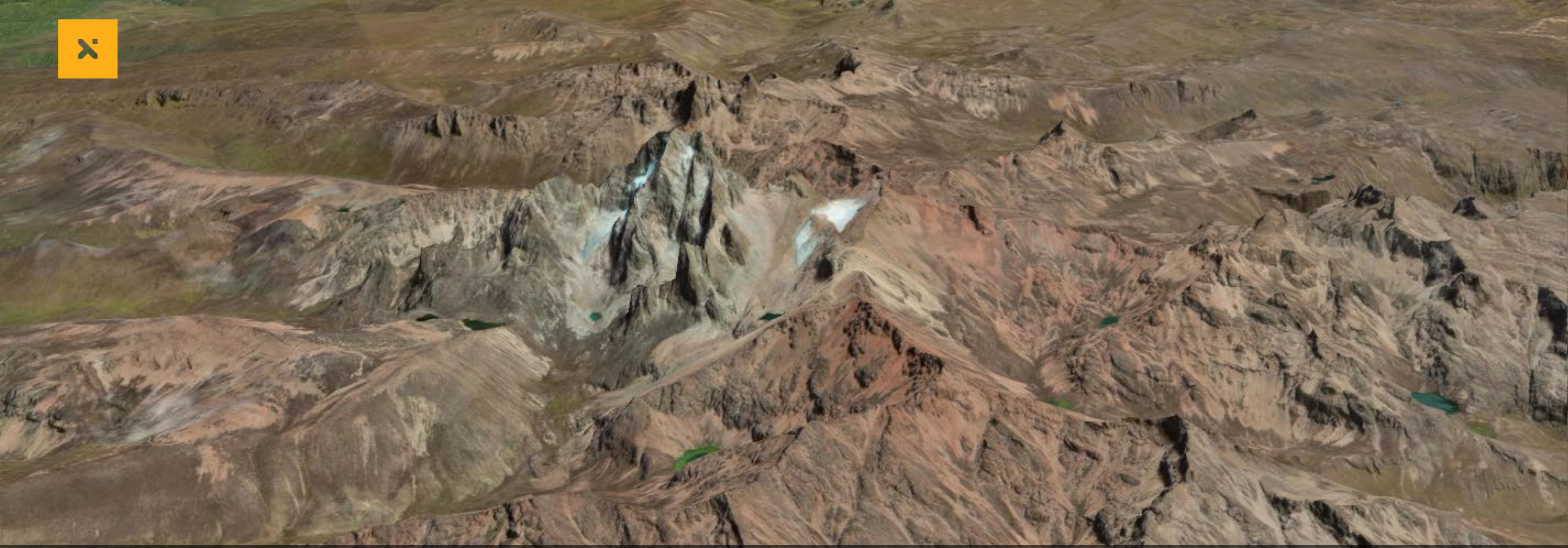

Maxar

Joe Carroll, Director of Business Development

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781-307-3097

3 April 2025

MAXAR INTELLIGENCE

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Who we are

Maxar Intelligence is a leading provider of secure, precise geospatial insights.

- We use the power of very high-resolution satellite imagery and AI-powered software platforms to deliver ground truth in near real-time.
- Our products and services empower users to achieve mission success on Earth and in space, helping keep nations safe, improve global navigation, protect our planet, speed up disaster response and more.

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Our partners

U.S. Government

- Trusted provider of geospatial products and services to the U.S. government for 20+ years
- Provide 90% of the government's foundational geospatial intelligence
- 400,000 analysts, warfighters and first responders rely on Maxar data
- Support many of the most innovative geospatial programs, including EOCL, GEGD, OneWorld Terrain and Project Maven

International Government

- Serve dozens of U.S. allies across six continents
- Customers include federal, state and local agencies across the defense and civil sectors
- Provide multi-domain, multi-force operations to support defense and intelligence, maritime security, national mapping, census and environmental monitoring missions



Enterprise

- Leading provider of high-resolution data for the world's most popular navigation and location-based services
- Partner with major telecom companies to support infrastructure planning and 5G rollouts
- Enable infrastructure monitoring and planning to improve operations across the energy/utilities sectors

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Maxar history supporting NASA research

Deciphering the Precision of Stereo IKONOS Canopy Height Models for US Forests with G-LiHT Airborne LiDAR

by **Christopher S. R. Neigh** [1,*], **Jeffrey G. Masek** [1], **Paul Bourget** [2], **Bruce Cook** [1], **Chengquan Huang** [3], **Khaldoun Rishmawi** [3] and **Feng Zhao** [3]

[1] Biospheric Sciences Laboratory, Code 618, NASA Goddard Space Flight Center, Greenbelt, MD 20771, USA
[2] Geography-Anthropology Program, Muskie School of Public Service, University of Southern Maine, P.O. Box 9300, Portland, ME 04104, USA
[3] Department of Geographical Sciences, University of Maryland, College Park, MD 20742, USA
* Author to whom correspondence should be addressed.

