Recent advances and ongoing developments of the CARbon DAta MOdel framework (CARDAMOM)

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The CARbon Data MOdel framework (CARDAMOM) is a model-data fusion tool that produces re-analyses of the terrestrial carbon cycle in agreement with available observations and ecological theory. CARDAMOM has been applied from local scale, using flux data and forest inventories, to global scale, using remotely sensed observations of leaf area and biomass stocks. Here we present some of CARDAMOM's recent applications focused on the impact of adding new observations and/or processes on the accuracy and uncertainty of parameter retrievals. At local scale, analyses of managed forests have demonstrated that repeated woody biomass observations help constrain both plant and soil carbon dynamics. At global scale, fire-prone ecosystems present shifts toward more productivity and more allocation to resistant plant pools. We also present preliminary results of ongoing developments such as the representation of drought stress on plant productivity. They will make CARDAMOM a tool of choice to take full advantage of upcoming satellite missions dedicated to observing tropical forests.