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Report from SMHI's marine monitoring cruise with R/V Svea

Photo: Sara Johansson, SMHI

Survey period: 2022-02-08 to 2022-02-15

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

Cooperation partners: Swedish University of Agricultural Sciences (SLU), Swedish Maritime Administration (SMA)

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SUMMARY

During the cruise, which is part of the Swedish pelagic surveillance program, the Skagerrak, the Kattegat, the Sound and the southern parts of the Baltic Proper were visited. In the Baltic Proper, nutrient mapping was carried out.

The temperature in the surface water was above normal for the month, except in the Northern Baltic Proper and the Western Gotland Basin. The surface temperature varied from just below 3 degrees in the entrance of the Gulf of Finland to just above 6 degrees in the Skagerrak.

The concentrations of nutrients in the surface water had increased slightly since January and were now approaching winter maxima. Nutrient levels were normal in the Skagerrak and Kattegat. In the Baltic Proper, where mapping of nutrients was carried out, the levels of phosphate and dissolved inorganic nitrogen were normal at most stations, while the levels of silicon were above normal at most stations.

The oxygen situation in the Kattegat's deep water was good, no oxygen deficiency, i.e. levels below 4 ml/l, were found. The oxygen situation in the Baltic Proper is still poor with acute oxygen deficiency (<2 ml/l) from 60–80 m. In the basins around Gotland, hydrogen sulphide was measured from 80–100 m. In the Bornholm Basin, the bottom water was anoxic and hydrogen sulphide was measured from a depth of 80 m. In the Bornholm Basin, the bottom water was anoxic with low concentrations of hydrogen sulphide, while no hydrogen sulphide was measured in Hanö Bay, but the oxygen concentration in the bottom water is close to zero. In Gdansk Bay, there was acute oxygen deficiency from 80 m, but no hydrogen sulphide was measured. No oxygen deficiency was measured in the Arkona basin.

SMHI's next regular expedition is planned March 17-23 with R/V Svea.

RESULTS

The cruise was performed onboard R/V Svea and began in Lysekil on 8 February and ended in Kalmar on 15 February.

During the expedition's first 24 hours there was a westerly wind around 15 m/s which then decreased to weaker south-easterly winds until the expedition's fourth day when winds again increased. The highest windspeeds were recorded on February 13th with 18 m/s in the eastern parts in the Northern Baltic Proper. The air temperature varied between 4-6 degrees in the North Sea and between 0-4 degrees in the Baltic Proper.

Extra phytoplankton samples were taken at the Å17, Släggö and Anholt E for a project at Uppsala University. Water samples from just below the halocline were also taken at station Anholt E in the Kattegat and BY38 in the Western Gotland basin for a project at the University of Gothenburg.

Svea's instruments for continuous measurements of surface water and current (Ferrybox and ADCPs) were in operation throughout the expedition. Svea's instruments for measuring profiles while in transit were used (MVP, Moving Vessel Profiles) for four transects, Å13-Å16 in the Skagerrak, Kriegersflak in Arkona, across Stolpe channel and between the stations BY38-BY36-BY32 in Western Gotland basin.

During the expedition, the IOW in Germany was also on an expedition with R/V Elisabeth Mann Borgese and several stations in the Arkona and Bornholm basins were sampled at intervals of only a few hours.

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

Data can be downloaded from SHARKweb here: https://sharkweb.smhi.se/hamta-data/

The Skagerrak

The cooling of the surface water (0–10 m) had stopped due to the mild weather and the temperature was about the same as in December and January. The temperature varied between 5-6 degrees in the surface water, which is slightly above normal for the month. The colder and less saline surface water was separated from the deep water, i.e. the stratification was found at a depth of about 20-30 meters closest to the coast, about 10 m deeper compared to January. Further out in the Skagerrak, there was little stratification in the water column. At station Å17 the halocline was situated at a depth of about 50 meters, about 20 m deeper than in January. The salinity of the surface water was slightly above normal at all stations and varied between 31 psu at Släggö and 34 psu at Å17.

The increase in nutrients in the surface water, which normally occurs during the winter, had continued since January and the concentrations were normal for the month. At the stations Å13 and P2, the concentration of silicate has decreased, but the decrease is an effect of a larger influence of North Sea water with higher salinity and lower silicate concentration rather than consumption by phytoplankton. In the deep water, the concentration of nutrients was normal for the month, apart from the station Släggö where the concentration of phosphate and dissolved inorganic nitrogen were below normal. At station Å17 where the halocline was unusually deep and the well-mixed surface

layer stretched down to 50 m, the concentration of phosphate and inorganic dissolved nitrogen was below normal between 20-50 m.

No oxygen deficiency was noted in the Skagerrak. At the coastal station Släggö, where oxygen deficiency was measured in the bottom water in November, the levels increased to around 5 ml/l in December and January, and at the measurement now in February it had increased to 6.8 ml/l.

The plankton activity, assessed on the basis of chlorophyll fluorescence measured with a CTD probe, showed a low activity in the surface layer throughout the Skagerrak.

The Kattegat and the Sound

The temperature in the surface water (0–10 m) was above normal at all stations and varied between 4-5 degrees, lowest in the Sound. The salinity had increased markedly since January and was above normal in the surface water at all stations, from about 21 psu in the Sound to about 30 psu at Fladen. A weak halocline was situated around 10 m. In the Sound, there was a strong southward current of about 2.7 knots (at the station Flinten-7). Salinity and temperature were normal in the deep water (below the halocline).

The concentration of phosphate and dissolved inorganic nitrogen in the surface water had increased further since January, while the concentration of silicate had decreased slightly or was unchanged. All nutrients were within the normal range for the month. In the deep water, the concentration of dissolved inorganic nitrogen was lower than normal, phosphate and silicate were within the normal range but close to lower than normal.

The oxygen situation in the Kattegat's deep water was good. No oxygen deficiency, i.e. levels below 4 ml/l, were noted. The lowest oxygen concentration was measured at station Anholt E where it was just below 5 ml/l, at other stations the concentration was above 6 ml/l in the bottom water.

The plankton activity, assessed on the basis of chlorophyll fluorescence measured with a CTD probe, showed a low activity in the surface layer throughout the Kattegat.

The Baltic Proper

The temperature in the surface water was above normal, about 4 degrees, in the southern basins (Arkona, Bornholm and Eastern Gotland basin) otherwise the temperature was normal, around 3 degrees (Northern Baltic Proper and Western Gotland basin). The water was well mixed down to the permanent halocline and the temperature was above normal from the surface down to the permanent halocline at all stations where the temperature in the surface water was above normal. At most stations, the temperature below the halocline was above normal, most clearly in the Western Gotland basin, where the temperature was above normal in the deep water at all stations. The salinity in the surface water was above normal from Stolpe chanel in the south and at almost all stations to the east and north (7.2–7.7 psu) of this, to the west of Stolpe chanel the surface salinity was normal (7.6–8.6 psu). The permanent halocline was around 70–80 m in the East Gotland Basins, in the eastern parts of the North Baltic Proper and in the Gulf of Gdansk. In the Western Gotland basin, the halocline was slightly shallower, about 60–70 m and less sharp. In the Arkona basin there was a sharp halocline at 30-40 m where the salinity increased to a maximum of 18 psu in the bottom water at station BY1, this indicates that saline dense water had entered through the Sound after strong winds in recent weeks. In the Bornholm Basin and in Hanö Bay, the salinity was normal around 15 psu in the bottom water and the halocline was around 50 m.

In the Baltic Proper, the winter nutrient mapping was carried out. This means that more stations than usual are visited in the area to get an idea of the nutrient situation in the entire area. During winter, when plankton activity is at its lowest, the nutrients are usually at their highest and reflect how much nutrients are available in the ecosystem before the spring bloom. At this mapping, the levels of phosphate and dissolved inorganic nitrogen were normal in the surface water at most stations. The concentration of dissolved inorganic nitrogen was lower than normal at only three stations in the East Gotland Basin (Stolpe chanel, Stolpe sill and BCS III-10). The concentration of phosphate was normal at all stations except one where it was slightly above normal (BY27 furthest east in the North Baltic Proper). At station 441 Stevns Klint just inside the Sound, the concentration of dissolved inorganic nitrogen was above normal, which reflects the inflow of water with higher salinity and nitrogen from the Kattegat. The concentration of silicate deviates most, with higher concentrations than normal at most stations, the exceptions are some stations the Western Gotland Basin, Hanö bay and Bornholm Basin.

In the bottom water, all nutrient concentrations were above normal at several stations, but it was the high concentration of dissolved inorganic nitrogen that deviated most from normal. At the station BY15 Gotland deep in the middle of the Eastern Gotland Basin, the concentration of dissolved inorganic nitrogen was twice as high as normal, 40 µmol/l compared to 15-year average which is 20 µmol/l in the bottom water. In the Western Gotland Basin, the concentrations of dissolved inorganic nitrogen were lower but still far above normal, around 15 µmol/l compared with the normal around 5–7 µmol/l. In the northern parts of the Eastern Gotland Basin the levels were lower and within the normal range (5–10 µmol/l) and in the North Baltic Proper once again above normal (> 10 µmol/l).

The oxygen situation in the Baltic Proper is still very serious with acute oxygen deficiency (<2 ml/l) from 70–80 m, except in Hanö Bay where there is acute oxygen deficiency already at 60 m. In the Western Gotland Basin, hydrogen sulphide (total absence of oxygen) was measured from 80 m and in the Eastern Gotland Basin slightly deeper, from 90–100 m. In the Bornholm Basin, the bottom water was anoxic with low concentrations of hydrogen sulphide, while no hydrogen sulphide was measured in Hanö Bay, where the oxygen concentration in the bottom water was close to zero. In Gdansk Bay, there is an acute lack of oxygen from 80 m, but no hydrogen sulphide was measured.

The plankton activity, assessed on the basis of chlorophyll fluorescence measured with a CTD probe, showed low activity at all stations, which is normal during the winter period.

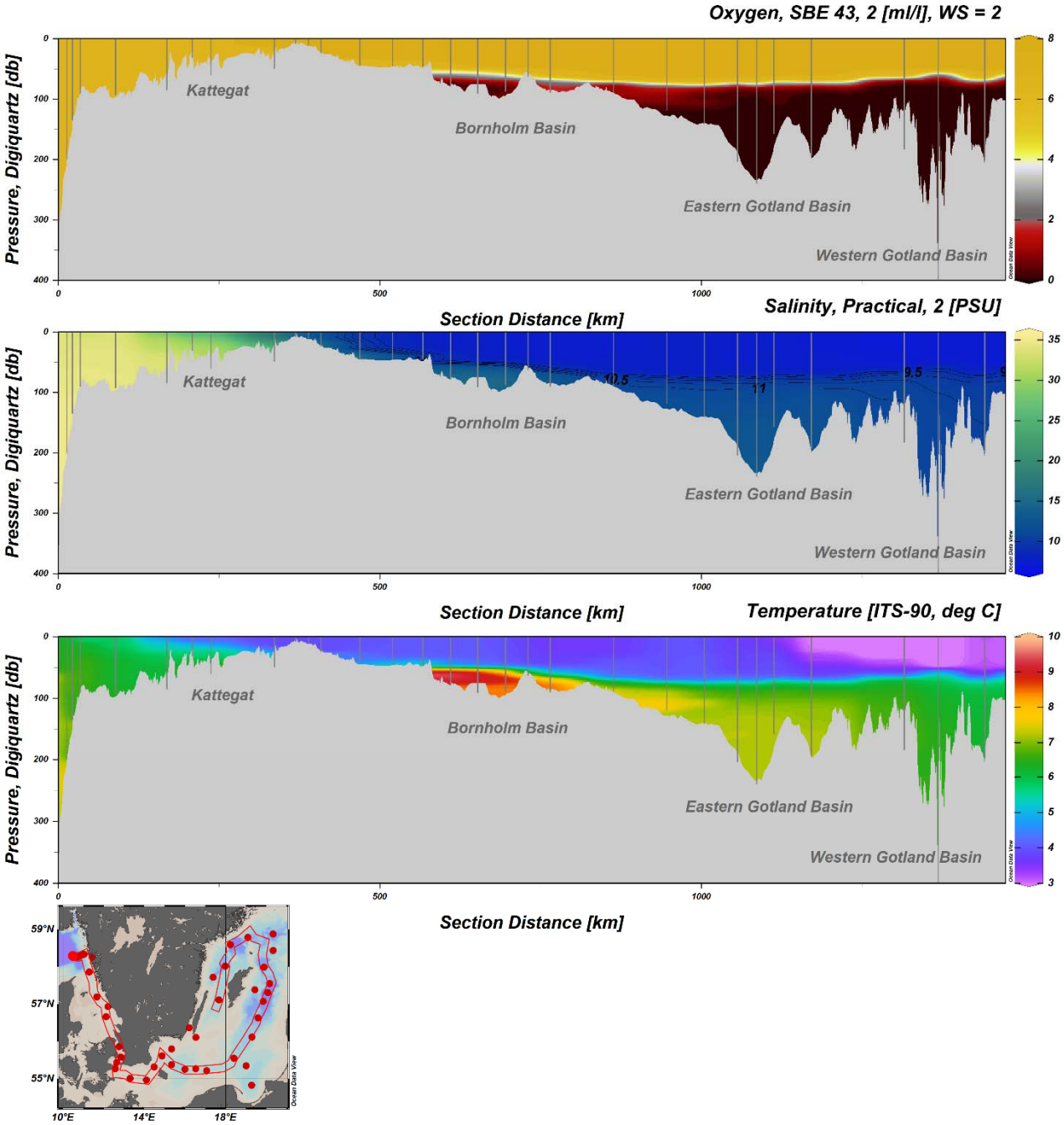


Figure 1. Transect showing CTD measurements of dissolved oxygen, salinity and temperature from Skagerrak, Kattegat, the Sound and to the Bornholm Basin. Data from major parts of the Baltic Proper is missing.

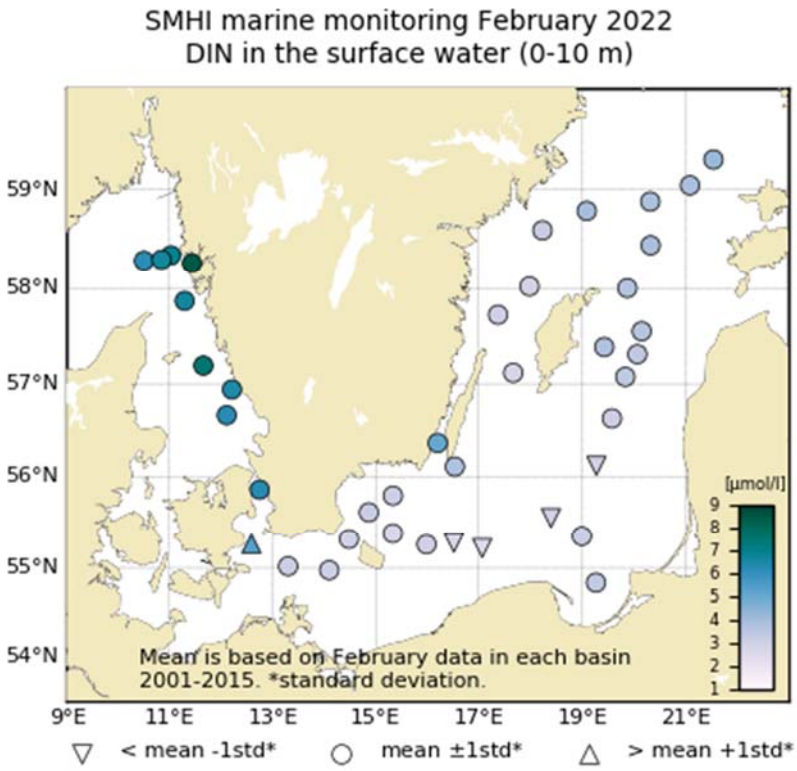


Figure 2. Concentration of dissolved inorganic nitrogen in the surface water (0-10m).

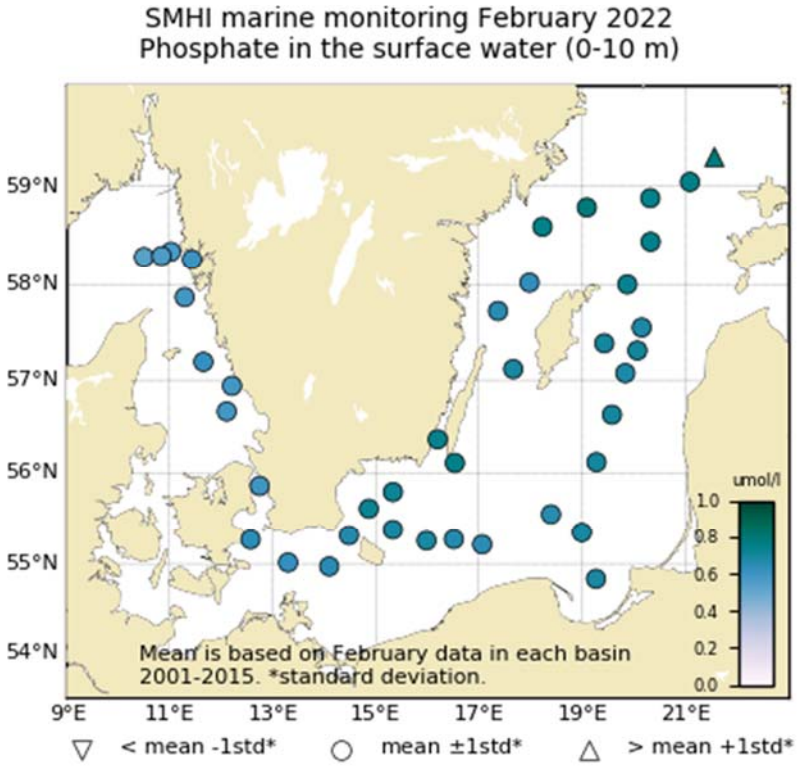


Figure 3. Concentration of phosphate in the surface water (0-10m).

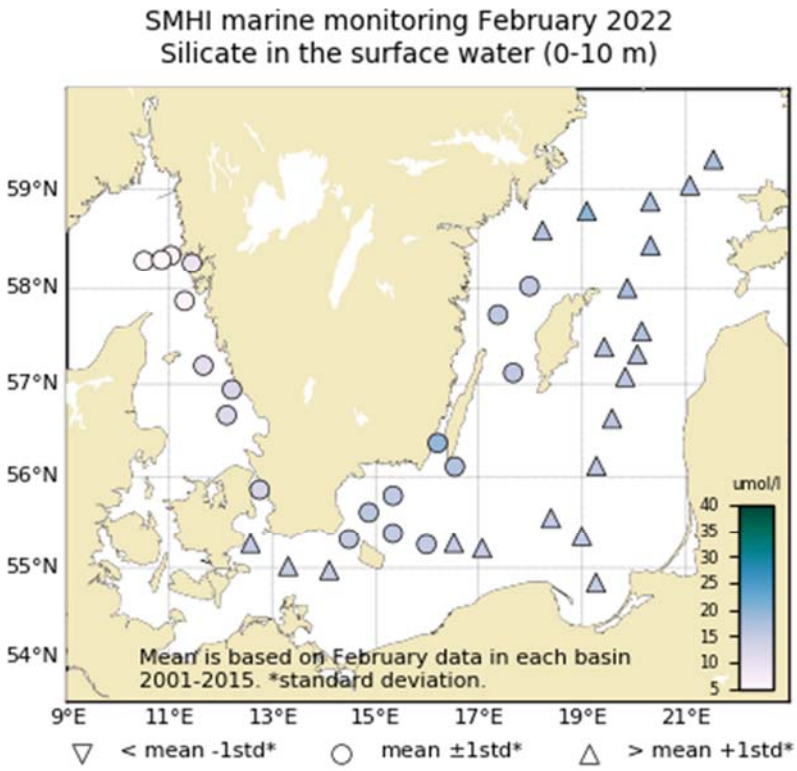


Figure 4. Concentration of silicate in the surface water (0-10m).

