



News Release

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BUHRC study reveals large contribution of sea surface warming to increased Atlantic hurricane activity

New research improves understanding of how hurricane risk changes as the sea surface warms, allowing insurers and reinsurers to better manage their risks now and in the future

LONDON, Thursday 31 January 2008 --- Atlantic hurricane activity has increased significantly since 1995 but the underlying causes of this increase remain uncertain. It is widely thought that rising Atlantic sea surface temperatures have had a role but the size of this contribution has remained unclear. Scientists at the Benfield UCL Hazard Research Centre (BUHRC) have quantified this contribution for the first time.

In a study published today in the prestigious scientific journal *Nature*, Prof. Mark Saunders and Dr Adam Lea, who are based at the Department of Space and Climate Physics at University College London, reveal the current sensitivity of tropical Atlantic hurricane activity to sea surface warming is large, with a 0.5°C increase in sea surface temperature being associated with a ~40% increase in activity and frequency. They also found that local sea surface warming was responsible for about 40% of the increase in Atlantic hurricane activity (relative to the 1950-2000 average) between 1996 and 2005.

The research focuses on storms that form in the tropical regions of the North Atlantic which account for 85-90% of the hurricanes that make landfall in the United States.

Prof. Mark Saunders, Head of Weather & Climate Extremes at the Benfield UCL Hazard Research Centre and lead author of the study explained the methodology behind the research:

"We used a statistical model based on two environmental variables – local sea surface temperature and an atmospheric wind field - which replicated 75-80% of the variance in tropical Atlantic hurricane activity between 1965 and 2005. By removing the influence of the winds from the model we were able to assess the contribution of sea surface temperature and found that it has a large effect."

Commenting on the broader implications of the study, Prof. Saunders added;

"This research is important for helping to resolve the vexed issue of how climate change will impact hurricane frequency and activity. Our analysis does not attempt to identify whether greenhouse gas-induced warming contributed to the increase in water temperature. But it is important that climate models are able to reproduce the observed relationship between hurricane activity and sea surface temperature, so improving their reliability to model how hurricane activity will be affected by climate change."

Paul Budde, Executive Vice President and Head of the Product Development and Applied Research Team within Benfield ReMetrics in the US, commented:

"Tropical Cyclones are the most frequent cause of the most severe losses in the insurance industry. Research like that of Saunders and Lea to quantify the relationship of specific environmental factors on hurricane activity, when combined with climate change models, will help the industry better understand what they might have to cope with in the future."

This is the second research paper by Prof. Saunders and Dr Lea to be published by *Nature*. A breakthrough computer model developed by the two scientists that significantly improved the prediction of the strength of hurricanes making landfall on the United States was the front cover paper of *Nature* in April 2005 ([Saunders, M.A. and A.S. Lea, Seasonal prediction of hurricane activity reaching the coast of the United States, Nature, 434, 1005-1008, 2005](#)).

Early indications point to an active Atlantic hurricane season in 2008 with Atlantic basin and US landfalling tropical cyclone activity being 50% above the 1950-2007 norm ([TSR extended range forecast 10th December 2007](#)).

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Notes to Editors:

1. *Large contribution of sea surface warming to recent increase in Atlantic hurricane activity*, by Prof Mark A. Saunders and Dr Adam S. Lea, appears in the 31 January issue of the journal *Nature*.

2. This work is supported by the TSR (Tropical Storm Risk) venture sponsored by Benfield (an independent reinsurance intermediary), Royal & Sun Alliance (an insurance group), and Crawford & Company (a claims management solutions company).

About Benfield UCL Hazard Research Centre:

With sixty researchers and practitioners, Benfield UCL Hazard Research Centre is Europe's leading multidisciplinary academic hazard research centre. BUHRC comprises three groups: Geological Hazards, Meteorological Hazards & Seasonal Forecasting, and Disaster Studies & Management. The Centre is based at University College London, one of the world's leading universities and, along with Oxford and Cambridge, one of the UK's top three multi-faculty teaching and research institutions. BUHRC is sponsored by Benfield, the world's leading independent reinsurance and risk intermediary. www.benfieldhrc.org BUHRC is sponsored by Benfield, the world's leading independent reinsurance and risk intermediary. Benfield's customers include many of the world's major insurance and reinsurance companies as well as Government entities and global corporations. Benfield operates from more than 45 locations worldwide. www.benfieldgroup.com

About Tropical Storm Risk (TSR):

Founded in 2000, Tropical Storm Risk (TSR) offers a leading resource for forecasting the risk from tropical storms worldwide. The venture provides innovative forecast products to increase risk awareness and to help decision making within the (re)insurance industry, other business sectors, government and society. The TSR consortium is co-sponsored by Benfield, the world's leading independent reinsurance and risk intermediary, Royal & Sun Alliance, the global insurance group, and Crawford & Company, a global claims management solutions company. The TSR scientific grouping brings together climate physicists, meteorologists and statisticians at University College London and the Met Office.

Tropical Storm Risk has won two major insurance industry awards during the past three years. In 2006 TSR was awarded the prestigious Risk Management Award at the British Insurance Awards, and in 2004 won the British Insurance Award for London Market Innovation of the Year. www.tropicalstormrisk.com.