Climate Research within the EC Framework Programmes

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First Meeting of the GEWEX/CLIVAR/VAMOS La Plata Basin Implementation Steering Group, Guaratinguetá, Brazil, 18-19 September 2006

SUSTAINABLE DEVELOPMENT, GLOBAL CHANGE AND ECOSYSTEMS
EU research: the story so far

- **1952**: ECSC treaty; first projects started March 1955
- **1957**: EURATOM treaty; Joint Research Centre set up
- **1983**: ESPRIT programme
- **1984**: First Framework Programme (1984-1987)
- **1987**: ‘European Single Act’ – science becomes a Community responsibility;
- **1990**: Third Framework Programme (1990-1994)
- **1993**: Treaty on European Union;
  role of RTD in the enlarged EU
- **2000**: European Research Area
- **2002**: Sixth Framework Programme (2002-2006)

SUSTAINABLE DEVELOPMENT, GLOBAL CHANGE AND ECOSYSTEMS
The Historical Perspective of EU Climate Change Research

FP3 & 4: Research on ecosystem functioning, climate and environment protection technologies

FP5: Integration of the environmental dimension in research; more attention to climate change, water, coastal integration and urban dynamics

FP6: Sustainability to be integrated in all areas of research, especially Energy, Transport and Agriculture

FP7: Sustainable management of the environment and its resources, functioning of climate and the earth system, development of new technologies, tools and services
FP6 (2002-2006) is the main instrument of the EC to implement the European Research Area (ERA), a new approach for European and international collaboration.

Implementation mainly through new instruments: Integrated Projects (IP) and Networks of Excellence (NoE).

The FP6 is open to partners around the world.
The 3 interrelated pillars of FP6

Priority 6: Sustainable Development, Global Change and Ecosystems

- Sustainable energy systems (810 M€): clean energy, energy savings, alternative motor fuels, fuel cells, energy carriers/transport/storage

- Sustainable surface transport (610 M€): environmentally friendly transport, interoperability, safety

- Global change and ecosystems (700 M€): greenhouse gas emissions, water cycle, biodiversity and ecosystems, natural disasters, land management, climate observation, complementary research, cross-cutting issues
Work Programme on Area I

Impact and mechanisms of greenhouse gas emissions and atmospheric pollutants on climate, ozone depletion and carbon sinks

Research priorities

1.1 Carbon and nitrogen cycles: sources and sinks
1.2 Atmospheric pollutants and their regional impacts
1.3 Climate dynamics and variability
1.4 Prediction of climate change and its impacts
1.5 Stratospheric ozone and climate interactions
1.6 Adaptation and mitigation strategies
FP6 Climate Research Projects
1st Call for proposals, 2003

- ENSEMBLES – IP: Ensemble-based Predictions of Climate Changes and their impacts
- SCOUT-O3 – IP: Stratosphere-Climate Links with emphasis on UTLS
- ACCENT – NoE: Atmospheric Composition Change: A European Network
- CARBOEUROPE – IP: Assessment of European Terrestrial Carbon Balance
- CLARIS-SSA: A Europe-South America Network for Climate Change Assessment and Impact Studies
CLARIS Specific Support Action

A Europe-South America network for climate change assessment and impact studies

Objective: to strengthen collaboration between research groups in Europe and S. America to develop common research strategies on climate change and impact issues in the subtropical region of South-America through a multi-scale integrated approach

Coordinator: J.-P. Boulanger, CNRS, France

Partners: 14 from France, Germany, Argentine, Brazil, Italy, Spain, Uruguay and the Netherlands

EC support: 500 K€
Duration: 36 months
Starting date: 1 July 2004
FP6 Climate Research Projects
2nd Call for proposals, 2004

- CARBOOCEAN – IP: Marine carbon sources and sinks assessment
- AMMA – IP: African monsoon multidisciplinary analysis
- QUANTIFY – IP: Quantifying the climate impact of global and European transport systems
- DYNAMITE – STREP: Understanding of the Dynamics of the Coupled Climate System
AMMA Integrated Project

