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Swedish Meteorological and Hydrological Institute
Oceanographic Laboratory

2021-02-23
Dnr: S/Gbg-2021-20

Report from the SMHI monitoring cruise with R/V Svea

Foto: Ola Kalén,
SMHI

Survey period: 2021-02-09 - 2021-02-17

Principal: Swedish Meteorological and Hydrological Institute (SMHI), Swedish Agency for Marine and Water Management (SwAM)

Cooperation partners: Swedish University of Agricultural Sciences (SLU)

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SUMMARY

During the expedition, which is part of the Swedish national marine monitoring programme, the Skagerrak, the Kattegat, the Sound and the Baltic Proper were visited. Mapping of winter nutrient pool was performed in the Baltic Proper. The cold weather that dominated in early February throughout the country continued during the week with northerly to north-easterly winds.

The surface water, which had been warmer than normal during the autumn and winter, had now cooled down considerably, especially in the Skagerrak and the Kattegat. There the temperature varied between 0.6–3.4 degrees, at most stations there the temperature was below normal in the surface water. However, in the Baltic Proper the surface water was warmer, at about 3-4 degrees. At most stations in the western and eastern Gotland Basin, the temperature was close to four degrees, which was warmer than normal for the season.

The salinity of the surface water in the Baltic Proper was still above normal for the season and varied between 6.9–8.7 psu. Normal salinities were observed in the Skagerrak and the Kattegat, from around 18 psu in the Kattegat to around 30 psu in the Skagerrak.

The concentration of nutrients had decreased in the Skagerrak and the Kattegat since the beginning of January, which indicates that phytoplankton activity has started. In these seas, chlorophyll fluorescence was also noted in the entire surface layer. The concentrations of dissolved inorganic nitrogen were about 4 µmol/l, phosphate around 0.5–0.6 µmol/l and dissolved silicon 3–8 µmol/l in the Skagerrak and 10–13 µmol/l in the Kattegat.

In the Baltic Proper, mapping of the winter pool of nutrients was performed and here the levels were as high as in January or higher. The mapping showed higher than normal levels of dissolved inorganic nitrogen (4–5 µmol/l) in the eastern Gotland basin and parts of the western Gotland basin, mostly normal levels of phosphate (0.7–0.8 µmol/l) and higher than normal levels of dissolved silicon (15–18 µmol/l). In the deep water in the western Gotland Basin, the concentration of dissolved inorganic nitrogen was far above normal.

The oxygen concentration in the bottom water was normal in the Skagerrak and the Kattegat with concentrations between 5–6 ml/l at all stations. Even in the Arkona basin in the Baltic Proper, the bottom water was well oxygenated (7-9 ml/l). In Hanö Bay and the Bornholm Basin, there was oxygen deficiency in the bottom water at the deepest stations, about 0.5 ml/l, the same oxygen concentration was in Gdansk Bay. However, new oxygen had reached the bottom water at the BCS III-10 station in the eastern Gotland Basin, where the concentration was 3.73 ml/l. After this the oxygen concentration decreased to 0.9 ml/l at the next station BY9 Klaipeda and at all stations north of it the bottom water was oxygen-free (hydrogen sulphide was measured), from 80–130 m, starting at the shallowest depths in the northern Baltic Proper.

The next regular expedition is planned 16-22 March with R/V Svea to start from Kalmar and end in Lysekil.

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RESULT

The expedition was carried out on board R/V Svea and started in Lysekil on February 9 and ended in Kalmar on February 17.

The weather during the expedition was cold with temperatures below zero degrees the winds were north to northeast winds and at most around 10 m / s.

All the 43 planned stations were sampled, 26 regular stations and 17 stations for mapping of nutrients in the Baltic Proper. At the 17 mapping stations, water samples were taken for analysis of nutrients (total and inorganic nutrients) and oxygen concentration as well as high-resolution profiles with CTD. At three stations in the Skagerrak and Kattegat and at two stations in the Baltic Proper, samples were also taken for analysis of eDNA (environmental DNA) for the University of Turku.

Svea's instrument for measuring profiles under way, MVP (Moving Vessel Profiler) was used to collect profiles between stations Å13 and Å17. The remaining planned transects occurred either during the night or during days with air temperatures below zero with ice build-up on the winch and was therefore not sampled. The ferry box on board Svea was running throughout the cruise and the ADCP (current measurements) was running in the Baltic Proper.

This report is based on data that has undergone an initial quality control. When further quality control has been performed, certain values may change. Data from this expedition is published as soon as possible on the data host's website, normally this takes place within one week after the expedition has ended. Some analyses are made after the expedition and are published later.

Data can be downloaded from SHARKweb here:
https://www.smhi.se/klimatdata/oceanografi/havsmiljodata

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Skagerrak

After several weeks of cold weather, the surface water in the Skagerrak had cooled down by 4–5 degrees since January and the surface temperature (0–10 m) was now about 0.6–3.4 degrees, which was below normal at two of the stations. The large variation in surface temperature was due to how superficial the halocline was at the different stations. At the Släggö, Å14 and Å16 stations, the halocline was just below 5 m, the temperature above the thermocline was about 1-2 degrees and as much as about 6 degrees below the thermocline, which made the average value for 0-10 m relatively high. The salinity of the surface water (0–10 m) was normal, 25 psu at the station P2 and slightly higher 28–30 psu at other stations.

There was a halocline at all stations between 5 and 10 m depth, above the halocline the water was colder and less saline and below the halocline the temperature and salinity increased. At some stations the temperature increase was sharp and there the temperature was above normal at a depth of 10-15 m and then normal in the deep water. The salinity of the deep water was about 35 psu which is normal. At the station P2 on the border to the Kattegat, the halocline was about 5 m deeper, between 10-15 m.

The concentration of nutrients in the surface water had decreased since January at all stations except the coastal station Släggö. It is normal for the concentration of nutrients to decrease in the Skagerrak in February and the levels were normal for the month at all stations except the westernmost station Å17, where the concentrations of phosphate and dissolved inorganic nitrogen (DIN) were lower than normal (0.3 µmol/l and 2.0 µmol/l, respectively). Concentrations at the other stations where; phosphate approx. 0.4–0.6 µmol/l; and DIN 4–8 µmol/l. The concentration of dissolved silicate was normal at all stations but significantly lower at Å17 than at other stations, about 3.0 µmol/l at Å17 and 6–8 µmol/l at the other stations except the coastal station Släggö where the concentration of nutrients is generally higher, here the concentration of silicate was about 11 µmol/l. The concentration of nutrients in the deep water was normal at all stations except Å17 where the concentrations of dissolved inorganic nitrogen and phosphate were higher than normal from 120 m and deeper.

At all stations, chlorophyll fluorescence was measured with the CTD, highest at station Å17. There was also a lot of zooplankton in the water, zooplankton and phytoplankton samples are analysed later so no more connection between the decreasing nutrients and plankton activity than the observation of a relatively large amount of zooplankton when sampling can be done at the time of writing.

The oxygen concentration in the bottom water was about 6 ml/l, also at the coastal station Släggö where there are sometimes slightly lower oxygen concentrations during the autumn.

Kattegat and the Sound

In the Kattegat and the Sound, the halocline was approximately 5 m deeper than in the Skagerrak, with temperatures around 1 degree above 10 m and approximately 7-8 degrees below the halocline. This meant that the surface temperature (0–10 m) was slightly lower in the Kattegat compared with the Skagerrak, even though the temperature at the surface (0 m) was approximately the same in both sea areas (approx. 0.5 degrees). The temperature in the surface water (0–10 m) had dropped

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from about 4 degrees in January to about 1 degree now in February. The highest temperature was found at the station Anholt E with 1.4 degrees and the coldest at the coastal station N14 Falkenberg with 0.6 degrees. At Fladen and in the Sound, the temperature was 0.8 degrees, which is just below normal for the month. The temperature in the deeper water, below the halocline, was above normal at all stations, a reminder of the past warm winter and summer. In the Sound, the salinity of the surface water was 9 psu and in the Kattegat, the salinity at the westernmost stations Fladen and Anholt E was about 18 psu in the surface water, which was below normal. At the coastal station N14 Falkenberg, the salinity was higher 21 psu, which is normal. Under the halocline, the salinity was about 32–33 psu, which is normal for the season.

The concentration of nutrients in the surface water had decreased since mid-January, just as in the Skagerrak, a sign that the growth of phytoplankton has started. In the Sound, on the other hand, concentrations were as high or higher than in January. The reduction in nutrients was already visible at the end of January when measurements were carried out during the fisheries expedition IBTS Q1 in collaboration with the Swedish University of Agricultural Sciences (SLU). The nutrient levels were normal; phosphate 0.5–0.7 µmol/l; dissolved inorganic nitrogen 4–5 µmol/l; and dissolved silicate 10–15 µmol/l. The concentration of all nutrients was highest in the Sound and decreased north in the Kattegat.

The bottom water was well oxygenated at all stations with concentrations between 5–6 ml/l, lowest in the Sound.

At all stations, chlorophyll fluorescence was measured with the CTD in the well-mixed surface layer.

Baltic Proper

In the Baltic Proper the surface water temperature had also decreased since January, but it was still warmer here compared with the Skagerrak and the Kattegat and in both the eastern and western Gotland basins the surface water temperature was above normal. In the Bornholm and Arkona basins, on the other hand, the surface water temperature was normal for the season. In the Baltic Proper, the surface water temperature was 3–4 degrees in February compared with 5–6 degrees in January. Since there is no shallow halocline in the Baltic Proper, the water is well mixed down to the to the halocline at about 60–80 m and there is therefore a larger volume of water that needs to be cooled down here compared to the North Sea. It was only at the station BY30 that there was a somewhat shallower halocline, at about 25 m, here the surface water was slightly colder compared to the closest station BY31 where there was no halocline. At the coastal station Ref M1V1 in Kalmar sound, the water was, as usual, well mixed down to the bottom (25 m) and the temperature much lower than at other stations in the open sea, -0.22 degrees.

The salinity of the surface water varied between 6.9–8.7 and was above normal in the eastern Gotland Basin and the Bornholm Basin. The halocline was at about 60–80 m and was deepest in the western Gotland Basin. There, the halocline had been pushed down to 80-90 m, which was seen both in the salinity and the oxygen. The salinity was significantly lower than normal between 70-90 m and the oxygen concentration was above 4 ml/l down to 90 m which is higher compared to January and throughout 2020 when the oxygen concentration was around 4 or lower from about 70 m. Between 90–100 m, the salinity and temperature were above normal in the western Gotland Basin and the

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northern Baltic Proper. The salinity and temperature were higher than normal at several stations also in the eastern Gotland Basin, as it has been in recent years.

Unlike in the Skagerrak and the Kattegat, the concentration of nutrients had not decreased in the surface water, which means that the growth of phytoplankton has not started here yet. Rather, the concentration of nutrients had increased slightly in the surface water at most stations, which means that the mapping of those nutrients in the surface water probably shows maximum values for the winter. The mapping shows that the levels of dissolved inorganic nitrogen were above normal in the eastern Gotland Basin and the northern parts of the western Gotland Basin. Since the spring bloom in the Baltic Sea is generally nitrogen-limited, there are conditions for a large spring bloom in 2021, but the size of the spring bloom depends not only on the supply of nutrients but also on the weather during spring. The concentration of nitrogen increased to the north, in Arkona and the Bornholm Basin the concentration was around 4 µmol/l and in the northern Baltic Proper the concentration of nitrogen approached 5 µmol/l. The highest concentration of nitrogen was closest to the coast, at the Ref M1V1 station in Kalmar sound and at the station PL-P63 in the Gdansk bay. The concentration of phosphate was above normal at the stations in Gdansk bay, Bornholmsbassängen and at the stations BY9 Klaipeda, BY2 Arkona and 441 Stevns Klint. For phosphate, the distribution was also reversed to that for nitrogen, with the highest concentrations of phosphate in the southern parts, Arkona, Bornholm, Gdansk Bay and the southern parts of the eastern Gotland Basin. There, the concentration was around 0.8 µmol/l while the concentrations in the northern Baltic Proper and the northern parts of the western Gotland Basin were 0.65–0.70 µmol/l. The concentration of dissolved silicate in the surface water was above normal at all stations, with the exception of the station Ref M1V1 in Kalmar sound. Dissolved silica is normally not limiting for phytoplankton and the high concentrations of silicate will therefore probably not be reflected in size of the coming spring bloom.

Below the 70 m halocline in the Bornholm Basin and Hanö Bay, the concentrations of phosphate and dissolved silicate were quite high, but not more than a standard deviation from the mean value. The levels of dissolved inorganic nitrogen were on the contrary quite low here. This reflects the oxygen situation with low oxygen concentrations, about 0.5 ml/l at the same depth. In the eastern Gotland Basin, the concentration of dissolved inorganic nitrogen was above normal below 150 m at the deepest stations BY11 and BY15 (in the Gotland Deep). At the other stations, the concentrations of nutrients in the deep water were normal or near normal. High concentrations of phosphate and low concentrations of dissolved inorganic nitrogen were observed at several stations at the depth where the oxygen was exhausted (depth of the oxycline). At all stations in the northern Baltic Proper and in the western Gotland Basin, the concentration of dissolved inorganic nitrogen and dissolved silicate was above normal from 100 m and deeper. In the western Gotland Basin, the concentration of dissolved inorganic nitrogen was 10–15 µmol/l at stations BY32, BY36 and BY38, this is twice to three times as high as the mean value in deep water. At the same stations, the concentration of phosphate was lower than normal in connection with the depressed halocline, i.e. between 70–90 m.

There was oxygen deficiency in the bottom water of the Bornholm Basin and Hanö Bay from 80 m with concentrations around 0.5 ml/l. Further into the eastern Gotland basin, the oxygen concentration in Stolpe channel increased to 4.5 ml/l to decrease again in the Gdansk bay to about 0.5 ml/l. In contrast to the low oxygen concentrations in Bornholm basin and Gdansk bay, the oxygen concentration at the station BCS III-10 had increased markedly since January, where the oxygen

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concentration in the bottom water was 3.73 ml/l, i.e. just below the limit for oxygen deficiency. Further north the oxygen concentration decreased, to just under 1 ml/l at the station BY9 Klaipeda and at all stations north of this station hydrogen sulphide was measured in the bottom water, with the highest levels in the deep in the eastern Gotland Basin. Hydrogen sulphide was measured in the bottom water at all stations in the western Gotland Basin, but a small decrease in the hydrogen sulphide content could be observed since January. Hydrogen sulphide was measured from 125-130 m depth in the eastern Gotland Basin, 80 m depth in the northern Baltic Proper and 90-100 m depth in the western Gotland Basin.

Measurements of chlorophyll fluorescence showed a low activity from the surface down to the thermocline, and no peaks with higher activity were noted at any station.

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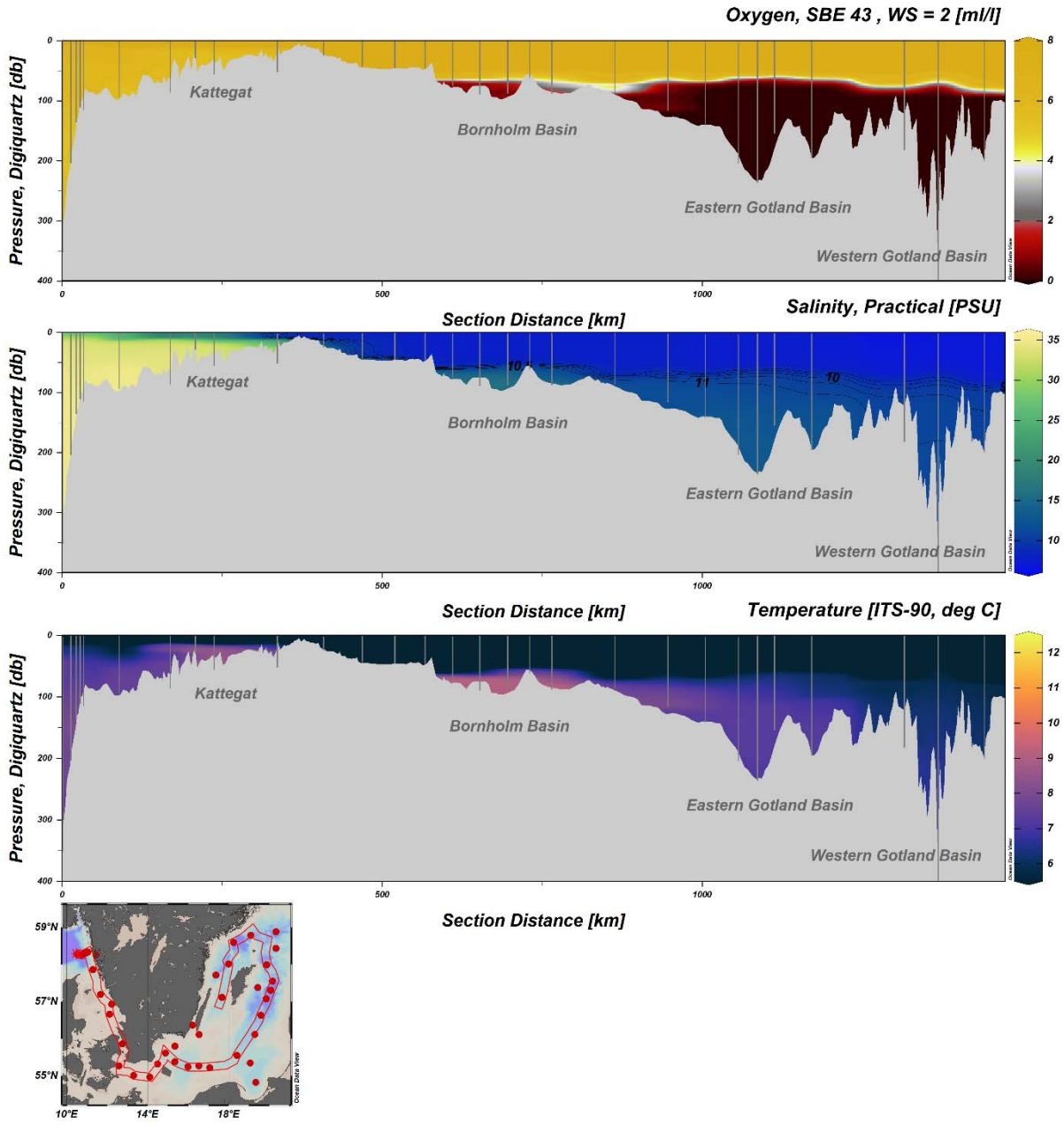

Figure 1. Transect showing dissolved oxygen, salinity and temperature from the Skagerrak, through the Sound and the Eastern Gotland Basin to the Western Gotland Basin.

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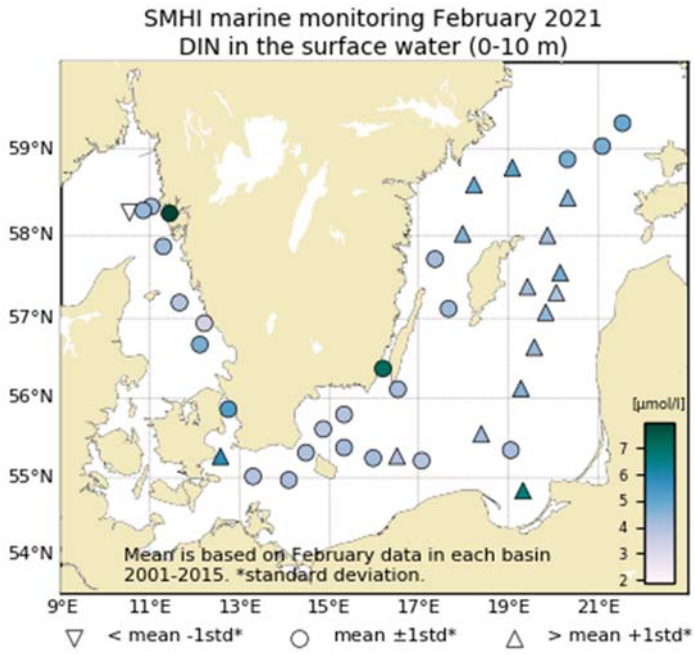

Figure 2. Dissolved inorganic nitrogen concentration in the surface water (0-10 m). Mean values and standard deviations are calculated foreach basin using measurements from February in the period 2001-2015. Basins according to HELCOM and SVAR (https://www.smhi.se/data/hydrologi/svenskt-vattenarkiv).

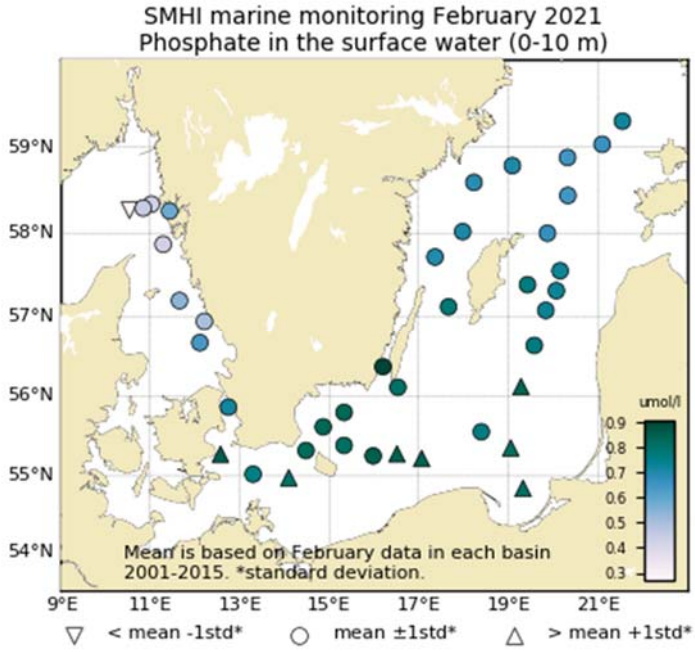

Figure 3. Phosphate concentration in the surface water (0-10 m). Mean values and standard deviations are calculated foreach basin using measurements from February in the period 2001-2015. Basins according to HELCOM and SVAR (https://www.smhi.se/data/hydrologi/svenskt-vattenarkiv).

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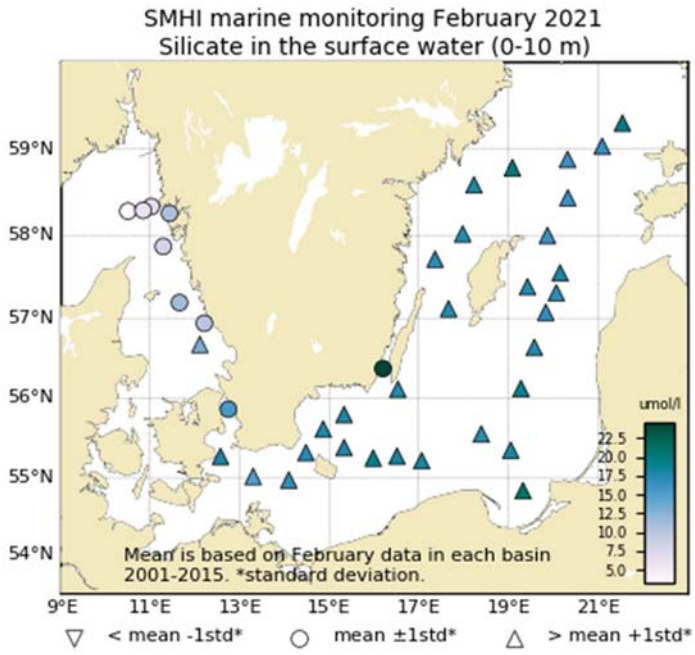

Figure 4. Silicate concentration in the surface water (0-10 m). Mean values and standard deviations are calculated foreach basin using measurements from February in the period 2001-2015. Basins according to HELCOM and SVAR (https://www.smhi.se/data/hydrologi/svenskt-vattenarkiv).

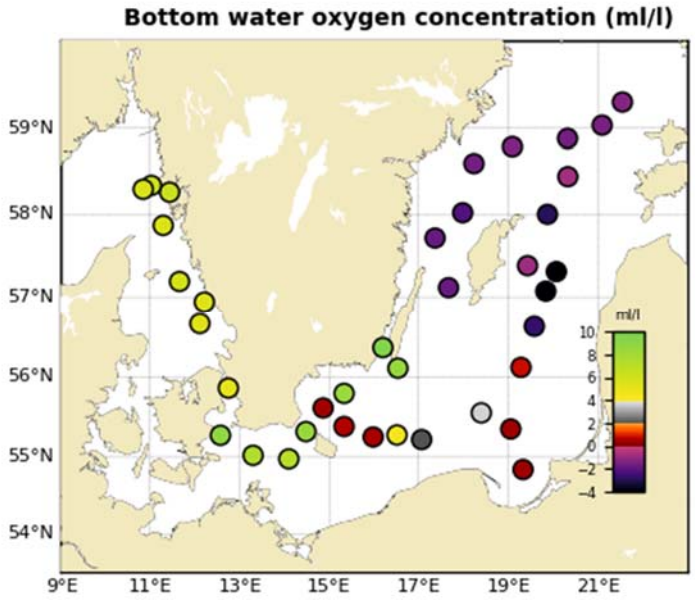

Figure 5. Oxygen concentration in the bottom water, approx. 1 m above bottom. Hydrogen sulphide as negative oxygen. Mean values and standard deviations are calculated foreach basin using measurements from February in the period 2001-2015. Basins according to HELCOM and SVAR (https://www.smhi.se/data/hydrologi/svenskt-vattenarkiv).

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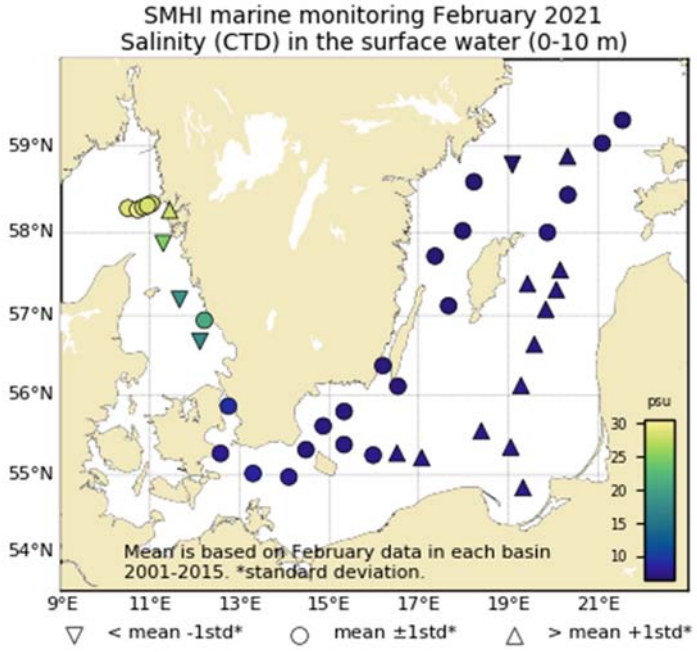

Figure 6. Salinity in the surface water (0–10 m). Mean values and standard deviations are calculated foreach basin using measurements from February in the period 2001-2015. Basins according to HELCOM and SVAR (https://www.smhi.se/data/hydrologi/svenskt-vattenarkiv).

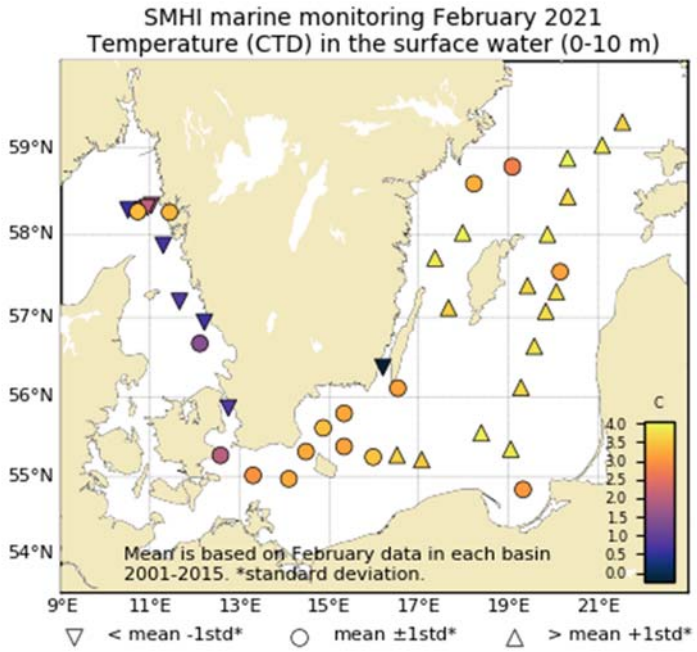

Figure 7. Temperature in the surface water (0-10 m). Mean values and standard deviations are calculated foreach basin using measurements from February in the period 2001-2015. Basins according to HELCOM and SVAR (https://www.smhi.se/data/hydrologi/svenskt-vattenarkiv**).**

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APPENDICES

- Track chart
- Table over stations, sampled parameters and number of sampling depths
- Vertical profiles for regular monitoring stations
- Monthly average surface water plots for regular monitoring stations

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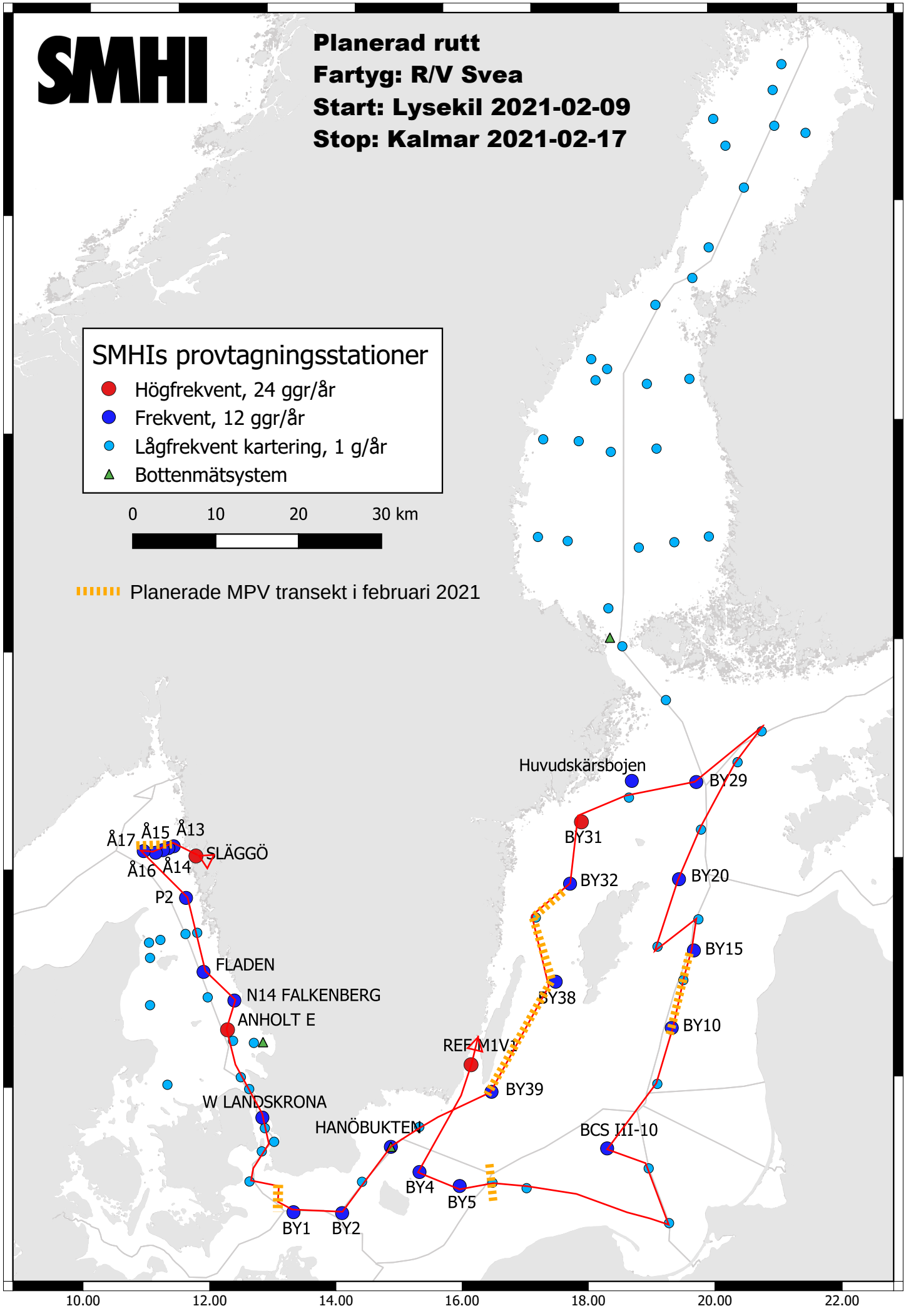
SMHI
Planerad rutt
Fartyg: R/V Svea
Start: Lysekil 2021-02-09
Stop: Kalmar 2021-02-17
SMHIs provtagningsstationer
Högfrekvent, 24 ggr/år
Frekvent, 12 ggr/år
Lågfrekvent kartering, 1 g/år
Bottenmätsystem
0 10 20 30 km
Planerade MPV transekt i februari 2021
Å17
Å15
Å13
Å16
Å14
SLÄGGÖ
P2
FLADEN
N14 FALKENBERG
ANHOLT E
W LANDSKRONA
HANÖBUKTEN
BY1
BY2
BY4
BY5
REF M1V1
BY39
BY38
BY31
BY32
Huvudskärsbojen
BY29
BY20
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BCS III-10
64.00
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Date: 2021-02-23
Time: 18:24

Ship: SE
Year: 2021

Ser no	Cru no	Stat code	Proj	Stat name	Lat	Lon	Start date yyyymmdd	Start time hhmm	Bottom depth m	Secchi depth m	Wind dir	Wind vel	Air temp C	Air pres hPa	WCWI elac aove tueo hdsb	CZPP hohp loy apt o p	No de	No btl	Temp_btld	Temp_ctd	Salt_btld	Salt_ctd	Ph	Doxy_btld	Doxy_ctd	H2s	Phos	Ptot	Ntri	Ntra	Ntrz	Amon	Ntot	Alky	Sio3-si	Humus	Comnt_visit	Comnt_samp
0152	3	FIBG27	BAS...	SLÄGGÖ	5815.57	01126.09	20210209	1310	64	6	03	7	-5.5	1016	7620	-x--	9		x	x	-	x	-	x	x	-	x	-	x	x	x	x	-	-	x	-	-	-
0153	3	SKEX14	BAS...	Å13	5820.36	01101.62	20210209	1600	114		04	8	-4.4	1016	1430	----	10		x	x	-	x	-	x	x	-	x	-	x	x	x	x	-	-	x	-	-	x
0154	3	SKEX18	BAS...	Å17	5817.06	01030.25	20210209	1915	351		06	10	-3.9	1017	9990	-x--	15		-	x	-	x	x	x	x	-	x	-	x	x	x	x	-	-	x	-	x	-
0155	3	SKEX17	BAS...	Å16	5816.01	01043.43	20210209	2120	203		05	8	-4.2	1017	9990	----	13		-	x	-	x	-	-	x	-	-	-	-	-	-	-	-	-	-	-	-	-
0156	3	SKEX16	BAS...	Å15	5817.65	01050.67	20210209	2230	135		04	7	-4.9	1017	9990	----	12		x	x	-	x	-	x	x	-	x	-	x	x	x	x	-	-	x	-	-	-
0157	3	SKEX15	BAS...	Å14	5818.91	01056.49	20210209	2347	110		04	7	-5.3	1017	9999	----	11		x	x	-	x	-	-	x	-	-	-	-	-	-	-	-	-	-	-	-	-
0158	3	SKEX23	BAS...	P2	5752.00	01117.52	20210210	0310	93		03	7	-5.8	1015	9999	----	10		x	x	-	x	-	x	x	-	x	-	x	x	x	x	-	-	x	-	-	-
0159	3	KANX25	BAS...	FLADEN	5711.51	01139.36	20210210	0815	89	8	35	9	-5.9	1015	1430	----	13		x	x	-	x	-	x	x	-	x	-	x	x	x	x	-	-	x	-	-	x
0160	3	KANX50	BAS...	N14 FALKENBERG	5656.39	01212.70	20210210	1145	31	6	16	5	-4.0	1015	1320	-x--	7		x	x	-	x	x	x	x	-	x	-	x	x	x	x	-	-	x	-	x	-
0161	3	KAEX29	BAS...	ANHOLT E	5640.08	01206.69	20210210	1500	59	6	03	8	-2.3	1016	1230	-x-x	10		x	x	-	x	x	x	x	-	x	-	x	x	x	x	-	-	x	-	x	x
0162	3	SOCX39	BAS...	W LANDSKRONA	5552	01244.9	20210210	2100	53		02	7	-5.2	1019	9999	----	9		x	x	-	x	-	x	x	-	x	-	x	x	x	x	-	-	x	-	-	-
0163	3	BPSA01	BAS...	441 STEVNS KLINT	5516.28	01234.31	20210211	0200	25		26	7	-4.4	1021	9990	----	6		-	x	-	x	-	x	x	-	x	-	x	x	x	x	-	-	x	-	-	-
0164	3	BPSA02	BAS...	BY1	5500.95	01318.05	20210211	0545	46		27	8	-3.8	1023	9990	----	8		x	x	-	x	-	x	x	-	x	-	x	x	x	x	-	-	x	-	-	-
0165	3	BPSA03	BAS...	BY2 ARKONA	5458.23	01405.93	20210211	0930	47	13	03	11	-2.3	1025	7740	-x--	8		x	x	-	x	-	x	x	-	x	-	x	x	x	x	-	-	x	-	-	-
0166	3	BPSA04	BAS...	BY3 HAMRARNE SUND	5519.09	01428.93	20210211	1330	47		36	7	-2.8	1027	1540	----	8		x	x	-	x	-	x	x	-	x	-	x	x	x	x	-	-	x	-	-	-
0167	3	BPSH05	BAS...	HANÖBUKTEN	5537.04	01451.99	20210211	1650	80		13	9	-3.1	1029	9990	----	11		x	x	-	x	-	x	x	-	x	-	x	x	x	x	-	-	x	-	-	-
0168	3	BPSH51	BAS...	HANÖBUKTEN-KBV	5548.02	01520.05	20210211	1945	56		20	10	-4.3	1030	9990	----	9		x	x	-	x	-	x	x	-	x	-	x	x	x	x	-	-	x	-	-	-
0169	3	BPSE49	BAS...	BY39 ÖLANDS S UDDE	5606.92	01632.18	20210212	0110	52		36	11	-6.9	1031	9999	----	8		x	x	-	x	-	x	x	-	x	-	x	x	x	x	-	-	x	-	-	-
0170	3	BPWX45	BAS...	BY38 KARLSÖDJ	5707.01	01740.09	20210212	0940	111	12	35	13	-1.8	1030	1640	----	14		x	x	-	x	-	x	x	x	x	-	x	x	x	x	-	-	x	-	-	-
0171	3	BPWX42	BAS...	BY36	5742.94	01722.02	20210212	1420	141		35	9	-2.1	1032	1730	----	15		x	x	-	x	-	x	x	x	x	-	x	x	x	x	-	-	x	-	-	-
0172	3	BPWX38	BAS...	BY32 NORRKÖPINGSDJ	5801.01	01759.06	20210212	1740	203		35	8	-0.5	1033	9999	----	17		x	x	-	x	-	x	x	x	x	-	x	x	x	x	-	-	x	-	-	-
0173	3	BPNX37	BAS...	BY31 LANDSORTSDJ	5835.61	01814.15	20210212	2230	449		35	8	-1.2	1032	9990	-x--	23		x	x	-	x	x	x	x	x	x	-	x	x	x	x	-	-	x	-	-	x
0174	3	BPNX36	BAS...	BY30	5847.29	01905.70	20210213	0330	186		33	10	-2.0	1031	9990	----	16		x	x	-	x	-	x	x	x	x	-	x	x	x	x	-	-	x	-	-	-
0175	3	BPNX35	BAS...	BY29 / LL19	5852.93	02019.67	20210213	0800	174	18	33	11	-1.2	1028	2740	---x	16		x	x	-	x	x	x	x	x	x	-	x	x	x	x	-	-	x	-	x	-
0176	3	BPNX33	BAS...	BY27	5917.91	02133.26	20210213	1330	174		33	10	0.4	1025	2840	----	16		x	x	-	x	-	x	x	x	x	-	x	x	x	x	-	-	x	-	-	-
0177	3	BPNX34	BAS...	BY28	5902.02	02106.07	20210213	1645	197		32	9	0.9	1025	9990	----	17		x	x	-	x	-	x	x	x	x	-	x	x	x	x	-	-	x	-	-	-
0178	3	BPNX27	BAS...	BY21	5826.48	02020.06	20210213	2200	123		32	11	1.1	1026	9990	----	14		x	x	-	x	-	x	x	x	x	-	x	x	x	x	-	-	x	-	-	x
0179	3	BPEX26	BAS...	BY20 FÅRÖDJ	5759.89	01952.72	20210214	0140	197		33	10	0.6	1026	9999	----	17		x	x	-	x	-	x	x	x	x	-	x	x	x	x	-	-	x	-	-	x
0180	3	BPEX19	BAS...	BY13	5723.02	01926.01	20210214	0625	122		33	10	1.0	1027	2750	----	14		x	x	-	x	-	x	x	x	x	-	x	x	x	x	-	-	x	-	-	-
0181	3	BPEX25	BAS...	BY19	5733.04	02009.72	20210214	1000	160		35	9	0.6	1027	1550	----	15		x	x	-	x	-	x	x	x	x	-	x	x	x	x	-	-	x	-	-	-
0182	3	BPEX21	BAS...	BY15 GOTLANDSDJ	5718.70	02004.64	20210214	1250	242		36	10	0.6	1028	1650	-x-x	24		x	x	-	x	x	x	x	x	x	-	x	x	x	x	-	-	x	-	x	-
0183	3	BPEX14	BAS...	BY11	5704.45	01950.48	20210214	1530	205		35	11	1.2	1028	2750	----	17		x	x	-	x	-	x	x	x	x	-	x	x	x	x	-	-	x	-	-	-
0184	3	BPEX13	BAS...	BY10	5638.02	01935.08	20210214	1930	143		35	10	0.6	1030	9999	----	15		x	x	-	x	-	x	x	x	x	-	x	x	x	x	-	-	x	-	-	-
0185	3	BPSE12	BAS...	BY9 KLAIPEDA	5607.50	01917.24	20210214	2350	121		33	8	1.2	1031	9990	----	14		x	x	-	x	-	x	x	-	x	-	x	x	x	x	-	-	x	-	-	-
0186	3	BPSE11	BAS...	BCS III-10	5533.31	01824.00	20210215	0600	90		33	7	1.3	1032	1230	----	12		x	x	-	x	-	x	x	-	x	-	x	x	x	x	-	-	x	-	x	-

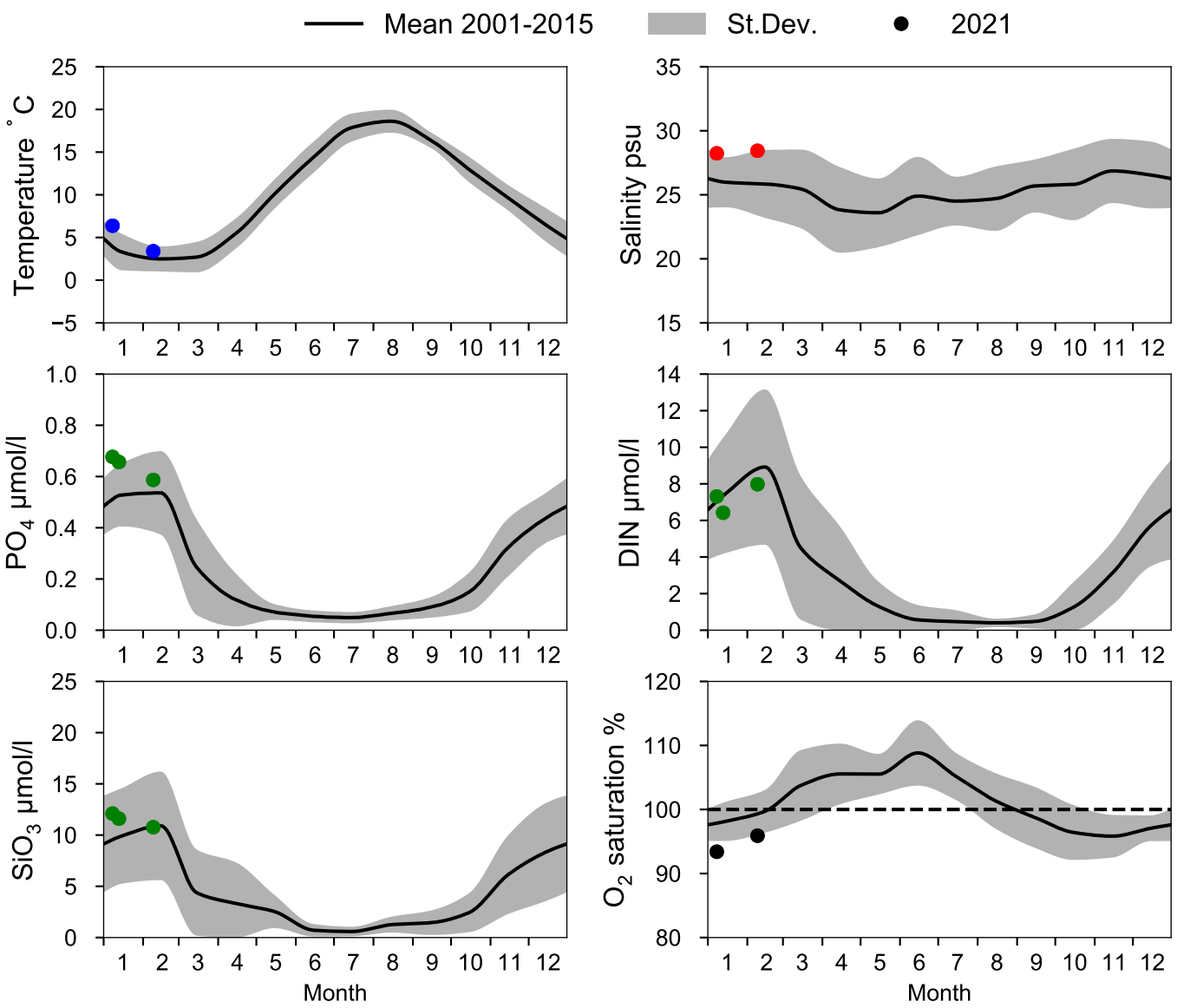
Date: 2021-02-23
Time: 18:24

Ship: SE
Year: 2021

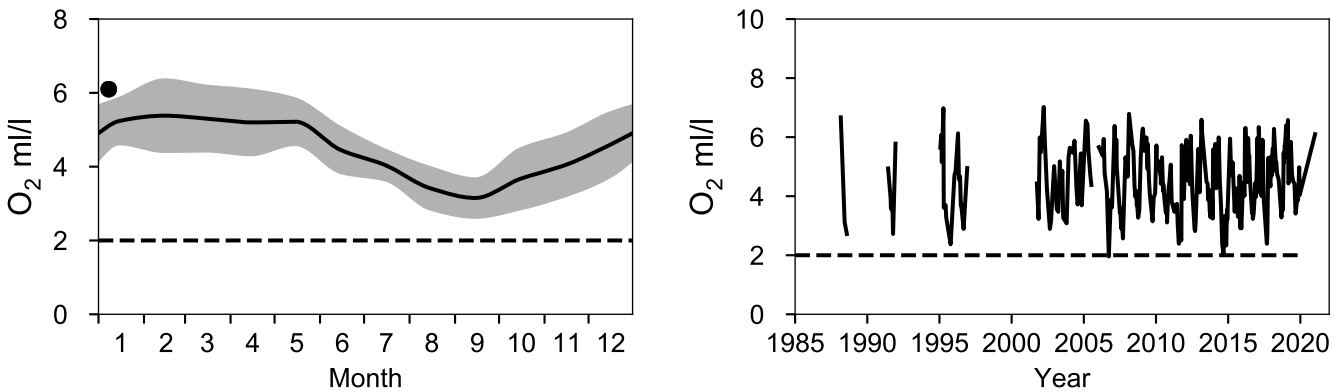
Ser no	Cru no	Stat code	Proj	Stat name	Lat	Lon	Start date yyyymmdd	Start time hhmm	Bottom depth m	Secchi depth m	Wind dir	Wind vel	Air temp C	Air pres hPa	WCWI elac aoveo tueo hdsb	CZPP hohp loy apt o p	No de	No btl	T e m p _ b t l	T e m p _ c t d	S a l t _ b t l	S a l t _ c t d	S h o x y _ b t l	D o x y _ c t d	H 2 s	P h o s	P t o	N t r i	N t r z	N t r o	A m t o	N t y	A l k 3 - s i	S i u s	H u m v i s i t	C o m n _ a m p	C o n t _ s t
0187	3	BPSE70	BAS...	PL-P63	5521.04	01903.50	20210215	0900	84	18	32	7	1.5	1031	2749	----	11		x	x	-	x	-	x	x	x	x	-	x	x	x	x	-	-	x	-	-	-
0188	3	BPSG71	BAS...	PL-P1	5450.02	01919.98	20210215	1320	109	14	30	5	1.7	1031	1330	----	14		x	x	-	x	-	x	x	-	x	-	x	x	x	x	-	-	x	-	-	-
0189	3	BPSE09	BAS...	BY7 STOLPE RÄNNA	5513.02	01704.05	20210215	2150	92		17	6	0.7	1025	9990	----	12		x	x	-	x	-	x	x	-	x	-	x	x	x	x	-	-	x	-	-	-
0190	3	BPSE08	BAS...	STOLPE TRÖSKEL	5516.52	01630.98	20210216	0015	63		17	8	0.4	1023	9999	----	10		x	x	-	x	-	x	x	-	x	-	x	x	x	x	-	-	x	-	-	-
0191	3	BPSB07	BAS...	BY5 BORNHOLMSDJ	5514.99	01559.04	20210216	0320	90		19	7	0.2	1021	9999	-x--	12		x	x	-	x	x	x	x	-	x	-	x	x	x	x	-	-	x	-	-	-
0192	3	BPSB06	BAS...	BY4 CHRISTIANSÖ	5522.97	01520.03	20210216	0740	92	14	16	8	0.1	1018	2830	---x	12		x	x	-	x	x	x	x	-	x	-	x	x	x	x	-	-	x	-	-	-
0193	3	BPWK01	BAS...	REF M1V1	5622.26	01612.12	20210216	1500	21	8	22	2	0.4	1015	2820	-x--	5		x	x	-	x	x	x	x	-	x	-	x	x	x	x	-	-	x	-	-	-

