DATA SHEET

INSIGHT PRODUCTS

DigitalGlobe™

Vegetative analysis

DigitalGlobe leverages its high-resolution multispectral satellites to provideRed-Edge detection for conducting vegetative analyses that can reveal plant type, age, health, and diversity in unprecedented detailed. Remote sensing solutions that include the Red-Edge band are sensitive enough to discriminate young vs. mature plants, conifers vs. broad leafed, and even detect subtle changes in plant health, before they are visible. Analysts rely on the sensitivity of WorldView-2's Red-Edge band to deliver granular field classifications and early-warning capabilities to industries that depend on the environment.

Applications

Precision agriculture

Field crops, orchards, and tree plantations are complex systems that require continuous monitoring, which is typically costly and highly subjective. The increased sensitivity of Red-Edge based analyses improves the efficiency of large scale monitoring, dramatically reducing cost and effort.

Benefits

- Discriminate between weeds and field crops
- Monitor effects of irrigation on crop health
- Calculate yield by mapping crop health to market price

Environmental mapping

Governmental agencies monitor natural resources to ensure regulatory compliance and manage risks from natural disasters. The ability to map and classify large areas with great detail will enable more efficient responses and a better understanding of potential risks.

- Identify plant stress that can indicate contamination or pollution
- Develop accurate forest fire models using detailed plant classification
- Monitor invasive species eradication with greater precision

Pipeline monitoring

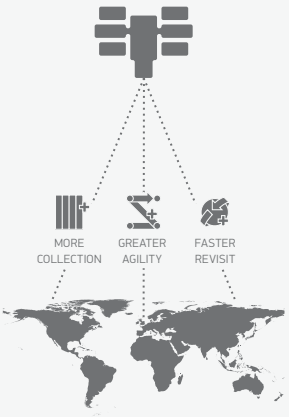
Oil and gas utilities need to monitor large stretches of pipelines across remote and inhospitable regions. Red-Edge based analysis can provide early identification of potential leaks based on their impact to the adjacent plant material.

- Deploy field crews to potential problem areas
- Minimize impact by quickly responding to leaks
- Detect leaks earlier reducing the loss of valuable resources

Near Sao Paulo, Brazil

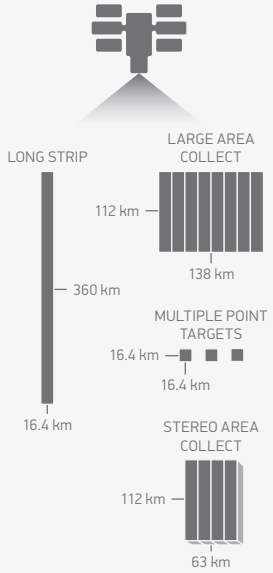
Design and specifications

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: Sun synchronous, 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 kilometers: 10 sec
Onboard storage	2199 Gb 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

(30º off-nadir angle)



Sensor bands

- Panachromatic
- Multispectral
- 4 additional bands

All imagery complies with U.S. regulation.

DS-VEG 10/14