#### NAU GLOBAL Fall 2008 3

below: The Sierra Madre Oriental in the Mexican State of Coahuila

## Interaction of Fire, Climate, and Forest Structure in Northern Mexico

By: Prof. Peter Fulé, Larissa Yocom, and Citlali Cortés Montaño School of Forestry and Ecological Restoration Institute



What determines when forest fires will occur?

Why do some forests burn more than others? How do El Niño and other climatic factors influence forest fires? Do widespread climate events or local characteristics, such as fuel, topography and ignition events have the greatest effect on fire occurrence? These are questions we are trying to answer in this study focused on fire, climate and forest structure in the mountains of northern Mexico. The findings that emerge from this study will have implications for regions in the United States and around the world that struggle with the challenge of forest fires. The project, funded by the National Science Foundation, is developing a new network of long fire and climate chronologies together with measurements of fuel dynamics in northern Mexico.

The two major mountain ranges of northern Mexico, the Sierra Madre Occidental in the west and the Sierra Madre Oriental in the east, conserve extraordinary forests of great biological diversity. In 2007 and 2008, we sampled study sites across both ranges for fire-scarred trees, measurements of forest structure and species composition, and wildland fuels. Our research team from Northern Arizona University is collaborating with several Mexican and American partners, including Dr. José Villanueva-Díaz from Mexico's national forest research agency; Dr. Eladio Cornejo from the Universidad Narro in Coahuila, Mexico; Dr. Don Falk from the University of Arizona; and Dr. Peter Brown of Rocky Mountain Tree-Ring Research in Colorado.

Climate patterns that we are assessing include precipitation, drought, El Niño-Southern Oscillation (ENSO), Pacific Decadal Oscillation (PDO), and Atlantic Multi-decadal Oscillation (AMO). Using tree-ring analyses of past fires, we are examining the impact of climate on fire occurrence and synchrony over large regions. We investigate forest and fuel structures to see how past fires affected them and to predict how future fires might behave, especially under changing climate conditions.

The information being developed in this project has many applications. Landowners and natural resource managers in northern Mexico can use the fire, climate and forest data to help develop management plans that are better suited to sustainable fire management as climate varies. Conservation of Mexican forests also has direct benefits for the U.S., because many migratory species cross the border during their life cycles and because both nations share important watersheds and airsheds. Another key application of the research is to improve understanding of large-scale climate and fire disturbance patterns of North America by adding sites in previously unstudied forests, such as in the northeastern region of Mexico, where El Niño/La Niña reverse their wet and dry effects. Improved knowledge about fire and climate interactions and trends over time will permit better forecasting of the environmental effects of short-term and long-term climate change.

Our international partnership is supporting two doctoral students at NAU, one from the U.S. and one from Mexico. In addition, we are supporting two NAU undergraduates carrying out thesis projects to reconstruct a climate chronology from tree rings and to investigate the sensitivity of co-occurring pine species to climate over an elevational gradient. In Mexico, the project assisted a Mexican student to complete an M.S. study on forest fire history as well as two undergraduates working on thesis projects related to tree regeneration and management history. The international scope

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### The Intersection of Politics and Global Education

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United States. In fact, 2004–05 saw a decrease in the growth of international students in the U.S. for the first time in about 30 years. A number of graduate programs experienced significant declines in the enrollment of international students. Thankfully, changes have been made that allow a much smoother flow of international students to the U.S., a phenomenon that for all of its other virtues has farreaching implications for the global scramble for intellectual capital.

It is a reasonable assumption that political leaders who have had significant international experiences and possibly international academic experiences may be more inclined to support policies that advance global education. Most of John McCain's international experience was acquired as a member of the armed forces, including his imprisonment in Vietnam for five years and as a child of parents in the armed forces stationed around the world. Some of Barack Obama's formative years were spent in Indonesia with his American mother and Indonesian stepfather. Of course, his father's Kenyan ancestry has led to his travel to and interest in that part of the world as well. Although neither candidate has made specific commitments to global education, they both understand by virtue of their professional and personal experiences, and by our stunning failures in Iraq, that America's standing and effectiveness on the global stage will require American citizens who can negotiate an increasingly interdependent and interconnected world. The chaos recently witnessed in the global financial markets that had its genesis in the U.S. mortgage industry should make this need even more urgent. The Bush administration's

rhetorical support for the Lincoln Commission's recommendation that one million American students per year for the next 10 years be funded to engage in study abroad experiences is noteworthy and demands our fervent advocacy for congressional approval and funding. Regardless of who wins in November, however, we all have an obligation as educators to first recognize the pivotal role that politics plays in education and advocate for policies that will advance the goal of preparing students to be globally competent

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of the work has been broadened because two of the students working in Mexico are from Paraguay and a Spanish scientist joined our field campaign in 2008. The diversity of ecosystems, cultures and research interchanges has contributed to a valuable experience for both the students and scientists involved.

Pete Fule is Associate Professor in the School of Forestry. Larissa Yocom and Citlali Cortes Montano are doctoral students in the School of Forestry.

#### African Image, Mass Media and Popular Literature: Lessons for a Curious Community

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success in the West, yet the resolution of the conflicts in Sierra Leone, Rwanda and Southern Sudan was a collective community effort, with enormous grassroots input. Hardly are these efforts fodder for the Western media, popular literature or the campus speaking circuit.

While these events are invariably informative, even riveting, and broaden the NAU community's exposure to global perspectives, it is important that they inspire a willingness to deconstruct stereotypes about various regions and ethnic groups in Africa. In effect, they provide an occasion to move beyond the messages that can lead to feeling overwhelmed, discouraged or angry and see instances of positive engagement and hopeful activism by people taking control of their lives in the face of impossible odds. Indeed, Ismael Beah's presentation succeeded in conveying exactly these sentiments. NAU students need these perspectives now more than ever, as they prepare for life in an increasingly interconnected and interdependent world and as some elect to pursue service learning experiences, be they in Africa or other parts of the developing world, including areas in America where conditions mimic quite closely these very circumstances. Further, while fiscal constraints may preclude the possibility of an African Studies Department, a robust African Studies minor within the Ethnic Studies Department could be the linchpin for providing the critical tools necessary for the deconstruction of stereotypes about Africa.

Ishmael Munene is an Assistant Professor in the Department of Educational Leadership.

#### Summer Study as a Window into Chinese History and Culture

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such international settings and in acquiring greater sensitivity to the needs of international students on American campuses.

The program collaborates with partner universities in China that serve as hosts for one week at a time. In addition to room and board, host universities provide academic instruction. Students from these institutions who intend to enroll as 1+2+1 students at NAU serve as guides to