

**The Prominent Spring Bloom and Its Relation to Sea-ice Melt in the Sea of Okhotsk,
Revealed by Profiling Floats**

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Introduction

This supporting information includes status of the profiling floats (Table S1) and the time series for six of the seven profiling floats (float 5259 is shown in Figure 2 in the manuscript (Figures S1 to S6)).

Table S1.

Float ID, First and Last profile date, Number of Profiles, First profile in the North Pacific, and Initial Location

Float ID	First Profile	Last Profile	Number of Profiles	First Profile in the North Pacific	Initial Location
5259	04 Nov 2007	11 May 2013	229	-	44.90N 145.19E
5260	05 Nov 2007	31 Oct 2012	210	-	45.40N 145.13E
6404	18 Nov 2010	21 Nov 2016	208	23 Feb 2014	44.83N 145.45E
9001	02 Jun 2013	04 Dec 2018	183	18 Feb 2014	45.34N 145.33E
9021	02 Jun 2013	04 Dec 2019	219	-	45.17N 144.94E
9049	09 Jun 2014	02 Feb 2017	96	-	45.16N 144.92E
9050	09 Jun 2014	13 Sep 2017	116	-	45.37N 145.12E

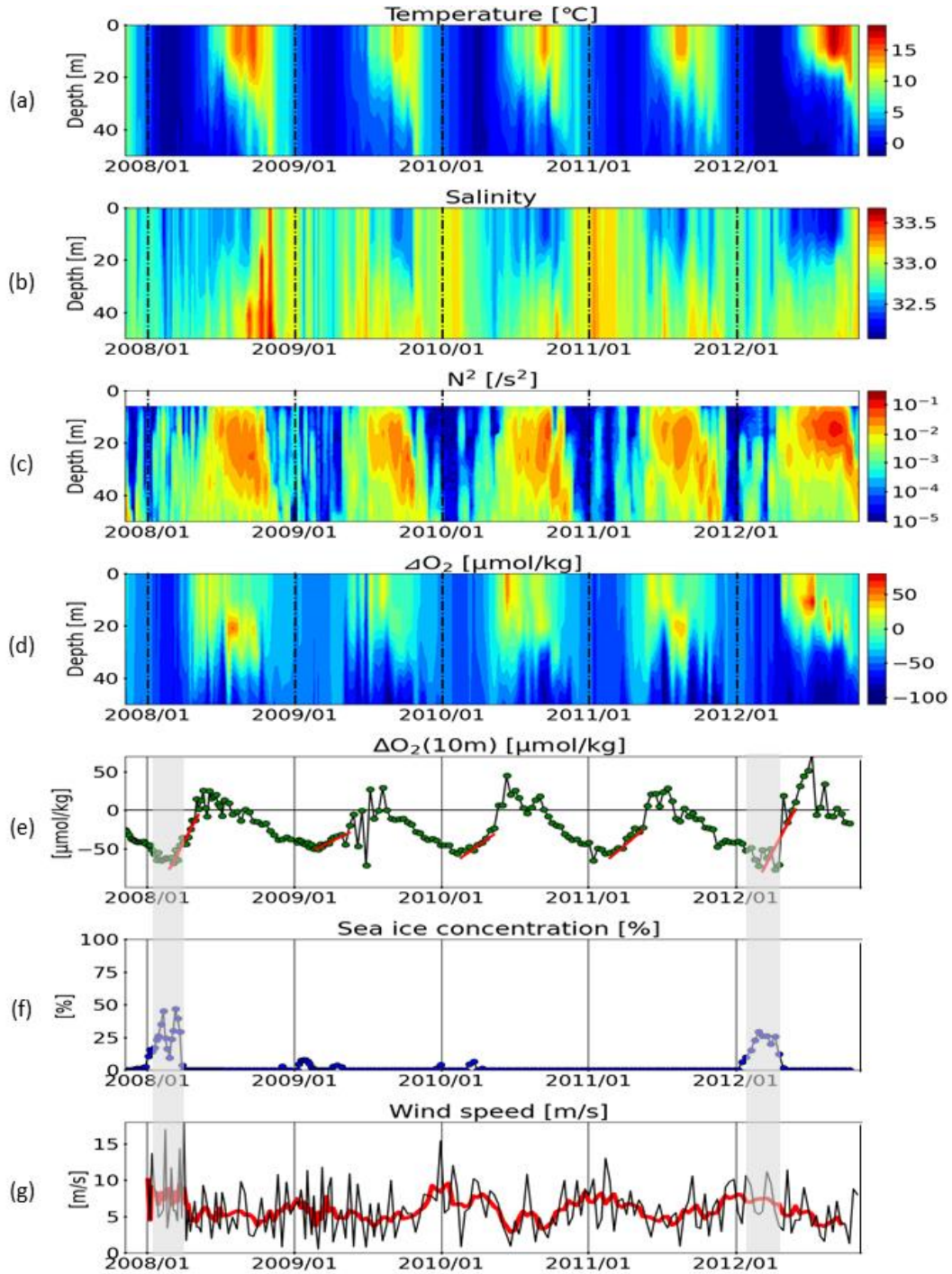


Figure S1

Time series of vertical profiles of (a) temperature, (b) salinity, (c) buoyancy frequency squared, represent as N^2 , (d) ΔO_2 and (e) ΔO_2 at 10m for float 5260 (green in Fig.1) and (f) sea-ice concentration from SSM/I and (g) wind speed from ECMWF. The red lines in (e) indicate least-squares fitting, showing the increase rate of ΔO_2 during the spring bloom. The gray shades in (e)~(g) highlight the periods of sea-ice melt.

