

Outline of granted projects in 2009
Programme « Changements Environnementaux Planétaires »

CECILE - Coastal Environmental Changes: Impact of sea Level rise	2
CHEDaR - Climate, Health and Environment: Data Rescue and modelling	3
CLIMED - Climate change effects on Mediterranean biodiversity and Consequences for ecosystem functioning	4
MACROES - MACROscope for Oceanic Earth System	5
OBRESOC - A retrospective observatory of an archaeological society: The trajectory of the LBK Neolithic	7
PAPRIKA - Cryospheric responses to anthropogenic pressures in the Hindu Kush-Himalaya regions: impacts on water resources and society adaptation in Nepal	9
WETCHANGE - Biodiversity and functions of alluvial systems facing severe droughts induced by global change	11

Project Title	CECILE - Coastal Environmental Changes: Impact of sea Level rise
Abstract	Sea level rise is a major consequence of global warming, which threatens many low-lying, highly populated coastal regions of the world. The CECILE project has the general objective of studying the impact of sea level rise on shoreline changes (past 50 years and next century) within an integrated approach involving all factors related to climate change, natural phenomena and anthropogenic forcing. It focuses on the following aspects: (1) Observations of recent past and present-day rate of relative sea level rise and potential impact in a few selected coastal regions (2) Attribution of changes to sea level rise or other forcing factors such as extreme event (3) Sea level change modelling (4) Sea level projections (5) Development of methodologies for assessment of future geomorphological coastal impacts in 2100.
Consortium	BRGM - www.brgm.fr LEGOS (UMR 5566) - http://www.legos.obs-mip.fr/ CNRM (URA 1357 Météo-France – CNRS) - http://www.cnrmmeteo.fr/ LIENSs (UMR 6250 – Université La Rochelle – CNRS) - http://www.univ-larochelle.fr/Littoral-Environnement-et-Societes-LIENSs.html CREOCEAN - http://www.creocean.fr SHOM - www.shom.fr CERFACS - http://www.cerfacs.fr/
Coordinator	Scientific coordinator : Anny Cazenave – LEGOS / GOHS anny.cazenave@legos.obs-mip.fr Project coordinator : Gonéri Le Cozannet – BRGM / RNSC g.lecozannet@brgm.fr
ANR Grant	864 650 €
Kick off and duration Reference	Janvier 2010 - 36 mois ANR-09-CEP-001
Competitiveness Cluster	Aerospace Valley

Project Title

**CHEDaR - Climate, Health and Environment:
Data Rescue and modelling**

Abstract

This fundamental research project aims at determining meteorological, environmental and sanitary conditions that prevailed during the 18th and 19th centuries, from historical archives and regional model simulations. We shall focus on the period covering 1750 to 1850, which includes two volcanic eruptions (Laki in 1783 and Tambora in 1815), and several extreme climate events. The challenge of this project is that very few meteorological data are available to date. In parallel, we will use climate numerical simulations of the last 1000 years to constrain a regional climate model centered over the Mediterranean region, in order to simulate fine scale meteorology and atmospheric composition for those events (heatwaves, droughts) and volcanic eruption. A detailed comparison between those regional simulations and observations will be performed.

Consortium

Laboratoire des Sciences du Climat et de l'Environnement (LSCE), UMR CEA-CNRS-UVSQ, Gif-sur-Yvette
Division de la Climatologie, Météo France, Toulouse
Centre de Recherche en Histoire Quantitative, UMR CNRS-Université de Basse Normandie, Caen
Laboratoire de Météorologie Dynamique, Ecole Polytechnique, Palaiseau

