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NCAR TECHNICAL NOTE

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Volume 2 --Figures

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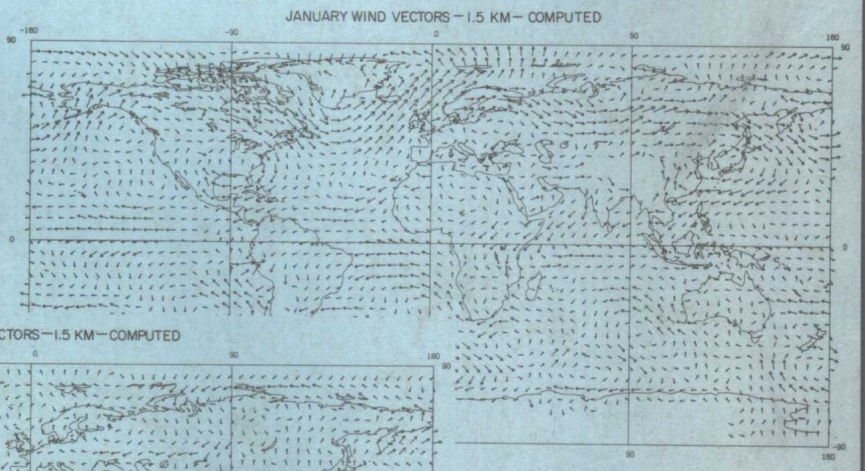

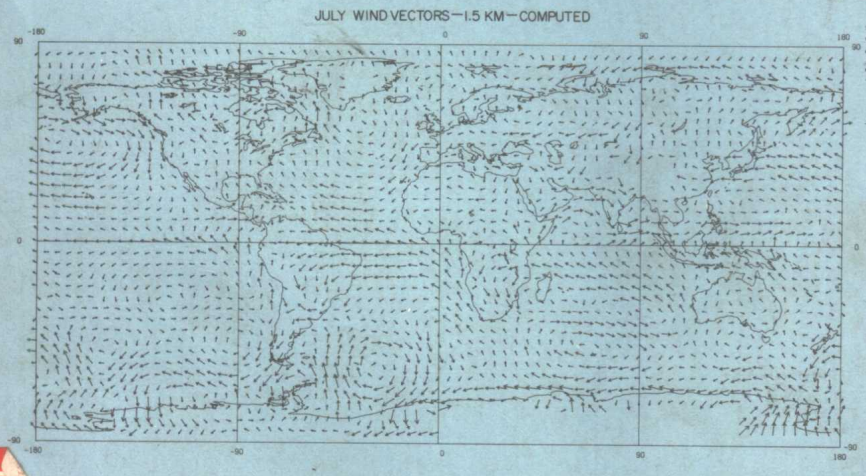

ATMOSPHERIC ANALYSIS AND PREDICTION DIVISION
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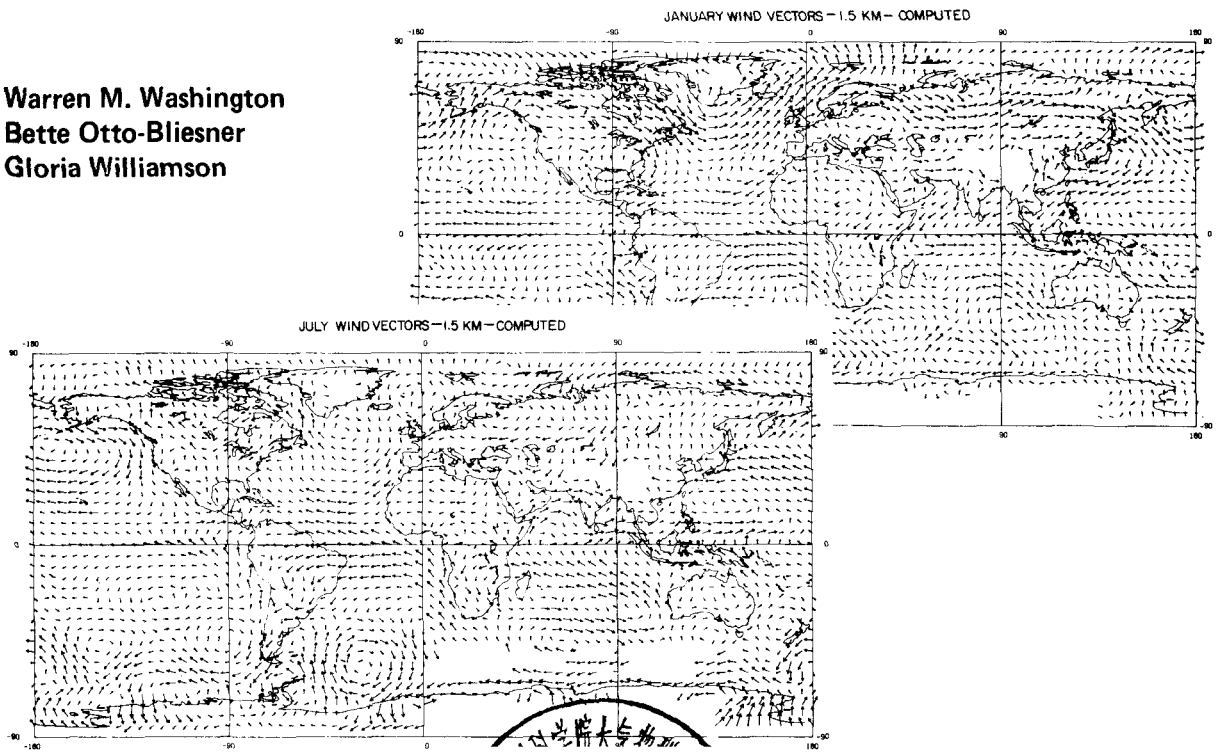

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PREFACE

For the reader's convenience in examining the figures along with the text, we have divided this technical note into Volume 1--Text and Volume 2--Figures. The purpose of this technical note is to document the capability of the National Center for Atmospheric Research (NCAR), 2.5° latitude-longitude, second-generation, 6-layer General Circulation Model (GCM) to simulate a typical January or July. This version is a modification of an NCAR model for which results of similar simulations were published earlier. The new diagnostics are storm tracks for both mountain and no-mountain experiments, soil moisture, snow cover, and energy balance at the earth's surface and model top. To clarify the cause of a deficiency in the temperature distribution, we include results of additional experiments.