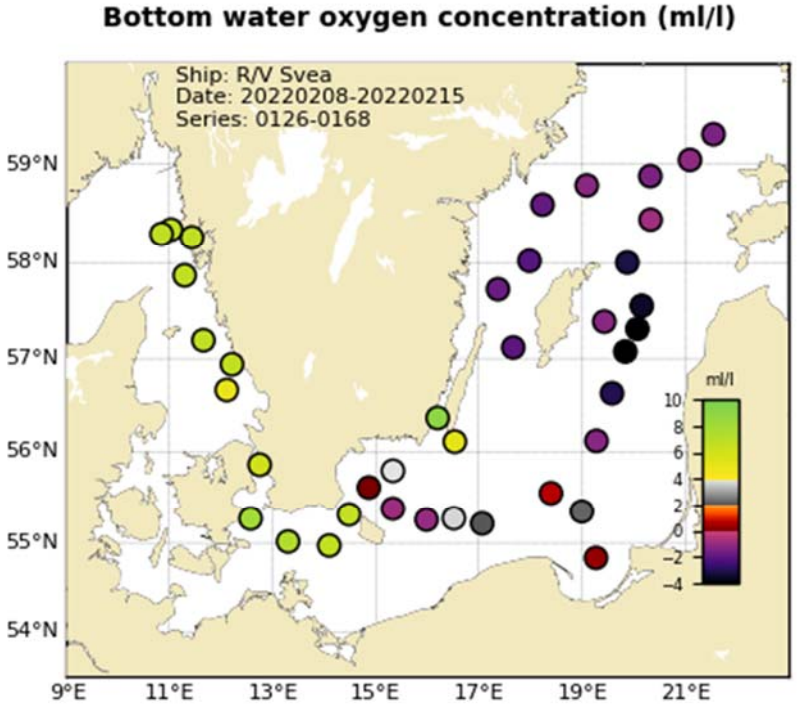


Figure 5. Oxygen concentration in the bottom water.

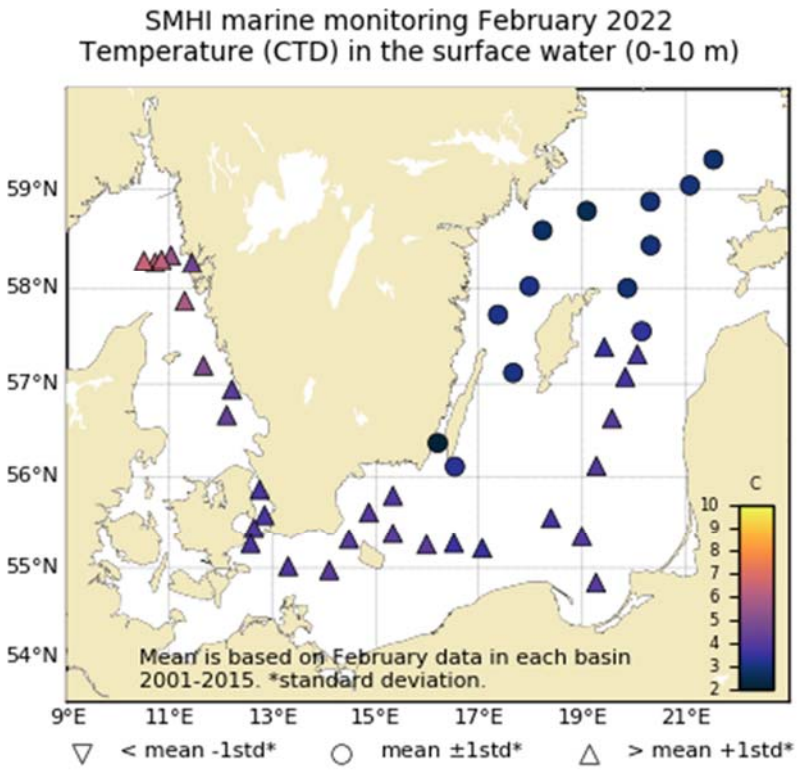


Figure 6. Temperature in the surface water (0-10m).

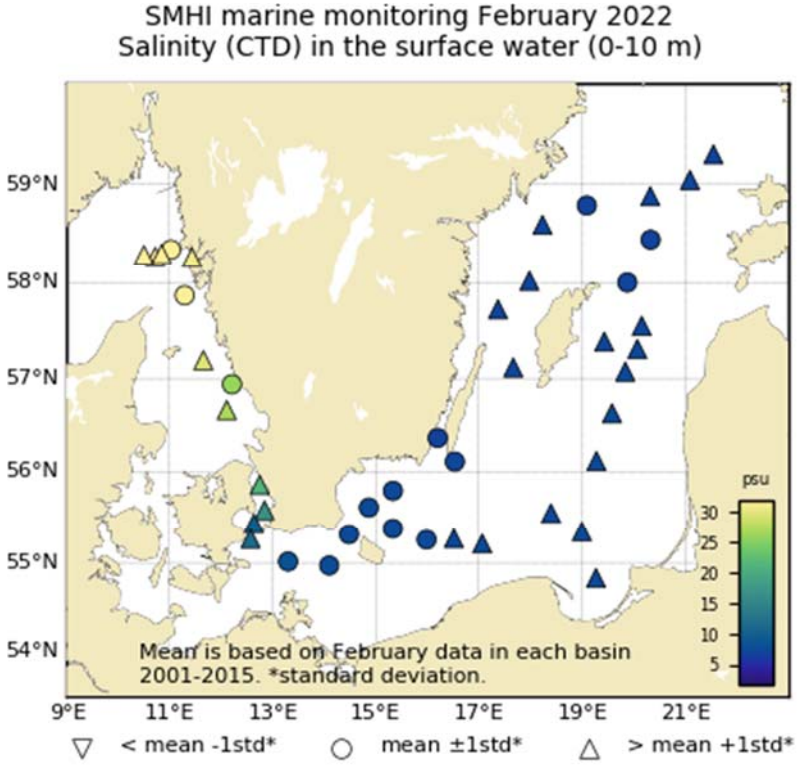


Figure 7. Salinity in the surface water (0-10m).

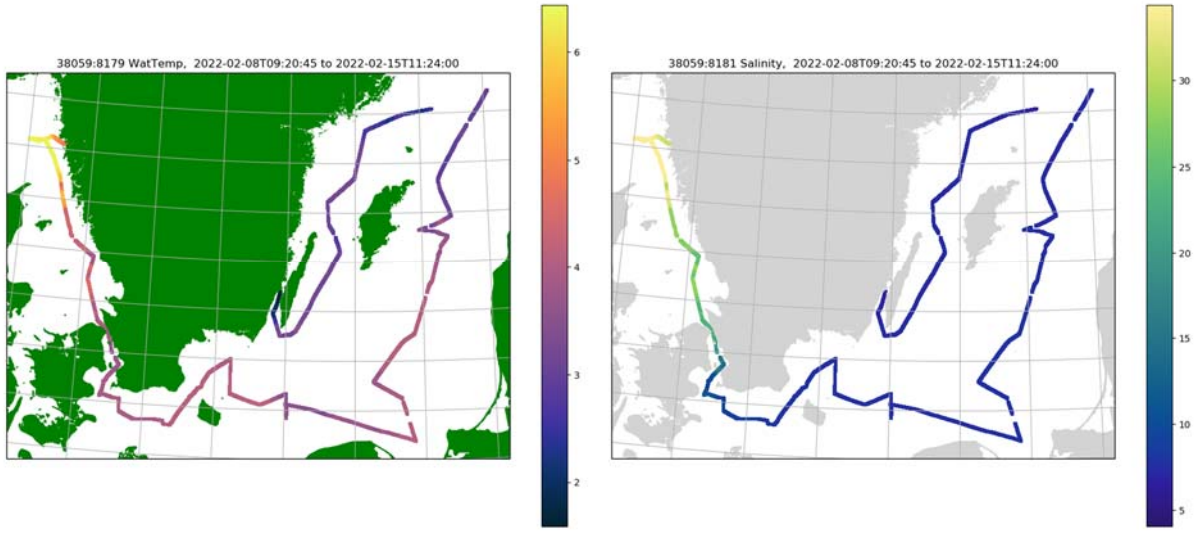


Figure 8. Surface water temperature (left) and salinity (right) from the ferrybox on Svea. Data has only undergone a rough quality control.

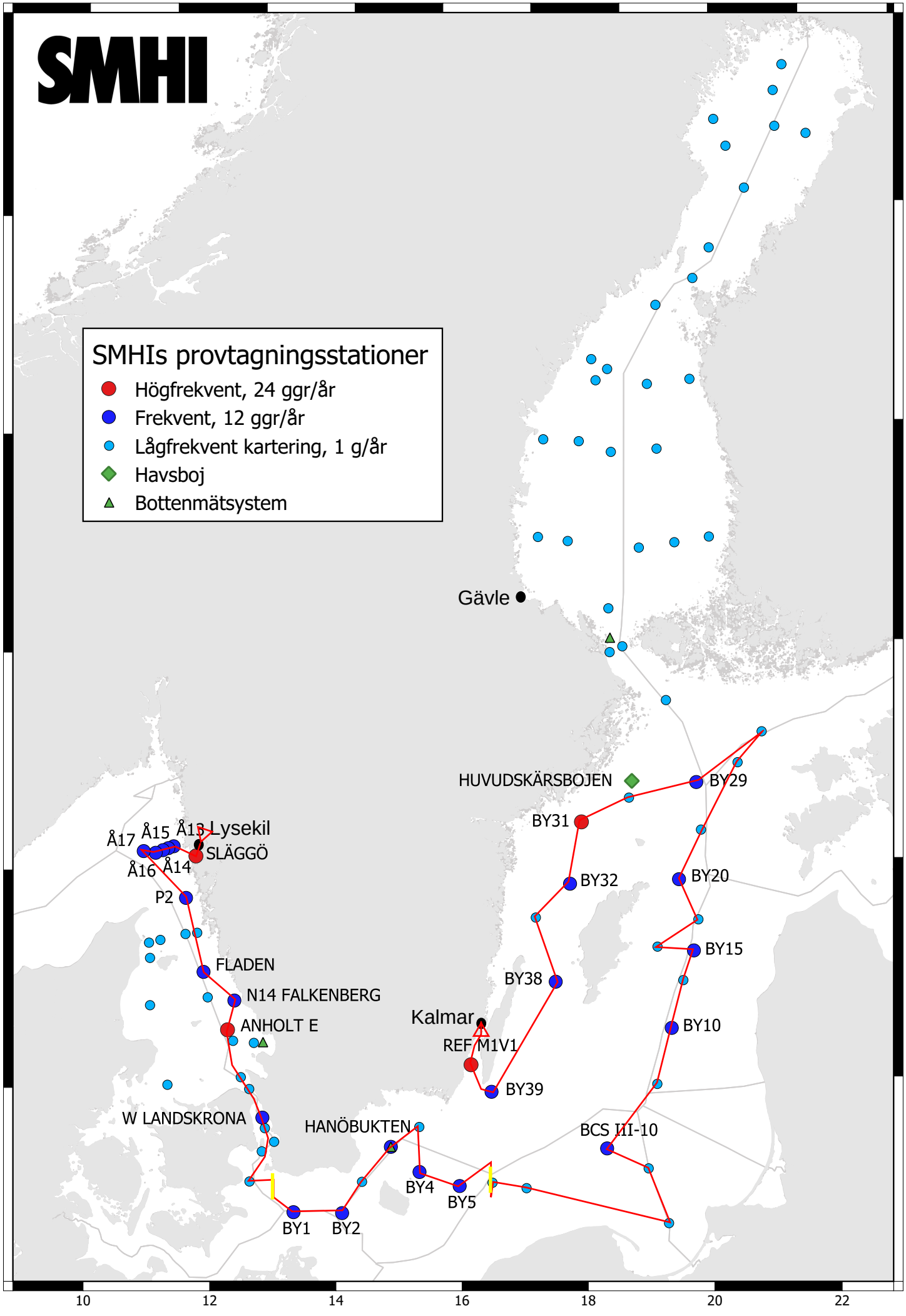
PARTICIPANTS

Name	Role	Institute
Lena Viktorsson	Chief scientist	SMHI
Kristin Andreasson	Quality manager	SMHI
Madeleine Nilsson		SMHI
Ann-Turi Skjevik		SMHI
Anna-Kerstin Thell		SMHI

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

SMHI
Havs
och Vatten
myndigheten


SMHI
SMHIs provtagningsstationer
Högfrekvent, 24 ggr/år
Frekvent, 12 ggr/år
Lågfrekvent kartering, 1 g/år
Havsboj
Bottenmätsystem
Gävle
HUVUDSKÄRSBOJEN
BY29
BY31
BY32
BY20
BY15
BY38
BY10
Kalmar
REF M1V1
BY39
BCS III-10
Å17
Å15
Å13
Lysekil
SLÄGGÖ
Å16
Å14
P2
FLADEN
N14 FALKENBERG
ANHOLT E
W LANDSKRONA
HANÖBUKTEN
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22

Date: 2022-02-21
Time: 17:00

Ship: SE
Year: 2022

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	vel	Air temp C	Air pres hPa	WCWI elac aove 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 P h o t _ b t l	D O x y _ b t l	D O x y _ c t d	H 2 S	P h o s	P o t	N t r a	N t r a	N t r a	A m o n	A t o t	A l k y	S i o 3 - s i	H u m u s	C o m v i s	C o n t _ a m p
0126	03	FIBG27	BAS...	SLÄGGÖ	5815.59	01126.15	20220208	1000	74	4	27	14	6.6	1002	0030	xxx-	9	9	x	x	x	x	-	x	x	-	x	x	x	x	x	x	-	x	-	x	-
0127	03	SKEX14	BAS...	Å13	5820.36	01101.76	20220208	1245	90		27	14	6.5	1004	0040	x---	10	10	x	x	x	x	-	x	x	-	x	x	x	x	x	x	x	-	x	-	-	-
0128	03	SKEX17	BAS...	Å16	5816.06	01043.34	20220208	1520	202		27	14	6.6	1006	0040	----	14	0	-	x	-	x	-	-	x	-	-	-	-	-	-	-	-	-	-	-	-	-
0129	03	SKEX18	BAS...	Å17	5817.07	01030.26	20220208	1640	340		25	15	6.4	1006	9990	xxx-	15	14	x	x	-	x	x	x	x	-	x	x	x	x	x	x	x	x	-	x	-	-	-
0130	03	SKEX16	BAS...	Å15	5817.70	01050.72	20220208	1910	135		26	14	6.1	1007	9990	x---	12	12	x	x	x	x	-	x	x	-	x	x	x	x	x	x	x	-	x	-	-	-
0131	03	SKEX23	BAS...	P2	5751.98	01117.63	20220208	2330	93		25	10	5.9	1010	9990	x---	10	10	x	x	x	x	-	x	x	-	x	x	x	x	x	x	x	-	x	-	-	-
0132	03	KANX25	BAS...	FLADEN	5711.56	01139.46	20220209	0415	84		22	12	4.8	1010	9990	x---	13	13	x	x	x	x	-	x	x	-	x	x	x	x	x	x	x	-	x	-	-	-
0133	03	KANX50	BAS...	N14 FALKENBERG	5656.41	01212.72	20220209	0710	30	5	22	11	5.0	1009	1330	xxx-	7	7	x	x	x	x	-	x	x	-	x	x	x	x	x	x	x	-	x	-	-	-
0134	03	KAEX29	BAS...	ANHOLT E	5640.11	01206.62	20220209	1000	62	5	22	10	5.5	1008	1630	xxxx	10	10	x	x	x	x	x	x	x	-	x	x	x	x	x	x	x	x	-	x	-	-
0135	03	SOCX39	BAS...	W LANDSKRONA	5551.97	01244.98	20220209	1610	50		26	9	7.0	1011	1130	x---	9	9	x	x	x	x	-	x	x	-	x	x	x	x	x	x	x	-	x	-	-	-
0136	03	SOSX00	EXT...	FLINTEN 7	5535.29	01250.64	20220209	1845	8		29	6	5.4	1013	9990	----	3		-	x	-	x	-	-	x	-	-	-	-	-	-	-	-	-	-	x	-
0137	03	SOSX00	EXT...	6W FALSTERBO	5526.54	01238.23	20220209	2020	11		25	7	5.1	1014	9990	----	3		-	x	-	x	-	-	x	-	-	-	-	-	-	-	-	-	-	-	-	-
0138	03	BPSA01	BAS...	441 STEVNS KLINT	5516.29	01234.39	20220209	2150	26		25	6	4.6	1015	9990	----	6	6	x	x	x	x	-	x	x	-	x	x	x	x	x	x	x	-	x	-	-	-
0139	03	BPSA02	BAS...	BY1	5500.92	01318.06	20220210	0140	47		25	8	4.7	1015	9990	x---	8	8	x	x	x	x	-	x	x	-	x	x	x	x	x	x	x	-	x	-	-	-
0140	03	BPSA03	BAS...	BY2 ARKONA	5458.27	01405.92	20220210	0510	47		24	8	4.3	1013	9990	xxx-	8	8	x	x	x	x	-	x	x	-	x	x	x	x	x	x	x	-	x	x	-	-
0141	03	BPSA04	BAS...	BY3 HAMRARNE SUND	5519.10	01428.99	20220210	0845	48	13	23	10	4.3	1012	2830	----	8	8	x	x	x	x	-	x	x	-	x	x	x	x	x	x	x	-	x	-	-	-
0142	03	BPSH05	BAS...	HANÖBUKTEN	5537.03	01452.01	20220210	1140	80	11	25	7	4.4	1010	2830	x--x	11	11	x	x	x	x	x	x	x	-	x	x	x	x	x	x	x	x	-	-	-	x
0143	03	BPSH51	BAS...	HANÖBUKTEN-KBV	5548.03	01520.09	20220210	1430	60		27	7	4.4	1009	1630	----	9	9	x	x	x	x	-	x	x	-	x	x	x	x	x	x	x	-	x	-	-	-
0144	03	BPSB06	BAS...	BY4 CHRISTIANSÖ	5522.98	01520.03	20220210	1730	94		25	11	4.2	1010	9990	x---	12	12	x	x	x	x	-	x	x	x	x	x	x	x	x	x	x	-	x	-	-	-
0145	03	BPSB07	BAS...	BY5 BORNHOLMSDJ	5515.54	01559.21	20220210	2030	91		26	9	4.1	1010	9990	xxx-	12	12	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	-	-	-	-
0146	03	BPSE08	BAS...	STOLPE TRÖSKEL	5516.49	01631.01	20220211	0240	63		27	12	3.8	1011	9990	----	9	9	x	x	x	x	-	x	x	-	x	x	x	x	x	x	x	-	x	-	-	-
0147	03	BPSE09	BAS...	BY7 STOLPE RÄNNA	5513	01704.01	20220211	0520	91		26	7	3.4	1011	9990	----	12	12	x	x	x	x	-	x	x	-	x	x	x	x	x	x	x	-	x	-	-	-
0148	03	BPSG71	BAS...	PL-P1	5449.94	01916.47	20220211	1330	110	11	27	8	3.6	1014	1730	----	14	14	x	x	x	x	-	x	x	-	x	x	x	x	x	x	x	-	x	-	-	-
0149	03	BPSE70	BAS...	PL-P63	5521.09	01900.00	20220211	1735	83		34	8	0.5	1015	7990	----	11	11	x	x	x	x	-	x	x	-	x	x	x	x	x	x	x	-	x	-	-	-
0150	03	BPSE11	BAS...	BCS III-10	5533.29	01824.05	20220211	2045	90		35	10	2.9	1020	9990	x-x-	12	12	x	x	x	x	-	x	x	x	x	x	x	x	x	x	x	-	x	x	-	-
0151	03	BPSE12	BAS...	BY9 KLAIPEDA	5607.46	01917.00	20220212	0140	127		29	11	2.3	1022	9990	----	14	14	x	x	x	x	-	x	x	x	x	x	x	x	x	x	x	-	x	-	-	-
0152	03	BPEX13	BAS...	BY10	5638.02	01935.08	20220212	0530	147		26	14	2.6	1020	1240	x---	15	15	x	x	x	x	-	x	x	x	x	x	x	x	x	x	x	-	x	-	-	-
0153	03	BPEX14	BAS...	BY11	5704.46	01950.59	20220212	0915	213		26	15	2.6	1020	1340	----	17	17	x	x	-	x	-	x	x	x	x	x	x	x	x	x	x	-	x	-	-	-
0154	03	BPEX21	BAS...	BY15 GOTLANDSDJ	5718.70	02004.61	20220212	1205	249		25	16	2.7	1019	1350	x-xx	24	24	x	x	-	x	x	x	x	x	x	x	x	x	x	x	x	-	x	x	x	-
0155	03	BPEX19	BAS...	BY13	5723.23	01926.10	20220212	1545	122		24	16	3.0	1018	9990	----	14	14	x	x	x	x	-	x	x	x	x	x	x	x	x	x	x	-	x	-	-	-
0156	03	BPEX25	BAS...	BY19	5733.09	02009.70	20220212	1930	160		23	16	2.8	1017	9990	----	15	15	x	x	-	x	-	x	x	x	x	x	x	x	x	x	x	-	x	-	-	-
0157	03	BPEX26	BAS...	BY20 FÅRÖDJ	5759.88	01952.92	20220212	2250	203		25	16	1.9	1014	9990	x---	17	17	x	x	-	x	-	x	x	x	x	x	x	x	x	x	x	-	x	-	x	-
0158	03	BPNX27	BAS...	BY21	5826.50	02019.99	20220213	0300	122		23	16	2.6	1009	9990	----	14	14	x	x	x	x	-	x	x	x	x	x	x	x	x	x	x	-	x	-	-	-
0159	03	BPNX34	BAS...	BY28	5902.63	02105.86	20220213	0750	200		22	18	3.0	1004	1750	----	17	17	x	x	-	x	-	x	x	x	x	x	x	x	x	x	x	-	x	-	-	-
0160	03	BPNX33	BAS...	BY27	5917.95	02133.17	20220213	1100	180		23	16	2.9	1002	2850	----	16	16	x	x	-	x	-	x	x	x	x	x	x	x	x	x	x	-	x	-	-	-

