

# Geospatial Technologies; Directions & Standards

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**Senior Director, SAARC**



"Wish" by Jorge Rodríguez-Gerada | Belfast, Northern Ireland | Nov23, 2013 | WorldView-2

# 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

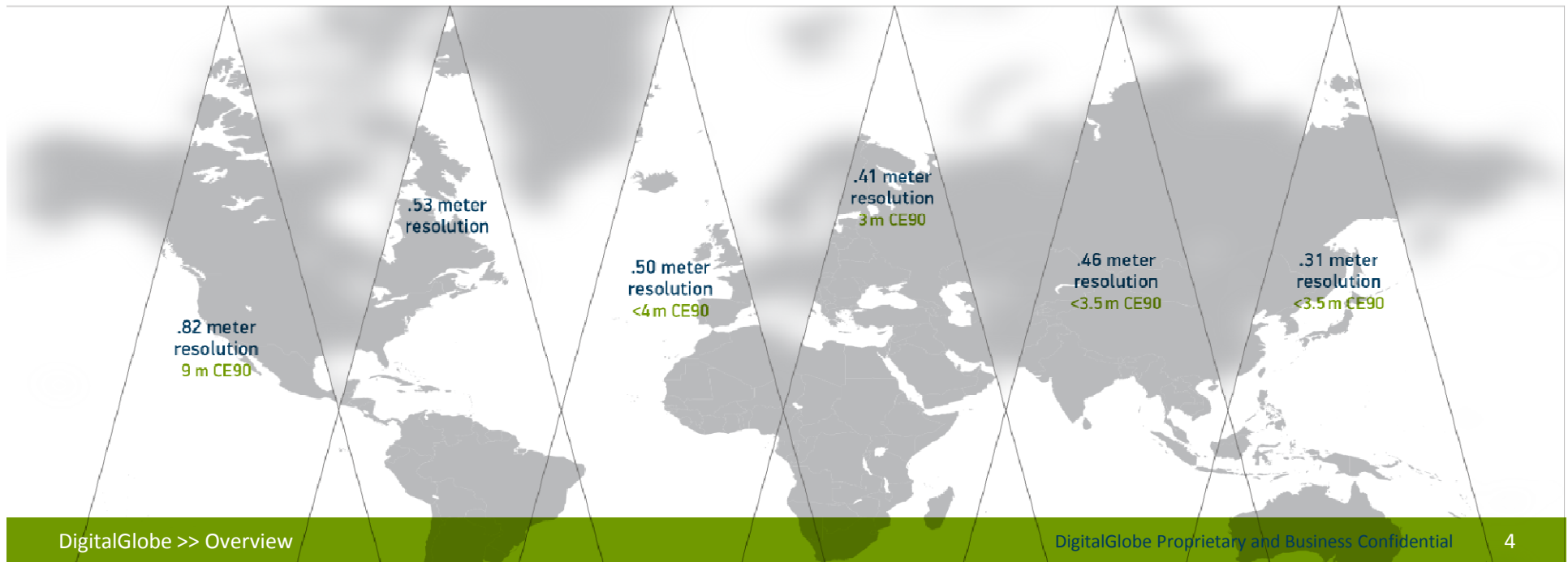
Insurance



Humanitarian

# Today's clearest view of the Earth

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





# Extending the spatial resolution to 30cm on WV3

Introducing the 1<sup>st</sup> multi-payload, super-spectral, high-resolution commercial satellite.



## WorldView-3<sup>®</sup>

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

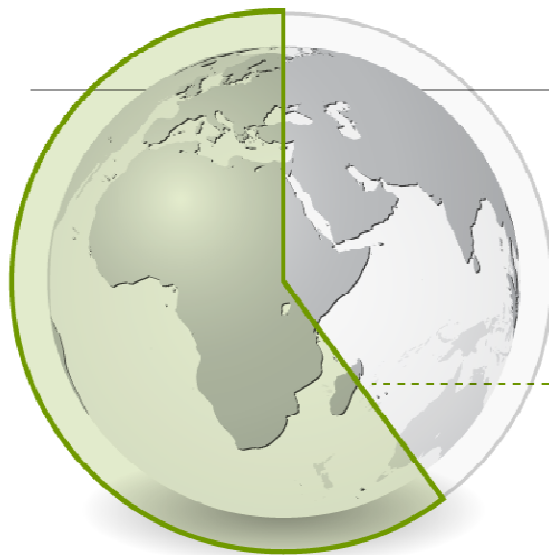
Content leader:



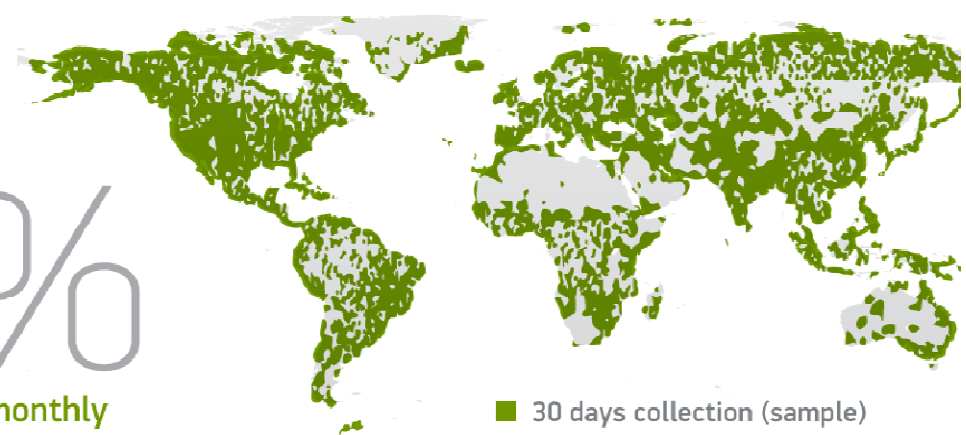
Archive contains the equivalent of over 8 times Earth's surface



