

National capability

Research facilities and equipment: essential infrastructure for environmental science



The Environment Centre Wales.

Gordon Brown opens new environmental research centre

Prime Minister Gordon Brown officially opened the £7 million Environment Centre Wales, a collaboration between the Centre for Ecology & Hydrology and Bangor University, on 15 February 2008.

'You are drawing on the talents of people across this country and Europe. I believe this is a fine example of how cooperation in a major area of research

should work in the future,' said the Prime Minister.

The new building complies with the highest environmental assessment rating for its design and construction. It sports solar panels, ground-source heat pumps, rainwater recovery systems and a combined heat and power plant. The builders used locally sourced materials where possible and they landscaped the grounds by planting native flora.



East coast storm surge

Accurate advanced warning helped minimise damage and disruption on 9 November 2007 when the worst storm surge in 20 years struck the east coast of England.

Head of the National Tidal and Sea Level Facility (NTSFL) Kevin Horsburgh said, 'The long-range forecast on 6 November 2007 suggested that the type of storm that can cause severe surges was approaching. By lunchtime the next day our tide-surge forecasting system produced a prediction of the size of the surge. Each subsequent output from the models told the same story. When the surge finally struck our models were accurate to within ten per cent, a really excellent outcome.'

Researchers at NTSFL, based at NERC's Proudman Oceanographic Laboratory, use tide and surge models for coastal flood warnings. These models run four times a day on supercomputers at the Met Office, producing predictions up to two days in advance.

The Storm Tide Forecasting Service, a partnership between Proudman, the Environment Agency and the Met Office, gives advance storm surge warnings, reducing the risk to life and property.

Summer floods and long-term trends in the UK

The ferocity of the 2007 summer floods surprised everyone and left parts of north-east and southern England submerged.

During the crisis, scientists from the Centre for Ecology & Hydrology (CEH), the British Geological Survey (BGS) and NERC's Flood Risk from Extreme Events (FREE) programme provided essential information to the media and operational services such as the Environment Agency, Defra, the Met Office and others. BGS and FREE scientists scrambled research aircraft to survey the affected regions.

Following the floods, the National Hydrological Monitoring Programme (NHMP), operated jointly by CEH and BGS, published a comprehensive report, *The summer 2007 floods in England and Wales – a hydrological appraisal*. The report stated that the floods have 'no close modern parallel for the June-August period' and that summer 2007 was a 'very singular episode, which does not form part of any clearly

emerging pattern or long-term trend consistent with currently favoured climate change scenarios.'

Coincidentally, BGS launched a new service, Geological Indicators of Flooding, in June 2007, one day before the first torrential downpours hit Hull. The service will complement the Environment Agency's existing flood maps.

In separate research, FREE scientists published a report in 2008 showing that winter rain and snowfall has become more intense in the UK over the last 100 years. The team, led by Tim Osborn from the University of East Anglia, noted similar increases in heavy rainfall in spring and, to a lesser extent, in autumn.

CEH and BGS scientists contributed written and oral evidence to Sir Michael Pitt's independent review of the summer flooding for the government.

■ The summer 2007 floods in England and Wales – a hydrological appraisal. Available from the Centre for Ecology & Hydrology.

£113 million supercomputer launched

A new £113 million supercomputer, capable of 60 trillion calculations a second, officially opened in January 2008. The facility, known as HECToR (High-End Computing Terascale Resource), gives environmental researchers direct access to the most powerful computer in the UK – from a PC in their own office.

The Chancellor of the Exchequer Alistair Darling officially opened the cross-research council facility housed at Edinburgh University.

The HECToR team plan to keep pushing the computer's speed to the limits. While it starts out with a speed limit of 60 Teraflops, by October 2009 peak performance will hit 250 Teraflops.

■ www.nerc.ac.uk/research/sites/facilities/hpc



Tewkesbury, Gloucestershire, during the 2007 summer floods.