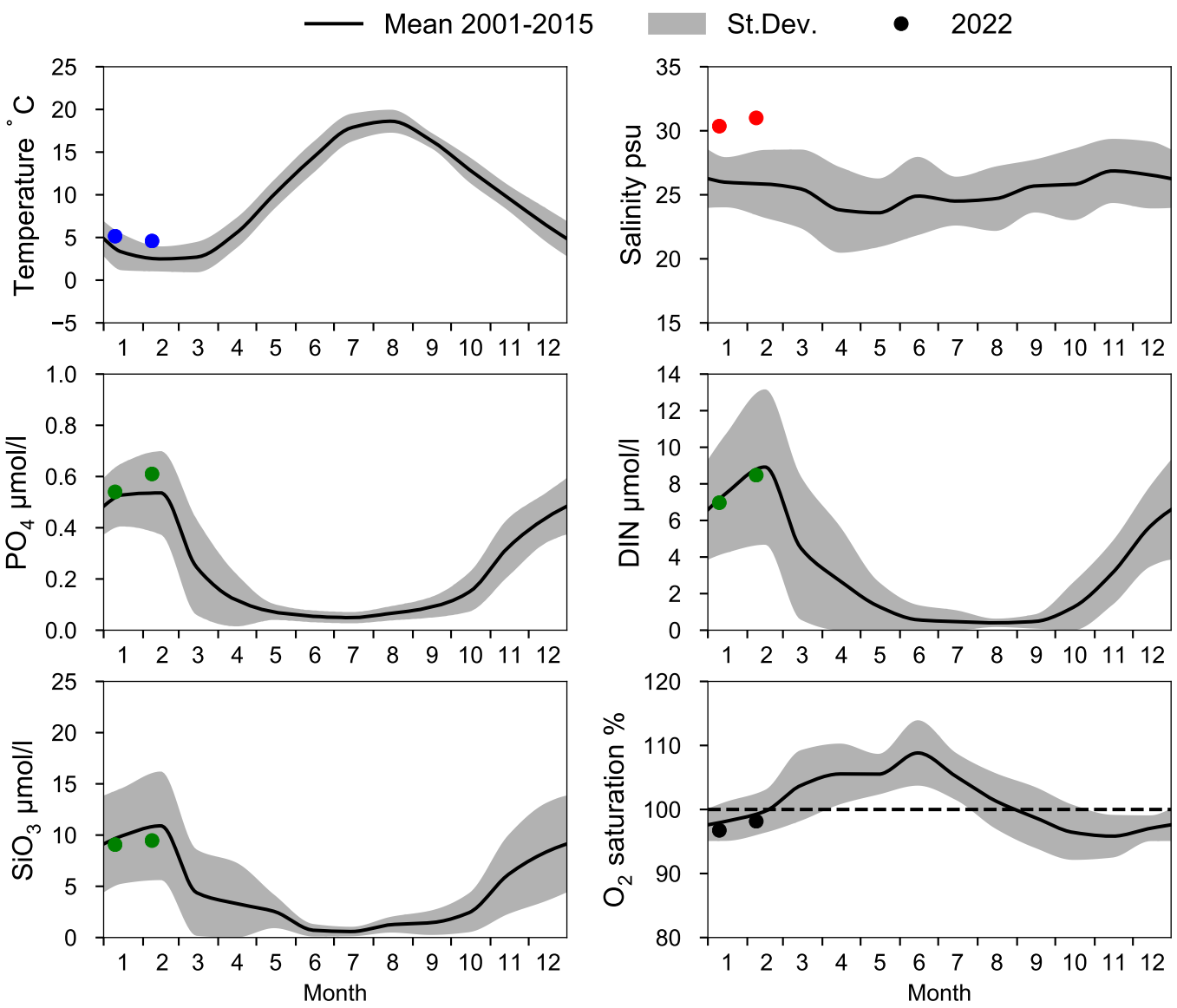
Date: 2022-02-21
Time: 17:00

Ship: SE
Year: 2022

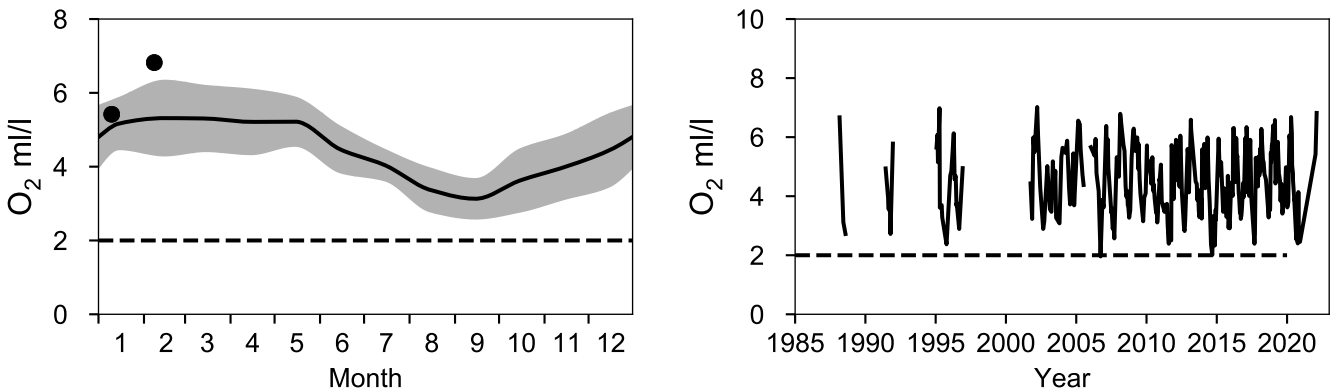
Ser no	Cru no	Stat code	Proj	Stat name	Lat	Lon	Start date yyyymmdd	Start time hhmm	Bottom depth m	Secchi depth m	Wind dir	Wind vel	Air temp C	Air pres hPa	WCWI elac aoveo tueo hdsb	CZPP hohp loy apt o p	No de	No btl	T e m p _ b t l	T e m p _ c t d	S a l _ b t l	S a l _ c t d	P h o s p h a t	D o x y _ b t l	D o x y _ c t d	H 2 s	P h o s p h a t	N i t r a t	N i t r o z	N a m m o n	A l k y	A S - s i	H u m u s	C o m m e n t s	C o m m e n t s _ v i s i t	C o m m e n t s _ s a m p
0161	03	BPNX35	BAS...	BY29 / LL19	5852.90	02019.67	20220213	1900	178		22	17	3.1	1001	9990	x-x-	16	16	x	x	-	x	-	x	x	x	x	x	x	x	x	x	-	x	-	-	-
0162	03	BPNX36	BAS...	BY30	5847.30	01905.76	20220214	0005	191		23	8	2.9	1000	9990	----	16	16	x	x	-	x	-	x	x	x	x	x	x	x	x	x	-	x	-	-	-
0163	03	BPNX37	BAS...	BY31 LANDSORTSDJ	5835.61	01814.17	20220214	0500	459		21	11	2.9	998	9990	xxx-	23	23	x	x	-	x	x	x	x	x	x	x	x	x	x	x	x	x	-	-	-
0164	03	BPWX38	BAS...	BY32 NORRKÖPINGSDJ	5800.98	01759.01	20220214	1000	205		21	16	3.7	996	2840	x---	17	17	x	x	-	x	-	x	x	x	x	x	x	x	x	x	-	x	-	-	-
0165	03	BPWX42	BAS...	BY36	5743.39	01722.39	20220214	1405	140		21	10	3.8	996	2740	----	15	15	x	x	x	x	-	x	x	x	x	x	x	x	x	x	-	x	-	-	-
0166	03	BPWX45	BAS...	BY38 KARLSÖDJ	5707.03	01740.12	20220214	1855	114		20	12	4.5	999	9990	x-x-	14	14	x	x	x	x	-	x	x	x	x	x	x	x	x	x	-	x	x	-	-
0167	03	BPSE49	BAS...	BY39 ÖLANDS S UDDE	5606.97	01632.15	20220215	0510	50		20	10	4.5	1000	9990	x---	8	8	x	x	x	x	-	x	x	-	x	x	x	x	x	x	-	x	-	-	-
0168	03	BPWK01	BAS...	REF M1V1	5622.23	01612.11	20220215	0800	21	3	21	13	4.3	999	1730	xxx-	5	5	x	x	x	x	x	x	x	-	x	x	x	x	x	x	x	x	-	-	-

STATION SLÄGGÖ SURFACE WATER (0-10 m)

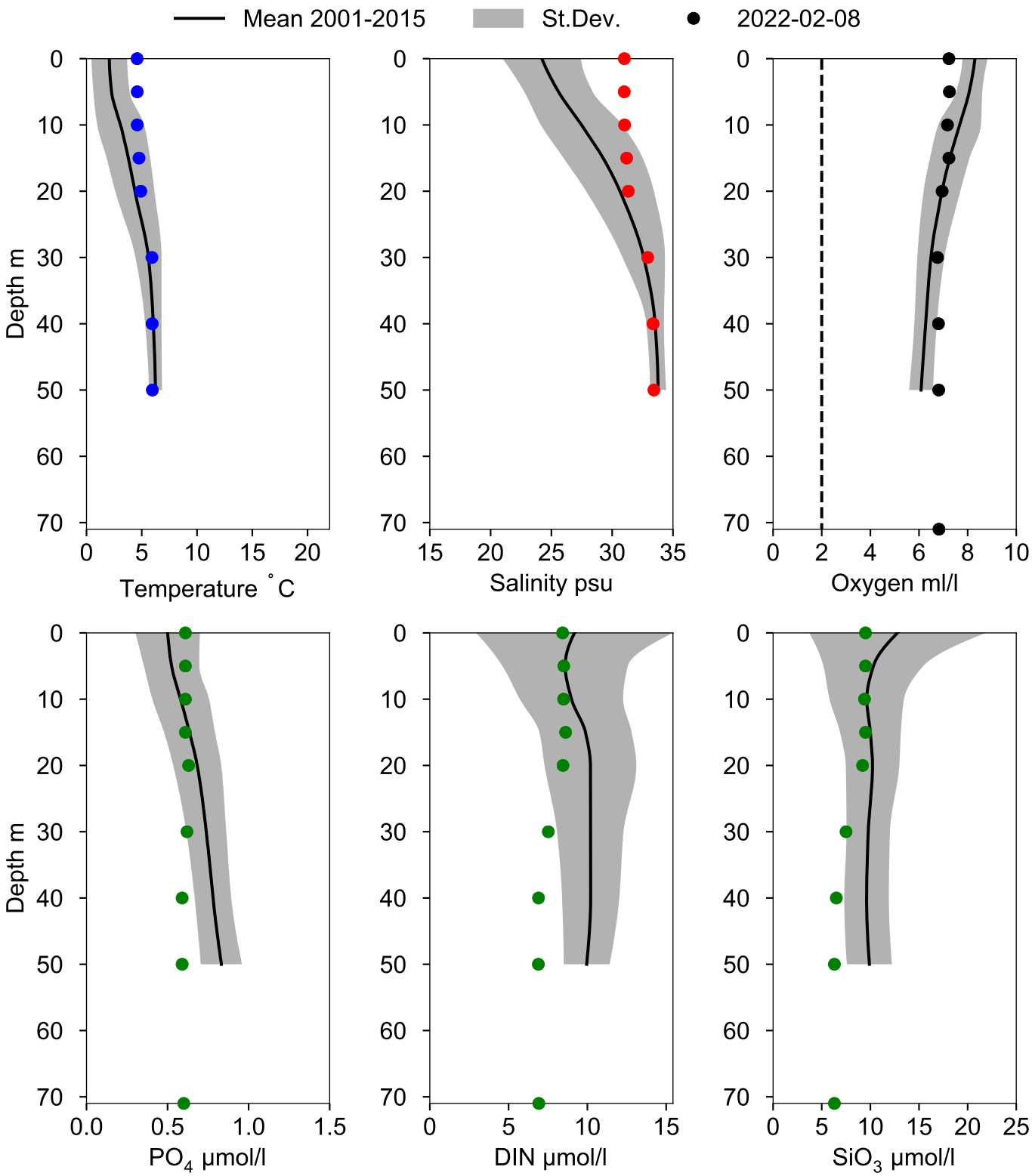
Annual Cycles



OXYGEN IN BOTTOM WATER (depth >= 64 m)

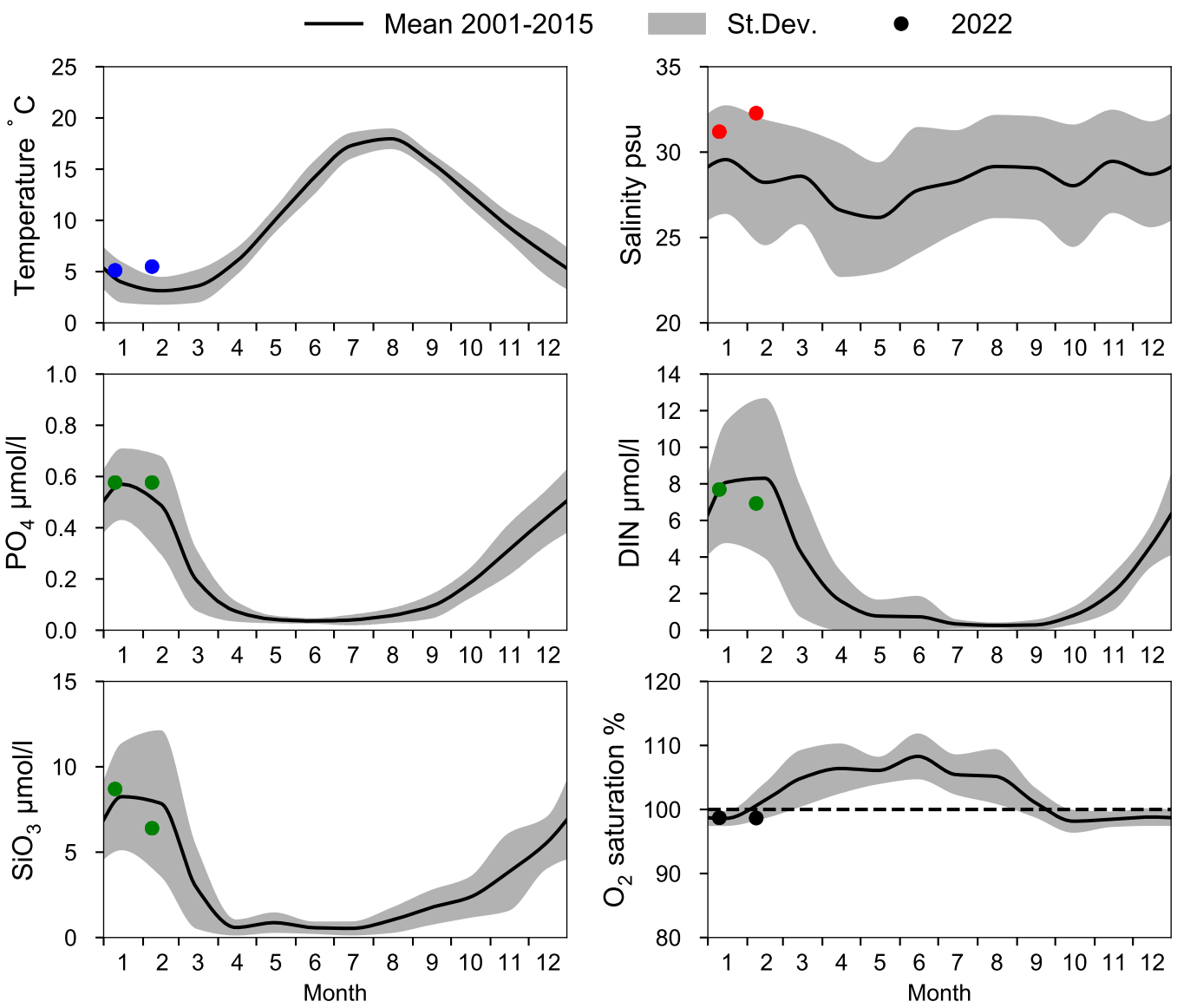


Vertical profiles SLÄGGÖ
February

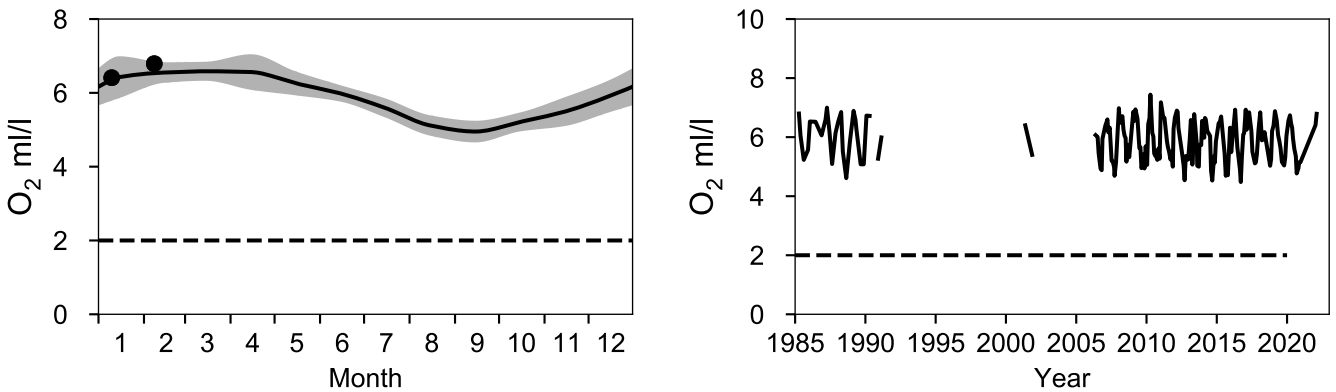


STATION Å13 SURFACE WATER (0-10 m)

