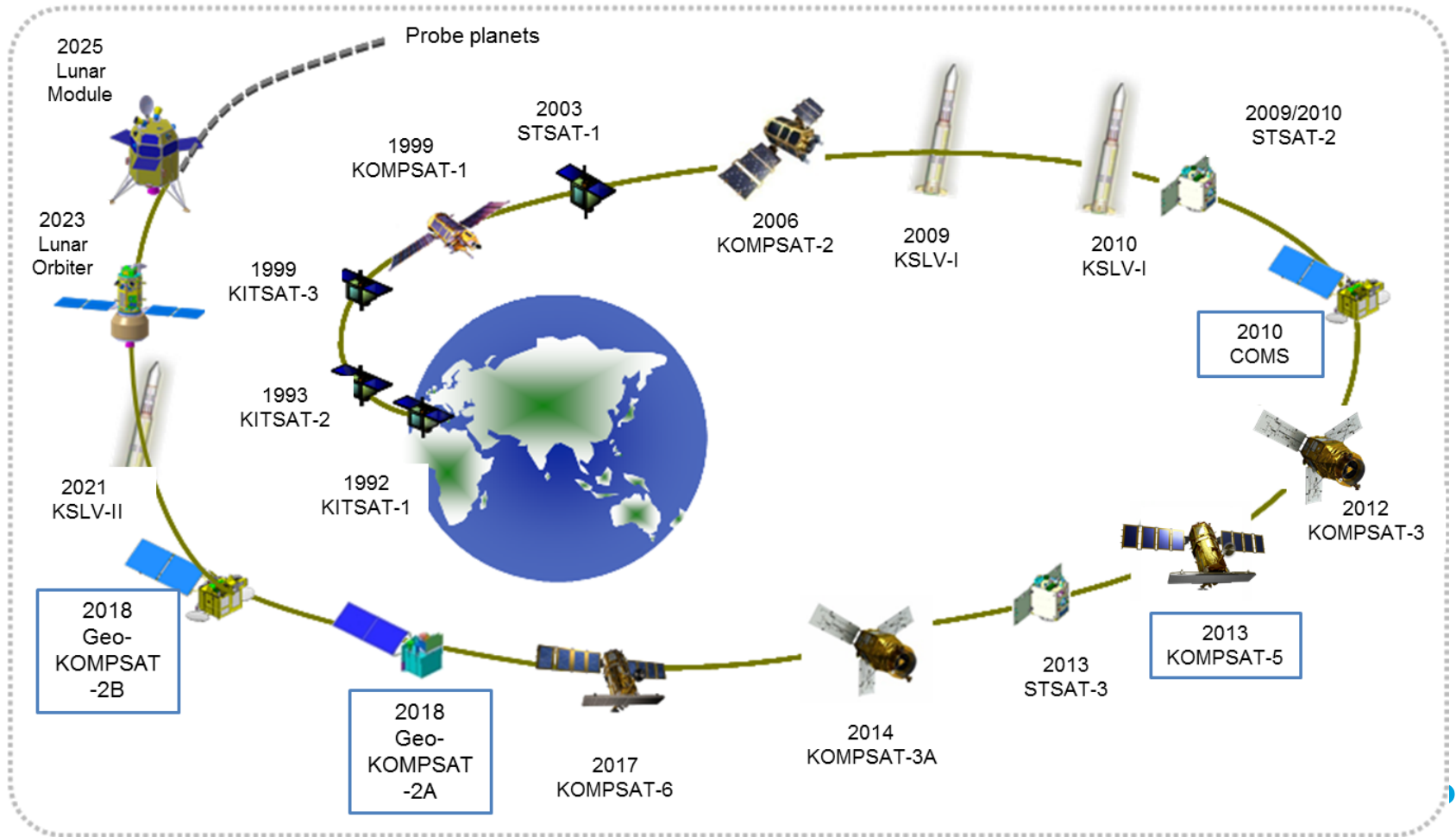


Status report on the current and future satellite systems by KMA

Presented to CGMS-42 plenary session, agenda item [D.1]

Development of the GEO-KOMPSAT-2

National-Space-Development-Plan



CURRENT GEO SATELLITES

➤ COMS (Communication, Ocean, and Meteorological Satellite)