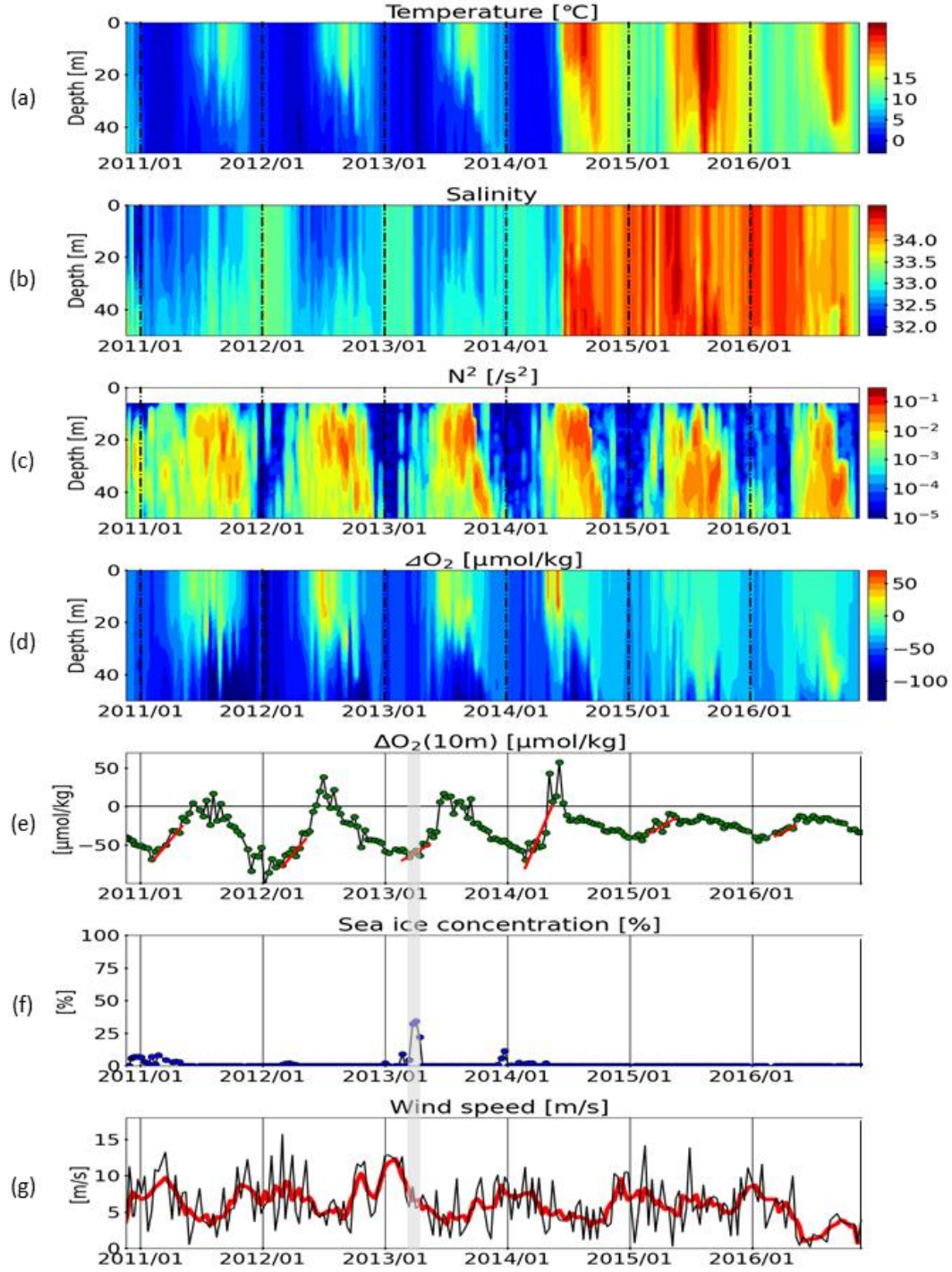


Figure S2

Time series of vertical profiles of (a) temperature, (b) salinity, (c) buoyancy frequency squared, represent as N^2 , (d) ΔO_2 and (e) ΔO_2 at 10m for float 6404 (cyan in Fig.1) and (f) sea-ice concentration from SSM/I and (g) wind speed from ECMWF. The red lines in (e) indicate least-squares fitting, showing the increase rate of ΔO_2 during the spring bloom. The gray shades in (e)~(g) highlight the periods of sea-ice melt.

