

# ICARE

## Thematic Centre for Cloud, Aerosol, Water and Radiation

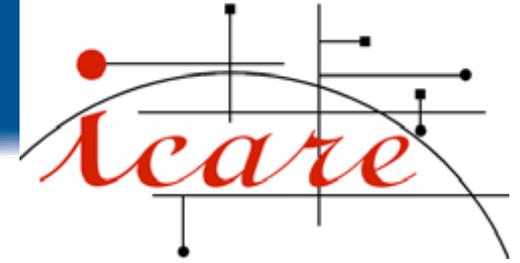
Didier RENAUT, CNES



## **ICARE overarching goals**

- 1. Maximizing the use of satellite data to contribute to:**
  - progress of scientific knowledge on clouds, aerosols, their interaction with radiation, water and energy cycles;**
  - improvement of weather and climate prediction.**
  
- 2. Offering the national and international scientific community a set of data, products and services in the thematic area « clouds, aerosols, water, radiation » to allow them an optimal use of space and in situ observations for climate modelling and study.**

# ICARE short history and partners



- **2002:** several French organizations (CNES, CNRS/INSU, Lille-1 University, the Nord-Pas-de-Calais region) begin cooperation to design Icare.
- **November 2003:** these 4 organizations sign the Constitutive agreement of the Icare Thematic center, with the support of the European commission.
- **November 2005:** the Icare Data center becomes a UMS (Service Unity, by agreement between CNRS, CNES and Lille-1 University).
- **February 2009:** the 4 organizations sign an extended version of the Constitutive agreement of the Icare Thematic center.

# ICARE general structure and management

## ➤ Structure

- A Data management, processing and delivery centre (CGTD), located on the Lille University campus
  - A development team
  - An exploitation team
  
- Several Scientific Expertise Centers
  - Laboratoire d'Optique Atmosphérique (LOA, Lille)
  - Institut-Pierre Simon Laplace (IPSL, Paris area) with several laboratories: LATMOS, LMD, LSCE...

## ➤ Management

- A Icare Steering Committee (with delegates of the 4 organizations)
- A Icare Users Committee
- A Icare Scientific Manager (F.-M. Bréon)
- A Director of the Data centre (J. Descloitres)
- A Icare Executive Committee



# ICARE ACTIVITIES

## 1. Scientific ground segment for selected CNES space missions

### Operational

1. **PARASOL:** processing and distribution of level 2, 3 and 4 products (aerosols, clouds, radiation, merged Modis-Parasol products).
2. **CALIPSO:** Icare center acts as a mirror of the NASA ASDC center. Distribution of Calipso level 1 and 2 products: lidar profiles, IR and VIS radiances, cloud and aerosol products. Processing and distribution of browses. New products.
3. **Non-CNES other space missions:** MSG/Seviri (aerosol products), MODIS level 1, Cloudsat (cloud products)...

### Ongoing

1. **MEGHA-TROPIQUES:** processing and distribution of level 2, 3 and 4 products (precipitation, water vapor, radiative budget, convective clouds...).
2. **Merged CALIPSO-CLOUDSAT products** on ice-cloud microphysics.



# ICARE ACTIVITIES

## 1. One example with Parosol browse products

You are here: [Home](#) / [Parosol](#) / [Browse](#)

### PARASOL Browse Online Products

Date selection:

2009 May

May 2009						
S	M	T	W	T	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

Product selection:

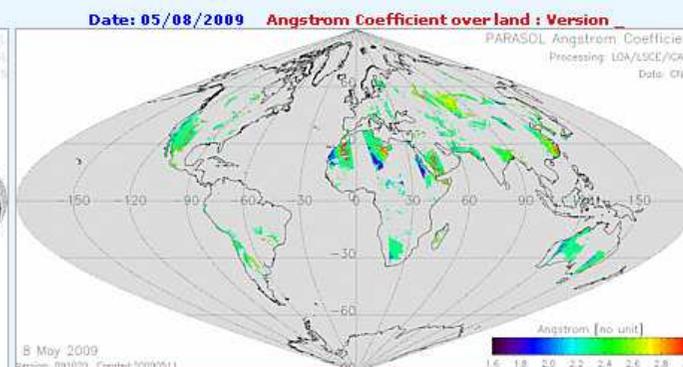
Level 1

#### Daily Products

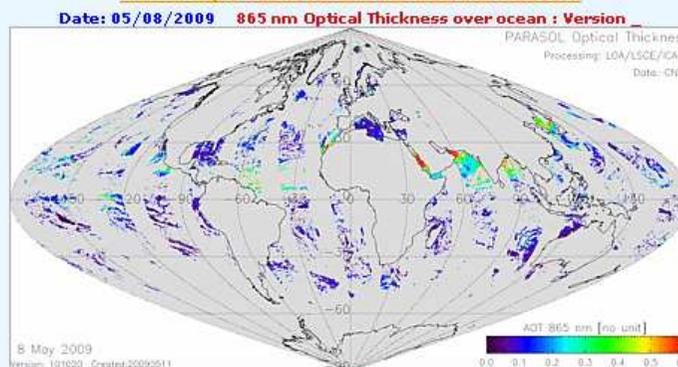
- Cloud Cor O2 pressure
- Cloud Mean SW Albedo
  - Cloud Phase
  - Cloud Cover
- Cloud Optical Thickness
- Fine Mode AOT 865nm over land
- Angstrom Coefficient over land
- 865 nm Optical Thickness over ocean
- Angstrom Coefficient over ocean
- Fine Mode AOT 865nm over ocean
- Fine Mode AOT 865nm over land-ocean



