

Interactive comment on “Reply to: “Tropical cirrus and water vapor: an effective Earth infrared iris feedback?”” by M.-D. Chou et al.

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Received and published: 10 April 2002

From the ERBE data, Baker (2002) finds that for a given latitude band, the longitudinal contrast of the net TOA radiation does not exceed 40 W m^{-2} . This number is significantly smaller than the radiation contrast of 110 W m^{-2} between the moist-cloudy and dry regions in Lindzen et al. (2001). Baker then concludes that the feedback factor of climate sensitivity as estimated by Lindzen et al. (2001) is significantly exaggerated.

In the ERBE data archive, the TOA radiation budgets are monthly mean values averaged over $2.5^\circ \times 2.5^\circ$ latitude-longitude boxes. Tropical cloud systems associated with easterly waves and Madden-Julian Oscillations propagate in zonal directions. The MJO's, for example, propagate from west to east at a speed of $\sim 5\text{--}6 \text{ m/s}$. With this speed, cloud systems propagate by $> 250 \text{ km}$ within a day. Therefore, one can expect that the possibility of a $2.5^\circ \times 2.5^\circ$ latitude-longitude box in the convection region to be continuously and totally covered by clouds in a one-month period is nearly 0. The

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ERBE monthly radiation in convective regions represents a mixture of radiation of both the moist-cloudy and moist-clear regions, and the net TOA radiation of the cloudy-moist region cannot be identified from the longitudinal distributions of the ERBE fluxes, as is attempted by Baker (2002).

References

Chou, M.-D., R. S. Lindzen, and A. Y. Hou, 2002: Reply to " Tropical cirrus and water vapor: An effective Earth infrared iris feedback?" Atmospheric, Chemistry, and Physics Discuss, 2, 173-180.

Baker, M, 2002: Interactive comment on "Reply to: 'Tropical cirrus and water vapor: an effective Earth infrared iris feedback?' ", Atmos. Chem. Phys. Discuss.

Fu, Q., M. Baker, D. L. Hartmann, 2002: Tropical cirrus and water vapor: an effective Earth infrared iris feedback? Atmos. Chem. Phys., 2, 31-37.

Lindzen, R. S., M.-D. Chou, A. Y. Hou, 2001: Does the earth have an adaptive infrared iris? Bull. Amer. Met. Soc., 82, 417-432.

Interactive comment on Atmos. Chem. Phys. Discuss., 2, 173, 2002.

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