

## ***Interactive comment on “Effect of Water Surface Area on the Remotely Sensed Water Quality Parameters of Baysh Dam Lake, Saudi Arabia” by Mohamed Elhag et al.***

### **Anonymous Referee #3**

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This study develops potentially strong relationships between water surface area and satellite derived water quality indices in a reservoir. However, before the quality of this work can be properly assessed, the manuscript needs a thorough rewrite. There are numerous spelling mistakes and typos throughout the manuscript as well as the frequent use of ambiguous terminology within sentences making it difficult for a reader to follow the study. The authors need to provide additional details, particularly in the methodology and results sections, to demonstrate the importance of this study's findings as, currently, it appears to be an extension of a previous journal publication (Water 2019, <https://doi.org/10.3390/w11030556>). This is exemplified by Figure 1, which is directly referenced from this publication, and the reliance on field measurements col-

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lected in the previous study.

Suggested areas for additional details are provided in the following sections.

**Methodology considerations.** Were any additional field measurements collected for this study, surface turbidity measurements across multiple sites within a single day would be of particular interest to support any spatial patterns observed in satellite imagery? Please could the authors provide the location of field sampling sites in Figure 1. If any catchment inflows occurred, data such as particle size distribution, total suspended solids concentration or turbidity of inflow waters would be of great value to support any spatial patterns observed. Please could the authors provide a timeline of changes in reservoir surface area across the image collection period, noting times of any inflow events during this period. Were any water column light profiles collected from this reservoir during the image collection period, this would assist readers understand the variability in the underwater light field.

**Results considerations.** The central finding of increasing turbidity with decreasing surface area is a little difficult to reconcile with traditional reservoir behaviour where turbid inflows result in riverine sections of reservoirs experiencing higher turbidity during increases in surface area. Were any inflows captured by the satellite imagery, if so what spatial patterns in turbidity were observed? There is no spatial information provided in this work yet this seems to be an important advantage in using remote sensing of water quality, were any spatial water quality patterns observed over the image collection period? What are the potential drivers of surface turbidity in this reservoir, in systems that experience extended drawdown conditions wind driven resuspension of sediments in the shallow edges can be of importance in driving turbidity, could this be a possibility in this reservoir? Please could the authors provide the range of surface nitrogen, turbidity and chlorophyll concentrations observed in the field data, this would help readers that are not familiar with water quality in the study region.

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Interactive comment on Hydrol. Earth Syst. Sci. Discuss., <https://doi.org/10.5194/hess-2019->

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