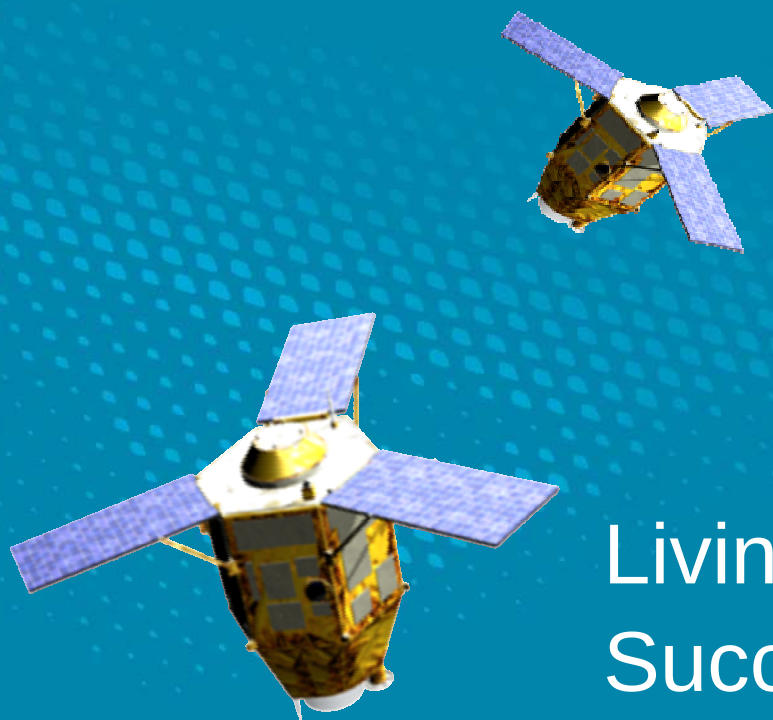




Living the Pléiades Constellation Success

Airbus DS – GISTDA Roadshow

TAY Lip Hong, Sales Manager
10 March 2015, Bangkok, Thailand

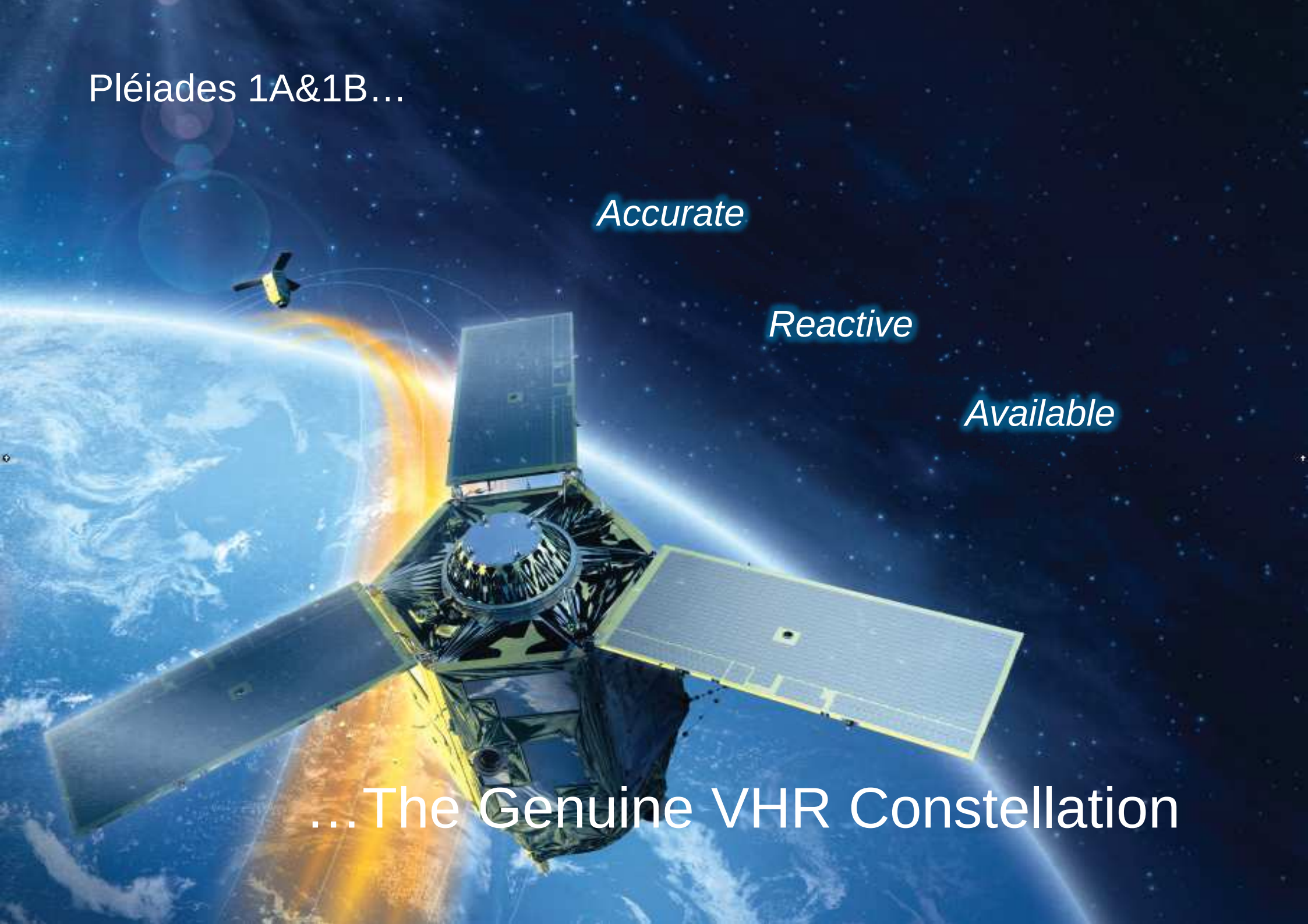
Pléiades 1A&1B...

Accurate

Reactive

Available

...The Genuine VHR Constellation



Accurate, Reactive, Available

Sensors

One camera

1 panchromatic
4 multispectral

12 bits

Dynamic range per pixel at
acquisition

PAN Colour

Simultaneous acquisition

Products

50 cm

Panchromatic
Pan-sharpened

2 m

Multispectral

Ortho rectified

As a standard
Fully automatic processing,
incl monopass mosaics

Per sq.km

Pricing model



Accurate, Reactive, Available

Constellation



1 day

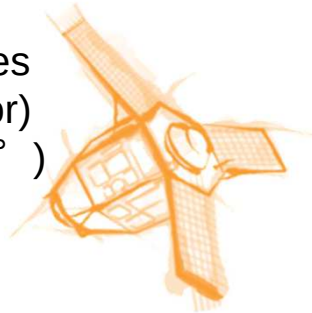
Revisit time with 2 satellites
@ 45° incidence (equator)
@ 30° incidence (Lat 40°)

Twins

Two IDENTICAL satellites

Phased orbit

180° one from each other,
same orbit



Operations

4

of tasking plans per day
One tasking plan every 8 hours

Up to 2h

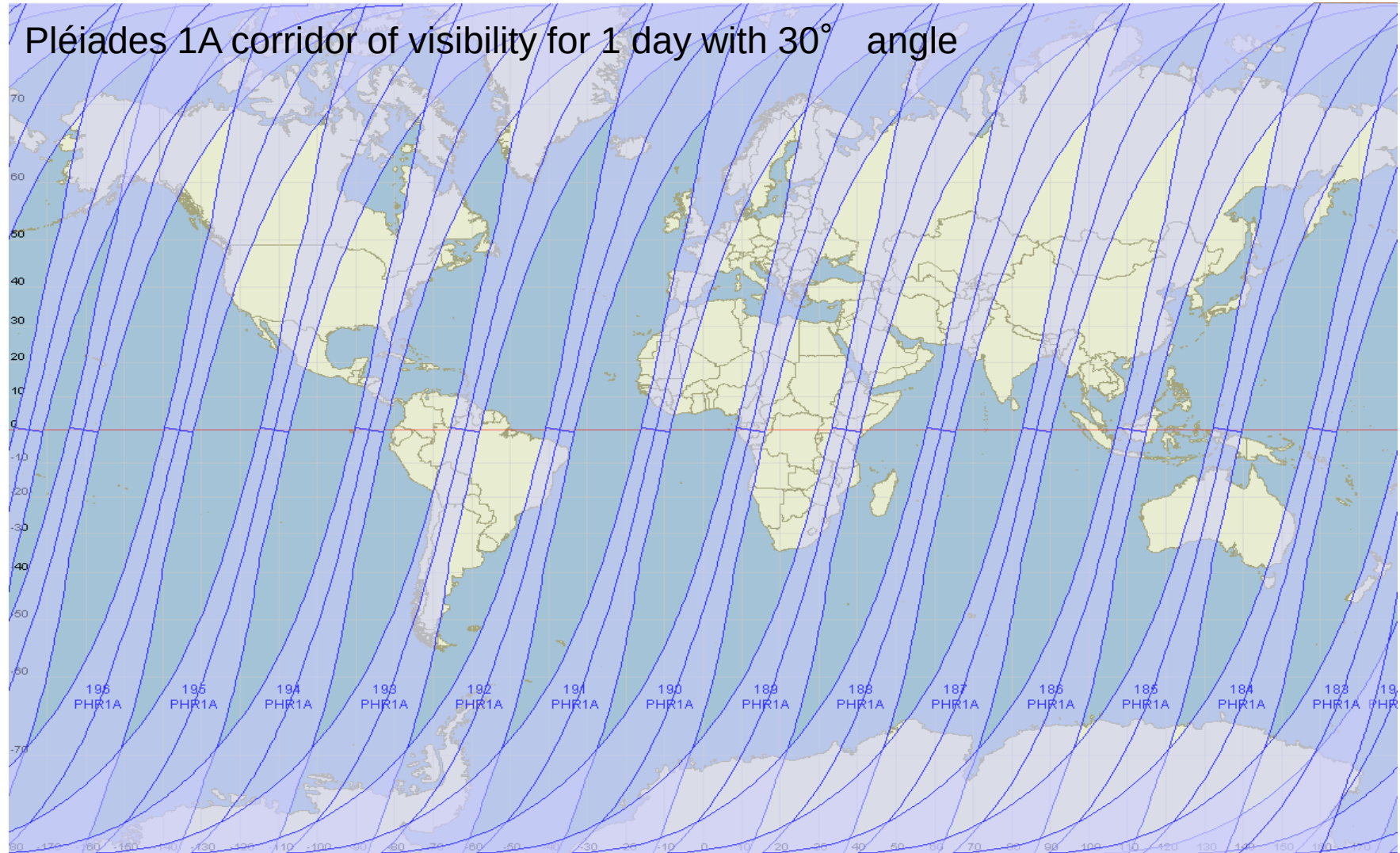
Before the acquisition window to
post a rush tasking request

