

Interactive comment on “A novel hydrographic gridded data set for the Northern Antarctic Peninsula” by Tiago S. Dotto et al.

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The submission introduces a gridded hydrographic data set of conservative temperature, absolute salinity, and dissolved oxygen as the mean of austral summer conditions of the period 2003-2019 at the Northern Antarctic Peninsula (NAP). Controlled by complex geography and bottom topography, water masses from Bellingshausen Sea, Weddell Sea, and the Antarctic Circumpolar Current (ACC) meet in Bransfield Strait (BS) creating a unique mixture, which supports high stocks of krill. The latter might be threatened by climate change, which shows one of the strongest signals in Antarctica at the Antarctic Peninsula. The comparison with existing climatologies, based on observations and numerical modelling, unveils some deficiencies of the existing products mainly caused by the lack of spatial resolution. As the resolution of numerical mod-

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els tend to increase, hydrographic data sets with high-resolution in space and time for model initialization and verification are needed desperately.

Having said this, the presented climatology is an improvement which comes, however, with three caveats:

1. The geographic focus on Bransfield Strait, leaving out – more or less - important regions like the eastern Bellingshausen Sea, southern Drake Passage, northwestern Weddell Sea continental shelf, and Powell Basin.
2. The lack of temporal, at least, seasonal resolution. E.g., only in central BS basin bottom temperatures are close to the surface freezing point (Fig. 12a), indicating some remnants of either local or remote wintertime convection - plus advection.
3. The restriction to GOAL cruises. Knowing that members of the institute participated in two Brazilian comprehensive hydrographic surveys to the northwestern Weddell Sea in 2000 and 2001 onboard of Ary Rongel, I wonder why this data is not included, which would fill the 'data void' to the east (Powell Basin) in the presented climatology.

Numerical models with a regional focus and, thus, high-resolution gain momentum. However, they need to consider the formation area of the water masses flowing towards the area of interest and, for model validation, at least a seasonal resolution. Thus, the presented climatology is of minor value and needs to be extended in space and time. This could be achieved either by combining the GOAL climatology with larger-scale climatologies or to collect more hydrographic data from different sources and platforms to create a comprehensive data set for the continental shelf fringing the whole Antarctic Peninsula.

Nevertheless, I recommend publication of this submission with moderate revision – if possible – because:

1. The GOAL climatology might be of significant value for marine biology, focused on krill and its predators in the NAP area.

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2. The GOAL climatology documents the continuous efforts of an institute, which is not a polar institute per se, to build up high standards in education and Antarctic field activities, which are comparable to other polar institutes worldwide.

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