

Post Launch Commissioning and Testing of Pléiades 1



April 2012

All the space you need



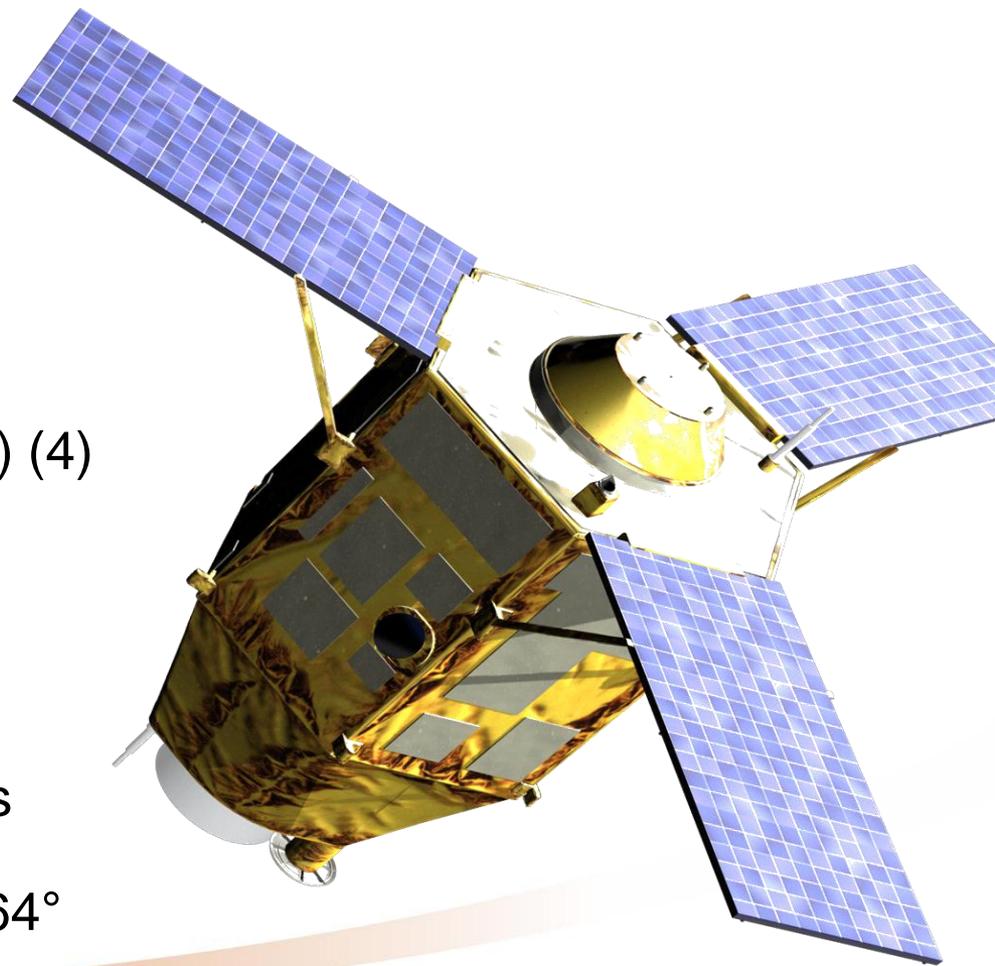
Overview

- Satellite System and Capability Overview
- Products
- Commissioning Status
- Sample Images