Remote Sens. **2014**, *6*(3), 1762-1782; **https://doi.org/10.3390/rs6031762**

ELSEVIER

Remote Sensing of Environment
Volume 191, 15 March 2017, Pages 95-109

Using high spatial resolution satellite imagery to map forest burn severity across spatial scales in a Pine Barrens ecosystem

Ran Meng [a], Jin Wu [a], Kathy L. Schwager [b], Feng Zhao [c], Philip E. Dennison [d], Bruce D. Cook [e], Kristen Brewster [a f], Timothy M. Green [b], Shawn P. Serbin [a]

ELSEVIER

Remote Sensing of Environment
Volume 210, 1 June 2018, Pages 282-296

Measuring short-term post-fire forest recovery across a burn severity gradient in a mixed pine-oak forest using multi-sensor remote sensing techniques

ELSEVIER

Remote Sensing of Environment
Volume 284, January 2023, 113332

Optimizing WorldView-2, -3 cloud masking using machine learning approaches

J.A. Caraballo-Vega [a], M.L. Carroll [a], C.S.R. Neigh [b], M. Wooten [b], B. Lee [c], A. Weis [b], M. Aronne [a], W.G. Alemu [b], Z. Williams [a]

ELSEVIER

Science of Remote Sensing
Volume 7, June 2023, 100092

Detection and mapping of artillery craters with very high spatial resolution satellite imagery and deep learning

Erik C. Duncan [a b 1], Sergii Skakun [a c 1], Ankit Kariryaa [b d], Alexander V. Prishchepov [b 1]

ELSEVIER

Remote Sensing of Environment
Volume 212, June 2018, Pages 8-20

Smallholder crop area mapped with wall-to-wall WorldView sub-meter panchromatic image texture: A test case for Tigray, Ethiopia

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Maxar CSDA product catalog

Maxar Products

- Level 1B (NASA Level 1A equivalent)
- Level 2A Ortho-rectified w/o DEM (NASA Level 1C)
- Level 3X Ortho-rectified w/ DEM (NASA Level 1C)
- Analysis Ready Data (ARD) w/ Atmospheric and Terrain Corrections (NASA Level 1C)
- Vivid Imagery Basemaps 15cm – 4m GSD (NASA Level 1C)
- CAVIS and SWIR data (designed to image snow, ice, and clouds)
- Precision 3D Data
  - Digital Surface Model (DSM)
  - Digital Terrain Model (DTM)

Maxar Sensor and Date Range

Maxar (formerly DigitalGlobe)	WorldView 1	09/18/2007-Present
	WorldView 2	10/8/2009-Present
	WorldView 3	8/13/2014-Present
	GeoEye-1	9/6/2008-Present
	QuickBird	10/18/2001-1/27/2015
	IKONOS	10/24/1999-3/31/2015
	WorldView 4	12/1/2016-1/7/2019

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Maxar is a proven leader in Earth imaging Satellites

All 6 Legion successfully launched!

1999	2001	2007	2008	2009	2014	2024/25



IKONOS

82 cm resolution
9 m CE90

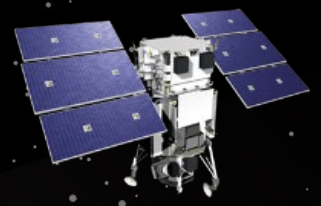
1st commercial EO satellite to provide Submeter 82cm with 4 Multispectral Bands



QuickBird

65 cm resolution
23 m CE90

1st commercial EO satellite to provide 65cm with 4 Multispectral Bands



WorldView-1

50 cm resolution
4.0m CE90

1st commercial EO satellite to provide 50cm Panchromatic Band



GeoEye-1

41 cm resolution
3.0m CE90

1st commercial EO satellite to provide 41cm with 4 Multispectral Bands



WorldView-2

46 cm resolution
3.5m CE90

1st commercial EO satellite to provide 46cm with 8 Multispectral Bands



WorldView-3

31 cm resolution
3.5m CE90

1st commercial EO satellite to provide 31cm with 8 Multispectral Bands & 8 SWIR Bands



WorldView Legion

30 cm class resolution
<5.0 m CE90

1st commercial EO fleet of 6 satellites to provide 30cm class with 8 Multispectral Bands Mid-Inclination Orbit

3.6M Square Km of 30cm collections/day

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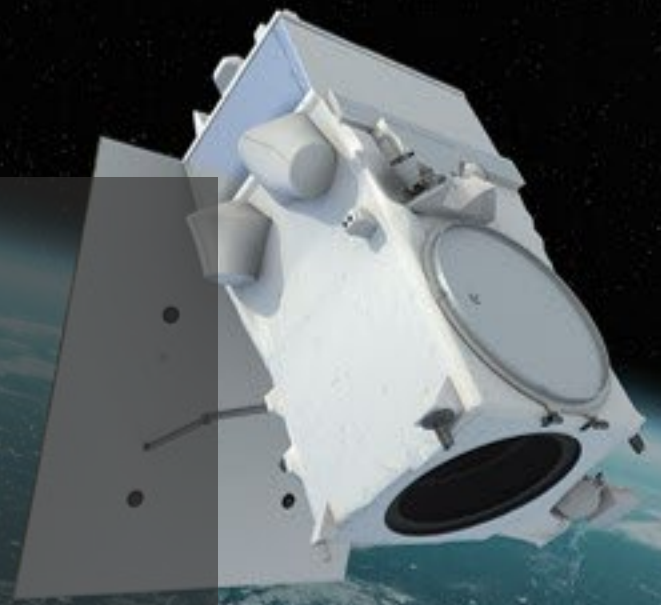
WorldView Legion further expands our industry-leading capabilities

WorldView Legion™ is a fleet of six high-performing satellites that dramatically expands our ability to revisit the most rapidly changing areas on Earth, enabling more near-time insights.



