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Interactive comment on "Expanding understanding of optical variability in Lake Superior with a four-year dataset" *by* Colleen B. Mouw et al.

Anonymous Referee #1

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The manuscript "Expanding understanding of optical variability in Lake Superior with a four-year dataset" by Mouw et al. presents a number of optical (IOPs and AOPs) as well as additional physical and biogeochemical parameters for Lake Superior, an important regional and global freshwater system. The characterization of Lake Superior optical properties have not been previously examined in much detail and this work provides a foundational record of current optical conditions, from which additional bio-optical work can/has been built, science questions addressed and future lake conditions can be measured against. I thought the paper was well written and concise. The paper does an excellent job at documenting methods and protocols used in the data collection and products generated. The figures are clear and represent a consolidation summary of

the data. Though meant as an overview of the optical variability, it would have been interesting to see more in-depth analysis of the relationships between the optical and water quality parameters. For example, line 338 discusses the bbp at the Ontonogon outflow "suggesting a greater abundance of phytoplankton . . .. . ." They have the actual Chl. a data in Figure 2 but stations aren't identified so it's hard to confirm this observation. Maybe a data summary table (mean, min,max) by station would be helpful. Overall, I think this paper contributes an important high quality data set from a somewhat unique lake that can be useful for future research efforts not just on Lake Superior but globally.

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