# CNRS Thematic School

## Feedbacks in environmental systems

where: Résidence Club La Fayette in La Rochelle

when: 7jours du 6 au 11 juin 2011

Directors:

Denis-Didier Rousseau DR CNRS

David Claessen, MC ENS

***CNRS Institutes concerned*** :

INSU-INSHS-INEE

# Feedbacks in environmental systems

**Why this school, findings:**

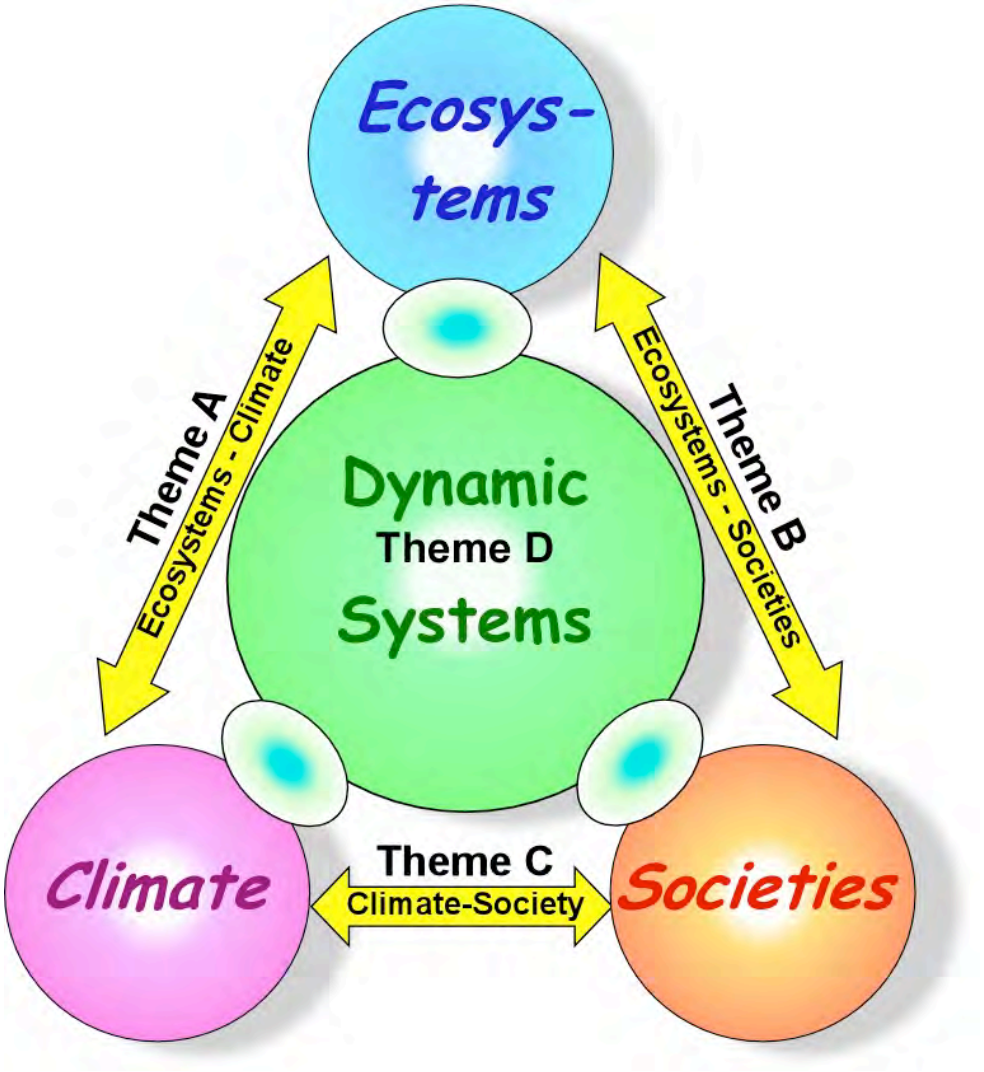
•Major current environmental issues concern the coupling of systems, complex themselves, which are still widely regarded as isolated fields or treated as such by the traditional disciplines: climate, ecosystems, economy and society.

•In fact, these systems influence one another: for example, Climate <-> Ecosystems, Climate <-> Economy and Society, Ecosystems <-> Economy and Society.

•The analysis of the consequences of feedbacks in environmental systems can be applied to many areas of interest of Environment sensu lato. These areas may represent a new disciplinary field for researchers from various institutions

# Feedbacks in environmental systems

## The philosophy, la notion of triptychs




LMD, UMR 8539

EVO-ECO, UMR 7625

CERES-ERTI, ENS

# Feedbacks in environmental systems

**Objectives**

•The project "Feedbacks in environmental systems" is particularly innovative in terms of the scientific field that it intends to establish and develop, addressing different audiences and specialists associated with the general theme of environmental change, including climate change impacts, observed via the coupling of complex environmental systems.