30 min

Direct tasking plan upload before
actual acquisition

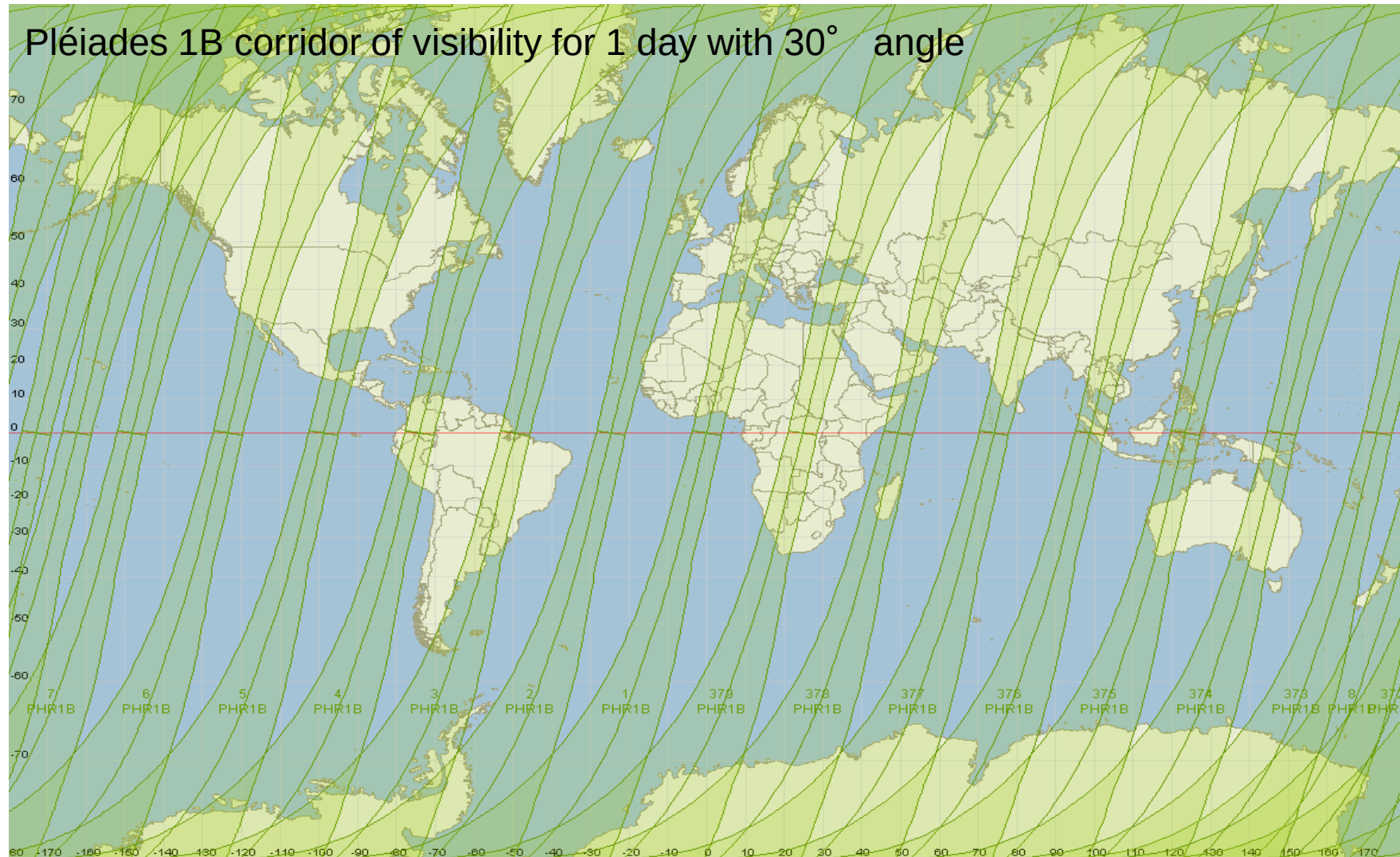
Accurate, Reactive, Available

Daily Revisit Capacity Anywhere on Earth



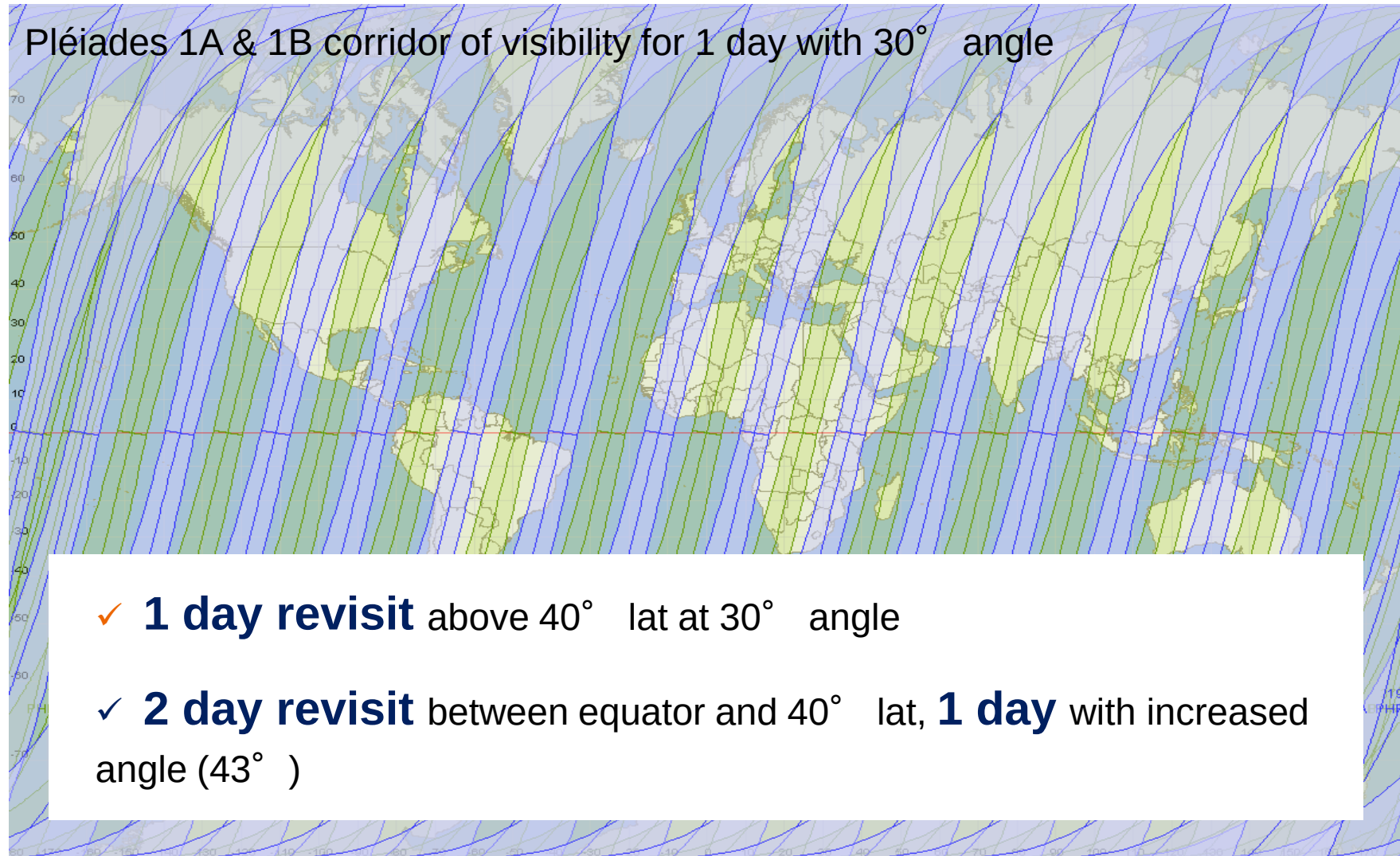
Accurate, Reactive, Available

Daily Revisit Capacity Anywhere on Earth



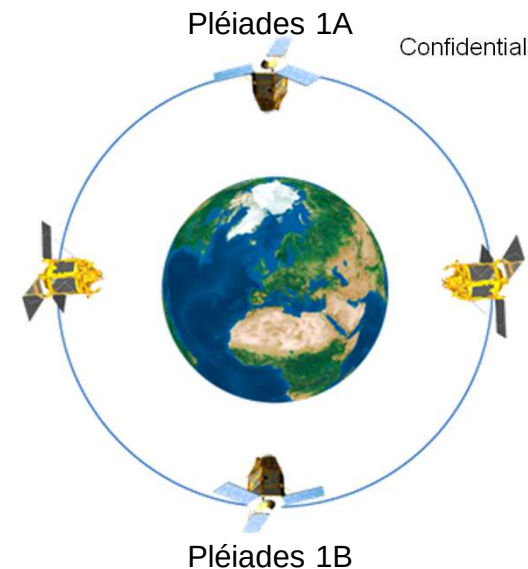
Accurate, Reactive, Available

Daily Revisit Capacity Anywhere on Earth



Accurate, Reactive, Available

Genuine Constellation, Daily Revisit



Two twins satellites, featuring a *true constellation*:

- ✓ **Faster access to target**, with an acquisition opportunity every day whatever the location of a crisis or natural disaster,
- ✓ **Greater change detection**, up-to-daily monitoring to follow activity progress on a given site (industrial, military, civil engineering piece of work, mining...)
- ✓ **Coverage x2**, ideal for rapid coverage of large areas with twice more attempts possible then twice more opportunities for a cloud-free image

Accurate, Reactive, Available

Acquisition capacity

600

Images per day, nominal
acquisition capacity (per sat)

20 km

Widest swath at nadir on the
VHR market

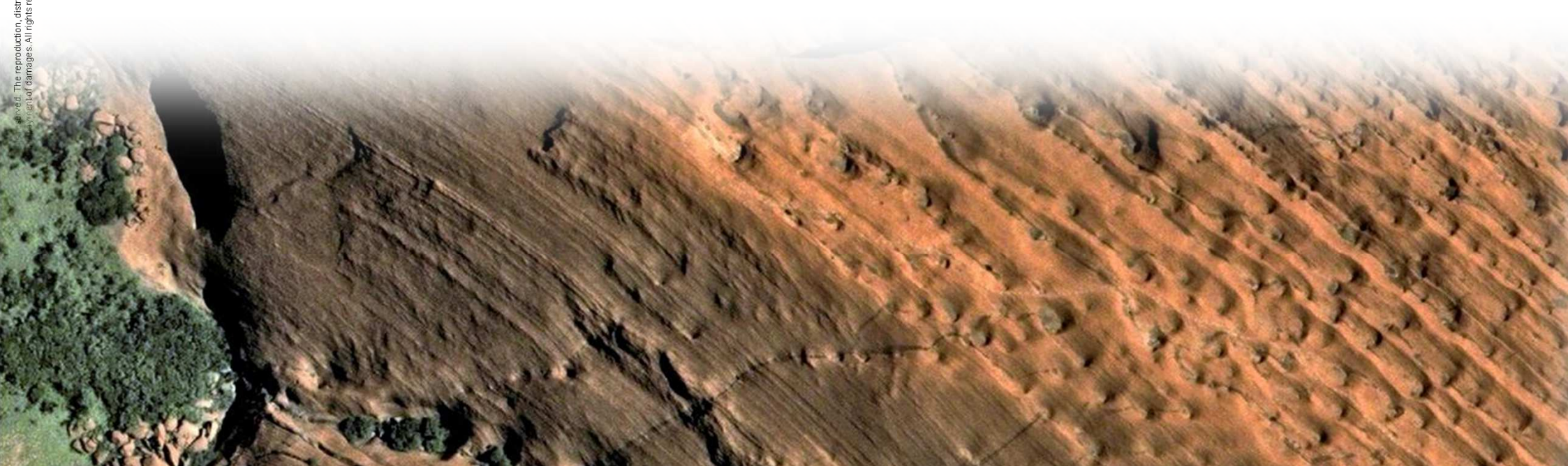
Agility

4

CMGs

Monopass collection scenarios

Multi-target,
Mosaic,
Stereo, tristereo,
Border / coastal / corridor



Accurate, Reactive, Available

The Broadest Swath



Pléiades' 400 sq.km

- A large footprint for its resolution, 20 km
- In the spirit of SPOT family, meant for wide coverage

