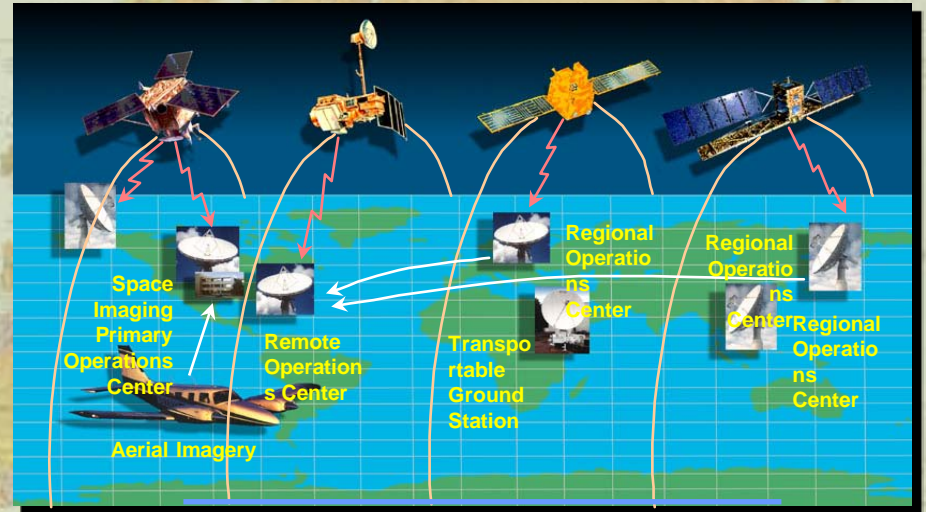


# IKONOS System and Product Overview

Bill Baer  
Space Imaging



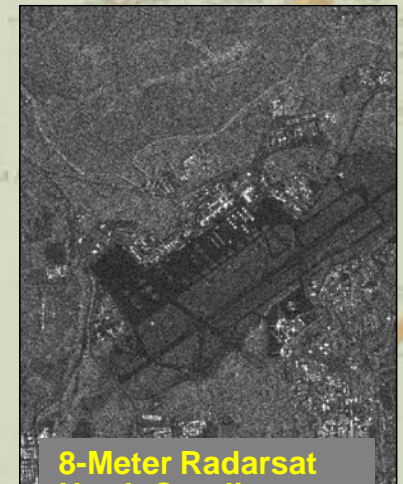
**Sub-Meter Color Aerial  
Greeley, Colorado**



**25-Meter Landsat TM  
Washington, D.C.**



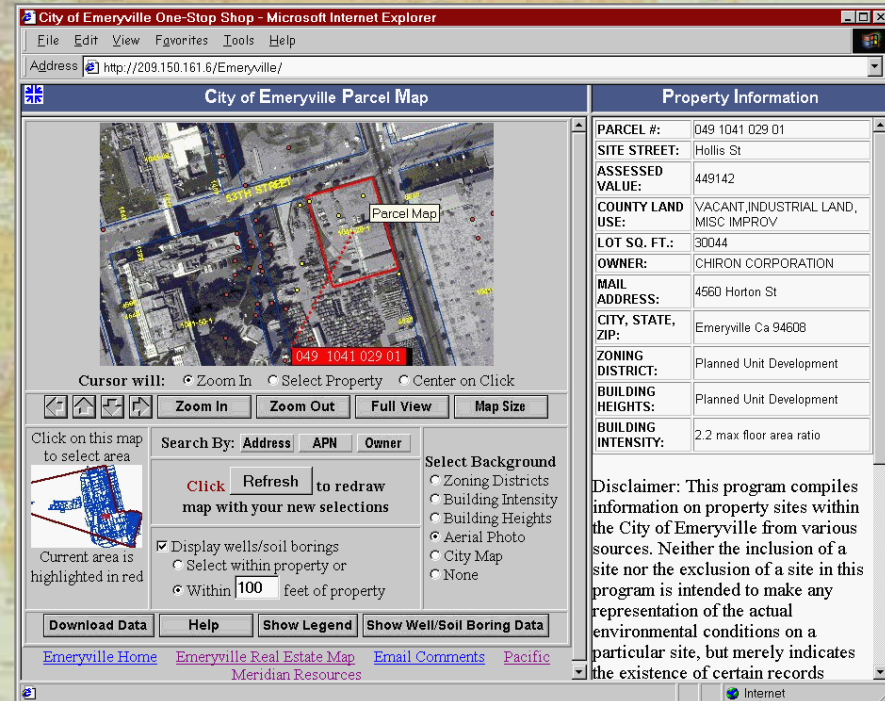
**5-Meter Fused IRS-1C  
Washington, D.C.**



**8-Meter Radarsat  
North Carolina**

- Value-added geo-spatial data services and products

- Image Acquisition Management
- GIS Systems Design and Implementation
- Mapping and Imagery Analysis
- Tool Development
  - Access (e.g., GeoBook)
  - Analysis
- Training and Technology Transfer



**City of Emeryville One-Stop Shop - Microsoft Internet Explorer**  
 Address: http://209.150.161.6/Emeryville/

**City of Emeryville Parcel Map**

Parcel Map: 049 1041 029 01

Cursor will:  Zoom In  Select Property  Center on Click

Buttons: Zoom In, Zoom Out, Full View, Map Size

Click on this map to select area

Search By:  Address  APN  Owner

Click Refresh to redraw map with your new selections

Display wells/soil borings

Select within property or

Within 100 feet of property

Select Background

- Zoning Districts
- Building Intensity
- Building Heights
- Aerial Photo
- City Map
- None

Buttons: Download Data, Help, Show Legend, Show Well/Soil Boring Data

Links: [Emeryville Home](#), [Emeryville Real Estate Map](#), [Email Comments](#), [Pacific Meridian Resources](#)

