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Earth System Dynamics
Discussions

Interactive comment on "Attribution in the presence of a long-memory climate response" *by* K. Rypdal

Anonymous Referee #1

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Review of 'Attribution in the presence of a long-memory climate response' by Rypdal

Recommendation: Minor revisions

This is an interesting paper about attribution of global warming in a long-memory climate. Previous studies assumed a zero- or short-memory climate. This study shows that long-memory response models are better supported by the data and explain more of the variance, thus, are more realistic. The paper is well written and advances the attribution field. I recommend to accept the manuscript after some minor revisions.

1) Please define 'AD'

2) Please define/explain in more detail the meanings of fingerprint and footprint

3) Page 1311, line 15-17: I don't understand this sentence. Attribution does not necessarily only refer to anthropogenic changes, so also internal modes can cause global temperature changes which are attributable.

4) Page 1316: Fig. 6a is referenced before Figs. 3-5.

5) Page 1320: Empirical mode decomposition should be explained and referenced.

6) The LM model diverges for large times. I think it would be good if the reasons for this would be discussed. Is this due to missing nonlinear effects/feedbacks in the model? Or is this the imprint of the non-stationarity of a long-memory climate?

7) Figure axes: I would prefer if the figure axis would be labeled with absolute years instead of relative.

Interactive comment on Earth Syst. Dynam. Discuss., 6, 1309, 2015.