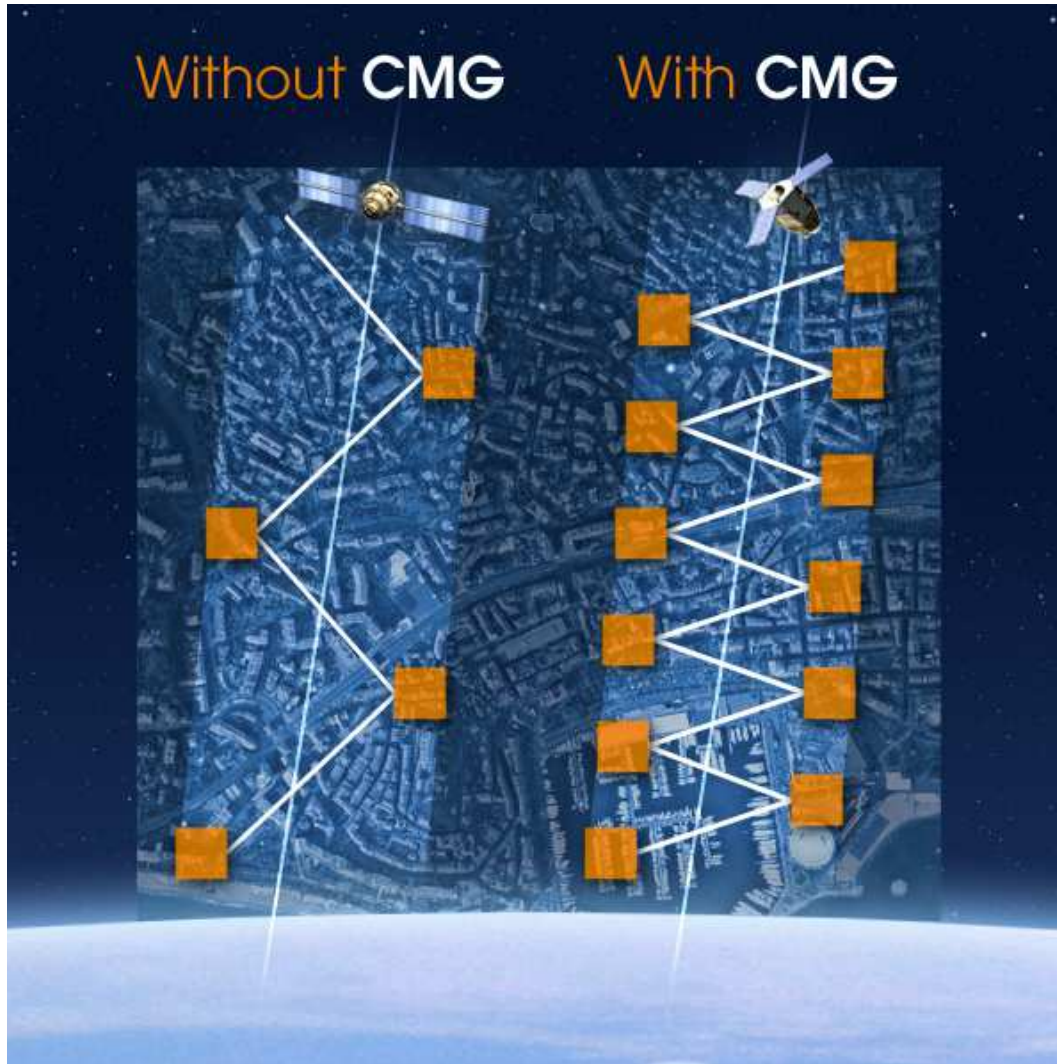
Maximised information on target and surroundings

Optimised production

Easier data handling

Accurate, Reactive, Available

A State-of-the-Art Agility



- **Twice** as many images collected as satellites without CMGs during the same orbit slot

Increase acquisition opportunities,
and probability of success:

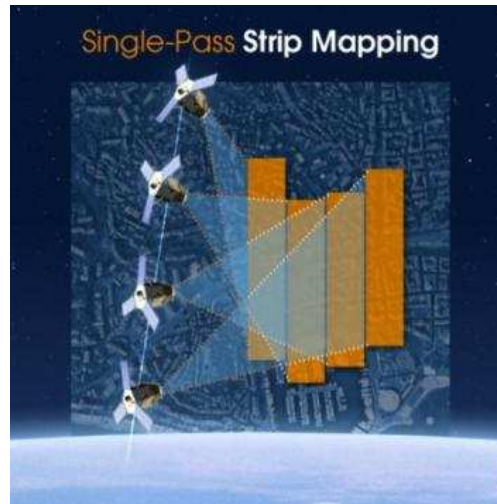
**Shortened average
acquisition window**

Accurate, Reactive, Available

Single Pass Collection Scenario



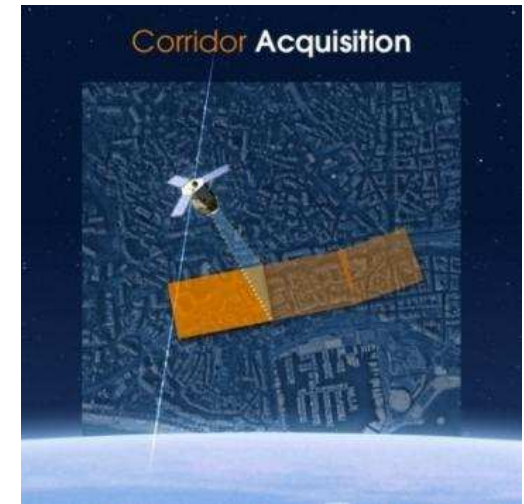
Typically **20 targets**
over 1,000 km within a
+/-30° corridor



Up to **100 x 150**
(5 strips) or
120 x 110 km
(6 strips at 30°),
automatically
orthorectified and
mosaicked



For accurate
3D modelling



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



Athens, Greece - 50-cm color - Commissioning Phase Data
Pléiades, December 27, 2011



© CNES 2011, Distribution Airbus DS / Spot Image



Pléiades - Extract over Abu Dhabi
First Pléiades Images - 50 cm colour

© Cnes 2012 - Distribution Astrium Services / Spot Image

© CNES 2011, Distribution Airbus DS / Spot Image



Pléiades - Extract over Beijing
First Pléiades Images - 50 cm colour

© Cnes 2012 - Distribution Astrium Services / Spot Image

© CNES 2011, Distribution Airbus DS / Spot Image

Pléiades system in a nutshell : Refresh and Reactivity promise!

Confidential



Fast access to target with an acquisition opportunity every day whatever the location of a crisis or natural disaster,



Great change detection & Monitoring capacity up-to-daily monitoring to follow activity progress on a given site (industrial, military, civil engineering piece of work, mining...)



Large collection capacity for commercial use **and great stereoscopic capacity** to respond to fine mapping needs



Twofold coverage, ideal for rapid coverage of large areas with twice more attempts possible then twice more opportunities for a cloud-free image

Fresh images - Rapid images – Regular images - Twice more images



**In pixel business every move matters:
Looking back to a great year !**

- **Reactivity**
- **Capacity**
- **Availability**

An aerial photograph of an industrial complex, likely a refinery or chemical plant. The facility features several large, interconnected storage tanks, distillation columns, and processing units. The site is surrounded by a network of roads and pipelines. In the foreground, there are large, irregularly shaped ponds or reservoirs. The overall scene is a detailed view of industrial infrastructure.

Reactivity is key !

High end portfolio to keep up with customer demands

Confidential

Thanks to Pléiades Single-pass stereoscopic collection scenarios...



- ✓ In a single pass, up to
6,000 km² pairs
2,000 km² triplets



- ✓ Assess & detect
moving targets, incl.
small elements
- ✓ Up to **25 images**

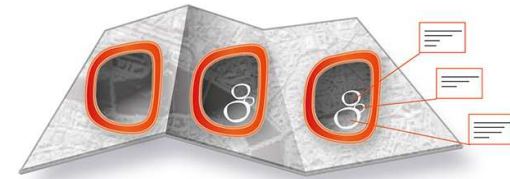


High end portfolio to keep up with customer demands

Confidential

More to be presented next and to be launched

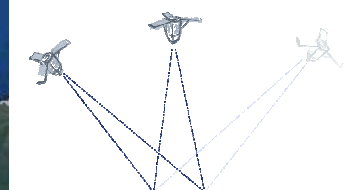
- Elevation 1 & 4 range with Pléiades thanks to Pléiades' outstanding agility on 3D accurate modeling
- Enriched GoMonitor with three level of services
- Pléiades data feeds Foundation layers for Defence and other data hungry services



An aerial photograph of a rugged, mountainous landscape. A winding road or path is visible, snaking through the terrain. The mountains are covered in patches of snow or light-colored rock, contrasting with the darker, forested slopes. A white rectangular box is superimposed in the center of the image, containing the text "Capacity is key !".

Capacity is key !

We Have Built and Are Expanding a Smart Thematic Archive

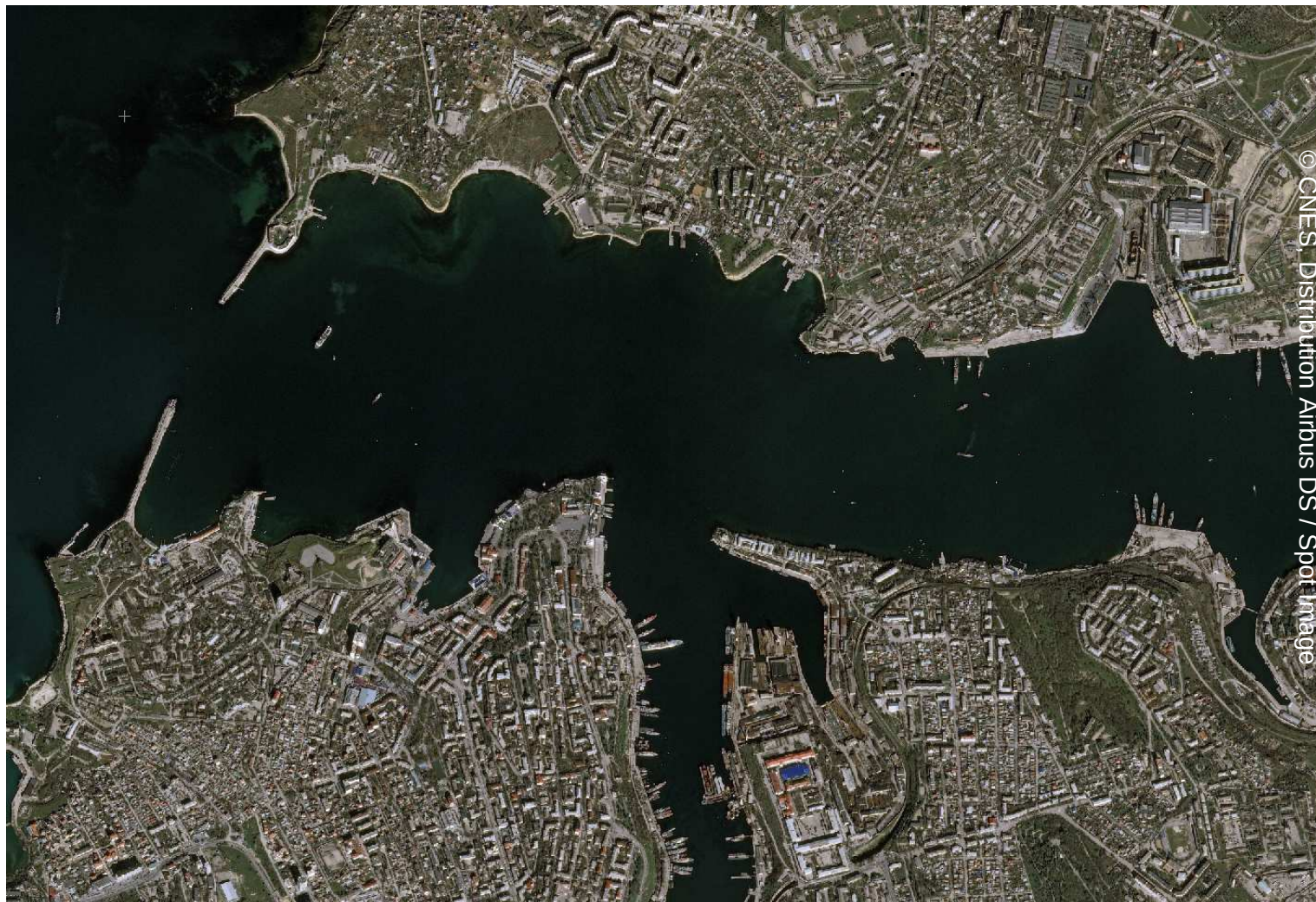


25 sq.km

1,000 airports
covered

Target 2,500

Sevastopol naval Blockade



The New York Times

Naval Blockade

Two Ukrainian naval vessels were being blocked by Russian ships at a port in Sevastopol's North Bay. The satellite image here was captured on Monday by Airbus Defence and Space.