We appreciate the comments on this work by many NCAR scientists and visitors; we benefited from suggestions by Wayman Baker, Robert Chervin, Robert Dickinson, Akira Kasahara, Takashi Sasamori, Richard Somerville, Harry van Loon, and David Williamson. We particularly acknowledge T. Sasamori's computation of the radiation budget at the top of the model atmosphere. R. Dickinson provided a more detailed analysis of the globally and zonally averaged radiation budget at the model top. We are grateful that R. Chervin uncovered an error in one of the processing programs that affected the radiation comparisons; he also computed the cloudiness charts. The NCAR Computing Facility provided time on the Control Data Corporation 6600 and 7600 computers and programming support. The illustrations were prepared by Roger Landing, John Maly, Gerald Meehl, and Elizabeth Rosenberg.

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NCAR TECHNICAL NOTES

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PPR - *Program Progress Reports*
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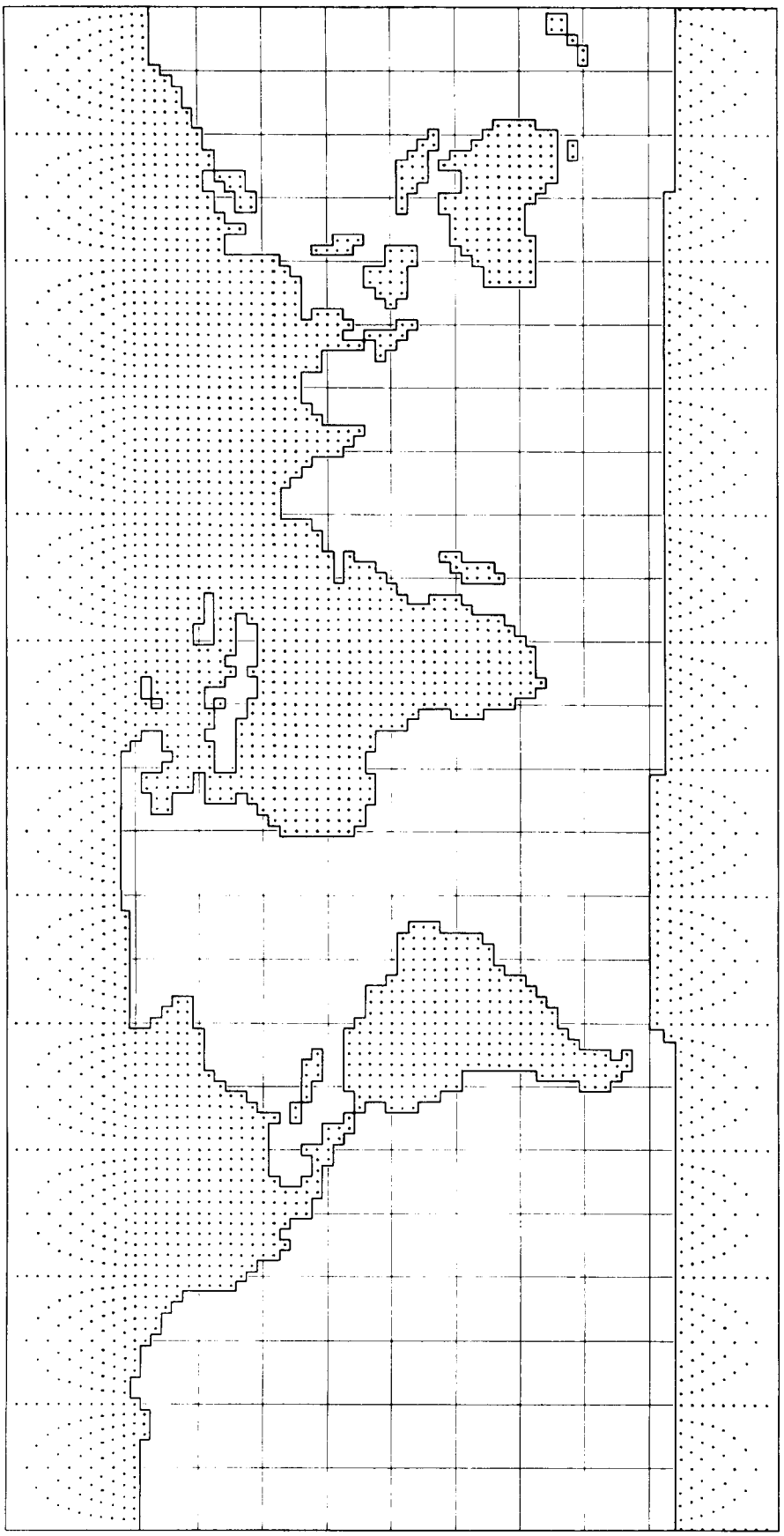

Fig. 2.1 Horizontal grid structure for the 2.5° latitude-longitude version of the NCAR model. Only the non-ocean points are shown to delineate the continental outline. The number of points along a latitude is reduced near the poles.

