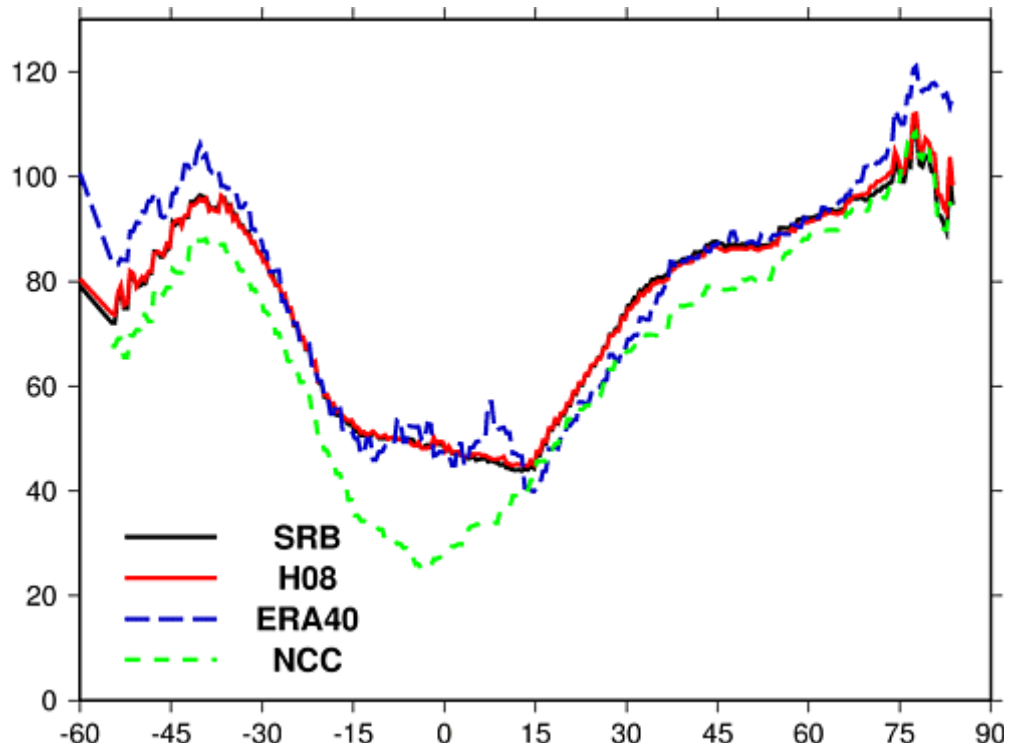


**Supplement 1.** Zonal means of the standard deviation of daily temperature from 1986 to 1995 of the observation-based product of the Global Teleconnection System (GTS) by the National Oceanic and Atmospheric Administration, our product (H08), and the ERA40 and NCC reanalysis products. Units are K.



**Supplement 2.** Zonal means of the standard deviation of shortwave radiation from 1986 to 1995 of the satellite-based product of the Surface Radiation Budget (SRB) project (Release 2.8, Gupta et al., 2006; <http://eosweb.larc.nasa.gov/>), our product (H08), and the ERA40 and NCC reanalysis products. Units are  $W/m^2$ .

**Supplement 3.** Parameters in exponential functions of snowfall catch ratios (Motoya *et al.*, 2002) for different gauge types.

Gauge type	a	b
Canadian Nipher	112.78	-0.08215
Chinese standard	100.00	-0.05600
Hellmann like*	120.95	-0.25425
Wild like	108.98	-0.25637
Tretyakov	105.38	-0.13125
Norwegian standard	106.95	-0.18622
Japanese (average)	96.63	-0.10040
NWS 8 inch like	98.00	-0.05405

\* Obtained from equation (4.5.3) in Goodison *et al.* (1998).