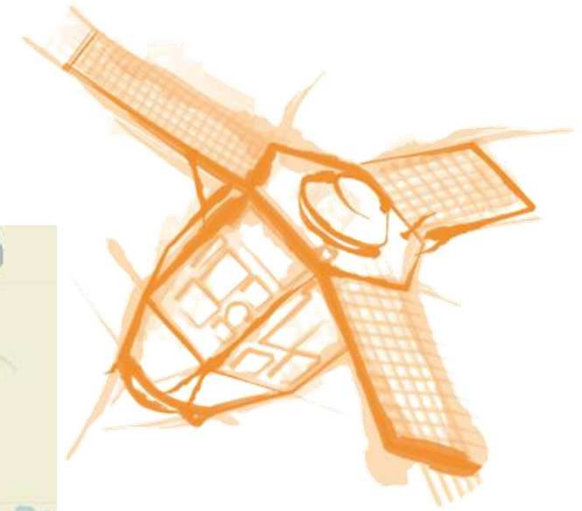
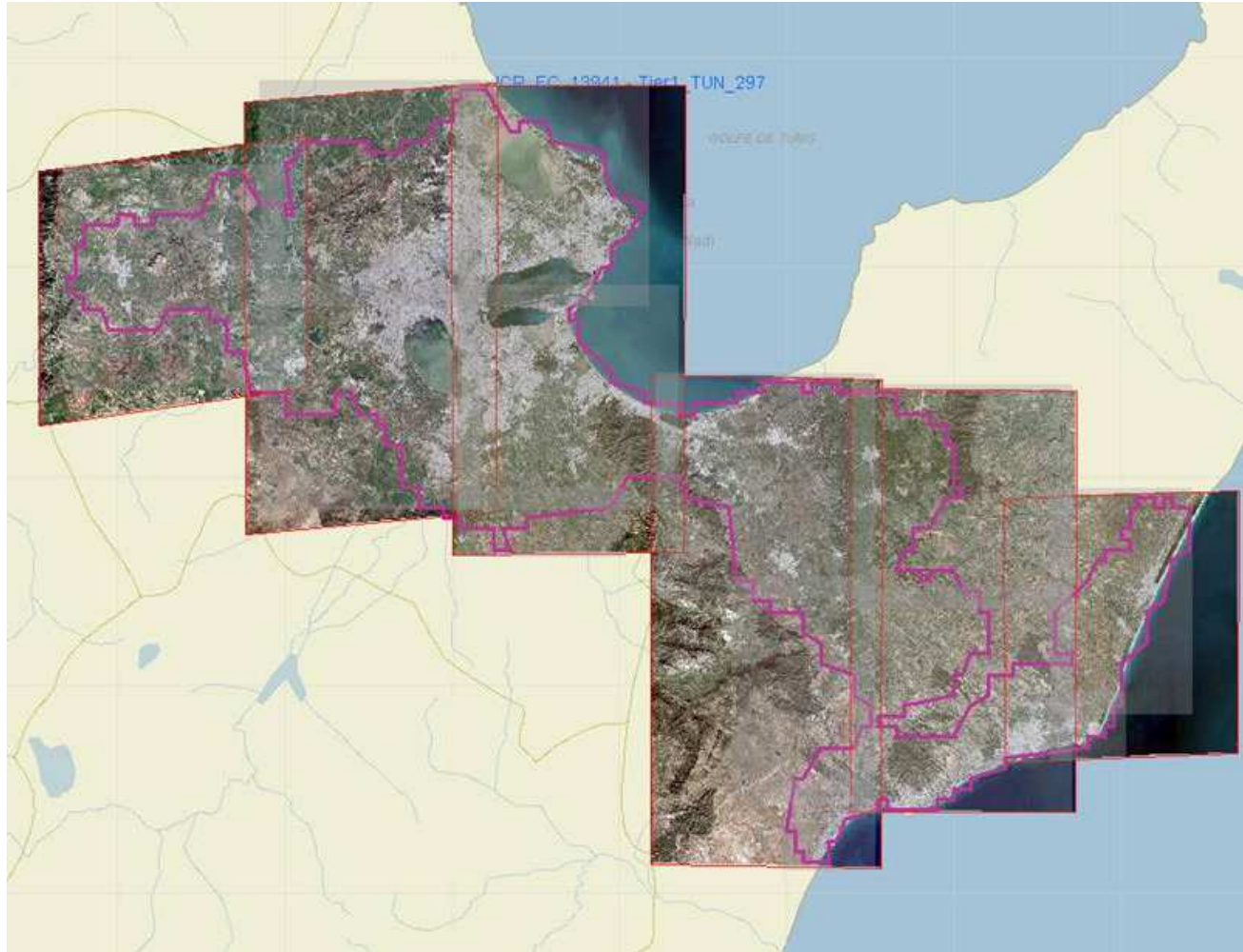
Capacity of the satellite to acquire the 220-km Korean border



- ✓ Pléiades **One pass acquisition**
- ✓ North-South acquisition
- ✓ Corridor collection scenario to follow the coastline of the Korean border

Proven Example

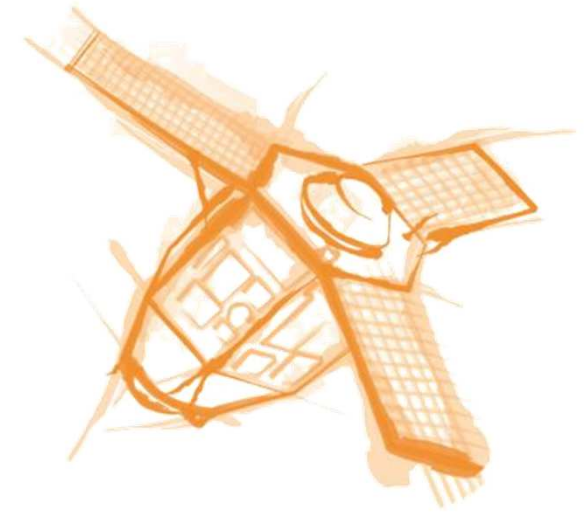
Wide Coverage, Homogeneous Data



✓ **6 strips**
over Tunis,
Tunisia clearing
100% of the
acquisition in
one satellite
pass

Proven Example

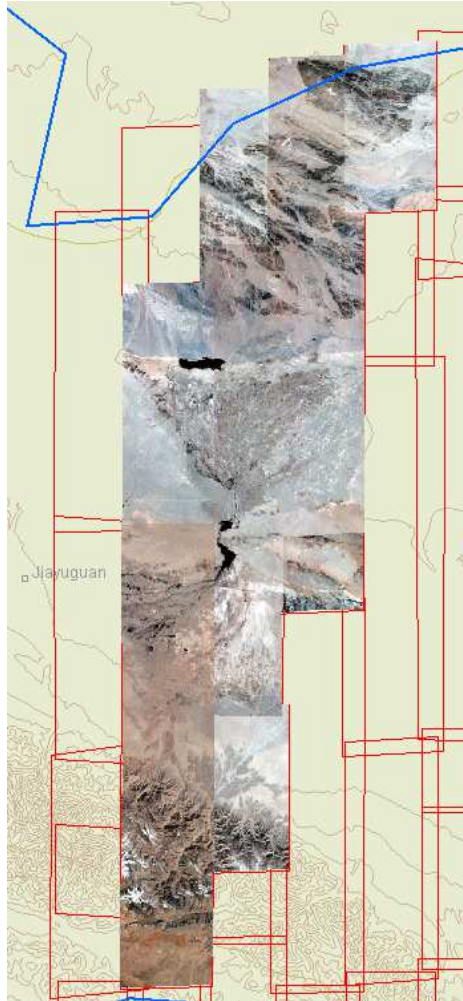
Wide Coverage, Homogeneous Data



✓ **7 strips** over
Rabat / Casablanca,
Morroco, clearing
100% of the
acquisition in one
satellite pass

Proven Example

Wide Coverage, Homogeneous Data



✓ Single pass coverage over Gansu, China:

8 strips,
up to 100km long.



✓ Single pass coverage over Shanghai:

4 strips,
up to 100km long.

An aerial photograph of a port area. In the center, a large white rectangular box contains the text "Availability is key !". The background shows a dark body of water with several large cargo ships docked at piers. To the right, there are numerous colorful shipping containers stacked in rows. The surrounding land features industrial buildings, parking lots, and some greenery.

Availability is key !

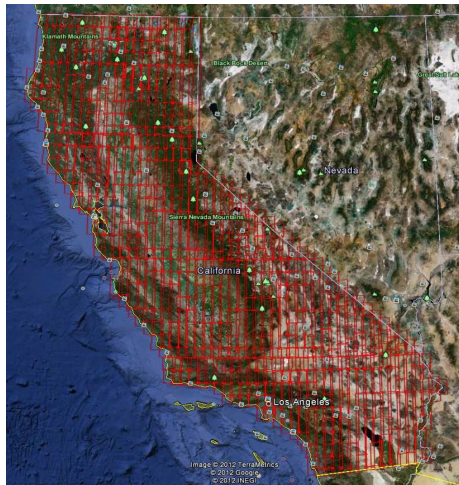
Pléiades archive is growing: fresh and consistent

