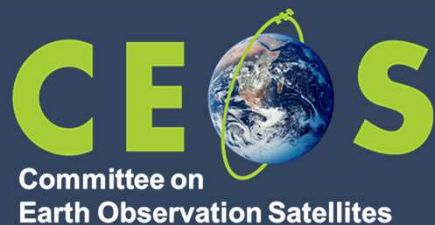


CNES updates

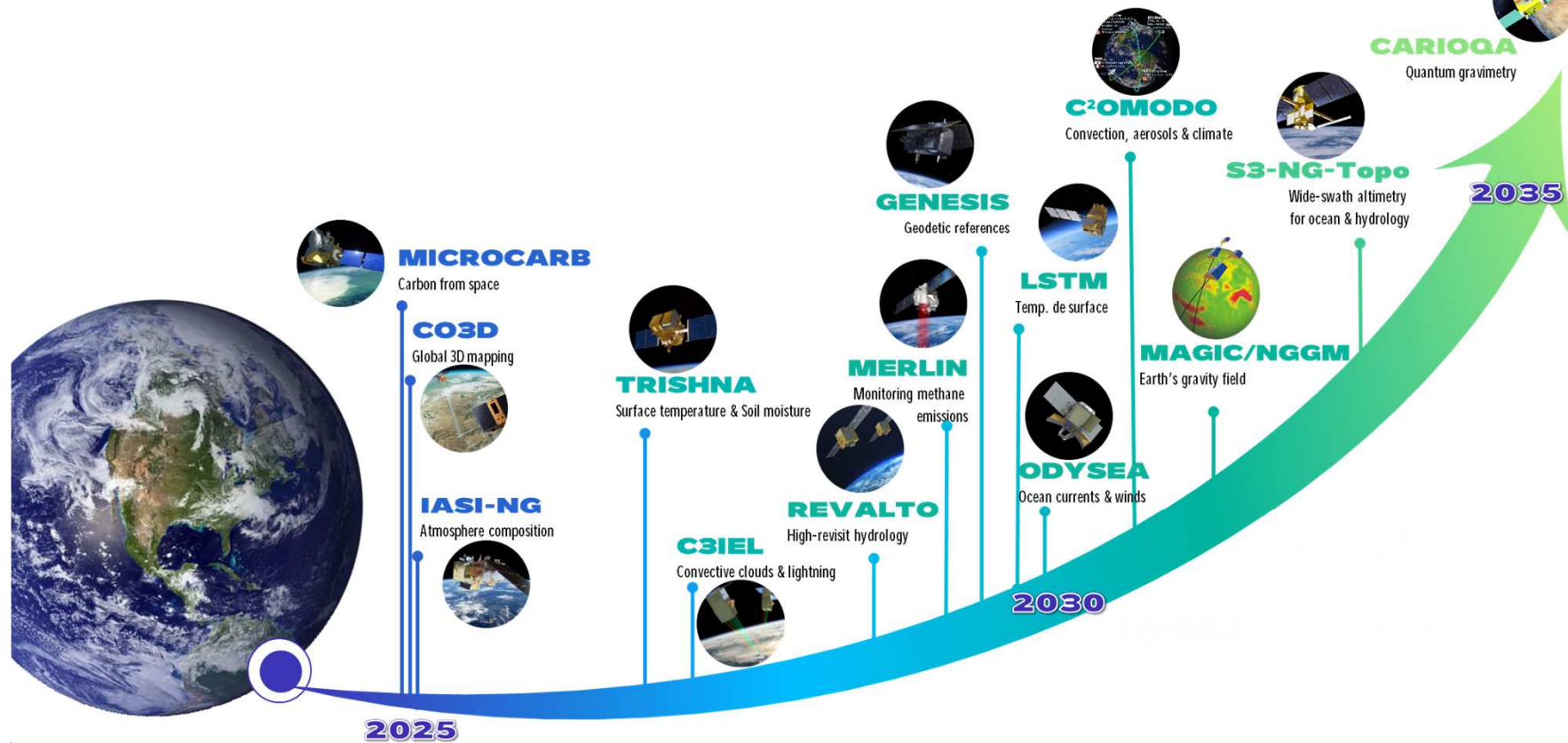


Alice ANDRAL, CNES
Agency report 2.6
WGISS-60

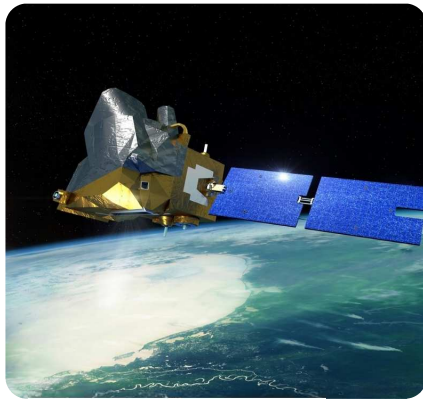
13-17 October, 2025
Oberpfaffenhofen, Germany