STATION SLÄGGÖ SURFACE WATER (0-10 m)

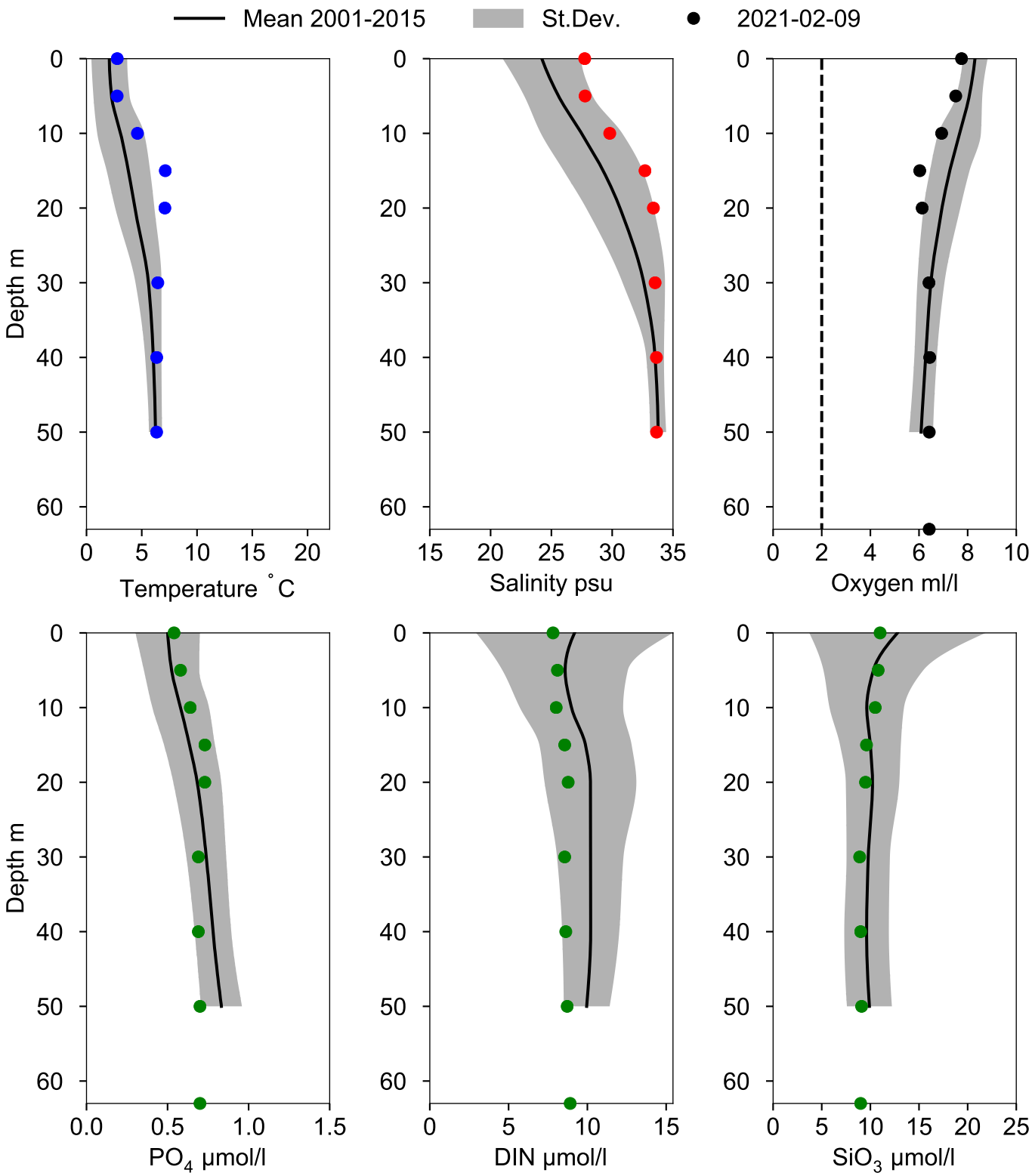
Annual Cycles



OXYGEN IN BOTTOM WATER (depth >= 64 m)

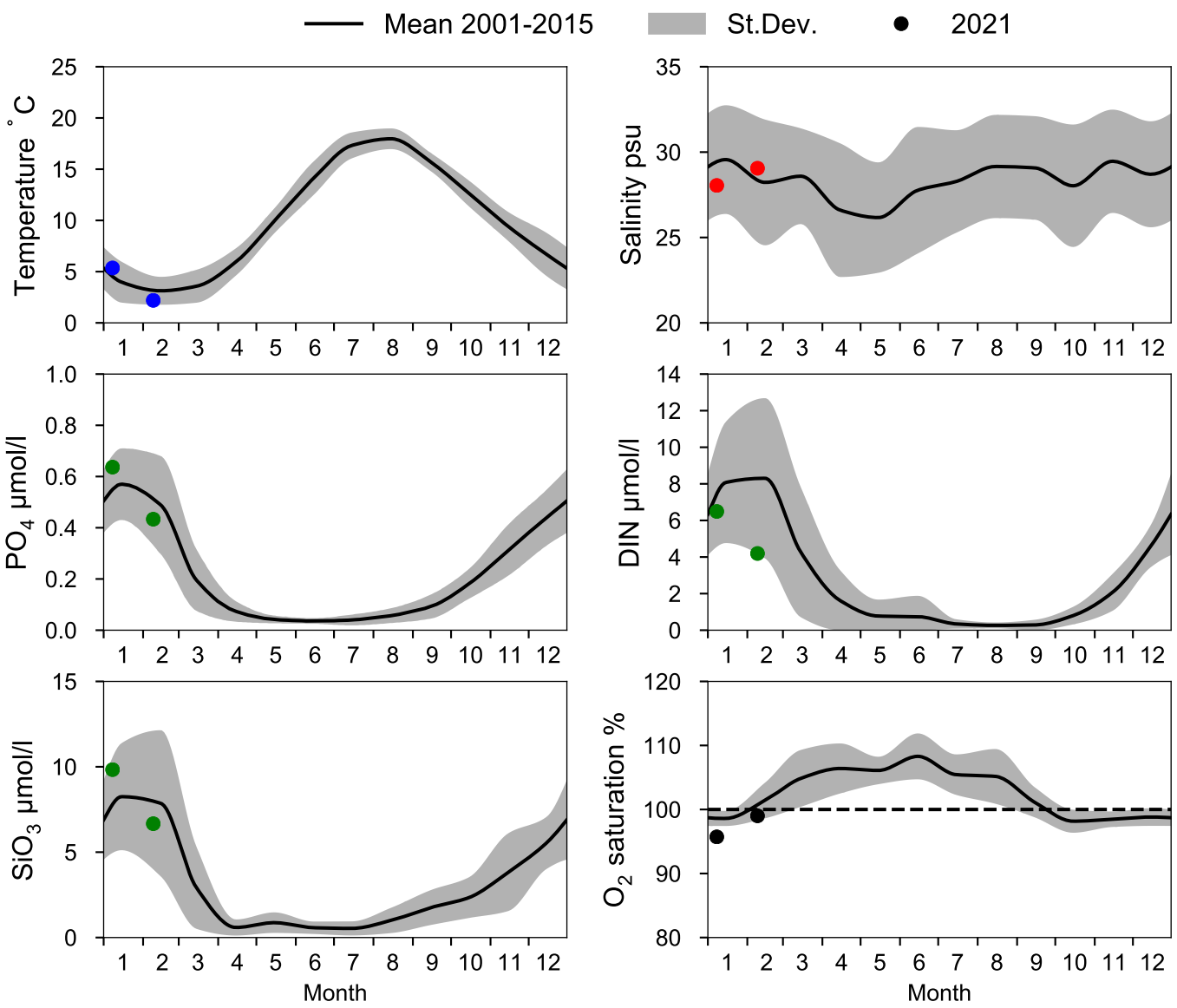


Vertical profiles SLÄGGÖ
February

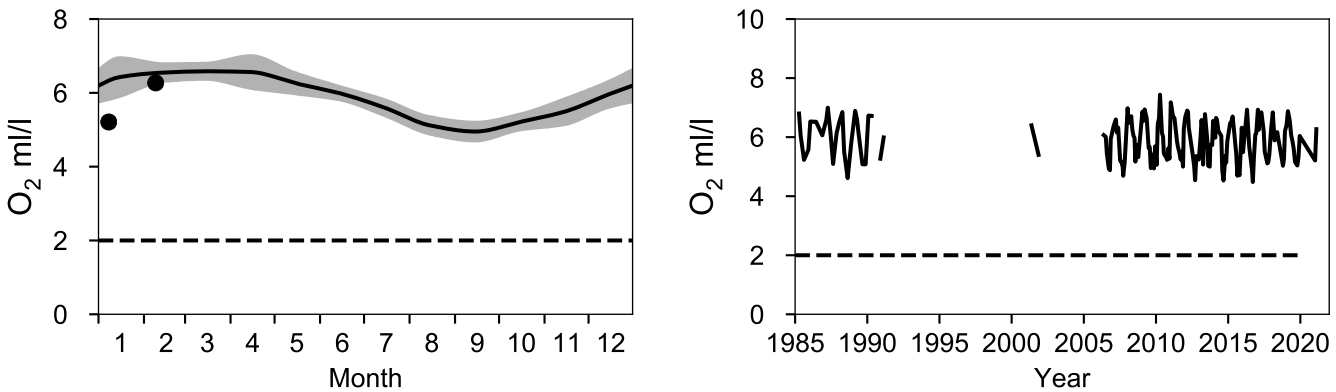


STATION Å13 SURFACE WATER (0-10 m)

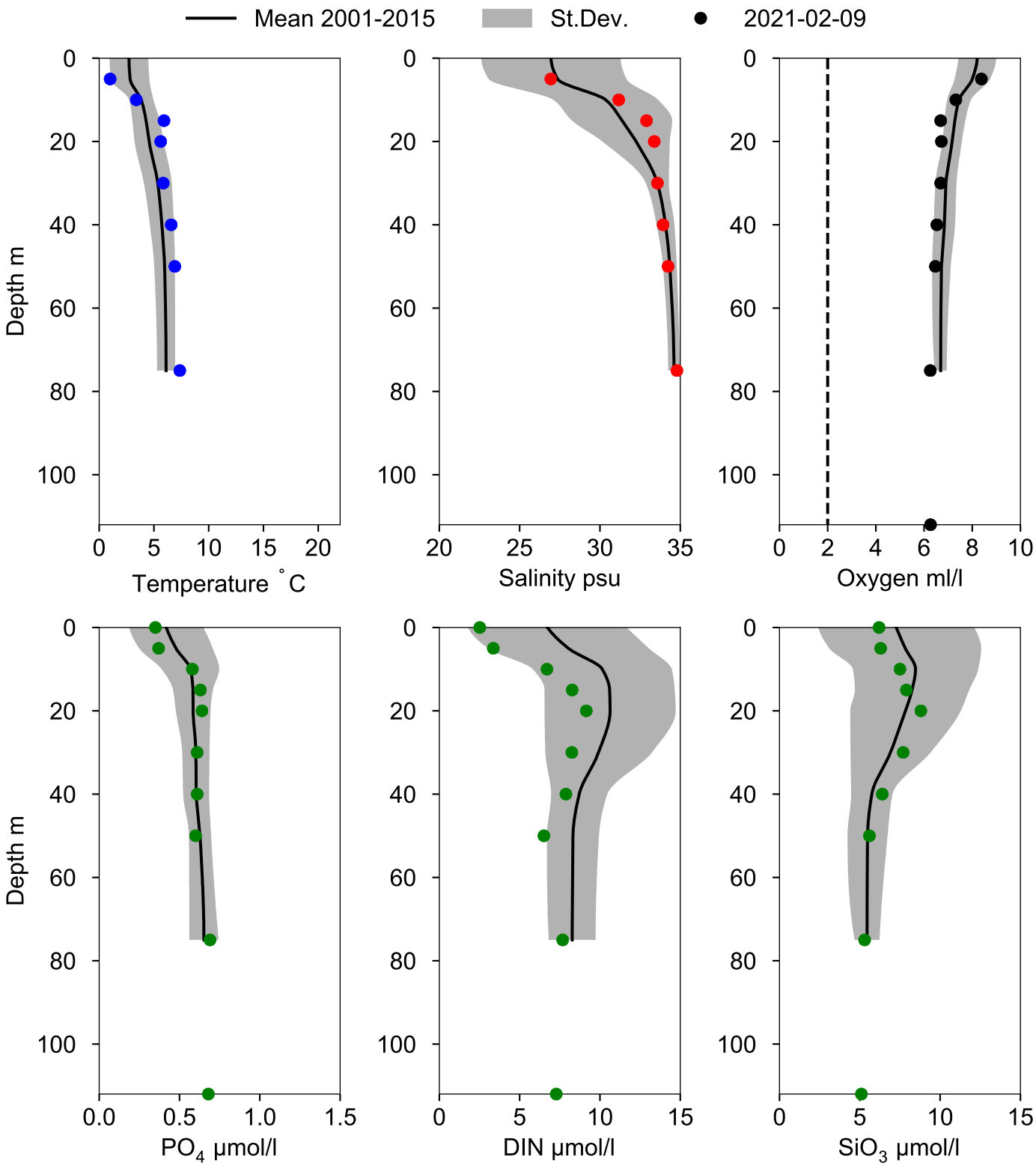
Annual Cycles



OXYGEN IN BOTTOM WATER (depth >= 80 m)

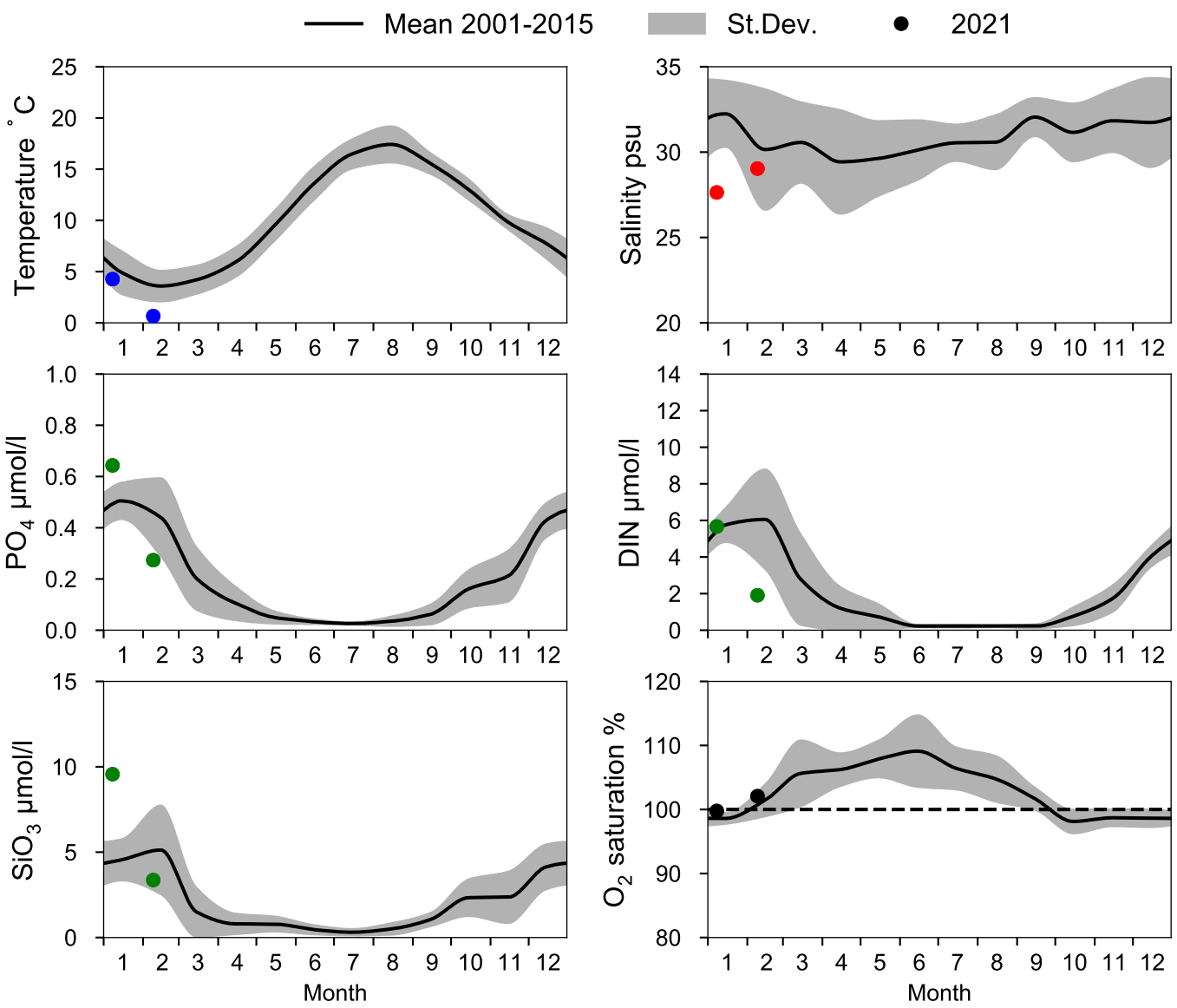


Vertical profiles Å13
February

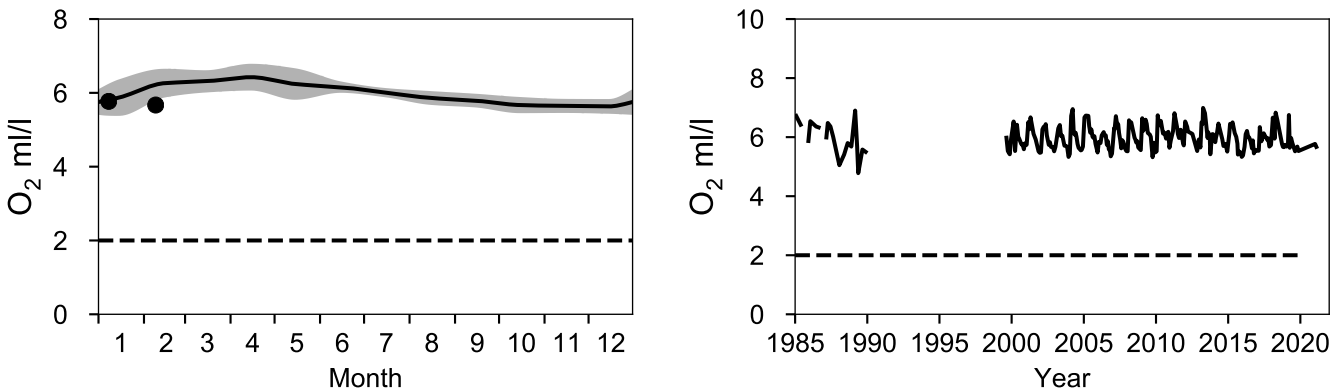


STATION Å17 SURFACE WATER (0-10 m)

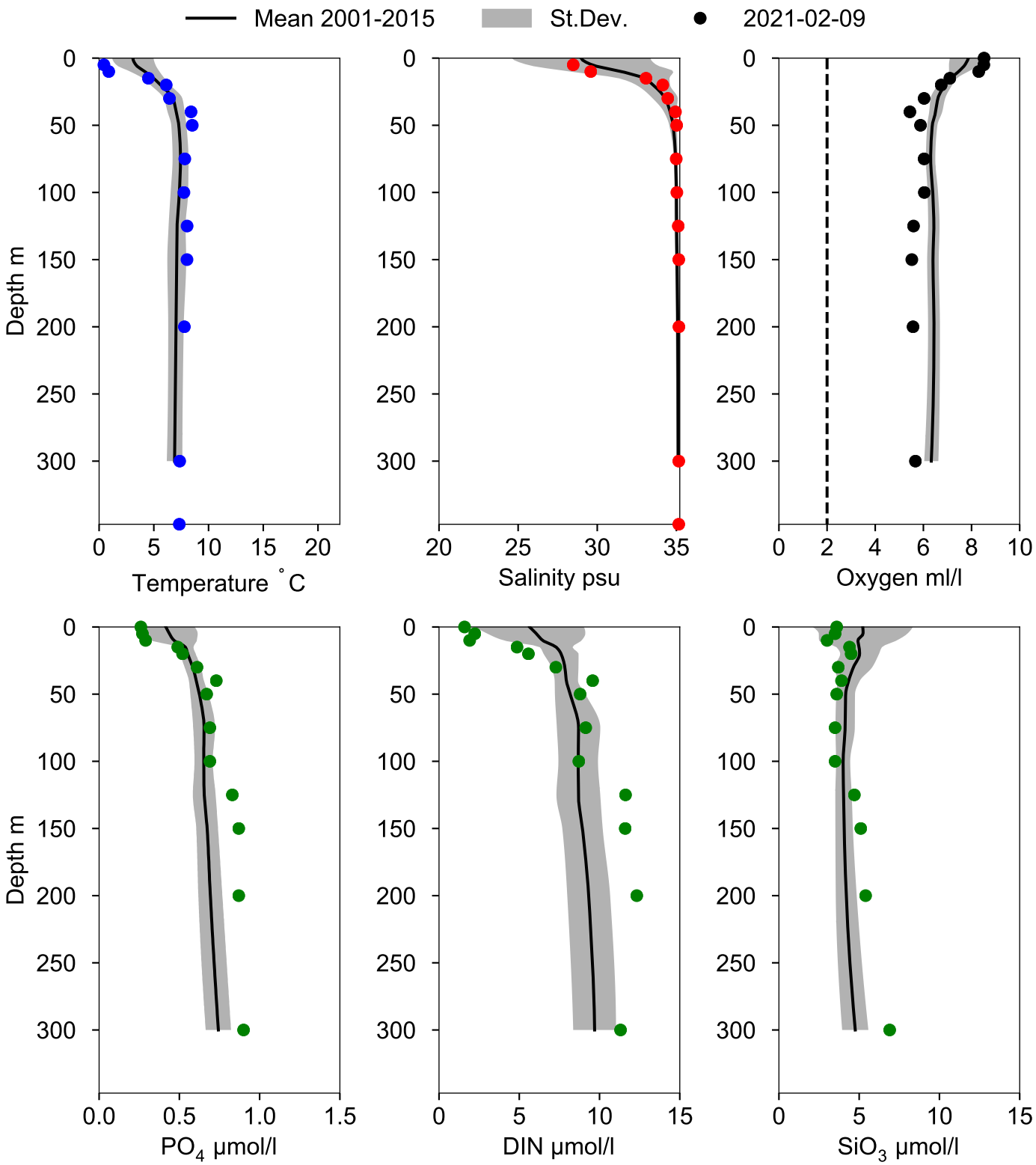
Annual Cycles



OXYGEN IN BOTTOM WATER (depth >= 300 m)

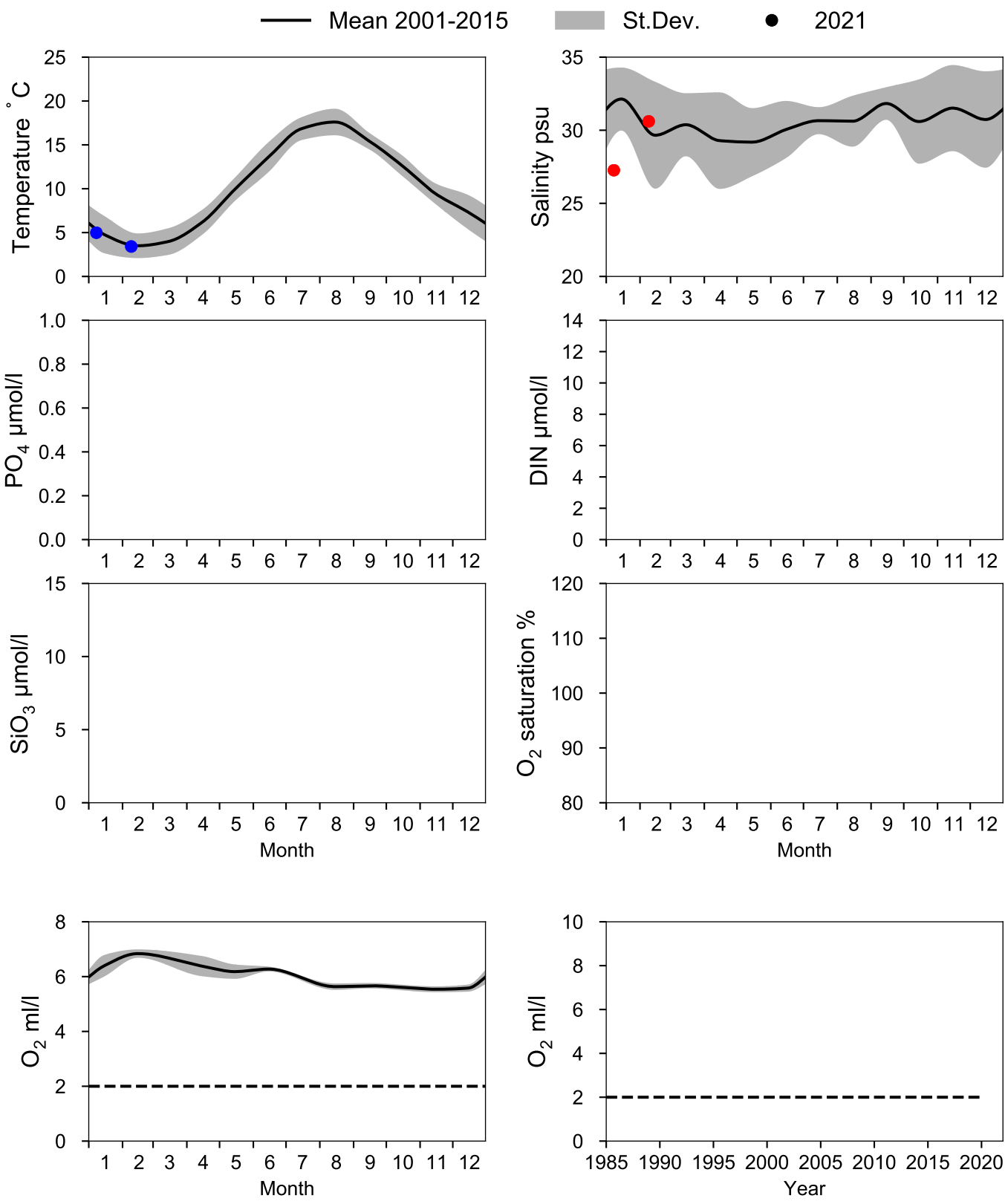


Vertical profiles Å17
February

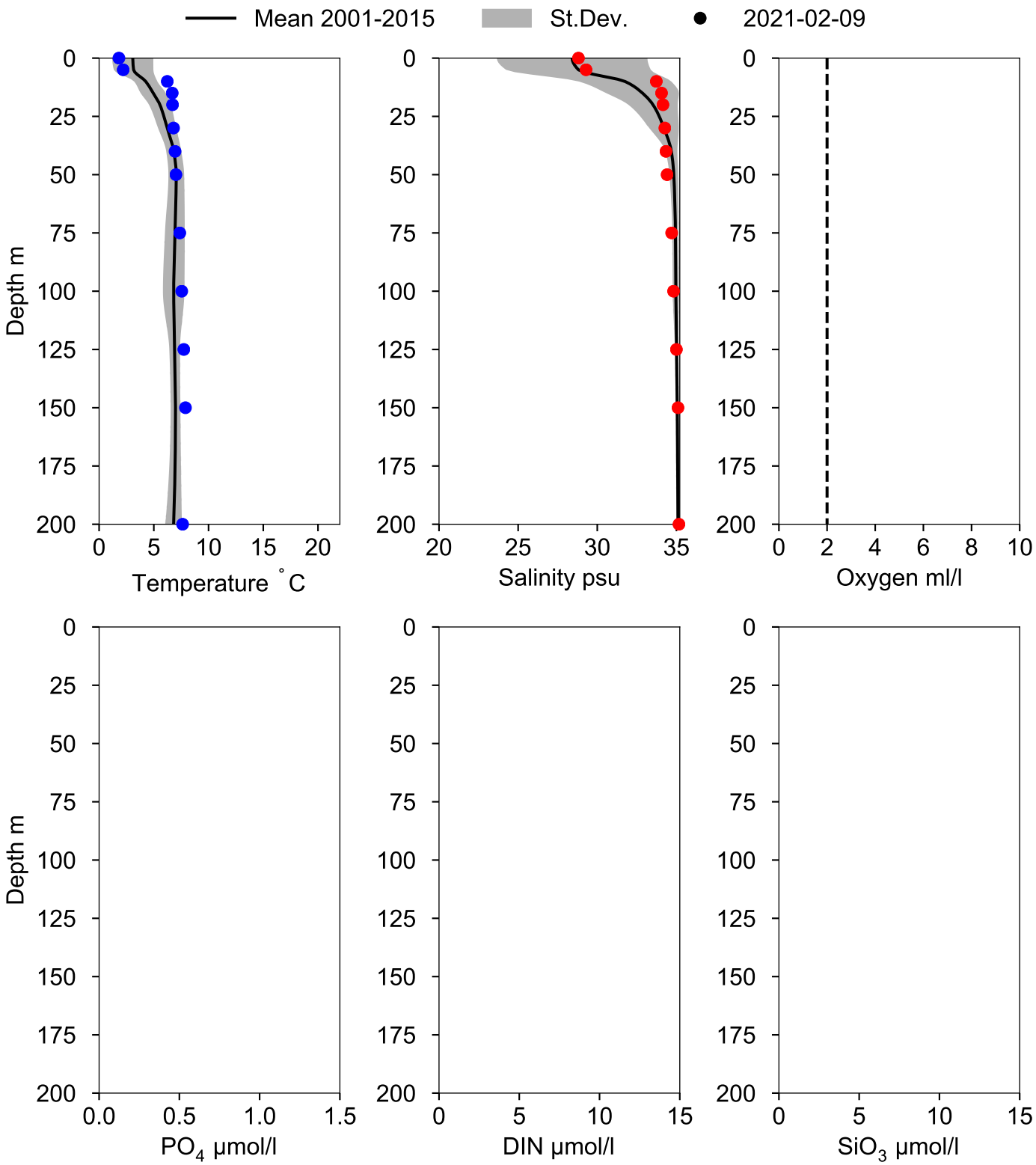


STATION Å16 SURFACE WATER (0-10 m)

Annual Cycles

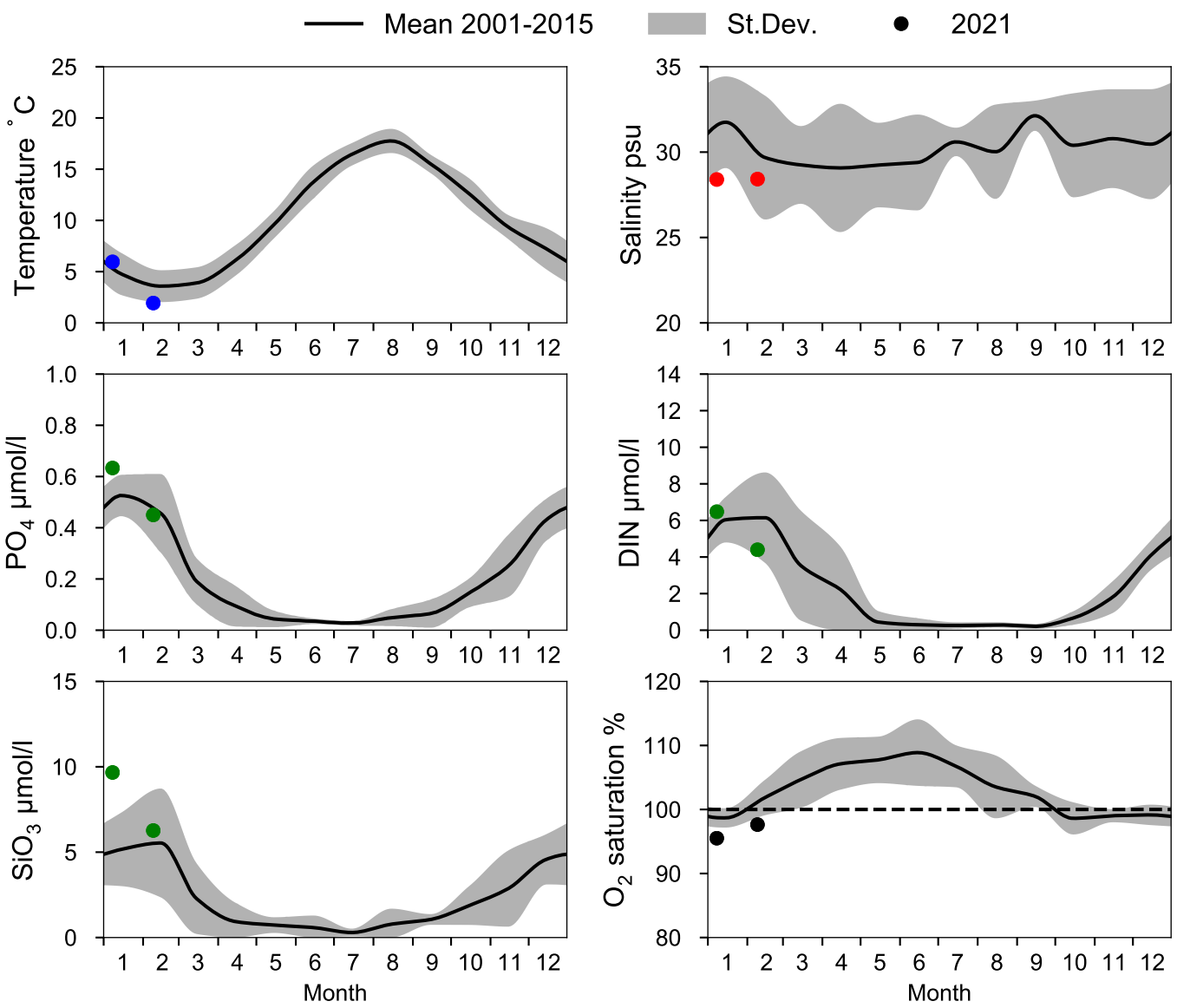


Vertical profiles Å16
February

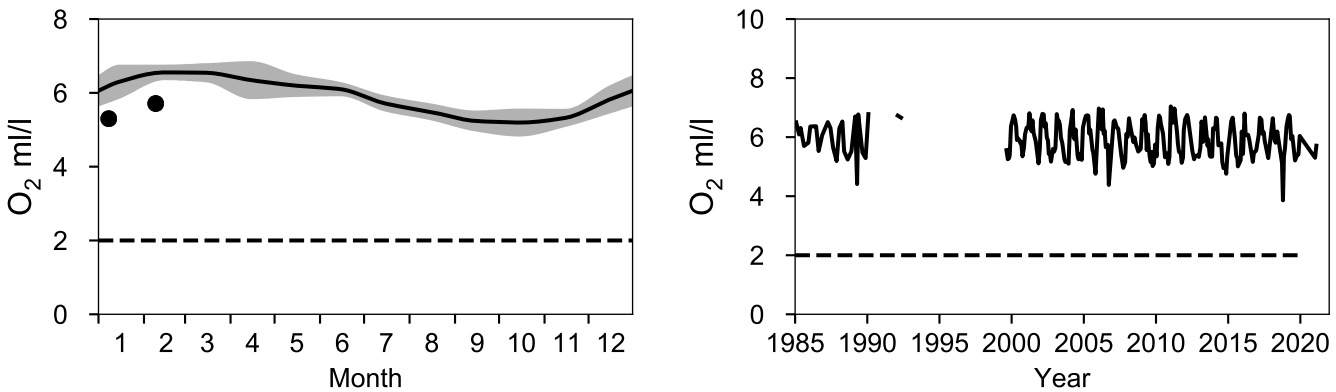


STATION Å15 SURFACE WATER (0-10 m)

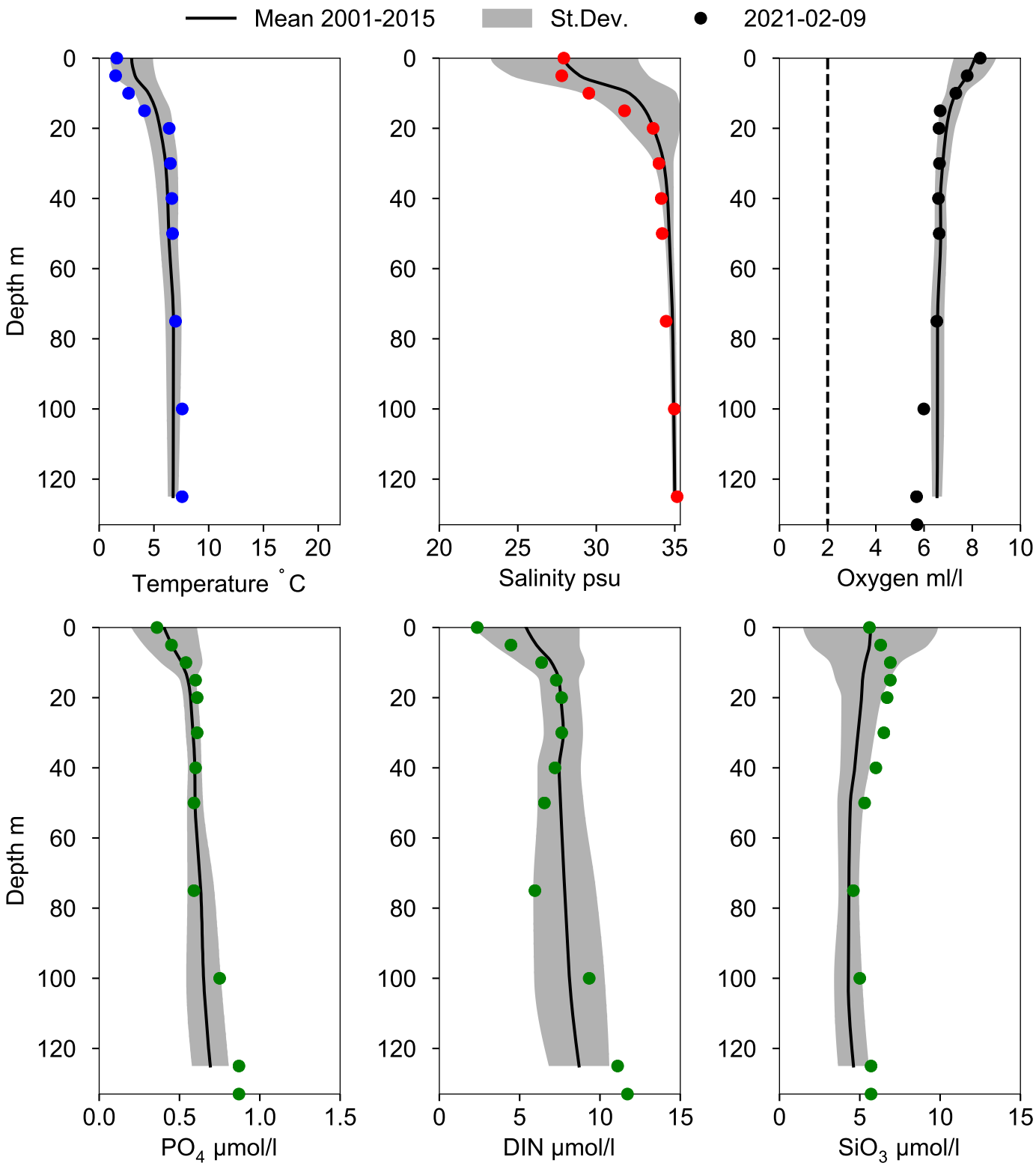
Annual Cycles



OXYGEN IN BOTTOM WATER (depth >= 125 m)

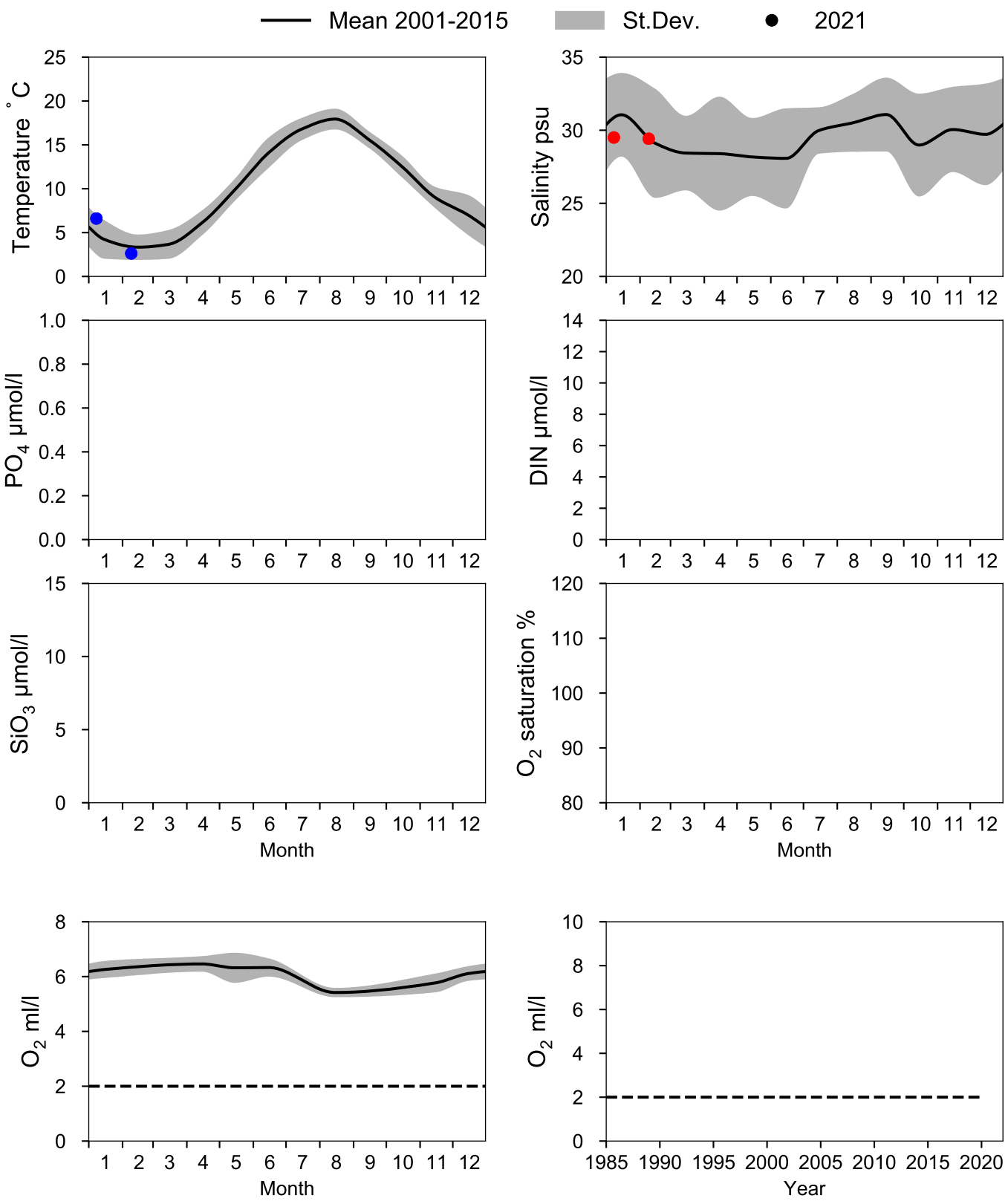


Vertical profiles Å15
February

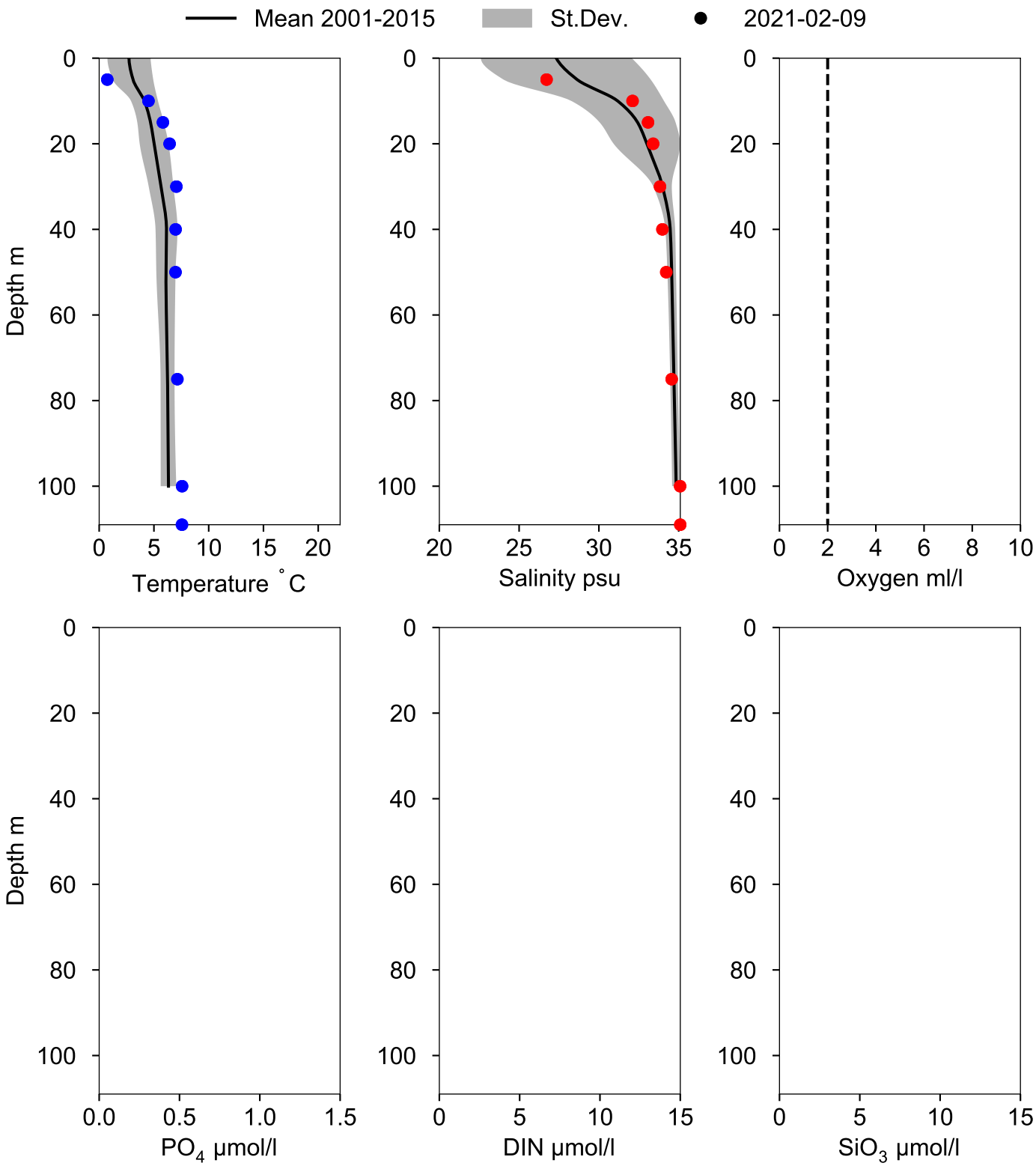


STATION Å14 SURFACE WATER (0-10 m)

Annual Cycles

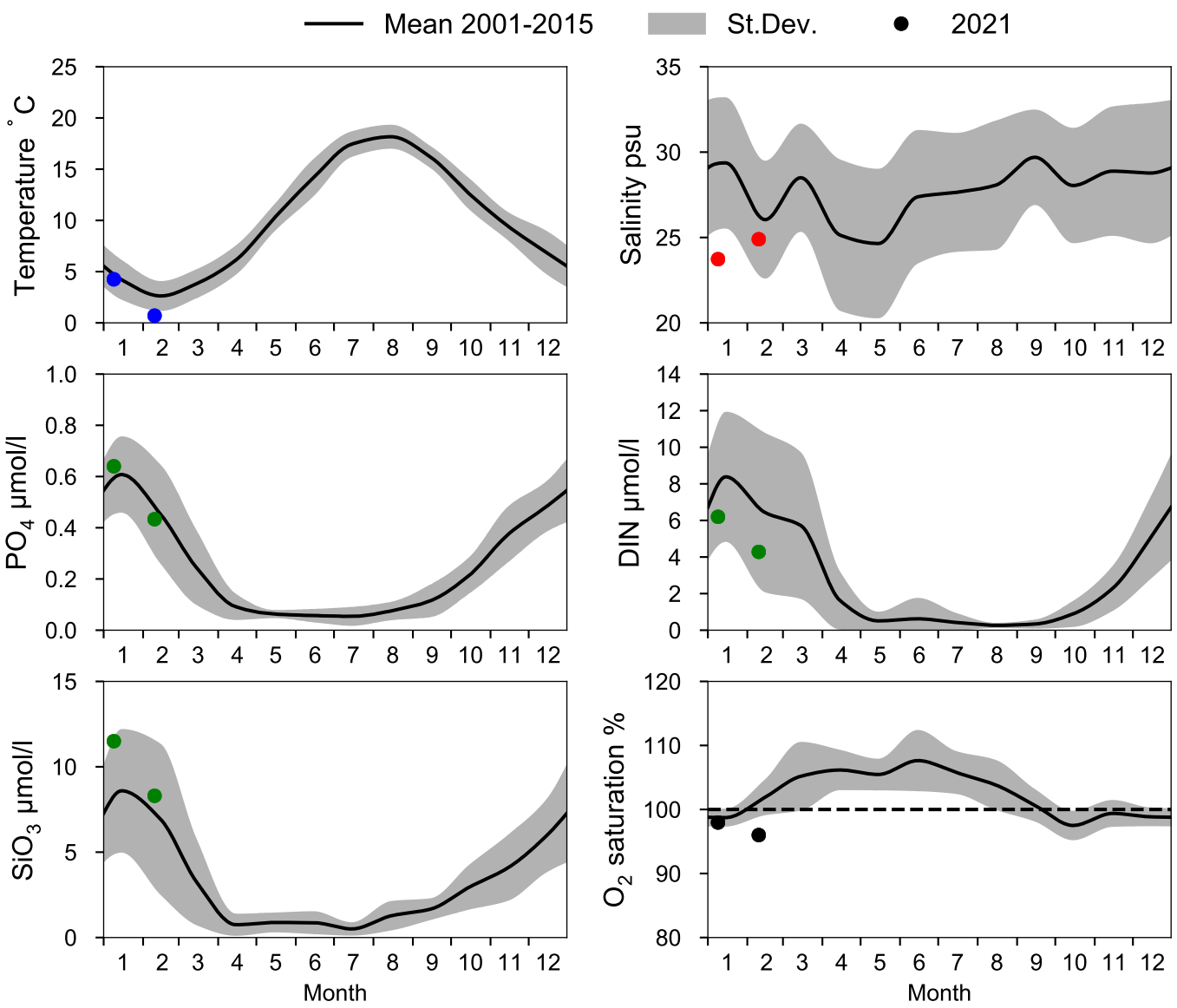


Vertical profiles Å14
February

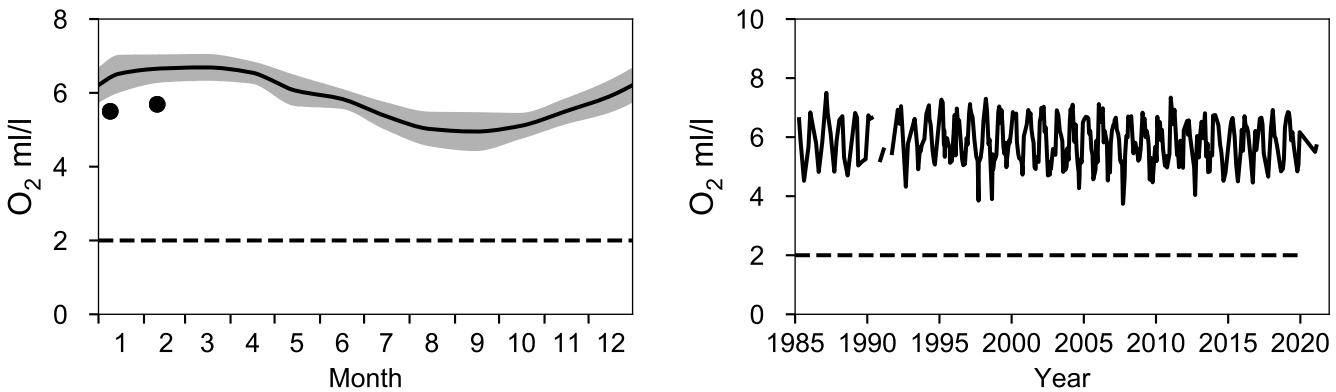


STATION P2 SURFACE WATER (0-10 m)

