

数学与系统科学研究院

计算数学所学术报告

报告人: **Dr. Jian Tao**

( *Texas A&M University* )

报告题目:

**Integrated Earth System Modeling:  
Physical Models & Data  
Infrastructure**

邀请人: 崔涛 副研究员

报告时间: 2018 年 5 月 16 日 (周三)

上午 9:30-11:00

报告地点: 科技综合楼三层

311 报告厅

## **Abstract:**

There is an increasing demand for climate prediction information on regional scales at high spatial resolutions by policy makers and stakeholders. There is also an increasing demand for predictive information about biogeochemical cycles and ecosystem changes at regional scales with high spatial resolutions. Yet such information is rarely available, because the current generation of climate and earth system models used for s2D predictions do not possess sufficient spatial resolutions to address regional scale problems. With the development of the high-resolution Community Earth System Modeling (CESM) software, scientists are able to generate high resolution modeling datasets. However, the amount of data generated from the high-resolution CESM simulations is unprecedented. Processing, archiving, and utilizing such enormous data sets pose a grand challenge to the existing data infrastructures, which have been primarily designed and built for archiving purposes only. There is an urgent need for a new Data Infrastructure (DI) that can effectively and efficiently share and utilize such large scale data sets to support interdisciplinary research and discoveries. The Enhanced Data Infrastructure for Integrated Earth System Modeling, or EDI2ESM for short, is one of such DI's that can serve large scale Earth system modeling data that not only enables data sharing but also offers efficient background processing and analysis. We envision EDI2ESM as a one-stop data framework for researchers and interested parties worldwide to browse, analyze, extract, and download high resolution Earth system data. In this talk, the design and features of EDI2ESM will be presented. Some plans to incorporate remote sensing and other observational data will also be discussed.

## **报告人介绍:**

Dr. Jian Tao is a Research Scientist/Computational Scientist at Texas A&M University. He received his Bachelor's degree in Space Physics from the University of Science and Technology of China in 2000 and his Ph.D in Computational Astrophysics from Washington University in St. Louis in 2008. Before joining Texas A&M, he worked at the Center for Computation and Technology (CCT) at Louisiana State University as an IT Consultant/Research Scientist. He also worked at CCT as a postdoc in the NSF XiRel project to build the next generation infrastructure for numerical relativity, and the NSF CyberTools project to develop the infrastructures needed for interdisciplinary research. He helped to manage the cyberinfrastructure development of the NSF Northern Gulf Coastal Hazards Collaboratory (NG-CHC) project at LSU where he led the development of SIMULOCEAN, a Service-Oriented Architecture (SOA) for deploying coastal models on High Performance Computing systems. Dr. Tao is the PI of an NSF BIGDATA (SMALL) project to improve both performance and usability of the HDF5 library that is widely used in the scientific computing community. He is also an NVIDIA Deep Learning Institute University Ambassador and a contributor to the widely used SPEC CPU 2017 Benchmark Suite. Together with his collaborators, Dr. Tao is the first-prize winner of IEEE Technical Committee on Scalable Computing (TCSC) Scale Challenge Award in both 2009 and 2016.

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