CNES updates since CGMS-52 and report to medium to long term plans

Presented to CGMS-53 plenary session

Murielle Lafaye

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Executive summary

- CNES satellite systems in exploitation
- Overview on the planning of CNES satellites systems
- Data & products distribution

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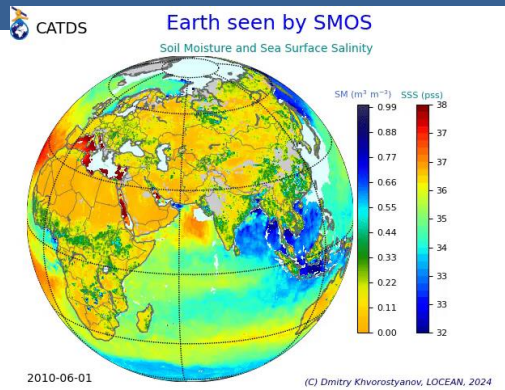
CNES satellite systems in exploitation

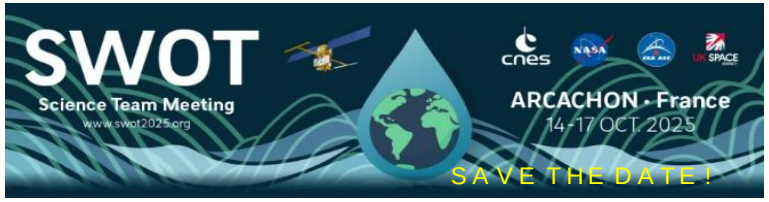


- **SMOS**
  - February 2025: **Mission extension until end 2028** approved by PB-EO

- **SWOT**
  - End of Calval, and products distributed to all users
  - **1rst scientific publications**
  - Several communication events
  - Renewal of SWOT Science Team and french Pis
  - Products delivered on AVISO for oceanography and Hydrowebnext for hydrology


Francesco d'Ovidio


Hind Oubanas



- **Others missions**
  - **AltiKa**: 4th mission extension until end 2025
  - **Jason-3**: MOU extension (in progress) (NASA/NOAA/CNES/EUM)
  - **CFOSat**: mission extension until 2026, 5th Science Team meeting held in Biarritz (18-20 march 2025)

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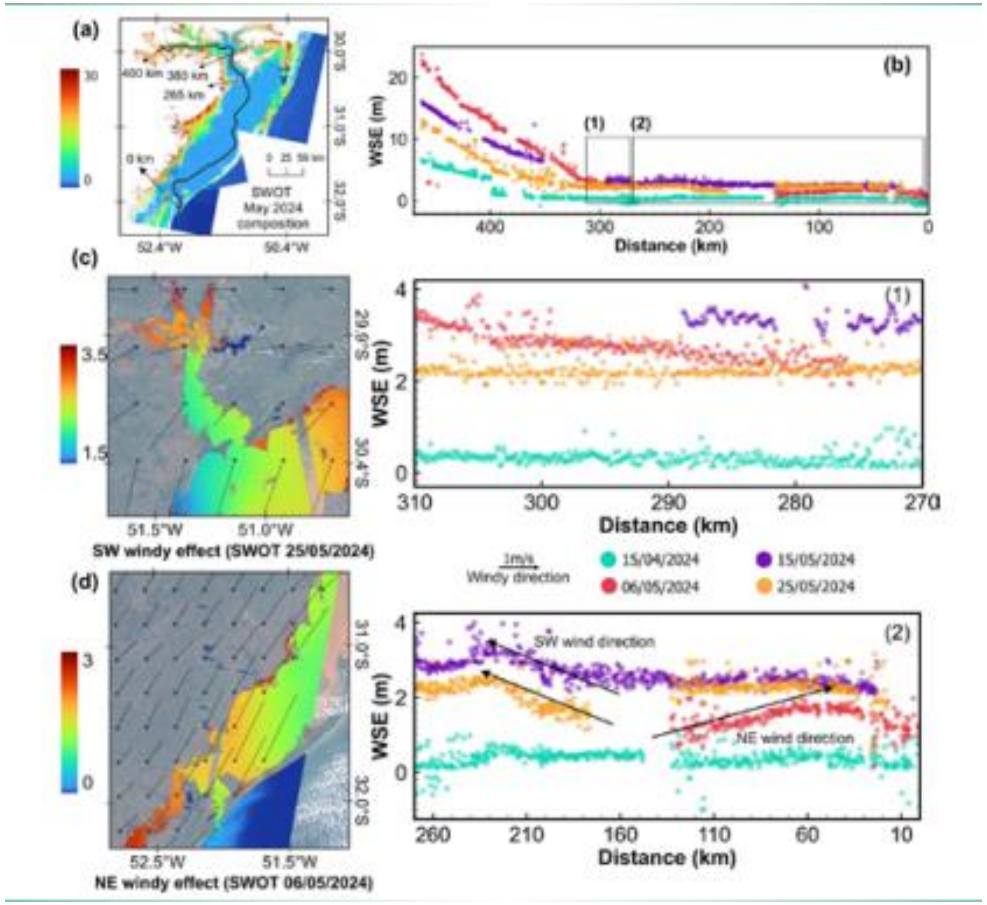
Overview - Planning of CNES satellite systems

