



INTERNATIONAL RESEARCH CENTER OF BIG DATA
FOR SUSTAINABLE DEVELOPMENT GOALS
可持续发展大数据国际研究中心



SDGSAT-1: The Satellite and Open Science Program

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International Research Center of Big Data for Sustainable Development Goals (CBAS)

2023.6.15 @ Geneva / GEO WPS 2023

SDGSAT-1 Scientific Satellite

www.sdgsat.ac.cn

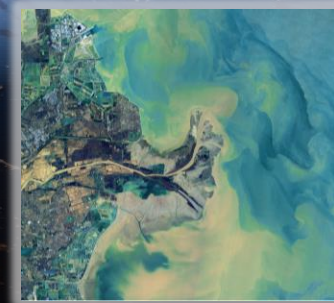


Launched on Nov. 5th 2021, depicting anthropic interaction with Earth's environment.

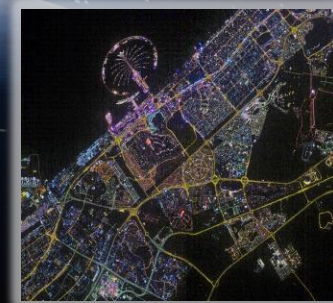


Synergetic observation by three sensors, with 300km swath width

- Glimmer: 10m panchromatic & / 40m RGB
- TIR: 3 bands, 0.2K temp. recognition
- Multispectral: 2 deep blue & 1 red edge bands



Multispectral



Glimmer



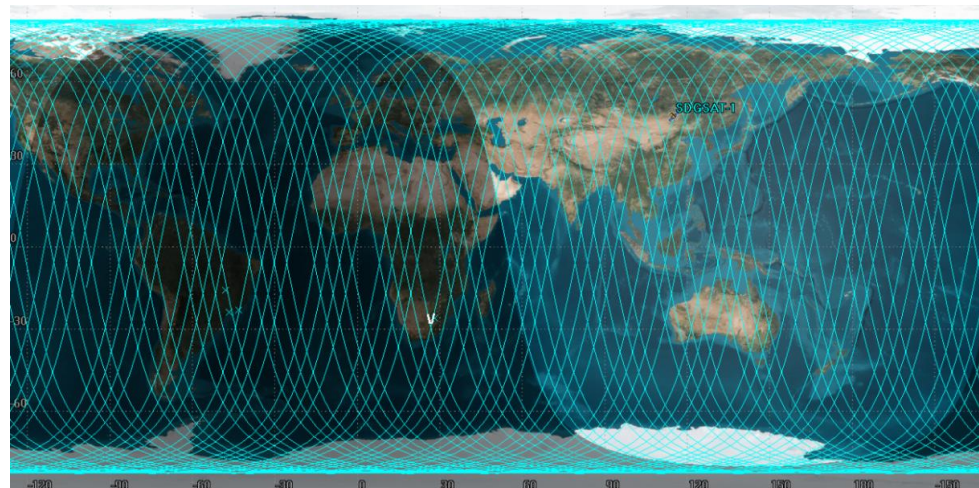
Thermal Infrared

Technical Specifications

- ❖ Designed life: **3 years**
- ❖ Orbit type: **sun-synchronous**
- ❖ Orbit altitude: **505 km**
- ❖ Orbit inclination angle: **97.5°**
- ❖ Swath width: **300 km**
- ❖ Data collect mode: **TIR+Glimmer (night), TIR+Multispectral (day), and single sensor.**



The orbit of SDGSAT-1



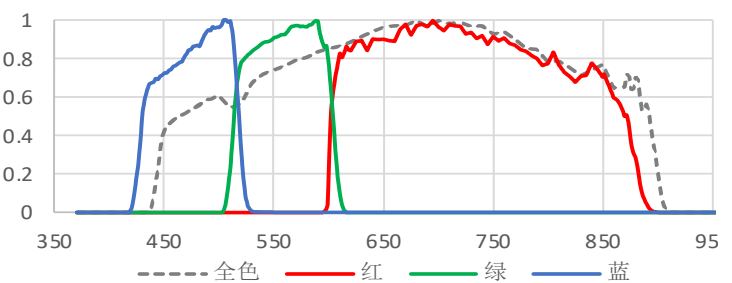
Tracks of satellite nadir points of SDGSAT-1

