

# Global challenges require international collaboration

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THE GLOBAL WATER CYCLE is changing. Recent high-profile assessments such as the Millennium Ecosystem Assessment and reports from organisations such as the UN and WWF have highlighted global concern about freshwater supply now and in the coming decades.

The UN's *Climate Change and Water* report published in June 2008 called for improved 'understanding and modelling of climate changes related to the hydrological cycle at scales relevant to decision making'. The scales relevant to decision making must involve what will happen regionally from seasons stretching out to decades.

NERC's strategy *Next Generation Science for Planet Earth* articulated important outstanding questions the research community need to address on the water cycle. This hinges on improving our knowledge of a wide range of related and fundamental scientific issues from climate change to natural hazards and the valuation of ecosystem services.

A challenge is to provide predictions on time and space scales useful to governments and others to enable timely action to be taken.

In October, NERC will launch an £11 million research programme specifically focusing on the changing water cycle. The programme is one of the first selected following the submission of the theme action plans by NERC's seven new theme leaders on behalf of

the scientific community.

The research programme will be a flagship NERC contribution to the Living With Environmental Change programme (LWEC). It has four key high-level science goals:

- Developing an integrated, quantitative understanding of the changes taking place in the global water cycle.
- Improving predictions for the next few decades of regional precipitation, evapotranspiration, soil moisture, hydrological storage and fluxes.
- Understanding how local-to-regional scale hydrological and biogeochemical processes are responding and will respond to changing climate and land use.
- Understanding the consequences of the changing water cycle for water-related natural hazards, for example floods and droughts.

We aim to start three other programmes in 2008 on Ocean Acidification, Storm Risk Mitigation and Ecosystem Services for Poverty Alleviation.

The Ecosystem Services for Poverty Alleviation programme has already held a successful meeting in Cape Town over the summer. Scientists and policy-makers discussed the first reports from China, sub-Saharan Africa, South Asia, and the Amazon and Andes. The reports articulate

the research needed in these areas. The key challenges are population and economic growth and the associated large-scale land-use changes and climate change. Clearly, water resources are an important part of this.

The impact of such research will be to help improve the lives of people living on less than a dollar a day. To achieve this, the research will need to contribute to effective local, national and global policy. That is why NERC has developed the programme with the Department for International Development, the Economic and Social Research Council and the research community in each region.

Good collaborative research will be essential to its success. In this the NERC community is seeking to take its already good record of collaborations in the UK and internationally to a higher level – be it on the water cycle, be it with developing countries or be it on polar research in the Arctic and Antarctic.

**See PlanetEarthonline for a three-part podcast on global water resources produced by BBC journalist Richard Hollingham, plus three special reports on ocean acidification, global water resources and ecosystem services for poverty alleviation.**