

## Review of revised manuscript “A method to predict the uncompleted climate transition process”

The manuscript in this state continues to be unsuitable for consideration of publication. Much of the grammar is unclear and the scientific findings of the paper get lost due to this. There also continue to be comments not addressed from previous reviews and more issues with the continuity and clarity of the paper in the revised version. Below I will simply list the main issues of the paper, noting which ones are still persisting from previous versions. In this review I will not go into the technical corrections and leave it to the authors to fix the numerous grammar mistakes.

### General comments

#### • Section 2.1

1. It is never explicitly stated which equilibrium states are represented by  $u$  and  $v$  (which is the start and which is the end state).
2. Figure 2a shows an example for  $k = -0.4$ , not  $k = 0.4$ . Adjust figure or text accordingly.
3. Absolute value of  $k$  had not been previously discussed, which may also relate to my previous comment. Maybe discussing this earlier clears up what is going on in the figure.
4. **(previous comment)** The statement “*According to Thom’s theory (1972), the system described by a quartic function . . .*” is still unclear. The authors’ response cleared up the confusion between quartic and quadratic from the previous version, but did not make this sentence clearer to the reader. According to the theory, if the system’s *general potential energy* is described by a quartic function then the system has a tipping point. The system itself does not need to be described by a quartic function.
5. Variable  $n_2$  is introduced in the text, but  $n_1$  and  $n_3$  are not.
6. **(previous comment)** The parameter  $h$  is defined twice, where one is an approximation of the other. The parameters should be labelled differently to clarify which  $h$  one is discussing in the rest of the manuscript.
7. **(previous comment)** Punctuation was added to Eq. 5 and 6, but they were not properly incorporated into a sentence as suggested.
8. The variables  $x_0$  and  $t_0$  are used in Eq. 6 and never introduced in the text.
9. **(previous comment)** Punctuation was added to Eq. 5 and 6, but they were not properly incorporated into a sentence as suggested.

10. **(previous comment)** The relation of  $\alpha$  and  $\beta$  to  $x_a$  and  $x_b$  was explained in the authors' response to my comments but was not clarified in the text of the paper. The mathematical relationship is only seen in Figure 2d but it should also be in the text as it is necessary for the understanding of the mathematical derivation in this section.
11. **(previous comment)** The parameter  $\mu$  is used in equation 7 but not introduced previously.
12. **(previous comment)** Eq. 7 and 8 are still not clearly integrated into the text as previously suggested. The equations should not be referenced before they are introduced. (This point holds for all equations in the manuscript.)
13. Parameter  $\omega$  is never defined in the text but is used in Eq. 8.

- **Section 2.2**

1. Eq. 9 seems out of place and not incorporated into any text where it is introduced.
2. The statement "*The end moment and the end state of the prediction result match the presetting lines.*" is not entirely accurate. The two predictions using 250 and 260 moments can be argued to match the truth, but the first using 240 moments appears to obviously overestimate the end state.

- **Section 3.1**

1. **(previous comment)** The phrase "transition change" (or "transition changes") is still used in this section and subsequent sections.
2. The text states that Figure 6b has a variation of 20-60 years of sub-sequence lengths, yet the figure appears to show from 15-60 years.
3. **(previous comment)** When Figure 7 is first discussed in the text, it is unclear which sub-sequence results are being discussed. I assume its the 10-year sub-sequence, but it is never specified. Also, a quantitative definition of a peak is never introduced in the text, nor in the authors' previous response (the authors' mention "extremely high frequency" without an actual threshold on what defines a frequency to be "extremely high").

- **Section 3.2**

1. **(previous comment)** The phrase "transition change" (or "transition changes") is still used in this section.

- **Section 4**

1. Along with my comment #2 for Section 2.2, not all of the ideal experiments accurately predict the end state. This first (using 240 moments) seems to overestimate the state. This should be noted and discussed.

2. **(previous comment)** The phrase “transition change” is still used in this section.

- **Figures**

1. In Figure 2a the legend appears to be wrong. The lines do not correspond to their starting (v) and ending (u) values
2. Caption of Figure 6 is wrong. The X-axis of 6b shows sub-sequence length in years, not months.
3. Caption of Figure 7 has not been adjusted to reflect the new figure.