

Geospatial Technologies; Directions & Standards

Srinibas Patnaik,
Senior Director, SAARC



DigitalGlobe™ at a glance



Stock symbol: **DGI**
LISTED
NYSE®

Offices & production facilities worldwide:



Markets served

 Defense & intelligence

Civil government 

 Location-based services

Mining 

 Oil & gas

Marine 

 Agriculture

Insurance 

 Humanitarian

Today's clearest view of the Earth

... from the world's most advanced constellation:



IKONOS®



QuickBird®



WorldView-1®



GeoEye-1®



WorldView-2®



WorldView-3®

.82 meter resolution
9 m CE90

.53 meter resolution

.50 meter resolution
<4 m CE90

.41 meter resolution
3 m CE90

.46 meter resolution
<3.5 m CE90

.31 meter resolution
<3.5 m CE90

Extending the spatial resolution to 30cm on WV3

Introducing the 1st multi-payload, super-spectral, high-resolution commercial satellite.



WorldView-3[®]

WorldView bus:

High-agility platform

Main instrument:

Panchromatic + 8 multispectral bands

Secondary instruments:

8 SWIR bands + 12 atmospheric correction bands

Resolution:

.31 meter, <3.5 m CE90



.31 m

Late
2014

WorldView-3's foundation is WorldView-2, with industry-transforming enhancements

Shared core high-performance features

- High-resolution panchromatic band
- 8 multispectral bands
- Agile CMG spacecraft



Enhancements

- 8 SWIR bands
- Atmospheric Correction Instrument (CAVIS-ACI)
- 33% better resolution, same swath
- Downlink data rate increased 50% (from 800 Mbps to 1,200 Mbps), heritage downlink maintained



See more of the Earth

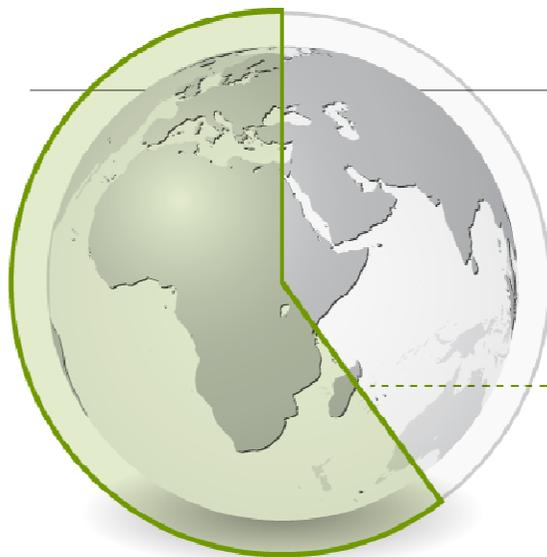
Content leader:



Archive contains the equivalent of over 8 times Earth's surface



More access:



Faster refresh:



Our vision

By 2020, be the indispensable
source of information about
our changing planet.