African Monsoon Multidisciplinary Analysis

Duration: 5 years
EC support: 13 M€ (Total costs: 37 M€)
Objective: to improve the ability to predict the West African monsoon (WAM) and its impact on intra-seasonal to decadal timescales as well as the consequences of climate change on WAM variability.
Coordinator: J. Polcher, CNRS, France
Partners: 57 from France, Germany, UK, Spain, Italy, Denmark, Belgium, the Netherlands, Finland, Niger, Senegal, Mali, Benin, Guinea, Ghana, Nigeria and Burkina Faso

SUSTAINABLE DEVELOPMENT, GLOBAL CHANGE AND ECOSYSTEMS
FP6 Climate Research Projects
3rd Call for proposals, 2005

- **MILLENIUM-IP**: European climate of the last millennium
- **NITROEUROPE-IP**: Nitrogen cycle and its interaction with c-cycle
- **DAMOCLES-IP**: Developing arctic modelling and observing capabilities for long term environmental studies
- **ADAM-IP**: Adaptation and mitigation strategies: supporting European climate policy
- **OOMPH – STREP**: Organics over the Ocean Modifying Particles in both Hemispheres
- **MAP – STREP**: Secondary Marine Aerosol Production from Natural Sources

SUSTAINABLE DEVELOPMENT, GLOBAL CHANGE AND ECOSYSTEMS
FP6 Climate Research projects
4th Call for proposals, 2006

- **EUCAARI-IP:** Aerosol cloud climate and air quality interactions
- **WATCH-IP:** Water and global change
- **CIRCE-IP:** Climate change and impact research - The Mediterranean Environment
- **CLAVIER-STREP:** Climate change and variability - Impact on Central and Eastern Europe
- **CECILIA-STREP:** Central and Eastern Europe climate change impact and vulnerability assessment
- **HYMN-STREP:** Hydrogen, Methane and Nitrous Oxide
- **CARBONorth-STREP:** The Carbon budget in Northern Russia
**Challenges:** More drastic GHG reductions will be needed
max. 2°C increase, max. 450 ppmv, -50 to 60% by 2050

- **Participation Challenge:** Include all major emitters
  - share of EU-25 in world GHG emissions will decline to <10%
  - share of developing countries will expand to >50%

- **Innovation Challenge**
  - *Pulling technological change:* Stimulate markets to promote generation and adoption of new technology
  - *Pushing technological change:* Invest in knowledge economy (Research) to give EU a competitive edge in a low carbon future

- **Adaptation Challenge**
A. Side event on “vulnerability of coastal zones to climate change”, during the UNFCCC COP-10 in Buenos Aires, 10 December 2004

B. Side event on “regional climate modelling and impacts” during the UNFCCC COP-10 in Buenos Aires, 13 December 2004

C. Side event on “ice and ocean changes off Greenland” during the UNFCCC SBSTA-22 in Bonn, 24 May 2005

D. Side event on “climate change predictions, impacts and adaptation”, UNFCCC COP-11 in Montreal, 28 November 2005
Building a Europe of Knowledge

Towards the Seventh Framework Programme 2007-2013
What’s new?

Main new elements compared to FP6:

– **Duration** increased from five to seven years
– More than 50% increase in the annual **budget**
– Basic research (~ €1.5 billion per year)
– New **structure**: cooperation, ideas, people, capacities
– Flexible funding schemes
– Joint Technology Initiatives
– Simpler procedures
– Logistical and administrative tasks external structures
Cooperation – Collaborative Research

Nine themes

1. Health
2. Food, agriculture and biotechnology
3. Information and communication technologies
4. Nanosciences, nanotechnologies, materials and new production technologies
5. Energy
6. Environment (including climate change)
7. Transport (including aeronautics)
8. Socio-economic sciences and the humanities
9. Security and space

