

AMERICAN METEOROLOGICAL SOCIETY – OCTOBER SCIENCE HIGHLIGHTS

Following are story ideas and tips about upcoming AMS meetings, papers in our peer-reviewed journals, and other happenings in the atmospheric and related sciences community.

Ecosystems Health in a Rapidly Changing Climate. That's the topic of the next AMS Environmental Science Seminar scheduled for Friday, October 10, 2008 from 10 a.m.- 12 p.m. in the Russell Senate Office Building, Room 253. See <http://www.ametsoc.org/atmospolicy/EnvironmentalScienceSeminarSeries.html> for details.

Climate Change and Rice Insurance? You know about climate change and sea level rise or increased weather extremes but what about rice insurance payouts? In a paper in the AMS September issue of *Journal of Applied Meteorology and Climatology*, several Japanese researchers constructed a framework for a preliminary assessment of climate change impact on the rice insurance payout in Japan. The framework consisted of various models ranging from climate projection downscaling, rice yield estimation, yield loss assessment, and rice insurance payout estimation. Results indicated that rice yield in the 2070s will decrease slightly in central and western Japan and increase in northern Japan. The increase in yield was derived from a significant reduction in yield loss caused by cool-summer damage; on the other hand, the decrease in yield was caused by the increase in yield loss caused by heat stress and the shortening of the growth period induced by the temperature rise. Reflecting such changes in yield, the rice insurance payout significantly decreased in northern Japan but only slightly increased in the areas of central and western Japan. In total, the 9-yr mean payout in Japan in the 2070s decreased to 120.2 billion yen; the value corresponded to 87% of the payout averaged over 9 yr in the 1990s (1991-99). For a copy of the paper contact Stephanie Kenitzer.

Size Matters – When it Comes to Hurricanes and Storm Surge. Over the last quarter-century, hurricane surge has been assumed to be primarily a function of maximum storm wind speed, as might be estimated from the Saffir-Simpson hurricane scale. However, Hurricane Katrina demonstrated that wind speed alone cannot reliably describe surge. Research published in the September issue of the AMS *Journal of Physical Oceanography* shows that storm size plays an important role in surge generation, particularly for very intense storms making landfall in mildly sloping regions. Prior to Hurricane Katrina, analysis of the historical hurricane record evidenced no clear correlation between surge and storm size, and consequently little attention was given to the role of size in surge generation. In contrast, the researchers found that, for a given intensity, surge varies by as much as 30% over a reasonable range of storm sizes. These findings demonstrate that storm size must be considered when estimating surge, particularly when predicting socioeconomic and flood risk. For a copy of the paper contact Stephanie Kenitzer.

In Hot Water. According to a paper in the 15 September issue of the *AMS Journal of Climate*, the North Atlantic hurricane seasons of 2005 and 2006 were dramatically different for the Gulf Coast and eastern seaboard of the United States. The 2005 hurricane season was one of the most destructive seasons in history, whereas there was limited impact in 2006. Hurricane activity had been forecast to be above normal in 2006, but it was not. One of the conspicuous differences in environmental conditions between these two years was sea surface temperature anomaly (SSTA) over a region of the western Atlantic and Caribbean (15°-30°N, 70°-40°W), which is important for hurricane formation and intensification. SSTA was more than 1.5 standard deviations warmer during the 2005 hurricane season, but it was much less in 2006 through most of its hurricane season. Why? The researchers found that there are two causes of SSTA difference over this region during July through September: the first is latent heat flux variability caused by wind speed effects, and the second is nonlinear ocean warming caused by submonthly atmospheric variability. For a copy of the paper, contact Stephanie Kenitzer.

El Niño and Cholera in Bangladesh. What do El Niño and cholera have in common? Recent studies arising from both statistical analysis and dynamical disease models indicate that there is a link between incidence of cholera, a paradigmatic waterborne bacterial disease endemic to Bangladesh, and the El Niño-Southern Oscillation (ENSO). However, a physical mechanism explaining this relationship has not yet been established. Researchers from the University of Barcelona and the Center for Ocean-Land-Atmosphere Studies investigated links between sea surface temperature in the central and eastern tropical Pacific and the regional climate of Bangladesh and found that enhanced precipitation tends to follow winter El Niño events in models and observations, providing a plausible physical mechanism by which ENSO could influence cholera in Bangladesh. The enhanced precipitation in the model arises from a modification of the summer monsoon circulation over India and Bangladesh. Westerly wind anomalies over land to the west of Bangladesh lead to increased convergence in the zonal wind field and hence increased moisture convergence and rainfall. This change in circulation results from the tropics-wide warming in the model following a winter El Niño event. These results suggest that improved forecasting of cholera incidence may be possible through the use of climate predictions. For a copy of the paper, contact Stephanie Kenitzer.

The Myth of the 1970s Global Cooling Scientific Consensus. A paper in the September issue of the *Bulletin of the American Meteorological Society* takes a closer look at the myth of the 1970s cooling scientific consensus. According to the paper, climate science as we know it today did not exist in the 1960s and 1970s. The integrated enterprise embodied in the Nobel Prize-winning work of the Intergovernmental Panel on Climate Change existed then as separate threads of research pursued by isolated groups of scientists. Atmospheric chemists and modelers grappled with the measurement of changes in carbon dioxide and atmospheric gases, and the changes in climate that might result. Meanwhile, geologists and paleoclimate researchers tried to understand when Earth slipped into and out of ice ages, and why. An enduring popular myth suggests that in the 1970s the climate science community was predicting "global cooling" and an "imminent" ice age, an observation frequently used by those who would undermine what

climate scientists say today about the prospect of global warming. A review of the literature suggests that, on the contrary, greenhouse warming even then dominated scientists' thinking as being one of the most important forces shaping Earth's climate on human time scales. More importantly than showing the falsehood of the myth, this review describes how scientists of the time built the foundation on which the cohesive enterprise of modern climate science now rests. See

<http://ams.allenpress.com/perlserv/?request=get-toc&issn=1520-0477&volume=89&issue=9>

Weather and Climate Priorities. The AMS has a new policy statement on weather and climate priorities that outlines specific steps that atmospheric science community, Congress and the executive branch can take to ensure our nation is ready to deal with the environmental challenges that will increasingly reshape many aspects of American life. The statement calls on these groups to work together to: 1) appoint key leaders and improve federal coordination; 2) create public, private, and academic partnerships that can develop better approaches and tools to plan, prepare for, and cope with local and regional weather and climate impacts; 3) advance the quality, timeliness, geographical specificity, and socio-economic impact content of products and services; 4) ensure that the scientific understanding needed for tomorrow's decisions is available; and 5) create and/or exercise existing mechanisms to monitor progress on goals 1-4. This and other AMS statements can be found online at

http://www.ametsoc.org/policy/2008nationalpriorities_amsstatement.html

Severe Storms Conference. The AMS 24th Conference on Severe Local Storms will be held 27-31 October 2008 at The Hilton DeSoto Hotel in Savannah, Georgia. Media are invited to attend. The program is online at

<http://www.ametsoc.org/MEET/fainst/200824sls.html>

AMS Annual Meeting Starts January 11. The AMS's 89th Annual Meeting gets underway, January 11, 2009 in Phoenix. The program is still being finalized but some preliminary details are online at <http://www.ametsoc.org/MEET/annual/index.html>

Check back often for updates. Media registration is now online at

<http://www.ametsoc.org/MEET/annual/newsroom.html>

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