Confidential

Archive price available upon collection

260m km²

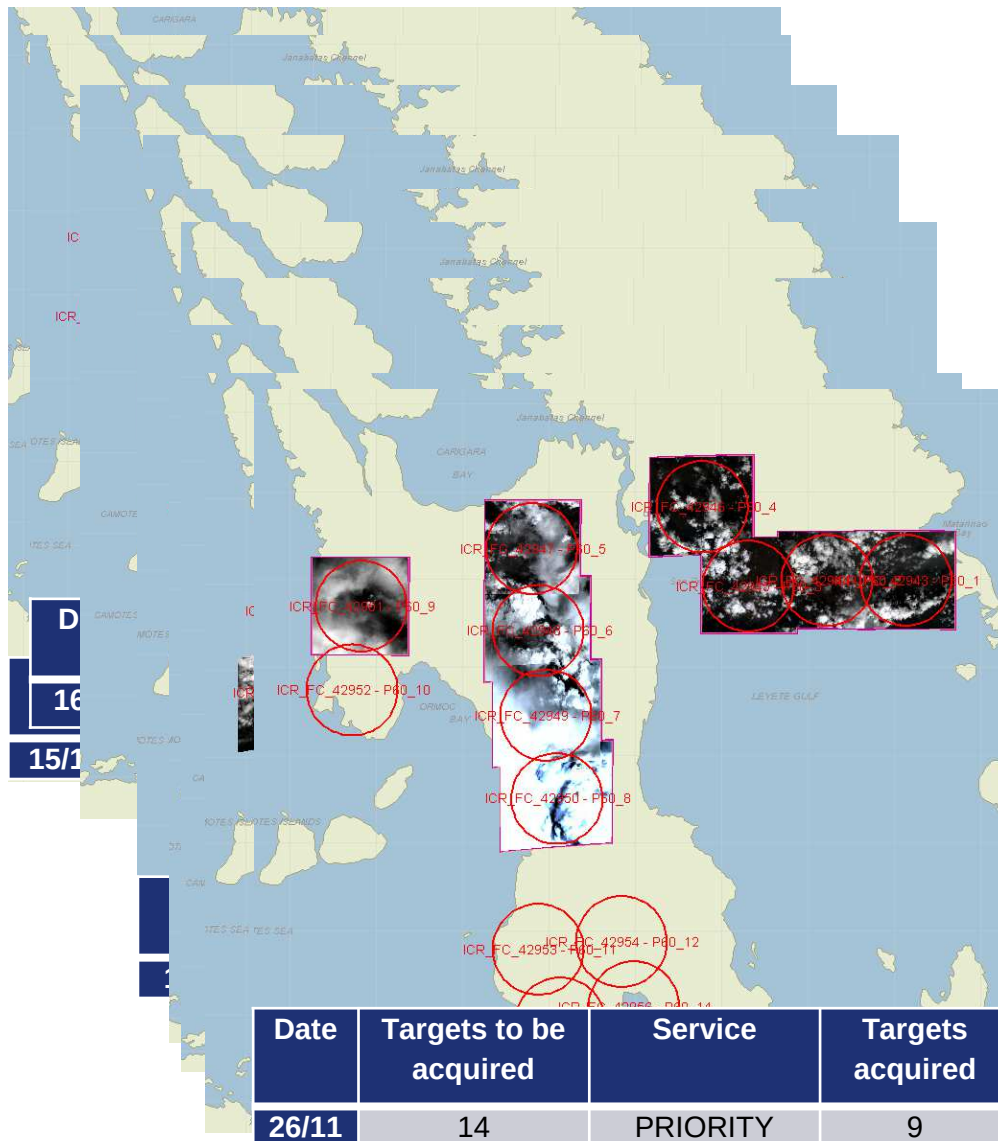
Pléiades Cumulated Archive – status Sept. 2014, since launch



524,000

images around the world



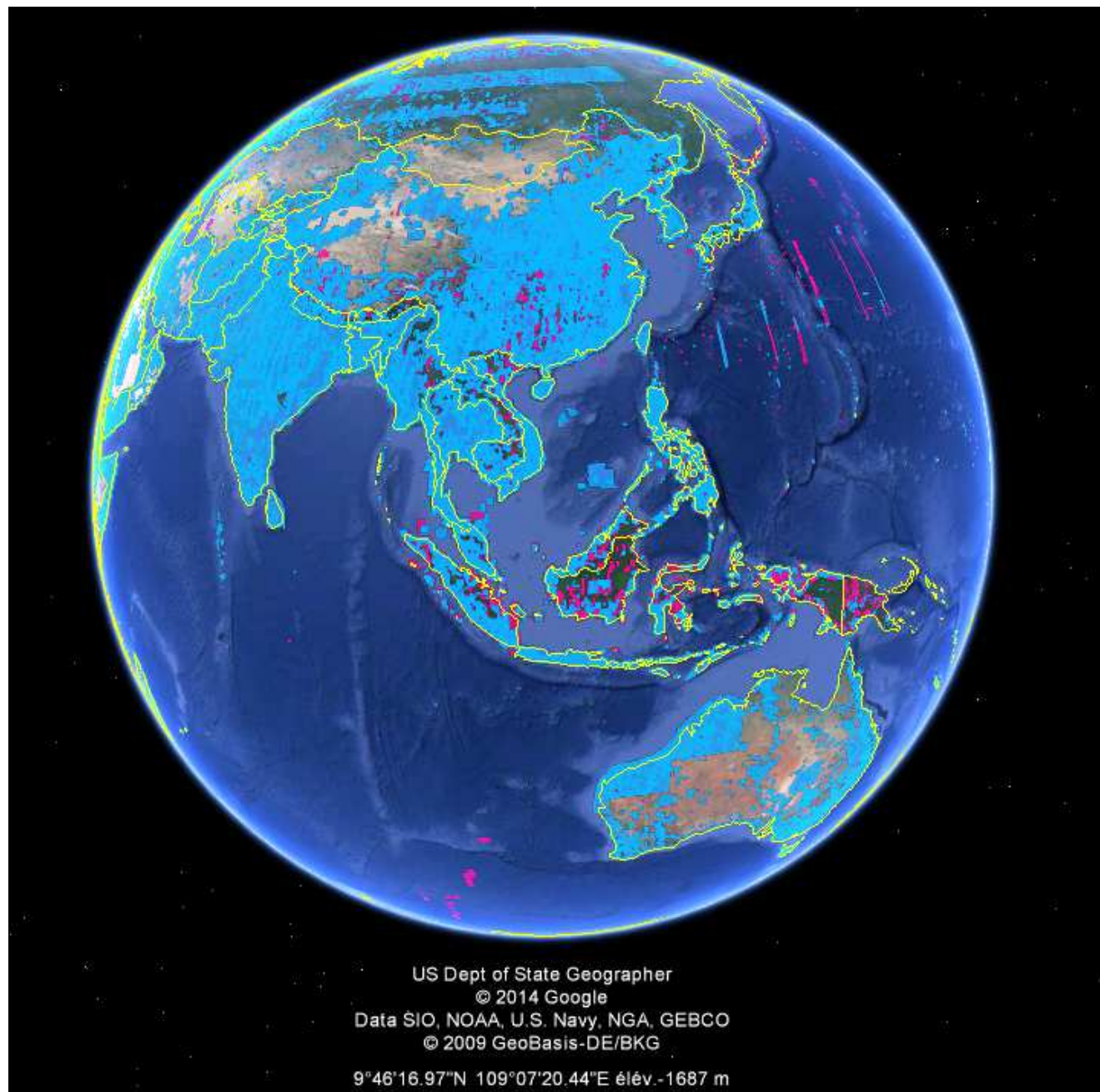


- ✓ Pléiades **1A & 1B target collection**
- ✓ Between, Nov 15th and Nov 26th (10 days of programming) Pleiades constellation has acquired **103 targets**, that is to say an average of 10 acquisitions per day on the same place.

Pléiades archive is growing

Confidential

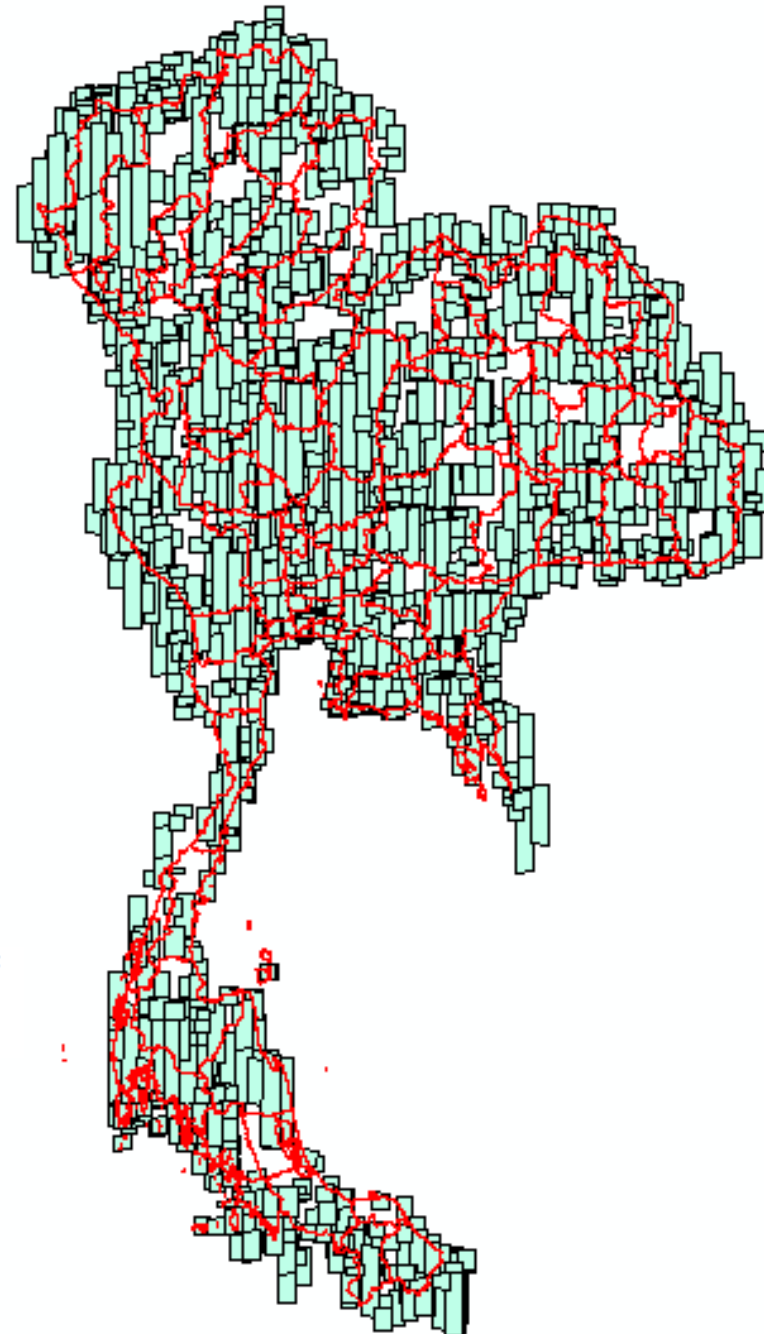
Example of APAC
region over the last
3 years
(2012 – 2014)



Pléiades Data **Good Archive** over Thailand

1 Jan. 2013 – 2 March 2015

Confidential



Legend :

- Thailand_Boundary
- 20130101_20150302_PHR_THD_F

Pléiades archive available
coverage = **427,164 sq km**

Pléiades Application

Topographic Mapping

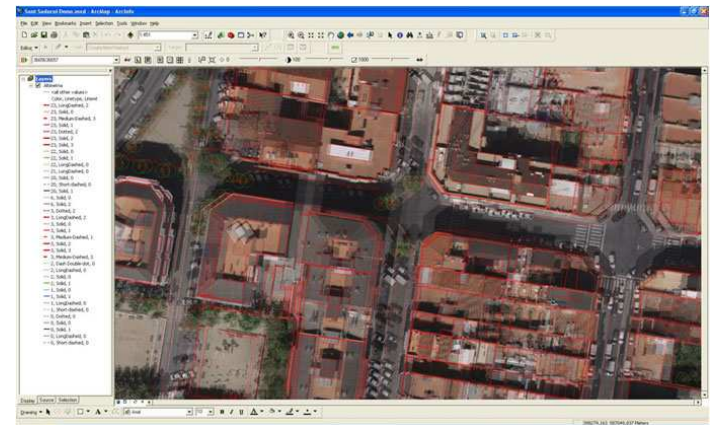
DSM/DTM from Stereo/Tri-Stereo

Forestry – a complement to SPOT6/7 for spotting the details

What PT5K is?

