

## **Reconstructed Air Temperature and Snowfall Fields over Continental Antarctica Applied to Testing IPCC Climate Model Performance**

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Two-meter air temperatures at monthly time scales and annual snowfall amounts have been reconstructed over the Antarctic continent at high spatial resolution by combining sparse observations since the International Geophysical Year with the spatial information contained in atmospheric model fields since the mid 1980s. The spatial and temporal characteristics of these fields and their inter-relationships are discussed. Next the fields are applied to assessing the performance of a subset of global climate models participating in the IPCC fourth assessment report (AR4, 2007). It is found that collectively the models have about the right snowfall sensitivity to temperature change, but that they are warming continental Antarctica at the global rate whereas the warming is much more muted in reality. The cause is traced to a spuriously amplified water vapor feedback. Recent efforts to identify the origin of this feedback will be summarized, and the implications for future Antarctic climate projections will be discussed. The desirability of extending such comparisons to a wider range of variables and for more extended time periods within the context of the ITASE project is outlined.