Type	Index	Specifications
Thermal Infrared Spectrometer	Bands	8~10.5 μm 10.3~11.3 μm 11.5~12.5 μm
	Spatial Resolution	30 m
Glimmer /Multispectral Imager	Bands /Glimmer	P: 444~910 nm B: 424~526 nm G: 506~612 nm R: 615~894nm
	Resolution /Glimmer	P: 10 m, RGB: 40 m
	Bands /Multispectral	B1: 374 nm~427 nm B2: 410 nm~467 nm B3: 457 nm~529 nm B4: 510 nm~597 nm B5: 618 nm~696 nm B6: 744 nm~813 nm B7: 798 nm~911 nm
	Resolution /Multispectral	10 m

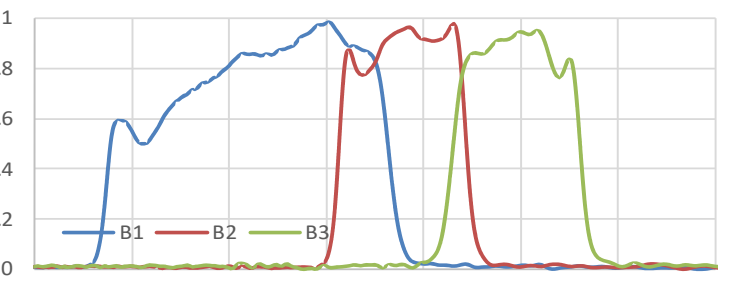
Characteristics of SDGSAT-1

◆ The world's **class** comprehensive performance indicator for its **wide swath width** and **high spatial resolution**

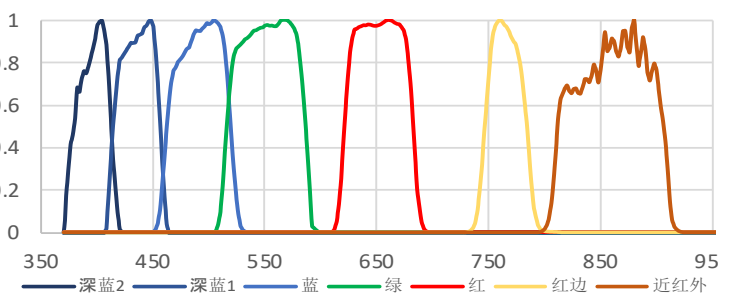
Glimmer



TIR



Multispectral



Innovation design

- 10m/40m
- 10m (PAN) + 40m (color)
- 300km

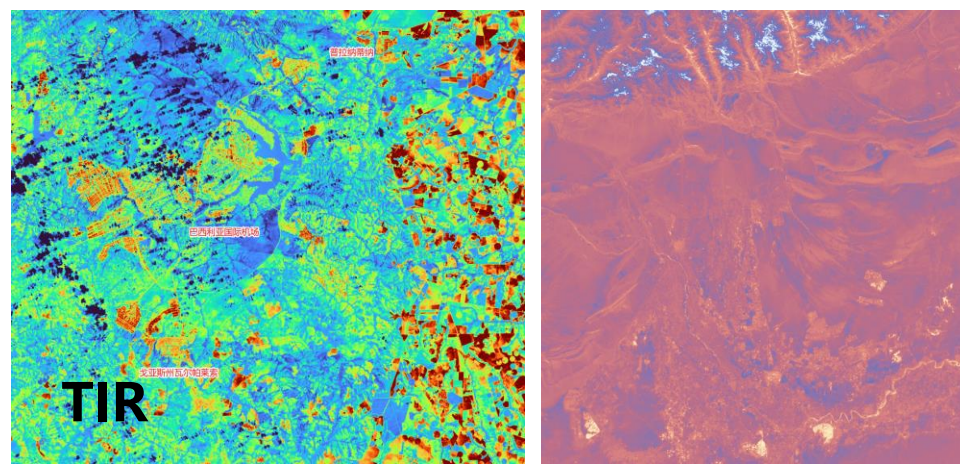
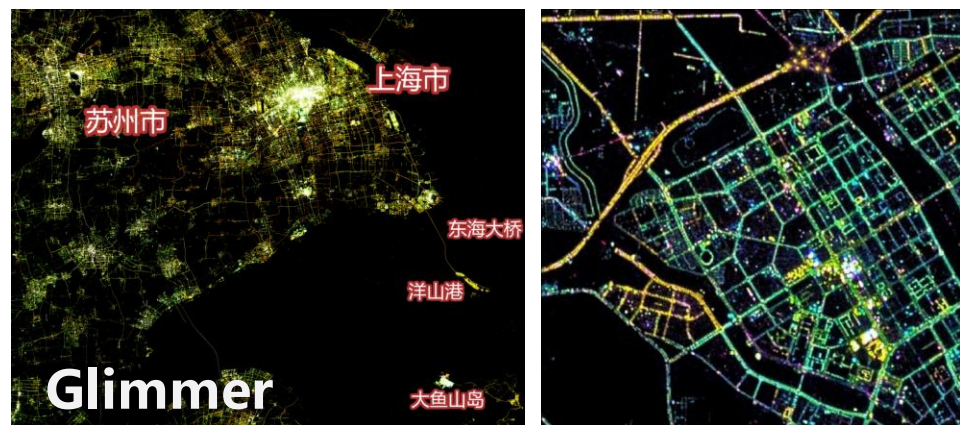
Highest ratio of swath width and spatial resolution