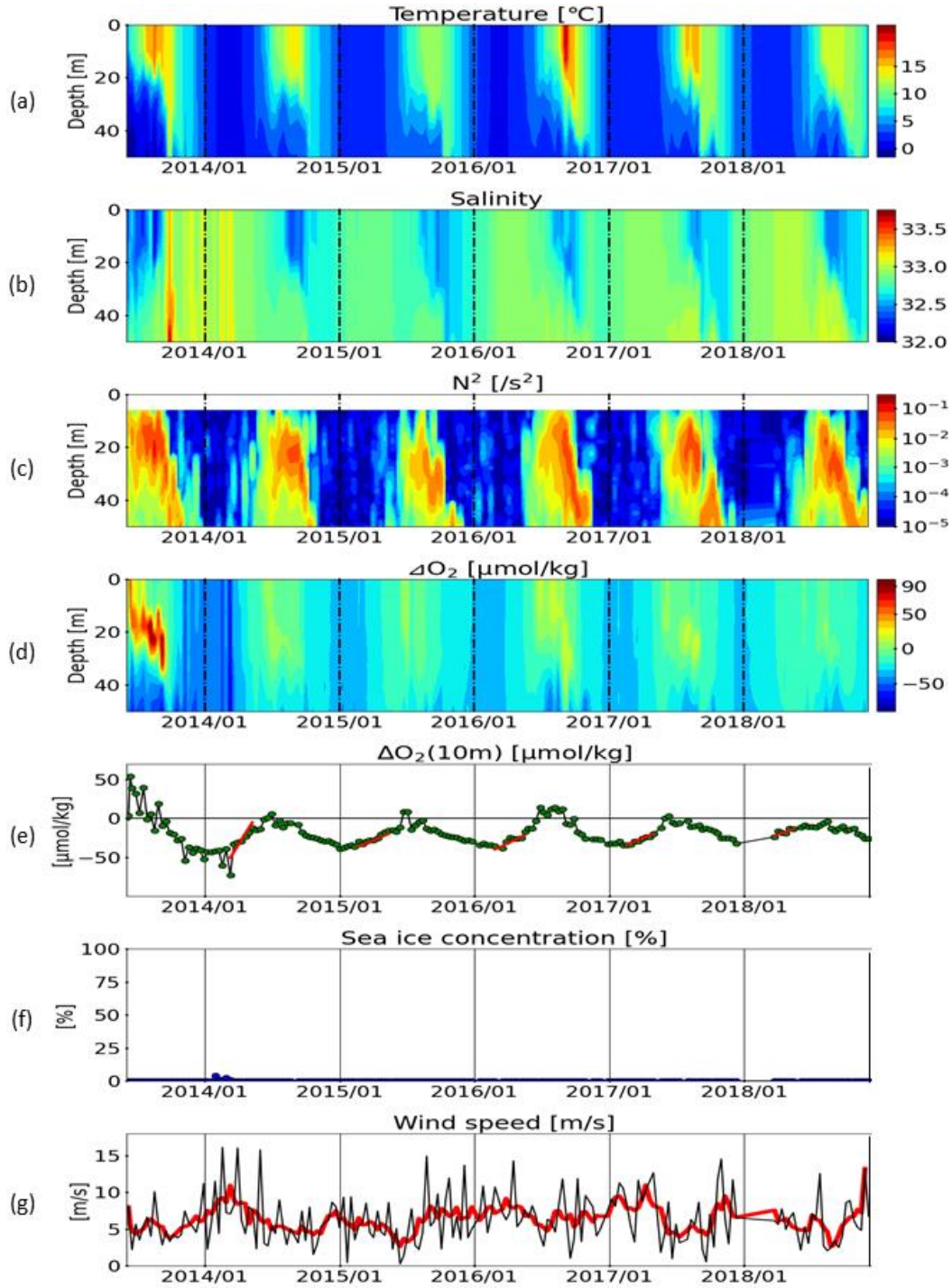


Figure S3

Time series of vertical profiles of (a) temperature, (b) salinity, (c) buoyancy frequency squared, represent as N^2 , (d) ΔO_2 and (e) ΔO_2 at 10m for float 9001 (yellow in Fig.1) and (f) sea-ice concentration from SSM/I and (g) wind speed from ECMWF. The red lines in (e) indicate least-squares fitting, showing the increase rate of ΔO_2 during the spring bloom. The gray shades in (e)~(g) highlight the periods of sea-ice melt.