Our Missions

CEOS



Update on the last missions



LEOP and commissioning phase = ok

➔ CAL/VAL phase 1

First observations in Amazonia

Science distribution in AERIS (FR)



LEOP operation = OK

First images mid-August

First very promising DEM



First signal received by EUMETSAT
few min. after separation

Satellite in Orbit verification -> mid-Nov then CAL/VAL

First spectrum successfully proceed
at CNES



TRISHNA

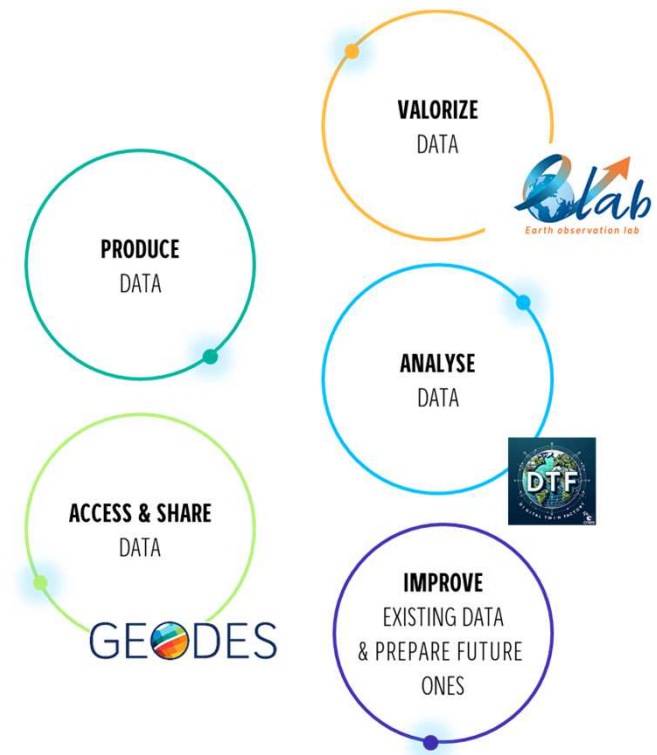
Measuring Continental surface
temperature – Evaptranspiration maps
Developed with ISRO
To be launched in 2027