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



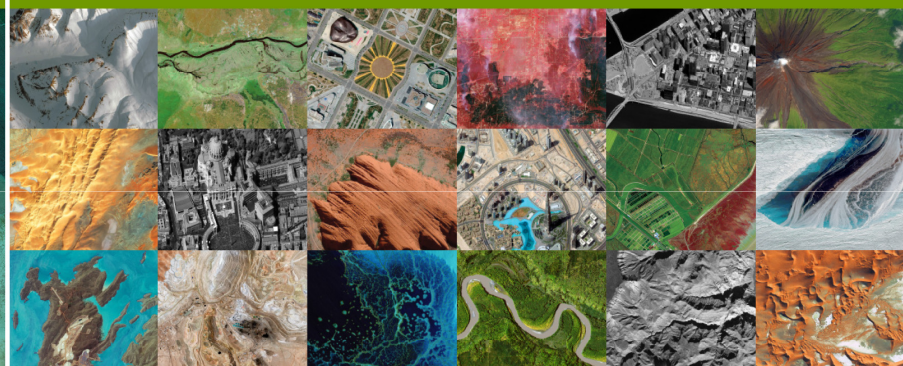
# Imagery

Leverage our vast image archive or task our advanced constellation

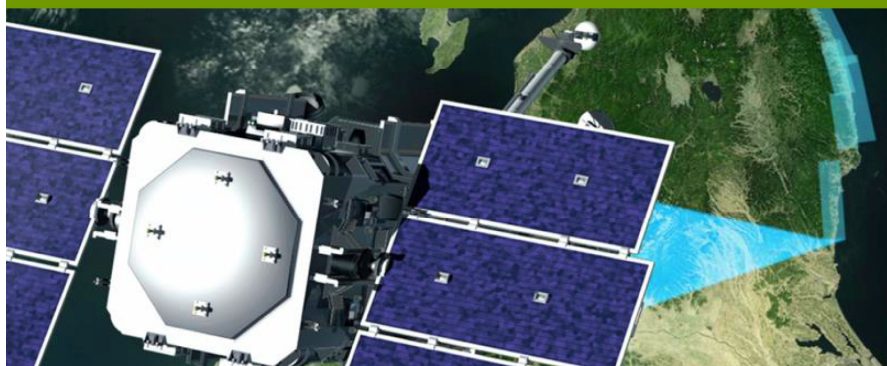
GATHER RAW AND STANDARD IMAGERY



LEVERAGE OUR VAST IMAGE ARCHIVE



TASK THE WORLD'S MOST ADVANCED CONSTELLATION



ACCESS OUR SATELLITES DIRECTLY

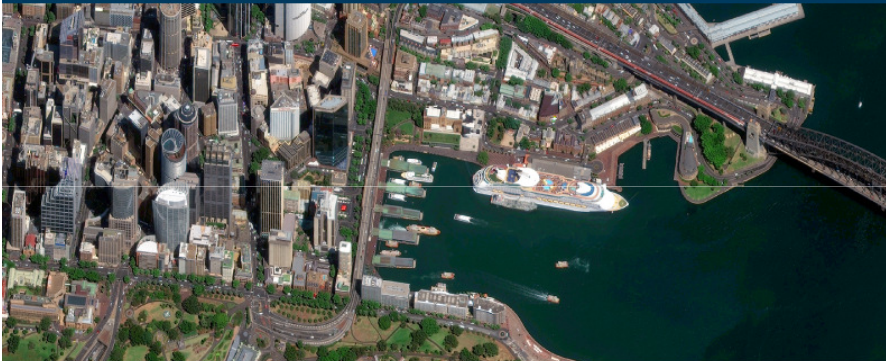




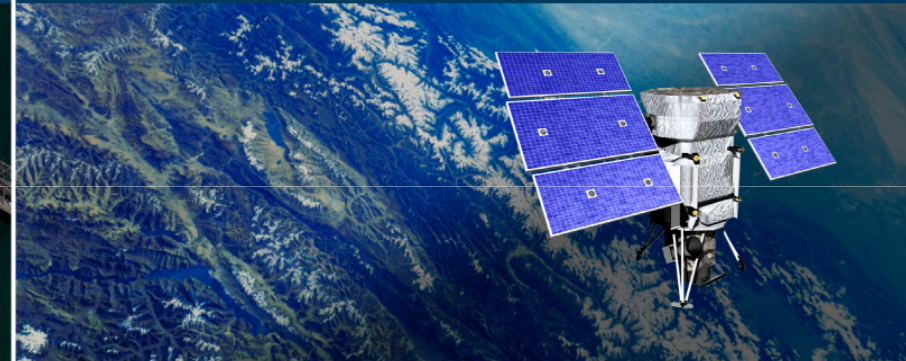
# Information

Let us process the imagery and fast-forward your workflow

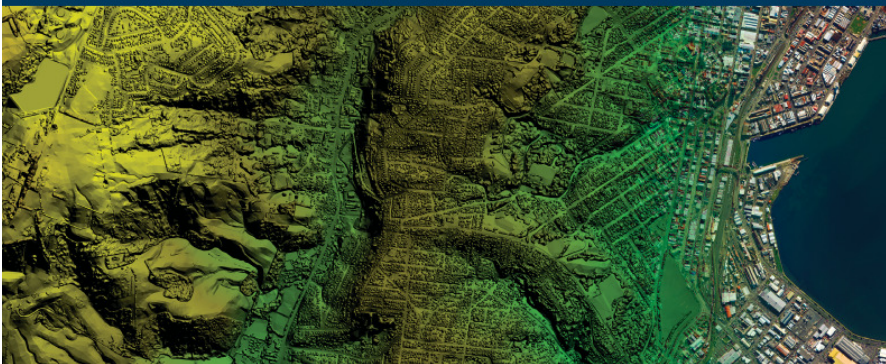
INGEST PRE-PROCESSED IMAGERY



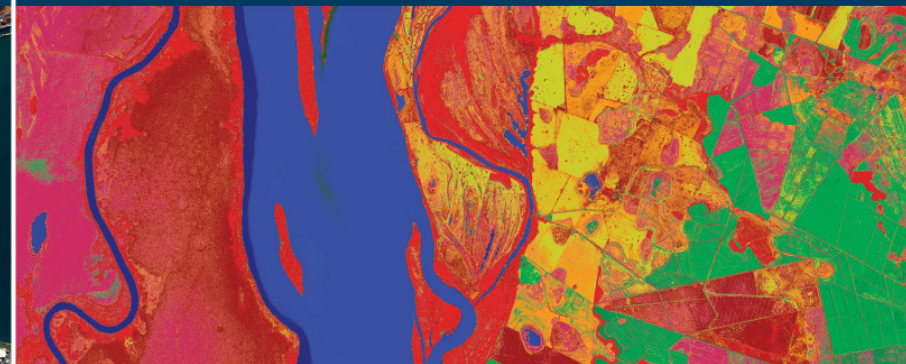
MAP LARGE AREAS OF PLANET EARTH



LEVERAGE ADVANCED ELEVATION MODELS



