GOCI :
Geostationary Ocean Color Imager
Announcement of Opportunity
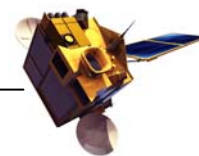
KORDI
Korea Ocean Research & Development Institute
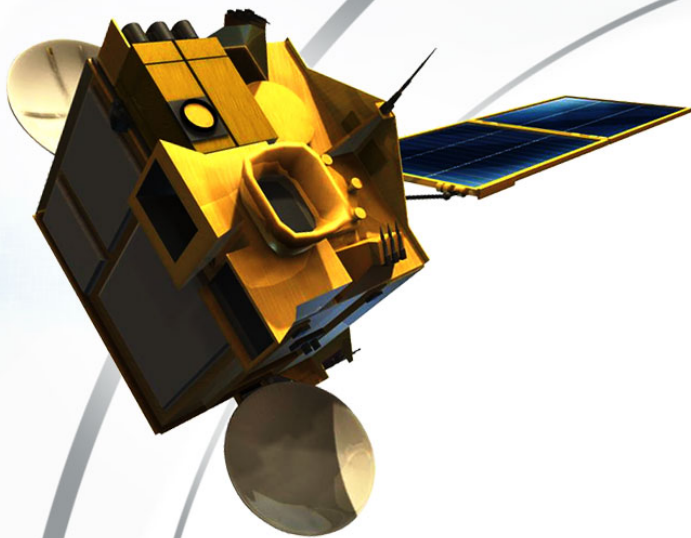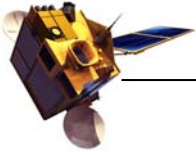
1. INTRODUCTION

The Korea Ocean Research and Development Institute (KORDI) releases an announcement of opportunity (AO) to carry out scientific research for the utilization of GOCI data. GOCI is the world's first Ocean Color Imager in Geostationary Orbit, which GOCI is expected to be one and only during mission life time. This AO aims at the promotion of data use for oceanographic applications, algorithm development, and Cal/Val activity.

In order to detect, monitor, and predict short term and regional oceanic phenomena such as red tides, yellow dust, fishing ground information, and etc, high spatial and temporal resolutions are required to ocean color remote sensing satellites. Unlike other ocean color satellites, GOCI has a unique capability to observe the ocean and coastal waters with high spatial resolution (500m) and very high temporal resolution(refresh rate : 1 hour), thanks to the state-of-the-art optical design and satellite location in geostationary orbit.

The GOCI is designed to be operated in a 2D staring-frame capture mode on board its Communication Ocean and Meteorological Satellite (COMS) and tentatively scheduled for launch in Mid of 2009. To provide an important new capability for imagining the coastal zone where the phenomena varying on shorter space and time scales demand a simultaneous increase in spatial and temporal resolution, the GOCI mission concept includes eight visible-to-near-infrared bands, a 500m×500m pixel resolution, and a coverage region of 2500km×2500km centered at 36˚N and 130˚E. GOCI will provide multiple views of many locations within the fixed region during a single day (i.e. 8 images during the daytime). The life time of the GOCI mission is about 7 years. The data from GOCI will therefore address various research areas in coastal, oceanographic and atmospheric sciences.

2. DATA DESCRIPTION AND AVAILABILITY

GOCI data, routinely received at the KORDI, will be processed to L1B and made available to the Principal Investigators (PIs) of the proposed research. GOCI L1B data can be processed to GOCI L2 data with GDPS (GOCI Data Processing System). The AO ensures that the selected PIs will be provided with L1B datasets and GDPS S/W for GOCI L2 processing at no cost after evaluation.

## 3. SPECIFIC RESEARCH AREAS FOR PROPOSAL SUBMISSION

Proposals could be submitted by individuals or a group of scientists belonging to recognized institutions, universities, and government/ non-government organizations in the following research areas of interest.