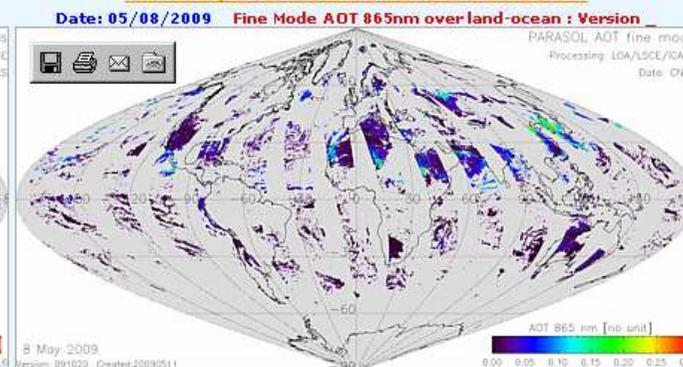
[Click for higher resolution and individual orbit selection](#)



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# ICARE ACTIVITIES

## 2. Projects required by scientific users

### Several Users projects (here just a few examples)

- Systematic processing of the EPSAT-SG rainfall algorithm (MSG rain algorithm) over Africa during AMMA.
- Implementation of the STRAT lidar algorithm.
- Intercomparison of different aerosol satellite products (Parasol, Modis, Caliop, MSG/Seviri, Envisat/Meris) and comparison with Aeronet (ground remote sensing) products.
- Impact of cirrus clouds on the determination of NO<sub>2</sub> with Aura/OMI.
- Intercalibration of the Calipso/IIR radiometer with infrared radiances of Modis and MSG/Seviri.
- A lot of processing and visualization tools.
- ....



# ICARE ACTIVITIES

## 3. Data distribution, communication

- Web site: <http://www.icare.univ-lille1.fr/>
  - 3000 visitors/month
  - 300 registered users for FTP data transfer
  - 6 To/month of data FTP-transferred to users
- Remote processing unit designed for users.
- Lettre Icare (paper newsletter).
- Talks and posters in scientific conferences and workshops.
- Outreach in other general symposia.

The screenshot displays the ICARE website interface. At the top, there is a navigation bar with links for Home, Data Access, Satellite Missions, Support Services, About us, and FAQ. Below this, the main content area is divided into several sections:

- Guided tour:** A section with a "new Access to guided tour" link.
- Satellite Missions:** A section listing missions: POLDER-PARASOL, CALIPSO, and MSG-SEVIRI.
- Data Access:** A section with links to "Browse the entire ICARE archive:", "Data Archive Browser", "Browse and compare multiple data sets:", and "new Multi-sensor Browse Interface". It also includes a link to "Access data sets through a dedicated interface:" and lists missions: POLDER-PARASOL, CALIPSO, CLOUDSAT, and MSG-SEVIRI (near-real-time).
- ICARE:** A section with a paragraph describing the center's creation in 2003 and its focus on atmospheric research.
- Highlights:** A section featuring "Les Journées Scientifiques ICARE 29-30 juin 2009" and "PARASOL: 4 years in orbit". The latter includes a paragraph about the 4th anniversary of PARASOL's operations and a grid of satellite images.

# ICARE staff and budget

## STAFF

- Nominal 14 : 5 permanent people (CNRS and Lille-1 University), 7 public people under contract, 2 private sector (retributed services)
- Real (May 2009) 12 (2 public under contract vacancies)

## BUDGET

For the ICARE Data center solely: between 750 and 1100 k€/year (funding essentially by CNES, NPC Region, European funds).

For the whole ICARE thematic center, there is also funding of the ICARE Expertise centers by CNES and (for LOA) NPC Region.

## ICARE perspectives

### ■ National level

- ◆ Megha-Tropiques scientific ground segment (launch planned Q1 2010).
- ◆ Development of the scientific use, in particular with new users focussed on the atmospheric water cycle.
- ◆ First Icare scientific workshop (Paris, 29-30 June, 2009).
- ◆ Interoperability and common access with other French thematic centres (Ether, Satmos...).

### ■ European and international level

- ◆ To become a GMES Data centre (linked to the GMES Atmospheric core service).
- ◆ Inclusion/connection with international centres/networks on atmosphere and climate (GEOS/CEOS, WMO/WDC-RSAT...), implying interoperability.
- ◆ Implication in future ESA space missions: ADM-Aeolus, 2011, for aerosols; Earthcare, 2013, for aerosols, clouds and radiative budget.

**Thank you for your attention**