

The repeat multi-spectral terrestrial photography method presented by the authors appears to be generally sound, as is their use of previously established vegetation indices. The use of these cheap and low maintenance methods for quantifying geomorphic change and vegetation response to floods is a significant contribution to the field. I have significant reservations, however, about the quality of the results obtained from the analysis of the photographs, and would like to see validation tests as well as error analysis that confirm the reliability of the method before it is used to draw conclusions about the behavior of a complex and dynamic natural system.

Many of the issues raised here and by previous reviewers could be addressed by more clearly re-framing the manuscript as a methods paper. The current goals of the study, as stated at the end of section 1, are to detect unknown changes in a natural system. I hold, however, that any results are questionable unless the method is shown to accurately detect what it is supposed to be detecting. The authors address the previous reviewers' requests for validation in their reply and state that this is a difficult process and that the necessary resources are unavailable. I acknowledge this reality but insist on the importance of some sort of validation of the results that confirm that any changes detected through these methods correspond to changes in the natural system and not external influences on the images such as soil reflectivity or the quality of ambient light. I suggest, at a minimum, that the method should be shown to meet two criteria:

(1) It detects no change during the flood study periods in areas near the channel that were not affected by the flow. This is currently not the case: figure 6 shows significant change throughout the Secondary Bar and central part of the Main Bar for pre-2011 floods, even when it is stated in lines 120-122 that these were not submerged during those events.

(2) It detects no change in the vegetation on the active floodplain for randomly selected periods (of the same length as the flood study periods) when no high flows occurred. This would also provide a measure of the error in the method.

I share another reviewer's concern about the meaning of "vegetation enhancement", and whether any significant biological changes could be visible over such a short timescale and distinguishable from, for example, the removal of litter changing the color of the background.

The manuscript is well organized and the language is generally good, although the wording of sections 1 and 2 can occasionally be confusing. The text is sometimes vague and could be significantly condensed.

The figures are clear and well designed. The text and figures are, however, not fully integrated, leading to the figures sometimes not being fully explained by the text that refers to them. The captions need to more thoroughly describe the content of the figures. This is particularly important for figures 5 and 6.

There is a lot of well-written explanations in the reply to reviewers that could be used in the manuscript. For example, the three bullet points about the novelty of the work on the first paragraph.

Line-specific comments:

105+: An understanding of what the different indices characterize and what the values mean seems to be assumed further on in the manuscript. Significant more detail in this section is necessary for readers to follow the text later on.

112-116: Grammar: Two sentence fragments that should be separate sentences.

117-119: It's clear that increased sensitivity refers to an increase in the error in the data (more sensitive = more error), but sensitivity is also used to refer to the ability to detect a signal (more sensitive = less error). Use "are negatively affected" or something similar.

120: What does "which is specific to riparian systems" refer to? Are these VIs not suitable for riparian systems because their vegetation tends to be sparse, and the optical properties of the soil introduce error to the data? (Isn't this a problem when trying to detect vegetation removal, since the percentage of bare ground will change?)

121-122: Grammar: Which methods were "modified"? Modified RVI and NDVI to develop multiple SAVIs? Problems with verb-object relationships in paragraph.

125- 126: Why were these specific methods selected? What do their values represent in nature?

139 (and elsewhere): Grammar: Should use a comma before "which", no comma before "that" ("... of a gravel bar, which are..." OR "... of a gravel bar that are...")

170: Is "Bignasco" a reference to a specific location? Specify "at the village of Bignasco" or "at the XXX gage near the village of Bignasco". Later on give the full reference to the gage, but should do it at the first reference.

176: "on the average" -> "on average"

179-190: How were the edges of the zones defined?

216: The \*reported\* peak flows are lower estimates

224-225: Said in 222 that SB and much of MB were only submerged in 2011, but then said that a discharge defined as a flood inundates the majority of the riparian zone.

266: The angle is given in the manuscript as 25 degrees, in the replies to reviewers as 38 degrees.

