

IASI & IASI-NG AT CNES

A MAJOR PROGRAM FOR SCIENCE AND SOCIETY

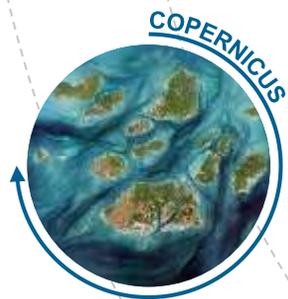


Carole
DENIEL

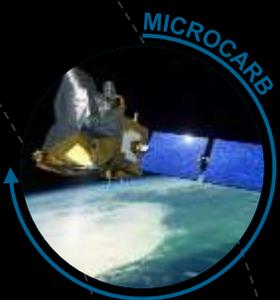
CNES Earth Observation
Programmes,
Strategy Directorate

CNES EO PROGRAM : COMMIT TO A MORE SUSTAINABLE WORLD

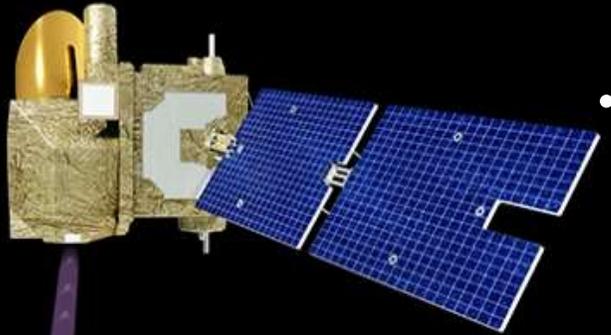
- ▶ **SCIENCES:** Better understand and monitor our changing Earth's Planet in the context of Global Change
- ▶ **TECHNOLOGY:** Innovation to build tomorrow's sustainable sectors for space
- ▶ **SOCIETAL:** Respond to Climate Change challenges from space
- ▶ **SERVICES:** Development of new services for populations at the regional and local scales
- ▶ **COOPERATION:** Participate to structuring international partnerships



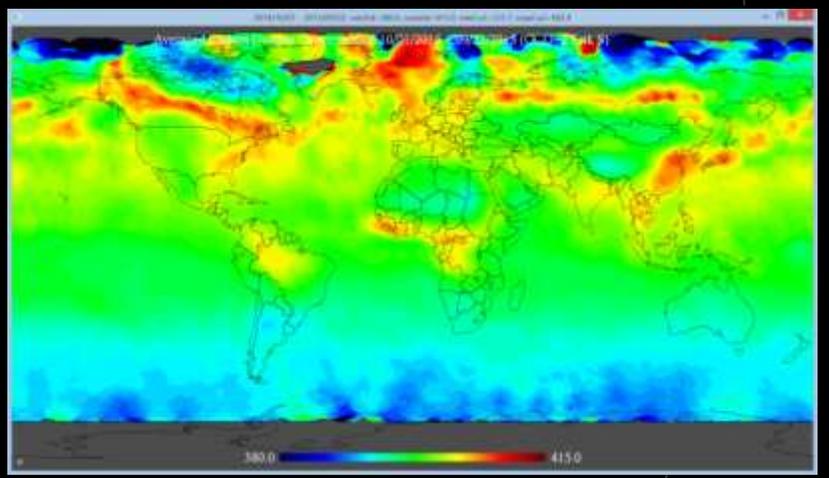
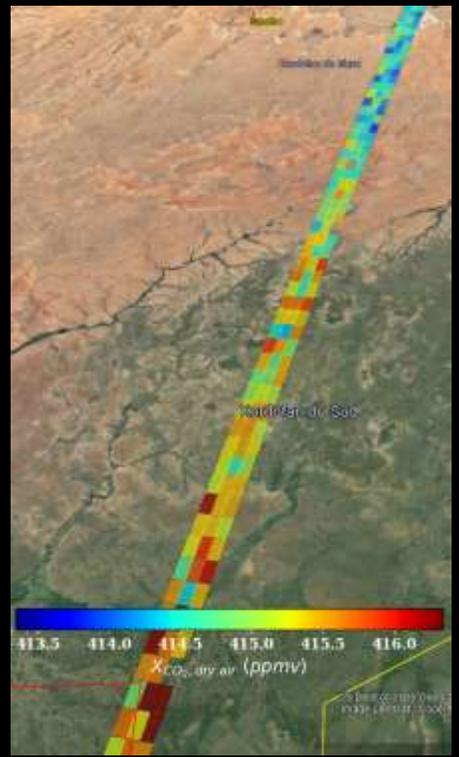
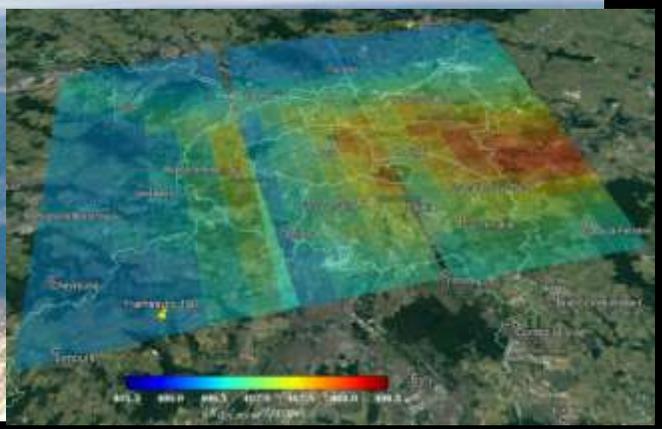
MICROCARB FOR PRECIOUS OBSERVATION OF ATMOSPHERIC CO₂



