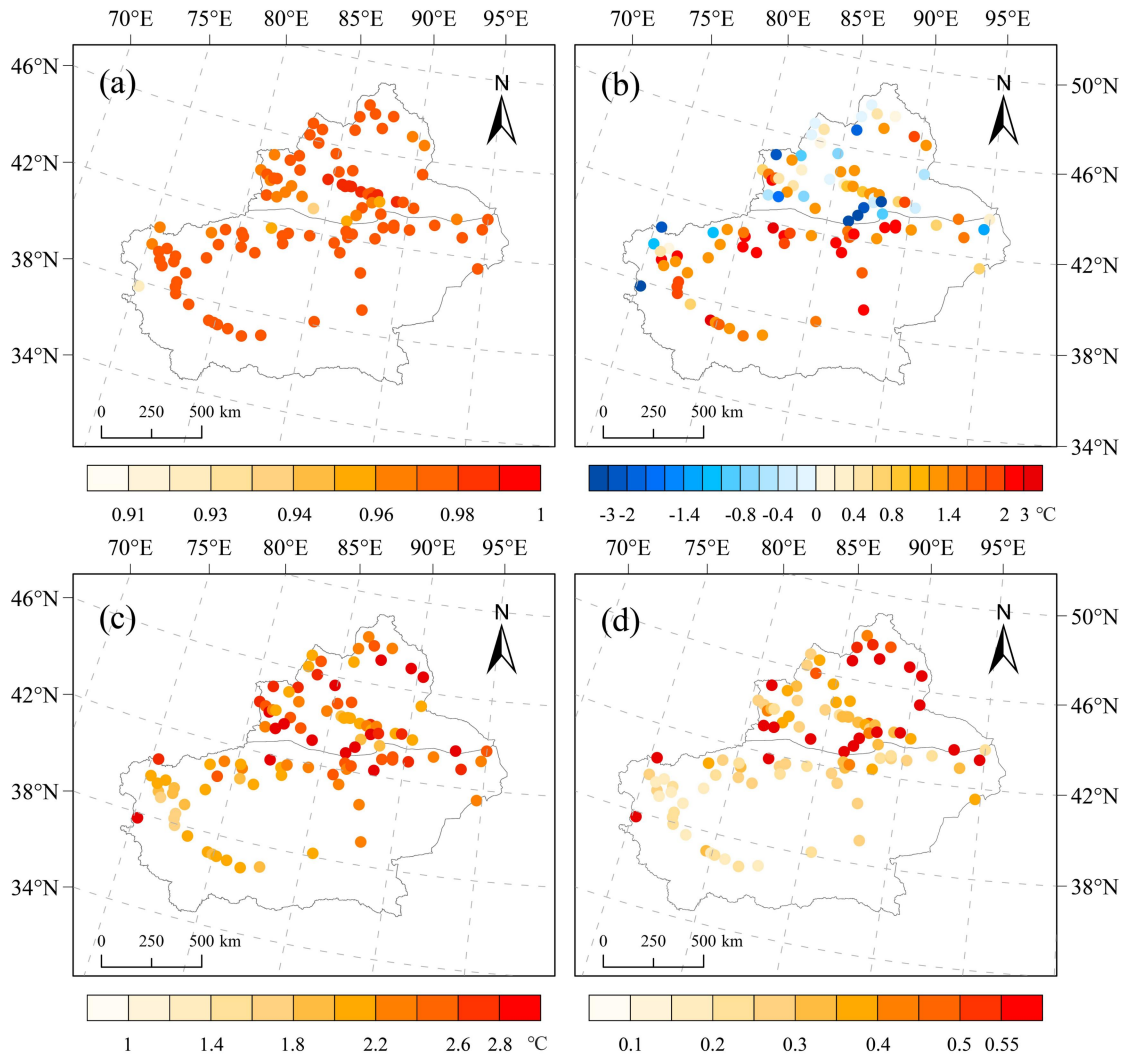