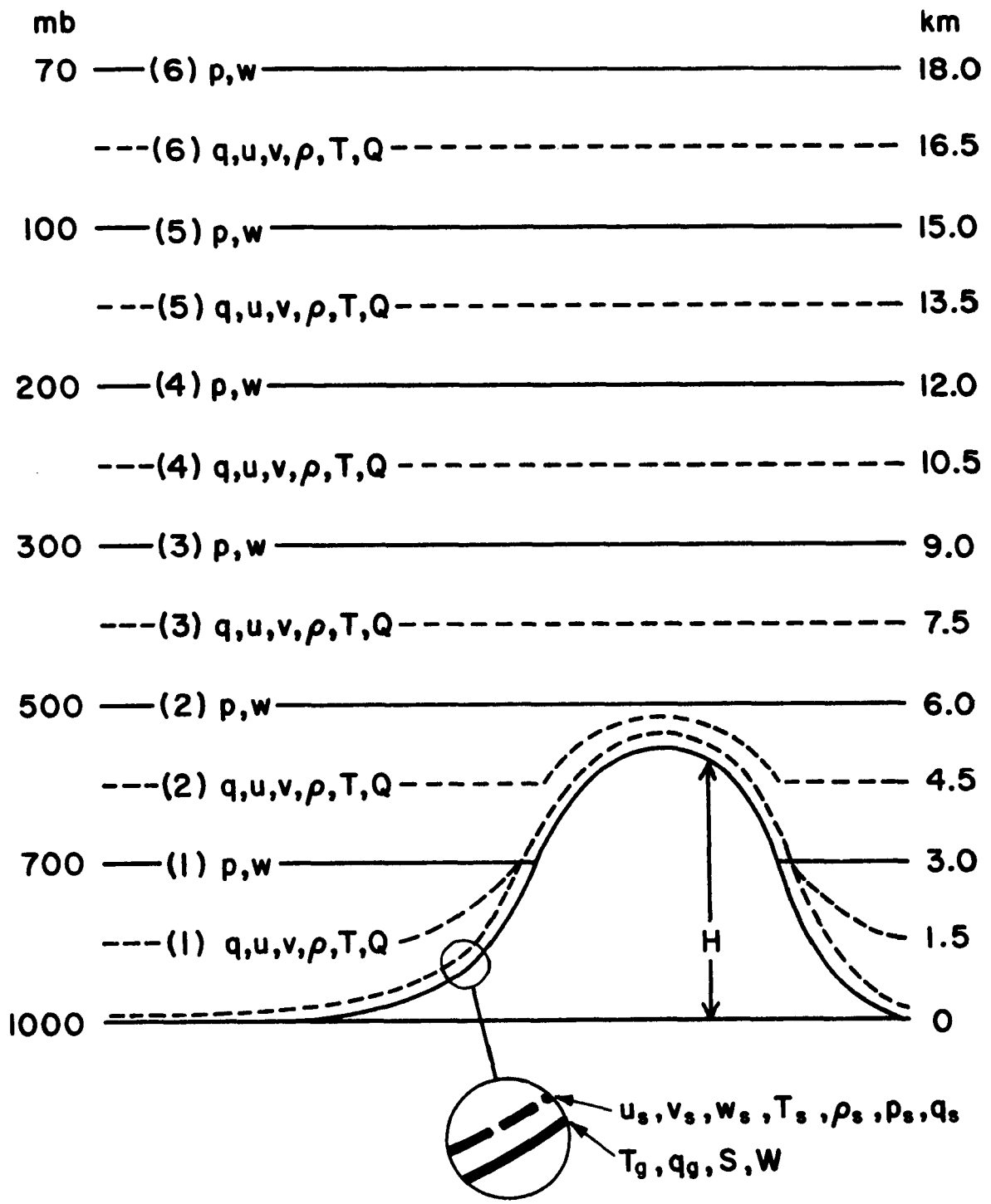

Fig. 2.2 Vertical grid structure for the 6-layer tropospheric model. The boundary-layer enlargement at the bottom shows the placement of surface and boundary-layer variables.