**Property Information**

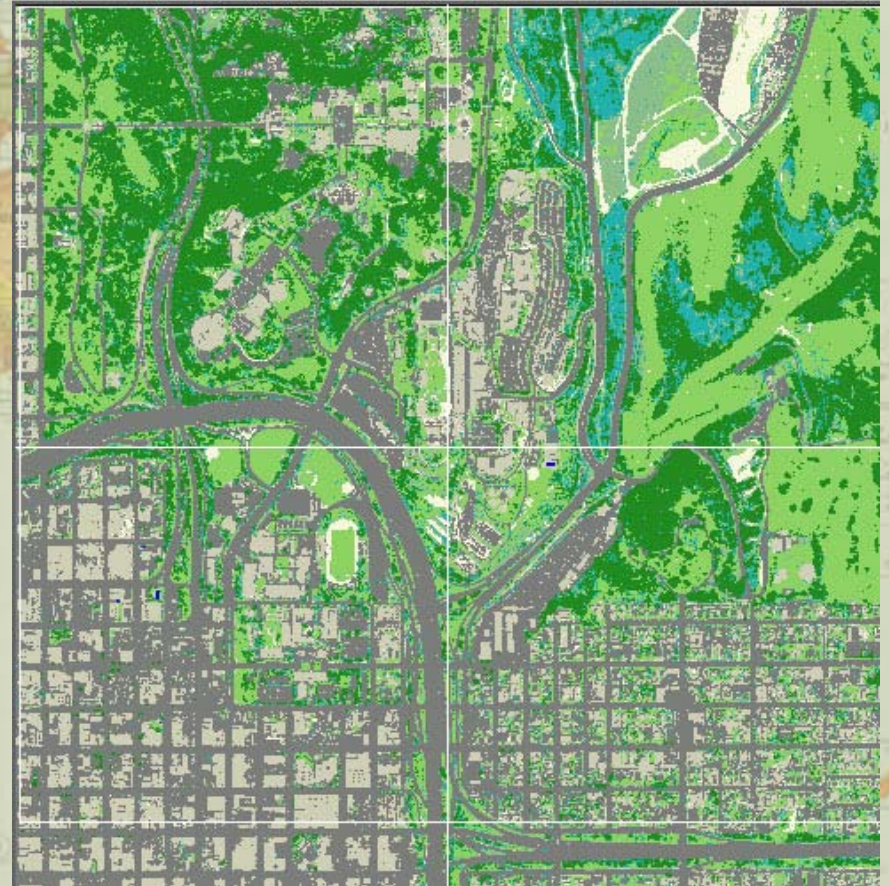
PARCEL #:	049 1041 029 01
SITE STREET:	Hollis St
ASSESSED VALUE:	449142
COUNTY LAND USE:	VACANT, INDUSTRIAL LAND, MISC IMPROV
LOT SQ. FT.:	30044
OWNER:	CHIRON CORPORATION
MAIL ADDRESS:	4560 Horton St
CITY, STATE, ZIP:	Emeryville Ca 94608
ZONING DISTRICT:	Planned Unit Development
BUILDING HEIGHTS:	Planned Unit Development
BUILDING INTENSITY:	2.2 max floor area ratio

Disclaimer: This program compiles information on property sites within the City of Emeryville from various sources. Neither the inclusion of a site nor the exclusion of a site in this program is intended to make any representation of the actual environmental conditions on a particular site, but merely indicates the existence of certain records

