

## ***Interactive comment on “The LGM surface climate and atmospheric circulation over East Asia and the North Pacific in the PMIP2 coupled model simulations” by W. Yanase and A. Abe-Ouchi***

**W. Yanase and A. Abe-Ouchi**

Received and published: 19 May 2007

We would like to thank the reviewer for suggestions and comments. The reviewer discussed several points on our manuscript.

(1) Abstract, last sentence: In a revised paper, following your suggestion, we will describe more precisely which aspects of simulations are consistent with the paleoclimatic reconstructions: e.g. the dry signal over East Asia, southward shift of westerly jet, and intensified northerly flow in boreal winter. The expression of 'paleoclimatic reconstructions' will be used instead of 'geological record' as you suggested.

(2) Section 1, second line: We will insert "atmospheric" before the word "CO<sub>2</sub>" as you suggested.

(3) Page 657: We will rewrite the sentence so that we mean the solar insolation is computed based on Berger (1978). We are sorry for the misleading explanation.

(4) Page 658: Following your suggestion, we will add other PMIP2 references associated with LGM simulation from Climate of the Past, Special Issue: e.g. Weber et al., Hargreaves et al, and Roche et al.

(5) Page 659: Firstly, we tried to analyze all the coupled-atmosphere-ocean GCM whether it is full complexity or intermediate complexity. We did not analyze the EC-BILTCLIO, just because we could not find the sea level pressure (psl) data for it in the database. However, we checked the precipitation and zonal wind at 500 hPa, and found the precipitation tendency is not as clear as the other models. In the revised version, we will try to add some figures for ECBILTCLIO and also try to discuss the result.

(6) Page 660, description of Fig. 1b-g: For example, the global average of sea level pressure anomaly from model A was removed from the anomaly simulated by the model A. We did not use the average over the models except for Fig. 1a and 1b. Since the original expression seems to be confusing as you asked, we will rewrite the description more precisely.

(7) Page 661 and Fig. 3: We agree with you that the absolute values for the wind and precipitable water at LGM will lead the reader to understand the result. Following your suggestion, we will add the figures.

(8) Page 662 and Fig. 6: Same as (7)

(9) Page 662: We agree with you that a Hovmoller plot will help us understand how long the dynamics of "summer" and "winter" last. We have checked it and found that the signal of precipitation over East Asia for both summer and winter are seen even in the following season, i.e. in autumn and spring, respectively. We will add a Hovmoller plot and discuss the result in the revised paper.

[Full Screen / Esc](#)[Printer-friendly Version](#)[Interactive Discussion](#)[Discussion Paper](#)

(10) Page 662 at the end: We see what you mean. Based on thermal wind balance, the temperature gradient is in phase with the vertical shear of the westerly flow. Since we are discussing the southward shift of the westerly jet (maximum of the phase), however, the temperature itself should be in phase with the westerly jet. We will add the detailed explanation in order to emphasize that we are discussing the gradient of "the gradient of temperature anomaly (upper-level jet)."

(11) Page 663, top: As you suggested, we will refer to the work by Kageyama et al. (1999).

(12) Page 663, section 4.1: As you suggested, the comparison with PMIP1 results would be interesting analysis. However, we think it needs the large amount of modification of the present version. Since the main focus of this paper is to describe the consistent characteristic among the PMIP2 CGCMs, we would like to mention it simply in the discussion, and like to leave it as a future work.

(13) Page 667: We can see the negative pressure anomalies over northern Siberia in MIROC, CCSM, HadCM and IPSL models. It seems to influence little on the winter monsoon (northerly flow) over East Asia because the geostrophic wind is westerly and it does not reach the coastal region in East Asia. We will briefly mention the above tendency over Siberia in a revised paper.

(14) Fig. 7b: The arrows indicate the anomaly of vertically integrated water vapor flux. The contours indicate the anomaly of divergence of water vapor flux. We are sorry for forgetting to mention it. We will add the description.

---

Interactive comment on Clim. Past Discuss., 3, 655, 2007.

[Full Screen / Esc](#)[Printer-friendly Version](#)[Interactive Discussion](#)[Discussion Paper](#)