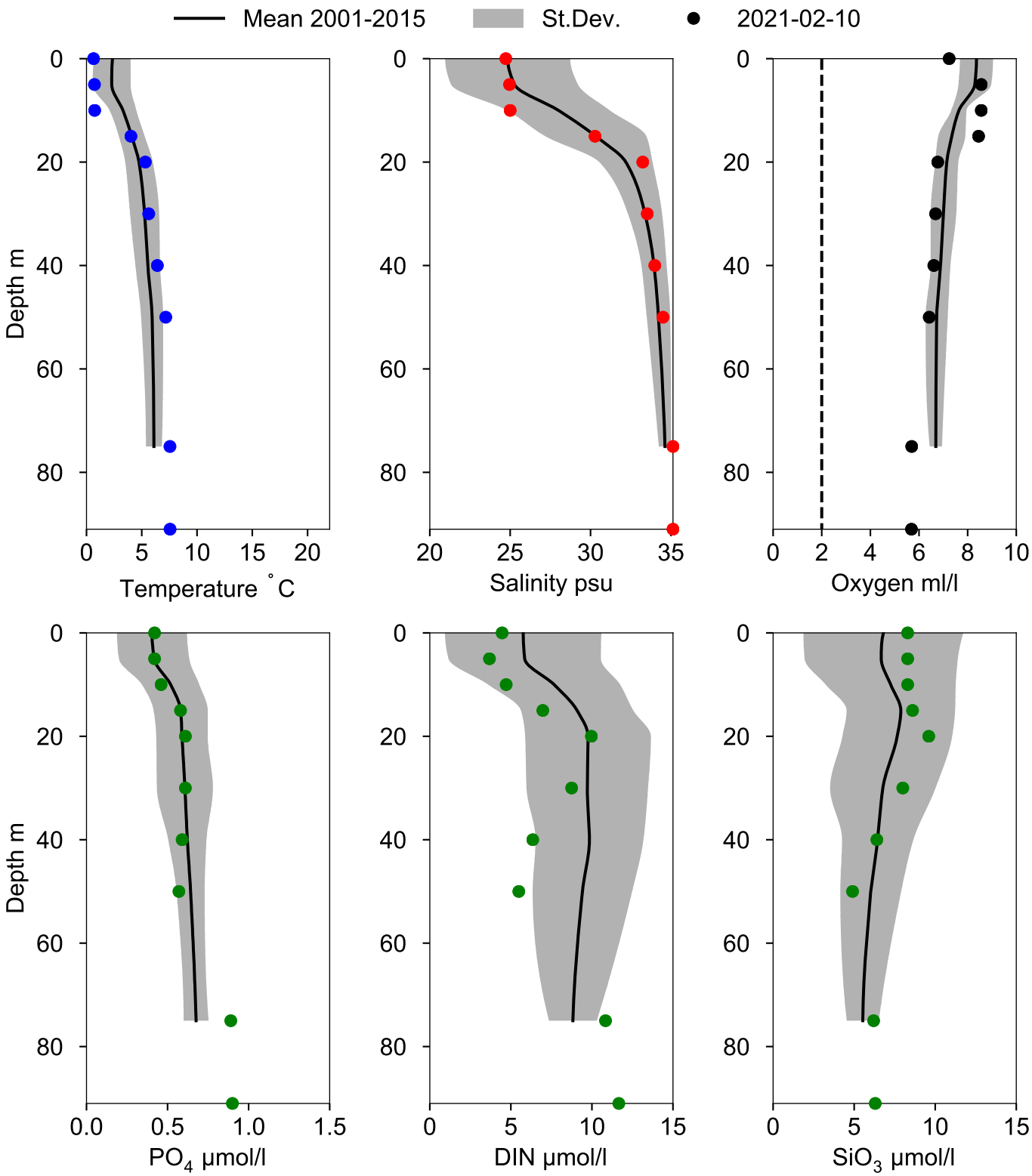
Annual Cycles



OXYGEN IN BOTTOM WATER (depth >= 75 m)

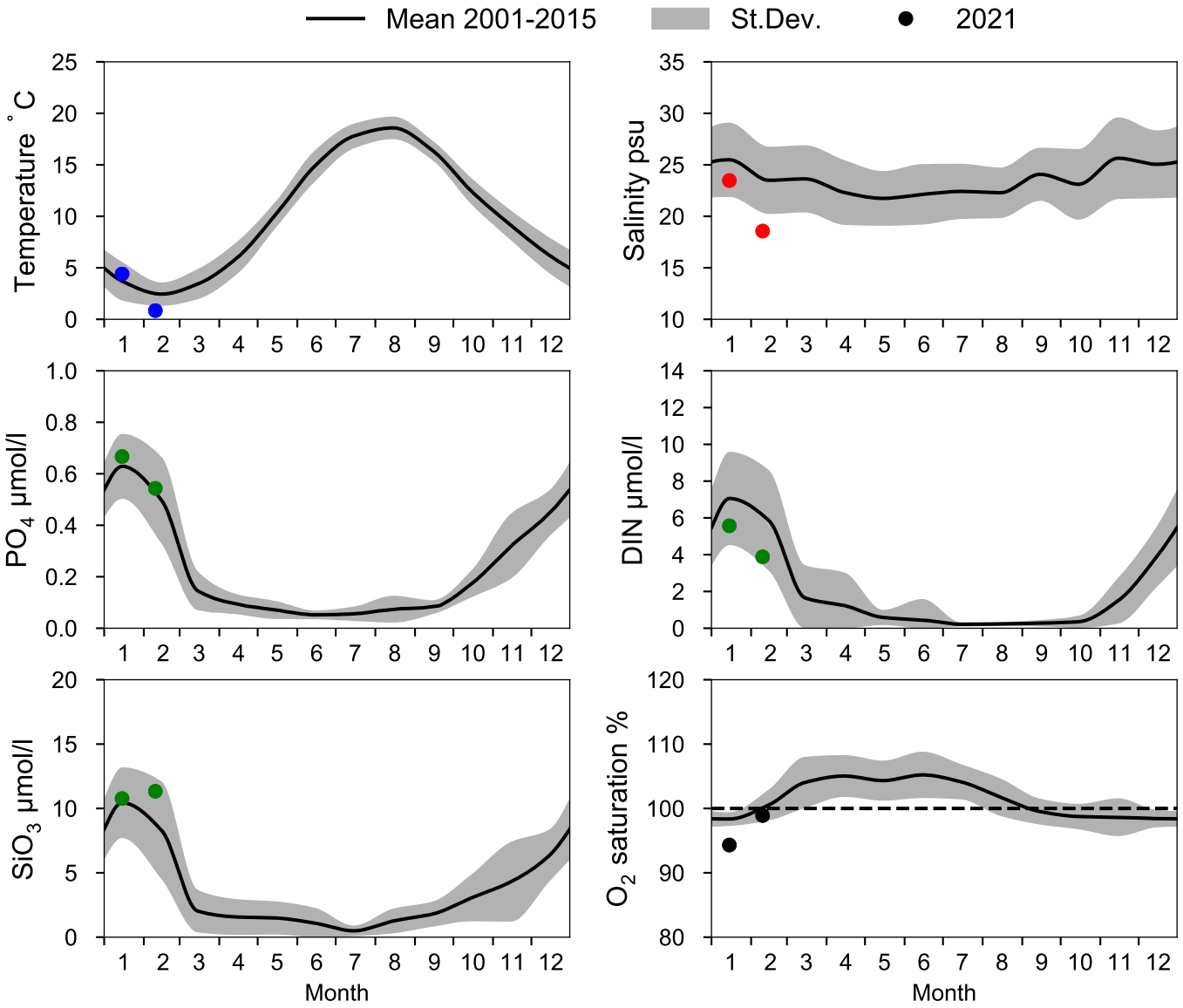


Vertical profiles P2
February

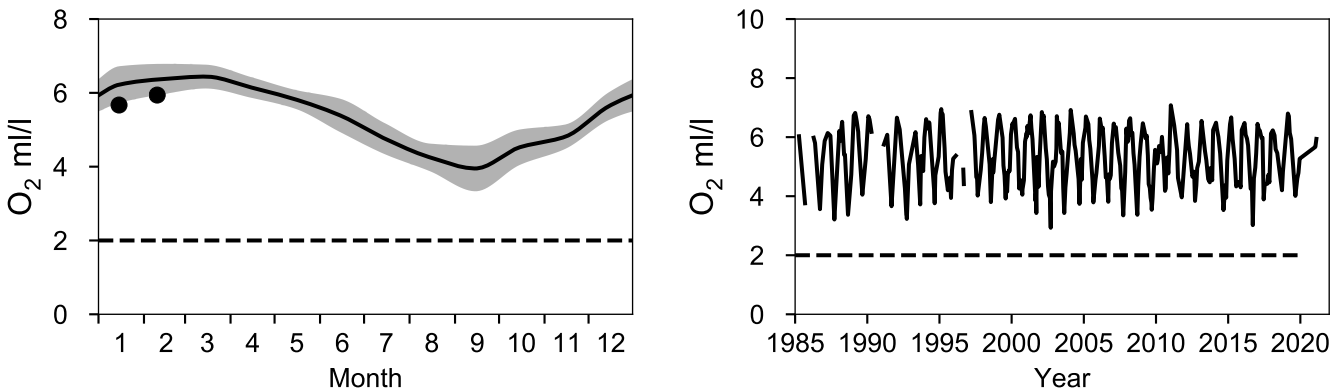


STATION FLADEN SURFACE WATER (0-10 m)

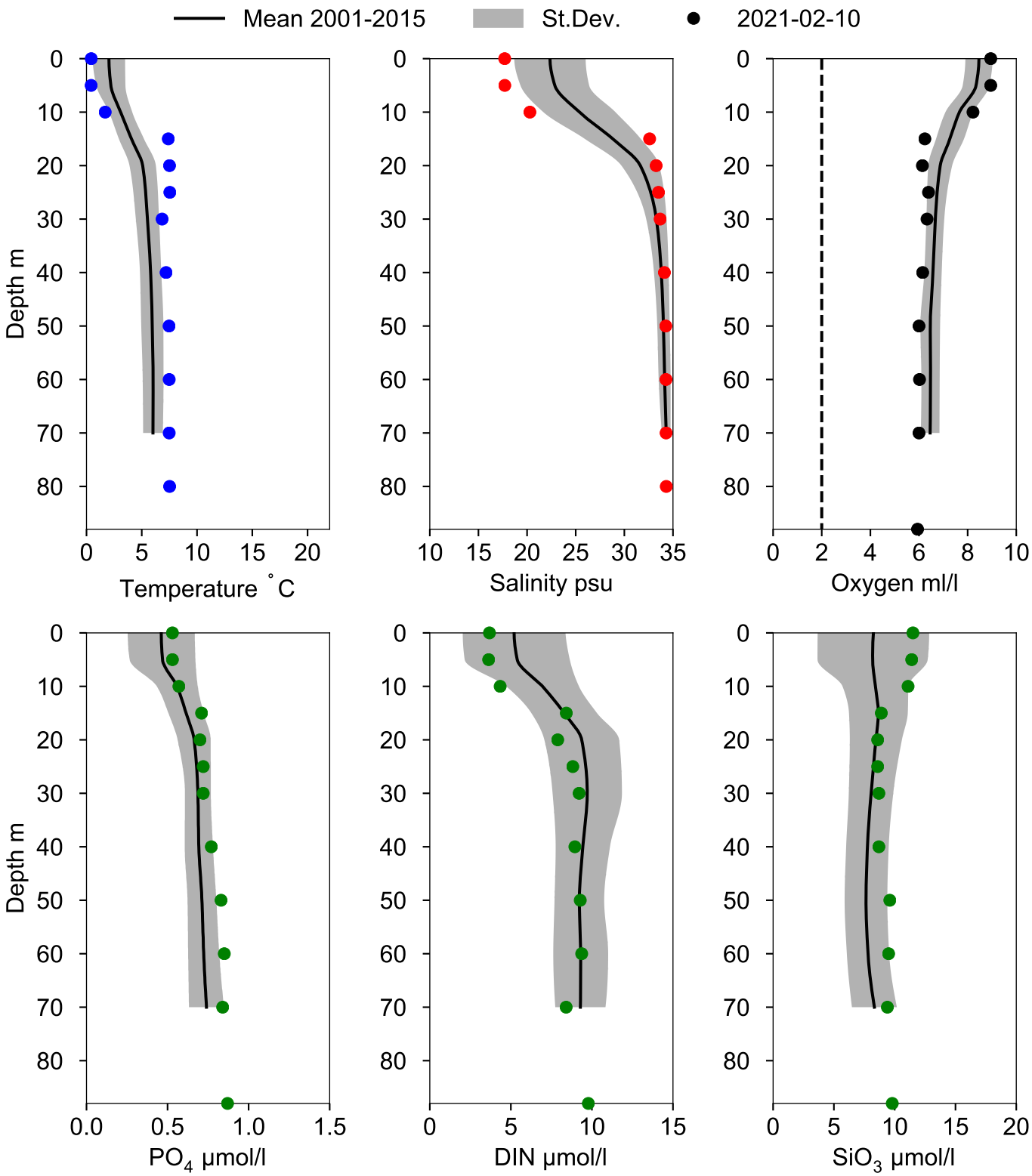
Annual Cycles



OXYGEN IN BOTTOM WATER (depth >= 74 m)

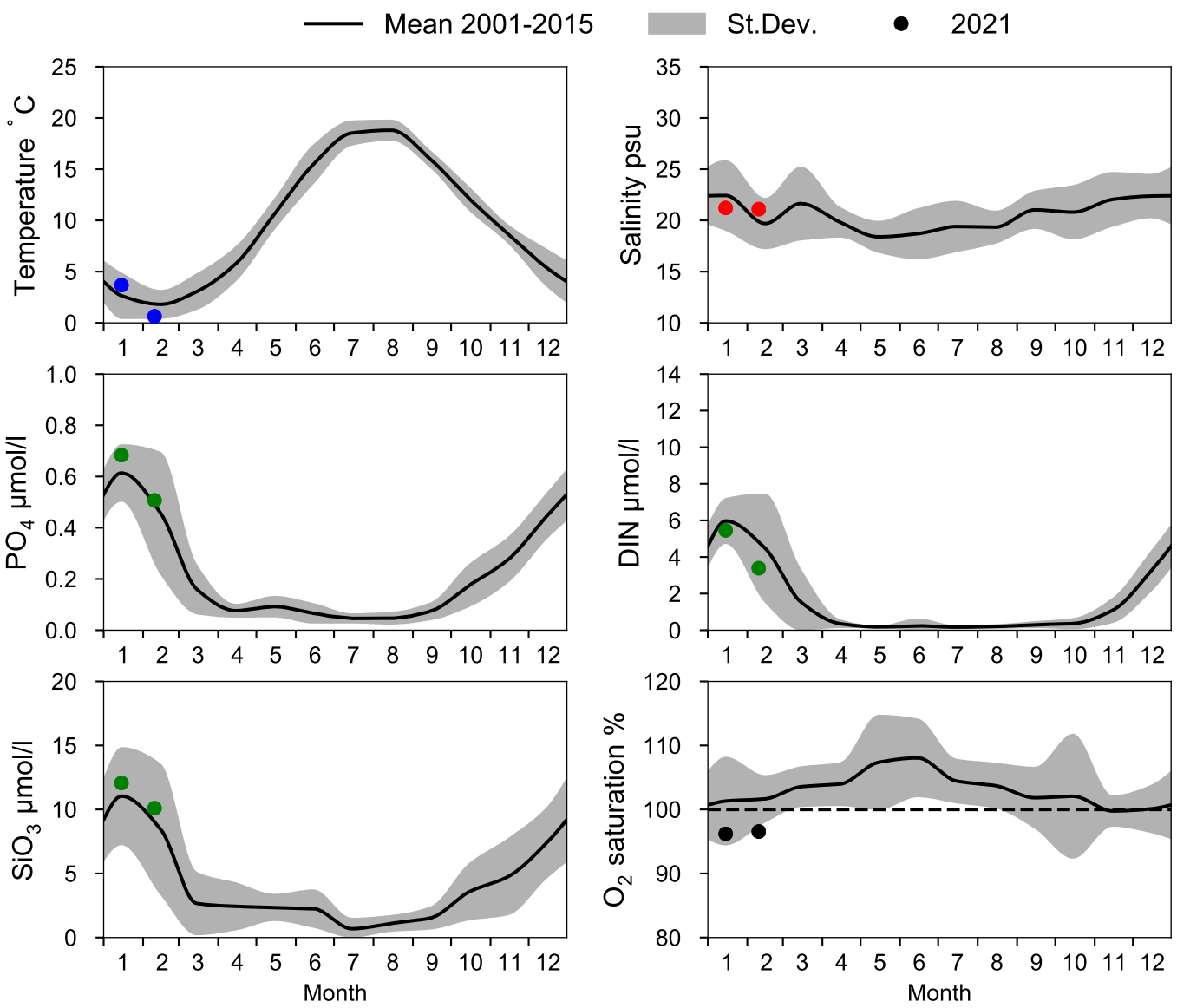


Vertical profiles FLADEN
February

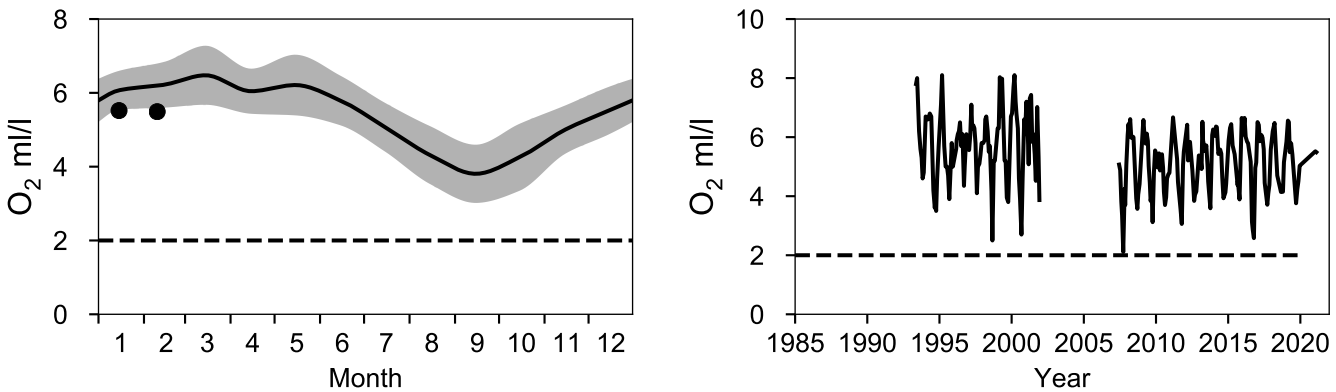


STATION N14 FALKENBERG SURFACE WATER (0-10 m)

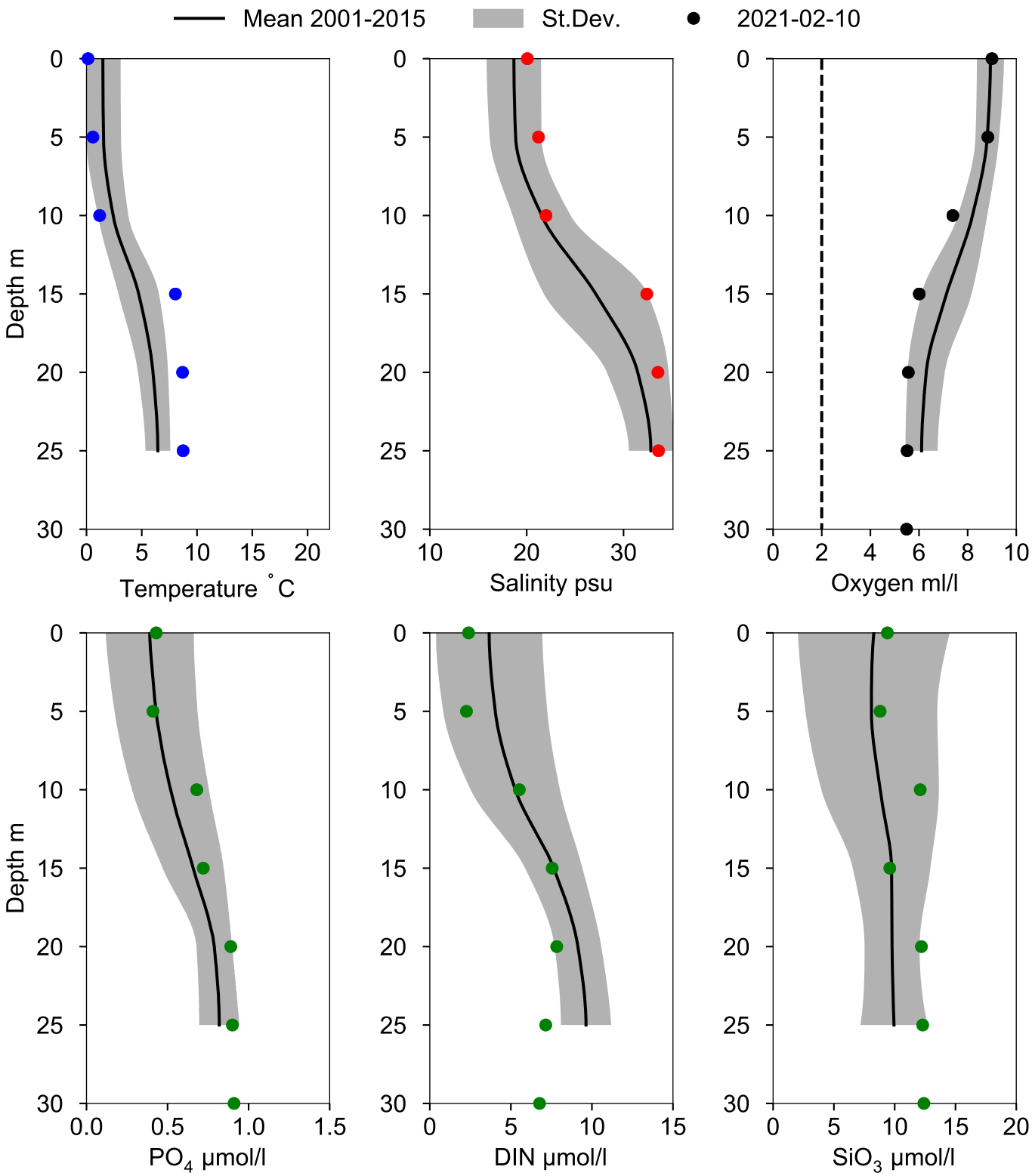
Annual Cycles



OXYGEN IN BOTTOM WATER (depth >= 20 m)

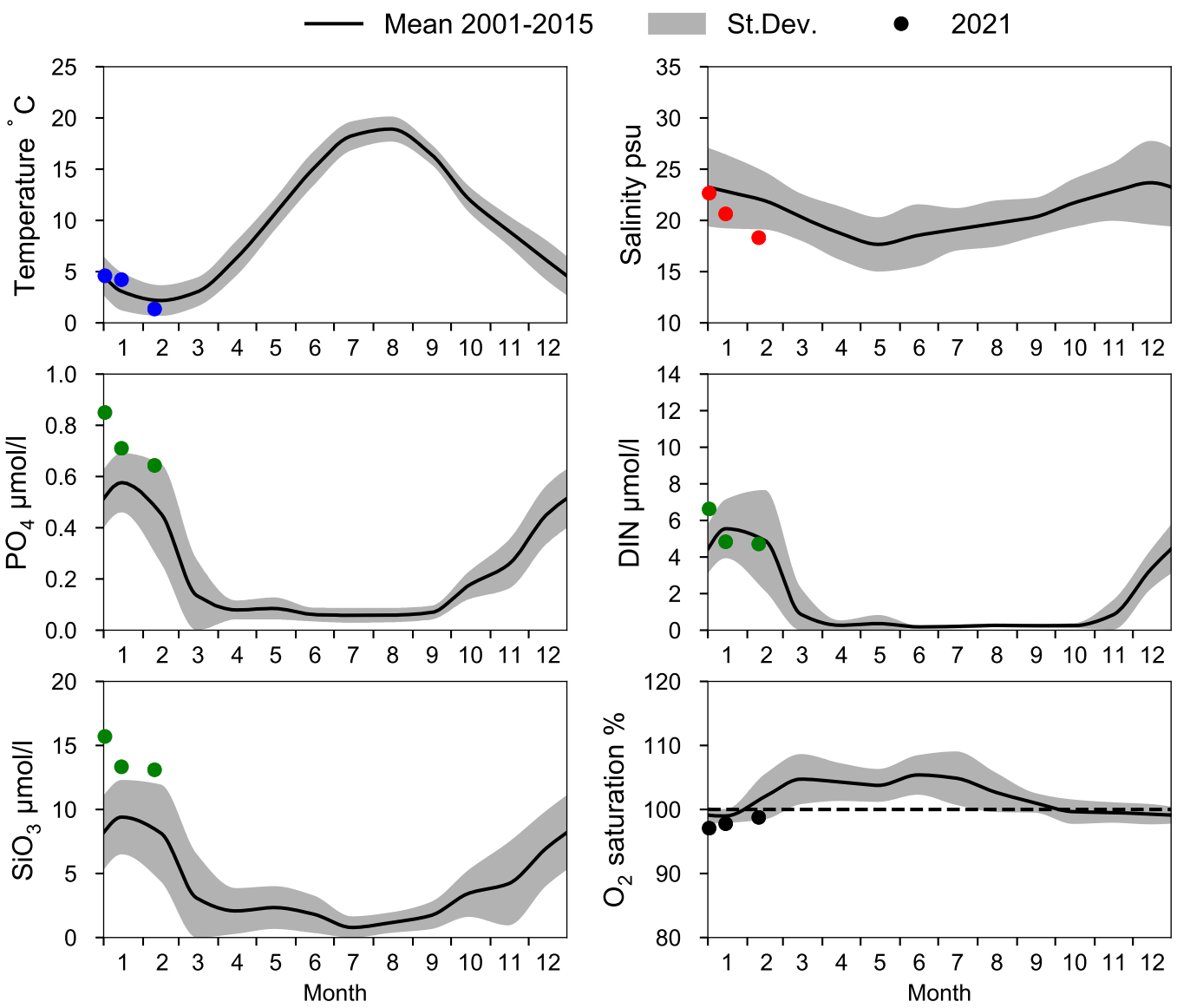


Vertical profiles N14 FALKENBERG
February

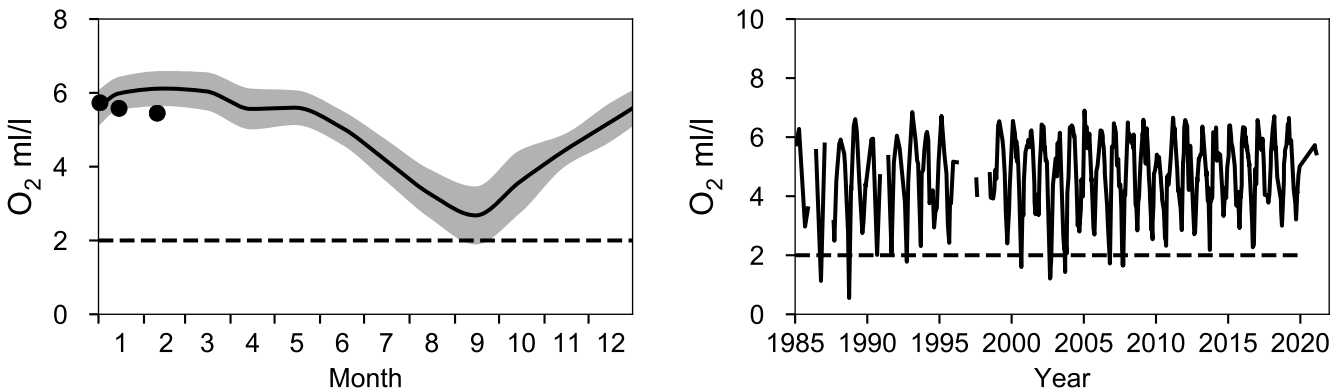


STATION ANHOLT E SURFACE WATER (0-10 m)

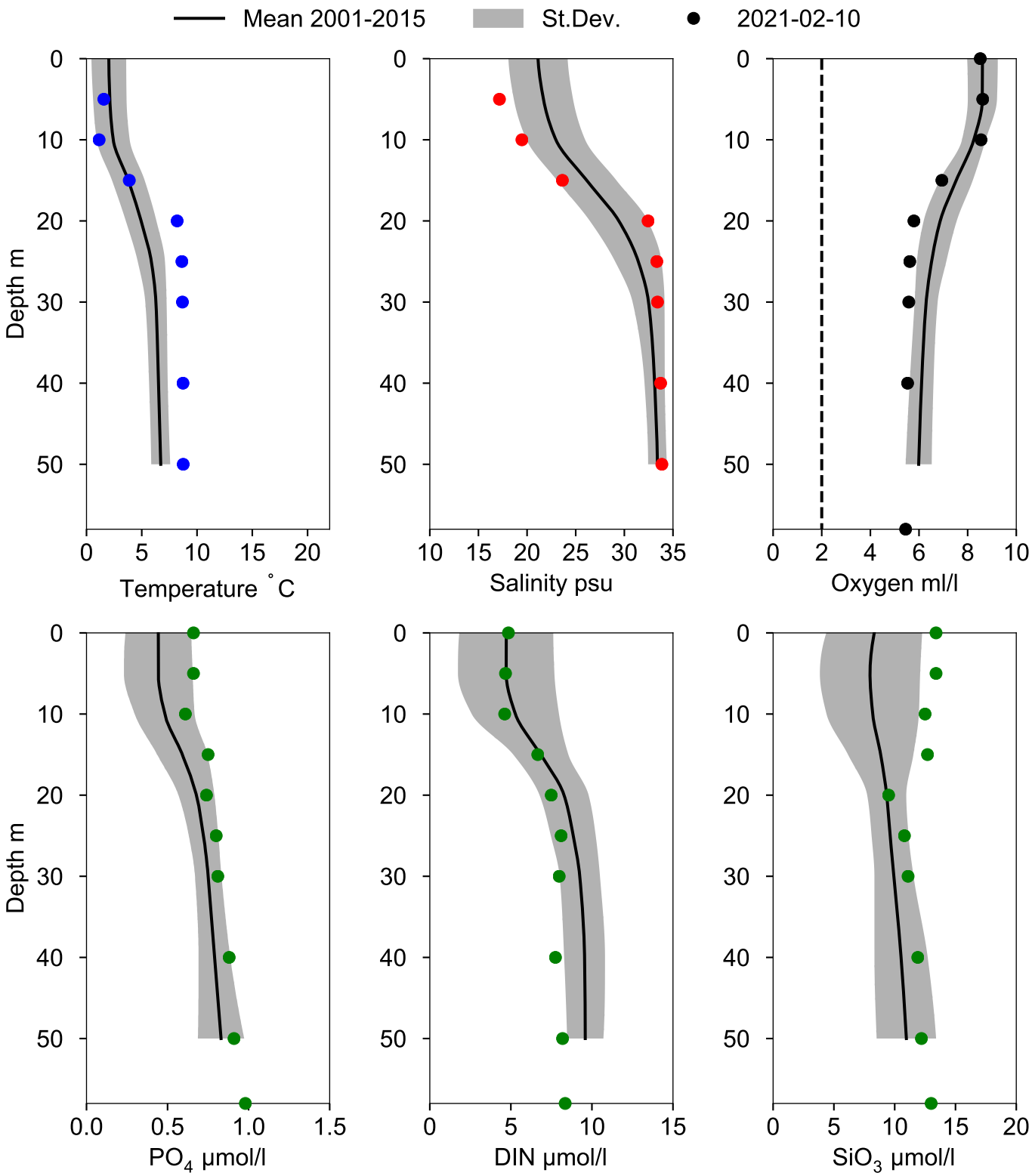
Annual Cycles



OXYGEN IN BOTTOM WATER (depth >= 52 m)

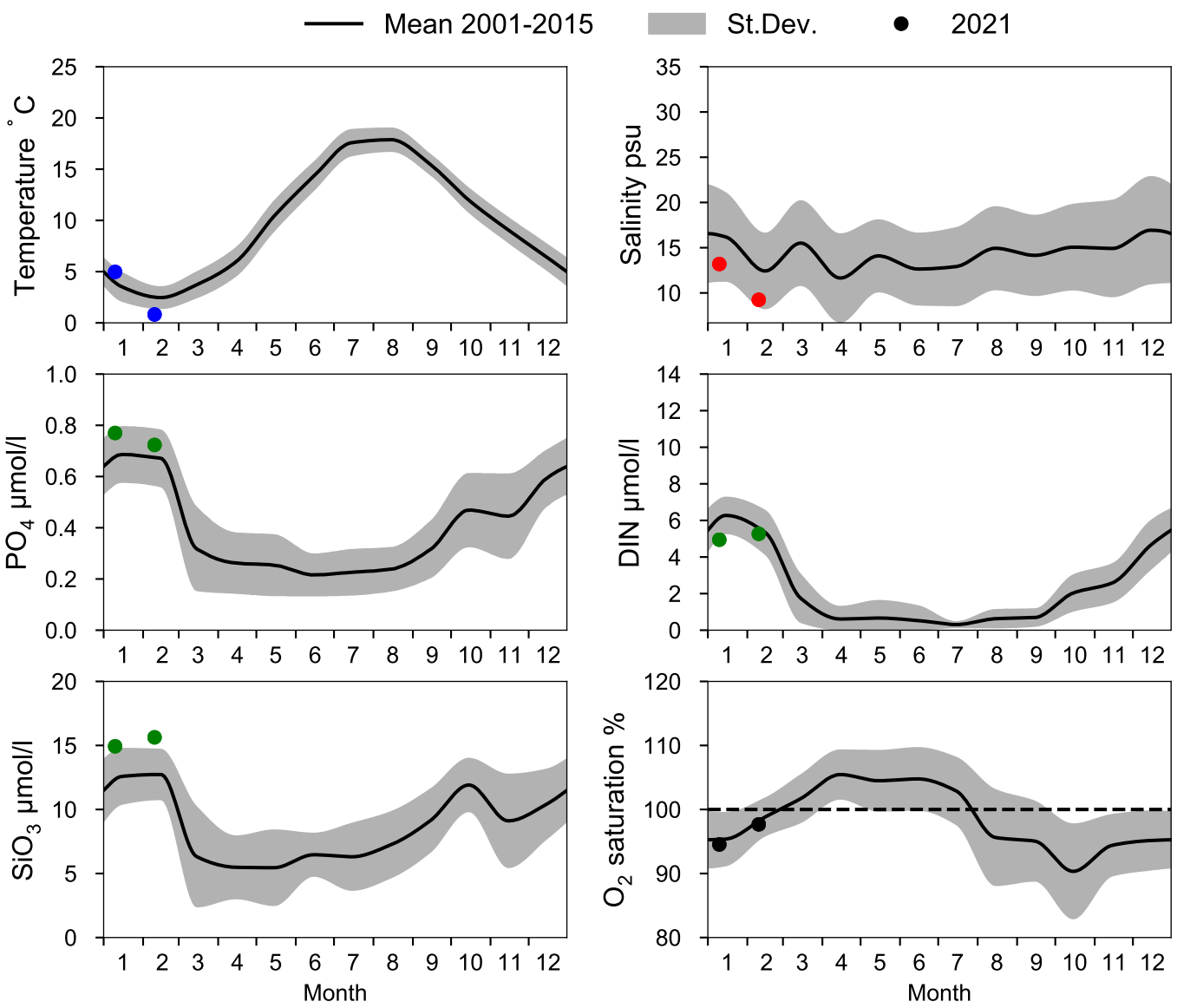


Vertical profiles ANHOLT E
February

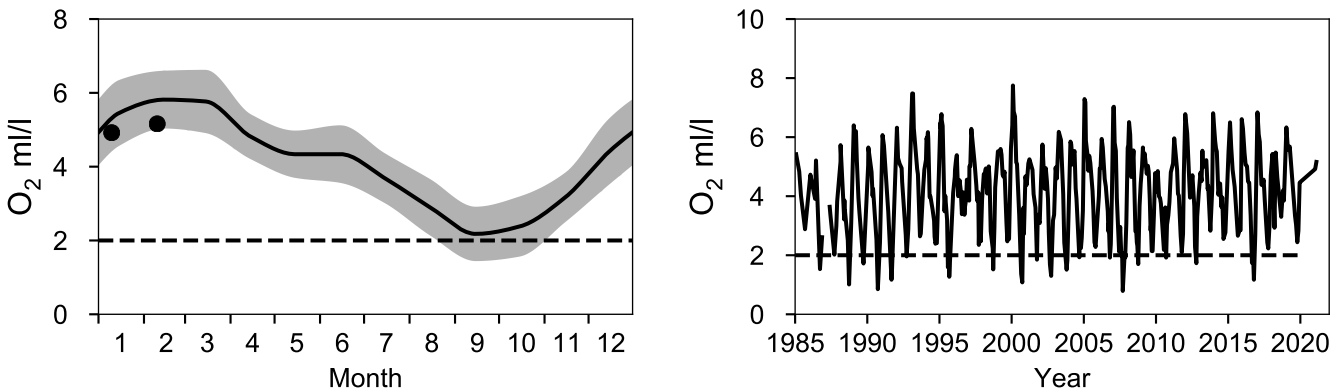


STATION W LANDSKRONA SURFACE WATER (0-10 m)

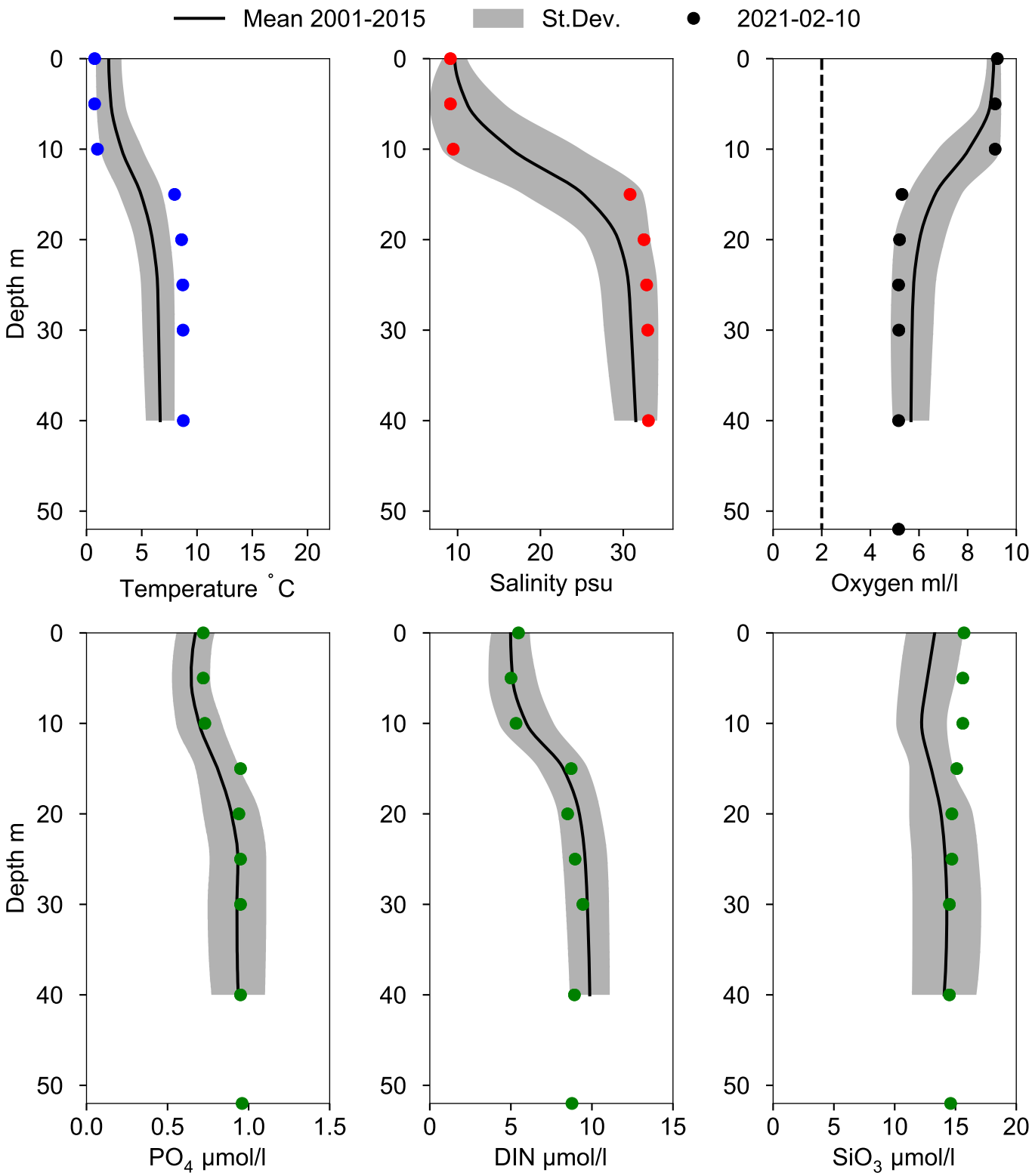
Annual Cycles



OXYGEN IN BOTTOM WATER (depth >= 40 m)



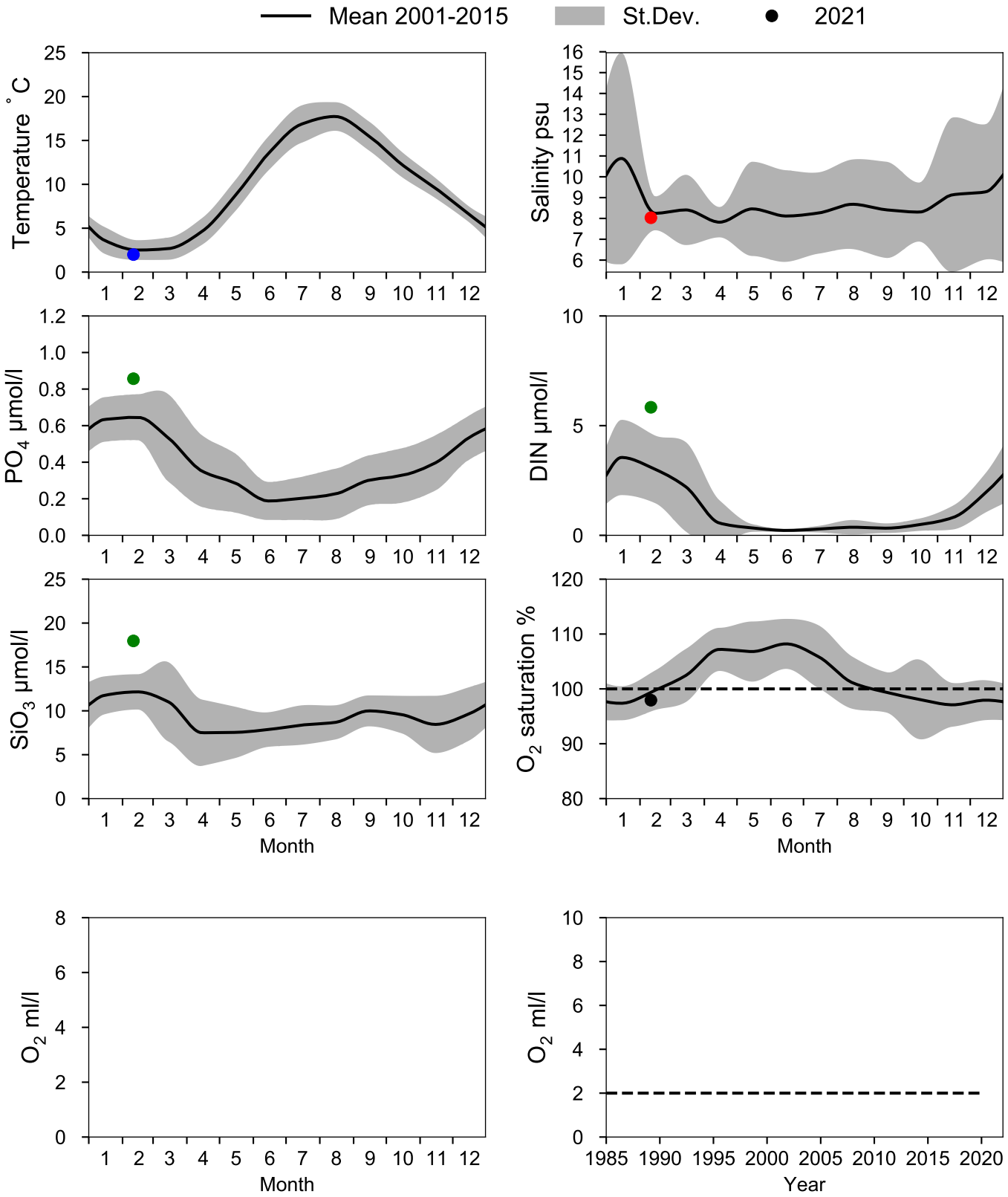
Vertical profiles W LANDSKRONA
February



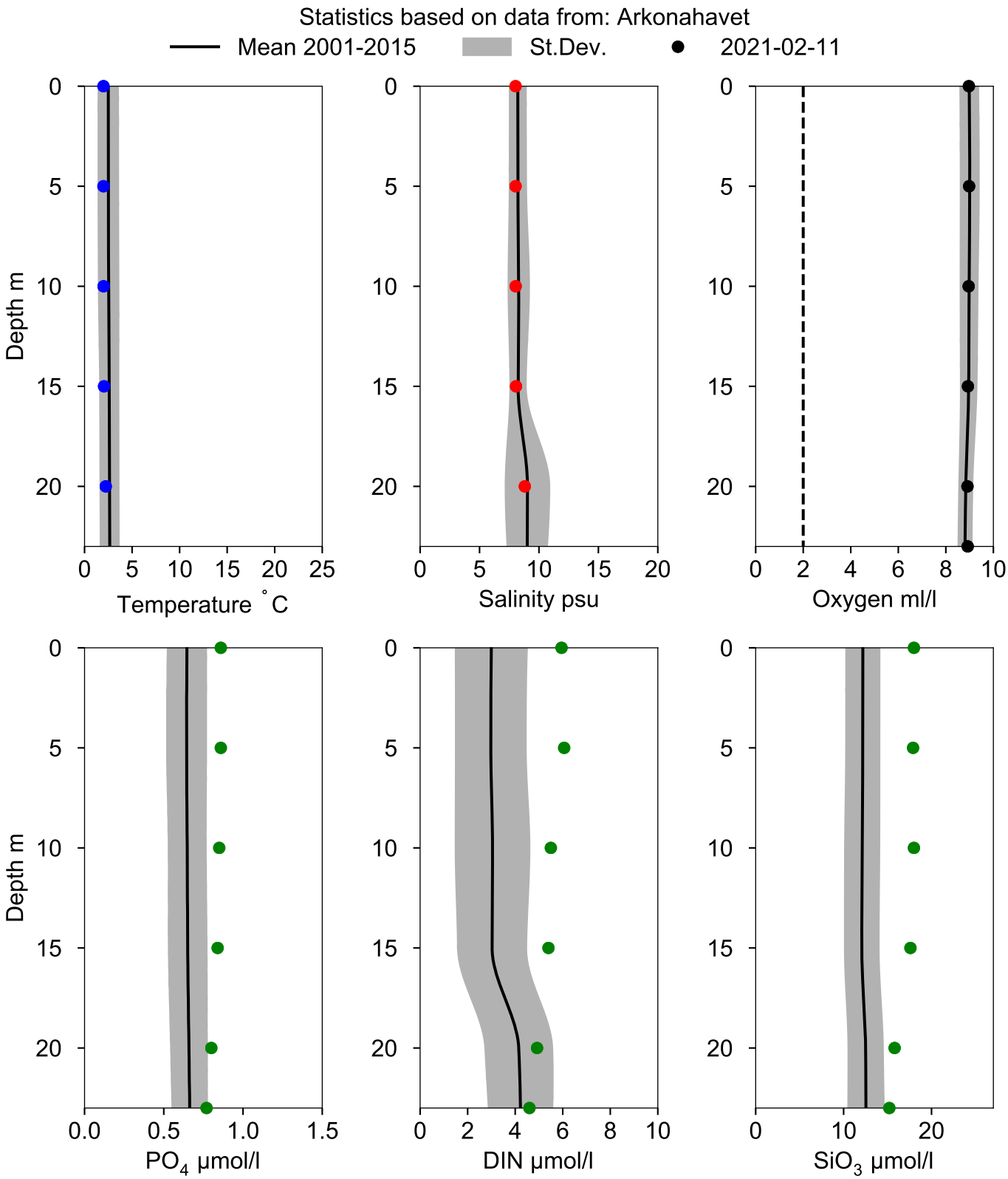
STATION 441 STEVNS KLINT SURFACE WATER (0-10 m)