Living our vision



» Meeting defense & intelligence requirements



» Supporting humanitarian efforts



» Monitoring critical infrastructure



» Tracking changes in human geography

Imagery

Leverage our vast image archive or task our advanced constellation

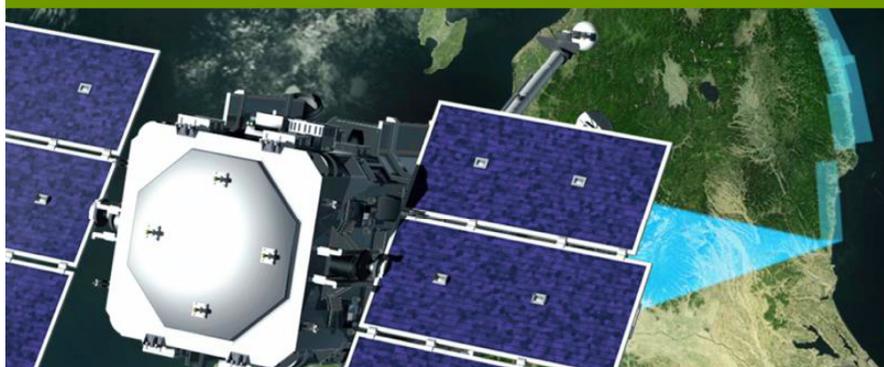
GATHER RAW AND STANDARD IMAGERY



LEVERAGE OUR VAST IMAGE ARCHIVE



TASK THE WORLD'S MOST ADVANCED CONSTELLATION



ACCESS OUR SATELLITES DIRECTLY



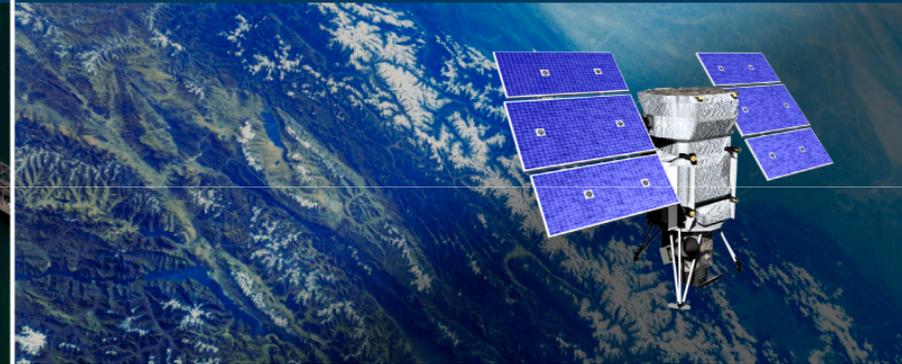
Information

Let us process the imagery and fast-forward your workflow

INGEST PRE-PROCESSED IMAGERY



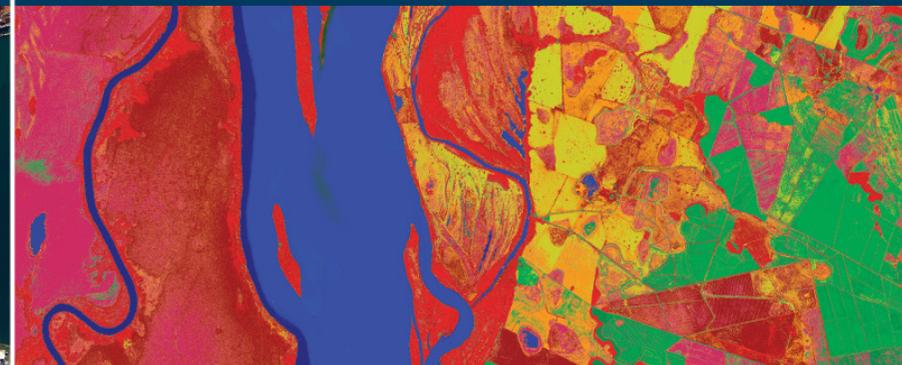
MAP LARGE AREAS OF PLANET EARTH



LEVERAGE ADVANCED ELEVATION MODELS



DIFFERENTIATE BETWEEN SURFACE MATERIALS



Insight

Our experts help you make critical decisions faster

MONITOR WORLD DISASTERS



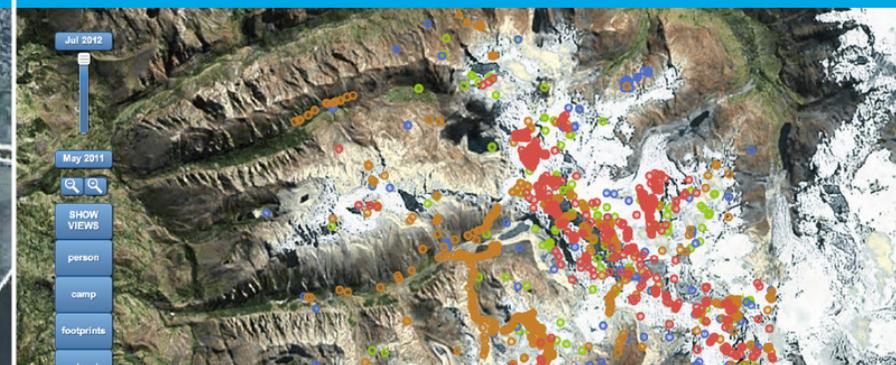
UNDERSTAND HUMAN GEOGRAPHY



PREDICT FUTURE EVENTS



CROWDSOURCE PROBLEM SOLVING



DigitalGlobe Constellation Enables Better

- Better Crop Inventory

- Deliverable: Finely tuned multi-spectral imagery:

- 50 cm resolution color imagery with 8 bands
- 80% ground truth accuracy
- +/- 30 days currency to planting seasons

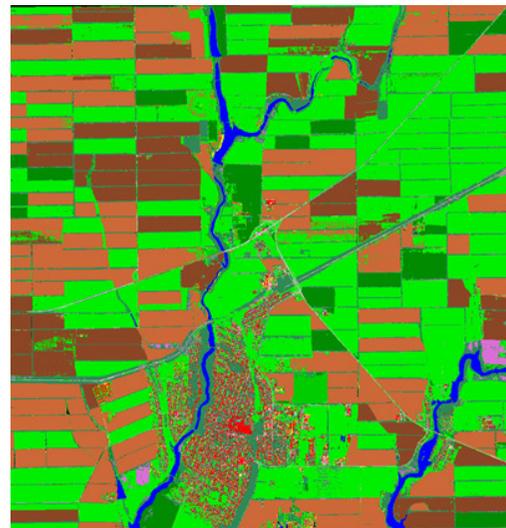


For uniform fields

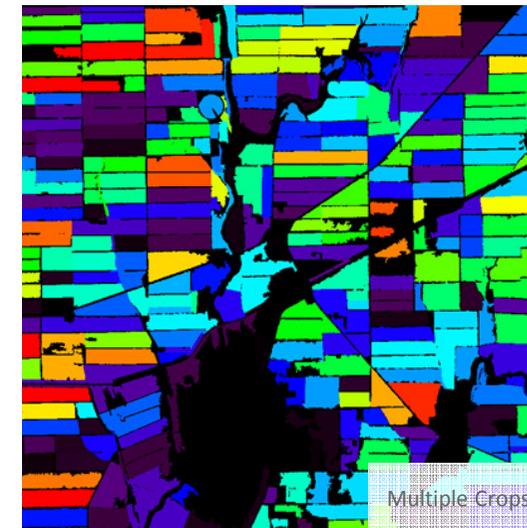
Crop Mask Detection
(e.g. crop or no crop present)



Field Boundary Delineation



Crop Type Identifications



DigitalGlobe Constellation Enables Best

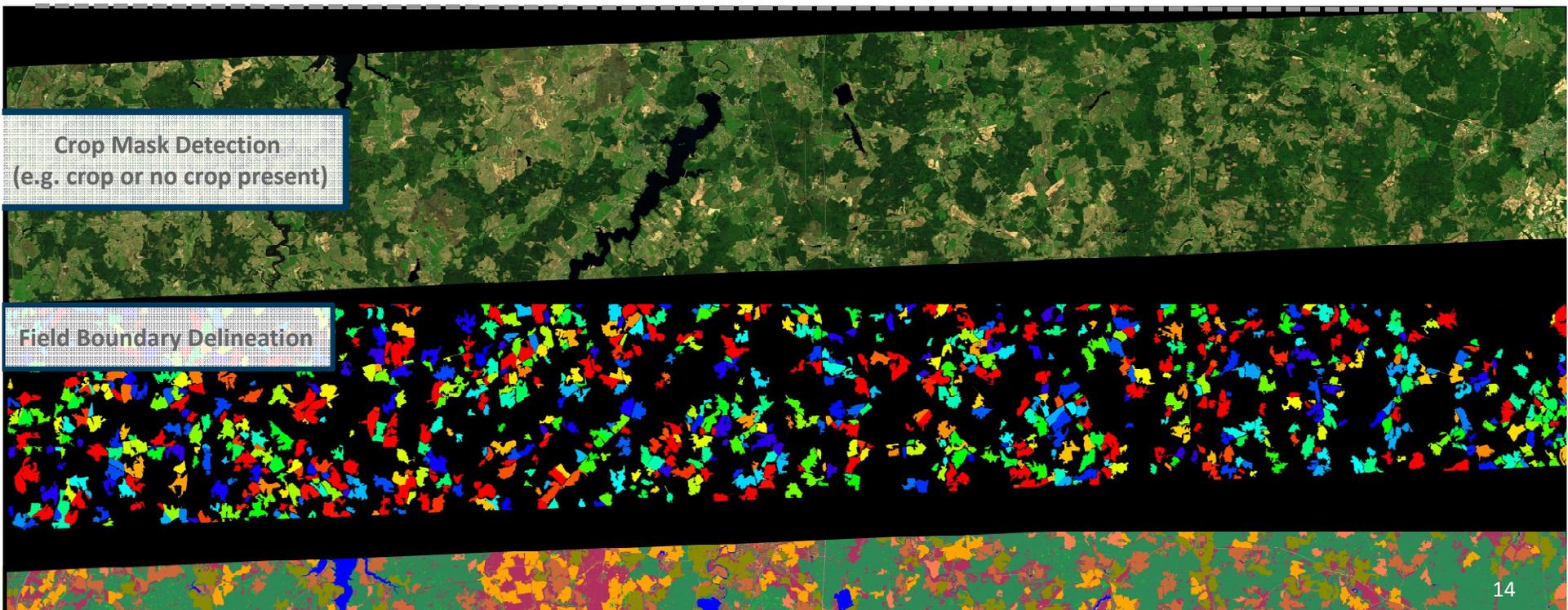
- Best Crop Inventory

- Deliverable: Finely tuned super-spectral imagery:

