

Feature Classification

WorldView-2 is the first high-resolution satellite to provide eight narrowly focused spectral detectors ranging from blue to near infrared. The unparalleled spectral fidelity, combined with remarkable accuracy, agility, and collection capacity, delivers detailed feature classification capabilities beyond any other remote sensing satellite. With the addition of four spectral bands: Coastal Blue, Yellow, Red-Edge, and Near-IR2, WorldView-2 is delivering increases in classification accuracy up to 30%, which enables finer object-oriented classification and provide measureable value in applications.

Applications

Species identification

Wild plant populations are much more complex and consist of multiple species. Some are invasive pests, while others have potential value. With the increased spectral fidelity of WorldView-2, plant species can be differentiated and accurately mapped.

Feature extraction

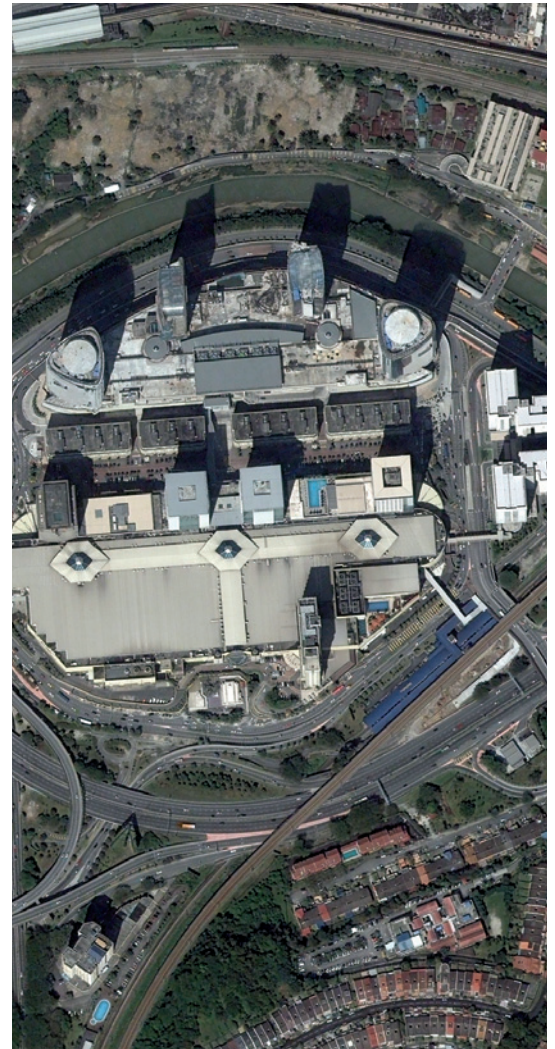
With the highest spectral fidelity and greatest spatial resolution, WorldView-2 is being used to develop extraction algorithms that use shape, texture, and spectral signature to differentiate between features.

Civil government

Understanding land use is critical for managing city resources and collecting tax revenue. WorldView-2's increased classification accuracy is being used to provide direct impact into a city's budget and expenses.

Benefits

- Map invasive species that can be harvested for biofuel production
- Identify wetland species that can indicate non-visible pollution
- Quantify trees by species to determine the logging value of a managed forest
- Automate roadway extraction to create current and accurate maps
- Detect minerals on bare soil that indicate seepage from mines
- Model potential damage from high winds based on roof type
- Accurately quantify and qualify land parcels to assess taxes and storm-water fees
- Locate non-permitted construction by identifying spectral changes
- Remotely identify roads in need of maintenance

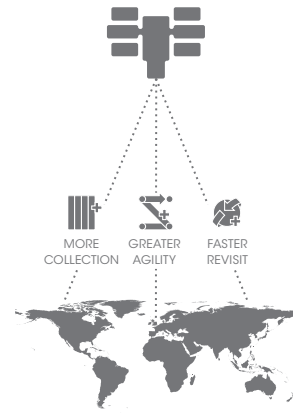


Kuala Lumpur, Indonesia
Collected January 27, 2008

Feature Classification

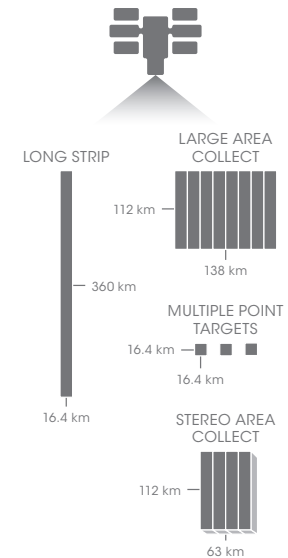
Design and Specifications

Launch Information	Date: October 8, 2009 Launch Vehicle: Delta 7920 (9 strap-ons) Launch Site: Vandenberg Air Force Base, California
Orbit	Altitude: 770 km Type: SunSync, 10:30 am descending node Period: 100 min
Mission Life	7.25 years, including all consumables and degradables (e.g. propellant)
Spacecraft Size, Mass and Power	4.3 m (14 ft) tall x 2.5 m (8 ft) across 7.1 m (23 ft) across the deployed solar arrays 2800 kg (6200 lbs) 3.2 kW solar array, 100 Ahr battery
Sensor Bands	Panchromatic: 450 - 800 nm 8 Multispectral: Coastal: 400 - 450 nm Red: 630 - 690 nm Blue: 450 - 510 nm Red Edge: 705 - 745 nm Green: 510 - 580 nm Near-IR1: 770 - 895 nm Yellow: 585 - 625 nm Near-IR2: 860 - 1040 nm
Sensor Resolution	Panchromatic: 0.46 m GSD at nadir, 0.52 m GSD at 20° off-nadir Multispectral: 1.85 m GSD at nadir, 2.07 m GSD at 20° off-nadir
Dynamic Range	11-bits per pixel
Swath Width	16.4 km at nadir
Attitude Determination and Control	3-axis stabilized Actuators: Control Moment Gyros (CMGs) Sensors: Star trackers, solid state IRU, GPS
Pointing Accuracy and Knowledge	Accuracy: <500 m at image start and stop Knowledge: Supports geolocation accuracy below
Retargeting Agility	Acceleration: 1.43 deg/s/s Rate: 3.86 deg/s Time to Slew 200 km: 10 sec
Onboard Storage	2199 gigabits solid state with EDAC
Communications	Image and Ancillary Data: 800 Mbps X-band Housekeeping: 4, 16 or 32 kbps real-time, 524 kbps stored, X-band Command: 2 or 64 kbps S-band
Max Viewing Angle / Accessible Ground Swath	Nominally +/-45° off-nadir = 1355 km wide swath Higher angles selectively available
Max Contiguous Area Collected in a Single Pass (30° off-nadir angle)	Mono: 138 x 112 km (8 strips) Stereo: 63 x 112 km (4 pairs)
Revisit Frequency (at 40°N Latitude)	1.1 days at 1 m GSD or less 3.7 days at 20° off-nadir or less (0.52 m GSD)
Geolocation Accuracy (CE90)	Specification of 5 m CE90 at less than 30° off-nadir, with predicted performance in the range of 4.6 to 10.7 m (15 to 35 ft) CE90, excluding terrain and off-nadir effects With registration to GCPs in image: 2.0 m (6.6 ft)






Collection Scenarios

(30° off-nadir angle)



Sensor Bands

-  Panchromatic
-  Multispectral
-  4 Additional Bands

U.S. Regulation requires imagery to be resampled to a minimum of 50 m pan and 2.0 m multispectral.