Annual Cycles

Statistics based on data from: Arkonahavet

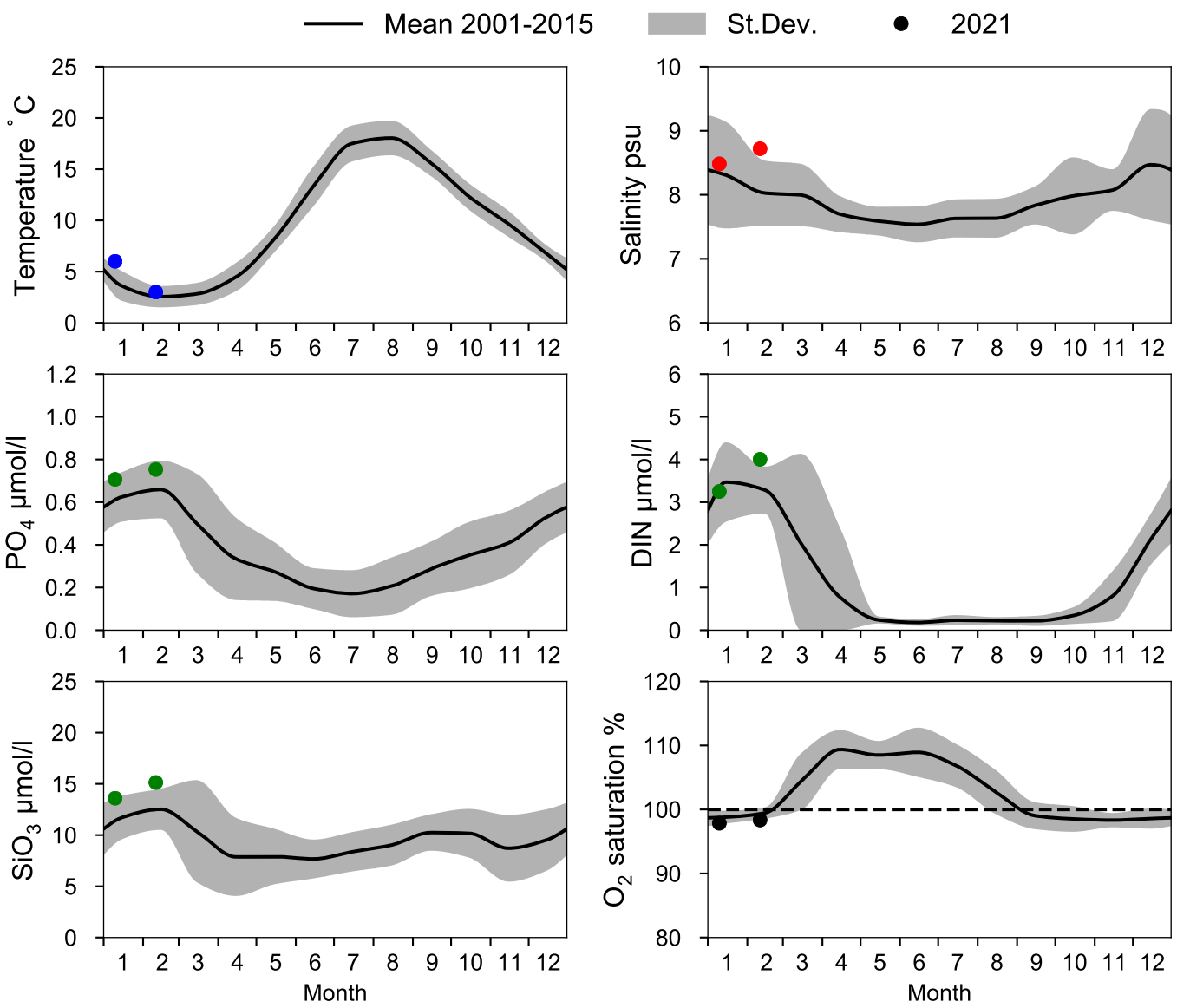


Vertical profiles 441 STEVNS KLINT
February

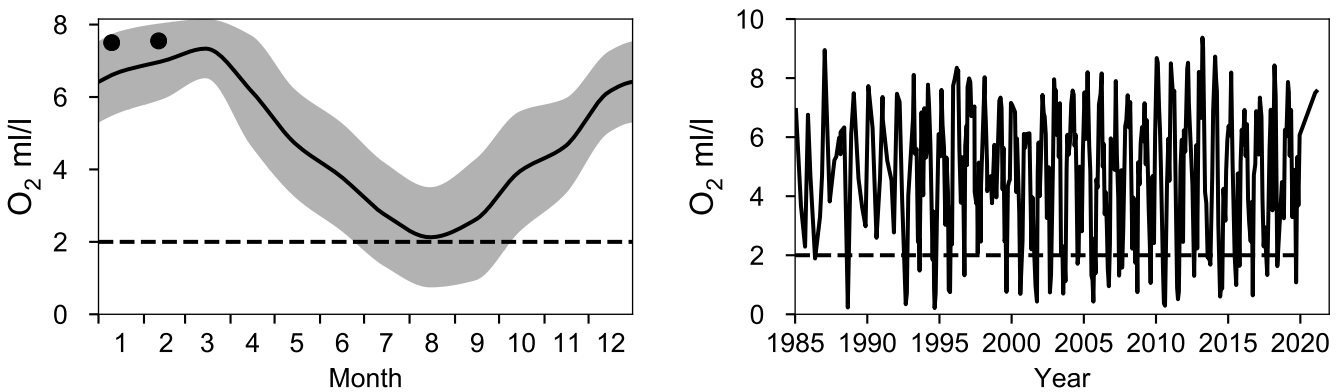


STATION BY1 SURFACE WATER (0-10 m)

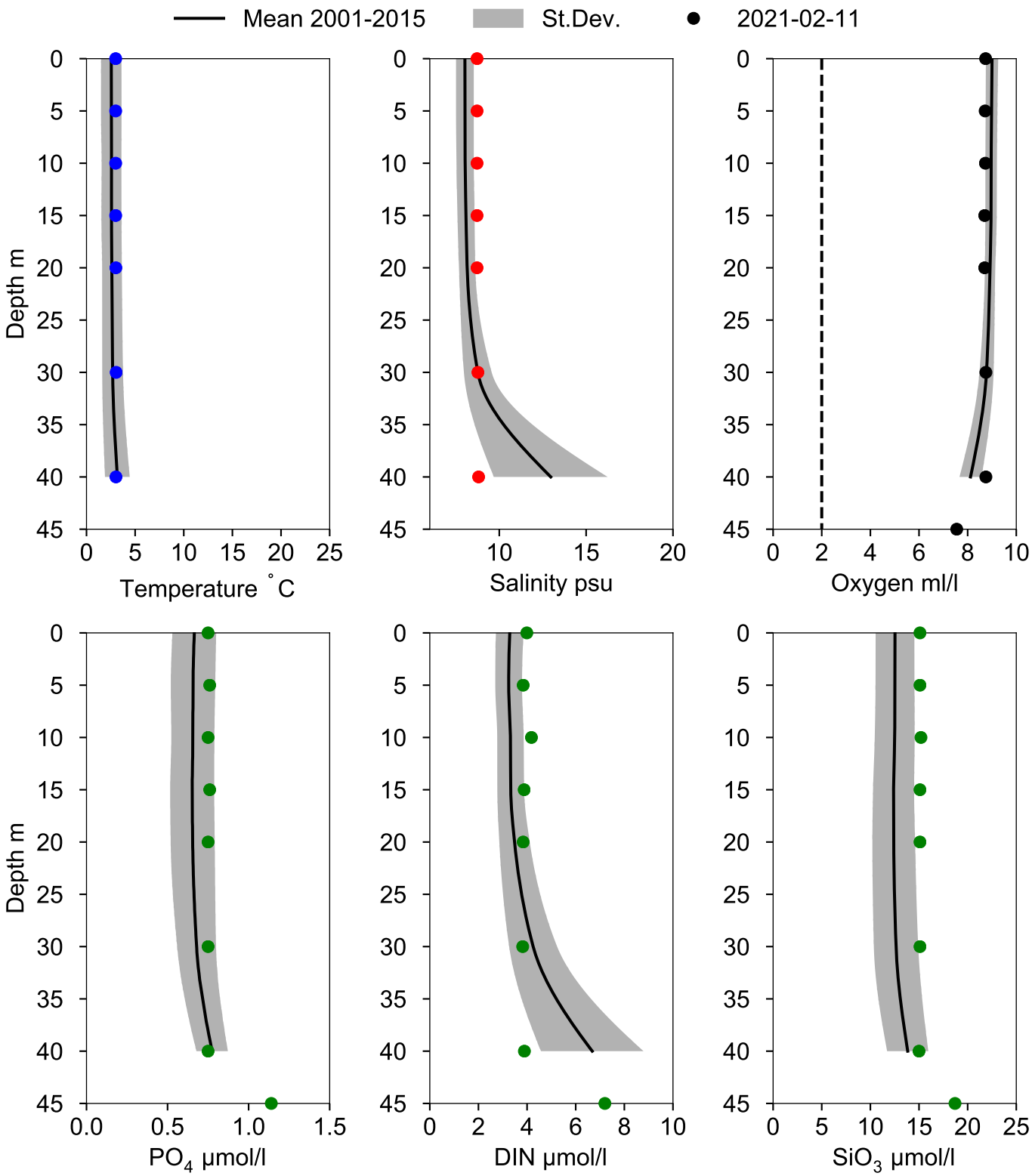
Annual Cycles



OXYGEN IN BOTTOM WATER (depth >= 40 m)

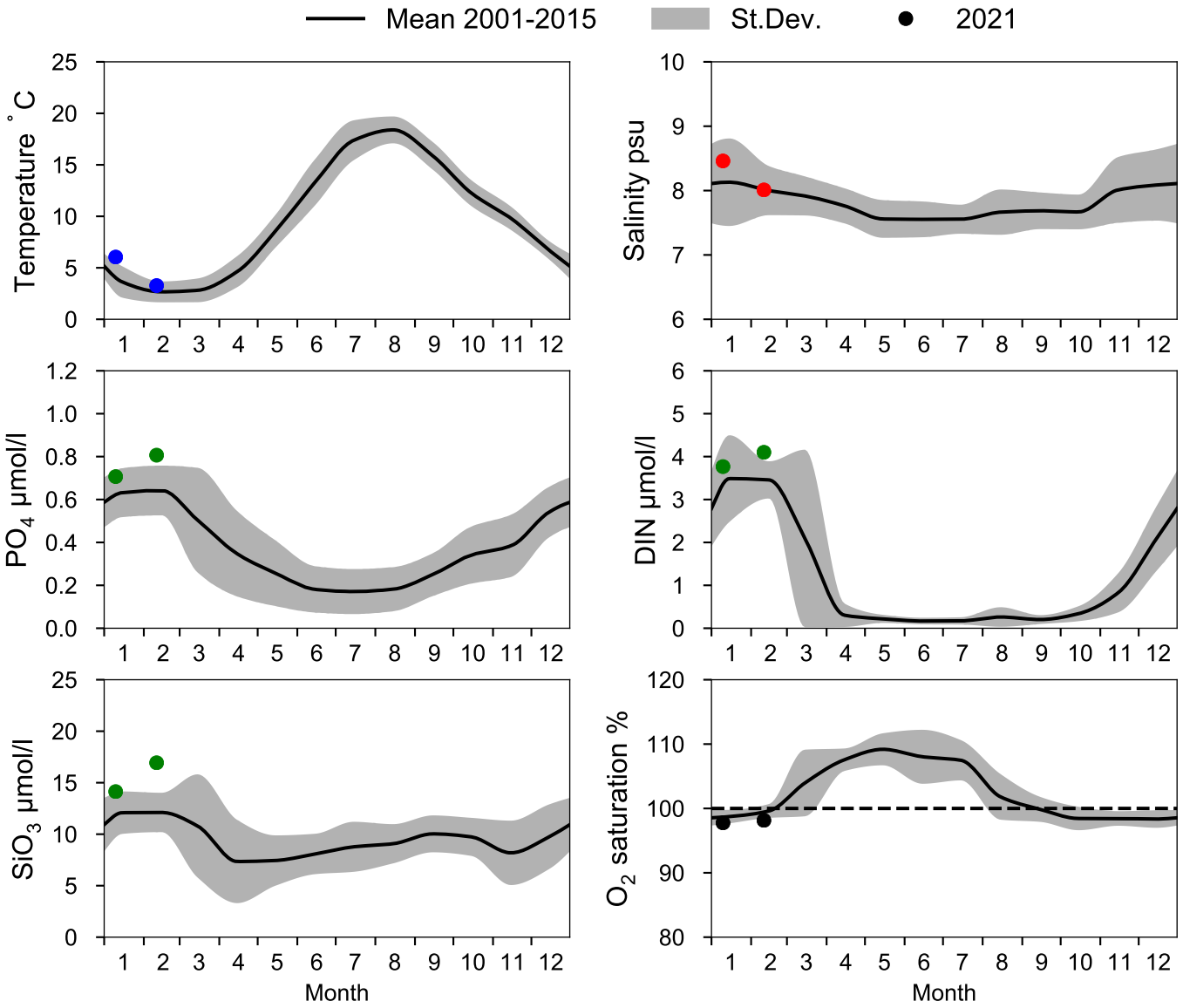


Vertical profiles BY1
February

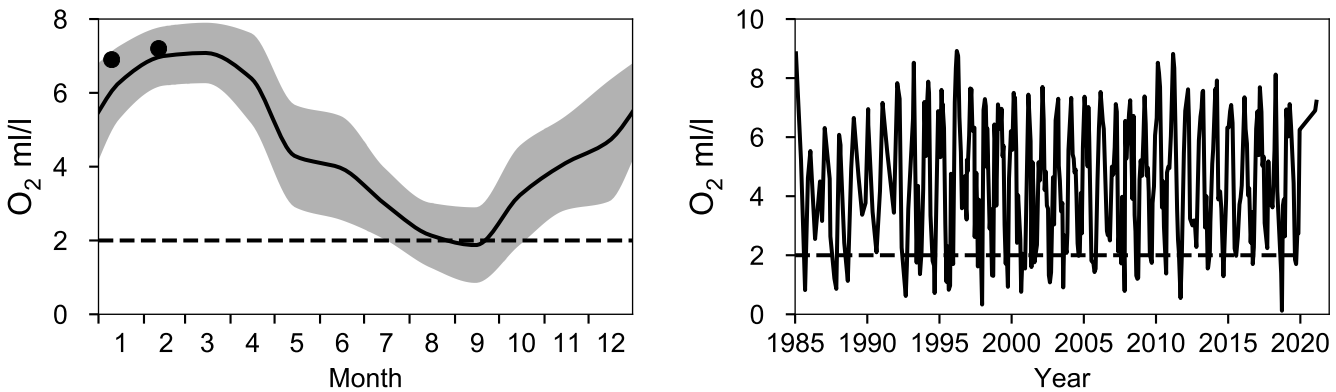


STATION BY2 ARKONA SURFACE WATER (0-10 m)

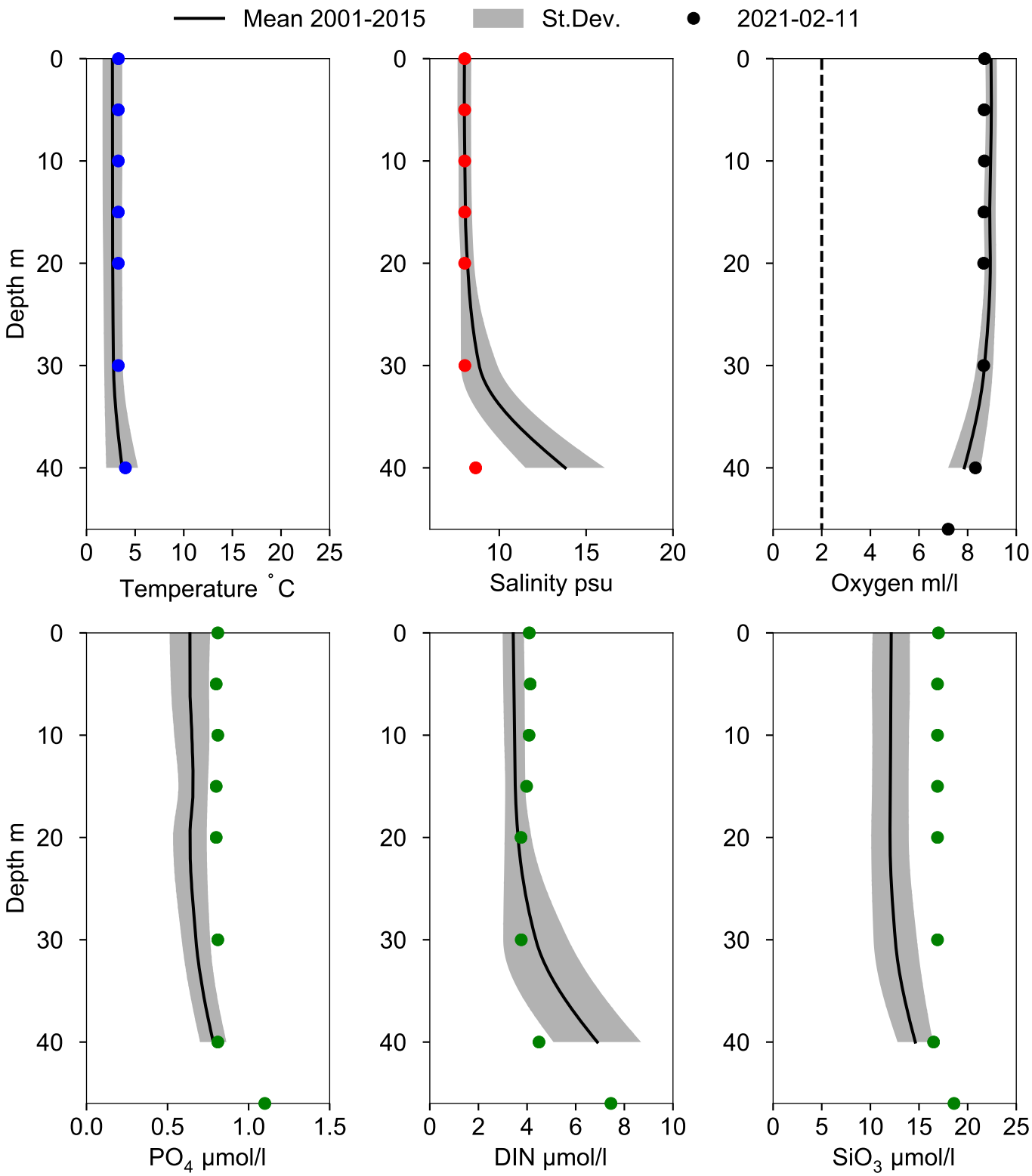
Annual Cycles



OXYGEN IN BOTTOM WATER (depth >= 40 m)



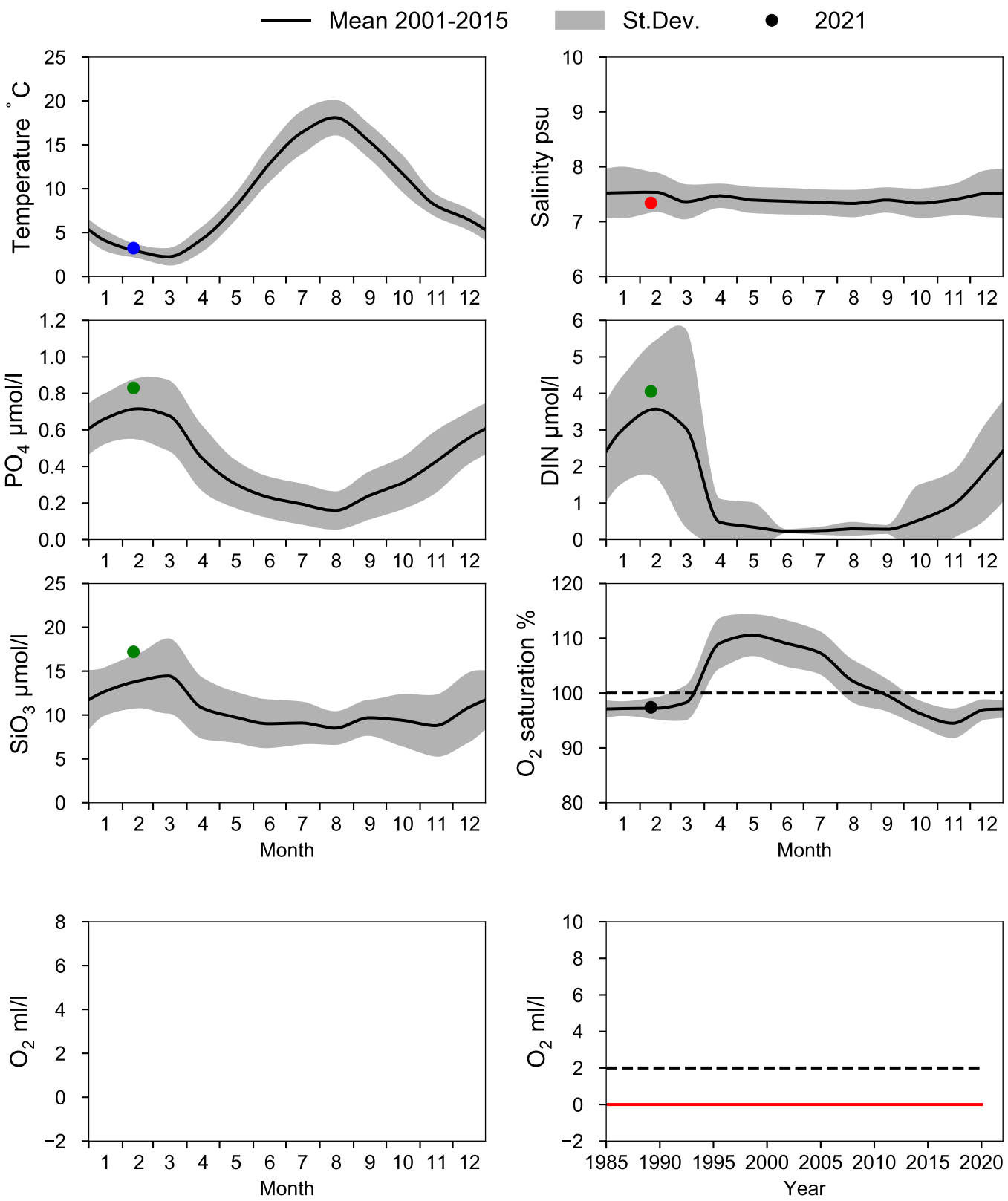
Vertical profiles BY2 ARKONA
February



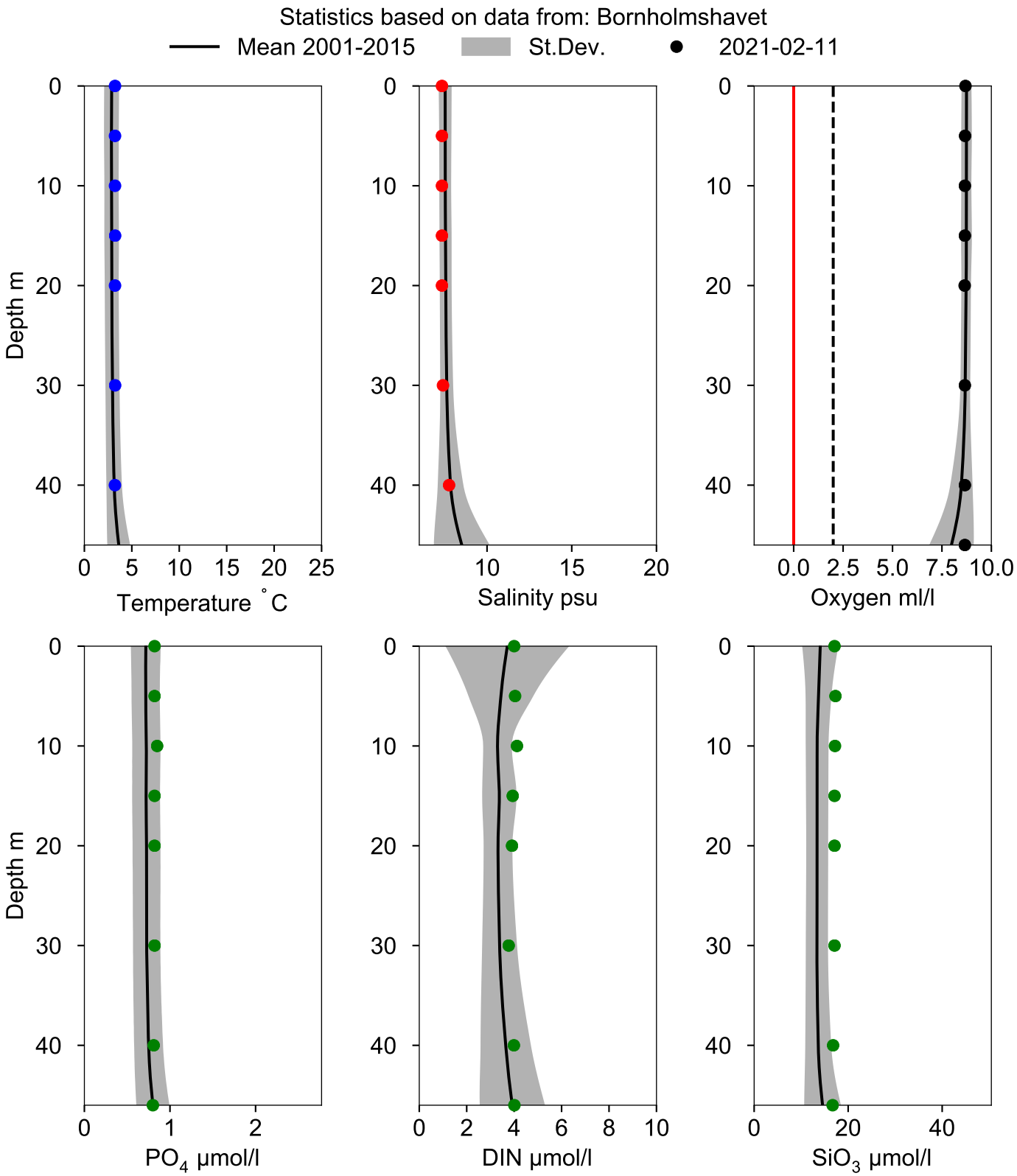
STATION BY3 HAMRARNE SUND SURFACE WATER (0-10 m)

Annual Cycles

Statistics based on data from: Bornholmshavet

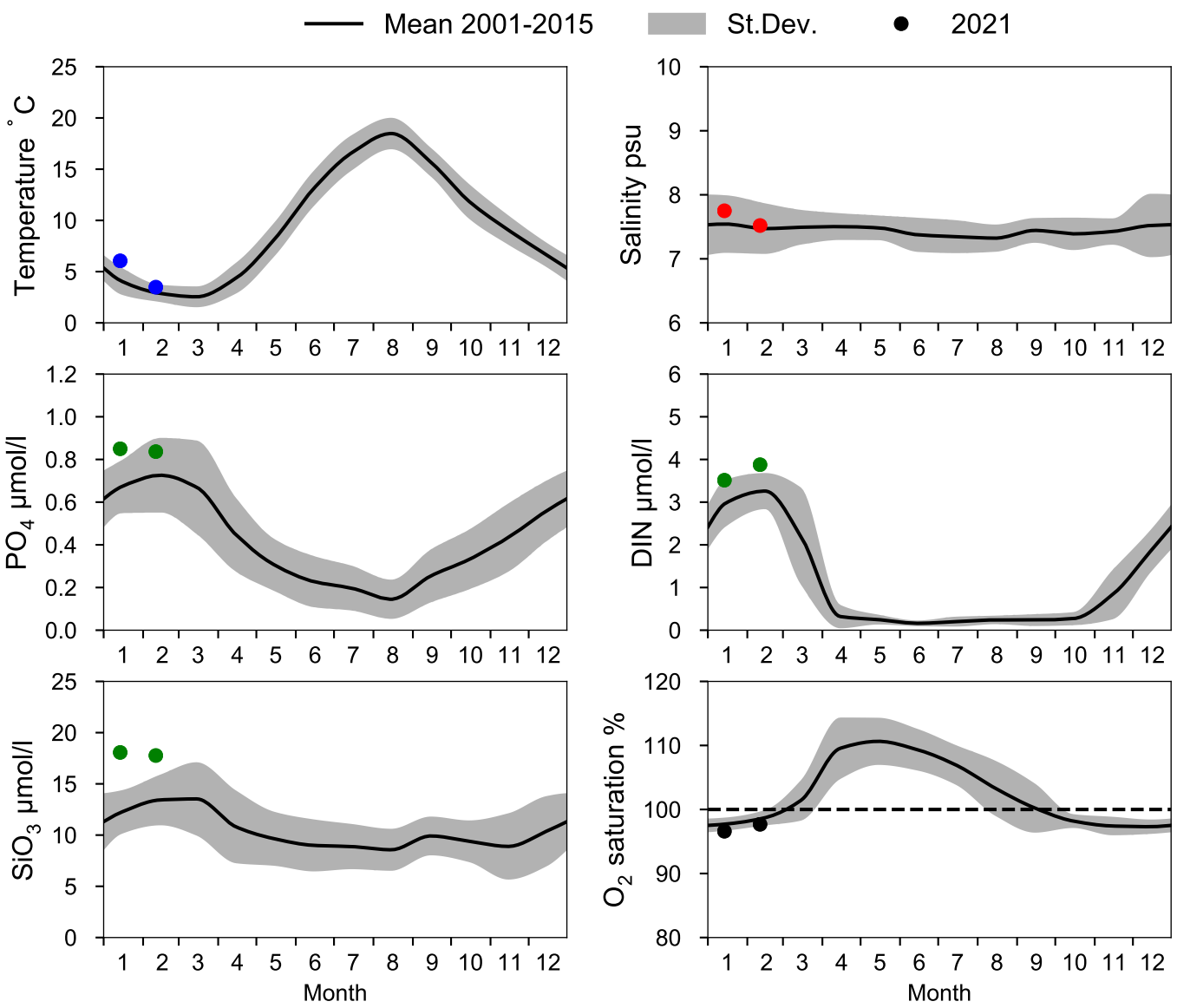


Vertical profiles BY3 HAMRARNE SUND
February

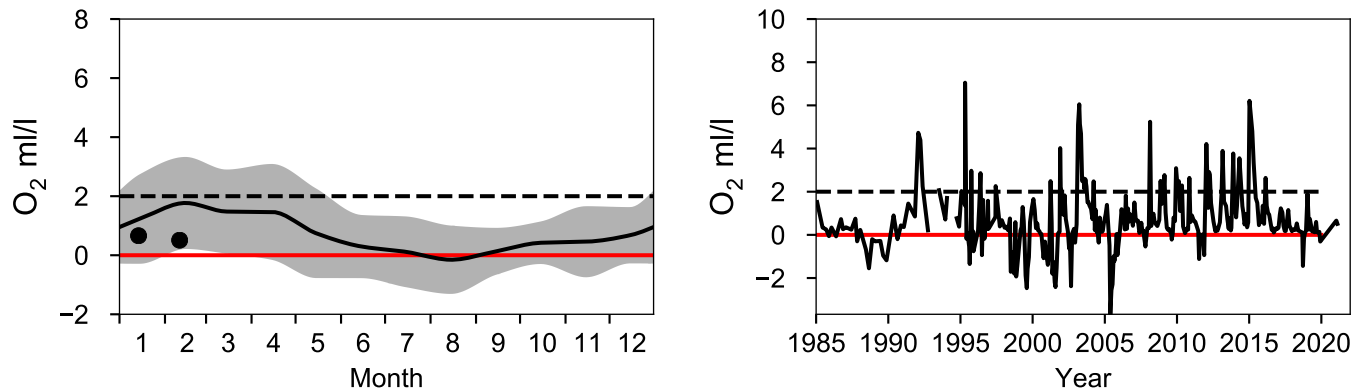


STATION HANÖBUKTEN SURFACE WATER (0-10 m)

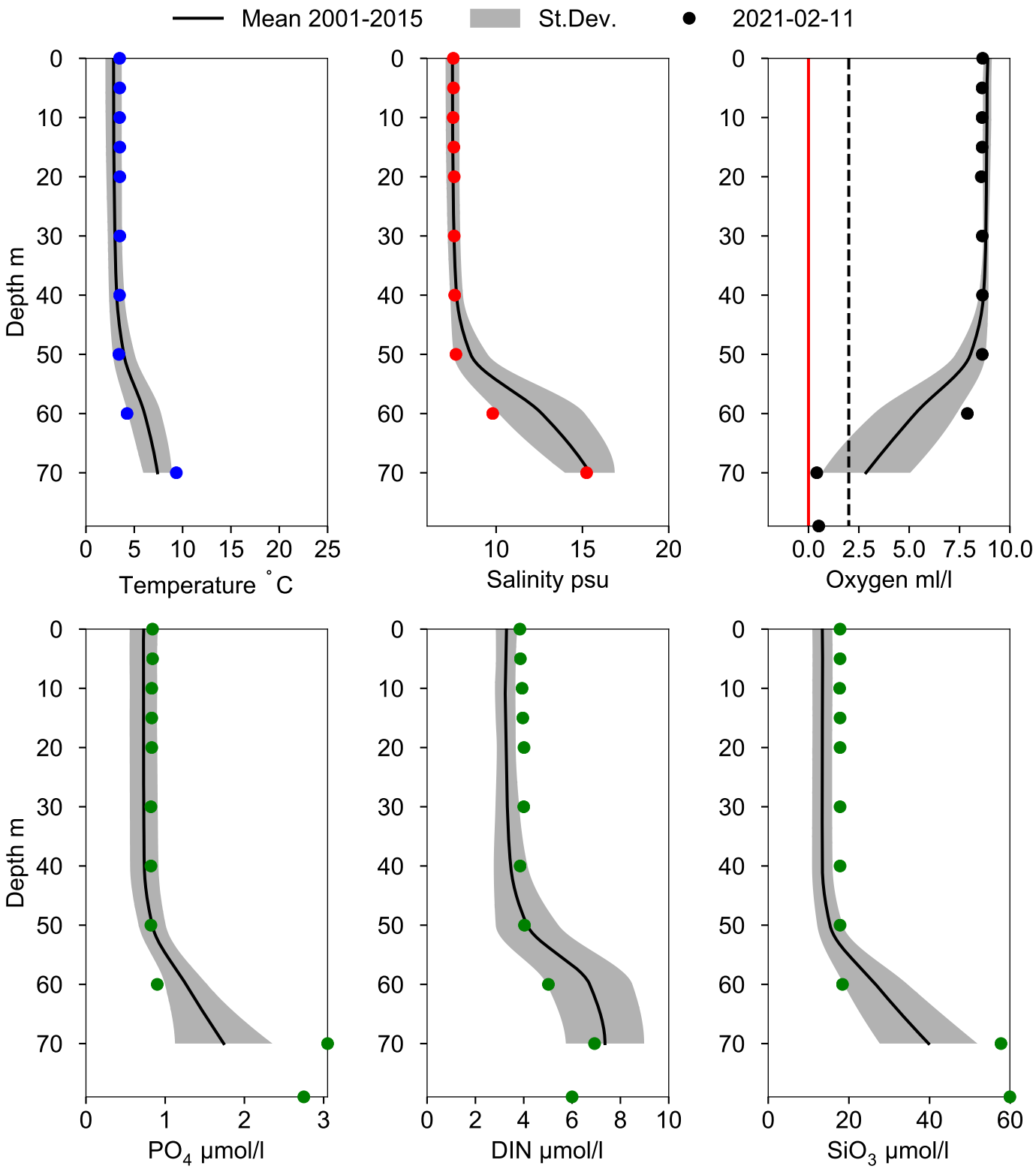
Annual Cycles



OXYGEN IN BOTTOM WATER (depth >= 70 m)



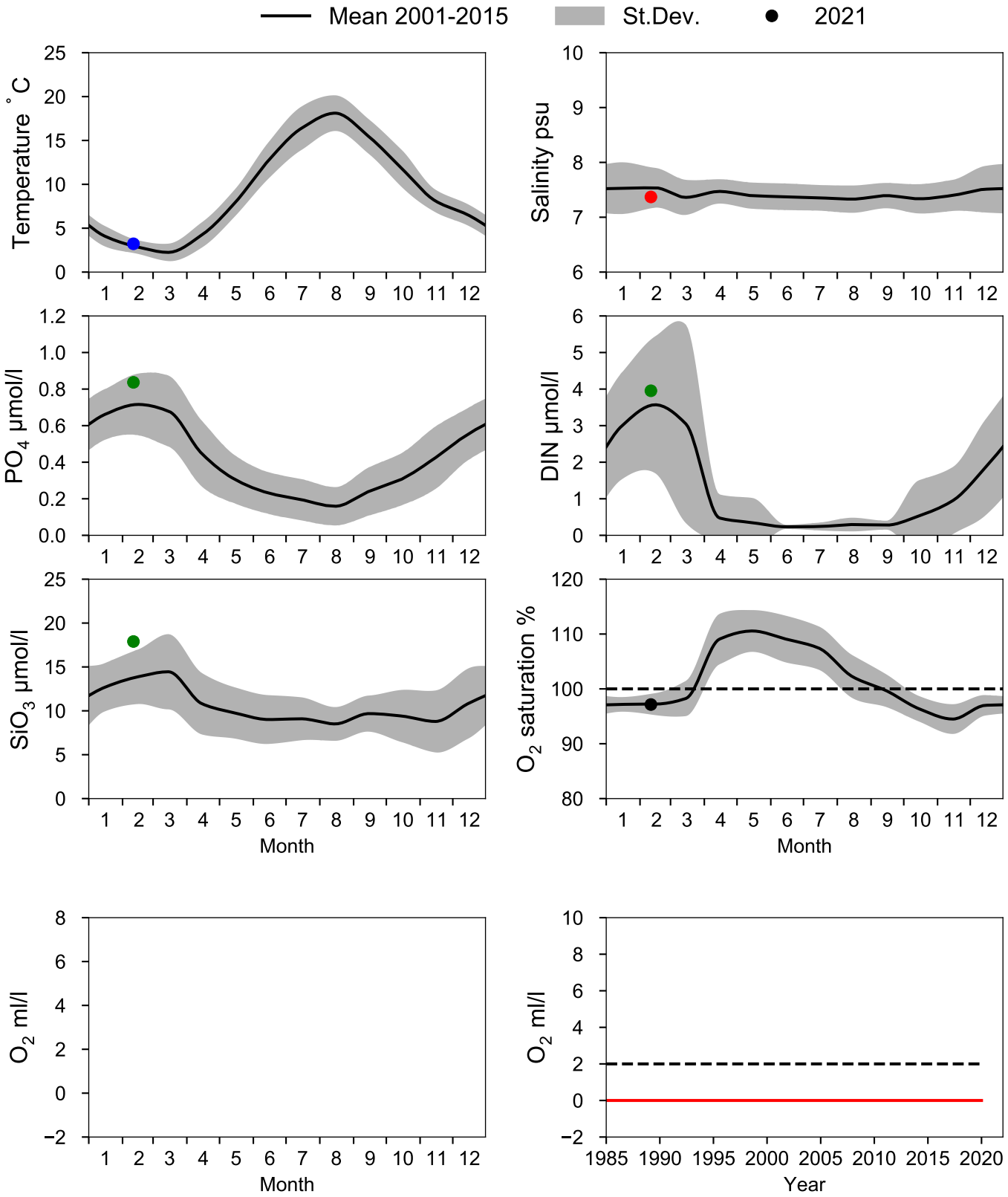
Vertical profiles HANÖBUKTEN
February



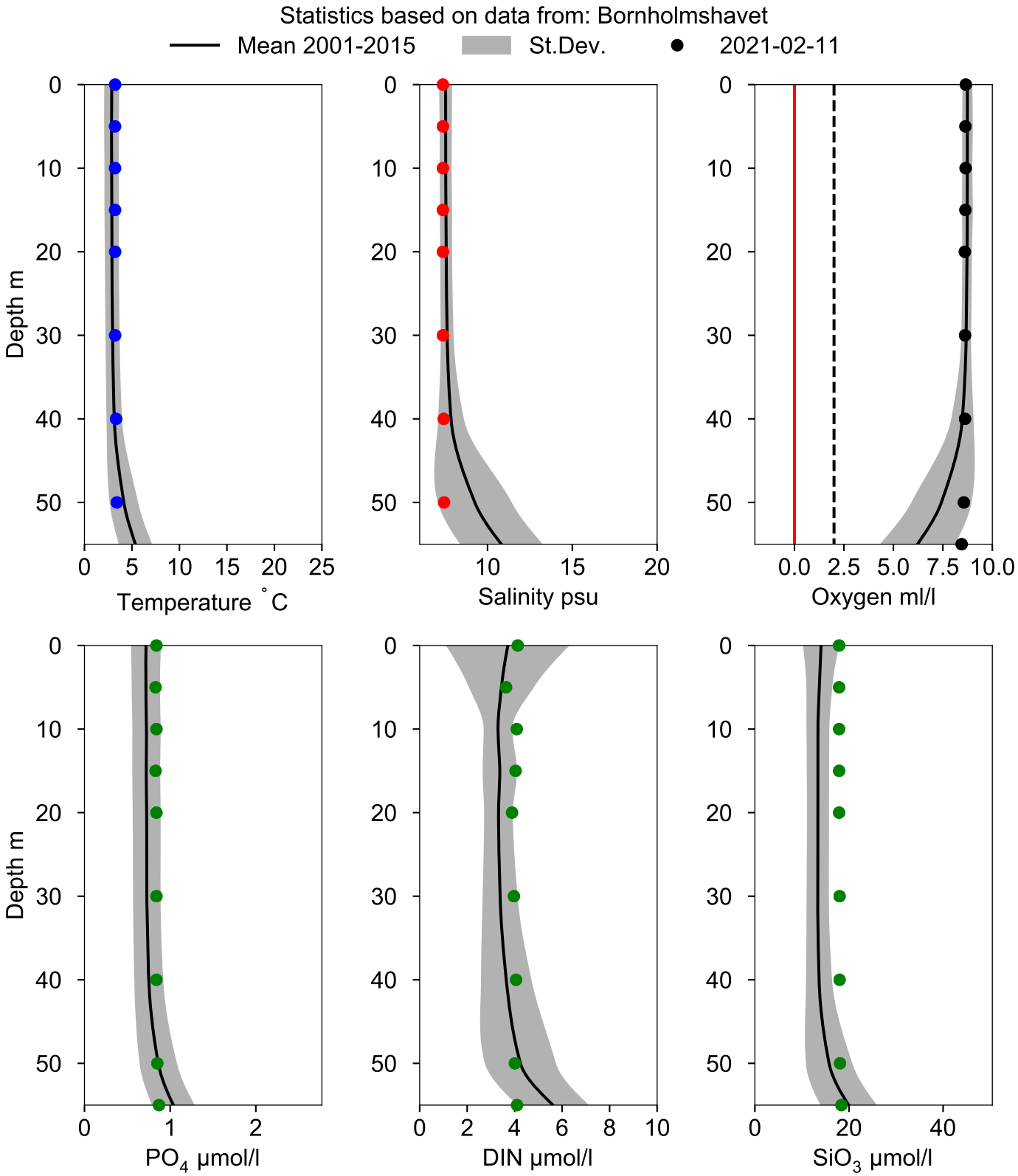
STATION HANÖBUKTEN-KBV SURFACE WATER (0-10 m)

Annual Cycles

Statistics based on data from: Bornholmshavet



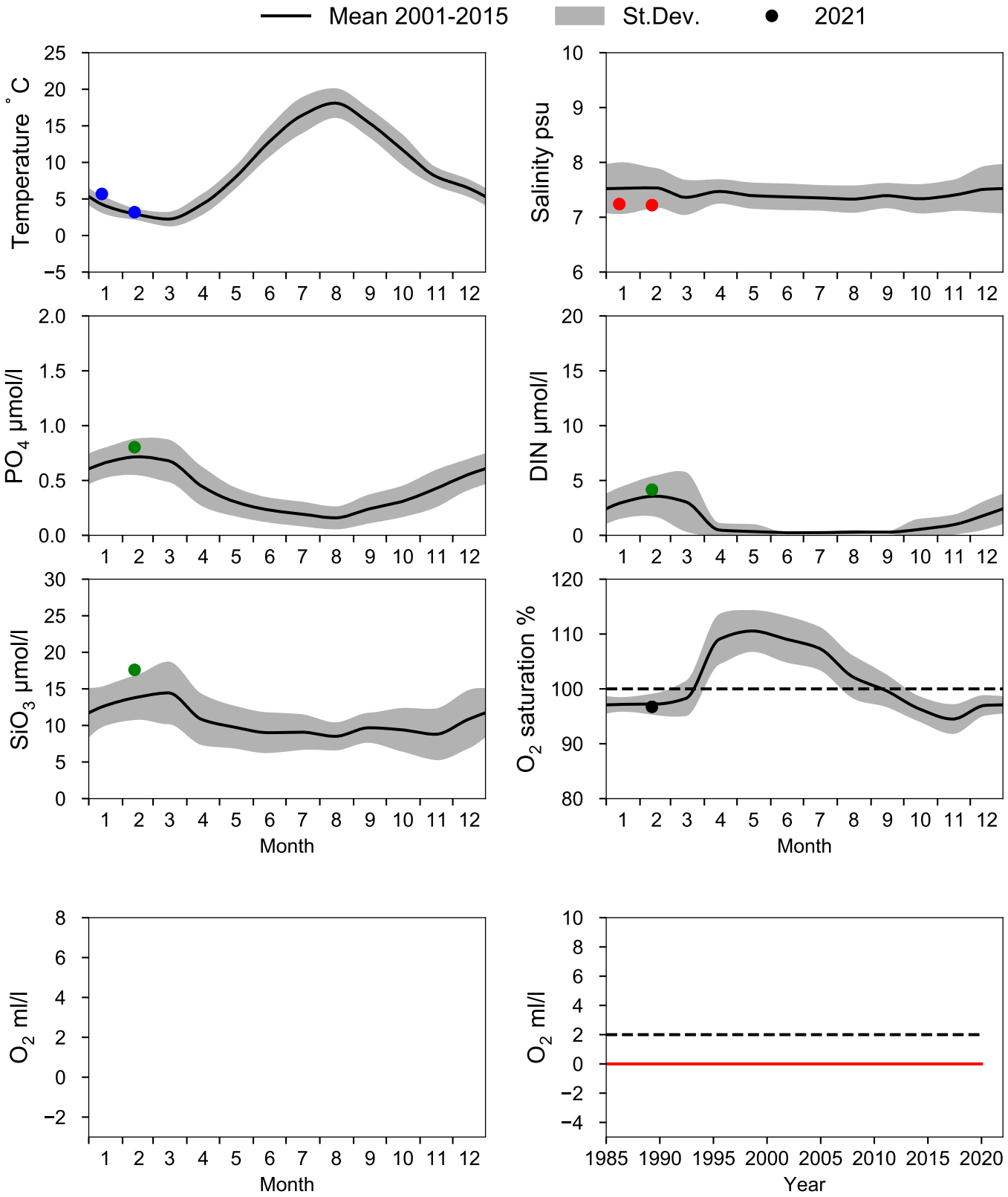
Vertical profiles HANÖBUKTEN-KBV
February



