

GeoEye satellites capture sub-metre imagery simultaneously in natural colour and colour infra-red. With a revisit rate of 2 to 4 days, and an extensive archive, high resolution satellite imagery has proven to be a reliable source for many resource, engineering and planning applications.

AAM Pty Ltd offers fully orthorectified, mosaiced and colour-balanced data sets which can be custom processed and formatted. Existing terrain models from a range of sources (including LiDAR) can be used to enhance the accuracy of many satellite products.

Benefits of using satellite imagery:

- Fast turn-around time
- Extensive archives
- Easy access to remote areas
- Stereo capture for digital elevation model generation
- Cost effective data set
- Georeferenced and GIS ready

Available Products

Georeferenced or Orthorectified Imagery

- 0.5m natural or false colour or 4 band multispectral*
- 0.8m natural or false colour or 4 band multispectral*
- 1.6m 4 band multispectral
- 3.2m 4 band multispectral
- 0.5m or 0.8m panchromatic imagery

Digital Elevation Models

- Input: 0.5m or 0.8m 4 band multispectral stereo pair*
- Output: DTM and 2m or 5m contours

**Pansharpened product*



Above: GeoEye-1 image (0.5m resolution) over Sydney, Australia

Comparing IKONOS and GeoEye-1 Imagery

Specifications	IKONOS	GeoEye-1 Imagery
Pixel Size: Panchromatic Multispectral (4 band)	0.82m (at nadir) 0.82m or 3.28m (at nadir)	0.5m* 0.5m* or 1.65m
Collection Capacity (at 30° latitude)	Approx 3 days	Approx 3 days
Swath Width at Nadir	11.3km	15.2km
Dynamic Range	11 bits per pixel	11 bits per pixel
Time of Satellite Overpass	Approx 10:30am (worldwide)	Approx 10:30am (worldwide)
Band Spectral Range - Panchromatic (B&W) - Blue - Green - Red - NIR	526 – 929nm 445 – 516nm 506 – 595nm 632 – 698nm 757 – 853nm	450 – 800nm 450 – 510nm 510 – 580nm 655 – 690nm 780 – 920nm

* Captured at 0.41m at nadir, resampled to 0.5m

The IKONOS satellite provides global 0.8m resolution imagery that enables mapping at 1:4,000 scale. The repeat capture capability allows monitoring of areas of interest on a regular basis. The latest generation GeoEye-1 satellite, launched in 2008, provides multispectral imagery with a 0.5m resolution (although captured at 0.41m at nadir). GeoEye-1 is the world's highest multispectral resolution and most accurate satellite data source, which in combination with IKONOS allows a repeatable capture over the same site on an almost daily basis.



Above: Comparing 0.8m imagery (left) and 0.5m imagery (right)

Case Study: Imagery and Terrain Data from the IKONOS Satellite

The agile IKONOS and GeoEye-1 satellites capture stereo imagery in the same overpass, which enables the generation of high resolution Digital Elevation Models (DEMs). A 154 sqkm exploration area in Western Australia was captured by IKONOS in stereo for the creation of a high resolution elevation model and orthoimage. Eight ground control points were supplied for the image processing.

Final deliverables for this project were:

- 2.4m DEM (ASCII Grid format) - from which 2m contours could be derived
- 0.8m colour orthoimagery

Product accuracies achieved

Orthoimage (IKONOS)