284: It seems like not fixing the white balance and not having a white reference card could introduce unwanted variability to the relative intensities of RGB. Auto white balance can cause problems if the images are mostly one color - here, green. If this is combined with changes in the color temperature of ambient light (which can range from 5000 K on a clear sunny day to 10000 K on an overcast day), it seems that the DN<sub>s</sub> might not be reliably constant on different days (and therefore "change" would be detected)

319-329: Is the location of the five fluvial features reliably stable over time? What are the values reported as image distortion referring to? What's the minimal area that can be studied in the image? The trees in figure 2 look to be less than 2 m x 2m in footprint.

361: Is the threshold of 0.15 for defining vegetation a standard value? Do it account for variability in the nature of the vegetation affecting that threshold? (for example, bright green vs. dark green canopy)

362: Specify in the text that the comparison reports a disagreement in direction before presenting the equation

376: Is this a result of this study instead of an a priori assumption?

Section 4.1: Detailed knowledge of what each VI measures seems to be necessary to understand what their differences mean. As currently written, the immediate conclusion is that these comparisons are ranking the VIs from “best” to “worse”, especially since the highest difference is over 30%. The aim of these comparisons is well stated in the reply to reviewers and should be expanded upon in the manuscript.

417: Here, again, knowledge of the relationship between values of VIs and real-world characteristics of vegetation is implied. How is the vegetation composition known to be stable?

428: The difference in the response of each VI category is only really visible in figure 5 for the Transition Zone.

440: What the authors refer to as “enhancement” should be more thoroughly explained. It seems the timescales are too short to be observing an uptake in biological activity.

Section 4.3: Widespread change is observed for the Secondary Bar and main area of the Main Bar for pre-2011 floods, even when those are stated as not having been submerged during those events. If this is not the reflection of a problem with the method, it must be very thoroughly explained in the manuscript.

461+: Much of this should go in the discussion, not results.

481-510: Much of this should go in the conclusions, not results.

531+: Far-reaching conclusions are drawn in this section about the effects of the floods on the vigor of plants and the distribution of species across the landscape. It seems that there is extensive knowledge about the specific characteristics of the plants on the study site that exceed the descriptions provided in section 2. If such detail about the effects of the floods on individual species can be known from this data, then this must be much more extensively supported in the manuscript.

541: Increasing diversity in only 7 days seems unlikely.

598: The data does not show a threshold effect. Only two magnitudes of floods were studied, so it's impossible to say that it's a threshold and not a gradual increase in response. The differences in response between the two floods in 2009, with the same recurrence interval, is also unexplained.

Comments on figures:

Fig 1: Add the catchment to the map or shrink the map. Increase the size of B1 and B2, identify the study reach in them. Red line around sectors is almost invisible when printed in black and white - change to solid black? Give lat-long grid shorter spacings so a second tick shows up.

Fig 2: Add letters to the images, identify the floodplain unit the pictures come from (MB, SB, or TZ).

Fig 3: Line for discharge seems to be missing. Lines for temperature and solar radiation are hard to differentiate. What is the box on the lowest plot?

There are significant periods of abnormal solar radiation and relative humidity for flood study periods 1, 2, and 4 that suggest multiple cloudy days corresponding to several “before” or “after” pictures. Are the differences in the quality of ambient light between the periods before and after the floods really insignificant?

Fig. 5: What VIs are used to produce these plots? The small black count plots are not described in the caption. The extent of the dark boxes should be stated.

If different VI categories correspond to different types/ages/health of vegetation, isn't variability in their response expected just because they are morphologically different? For example, species A and B, corresponding to two different VI categories, could benefit equally from a flood, but A gets bushier and therefore more visible in the photographs while B has thin stems that grow quickly but are only barely more visible. Is the method sensitive enough to the characteristics of individual plants that this could be significant?

Fig 6: What VI is this showing? Add two columns to show the before and after pictures.

Left: What's the threshold for transparency? Right: Should use a color other than red - placed next to the left column, seems to suggest that the color is representing the same information. The reply to reviewers places more importance on this figure and explains it more thoroughly than the manuscript does. The caption needs to be expanded.