

## Upcoming Events

### FES Seminar Lecture Series: Julie Newman “Pathways towards sustainability: What does it take to transform an organization?”

12:00-1:00, Wednesday, Mar 28. Burke Auditorium, Kroon Hall.



Dr. Julie Newman lectures and consults for universities both nationally and internationally. She also co-coordinates a sustainability working group of the International Alliance of Research Universities [IARU] as well as a Sustainability Working Group for the Council of Ivy Presidents. She has worked in the field of sustainable development and campus sustainability since 1993. In 1997, Julie assisted with the establishment of the longest-standing sustainability office in the country at the University of New Hampshire, Office of Sustainability Programs (OSP). In 2004 Julie co-founded the Northeast Campus Sustainability Consortium established to advance education and action for sustainable development on university campuses in the northeast and maritime region. Also in 2004, Julie was recruited to be the founding Director of the Office of Sustainability for Yale University.

### FES Seminar Lecture Series: Harry Greene “Pleistocene re-wilding: lions in a den of Daniels?”

12:00-1:00, Wednesday, Apr 4. Burke Auditorium, Kroon Hall.

More than five years ago, Dr. Harry Greene and his colleagues published papers in *Nature* and *American Naturalist* that proposed partially restoring the lost North American Pleistocene megafauna with conspecifics and closely related proxies for tortoises, cheetah, elephants, and other species. In this seminar he will summarize their initiative and the subsequent response from conservation biologists and the public, with emphasis on implications for conserving biodiversity on a rapidly changing earth.



## Journal Publications

### Navigating the Anthropocene: Improving Earth System Governance

**Authors:** F. Biermann, K. Abbott, S. Andresen, K. Bäckstrand, S. Bernstein, M. M. Betsill, H. Bulkeley, B. Cashore, J. Clapp, C. Folke, A. Gupta, J. Gupta, P. M. Haas, A. Jordan, N. Kanie, T. Klavánková-Oravská, L. Lebel, D. Liverman, J. Meadowcroft, R. B. Mitchell, P. Newell, S. Oberthür, L. Olsson, P. Pattberg, R. Sánchez-Rodríguez, H. Schroeder, A. Underdal, S. Camargo Vieira, C. Vogel, O. R. Young, A. Brock, R. Zondervan.

**Published:** 2012, *Science*, Vol. 335 no. 6074 pp. 1306-1307 DOI: 10.1126/science.1217255

**Abstract:** Science assessments indicate that human activities are moving several of Earth's sub-systems outside the range of natural variability typical for the previous 500,000 years (1, 2). Human societies must now change course and steer away from critical tipping points in the Earth system that might lead to rapid and irreversible change (3). This requires fundamental reorientation and restructuring of national and international institutions toward more effective Earth system governance and planetary stewardship.

## **Anthropogenic aerosols as a source of ancient dissolved organic matter in glaciers**

**Authors:** Aron Stubbins, Eran Hood, **Peter A. Raymond**, George R. Aiken, Rachel L. Sleighter, Peter J. Hernes, **David Butman**, Patrick G. Hatcher, Robert G. Striegl, Paul Schuster, Hussain A. N. Abdulla, Andrew W. Vermilyea, Durelle T. Scott and Robert G. M. Spencer

**Published:** 2012, Nature Geoscience 5, 198–201 DOI:10.1038/NNGEO1403

**Abstract:** Glacier-derived dissolved organic matter represents a quantitatively significant source of ancient, yet highly bioavailable carbon to downstream ecosystems<sup>1</sup>. This finding runs counter to logical perceptions of age–reactivity relationships, in which the least reactive material withstands degradation the longest and is therefore the oldest<sup>2</sup>. The remnants of ancient peatlands and forests overrun by glaciers have been invoked as the source of this organic matter<sup>1,3,4</sup>. Here, we examine the radiocarbon age and chemical composition of dissolved organic matter in snow, glacier surface water, ice and glacier outflow samples from Alaska to determine the origin of the organic matter. Low levels of compounds derived from vascular plants indicate that the organic matter does not originate from forests or peatlands. Instead, we show that the organic matter on the surface of the glaciers is radiocarbon depleted, consistent with an anthropogenic aerosol source. Fluorescence spectrophotometry measurements reveal the presence of protein-like compounds of microbial or aerosol origin. In addition, ultrahigh-resolution mass spectrometry measurements document the presence of combustion products found in anthropogenic aerosols. Based on the presence of these compounds, we suggest that aerosols derived from fossil fuel burning are a source of pre-aged organic matter to glacier surfaces. Furthermore, we show that the molecular signature of the organic matter is conserved in snow, glacier water and outflow, suggesting that the anthropogenic carbon is exported relatively unchanged in glacier outflows.

## **Can legality verification rescue global forest governance?: Analyzing the potential of public and private policy intersection to ameliorate forest challenges in Southeast Asia**

**Authors:** Benjamin Cashore, **Michael W. Stone**

**Published:** 2012, Forest Policy and Economics, Vol 18, 13–22 (In Press)

**Abstract:** One of the most important and pressing questions of our times is to understand better what types of governance arrangements at the local, domestic and international levels, as well as innovative non-state market driven mechanisms that might best address fundamentally important but seemingly intractable environmental, economic and social challenges. This paper sheds light on these questions by assessing the emergence of legality verification as a means to address global forest degradation. Legality verification is puzzling because it presents a relatively modest solution compared to previous efforts to build a legally binding global forest convention, global certification systems or domestic focused “good forest governance” initiatives, and yet it is garnering the interest of wide ranging and diverse global coalitions within developed and developing countries.

