

***Interactive comment on “Satellite-based estimates of light-use efficiency in a subtropical mangrove forest equipped with CO<sub>2</sub> eddy covariance” by J. G. Barr et al.***

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This paper presents an important data set describing mass and energy exchange from a tropical mangrove community in Florida, USA. There are few if any long-term flux data sets from mangrove forests given the technical difficulty and fetch constraints associated with operating eddy covariance systems in mangrove forests. The data span a good range of environmental conditions including recovery from a hurricane. Such observations provide data quantifying mangrove forest sink strength, important given the current interest in ‘blue carbon’ ecosystems with claims of large levels of carbon storage and high carbon sink potential. This is important as recently, mangrove

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forests can now be included in REDD+ schemes and knowledge of their response to environmental drivers and typical sink strength is increasingly important if they are to be included in emission offset and rehabilitation programs – we need to know how these systems work.

The aim of this paper was to develop a light use efficiency model linked to MODIS derived EVI to predict productivity as a function of key variables such as salinity and temperature. Given many mangrove systems of the world are in tropical and/or difficult to access areas, developing a robust method of estimating GPP from satellites is highly valuable.

The methods look sound from this experienced team who are leaders in using EC methods in mangrove ecosystems. The development of an ecosystem respiration model for this ecosystem was also novel and useful. Modeled GPP using the calibrated LUE model performed well. I thought the paper was well written and well-structured and is of appropriate scope for Biogeosciences.

I had only minor comments, this is a very sound piece of work; 1) Why was soil/sediment temperature (assuming it was measured) not included in the ecosystem respiration modelling, in addition to or as well as air temperature ? 2) Use ‘fPAR’ instead of ‘FAPAR’, fPAR is the standard acronym.

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