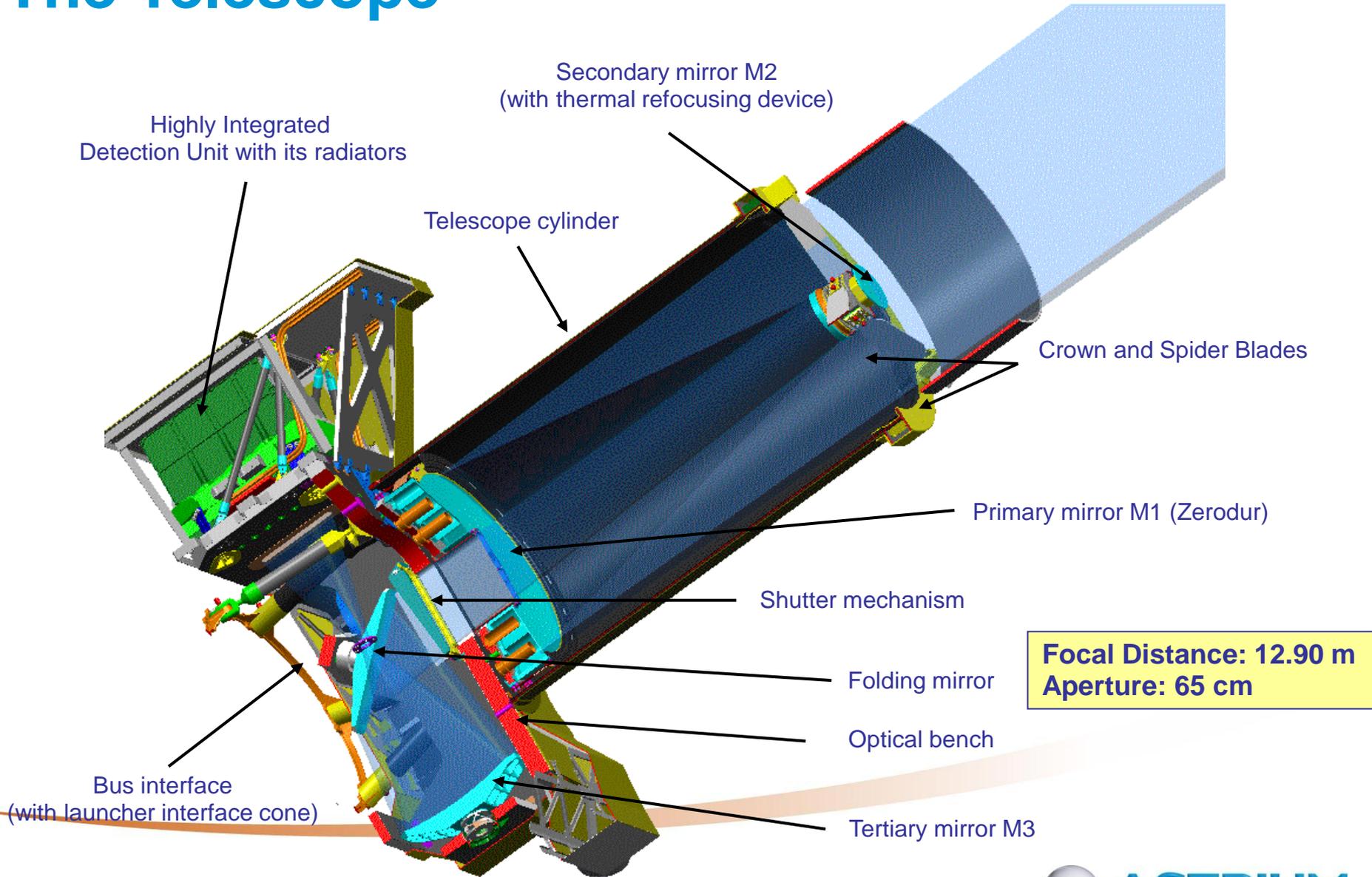
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Pléiades 1 (and Pléiades 2)

- **Mass:** 1 ton
- **Power Supply**
 - Batteries Lithium-ion
 - Solar Panels – 1.5 kW
- **Positioning System**
 - Gyroscopic actuators (CMG) (4)
 - Star Trackers (3)
 - Gyros FOG
- **Transmission TMI**
 - Band X : 465 Mbps
 - 3 Channels at 155 Mbps
 - Modulation 8-PSK
 - Antenna Omni directional : 64°
- **Onboard Memory:** 1 Tb



The Telescope



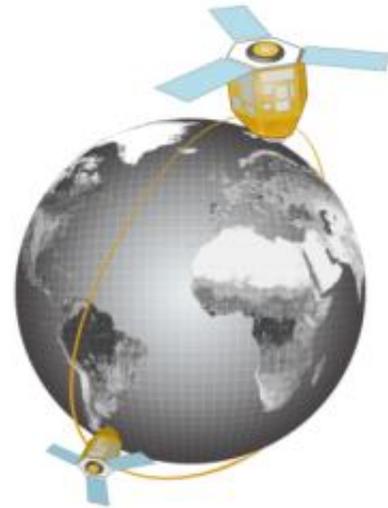
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All the space you need