- 30m
- 0.2°C (@300K)
- 3 bands
- 300km

Advantage in monitoring water and vegetation

- 2 deep blue
- 1 red edge
- 300km

Depict traces of anthropic activities



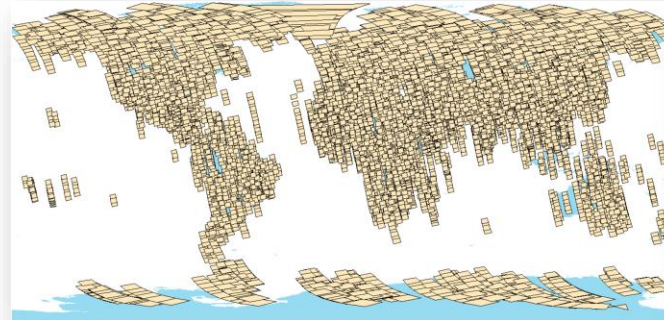
Archived Data



About **90,000** images and **168TB** of L4 data has been produced from SDGSAT-1.

Statistics of Data (by May 15, 2023)

Sensor	Level	Scene #
Glimmer	L4A	13,477
Multispectral	L4A/L4B	16,061
TIR	L4A/L4B	60,632
Total		90,170



Thermal Infrared datasets coverage (Night)



Thermal Infrared datasets coverage (Day)