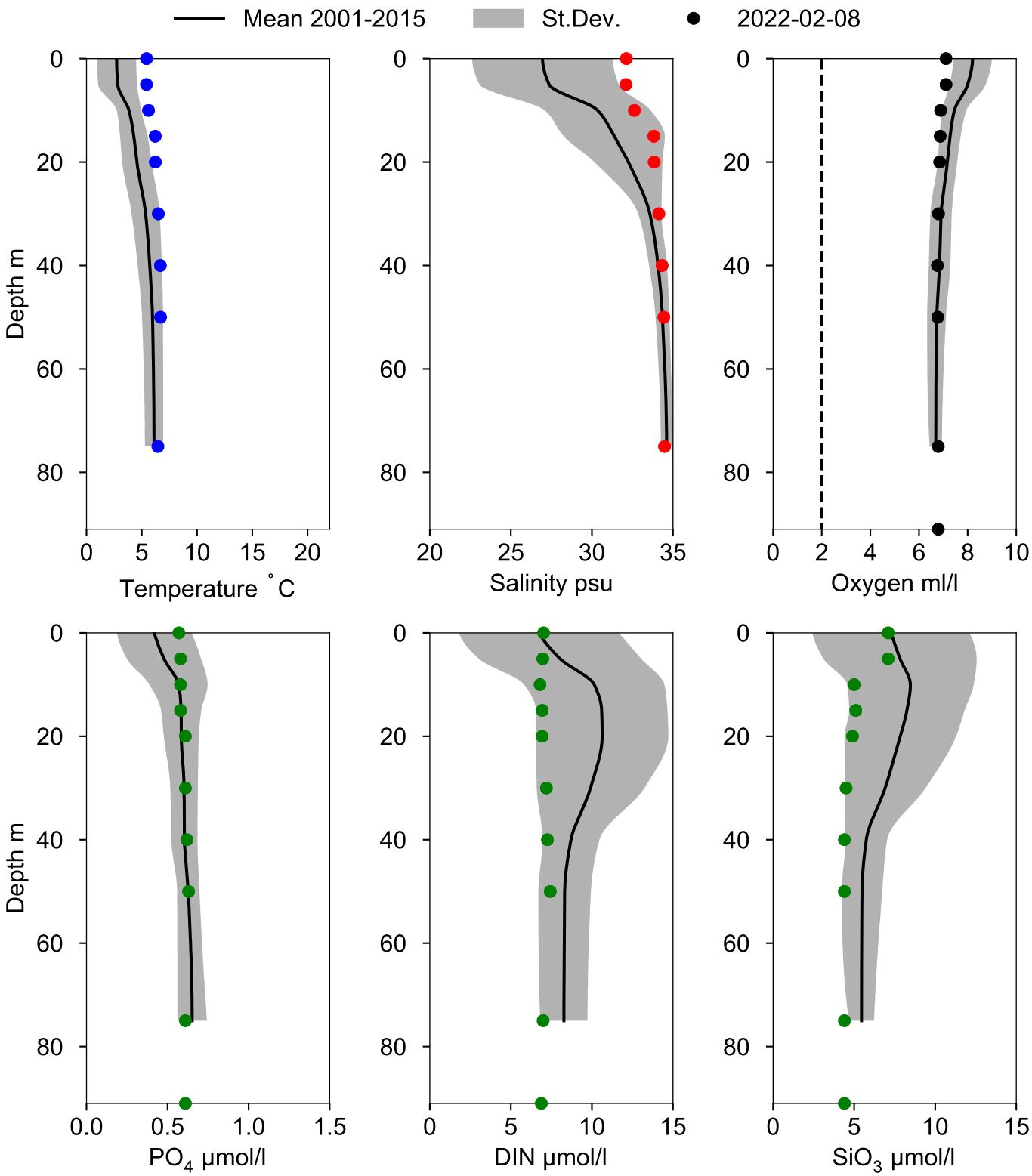
Annual Cycles



OXYGEN IN BOTTOM WATER (depth >= 82 m)

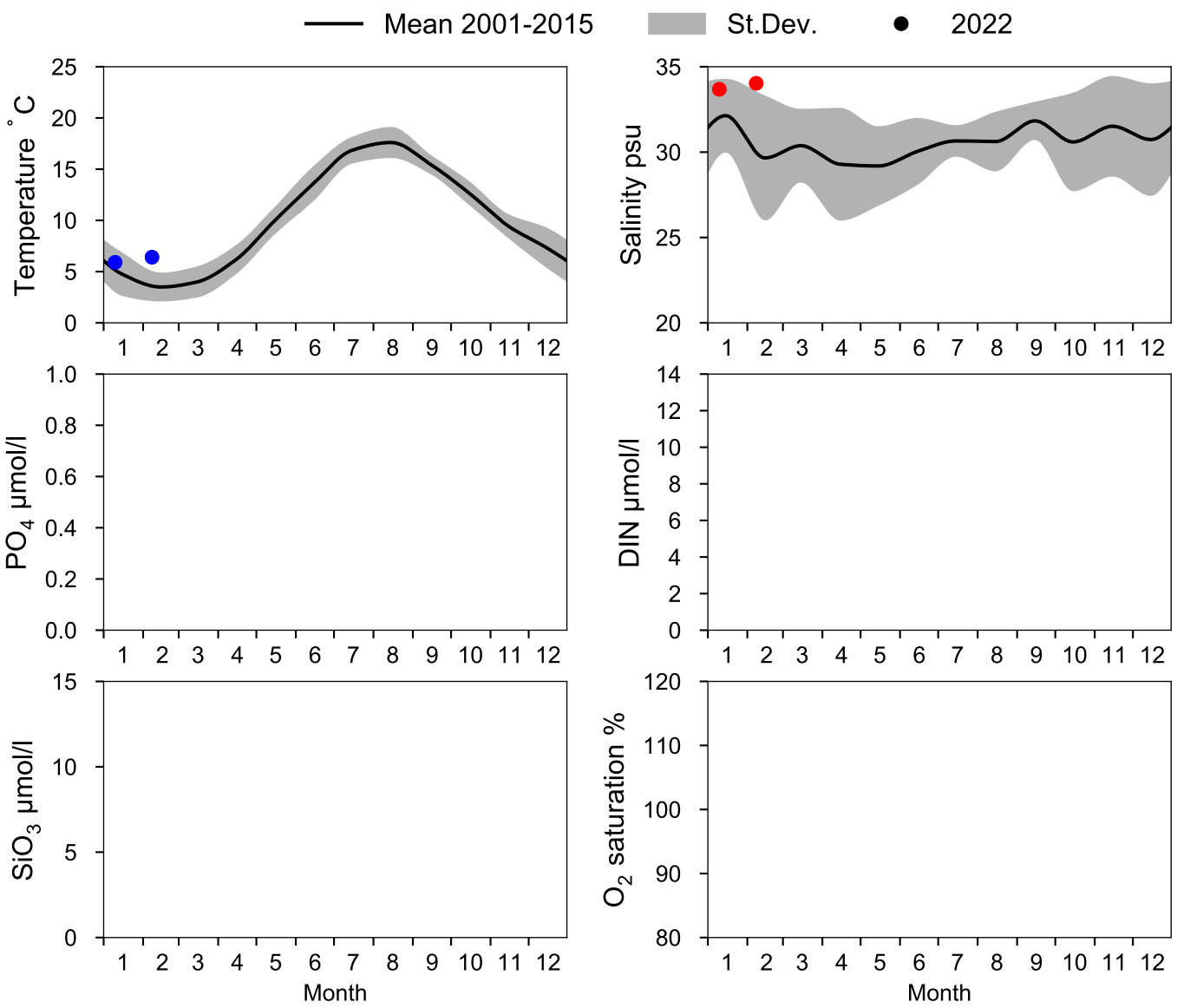


Vertical profiles Å13
February

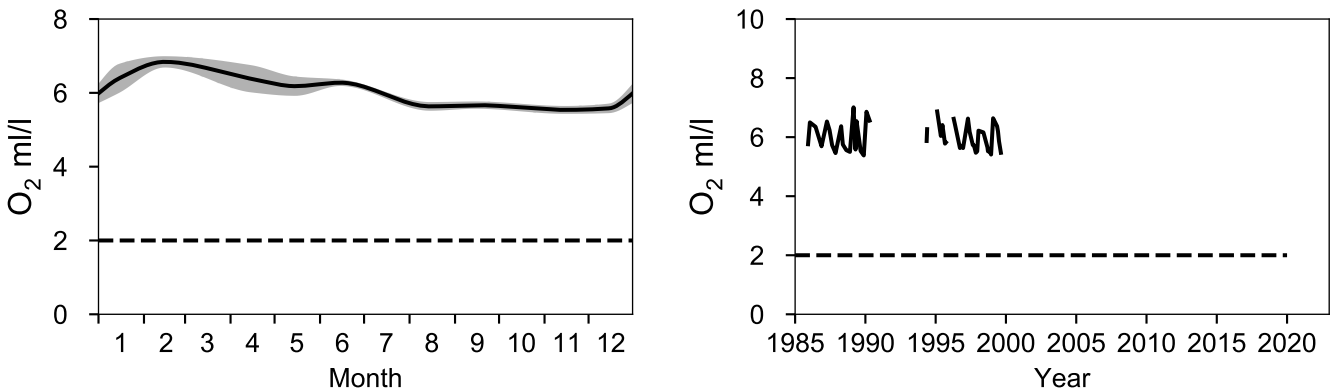


STATION Å16 SURFACE WATER (0-10 m)

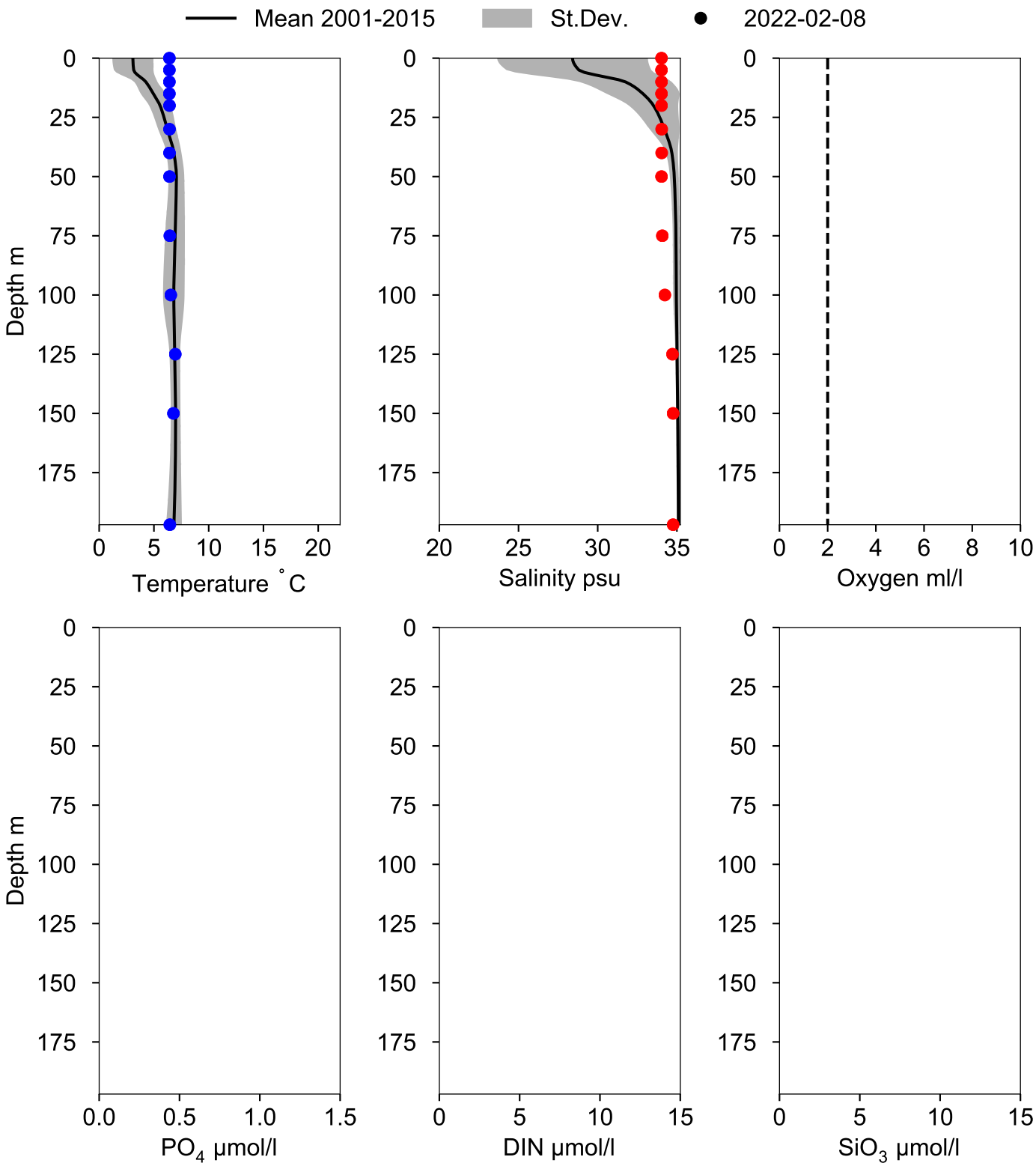
Annual Cycles



OXYGEN IN BOTTOM WATER (depth >= 193 m)

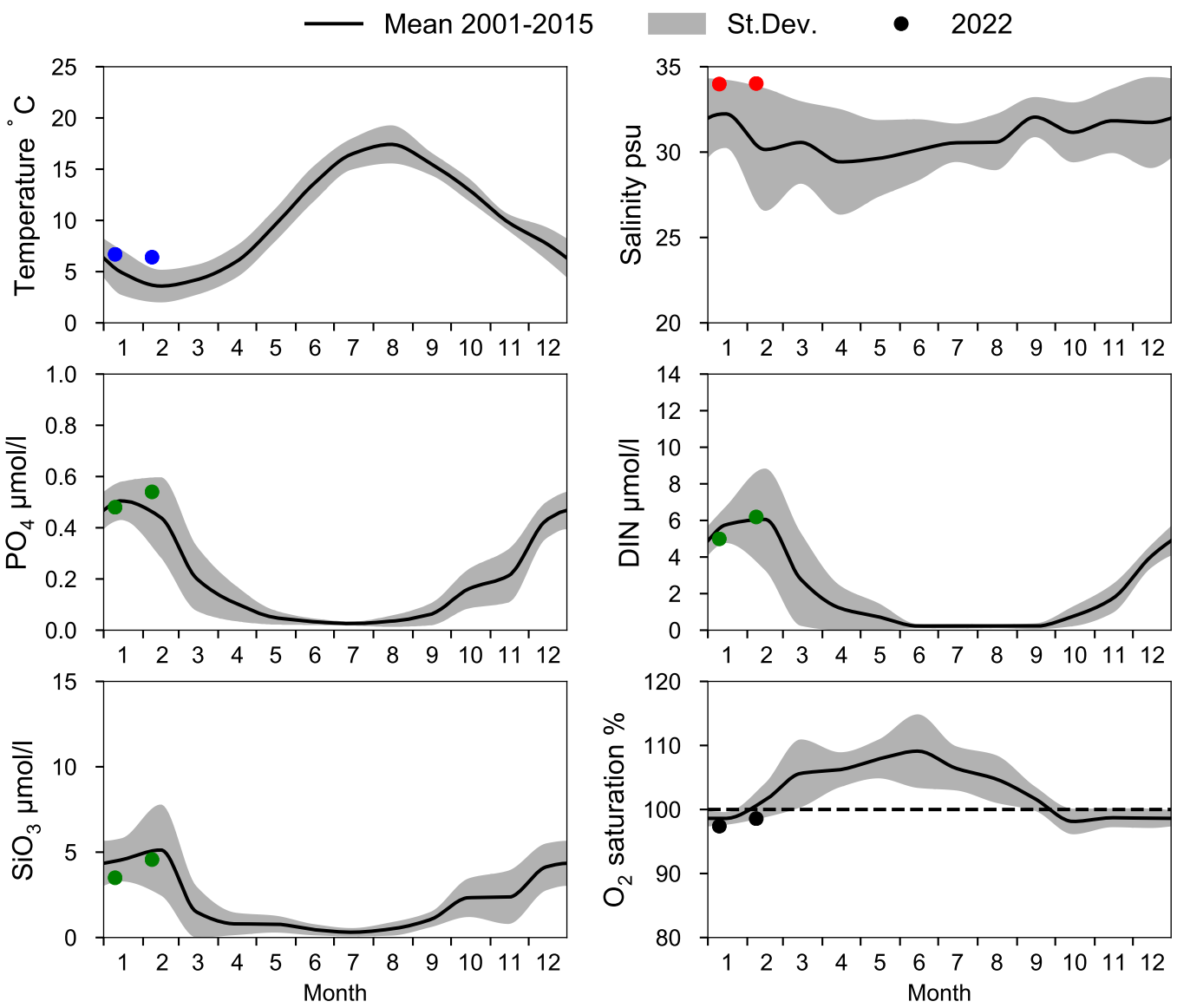


Vertical profiles Å16
February

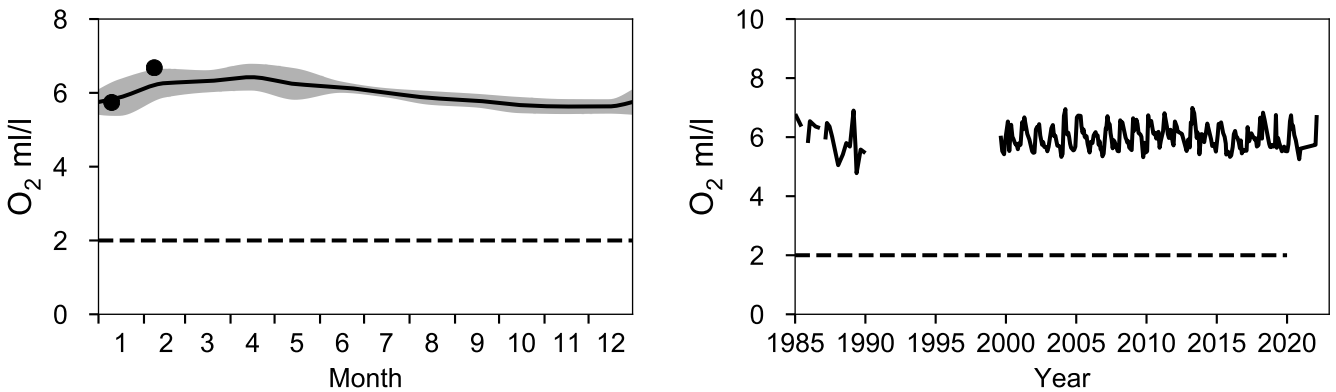


STATION Å17 SURFACE WATER (0-10 m)

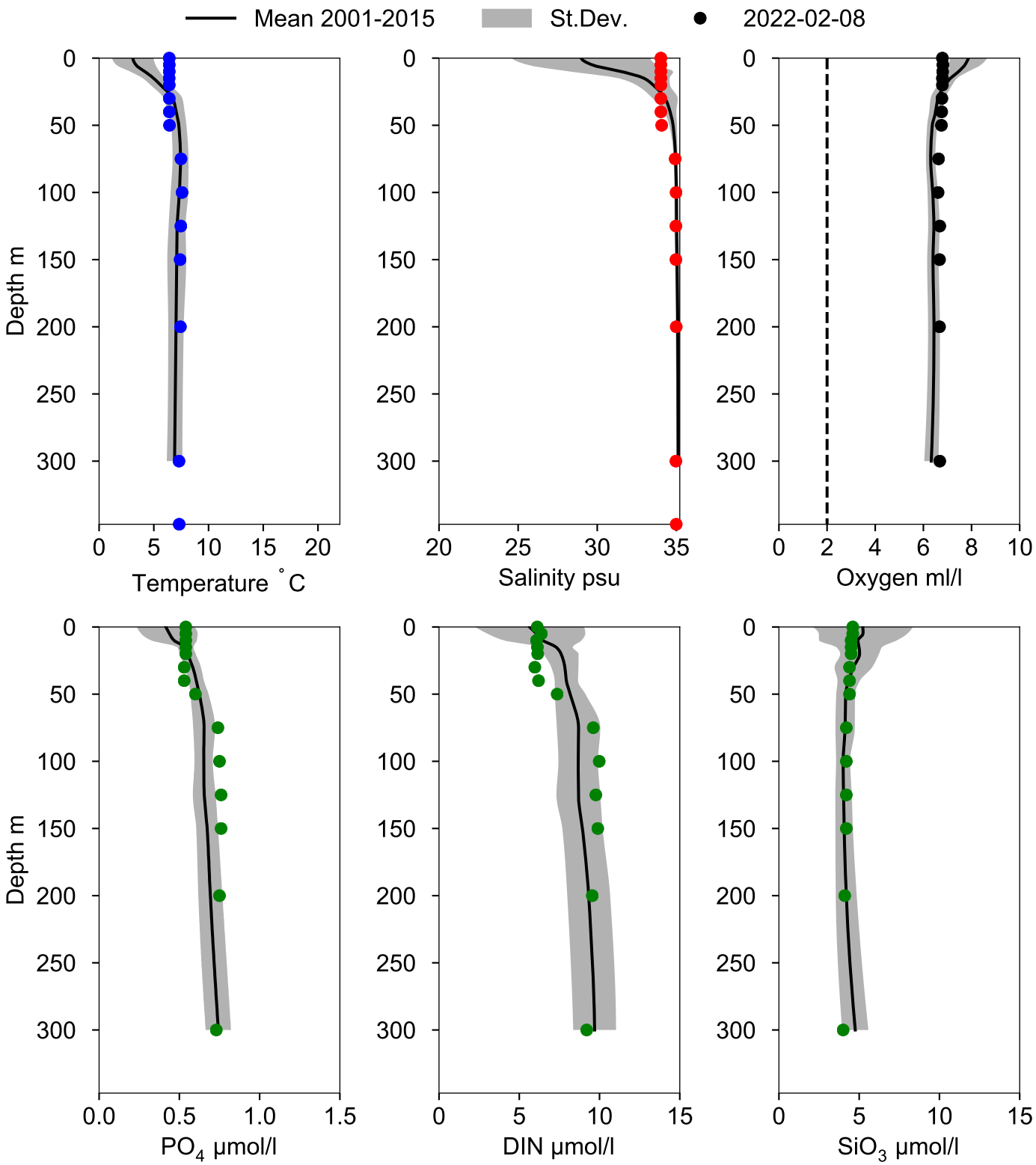
Annual Cycles



OXYGEN IN BOTTOM WATER (depth >= 300 m)

