

Data Processing and Visualization for Global High-Resolution Climate Simulations

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Global high-resolution climate models have demonstrated the added value of enhanced resolution. They showed significant improvement in the simulation of large-scale circulation. In addition, the increased resolution enables more realistic simulation of small-scale phenomena. The improved simulations of climate also result in better representation of extreme events. Nevertheless, computing demands are rapidly increased for enhanced-resolution simulations. Other than computing resources, the storage and distribution of the high-resolution model data is another challenging issue. In this study we try to develop a big data experimental platform for environmental monitoring and simulation. The platform links computing environment for global climate simulation and big data analysis system that improves data management and processing power. Master and slave data nodes are designed and coupled with distributed database. The data node is not only for data storage, but also for in-place computing that enables processing further data operation and analysis effectively. The platform has applied to the global high-resolution climate simulations and demonstrates temporal and spatial visual analysis of the huge amount data.

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