Coordinator

Pascal Yiou- LSCE/ CEA
Pascal.yiou@lsce.ipsl.fr

ANR Grant

526 236 €

Kick off and duration

March 2010 - 48 months

Reference

ANR-09-CEP-002

Competitiveness Cluster

No

Project Title	CLIMED - Climate change effects on Mediterranean biodiversity and consequences for ecosystem functioning
Abstract	This project aims to link predicted climate change to biodiversity change across trophic levels, and to quantify their effects on ecosystem processes related to carbon and nutrient cycling in a Mediterranean ecosystem. Complementary experiments combining a large rain exclusion facility in the field and microcosm studies in the Montpellier. ECOTRON aiming at understanding underlying mechanisms in more detail are planned. By taking an explicit functional approach to biodiversity and by focussing on interactions among plants, soil fauna, and micro organisms, this project will contribute to develop predictive tools for climate change effects on biodiversity and its consequences for ecosystem carbon sequestration, ecosystem productivity and soil fertility.
Consortium	CEFE-CNRS Montpellier, UMR 5175 Laboratoire Sols et Environnement, UMR INPL-INRA 1120 Institut Méditerranéen d'Ecologie et de Paléoécologie, UMR 6116 ECOTRON-CNRS Montpellier
Coordinator	Stephan Hättenschwiler- CNRS, UMR 5175 Stephan.hattenschwiler@cefe.cnrs.fr
ANR Grant	849 107 €
Kick off and duration	March 2010 – 48 months ANR-09-CEP-007
Reference	No
Competitiveness Cluster	

Project Title

MACROES - MACROscope for Oceanic Earth System

Abstract

The main objective of MACROES is to better understand and predict the end-to-end dynamics of marine ecosystems in a context of generalized overfishing and planetary environmental changes by integrating the complex synergies and feedbacks of the oceanic system. The project gives a particular emphasis to tunas and the associated fisheries as they represent the dominant exploited species in the global open ocean. To address this objective, the project will articulate inter-operable databases and end-to-end climate, ecosystem and economic models. To ensure their wide availability, observed and modeled data will be made available through a Model and Data Sharing Tool and synthesized into a Synthetic Indicator Panel. A particular emphasis will be given to the identification of the feedbacks between the different systems considered (climate, biogeochemistry, ecosystems..).

Consortium

LPO - Laboratoire de Physique des Océans – Brest
EME – Écosystèmes Marins Exploités – Sète
LSCE – Laboratoire des Sciences du Climat et de l'Environnement – Gif-sur-Yvette
LOCEAN – Laboratoire d'Océanographie et de Climatologie : Expérimentation et Approches Numériques – Paris
LEMNA – Laboratoire d'Economie et de Management de Nantes-Atlantique – Nantes
CERTAP – Centre d'Etude et de Recherche sur les Transformations de l'Action Publique – Perpignan
LMGEM – Laboratoire de Microbiologie, de Géochimie et d'Ecologie Marines - Marseille

Coordinator

Olivier Aumont-LPO/ IRD
Olivier.aumont@ird.fr

ANR Grant

1 213 705 €

Kick off and duration

February 2010 - 48 mois

Reference	ANR-09-CEP-003
Competitiveness Cluster	Europôle Mer

Project Title

OBRESOC - A retrospective observatory of an archaeological society : the trajectory of the LBK Neolithic

Abstract

Data on archaeological societies, from birth to collapse, may be regarded as the results of retrospective observatories that may have recorded environmental impacts. The aim of our project is therefore to cross existing archaeological data on the first farmers in Europe, who colonized an area stretching from Normandy and Brittany to Ukraine, called LBK (5750-4750 Cal BC), with the corresponding environmental data, in order to gain insights into the reactivity and resilience to climatic impacts of this archaeological society's sociocultural system. Under what environmental and cultural circumstances did this society emerge and disappear? The success of a society can be measured by its demographic expansion, which is generally correlated with its geographical extension. Which were the geographical areas in which it expanded, from its origins to its zenith, and where fragments may have remained before its disappearance? Do any environmental variations correlate with the tempo of these kinetics in space and time? Our project integrates paleoenvironmental and bioarchaeological disciplines, cultural archaeology, paleodemography and economics, via space-time modelling of complexity from the macro (exogenous environmental variables) to the micro-economic (endogenous variables), and their interactions. This multidisciplinary approach provides the framework for the creation of a reasonably realistic modelling tool of trajectories in space and time of an archaeological society. We expect our project to provide convincing indications as to the impacts of the environmental variables that guided the long-term trajectory of human behavior, in the context of the first European Neolithic farmers. This approach could influence a new strategy for scientific research on European prehistory. The project's modelling approach as a whole could contribute to the emergence of a new sub-discipline at the intersection between cultural archaeology and environmental archaeological sciences: the archaeology of socio-natural processes.