# IKONOS Utility for Land Cover/Land Use Change

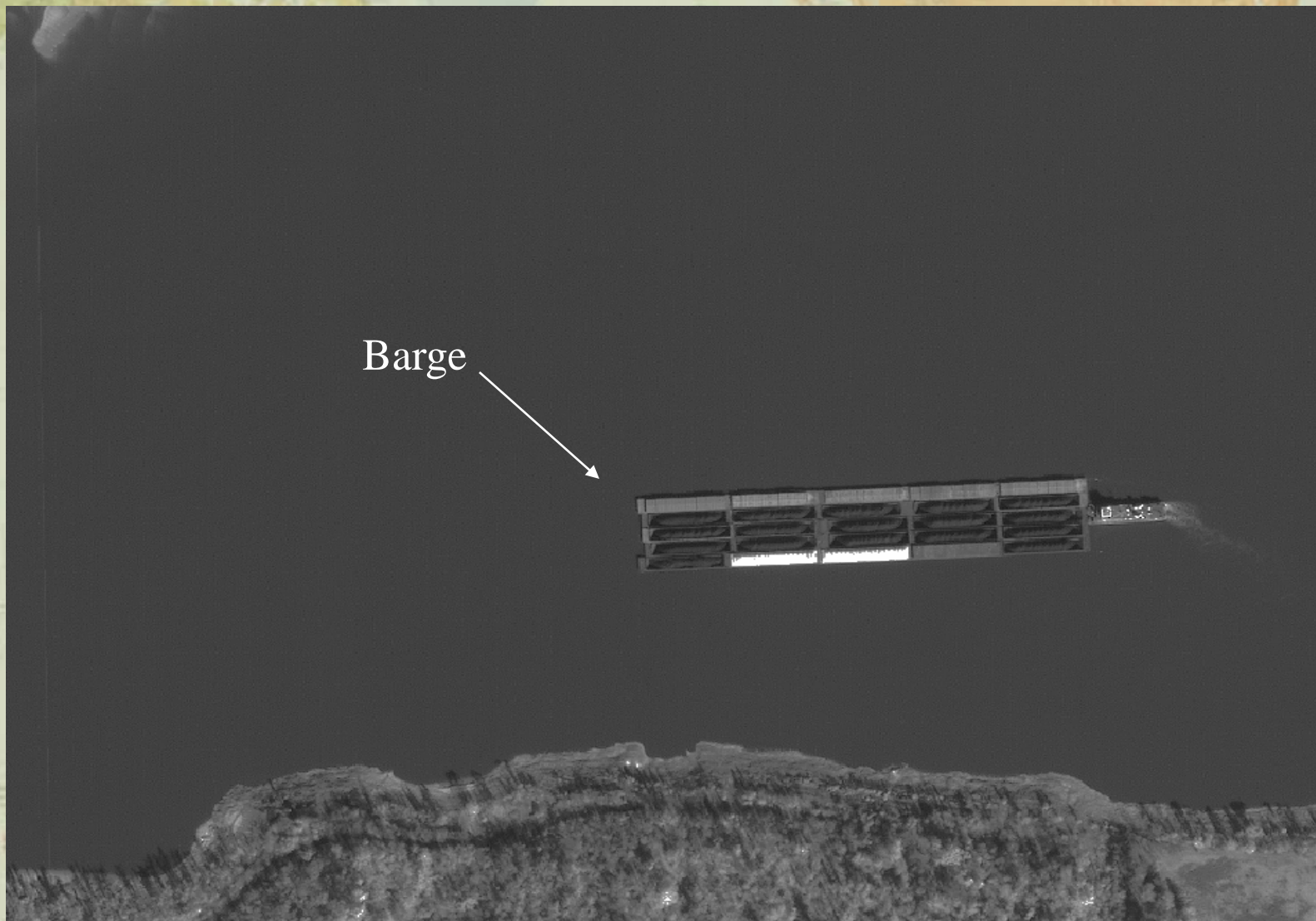
**IKONOS 4-meter bands 321**

**Land Use/Land Cover Study**





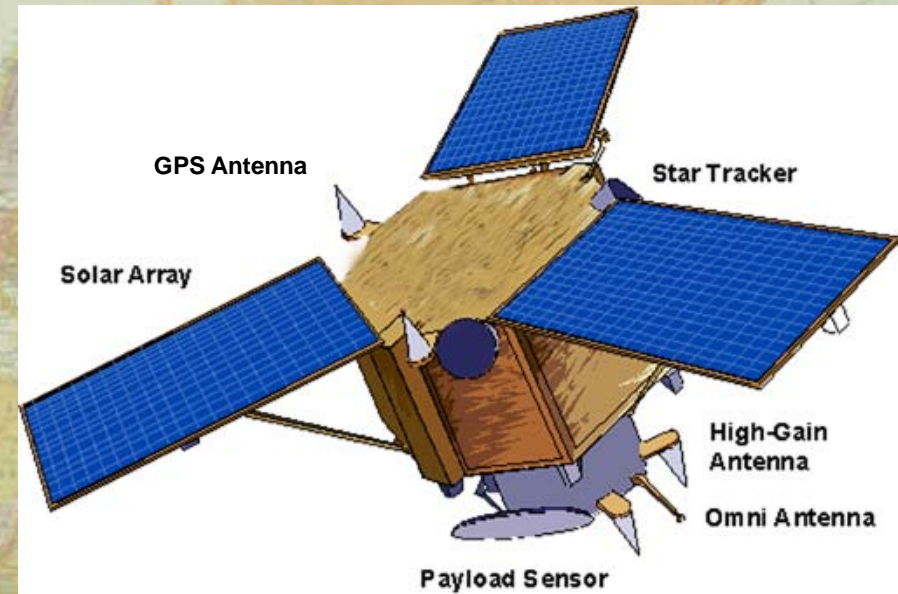




Barge



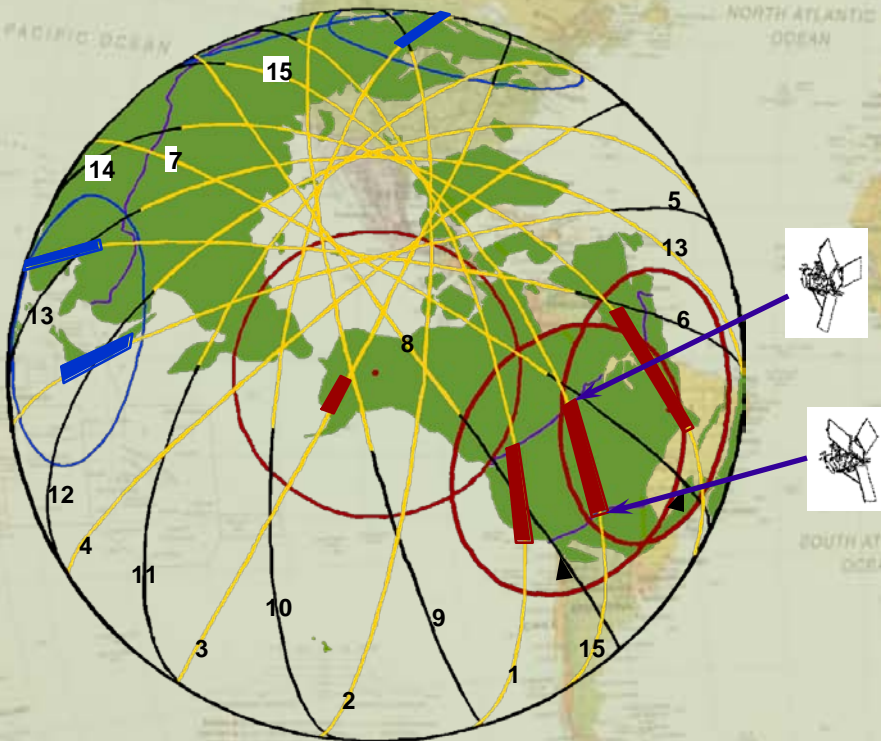
- 1m Ground Sample Distance in panchromatic band
- 4m ground sample distance in 4 multispectral bands (Blue, Green, Red, NIR)
- Simultaneous Pan and Multispectral collection
- “Pushbroom” collection with spacecraft motion scanning linear detector arrays along the ground
- Solid State focal plane for stable interior orientation
- GPS, Star Trackers, & Gyros for exterior orientation
- >11-km ground image swath at nadir
- Same pass stereo imaging
- 680 km sun-synchronous orbit for uniform lighting & global coverage
- 1m GSD images every 3 days
- Daily coverage with 2.7m GSD images

