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[\[PDF \(1272K\)\]](#) [\[References\]](#) [\[Supplementary Materials\]](#)**A 59-year (1948-2006) global meteorological forcing data set for land surface models. Part II: Global snowfall estimation**[Yukiko Hirabayashi](#)¹⁾⁵⁾, [Shinjiro Kanai](#)²⁾, [Ken Motoya](#)³⁾, [Kooiti Masuda](#)⁴⁾ and [Petra Döll](#)⁵⁾

- 1) Interdisciplinary Graduate School of Medicine and Engineering, University of Yamanashi
- 2) Institute of Industrial Science, The University of Tokyo
- 3) Faculty of Education and Human studies, Akita University
- 4) Frontier Research Center for Global Change, Japan Agency for Marine-earth Science and Technology
- 5) Institute of Physical Geography, Frankfurt University

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Abstract:

Global terrestrial snowfall was estimated for 59 years from 1948 to 2006 by applying gauge undercatch correction for snowfall and rainfall based on daily meteorological data and gauge type. Following gauge correction, global annual snowfall estimation increased from 9.4 to $12.3 \times 10^3 \text{ km}^3$, while annual terrestrial precipitation increased from 112.8 to $119.6 \times 10^3 \text{ km}^3$. Percentage of snowfall in total precipitation increased from 8.3 to 10.3% with gauge correction. The snowfall distinction method using wet-bulb temperature produced larger values for snowfall than those obtained using a 0°C threshold method and those from reanalysis-based products. In contrast, the increase in total precipitation was half of the increase obtained by using a climatology of correction coefficients from previous studies. The estimated 59-year time series of snowfall amount showed a downward trend after the mid-1980s, suggesting a decrease in snowfall associated with a warmer climate in recent decades.



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