



# Expert Talk on



# **SUPERCOMPUTING AND ITS APPLICATION TO ATMOSPHERIC SCIENCE**

by

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## **Abstract**

The application of Supercomputing or High Performance Computing (HPC) is enormously increasing in many areas of science and technologies. One such area is atmospheric science where HPC is used for numerical weather forecasting. In weather forecasting problems, clouds play a very important role in modulating climate by controlling radiation received at the Earth surface. The lack of understanding of the hydrodynamics and the micro-physical processes in clouds causes major uncertainties in current atmospheric general circulation models. A Numerical Simulation of processes at cloud interface to study droplet dynamics requires extensive computational resources which can be fulfilled only by supercomputing systems. This talk will cover the overview of HPC system at IITM Pune and its application in simulating the cloud microphysical properties. This will include algorithm details and their implementations on supercomputer.

## **About the Speaker**

Dr. Bipin Kumar is working as Scientist E at Indian Institute of Tropical Meteorology, Pune. He has done his Ph.D. in Computing in the year 2009 from Dublin City University, Ireland, and M.S. in Mathematics in 2006 from National University of Singapore. His research interests include Cloud Microphysics and HPC, Parallel Numerical Algorithms and Numerical Model Development. He has published his work in various journals, like Journal of Atmospheric Sciences, Applied Mathematics and Computations, Mathematics and Computer in Simulation etc. He has published a book titled 'Computational Techniques for Multiphase Fluid Flows'. He is Associate Faculty at International Center for theoretical Sciences. He has received DCU Teaching Award at DCU, Ireland. He was recipient of different scholarships including, Microsoft Scholarship, DCU Scholarship, NUS Scholarship, CSIR-SRF and MCM Scholarship by Microsoft Ireland, DCU Ireland, NUS Singapore, CSIR India and IIT -Kanpur respectively.