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Global Study on Climate Predictability

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Cell-to-cell mapping is a powerful tool for globally analyzing into nonlinear system. By introducing the cell-to-cell mapping method, the predictability of climate in a most simplified air-sea coupled model is studied in this paper. It is indicated that there exists a maximum predictability limit in climate predication. For the prediction beyond the daily predictability limit, it is proved by using simple cell-to-cell mapping idea that mean value is predictable, and the quantitative result is obtained. The study also shows that both coupling mechanism and improvement of observational error prolongs the maximum predictability limit.

Key words: Cell-to-cell mapping method, Climate system, Predictability limit.