More high-resolution capacity

- Triples our 30 cm-class capacity
- Collecting 6M+ sq km per day by mid-2025
- Increased daily point target collection capacity

High revisit rates

- Will enable our constellation to revisit some areas up to 12x per day
- Mean-Time to Access will improve to less than 4 hours

"Dawn-to-dusk" collection

- Can collect imagery across more varied times of day

Highest geometric accuracy

- Maintains our ability to offer the highest accuracy available today

→ Future innovation considerations for WorldView Legions 7 & 8

- **Capacity/capability:** CMGs, sensor line rate, focal plan width, on-board image processing and ATR
- **Comms:** WBTX Vendor Study, real-time TT&C, mesh network laser comms
- **Resilience and performance:** Power margin, optical filtering, GPSR updates, NEI tasking

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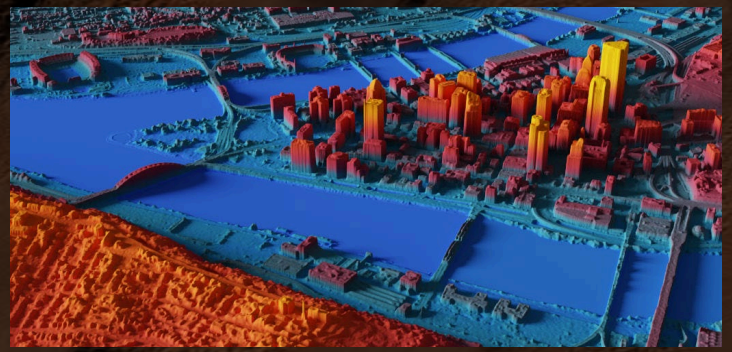
Deep dive: Information products



2D: Highest-quality satellite imagery

Optical imagery
- Native 30 cm resolution and derived 15 cm HD imagery
- < 5 m CE90 positional accuracy
- Multispectral diversity
- Analysis-ready data

Imagery basemaps
- Stunning, virtually seamless
- Accurate, consistent and actionable
- Local and global scale



3D: Most accurate representation of Earth

Precision3D™
- 50 cm resolution 3D TIN model with real textures and an absolute accuracy of 3 m in all dimensions
- Data layers include 3D vectors, 3D surface model, digital surface model and digital terrain model

Precision3D Registration (P3DR)
- Precision3D data layer automatically georegisters geospatial data—from drone FMV to satellite imagery



Non-Earth imaging: Enabling space domain awareness

- First company licensed to conduct non-Earth imaging (NEI)
- Can collect and distribute images of space objects across LEO, MEO, GEO
- Capable of imaging LEO objects at less than 6-inch resolution
- Can also support tracking of objects across a much wider volume of space

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System-Ready (1B)	View-Ready (2A & OR2A)	Map-Ready (Ortho)	System-Ready & View-Ready Stereo Imagery
Sensor corrected, un-projected (raw) product	Projected and resampled, projected to a Digital Elevation Model (DEM)	High-quality, standardized, orthorectified imagery	Create your own DEMs for 3D feature extraction
Supports image manipulation and photogrammetric analysis by image processing systems	Ideal for image viewing, analysis and manipulation in geographic information systems	Ideal for image viewing and locational reference by users in any application	Supports 3D visualization and advanced analytics

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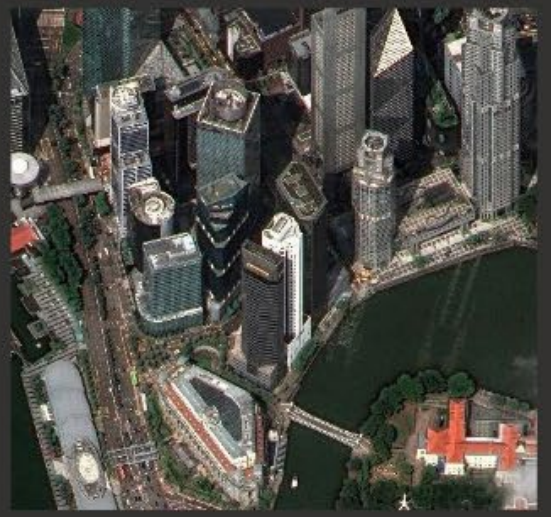
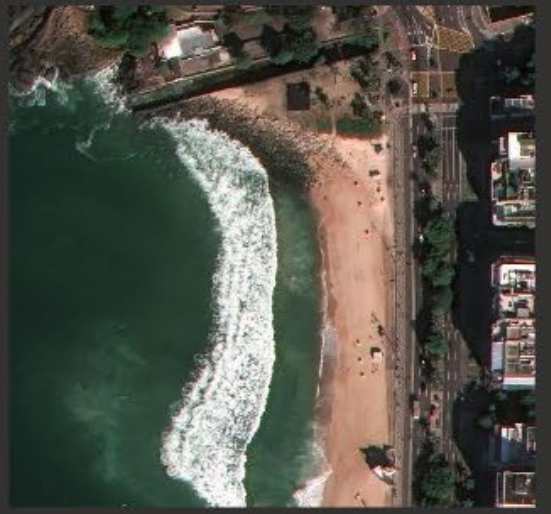
WorldView Legion images are looking extremely sharp and clear