- Payloads :
 - MI(5-channel VIS/IR Meteorological Imager)
 - GOCI(Geostationary Ocean Color Imager)
- Launch : 26/06/2010
- Orbit : 128.2°E
- Lifetime estimated : 2011 - 2018
- Operator : KMA, KIOST



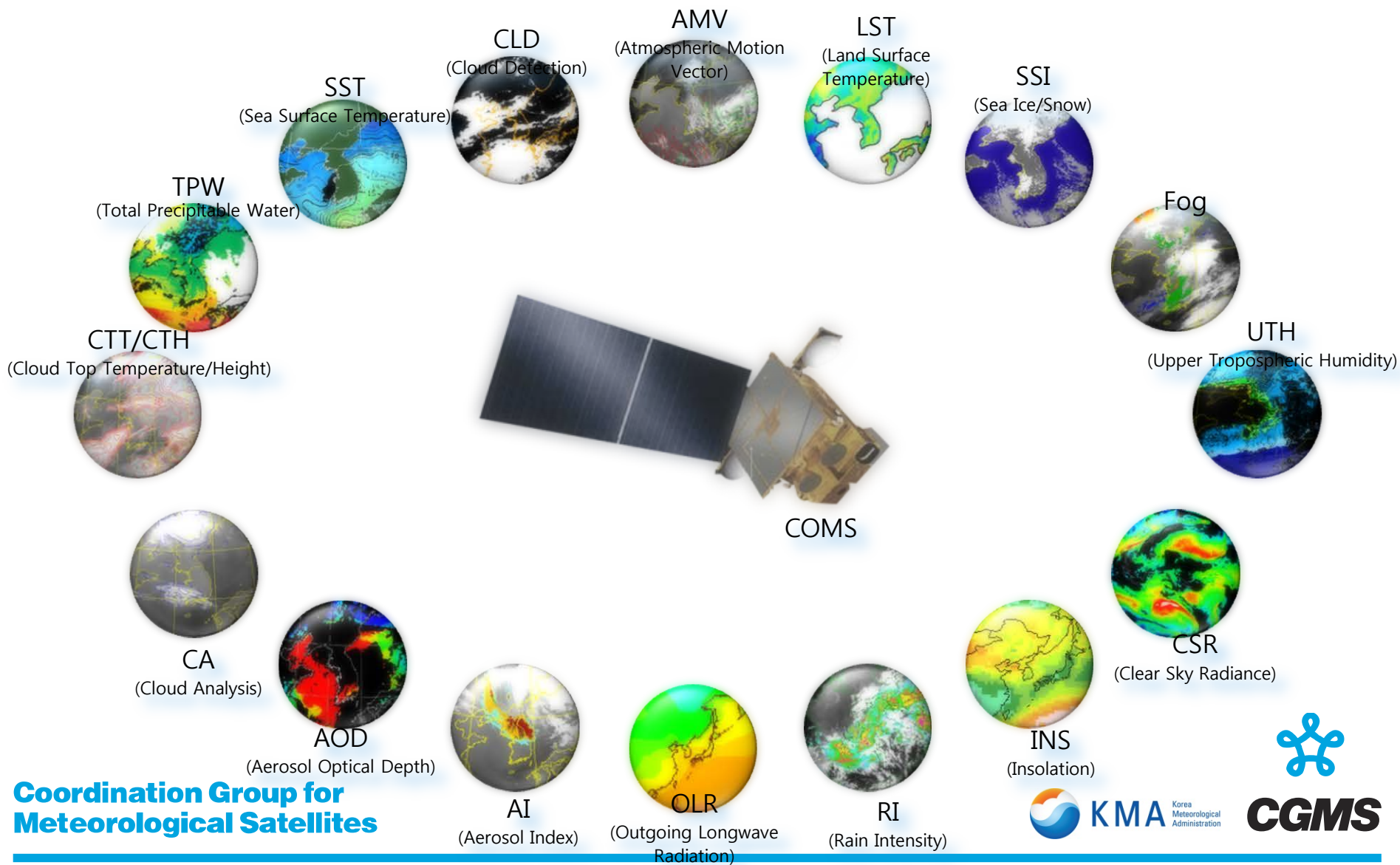
➤ COMS MI data Service via Satellite

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

➤ Service via Landline

- Internal users : Intranet, Comprehensive WIS*, Disaster Prevention WIS*
- KMA/NMSC Homepage, ftp