- ✓ Bio-optical algorithm development
- ✓ Retrieval techniques of optical properties
- ✓ Ocean color applications to detection of the fishing ground and ocean circulation features.
- ✓ Ocean primary productivity
- ✓ Calibration and validation
- ✓ Detection of algal blooms and river plumes
- ✓ Characterization of aerosols over the ocean
- ✓ Atmospheric correction algorithm development
- ✓ Yellow Dust, Forest Fire, Inland flood, Vegetation Index, Heavy Snowfall, etc.

Those who have interest and ideas for data application of Ocean Color Sensor in Geostationary Satellite Platform could also submit proposals.

4. EVALUATION OF PROPOSALS

The proposals received in response to this AO will be evaluated on the basis their scientific and technical merits, innovative methods and approaches, and potential applications. All proposal subscribers will be given an opportunity to acquire GOCI data for their scientific applications, and can participate in GOCI PI Workshop which will be held in Hyatt Hotel, Jeju Island, Korea from 29 to 30, Oct. 2008 on their own expense. The following is description of PI.
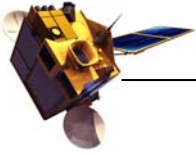
GOCI PI(Principal Investigator)

PI
- ✓ Automatically determined with Proposal Subscription.
- ✓ Research Proposal Presentation is not obligated but available in the PI Workshop.
- ✓ PI can participate in GOCI PI Workshop with their own expense.
- ✓ Presentation in GOCI PI Workshop is not obligatory, but possible.
- ✓ to be provided with GOCI L1B data & GDPS S/W

5. SUBMITTING PROPOSALS

The potential PI should submit the proposal by only e-mail directly to :

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6. PROPOSAL FORMAT

GOCI AO Proposal should be submitted with respect to the attached Proposal format (GOCI AO Proposal Format.doc).

*Note that proposals should be limited to around 3 pages in length on standard A4 size paper, typed double-spaced and in the prescribed format.

7. SCHEDULE

- ✓ Deadline for Proposal Submissions : September 30, 2008
- ✓ Notification of Evaluation Results : August 15, 2008
- ✓ 1st GOCI PI Workshop in Jeju Island : October 29~30, 2008
   - ■ Location : Hyatt Regency Hotel, Jeju, Korea(Republic Of)
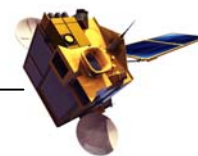
Annexure Ⅰ : General Specifications of GOCI

| Description	Specification
Detector	CMOS (2D, 1415 x 1432 pixels)
Image capture (sequence)	2D Staring frame capture
	Dark calibration(DC) -> High gain -> Low gain ->DC
Radiometric Calibration	2 Solar diffusers
Resolution (GSD)	500m x 500m
Total FOV	16 slots, 5,300 x 5,300 Pixels
Coverage	2,500km x 2,500km
Satellite Location	
Longitude	128.2˚E
Altitude	35,786km
Pupil Diameter of Pointing Mirror	140mm
SNR	> 1,000
MTF	> 0.3
Number of Spectral Bands	8 Bands (6-Visible and 2-NIR)
Spectral Coverage	400 ~ 900nm (for 8 bands)
Digitization	≥ 12 bits

# Annexure Ⅱ : GOCI Spectral Performances

Band	Centre wavelengths	Band width	Nominal Radiance	Maximum Radiance	Saturation Radiance in High gain	Saturation Radiance in Low gain	Type
B1	412 nm	20 nm	100	150.0	152.0	601.6	Visible
B2	443 nm	20 nm	92.5	145.8	148.0	679.1	Visible
B3	490 nm	20 nm	72.2	115.5	116.0	682.1	Visible
B4	555 nm	20 nm	55.3	85.2	87.0	649.7	Visible
B5	660 nm	20 nm	32.0	58.3	61.0	589.0	Visible
B6	680 nm	10 nm	27.1	46.2	47.0	549.3	Visible
B7	745 nm	20 nm	17.7	33.0	33.0	429.8	NIR
B8	865 nm	40 nm	12.0	23.4	24.0	343.8	NIR