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Benefits of Maxar's patented multiview process

Complete surface measurements

- Multiple look angles from high resolution sensors nearly eliminate occlusion

Consistent high accuracy

- Deep stack image alignment on pixel-by-pixel basis averages out the pointing errors of individual images and enable 3m SE90 w/o ground control

High fidelity surface representation

- Hyper semi-global matching that leverages Maxar's unique 'global deep imagery stack' along with advanced AI produces native 50cm resolution 3D, the most detailed resolution ever available globally



The highest resolution, most accurate representation of the entire face of Earth, enabling customers to see the world at global scale in fully immersive 3D

- 3m Absolute Accuracy, 1m Relative Accuracy
- 50cm Resolution/Post Spacing

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Precision3D core products

- **3D Products (Mesh)**
  - 3DSM
  - 3DTM
  - 3D Textured Objects



3DSM

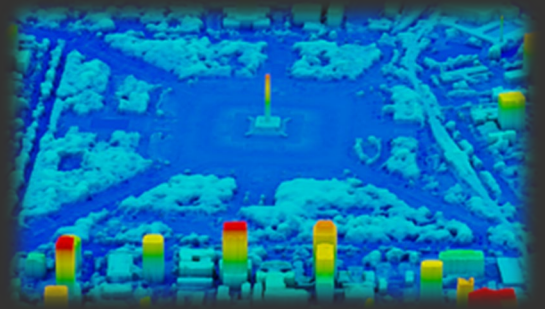


3DTM



3D Textured Objects

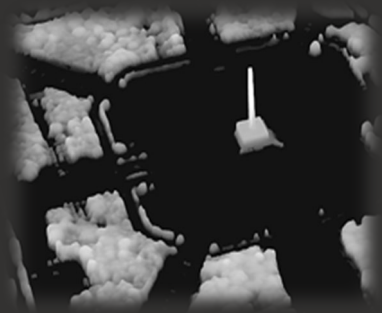
- **Elevation Products (DEMs)**
  - DSM
  - DTM
  - DHM
  - Point Cloud



DSM



DTM



DHM

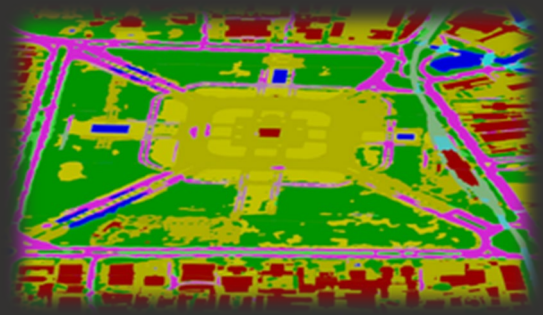


Point Cloud

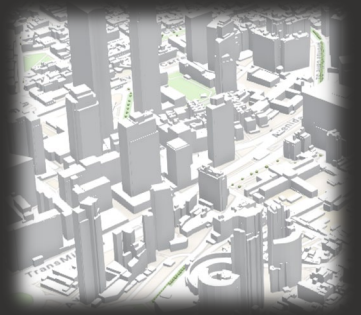
- **Extracted Products**
  - True Ortho
  - Classification
  - Building/Veg (vectors)



True Ortho



Classification



Building and/or Veg Vectors

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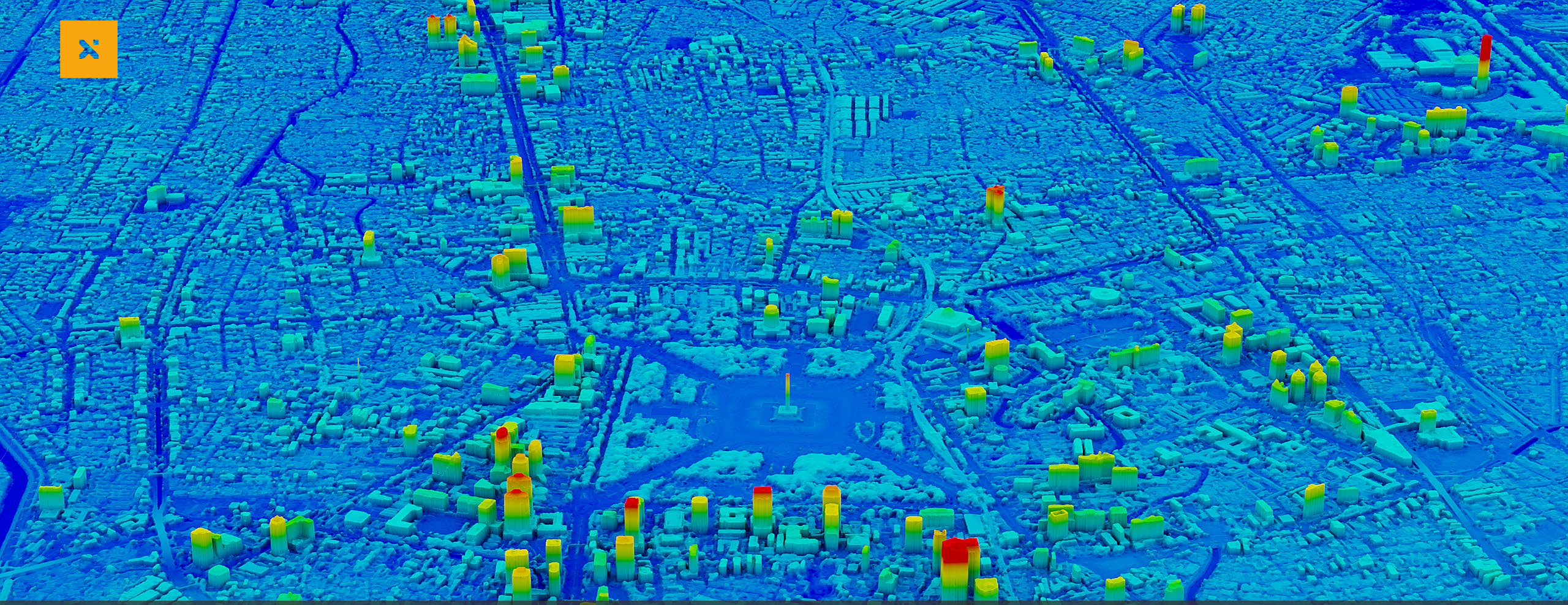

