Fig. 1 Model domain (D1), buffer zone (between D1 and D2), diagnosis domains (D3, D4), and topography (m).
Fig. 2 Total precipitation (mm), January to May 1985: (a) RegCM2 continuous run, (b) RegCM2 monthly reinitialized run, (c) RegCM2 ten-day reinitialized run, (d) University of East Anglia (UEA) 0.5 degree gridded observational data over land, (e) Xie-Arkin blended gauge, satellite observations and numerical model data (X−A), and (f) five-month total precipitation (mm) over Amazon in the box in (a).
Fig. 3 Monthly precipitation (mm/day), January to May 1985. The 6 curves include 3 model simulations and 3 observations: (1) RegCM2 continuous run, (2) monthly reinitialized run, and (3) ten-day reinitialized run; (4) University of East Anglia (UEA), (5) Xie–Arkin (X–A), and (6) ANEEL observation.
Fig. 4 Comparison between four datasets: Analysis data (A), Continuous run (C), Monthly reinitialized run (M), and Ten–day reinitialized run (T). The operator O is either RMSD, or BIAS, or APC defined by equation (5), (6), (7), respectively.
A: Analysis; C: Continuous; M: Monthly; T: Ten-day

persistent | RMSD(AM) | RMSD(AT) | RMSD(MT)
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Fig. 5 Time series of the root mean square difference (RMSD) over the whole model domain for the variables: surface pressure $P_s$, specific humidity $q$ at $\sigma=0.51$ and 0.895, temperature $T$ at 200hPa, and $\sigma=0.51$ and 0.895. The capital letters A, C, M, and T in the brackets represent reanalysis, continuous, monthly reinitialized, and ten-day reinitialized run, respectively. RMSD(AM) is the RMSD between A and M. The persistent one (solid curve) is the RMSD between the transient state of a variable and its value at 0000 UTC 1 January 1985.
Fig. 6 Time series of area averaged bias over the whole domain between a model run and the reanalysis. The solid, long dashed, and short dashed curves denote $\text{BIAS(C-A)}$, $\text{BIAS(M-A)}$, and $\text{BIAS(T-A)}$, respectively, where A, C, M, and T represent reanalysis, continuous run, monthly reinitialized run and ten-day reinitialized run, respectively. Biases of $T$ ($p=200\text{hPa}$), $T$ ($\sigma=0.895$), $q$ ($\sigma=0.895$), and $P_s$ (hPa) are in (a), (b), (c), and (d), respectively.
Fig. 7 Similar to Fig. 6, but for the first 90 days and averaged over Amazon basin instead of the whole domain. Note that plotted in (d) are not biases but precipitations of the ten-day reinitialized run (short dashed), monthly reinitialized run (long dashed), and continuous run (solid). Also shown in (d) is the observational ANEEL daily precipitation (thick dash-dot).
Fig. 8 Time series of the anomaly pattern correlation (APC) averaged over domain D1 to D4 (see Fig. 1) for various variables, between a model run and the reanalysis, or between different model runs. For example, APC(AC) is the APC between the reanalysis (A) and the continuous run (C). The APCs are calculated for the following variables: Vp200 (wind speed at p=200hPa), Vq.895 (wind speed at q=895), q (specific humidity at q=895), and Ps (surface pressure).
Fig. 8 Time series of the anomaly pattern correlation (APC) averaged over domain D1 to D4 (see Fig. 1) for various variables, between a model run and the reanalysis, or between different model runs. For example, APC(AC) is the APC between the reanalysis (A) and the continuous run (C). The APCs are calculated for the following variables: Vp200 (wind speed at p=200hPa), Vq.895 (wind speed at σ=0.895), q (specific humidity at σ=0.895), and Ps (surface pressure).
Fig. 9 The 5-month averaged bias of $T$ (p=200hPa), $T$ ($\sigma=0.51$), $T$ ($\sigma=0.895$), $P_s$, $q$ ($\sigma=0.51$), and $q$ ($\sigma=0.895$) between model simulation and reanalysis along the equator. Also shown are the terrain and land–sea masks.
Fig. 10 Similar to Fig. 9, but for Ps and T_\sigma=.895 along the latitude of 20S.