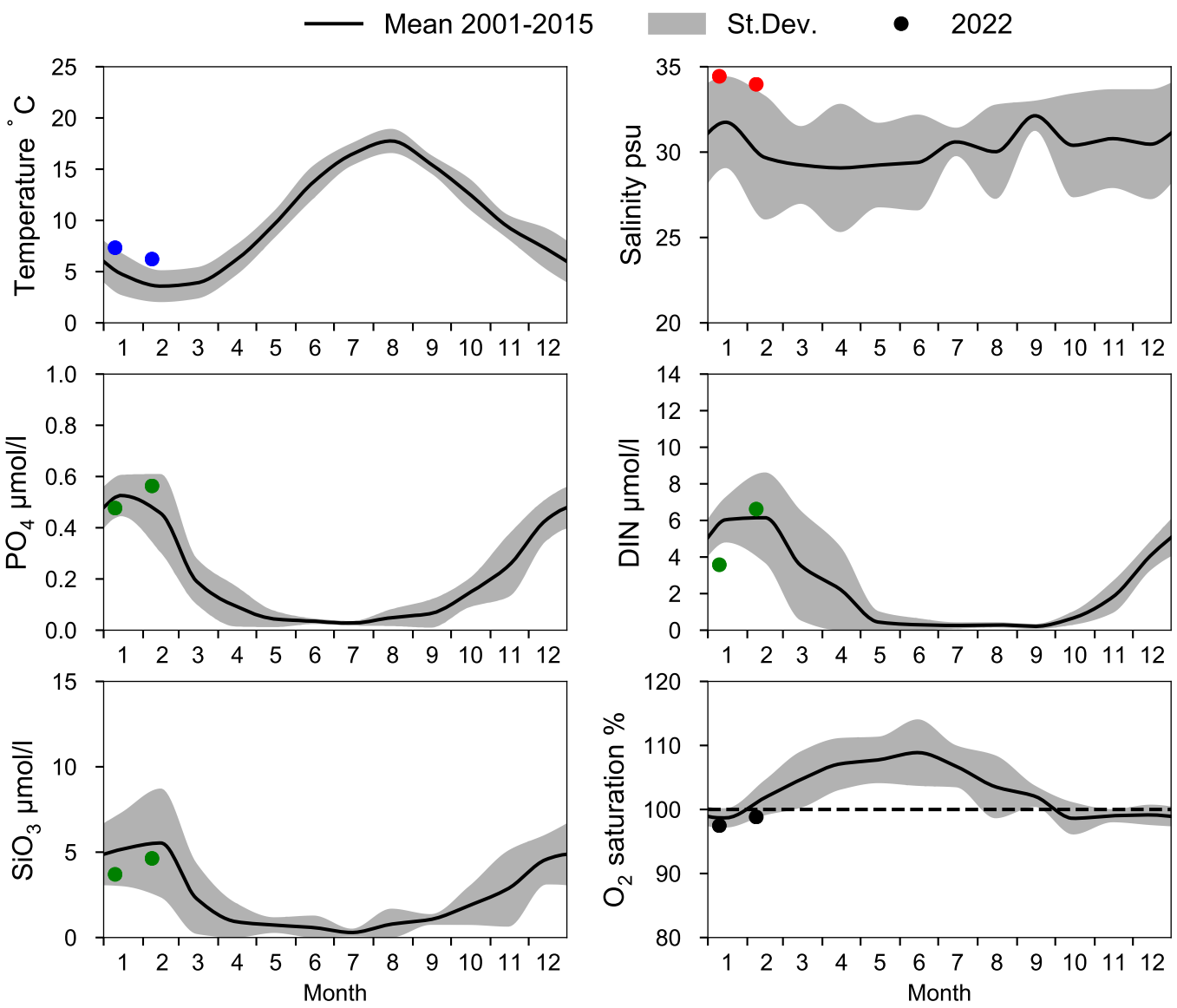


Vertical profiles Å17
February

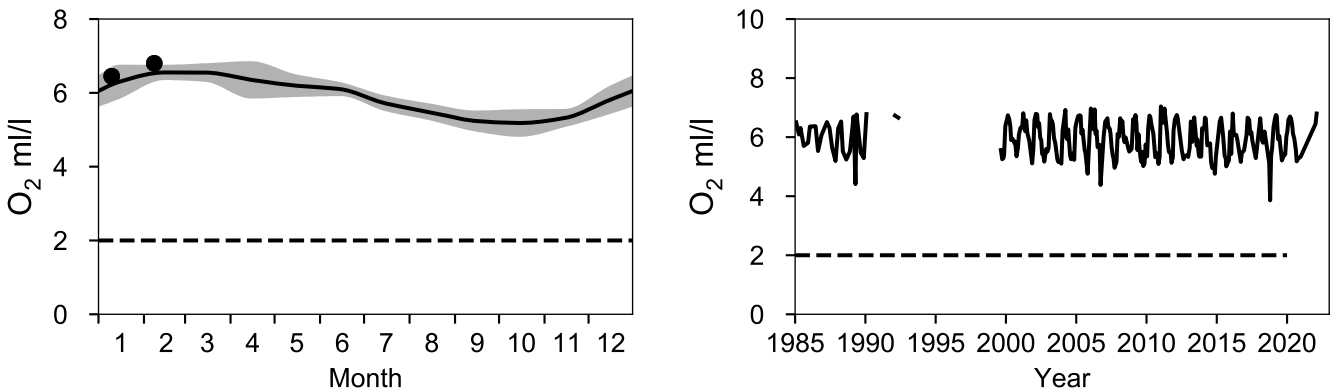


STATION Å15 SURFACE WATER (0-10 m)

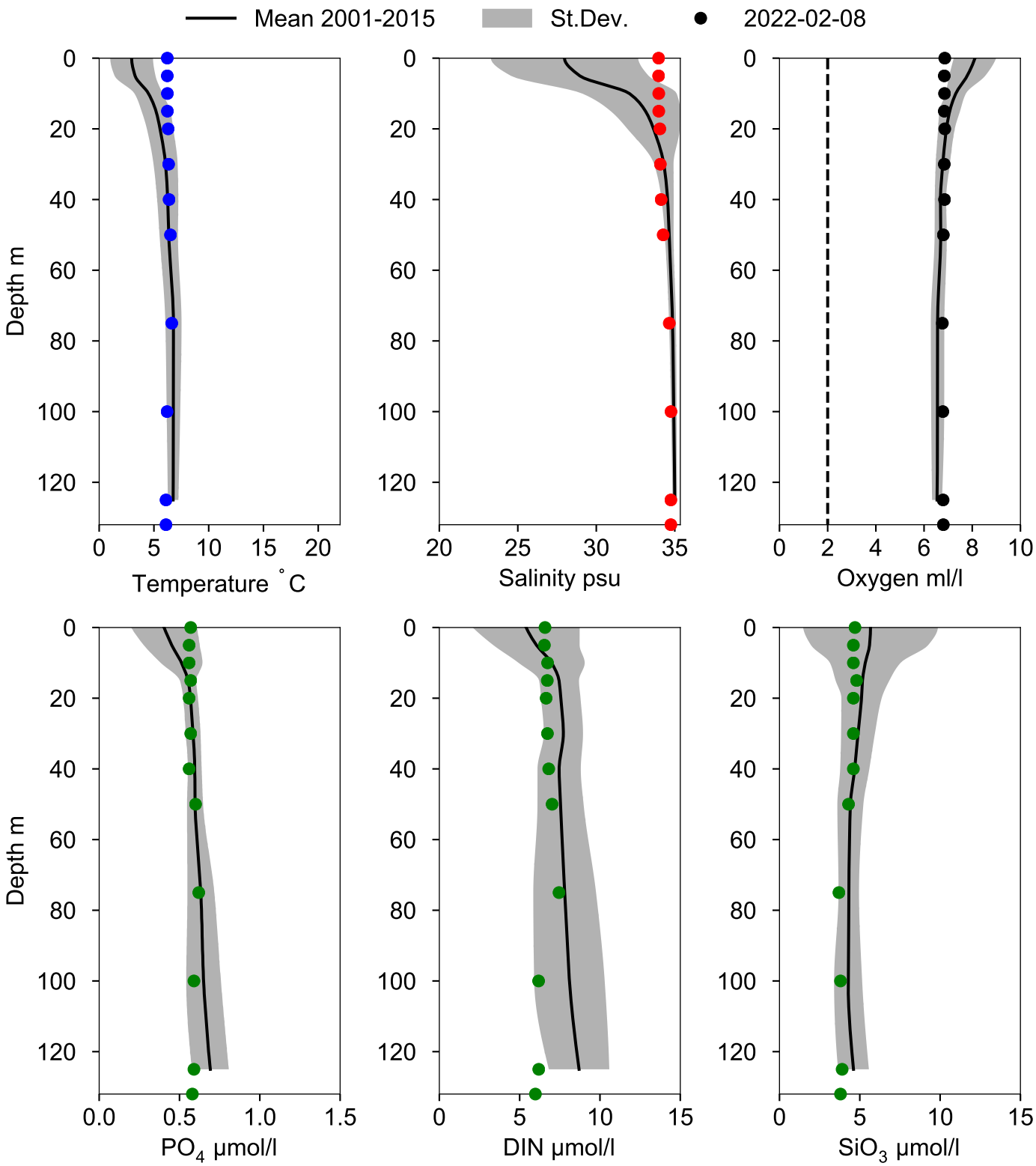
Annual Cycles



OXYGEN IN BOTTOM WATER (depth >= 125 m)

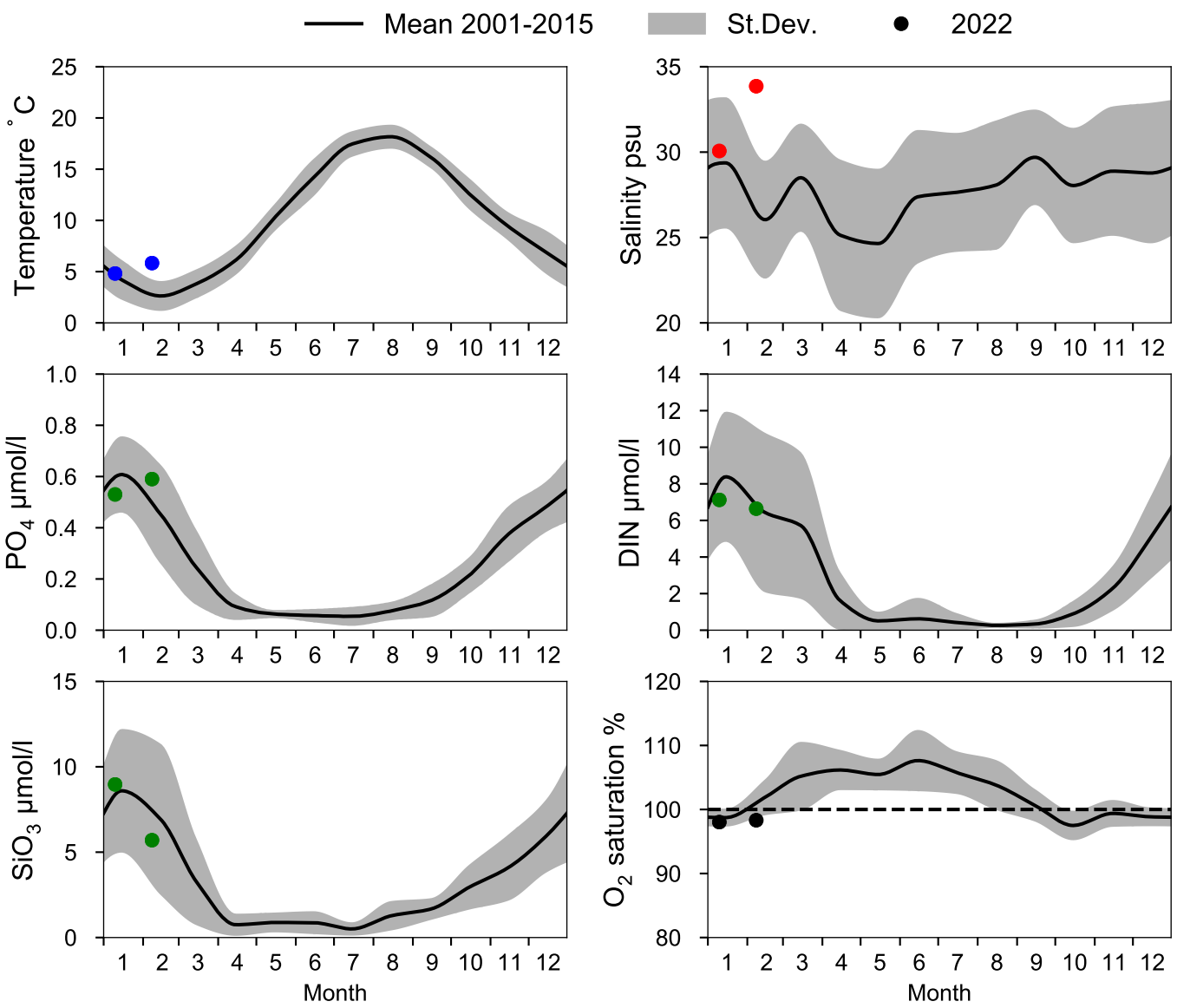


Vertical profiles Å15
February

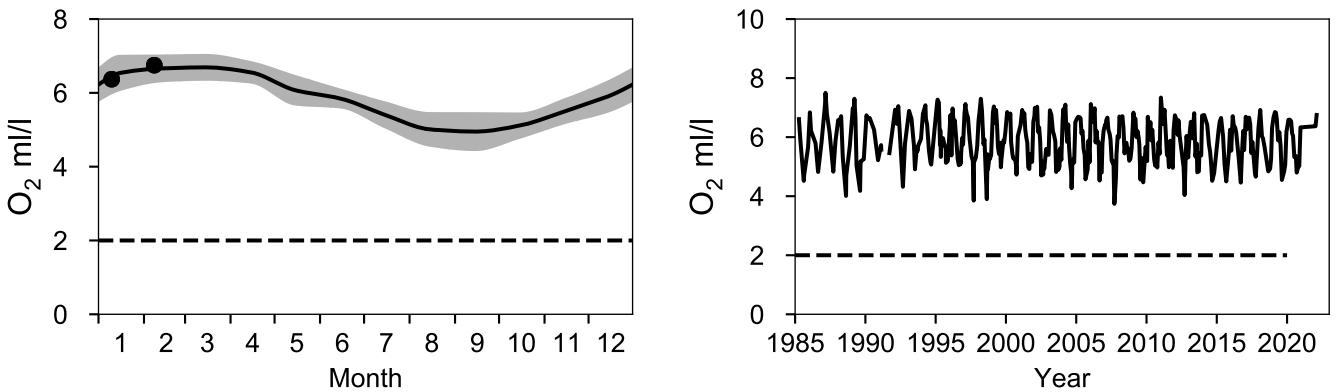


STATION P2 SURFACE WATER (0-10 m)

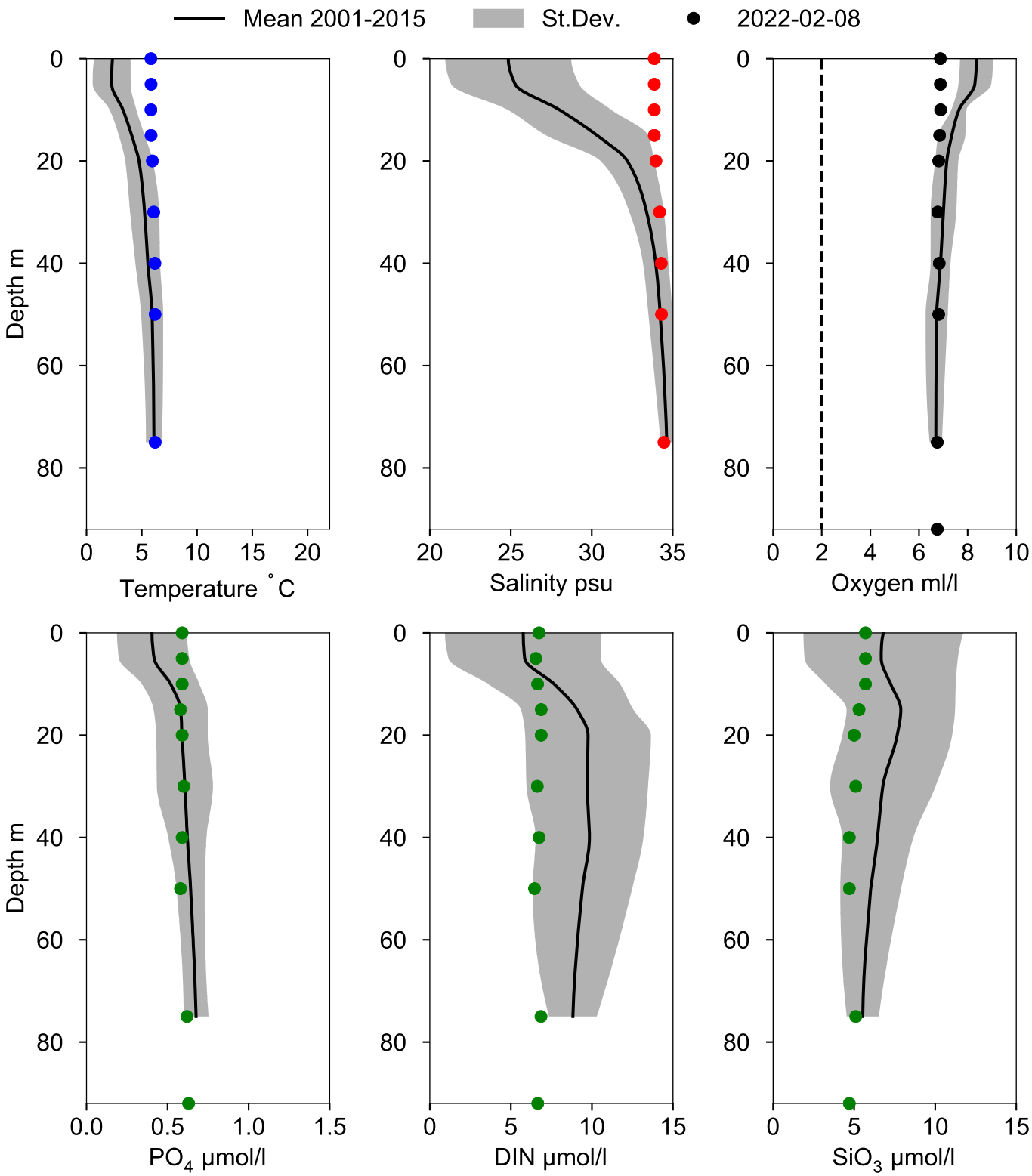
Annual Cycles



OXYGEN IN BOTTOM WATER (depth >= 75 m)