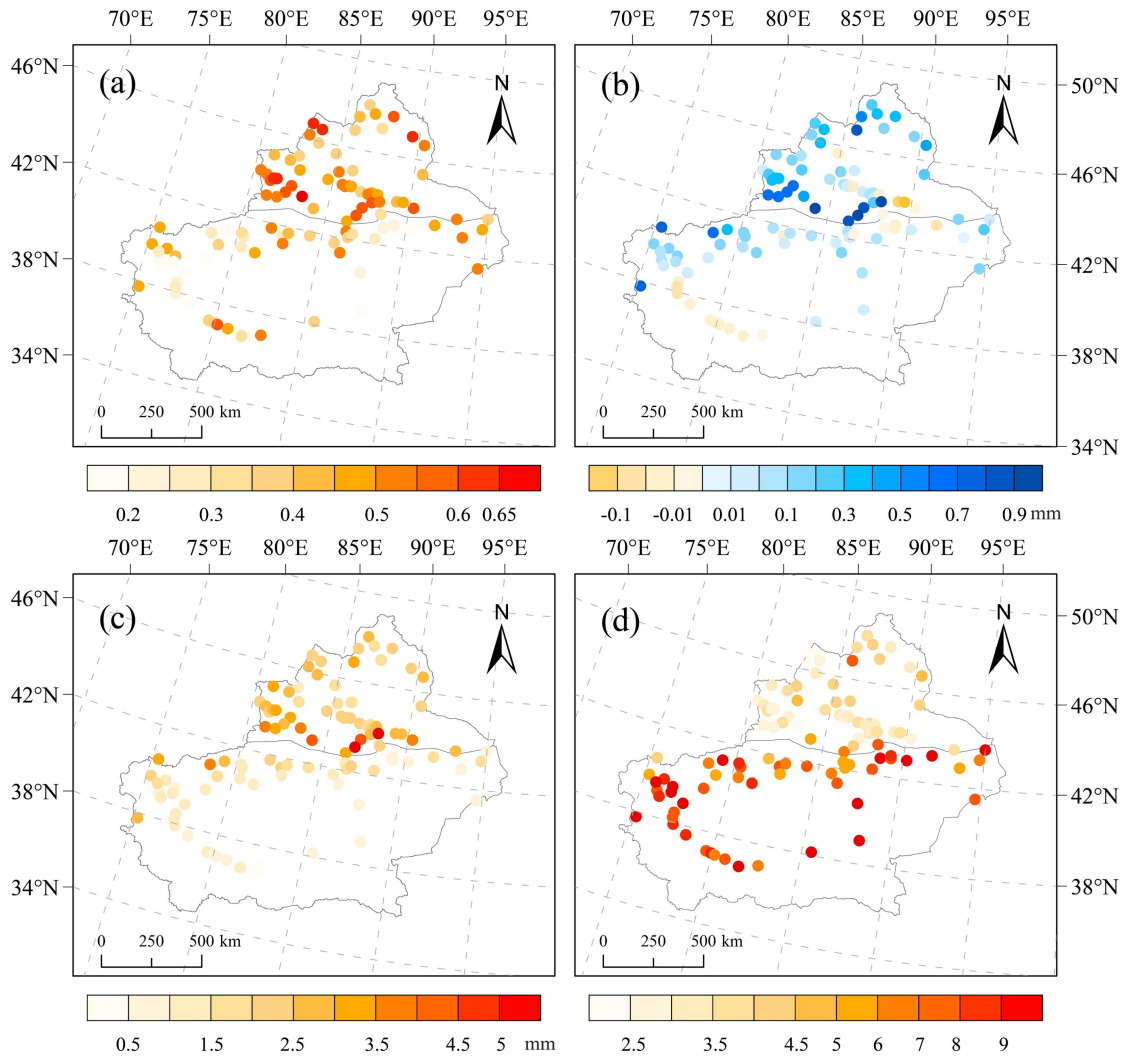