SWOT

- Cooperation NASA-JPL / CNES / UKSA / CNSA
- Measuring water height in oceans, lakes and rivers
- Paving the way towards satellite hydrology

- Demonstrator for operational satellite swath altimetry

- Swath altimeter
- Products delivered on DataTerra/AERIS



SWOT water elevation profiles along Patos laguna hydrograpgic bassin (a), and impact of wind from SWOT data on river Gualba © and Patos laguna (d)
Publication ref : Laipelt et al., SWOT reveals how the 2024 disastrous flood in South Brazil was intensified by increased water slope and wind forcing, Geophysical Research Letters, 52, e2024GL111287, (2025), DOI : 10.1029/2024GL111287.

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CNES for EC satellite systems in exploitation

- # Copernicus : Sentinel-2
  - End of Commissioning for S-2C ; takes over S2A as reference mission
  - Sentinel-2A exploitation: « ok » European Commission **S-2A exploitation +1 year** until march 2026 = **3 sats Sentinel-2 in exploitation**
  - Inter-calibration with S-2B
  - **Mobilisation of french scientits (CESBIO – O. Hagolle)** to extend exploitation of Sentinel-2constellation **is a succes**

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SPS 2024 Priorities

instruments

Missions

Data

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SPS 2024 Priorities – Instruments & Technologies

LIDAR Technologies

Increasing needs for various applications in atmosphere (identifying aerosols, GHG measurement), oceanography (ocean color, bathymetry) and for continental surfaces (forest ecosystems).

Hyperspectral Technologies

GHG anthropic emissions quantification
Very high spatial accuracy missions are mandatory

Instruments

Instruments Miniaturisation
Studies for new concepts, upgrade TRL in synergy with laboratoiries and equipements

Sensors

Upgrade sensors in NIR and MIR

DORIS Neo

Precise positioning is needed (> GNSS) for topography missions (S3-NG-Topo, S6-NG) and terrestrial reference (GENESIS).

O2GF

Ground station

R&T Systèmes Orbitaux

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OUTPUTS OF OUR SCIENTIFIC PROSPECTIVE

VERY HIGH PRIORITY MISSIONS

Odysea

C2omodo/AOS

ECO

Carioqa

OG2F

StratoFleet

Smash

Wivern

Genesis & Doris-Neo

Coupling, interfaces and various scales interactions

Interactions between internal deep Earth and external envelopes

Cryorad

Smos-HR

Climate cycles and variability

Magic/NGGM

Biodiversity

S3-NG-Topo

Cmim (phase A)

Ocean Color GEO

Prediction, Digital Twins and hazards

Land-Sea Continuum

Socio-ecosystems et biodiversity

Cfosat-NG

Swot-Loac

4D-Earth

LÉGENDE

	Coopérations	Copernicus	ESA : FutureEO - Nav	EUMETSAT
Major Priorities				
High Priorities				

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Missions Overview - Planning of CNES satellite systems