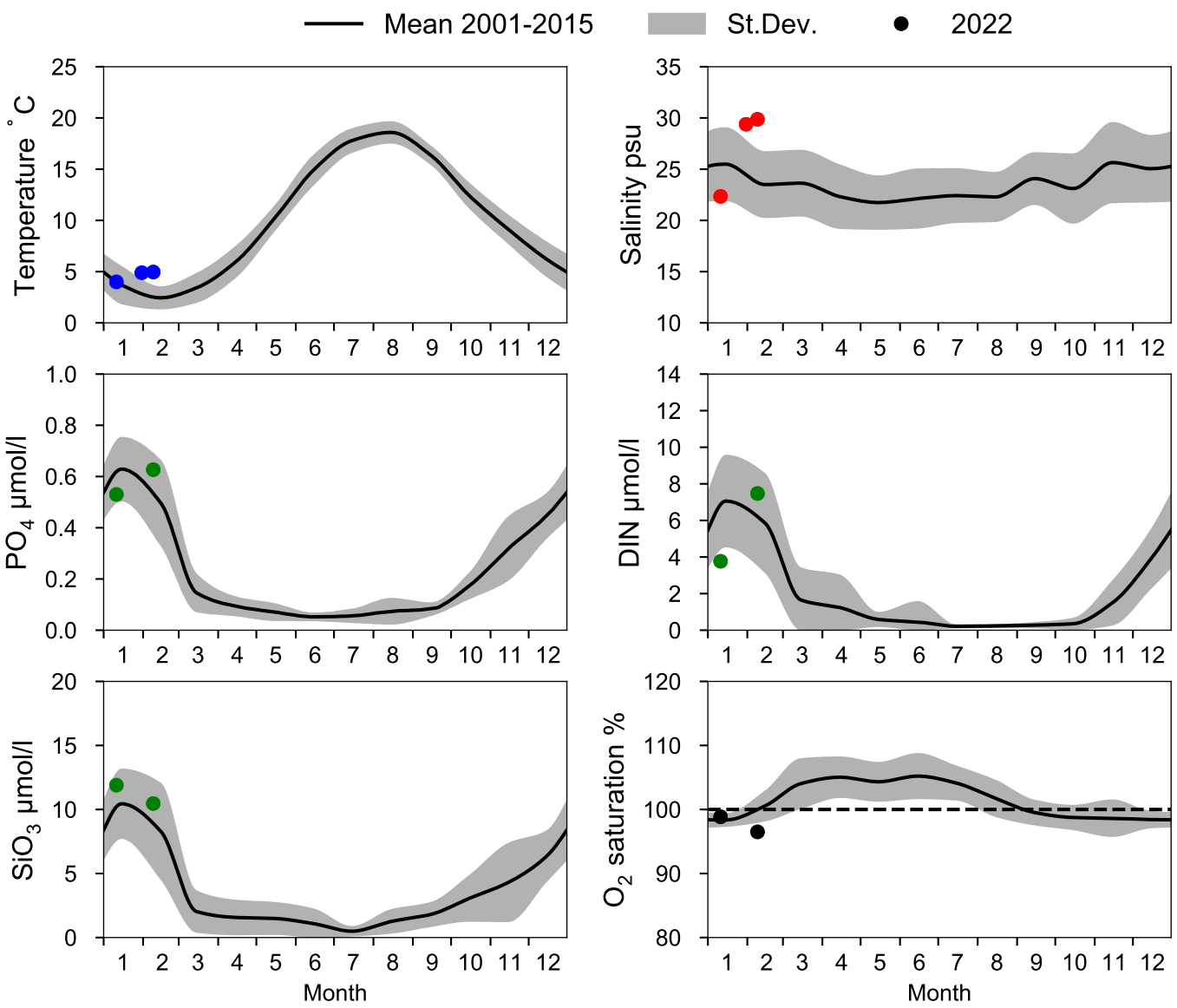


Vertical profiles P2
February

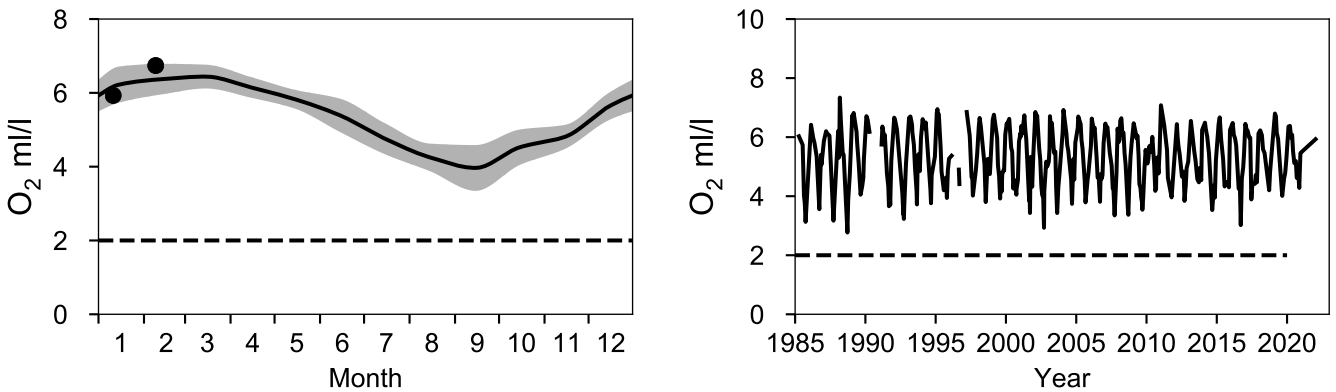


STATION FLADEN SURFACE WATER (0-10 m)

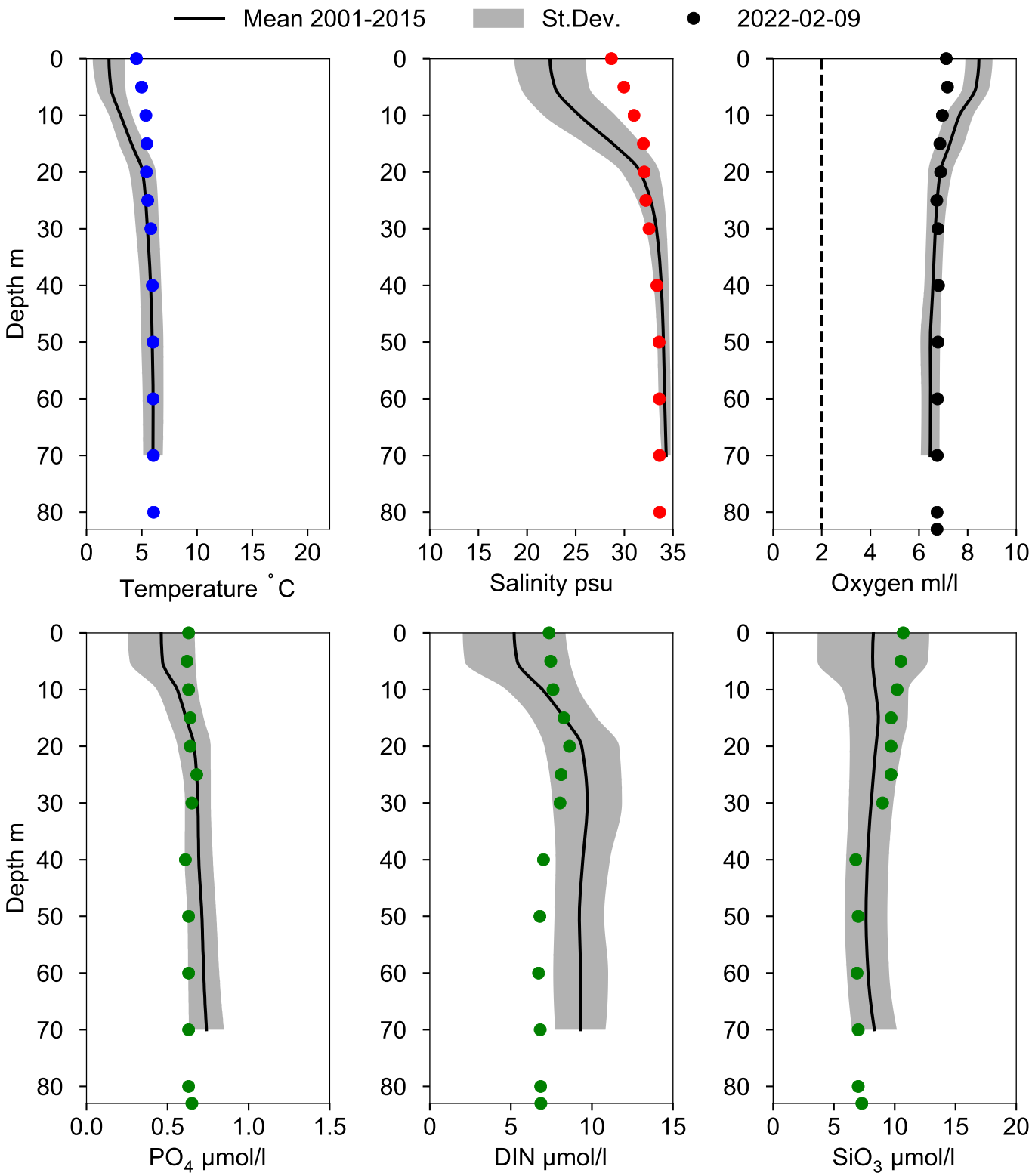
Annual Cycles



OXYGEN IN BOTTOM WATER (depth >= 74 m)

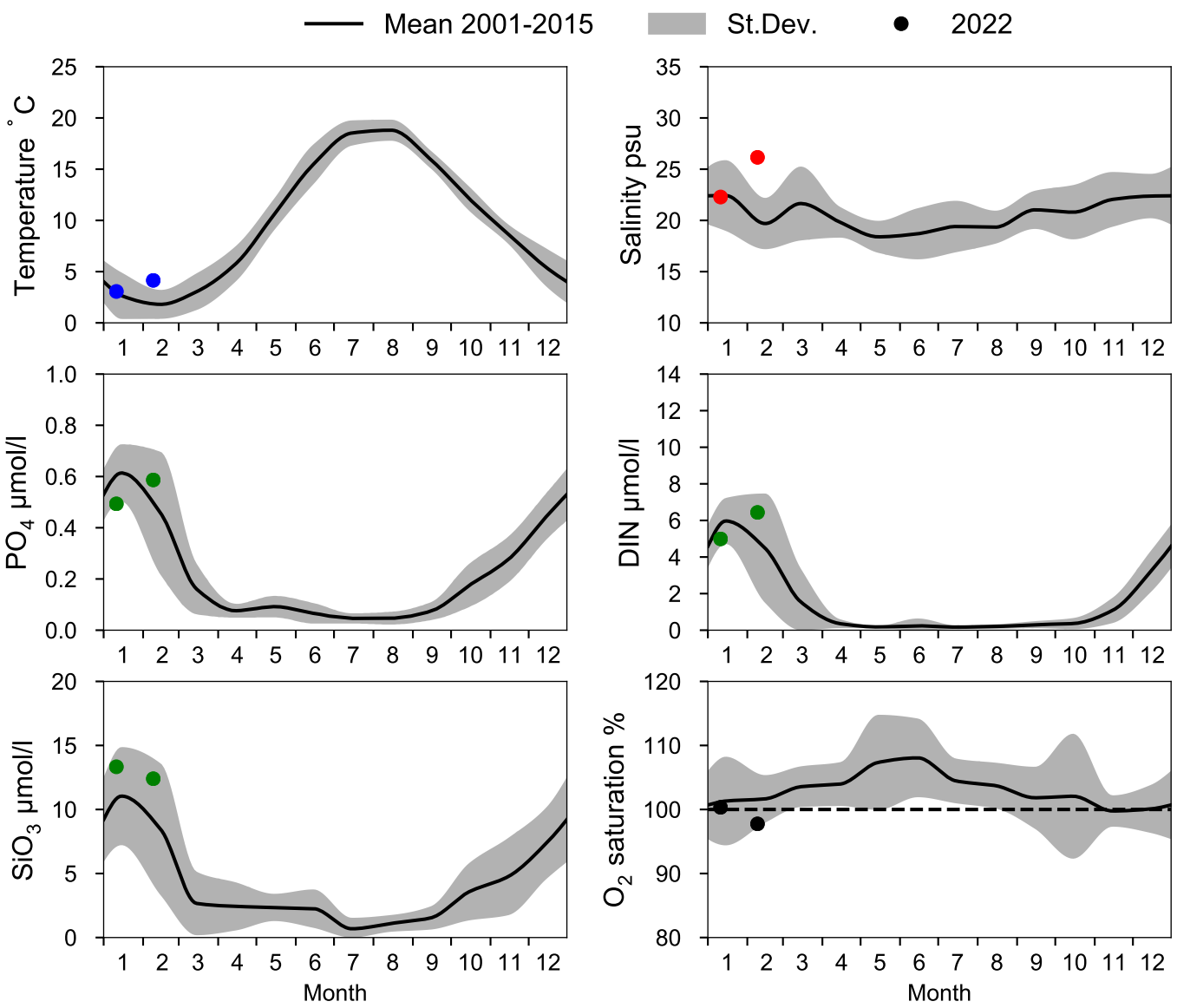


Vertical profiles FLADEN
February

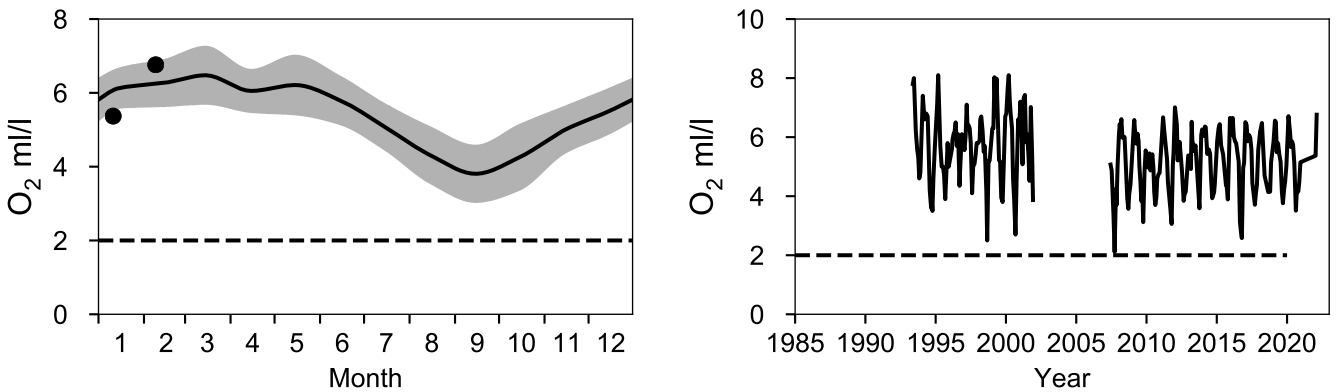


STATION N14 FALKENBERG SURFACE WATER (0-10 m)

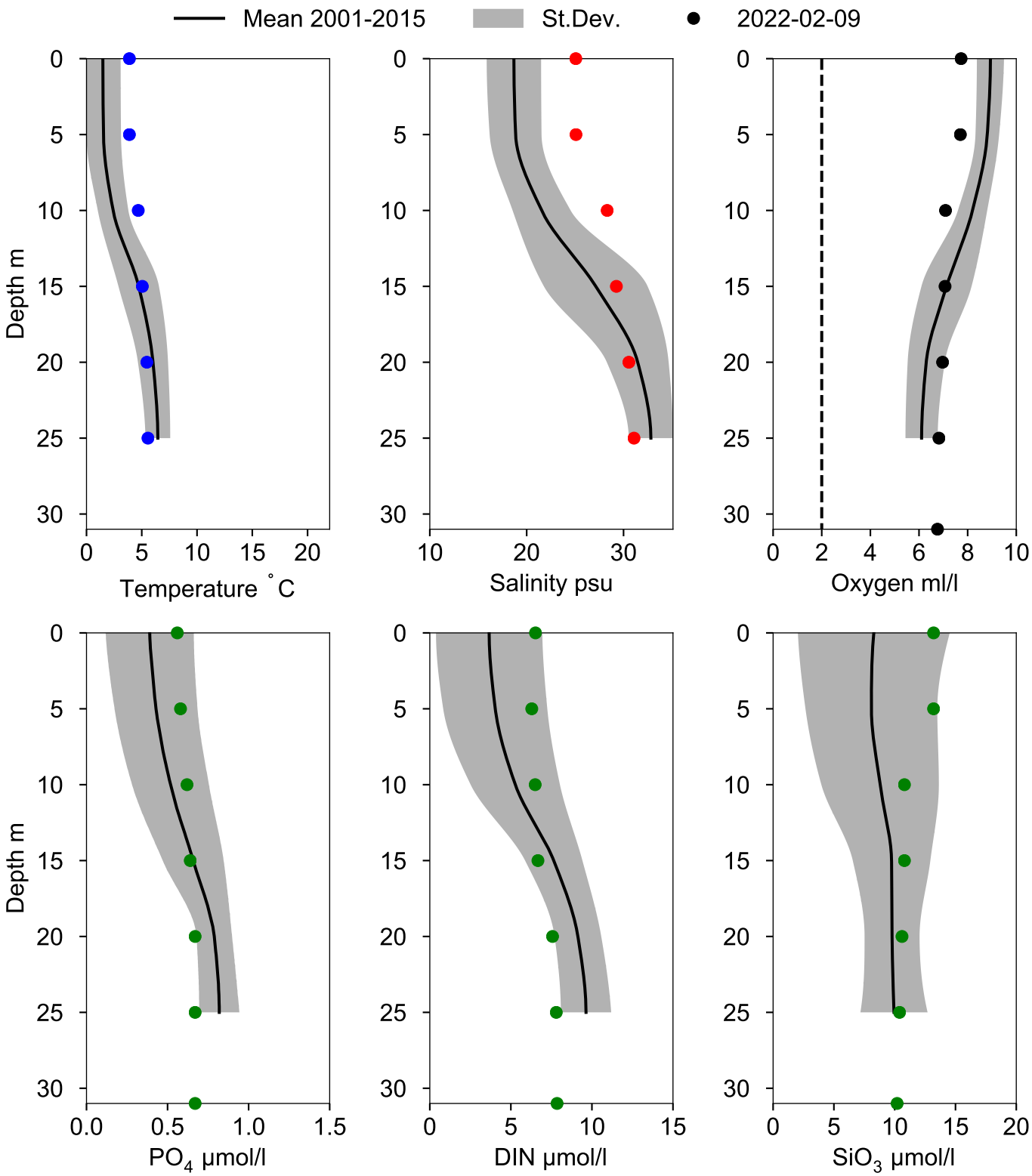
Annual Cycles



OXYGEN IN BOTTOM WATER (depth >= 25 m)

