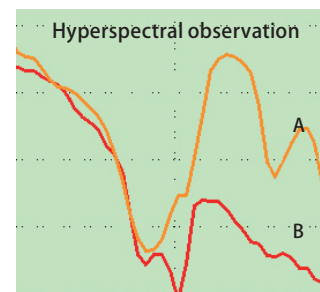
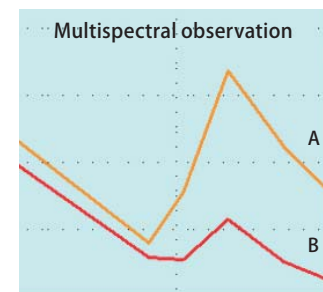
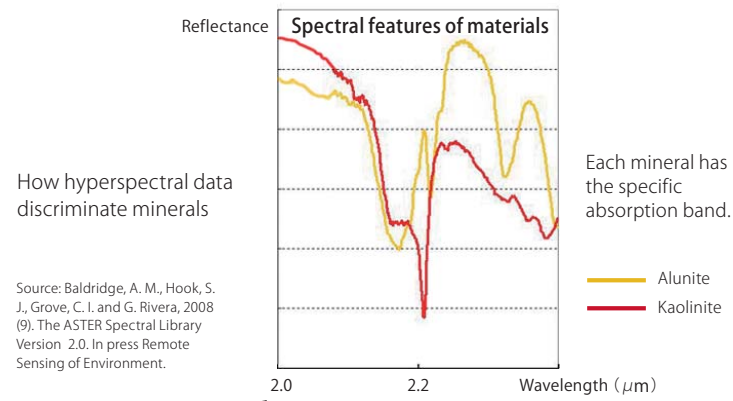
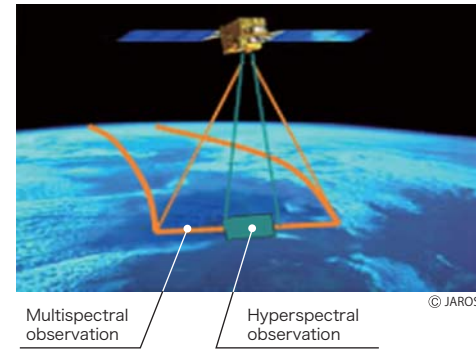


Characteristics of the Hyperspectral Sensor

While multispectral sensors collect reflectance data in discrete visible-to-infrared bands, hyperspectral sensors capture data in continuous spectral ranges. This feature of hyperspectral imaging is particularly useful for the identification of mineral types and tree species.



A concept of observation by the space-borne hyperspectral sensor under development by METI

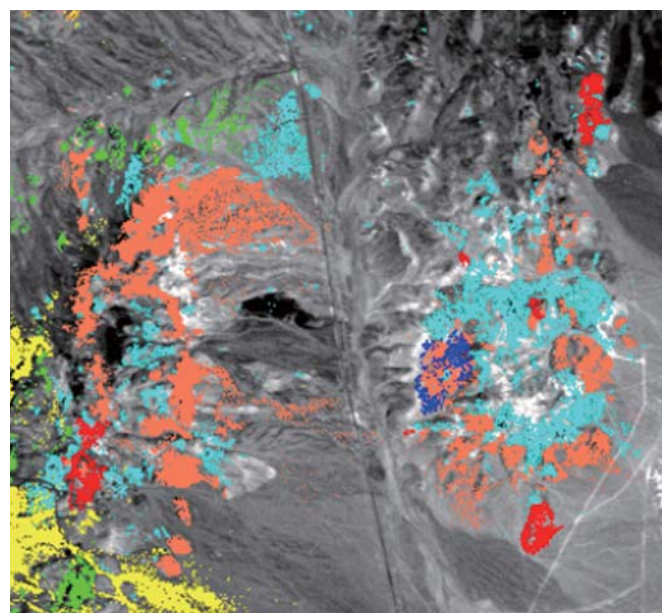
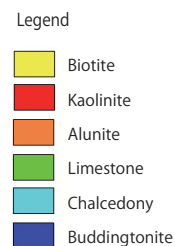


Parameter	Specifications
Ground resolution/Swath	30m/30km
Number of channels	~185
Spectral coverage	0.4~2.5 μm
Spectral resolution	10nm(VNIR) 12.5nm(SWIR)
S/N	≥ 450@620nm ≥ 300@2100nm

In the FY2006, the Ministry of Economy, Trade and Industry (METI) of Japan commenced development of the hyperspectral imaging system "Next-generation earth observing space-borne sensor" to address growing needs in agriculture and environmental studies as well as resource exploration. ERSDAC is engaged in R&D on hyperspectral data applications.