16 baseline products from Meteorological Imager



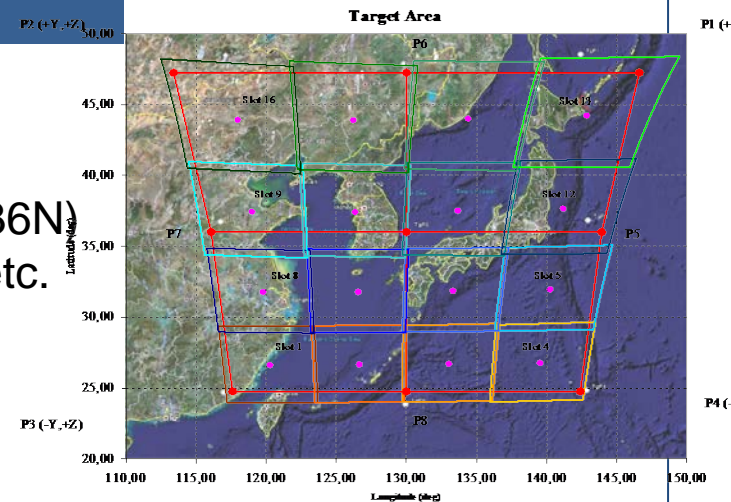
CURRENT GEO SATELLITES

➤ Geostationary Ocean Color Imager (GOCI)

- GSD(Ground Sampling Distance) : 500m × 500m
- Target Area : 2,500km × 2,500km(Center : 130E 36N)
- Included Nations : Korea, China, Japan, Russia, etc.
- Temporal Resolution : 1hour (8 times at 1 day)

➤ GOCI data distribution

