9) **POSTER**

Calibrating the carbon and energy-water exchange processes represented in the
BATS2 model for a set of natural forest ecosystems within the Amazon

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Over the last decade, carbon exchange processes have been introduced into some of the more realistic and important land-surface models used in General Circulation Models (GCMs). In particular, carbon exchange is now calculated (albeit in an appropriately simple way) in the second-generation Biosphere Atmosphere Transfer Scheme (BATS2). This paper discusses automatic calibration of.the description of the carbon and energy-water exchange processes represented in BATS2 using state-ofthe- art multi-parameter estimation techniques and long-term measurements of fluxes over several undisturbed Amazon forest sites. Optimization of the parameters in BATS2 was made by simultaneously minimizing the Root Mean Square Error (RMSE) between time series of observed and modeled latent- and sensible-heat fluxes and CO_2 exchange. This procedure provides values of preferred sets of the many model parameters used in BATS2 in the different conditions for which extended time series of undisturbed forest data are available through the LBA Experiment. In most cases the optimization algorithm defines preferred parameters that lie comfortably within the predefined range of plausible values, but in some cases the preferred values are close to the edge of this range. The RMSE between modeled and measured fluxes was significantly reduced when the optimized parameters were used over the "default" values of parameters that would otherwise be assigned in BATS for the tropical forest biome. Investigations were carried out as to how preferred sets of model parameters change with site and season. It should be noted that model calibration also (implicitly) provides an extra level of quality control on the LBA data by flagging times when individual data points are inconsistent with the remainder of the data.