Pléiades Orbit

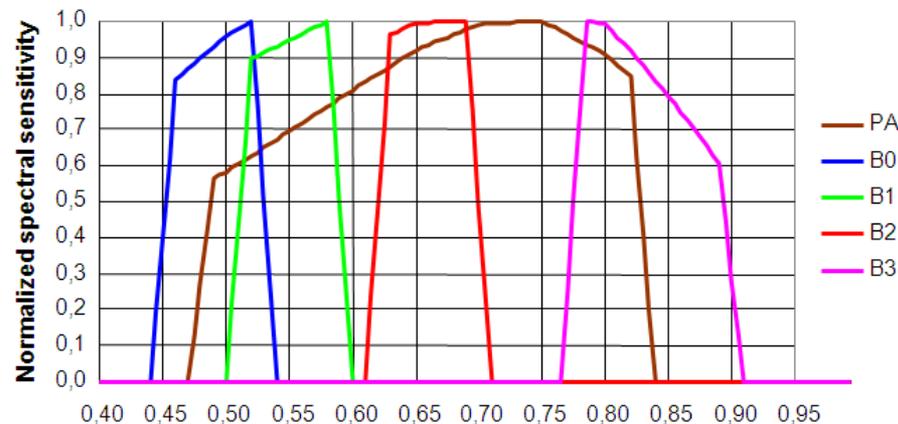
■ Orbit Parameters

- Sun-synchronous
- 694 km Altitude
- 26 Day Cycle
- Nominal 10:30am equatorial crossing
- Orbits Per day: 14 + 15/26
- Period 98.64 minutes
- 180° orbit phase with 2 satellites
 - 90° orbit phase with SPOT 6&7



Product Resolution and Spectral Bands

- Panchromatic (50 cm)
 - 480 – 830nm
- Multispectral (2 m)
 - Blue: 430 – 550nm
 - Green: 490 – 610nm
 - Red: 600 – 720nm
 - Near infrared: 750 – 950nm
- Pan & MS Acquired Simultaneously
- 12 bits Dynamic Range
- 20km Collection Swath



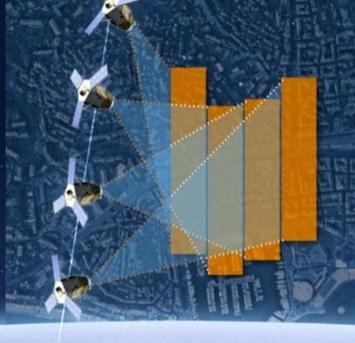
Pléiades Collection Mode - Capabilities

Target Collection



15 targets
over 1,000 km within a
+/-30 deg corridor

Single-Pass Strip Mapping



1 square degree
Automatically
orthorectified and mosaicked

Stereo & Tri-Stereo



In a single pass, up to
6,000 sq. km pairs
2,000 sq. km triplets

**Multiple acquisitions over target
on a single pass**



Up to **15 shots** over the
same target within 10 min

Corridor Acquisition



To follow **linear targets**
such as coasts, borders,
roads, pipelines, rivers

All the space you need

That's agile!



Image of SPOT 5 captured by Pléiades
March 2012

Pléiades Tasking

■ Standard Tasking

- Pre-defined collection window: 60 days
- 120 days in weather challenging areas

■ Priority Tasking

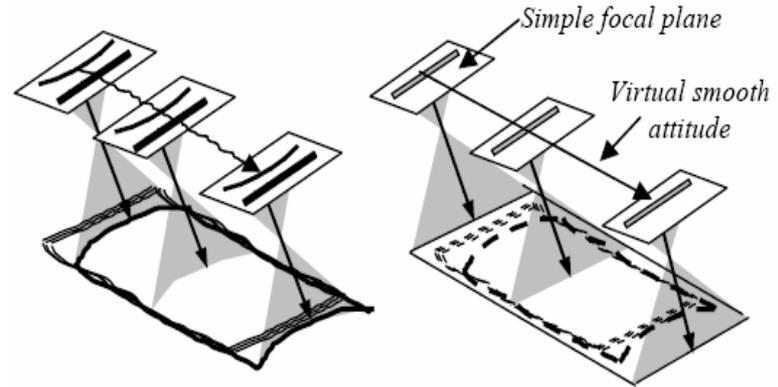
- Pre-defined collection window: 30 days
- Subject to feasibility study

