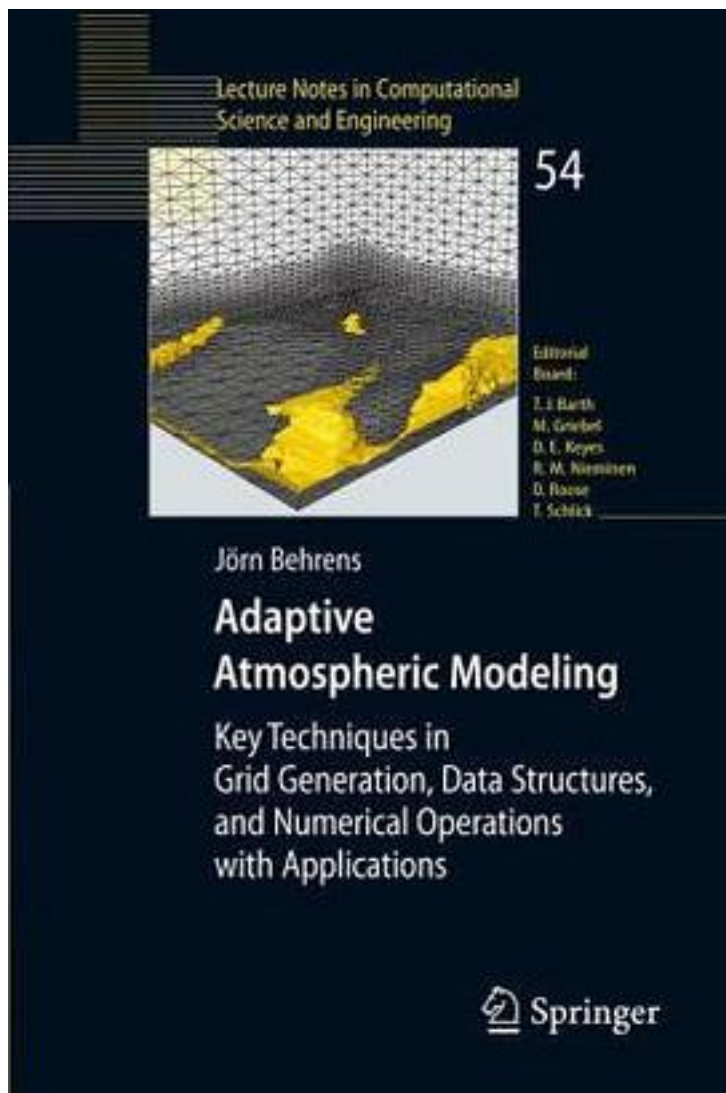# Adaptive Atmospheric Modeling

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著者:Behrens, Jorn

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This book gives an overview and guidance in the development of adaptive techniques for atmospheric modeling. Written in an educational style and featuring an exhaustive list of references, it is a starting point for everyone who is interested in adaptive modeling, not restricted to atmospheric sciences. It covers paradigms of adaptive techniques, such as error estimation and adaptation criteria. Mesh generation methods are presented for triangular/tetrahedral and quadrilateral/hexahedral meshes, with a special section on initial meshes for the sphere. Efficiency issues are discussed including techniques for accelerating unstructured mesh computations as well as parallelization. Considering applications, the book demonstrates several techniques for discretizing relevant conservation laws from atmospheric modeling. Finite volume, discontinuous Galerkin and conservative Semi-Lagrangian methods are introduced and applied in simplified real life simulations. It is the author's intention to motivate the reader to become involved with adaptive modeling techniques.

作者介绍:

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