

***Interactive comment on* “Teleconnection between Australian winter temperature and Indian summer monsoon rainfall” by S.-Y. Lee and T.-Y. Koh**

S.-Y. Lee and T.-Y. Koh

s13leesy@gmail.com

Received and published: 17 November 2011

Dear reviewer,

Thank you for taking the time to read our manuscript and offer your valuable feedback. We are preparing a detailed response to your comments. We are happy that you have directed our attention to Gimeno, 2010 and Gimeno, 2011, which shows that the Indian Ocean is a main source of water vapour for the Indian summer monsoon. We will also be closely reading the other references you have suggested regarding the methods for estimating moisture sources from trajectories (Stohl and James, 2004, 2005; Sodemann, 2008a, 2008b).

Since both reviewers share the same concern regarding the trajectory time of ~ 17

Full Screen / Esc

Printer-friendly Version

Interactive Discussion

Discussion Paper



days we obtained, we would like to make a brief response below even as we start some quantitative calculations.

The point about the residence time of water vapour in the atmosphere is well noted. The 17 days estimated refers to the time it takes an air parcel to travel from interior Australia to West India. The air parcel takes up most of its water vapour from the eastern tropical Indian Ocean as shown in Gimeno, 2010 (cf. Figure 3 in that paper), which lies approximately one third to one half the distance from interior Australia to West India. Tracing the back-trajectories from India to interior Australia was only to motivate exploring a possible teleconnection to Australia and not to establish a precise mechanism. But in response to the reviewers' concerns, we are currently calculating the time from the water vapour source in the Indian Ocean to West India. We hope to verify that the trajectory time thus calculated does not differ much from Numaguti's value of 10 days. We hope to include these new results in Section 4.5 in the revised manuscript as soon as possible.

We believe the above calculation and the reference to Gimeno's work is an important improvement to the manuscript. Thank you once again.

Yours Sincerely,

Shao-Yi Lee and Tieh-Yong Koh

References:

Gimeno, L, Drumond, A, Nieto, R, Trigo, RM, & Stohl, A (2010) On the origin of continental precipitation. *Geophysical Research Letters* 37: L13804, doi:10.1029/2010GL043712.

Gimeno, L, Nieto, R, Drumond, A, Durán-Quesada, AM, Stohl, A, Sodemann, H, Trigo, RM (2011) A close look at oceanic sources of continental precipitation. *Eos Transactions American Geophysical Union* 92(23): 193-194, doi:10.1029/2011EO230001

Numaguti, A., 1999: Origin and recycling processes of precipitating water over the

C11968

ACPD

11, C11967–C11969,
2011

Interactive
Comment

Full Screen / Esc

Printer-friendly Version

Interactive Discussion

Discussion Paper



Eurasian continent: experiments using an atmospheric general circulation model. *J. Geophys. Res.* 104, 1957-1972.

Sodemann, H., C. Schwierz, and H. Wernli, 2008a: Interannual variability of Greenland winter precipitation sources: Lagrangian moisture diagnostic and North Atlantic Oscillation influence, *J. Geophys. Res.*, 113, D03107, doi: 10.1029/2007JD008503

Sodemann, H., V. Masson-Delmotte, C. Schwierz, B. M. Vinther, and H. Wernli, 2008b: Interannual variability of Greenland winter precipitation sources: 2. Effects of North Atlantic Oscillation variability on stable isotopes in precipitation, *J. Geophys. Res.*, 113, D12111, doi: 10.1029/2007JD009416

Stohl, A., and P. James, 2004: A Lagrangian Analysis of the Atmospheric Branch of the Global Water Cycle. Part I: Method Description, Validation, and Demonstration for the August 2002 Flooding in Central Europe. *J. Hydrometeor.*, 5, 656–678.

Stohl, A., and P. James, 2005: A Lagrangian Analysis of the Atmospheric Branch of the Global Water Cycle. Part II: Moisture Transports between Earth's Ocean Basins and River Catchments. *J. Hydrometeor.*, 6, 961–984.

[Interactive comment on Atmos. Chem. Phys. Discuss.](#), 11, 26415, 2011.

[Full Screen / Esc](#)

[Printer-friendly Version](#)

[Interactive Discussion](#)

[Discussion Paper](#)