EO data promotion at CNES

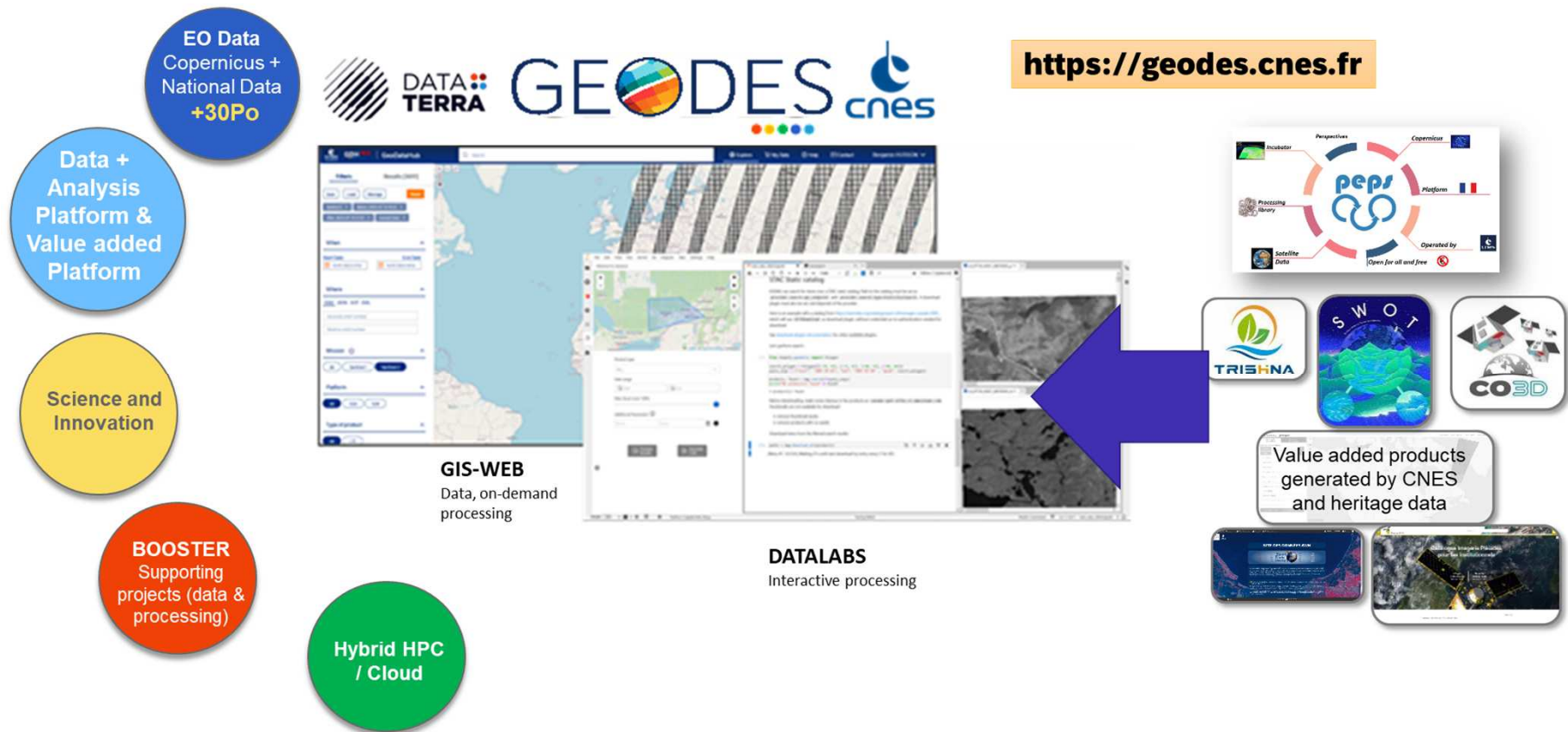


❖ CNES DATA Campus

- Support the whole ecosystem to take advantage of space data.
- Meet the technical challenges of **space projects in term of data processing** (ground segment, platforms, advanced algorithmics).
- Enhance data by offering innovative **algorithms, models, products & services**.
- Facilitate **data access and distribution** over the long term.
- Encourage the **emergence of new concepts** (algo, missions, usages).
- Promote collaborations.



EO data access



EO data within DataTerra



FR research infrastructure for the integrated observation of the Earth System



40 M

per year (full cost)



26

partner
organizations and
universities



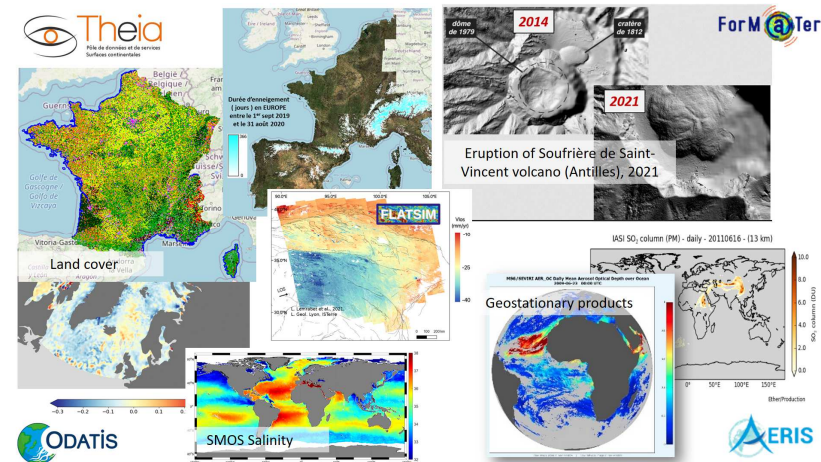
1 000 +

products and
services



15 000 +

users



CNES initiative on Digital Twins



❖ Digital Twin Factory

- Support industrial and academic DT initiatives

➔ **Deliver Open-source foundation building blocks to foster new thematic DT initiatives**