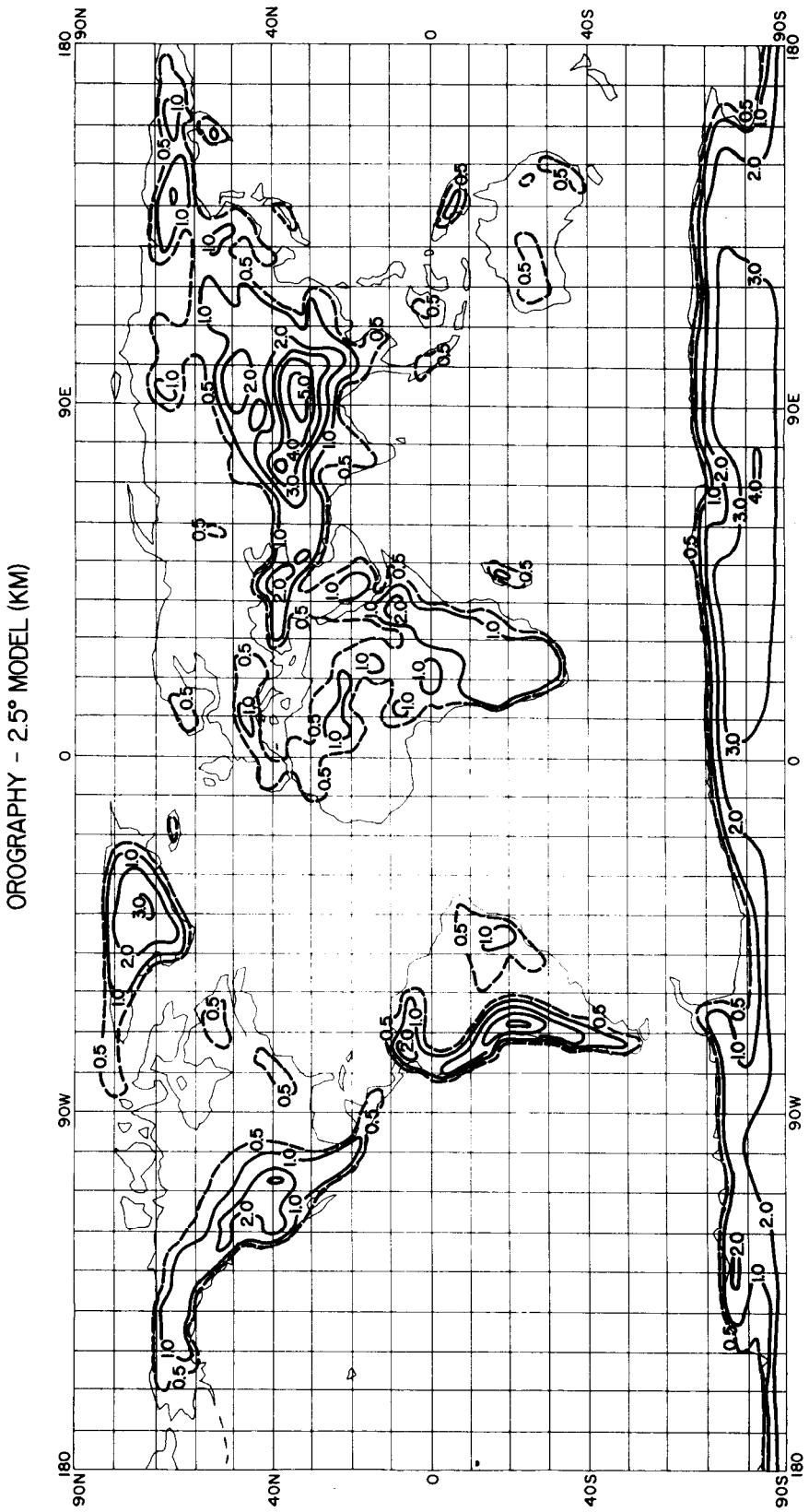

Fig. 2.3 Orography with contour intervals of 1 km.

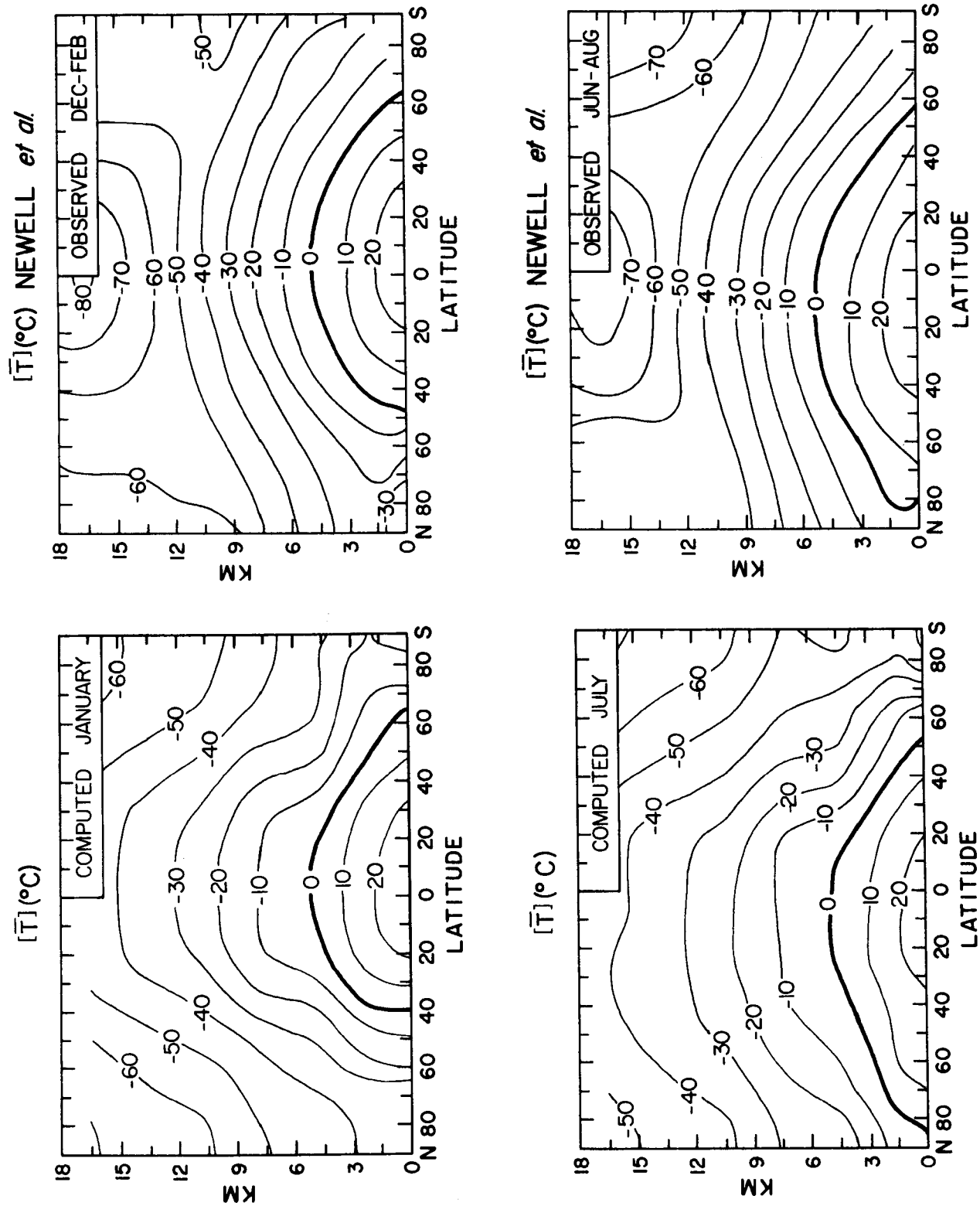

Fig. 3.1a January and July zonal distribution of temperature.

