

Responses to the reviewers and the editor

We thank the two anonymous reviewers and the editor for their constructive comments of the manuscript.

Editor

I would like to suggest a minor revision of this work based on the comments raised by the reviewers and on my own judgement. Please pay special attentions to: 1) re-clarify the statement on the timescale of the Budyko and complementary relationship, as suggested by the Referee #3. Although the Budyko curve has been applied for the season or month, the equation used in the manuscript (with precipitation as water availability) is valid only at a long-time scale; 2) revise the typos.

See responses below.

Reviewer 1

This paper aims to relate the complementary relationship and the Budyko framework. As the authors have responded the comments well, I think the manuscript should be accepted for publication. However, there is one typo:

1. Page 1, Line 28: "Wang et al., 20015" should be "Wang et al., 2015"

The typo was corrected.

Reviewer 2

The authors did a good revision on the original manuscript following the suggestions and comments from editor and reviewers. However, I don't think the statement on the timescale of the Budyko and complementary relationship is valid, at least in this manuscript, because: (1) line 5-10, equation (1) from the Budyko equation is valid only at a long-time scale; (2) equation (5) is valid only at a long-time scale also, which is the basis of equation (10). To be sure, the complementary relationship is valid at different time scales.

We recognize that our statement on timescale was not perfectly clear in the previous manuscript and certainly put at the wrong place (P5 lines 9-12). Consequently the statement was removed from its original place and split into two new statements in the introduction. A first statement (P2 lines 7-9) recalls that the Budyko functions initially established for long-time scales have been downscaled to the season or the month through analytical adjustments. The second statement (P2 lines 26-28) confirms that the CE relationship holds on different timescales from the day to the year, which justifies the matching between the two relationships (CE and Budyko) on long timescales. A new reference was added (Morton, 1983) to support the long timescale approach for the CE relationship.