Digital Surface Model

- Describes the elevation of the earth surface in a raster format. The data represents the average elevation in the post spacing area.
  - Type: First surface model
  - Format: GeoTIFF, Esri BIL, (others on request)
  - Resolution: 50 cm, 1m, 2m, 4m

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Digital Terrain Model

- The elevation of the bare earth in a raster format, based on the Precision3D DTM with trees and man-made objects removed by automated processing. The data represents the average elevation in the post spacing area.
  - Type: Bare Earth model
  - Format: GeoTIFF, Esri BIL, (others on request)
  - Resolution: 50 cm, 1m, 2m, 4m

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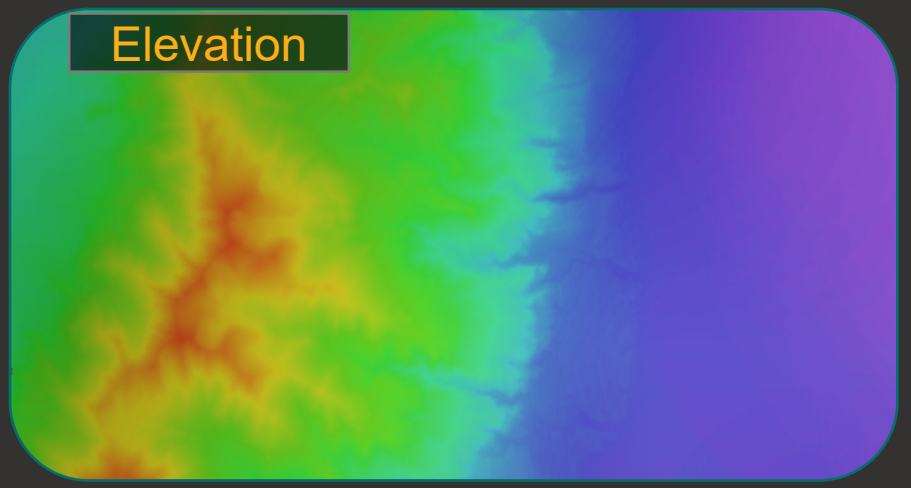
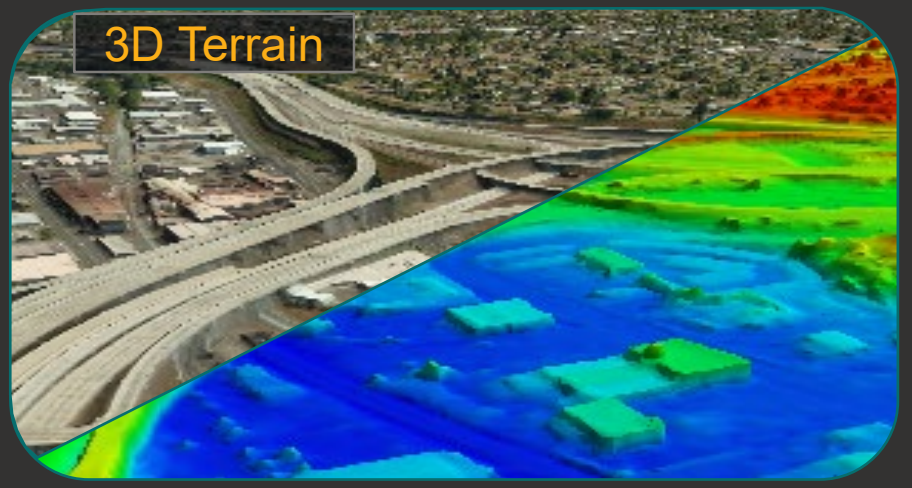
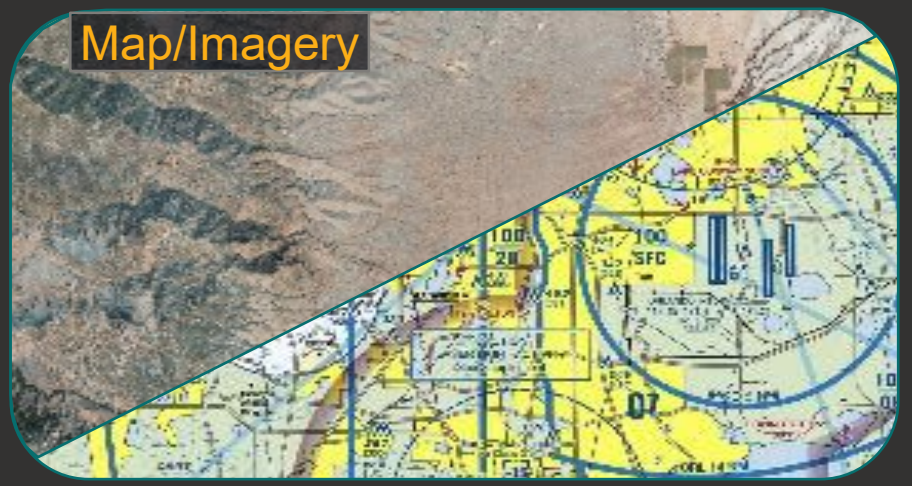
Mapping and terrain evaluation









