

Physics Seminar

SFHI Faculty Candidate

Physics, Civil & Environmental Engineering

Michigan Technological University

Wednesday, April 15, 2009

3:00 pm

Room G005 Rekhi Hall

Numerical Modeling of Earth's Atmosphere: The Roles of Aerosols and Clouds in the Climate System

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Abstract: Aerosols, clouds, and associated physiochemical processes affect the radiative balance and hydrological cycle of the Earth-atmosphere system. Our capability in predicting future climate change has to rely on our knowledge about the climate responses and feedbacks associated with aerosols and clouds. Numerical models have long been developed and used in studying the roles of aerosols, clouds, and aerosol-cloud interaction in the climate system. Such models need to represent processes differing up to a terra scale through numerically solving hundreds of partial and ordinary differential equations in a timely integration, and are among the most computational demanding programs in the field of science. Two of these models, one in a global scale developed based on the Community Climate System Model (CCSM) of the National Center for Atmospheric Research (NCAR), and one in a regional scale with capability of resolving individual convection will be described. Interesting findings achieved by using these two models will be discussed.

Biography: I received my PhD in Atmospheric Science at the State University of New York located in Albany in May 1992. From August 1992 - March 1994 I did Postdoctoral research at the Scripps Institution of Oceanography, University of California in San Diego. My current research includes: anthropogenic and natural climate changes; physics and chemistry of atmospheric aerosols and clouds; aerosols, clouds, and aerosol-cloud interaction in tropospheric chemistry and climate system; tropospheric chemistry and chemistry-climate interactions; numerical modeling of atmospheric processes and the Earth system.