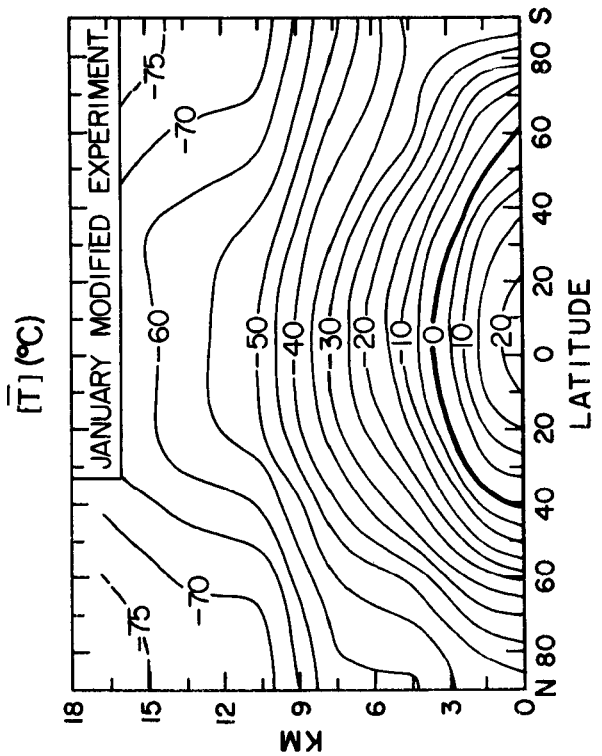

Fig. 3.1b January zonal distribution of temperature for the modified experiment with 5° model.

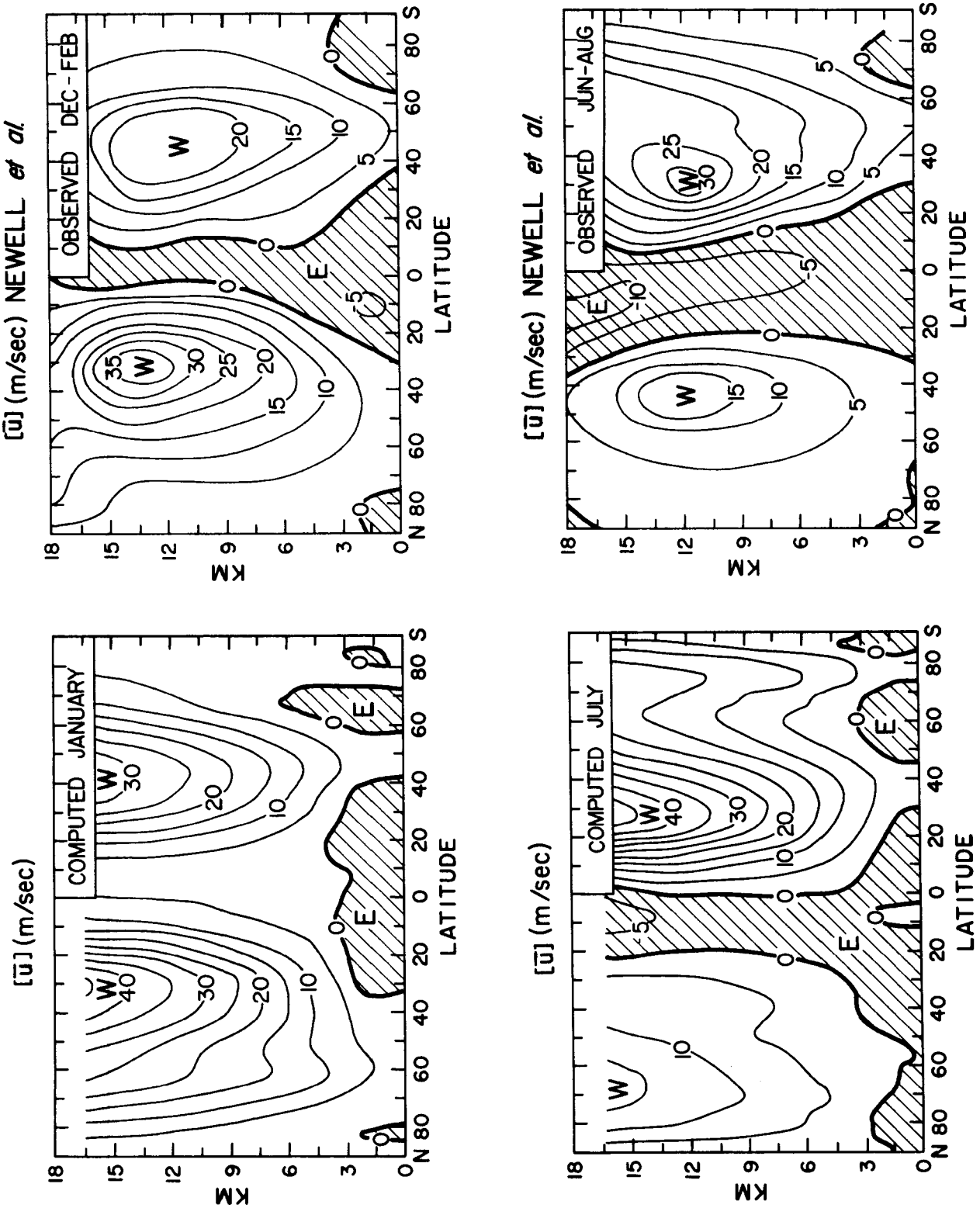

Fig. 3.2a January and July zonal distribution of zonal wind component.