15 **Supplementary Figures**



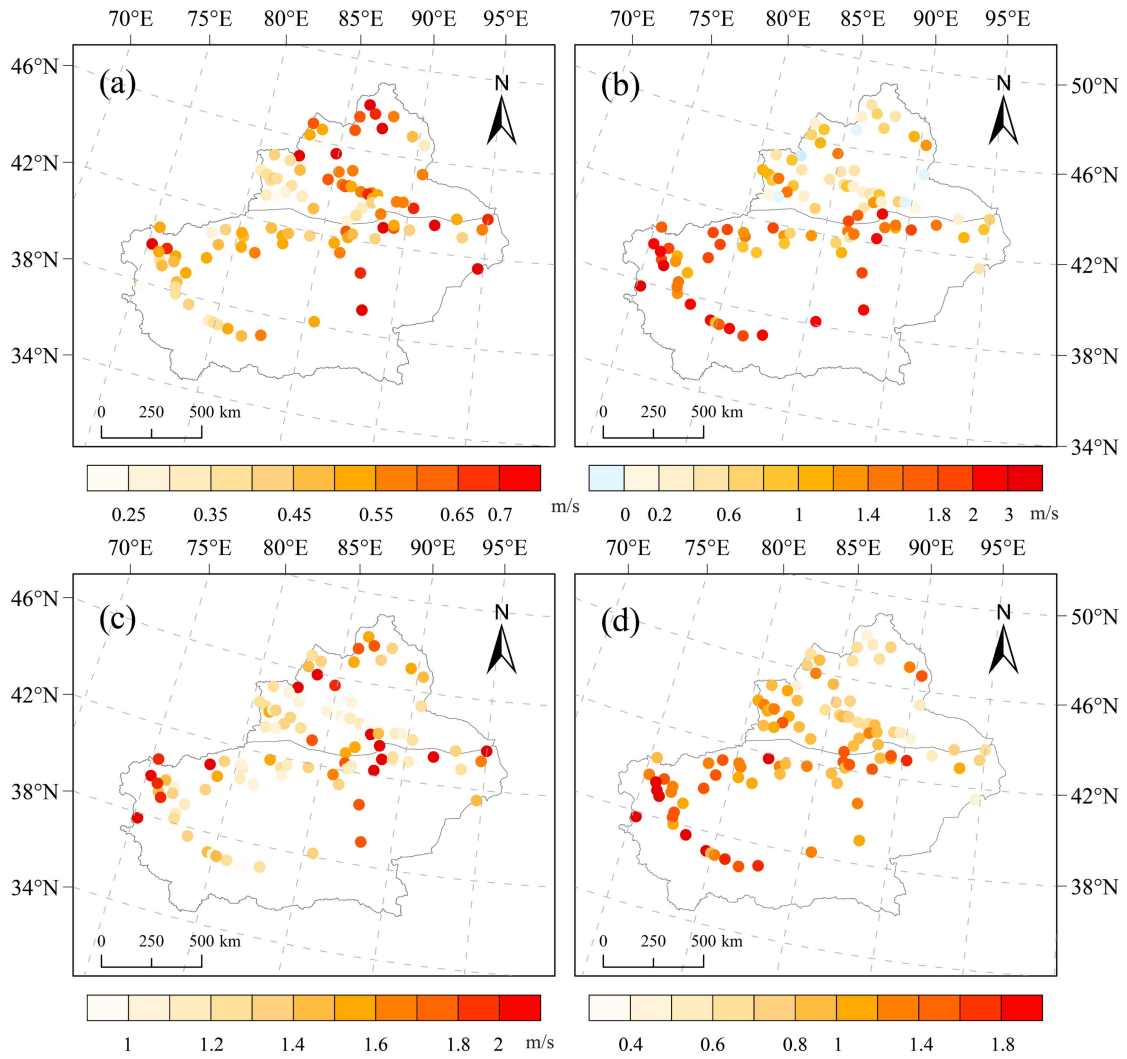
16

17 **Figure S1.** Spatial distribution of correlation coefficient (CC), mean error (ME), root
 18 mean square error (RMSE), and Distance between Indices of Simulation and
 19 Observation (DISO) values (a~d) between simulated and station temperature data
 20 under scheme 14.



