8-Band Multispectral Imagery

Mining Industry Information Sheet

Geoimage is a premium reseller of Maxar's 8-band imagery from their WorldView satellites.

Additionally, Geoimage has developed a highly advanced suite of image processing and analytics services, specific to mining applications.

WorldView satellites are the only commercial high-resolution satellites to provide eight spectral bands in the visible to near-infrared range. Each band is narrowly focused on particular range of the electromagnetic spectrum that is sensitive to a particular feature on the ground, or a property of the atmosphere.

Together they are designed to improve the segmentation and classification of land and aquatic features beyond any other space-based remote sensing platform.

BENEFITS

» Economical

- Speed to task, capture and deliver imagery;
- Improved operational efficiencies and potential economic savings.

» Accurate

- Greater accuracy and reliability delivered by Geoimage's proven advanced processing capability and experience.

» Customised

- Cutting edge technology and global best practice, accessed via our unique partner network;
- Multispectral bands deliver greater potential for additional data and information extraction to the benefit of multiple divisions of your business.

» Governance

- Remotely monitor mining activity and impacts to remove or reduce on-ground risks and evidence regulatory

FEATURES

- Qualify permit boundaries, investigate violations, and determine priority areas for field visits.
- Track and verify mining operations for onsite reclamation and bond status.
- Evaluate erosion and acid mine drainage trends, wildlife habitats, topsoil redistribution and vegetation.
- Classify post-mining vegetation communities.
- Monitor overall mine site activities, including post-mining land use.
- Monitor re-vegetation of disturbed sites.
- Collaborate with other agencies and mining companies so all interests are aligned.

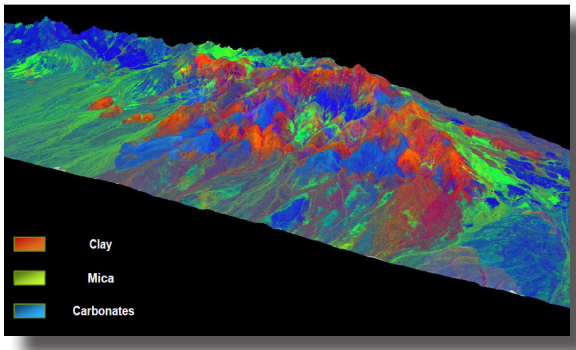

Image: Example of spectral data showing mineral deposits

CASE STUDY
PROJECT DETAILS

CLIENT
BHP Billiton

LOCATION
Various Project Sites across Western Australia

CHALLENGE
To use remote sensing of satellite imagery to assist in mine site planning activities, land use and vegetation monitoring.

SOLUTION
Use 30cm, 8-Band WorldView-3 satellite imagery for analytics, remote sensing and GIS laying on said imagery.

MOVING FORWARD
Geoimage have internal capabilities/software to use 8-band 30cm data in the following ways:

- Vegetation change & health
- Noxious weed mapping & species identification
- Land use mapping
- Cap dumps - erosion /Creek runoff

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> “SWIR has revolutionised the remote sensing industry, with greater potential for data extraction.”
> Tony Evans, Geoimage Managing Director

SPECTRAL BAND ROLES

Coastal Blue	400-450 nm	• New band • Absorbed by chlorophyll in healthy plants and aids in conducting vegetative analysis • Least absorbed by water, and will be very useful in bathymetric studies • Substantially influenced by atmospheric scattering and has the potential to improve atmospheric correction techniques.
Blue	450-510 nm	• Identical to QuickBird • Readily absorbed by chlorophyll in plants • Provides good penetration of water • Less affected by atmospheric scattering and absorption compared to the Coastal Blue band.
Green	510-580 nm	• Narrower than the green band on QuickBird • Able to focus more precisely on the peak reflectance of healthy vegetation • Ideal for calculating plant vigor • Very helpful in discriminating between types of plant material when used in conjunction with the Yellow Band.
Yellow	585-625 nm	• New band • Very important for feature classification • Less affected by atmospheric scattering and absorption compared to the Coastal Blue band.
Red	630-690 nm	• Narrower than the red band on QuickBird and shifted to longer wavelengths • Better focused on the absorption of red light by chlorophyll in healthy plant materials • One of the most important bands for vegetation discrimination • Very useful in classifying bare soils, roads and geological features.
Red-Edge	705-745 nm	• New band • Centered strategically at the onset of the high reflectivity portion of vegetation response • Very valuable in measuring plant health and aiding in the classification of vegetation.
NIR1	770-895 nm	• Narrower than the NIR1 band on QuickBird to provide more separation between it and the Red-Edge sensor • Very effective for the estimation of moisture content and plant biomass • Effectively separates water bodies from vegetation, identifies types of vegetation and also discriminates between soil types.
NIR2	860-1040 nm	• New band • Overlaps the NIR1 band but is less affected by atmospheric influence • Enables broader vegetation analysis and biomass studies.