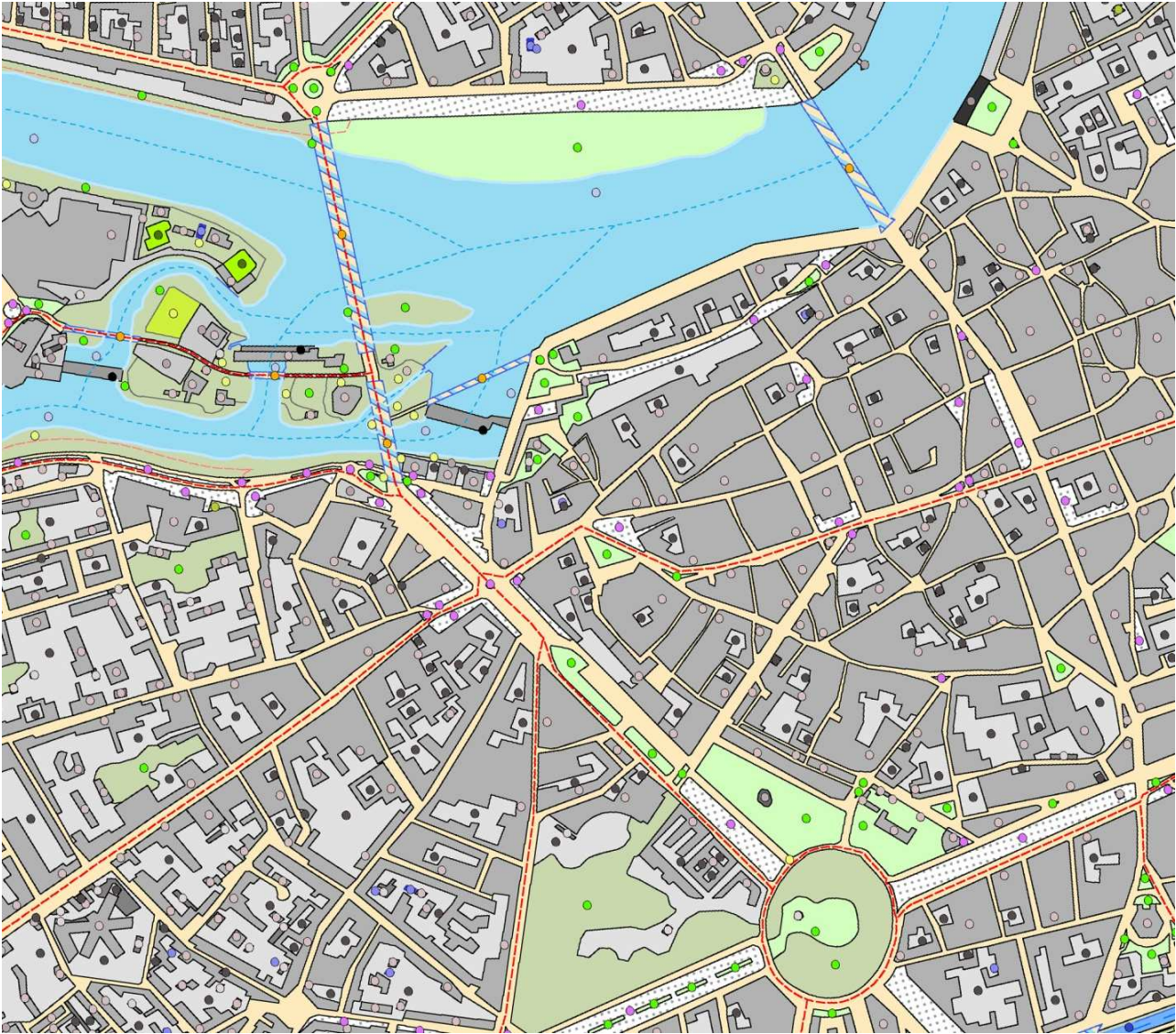
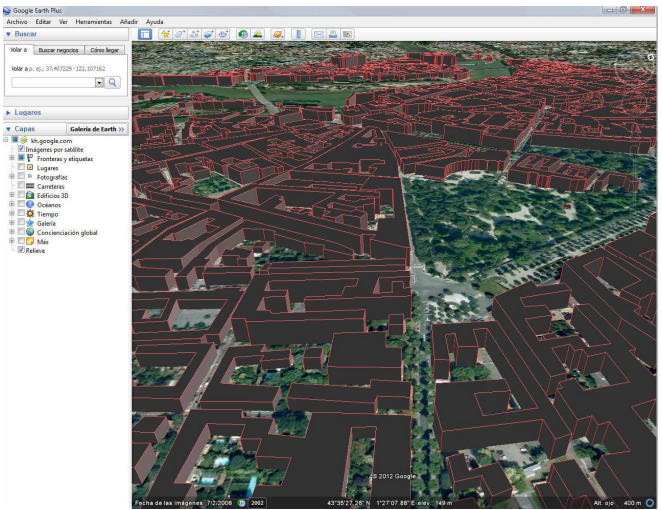
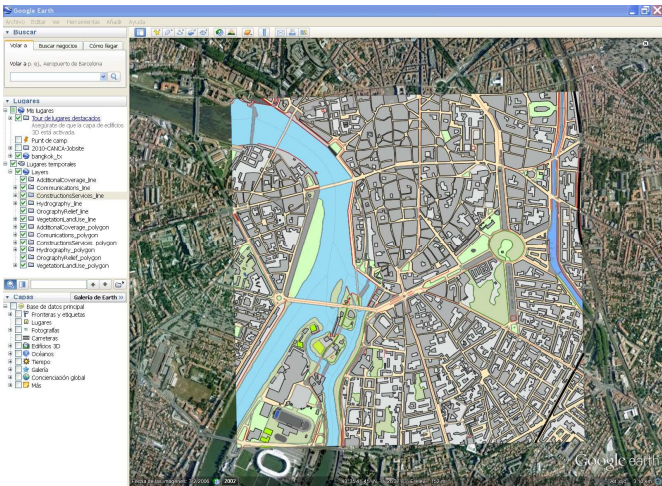
Pléiades Topographic 1:5.000 scale maps

- Product derived from Pléiades stereo imagery
- A manually extracted (photogrammetry) **3D GIS vector database with all features coded** or multi-coded to represent topographical features.
- **Map reference scale is “classical” 3D 1:5,000.** Pléiades 50cm enables large scale mapping from space!
- Designed to serve (anywhere in the world):
 - Large engineering projects
 - Oil&Gas
 - Cities and Public Administrations (IGN’s carefully)
- PT5K Geodatabase data model is suitable for **future generalization to 25K and 50K** reference scale maps



Examples over Urban Areas

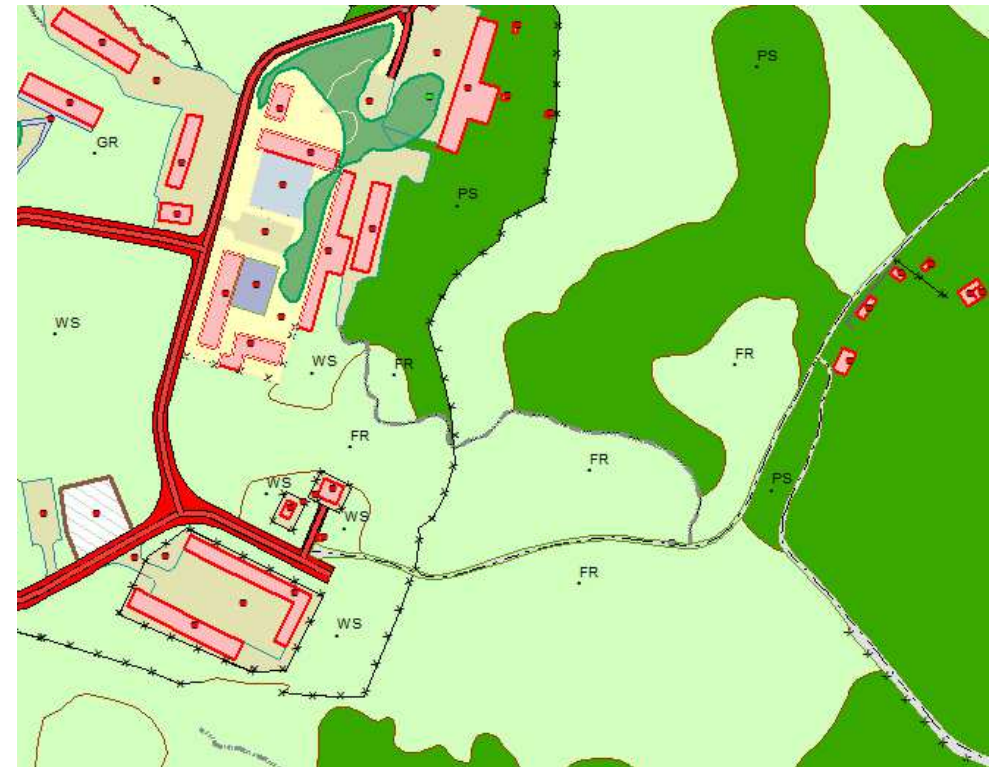
Toulouse



Examples

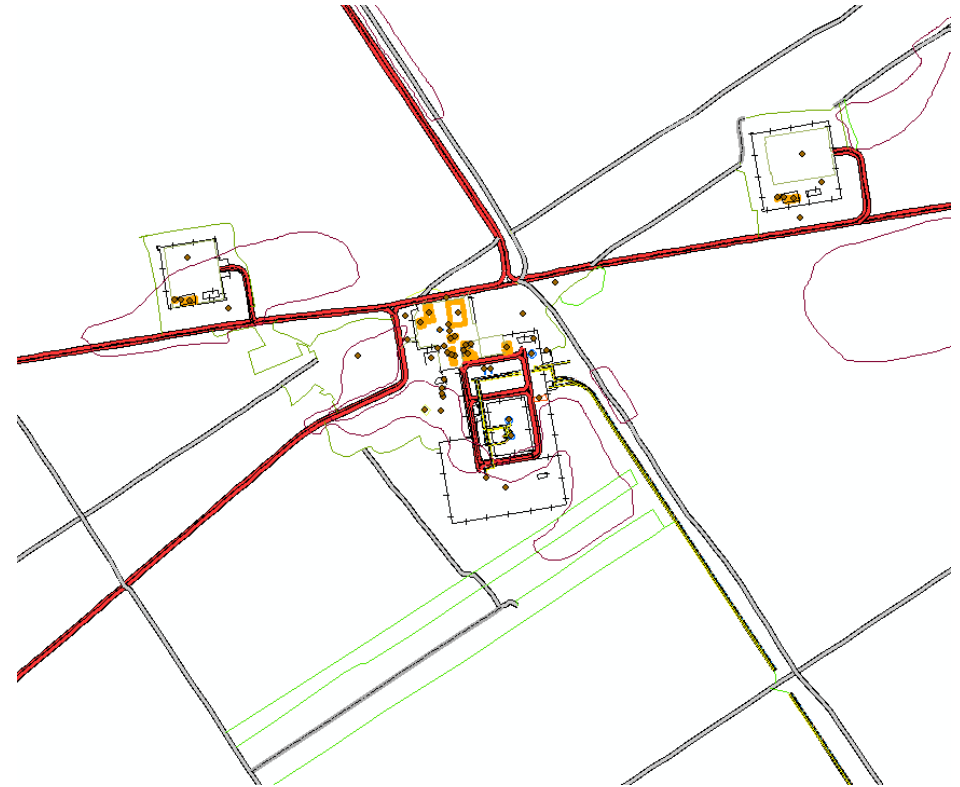
Oil and Gas project - Machiques, Venezuela

