



Global (Environmental) Change Research *ESF RESCUE and beyond...*

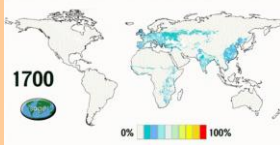
P. Monfray, CNRS-INSU
(representing C. Bréchignac, CNRS Président)

*ESF Forward Look on Responses to Environmental and Societal
Challenges for our Unstable Earth (RESCUE)
Rueil-Malmaison, 10-11 September 2009*



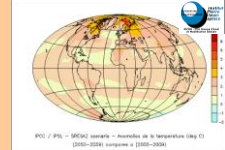
Evolution of GCR scientific questions

From “**Earth System alert**” using observations and analysis



cropland

- Attribution by distinct disciplines of human activities impacts on water pollution, air pollution, climate, biodiversity, soil, ...
- Transfer to politics and mass media via international assessment (O3, IPCC, MEA, etc...)



surface temperature

to “**Earth System management**” linking environmental issues to society development

Adaptation issues

Global localization of environmental changes and impacts

Local to regional human dimension responses

etc...

Need integrated “Earth System Science” to:

- Provide new tools for policy makers and managers;
- Trigger innovative research for adaptation and remediation;
- Joint “development research” to “environmental research” on common objects;
- Strength interactions between natural sciences and social sciences and humanities

Mitigation issues

Integrate environmental constrains in development

Governance and effectiveness of decision making

etc...



Science(s) for adaptations & mitigations ? Science(s) for environment & development ?

***A highly complex challenge
for scientific communities (as ICSU)
or research funders (as IGFA, incl. CNRS) !***



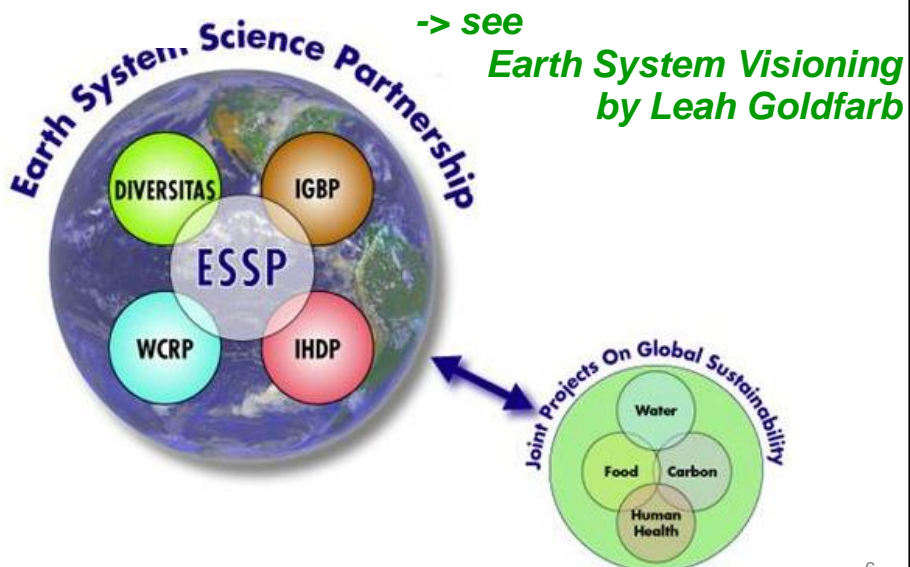
Some tough issues for GCR

- **Disciplines and key processes**
 - GCR is reliable on basic process knowledge, some of them are crucial in particular those controlling time scale ranging **from years to decades**
- **Multi- to trans-disciplinarity**
 - Find **innovative ways to strength collaboration** between the natural, social and human sciences within GCR
 - Elaborate (double way) dialogues and **requalify** scientific questions
 - Elaborate **new GCR programming vision to fund** where integration is envisioned at the beginning for better co-appropriation by disciplines
- **Integrated databases for GCR**
 - Develop research **methodologies crossing disciplines** to consolidate, characterize and use diverse datasets
- **Integrated modeling systems for GCR**
 - Develop research **methodologies for interaction** between various models towards reanalysis and forecast capabilities
- **Research organizations and agencies**
 - Have **long-term view**, beyond classical 3-4 yrs programming, ie **10 yrs** at least from observations to analysis and forecast
 - Increase effectiveness on **emergent** activities, via **international coordination**, joint funding, institute, etc...
- **Education and capacity building**
 - Towards a “revolution” **crossing** dualism of **nature and culture**
 - **Evaluation** and career
- **Science and policy**
 - Improve a **double way** interface, communication and outreach
- **Focus on key regional areas**
 - sensitive to both development and environment, e.g. **Arctic zone**, **Mediterranean areas**, **Monsoon areas** (as Africa), ...
 - **common object** for various stakeholders (disciplines, funders, policy makers, end-users ...)