Does the relatively limited scope of legality verification represent a “race to the bottom” in global forest regulation that many scholars assert is inevitable with the rise of economic globalization? Or, does legality verification trigger the beginning of a process that may provide institutional solutions to global forest governance in ways that previous efforts have yet to accomplish? The purpose of this paper is to offer a theoretical framework with which to guide future research on these questions. To accomplish this task we distinguish conceptually legality verification from global certification and domestic good forest governance initiatives. We then review current support in developed and developing countries, focusing our lens on coalitions supporting legality verification in the United States, European Union, and Southeast Asia. Third, inductively from this review, and deductively, we develop propositions to guide further conceptual and empirical researches focusing on the institutionalization “logics” of legality verification to become an authoritative arena of global forest governance, as well as its potential to reinforce, rather than detract from, global certification and good forest governance initiatives.

## Re-Thinking Environmental 'Effectiveness': Complex Global Governance and Influence on Domestic Policies

**Authors:** Steven Bernstein, Benjamin Cashore

**Published:** 2012, *International Affairs*, Vol 88, Issue 3, 585–604 DOI: 10.1111/j.1468-2346.2012.01090.x

**Abstract:** Standard works on international environmental governance assume single-issue regimes with binding obligations designed to govern the behaviour of states. Yet many of the most pressing global environmental problems, including climate change, forest degradation and biodiversity loss, are governed by an array of mechanisms—legal, non-legal, governmental and non-governmental—in complex arrangements. Examining the combined effects of these international and transnational efforts on domestic or firm policies and practices—the usual targets of such efforts—requires expanding a focus on regime 'compliance' and 'effectiveness' to 'influence' factors from beyond state borders. To facilitate such a move, the authors develop a framework that distinguishes four distinct pathways through which actors and institutions influence domestic policies: international rules; international norms and discourse; creation of, or interventions in, markets; and direct access to domestic policy processes. Propositions are then developed on the conditions under which, and processes through which, actors and institutions affect domestic and firm policies and practices along each pathway. The framework is applied to the case of forest governance, a prototypical example of complex global environmental governance.

## Environment and Development: the Prospective for Early- and Late-Developed Countries

**Authors:** Wei Cheng, Yajie Song, Junting Liu, Haibao Yu, Yuanyuan Xing, Graeme Berlyn

**Accepted:** April 2012, *Journal of Environmental Economics*, In Press.

**Abstract:** In this paper, the mainstreaming of ecological and environmental concepts between "early-developed" (or developed) and "more recently developed" (or "late-developed") countries are primarily considered, while the "developing" countries are also recognized. We propose that the countries represented by these two categories interpret and hence treat ecology, the environment and development differently. For example, early-developed countries favor the concept of specific area, or disciplinary ecology, such as wilderness, recreation, watershed, products, parks, etc. In contrast, late-developed countries favor the concept of development program, or interdisciplinary ecology. The formation and evolution of these two environmental concepts is founded on different economic, social, historical, and contemporary conditions. Hence, late-developed countries should implement measures to promote the development of a sustainable economy, society, and eco-environment in view of the parameters that "compound" these issues in late-developed countries to complete rapid industrialization and modernization.

## Research Spotlight

### F&ES Professor Michelle Bell Receives Monaco Award



**Dr. Bell, professor of environmental health at the Yale University's School of Forestry & Environmental Studies (F&ES), has received the inaugural Prince Albert II de Monaco/Institut Pasteur Award for outstanding contributions to her field. She was honored by the Institut Pasteur and the Prince Albert II of Monaco Foundation at a scientific symposium on environmental changes and their impact on human health on March 23 in Monaco.**

Prince Albert II of Monaco and the Institut Pasteur, a nonprofit research center in Paris dedicated to the prevention and treatment of disease, established the award to honor scientists for their study of how environmental conditions affect public health.

Dr. Bell joined Yale in 2004 and was promoted to professor in 2011. Her research investigates how air pollution and extreme weather contribute to mortality and affect health outcomes such as pregnancy, and how climate change could impact human health. Her work integrates epidemiology, atmospheric sciences, environmental engineering and biostatistics, and is global, with studies in the United States, Europe, Asia and South America.

Dr. Bell has conducted several landmark studies of environmental health. In 2004 she led the largest study to date of the health impacts of tropospheric ozone, establishing a clear link between ozone and premature mortality in 95 large U.S. communities covering about 40 percent of the U.S. population over a 14-year period. The study was published in the Journal of the American Medical Association.

In one of the earliest and largest studies on climate change and air pollution, she estimated changes in ozone levels and the subsequent health response under climate change for 50 U.S. cities by linking air quality, meteorological and climate change models. The Environmental Protection Agency, World Health Organization and regional environmental agencies have used her results in establishing health-based policies for air pollution, including particulate matter, ozone and carbon monoxide.

**"I strive for research that is relevant to the medical community and policy makers and that helps address real-world environmental problems," said Bell.**

**A reception to honor Michelle Bell will be held Wednesday, April 4th, at 4 pm on the 3rd floor of Kroon Hall. All are invited! Light refreshments will be served.**