



PHYS2132 Introduction to climate modeling

[22.5h+15h exercises] 6 credits

This course is taught in the 2nd semester

Teacher(s): André Berger, Thierry Fichefet, Jean-Pascal van Ypersele de Strihou
Language: French
Level: Second cycle

Aims

The climatic system is formed by the atmosphere, the oceans, the cryosphere, the lithosphere and the biosphere. The interaction between the different components and the complexity of their own dynamics makes the system highly non-linear. The solutions of the partial differential equations that govern the evolution of climate depend on the parameterization of the processes included. The analysis of each subsystem and the links between them is therefore indispensable.

Main themes

1. Energetic totals in the atmosphere
2. Zero-dimension model and the greenhouse theory
3. One-dimension model and intrinsic stability and external solutions
4. Two-dimension model and transient response of the coupled system
5. General atmospheric circulation model
6. 3D model of the atmosphere-ocean-ice coupled system

Other information (prerequisite, evaluation (assessment methods), course materials recommended readings, ...)

Prerequisites: PHYS 1121(Physics of fluids I) and PHYS 2223 (Dynamics of geophysical and environmental fluids).

Programmes in which this activity is taught

ISLE3DA/SO

Other credits in programs

MAP23	Troisième année du programme conduisant au grade d'ingénieur civil en mathématiques appliquées	(6 credits)
MECA23	Troisième année du programme conduisant au grade d'ingénieur civil mécanicien	(6 credits)
PHYS21/T	Première licence en sciences physiques (Physique de la terre, de l'espace et du climat)	(6 credits)
PHYS22/G	Deuxième licence en sciences physiques	(6 credits)