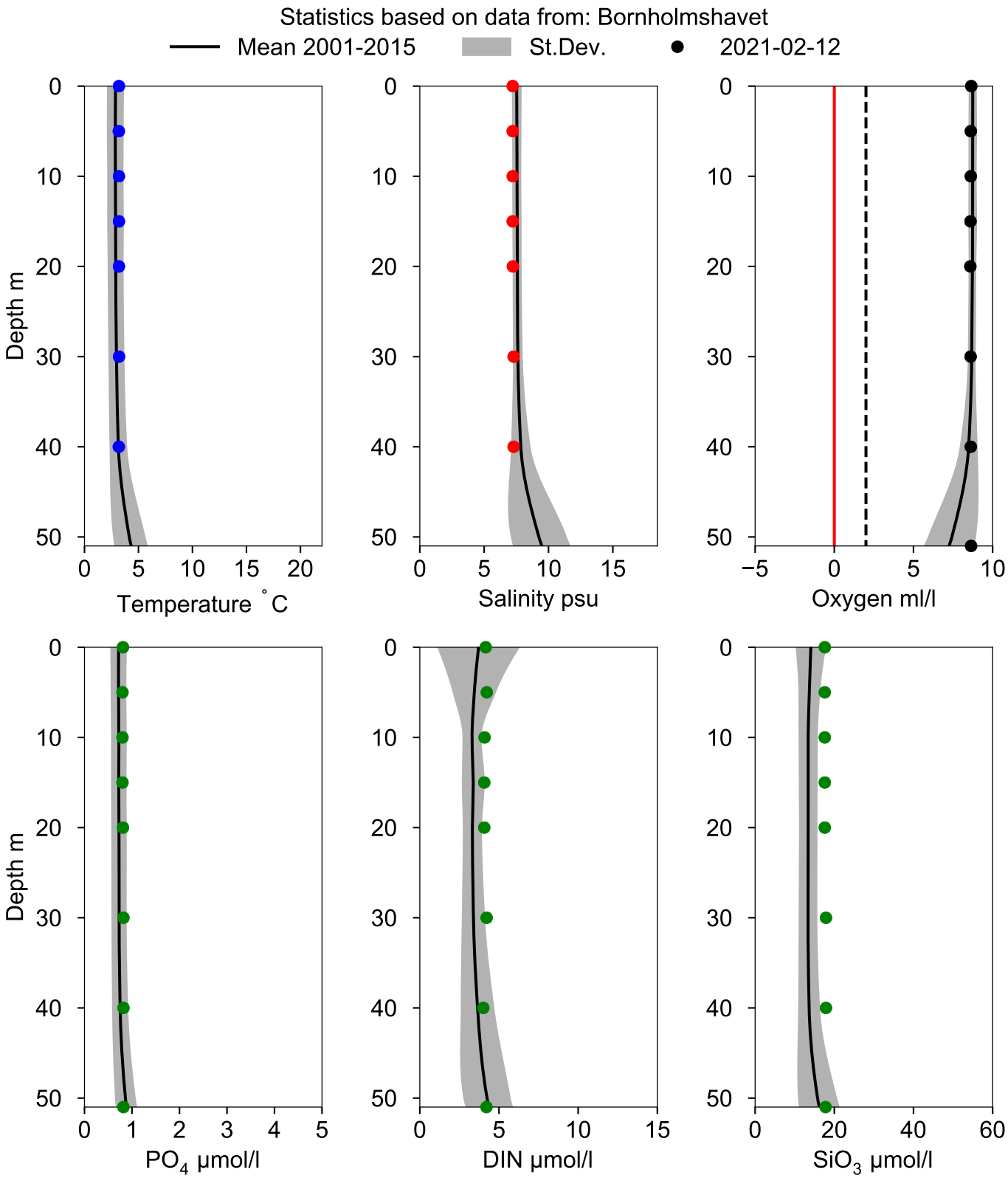
STATION BY39 ÖLANDS S UDDE SURFACE WATER (0-10 m)

Annual Cycles

Statistics based on data from: Bornholmshavet

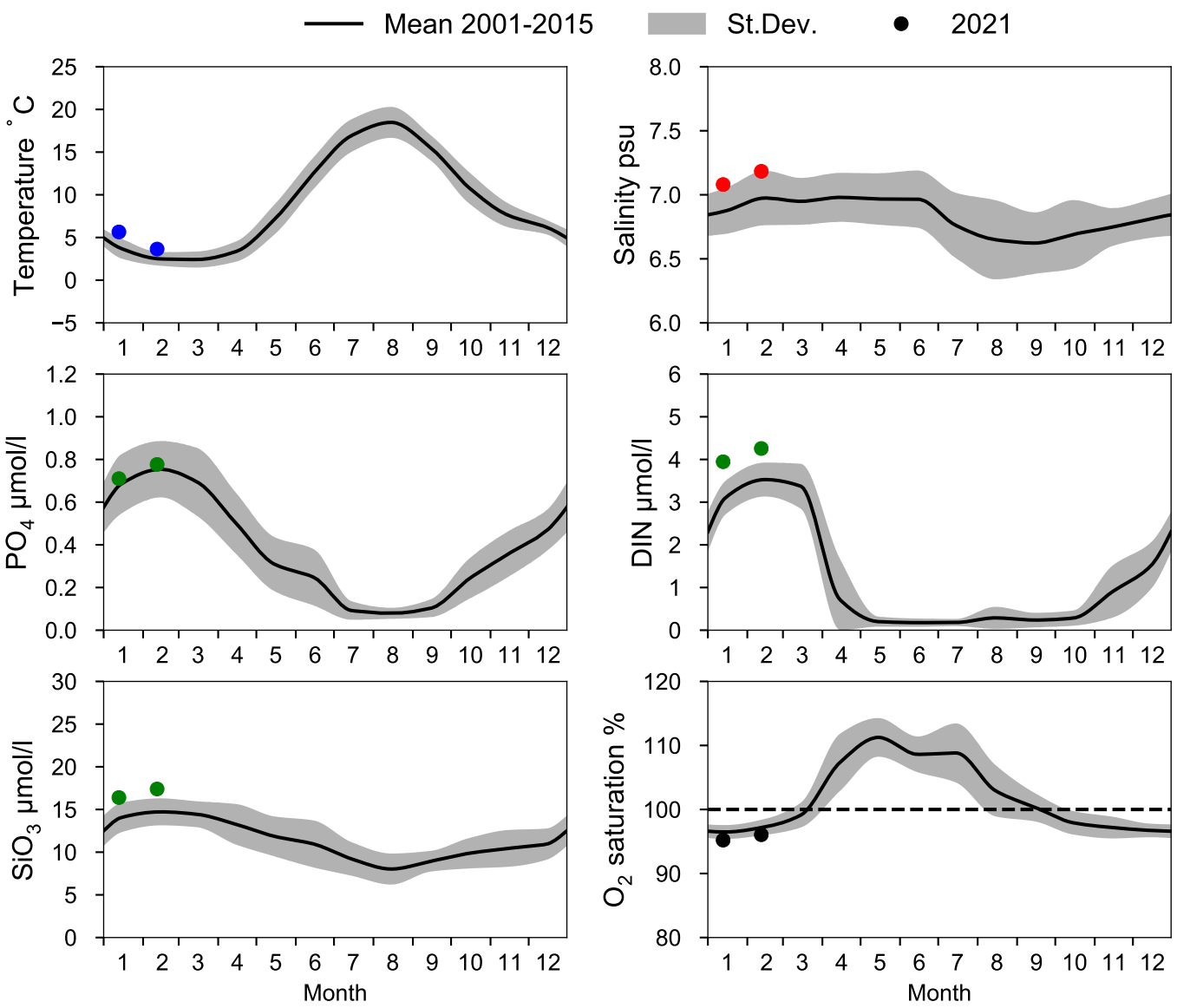


Vertical profiles BY39 ÖLANDS S UDDE
February

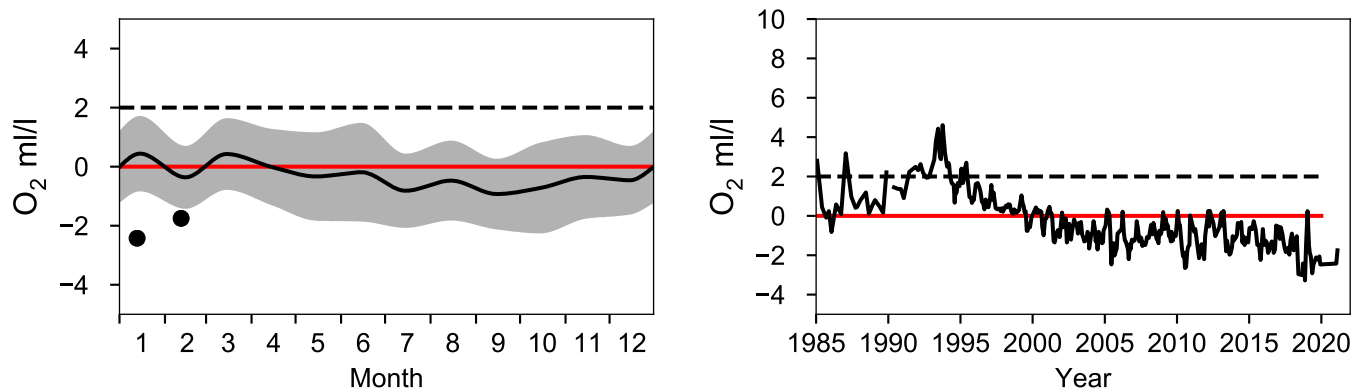


STATION BY38 KARLSÖDJ SURFACE WATER (0-10 m)

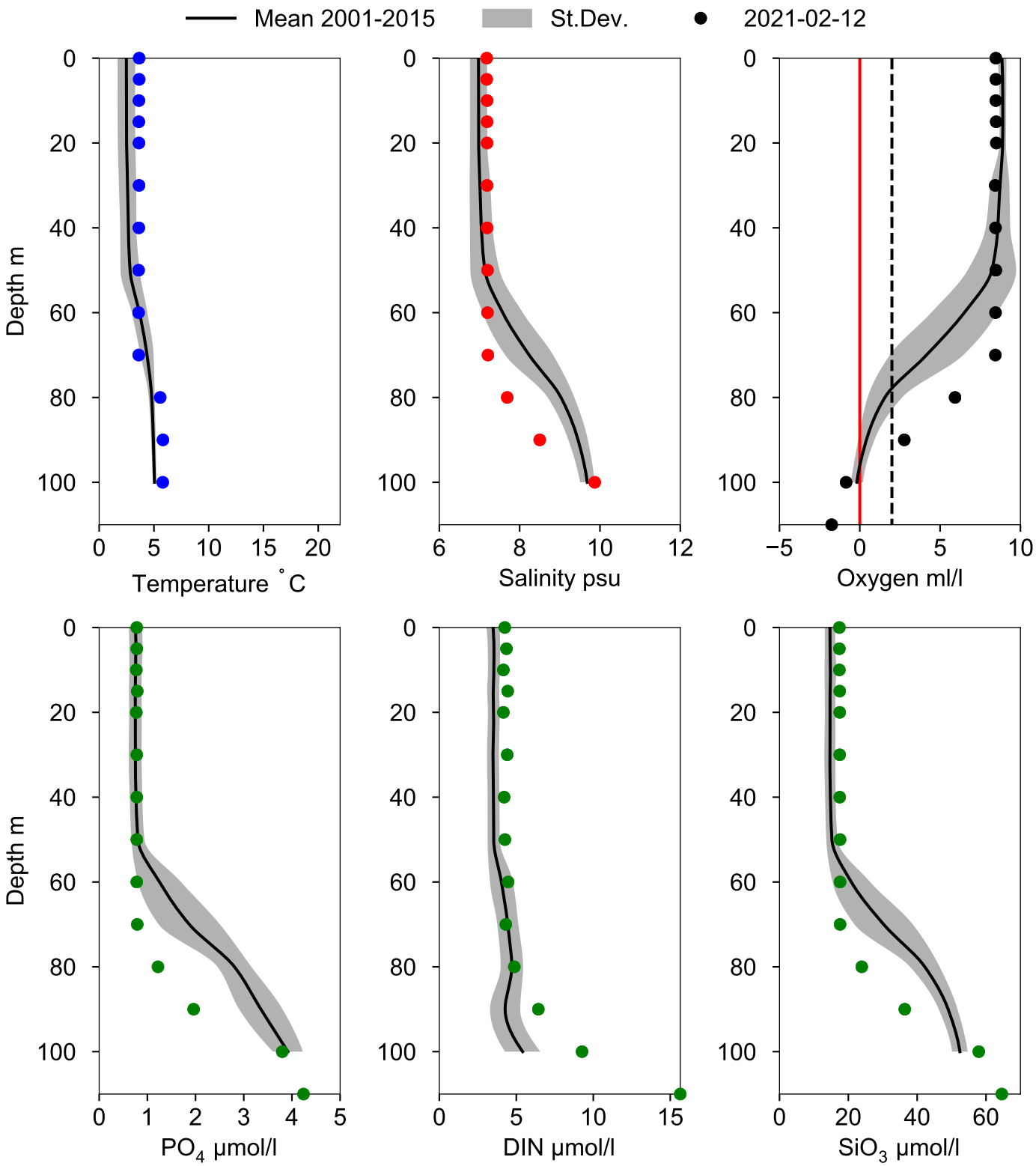
Annual Cycles



OXYGEN IN BOTTOM WATER (depth >= 100 m)



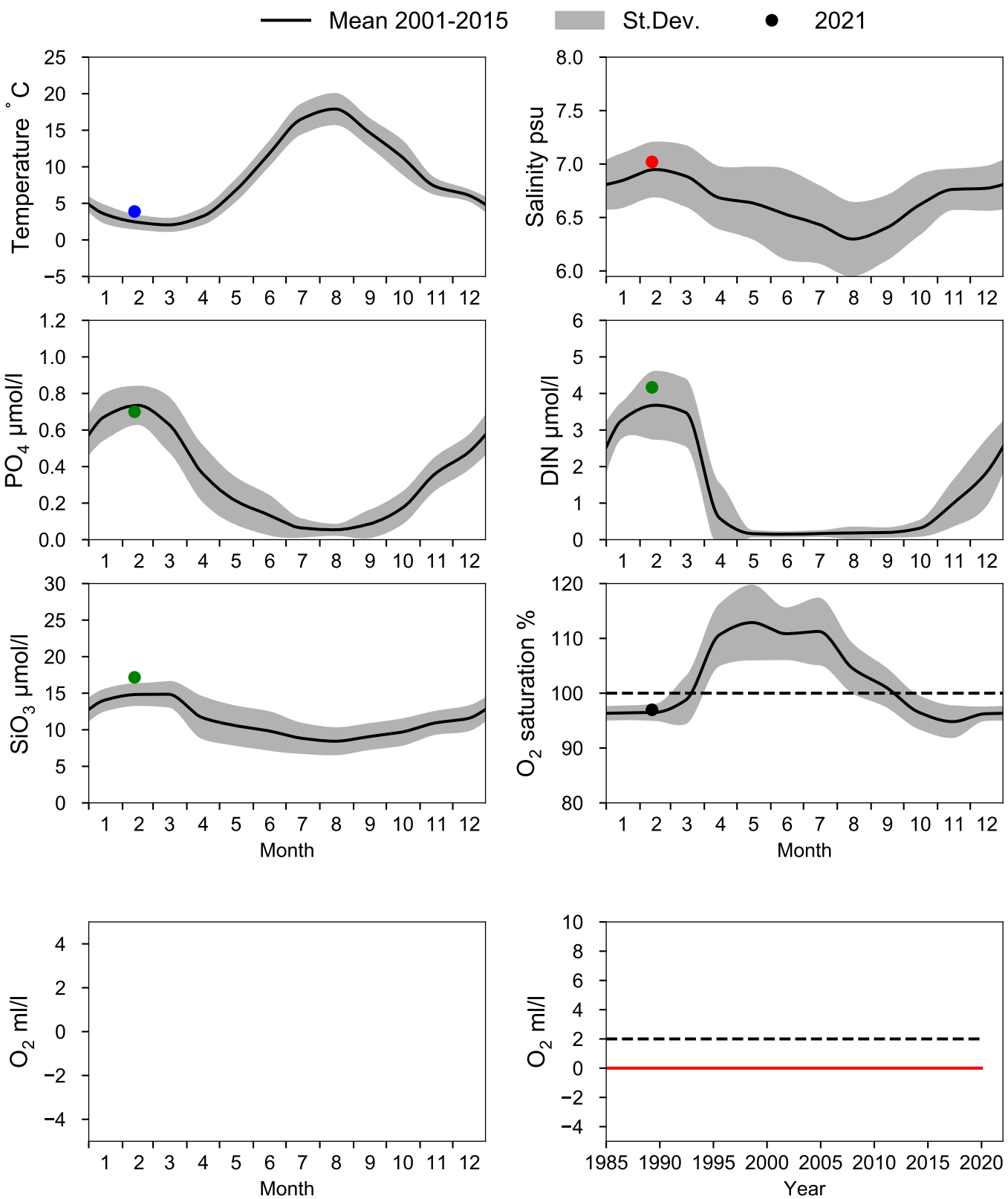
Vertical profiles BY38 KARLSÖDJ
February



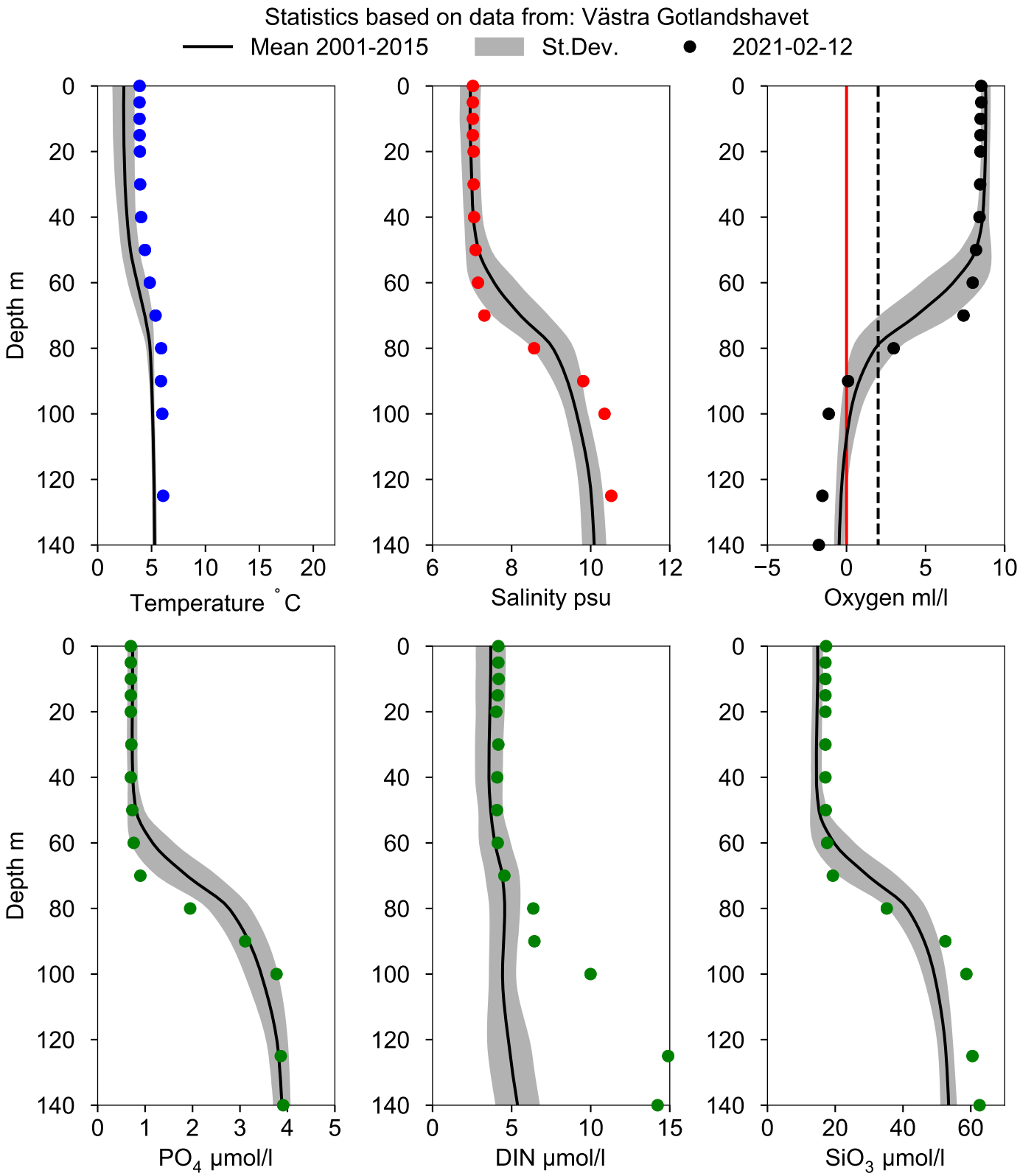
STATION BY36 SURFACE WATER (0-10 m)

Annual Cycles

Statistics based on data from: Västra Gotlandshavet

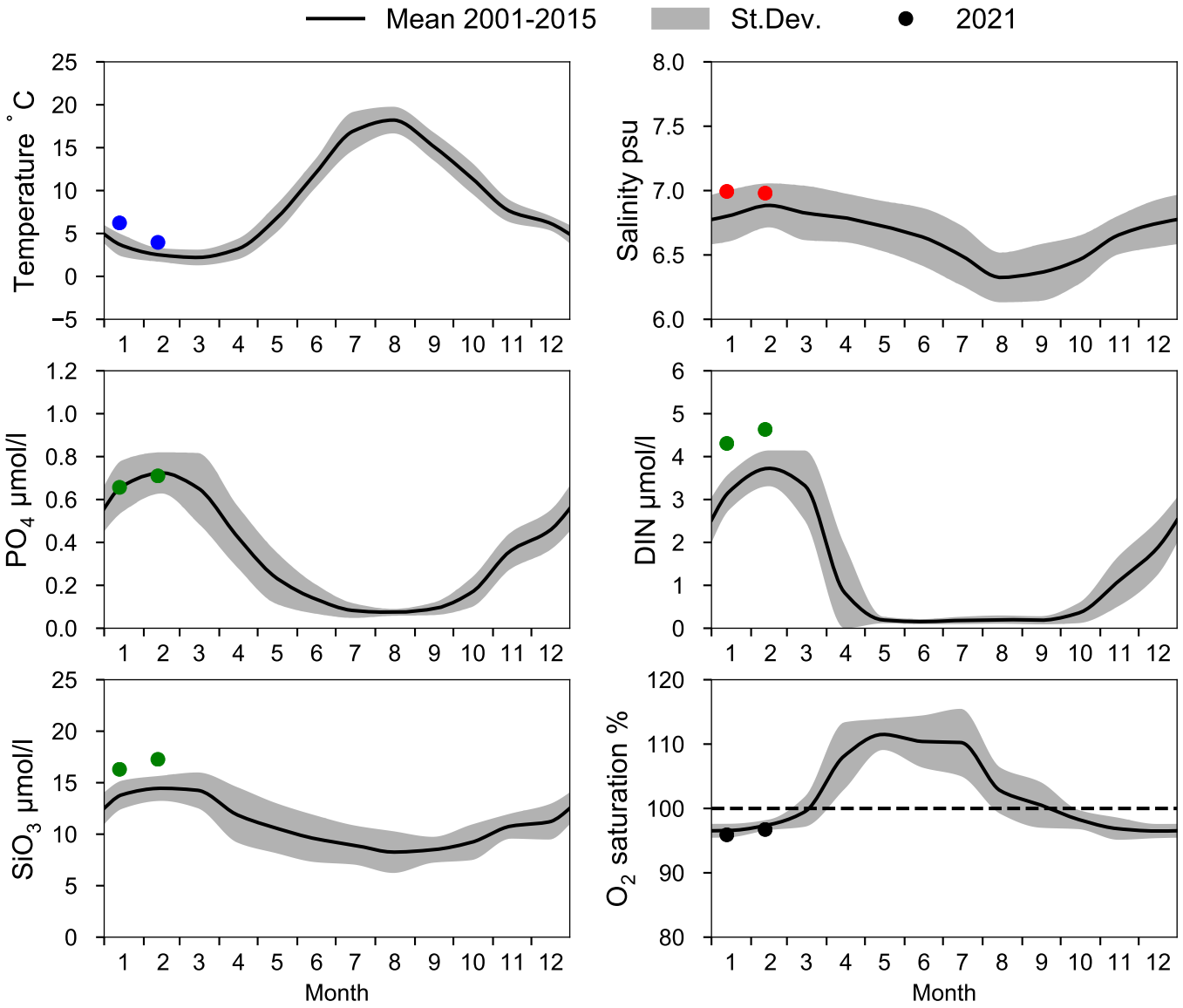


Vertical profiles BY36
February

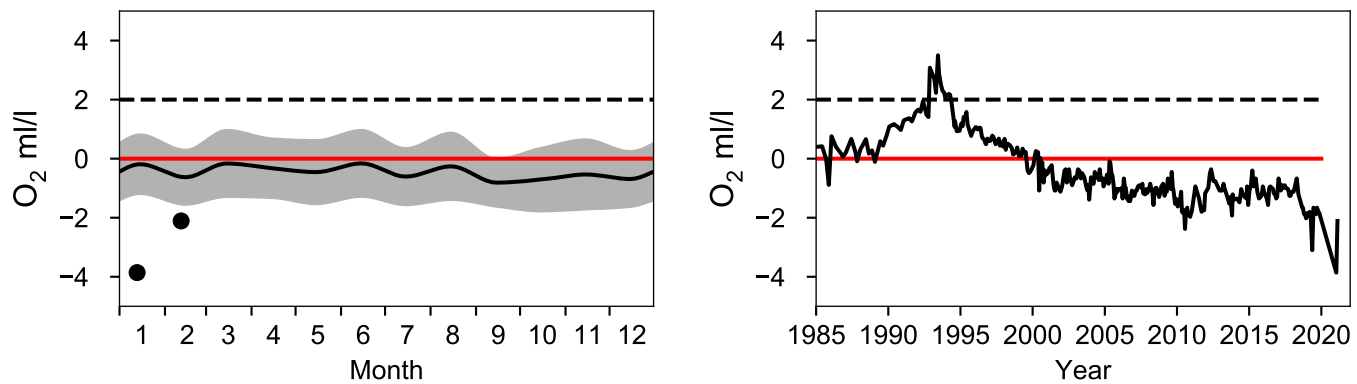


STATION BY32 NORRKÖPINGSDJ SURFACE WATER (0-10 m)

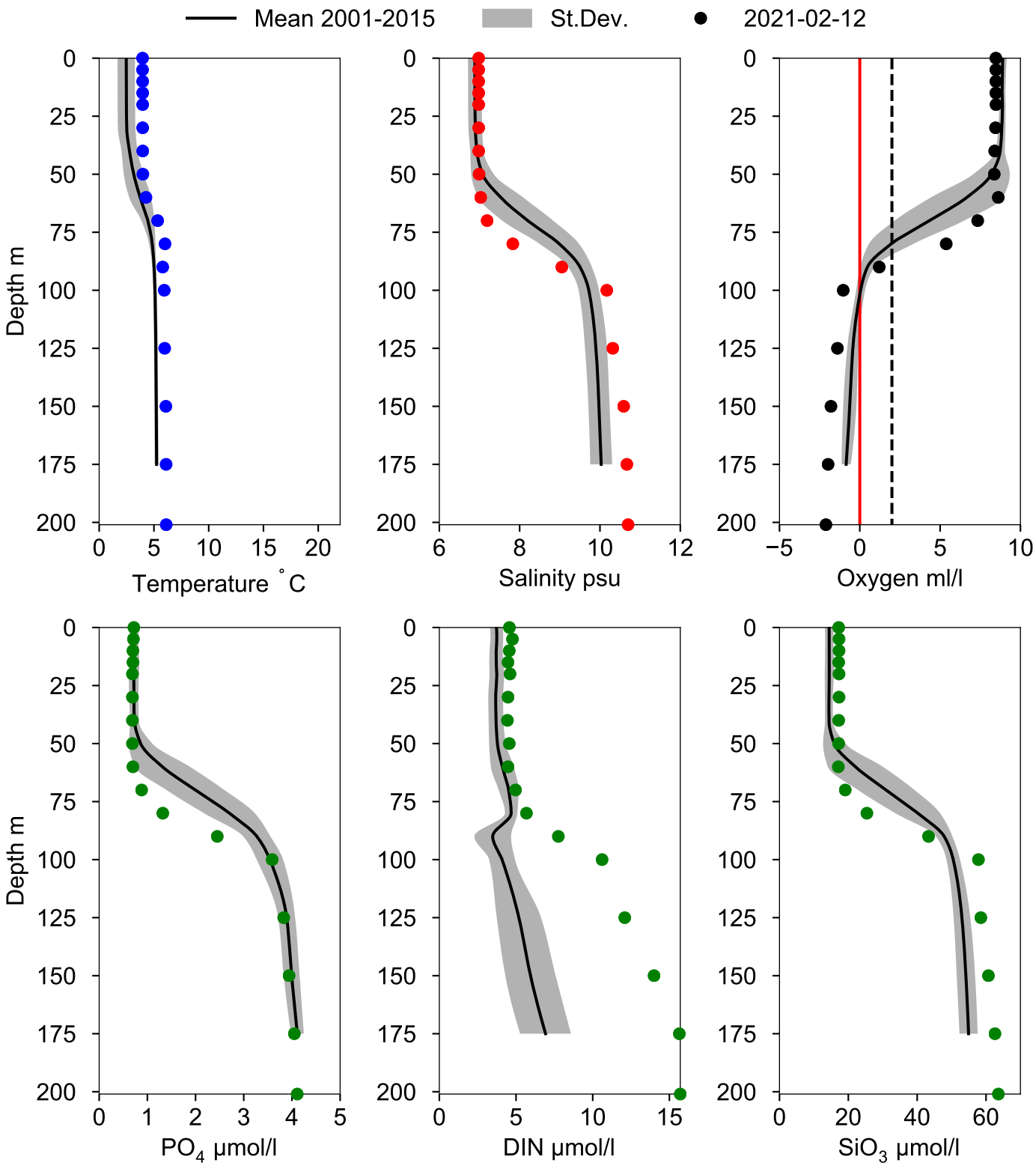
Annual Cycles



OXYGEN IN BOTTOM WATER (depth >= 175 m)

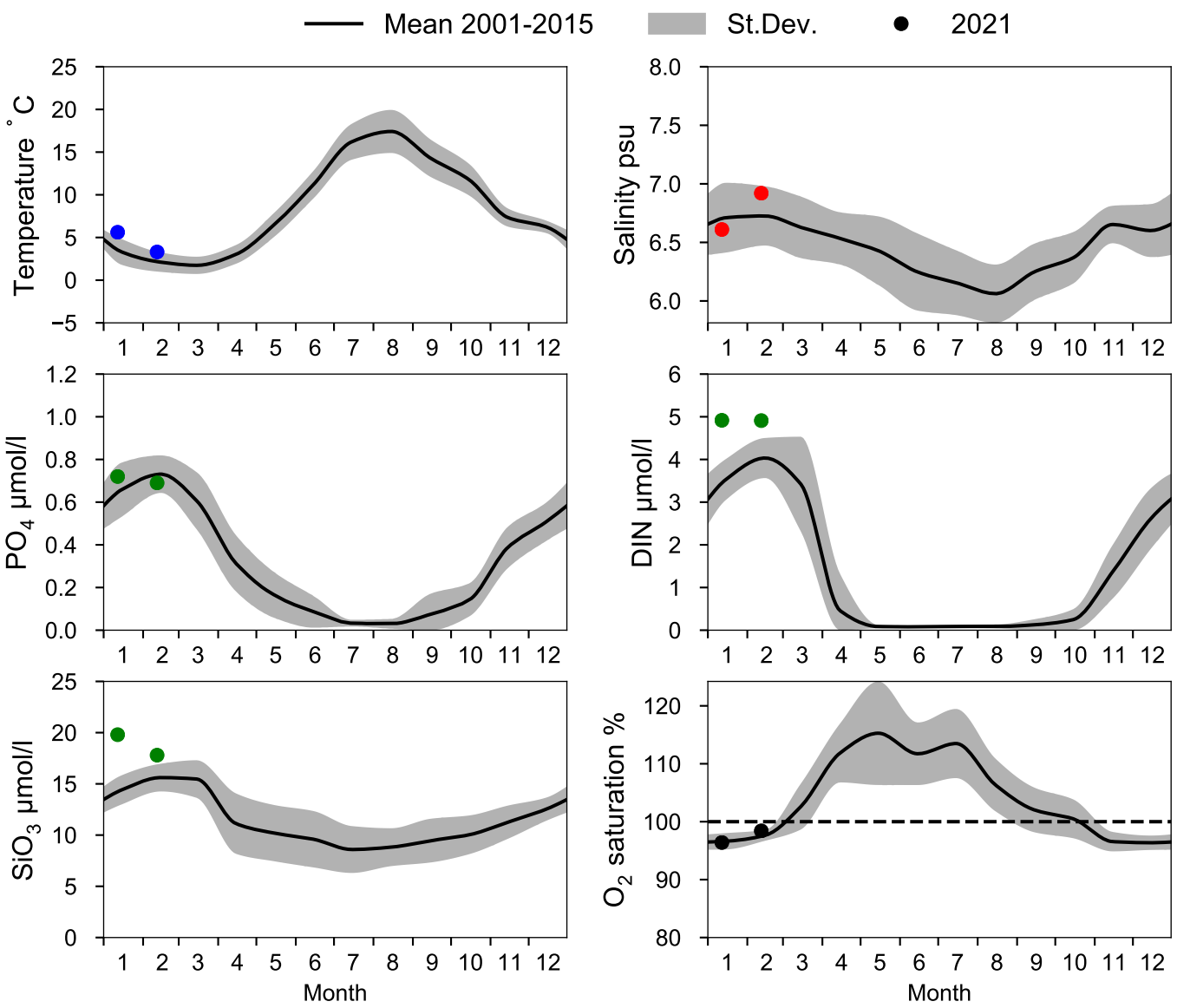


Vertical profiles BY32 NORRKÖPINGSDJ
February

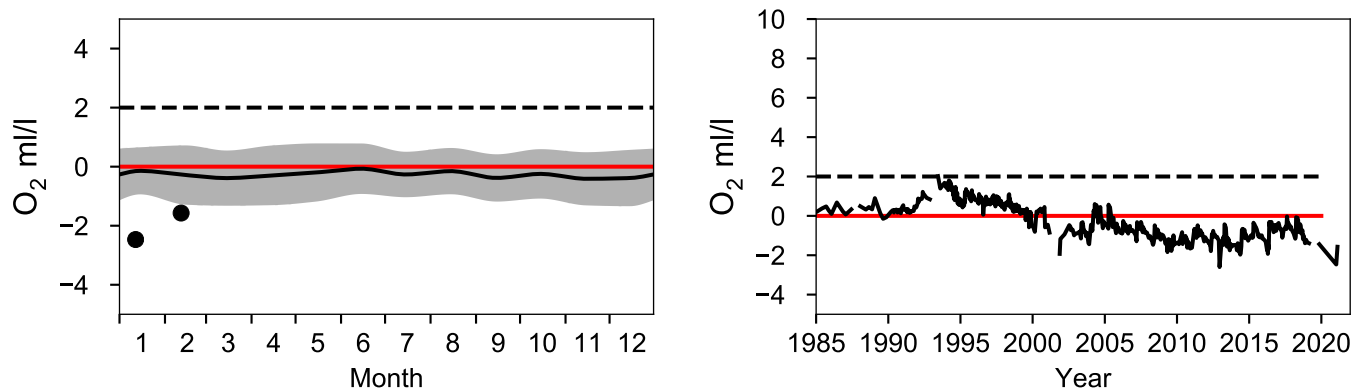


STATION BY31 LANDSORTSDJ SURFACE WATER (0-10 m)

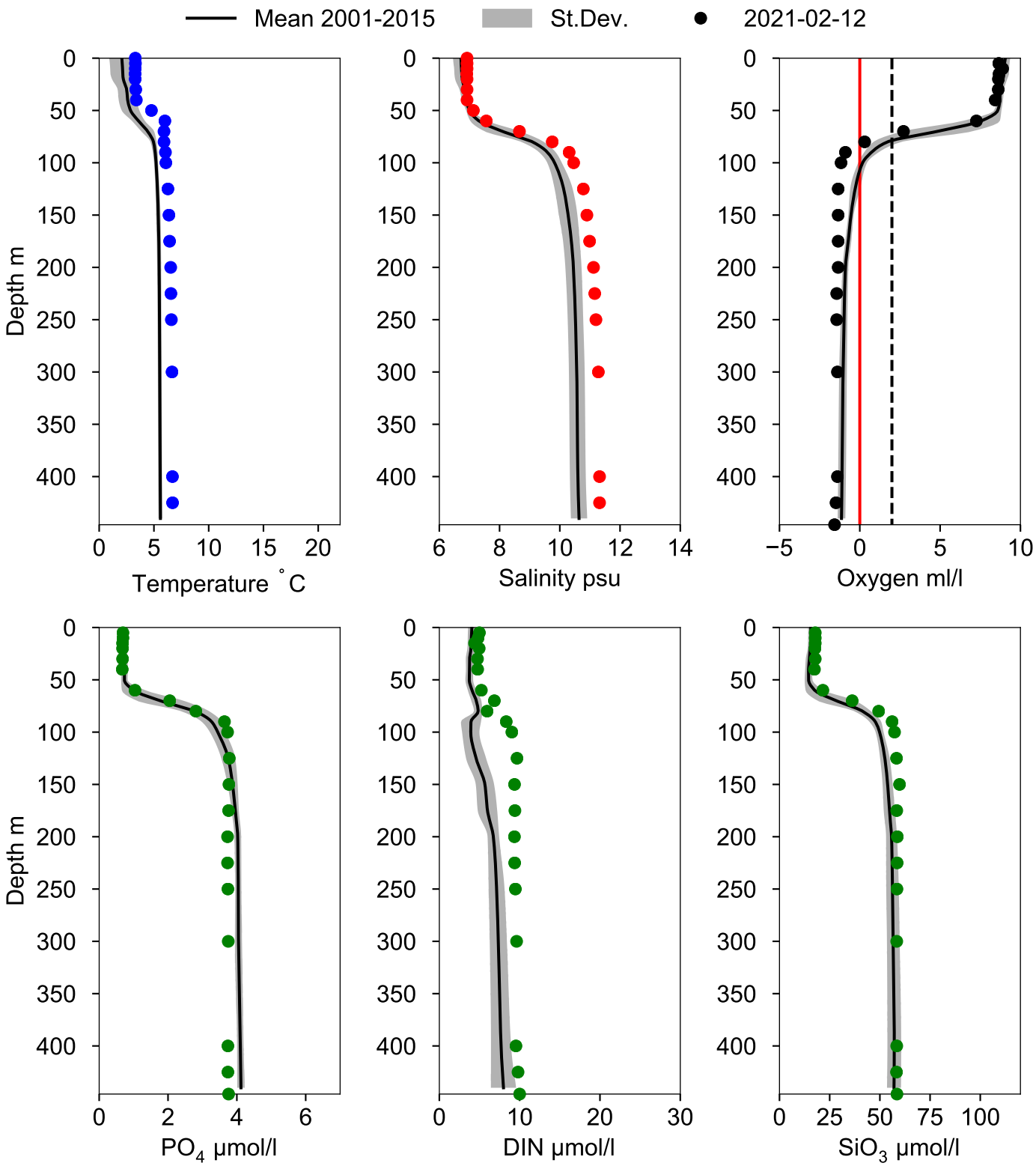
Annual Cycles



OXYGEN IN BOTTOM WATER (depth >= 419 m)



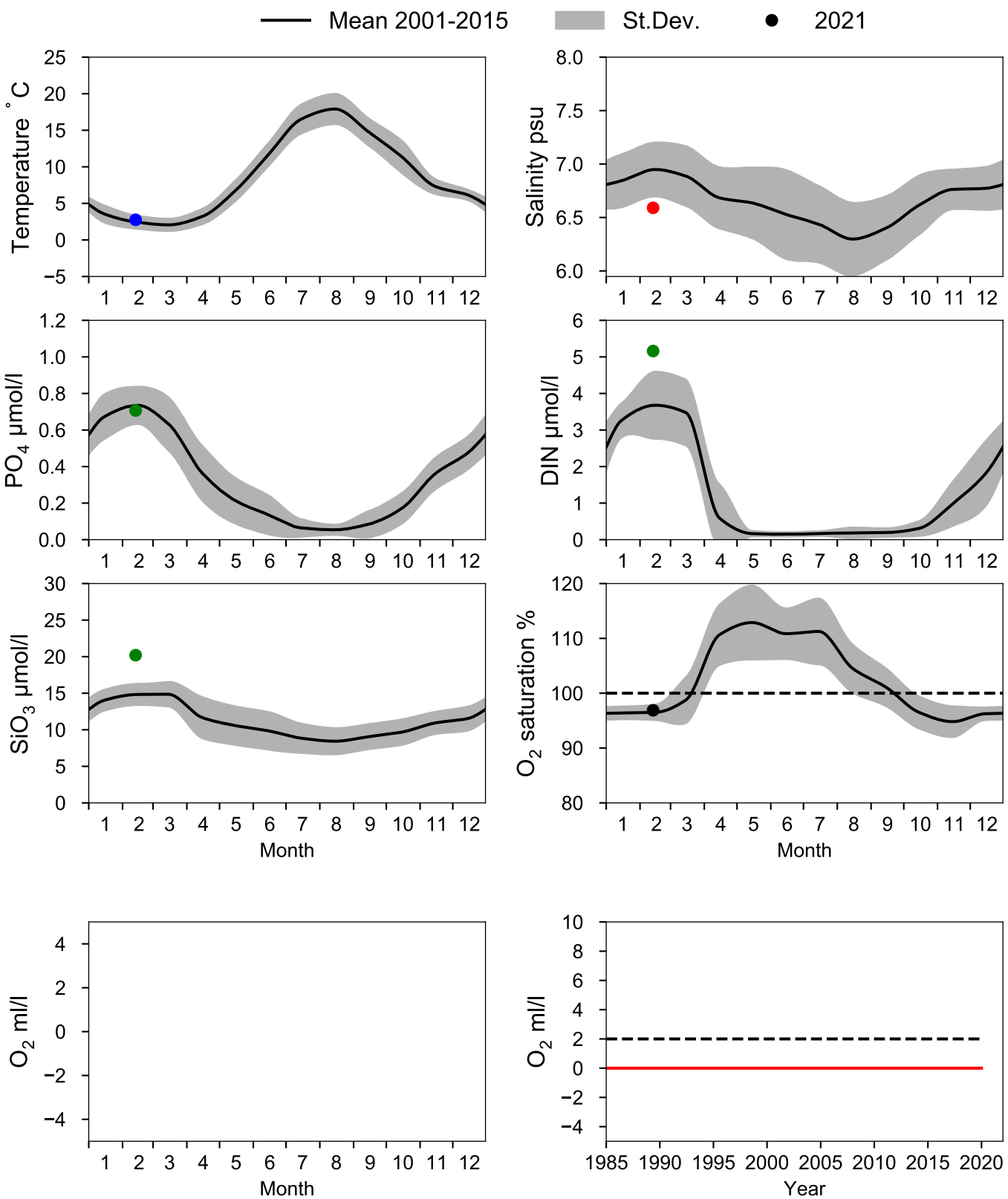
Vertical profiles BY31 LANDSORTSDJ
February



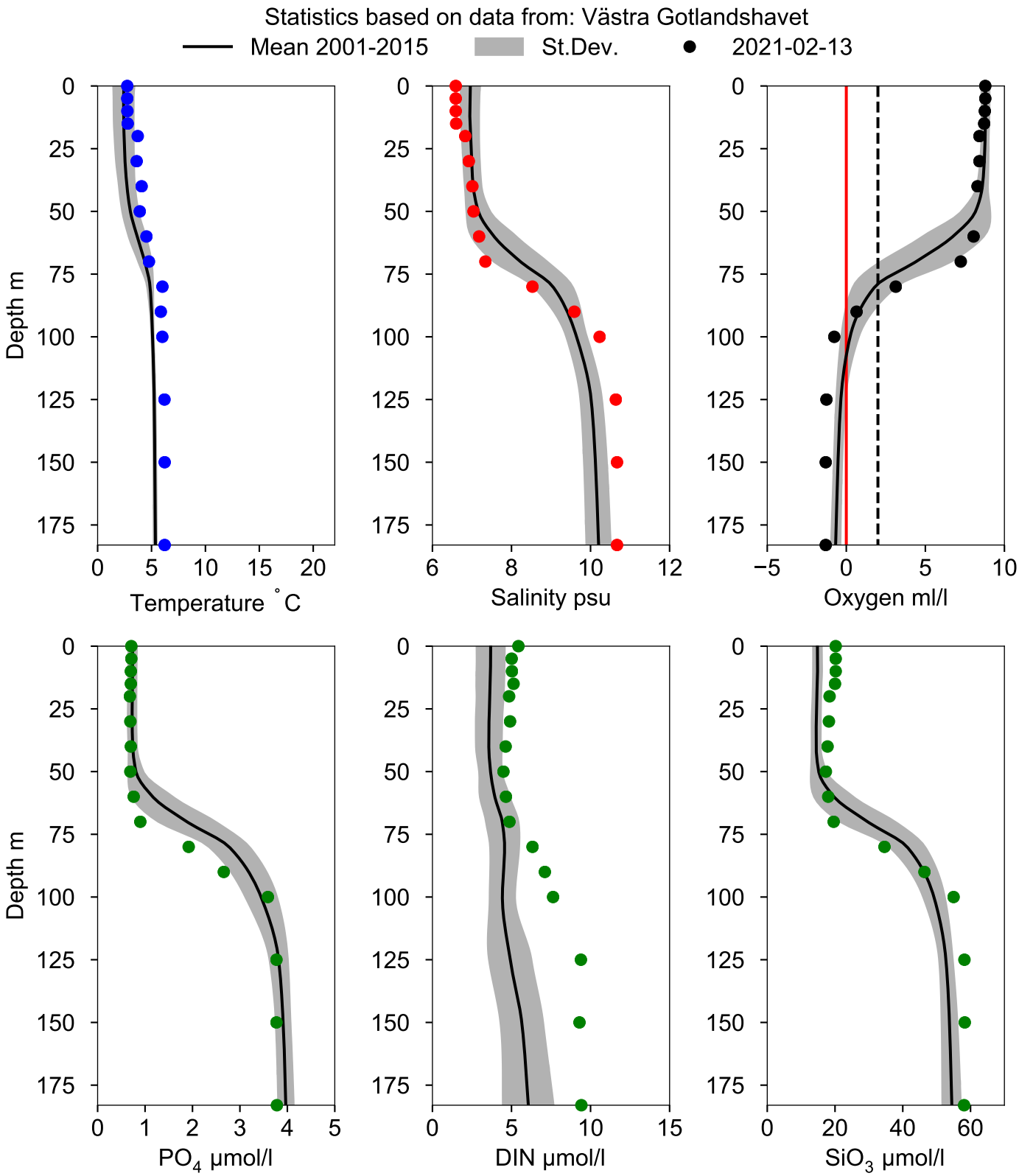
STATION BY30 SURFACE WATER (0-10 m)

Annual Cycles

Statistics based on data from: Västra Gotlandshavet

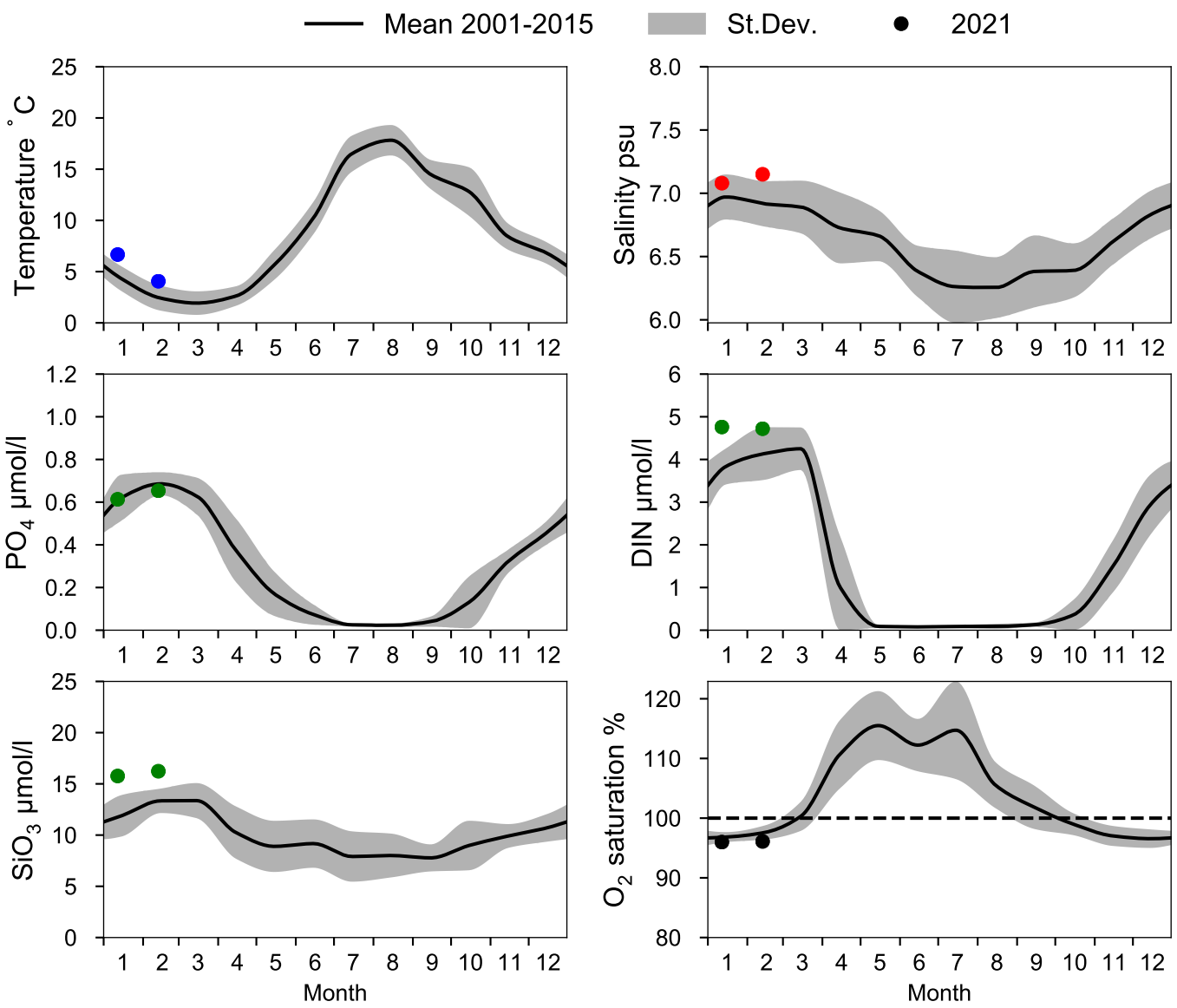


Vertical profiles BY30
February

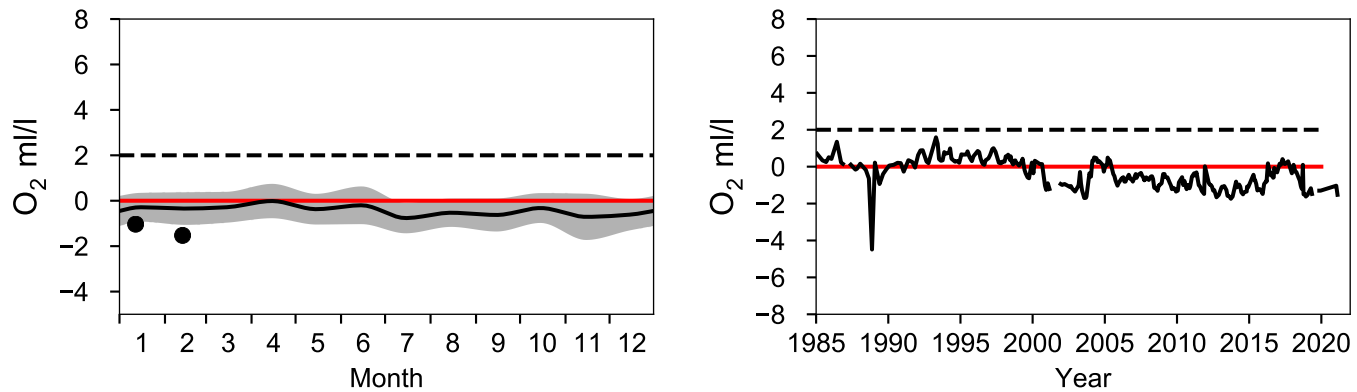


STATION BY29 / LL19 SURFACE WATER (0-10 m)