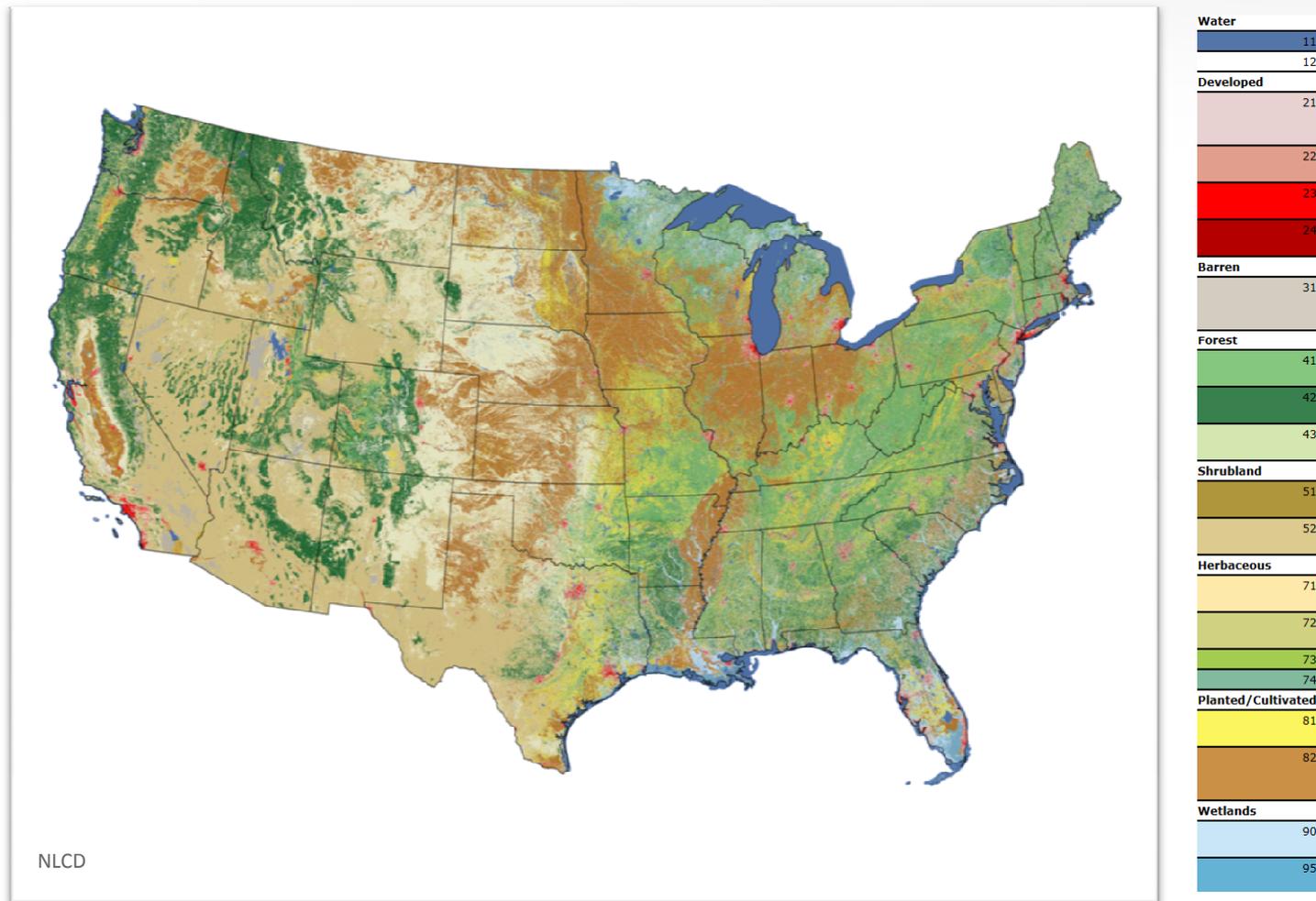
- 30 cm resolution color imagery with 16 bands
 - 90% ground truth accuracy
 - +/- 30 days currency to planting seasons