DIFFERENTIATE BETWEEN SURFACE MATERIALS





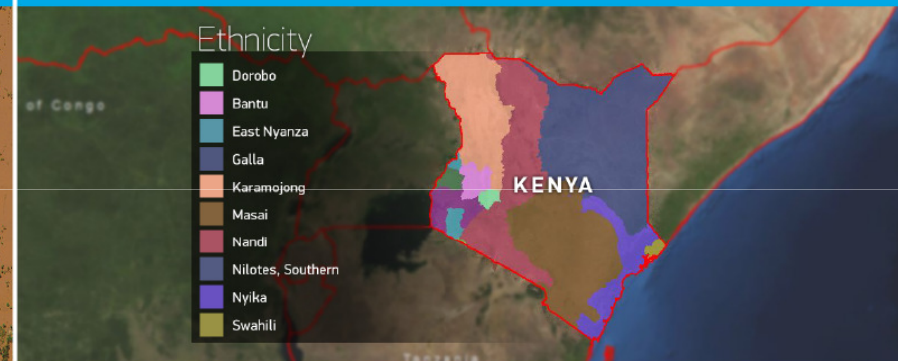
# Insight

Our experts help you make critical decisions faster

## MONITOR WORLD DISASTERS



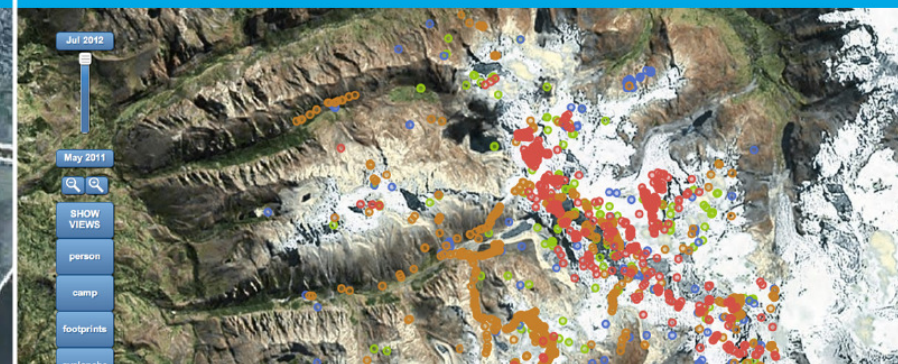
## UNDERSTAND HUMAN GEOGRAPHY



## 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

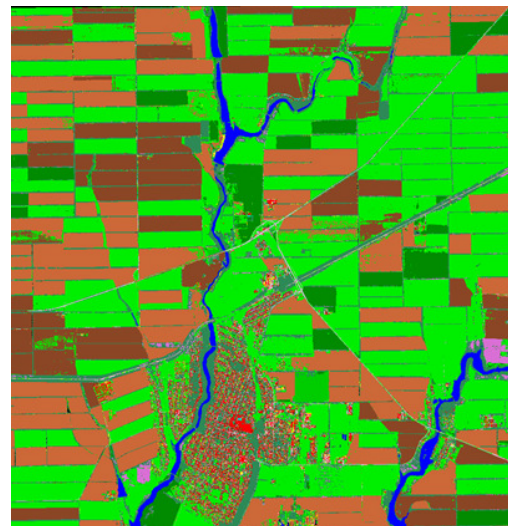


For uniform fields

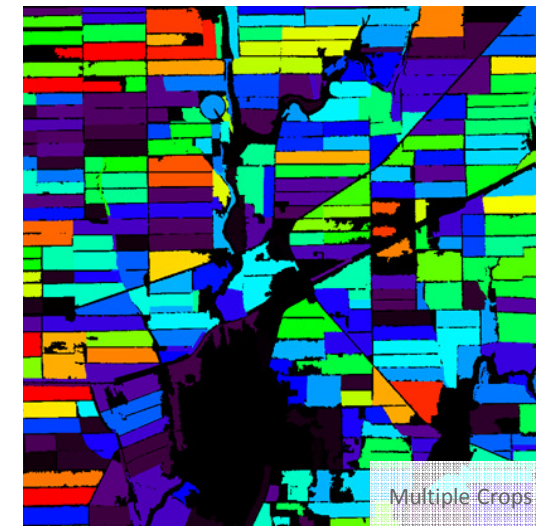
Crop Mask Detection  
(e.g. crop or no crop present)



Field Boundary Delineation



Crop Type Identifications





# DigitalGlobe Constellation Enables Best

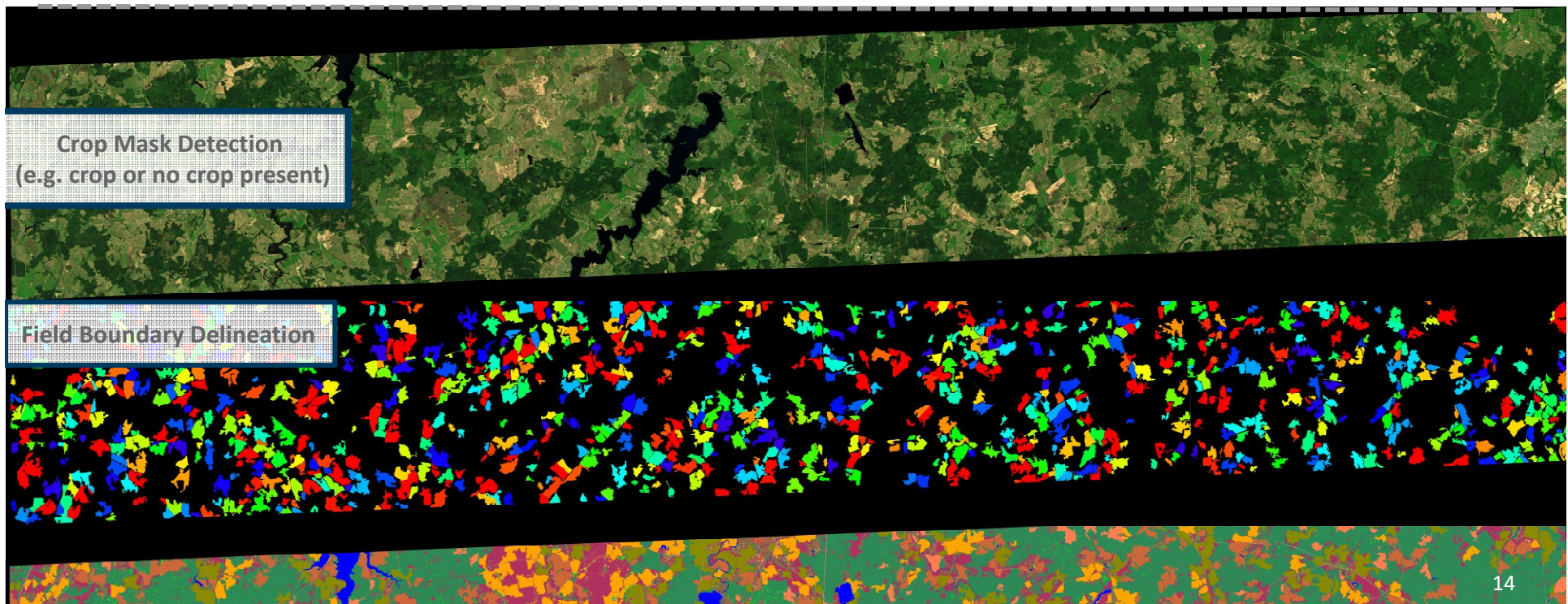
- Best Crop Inventory

- Deliverable: Finely tuned super-spectral imagery:

