

Special Program in Applied Mathematics and Applied Mechanics

Data Assimilation and Its Application to Snow Data Analysis of Xinjiang

2015 - 04 - 23 (Thu.)

10:00 - 11:00

308, Mathematics Research Center Building (ori. New Math. Bldg.)

Data assimilation(DA) is an applied mathematics method of numerical computation of partial differential equations, statistical estimation, and optimal control. In most cases, a system of partial differential equations(PDE) has made oversimplification of the real physical system and has given an inexact initial value. Meanwhile, instrumental observations are superficial and discrete in a large sense. With the techniques of data assimilation, PDE predictions and observations can be comprehensively used to obtain an optimal estimation of real physical status at a higher precision. In methodologies, we introduce two commonly used schemes of data assimilation, i.e., Ensemble Kalman Filter(EnKF) and three-dimensional calculus of variations(3D-Var). In experiments, we build the Xinjiang snow data analysis system of assimilating satellite remote sensing observations into the Common Land Model(CoLM). It is noted that, in weather and ocean analysis, data assimilation has become an operational component of numerical prediction systems. In land surface analysis and the whole earth system modeling, data assimilation is under development, and many kinds of uncertainty need us to explore. This talk will give you some insight into data assimilation by introducing its short history, basic methodologies, our demonstrations, and some challenging problems.



Center for Advanced Study in Theoretical Sciences, NTU