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ERC funds projects to tackle climate change's impacts



Climate change is one of the most urgent challenges for mankind. EU citizens consider it as the second most serious problem facing the world today, according to a recent European survey.

- The impacts of climate change are already present all over the world, and scientists predict they will intensify in the coming decades. The rise of global temperatures over the past 100 years, altered rainfall patterns, shrinkage of glaciers, warming up and expansion of the world's oceans and hazardous weather events like heat waves, droughts, storms and floods are some examples of natural disasters that have lately become more frequent or severe.

For this reason, the 17th Conference of the UNFCCC Parties (COP 17) which takes place from 28 November to 9 December in Durban, South Africa, is very timely. It will serve as a global platform for governments, international organisations and civil society to discuss these important issues.

Finding solutions to the disorders of climate change requires scientific inputs from almost all disciplines, including physics, biology, earth sciences, sociology, and economics. Significant efforts worldwide have been made to fund research in these scientific areas and the European Research Council (ERC) is a crucial element in funding frontier-research in this field. Since 2007, it has funded a total of 48 projects to increase our understanding of the complexities of the climate model, its implications for societies and natural systems with a view to identify options for mitigation and adaptation.

What has caused the Earth's climate to change throughout its history? How climate might change over the next 100 years and why? How should support for low-carbon technologies be designed? What are the micro impacts of climate change on plants and animal species? What are the regional effects of climate's shifts? These are questions addressed by some of the ERC-funded projects on this topic.

Some examples of ERC-funded projects on climate change

Tackling the side effects of climate change policies



This project focuses on the "green paradoxes", i.e. the counterproductive effects that climate change policies can have when they do not take into account the supply dimension of the fossil fuels markets. The goal is to provide policy recommendations by, for instance, examining imperfect competition on the oil market and distinguishing between dirty and clean alternatives for fossil fuels. These environmental policy proposals will also address the adverse distributional aspects of climate change on developing economies and on the poorest economies of the advanced world, more heavily charged by green taxes.

- Researcher: Cees Withagen (ERC Advanced Grant 2010)
- Host Institution [1]: VU University, Amsterdam, NL
- Project's title: COMBATING CLIMATE CHANGE: Political economy of Green Paradoxes (GP)

[Researcher's website](#) [2]

[Project on CORDIS](#) [3]

Towards a better understanding of sea-level changes



Climate change has a direct impact on sea-level rise. Sea-level rise is provoked by many different Earth system processes and can have severe consequences on populations and ecosystems near the coast. This project aims to increase our knowledge of future sea-level variations, particularly in a twofold manner: firstly, by studying the global and local sea-level modifications due to density change and secondly, by examining the models of coupled evolution of ice-sheets and climate on a multi-millennial timescale – including the long-term future of the Greenland ice-sheet.

- Researcher: Jonathan Michael Gregory (ERC Advanced Grant 2009)
- Host Institution [1]: The University of Reading, UK
- Project's title: Sea-level change due to climate change (SEACHANGE)

[Researcher's website](#) [4]

[Project on CORDIS](#) [5]

Improving weather forecast and climate models



The accuracy of atmospheric climate variability, its predictability and interaction with anthropogenic influences is far from being well known. This project aims to advance scientific understanding of dynamical properties of the atmosphere and climate systems over many spatial and temporal scales. An important outcome could be a free-access, user-friendly tool for carrying out a physically-based analysis of weather and climate model outputs.

- Researcher: Nedjeljka Zagar (ERC Starting Grant 2011)
- Host Institution [1]: Univerza v Ljubljani, Ljubljana, SI
- Project's title: Modal analysis of atmospheric balance, predictability and climate (MODES)

[Researcher's website](#) [6]

[Project on CORDIS](#) [7]

Fighting climate change in the Mediterranean region



How are clouds and precipitation formation influenced by atmospheric chemical composition changes? Can aerosol pollution in the Mediterranean region exacerbate the predicted and observed drying in a changing climate? This research team has developed a new numerical method to consistently compute atmospheric trace gas, aerosol chemistry and cloud processes that can be used in climate models. The model system will facilitate air quality and climate studies and provide input to climate impact assessments. By simulating realistic meteorological conditions at high spatial resolution their method can be straightforwardly tested against observations.

- Researcher: Johannes Lelieveld (ERC Advanced Grant 2008)
- Host Institution [1]: The Cyprus Research and Educational Foundation, Lefkosia, CY
- Project's title: Consistent computation of the chemistry-cloud continuum and climate change in Cyprus (C8)

[Researcher's website](#) [8]

[Project on CORDIS](#) [7]

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[4] <http://www.met.rdg.ac.uk/~jonathan/>

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[6] <http://www.cgd.ucar.edu/~nzagar/>

[7] <http://erc.europa.eu/glossary/term/235>

[8] <http://www.cyi.ac.cy/user/26>

[9] http://erc.europa.eu/sites/default/files/content/pages/ClimateChange_LIST_ERCprojects_WEB.pdf