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

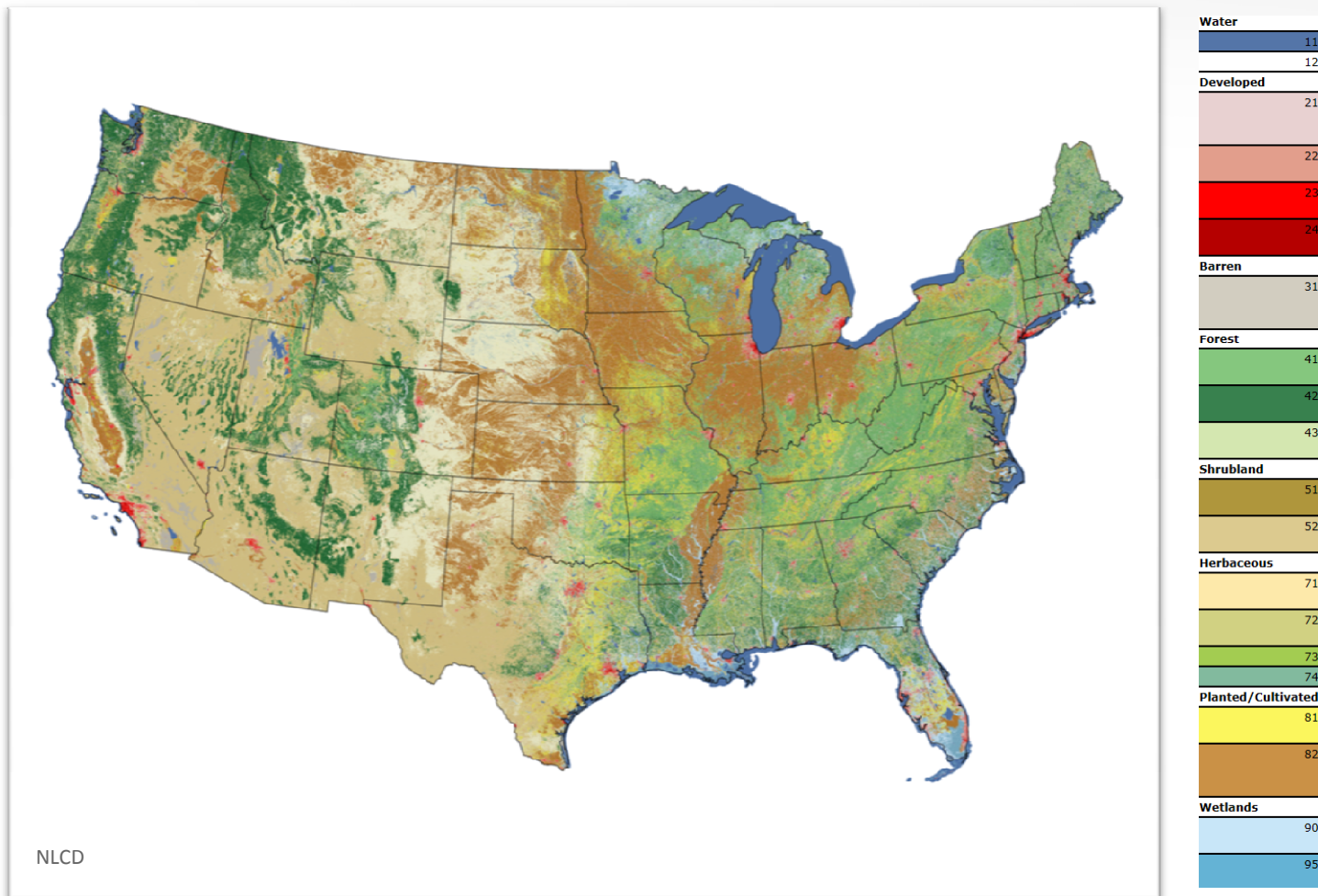


For Mixed fields

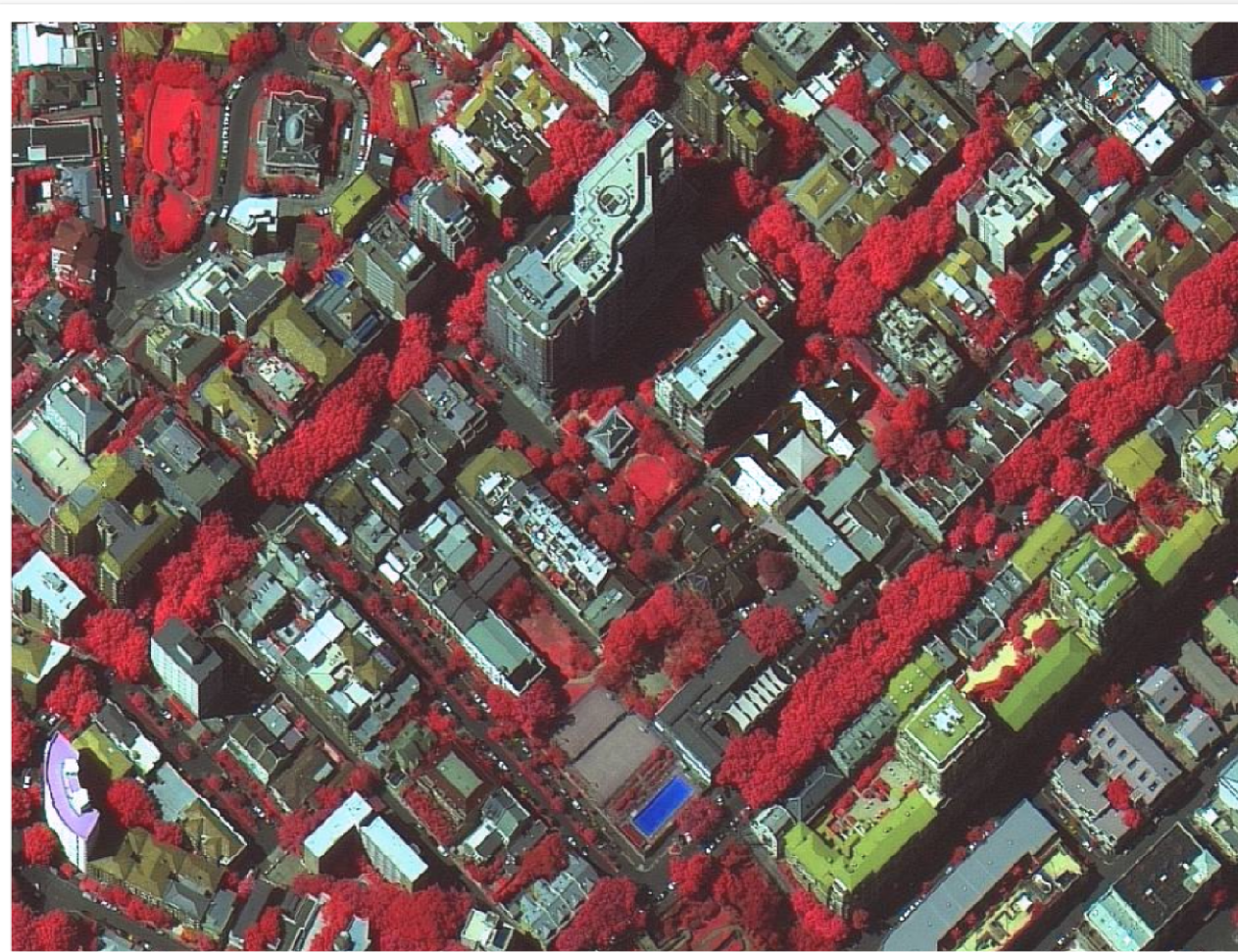




# Mapping Forests at National Scale



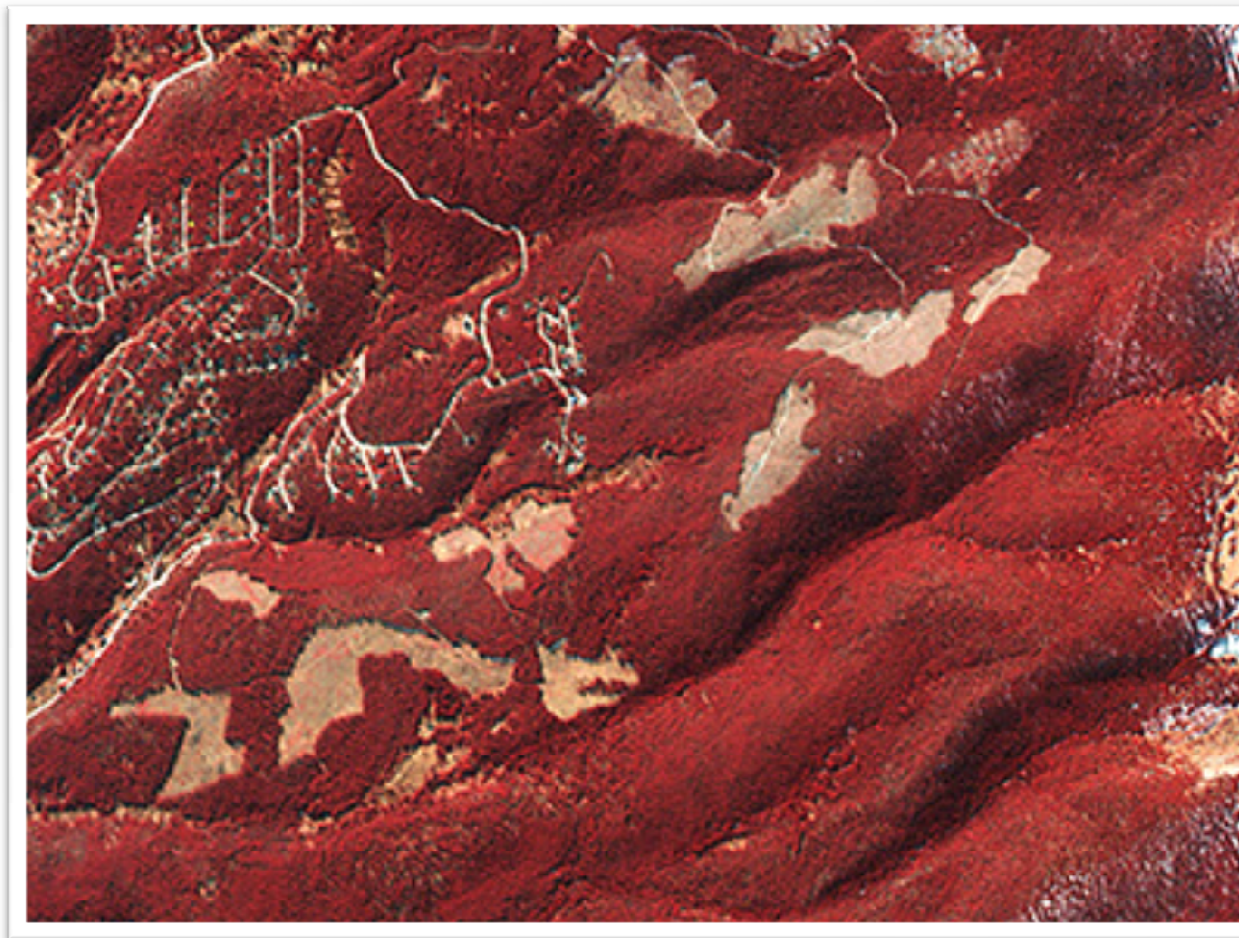