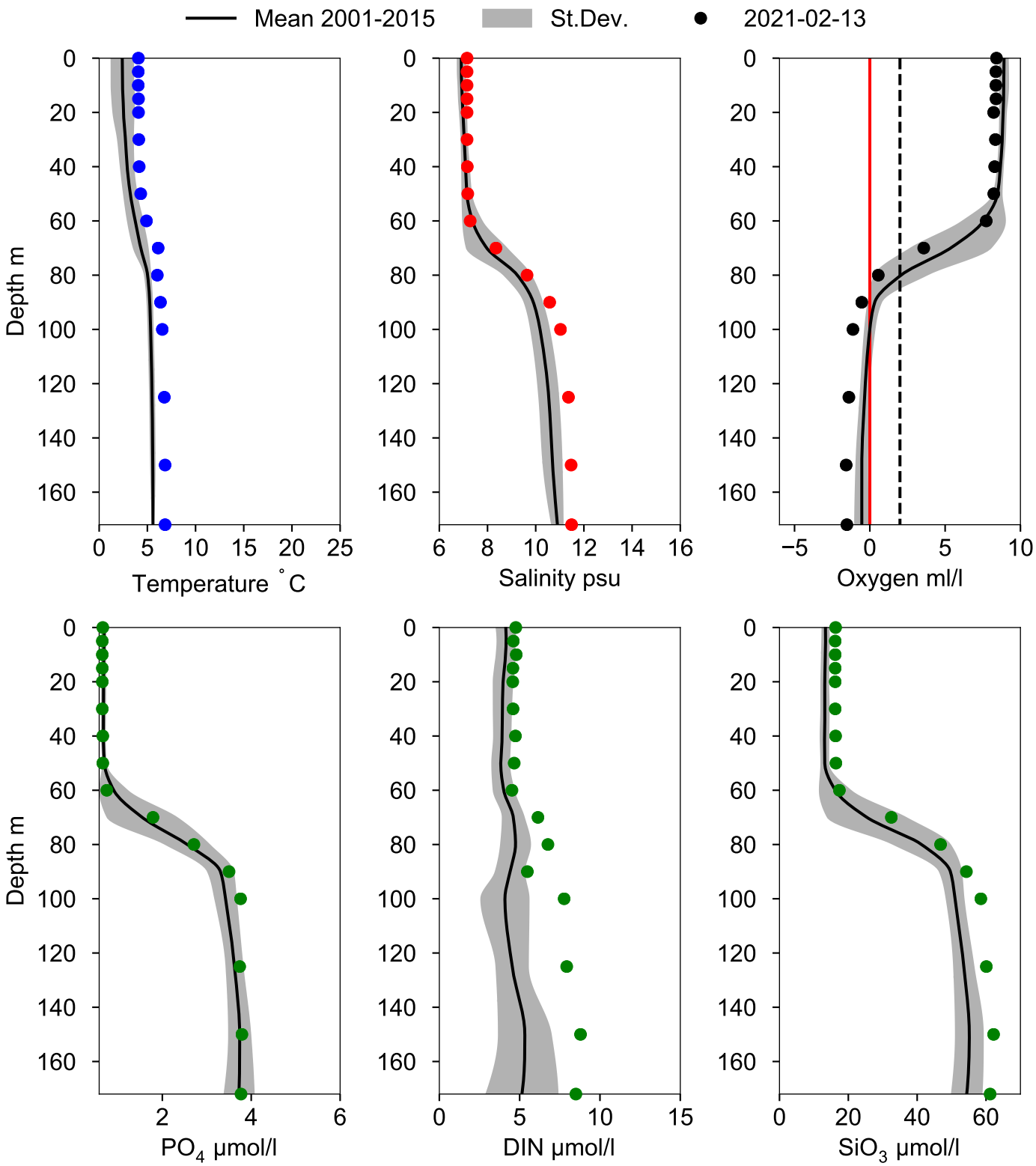
Annual Cycles



OXYGEN IN BOTTOM WATER (depth >= 150 m)



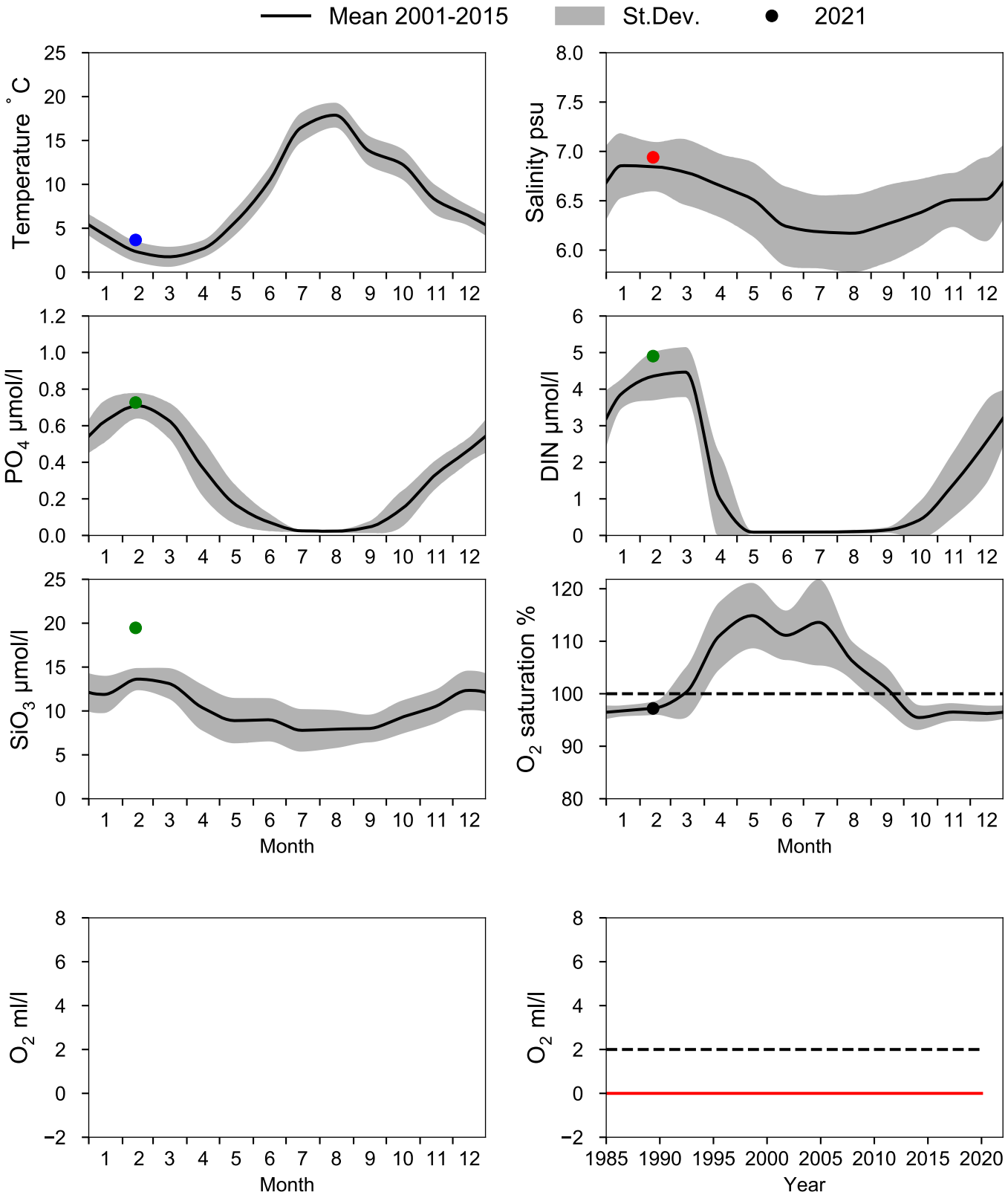
Vertical profiles BY29 / LL19
February



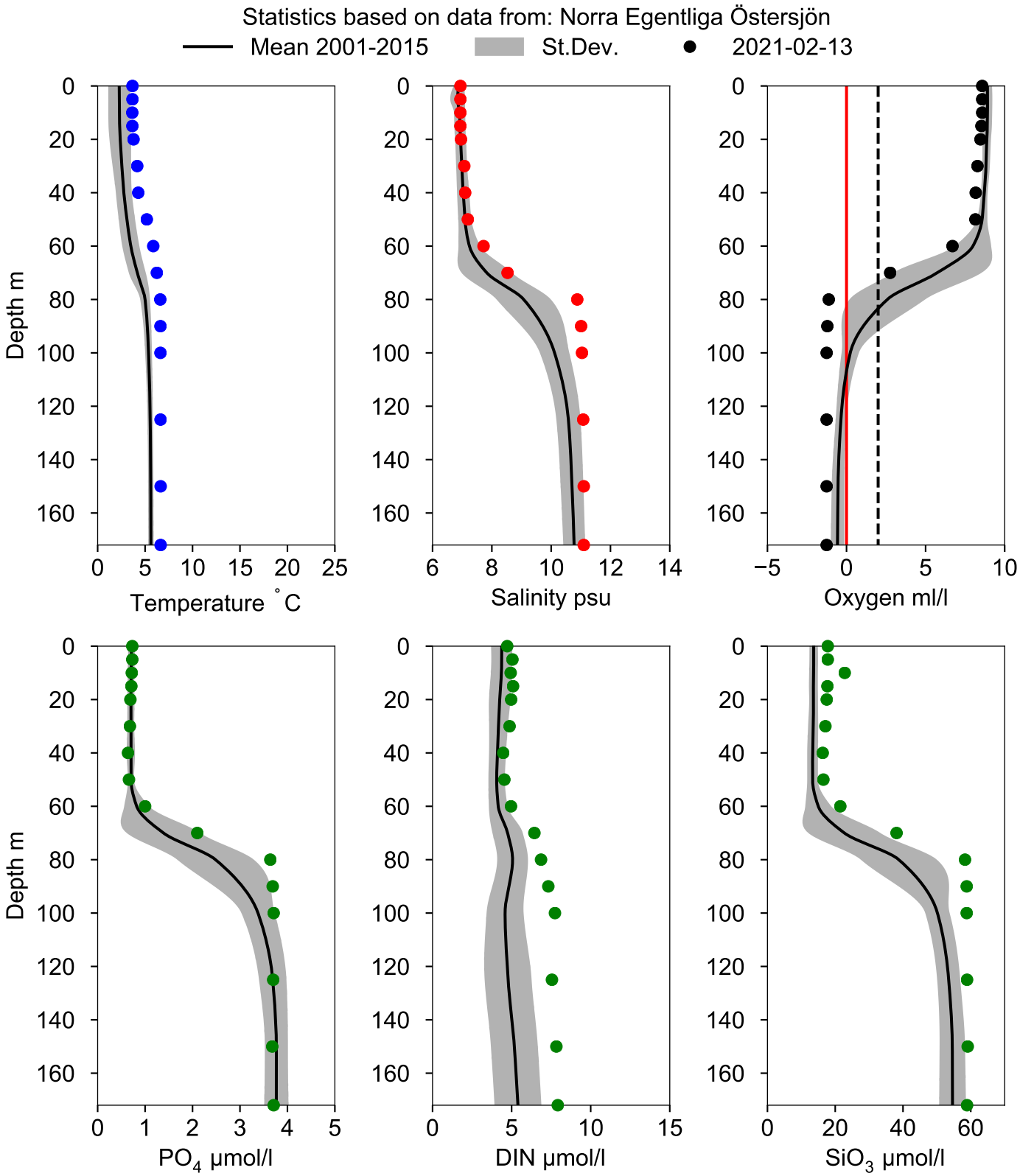
STATION BY27 SURFACE WATER (0-10 m)

Annual Cycles

Statistics based on data from: Norra Egentliga Östersjön



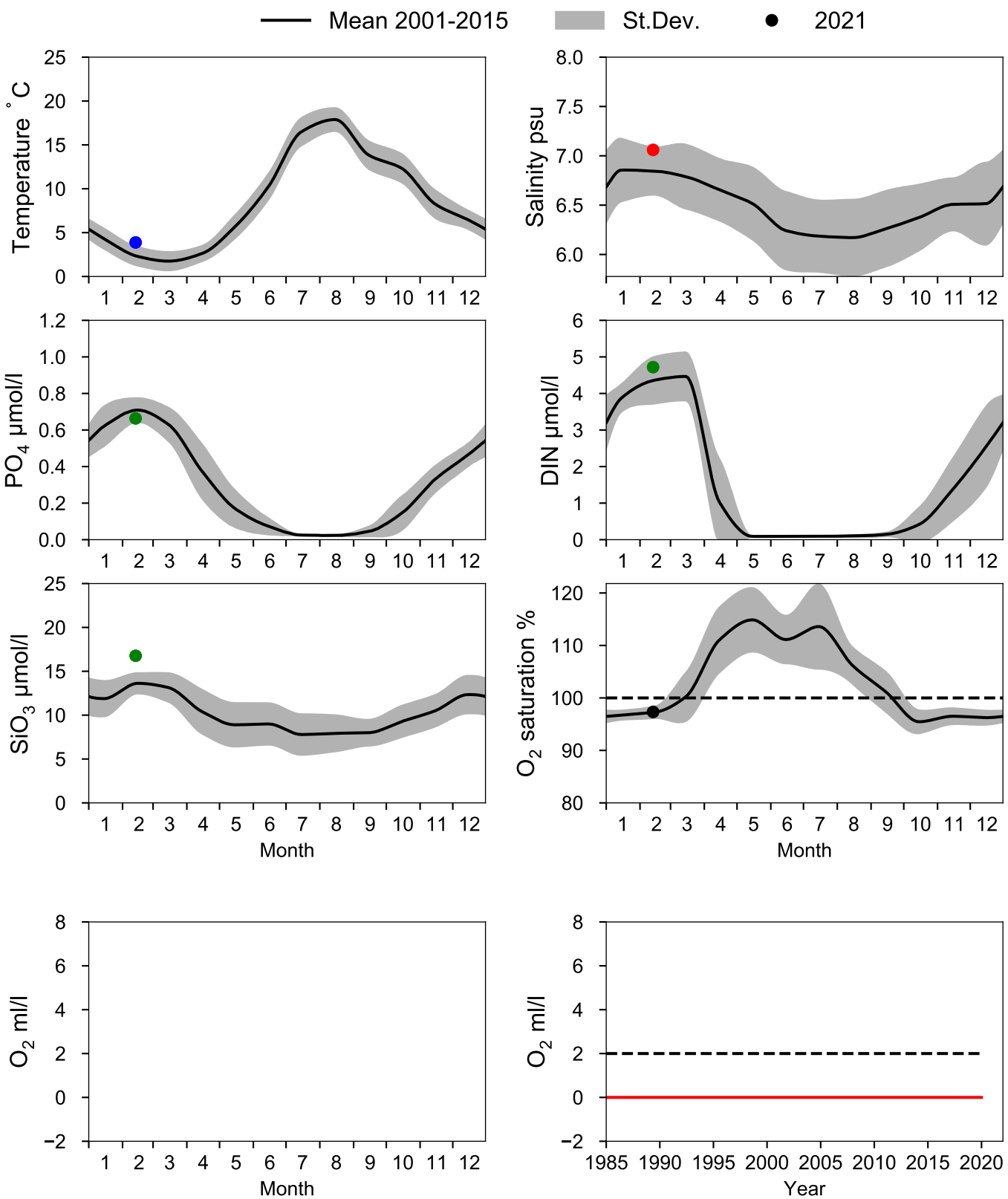
Vertical profiles BY27
February



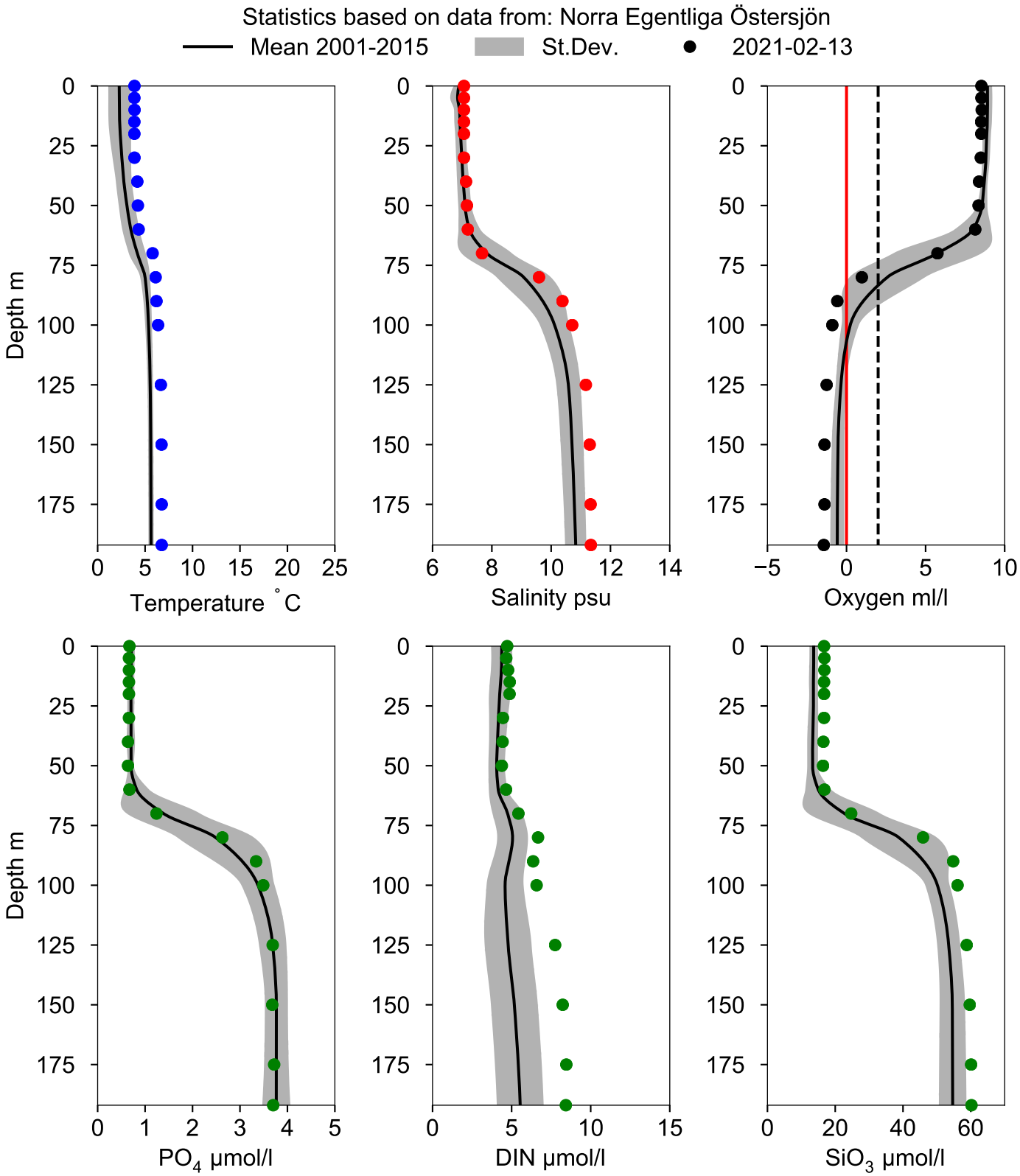
STATION BY28 SURFACE WATER (0-10 m)

Annual Cycles

Statistics based on data from: Norra Egentliga Östersjön



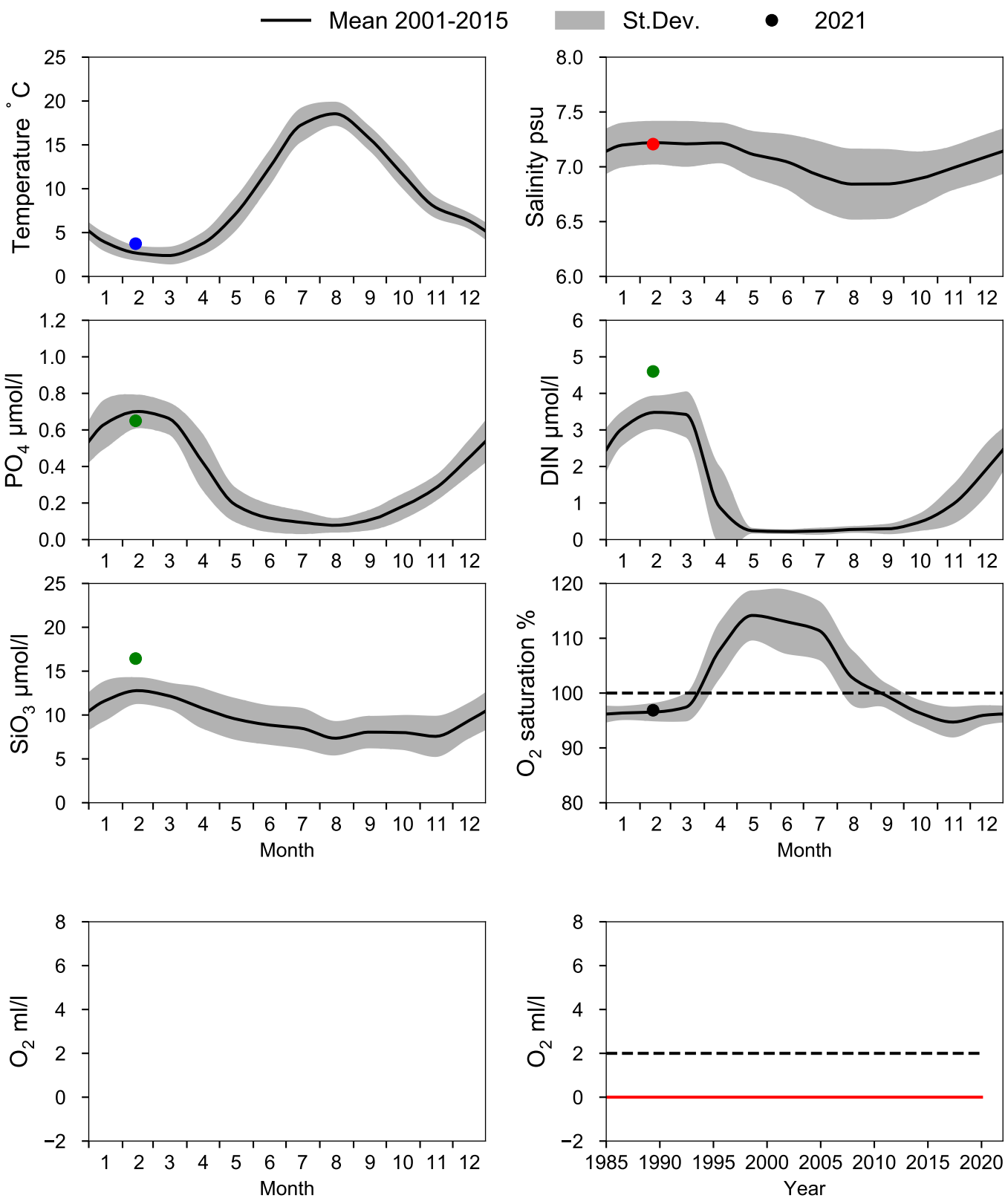
Vertical profiles BY28
February



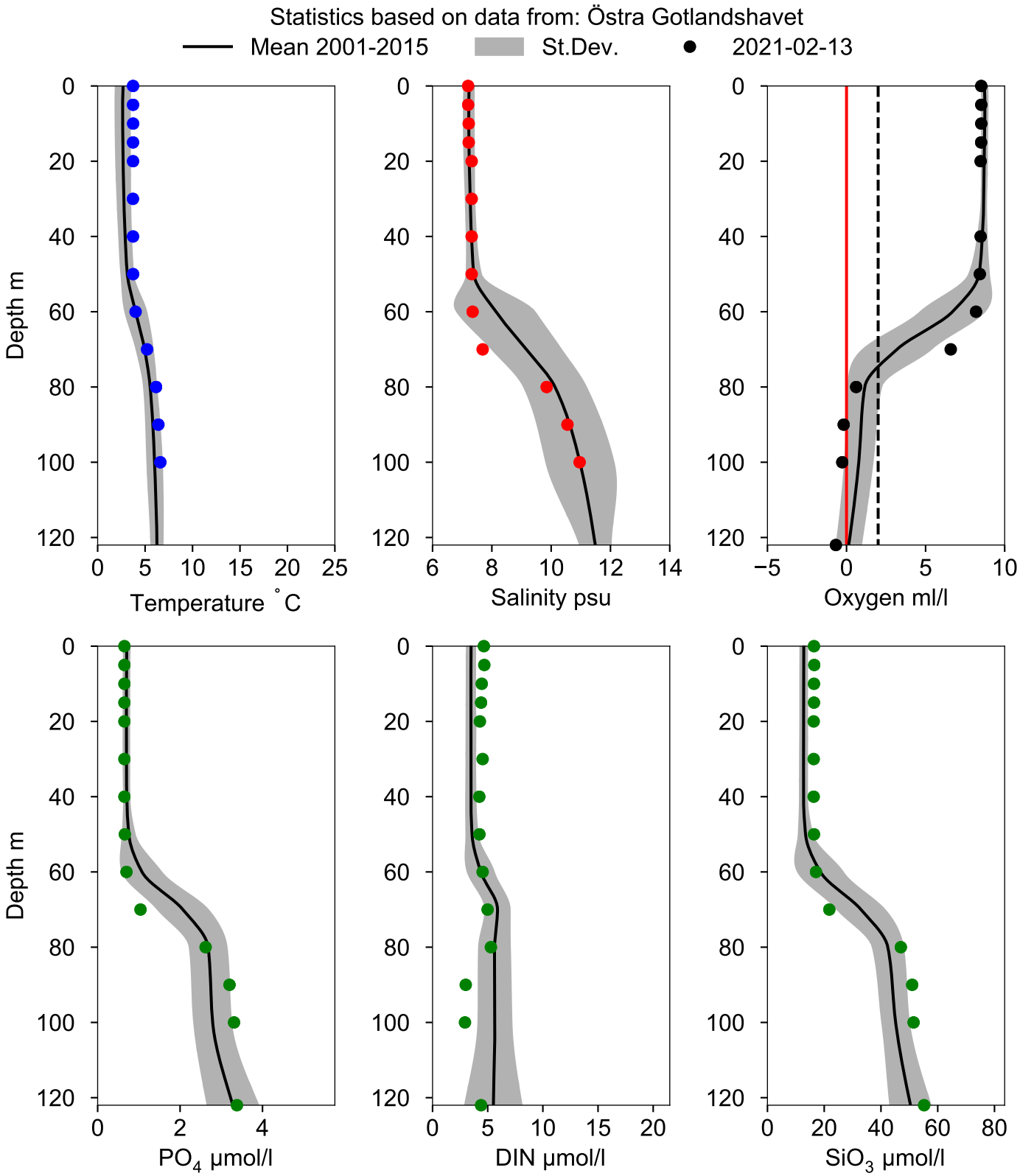
STATION BY21 SURFACE WATER (0-10 m)

Annual Cycles

Statistics based on data from: Östra Gotlandshavet

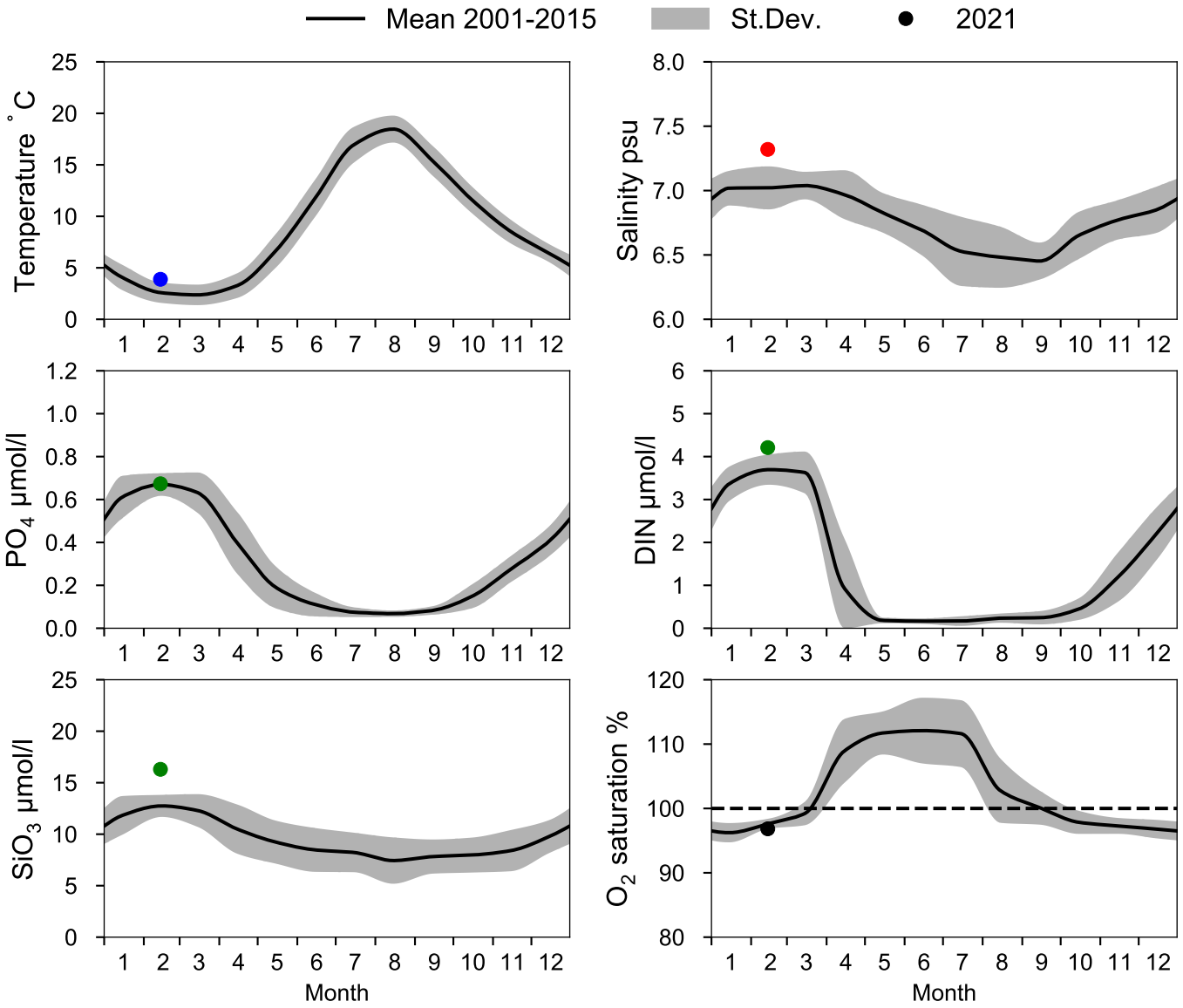


Vertical profiles BY21
February

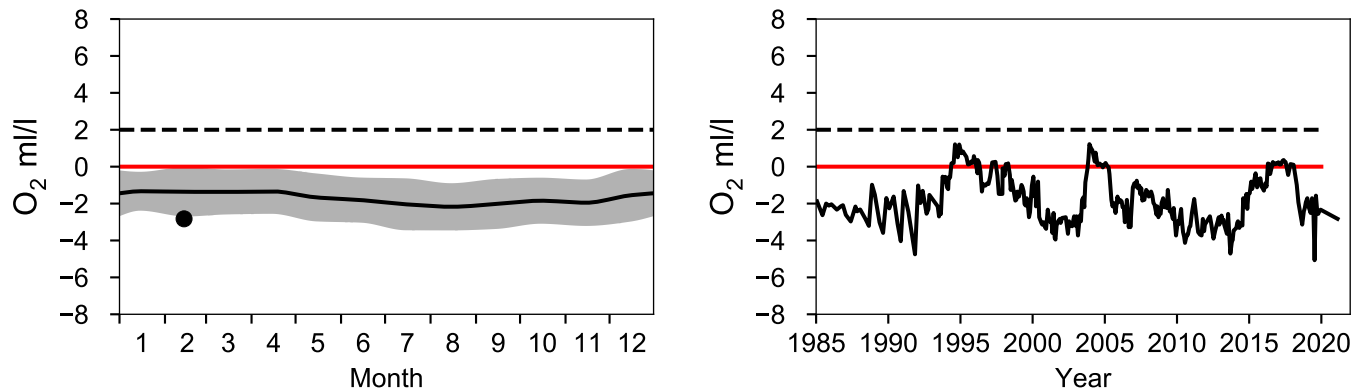


STATION BY20 FÅRÖDJ SURFACE WATER (0-10 m)

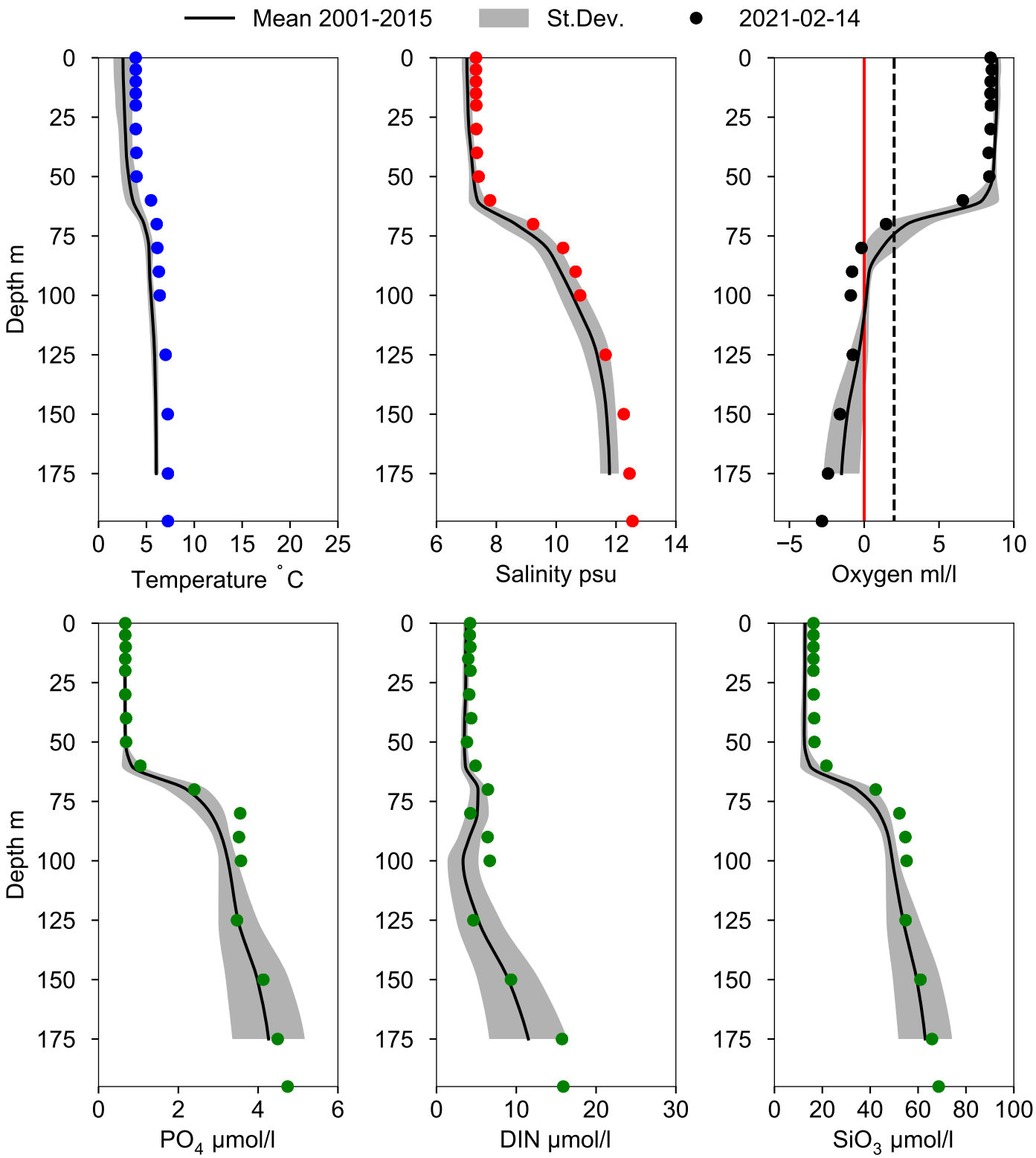
Annual Cycles



OXYGEN IN BOTTOM WATER (depth >= 175 m)



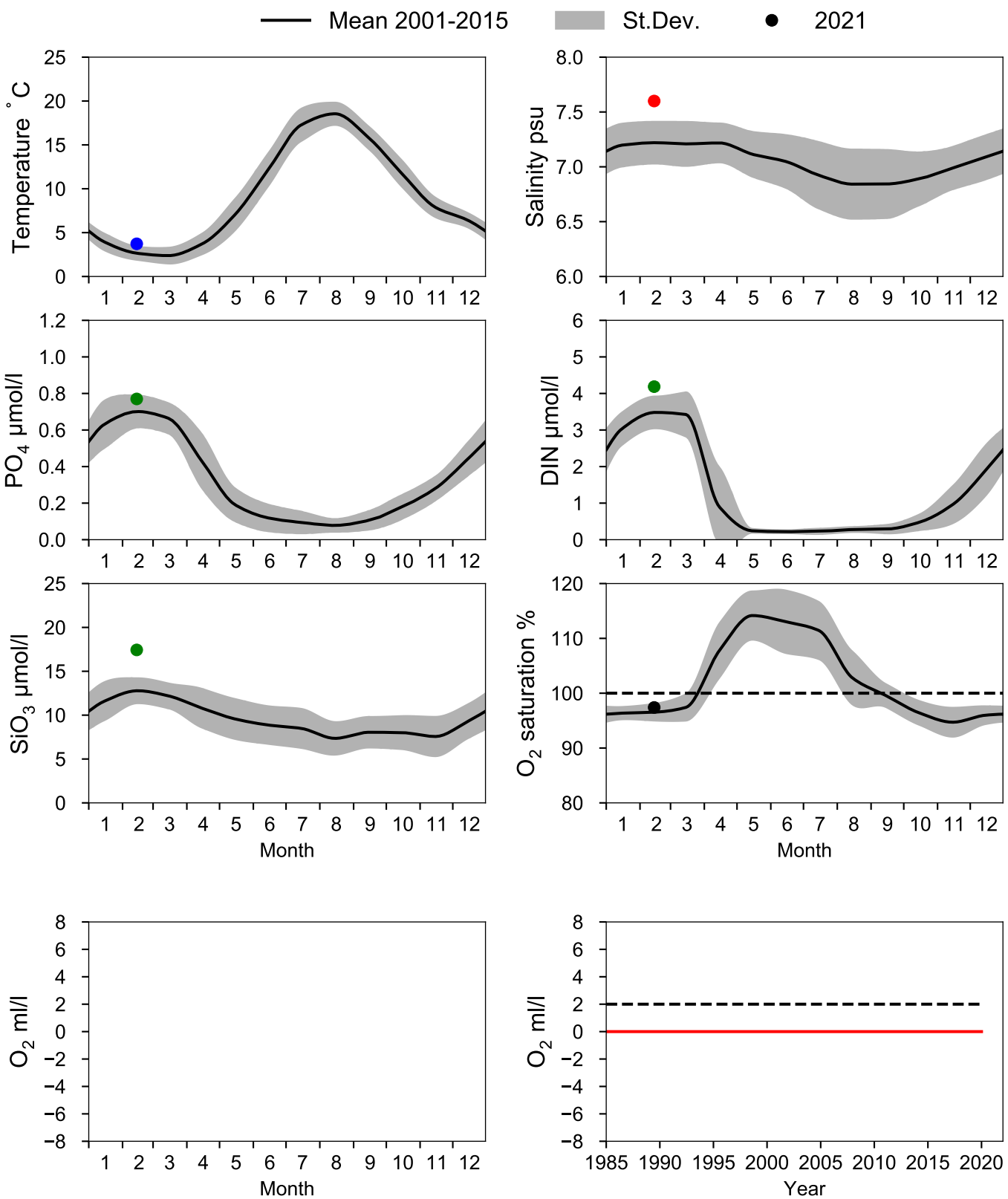
Vertical profiles BY20 FÅRÖDJ
February



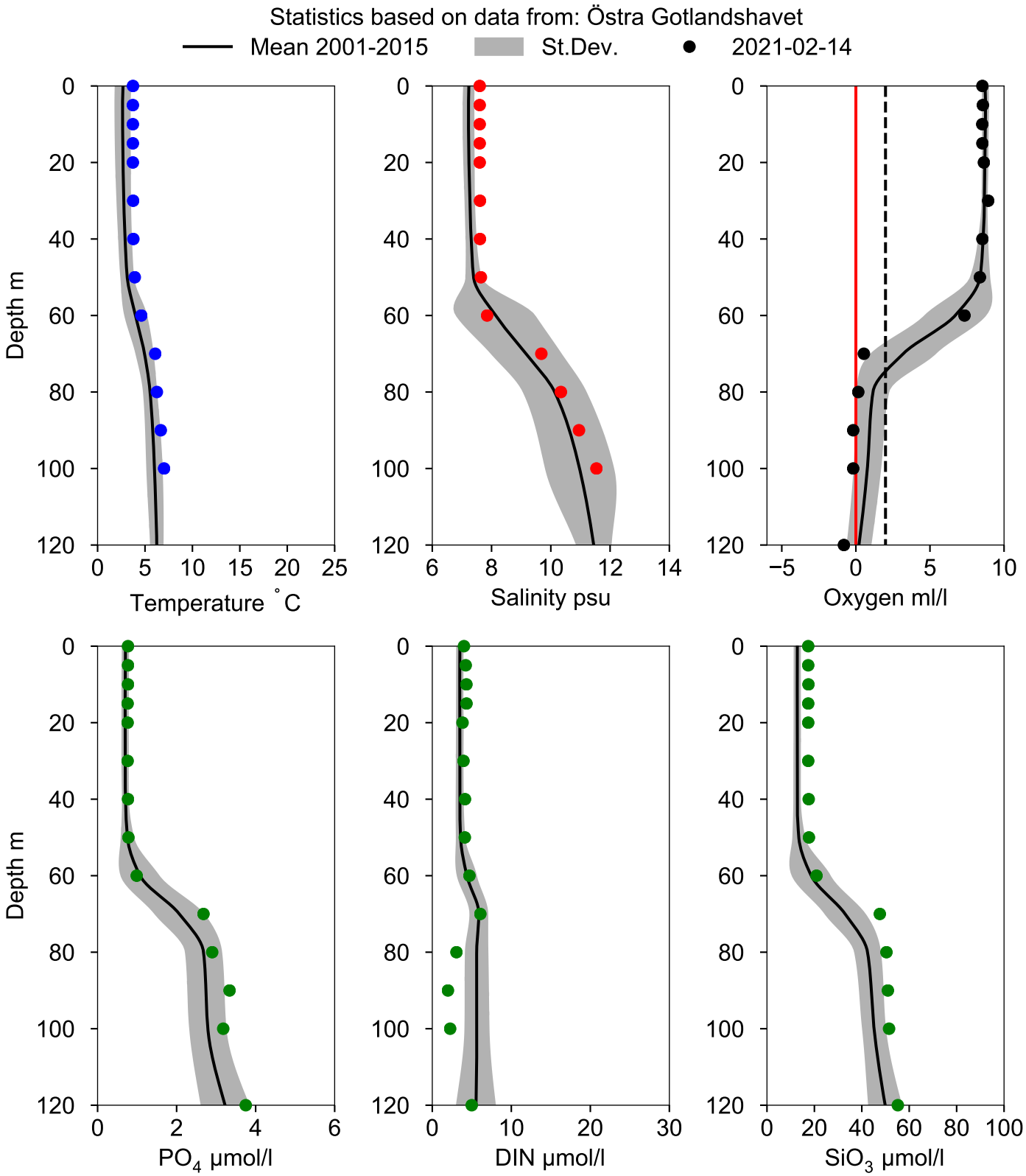
STATION BY13 SURFACE WATER (0-10 m)

Annual Cycles

Statistics based on data from: Östra Gotlandshavet



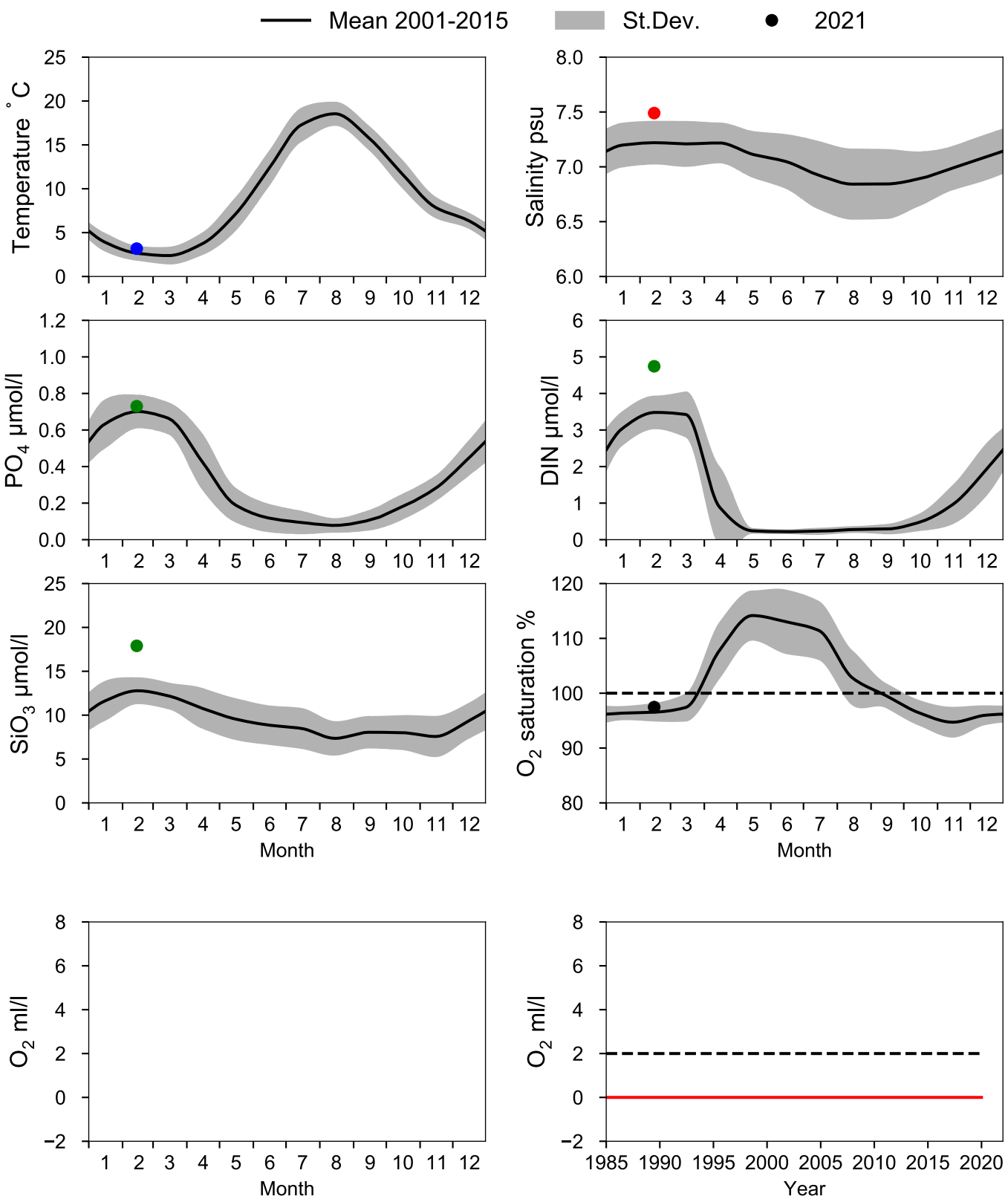
Vertical profiles BY13
February



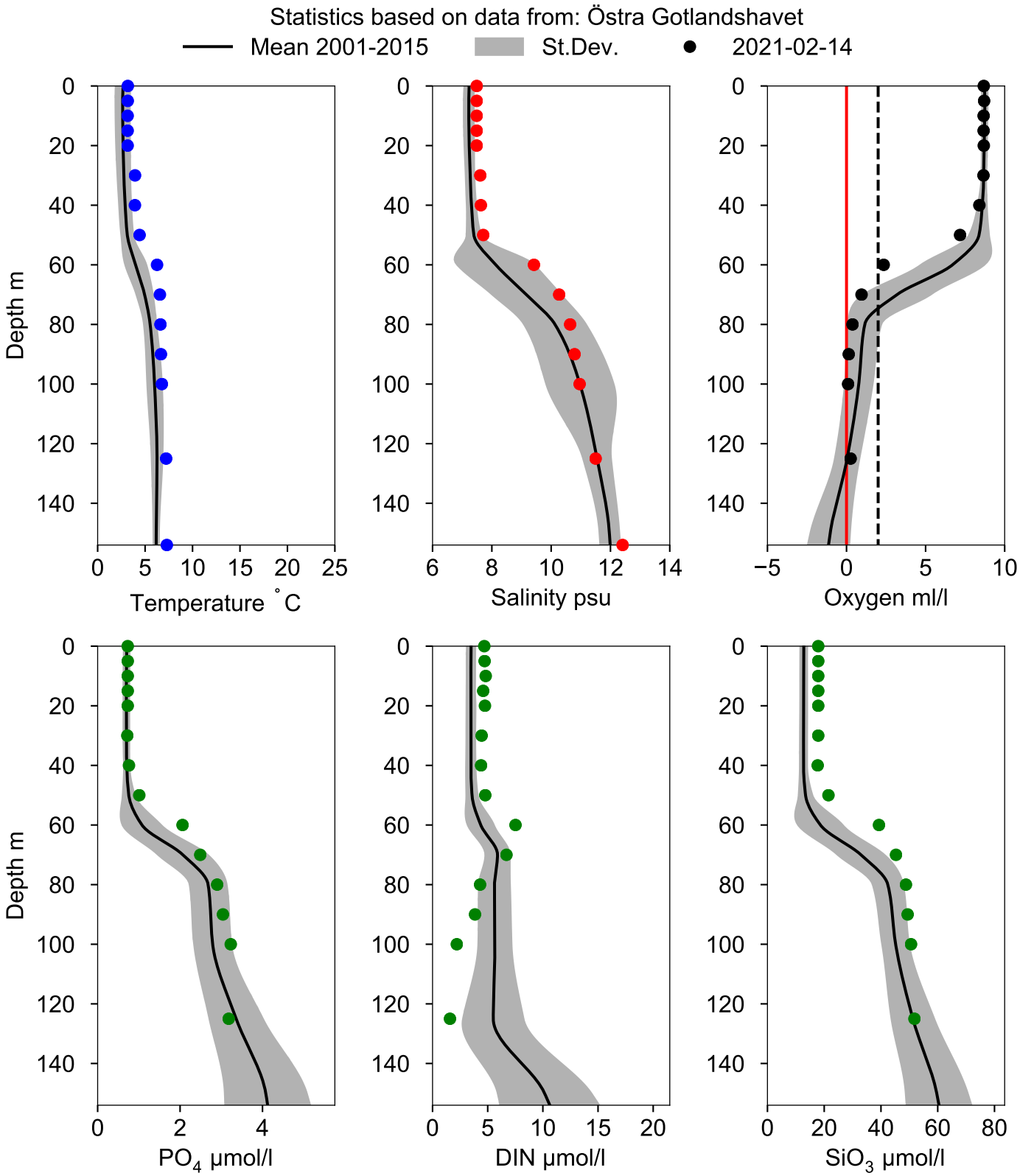
STATION BY19 SURFACE WATER (0-10 m)

