

## The Fellows Forum

Each year, under the direction of The Graduate School, members of the Fellows Society organize and participate in an interdisciplinary symposium designed to engage students from a broad range of academic disciplines. Proposals for the 2012 Fellows Forum are due November 1, 2011.



### Organizers:

Rose Njoroge, Wilson-Auzenne Fellow  
Ph. D. Candidate in Educational Psychology & Learning Systems

Joanna Goplen, College Teaching Fellow  
Ph. D. Candidate in Psychology

Jennifer Feltman, Coordinator, The Graduate School  
Ph.D. Candidate in Art History

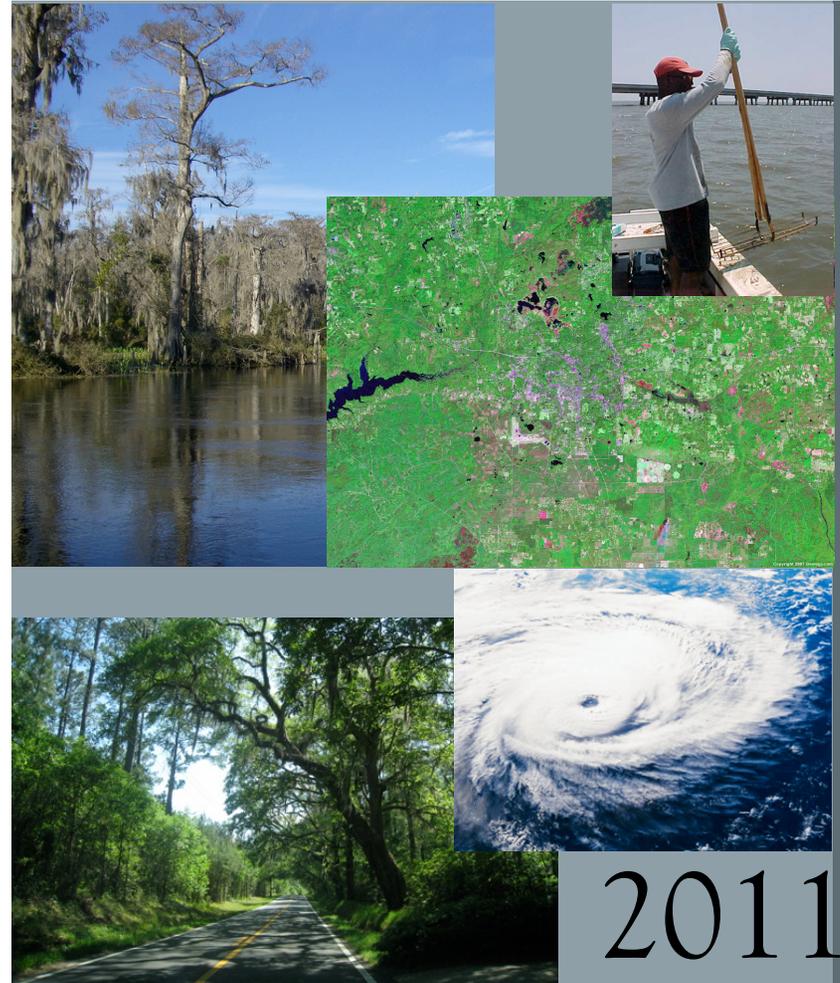
### Thanks to our sponsors:



THE  
GRADUATE  
SCHOOL

408 Westcott Building  
P.O. Box 3061410  
Tallahassee, FL 32306-1410

[gradschool.fsu.edu](http://gradschool.fsu.edu)



# 2011

## Fellows Forum

Global Climate Change and North Florida:  
Facts, Perceptions, and Planning

March 18, 2011  
The FSU Center for Global Engagement

# Agenda

## Coffee and Pastries

9:15 - 9:45 AM

## Welcome from Dean Marcus

9:45 - 10:00 AM

## Panel 1

### Facts: The Science of Climate Change

10:00 - 10:45 AM

**Dr. Mark Bourassa**, Assoc. Professor; Department of Earth, Ocean & Atmospheric Science; Center for Ocean-Atmospheric Prediction Studies

**Dr. Eric Barron**, President, The Florida State University

**David F. Zierden**, State Climatologist of Florida; Florida Climate Institute; Center for Ocean-Atmospheric Prediction Studies

