

## ***Interactive comment on “Monitoring of riparian vegetation response to flood disturbances using terrestrial photography” by K. Džubáková et al.***

### **Anonymous Referee #3**

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#### General Remarks

The authors present an analysis of floodplain vegetation changes following flooding events as detected by a ground digital camera system made of two cameras shooting in both the visible and the near-infrared ranges. Because of the known difficulties in obtaining objective information from single vegetation indexes, the authors propose a comparison of seven different vegetation indexes taken from the literature. A statistically robust vegetation index (VI) is defined by using the median of 7 days pre and post flooding events in order to limit the variability due to heterogeneity and light conditions. Vegetation changes are in form of a differential change ( $\Delta VI$ ) of such median  $V_{is}$ , and an index of disagreements among  $V_{is}$  is also built by comparing  $\Delta VI$  from different indexes for the same pre and post flooding event. Results show the different interpre-

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tation of vegetation damage/enhancement from different indexes, and the discussion focuses at the importance of simple and economic analysis to detect floodplain sediment and vegetation dynamics. The paper is very well written, and pleasant to read. I particularly appreciated the idea of building a statistically robust index by comparing the median of the empirical histogram. I recommend publication in HESS prior to a revision to address some minor issues is done.

#### Minor issues

- How were the pre- and post- flood condition fixed/defined? On a streamflow basis? With respect to the peak? In this case the asymmetry of the hydrograph may determine non completely comparable conditions. For instance, Figure 2 show that some days after the peak has occurred flow conditions can still be quite high and many pixels are in the Figure are simply non usable in order to construct the statistics of Eqs. (1,2). Please comment and explain this point better;
- I would appreciate a comment on why authors did choose the median and not the mode or the average of the empirical histogram when defining the vegetation index;
- It is not necessarily clear to me how authors can discriminate between vegetation enhancement as a response for bigger and mature trees and not only an effect due to the elevation of the site on which vegetation grows. May be joining an elevation map aside of Figure 6 might help to interpret the results;
- An interesting comparative analysis would arise if hydrodynamic conditions could numerically be modeled and then put in relation to the observed index changes. I understand this is not a feasible task to be accomplished, particularly in relation to the available DTMs. I leave the authors the decision to whether address it or not.
- Figure 1. Please indicate flow direction and floodplain orientation;
- Figure 3, if I understand the Figure correctly, the number of outliers is very high. Can this affect the significance of the proposed methodology?

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Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 11, 3359, 2014.

**HESD**

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