❖ DT collaboration

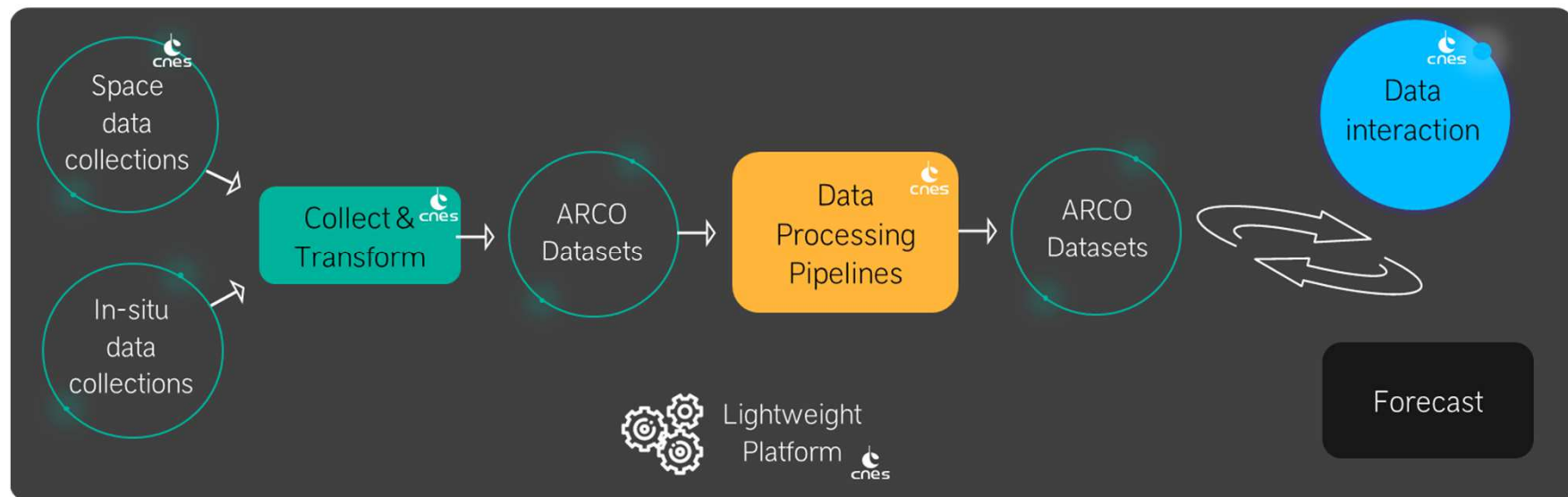
- National (Jumeau Numérique de la France et des Territoires)
- European (technical discussions with EUMETSAT, ESA ; keen to deepen exchanges)
- International (SCO project together with NASA/AIST)

❖ Stick to the standards & interoperability

CNES initiative on Digital Twins



- ❖ Interoperable building blocks to support the community in building their own Thematic & Local digital twins





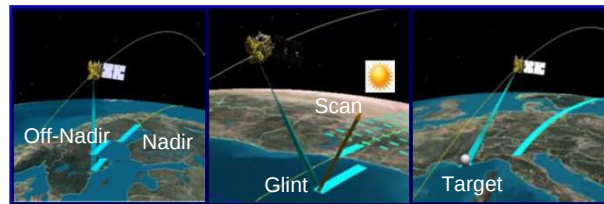
MICROCARB

LAUNCHED 25 JULY 2025

A Scientific Mission dedicated to Natural CO₂ fluxes at global scale & demonstrator for CO₂ anthropogenic emissions
- precursor for future missions and complementary to CO2M (Copernicus), TANGO (ESA-SCOUT), CARBON-I (NASA-JPL)

Instrument

- Compact instrument (80 kg, 60W) on micro-satellite
- Passive grating spectrometer in 4 NIR / SWIR bands
- Embedded imager (red band resolution 140m)



Data distribution

- Operational processing & distribution to Copernicus users delegated to EUMETSAT
- Scientific distribution on Data Terra / AERIS
- One year of calibration and validation

Current status

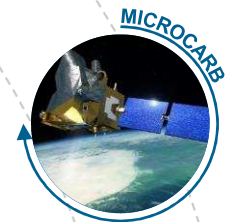
- Commissioning phase OK
- Cal/Val Phase 1 will start in Sep. for 6 months (instrument test and Level1 products)
- Cal/Val Phase 26 months with exploitation made by EUMETSAT and Level2 processing.

