

1

2

Journal of Geophysical Research - Oceans

3

Supporting Information for

4

The Relationship between Nitrate and Potential Density in the Ocean South of 30°S

5

Dan Xu^{1,2}, Tao Wang¹, Xiaogang Xing³, and Changwei Bian⁴

6

¹Key Laboratory of Marine Environment and Ecology, Ocean University of China, Qingdao, China.

7

²College of Oceanic and Atmospheric Sciences, Ocean University of China, Qingdao, Shandong, China

8

³State Key Laboratory of Satellite Ocean Environment Dynamics, Second Institute of Oceanography, Ministry of Natural Resources, Hangzhou, China.

9

10

⁴Key Laboratory of Physical Oceanography, Ocean University of China, Qingdao, China.

11

Corresponding author: Tao Wang (taowang@ouc.edu.cn)

12

Contents of this file

13

1. Seasonal variation of K

14

2. Distributions of K quantified with the WOD and BGC-Argo, MGBNPR_015_009 data

15

Introduction

16

The supplementary information here presents the seasonal variation of K and distributions of K quantified with the WOD and BGC-Argo, MGBNPR_015_009 data, supporting the view in the main text.

17

18

19

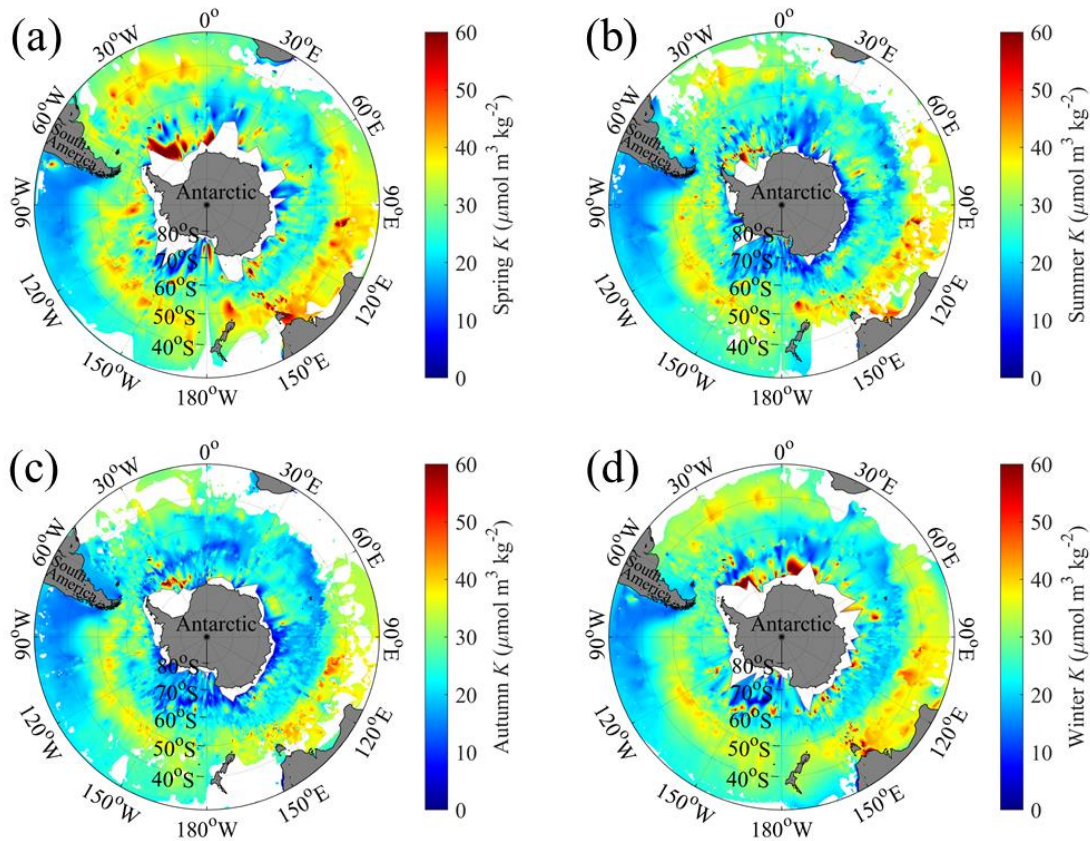
1. Seasonal variation of K

20

The patterns of K in four seasons are consistent with total result (Figure 7a in the main text), indicating that the seasonality does not have significant effects on the distribution of K .

21

22

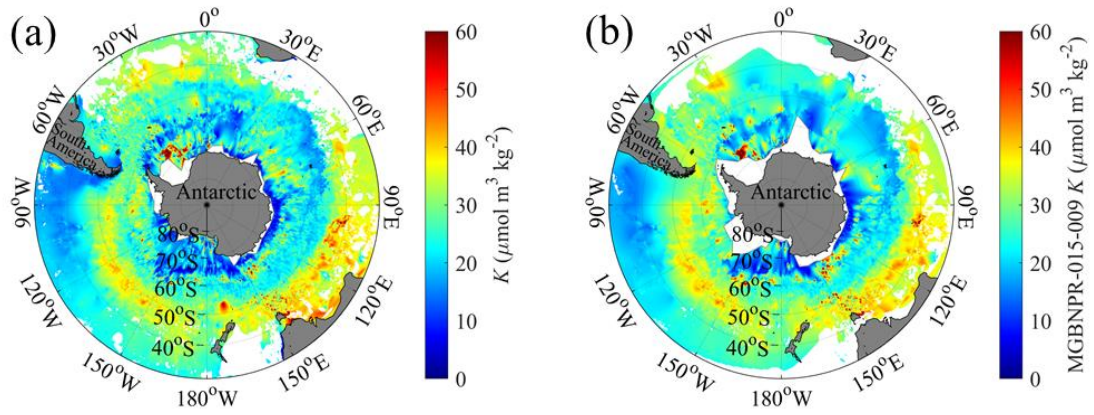


23

24 **Figure S1.** Spatial distribution of K in different seasons. (a) spring (October, November),
 25 (b) summer (December, January, February), (c) autumn (March, April, May, June), (d) winter
 26 (July, August, September), The seasonal division refers to du Plessis et al. (2019).

27 **2. Distribution of K quantified with the WOD and BGC-Argo, MGBNPR_015_009**
 28 **data**

29 The spatial distributions of the linear-fit slope obtained by the WOD and BGC-Argo,
 30 MGBNPR_015_009 data are consistent with the result quantified with three datasets
 31 (Figure 7a in the main text), indicating that the MGBNPR_015_009 dataset is appropriate
 32 to be applied to quantify the nitrate-density relationship.



33

34 **Figure S2.** Distribution of K in the ocean south of 30°S quantified with the (a) WOD and
 35 BGC-Argo, (b) MGBNPR-015-009 data.