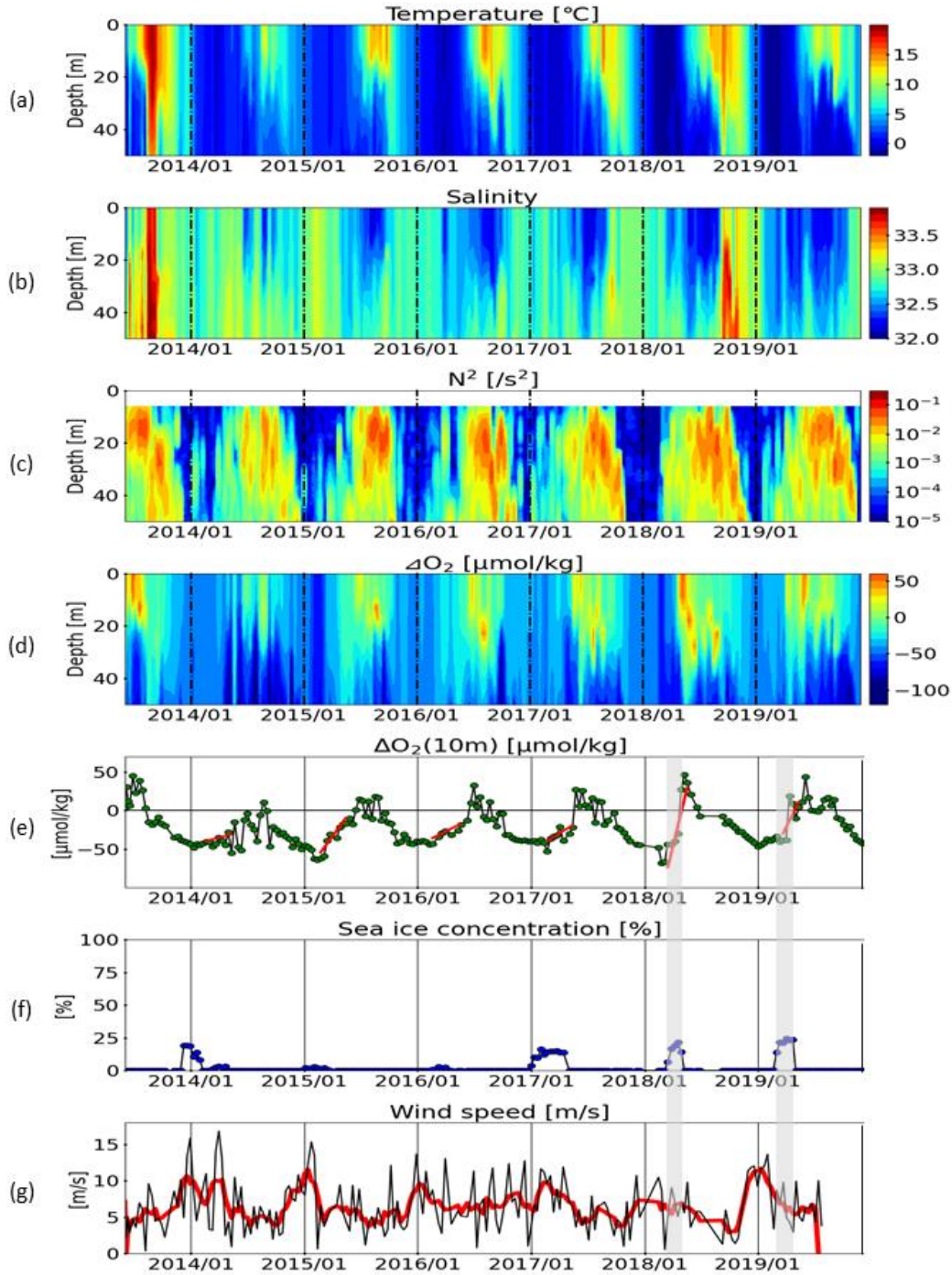


Figure S4

Time series of vertical profiles of (a) temperature, (b) salinity, (c) buoyancy frequency squared, represent as N^2 , (d) ΔO_2 and (e) ΔO_2 at 10m for float 9021 (blue in Fig.1) and (f) sea-ice concentration from SSM/I and (g) wind speed from ECMWF. The red lines in (e) indicate least-squares fitting, showing the increase rate of ΔO_2 during the spring bloom. The gray shades in (e)~(g) highlight the periods of sea-ice melt.

