

# **ELECTRICAL & COMPUTER ENGINEERING SEMINAR**

## **“Remote Sensing of Water Vapor, Clouds and Precipitation Using Radar and Radiometer Techniques”**

by

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Boulder, Colorado

Monday, April 9, 2007 4:10 p.m.  
Engineering B101

### **Abstract & Biography**

The seminar will present an overview of radar and radiometer remote sensing of precipitation, cloud and water vapor. Radar and radiometer techniques rely on electromagnetic characteristics, namely scattering and absorption properties of atmospheric medium. Radars and radiometers are designed to operate at various frequencies for optimal remote sensing of quantities of primary interest. Microwave frequencies of less than 30 GHz are suitable for sensing particles sizes greater than 1 mm. Particles less than 1 mm can be detected using instruments that operate at frequencies greater than 30 GHz.

One of the critical weather research areas is quantitative precipitation estimation. Accurate estimation of precipitation requires advanced remote sensing instrumentations and retrieval methods. Radar and radiometer observations of precipitation, clouds, and water vapor will be discussed.

Dr. Jothiram Vivekanandan (Vivek) holds a Senior Scientist appointment in both the Earth Observing Laboratory and Research Applications Laboratory. Vivek manages the Remote Sensing Facility at the National Center for Atmospheric Research (NCAR) in Boulder, Colorado. He received his Ph.D. from Colorado State University's Department of Electrical Engineering in 1986, his M. Tech. in Microwave Radar Engineering from the Indian Institute of Technology, and his B.E. from Madurai-Kamaraj University's department of Electronics and Communications Engineering in 1979.

He emphasized the interpretation of remote sensing instruments' responses to clouds and precipitation using mathematical models and actual field observations. He led the development of the dual-wavelength system by adding a millimeter wave radar to NCAR's S-band polarization radar (S-Pol), and he is currently involved in building an airborne cloud radar. Vivek is particularly well known for his effort on an automated technique to classify radar echoes into precipitation type utilizing polarimetric radar variables, and also a cloud microphysical retrieval technique using radar and radiometer/satellite observations. He is an Associate Editor for *Radio Science*.

Please contact Prof. Steven Reising, [Steven.Reising@ColoState.edu](mailto:Steven.Reising@ColoState.edu), with any questions.