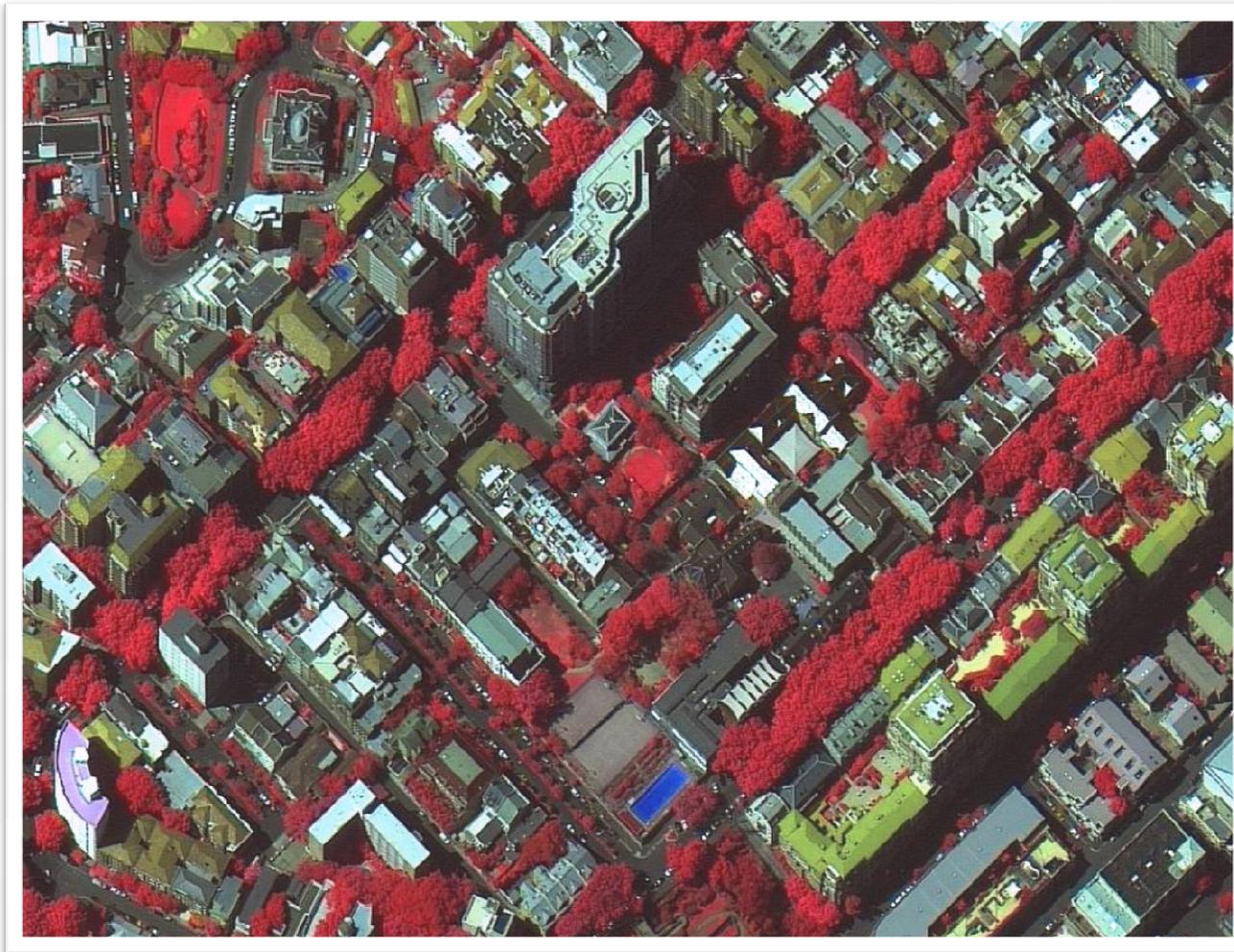
For Mixed fields



Mapping Forests at National Scale



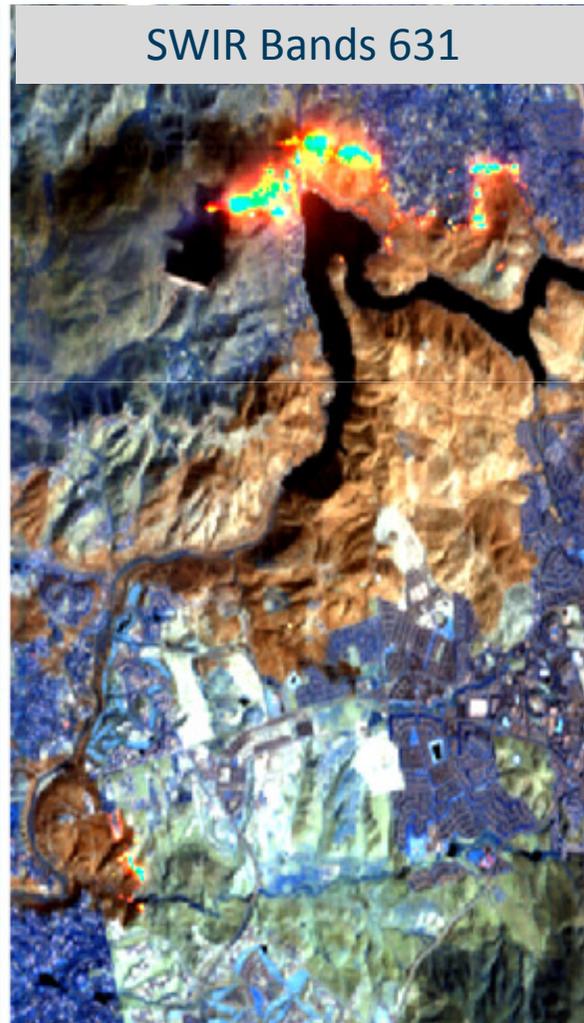
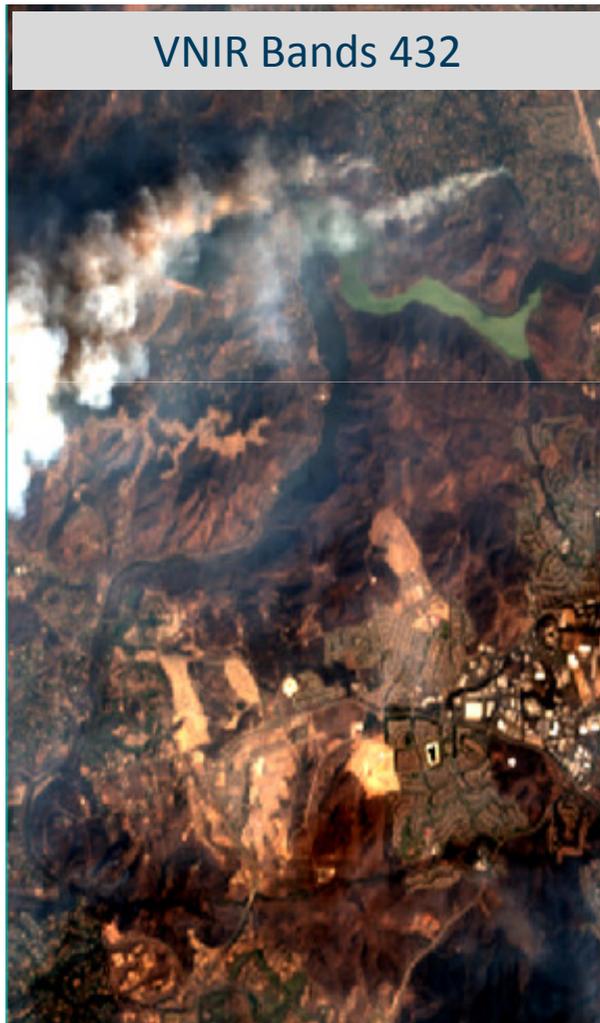
Mapping urban forests



