**Hydrology and
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Discussions**

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Interactive comment on "The turbidity behavior in an Amazon floodplain" *by* E. Alcântara et al.

Anonymous Referee #2

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General comments

Unfortunately, this paper was both poorly written and poorly structured making it very difficult to follow the information presented. Throughout the paper the English needs careful correction and the ordering of the content needs to be reconsidered. For example, in the Introduction section the authors present a confusing summary of the past studies on the Amazon floodplain. This section needs to be reordered and probably can be substantially reduced as much of it is repetitive. Furthermore, it was not satisfying that much of this material was not related to your data analysis in the discussion section.

The authors have presented some analysis in this paper which I believe is flawed. For example, the power spectrum (Fig 9) cannot be used to make comments about the

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"power" as a function of time.

In its present form I do not believe that the paper demonstrates any significant advances in our understanding of floodplain dynamics. Instead it serves as a site characterisation using newly available data. I would like to see the authors expand their discussion of the implications of this data set for other similar systems as well as make more satisfying conclusions about why the patterns they measured exist. However, they may not have the seemingly necessary measurements of currents and waves to achieve this.

Detailed comments:

Introduction

Definitions need to be introduced earlier e.g., definition of pulses appears p. 3950, line 15 after the term has already been used many times. The description of the precipitation climate should precede the description of how the Amazon floodplain responds to the "water year".

It is not clear from your description whether the lakes are contributing water to the flood plain or whether they are the floodplain. Furthermore, it is not clear if the different lake descriptions exist at the same time. You did relate these characterisations to your results in your discussion of the spatial analysis.

I felt that Fig. 2 was not necessary

Methodology

I found the descriptions of the methodology used for the data analysis to be unnecessarily detailed. Sufficient detail of the analysis technique as applied to your data set is adequate along with references which contain the details.

Time series analysis

The Results need to start with a time series plot of wind vectors, water level (perhaps

at multiple stations), and turbidity. This is needed to support claims related to flood pulses, the occurrence of sediment resuspension during low water wind events etc.

It is not at all clear to me why you would want to try and model your data as an eight-term Gaussian series. This needs to be justified. If you want to remove high frequency fluctuations then a low-pass filter would be a better choice.

The power spectrum analysis is flawed. The power spectrum cannot be used to make comments about the "power" as a function of time. In fact it does not look like any of your peaks are significantly different from each other. Try a log x-axis to look more closely at the peaks less than 250 h. You might see a peak due to the wind stress with a 3-day periodicity or something like that.

The data in Fig 10 needs to be smoothed so that the dense black contour lines on the upper LHS of the plot do not cover all of the color. The color bar should be displayed on the RHS to remove it from the x-axis and the first x-axis should be labelled as time in hours (same for Fig. 13).

The discussion of the wavelet analysis is not cohesive and is very difficult to understand. Showing a time series of wind vectors below the wavelet analysis would be better than including wind roses.

Cross wavelet spectrum...

Again a time series of wind vectors and water level below the wavelet analysis would make it easier to follow your discussion.

Spatial analysis

The analysis of the spatial data is extremely speculative. It appears the turbidity data needs to be coupled with measurements of currents and waves in order to substantiate the suggestions the authors provide to explain the areas of high and low turbidity. This also really needs to be related to the information presented in the Introduction section about the source of water to the "clear" and "black" water lakes etc (p. 3951, paragraphs

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1-3).

Why are there so many NaNs in Fig 15d?

In figure 15d, when the water level is lowest, we do not see the highest values of turbidity , this does not agree with your time series analysis. Why?

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 6, 3947, 2009.

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