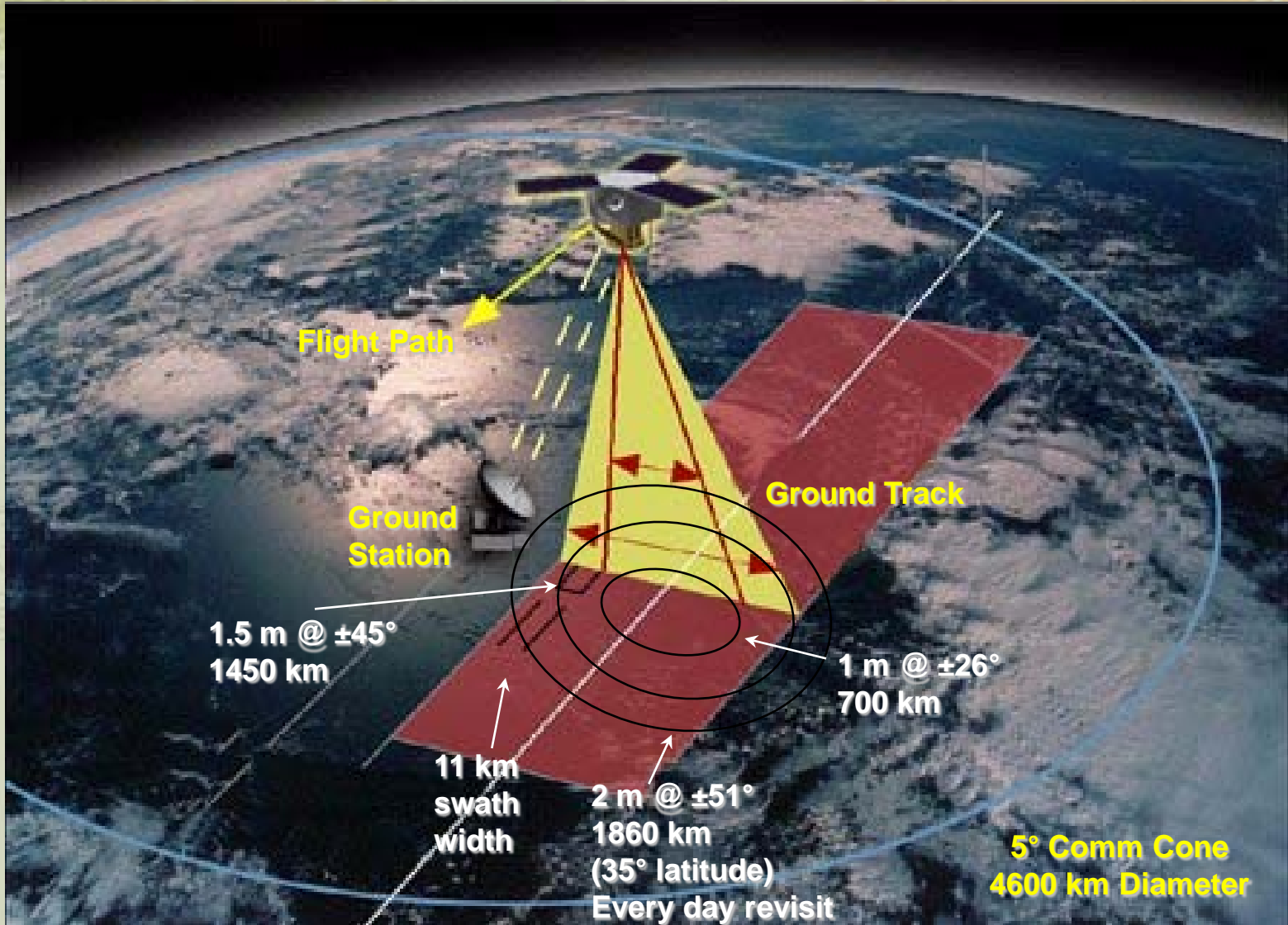


**IKONOS satellite provides unique imaging capabilities**

# One Day during Mission Operations

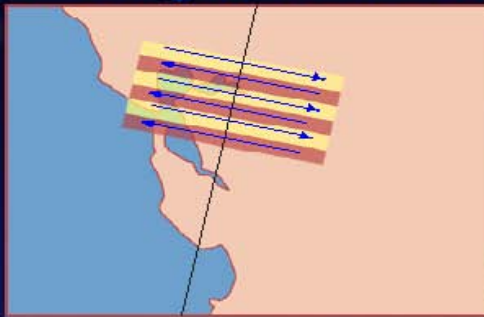
- **Sun Synchronous 680 km orbit**
  - **15 revs per day**
  - **Satellite overhead same time 10:00 - 11:00**
  - **Ground track “walks” to provide near nadir viewing world wide**



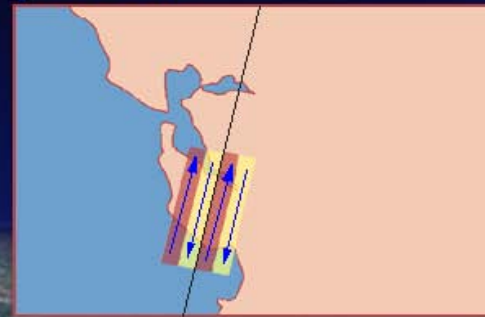




## Tasking Single Pass Collection Options



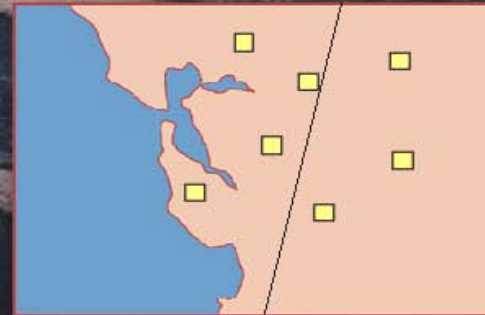
**Cross-Scan Area Coverage**  
130 km x 76 km



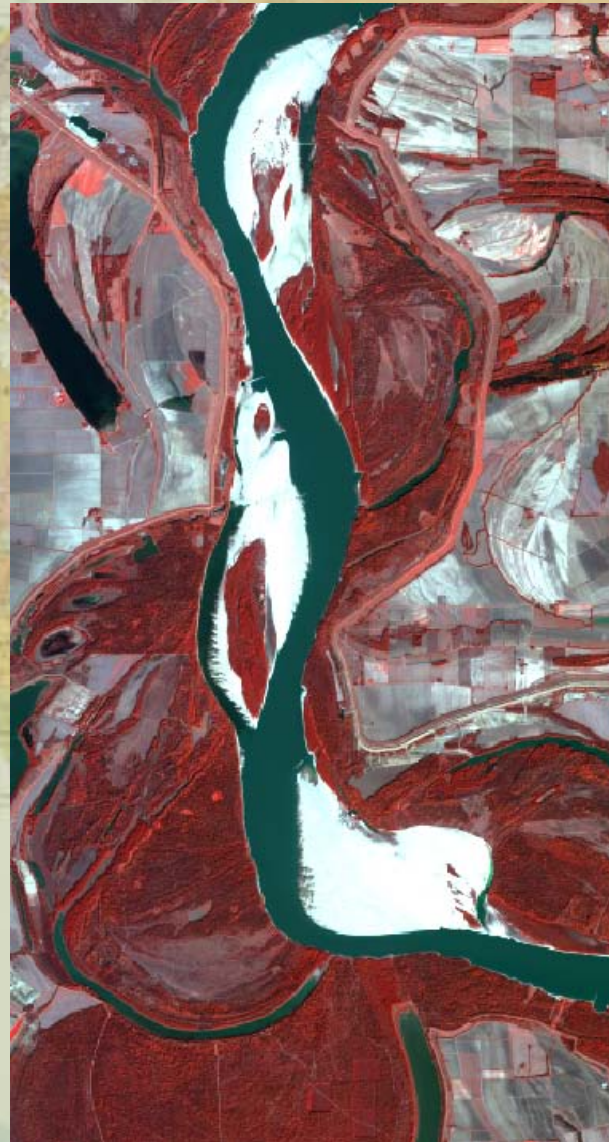
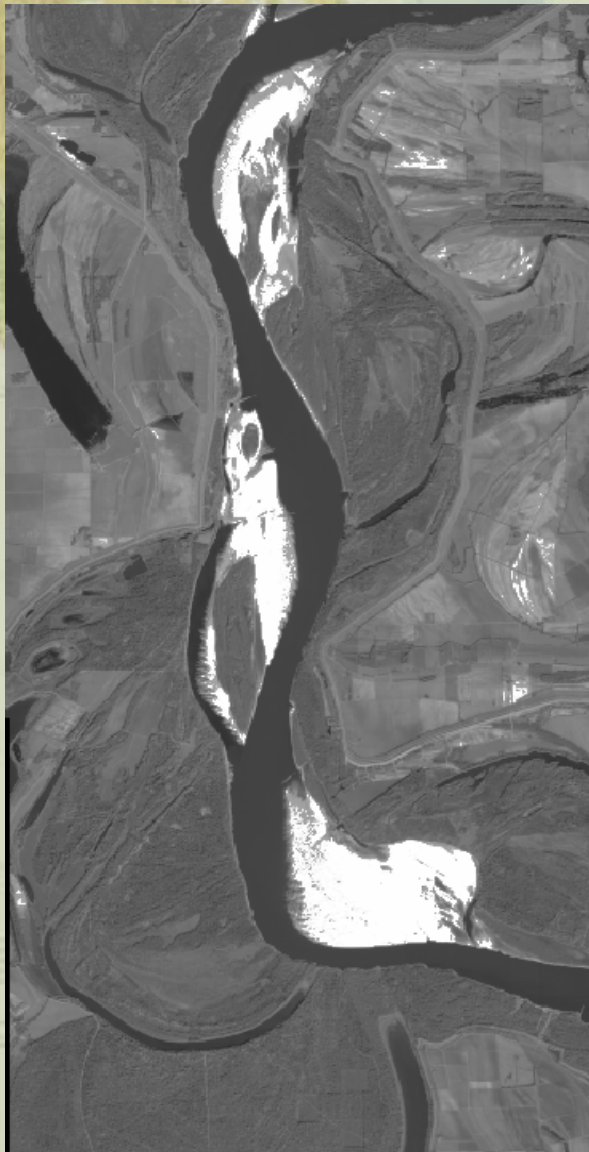
**Along-Scan Area Coverage**  
47km x 100 km



