

Interactive comment on “Simulated northern hemispheric storm tracks of the Eemian interglacial and the last glacial inception” *by* F. Kaspar et al.

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We would like to thank the anonymous referee for the detailed review. Below we provide a reply to all comments.

Reply to the general comments of referee 1: The general comments were mainly positive about the manuscript. Concerning the few critical remarks, we included following additional statements into the text: Additional comments on the problems related to model resolution; a more careful discussion of the relationship between meridional temperature gradients and storm tracks; potential other factors as latent heat release (see also our reply to referee 2).

Specific comments of referee 1:

Referee's specific comment 1: P1251, l22. "the changed orbital configuration would lead to distinct changes in the seasonal cycle of temperature, especially over land". Please explain why especially over land.

Reply: It was probably confusing to mention changes over land at this position of the manuscript, as this is a result of the simulations. In the introduction we changed the formulation and focused on the dependence on latitude and season. Differences between continents and oceans are now mentioned in the results section.

Referee's specific comment 2: P1252 l17. Here, the authors could add a few sentences explaining why the study of storm tracks for the Eemian and Last Glacial Inception is particularly interesting, by referring to earlier work, such as Vettoretti and Peltier's "cryospheric pump" or Khodri et al's transports at the Last Glacial Inception. More generally, the introduction gives good account of storm track studies for other periods but lacks references to earlier modelling/storm-track work both on the Eemian and the Last Glacial Inception.

Reply: We included a short section on previous modelling experiments for the last glacial inception. We also included additional references. One of these references includes a detailed review of other experiments (Vettoretti and Peltier, 2004)

Referee's specific comment 3: P1253, last sentence before section 2.2. Which experiments are the authors referring to? The sentence needs to be completed.

Reply: We included the requested information.

Referee's specific comment 4: P1254, section 3.1, first paragraph. Since the authors refer to a publication in a book which is not easy to get, it would be better if they included a short summary of their results here.

Reply: The summary of the results has been slightly expanded, but with a focus on those results which are important for the further text.

Referee's specific comment 5: P1256/1257 section 3.3. This discussion would be

easier to follow if the authors chose to describe the changes for EEM and GI in the same order (in terms of regions). In the present state of the manuscript, the discussion is a little messy.

Reply: We changed the order of regions according to the suggestion.

Referee's specific comment 6: P1259 before beginning of section 4: the discussion of the GI relationship between storms and precipitation is very slim. It would be good to expand this paragraph and give some ideas as to why the relationship does not always work.

Reply: The section on the GI simulation has been expanded. A comment on discrepancies between changes in precipitation and changes in storm tracks is included.

Referee's specific comment 7: P1260, conclusions. For the sake of clarity, the authors should stress that if some storm activity changes may appear to be similar for the EEM and future situations, this is not because the forcings are similar, but rather because these different forcings (insolation vs greenhouse gas concentration increase) have similar consequences on the meridional temperature gradients (and other potential factors), which in turn yield similar changes in storminess.

Reply: This is now clearly mentioned.

Technical comments of referee 1:

Reply: All technical comments have been incorporated.

Interactive comment on Clim. Past Discuss., 2, 1249, 2006.