Main product : CO₂ column-integrated concentration

- Random error < 0.5 ppm (Goal) , < 1.5ppm (Threshold)
- Regional bias < 0.1 ppm (Goal), < 0.2 ppm (Thresold)

XCO₂ retrieval : 4ARTIC

Full physics, optimal estimation, GEISA, LIDORT



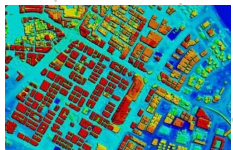
CO3D

LAUNCHED 25 JULY 2025



1 m

Relative 3-D accuracy DEM



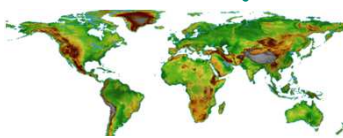
50 cm

RGB & NIR imagery



123 Mkm²

Worldwide coverage



6000 TB

Data volume

Mission concept

- Constellation of 4 optical satellites (2 pairs)
- VIS+NIR, optical resolution 50 cm
- Cloud processing
- Synchronous stereoscopic acquisitions
- Global coverage -60° / +70°

Science challenges

- Biosphere, Hydrology, Coastal, Cryosphere, and more !
- Global scale Digital Elevation Model (DEM)
- 1-meter resolution, 1-meter relative accuracy, 4-meter absolute accuracy

Benefits

- Low-cost, Global DEM
- Mission programming management & archives by quotas for FR scientists and institutions
- Data access on DINAMIS (as for Pléiades, Pleiades-Neo)

4
AIRBUS
Satellites

Sun-synchronous orbit
502 km
SSO 10H45



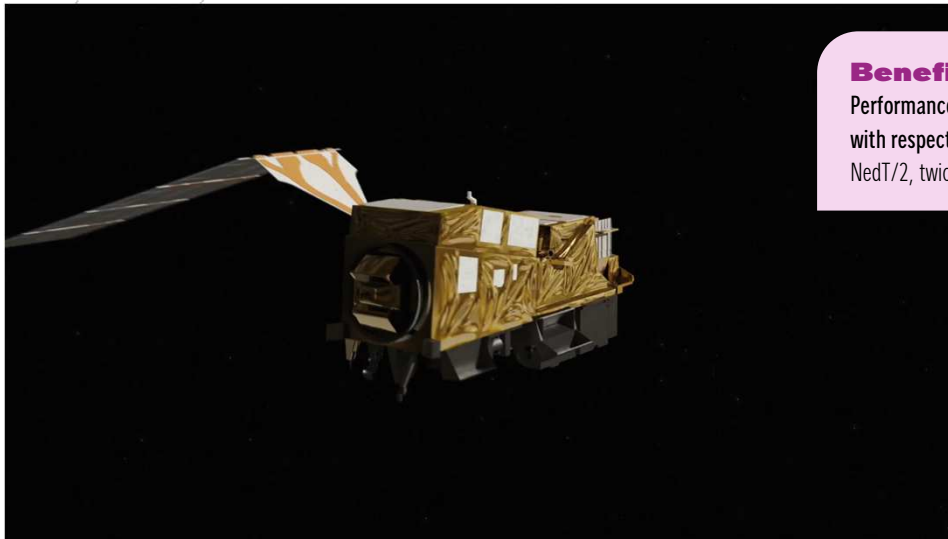
18-months demonstration phase



27 Mkm²

IASI -NG

LAUNCHED 12 AUG. 2025



Benefits

Performances improved by a factor of 2
with respect to IASI:
NedT/2, twice better resolution

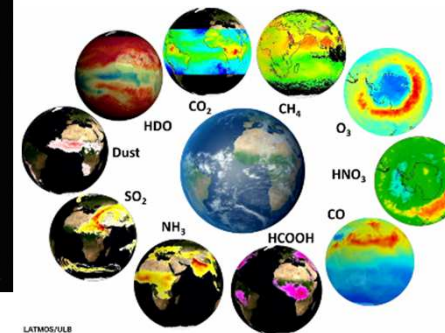
Programmatics

- IASI heritage: infrared sounding is a French excellence sector
- EPS-SG operational program for Meteorology
- Instrument development phase



Science challenges

- **3 major objectives:**
 - Numerical Weather Prediction,
 - Climate studies,
 - Atmospheric Composition
- **Measurement of main gases and components of the atmosphere:**
 - temperature,
 - water vapor,
 - aerosols,
 - pollutants,
 - volcanic emissions,
 - greenhouse gases



Current status

- Preparation of system validation and CAL/VAL (nov. 2025 – June 2026)