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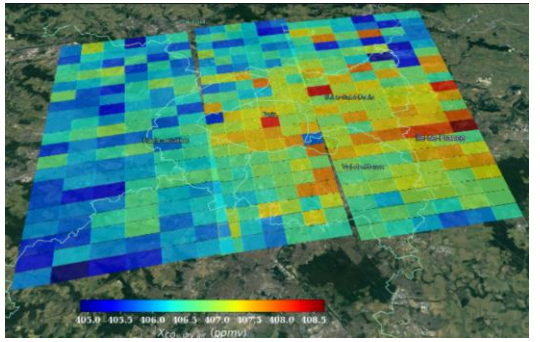
Missions Overview - Planning of CNES satellite systems

MICROCARB

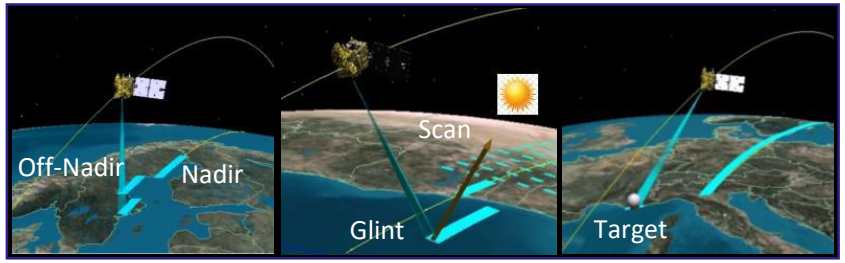
- Cooperation CNES – UKSA
- Measuring carbon in the atmosphere : identifying carbon sources,
- Estimating carbon fluxes and deriving CO2 concentrations at regional and global scale

- Demonstrator for CO2M COPERNICUS

- Compact instrument <80kg on a micro satellite
- Scanning spectrometer NIR-SWIR (4 bands CO2, O2, aerosols, imager)
- Modes : Nadir & City
- Products delivered on DataTerra/AERIS



Mode « City » - CNES



→ **Launch scheduled 25 july 2025**

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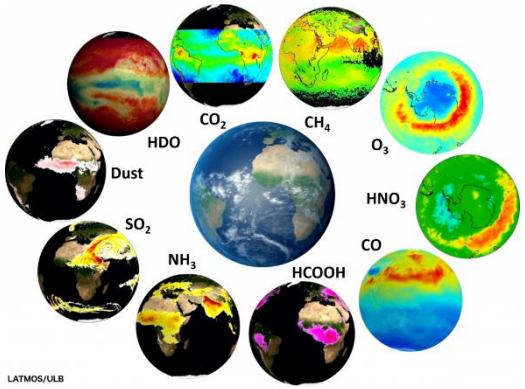
IASI-NG



- Heritage of IASI…and french expertise (science, industry)
- Operational Meteorology at EUMETSAT
- Numerical Weather Prediction, Climate, Atmospheric composition
- Measuring various gases & components: temperature, water vapor, aerosol, pollutants, volcano emissions, GHG

- Performances x 2 (NedT / 2, Resolution x 2)

- IR atmospheric sounder

- Products delivered via EUMETCAST and DataTerra/AERIS (TBC)

→ **Launch scheduled august 2025 on EPS-SG A1**
→ **2032**
→ **2039**

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Data & products distribution

Data & products distribution

HPC / CLOUD PLATFORM & DATA DISSEMINATION POLES

An increasing amont of available data

RE ENFORCE ARTICULATION WITH EUROPEAN PLATFORMS

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UNOC & THE SPACE 4 OCEAN ALLIANCE

An international Coalition addressing major challenges for ocean and coastal zones

Science, in situ measurements, space measurements & advanced numerical models

Re enforce collaboration between space community & maritime actors

Fill the gaps in EO operational services

Develop capacities, for first impacted countries such as SIDS or LDC

Develop local indicators, for regional & global marine environment

Promote operational services for the most impactful oceanic challenges

CONTRIBUTE TO WORLD POLITICAL FRAMEWORKS (UNO-SDG 14)

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« Sharing ideas…creating value… »

Thanks !

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