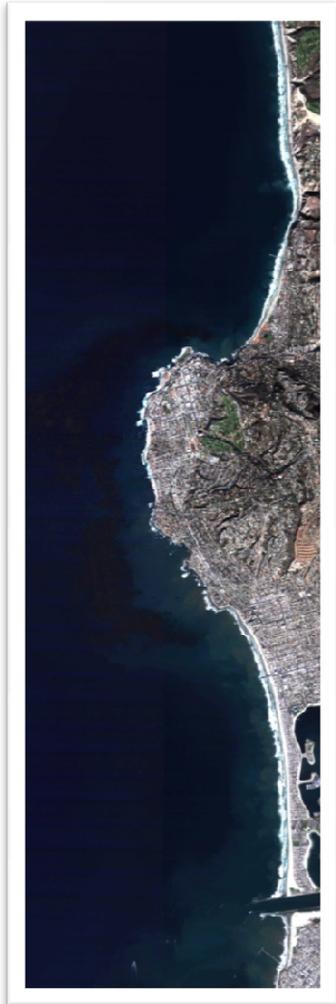
Monitor Deforestation



WorldView3 SWIR bands will be able to see through smoke to identify fires and hotspots

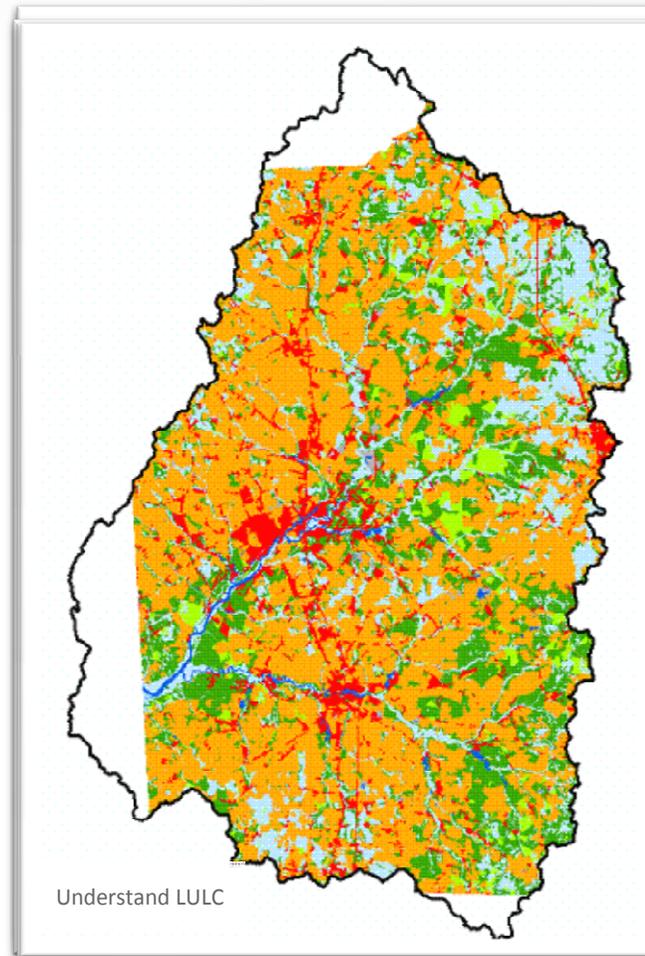


Mapping shallow water marine environment

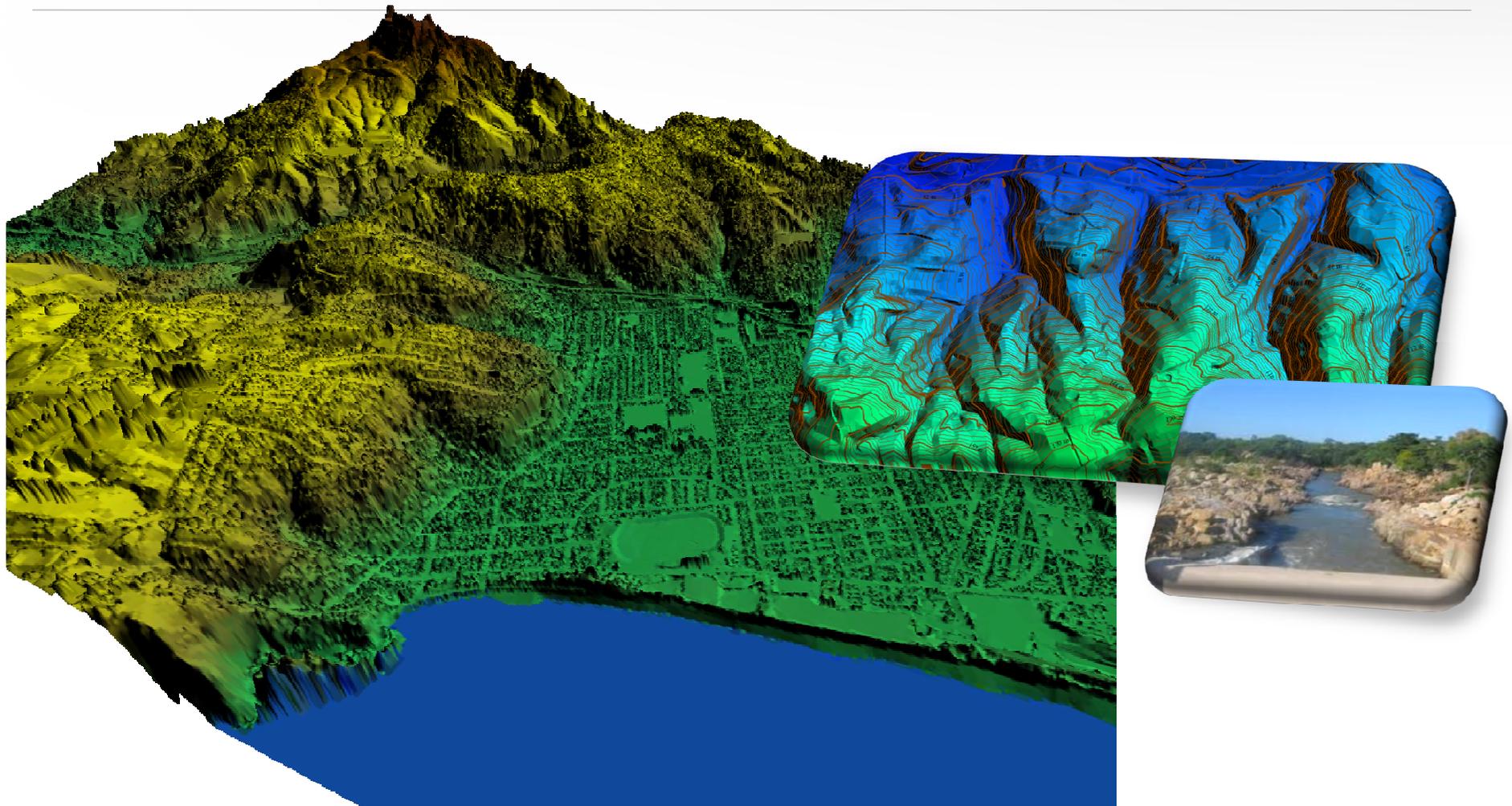


 Reefs

