## GEO New Mission and Synergy

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## **GeoKompsat-2 Development**





## **GOCI-II**



- GOCI-II is focused on the coastal and global ocean environment monitoring with better spatial resolution and spectral performance for the succession and expansion of the mission of GOCI.
- GOCI-II project started the development in 2012, and will be launched in 2018.
- The user requirements of GOCI-II will have higher spatial resolution, 300m×300m, and 13 spectral bands to fulfill GOCI's user requests, which could not be implemented on GOCI for technical reasons.
- GOCI-II will have a new capability, supporting user-definable observation requests such as clear sky area without clouds and special-event areas, etc. This will enable higher applicability of GOCI-II products. GOCI-II will perform observations 8 times daily, the same as GOCI's.
  - The main difference between GOCI-II and GOCI is the global-monitoring capability, which will meet the necessity of the monitoring and research on the long-term climate change. Daily global observation once is planned for GOCI-II.

Items	GOCI Specs	GOCI-II Specs	
Increased band number	8 bands	13 bands	
Improved spatial resolution	500m	300m	
More observations	8 times/day	10 times/day	
Pointable & Full Disk coverage	Local Area	Local Area + Full Disk	



## GOCI-II



#### Spectral Bands Requirements (TBD)

- 13 Bands (GOCI : 8 Bands)
- Phytoplankton type verification, Enhanced Atmospheric Correction Accuracy

Band	Band Center	Bandwidt h	Nominal Radiance	Maximum Ocean Radiance	Saturation Radiance	Maximum Cloud Radiance	SNR @ Nominal Radiance
1	380 nm	20 nm	93	139.5	143.1	634.4	998
2	412 nm	20 nm	100	150	152	601.6	1050
3	443 nm	20 nm	92.5	145.8	148	679.1	1145
4	490 nm	20 nm	72.2	115.5	116	682.1	1228
5	510 nm	20 nm	55.3	85.2	122	665.3	1124
6	555 nm	20 nm	55.3	85.2	87	649.7	1124
7	620 nm	20 nm	40.3	67.8	70.5	616.5	1080
8	660 nm	20 nm	32	58.3	61	589	1060
9	680 nm	10 nm	27.1	46.2	47	549.3	914
10	709 nm	10 nm	27.7	50.6	51.5	450	914
11	745 nm	20 nm	17.7	33	33	429.8	903
12	865 nm	40 nm	12	23.4	24	343.8	788
13	PAN	515 nm	-	-	-	-	-

#### User Requirements for GOCI-II Direct Broadcasting

- Data Rate : 23Mbps
- Service Coverage : ~ Full Disk Area
- Data Format : (TBD)
- Receiving Antenna on Ground Station : < 6.5m (Diameter, TBD)



### **GEO-Kompsat2** Configuration





## GEOKompsat-2 Payloads Requirements KO52



## **Necessity & Objectives**





## Integrated Research Areas of three payloads



#### **Ocean Application**

#### **Original application**

- Long-term climate change, carbon emissions
- Environmental monitoring for coastal/marine/land
- Real-time marine environmental monitoring (disasters reduction)
- Fishing cost saving for increased production

#### MI-II

- Fisheries using SST
- Marine numerical weather prediction
- Atmospheric correction precision
- Marine meteorological disasters surveillance(hurricanes, torrential rain)



GEMS

- DOM distribution research using UV data
- Improving atmospheric correction accuracy using vertical aerosol data
- Marine environment analysis accuracy improvement removal of NO2

#### In case of Ocean Application,

Ocean product accuracy will be enhanced with integration of other satellite.

## Integrated Research Areas of three payloads



#### Meteorology Application

#### **Original application**

- Real-time weather image production (production support)
- Short-period meteorological monitoring changes
- Numerical weather prediction model
- Climate/Environmental Change

#### **GOCI-II**

- Yellow dust information
- Surface information (vegetation)
- Sea surface analysis (SST, sea ice)
- Analysis of cloud data
- Forest fire surveillance

Meteorology Imager GEMS

Yellow dust analysis

- Aerosol information analysis
- Climate change and cloud research

In case of Meteorology Application,

Real-time prediction paradigm will be changed with integration of other satellite.

## Integrated Research Areas of three payloads



#### **Environmental Application**

#### **Original application**

- Atmospheric environment and climate change, gas monitoring
- Quantitative monitoring aerosol in Korean Peninsula & East Asia
- Pollutants of long distance moving surveillance
- Air quality model evaluation and predication

#### MI-II

- Atmospheric Environment Monitoring
- Aerosol (Optical depth) day & night quantitative monitoring

Geostationary Environmenta Monitoring Spectrometer **GOCI-II** 

Aerosol (Optical depth) day & night quantitative monitoring

In case of Environmental Application, Various practical applications will be suggested with integration of other satellite.

## Summary



**GEO new mission & Synergy** 



## A Constellation of Geostationary Ocean Color Satellites



Fusion algorithm can be applied to GEO constellations

# Thankyou

Structure of Chlorophyll Distribution in the North-East Asian Seas

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