Consortium

Dynamique de l'évolution humaine : individus, populations,

espèces, UPR 2147, CNRS
Centre d'Etudes Préhistoire, Antiquité, Moyen-Âge, CEPAM,
UMR 6130
Centre de Bio-archéologie et d'Ecologie, UMR 5059
Archéologies et Sciences de l'Antiquité, UMR 7041
Environnements et Paléoenvironnements Océaniques, EPOC,
UMR 5805
Université Versailles St Quentin, UMR 5197
Archéozoologie et histoire des sociétés, UMR 7209

Coordinator Jean-Pierre Bocquet Appel-UPR 2147, CNRS
Jean-pierre.bocquet-Appel@evolhum.cnrs.fr

ANR Grant 900 000 €

Kick off and duration January 2010- 36 months

Reference ANR-09-CEP-004

Competitiveness Cluster No

Project Title

PAPRIKA - Cryospheric responses to anthropogenic pressures in the Hindu Kush-Himalaya regions: impacts on water resources and society adaptation in Nepal

Abstract

PAPRIKA addresses current and future evolution of the cryosphere in response to global environmental changes in South Asia and their consequences on water resources in Nepal. It investigates how anthropogenic emissions affect glaciers and snow through direct alteration of radiative forcing and induced changes in monsoon circulation. An impact assessment of the water availability for the HKH region under several climate scenarios, employing the improved estimates of expected trends in anthropogenic activities, will be developed. Adaptation strategies to changing water resources for local Nepalese communities will be developed to mitigate the predicted consequences and impacts of environmental changes for sectors like agriculture.

Consortium

Laboratoire d'étude des Transferts en Hydrologie et Environnement, LTHE, UMR 5564
Laboratoire de Glaciologie et de Géophysique de l'Environnement, LGGE, UMR 5183
Laboratoire des Sciences du Climat et de l'Environnement, LSCE, UMR 1572
Hydro Sciences Montpellier, UMR 5569
Milieux, sociétés et cultures en Himalaya, UPR CNRS 299
Politiques publiques, Actions politiques, Territoires, PACTE, UMR 5194

Coordinator

Yves Arnaud-LTHE/IRD, UMR 5564
yves.arnaud@ird.fr

ANR Grant

664 261 €

Kick off and duration

February 2010 - 36 months

Reference

ANR-09-CEP-005

Competitiveness Cluster	No
-------------------------	----

Project Title	WETCHANGE - Biodiversity and functions of alluvial systems facing severe droughts induced by global change
Abstract	The goal is to obtain realistic previsions at 20 years of the relative vulnerability of different types of wetlands to dewatering and drought. The work will led successively to the production of 1) an hydroclimatic scenario of the impact of global change on the water recharge of the river, 2) a hydrogeological model of the river and its aquifer, which will provide a model of the dewatering regime of wetlands at the 10 m scale, and 3) a quantification of the rate of dewatering and drying of habitats in the plant environment. At this scale, the response of animal, plant and microbial communities to dewatering will be measured through the survey of established communities both in natural ecosystems and in the laboratory. These results will be grouped in a multidisciplinary base of knowledge and will lead to the production of integrated scenarios of response for each functional type of wetland.
Consortium	LEHF, UMR 5023, Ecologie des Hydrosystèmes Fluviaux Cemagref, Unité HHLY, Lyon Ecole Nationale Supérieure des Mines de Saint Etienne, Equipe SITE
Coordinator	Gudrun Bornette-LEHF/CNRS, UMR 5023 gbornett@univ-lyon1.fr
ANR Grant	693 981 €
Kick off and duration	February 2010- 36 months
Reference	ANR-09-CEP-006
Competitiveness Cluster	No