■ Instant Tasking

- Guarantee next possible attempt
- Collection within the next 24 hours, up to 4 hours after order placement

Product Processing Levels

- **Primary Level (~ SPOT 5 Level 1A – sensor geometry)**
 - Radiometric corrections
 - Geometric corrections restoring perfect linear conditions of acquisition
- **Ortho Level (georeferenced)**
 - Primary level corrections
 - Projection (most of the current projections)
 - Terrain corrections
 - Automatic processing of orthomosaics up to 1 square degree (seamless)
- **Product Types**
 - 50 cm Bundle: 50 cm Pan + 2 m 4-band Color
 - 50 cm Panchromatic Only
 - 50 cm Pan-Sharpened 4-band Color
 - 50 cm Pan-Sharpened 3-band (False Color or Natural Color)
 - 2 m 4-band Multispectral Only



 **One unified price, regardless of product type and processing levels**

Product Formatting and Delivery

- File Format: JPEG2000 or GeoTIFF
 - Metadata – DIMAP
 - JPEG 2000 Lossy or Lossless versions
 - NITF 2.1 - coming soon
- Pixel Encoding: 8 or 12 bits
- RPC Model included (Primary Only)
 - Including Refined Attitude: except rush delivery
- Dynamic Stretching (~DRA): on / off
- Delivery: standard / rush
- Media: DVD/CD, FTP, Streaming, USB stick, hard drive

Pleiades -1 Commissioning Timeline

- Satellite Launch Dec 16, 2011
- First Image Dec 21, 2011
- Final Orbit achieved January 2012
- Satellite declared operational March 02, 2012
 - Collection/Tasking ramp-up
 - Product fine-tuning
- End of IQ commissioning June 2012
- Beginning of commercialization June 2012

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Commission Status

- Image Quality (MTF & SNR)
- Radiometric Performance
- Band to band registration
- Geolocation
- Intra-scene Accuracy
- Pan-sharpening
- Satellite Tasking
- Product Formatting



On going



Pan-sharpening - Process refinement

Example: pixel saturation



Before Correction



After Correction

Astrium Earth Observation Satellite Assets

A Unique Constellation

Multi-Source, Multi-Resolution
EO+SAR Constellation

Currently In Operation

Optical: Pléiades 1, SPOT 4 & 5
SAR: TerraSAR-X & TanDEM-X

5 New Satellites in the Next 3 Years

4 Optical, 1 SAR Satellites



Dec 16, 2011

Pléiades 1
50 cm



September 2012

SPOT 6
1.5 m



Q4 2012

Pléiades 2
50 cm



2013

SPOT 7
1.5 m



2015

TerraSAR-X 2
25 cm

A Continuity of Service guaranteed until 2023



Tucson, USA – 50 cm Color – Commissioning Phase Data
Pléiades, December 23, 2011



Forbidden City, Beijing, China – 50 cm Color - Commissioning Phase Data
Pléiades, December 23, 2011