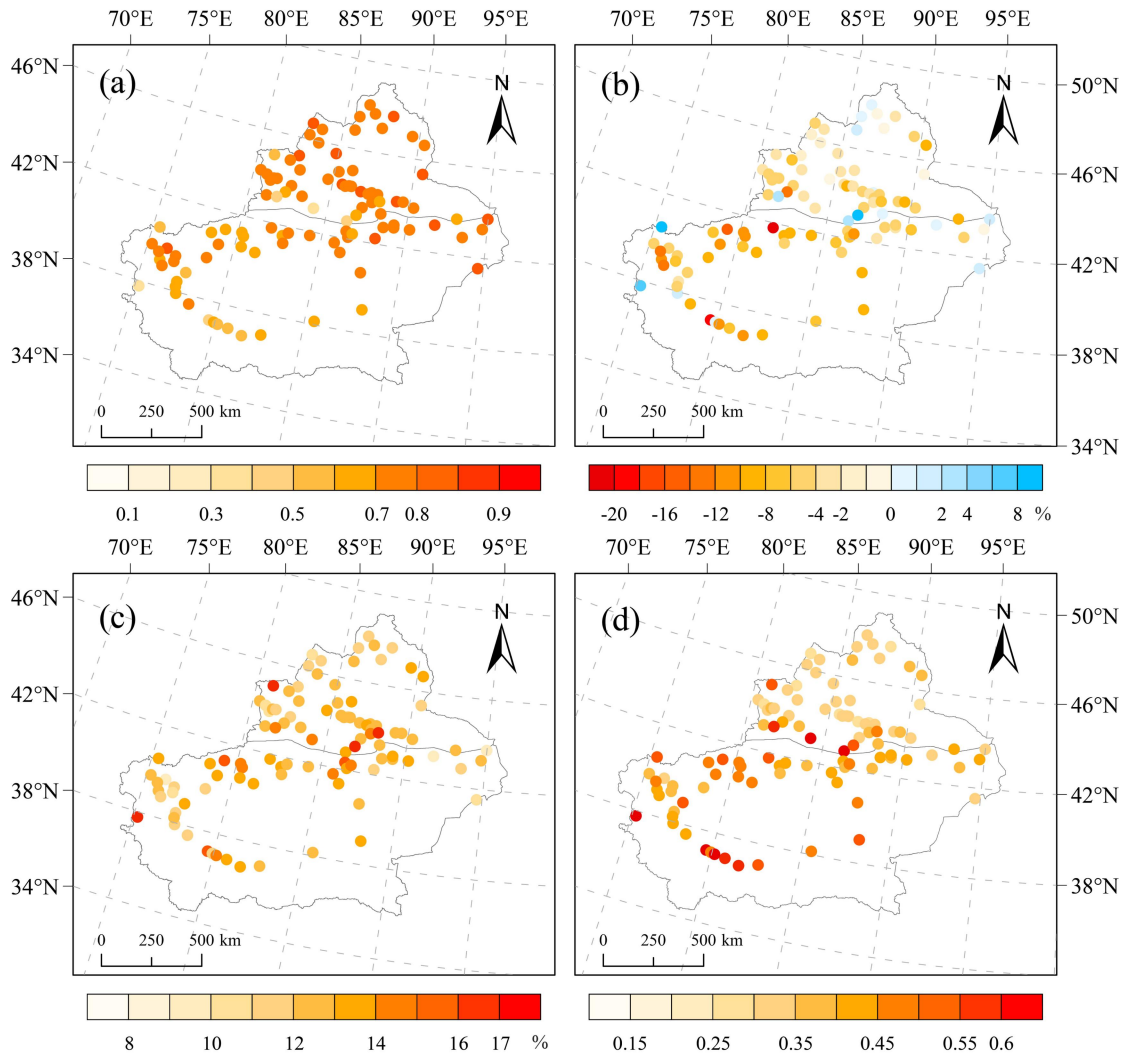
21

22 **Figure S2.** Spatial distribution of CC, ME, RMSE, and DISO values (a~d) between
 23 simulated and station precipitation data under scheme 23.