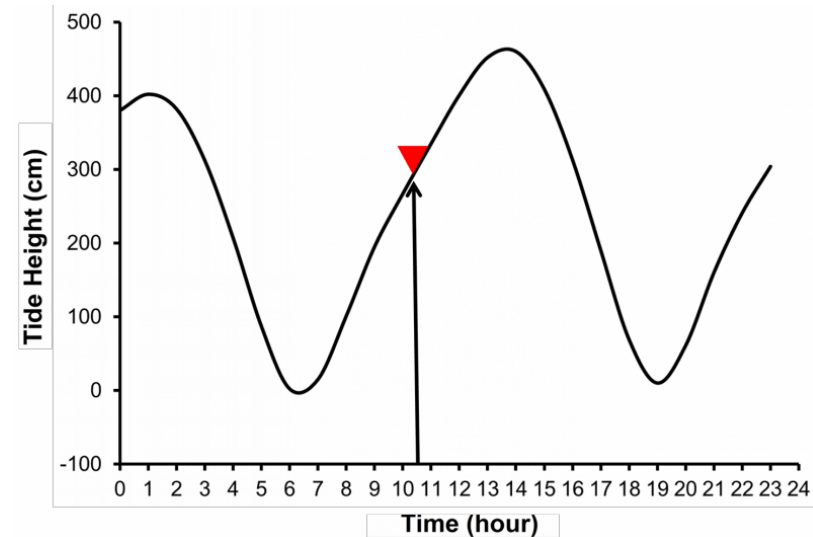
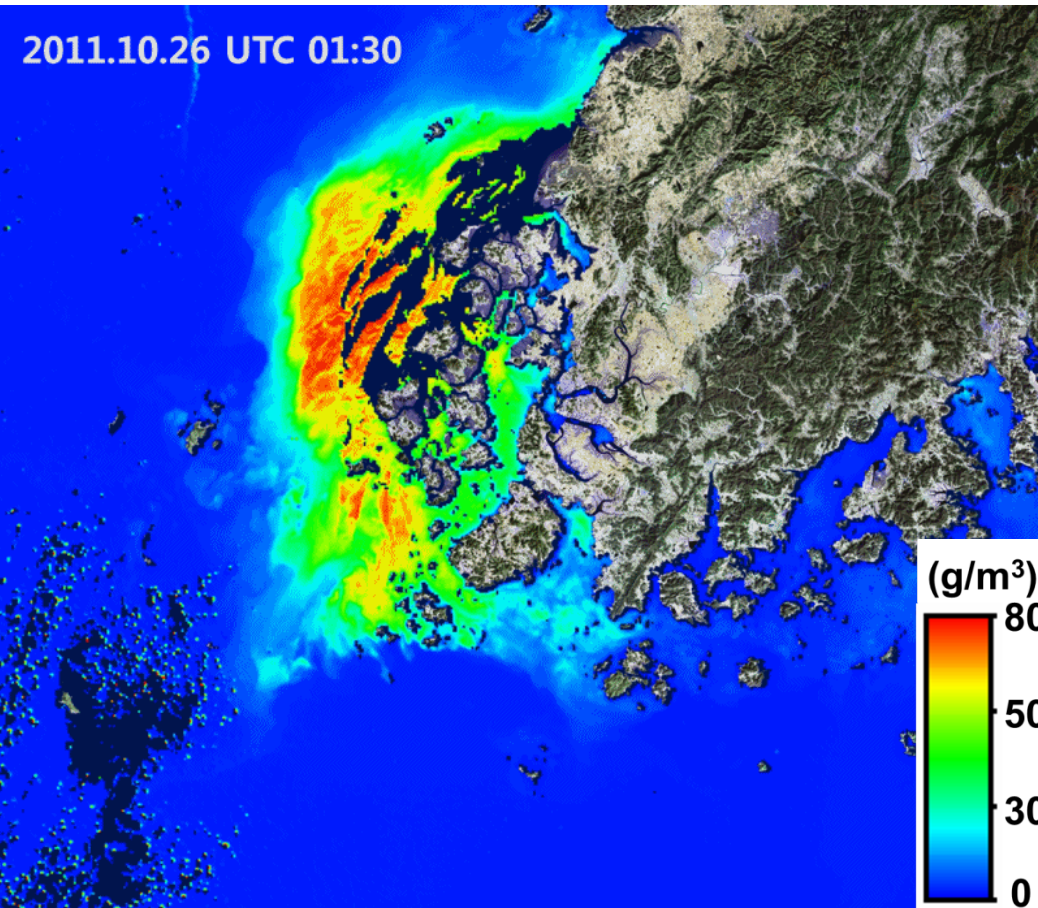
- Scientific user :
<http://kosc.kordi.re.kr/processingsoftware/gdps/onlinehelp.kosc>
- Domestic gov./inst. User : ftp
- Public user : portal site
 - <http://map.naver.com> (in korean)
 - Service : L1B RGB, CHL, CDOM, SS Jpeg image(only)
- International scientific user : redistribution site
 - Approved by GOCI operation committee(Jan. 2013)