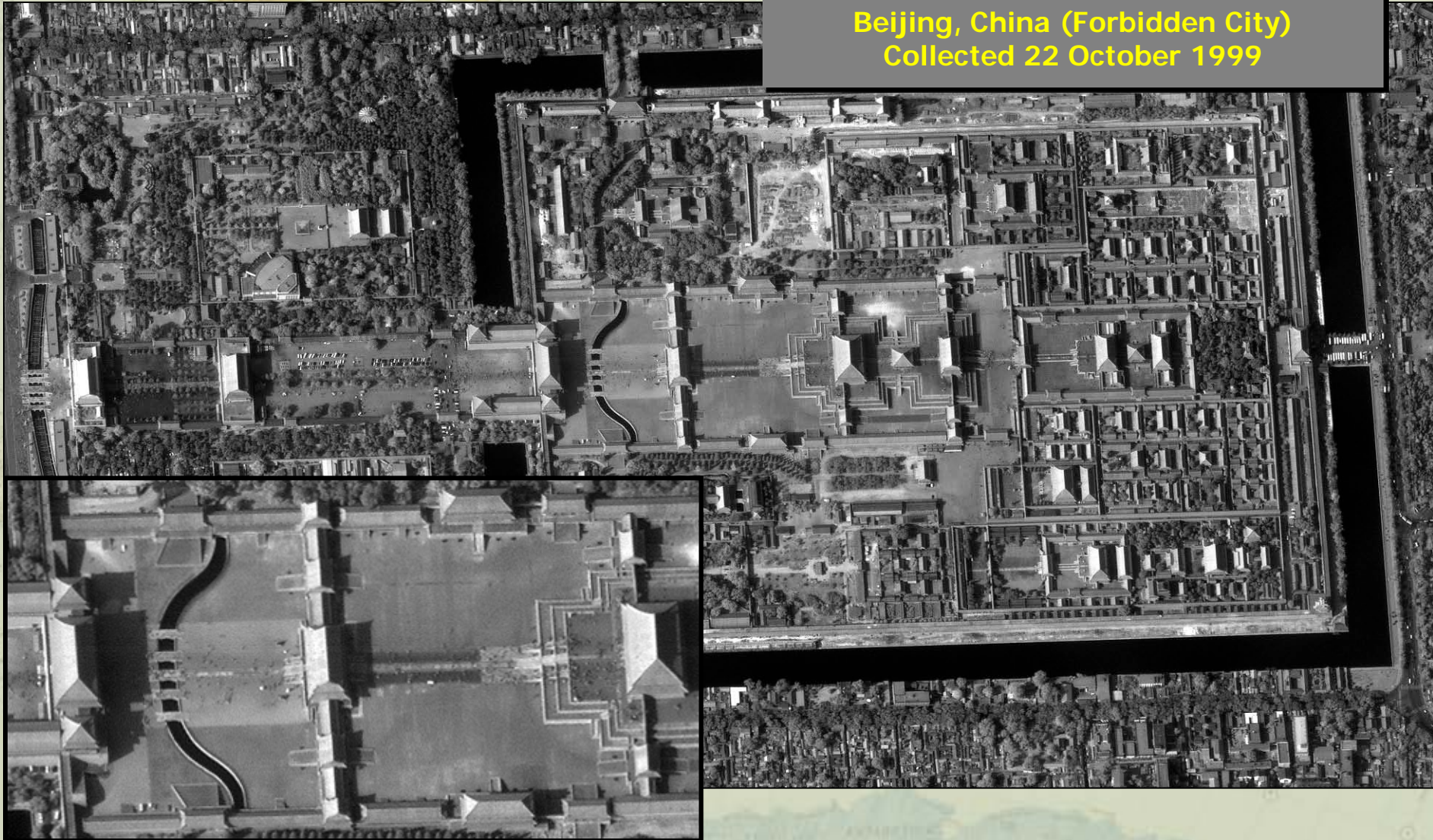
**Along-Scan Single Swath**  
11 km x 1000 km

