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### Abstract

It is arduous to gather a good spatial and temporal dataset of marine carbonate properties, especially in the Southern Ocean. In this study, we have reconstructed the carbonate system in the Gerlache Strait, a coastal zone of the Northern Antarctic Peninsula. We also analyzed the impact of ocean acidification by calculating the tipping points of the calcium carbonate saturation states and pH (i.e., when saturation state and pH goes below one and 7, respectively). Hydrographic and carbonate data from three distinct data sets (GOAL – 2013 to 2016, FRUELA – 1996, and World Ocean Database – 1965 to 2004) have been

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