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Computational Experiment Design Within A Functional Unit Testing Framework

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A functional unit testing (FUT) framework has been developed to validate key ecosystem processes within Earth System Model by enabling direct comparison with field experimental result. In this poster, we first present the software components of a FUT for the land model within the Accelerated Climate Model for Energy (ACME) and describe the key technologies and functions incorporated in the FUT system implementation. We then demonstrate several computational experiments designed to validate mechanistic ecosystem processes, such as photosynthesis, root dynamics and soil decomposition. At last, we illustrate several new directions for further system improvement, including real time ecosystem process monitoring and experiment data infusion.