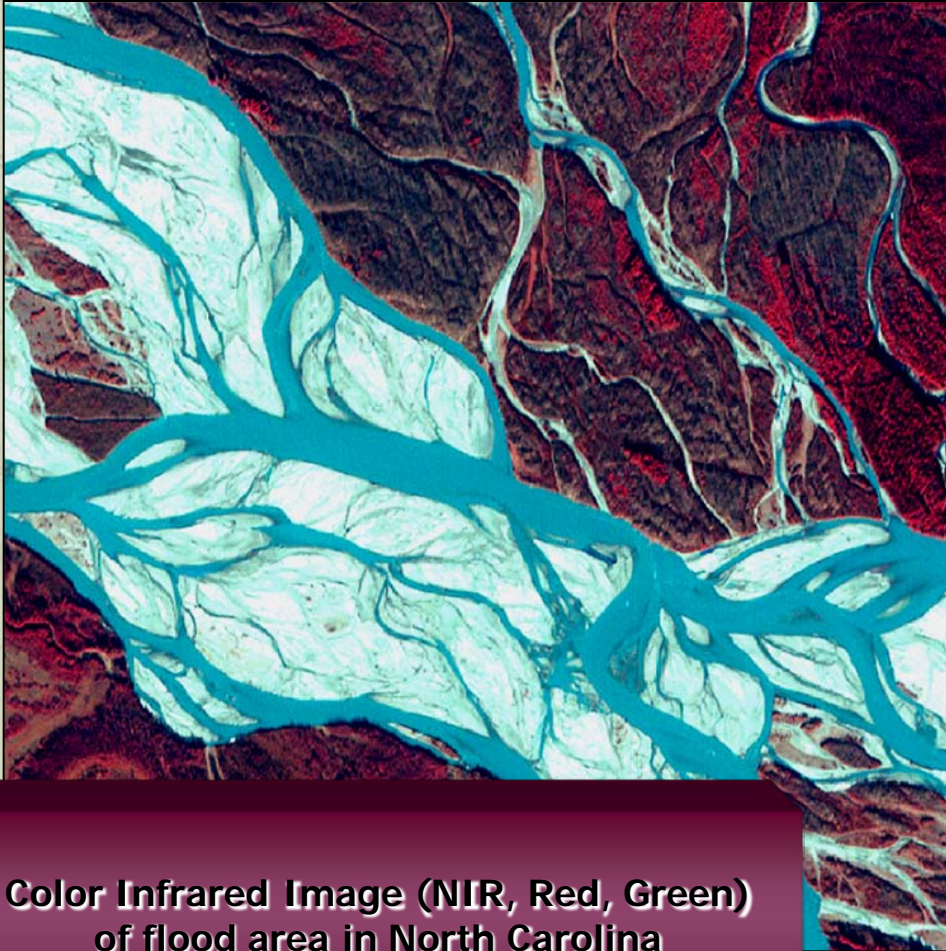


**Single Scenes**  
11 km x 11 km



Beijing, China (Forbidden City)  
Collected 22 October 1999





**Color Infrared Image (NIR, Red, Green)  
of flood area in North Carolina**

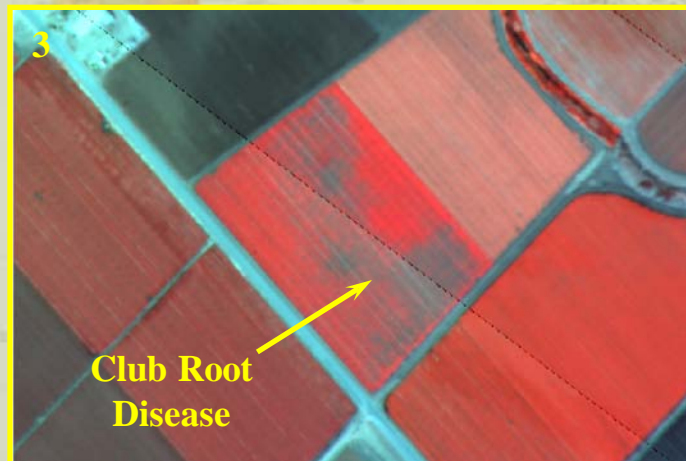
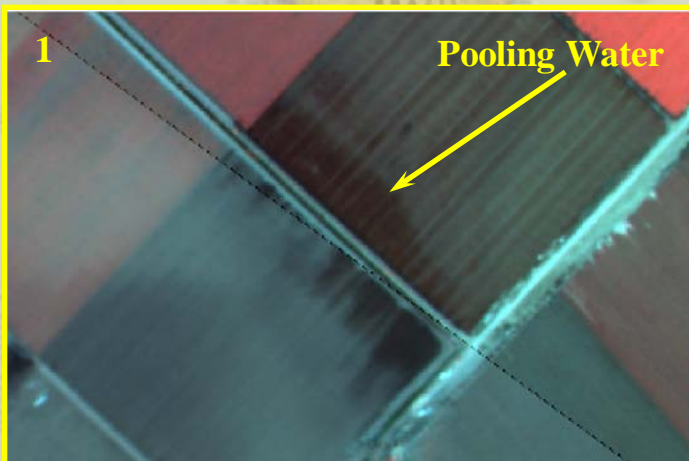
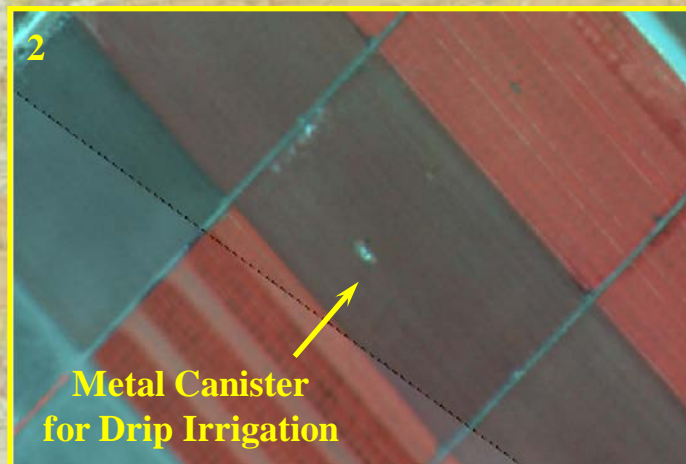
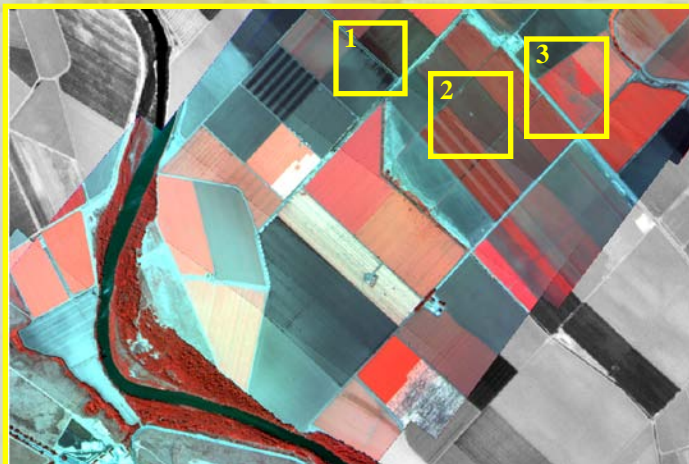
- 4m GSD
- Choice of RGB, CIR, or 4-band (Blue, Green, Red, NIR)
- Absolute radiometric accuracy for automatic classification and other multispectral applications.