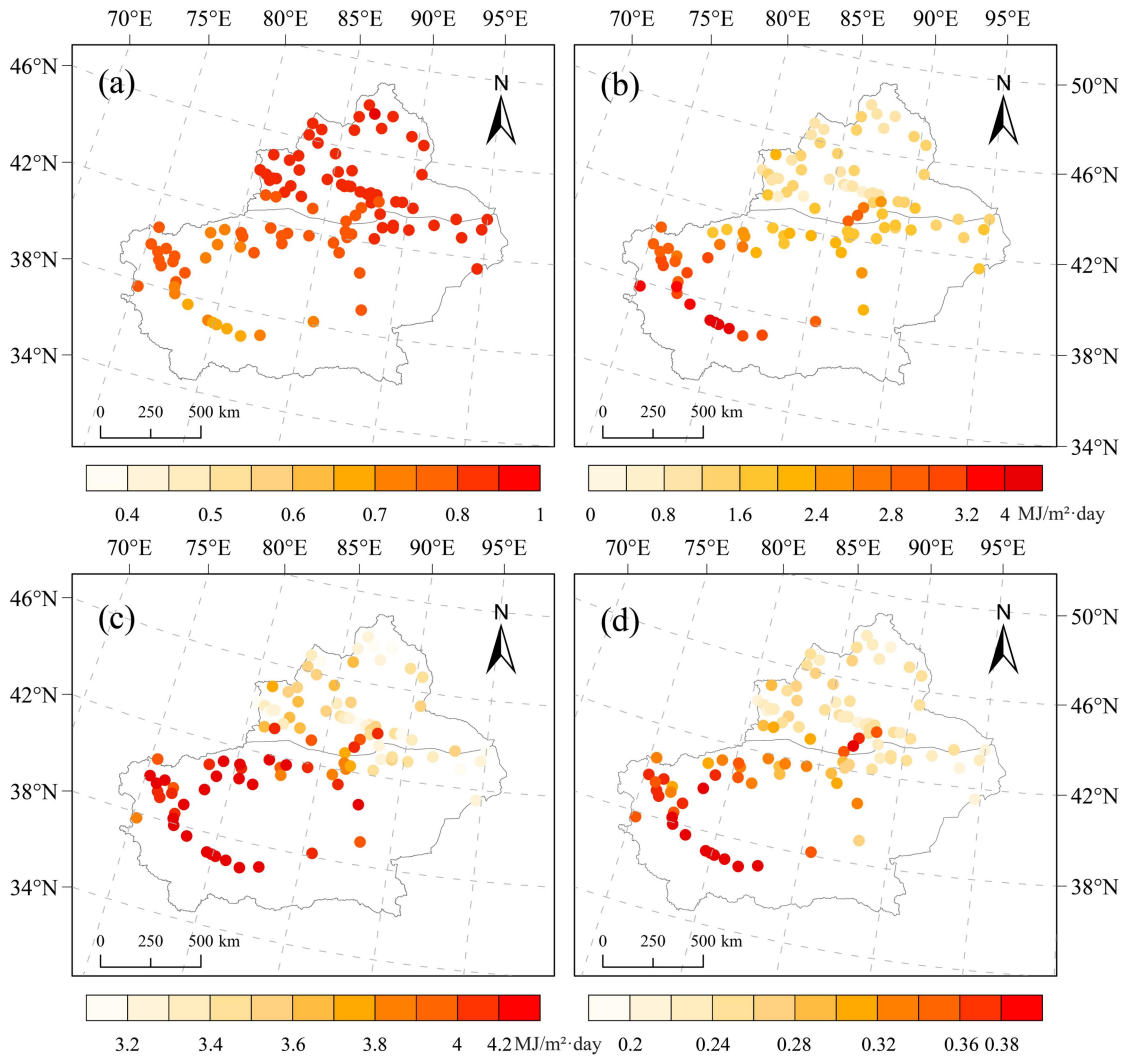
24

25 **Figure S3.** Spatial distribution of CC, ME, RMSE, and DISO values (a~d) between
 26 simulated and station wind speed data under scheme 12.