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Risk Planning and Mitigation



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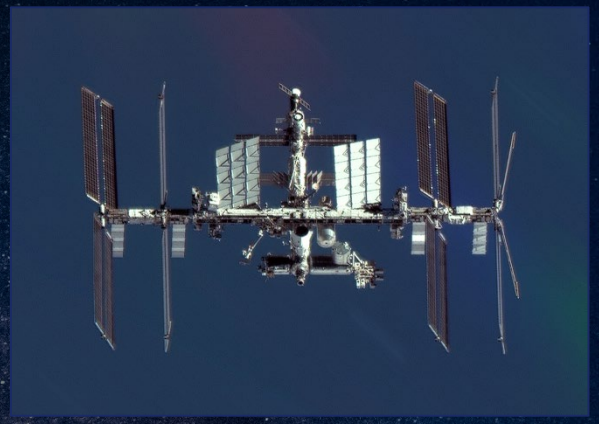
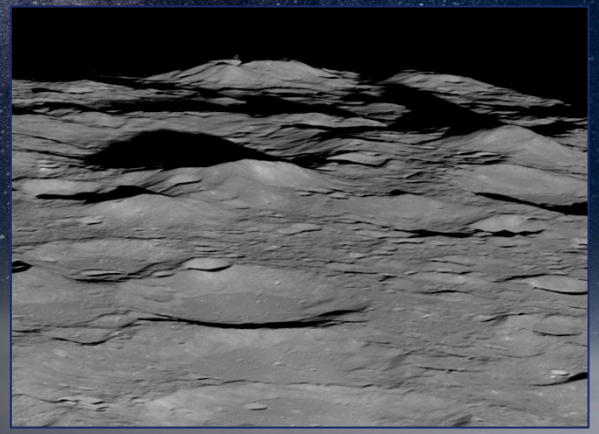
Enabling space domain awareness through non-Earth imaging

Maxar can image space objects in low, medium and geostationary Earth orbit and beyond to support:

- **Space domain awareness:** Identify and characterize space objects; assess the operational environment for space operations.
- **Space traffic management:** Support on-orbit collision risk assessment and maneuver planning, end-of-life verification and controlled de-orbit collision avoidance.
- **Ongoing satellite operations:** Assist operators with navigation safety, asset health assessments and defunct satellite monitoring.
- **National security missions:** Provide support for the U.S. government and its partners.