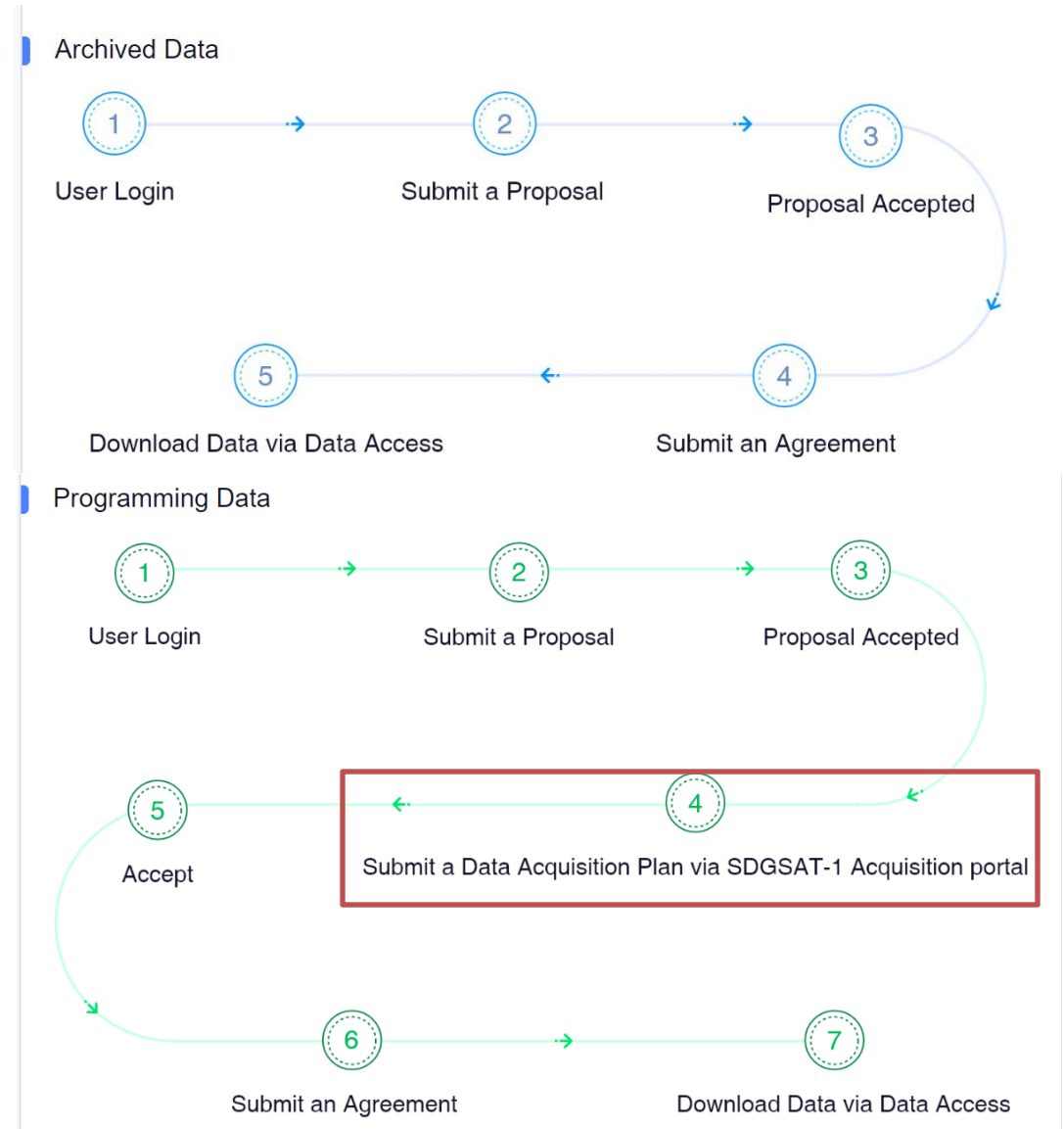
Multispectral datasets coverage



Glimmer datasets coverage



- The program aims to promote **multi-disciplinary** research on social, environmental and economic dimensions of SDGs and fill in existing **data gaps** limiting progress towards SDGs.
- SDGSAT-1 Open Science Program is well suited to support the development of **scientific applications** and publicly accessible **SDG products**.



SDGSAT-1 Open Science Program

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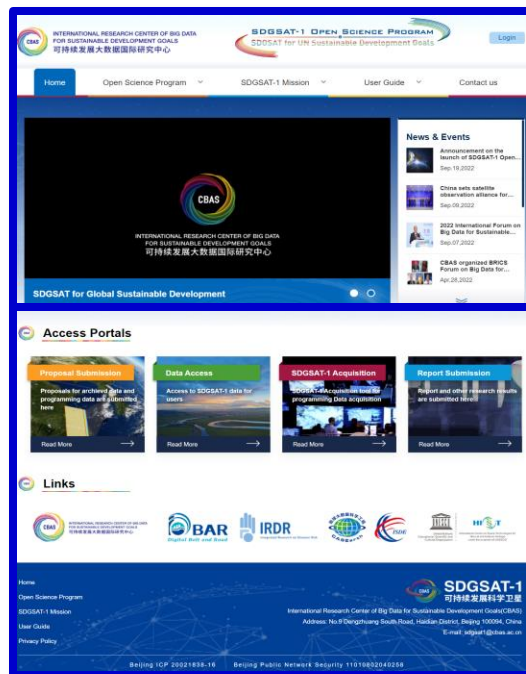
Home

