COMS.
- NMSC is mainly involved in the continuing education and training to the forecasters in KMA to improve weather forecasting and environmental services by using the various satellite data.
- NMSC gives short-term lectures related to effective application of Geo and Leo satellite products to support domestic users relevant to climate, hydrology, aviation, marine, land etc.
- NMSC has also carried out international training course on " the Analysis of COMS Data" nearly every year since 2007 by inviting foreign users in the Asia-Pacific regions.



http://nmsc.kma.go.kr(English)

http://cyber.nmsc.kma.go.kr(Korean)

Daily weather briefing using satellite data provided as animation with script (Korean)

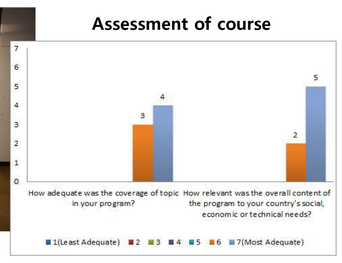
❖ Main Achievement in 2015

- **Organizing 2 training courses as a part of project "Establishment of COMS Data Analysis System in the Philippines" for managers and forecasters on the operation and utilization of COMS data receiving and processing system as well as its facilities of ground system.**
  - management course : 8 managers, 1. - 7. March (7days), NMSC
  - forecasters course : 10 managers, 31. May-13. June (14days), NMSC
- **Supporting 2 international online events and 1 offline training course.**
  - Science week from 27 to 30 in July hosted by CoE Australia and Event week from 16 to 20 in Nov. by WMO-CGMS VLab by giving lectures related to development of GK-2A and its application.
  - Contribute to the training course of 6th Asia-Oceania Meteorological Users' Conference(AOMSUC) held in Tokyo from 9 to 13, Nov. by sharing the application method of RGB imagery using COMS data to the Korean Peninsula

Discussion with head of NMSC

Visiting the KMA H.Q

Sharing Korean culture



Assessment of course

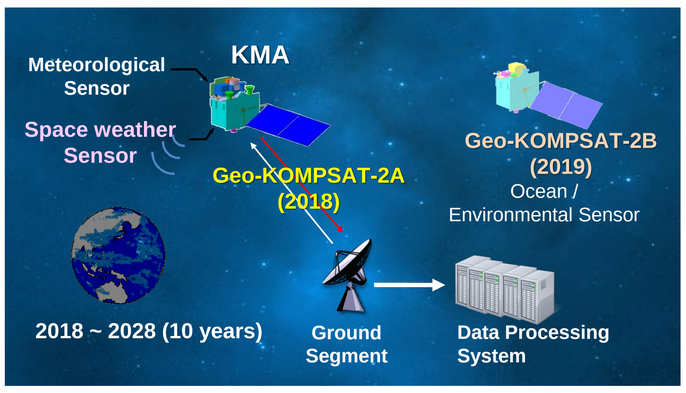
❖ Future Plans in 2016

- **Run International training course on "Analysis of COMS and GEO-KOMPSAT 2A data" from 2016 to 2018 through the support of KOICA (Korea International Cooperation Agency).**
  - 1st stage will be held in NMSC from 10. Oct. to 2. Nov (4weeks) for 18 forecasters or meteorologists in the developing countries over the Asia-Oceania regions, which will be jointly hosted by 2days training course of 7th AOMSUC from 21 to 28, Oct. in Incheon, Korea.
  - **Jointly hosting RFG meeting 2 times a year with CoE Australia in this year and sharing analyzing skills, training contents and exchange trainers based on the cooperation between KMA and BOM.**

Future satellite program

❖ Geo-KOMPSAT-2 Program (2018~)

- **GK-2A for the next generation Meteorological Imaging and Space Weather monitoring**
  - AMI will have 16 chs similar to AHI/Himawari-8/9 and ABI/GOES-R, and observes full disk every 10 min. with 0.5~2km spatial resolution.
  - NMSC is developing AMI data processing system to produce 52 products and their application techniques.



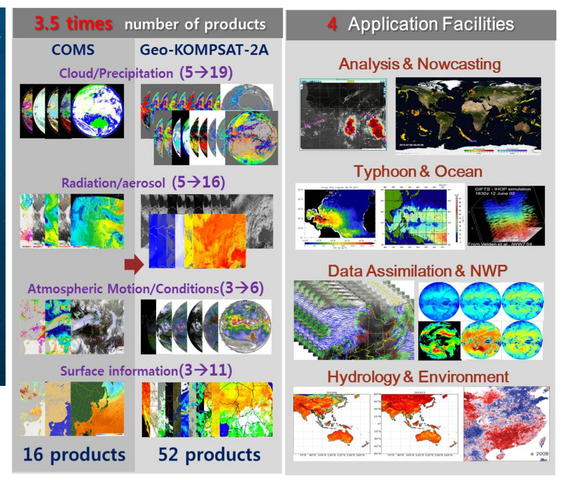


Fig. 3. Schematic diagram for development of Geo-KOMPSAT-2

- **GK-2B for the Geostationary Ocean Color and Atmospheric Trace Gas monitoring**
  - GOCI-II with 12 spectral band s of 250m resolution will observe regional area 10 times and full disk 1times a day.
  - GEMS is Geostationary Environmental Monitoring Spectrometer for atmospheric composition measurement such as O3, NO2, SO2, HCHO, Aerosols in the Asia-Pacific region (8 times a day).

❖ Data Service Plan of Geo-KOMPSAT-2A

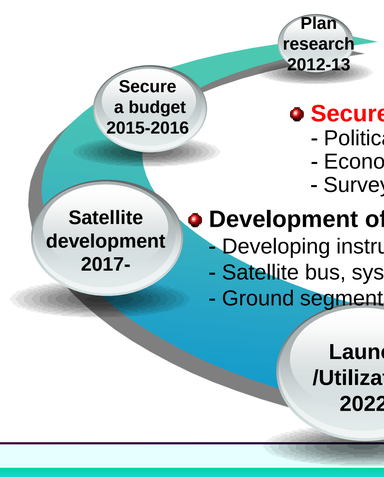
[Via GK-2A broadcast]

- **Broadcast all 16 channels data (UHRIT)** of meteorological observations
- Maintain **L/HRIT broadcast** corresponding to COMS five channels
- GOCI-II products might be broadcast via HRIT (TBC)

[Via Landline]

- Web-based service system will be renovated for GK-2A data
- GK-2A data also will be available in DCPC-NMSC (http://dcpc.nmsc.kma.go.kr)

❖ LEO satellite development Plans (2022~)



- **Generic technology research (2012~2013)**
  - LEO meteorological satellite instruments technology research
  - LEO meteorological satellite development mid-long term roadmap
  - International technology development cooperation research
- **Secure a budget for LEO satellite(2015~2016)**
  - Political and technical validity
  - Economical validity and analysis of benefits
  - Surveying industrial ripple effects and proposing the way of improving manpower
- **Development of the LEO meteorological satellite (2017~)**
  - Developing instruments of the LEO satellite
  - Satellite bus, system integration and developing testing technique
  - Ground segments development and secure a image quality technique
- **Application of data Utilization plan(2022~)**
  - Apply to weather, climate, earthquake, volcano, disaster, etc.
  - Data utilization research for global water/climate, etc.
  - Supply standard input data of numerical model