**Kyoto, Japan (Imperial Palace and Park)**  
Collected 20 October 1999



## Agriculture - Crop Stress/Crop Health



## Product options

- 1m Pan
- 4m MSI
- 1m Pan & 4m MSI, or
- 1m PSM (pan-sharpened).

## MSI & PSM

- Natural (Red/Green/Blue)
- CIR (NIR, Red, Green)
- 4-band (Blu, Grn, Red, NIR)

## NASA products

- 1m Pan and
- 4-band, 4m MSI

Band	$\lambda$	GSD
Pan	450-900 nm	1m
Blue	445-516nm	4m
Green	506-595nm	4m
Red	632-698nm	4m
NIR	757-853nm	4m

## Georectified

- Image projected onto inflated ellipsoid.
- Map Oriented
- Terrain Displacement
- Produced from mono image.
- Low cost, fast delivery.

## Orthorectified

- Image projected onto DEM.
- Terrain corrected
- Map Accuracy
- Produced from stereo or mono + DEM
- Higher cost.

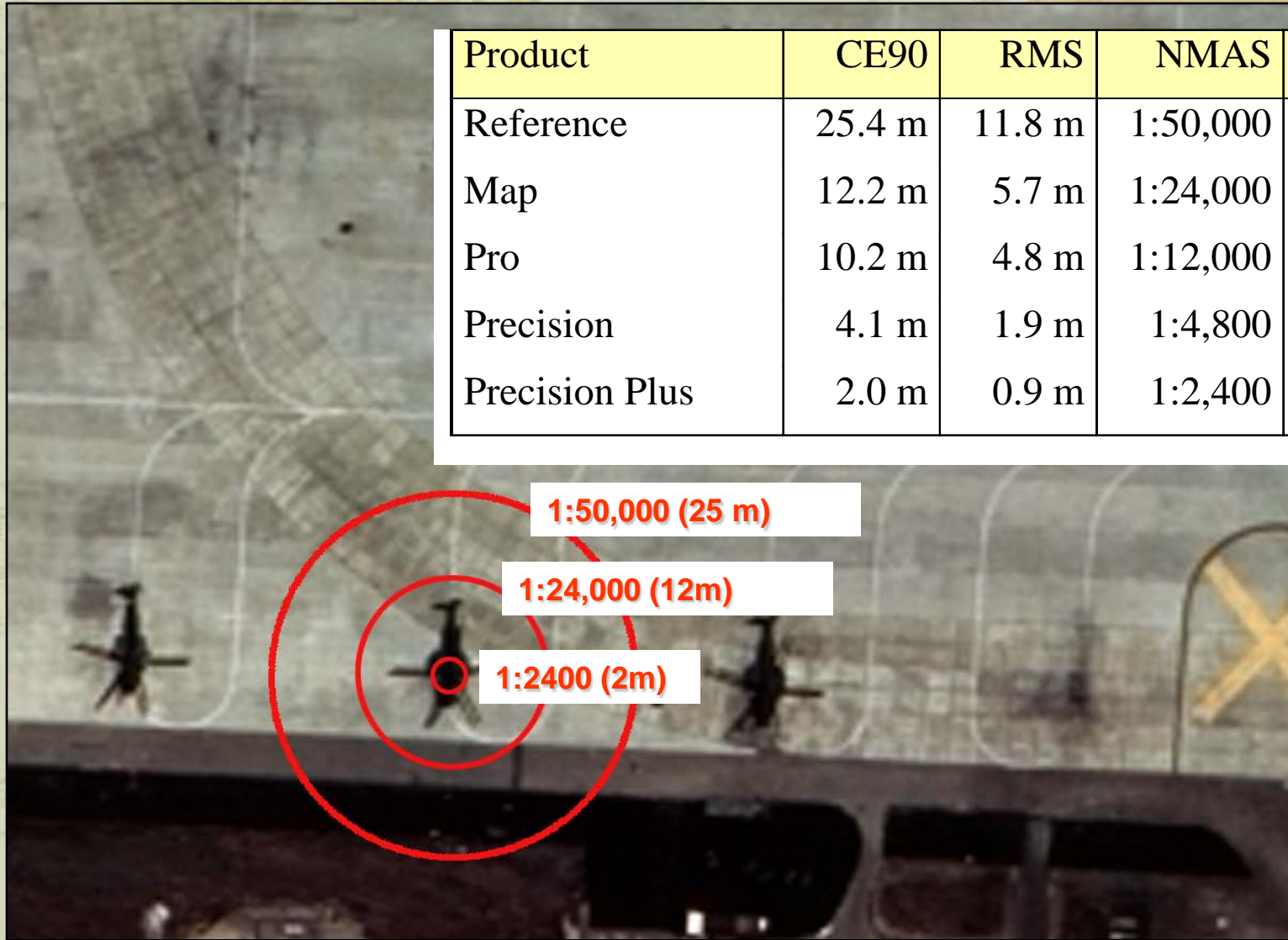
- Map-oriented
- Fast delivery of large areas
- Ideal for impact analysis, national and global security, emergency response and disaster management
- CE90 error of 50 meters (excluding effects of terrain displacement)
- Uniform ground sample distance
- Projects with limited budgets



**Geometrically-Corrected**

*Available as 1-meter color and black-and-white, 4-meter multispectral*

Product	CE90	RMS	NMAS	GCP	DEM
Reference	25.4 m	11.8 m	1:50,000	No	5c
Map	12.2 m	5.7 m	1:24,000	No	5c
Pro	10.2 m	4.8 m	1:12,000	No	5c
Precision	4.1 m	1.9 m	1:4,800	Yes	5c
Precision Plus	2.0 m	0.9 m	1:2,400	Yes	5e



- **CARTERRA™ Stereo**

- Stereo pairs with RPC Image Geometry Data.
- Standard Stereo
  - 25m CE90 (H)
  - 22m LE90 (V)
- Precision Stereo
  - 2-4m CE90 (H)
  - 3-6m LE90 (V)