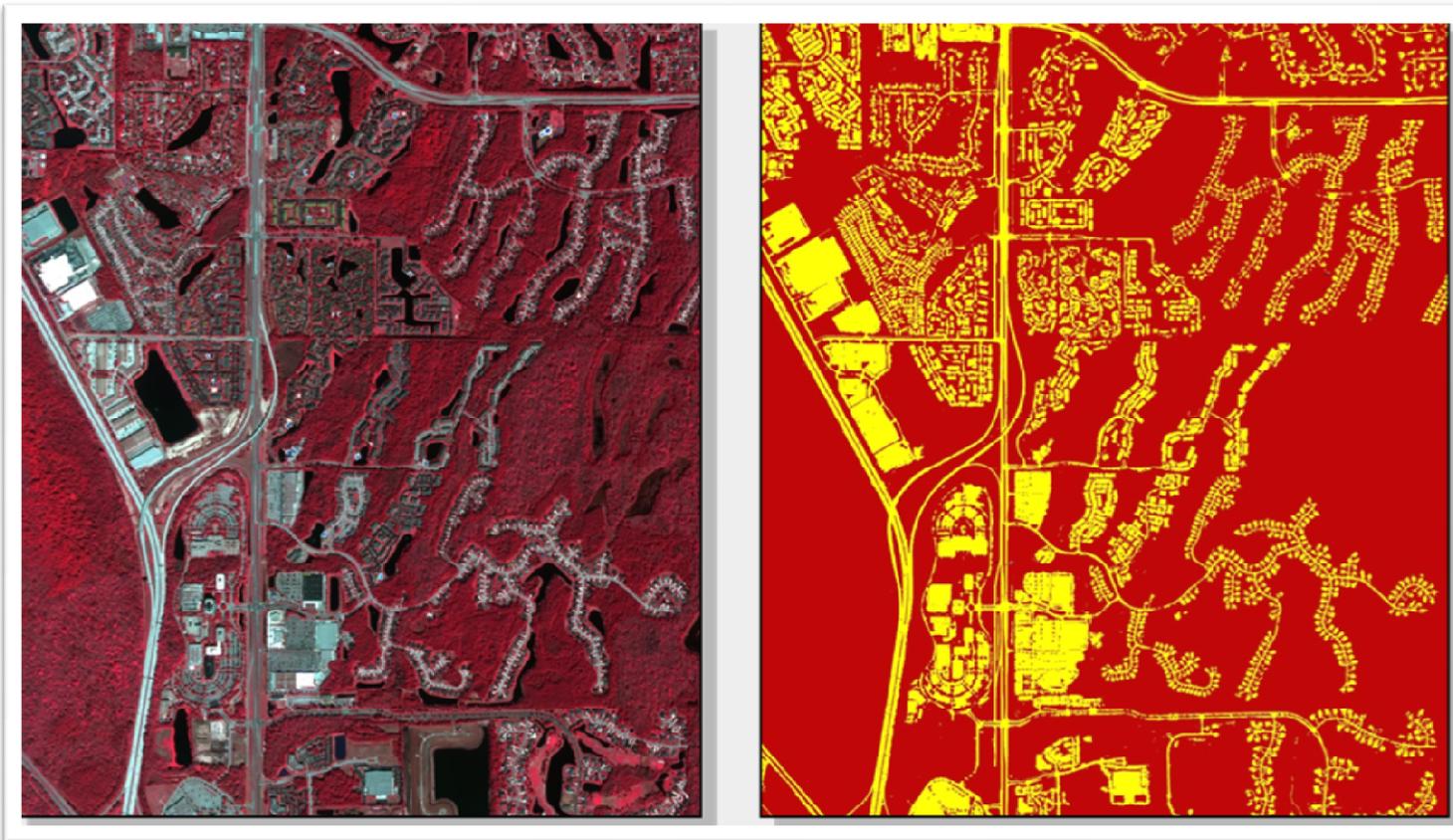
Mapping the watershed...



Watershed Management with high accuracy elevation models from satellite imagery ...



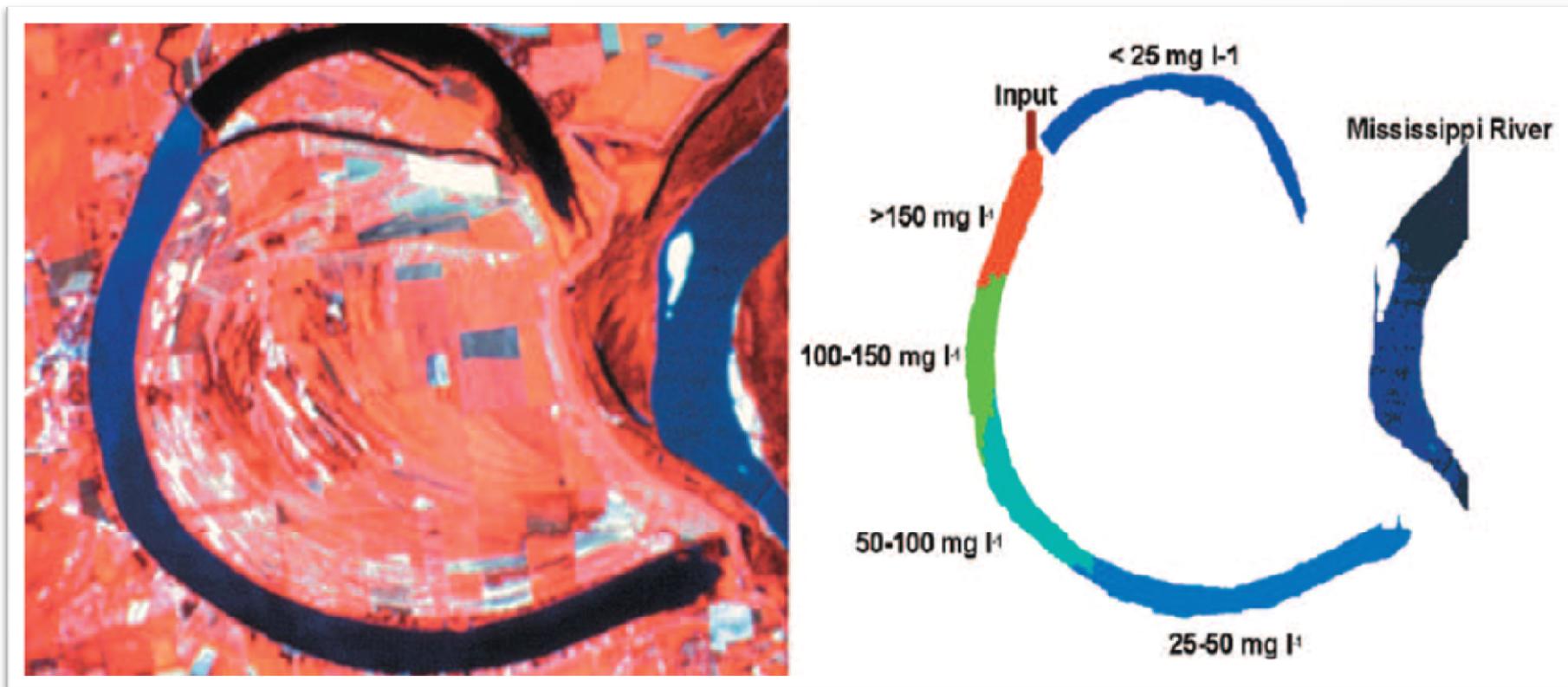
Mapping impervious surfaces for storm water management and non point source pollution...



