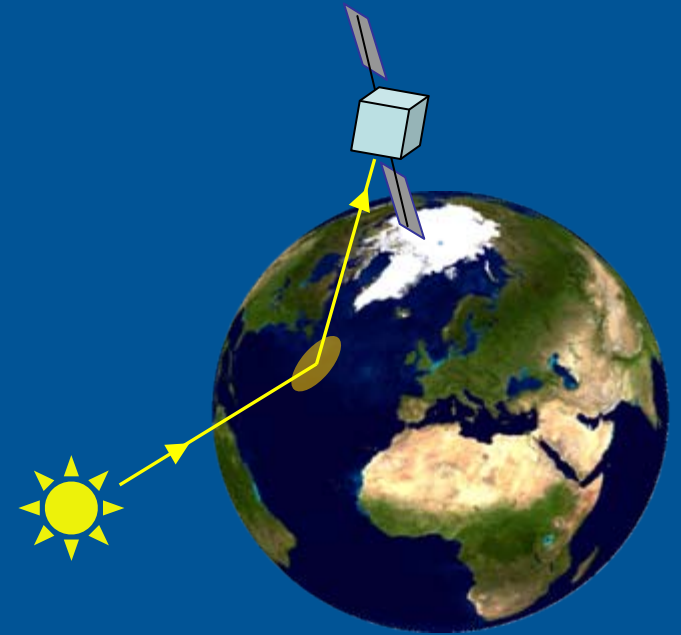




CENTRE NATIONAL D'ÉTUDES SPATIALES



# MICROCARB (Pre phase A CNES)



# A better understanding of global CO<sub>2</sub> cycle

- CO<sub>2</sub> is 77% of total anthropogenic GHG emissions (in 2004).

- Only 45% of the CO<sub>2</sub> produced by human activities is remaining in the atmosphere.

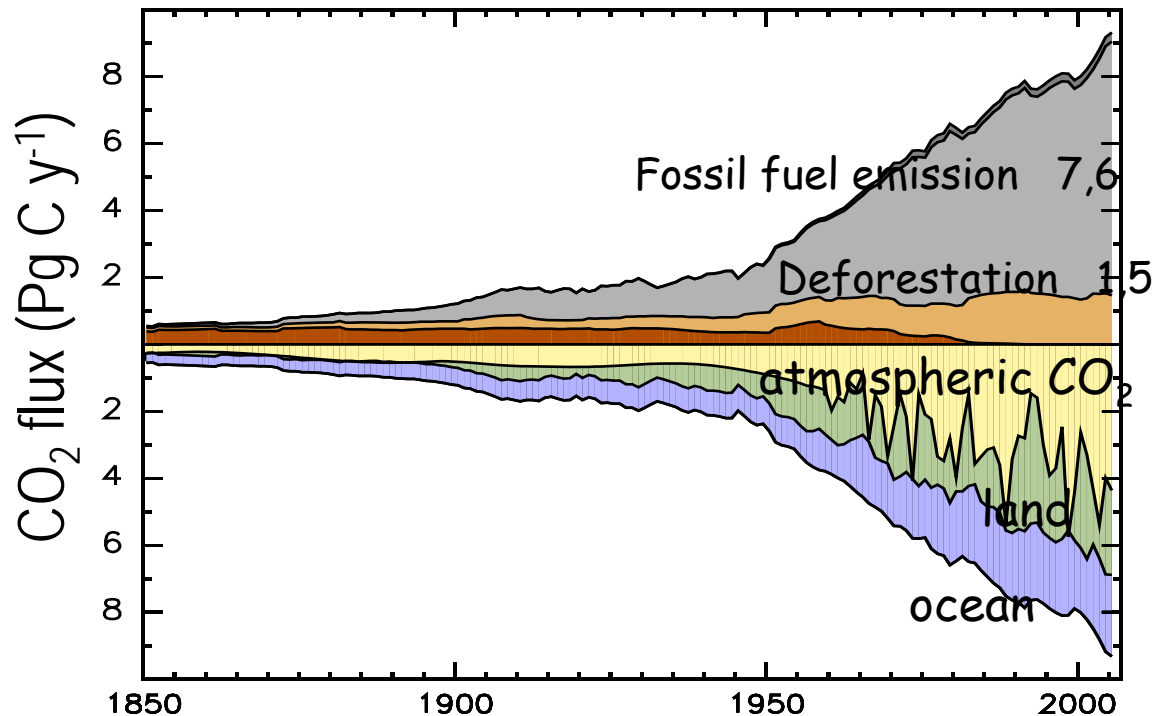
- Where are the **sinks** that are absorbing over 55% of the CO<sub>2</sub> that we emit?