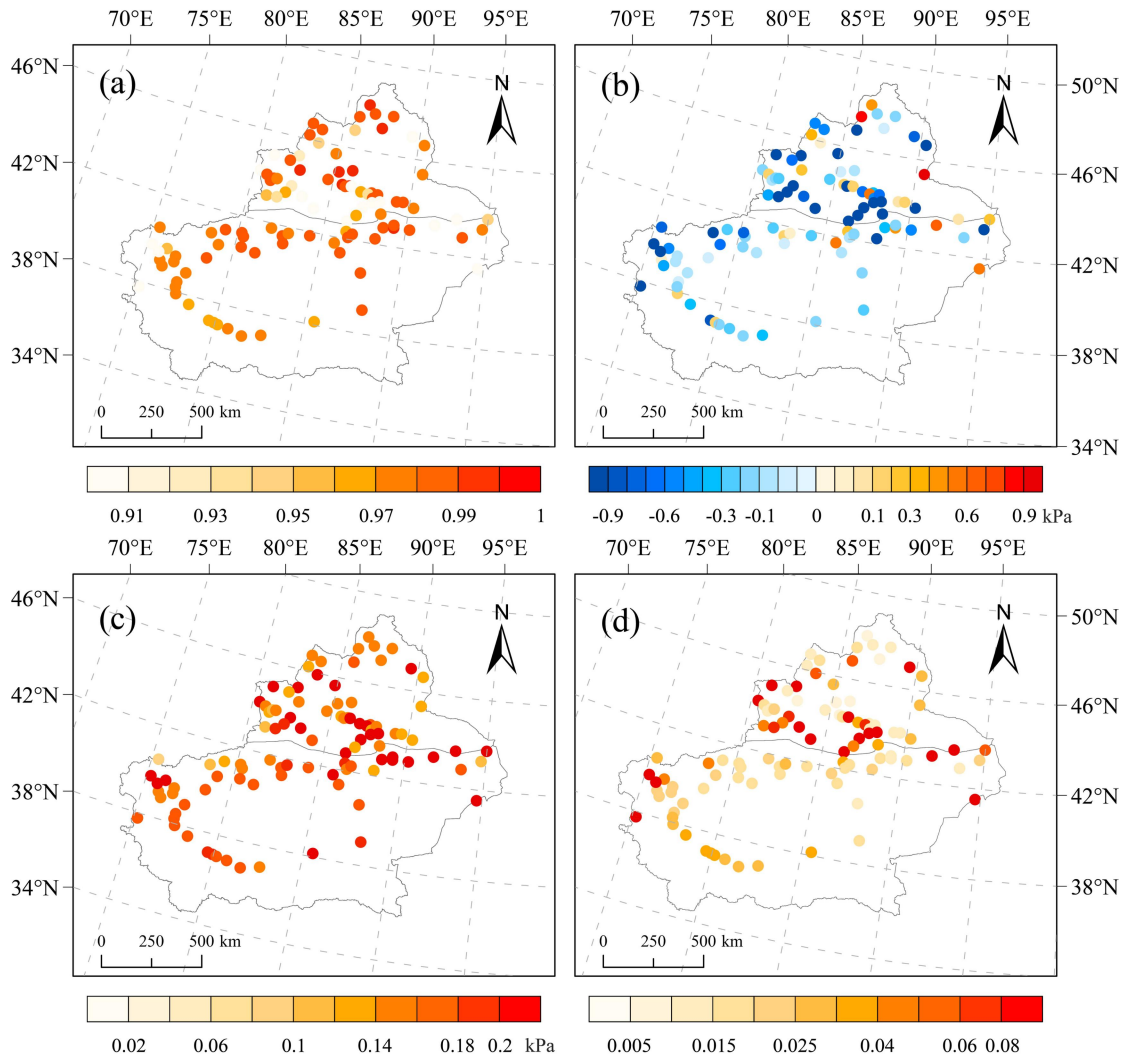
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Figure S4. Spatial distribution of CC, ME, RMSE, and DISO values (a~d) between simulated and station relative humidity data under scheme 12.



