



Committee on Earth Observation Satellites

Cote d'Azur University - Academy 3  
WG Disasters Conference  
October 3rd 2022

# DINAMIS: EO imagery for French and foreign institutional users

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Access to data  
is quite  
complicated



Pléiades@CNES, 2015, Distribution Airbus DS



Spot @Airbus DS

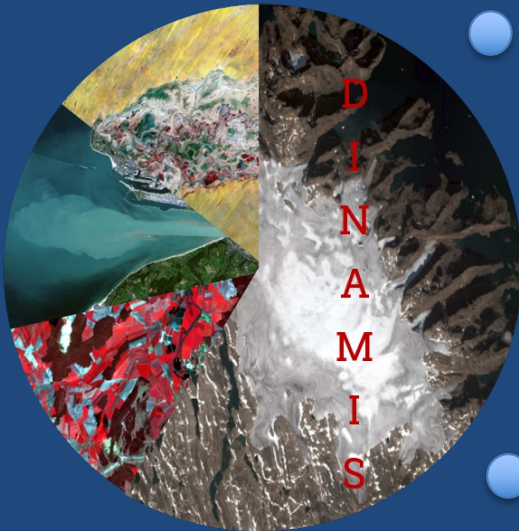


Pléiades@CNES, 2015, Distribution Airbus DS

We are  
helping  
with this

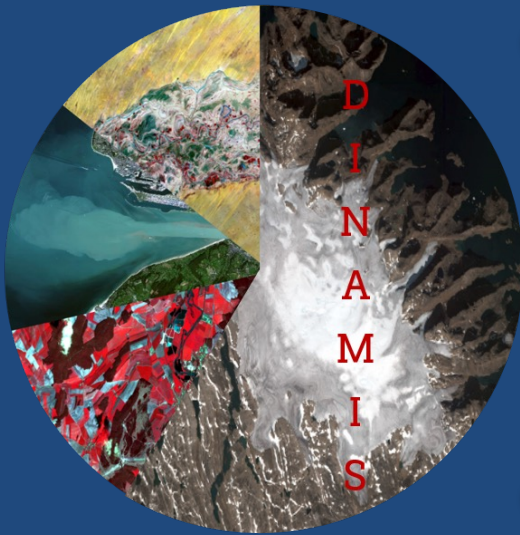
# Who are we?

French national facility for institutional procurement of VHR  
satellite imagery



- Created in 2017
- On the initiative of 6 French highly regarded partners :  
CNES, CNRS, IGN, IRD, CIRAD, INRAE
- For an unique and central data access

# Propose



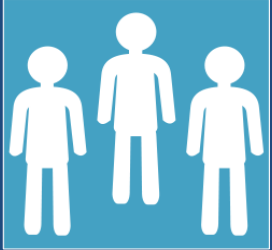
- Data for institutional users (public, scientist), for research and innovation
  - Earth Observation satellite data
  - Very High Resolution images

# What exactly?

- Raw satellite data (Pléiades/Spot 6-7) (geometric and radiometric pre-processing included)
  - Free download data from DINAMIS Catalogue
- New data acquisition\* based on free quota\*\* completed by co-financing or institutional pricing in case of quota overshooting

\* Pléiades/Spot 6-7 tasking and archive

\*\* Not fixed



# For which users?

Authorized Institutional Users (AIU\*)  
(the French Pléiades Public Service Delegation)

- French scientists (European/international subject to condition)
- French public actors
- French private companies for R&D activities

\*AIU : French institutional bodies, (governmental, ministerial, regional, departmental, territorial, communal, university, laboratory scientist, educational institution,...), associative organism with a public mission



# How does it work?

## 3 main steps

1. Your organism must adhere to DINAMIS: signature of DINAMIS Charte. Online registration - Validation by DINAMIS within 48h
2. Create your user account (individual, professional mail address)
3. Consult DINAMIS Catalogue. Free images download

And if needed: new images creation demand (archive and/or tasking)

# Free allocation, free quota, over-quota

## DINAMIS Catalogue: free images

### Archive images\* and satellite tasking: free quota

#### Pléiades

Scientist: 4 500 sq.km  
Public actors: 3 500 sq.km

#### Per user/demand

- French institutional
- French R&D

#### Spot 6-7

10 telemetry credits (36 000 sq.km)

### Over quota

French scientist | 1 € / sq. km

French public actors | 1,4 € / sq. km archive  
French private companies | 1,8 € / sq. km tasking

French institutionnel  
(scientist+public)

20 credits more: 20 k€  
50 credits more: 50 k€

\*Referenced images in Airbus Catalogue





# Current images offer

## Available in DINAMIS Catalogue

- Pléiades et SPOT 6-7 (worldwide)
- Pléiades annual coverage: French metropolitan and Guyana littoral, overseas departments
- SPOT 6-7 annual coverage for French metropolitan
- Complementary high resolution images
  - Spot World Heritage Program (Spot 1-5)
  - PEPS platform (Sentinel 2)
  - Kalideos Project (RapidEye, CosmoSkyMed, Aster, TerraSar-X)