International Space Station, SSD 15.7 cm



Lunar Southern Highlands, SSD ~202 m



Rocket fairing, SSD 2.6 cm

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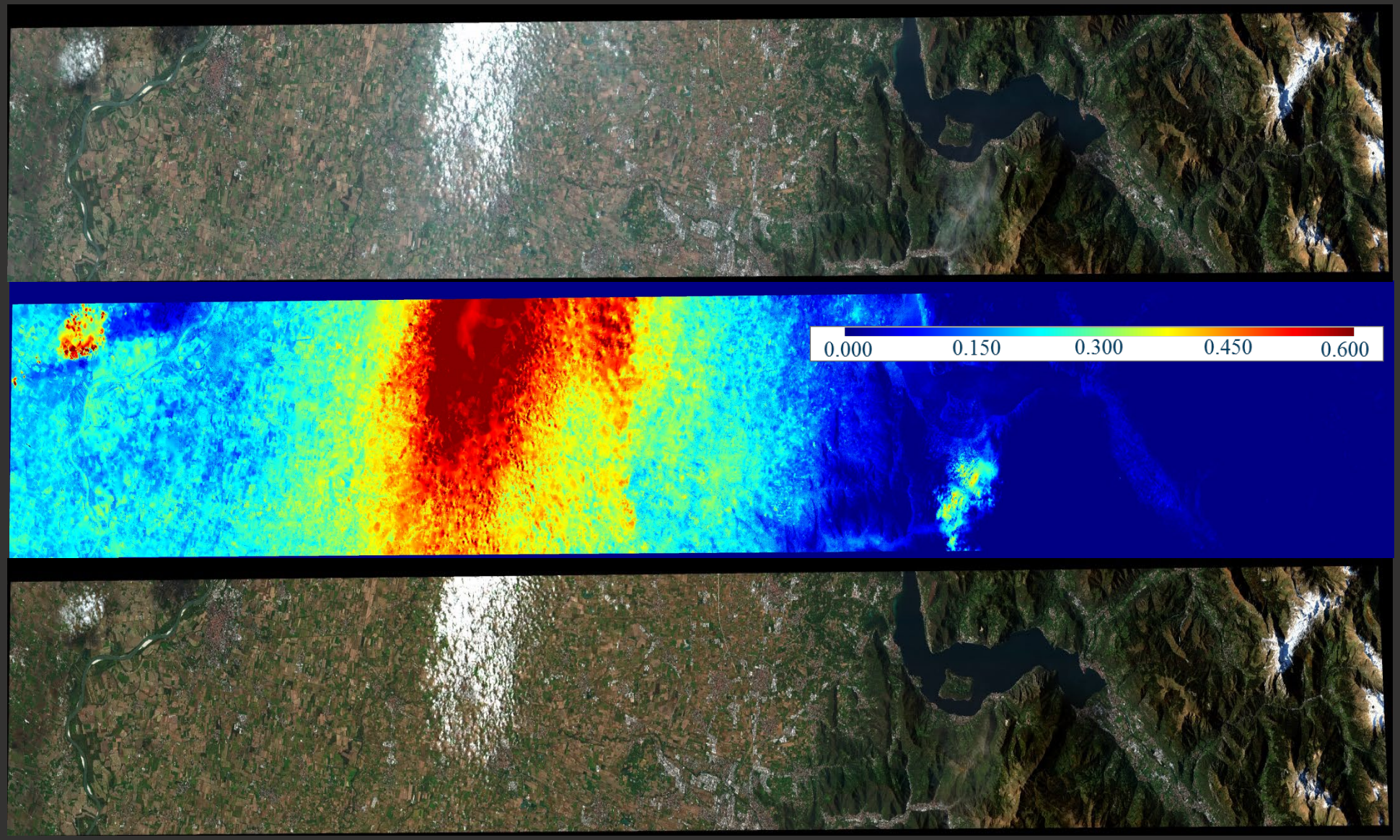
AComp: Maxar's Atmospheric Compensation

- Derives aerosol optical depth (AOD) and water vapor from image
- Works on PAN, VNIR, and SWIR imagery
- Fully automated (no human in the loop)
- Suitable for large-scale production



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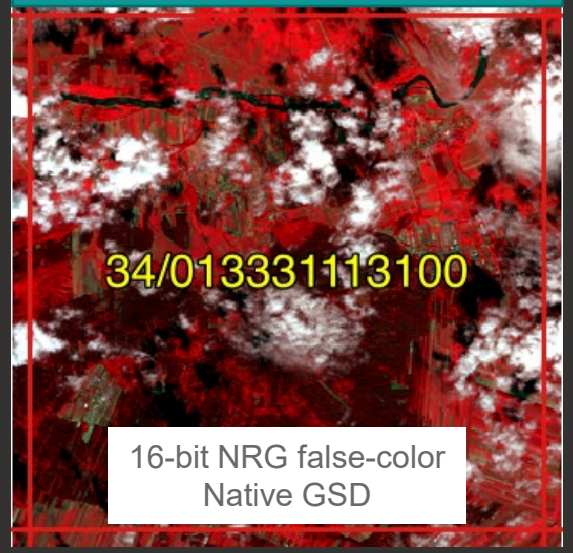
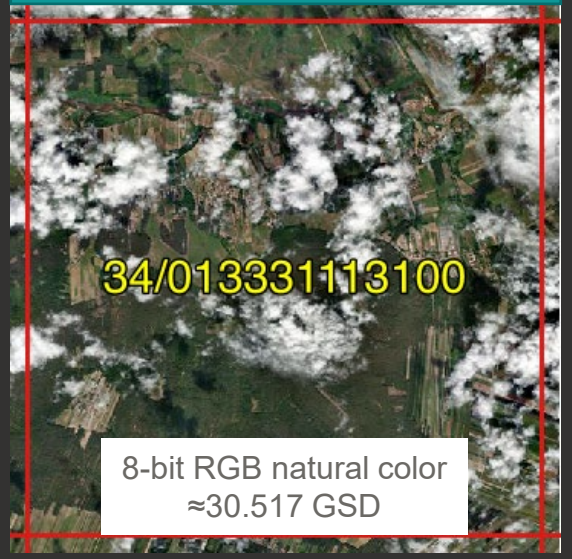
Analysis Ready Data (ARD)

Goal: Minimize the burden of repetitive and boilerplate tasks on the users of the data
Method: Generate a set of standard image products on a fixed global grid