Open Science Program ▾

SDGSAT-1 Mission ▾

User Guide ▾

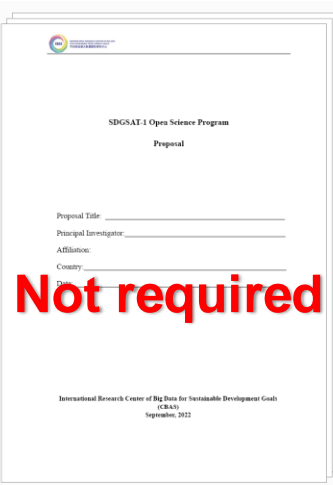
Contact us



Purpose and application

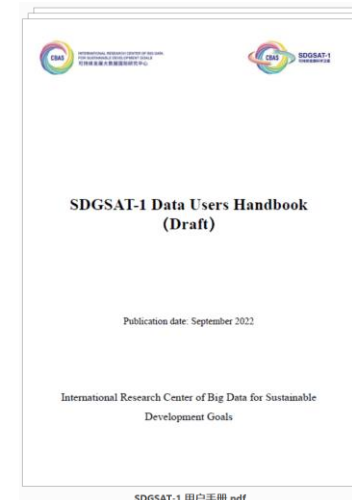
Satellite product introduction

FAQs & documents

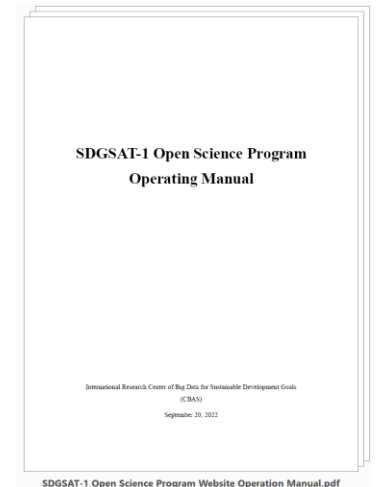


Not required

Proposal template



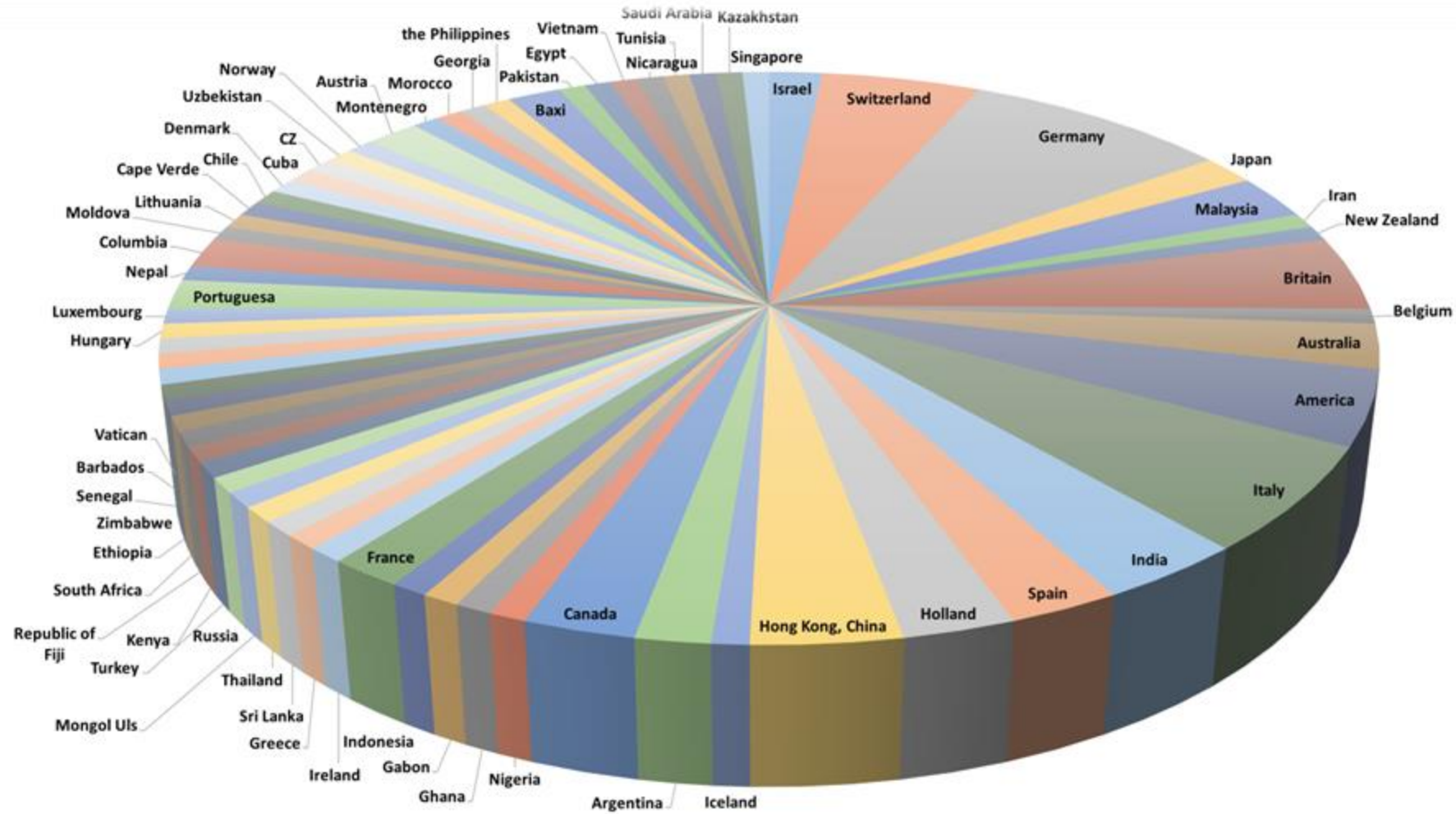
Users' manual



Operating manual

SDGSAT-1 Open Science Program

www.sdgsat.ac.cn



More than **90,000** SDGSAT-1 images shared with scientists from **70** countries and regions

Welcome!

www.sdgsat.ac.cn



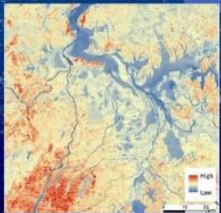
SDGSAT-1: the Science Satellite for SDGs

Launched on November 5, 2021,
Data available FREE-of-CHARGE worldwide from September 2022



- Synergistically observing day and night with three sensors
Swath Width: 300 km
Glimmer Imager:
- 10 m panchromatic / 40 m RGB
Thermal Infrared Spectrometer:
- 3 bands / 30 m / 0.2K detection
Multispectral Imager:
- 7 bands / 10 m / 2 deep blue & 1 red edge bands

Detect parameters representing interaction between human activities and the Earth's environment
Precisely depict traces of anthropic activities and serve the realization of SDGs



Thermal Infrared image of Poyang Lake, China



Multispectral image of the Yellow River Estuary



Glimmer image of Dubai, the United Arab Emirates



SDGSAT-1 Open Science Program

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Technical specifications of SDGSAT-1

