

## ***Interactive comment on “Response of CO<sub>2</sub> and H<sub>2</sub>O fluxes of a mountainous tropical rain forest in equatorial Indonesia to El Niño events” by A. Olchev et al.***

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I would like to chime in with some general thoughts.

I do not believe that a perfectly flat site is necessary nor even advantageous for eddy covariance measurements, especially in some cases where a small slope can simplify (but of course not oversimplify) budget calculations at night due to horizontal advection (e.g. <http://www.sciencedirect.com/science/article/pii/S0168192303002314>). As a consequence, and given the proposed improvements to the methodological description, I see no reason to exclude measurements at this site if the measurements themselves are treated with caution. In other words, a comprehensive discussion of the

C2349

methodologies and associated uncertainties inherent in the estimation of flux sums will in my opinion make observations from this site defensible.

A separate issue, and one that I feel deserves mention, regards the correlation analysis of moving averages. I refer specifically to the smoothing procedure described in the Results on page 7 line 21, which belongs in the Methods section with an expanded explanation.

Smoothing degrades one's ability to perform a correlation analysis by considering the definition of correlation:  $r = 1/(N-1) * \sum((x-\text{mean}(x))*(y-\text{mean}(y)))/(\text{std}(x)*\text{std}(y))$  [apologies for the equation as text]. By changing the values  $x$  and  $y$ , and also the standard deviation of  $x$  and  $y$  (but not the mean) by smoothing, the correlation becomes a function of the smoothing procedure.

For this reason, I recommend that the analysis in support of the major conclusion be re-done. Different approaches exist for drawing inference from complicated time series including Granger (or spectral Granger) causality, wavelet coherence, change detection algorithms, or correlation analyses that maintain the statistics of the underlying signal to name a few, not that every potential method requires examination.

My apologies for the rare editorial interlude; I felt that it would be important in this case that I contributed to the discussion.

Sincerely,

Paul C. Stoy

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C2350