# Mapping urban forests





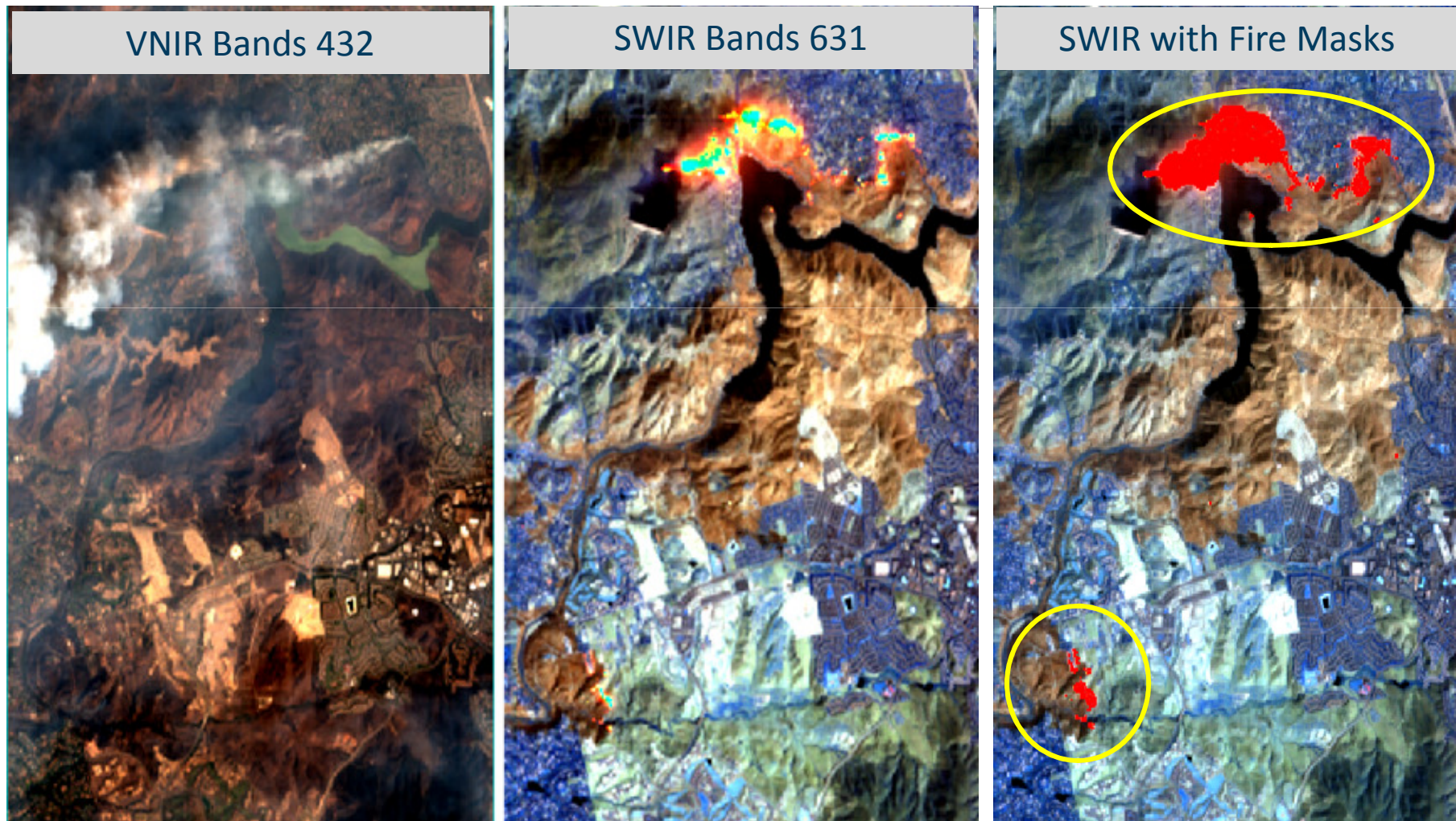
# Monitor Deforestation

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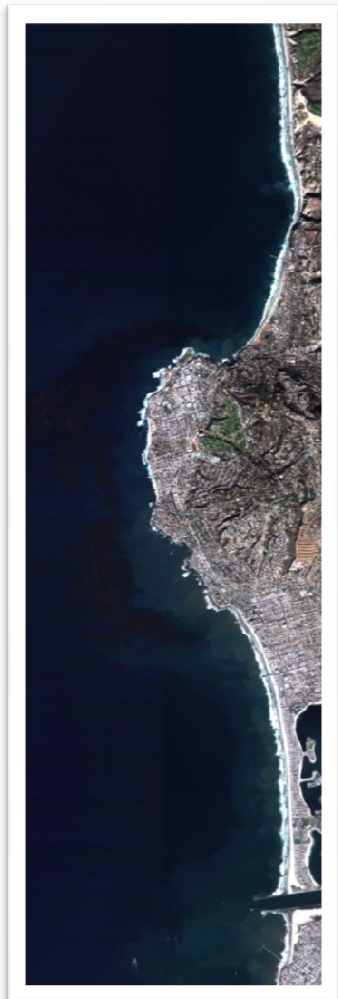




