

HISUI Research Announcement

~ Public Invitation for Research Proposal ~

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Japan Space Systems

HISUI is a project being implemented by the Ministry of Economy, Trade and Industry. The aim is to develop the Hyperspectral Sensor "HISUI" and install it on the International Space Station (ISS) to conduct research on the use of data acquired by HISUI to demonstrate its effectiveness. Therefore, the call for HISUI Research Proposal is made as a public invitation in order to promote the use-case demonstration of HISUI data in various application areas, as a framework for publicly inviting research proposals from domestic and international earth observation data users regardless of target fields and application areas.

A) Target Applicant

HISUI Research Announcement is open to all researchers who wish to use HISUI data regardless of domestic/international or research fields. However, in consideration of the situation of HISUI observation resource, there may be cases where application is restricted.

B) Application & Evaluation Method

The proposals will be evaluated by the project secretariat which will be established upon receipt of proposals of the research.

C) Expenses

All expenses pertaining to the research are to be covered by the researchers. However, the operation and data provision of HISUI will be covered by the project.

D) Area of Investigation (AOI)

Indication of the Area of Investigation (hereinafter referred to as AOI) defined as about 10 km × 10 km. It is possible to request a few regions.

E) HISUI Observation Plan

AOI is preferentially reflected in the observation plan.

F) HISUI Data Product

Applicable only to AOI, HISUI products are processed preferentially and are provided free of charge (after 2021).

G) Regulation on Data Usage

Redistribution of original data is prohibited.

H) Research Reporting

The applicants shall report to the project secretariat when publishing results to academic societies etc.

Please contact us if you are interested. We will inform you about details.

hisui_application@jspacesystems.or.jp



Overview of HISUI

HISUI is a spaceborne hyperspectral imager to substantiate the applicability of hyperspectral data in space. Its high spectral resolution enables to identify land surface materials precisely and provide the possibility of earth observation satellite for a broad range of applications.

The main specifications of HISUI is shown in the table on the right.

HISUI continuously acquires 185 band data in VNIR to SWIR range.

The most remarkable feature of HISUI data is the high spectral resolution. It allows contiguous measurement of reflectance spectra, which show characteristics and physical properties of target materials, across a wide wavelength range. And more detailed information can be obtained by the hyperspectral data than the multispectral data as the multispectral imager cannot collect data continuously and thus the spectral signature of unmeasured regions remain unknown.

HISUI Specification		
Spatial Resolution		20~30 m
Swath		20 km
Spectral	Bands	185 Bands VNIR:58 SWIR:127
	Range	0.4-2.5 μ m
		VNIR: 0.4-0.97 μ m SWIR: 0.9-2.5 μ m
Resolution	VNIR: 10 nm SWIR: 12.5 nm	
S/N		\geq 450 @ 620 nm \geq 300 @ 2100 nm
MTF		\geq 0.2
Sampling bit rate		12 bits

HISUI is currently under development and planned to be installed in the Japanese Experiment Module "Kibo" of the International Space Station and begin operation in 2019. With HISUI, it will be possible to realize the world's first observation with hyperspectral sensor for demonstration in space on a global scale.

In the HISUI ground data system, HISUI operation is based on the observation plan created from adjusting the observation requests from users.

With respect to the data observed by HISUI, level 1G products will be provided, which are data subjected to processing such as wavelength correction, radiation correction, geometric correction, ortho correction and so on. (after 2021).