



Comparing terrestrial, satellite, and ecosystem model output data for the Batéké Plateau, Gabon.

Charlotte Fletcher, Richard Petritsch, and Stephan Pietsch

Institute of Silviculture, University of Natural Resources and Applied Life Sciences, Vienna,
Austria(fletcher@groupwise.boku.ac.at)

Productivity estimates hold an important role in decision making processes involving carbon sequestration and ecosystem management. They are also an integrated part of our efforts in understanding the effects of climate change on ecosystems. Yet exhaustive measurements of Net Primary Production (NPP) are difficult to accomplish, and the relationship between site-level and ecosystem model biomass estimates, and satellite and ecosystem model NPP estimates, is, as yet, not clearly defined. Past research undertaken in Austria suggests that (i) satellite-driven NPP estimates are similar to those of the ecosystem model's self-initialisation which represents potential NPP; (ii) NPP derived from field observations are correlated to the model results on actual ecosystem NPP; and (iii) correlations between satellite-derived versus terrestrial estimates are relatively poor.

This study builds on the above-mentioned research within a different environmental context. Correlations between terrestrial data-driven biomass and NPP estimates and those derived from satellite imagery and an ecosystem model are analysed for the Batéké Plateau, Gabon - an area of savannah grasslands in the Congo basin. The biomass and NPP outputs of a biogeochemical (BGC) ecosystem model will be compared with biomass estimates calculated from field data, and NPP estimates as derived from the Moderate Resolution Imaging Spectroradiometer (MODIS) available on the internet, respectively.

One potential reason offered for the lack of correlation between satellite-derived and terrestrial estimates of NPP is that the different estimation methods act on different scales. Indeed, prior results indicate that satellite and terrestrial estimates are more highly correlated for homogenous landscapes compared to 'patchy' landscapes. The Batéké Plateau has a more homogenous landscape compared to the intensively managed, patchwork landscape of Austria. It is therefore predicted that this study will show stronger correlations between the terrestrial, satellite, and ecosystem model estimates.