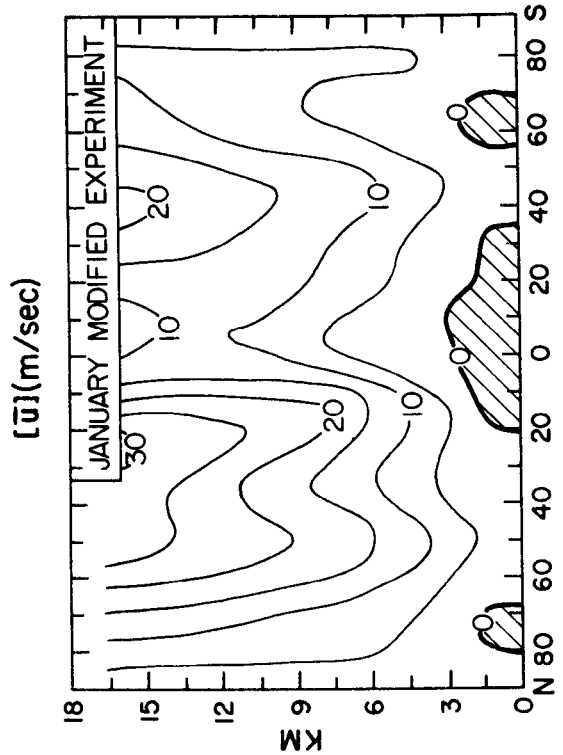

Fig. 3.2b January zonal distribution of zonal wind component.

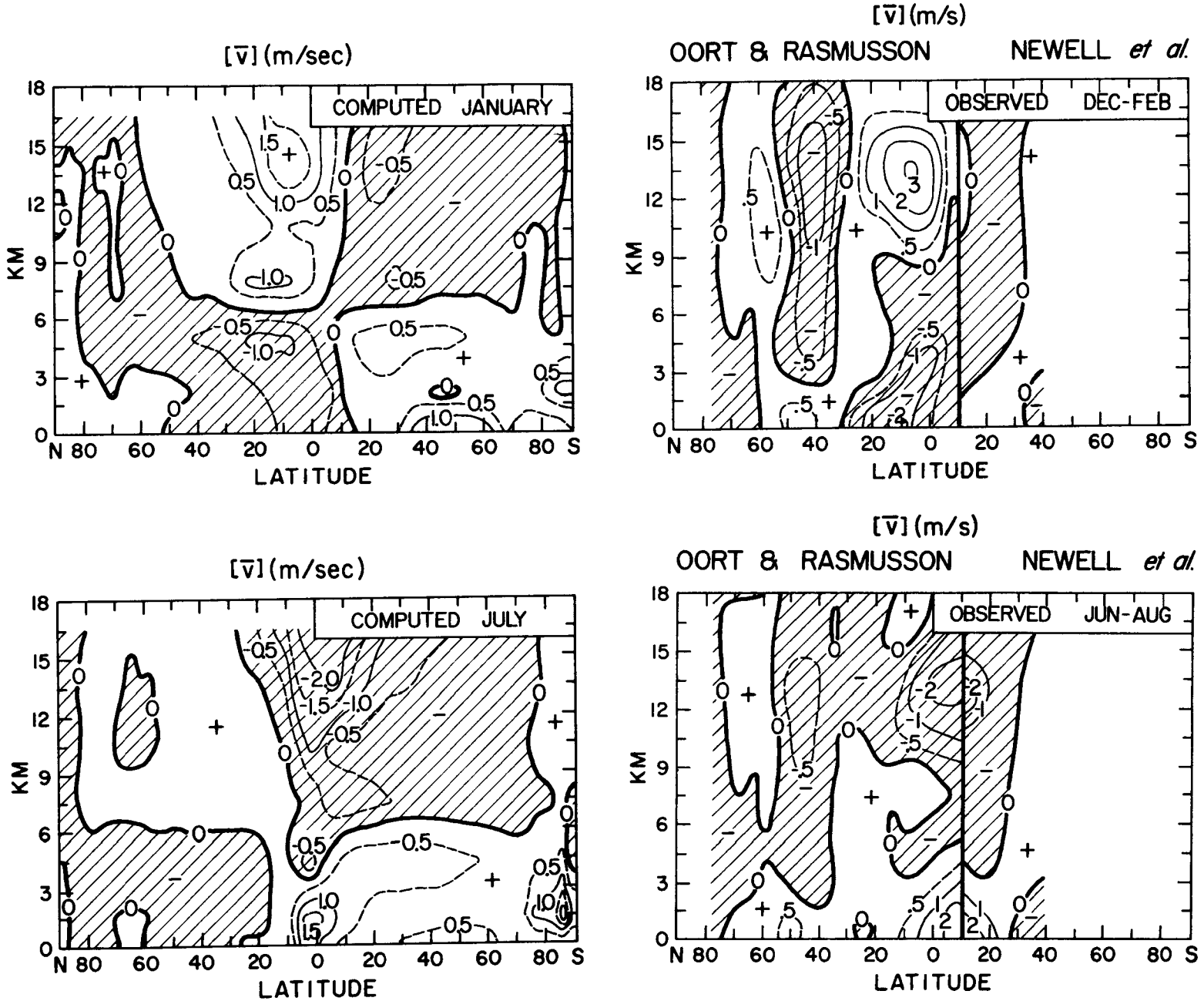

Fig. 3.3a January and July zonal distribution of meridional wind component.