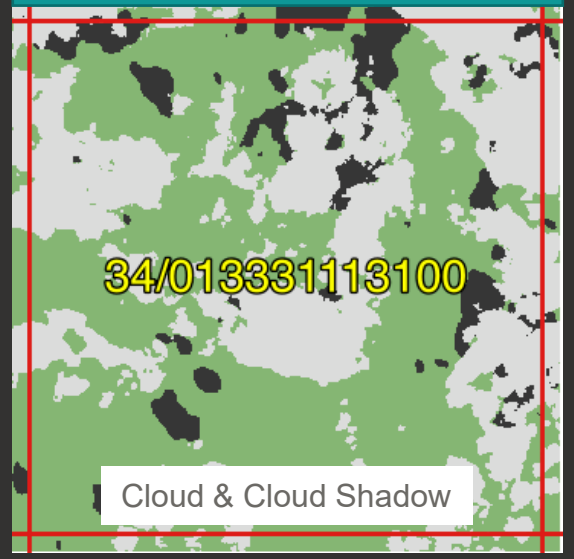
Surface Reflectance



RGB Visual



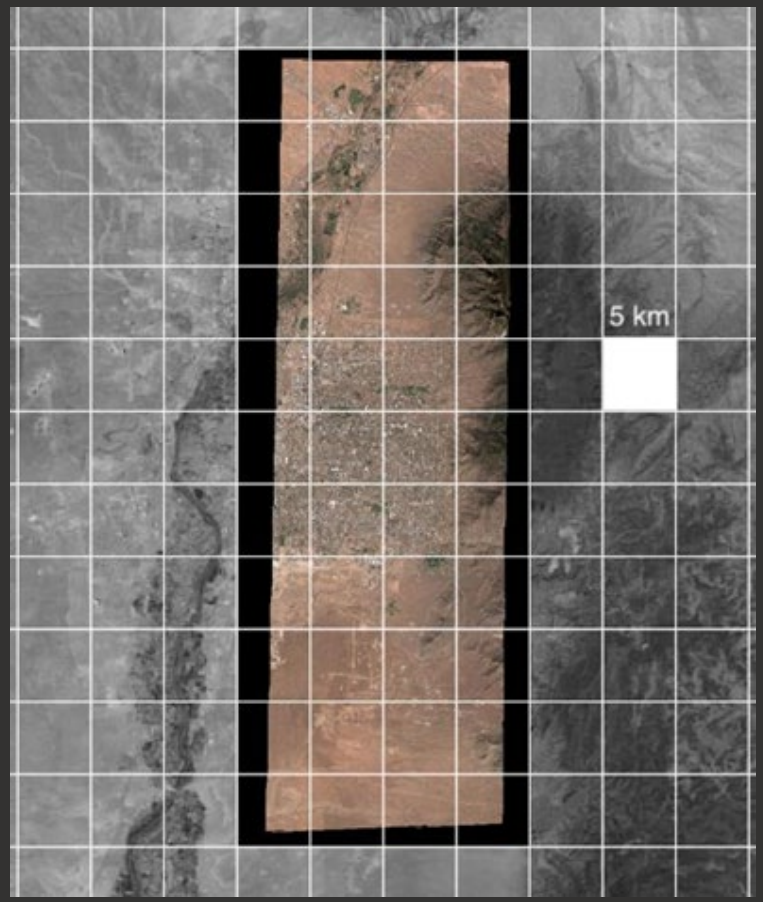
Data Masks



- Clear
- Cloud
- Cloud Shadow

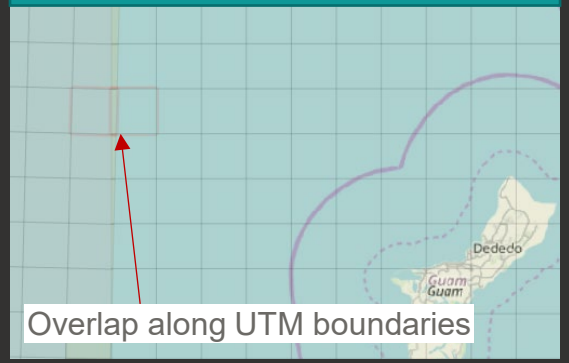
Additional Masks:

- Clouds
- Healthy Vegetation
- PAN & MS Saturation
- Terrain Shadows
- Water

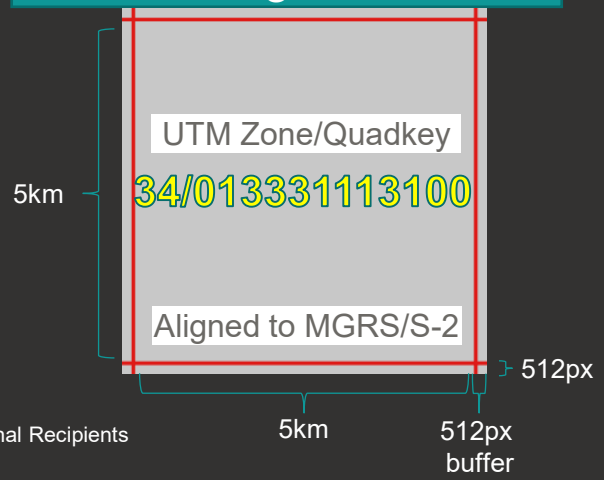


https://ard.maxar.com

60 UTM Grids



Pixel-aligned Grid



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