WorldView3 SWIR bands will be able to see through smoke to identify fires and hotspots



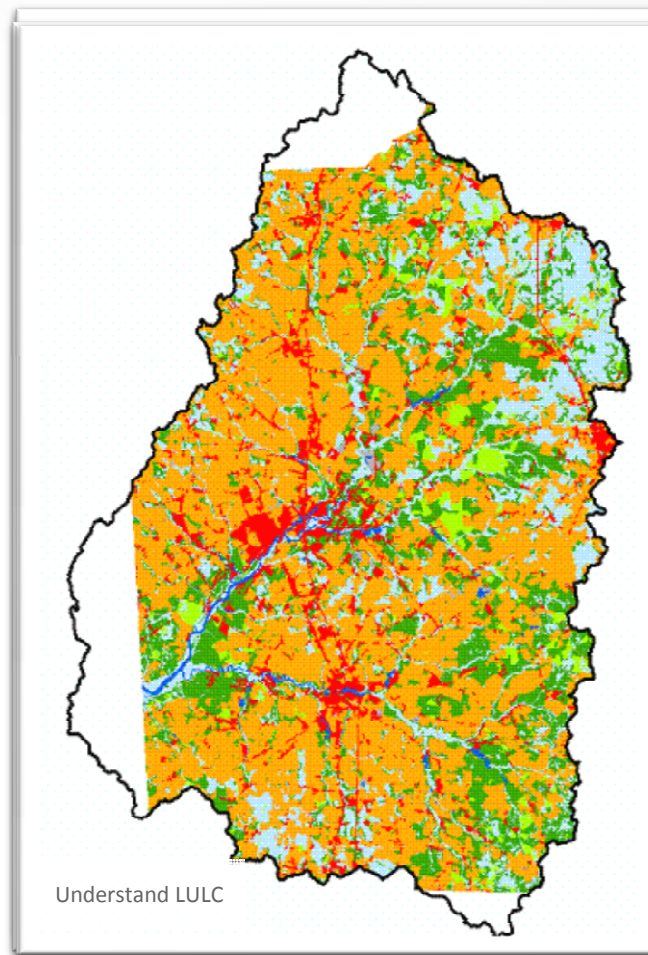
# Mapping shallow water marine environment