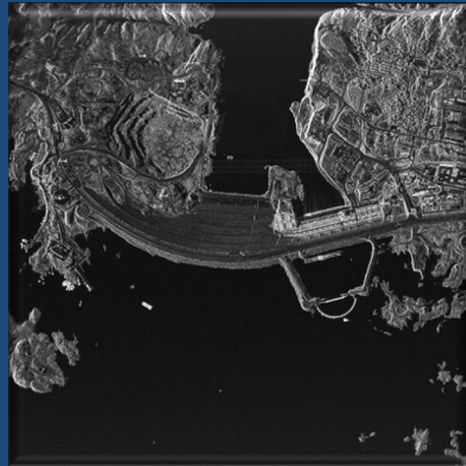
## On request

- Pléiades  
SPOT 6-7
- Tasking around the world  
Referenced images in Airbus Catalogue

# Tomorrow offer



Pléiades-Neo 30 cm



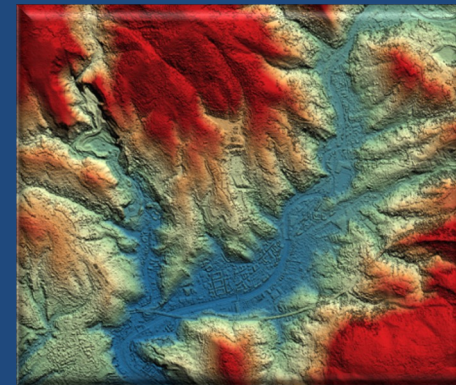
TerraSarX 25 cm à 40 m



Planet 0,6-1m



Jilin 0,5-3m



CO3D – MNS 1m

# Factsheets and tutorials

- Data features: Pléiades & Spot 6-7 imagery/products
- Data access: Catalogue tutorials

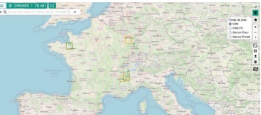
### Catalogue tutorial

Tutorial n° 2 – Viewing data

This tutorial shows you how to use simple or advanced data visualization techniques in the DINAMIS Catalogue.

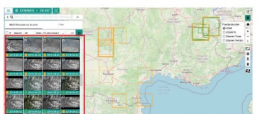
You can view data in the Catalogue in several ways.

- Viewing by bounding box**



Schematic data visualization using a bounding box.

- Viewing by Image**



Quicklook visualization with grid tool selected.

### Catalogue tutorial

Tutorial n°1 – Searching, filters and saving searches

This tutorial shows you how to do a simple or advanced search for satellite data in the DINAMIS Catalogue.

#### SEARCHING

You can search the meta-catalogue in several ways.

- Text search in the search bar**

Simply key in your search text, i.e. theme, sensor, keyword, area of interest, etc., in the search bar.


- Geographic search using the map**
- Date search using the timeline**

The timeline is at the bottom of your web browser window. You can also enter or select dates via the menu.

#### SEARCH FILTERS

Filters let you search data directly and then refine your search criteria using additional filters or cutouts (see Refining Searches below).

There are **basic filters** (Acquisition mode, Resolution or Topogram) and **advanced filters** (Processing level, Cloud cover and Incidence angle).



### Pléiades imagery

Characteristics


#### 1. RESOLUTION

**Very high spatial resolution**

Pléiades images are onboard satellite acquired at 70 cm resolution (at nadir) for panchromatic spectral mode (black & white) and at 2.8 m resolution (at nadir) for multispectral mode (colour). On-ground 50 cm processing resampling algorithm is performed allowing images robustness, especially in the case of post processing.

50 cm resampled images reflect better quality in terms of information content and ensure the initial content is fully preserved in the final product.

Pléiades images distributed by Airbus DS are at 50 cm in panchromatic and at 2 m in multispectral modes.

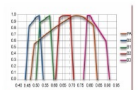


#### 2. RADIOMETRY

**Spectral bands**

5 spectral bands:

- Panchromatic (PAN) 470–830 nm
- Blue (B0) 430–500 nm
- Green (B0) 500–620 nm
- Red (B0) 590–710 nm
- Near-infrared (B0) 740–940 nm



**Spectral combinations**

Panchromatic (PAN)	Multispectral (MS)	Bundle (PANMS)	Pan-sharpened (PANSH)
50 cm 1 band (black and white)	2 m 4 bands (B,C,G,NIR)	50 cm area 2 m separated	50 cm merge product
		Panchromatic 1 band Multispectral 4 bands	Pan-sharpened 5 bands Natural or false colour Pan-sharpened 4 bands

### Pléiades products

Characteristics

#### 1. GEOMETRIC PROCESSING LEVELS

**Primary products**

The Primary product is the geometric processing level closest to the natural image acquired by the sensor. This product restores perfect collection conditions: the sensor is placed in near-linear geometry, and the image is clear of all radiometric distortion. This product is optimal for those users familiar with satellite imagery processing techniques who want to apply their own production methods (orthorectification, 3D modelling for example). In this case, the 3D model and the sensor model are provided with the product to ensure full autonomy and simplicity for users. The Primary level product is in radiometry on the native dynamic range of the sensor, 12 bits (4096 values).

