What are the best spectral bands to study?

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Question:

What are the best spectral bands to use for my study?

Answer:

This is a common question considered by all users of remotely sensed data. Tl
resolution) is often the most interesting aspect of viewing a satellite image, bu
changes in irradiative energy reflected by different surface materials are used
interest.

Landsat 8 Operational Land Imager (OLI) and Infrared Sensor (TIRS)

Reference

Barsi, J.A.; Lee, K.; Kvaran, G.; Markham, B.L.; Pedelty, J.A. The Spectral Respons
Operational Land Imager. *Remote Sens.* **2014**, *6*, 10232-10251. doi:10.3390/rs6
(http://www.mdpi.com/2072-4292/6/10/10232)

Band	Wavelength	Useful for mapping
Band 1 – Coastal Aerosol	0.435 - 0.451	Coastal and aerosol studies

Band 2 – Blue	0.452 - 0.512	Bathymetric mapping, disting vegetation, and deciduous fr vegetation
Band 3 - Green	0.533 - 0.590	Emphasizes peak vegetation, assessing plant vigor
Band 4 - Red	0.636 - 0.673	Discriminates vegetation slop
Band 5 - Near Infrared (NIR)	0.851 - 0.879	Emphasizes biomass content
Band 6 - Short-wave Infrared (SWIR) 1	1.566 - 1.651	Discriminates moisture conte vegetation; penetrates thin c
Band 7 - Short-wave Infrared (SWIR) 2	2.107 - 2.294	Improved moisture content c and thin cloud penetration
Band 8 - Panchromatic	0.503 - 0.676	15 meter resolution, sharper
Band 9 – Cirrus	1.363 - 1.384	Improved detection of cirrus
Band 10 – TIRS 1	10.60 – 11.19	100 meter resolution, therma estimated soil moisture
Band 11 – TIRS 2	11.50 - 12.51	100 meter resolution, Improv and estimated soil moisture

Landsat 4-5 Thematic Mapper (TM) and Lands Thematic Mapper Plus (ETM+)

Band	Wavelength	Useful for mapping
Band 1 - Blue	0.45 - 0.52	Bathymetric mapping, disting vegetation, and deciduous fro vegetation
Band 2 - Green	0.52 - 0.60	Emphasizes peak vegetation, assessing plant vigor
Band 3 - Red	0.63 - 0.69	Discriminates vegetation slop
Band 4 - Near Infrared	0.77 - 0.90	Emphasizes biomass content
Band 5 - Short-wave Infrared	1.55 - 1.75	Discriminates moisture conte vegetation; penetrates thin cl
Band 6 - Thermal Infrared	10.40 - 12.50	Thermal mapping and estima
Band 7 - Short-wave Infrared	2.09 - 2.35	Hydrothermally altered rocks mineral deposits

Band 8 - Panchromatic (Landsat 7 only)	0.52 - 0.90	15 meter resolution, sharper

Landsat 1-5 Multispectral Scanner (MSS)

Landsat MSS 1, 2, 3 Spectral Bands	Landsat MSS 4 & 5 Spectral Bands	Wavelength	Useful for mappi
Band 4 - green	Band 1 - green	0.5 - 0.6	Sediment-laden w of shallow water
Band 5 - red	Band 2 - red	0.6 - 0.7	Cultural features
Band 6 - Near Infrared	Band 3 - Near Infrared	0.7 - 0.8	Vegetation bounda water, and landfor
Band 7 - Near Infrared	Band 4 - Near Infrared	0.8 - 1.1	Penetrates atmosp emphasizes veget between land and

The Spectral Characteristics Viewer (spectral-characteristics-viewer) is an inter scientists at the USGS Earth Resources Observation and Science (EROS) Center bands, or channels, of different satellite sensors measure the intensity of the r (colors) of light. This is also known as the relative spectral response (RSR). By o curves from different features (spectra), one can determine which bands of th work for the application.

About

Landsat represents the world's longest continuously acquired collection of space-based moderate-resolution land remote sensing data. Four decades of imagery provides a unique resource for those who work in agriculture, geology, forestry, regional planning, education, mapping, and global change research. Landsat images are also invaluable for emergency response and disaster relief.

Landsat Updates

The Landsat Update is an informal communication tool, prepared periodically and distribu
Landsat partners, to provide information about Landsat activities and related topics of inte

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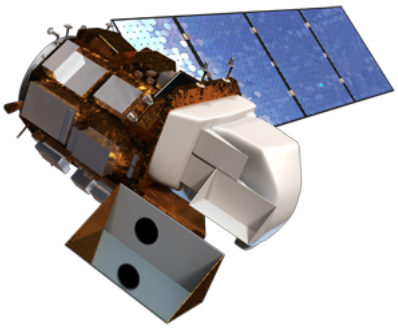
Gallery (http://remotesensing.usgs.gov/gallery/)



(landsat-missions-timeline)