Falconer Natural History
2012 Spring Lecture Series

Sponsored by the
Atmospheric Sciences Research Center at the University at Albany

You are cordially invited to attend a series of free public lectures to be held TUESDAY EVENINGS at 8:00 p.m. in the John J. Sullivan Auditorium, CESTM Building, University at Albany, 251 Fuller Road, Albany, New York

April 3 Prof. Andrew Sturman, Canterbury University, Christchurch New Zealand., **"Saving the noble grape - helping the world's vineyard areas adapt to changing climate"**. Grapes grown for wine production are one of the most climate-sensitive horticultural crops, as the flavor of the resulting wine is strongly influenced by weather experienced during the growing season. The speaker will describe a international research program that aims to help vineyard regions adapt to variations in climate using a new multi-scale approach.

April 10 Prof. John Garver, Union College, Schenectady NY. **"A historical perspective of flooding in the Mohawk watershed related to Hurricane Irene and Tropical Storm Lee"** Recent severe and catastrophic flooding driven by Hurricane Irene and Tropical Storm Lee altered the political and economic landscape and caused millions in property damage. Primary challenges resulting from this flooding include issues with the Gilboa Dam, the Erie Canal locks, and rebuilding on the floodplain. We need to evaluate appropriate mitigation strategies so that we can better manage future floods. An important question in the entire watershed is how changes in recent precipitation patterns – especially in the Catskills – affect the overall response to rebuilding, reconstruction, and mitigation. The long record of flooding in the Mohawk watershed shows that flood levels during Hurricane Irene were high, but discharge or stage levels have been exceeded a number of times in the lower Mohawk. However, Schoharie Creek flooding during the Irene event was well above the last previous high water (January 1996). An extraordinary amount of damage occurred in the lower Mohawk, and some of this damage resulted in Schoharie-derived debris and complications related to flow in the Erie Canal Lock system. This talk reviews these flood events and places them in historical context.

April 17 Dr. Fangqun Yu, Atmospheric Sciences Research Center, University at Albany, **"Do cosmic rays play a role in Earth's climate system?"** The Earth is constantly bombarded by cosmic rays, energetic charged subatomic particles originating from outer space. While the total energy deposited on the Earth due to cosmic rays flux is negligible, recent studies indicate that cosmic rays may play an important role in the Earth's climate system through a series of physical processes involving ionization, ion nucleation, and cloud formation. Observations and theoretical advances describing these processes will be presented. The challenge to understand how variations in cosmic ray flux contribute to changes in global and regional climate will also be discussed.

April 24 Dr. Phillip Fearnside, Instituto Nacional de Pesquisas da Amazônia, Manaus, Brazil, "**Amazonian hydroelectric dams as sources of greenhouse gases**". Amazonian hydroelectric dams emit greenhouse gases, especially methane (CH_4). These emissions are often underestimated and can exceed those for fossil fuel combustion for decades. Emissions occur from both the reservoir surface and from the water that passes through the turbines and spillways. All emissions must be counted and mitigated if we are to control global warming.

May 1 Dr. Susan Trumbore, Max-Planck Institute for Biogeochemistry, Leipzig Germany, **"Managing the Earth's Carbon Cycle".** The amount of carbon dioxide in the atmosphere is increasing because we are burning fossil fuels and forests faster than the processes removing carbon from the atmosphere. Climate scientists overwhelmingly agree that rising levels of carbon dioxide will heat the atmosphere, with consequences for ecosystems and societies. A number of initiatives to enhance the natural processes that store carbon in forests, soils and even oceans are currently discussed as ways to reduce the rate of atmospheric CO_2 increase. This talk will explore the limits of such actions and the complications of trying to manage land for carbon.

May 8 Prof. Evgeni Fedorovich, School of Meteorology, University of Oklahoma, **"Understanding thermally driven fluid flows through laboratory and computer experiments**." In recent decades fluid dynamics has been transformed by the increasing power of numerical simulation tools. In this presentation, the numerical results are compared and contrasted with tradition of laboratory experiments that have been used to investigate similar problems.

Tax-deductible donations to sustain the Natural History Lectures may be made out to the "University at Albany Foundation" and mailed to the University at Albany Foundation UAB-201, 1400 Washington Avenue, Albany, NY 12222. Address donations "Attention: Ray Falconer Fund"