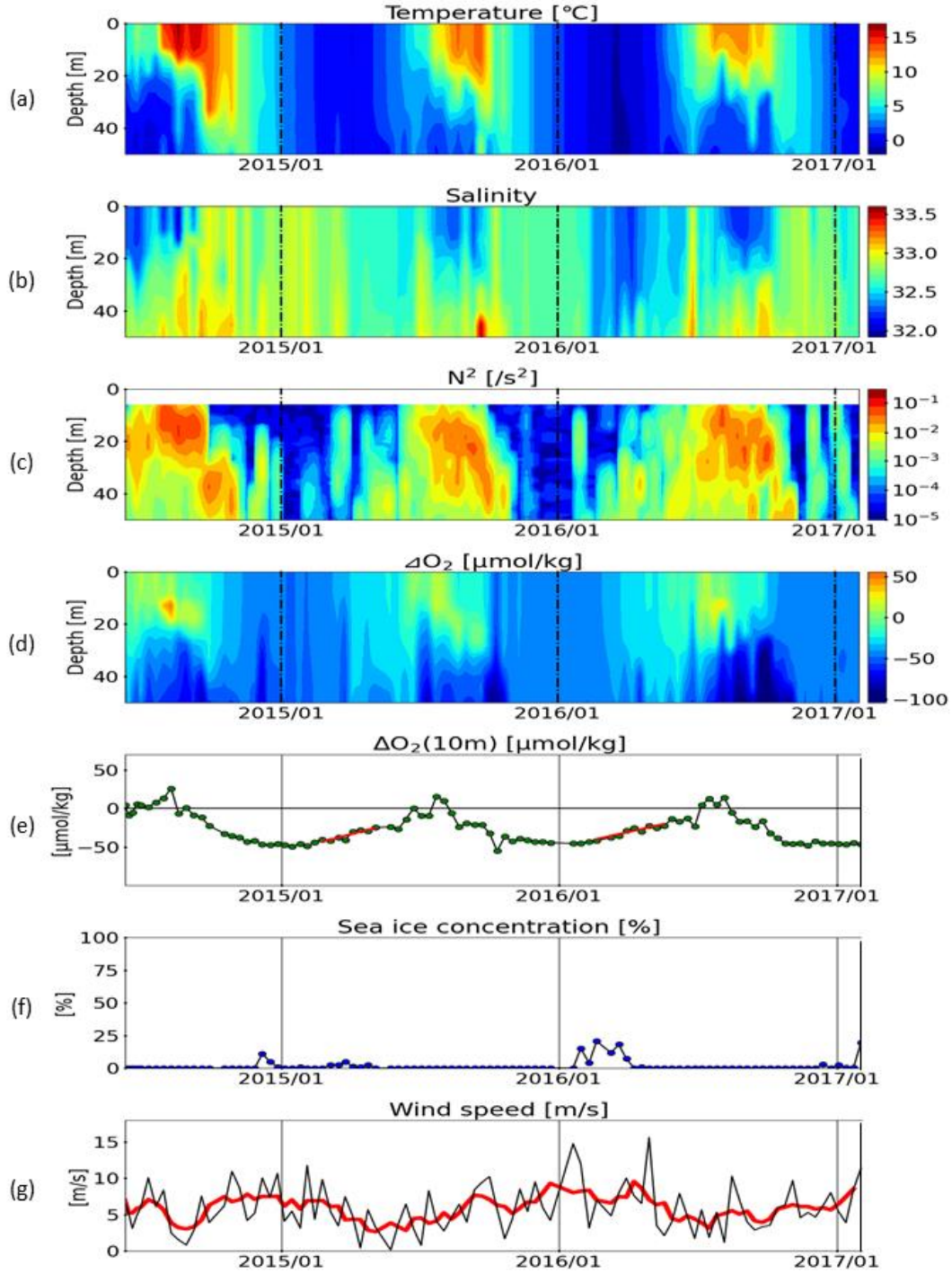


Figure S5

Time series of vertical profiles of (a) temperature, (b) salinity, (c) buoyancy frequency squared, represent as N^2 , (d) ΔO_2 and (e) ΔO_2 at 10m for float 9049 (purple in Fig.1) and (f) sea-ice concentration from SSM/I and (g) wind speed from ECMWF. The red lines in (e) indicate least-squares fitting, showing the increase rate of ΔO_2 during the spring bloom. The gray shades in (e)~(g) highlight the periods of sea-ice melt.