## Break

10:45 - 10:55 AM

## Panel 2

### Perceptions and Planning: The Human Element

10:55 - 11:40 AM

**Rose Njoroge**, Ph.D. Candidate,

Department of Educational Psychology & Learning Systems

**Joanna Goplen**, Ph.D. Candidate, Department of Psychology

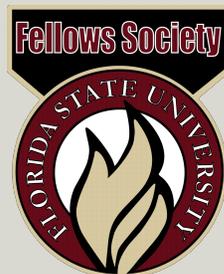
**Dr. Robert Deyle**, Professor, Department of Urban & Regional Planning

## Q & A with Panelists

11:40 - 12:30 PM

## Lunch

12:30 - 1:30 PM



## Notes:

### The Fellows Society

*Bringing together University-wide fellowship holders for the purpose of interdisciplinary learning.*



**Panel 1**  
**Facts: The Science of Climate Change**

***Scientific Basis of Climate Change: Role of Observational and Historical Records***

**Dr. Mark Bourassa**

Associate Professor  
Florida Climate Institute  
Center for Ocean-Atmospheric Prediction Studies

A huge amount of observations are available to support studies of climate change. Most people think of climate studies as relying solely on computer models of climate; however, change can be seen in these observations. Furthermore, these observations can be used to understand physical processes that relate to climate, for example characteristics of atmospheric and oceanic circulation, which are related to the transport of heat and moisture, and hence related to temperature and precipitation. This observation-based knowledge of these processes, combined with knowledge of how related physics and chemistry works, can be used to evaluate and improve climate models. There are also observations of the concentration of CO<sub>2</sub> in the air and oceans. This kind of information is crucial for testing how well models represent our current climate. Interpretation of historical observations is fraught with complications due to changing observing techniques, changes in location of the observations, and changes in the land use around the observing site. In recent decades, satellite observations have been used to more carefully measure conditions over much more of the Earth system. Great care is being taken to intercalibrate these observations, making them consistent from satellite to satellite for the times when both satellites are in orbit. This care to avoid spurious change in the climate record, combined with the excellent coverage and vast quantity of observations from satellites, allows scientists to more accurately determine how parts of the Earth are changing. Different types of observations can be combined to tell us why these changes are occurring. For example, observations tell us that the height of water on our coastlines is, on average, slowly rising. This is a concern for coastal communities because it means sea water will cause damage further inland. One of the more impressive contributions of our observing system and understanding is that we can test if an observed change in one part of the Earth system is consistent with changes in other parts of the Earth system. The connections between sea level rise, global warming and melting of ice in Greenland and Antarctica are also discussed.

***Beyond Climate Change***

**Dr. Eric Barron**  
President  
The Florida State University

The ability to “anticipate” the future is what makes information from the Earth sciences valuable to society – whether it is the prediction of severe weather or the future availability of water resources in response to climate change. The potential is enormous, yet many appear ready to move quickly toward decisions about specific mitigation and adaptation strategies assuming that the science is settled. Five important weaknesses must be addressed first: (1) the formation of a true “climate services” function and capability, (2) the deliberate investment in expanding the family of forecasting elements to incorporate a broader array of environmental factors and impacts, (3) the investment in the sciences that connect climate to society, (4) a deliberate focus on the problems associated with scale, in particular the difference between the scale of predictive models and the scale associated with societal decisions, and (5) the evolution from climate services and model predictions to the equivalent of “environmental intelligence centers.” Our objective should be to bring the discipline of forecasting to a broader array of environmental challenges to address societal sectors such as water, human health, and agriculture. The potential exists for a revolution in forecasting, that entrains a much broader set of societal needs and solutions. However, without this effort, our ability to make good decisions in response to climate change will be limited.

## ***Climate Change Variations and Trends in Florida***

**David F. Zierden**  
State Climatologist for Florida  
Florida Climate Center  
Florida Climate Institute  
Center for Ocean-Atmospheric Prediction Studies

The global average temperature has risen approximately 0.8 degrees Celsius over the past 150 years according to the Intergovernmental Panel on Climate Change (IPCC) AR4 report issued in 2007. One of the major conclusions is that most of this increase is very likely due to the anthropogenic increase in greenhouse gases from the burning of fossil fuels. This warming is not uniform geographically, however, and some regions of the world actually show little change or even modest cooling over this time period, including the Southeast United States. Temperature and precipitation trends in Florida over the last century are examined using historical surface weather observations. Tremendous year to year variability, strongly associated with the El Niño/Southern Oscillation in some seasons, is identified in these historical records, along with multi-decadal variations in temperature. Other influences on the local and regional climate are explored including urbanization and other land use changes. Historic changes in other threats associated with climate change are examined, including historic sea levels over the last century and hurricane intensity and frequency. Societal impacts of these climate variations and trends are also addressed.