- *the International Council for Science (ICSU)*
- *the International Funding Agencies (IGFA)*
- *the CNRS (France)*

ICSU Global Change Research





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*International Group of Funding Agencies
for Global Change Research*

adapted from Dawn Conway, chair

Past and present

THEN

- IGFA established **1991** to foster Global Change Research
- Informal consortium
- Facilitator and forum: liaison, knowledge-sharing, foresight, funding

NOW

- R&D support declining in relative terms
- New context & funding demands
 - Mitigation and adaptation
 - Development of low carbon energy technologies
 - Millennium Development Goals (MDG)
 - International Agreements (UNFCCC)
 - Competing country priorities
 - etc...

9

Some hot issues

- Risk management
- Adaptation
- Health and economic impacts
- Regional issues
- Climate as a national security issue
- Need for Earth system science strategy
- Interdisciplinarity & gaps
- Public awareness/opinion
- Mitigation; carbon trading; business strategies
- Opportunities
- ...

>>> A super wicked problem for IGFA funders (incl. CNRS)

Key actions to develop

- Share information
 - Country/agency priorities, policies, programs, resources; best practices; training; partnerships
 - partnerships, training
- Exchange info with ICSU GCR programmes & regional offices
- Identify funding and policy trends, needs, opportunities
- Determine priorities and options; coordinate efforts
- Harmonize funding strategies
- Promote interaction among scientists, policy and decision maker
- ...

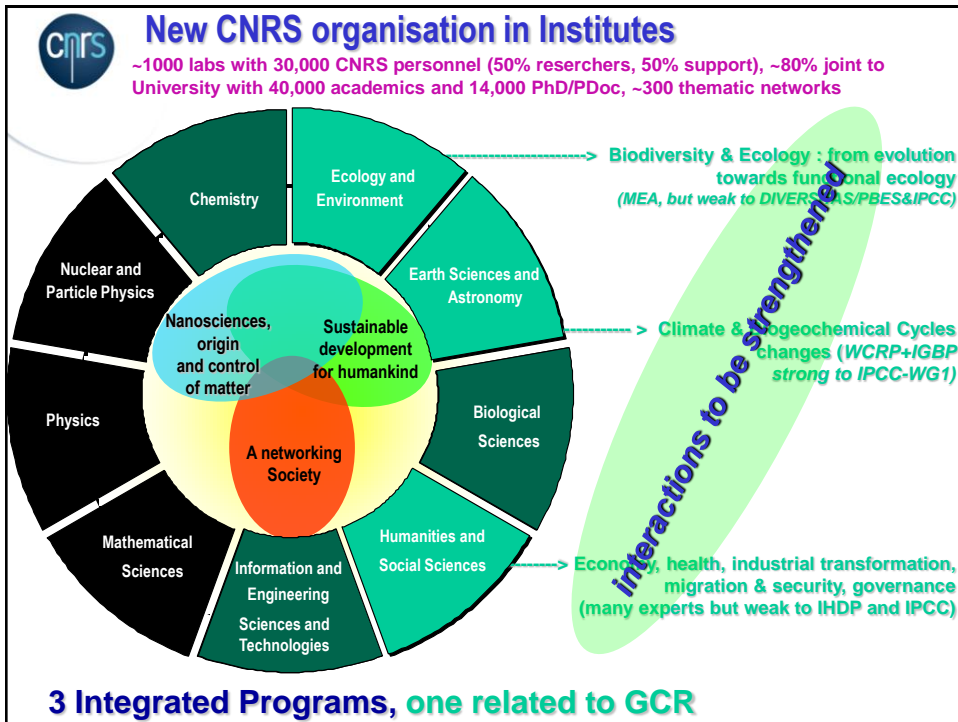
**>>> Strategic priorities and new mechanisms urged
(-> IGFA agenda, 2009-2010)**



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- Some French initiatives on ESS involving CNRS**
- *Inter-agencies coordinated effort on key vulnerable areas as West Africa (AMMA), Mediterranean Zone (MISTRALS), Arctic Zone (tbd 2010)*
 - *New call to promote interdisciplinary research on global environmental changes, fund by French national research agency/ANR and managed by CNRS/INSU (up to 30M€), open to bi- and multi-lateral cooperation*
- and...**
- *ESF Forward Look on Responses to Environmental and Societal Challenges for our Unstable Earth (RESCUE), organized by European Science Foundation, proposed by CNRS, open to international science community*



ESF RESCUE : a timely initiative

- *By critical mass, attracting key players cross Europe and beyond*
- *For brainstorming and cross classical barriers*
- *Towards recommendations waited both by scientific programs (ICSU) and funding agencies (IGFA)*



ESF RESCUE : a real challenge for all !

- *Be open-minded*
- *Be innovative and see far*
- *Re-qualify scientific questions*
- *Rethink education and communication*
- *Be rooted on societal issues*
- *Focus on **implementation** methodologies and strategy*

-> “Overall, this [RESCUE] effort will enable ... an increased effectiveness of ongoing and future activities across research organizations and initiatives in Europe.”

>>> Wish strong success in the next 18 months for all RESCUE contributors !