Horizontal X – RMS 0.47m

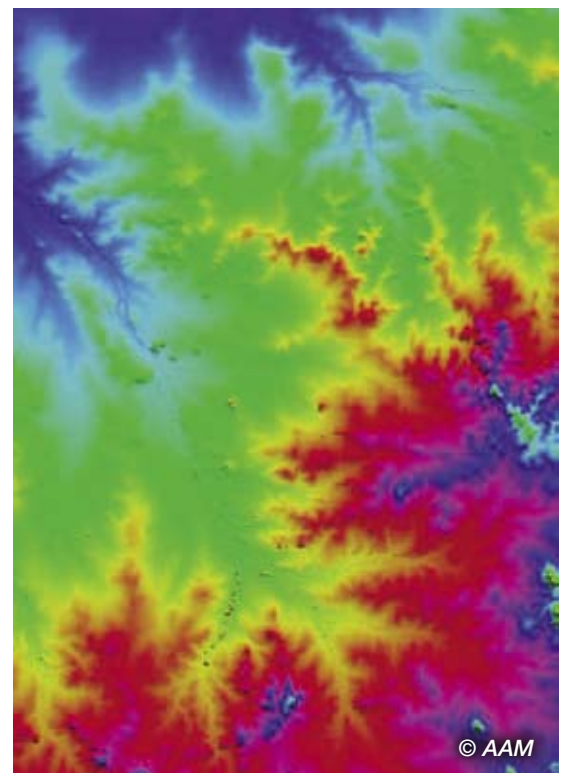
Horizontal Y – RMS 0.51m

DEM

Horizontal X – RMS 0.33m

Horizontal Y – RMS 0.41m

Vertical Z – RMS 1.84m

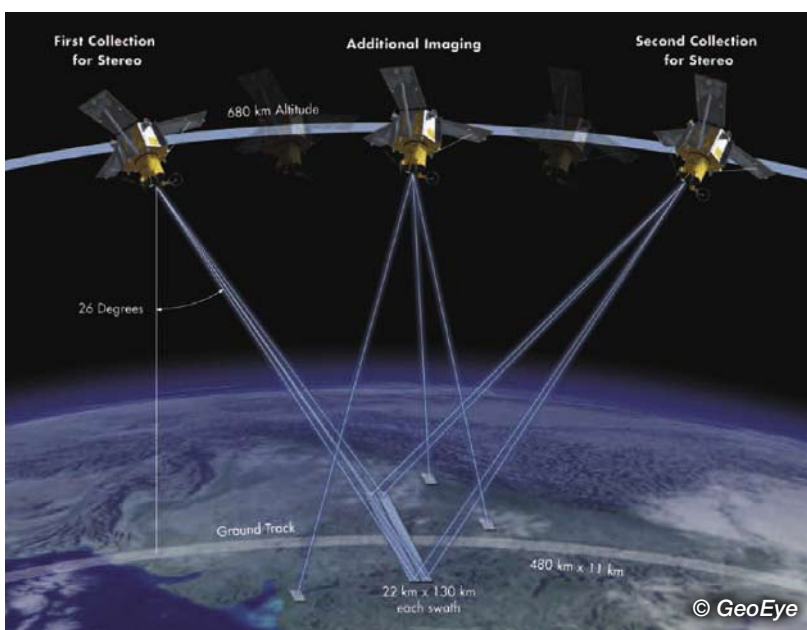


Timeframes:

IKONOS Order Placed - 10 August

IKONOS Imagery Captured (Cloud free) - 25 August

Final Data Sets Delivered - 12 September



Top: Final IKONOS orthoimage of WA

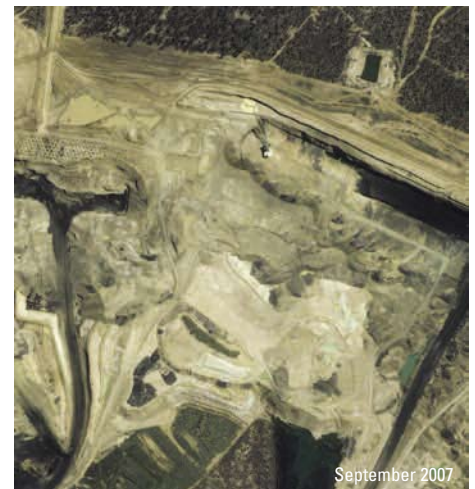
Above: Final IKONOS elevation model

Left: Representation of In-track IKONOS stereo collection. The IKONOS satellite orbits the earth at 680kms travelling at a speed of 7kms per second and is capable of capturing stereo imagery in the same overpass if requested.

Multi-Site: GeoEye-1 and IKONOS

The Multi-Site Product is a breakthrough in new capture pricing for small projects. By reducing the minimum area for capture from 100 to only 50 sqkm, the cost of imagery over each site is reduced by 50%. Multi-Site offers natural colour and colour infrared imagery, with a guaranteed 2km x 2km cloudfree area. There are two Multi-Site options:

- A. Same site imaged 3 times in 12 months
- B. 3 x 50 sqkm sites ordered at the same time



Example: Same 50 sqkm site - imaged 3 times, showing change over time

Imagery for All Applications

Take advantage of two great features of IKONOS and GeoEye-1 data:

1. Receive all four multispectral bands (Blue, Green, Red, Near IR) of data for the same price as three
2. Receive both panchromatic and multispectral for the same price

Your vegetation specialists, geophysicists or environmental engineers may be keen to utilise the blue or NIR bands, while you require a high definition, natural looking colour image.