Spectral radiance values are in $Wm^{-2}\mu m^{-1}sr^{-1}$
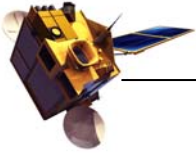
Annexure Ⅲ : GOCI Coverage Area

Target Area
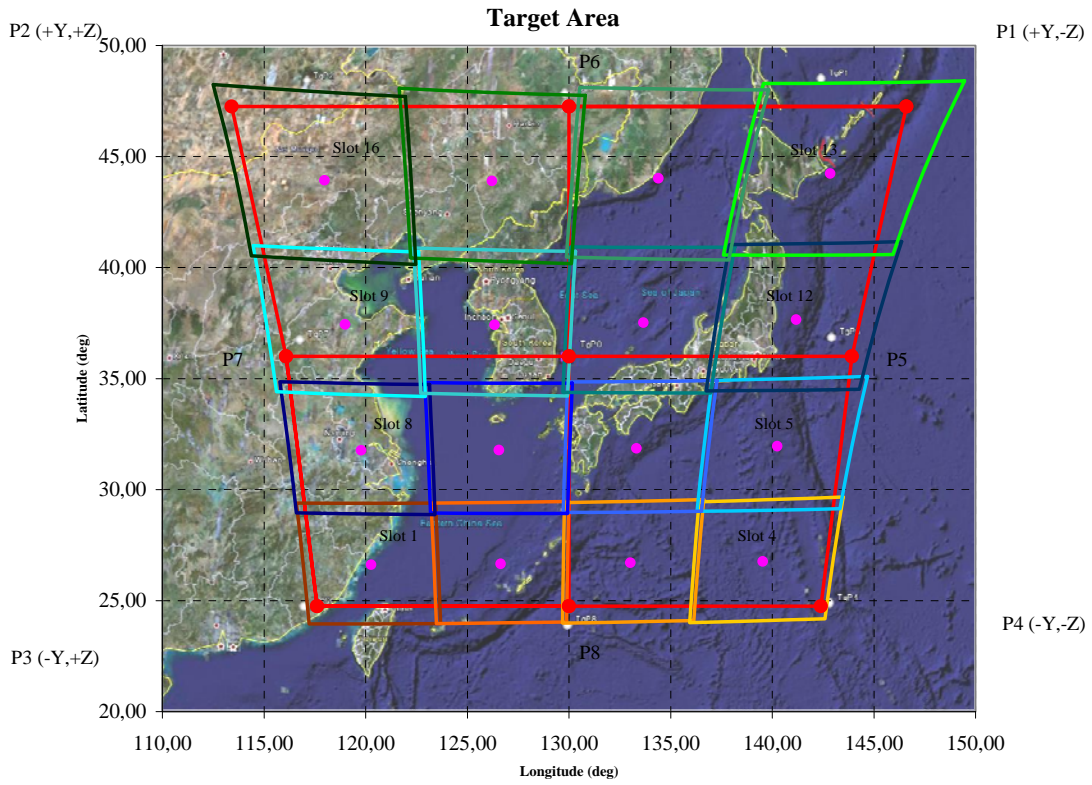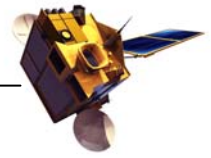
Annexure Ⅳ : GOCI Data Products

No.	GOCI Data Product	Descriptions	Data Size (1 image)	Distribution	Data type
1	GOCI RAW	Raw Data from Satellite	769MB	N	DN
2	GOCI L0	Converted product for correction process	634MB	N	DN
3	GOCI L1A	Radiometrically Corrected Product	994MB	N	Radiance
4	GOCI LIB	Geometrically & Radiometrically Corrected Product	~994MB	Y	Radiance
5	GOCI LIB Region	Geometrically Corrected Product for specified region	994M~	N	Radiance
6	GOCI L2	Physical Parameters Chlorophyll, TSS, CDOM, Red-Tide, etc.	~3500MB	N	Physical Unit
7	GOCI L2 Region	Physical Parameters for specified region	~3500MB	N	Physical Unit