**Ortho images**

The Ortho product is a georeferenced image in Earth geometry, corrected from acquisition and terrain off-nadir effects. The Ortho is produced as a standard, with fully automatic processing so that it can be superimposed on a map. In addition to radiometric and geometric adjustments, a geometric process using a relief model (known as orthorectification) eliminates the perspective effect on the ground (not on buildings, restoring the geometry of a vertical shot). The Ortho product is optimal for simple and direct use of the image. It can be used and ingested directly into a Geographic Information System. This processing level facilitates the management of several layers of products, from the same sensor or others, while reducing localization gaps that can be caused by different viewing angles or relief between the various layers.

The standard 3D model used for ground corrections is the worldwide Reference3D dataset, which is part of Airbus DS Elevation30 suite.

#### 2. RADIOMETRIC PROCESSING LEVEL

Raw imagery corresponds to raw data without any radiometric processing. Each pixel is given in digital numbers (DN), i.e. native pixel values from the sensor acquisition (after equalization). These digital numbers quantify the energy recorded by the detector corrected relative to the other detectors to avoid non-uniformity noise.



**Key benefits**

- Perfect for expert users addicted to pure data and familiar with satellite imagery applications and image processing tools.
- Ideal to carry up calibration and own spectral analysis.

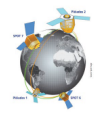
### Spot-6 and Spot-7 imagery

Characteristics

SPOT-6 and SPOT-7 form with the two Thiokol satellites a constellation of optical Earth-imaging satellites providing continuity and availability of high- and very-high-resolution data.

SPOT-6 and SPOT-7 draw on the successful heritage of previous generations of SPOT satellites to offer products at a resolution of 1.5 m.

The two identical Konica imaging instruments on SPOT-6 and SPOT-7 afford a ground swath of 60 km and a daily revisit capability (viewing angle >60°) operated simultaneously on the two satellites.



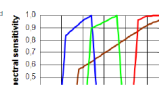
**Resolution**

The SPOT-6 and SPOT-7 satellites acquire imagery at a resolution of 2 m at nadir in panchromatic (black and white) mode and 6 m at nadir in multispectral (colour) mode, with a dynamic range of 12 bits per pixel. Images are then resampled on the ground. Airbus Defence & Space and GEOS/DINAMIS distribute SPOT-6 and SPOT-7 products at a resolution of 1.5 m in panchromatic mode and 6 m multispectral mode.

**Spectral bands**

The five spectral bands are always acquired simultaneously.

- Panchromatic (PAN) 0.460-0.745 µm
- Blue (B0) 0.450-0.520 µm
- Green (B0) 0.530-0.690 µm
- Red (B0) 0.625-0.695 µm
- Near-infrared (B0) 0.800-0.890 µm



### SPOT 6-7 products

Characteristics

Products generated by GEOS/DINAMIS terminal

Instrument	Resolution	Spectral mode	Processing level	Description
56 or 57	15 m	PAN	Primary	15-m panchromatic with radiometric and geometric corrections (*)
56 or 57	15 m	PAN	Ortho	15-m panchromatic, orthorectified to projection
56 or 57	6 m	XS	Primary	6-m colour with radiometric and geometric corrections
56 or 57	6 m	XS	Ortho	6-m colour, orthorectified to projection
56 or 57	15 m	PAN+XS	Ortho	15-m merged product, orthorectified to projection (merged 3-band natural colour, merged 3-band false colour, merged 4-bands)
56 or 57	Bundle	PAN+XS	Primary	Simultaneous acquisition of 4 colour bands at 6 m and 1 panchromatic band at 15 m
56 or 57	Bundle	PAN+XS	Ortho	Orthorectification, simultaneous acquisition of 4 colour bands at 6 m and 1 panchromatic band at 15 m
56 or 57	15 m	PAN+MS	Primary	15-m merged product (merged 3-band natural colour, merged 3-band false colour, merged 4-bands)

(\*) at nadir

# Keep up-to-date



- Website: <https://dinamis.data-terra.org/>
- Catalogue: <https://catalogue-dinamis.data-terra.org/>
- On line request Application: <http://application-dinamis.data-terra.org/login>



- LinkedIn: <https://www.linkedin.com/company/dataterra-dinamis>
- You Tube: <https://www.youtube.com/channel/UC5uatLlrr4s3lc38TYQblug>



- Dedicated form: <https://dinamis.data-terra.org/contact/>

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Our priority issue

To best help you to make your project  
successful