Semi-rural area



Examples over a Rural Area

Oil and Gas - El paso Morenero, Venezuela



Examples

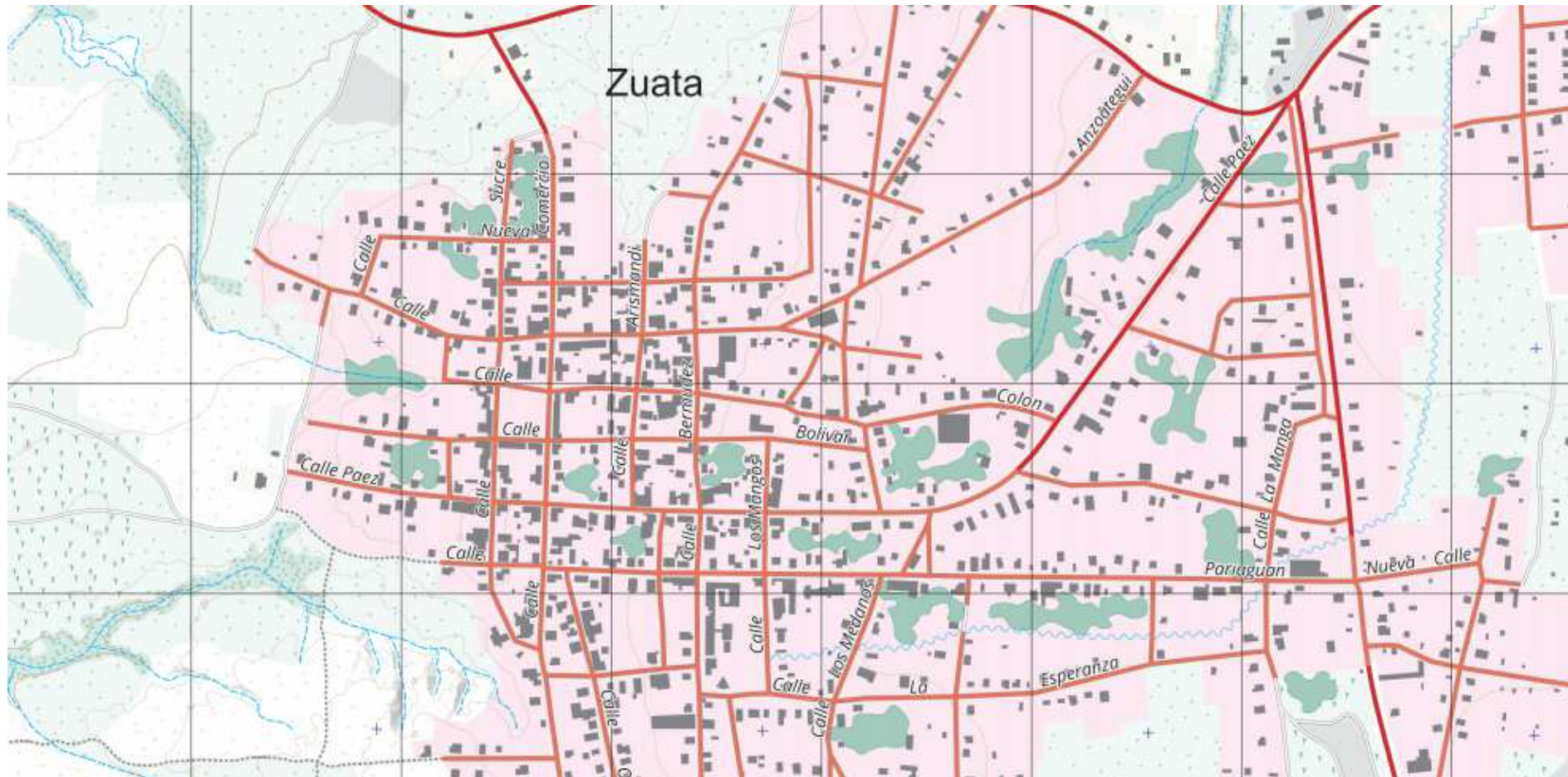
Oil and Gas, Zuata, Venezuela

PT5K overlapping the orthophoto



Oil and Gas, Zuata, Venezuela

Finished map at a scale of 1:5,000



Cartographic edition done by Lorientte

UPGRADING RGE ALTI® IN MOUNTAINOUS AREAS USING PLEIADES

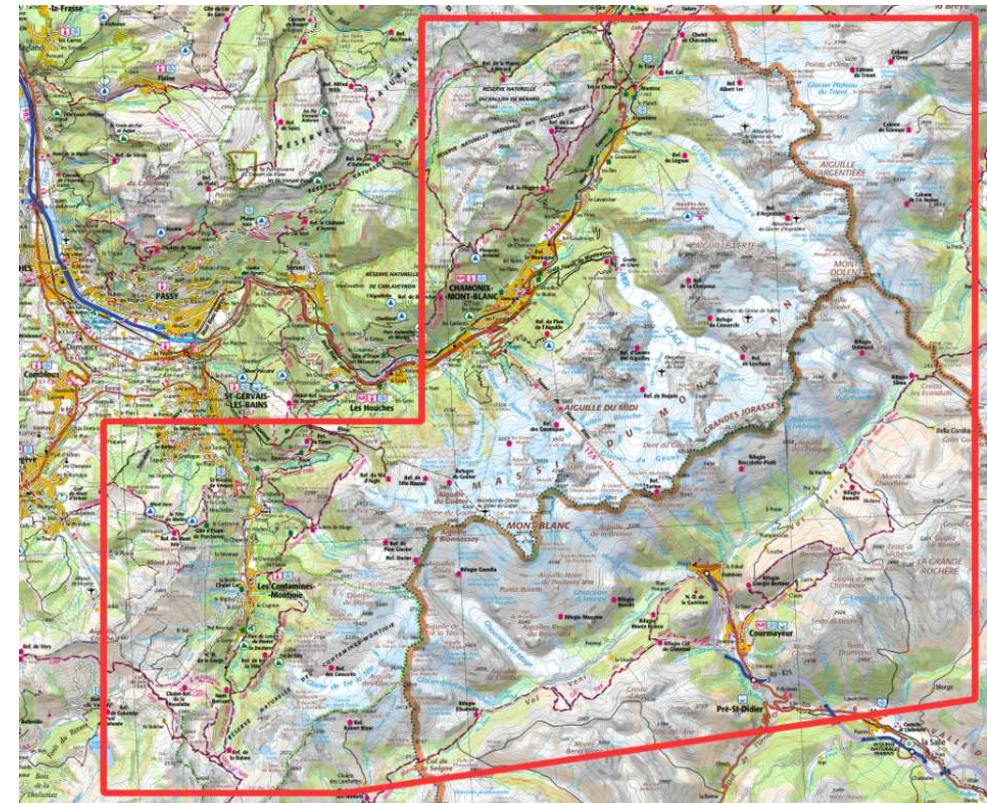
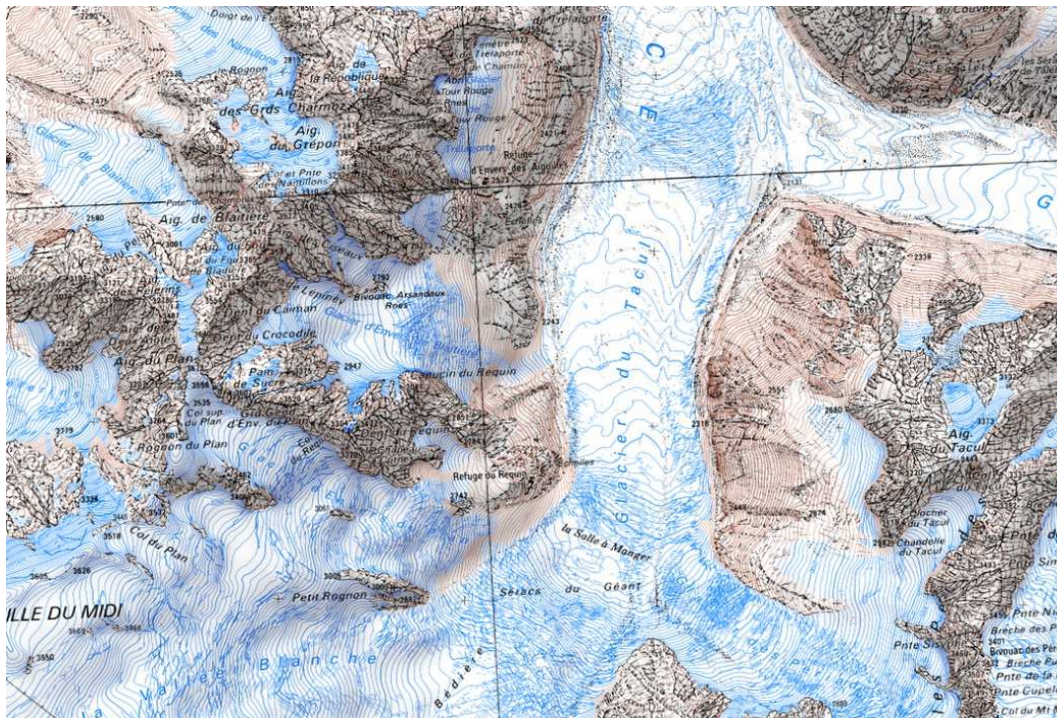
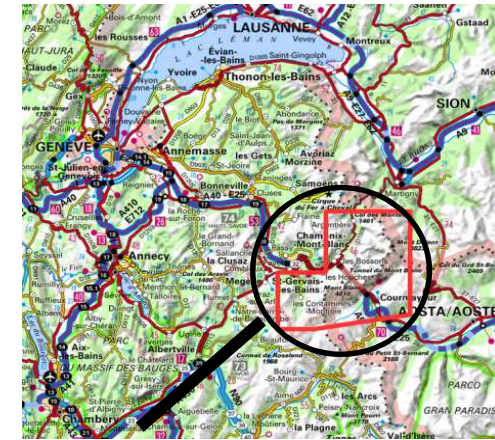
TEST AREAS MONT-BLANC (FRANCE)

800 km² on the Mont-Blanc massif

Altitude from 1000m to 4800m, poor vegetation, snowy terrain and glaciers, numerous shadows

Multi-stereo of 5 images on August 2012

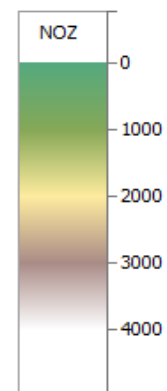
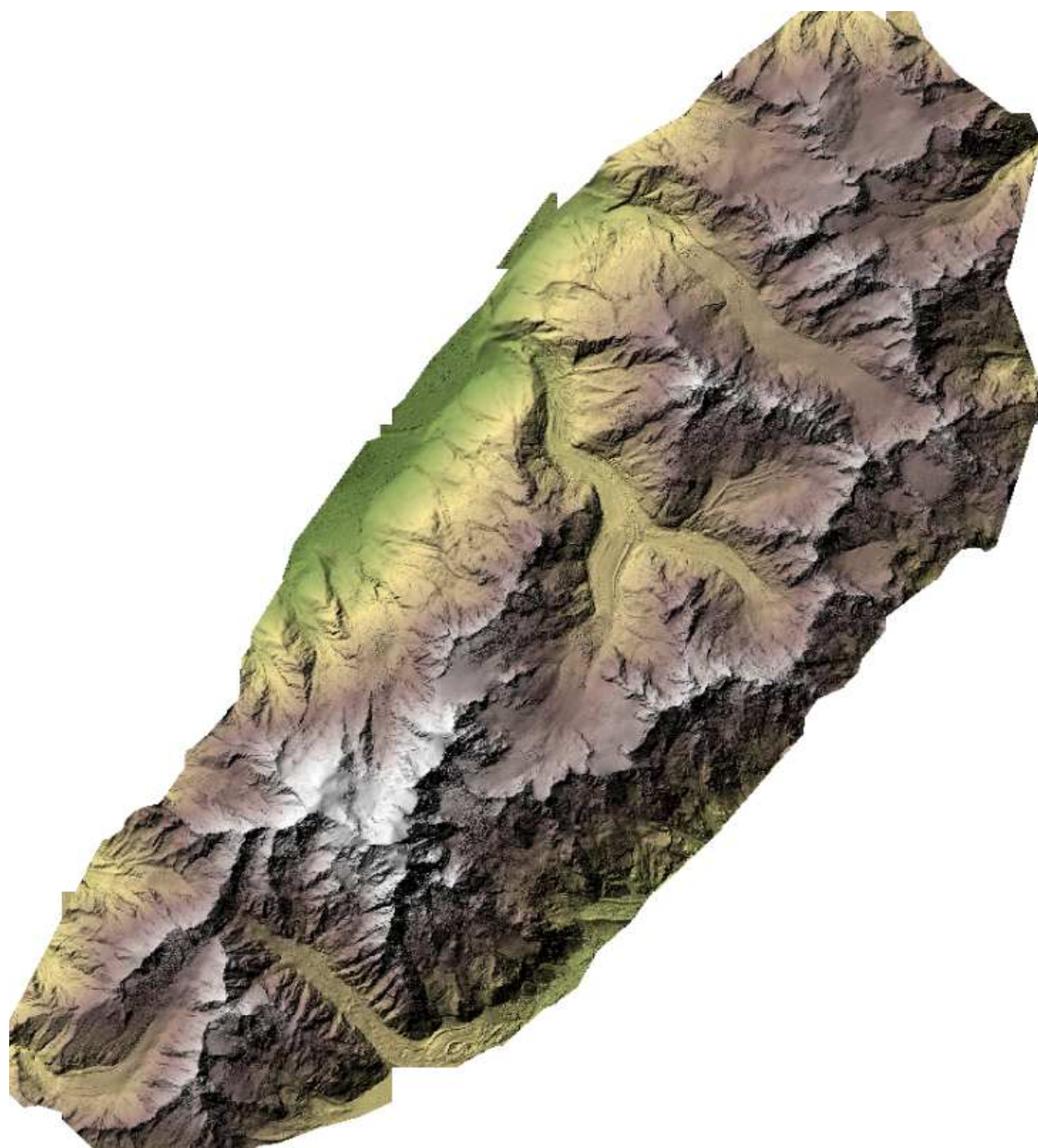
Tristereos on September 2013