- Land (30%) & ocean (24%)?
- Eurasia/North America?

- Why does CO<sub>2</sub> buildup vary dramatically with nearly uniform emissions?

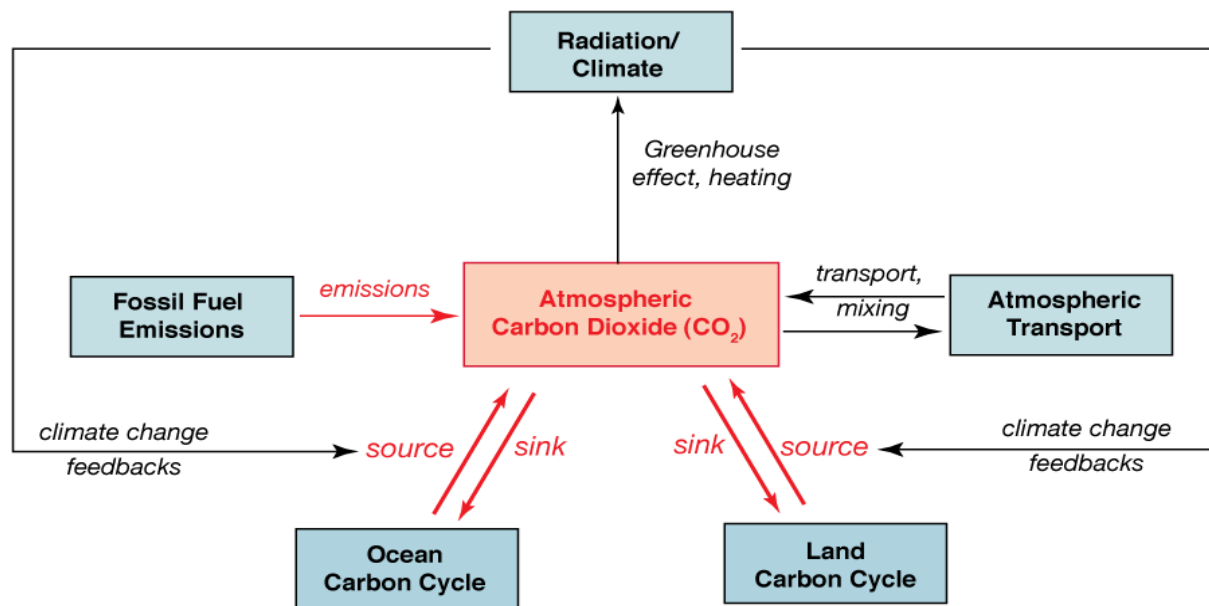
- How will CO<sub>2</sub> sinks respond to climate change?

2000-2006



# MICROCARB

GOAL: To measure vertically integrated CO<sub>2</sub> concentration with a typical precision of 0.3 to 1% (1 to 3 ppm) at 500 km \*500km spatial resolution with a compact and low cost concept mission.



**Because atmospheric CO<sub>2</sub> is the only means to determine the sources and sinks of carbon globally.**

# MICROCARB

- **Goal :**  
to launch a microsatellite to get the cartography of carbon dioxide (CO<sub>2</sub>) fluxes from 2014.
  
- **Scientific payload :**  
Instrument for the measurement of CO<sub>2</sub> and O<sub>2</sub> spectrum with a good spectral resolution (0.20 cm<sup>-1</sup>) and a good radiometric performance (SNR ~ 300). Measure at nadir and Glint. Study for an additional imager. Myriade platform (Microsat): 500 x 500 x 250 mm<sup>3</sup> ; Power max ~ 60W.
  
- **Instrument concept:**
  - FT static spectrometer = radiometer imager of a corner cube (concept studied in pre phase A) or
  - Grating spectrometer
  
- **Hypothesis for the orbit**
  - ◆ Heliosynchronous
  - ◆ Mean local time of ascending node : 12h30 or 13h30
  - ◆ Altitude : 700 km (inclinaison ~ 98.2° )