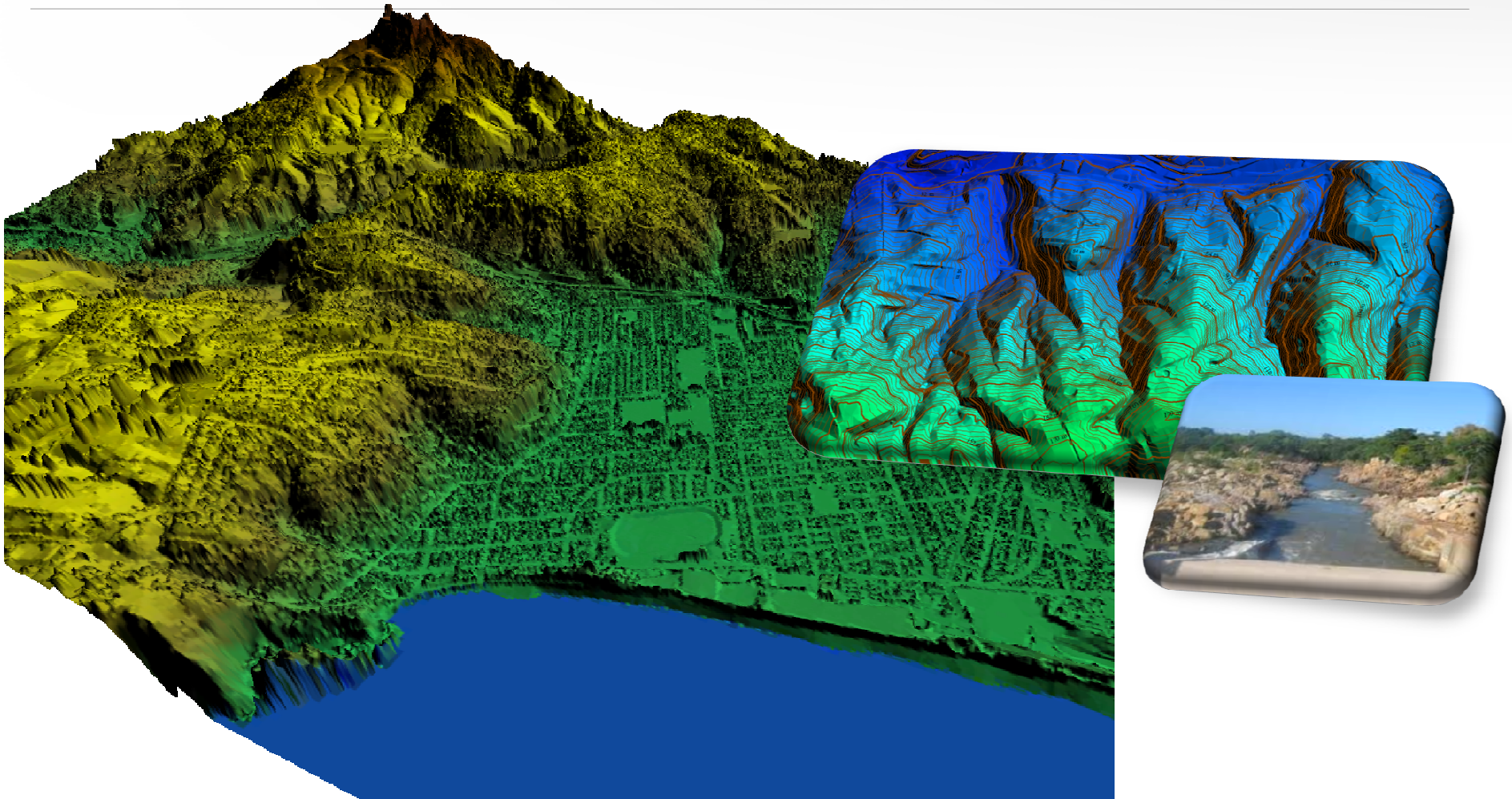
 Reefs



# 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...

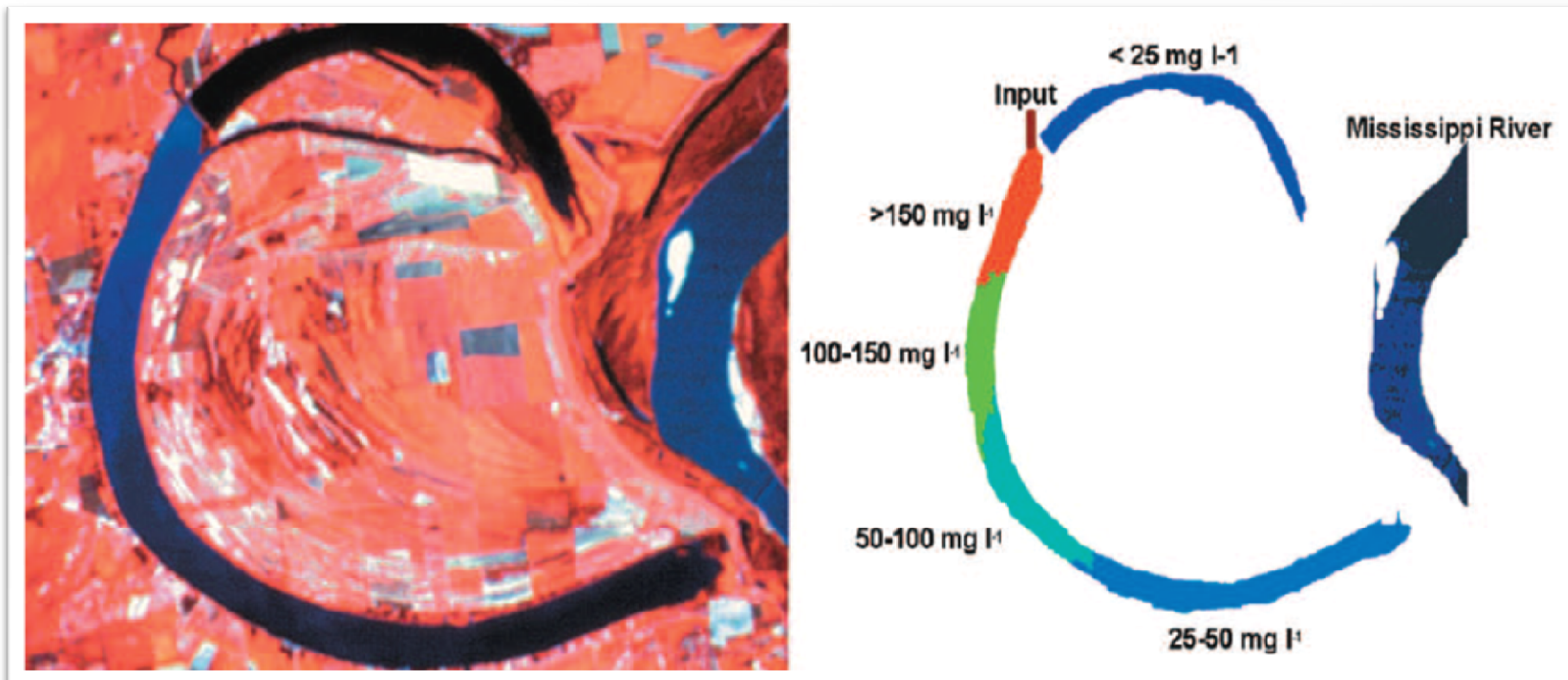


Imagery



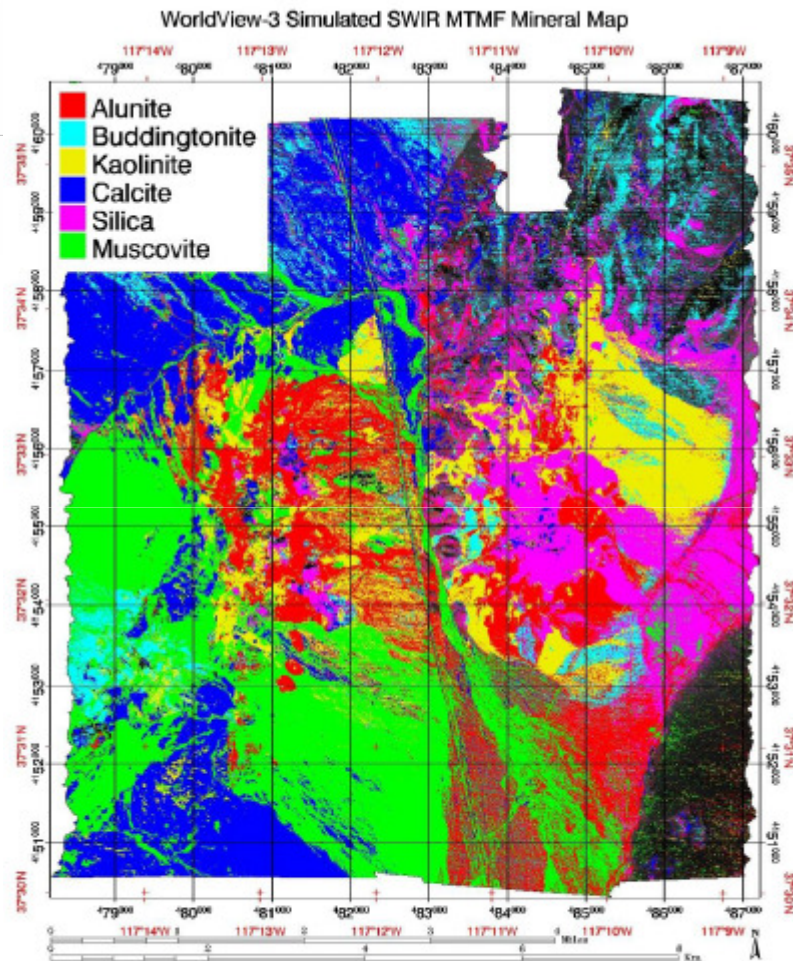
Impervious Surfaces

# Mapping water quality (suspended solids) using spectral information

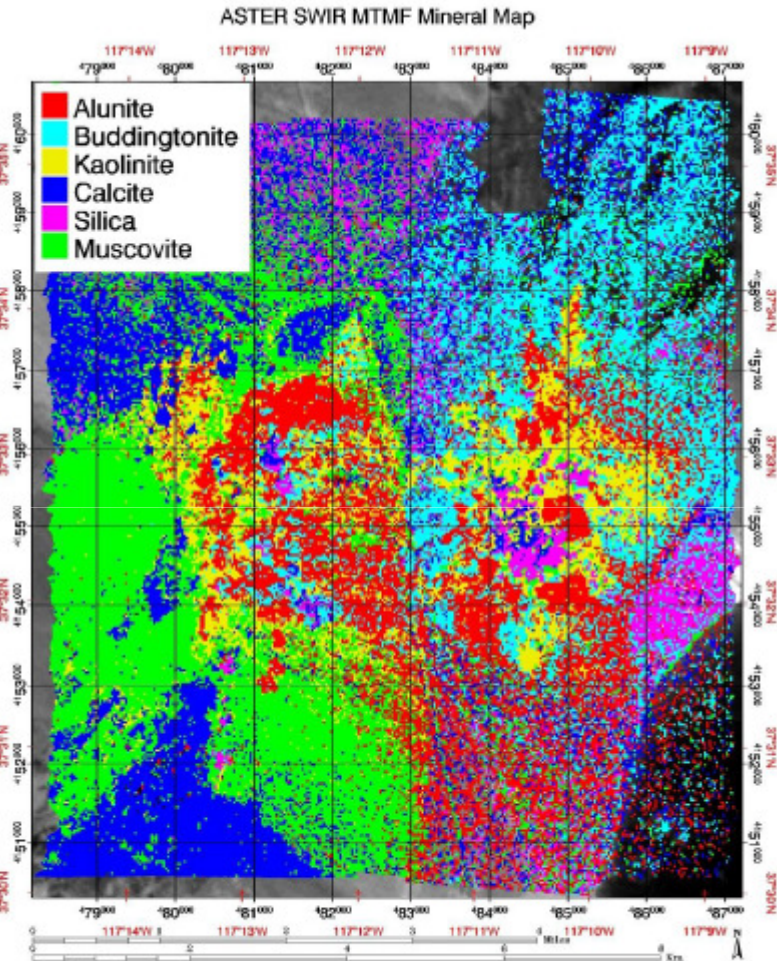




# WV3 vs Aster SWIR Color Mineral Maps



**WV-3 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

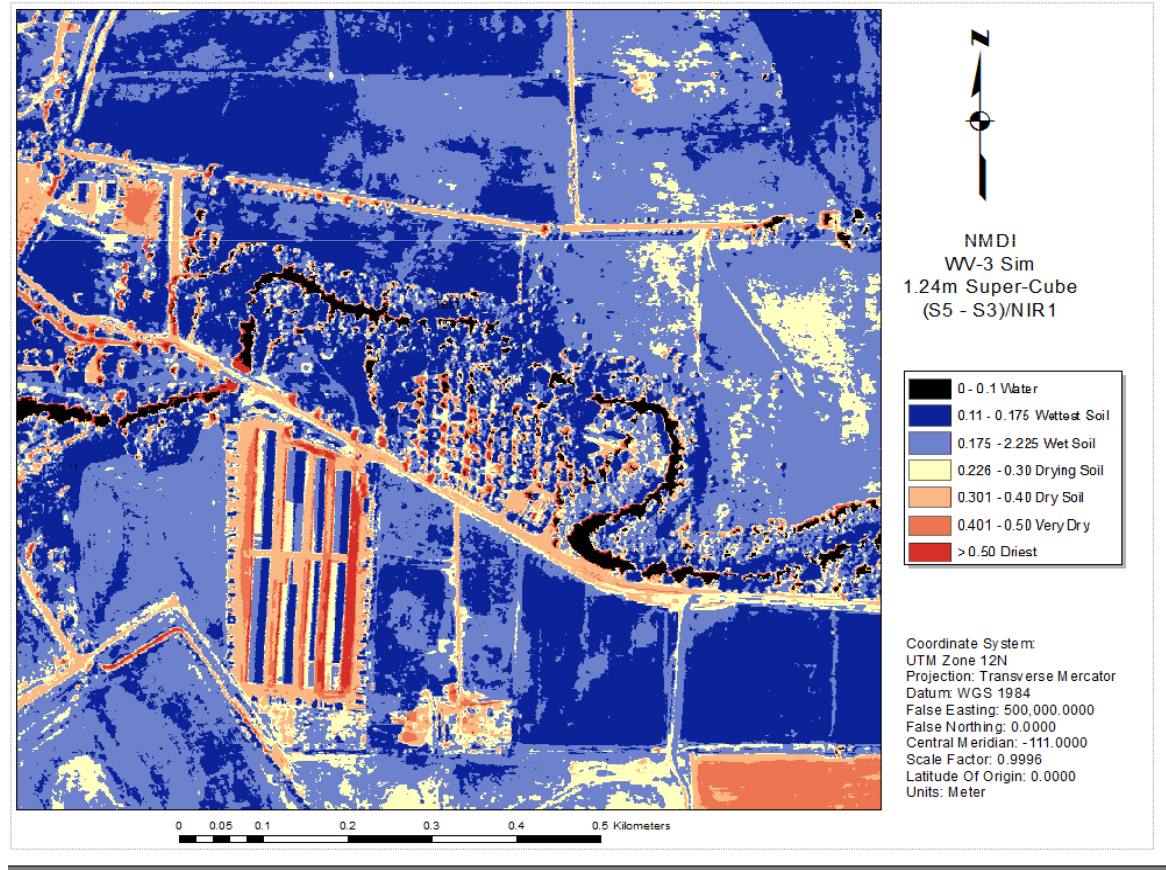


