

Interactive comment on “A regional evaluation of the influence of climate change on long term trends in chlorophyll-a in large Italian lakes from satellite data” by Gary Free et al.

Anonymous Referee #2

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The authors present an interesting study on the influence of climate change on chlorophyll-a change in several sub-alpine lakes observed by long-term satellite data. This is a very interesting research topic and represents a new promising direction. But I have two main concerns about this study. First is about the accuracy and the continuity of the satellites derived Chl-a data which is probably not the focus of this study but definitely provides the basis for the following analyses. Hence, I think it is still important to provide more information on the Chl-a data validation over the several sensors and the continuity between them, as the Chl-a data is not derived from a demonstrated product. The second concern is about the possible impacts other than climate change, such as anthropogenic activities or nutrient loadings. In other words, if it is possible

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that the change in Chl-a pattern is caused or partly caused by other factors? If so, how to quantify the change caused by other factors? If not, why? Several detail comments are listed as follows: 1. Page 3, Line 113-116. Why to use 6SV code for the atmospheric correction for the three sensors? In my impression, there are several atmospheric correction tools that have been demonstrated to be suitable for the sensors, such as Acolite, C2RCC, and Polymer. 2. Page 3, Line 118-Line 120. How many ROIs are selected for each lake? Are those ROIs fixed and extracted from every image? 3. Page 3, Line 130. It is very confusing why the in-situ data are typically higher than that estimated data by satellite data. The estimated Chl-a data should be validated before to be fed into the analyses. 4. Page 3, Line 140. Total phosphorus data were mentioned here but why it was missed in the following NPMR analyses? 5. Section 4-Good discussion!

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