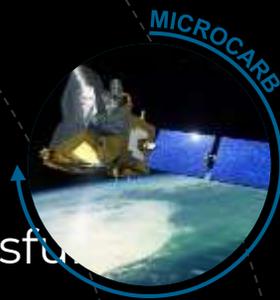
- A small (<80kg) & innovative instrument
- A strong précision of 1 ppm (> 0.2%) on XCO₂



Simulation of CO₂ above Paris from Microcarb city mode product



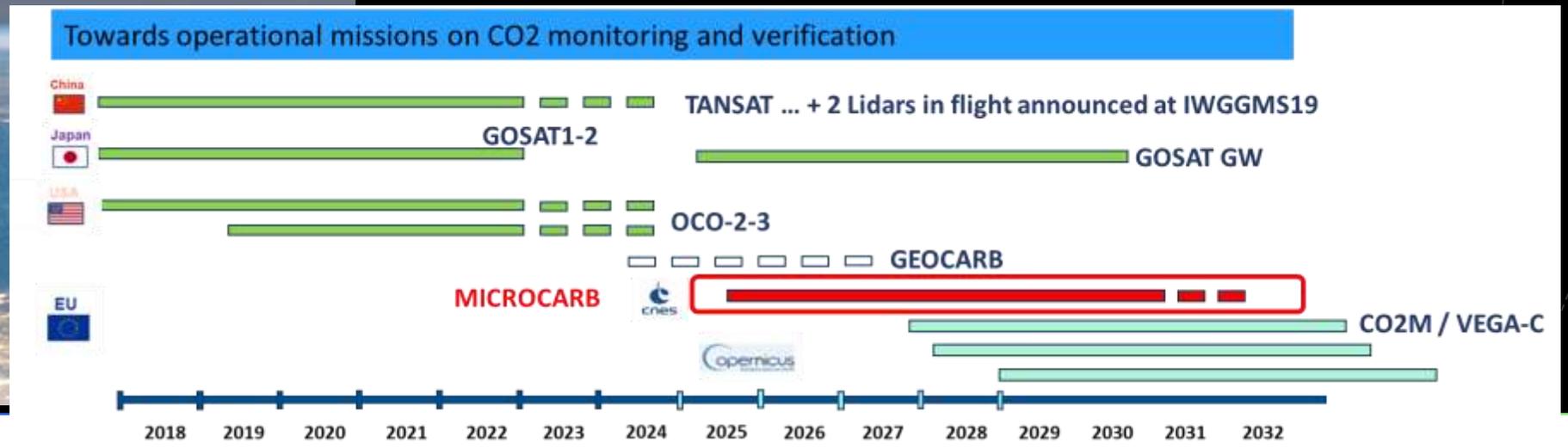
MICROCARB FOR PRECIOUS OBSERVATION OF ATMOSPHERIC CO₂



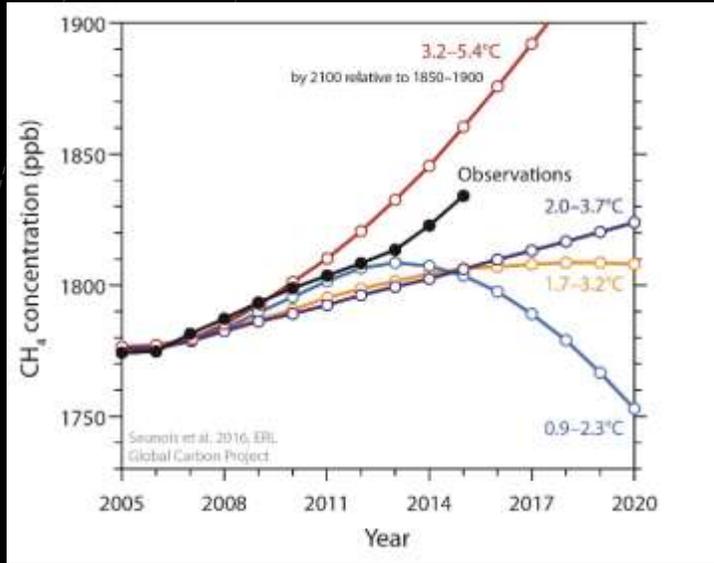