Imagery

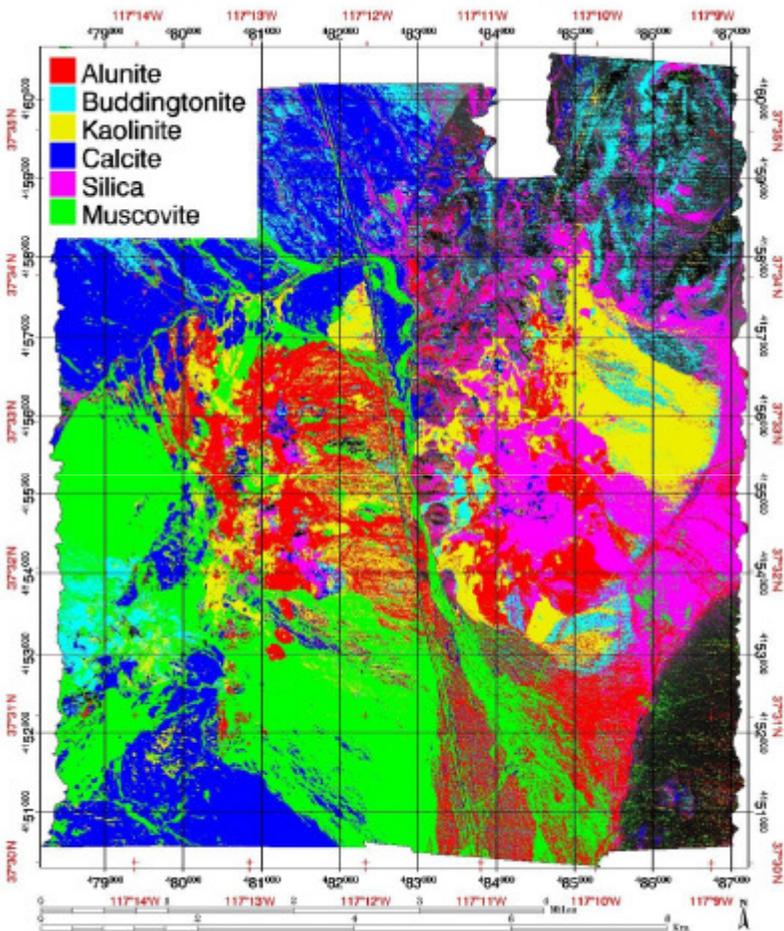
Impervious Surfaces

Mapping water quality (suspended solids) using spectral information



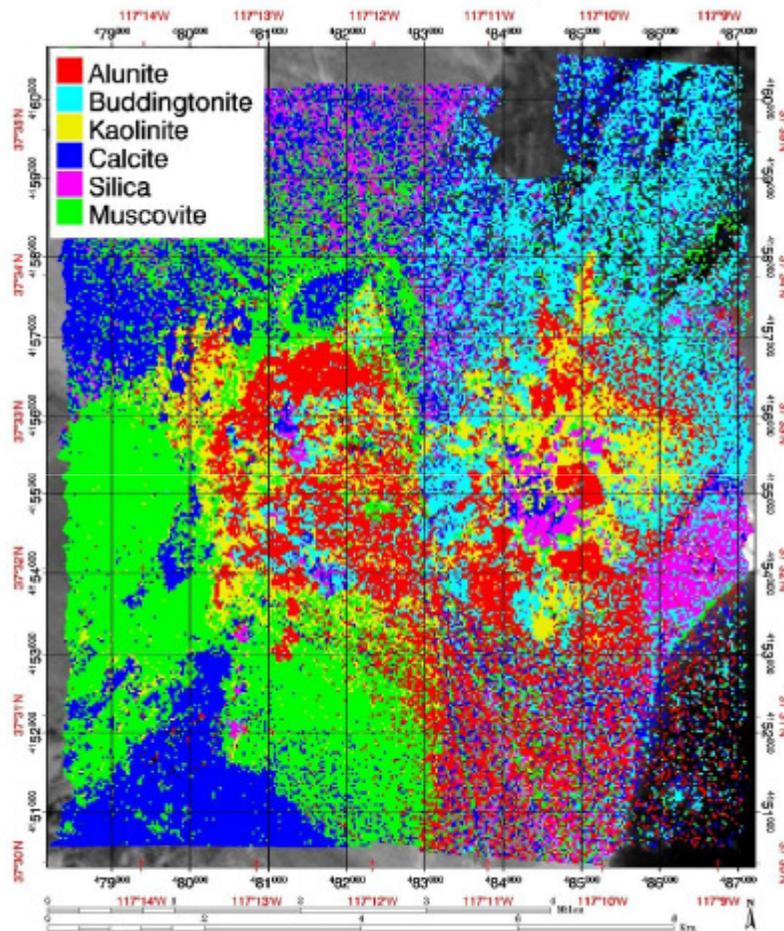
WV3 vs Aster SWIR Color Mineral Maps

WorldView-3 Simulated SWIR MTMF Mineral Map



WV-3 SWIR MTMF Mineral Map

ASTER SWIR MTMF Mineral Map



ASTER SWIR MTMF Mineral Map

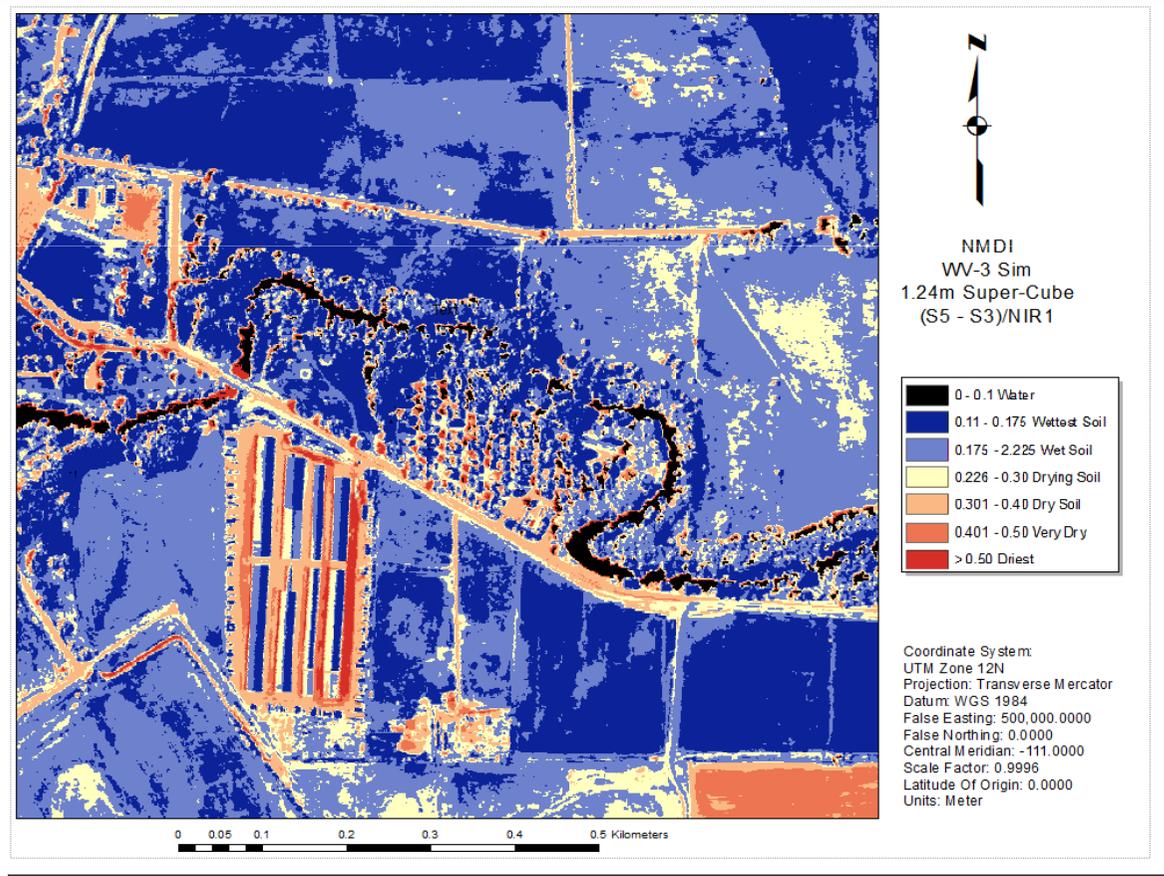
Courtesy of
 F. A. Kruse, Naval Postgraduate School
 Monterey, CA USA (fakruse@nps.edu)
 S. L. Perry, Perry Remote Sensing, LLC, Denver, CO USA

Monitoring Soil and Vegetation Moisture

WV3 Sim 1.24m Natural Color Image



Soil Moisture from NIR2, SWIR3, SWIR5
(Moisture index NMDI)



Wildfire smoke in color image



Wildfire smoke penetration in SWIR



Potential use cases for SWIR

SWIR Solutions Enable	Potential Use Case
Human Activity Monitoring	Engage in surveillance Locate new forest clearings
Disturbed Earth	Find locations of buried items Identify new construction
