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Hydrology and Earth System Sciences Discussions

Interactive comment on "Flooding dynamics in a large low-gradient alluvial fan, the Okavango Delta, Botswana, from analysis and interpretation of a30-year hydrometric record" *by* P. Wolski and M. Murray-Hudson

Anonymous Referee #1

Received and published: 10 October 2005

The paper describes the complex flooding dynamics in the different branches of the Okavango Delta. The dynamics is extremely complex, whereby there is a strong interaction between channel flow and floodplain flow with continuous changes in the channel network, governed: by sedimentation, erosion, vegetation growth, hydrological variability and human interventions. Although the paper is essentially descriptive (it does not make an attempt at quantification or modelling) it is a valuable paper. It builds on a wealth of hydrological data and field analysis and it gives a good overview of the research to date. What is most interesting is the interaction between the ecosystem and the hydrological behaviour of the system. The hypothesis that cyclic behaviour in water levels and flows is due to vegetation growth reacting to nutrient pulses (whereby

ecosystems can maintain a nutrient rich environment by recycling of nutrients over prolonged periods of time) is interesting. This is a very interesting hypothesis for further study. The fact that this is a hypothesis rather than a firm conclusion should be stressed in the paper. If proven true, it would be an important example of system feedback between ecosystem, morphology, water quality (nutrients) and hydrology.

The paper would benefit from rigorous English editing. Sometimes the language is unclear. Below I have made some suggestions for adjustments, but I am sure the paper would highly benefit from editing by a native speaker.

Editorial suggestions:

P1, L8: remove "input"

P1, L11: replace "nutrients recycling might" by "intermittent nutrient loading, possibly sustained by nutrient recycling, may"

P1, L11: "It is shown that discharge data within the main channels of distributaries do not adequately represent flood dynamics, but that flood plain flow can form a large part of the total discharge, being responsible for the larger part of the flood dynamics"

P1. L14: replace "changes" by "variation"

P1, L18: replace "of the" by a comma

P2, L4: replace "operations" by "variability"

P3, L6: replace "entire" by "the total"

P3, L12: replace "might" by "may". Do this throughout the paper. The word might is not appropriate in a technical paper. "May" is weak enough to indicate that you are not certain.

P3. L22: replace "e.g." by "e.g. at the"

P4, L3-4: replace "they hydrotechnical results might" by "technically speaking, they

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may"

P4, L11: replace "detail" by "describe the "

P4, L 13: "In a broader context"

P4, L14: "in the channel-floodplain"

P7, L12: remove "peculiar"

P8, L20: I am not so happy with the word aggradation. Although it is not a wrong word, it is jargon that is not known beyond an inner circle. It does not even occur in the dictionary. Better to use sedimentation or accretion throughout the paper.

P9, L10: better remove the word "longitudinal". It is quite clear that you mean the slope in the flow direction. It raises unnecessary questions. Next: "This reduces the flow velocity"

P9, L13: remove comma after "or"

P10, L2: replace "although" by "albeit"

P10, L15: remove "being"

P10, L 16: replace "failing" by "dying" Do this throughout the paper.

P10, L 17: replace "straightening" by "shortening"

P10, L25: "upstream part of"

P10, L28: remove "rather"

P11, L9: replace "becomes relatively unbounded" by "is not constrained"

P11, L11: replace "could thus cause" by "thus causes"

P11, L12: replace "When..." by "Further down, the flow is confined in the X.. area. As a result, seasonal.."

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P11, L13: remove "relatively"

P11, L14: remove "water level hydrographs"

P11, L18-19: replace "must be delivered there" by "is delivered"

P11, L 20: replace "must"

P11, L 22: replace "Flood accession" by "Lateral inflow" (the word accession is not really a good term. avoid it throughout the paper)

P11, L22: replace "must be by" by "likely stems from"

P11, L25 replace "ones" by "the ones"

P12, L5: replace "magnitude as the channel flow" by "order of magnitude"

P12, L18: replace "bounded" by "bound" and remove "a"

P12, L10: "causes a rise"

P12, L 19: replace "accedes to" by "continues to spill into"

P13, L5: "The Hamoga site"

P13, L14: replace "that" by "this"

P13, L17: "channel gradient to the"

P13, L19: "results"

P13, L21: replace "flood" by "floods" or "flooding"

P13, L22: replace "in" by "at"

P13, L25: "as is evident"

P14, L11: remove "of"

P14, L17 "is thus redirected"

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P14, L19: replace "accession" by "flowing"

P14, L24: replace "seems" by "appears"

P15, L22: replace "cyclical" by "cyclic"

P16, L20: remove "located on channels"

P17, L4: replace "in such" by "to such"

P17, L7: replace "of" by "in a "

P17, L12: replace "capture and characterization" by "description and characterisation"

P17, L13: remove "channel"

P17, L14: replace "the analysed" by "a"

P17, L 20: replace "nutrients recycling might" by "nutrient pulses may"

P17, L23: remove "will"

Interactive comment on Hydrology and Earth System Sciences Discussions, 2, 1865, 2005.