Annual Cycles

Statistics based on data from: Östra Gotlandshavet

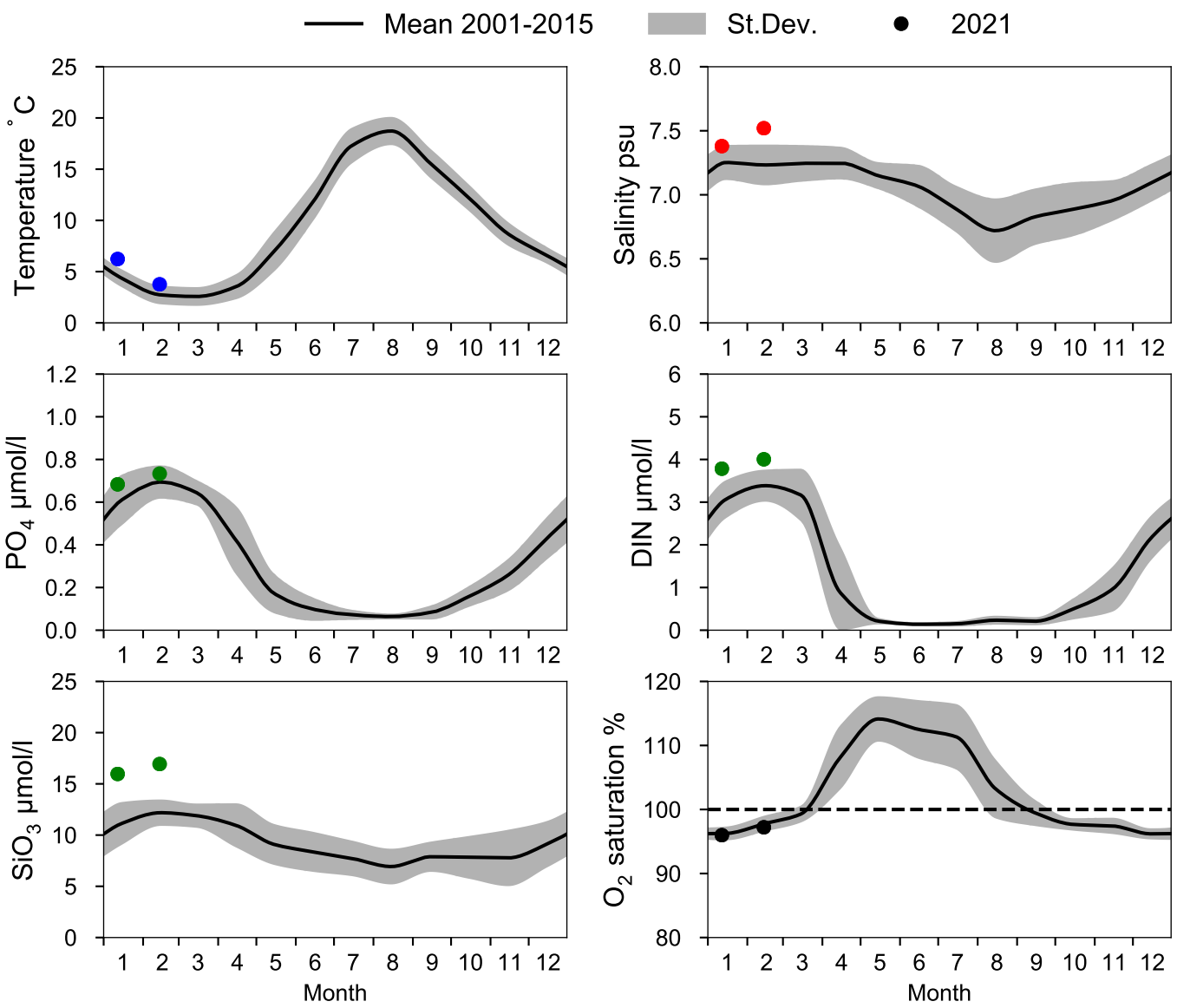


Vertical profiles BY19
February

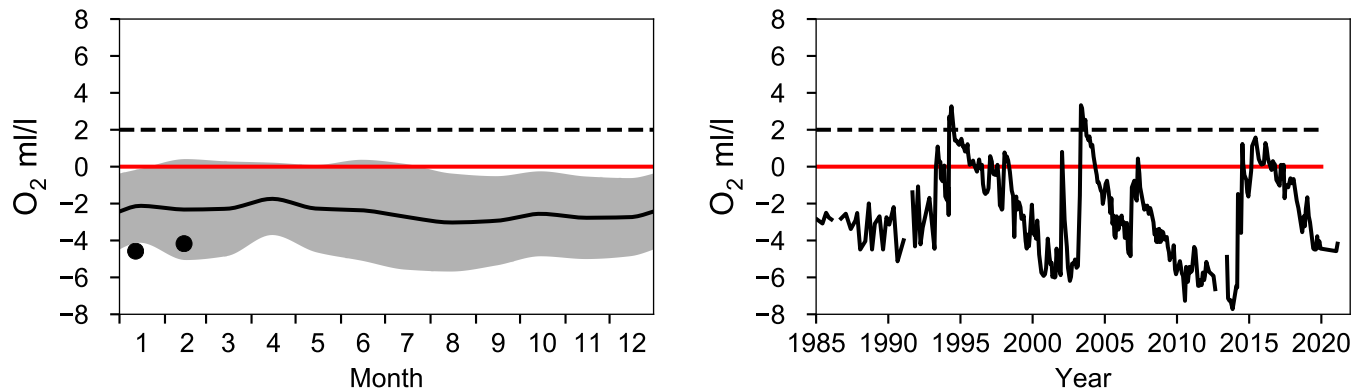


STATION BY15 GOTLANDSDJ SURFACE WATER (0-10 m)

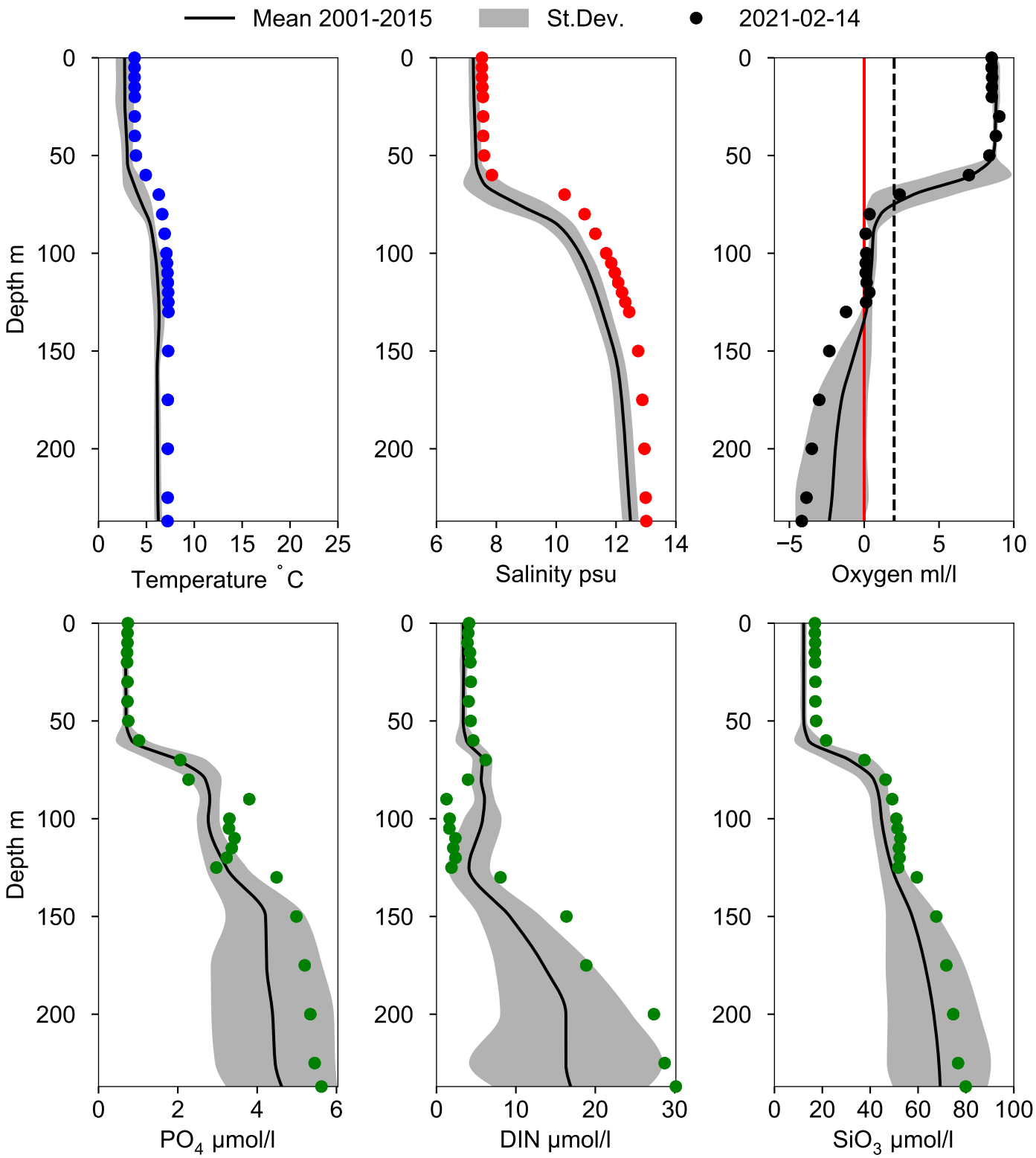
Annual Cycles



OXYGEN IN BOTTOM WATER (depth >= 225 m)



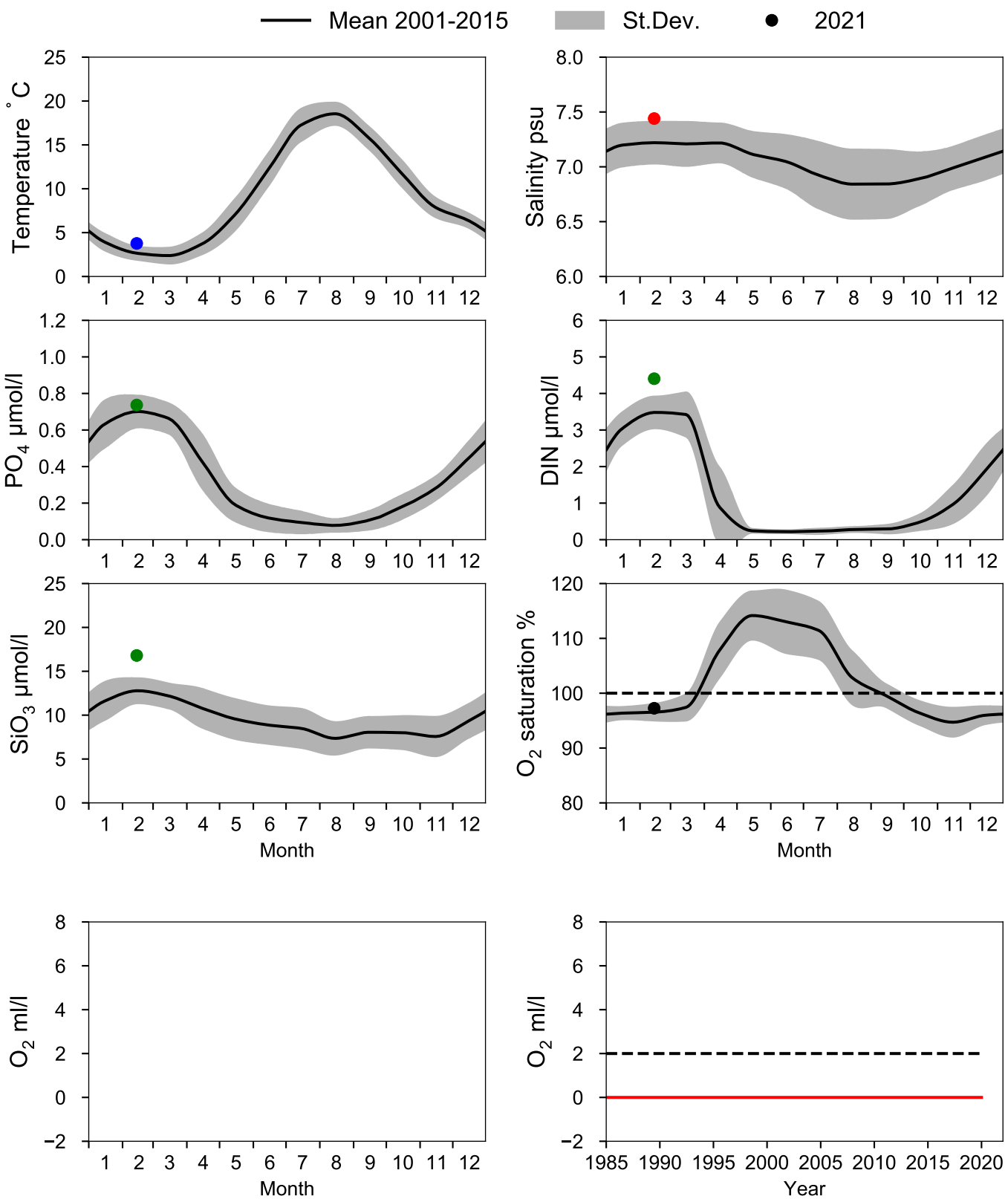
Vertical profiles BY15 GOTLANDSDJ
February



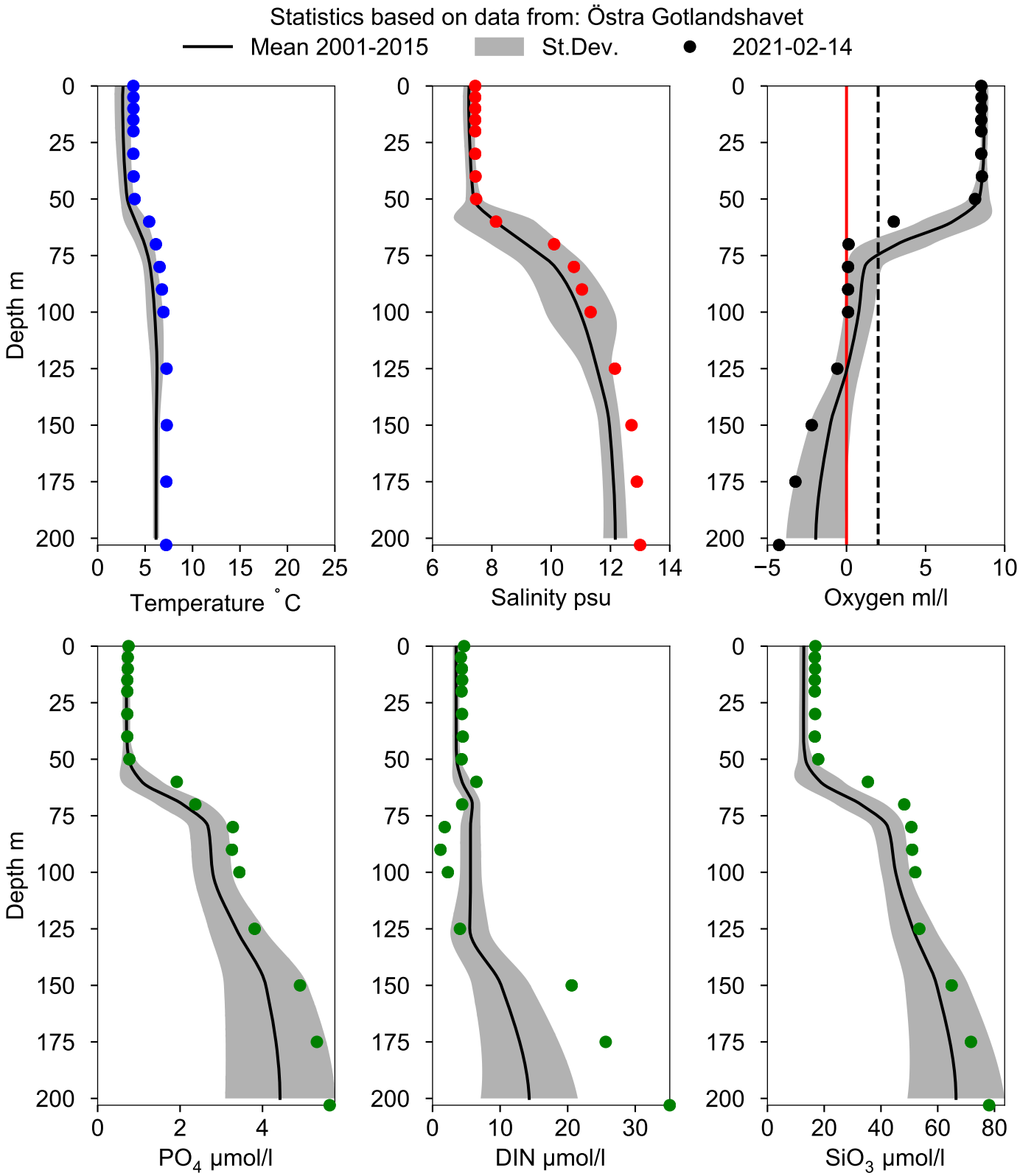
STATION BY11 SURFACE WATER (0-10 m)

Annual Cycles

Statistics based on data from: Östra Gotlandshavet

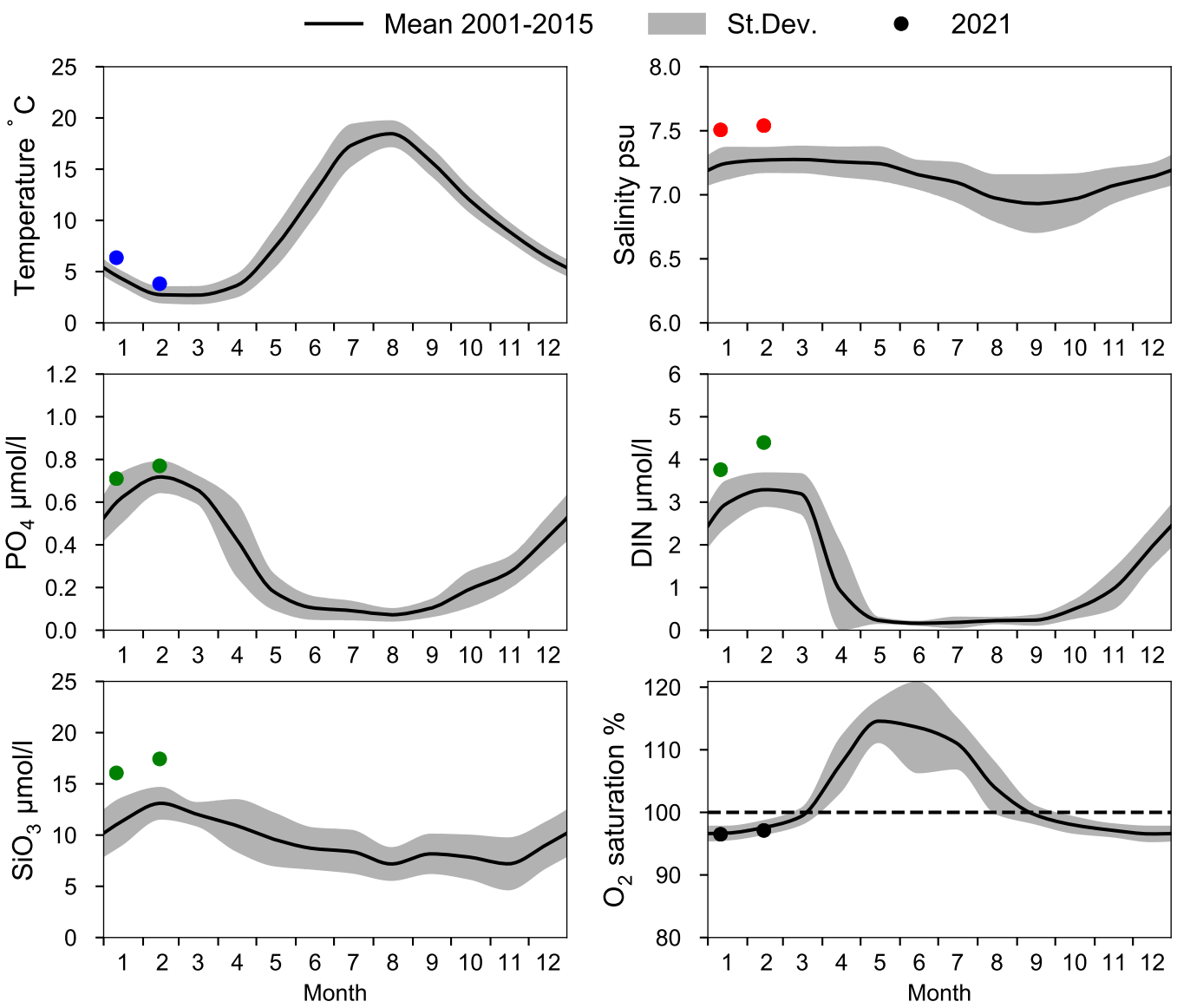


Vertical profiles BY11
February

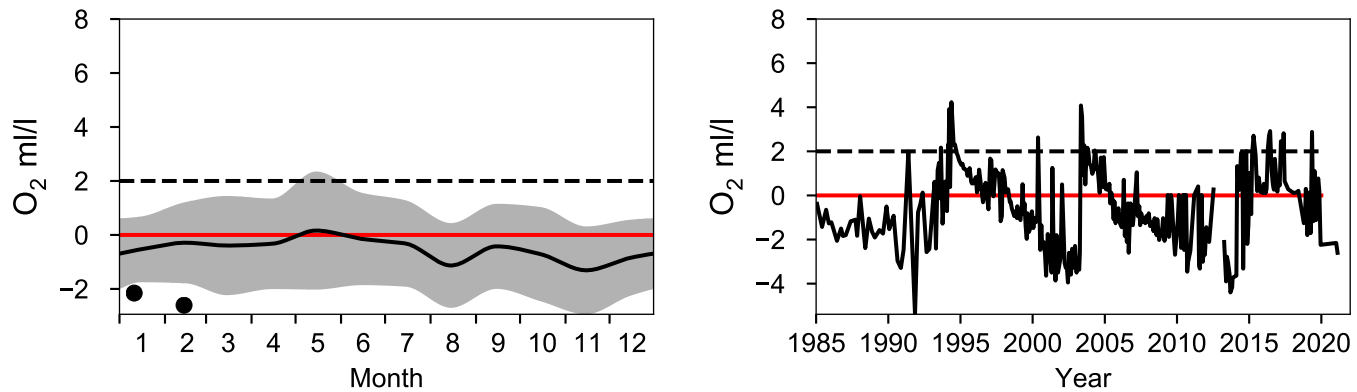


STATION BY10 SURFACE WATER (0-10 m)

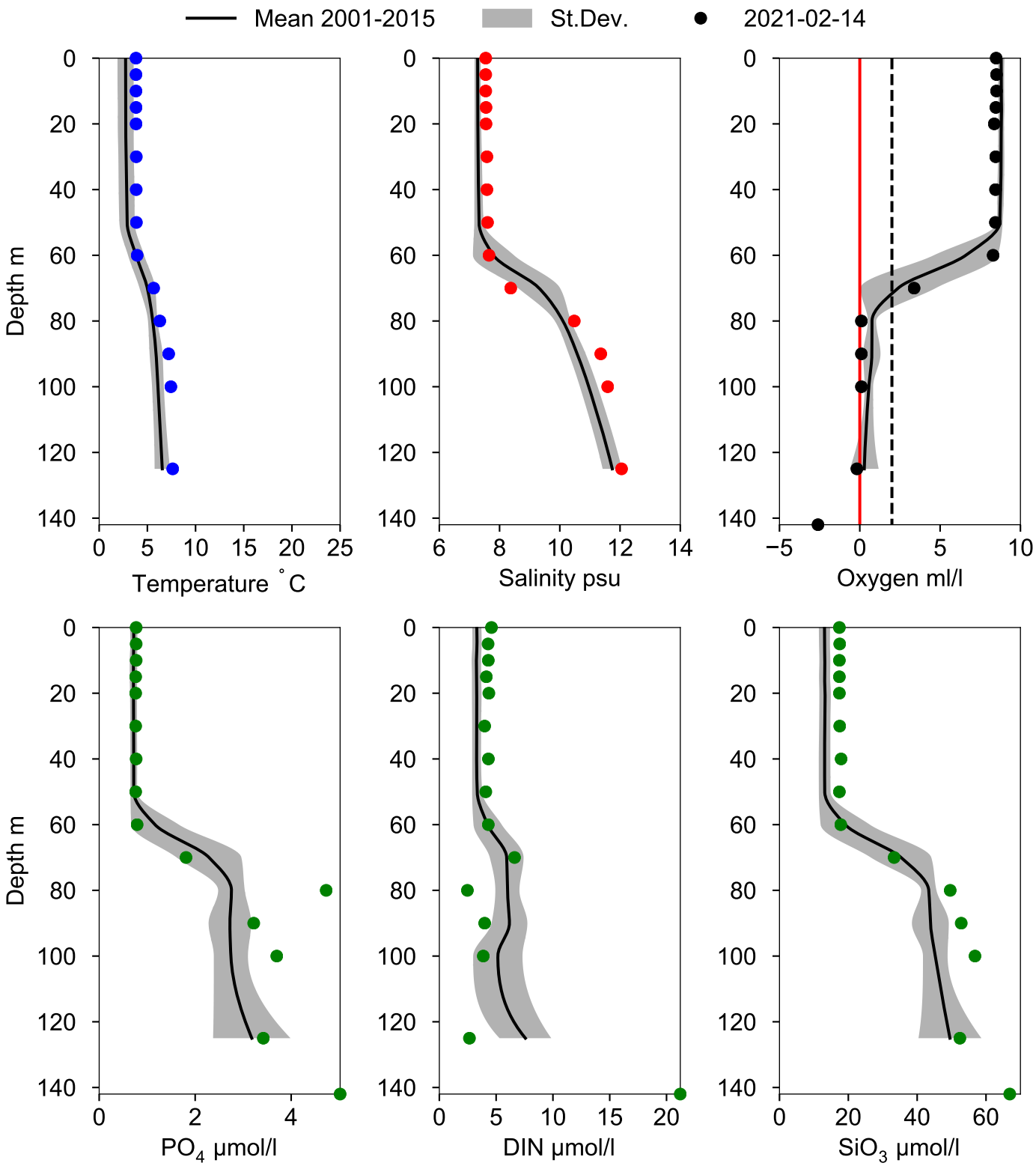
Annual Cycles



OXYGEN IN BOTTOM WATER (depth >= 125 m)



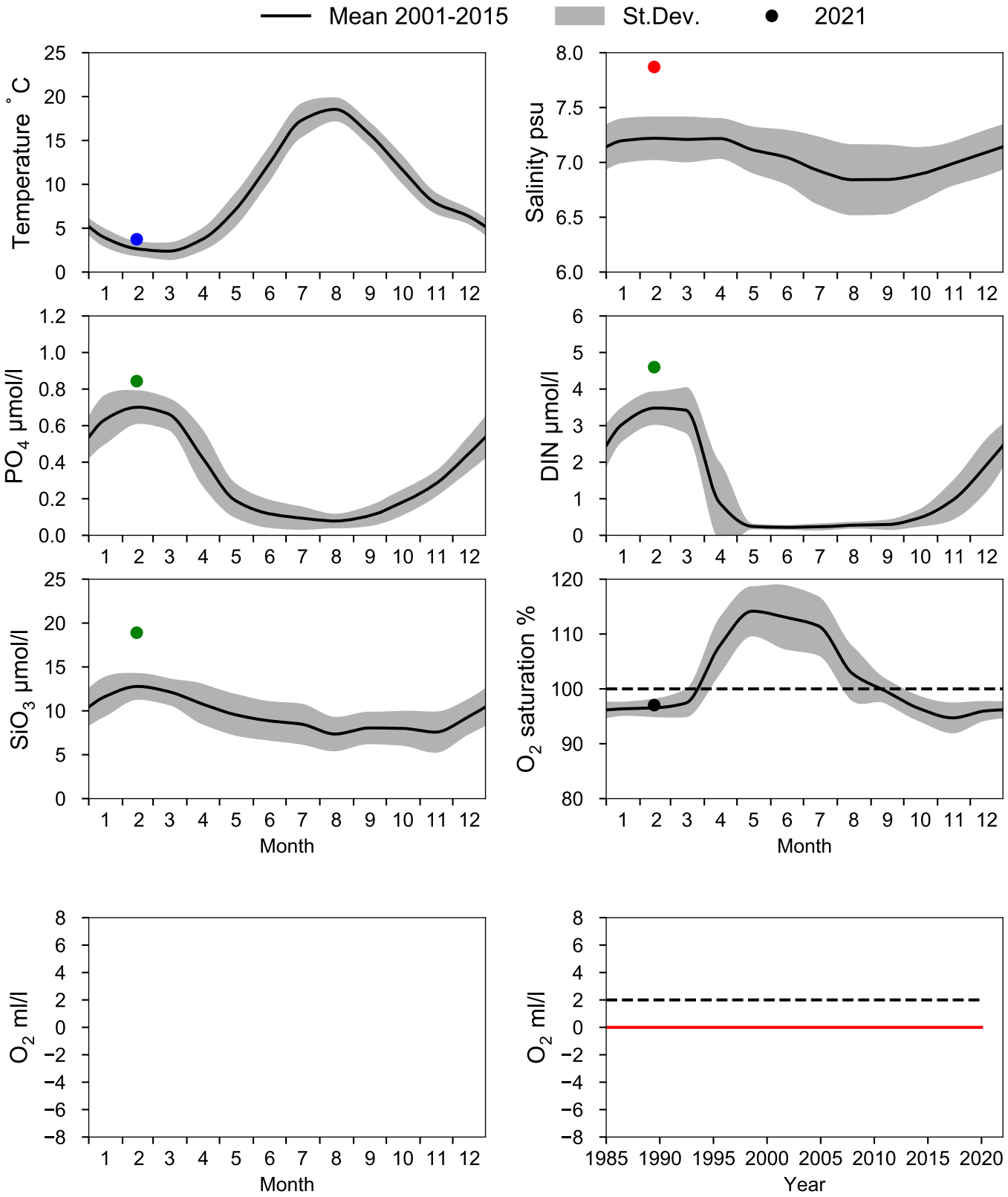
Vertical profiles BY10
February



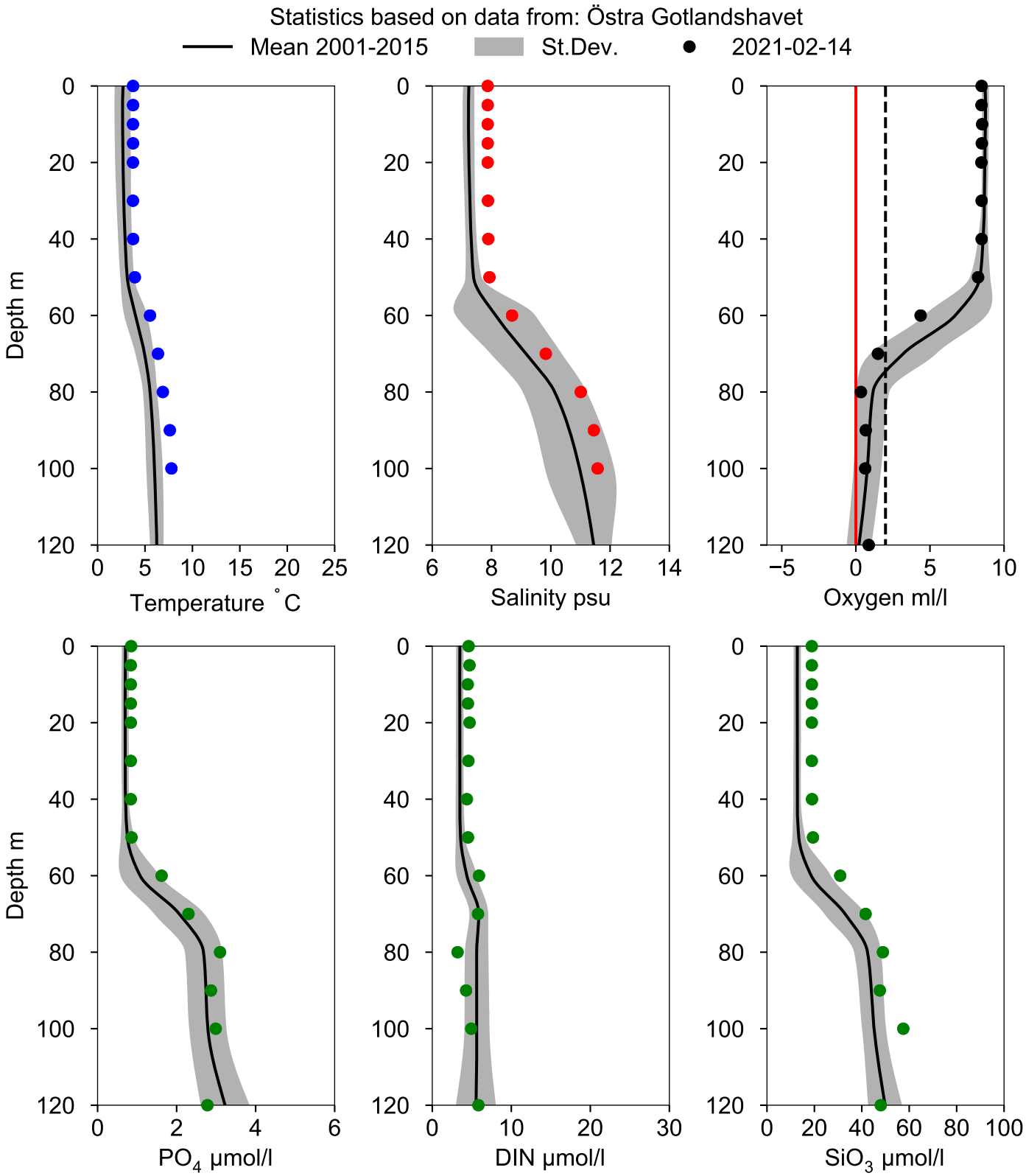
STATION BY9 KLAIPEDA SURFACE WATER (0-10 m)

Annual Cycles

Statistics based on data from: Östra Gotlandshavet

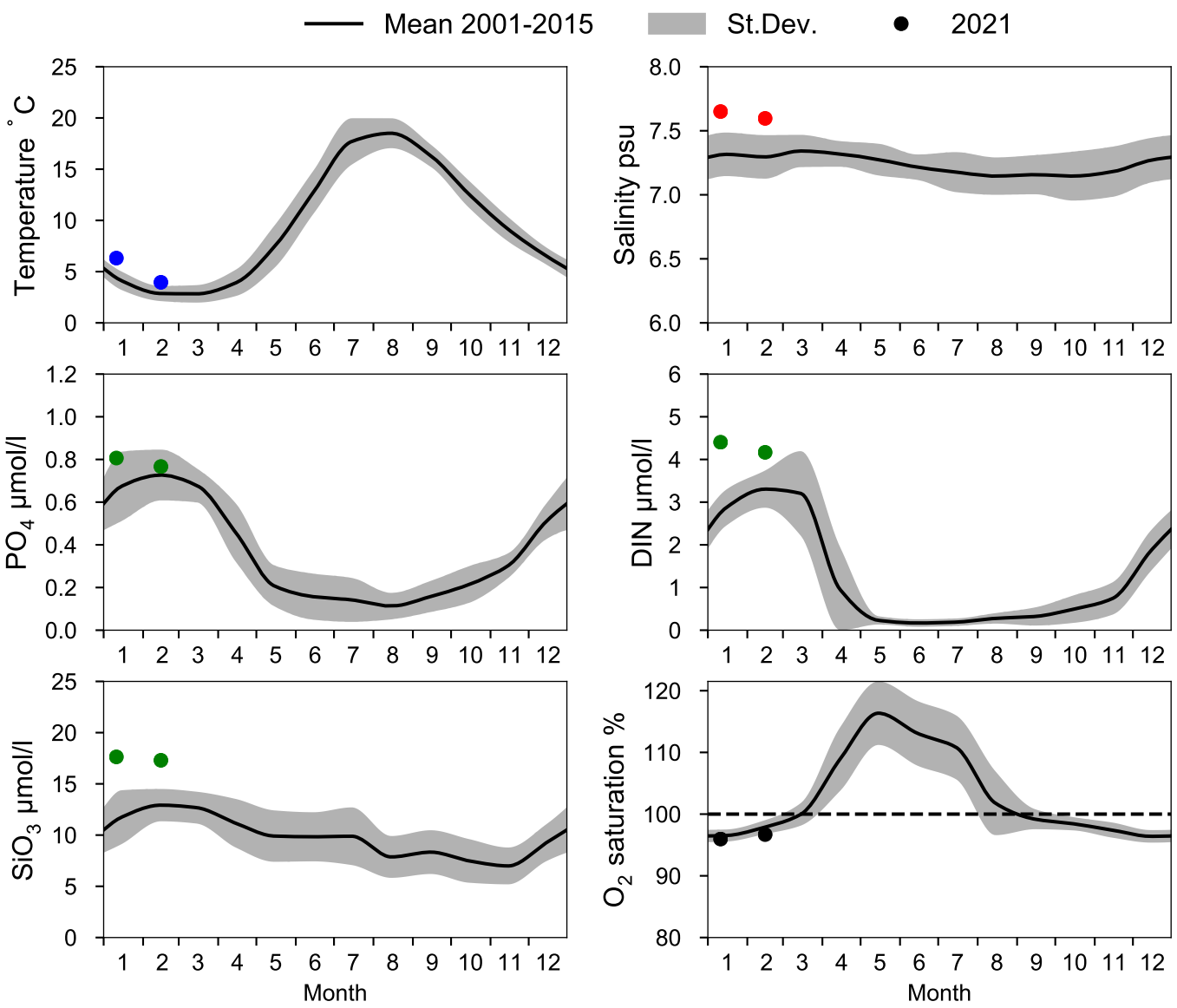


Vertical profiles BY9 KLAIPEDA
February

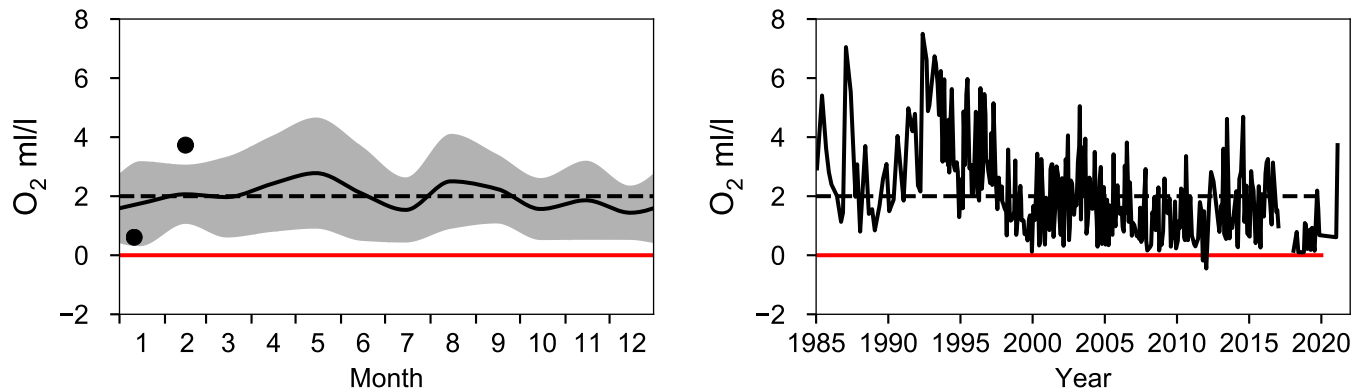


STATION BCS III-10 SURFACE WATER (0-10 m)

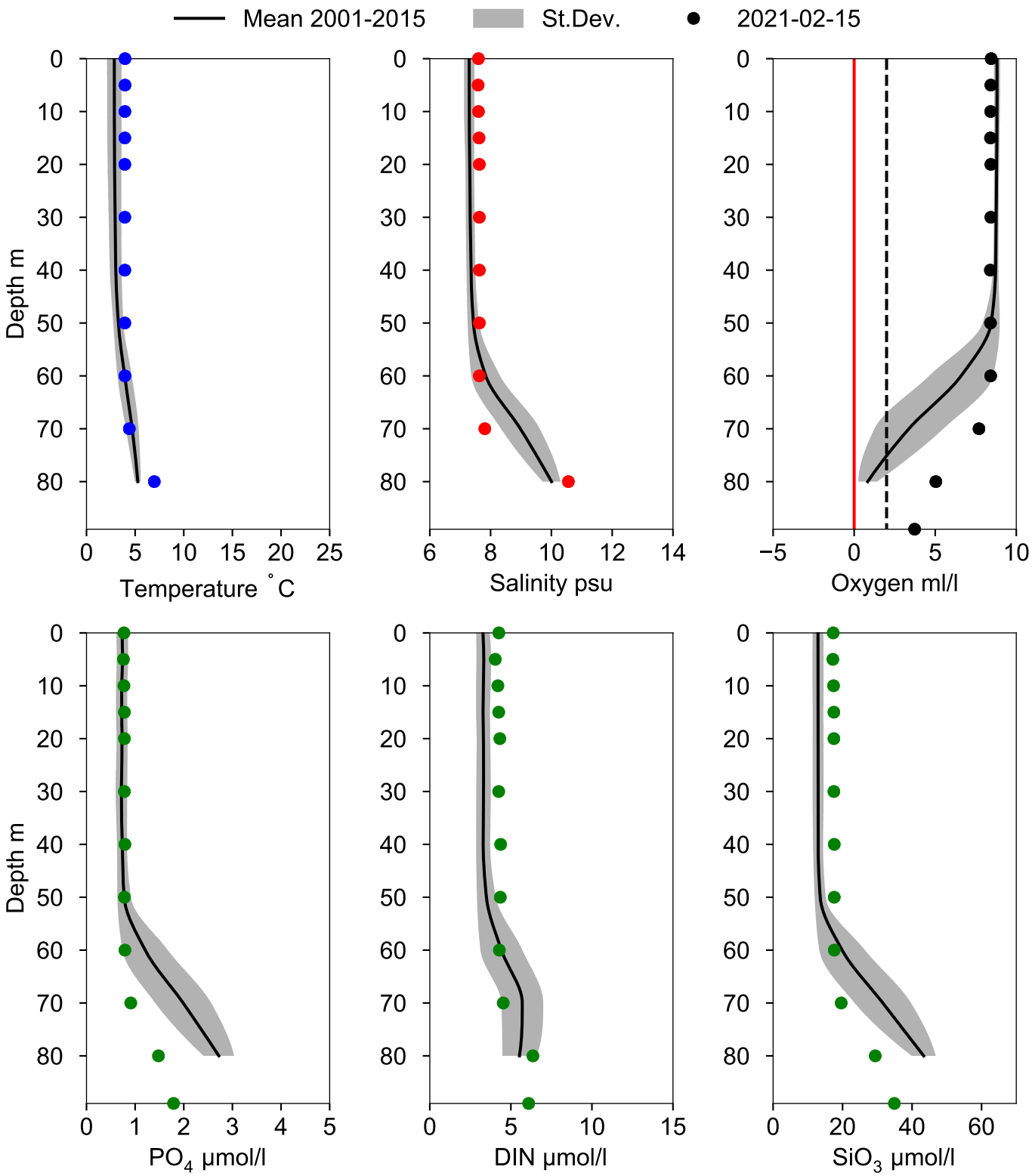
Annual Cycles



OXYGEN IN BOTTOM WATER (depth >= 80 m)



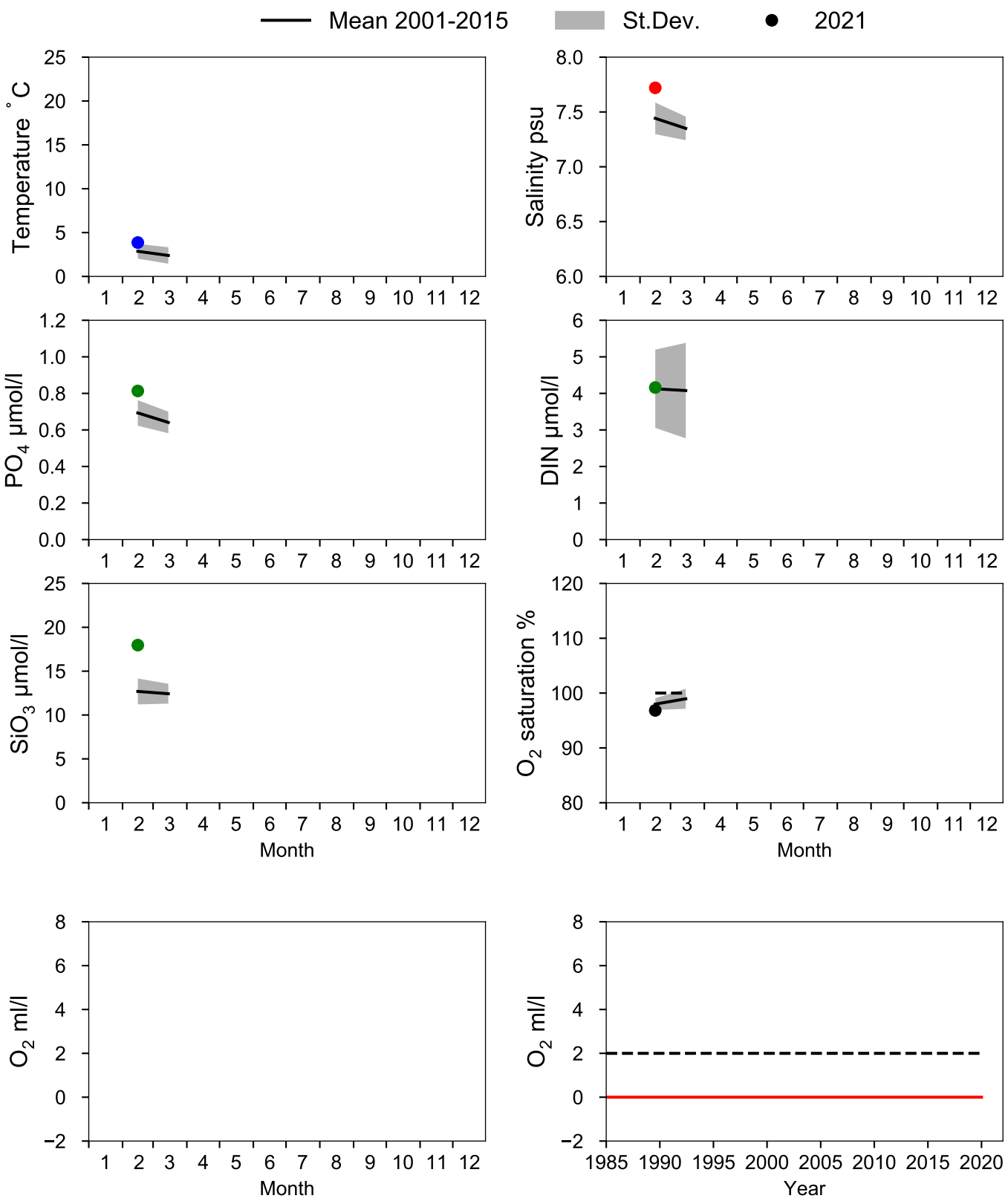
Vertical profiles BCS III-10
February



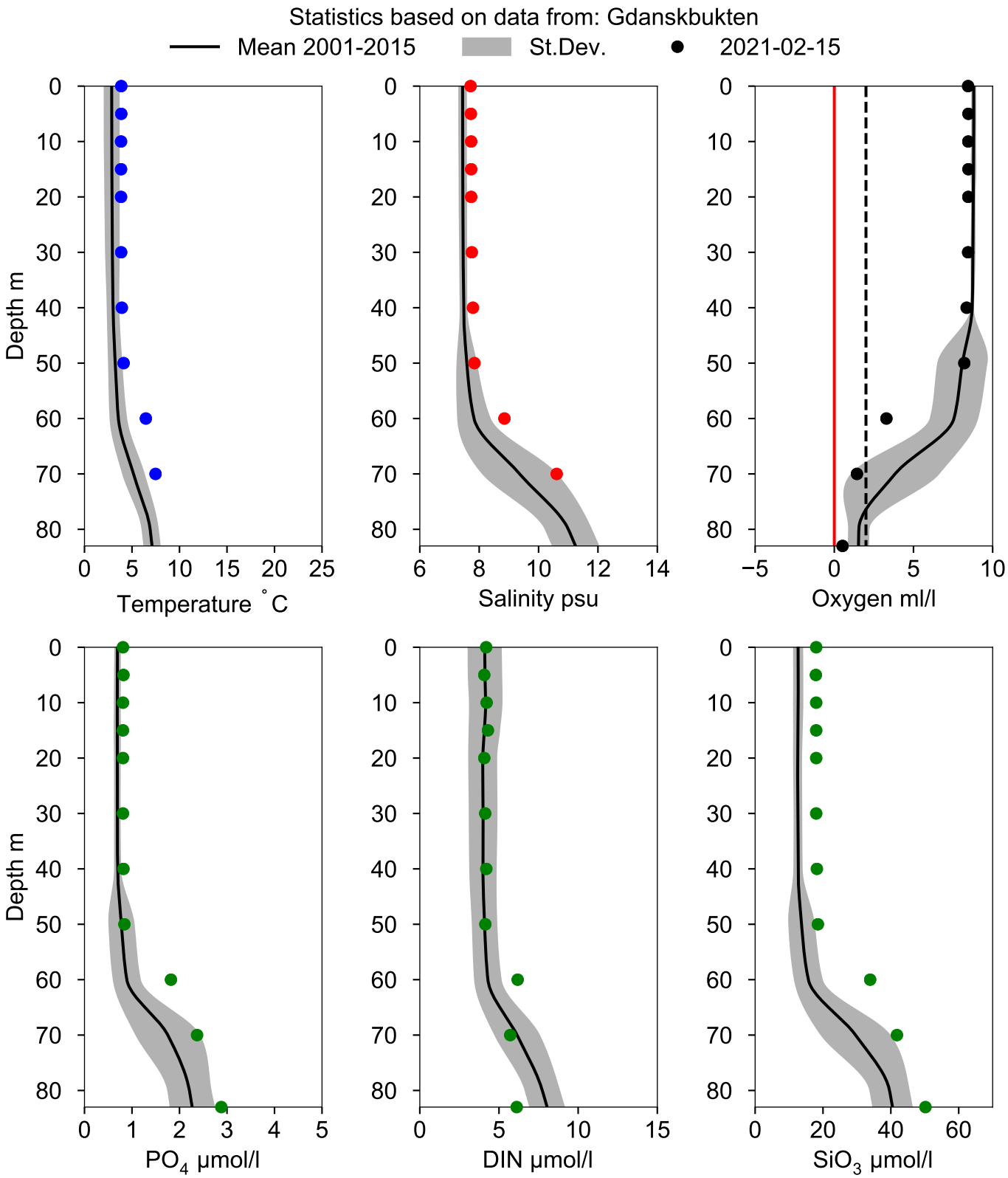
STATION PL-P63 SURFACE WATER (0-10 m)