Improved Mineral Mapping Accuracy

Each mineral has its own unique absorption characteristics. Hyperspectral data can capture finer absorption features than multispectral data, and thereby provide more accurate identification capability of minerals. Six minerals are successfully identified in the image below.



Result of hyperspectral data analysis (AVIRIS)
Cuprite, Nevada, U.S.A.

Diverse Applications of Hyperspectral Data

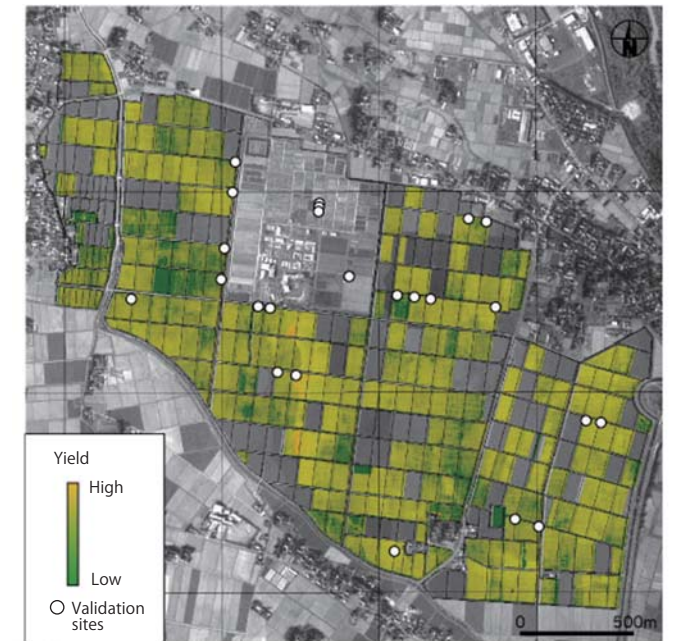
Hyperspectral data provide a significantly higher discrimination capability of surface materials than multispectral data. Hyperspectral data can be used in diverse applications including

Resource Exploration

Accurate identification and precise discrimination of rocks and minerals improves the accuracy of exploration of oil and other energy resources.

Agriculture

Hyperspectral imagery is expected to aid labor-efficient agriculture and food security. Estimation of rice yield and quality (flavor) using hyperspectral data provides essential information for the management of fertilization, irrigation and planting density. Hyperspectral data is also useful for pasture grass, wheat and many other crops.

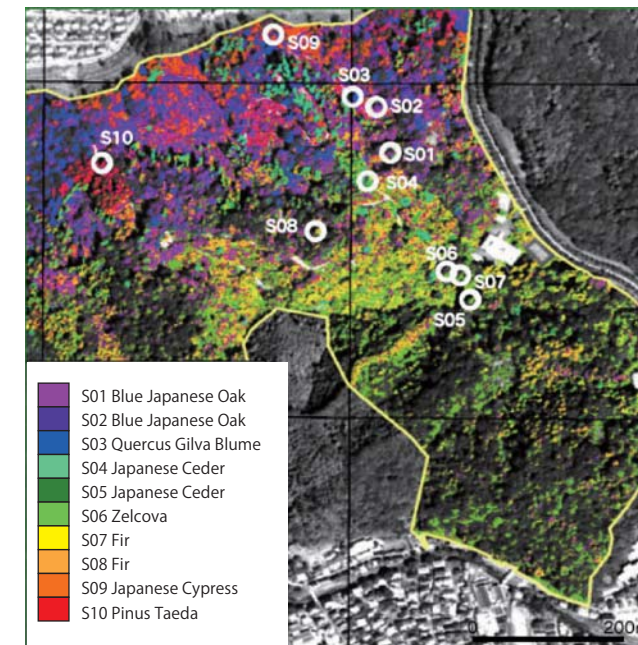


Rice yield monitoring

Darker orange indicates higher yield and darker green lower yield.

Forestry

Hyperspectral data enables detailed classification of tree species and accurate large-scale monitoring of tree growth and pest infestation. It can provide unprecedented high-quality information for forest management.



Forest monitoring

Specific tree species can be monitored with hyperspectral data.

* Environmental monitoring

Hyperspectral remote-sensing is a powerful tool for a large-scale monitoring of an aquatic environment; it can detect the distribution of lake pollutants and components of blue/red tides to name a few. It can also detect vegetation accurately, thus its potential application includes the monitoring of deforestation and desertification.