Forest-CEW: A Forest Ecosystems Model for Carbon-Energy-Water Processes.

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Forest ecosystem models (FEM) are essential tools for studying the forest carbon budget, which is an important subject in the global climate change studies. Although using FEM has a long history and there exist many types of FEM, new models are still being developed for special uses. This presentation introduces Forest-CEW, a forest ecosystems model for carbon-energy-water processes. The model is aimed at having a structure that can be configured flexibly for different forest ecosystems, a graphic interface for inexperienced users, and a command execution mode for experts. The time scale of the model is at the hourly level. Model validation using the data from Tomakomai flux research site (asiaflux.net/index.php?page_id=113) shows that the model can well reconstruct major ecosystem variables including net ecosystem exchange, soil temperature and water content. We also compared Forest-CEW with those include in the TDE ecosystem model intercomparison (cdiac.ess-dive.lbl.gov/epubs/tdemodel/models.html) and the results show that its performance is among the best of the 13 models.

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