Annual Cycles

Statistics based on data from: Gdanskbukten



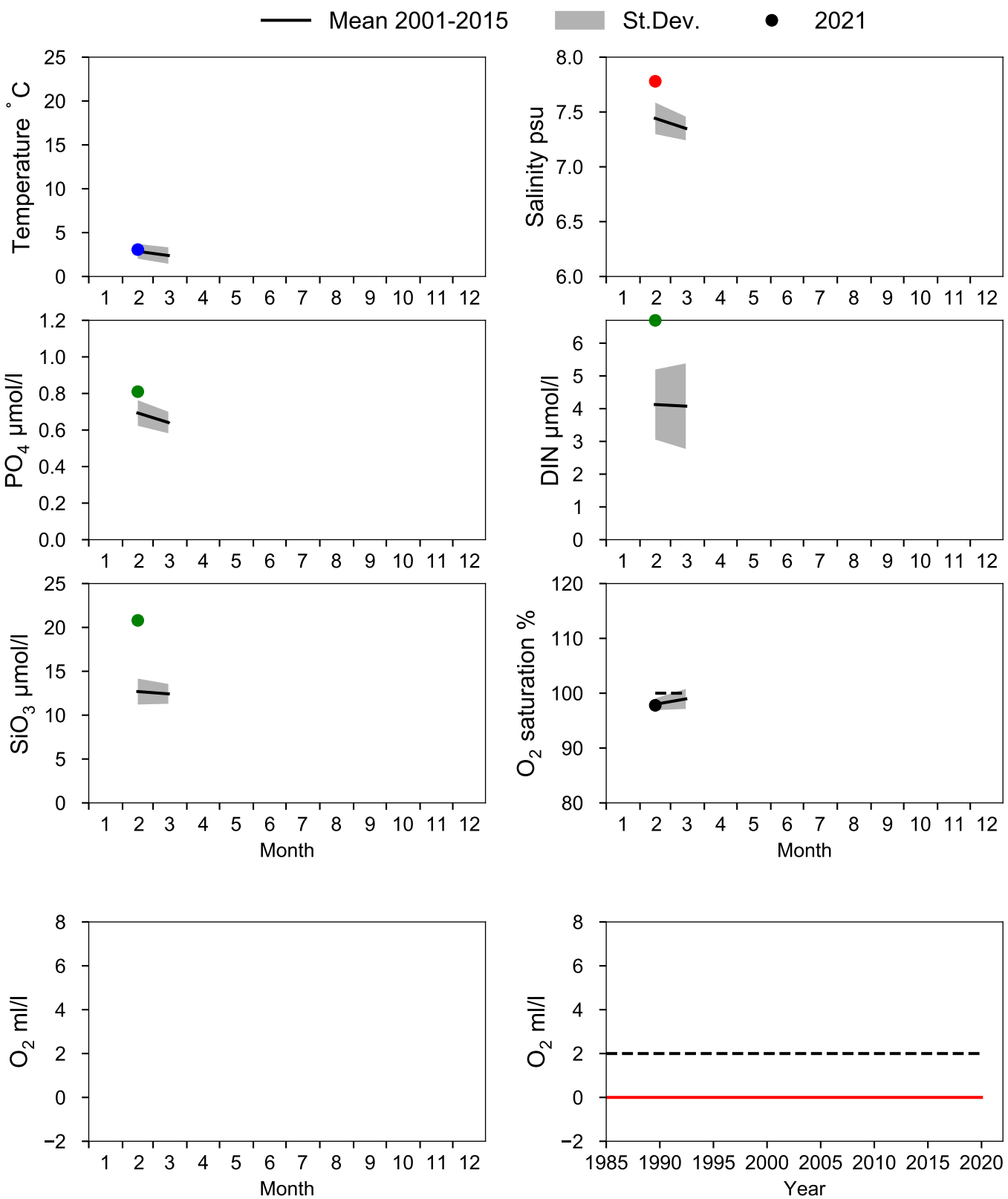
Vertical profiles PL-P63
February



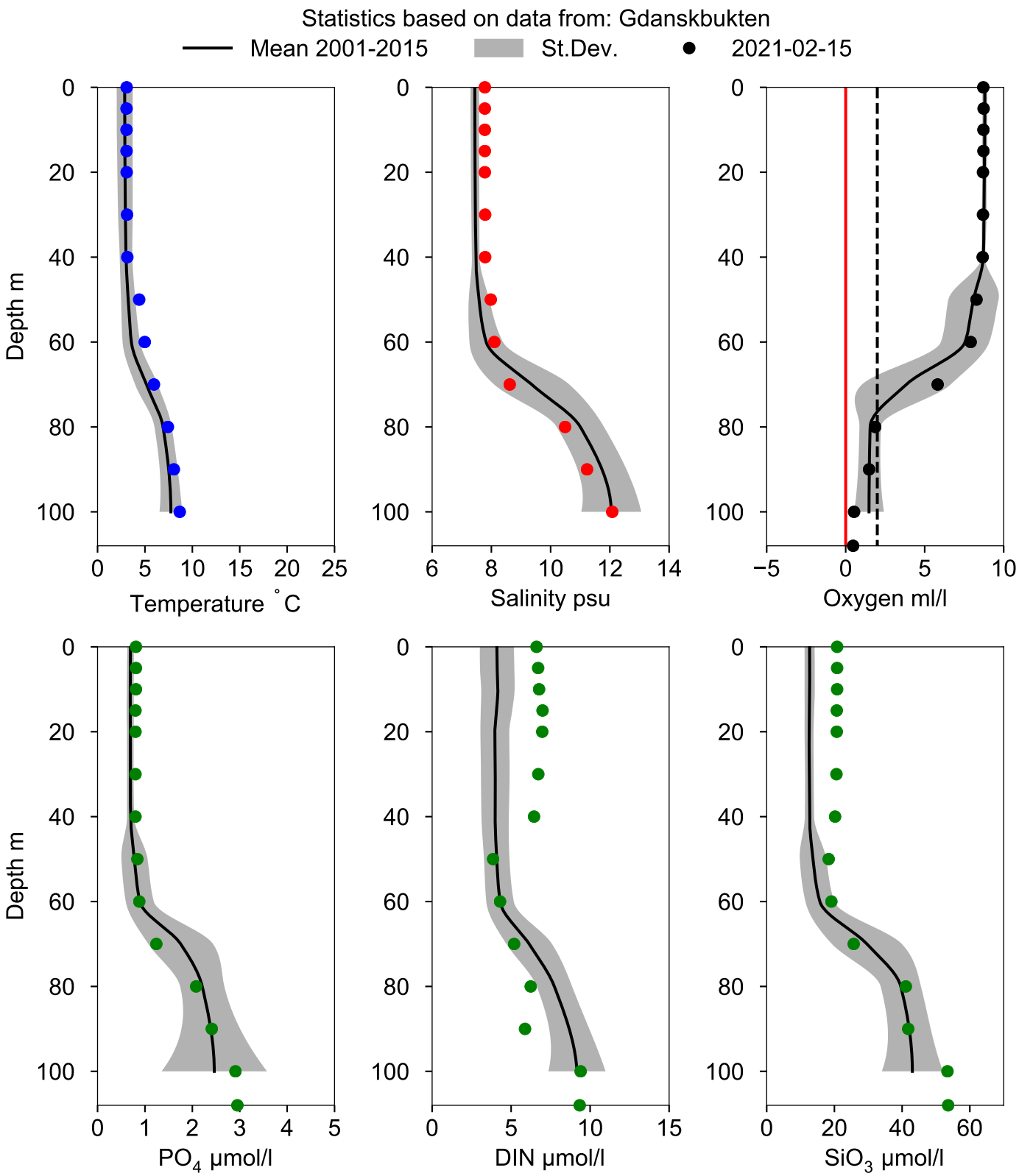
STATION PL-P1 SURFACE WATER (0-10 m)

Annual Cycles

Statistics based on data from: Gdanskbukten



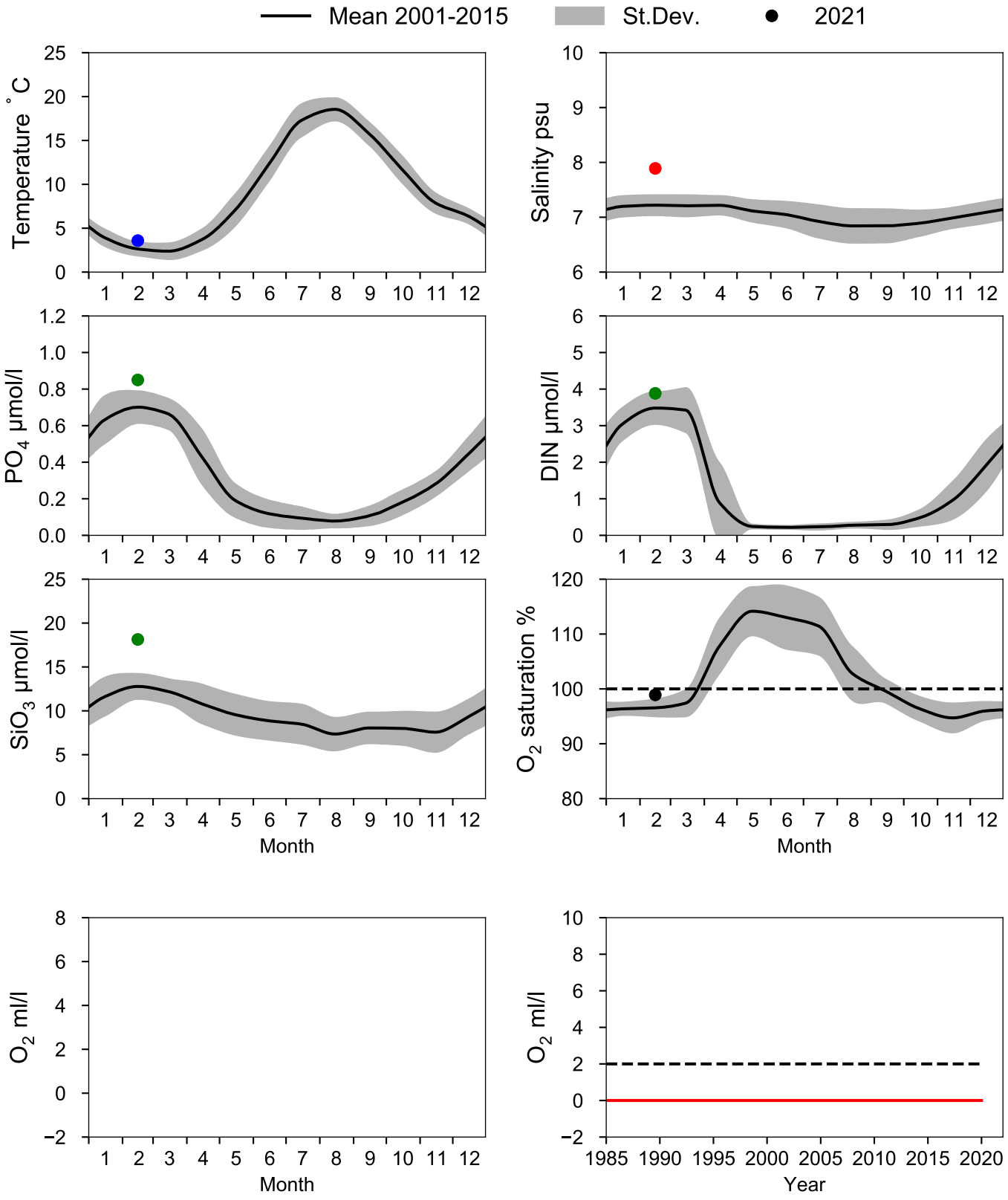
Vertical profiles PL-P1
February



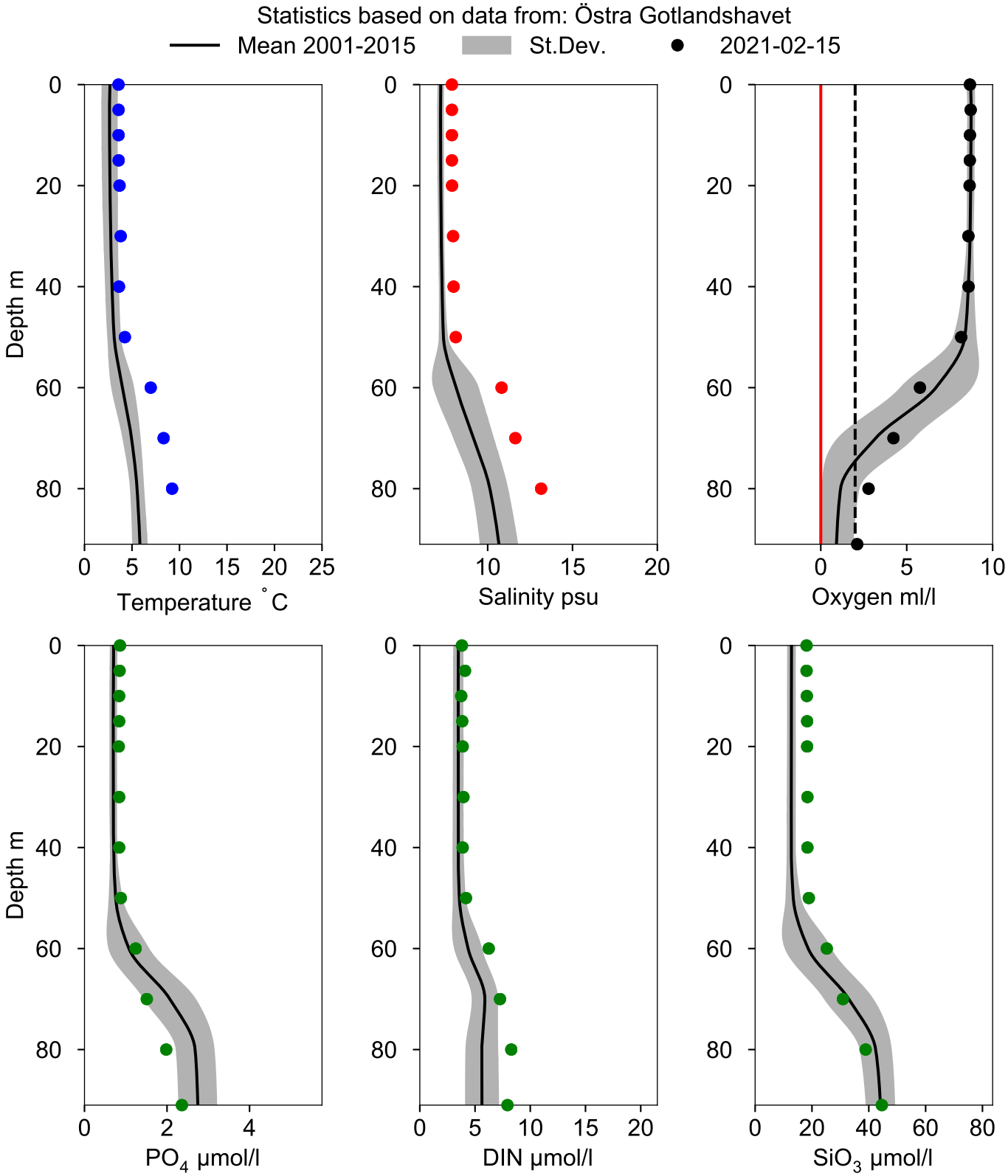
STATION BY7 STOLPE RÄNNA SURFACE WATER (0-10 m)

Annual Cycles

Statistics based on data from: Östra Gotlandshavet



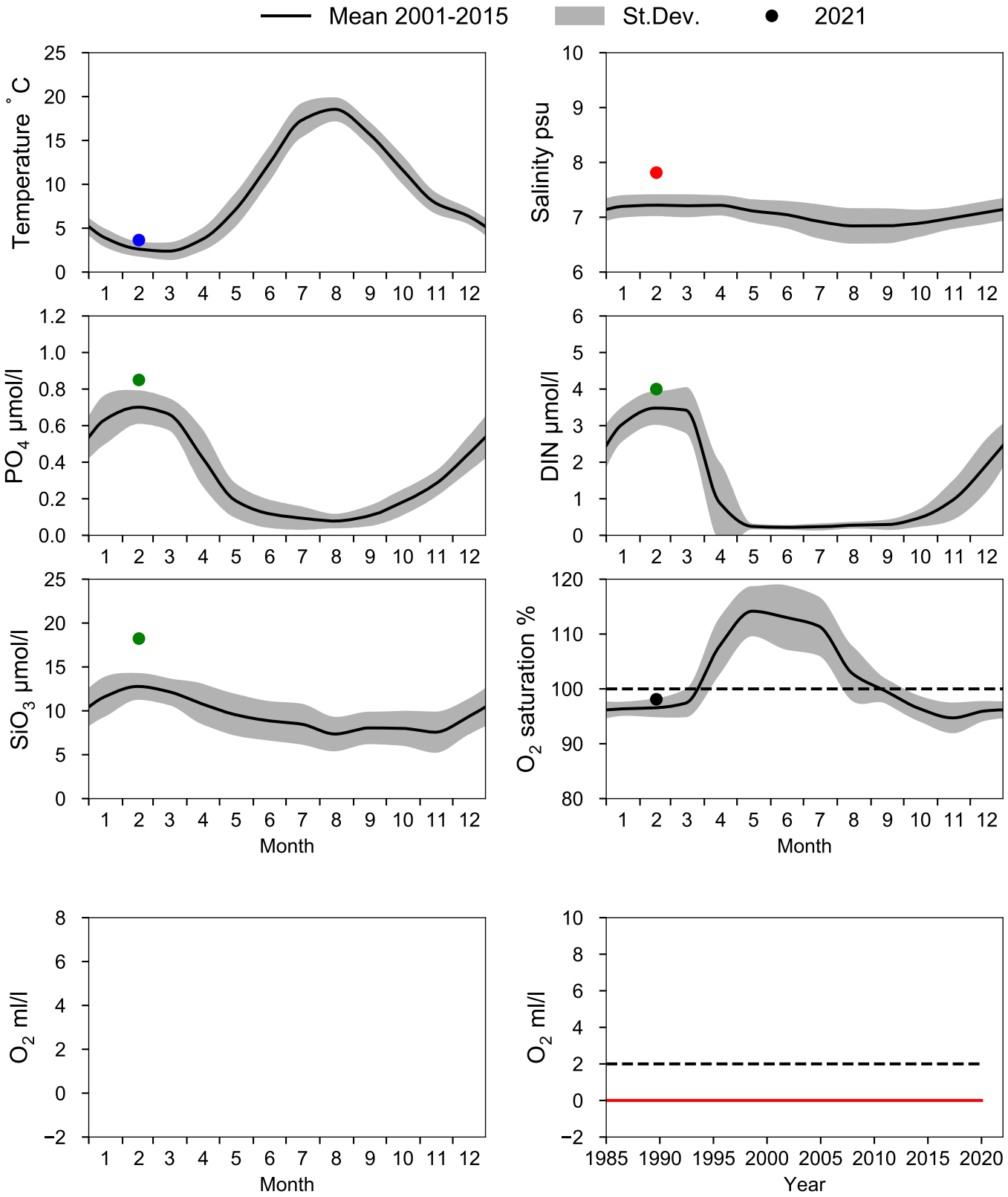
Vertical profiles BY7 STOLPE RÄNNA
February



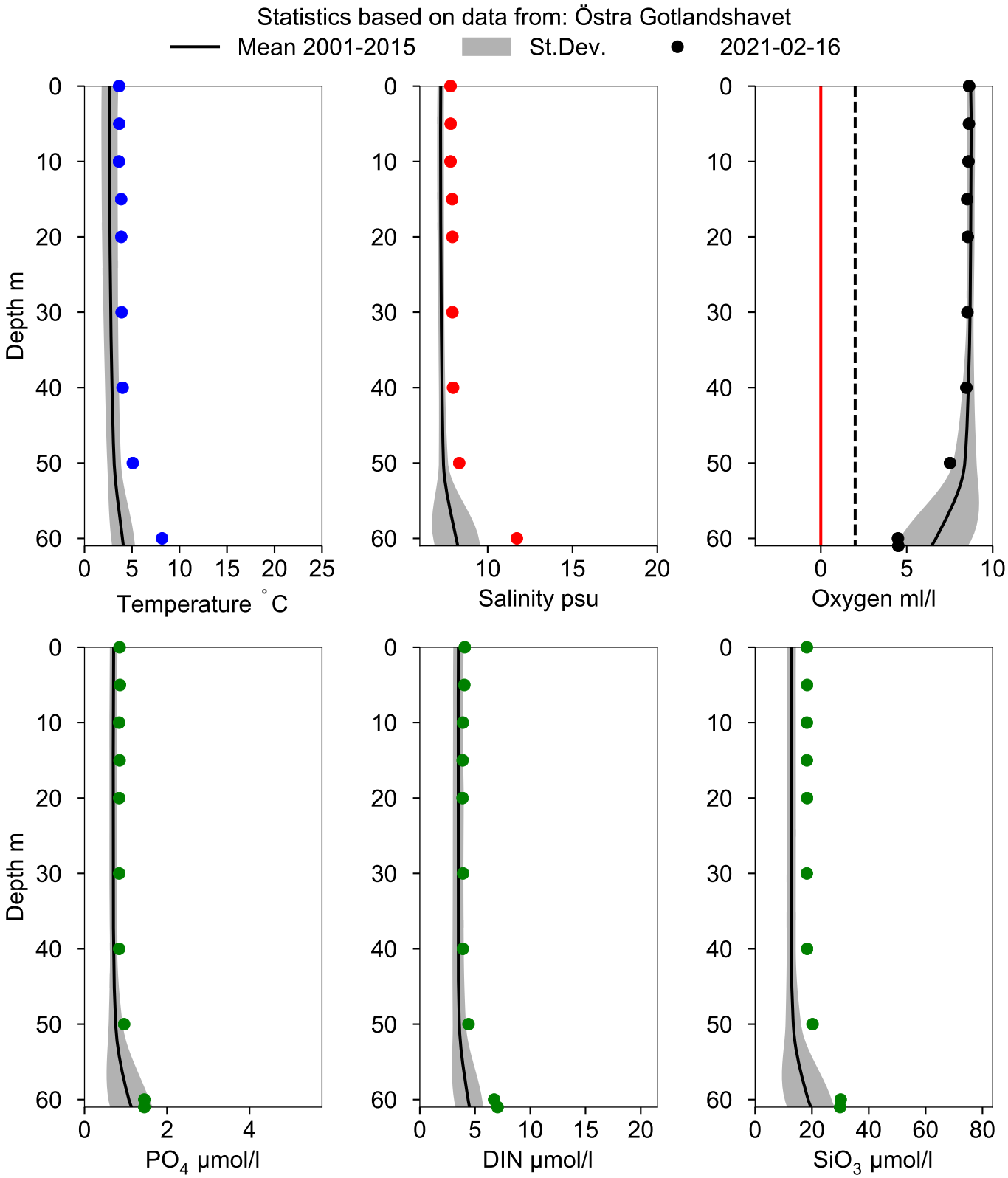
STATION STOLPE TRÖSKEL SURFACE WATER (0-10 m)

Annual Cycles

Statistics based on data from: Östra Gotlandshavet

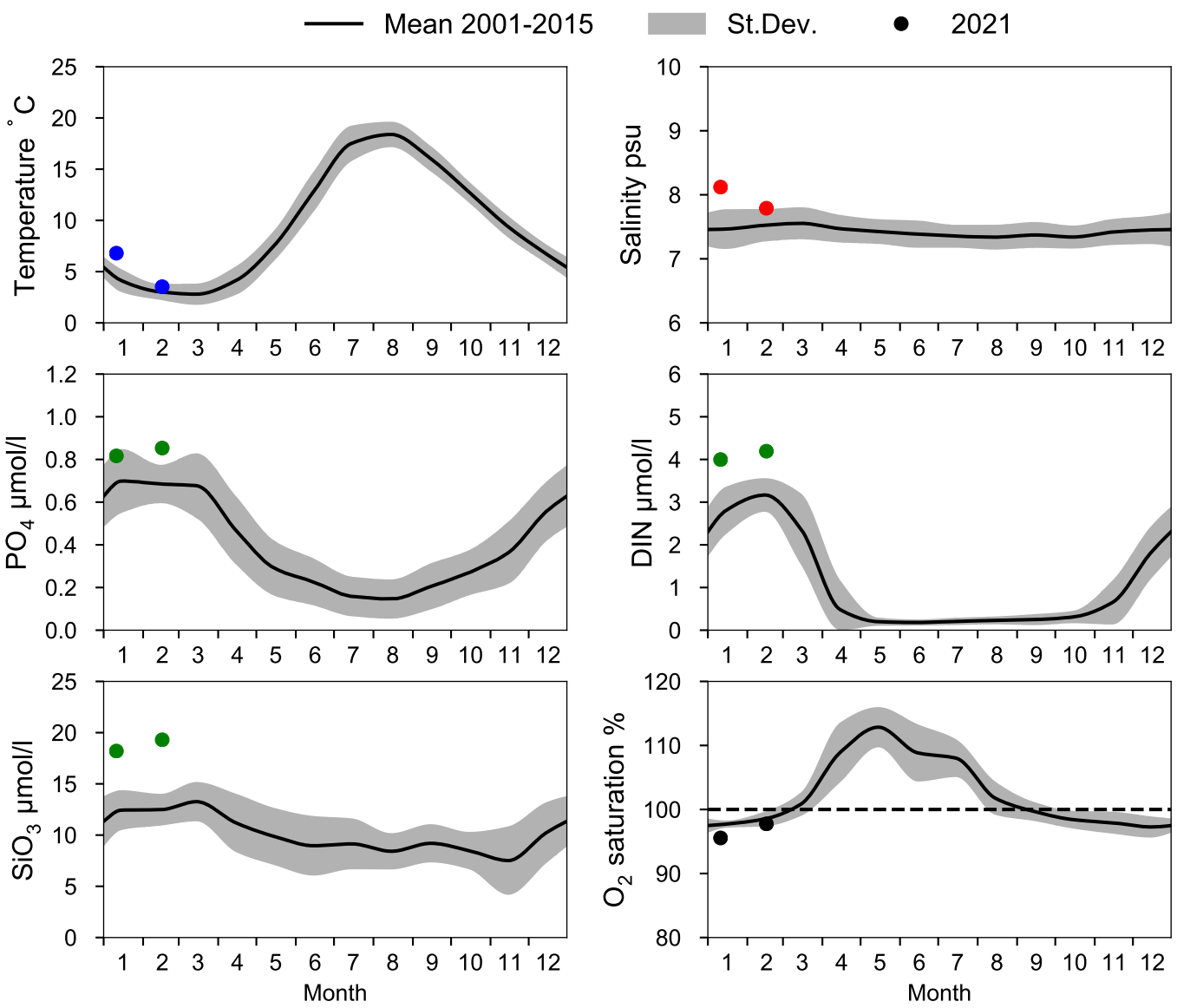


Vertical profiles STOLPE TRÖSKEL
February

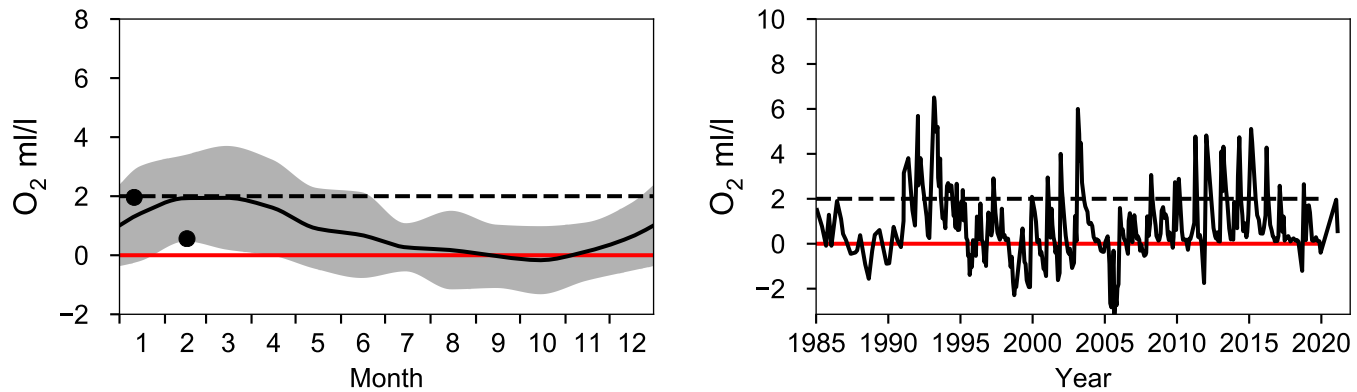


STATION BY5 BORNHOLMSDJ SURFACE WATER (0-10 m)

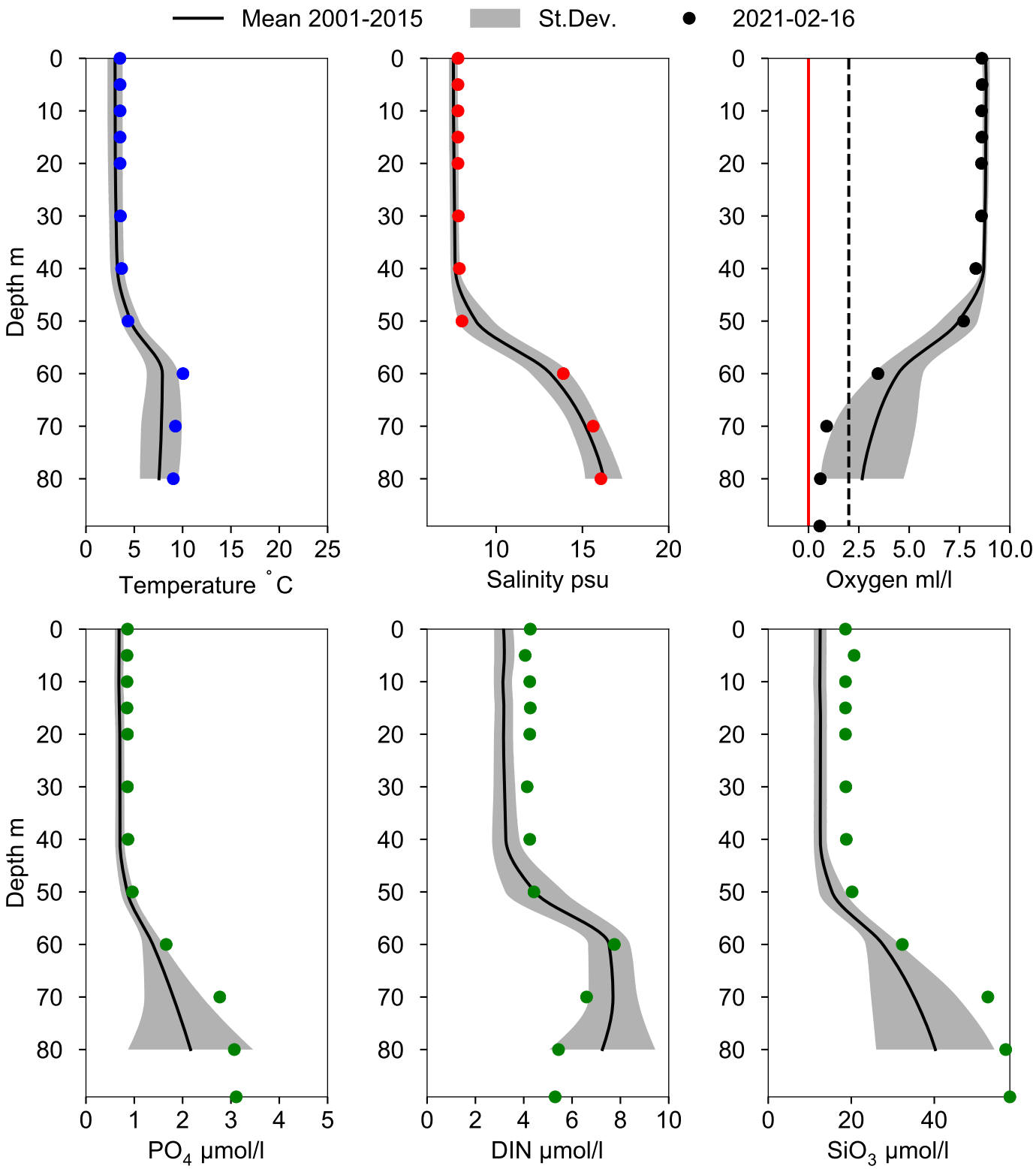
Annual Cycles



OXYGEN IN BOTTOM WATER (depth >= 80 m)

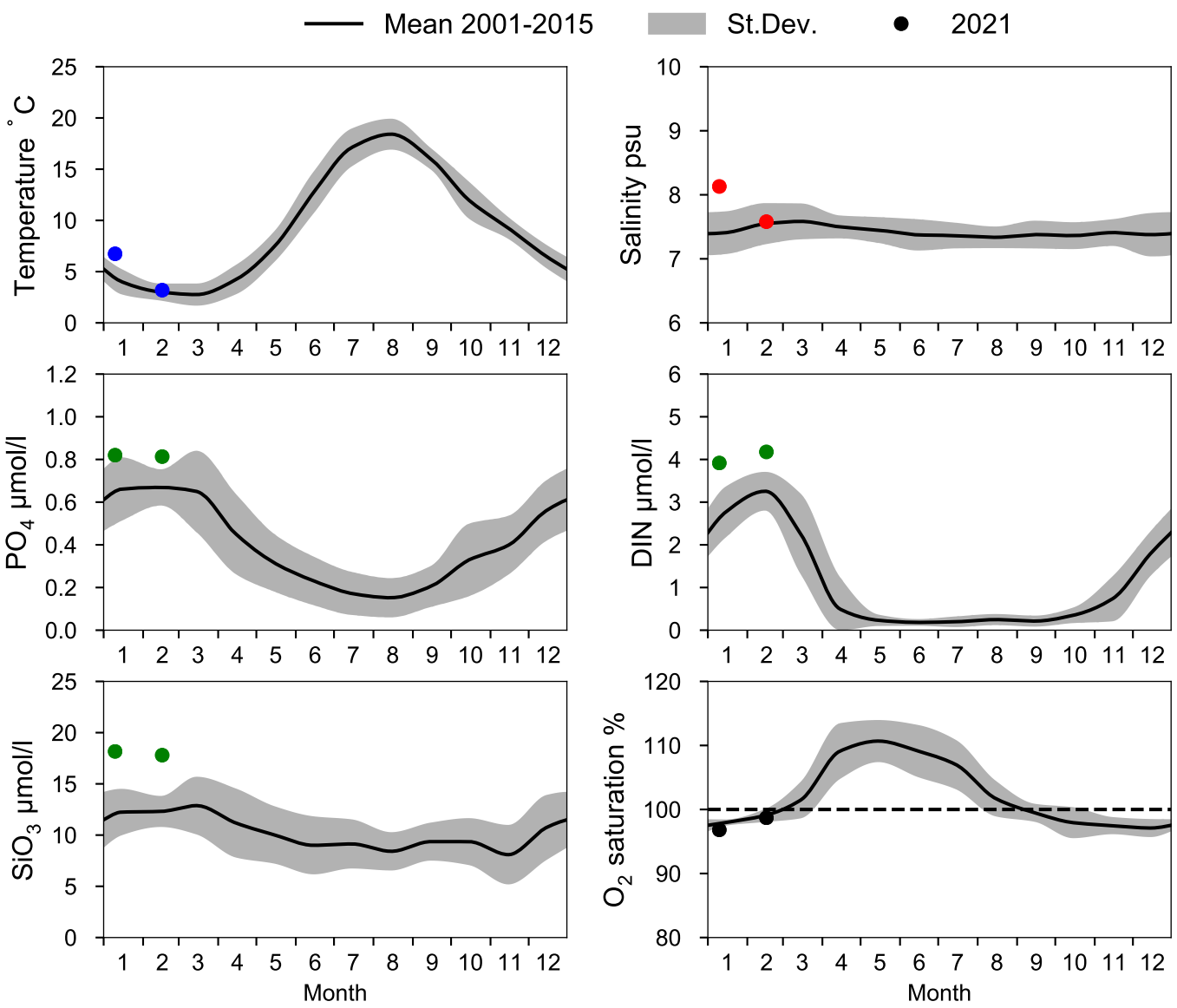


Vertical profiles BY5 BORNHOLMSDJ
February

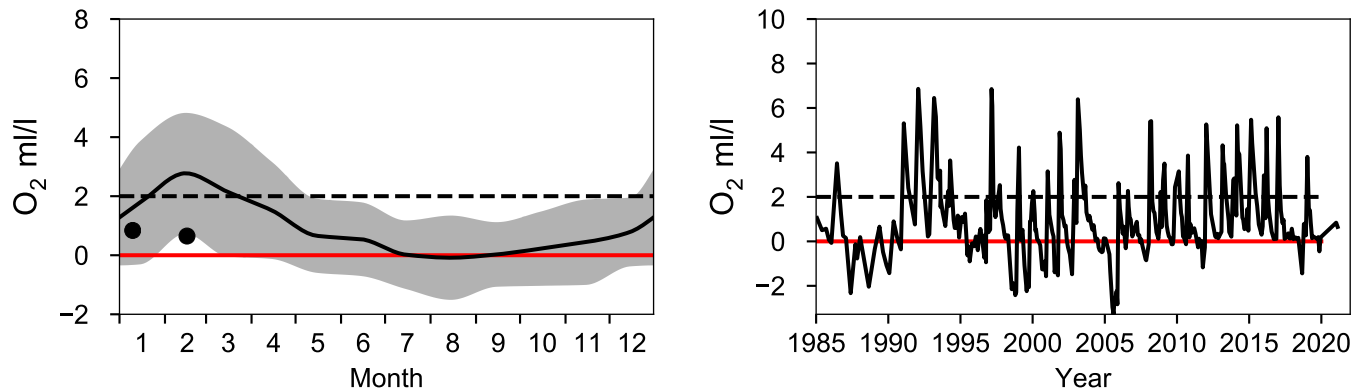


STATION BY4 CHRISTIANSÖ SURFACE WATER (0-10 m)

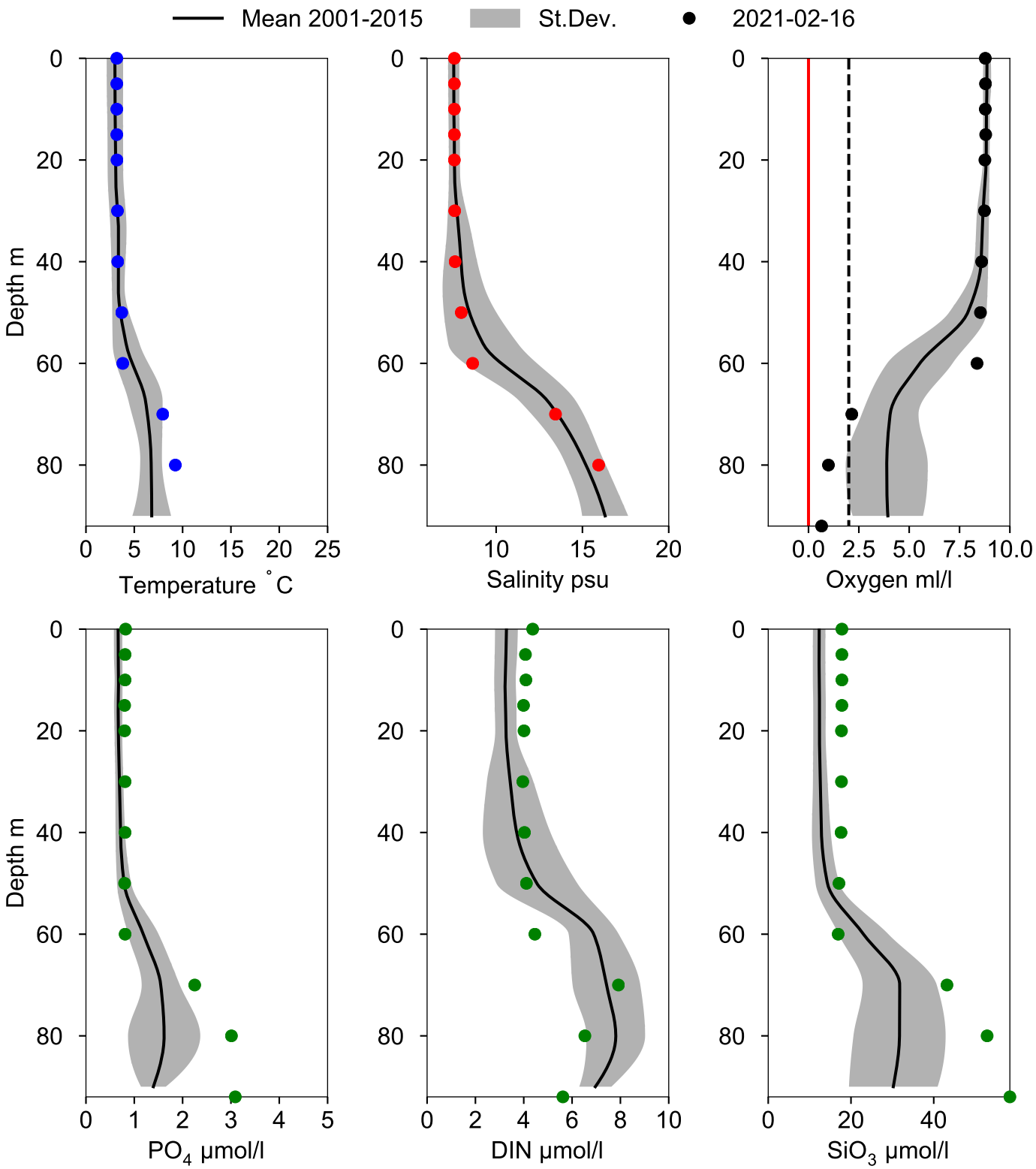
Annual Cycles



OXYGEN IN BOTTOM WATER (depth >= 80 m)

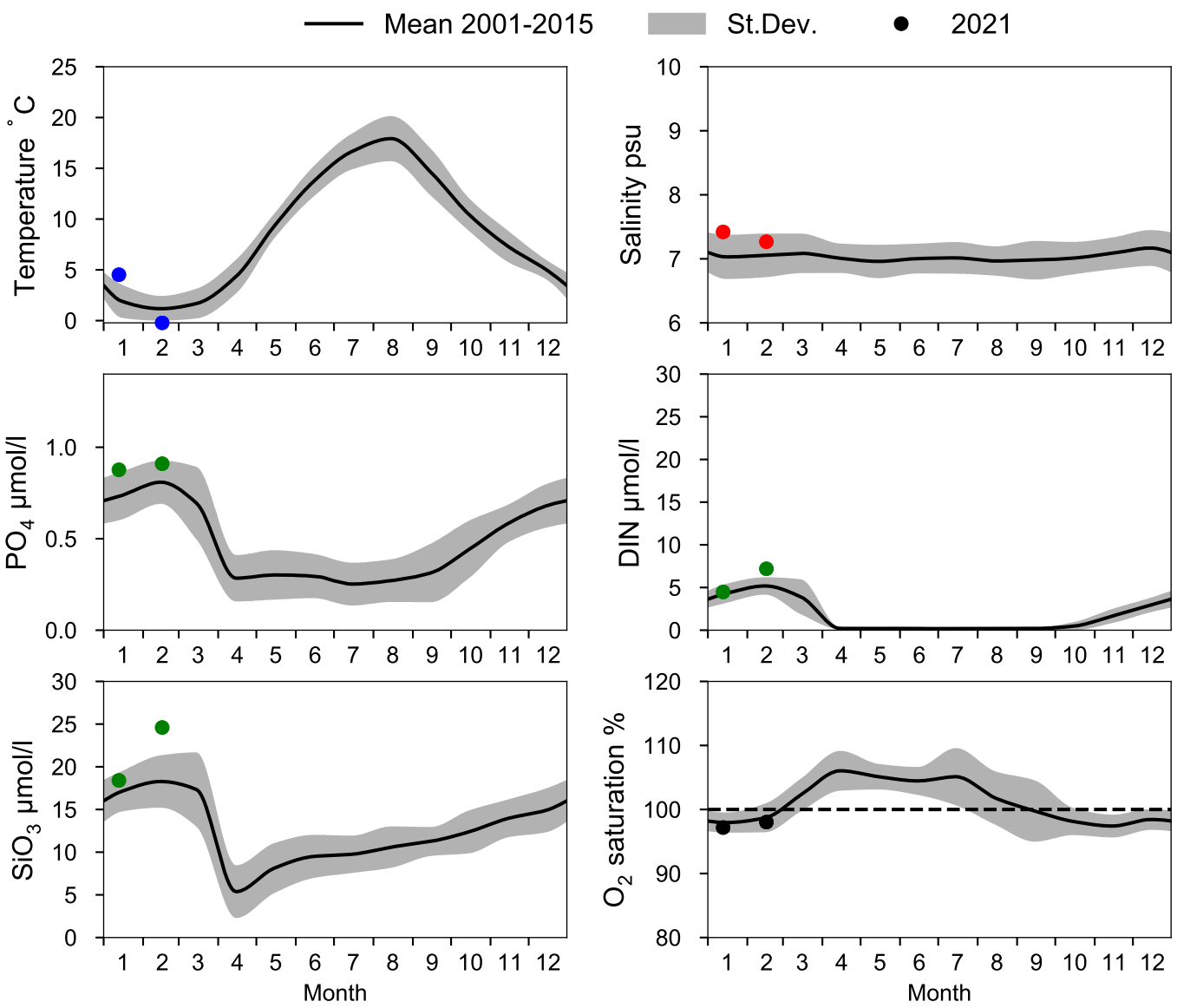


Vertical profiles BY4 CHRISTIANSÖ
February

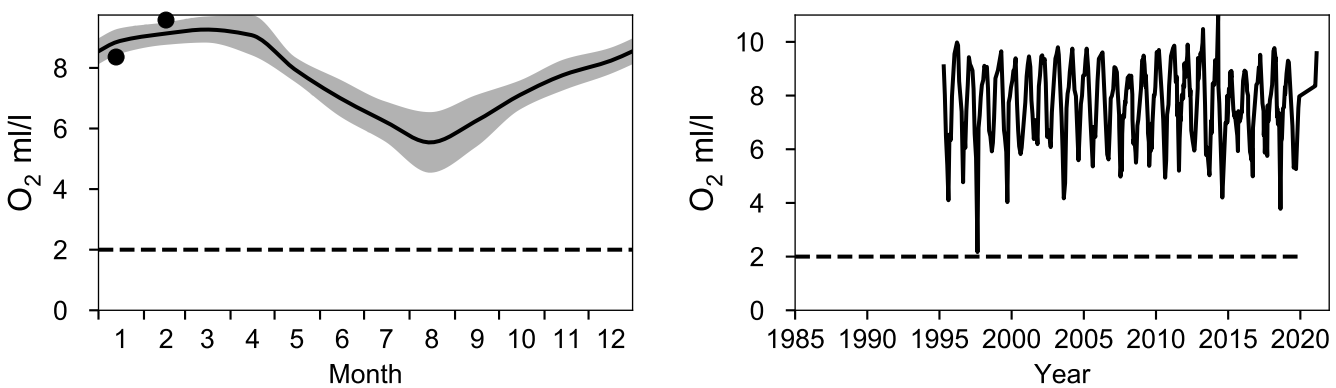


STATION REF M1V1 SURFACE WATER (0-10 m)

Annual Cycles



OXYGEN IN BOTTOM WATER (depth >= 15 m)



Vertical profiles REF M1V1
February