Orbit / Sensor	Parameter	Specification
Orbit	Type	Sun-synchronous
	Altitude	505 km
	Inclination	97.5°
Thermal Infrared Spectrometer	Swath Width	300 km
	Bands	8–10.5 μm 10.3–11.3 μm 11.5–12.5 μm
	Spatial Resolution	30 m
Glimmer / Multispectral Imager	Swath Width	300 km
	Bands of Glimmer Imager	P: 444–910 nm B: 424–526 nm G: 506–612 nm R: 600–894 nm
	Spatial Resolution of Glimmer Imager	P: 10 m, RGB: 40 m
	Bands of Multispectral Imager	B1: 374–427 nm B2: 410–467 nm B3: 457–529 nm B4: 510–597 nm B5: 618–696 nm B6: 744–813 nm B7: 798–911 nm
	Spatial Resolution of Multispectral Imager	10 m



Please Register to Use SDGSAT-1 Data!

Two Special Issues of SDGSAT-1 are calling for papers:



Remote Sensing of Environment: SDGSAT-1 and Satellite Remote Sensing for SDGs

- Innovation and progresses on SDGSAT-1 and satellite remote sensing applications for SDGs
- Earth observing technologies in serving the implementation of UN 2030 Sustainable Development Agenda by using SDGSAT-1 and other satellites



International Journal of Digital Earth: Innovative approaches and applications on SDGs using SDGSAT-1

- Cal/Val operations, performance, and data processing of SDGSAT-1 instruments
- Tools and algorithms for analyzing SDGSAT-1 data
- SDG applications, i.e., monitoring, evaluation, and public data production of SDGs, using SDGSAT-1 and other satellite data





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Thanks

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