•The scientific objectives of the School are to set up, and bring out, a strong community dealing with the coupling of complex systems in the environmental field from the expertise provided by experts who are supporting the training .

•The strategic objectives of the school are clearly to encourage the emergence of a new community in order to address short-term European competition in a competitive position.

# Feedbacks in environmental systems

**Public concerned**:
Scientists studying climatology, ecology, biodiversity, economics, geography, dynamical systems and complex systems.

**Lecturers**:
Lecturers of this school belong to disciplines and are all teachers in their fields.

**Organization-themes discussed during 7j**

1 - Introduction to different areas: climate, dynamic and complex systems, marine and terrestrial ecosystems
2 – Couping between fields, such as climate-ecosystems...
3 - Introduction of participants
4 - Working groups analysing published materials ("journal club") and contradictory presentation of the studied documents (pros and cons)
5 - Film presentation and discussion
6 -General Roundtable on feedbacks in environmental systems

# Feedbacks in environmental systems

**Teaching methods:**

- Presentations (presented by guest lecturer), workshops (group work, tutorials,), presentations by participants, slots for informal exchanges …
- Study groups organized on the analysis of publications, a roundtable on general feedback in environmental systems.
- Screening of a film on environmental issues with debate
- Pace of work sessions. Days organized into half-days divided into two specific themes + a round table organized in the evening on papers

**Educational material**:

- Used for the teaching
  - "powerpoint" presentations , scientific articles, video projections
- Distributed to participants (documents courses in pdf format) through the USB key
  - Publication of documents (where and in what form?)
  - The PDF documents will be available on the school website http://www.environnement.ens.fr/enseignement/ecole-thematique-cnrs/ which is est hosted at CERES-ERTI of ENS (http://www.environnement.ens.fr/) which posts already online documents

# Feedbacks in environmental systems

**Morning**
9:00 -10:30
11:00 -12:30

**Afternoon**
14:30 -16:00
16:30 -18:00

**Evening**
20:30 - …

| Date | Time slot | Speaker | Title/event |
|---|---|---|---|
| **Sunday, 10 June** | >17:00 | | *Arrival* |
| **Monday 11** | 08:30-9:00 | Denis-Didier Rousseau | *Opening of the school* |
| | 09:00-10:30 | Michael Ghil | *Introduction dynamical systems* |
| | 11:00-12:30 | Hervé Le Treut | *Introduction to climatology* |
| | 14:30-16:00 | Pierre-Henri Gouyon | *Evolution of biodiversity* |
| | 16:30-18:00 | | *Short presentations of participants* |
| | 20:30-22:00 | | *Short presentations of participants (cont'd)* |
| **Tuesday 12** | 09:00-10:30 | David Claessen | *Introduction population dynamics and adaptation* |
| | 11:00-12:30 | Hervé Le Treut | *Introduction to meteorology* |
| | 14:30-16:00 | Pierre-Henri Gouyon | *Selection and constraints in evolution* |
| | 16:30-18:00 | | *Working groups (article analysis)* |
| | 20:30-22:00 | | *Debate/discussion working groups* |
| **Wednesday 13** | 09:00-10:30 | Michael Ghil | *Dynamical systems : application to climate and ocean* |
| | 11:00-12:30 | Bernard Cazelles | *Non-linear dynamics in ecology incl epidemiology* |
| | 14:30-16:00 | Bernard Cazelles | *Feedback of climate and ecology* |
| | 16:30-18:00 | | **Working groups (article analysis)** |
| | 20:30-22:00 | | *Debate/discussion working groups* |
| **Thursday 14** | 09:00-10:30 | Jacques Gignoux | *Vegetation & climate* |
| | 11:00-12:30 | Christine Delire | *Modelling vegetation dynamics* |
| | 14:30-16:00 | Tim Lenton | *Co-evolution of Life and the Planet* |
| | 16:30-18:00 | | **Free** |
| | 20:30-22:00 | | **Film + debate** |
| **Friday 15** | 09:00-10:30 | Guillaume Massé | *Ocean dynamics, biogeochemical cycles* |
| | 11:00-12:30 | Bernard Barnier | *Modelling ocean dynamics* |
| | 14:30-16:00 | Laurent Bopp | *Coupling marine ecosystems & ocean dynamics* |
| | 16:30-18:00 | | **Working groups (article analysis)** |
| | 20:30-22:00 | | *Debate/discussion working groups* |
| **Saturday 16** | 09:00-10:30 | | *Round table discussion* |
| | 11:00-12:30 | | *Discussion & comments by participants* |
| | Afternoon | | *Excursion* |
| **Sunday 17** | Morning | | *Departure* |