## **Panel 2 Perceptions and Planning: The Human Element**

### ***What Influences Public Acceptance (or Rejection) of Scientific Evidence on Global Climate Change: Focus on North Florida***

**Rose Njoroge**  
Ph.D. Candidate  
Department of Educational Psychology & Learning Systems

Based on the scientific evidence contained in a series of synthesis reports by the Intergovernmental Panel on Climate Change or the IPCC (2001, 2007) and the International Arctic Science Committee (2004), scientists have come to a consensus that: (a) a rapid human-induced global warming has overtaken the natural climate fluctuation (climate change that would happen without interference from human activities) and, (b) the human-induced global warming is destabilizing the climate, posing a serious threat to all life on the planet (IPCC, 2001, 2007). The scientific consensus is endorsed by most scientific experts who are currently involved in research on climate change, and all the major scientific organizations in the world. In spite of the scientific consensus, the latest national public opinion surveys conducted among representative samples of the United States general public indicate the American public is polarized in its views on the scientific consensus - mainly along partisanship and ideological lines. The emerging academic research on why the US public accepts (or rejects) the scientific consensus on global warming is due to other additional factors (e.g., cultural worldviews and views on the free market economic system). This presentation is a summary of findings of the factor(s) that best differentiate between the segments of the public that accepts from those that reject the scientific consensus based on survey data from a sample of residents of North Florida.

## ***The Psychology of Climate Change: Human Behavior and Barriers to Mitigation***

**Joanna Goplen**  
Ph.D. Candidate  
Department of Psychology

Climate experts overwhelmingly agree that recent warming trends in the earth's atmosphere are largely the result of human behavior. In order to prevent the potentially devastating effects of continued warming, some scientists are researching technological remedies to the problem such as alternative energy or carbon sequestration. In this talk, I will argue that the problem of climate change is also in need of contributions from social scientists because changes in human behavior are also important to the prevention of global warming. I will review recent research in the field of psychology that examines how people understand the concept of climate change, what motivates us to use more or less energy, and how our psychological processes can create barriers to climate change mitigation. The concept of climate change is incredibly complex, abstract, and temporally distant — making it rather unavailable to us psychologically and therefore leaving people disinterested and unmotivated. Further, overconsumption functions as a status symbol in many societies. When people consume to communicate status information about themselves to others, consumption is often prioritized over the psychologically unavailable threat of climate change. Another important contributor to global warming is dramatic increases in the world's human population. Decisions to procreate or implement family planning programs in certain communities are largely influenced by social and psychological determinants. Social scientists are just beginning to explore these and other aspects of human behavior that contribute to global warming. Ultimately, global warming is a highly politicized and controversial issue that needs to be attacked on all fronts. Social science research has the potential to substantially enrich mitigation efforts worldwide.

## ***Planning for and Mitigating Climate Change in North Florida***

**Dr. Robert Deyle**  
Professor  
Department of Urban and Regional Planning

Planning for and mitigating the effects of climate change are important initiatives for communities in North Florida as well as everywhere else on the planet. While much uncertainty remains about exactly how and when climate will change at the scale of individual communities, the risks are sufficiently high to warrant careful assessment of alternatives for mitigating the impacts by reducing the human-generated greenhouse gases (GHGs) in the atmosphere. Current rates of global GHG production indicate that worst-case emission projection scenarios are in play. Local governments can both reduce GHG emissions from government operations and enact policies to reduce emissions by their constituents. But mitigation will not be enough. The inertia of climate changes already underway requires that we also plan for adapting to impacts that cannot be wholly averted. Coastal communities in North Florida will experience higher rates of sea level rise and associated impacts on natural resources and the built community, and there is evidence that the intensity of tropical cyclones may be increasing as sea surface temperatures warm. While possible changes in temperature and hydrologic regimes remain very uncertain, communities can be proactive by increasing their resilience to the public health, economic, and ecological impacts of such changes. In this presentation I will offer an overview of some of the major mitigation and adaptation options that local governments in North Florida ought to consider when they accept the responsibility for protecting their citizens, as well as other humans and living organisms on the planet, from the potentially very serious impacts of climate change.