+ Euratom: Fusion energy research, nuclear fission and radiation protection

Towards FP7
6. Environment (inc. climate change)

- Climate change, pollution and risks
- Sustainable management of resources
- Environmental technologies
- Earth observation and assessment tools
Environment (inc. climate change)

• Support EU International commitments such as:
  – Kyoto Protocol
  – UN Convention on Biological Diversity
  – World Summit on Sustainable Development

• Contribute to:
  – Intergovernmental Panel on Climate Change (IPCC)
  – Global Earth Observation Initiative (GEO)
  – International Programmes (WCRP, IGBP, etc.)

• Contribute to EU policies such as:
  – 6th Environmental Action Plan and associated Thematic Strategies
  – Action Plans on Environmental Technologies and Environment and Health
  – Water Framework Directive

Towards FP7
Environment (inc. climate change)

- Climate change, pollution and risks
  - Pressures on environment and climate
  - Environment and health
  - Natural hazards

- Sustainable Management of Resources
  - Conservation and sustainable management of natural and man-made resources
  - Evolution of marine environments
Environment (inc. climate change)

- Environmental Technologies
  - Environmental technologies for observation, prevention, mitigation, adaptation, remediation and restoration of the natural and man-made environment
  - Technology assessment, verification and testing

- Earth observation and assessment tools
  - Earth observation
  - Forecasting methods and assessment tools

Towards FP7
Pressures on Environment and Climate
Specific Programme

Integrated research on the functioning of climate and the earth system is needed in order to observe and analyse how these systems evolve in the past and predict their future evolution. This will enable the development of effective adaptation and mitigation measures to climate change and its impacts. Advanced climate change models from the global to sub-regional scales will be developed and validated. These models will be applied to assess changes, potential impacts and critical thresholds (e.g. ocean acidification). Changes in atmospheric composition and in the water cycle will be studied. Pressures on environmental quality and on climate from natural and anthropogenic pollution of the air, water and soil will be investigated.
Pressures on Environment and Climate
Work Programme

1. **The Earth System and Climate**: Functioning and abrupt changes
2. **Emissions and Pressures**: Natural and anthropogenic
3. **The global carbon cycle – Greenhouse Gas budgets**
4. **Future Climate**
5. **Climate Change Impacts**
6. **Response strategies**: Adaptation, Mitigation, Policies
Pressures on Environment and Climate (2007)

1. The Earth System and Climate: Functioning and abrupt changes
   • Stability of the thermohaline circulation

   _Expected impact:_ Quantification of the risk, time horizon and possible scenarios for THC breakdown.

2. Emissions and Pressures: Natural and anthropogenic
   • Megacities, air quality and climate

   _Expected impact:_ Better quantification of air quality and more reliable tools for prediction of air pollution in cities. Support to CAFÉ programme and AQ regulation. Better quantification on regional and global impacts of megacity air pollution.
3. The global carbon cycle - Greenhouse gas budgets

- Ocean acidification and its consequences

   Expected impact: Impacts and feed-backs of ocean acidification on ocean ecosystems and the carbon cycle should be studied and better described in coupled ocean-climate models.

4. Future Climate

   No topic for 2007
5. Climate Changes Impacts

- **ERA-NET climate change and its impacts in national water policies**

  **Expected impact:** To provide integrated information on national research activities related to the water policies that take into account climate change and its influence; to contribute to the definition of related research needs by set up a coordinated common strategy.

- **Climate change impacts on vulnerable mountain regions**

  **Expected impact:** Expertise and integrated models applicable to other mountain regions of the world.
5. Climate Changes Impacts (continued)

- Past and future climate change impacts in Parana-Plata basin of South America

Objective and research tasks: Observations and modelling studies at both regional and continental scale to quantify past and predict future climate changes and impacts in the Parana-Plata basin. Emphasis in climate change impacts should be given to floods, hydrological systems, land-use and agriculture, deforestation and needs to assess the social and economic implications. Adaptation measures to future climate risks and impacts should be also considered.

