1. Record Nr. UNINA9910350338603321

Titolo	Current Trends in the Representation of Physical Processes in Weather and Climate Models [[electronic resource] /] / edited by David A. Randall, J. Srinivasan, Ravi S. Nanjundiah, Parthasarathi Mukhopadhyay
Pubbl/distr/stampa	Singapore : , : Springer Singapore : , : Imprint : Springer, , 2019
ISBN	981-13-3396-3
Edizione	[1st ed. 2019.]
Descrizione fisica	1 online resource (377 pages)
Collana	Springer Atmospheric Sciences, , 2194-5217
Disciplina	551.6015118
Soggetti	Atmospheric Sciences Environmental Science and Engineering Monitoring/Environmental Analysis Climate Change/Climate Change Impacts
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	Model systematic errors in the annual cycle of monsoon: Inferences from process-based diagnostics -- Challenges in tropical numerical weather prediction at ECMWF -- Convection Initiation in Climate Models using the Heated Condensation Framework: A Review -- Cloud Microphysics Across Scales for Weather and Climate -- Microphysical representations and their consistency with in-situ and remote-sensing observations -- Convective Available Potential Energy and Precipitation in a Cloud Resolving Model Simulation of Indian Summer Monsoon -- A Gray Zone GCM with Full Representation of Cloud Microphysics -- The Stochastic Multi-cloud Model (SMCM) convective parameterization in the CFSv2 : Scopes and Opportunities -- The IITM Earth System Model (ESM): Development and Future Roadmap -- Cumulus friction in the Asian monsoon of a global model with 7km mesh -- Difficulties in the subgrid-scale redistribution of moisture of a global cloud-resolving model -- Challenges of improving the stratiform process in a coupled climate model with Indian monsoon perspective -- Current and Future Activities in Modelling & Data Assimilation at NCMRWF -- Microphysics in Goddard Multi-scale Modeling Systems: A Review -- Stochastic Representation of NCEP GEFS to Improve Subseasonal Forecast -- New Pathways for Moist Convection Parameterisation -- Land Surface

Processes.

Sommario/riassunto

This book focuses on the development of physical parameterization over the last 2 to 3 decades and provides a roadmap for its future development. It covers important physical processes: convection, clouds, radiation, land-surface, and the orographic effect. The improvement of numerical models for predicting weather and climate at a variety of places and times has progressed globally. However, there are still several challenging areas, which need to be addressed with a better understanding of physical processes based on observations, and to subsequently be taken into account by means of improved parameterization. And this is all the more important since models are increasingly being used at higher horizontal and vertical resolutions. Encouraging debate on the cloud-resolving approach or the hybrid approach with parameterized convection and grid-scale cloud microphysics and its impact on models' intrinsic predictability, the book offers a motivating reference guide for all researchers whose work involves physical parameterization problems and numerical models.