RESULTS

VIEW OF MONT-BLANC 2013 DTM

Confidential



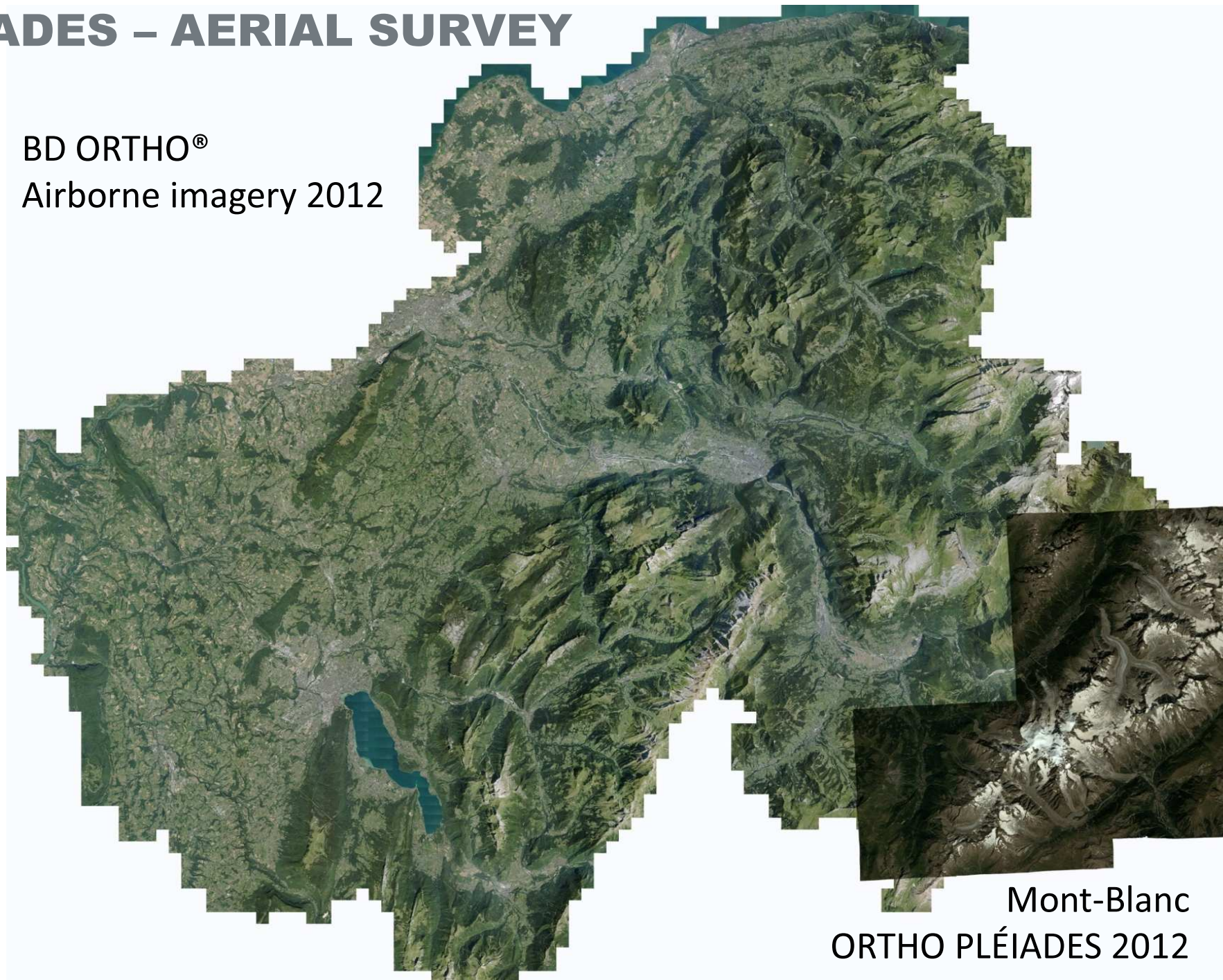
COMPLEMENTARITY

PLEIADES – AERIAL SURVEY

Confidential

BD ORTHO®
Airborne imagery 2012

Haute-
Savoie
(74)

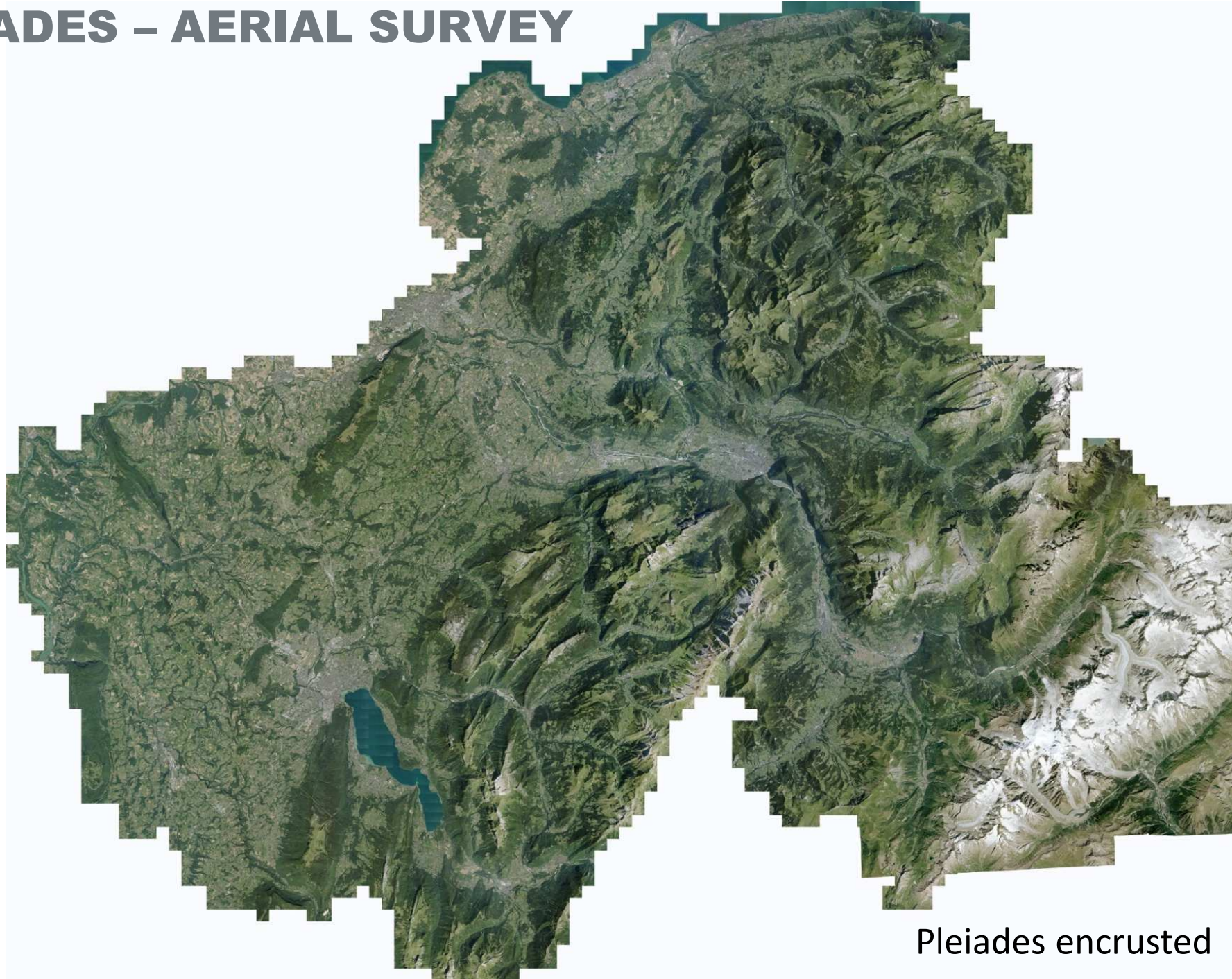


Mont-Blanc
ORTHO PLÉIADES 2012

COMPLEMENTARITY

PLEIADES – AERIAL SURVEY

Confidential



Pleiades encrusted

PLEIADES AS AN ADDITIONNAL SOURCE FOR BD ORTHO®

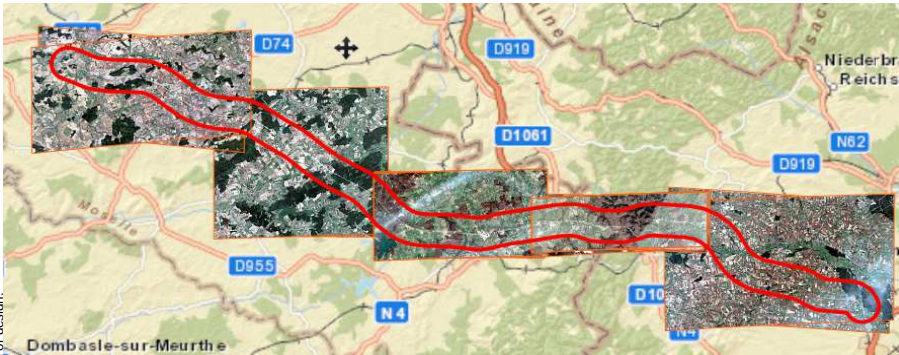
- Possible source to produce additional BD ORTHO® “départements”
- Possible source to produce parts of BD ORTHO® “départements”, where landscape lends itself to aerial-satellite mosaicking
- The solution to produce BD Ortho® on remote French overseas “départements” and territories

3D PLOTTING FROM PLÉIADES STEREOPAIRS

3D PLOTTING ALONG EASTERN HIGH SPEED TRAIN (LGV Est)

Confidential

Updating of BD Topo®, compatible with the specifications (accuracy better than 1m)



Evaluation of damages due to natural hazard

Storm in Cotriguaçu – MT, Brasil

SPOT6 for a panoramic view, Pleiades for spotting the detail

Evidence of canopy disturbance

Detailed analysis in favour of natural accident
(trunks spread over the ground)



Thank you!

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