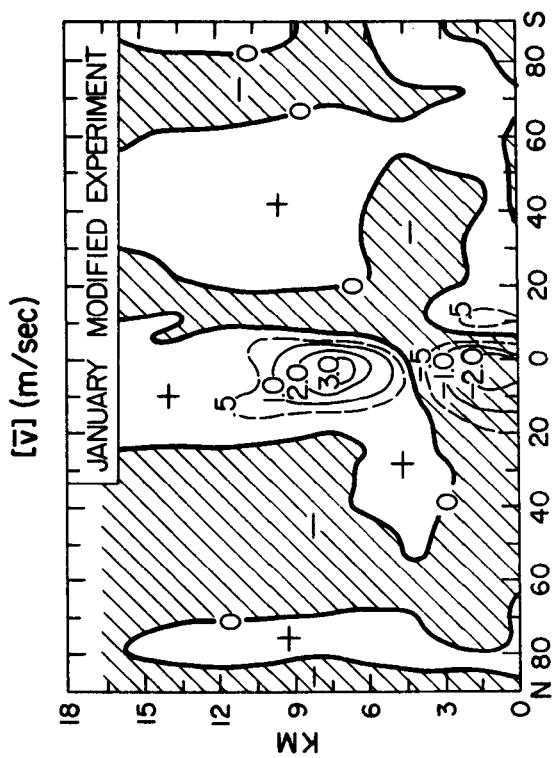

Fig. 3.3b January zonal distribution of meridional wind component.

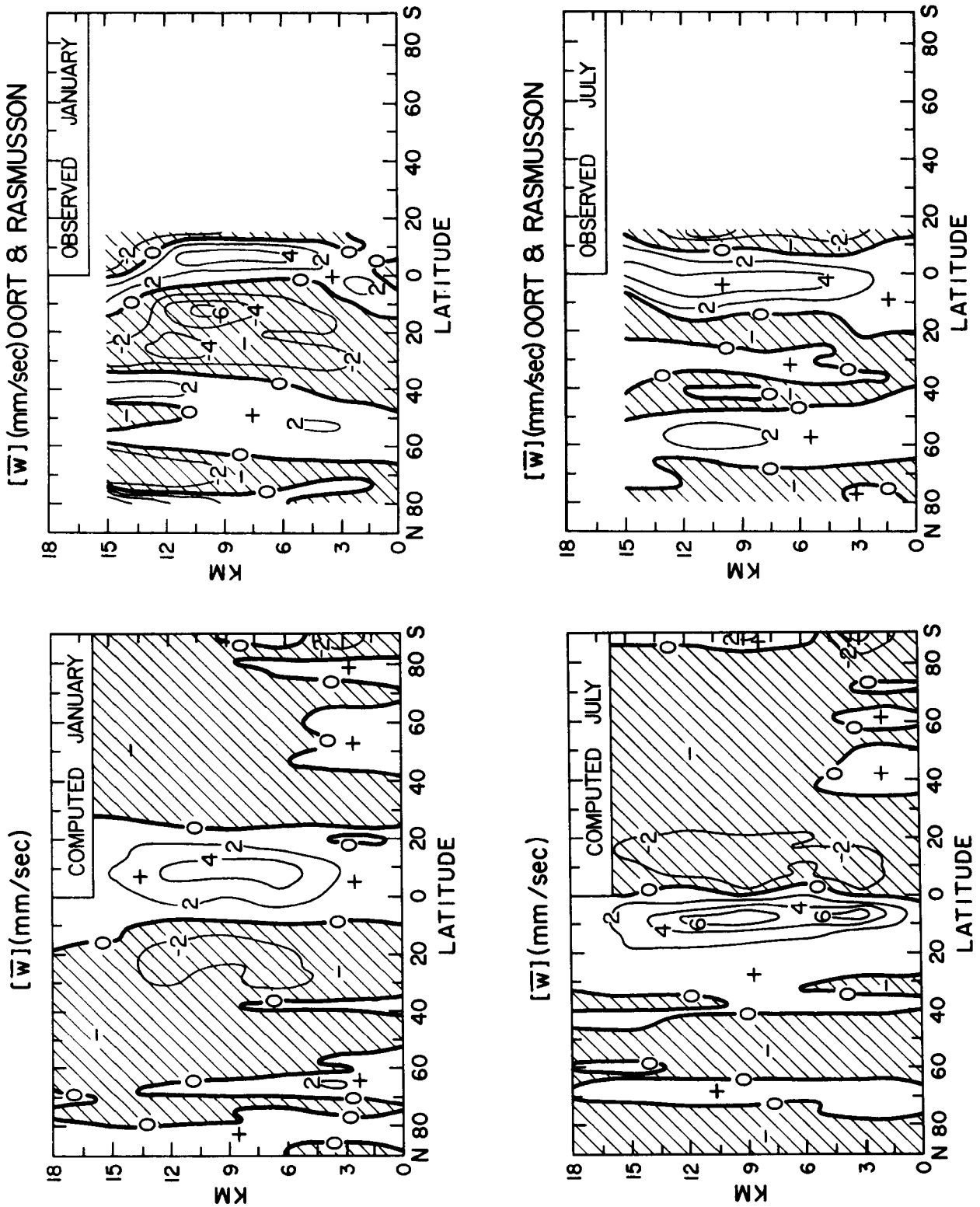

Fig. 3.4a January and July zonal distribution of vertical wind component.

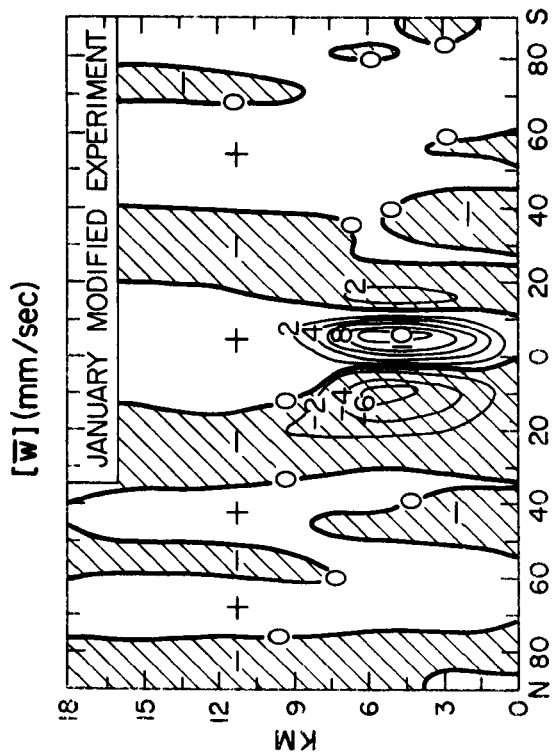

Fig. 3.4b January zonal distribution of vertical wind component.