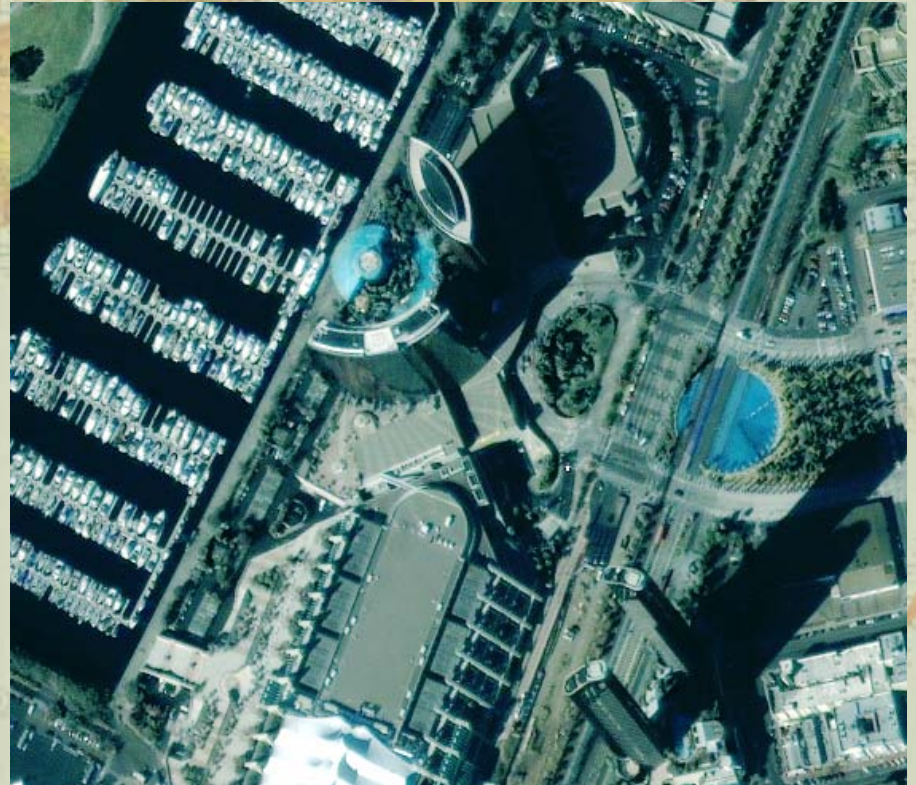
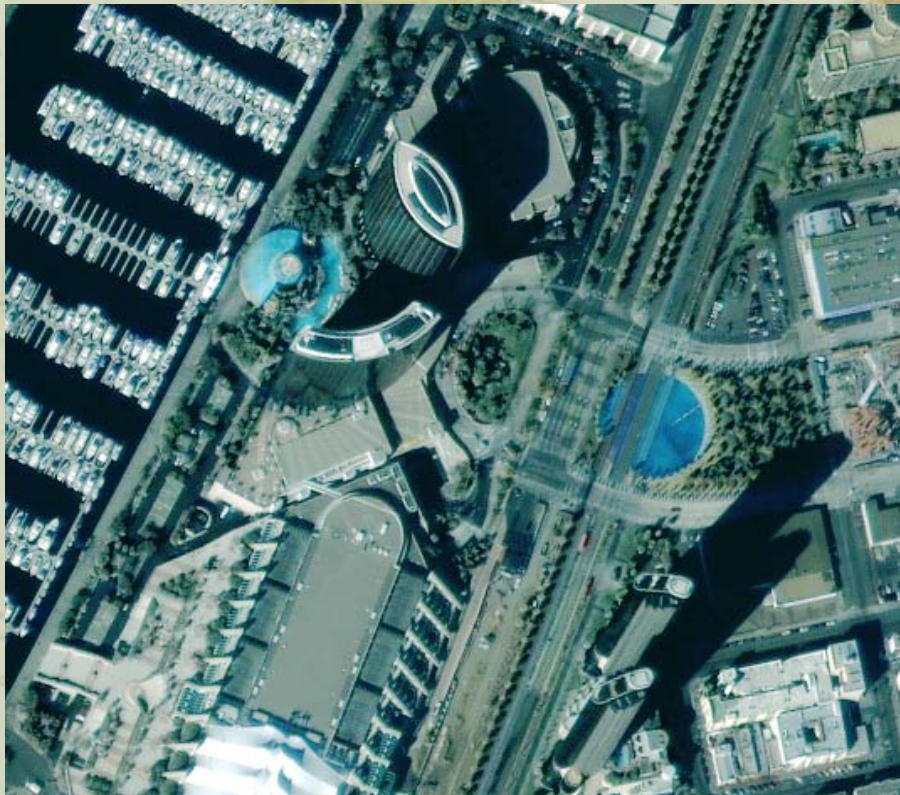


- Sold to US & foreign national governments only

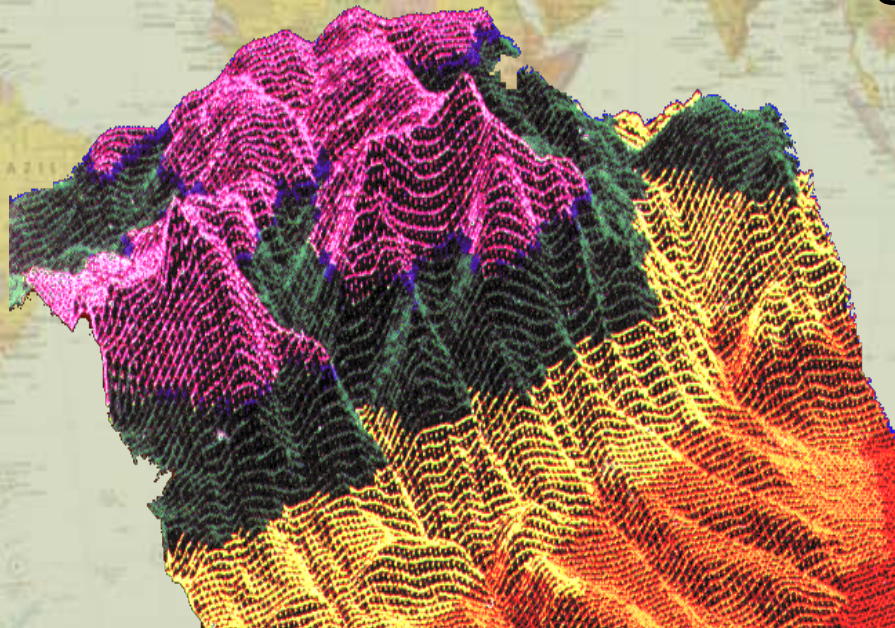


# Pan Sharpened (Color) Stereo

- Everything the eye can see
- High resolution, 3D, color imagery.



- Generated from IKONOS stereo pairs
- Edited to ground level to remove buildings and vegetation





# IKONOS Status Since Launch

## September 23, 1999

---

- Completed 10,000 orbits around the Earth in August 2001 (450 million kilometers)
- Collected more than 20 million sqkm of nearly cloud-free imagery over every continent
- Created more than 480,000 images, which are stored in Space Imaging's archive
- On average collects about 900 images per day
- IKONOS ortho production has capacity to deliver in excess of 10,000 sqkm of pan 1 sharpened product per day
- Image quality continues to be at spec or better