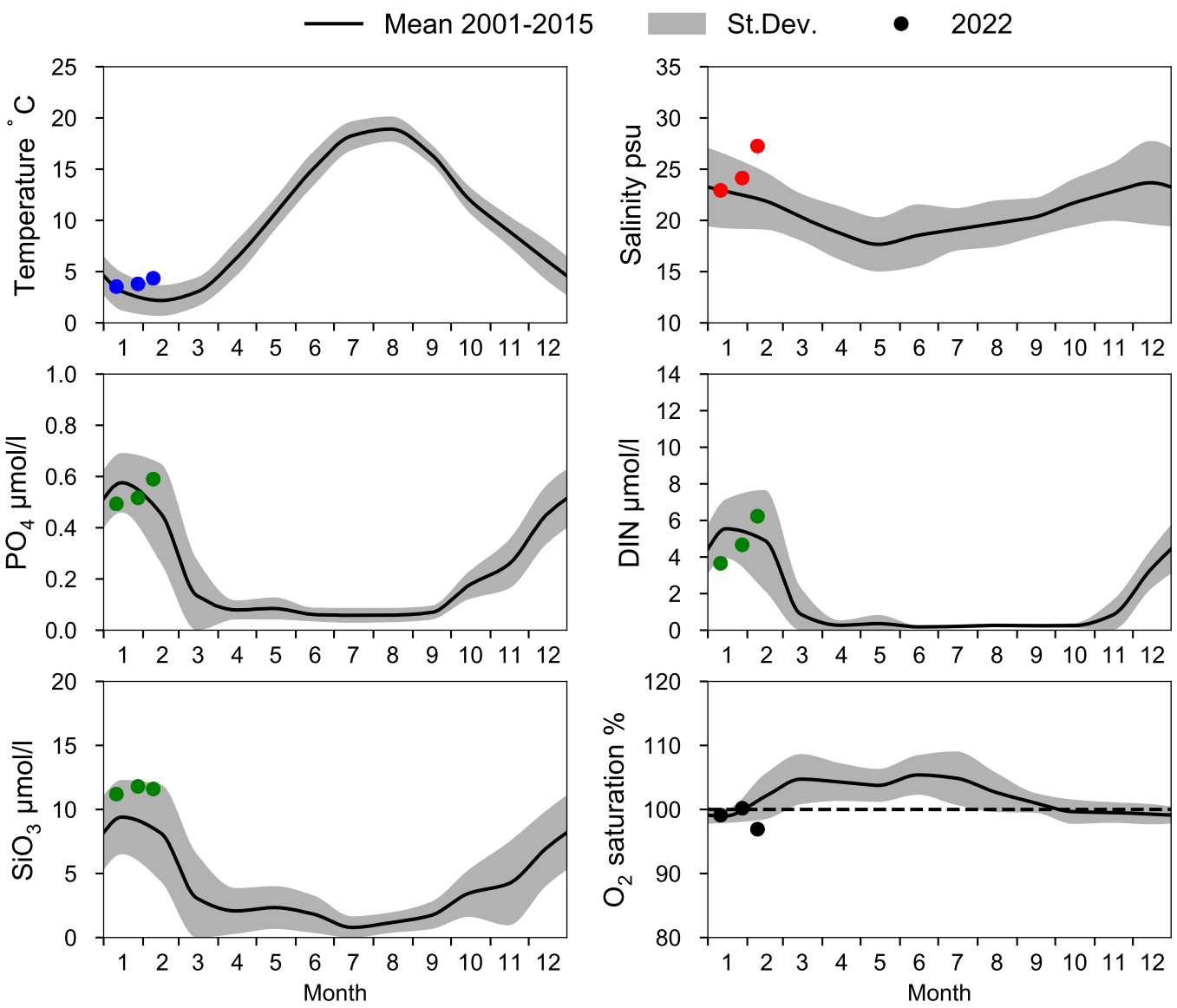


Vertical profiles N14 FALKENBERG
February

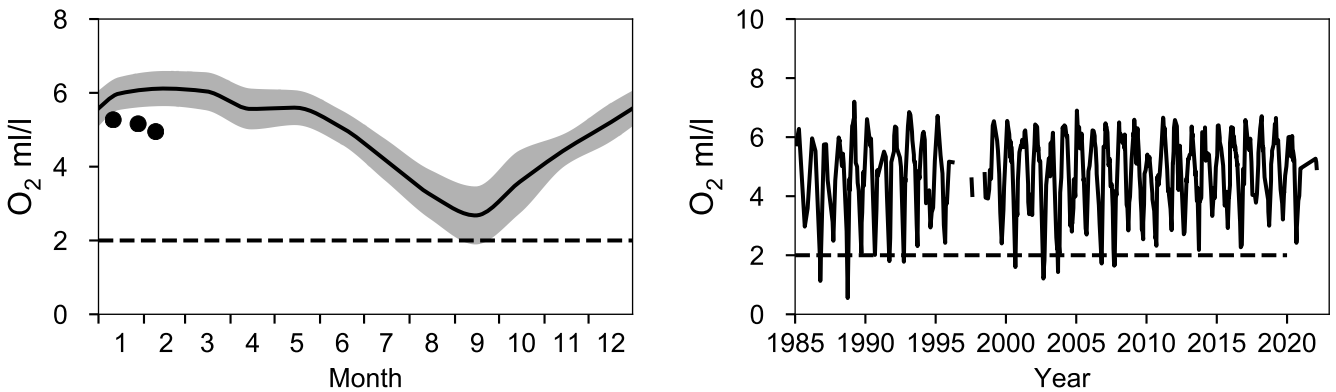


STATION ANHOLT E SURFACE WATER (0-10 m)

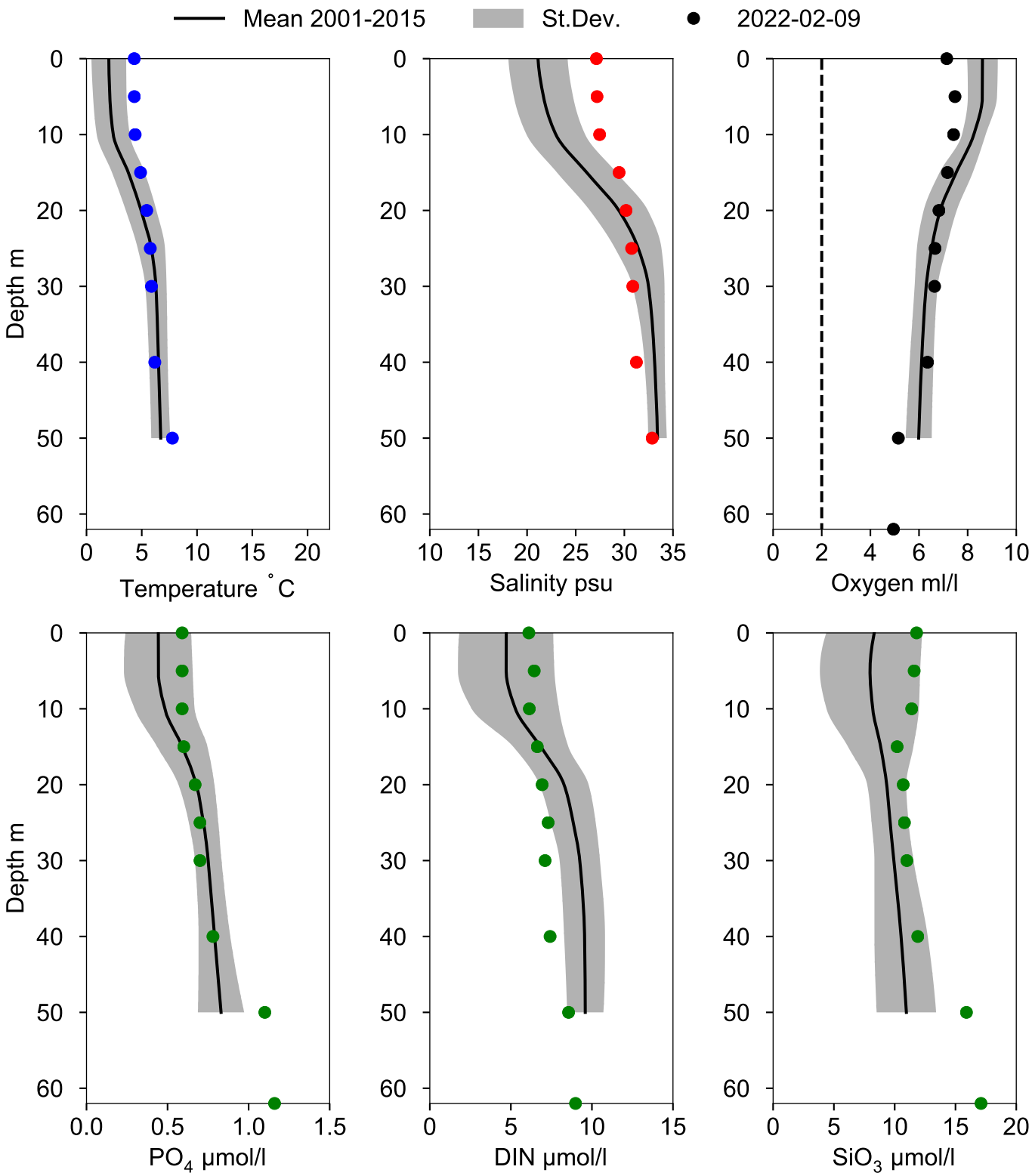
Annual Cycles



OXYGEN IN BOTTOM WATER (depth >= 52 m)

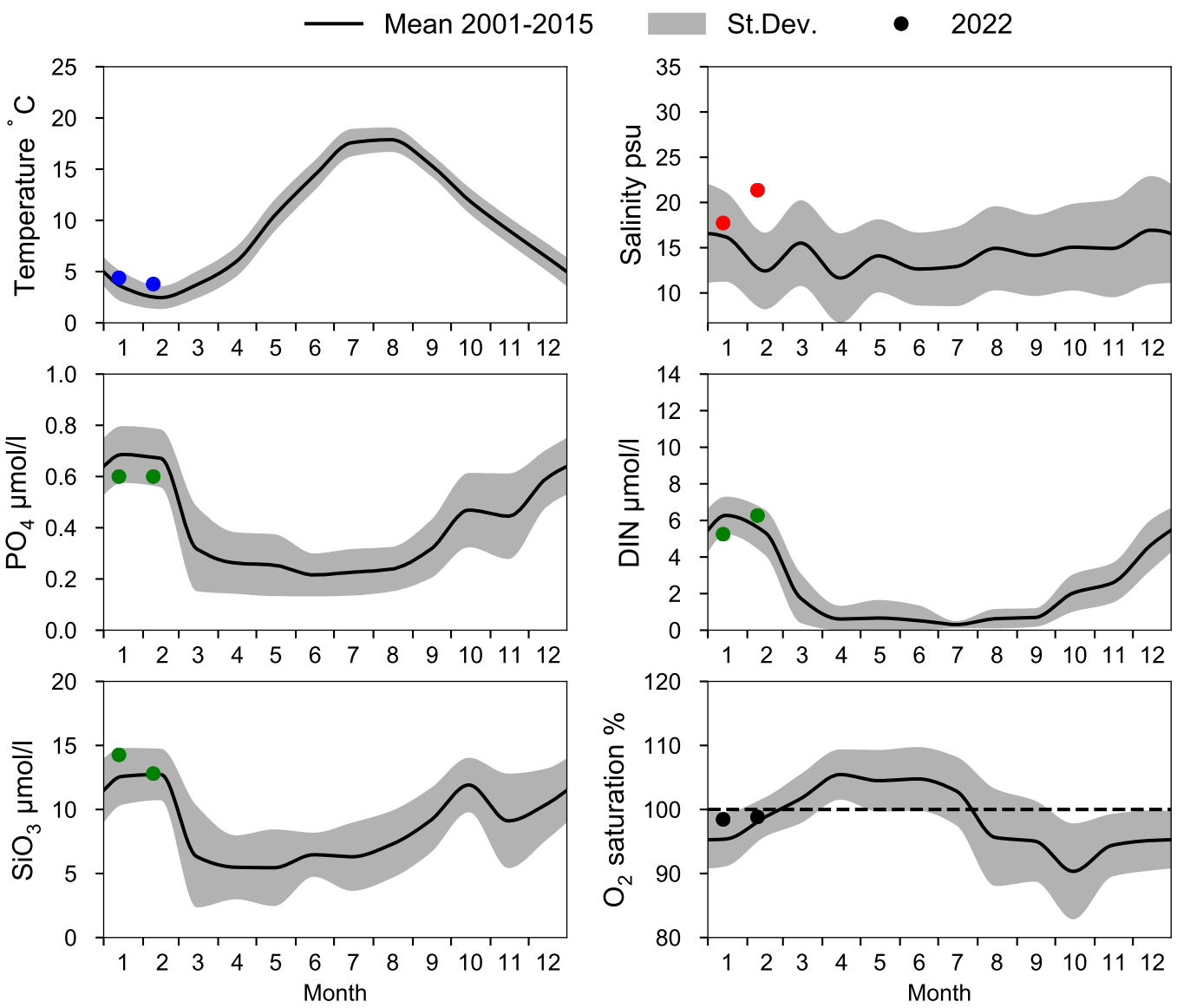


Vertical profiles ANHOLT E
February

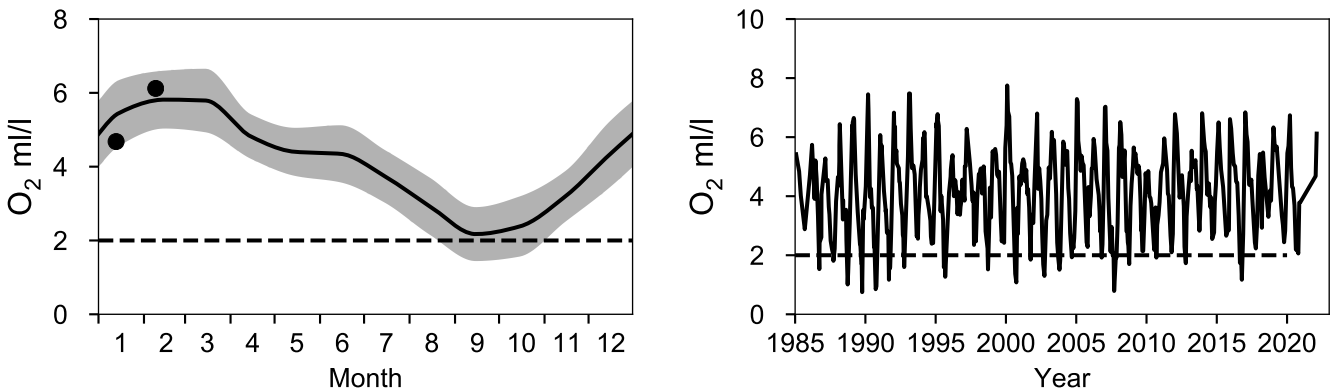


STATION W LANDSKRONA SURFACE WATER (0-10 m)

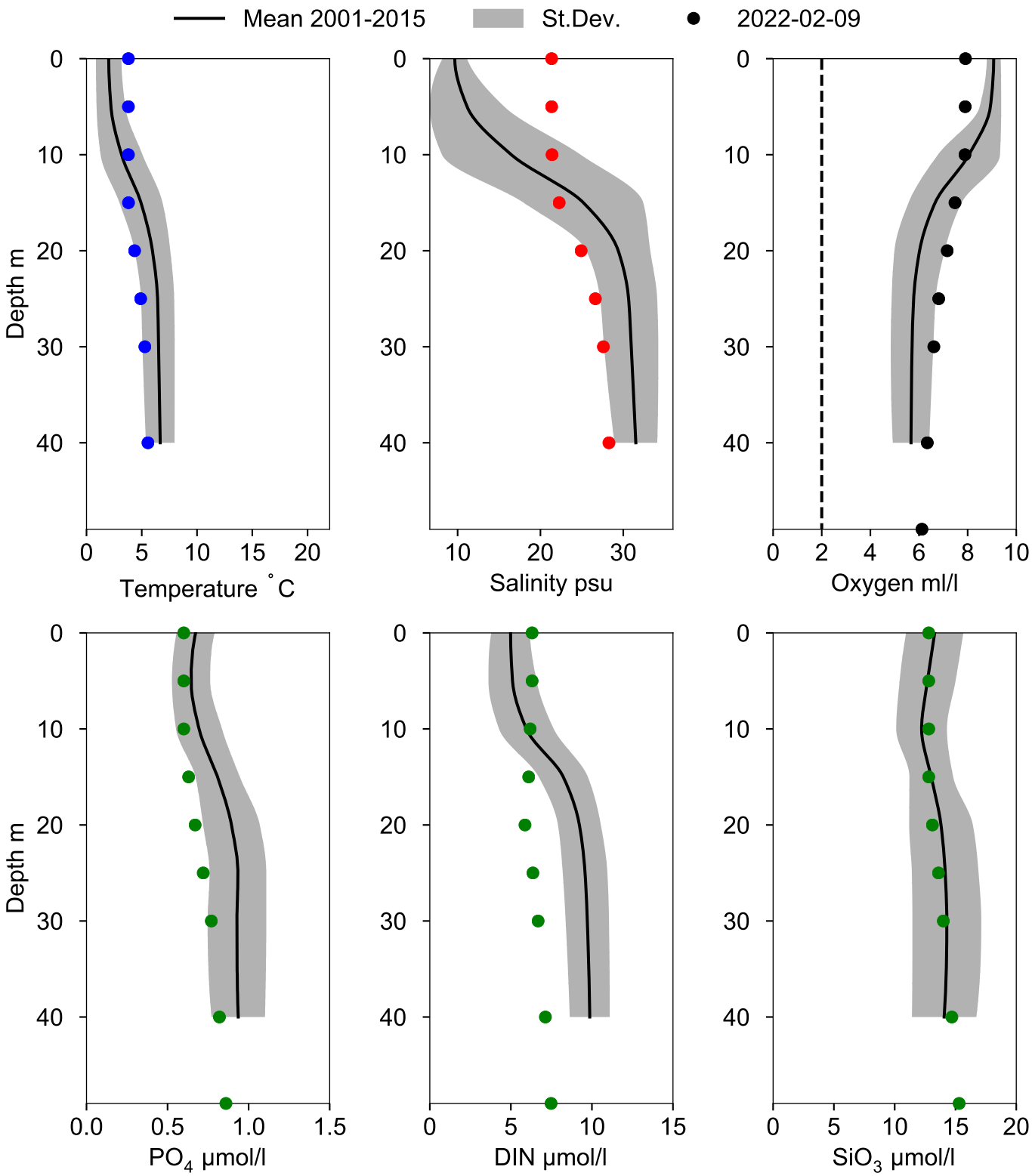
Annual Cycles



OXYGEN IN BOTTOM WATER (depth >= 40 m)