Man-Made Materials Detection	Differentiate between paint, plastics, camouflage
Trafficability	Determine if road can support movement of heavy equipment
Marine / Port Monitoring	Monitor high value passageways
Oil Sheen Detection	Manage coastal assets Respond to vessel accidents
Smoke / Haze Penetration	Isolate and respond to forest fires

DigitalGlobe sets the standard for quality

Accuracy. Currency. Completeness. Consistency. We lead the industry.

Versus the competition:

Resolution: We are the resolution leader

Revisit: > 3x more often

Accuracy: ~ 2x better

Coverage: ~ 4x more area per day

Spectral diversity: > 2x greater

Archive: ~ 18x larger



DigitalGlobe constellation

Collection opportunity @ 40° latitude:

Once every 12 hours

The **only** 40 cm constellation & the **fastest** sub-meter constellation.

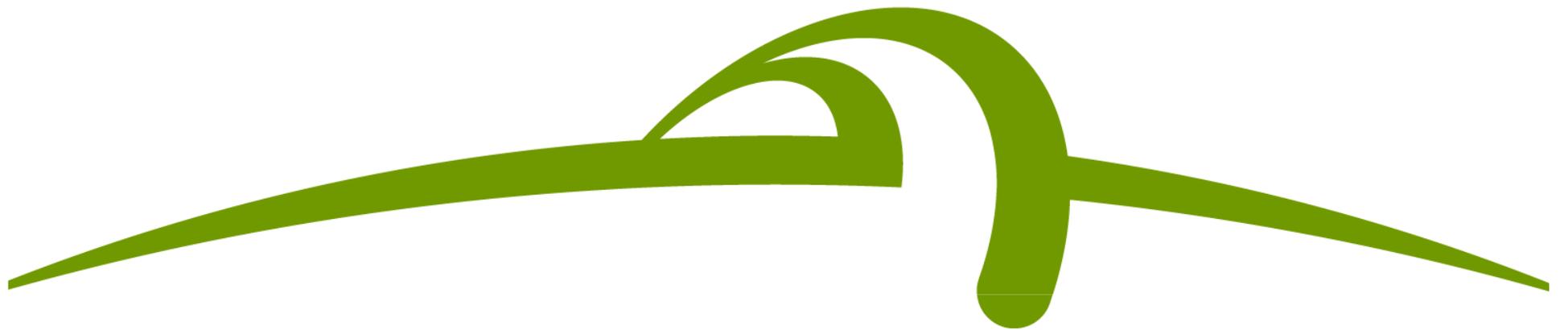
Example at 70 cm resolution:



Competitor constellation

Collection opportunity @ 40° latitude:

Once every 24 days



www.digitalglobe.com