数学与系统科学研究院

计算数学所定期学术报告

报告人：**Prof. XIANGJUN TIAN**

（ *Institute of Atmospheric Physics, Chinese Academy of Sciences* ）

报告题目：

A POD-based ensemble four-dimensional variationalassimilation method

邀请人：　严宁宁研究员、龚伟博士

报告时间：**2011** 年 **11** 月 **17** 日（周四）

下午 **16：00～17：00**

（**15：30～16：00** 茶歇）

报告地点：　科技综合楼三层 **311**

计算数学所报告厅

Abstract:

In this paper, a POD-based ensemble four-dimensional variational data assimilation method (referred to as PODEn4DVar)is proposed on the basis of the proper orthogonal decomposition (POD) and ensemble forecastingtechniques. The ensemble forecasts are conducted to obtain the model perturbations (MPs) and their correspondingobservation perturbations (OPs). Under the assumption of the linear relationship between the MPs and the OPs,the POD transformation is applied to the OP space rather than the MP space directly, which substantially decreases thecomputational costs. The optimal MP and its corresponding OPs is thus represented by the transformed MP ensembleand their related OP orthogonal base vectors to fit the 4-D observation innovations in the assimilation window. Further,the implementation of the forecast model ensemble update is successfully implemented by replacing the single 4-Dobservation innovation with the ensemble of innovation vectors. The feasibility and effectiveness of the PODEn4DVarare demonstrated in an idealized model with simulated observations. It is found that the PODEn4DVar is capable ofoutperforming both 4DVar and the EnKF under both perfect and imperfect-model scenarios with lower computationalcosts compared with EnKF.

欢迎大家参加！