



Physical Research Laboratory, Ahmedabad

COLLOQUIUM - 12-36

Speaker: Dr. S. Ramachandran

Space & Atmospheric Sciences Division, Physical Research Laboratory, Ahmedabad.

Title: Aerosols, Clouds and Rainfall

Abstract

Atmospheric aerosols can exert a cooling and warming on the Earth's climate through direct (scattering and absorption of solar and long wave radiation), semi-direct (evaporation of cloud droplets due to solar absorption), and indirect (modify the cloud optical properties, lifetime and albedo) effects. The concentration, size and composition of aerosols that can act as cloud condensation nuclei determine the cloud properties, evolution and development of precipitation. The indirect radiative effects of aerosols are more uncertain than the direct radiative effects of aerosols. The combined effects of aerosols produced by local and non-local (long-range transport) sources may alter the large-scale heating and induce changes in the general circulation of the atmosphere, thereby affecting the processes of cloud formation and rainfall. The inter-annual and spatial variations in aerosols and cloud characteristics, and their relation to rainfall in summer monsoon over India during the last decade which witnessed normal, drought and excess rainfall are examined. Results obtained on the aerosol-cloud-rainfall linkages over India and observational evidence for aerosol indirect radiative effects will be presented.

The Speaker

Dr. Srikanthan Ramachandran joined PRL as a Faculty Member in 2000 after receiving advanced degrees in Physics from the Maharaja Sayajirao University of Baroda and PRL. He was a Visiting Research Staff Member in Princeton University during 1997-1999. His principal research interests are measurements and modeling of aerosols in the troposphere and lower stratosphere, and their radiative impacts. His current projects address aerosol composition, aerosol-cloud interactions, and the role of black carbon aerosol in climate. Dr. Ramachandran was involved in the first of its kind observations of aerosol- and associated radiative forcing over the Indian Ocean during the Indian Ocean Experiment. He is an author of the 2007 climate science assessment of the Intergovernmental Panel on Climate Change (IPCC), which shared the 2007 Nobel Peace Prize. He is a reviewer and an author on the World Meteorological Organization (WMO) Scientific Assessment of Ozone Depletion. He was a Member of the International Radiation Commission (2001-2008). He is a recipient of the INSA Young Scientist Award, START Young Scientist Award, START Visiting Scientist Award, and the NASA Group Achievement Award. He has published over 60 papers in refereed journals.

Wednesday: 12 December, 2012, 16:00 hrs

K.R. Ramanathan Auditorium, PRL

Tea at 15:30 hrs

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