- Satellite is ready for Launch since February after successful tests

Planned on VEGA-C: with CO3D satellite on VV27, may-June 2025

Ground segment in partnership with EUMETSAT with will process the operational data and distribute them to Copernicus and Met Offices



CH₄ : A MORE RAPID RESPONSE TO MITIGATE

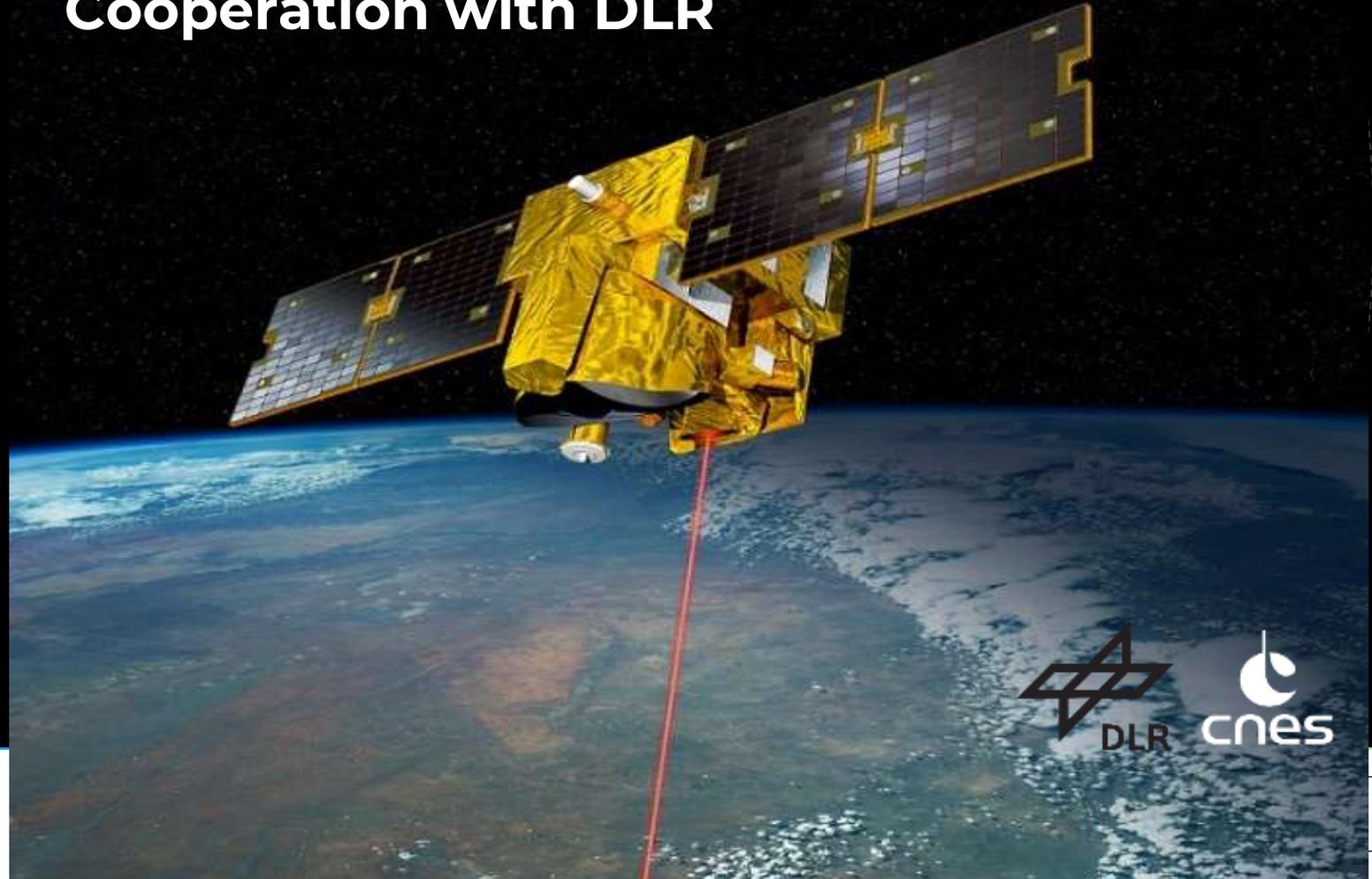
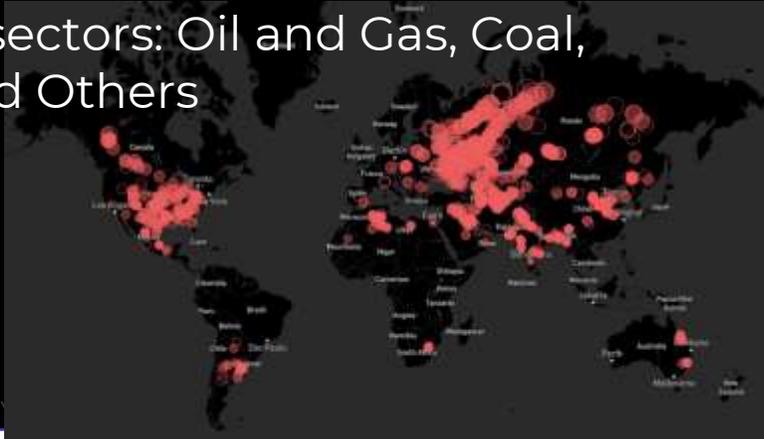