# Monitoring Soil and Vegetation Moisture

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

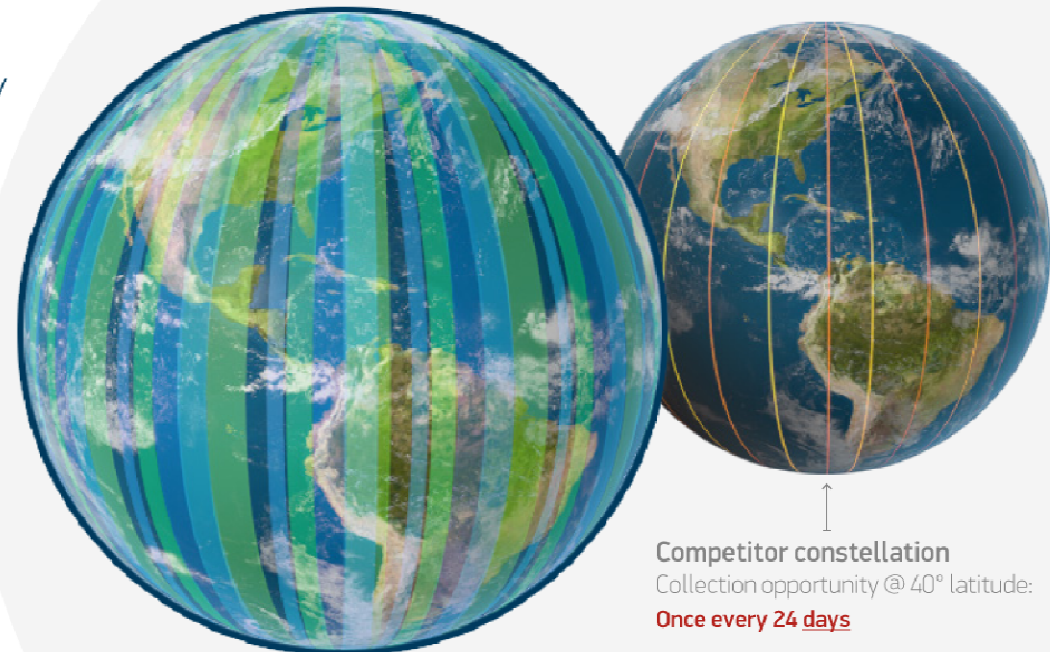
**Coverage:** ~ 4x more area per day

**Spectral diversity:** > 2x greater

**Archive:** ~ 18x larger

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

Example at 70 cm resolution:



**DigitalGlobe constellation**

Collection opportunity @ 40° latitude:

**Once every 12 hours**

**Competitor constellation**

Collection opportunity @ 40° latitude:

**Once every 24 days**



[www.digitalglobe.com](http://www.digitalglobe.com)