

The main WCRP objectives are to determine the predictability of climate and to determine the effect of human activities on climate.

To achieve these objectives, WCRP adopts a multidisciplinary approach and organizes large-scale, observational and modelling projects, each of which focuses on aspects of climate too large and complex to be addressed one nation or individual scientific discipline.

Core Projects



The Global Energy and Water Cycle Experiment (GEWEX) is the scientific focus in the WCRP for studies of

atmospheric and thermodynamic processes that determine the global hydrological cycle and water budget and their involvement in global changes such as the increase in greenhouse gases. Examples of activities under GEWEX are:

- Large-Scale Biosphere Atmosphere Experiment in Amazonia (LBA)
- GEWEX Asian Monsoon Experiment (GAME)
- Baltic Sea Experiment (BALTEX)
- African Monsoon Multidisciplinary Analysis (AMMA)

<http://www.gewex.org>



The mission of the CLimate VARIability and Predictability (CLIVAR) project is to observe, stimulate and predict the Earth's climate system, with a focus on ocean-atmosphere interactions enabling better understanding of climate variability, predictability and change to the benefit of society and the environment. Examples of regional CLIVAR activities include:

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- African Monsoon Multidisciplinary Analysis (AMMA)
- Tropical Atlantic Climate Experiment (TACE)
- American Monsoon Systems (VAMOS)
- Mediterranean Climate Variability (Med-CLIVAR)

<http://www.clivar.org>



The Stratospheric Processes And their Role in Climate (SPARC) project addresses all aspects of stratospheric research for climate. It studies trends and chemical transformations in the stratosphere and its interaction with the troposphere. SPARC scientists made a key contribution to the WMO/UNEP 2006 Ozone Assessment. Examples of activities under SPARC include:

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- SPARC Assessment of Stratospheric Aerosol Properties
- SPARC Assessment of Polar Stratospheric Clouds (ongoing)

<http://www.atmos.physics.utoronto.ca/SPARC/>



The principal objective of the WCRP Climate and Cryosphere (CLIC) project is to assess and quantify the impacts of climatic variability and change on components of the cryosphere and their consequences for the climate system, and to determine the stability of the global cryosphere (including ice sheets, glaciers, sea/river/lake ice, snow, permafrost and seasonally frozen ground). CLIC also coordinates the participation of all WCRP projects in the International Polar Year (IPY). CLIC has recently completed a major report on cryospheric observations, the IGOS Theme on Cryosphere.

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<http://cliv.npolar.no/>



Photo: T. Hoek (UCAR)

WCRP- a dynamic programme leading climate science since 1980



Working Groups

Modelling

The development and evaluation of global climate models have long been important unifying components of all WCRP elements for understanding and predicting climate variations and providing reliable predictions of natural and anthropogenic climate change. These activities are centred around two main groups: the CAS/JSC Working Group on Numerical Experimentation (WGNE) and the Working Group on Coupled Modelling (WGCM). Modelling activities within the WCRP have been essential to the completion of the Fourth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC).

http://wcrp.wmo.int/AP_Modelling.html
<http://www.pcmdi.llnl.gov/projects/cmip/index.php>

Observation & Analysis

The WCRP is the lead agency for a number of projects in the Global Earth Observing System of Systems (GEOS). WCRP works closely with the ICSU/WMO/UNEP Global Climate Observing System (GCOS) to co-sponsor, with GCOS and the Global Ocean Observing System (GOOS), the Ocean Observation Panel for climate (OOPC) overseeing the implementation of an ocean observation system and, with GCOS only, co-sponsors the Atmospheric Observation Panel for Climate (AOPC).

http://wcrp.wmo.int/AP_WOAP.html
<http://ioc3.unesco.org/oopc/>
<http://www.wmo.ch/web/gcoss/aopc.htm>

Surface Fluxes and SOLAS

The WCRP co-sponsored Surface Ocean Lower Atmosphere Study (SOLAS) and the WCRP Working Group on Surface Fluxes (WGSF) both facilitate research on exchange processes at the air-sea interface and the transport and transformation of substances in atmospheric and oceanic boundary layers; air-sea flux of CO₂ and other short- and long-lived radiatively-active gases. These cross-cutting efforts aim at achieving quantitative understanding of the key biogeochemical-physical interactions and feedbacks between the ocean and atmosphere, and of how this coupled system affects and is affected by climate and environmental change.

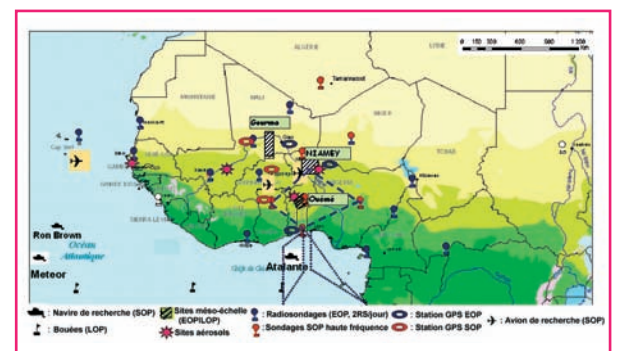
<http://www.uea.ac.uk/env/solas/>



Balloon launch during the AMMA campaign [T. Hoek, UCAR]

National Meteorological and Hydrological Services (NMHSs)

Through the WMO, WCRP responds to and serves the climate research needs of over 180 national meteorological and hydrological services.



AMMA field campaign