MERLIN : a Lidar in space for XCH₄ in 2029

Cooperation with DLR

2946 detections in 2019-2021

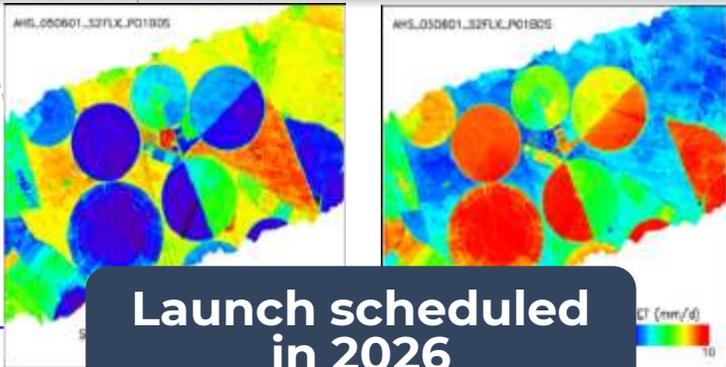
3 sectors: Oil and Gas, Coal, and Others



BILATERAL PROGRAMS AND INNOVATION



Ground **surface temperature** and daily **evapotranspiration**



Launch scheduled in 2026

Bilateral programs devoted to WATER
Land, Coastal, Ocean Water

Satellite precursors
LSTM, S3-NG TOPO
Downstream Programs

hydrweb.next



First global survey of Earth's surface waters



Launched Dec 16, 2022

Earth Science Foresight 2024-2029

International Cooperation, a key driver

Theme 1: Climate variability and cycles: the water cycle

Theme 2: Couplings, interfaces and scale interactions

Theme 3: Land-Sea Continuum

Theme 4: Socio-ecosystems and biodiversity

Theme 5: Forecasting, digital twins and hazards

Theme 6: Interactions between the inner Earth and its outer envelopes

See <https://cnes.fr/scientifiques/seminaires-prospective>



FUTURE MISSIONS

Four Missions & services are dedicated to the Climate and the Environment



AOS
Atmospheric
Observatory



C3IEL
Clouds and
precipitations



SMASH
Land Water level
with high revisit



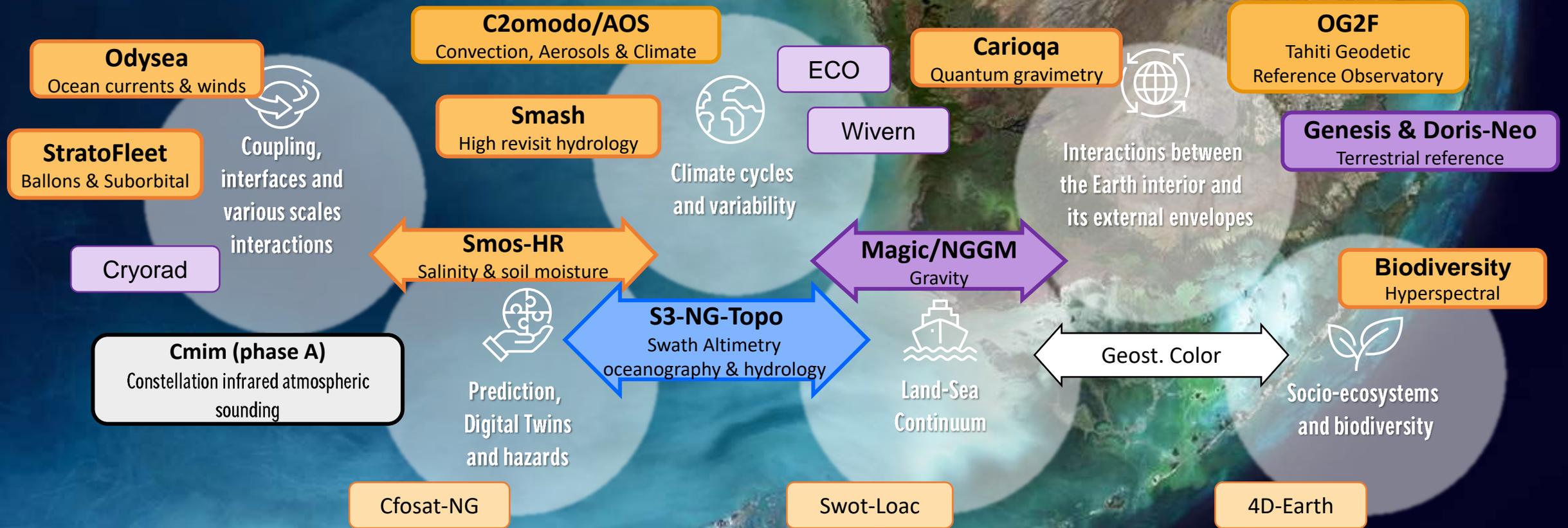
ODYSEA
Oceanic currents
and winds

CNES has adopted a global perspective in making cooperation a key element of its strategy since its inception.

CNES partnerships with all the Ecosystem are founded on a relationship of trust, built at the highest levels over many years



Summary of TOSCA priorities



LEGEND	Cooperations	Copernicus	ESA : FutureEO - Nav	EUMETSAT
	Top priorities			
Substantial priorities				

