

ACTIVITIES FOR MBL MEL Project DEB-0108960

Research activities

The aim of this research was to extend our analysis using the MEL model along three lines: **(1)** examine multiple sources of the same element resource to plants (e.g., NH_4 , NO_3 , N-fixation, & dissolved organic N [DON]), **(2)** generalize from two to three or more element resources, and **(3)** generalize to non-elemental resources (e.g., light and water). Development of this new model is now complete. The approach is general enough that the model can now be extended to any number of element and non-element resources and to any number of sources for any single resource. The form of the model that we have implemented has eight resources or sources of resources: CO_2 , NH_4 , NO_3 , DON, N_2 -fixation, PO_4 , H_2O , and light. In addition, the model has been formulated to run on a daily time step, which allows a more accurate assessment of the soil water balance and of the losses of soil-water solutes. We have calibrated it to data from Hubbard Brook and are preparing a manuscript describing the approach, the model, and its application (Rastetter et al. in prep). Because this manuscript is still in preparation, details of this work are specified in below under findings.

Education activities