



Analysis of across-site variability in carbon-flux and -pool relations as affected by biotic and abiotic factors.

Myroslava Khomik (1), Markus Reichstein (1), Marion Schrumpf (1), Christian Beer (1), Ivan Janssens (2), Jorge Curiel Yuste (3), Sebastiaan Luyssaert (2), Susane Trumbore (1), and Thomas Wutzler (1)

(1) MPI-BGC, Jena, Germany (kmyros@bgc-jena.mpg.de), (2) Department of Biology, University of Antwerp, Belgium, (3) CREAM, Universitat Autònoma de Barcelona, Spain

Soils are complex systems that contain the largest carbon pool in terrestrial ecosystems. Yet in terrestrial carbon models soil carbon dynamics are often represented by very simple “one-bucket” - type models, partly due to the lack of understanding of soil carbon dynamics at ecosystem scales. The aim of our project is to derive relationships between carbon fluxes and pools within the whole ecosystem, and possibly within its different compartments, across different biomes. For example, the apparent soil carbon turnover rate can be derived from knowledge of site’s soil carbon pools and measurements of soil and ecosystem carbon fluxes. The goal is to use such relationships as an overall ecosystem diagnostic for constraining soil carbon models. We used soil carbon data together with eddy-covariance ecosystem flux data and soil chamber flux data from a number of forested sites across the globe to compute apparent soil carbon turnover rates. We related these rates to the site’s climatic and edaphic factors. Here we present some preliminary results.