

## Optimization of a terrestrial ecosystem model by data assimilation: demonstrating flexibility of the particle filter

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Although data assimilation is widely used for optimization of simulation models, due to complexity, terrestrial ecosystem models have not become one of main targets of data assimilation. In this study, using the particle filter, a method of data assimilation, we show that a terrestrial ecosystem model with complex structure and abrupt behavior can be optimized. As a case study, leaf onset and offset phenology, abrupt behavior in forest ecophysiology, of deciduous trees in a terrestrial ecosystem model was optimized. Using satellite-based leaf area index, here we show the results of data assimilation where the set of model parameters were optimized.

Keywords: ecosystem modeling, data assimilation, terrestrial ecosystem