

# Energetics of the climate system

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## General organization of the course

- 1. The Earth seen as a whole: global processes and history**
- 2. Radiative Processes and Radiative-Convective Models**  
*(vertical dimension of the problem)*
- 3. Atmospheric and Oceanic Transport (horizontal dimension of the problem)**
- 4. Anthropogenic forcings and climate response: uncertainties and feedbacks**
- 5. The COPs: what is the role expected from science**

## Content of the Course

### Part 1

#### **Global processes and history**

- 1. The atmosphere and the ocean: generalities*
- 2. A global view of radiative processes*
- 3. Past climate history*
- 4. A global idea of climate stability.*

### Part 2

#### **The vertical dimension. Radiative Processes and Radiative-Convective Models**

- 1. Radiative processes: generalities*
- 2. Absorption and Greenhouse effect*
- 3. The role of convection*
- 4. Diffusion of Solar Radiation*

## Part 3

### ***The energy budget***

1. *Energy budget at the top of the atmosphere*
2. *Energy exchanges at the surface of the atmosphere*
3. *Transport by the atmosphere and the ocean*
4. *Vertical and horizontal transport*

## Part 4

### ***From science to decision: a few issues***

1. *Anthropogenic forcing*
2. *Climate response at different scales*