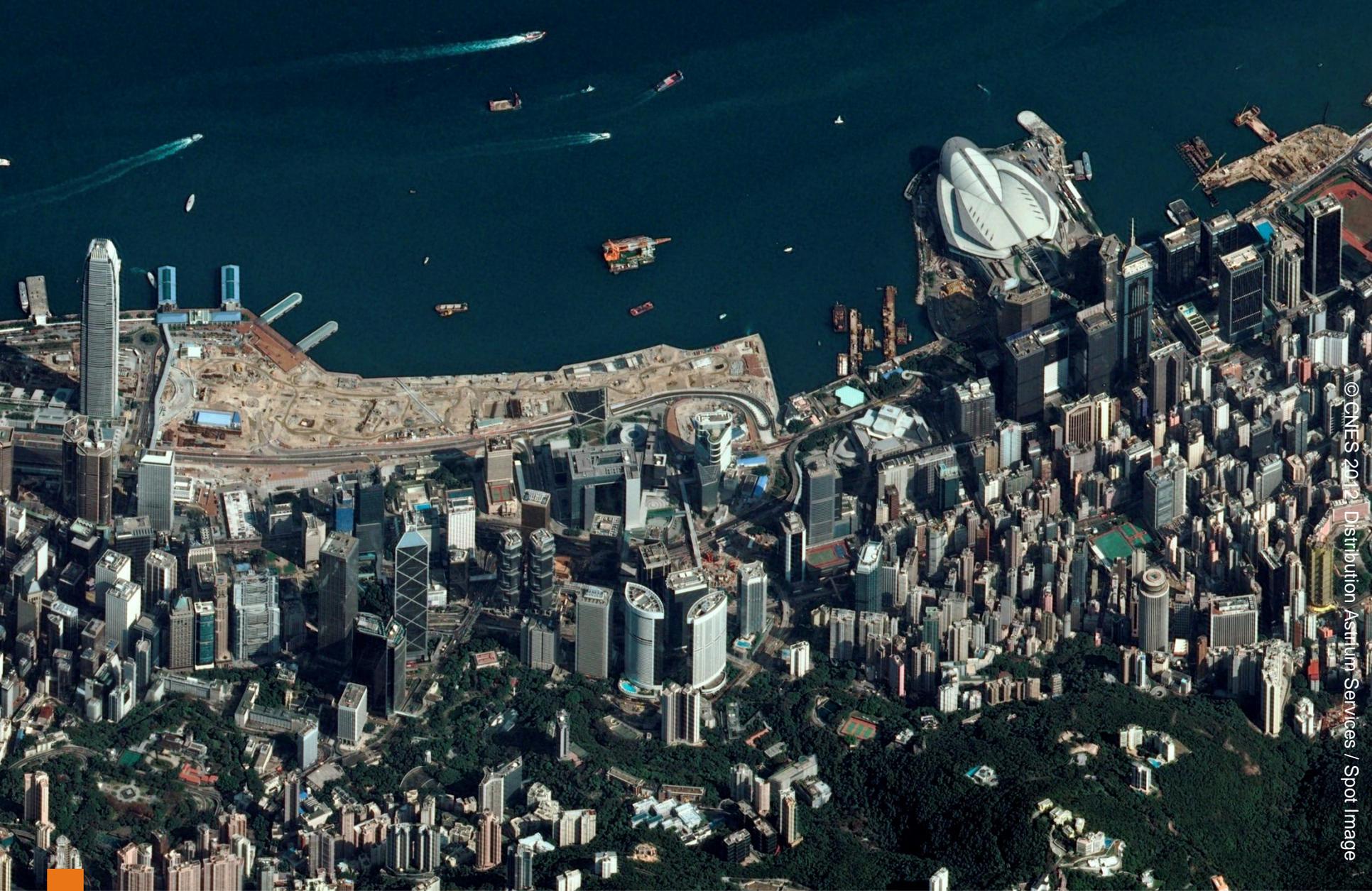
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Ferrari World, Abu Dhabi - 50 cm Color – Commissioning Phase Data
Pléiades, March 2012



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Ayers Rock, Australia – 50 cm Color - Commissioning Phase Data
Pléiades, March 2012



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Hong Kong - 50 cm Color - Commissioning Phase Data
Pléiades, February 1, 2012



Cairo, Egypt – 50 cm Color - Commissioning Phase Data
Pléiades, December 24, 2011



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Washington, USA – 50 cm Color - Commissioning Phase Data
Pléiades, January 1, 2012



Bora Bora, Polynesia - 50 cm Color - Commissioning Phase Data
Pléiades, January 2, 2012



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Dubai, U.A.E. – 50 cm Color - Commissioning Phase Data
Pléiades, January 4, 2012

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