Expected impact: Strengthening of the cooperation between European and South American multidisciplinary research communities by studying climate change impacts in a basin which largely involves the greater part of the population, economy, agriculture, hydropower production of five major South America countries.
6. Response strategies: Adaptation, Mitigation, Policies

- Full costs of climate change

  Expected impact: More complete, updated assessment of cost of mitigation, adaptation and damage of climate change including air-quality co-benefits. Support for EU policies on climate change in international negotiations and air pollution policy.

- Effectiveness of adaptation and mitigation measures related to changes of the hydrological cycle and its extremes

  Expected impact: Assessment of the efficiency of current and future adaptation and mitigation measures to hydrological changes and related extremes. Support for EU and non-EU research activities and policies as a response to climate change, in particular on adaptation.

- Impacts and feedbacks of climate policies on land use and ecosystems in Europe

  Expected impacts: Assessment of the efficiency of current and future land use adaptation and mitigation processes, including Carbon sinks. Identification of the adaptation induced by policies, in particular as a response to Common Agricultural Policy, Rural development Strategy, Forestry related measures and in general EU policies on climate change.
Ideas – Frontier Research

ERC – European Research Council

Commission

- Approval of work programme, as defined by the Scientific Council
- Instruction to implement work programme
- Approval of annual implementation report
- Information to programme committee

Scientific Council*

- Preparation of work programme
- Set up of peer review: pool of reviewers, nomination of review panels, evaluation guidelines
- Oversight of the evaluation procedure
- Annual scientific report

Externalised tasks**

- Information and support to applicants
- Reception / eligibility of proposals
- Organisation and execution of evaluation
- Selection decision
- Scientific and financial follow-up of contracts
- Annual implementation report

* Created by Commission decision
** Under the responsibility of the Commission

Towards FP7
People – Marie Curie Actions

• Initial training of researches
  – Marie Curie Networks*
• Life-long training and career development
  – Individual Fellowships
  – Co-financing of regional/national/international programmes
• Industry-academia pathways and partnerships
  – Industry-Academia Knowledge-sharing Scheme*
• International dimension
  – Outgoing & Incoming International Fellowships
  – International Cooperation Scheme
  – Reintegration grants;
  – Support to researcher ‘diasporas’
• Specific actions
  – Mobility and career enhancement actions
  – Excellence awards

* Open to third-country nationals
Capacities – Research Capacity

1. Research infrastructures
2. Research for the benefit of SMEs
3. Regions of Knowledge
4. Research Potential
5. Science in Society
6. Activities of International Cooperation
7. Coherent development of policies
Tentative Roadmap for FP7

2005

6/4  Commission - Adoption of FP7 proposals
18/4  Council - Exchange of views
7/6  Council - Orientation debate
21/9  Commission - Proposals on SPs and Rules for participation and dissemination
11/10  Council - Exchange of views on SPs and Rules
23/11  Commission - Proposals under Articles 169 and/or 171
28-29/11  Council - Orientation debate on SPs and Rules
12-15/12  EP - 1st reading on EC FP. Opinion on Euratom FP

2006

Feb/Mar  Council - Common position on EC FP
April  Common position on EC Rules
May/June  EP - 2nd reading on EC FP; Opinion on SPs; 2nd reading on EC Rules (earliest)
June  Council - Adoption of FP and Rules (earliest)
July  Council and EP - Adoption of FP and Rules
July  Council - Adoption of the SPs
Oct  Commission - Adoption of Work programmes and necessary materials
Nov  Commission - Publication of 1st calls
Information

- EU research: http://europa.eu.int/comm/research
- Information on research programmes and projects: http://www.cordis.lu/
- RTD info magazine: http://europa.eu.int/comm/research/rtdinfo/
- Information requests: research@cec.eu.int