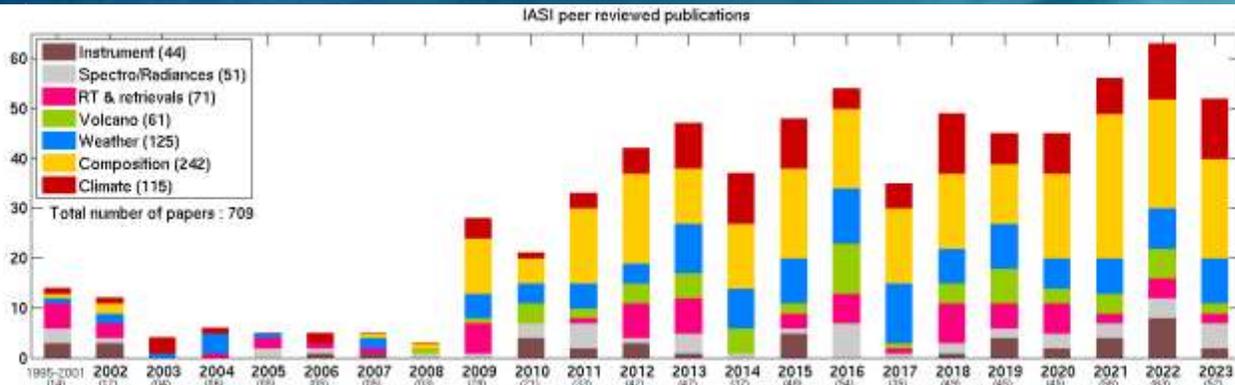
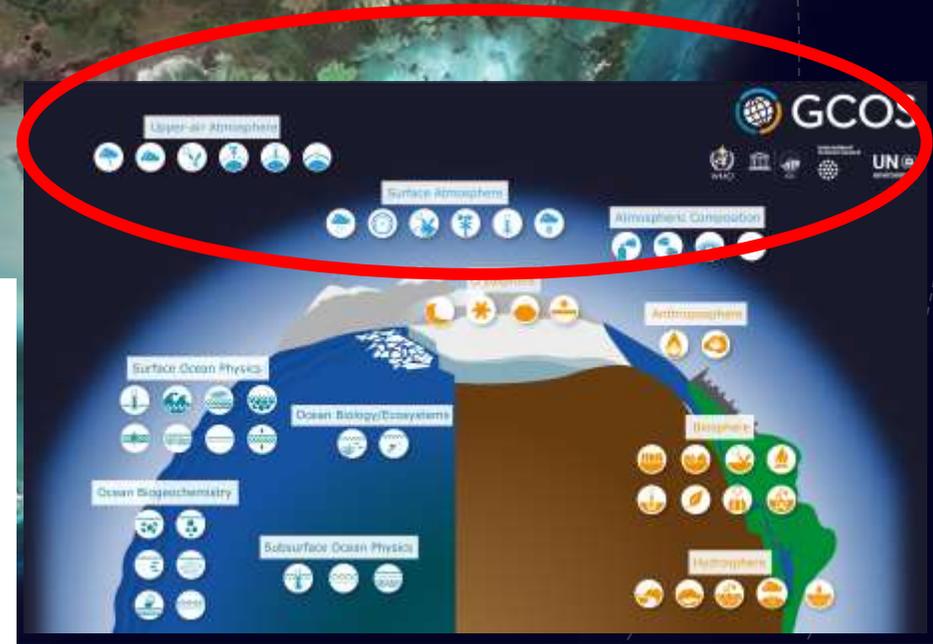
IASI : A KEY PROGRAMM FOR FRANCE SINCE 1989

For NWP, Climate and Atmosphéric composition

- ❖ 1989 : Priority for IASI at CNES seminar (Cap d'Agde)
- ❖ 1998 : Phase C/D for the development of the instruments
- ❖ **2001 : Collaboration Agreement with Eumetsat**
- ❖ **2006** : Launch of IASI-A on METOP-A !
- ❖ **2007** : FIRST IASI conference
- ❖ 2013 : Decision to pursue the program in cooperation with EUMETSAT: IASI NG 🌐

The 16 Atmospheric ECV are observed by IASI

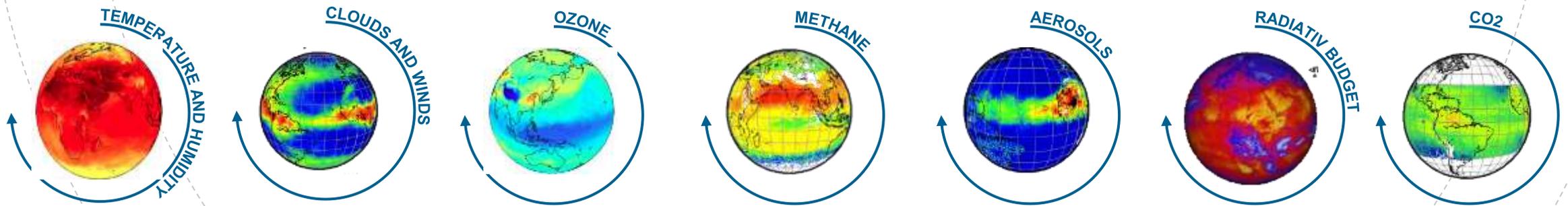
A success for the Science as shown by publications



IASI PROGRAM : COMMIT TO A MORE SUSTAINABLE WORLD



- ✓ ► **SCIENCES:** Better understand ozone hole recovery, tropospheric chemistry, climate change (50publi/years)
- ✓ ► **TECHNOLOGY:** Innovation with IASI Concept and IASI NG with double precision and accuracy
- ✓ ► **SOCIETAL:** With better meteorological & Air Quality prevision
- ✓ ► **SERVICES:** Alert to volcanoes Ash for Air Traffic, Pollution event by big Fires or human activities, ..
- ✓ ► **COOPERATION:** Inside Europe but Worlwwide promotion (NASA, JAXA, China, India, CEOS, CGMS, ..)



THANK YOU FOR YOUR ATTENTION

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Welcome to IASI NG in
the success story family
initiated by IASI

Sure that the research
community will be as
much inspired than it
was the case with IASI

