

## ***Interactive comment on “Estimation of vegetation cover resilience from satellite time series” by T. Simoniello et al.***

### **Anonymous Referee #1**

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This paper shows a technique to characterize the vegetation cover resilience from remote sensing observations. Given the importance of the vegetation monitoring and the knowledge of the vegetation dynamics in the framework of surface processes, this paper fits one of the scope of this journal.

To improve the paper, this referee suggests to update/modify/better explain next points:

#### General comments

- Sect. 4.2, page 520: on the use of the fuzzy K-mean unsupervised algorithm. Is there a particular motivation to choose the fuzzy K-means unsupervised algorithm instead of the k-mean algorithm or another unsupervised method? Please, a comment on this point.

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- Sect 5, Results: on the temporal interval used to estimate the mean life time  $\tau$  (years). Reference period to compute the persistence map is 10 years, and the evaluation period, 12 years. Have the authors checked how the reference temporal interval could influence the estimation of  $\tau$  ? For example, how much them could change if the reference time interval was shorter? A brief discussion on this point is welcome.

- Sect 5, Results: on the pixel resolution. Given the experience of authors for processing 1.1x1.1 km<sup>2</sup> AVHRR data, could the authors give a comment on how the pixel resolution could influence the estimation of  $\tau$ ?

- Sect. 5.4, Results: on the time-step used to get clusters. The time step used is of 10 years. In general, the use of more data permits a better estimation of the clusters (in this case, representative phenological responses). Have the authors checked if a shorter time step (e.g. 5 years) could give similar clusters? Moreover: was the selection of the number of clusters (7 clusters) guided from the nr of climate regions? Please, a comment on this point could clarify how much these choices could affect the results.

### Specific comments

- Page 517, line 16: please, specify the acronym MVC.

- Page 519, line 25: the sentence should be corrected in "... adding all the persistence maps from  $t_i$  to T."

- Page 520, line 5: to better define  $q(t)$ , next part could be changed in: "...where  $N(t)$  and  $N(t_i)$  are the number of non cleared trends having the same sign in  $P(x,y,t)$  and  $P(x,y,t_i)$ , respectively."

- Page 522, line 24, and Page 523, line 2: the numbers maximum and minimum divergence (13 years, and -5.7 years) don't fit with values shown in fig. 7. Please, check them (them should be 15 and -5.8, respectively).

- On tabs 1,2,3: a quantitative measure of the pixels that have a positive and a negative

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trends, could be easily obtained by showing the percentage of them. This evaluation could help to better understand the extension of the phenomenon, per class, climatic region or cluster. I suggest to add these percentages in the tables.

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Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 5, 511, 2008.

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