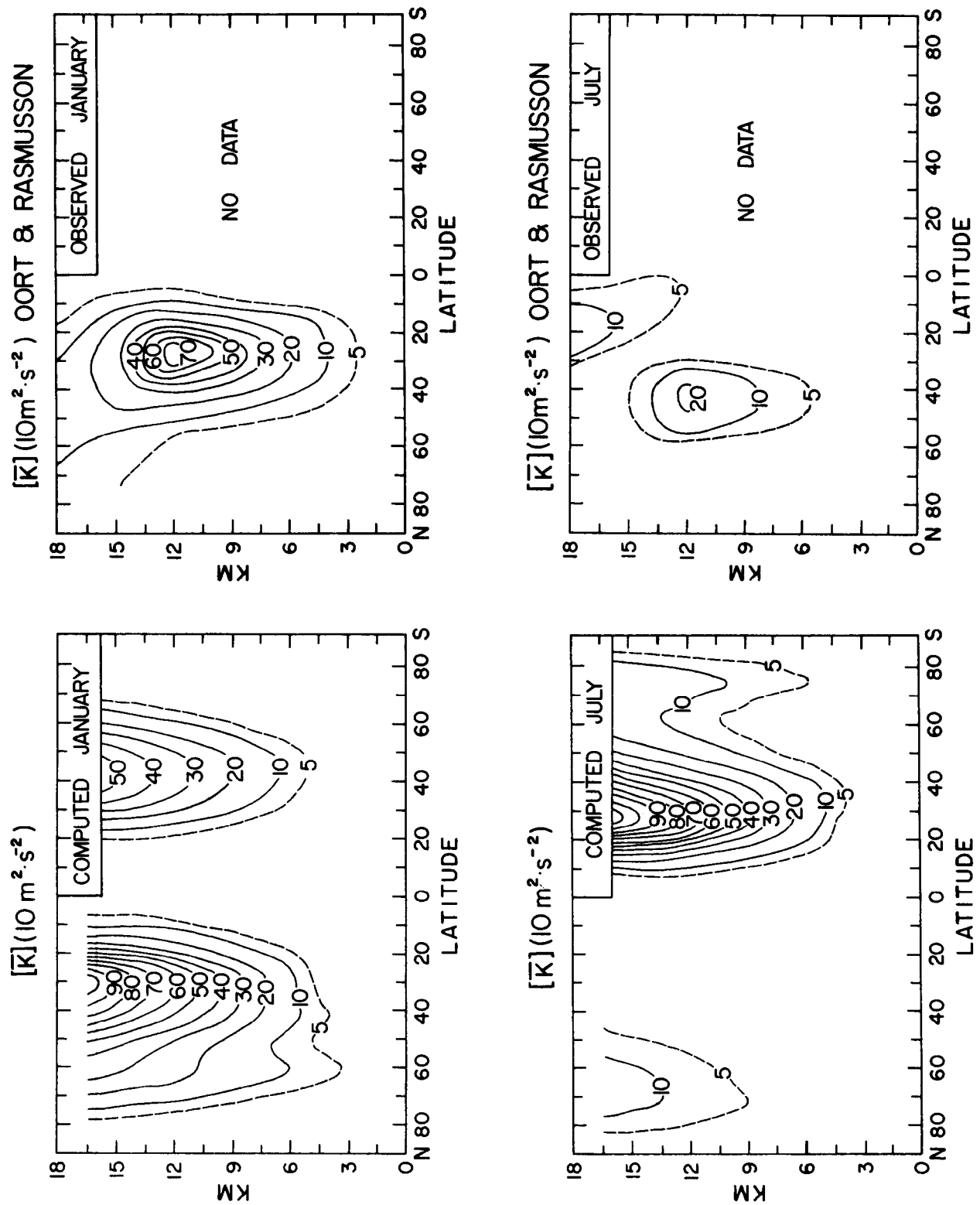

Fig. 3.5a January and July zonal kinetic energy.

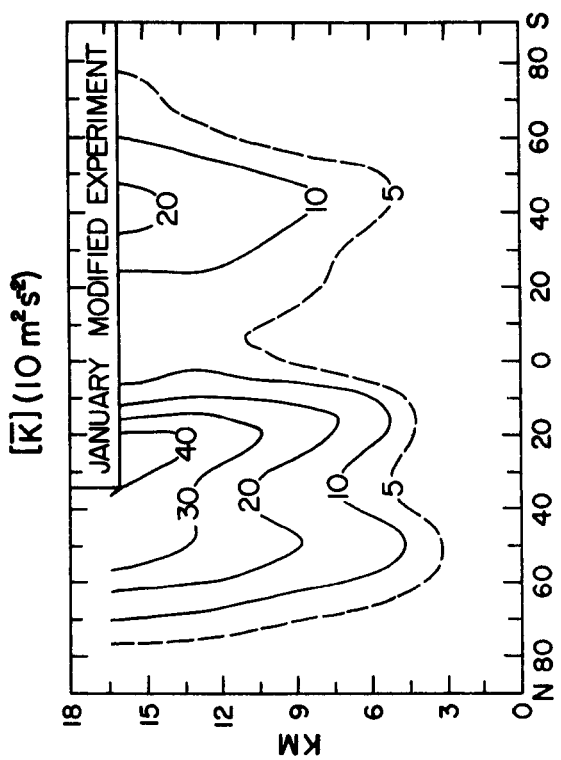

Fig. 3.5b January zonal kinetic energy.