30

31 **Figure S5.** Spatial distribution of CC, ME, RMSE, and DISO values (a~d) between
 32 simulated and station downward shortwave radiation data under scheme 26.



33

34 **Figure S6.** Spatial distribution of CC, ME, RMSE, and DISO values (a~d) between
 35 simulated and station surface pressure data under scheme 14.

36 **Supplementary Tables**37 **Table S1. Abbreviations and Full Names of Physical Parameterization Schemes**

Scheme (Abbreviation)	Full Name
Thompson	Thompson MErosol-Aware Microphysics Scheme
Morrison2-moment	Morrison Two-Moment Microphysics Scheme
WSM6	WRF Single-Moment 6-Class Microphysics Scheme
WSM3	WRF Single-Moment 3-Class Microphysics Scheme
Lin	Lin et al. (1983) Microphysics Scheme
WSM5	WRF Single-Moment 5-Class Microphysics Scheme
WDM6	WRF Double-Moment 6-Class Microphysics Scheme
NSSL 2-moment	NSSL Two-Moment Microphysics Scheme
Kain–Fritsch (new Eta)	Kain–Fritsch (New Eta) Cumulus Parameterization Scheme
Grell–Freitas	Grell–Freitas Ensemble Cumulus Scheme
Grell-3	Grell 3D (Grell 1993) Cumulus Scheme
BMJ	Betts–Miller–Janjic Scheme
Grell–Devenyi (GD)	Grell–Dévényi Ensemble Cumulus Scheme
Multiscale Kain–Fritsch	Multiscale Kain–Fritsch (MSKF) Cumulus Scheme
SAS	Simplified Arakawa–Schubert Scheme
Tiedtke	Tiedtke Cumulus Parameterization Scheme
RRTM	Rapid Radiative Transfer Model (Longwave)
CAM	NCAR Community Atmosphere Model Longwave Radiation Scheme
RRTMG	Rapid Radiative Transfer Model for GCMs (Longwave)
GFDL	Geophysical Fluid Dynamics Laboratory Longwave Radiation Scheme
Goddard	NASA Goddard Longwave Radiation Scheme
Dudhia	Dudhia Shortwave Radiation Scheme
Goddard shortwave	NASA Goddard Shortwave Radiation Scheme
CAM	NCAR Community Atmosphere Model Shortwave Radiation Scheme
RRTMG	Rapid Radiative Transfer Model for GCMs (Shortwave)

FLG (UCLA)	Fu–Liou–Gu (UCLA) Shortwave Radiation Scheme
GFDL	Geophysical Fluid Dynamics Laboratory Shortwave Radiation Scheme
GBM	Grenier–Bretherton–McCaa (GBM) PBL Scheme
ACM	Asymmetric Convective Model (ACM2) Scheme
MYJ	Mellor–Yamada–Janjic Scheme
YSU	Yonsei University Scheme
MYNN	Mellor–Yamada–Nakanishi–Niino Scheme
BouLac	Bougeault–Lacarrère Scheme
UW	University of Washington PBL Scheme
Revised MM5	Revised MM5 Similarity Surface Layer Scheme
Noah-MP	Noah Multi-Physics Land Surface Model
Thermal Diffusion (TD)	Thermal Diffusion Scheme (1-Layer Soil Model)
Noah-LSM	Noah Land Surface Model
CLM4	Community Land Model Version 4
