



An internationally recognised team

We have assembled teams of experts, from internationally renowned research groups across the University of Reading, to deliver an integrated approach to the scientific challenges of our changing climate:

School of Agriculture, Policy and Development

Department of Agriculture Crops and Climate, Centre for Agri-Environmental Research

School of Mathematics, Meteorology and Physics

Department of Meteorology Aerosols, Radiation, Clouds, Climate Dynamics, Ocean Dynamics, Urban Meteorology

Department of Physics Environmental Physics

Natural Environment Research

Council (NERC) Centres: National Centre for Atmospheric Science – Climate (NCAS-Climate)

Data Assimilation Research Centre (DARC)

Environmental Systems Science Centre (ESSC)

School of Human and Environmental Sciences

Department of Geography Landscape and Climate, Aquatic Environments Research Centre

Department of Soil Science Soils and Environmental Systems

Department of Archaeology Water, Life and Civilisation Project

Hadley Centre, Met Office

Hadley Centre Reading Unit Monitoring, attribution and prediction of climate change and its impacts



Sir Gilbert Thomas Walker – the eminent meteorologist

Sir Gilbert Thomas Walker, FRS (1868-1958) was an eminent British mathematician and meteorologist. He is best known for his ground-breaking description of the Southern Oscillation, a major phenomenon of global climate related to El Niño, and for pioneering seasonal forecasting.

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Who to contact

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Understanding our climate,
understanding our future

**A new institute at the
University of Reading**
the Walker Institute for
Climate System Research



"There is no bigger problem than climate change. The threat is quite simple, it's a threat to our civilization."

Sir David King

Our climate, our world

The challenge – our changing climate

The challenge for society – water resources, food security, biodiversity and health are all under threat from a changing climate. Natural variations in climate, which occur even without human interference, also have profound effects on society.

The challenge for the scientific community – to provide the best possible advice, to governments, businesses and individuals, about expected changes in climate and their impacts over the coming seasons, decades and beyond.

Understanding climate and how it affects us, cuts across traditional boundaries between physical, biological and social sciences. Consequently, there is an urgent need for a new approach to research that can exploit and integrate the expertise of many distinct fields.

The Walker Institute – integrating excellence

The University of Reading is uniquely placed to pioneer this integrated approach by bringing together its unrivalled breadth and depth of climate expertise within one organisation – the Walker Institute.

The University has world renowned expertise across a range of core disciplines that are central to climate system science – in particular meteorology, oceanography, agriculture, geography, hydrology and soil science. Our science is underpinned by world-class technical capabilities in climate modelling and the exploitation of earth observation data.

The Walker Institute will address important issues such as: how pollutants (e.g., emissions from aircraft) affect climate; the potential to forecast natural climate variations (such as El Niño and monsoons) over seasons and decades; how climate change might affect high impact weather events (such as storms); how to improve regional detail in forecasts of climate (e.g., localised extremes of rainfall); the influence of climate on agriculture and water resources; and the interactions between the land surface (e.g., vegetation and soils) and climate.

The Walker Institute – delivering benefits for society

The Walker Institute will deliver world-leading research and training at the frontiers of climate system science. In addition, we will provide a new source of independent and scientifically sound advice on climate and how it might change over the coming seasons, decades and centuries.

We will work together with the wider scientific community, especially the Met Office Hadley Centre and the National Centre for Atmospheric Science to respond to the demands and challenges that the world is facing due to increasing vulnerability to climate variability and change.

As well as innovative research, training the next generation of climate scientists will be a priority for the Walker Institute. We will capitalize on our integrated approach to offer a unique postgraduate education programme in climate system science.



Our vision is to be a world leader in integrated climate system research, in order to deliver better knowledge and understanding of future climate and its impacts for the benefit of society.



Our science – both fundamental and integrated

Imagine being able to forecast the climate of Europe out over the next 1 or 2 decades – the economic and social **benefits** are immense. The latest science is showing real potential for such forecasts because of the long memory that exists in the Atlantic Ocean. Scientists in the Walker Institute will be at the **forefront** of this research, we will investigate how the Atlantic Ocean influences our weather and climate and the best way to communicate such forecasts to users.

What will climate change mean for food security?

Despite technological advances, **agriculture** is still highly dependent on climate. In the Walker Institute, experts in agriculture and climate modelling will work together to understand how climate variability and change, including **extremes** in temperature and rainfall, will affect crop yields, and what adaptation options are available to **farmers**.

Will hurricanes and storms be more severe in the future?

Severe storms and hurricanes are some of the most **devastating and costly** consequences of climate. We will seek to improve predictions of such extreme events by advancing our knowledge of storm processes and developing more detailed climate models. We can make our predictions more effective by engaging with the user community – for example, authorities responsible for sea defences and the **insurance** sector.