Usefulness of GOCI

- ❖ GOCI has an advantage over other ocean color satellite imagers in that it can obtain data every hour during daytime, allowing ocean monitoring in near real time
- *Temporal variability in oceanic environment & disaster around Korean Peninsula*

2011.10.26 UTC 01:30



CURRENT LEO SATELLITES

➤ KOMPSAT-5

- Launch : **August 22nd 2013**

Payload	Characteristics
AOPOD	<ul style="list-style-type: none">• Dual frequency GPS receiver<ul style="list-style-type: none">– IGOR : Integrated GPS Occultation Receiver• LRRRA(Laser Retro Reflector Array)

➤ Sun-Synchronous Dawn-Dusk Orbit

- 550 km mean altitude and 97.6 deg inclination
- 06:00 AM MLTAN (Mean Local Time of Ascending Node)
- 28 days repeat ground track

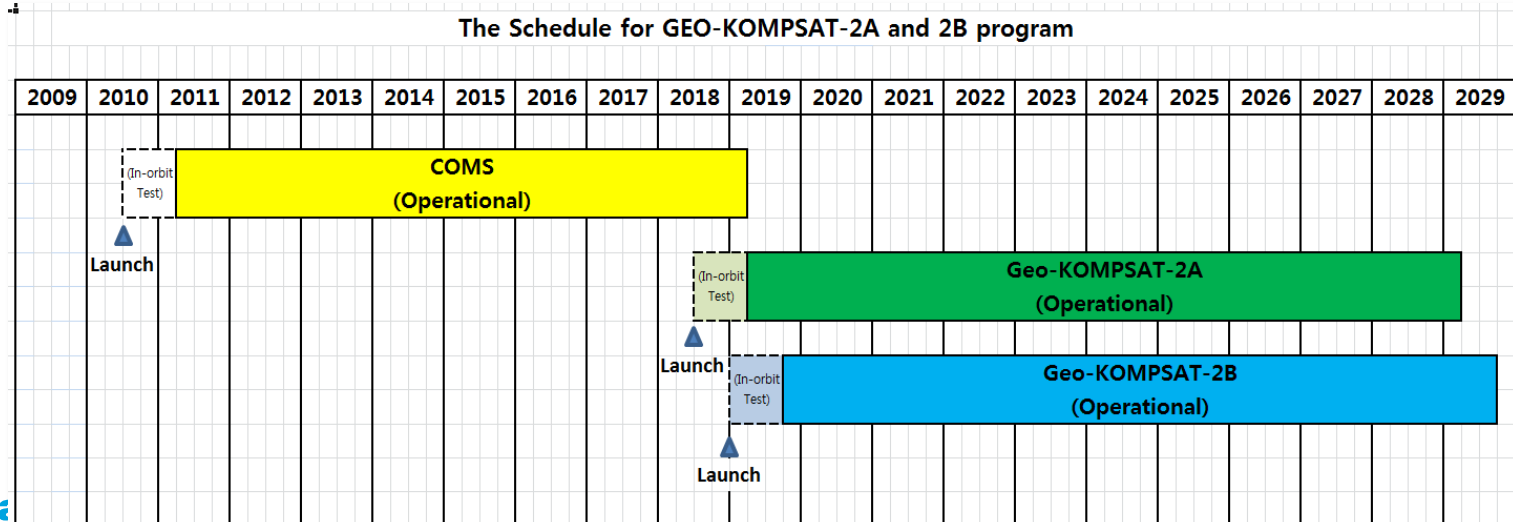
➤ Ground Segment

- KARI site in Daejeon

Future satellite system

Sector	Satellite in Orbit	Operator	Location	Launch date	Environmental payload and status
West Pacific	COMS	KMA, KIOST	128.2°E	26/06/2010	5-channel VIS/IR Meteorological Imager (MI), Geost. Ocean Colour Imager (GOCI) Direct Broadcast via HRIT/LRIT
	GEO-KOMPSAT-2A	KMA	128.2°E	05/2018	Advanced Meteorological Imager (AMI), Space Environmental monitoring payload Direct broadcast via HRIT/LRIT
	GEO-KOMPSAT-2B	MOF(Ministry of Ocean and Fisheries), ME(Ministry of Environment)	128.0°E	12/2018	Advanced Geostationary Ocean Colour Imager(GOCI-II), Geostationary Environmental Monitoring Spectrometer(GEMS)

The Schedule for GEO-KOMPSAT-2A and 2B program



FUTURE GEO SATELLITES

➤ Observation mission(GEO-KOMPSAT-2A)

- **Advanced Meteorological Imager (AMI)**
 - Multi-channel capacity: 16 channels
 - Temporal resolution: within 10 minutes for Full Disk observation
 - Flexibility for the regional area selection and scheduling
 - Lifetime of meteorological mission: 10 years
- **Broadcast all 16 channels data** of meteorological observations
- **Maintain L/HRIT broadcast** corresponding to five channels

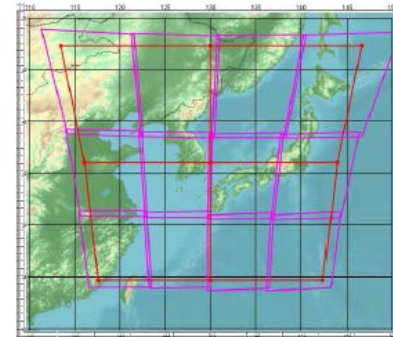
Bands		Center Wavelength		Band Width (Max, um)	Resolution (km)
		Min(um)	Max(um)		
VNIR	VIS0.4	0.431	0.479	0.075	1
	VIS0.5	0.5025	0.5175	0.0625	1
	VIS0.6	0.625	0.66	0.125	0.5
	VIS0.8	0.8495	0.8705	0.0875	1
	NIR1.3	1.373	1.383	0.03	2
	NIR1.6	1.601	1.619	0.075	2
MWIR	IR3.8	3.74	3.96	0.5	2
	IR6.3	6.061	6.425	1.038	2
	IR6.9	6.89	7.01	0.5	2
	IR7.3	7.258	7.433	0.688	2
	IR8.7	8.44	8.76	0.5	2