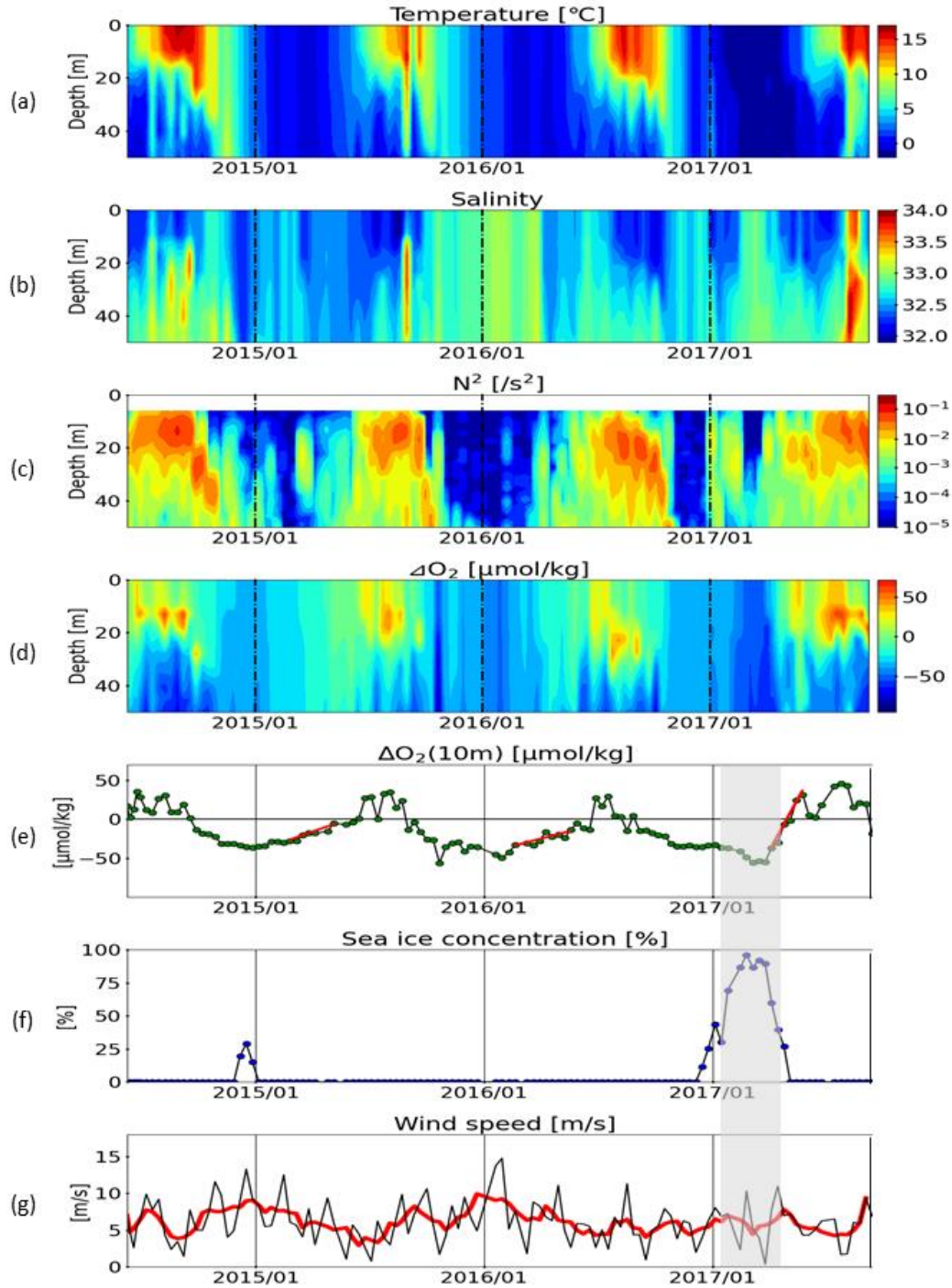


Figure S6

Time series of vertical profiles of (a) temperature, (b) salinity, (c) buoyancy frequency squared, represent as N^2 , (d) ΔO_2 and (e) ΔO_2 at 10m for float 9050 (pink in Fig.1) and (f) sea-ice concentration from SSM/I and (g) wind speed from ECMWF. The red lines in (e) indicate least-squares fitting, showing the increase rate of ΔO_2 during the spring bloom. The gray shades in (e)~(g) highlight the periods of sea-ice melt.