

Earth Syst. Sci. Data Discuss., referee comment RC5  
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## Comment on **essd-2021-351**

Anonymous Referee #3

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Referee comment on "Primary productivity measurements in the Ross Sea, Antarctica: a regional synthesis" by Walker O. Smith Jr., Earth Syst. Sci. Data Discuss., <https://doi.org/10.5194/essd-2021-351-RC5>, 2021

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This paper presents a valuable dataset that provides in situ measurements of the primary productivity in the Ross Sea, Antarctica which is a representative marine area in the South pole. The dataset will be very useful for understanding the carbon cycle and developing remote sensing methods of productivity estimation in Antarctic regions. The dataset is well described and analyzed. I only have a few questions for the author to consider when improving the paper.

- Line 50: You mentioned that "long (e.g., 24 h) measurements approximate net production, but this has not been rigorously examined in polar systems." Have you tried to address this issue in your dataset? Does "primary productivity" in the paper mean the "net productivity" or the "gross productivity"?
  
- According to table 1, your data collection sites in different periods are inconsistent. Could the year of measurement of these points be somehow reflected in Fig. 1? Will the distribution of data collection sites across different periods bring bias to the seasonal dynamic analysis (e.g., Fig. 4)?