Bands		Center Wavelength		Band Width (Max, um)	Resolution (km)
		Min(um)	Max(um)		
LWIR	IR9.6	9.543	9.717	0.475	2
	IR10.5	10.25	10.61	0.875	2
	IR11.2	11.08	11.32	1.0	2
	IR12.3	12.15	12.45	1.25	2
	IR13.3	13.21	13.39	0.75	2

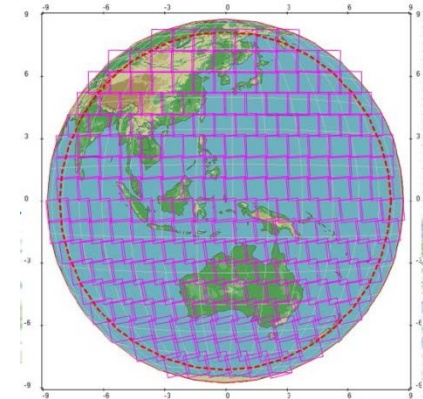
FUTURE GEO SATELLITES

- GOCI-II(Geostationary Ocean Colour Imager-II)
 - **The succession and expansion of the mission of GOCI**
 - Supporting **user-definable observation requests** such as clear sky area without clouds and special-event areas, etc
 - 10 times daily regional and 1 time **daily global observation**
 - Higher spatial resolution, **250m×250m(at Eq)**, and **12 spectral bands**

Items	GOCI Specs	GOCI-II Specs
Bus	COMS	GEO-KOMPSAT-2B
Increased band number	8 bands (412~865 nm)	12 bands (380 ~ 865nm)
Improved spatial resolution	500m	250m (at 130E, Eq)
More observations	8 times/day	10 times/day
Pointable & Full Disk coverage	Local Area	Local Area + Full Disk



LA

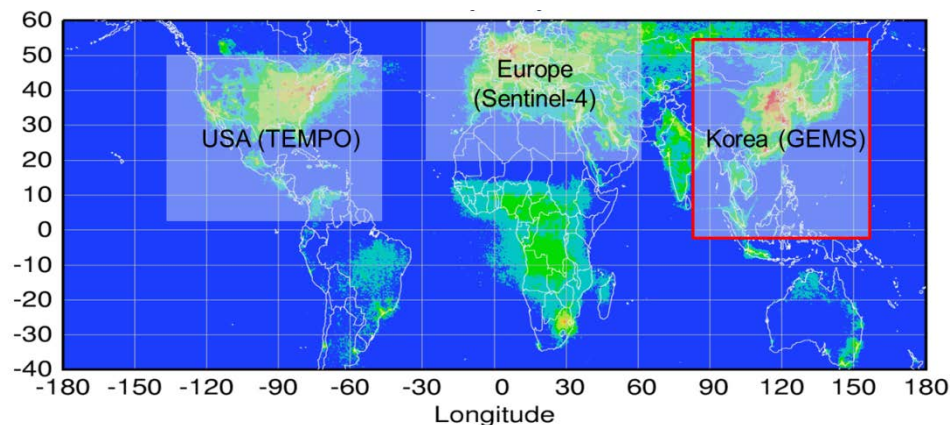


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FUTURE GEO SATELLITES

- GEMS(Geostationary Environmental Monitoring Spectrometer, GEO-KOMPSAT-2B)
 - Contributing to Atmospheric Composition Constellation under the Committee on Earth Observation Satellites (CEOS)
 - understanding of the globalization of pollution events, source/sink identification, and long-range transport of pollutants and short-lived climate forcers (SLCFs)
 - baseline : Korea (GEMS), Europe (Sentinel-4), and the US (TEMPO)

Bus	GEO-KOMPSAT-2B
Payload	Scanning UV-Visible(300-500 nm) Spectrometer
Measurement	O3, NO2, SO2, HCHO, Aerosols
Duty cycle/Imaging time	8 images during daytime (30 min imaging + 30 min rest) × 8 times/day
Field of regard	> 5,000 km(N/S) × 5,000 km(E/W) N/S: 45°N~5°S, E/W: Selectable between 75°E~145°E



Thank you