

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

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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

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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

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