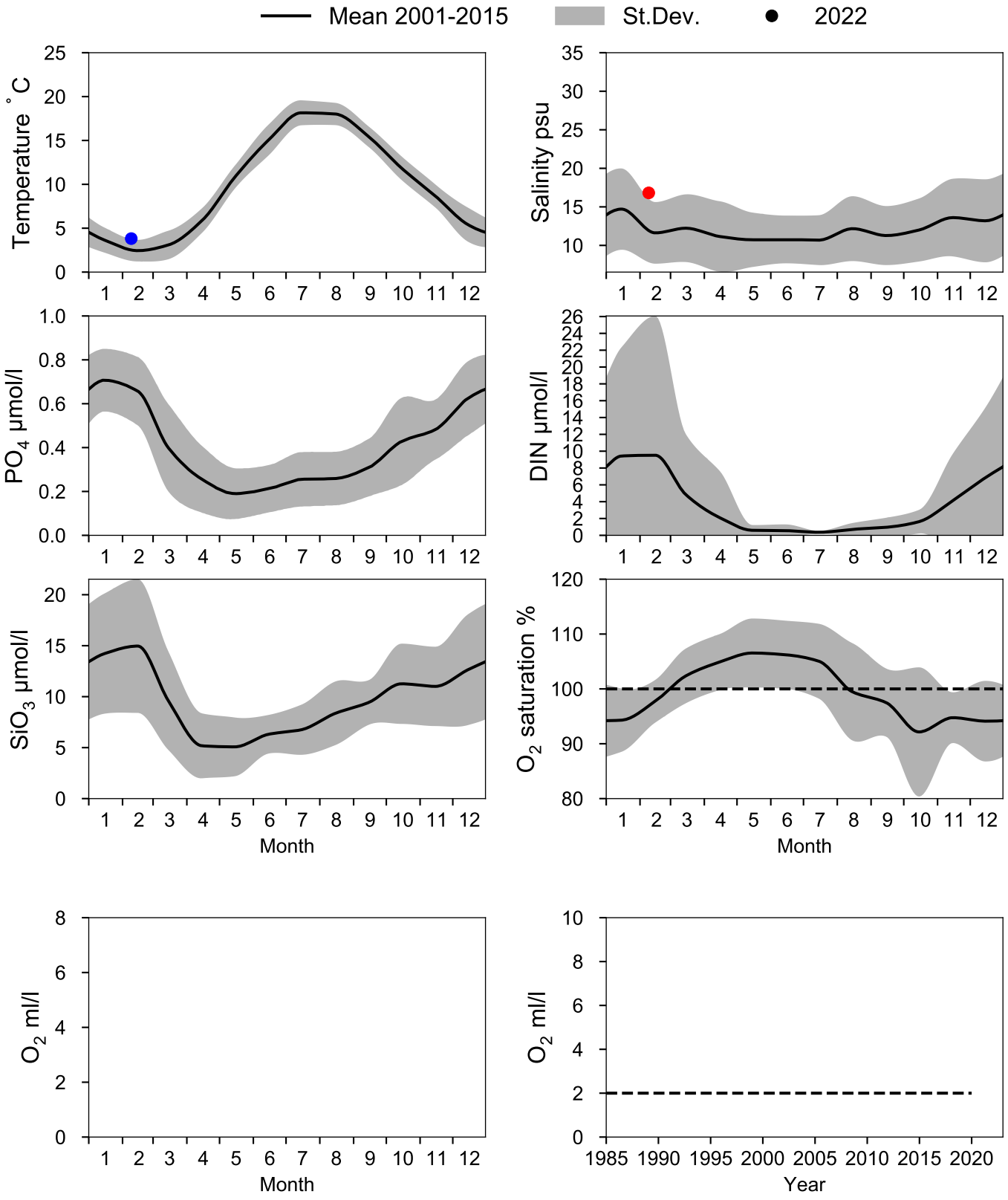
Vertical profiles W LANDSKRONA
February



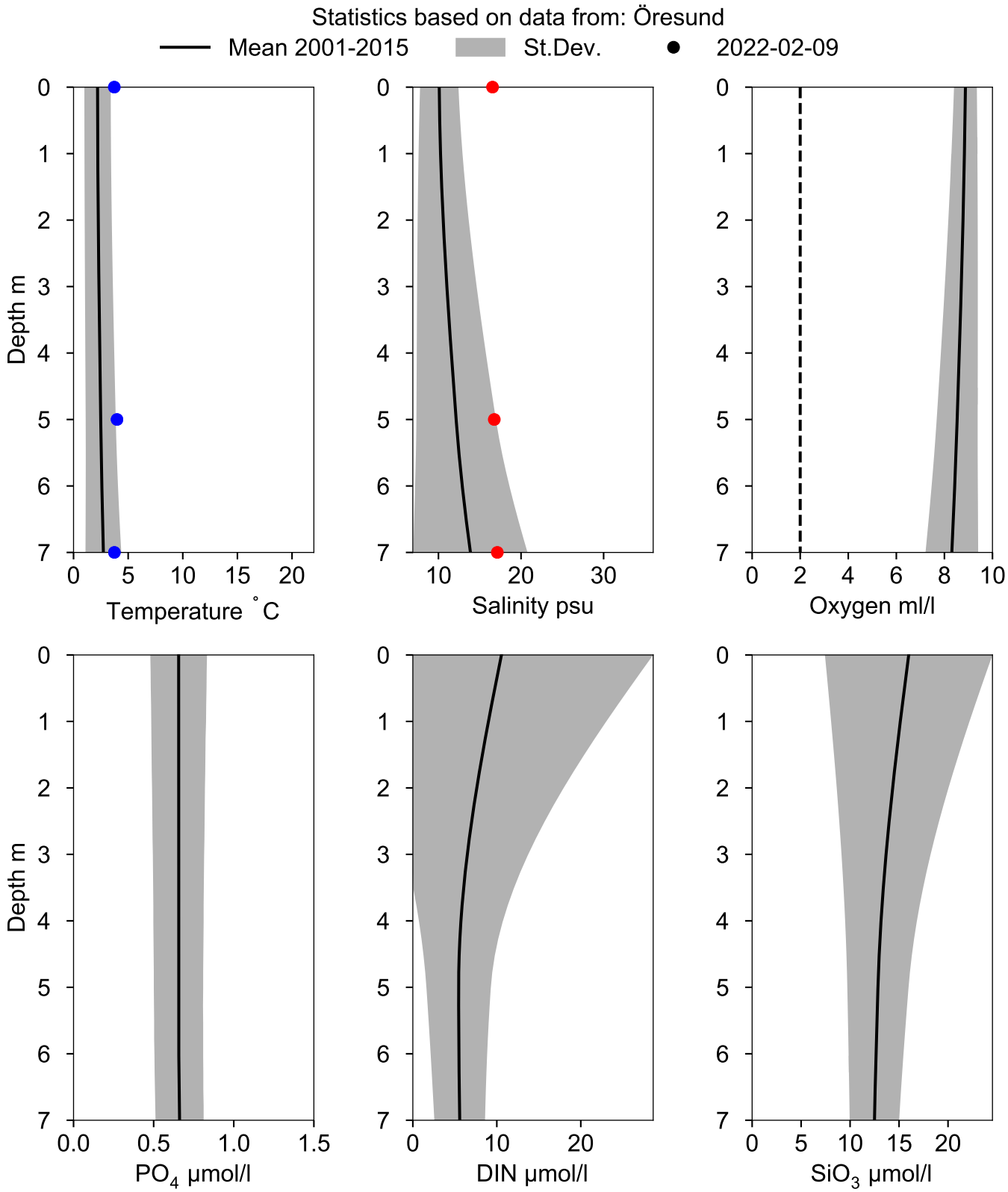
STATION FLINTEN 7 SURFACE WATER (0-10 m)

Annual Cycles

Statistics based on data from: Öresund



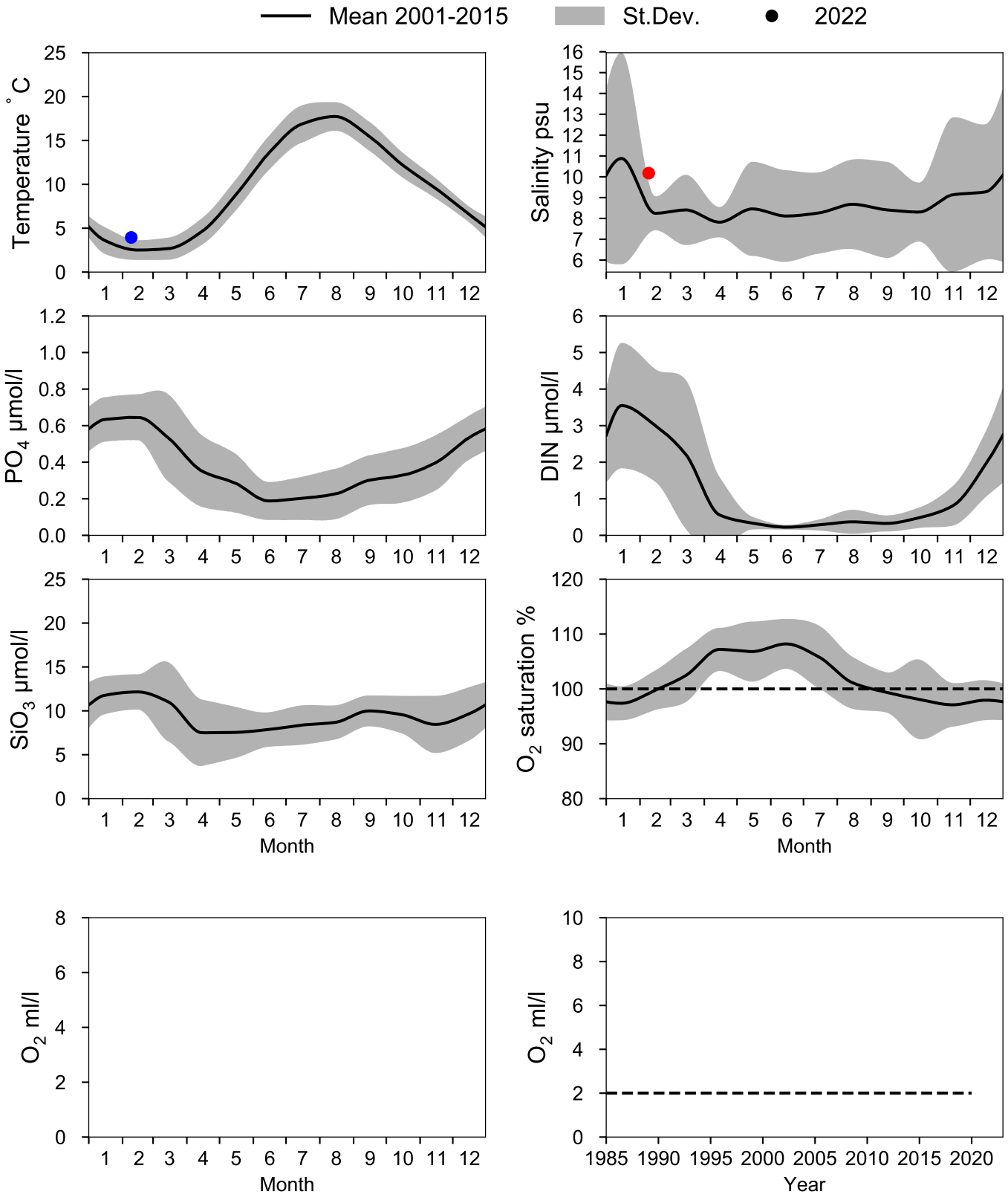
Vertical profiles FLINTEN 7
February



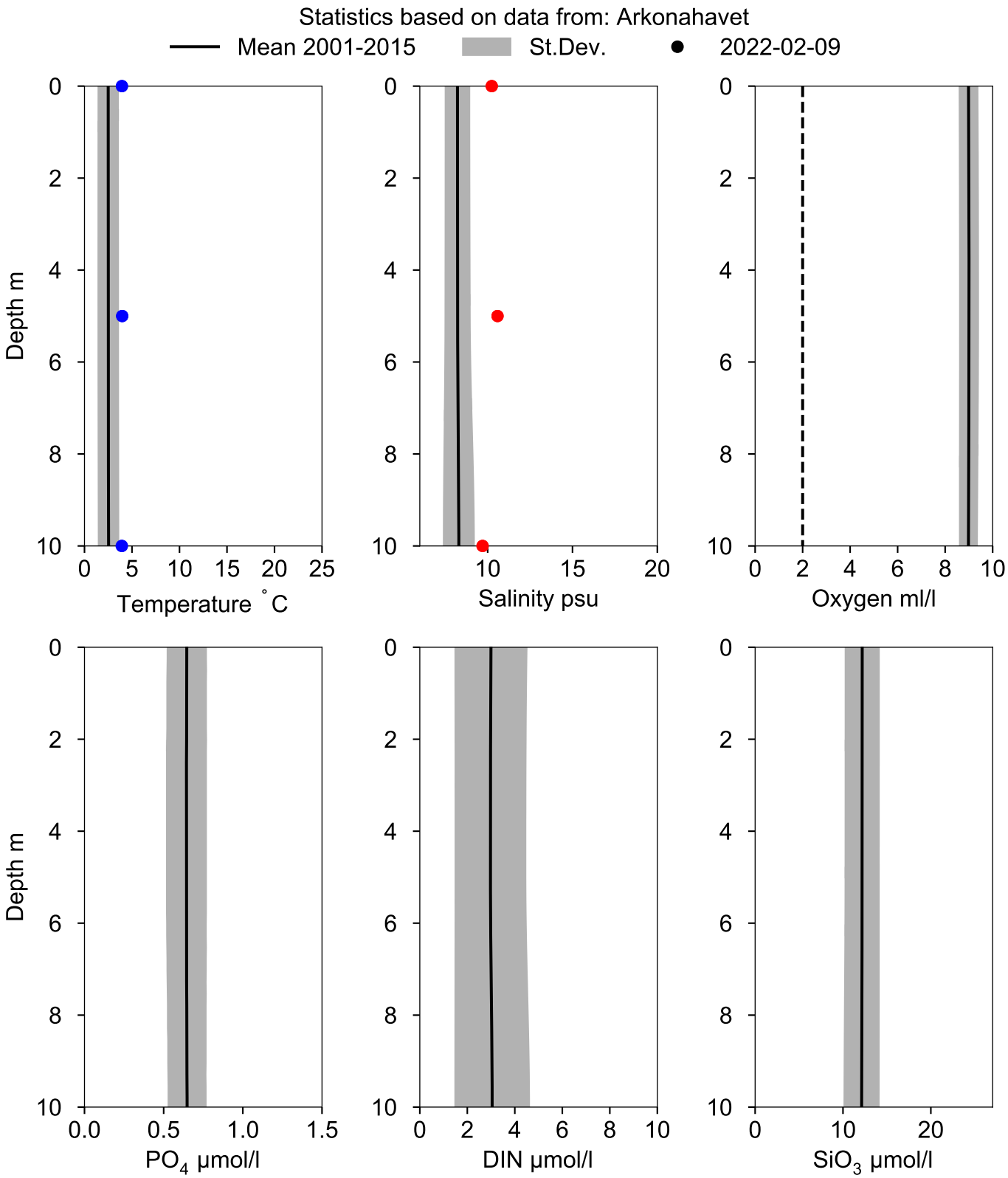
STATION 6W FALSTERBO SURFACE WATER (0-10 m)

Annual Cycles

Statistics based on data from: Arkonahavet



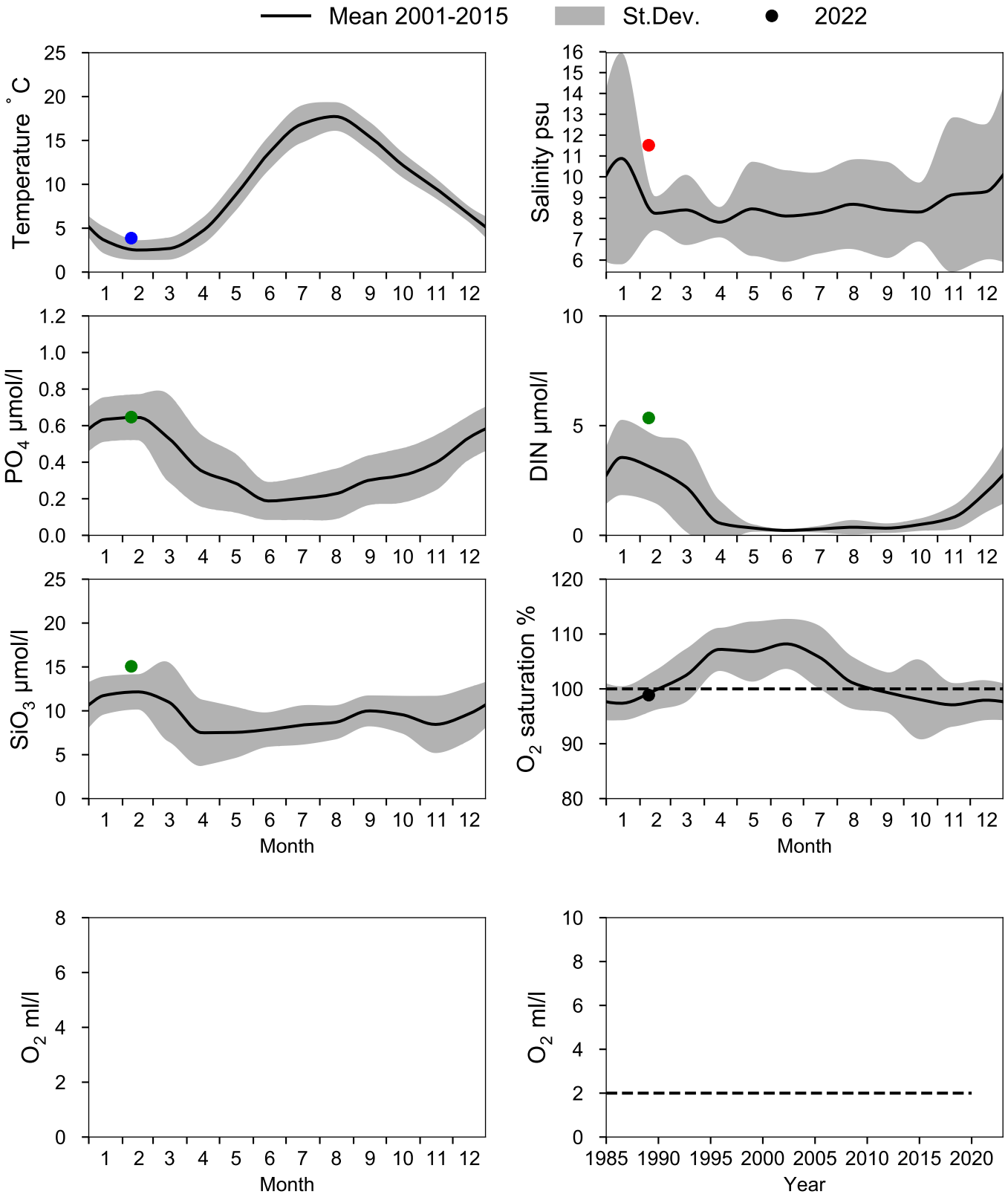
Vertical profiles 6W FALSTERBO
February



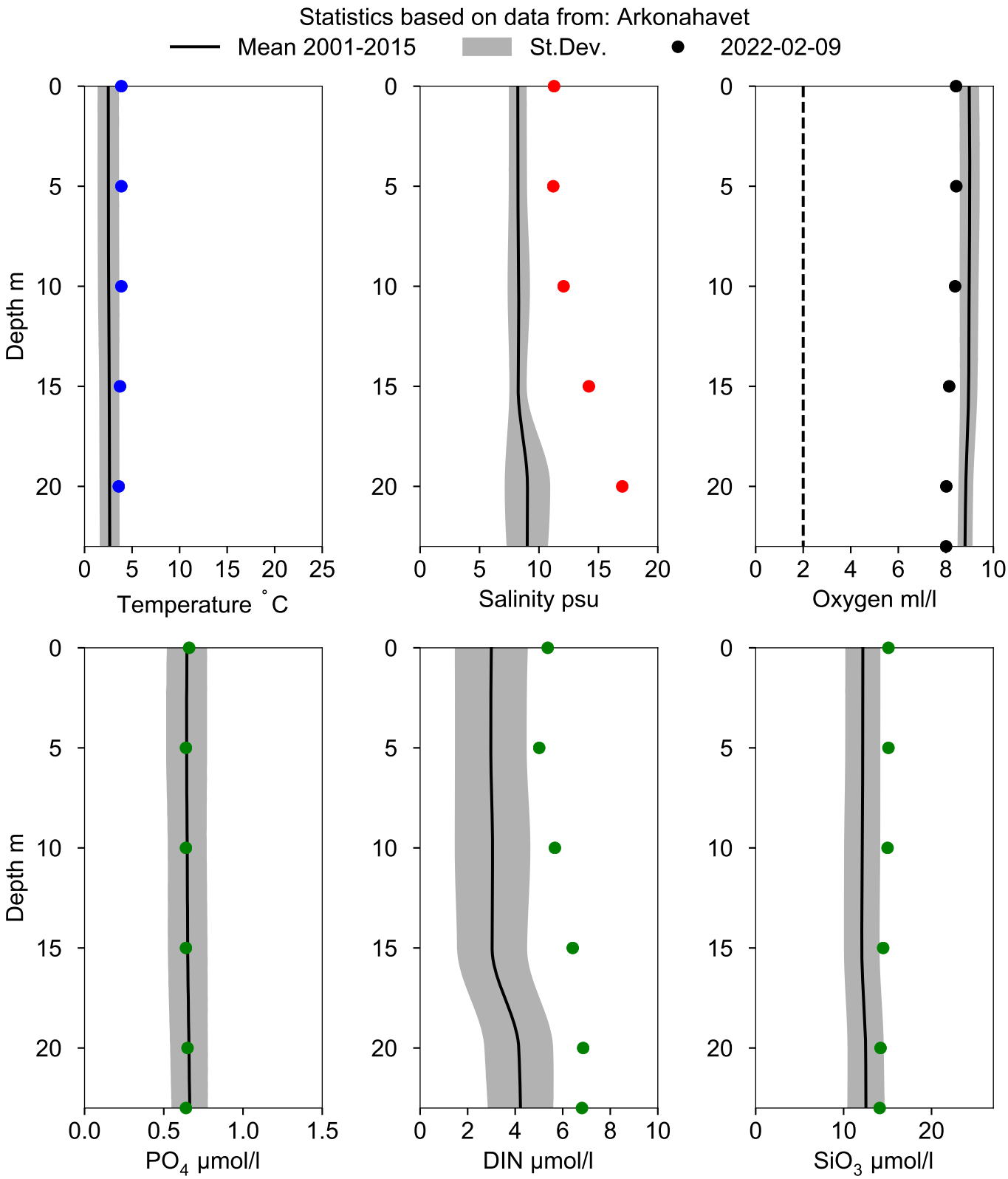
STATION 441 STEVNS KLINT SURFACE WATER (0-10 m)

Annual Cycles

Statistics based on data from: Arkonahavet

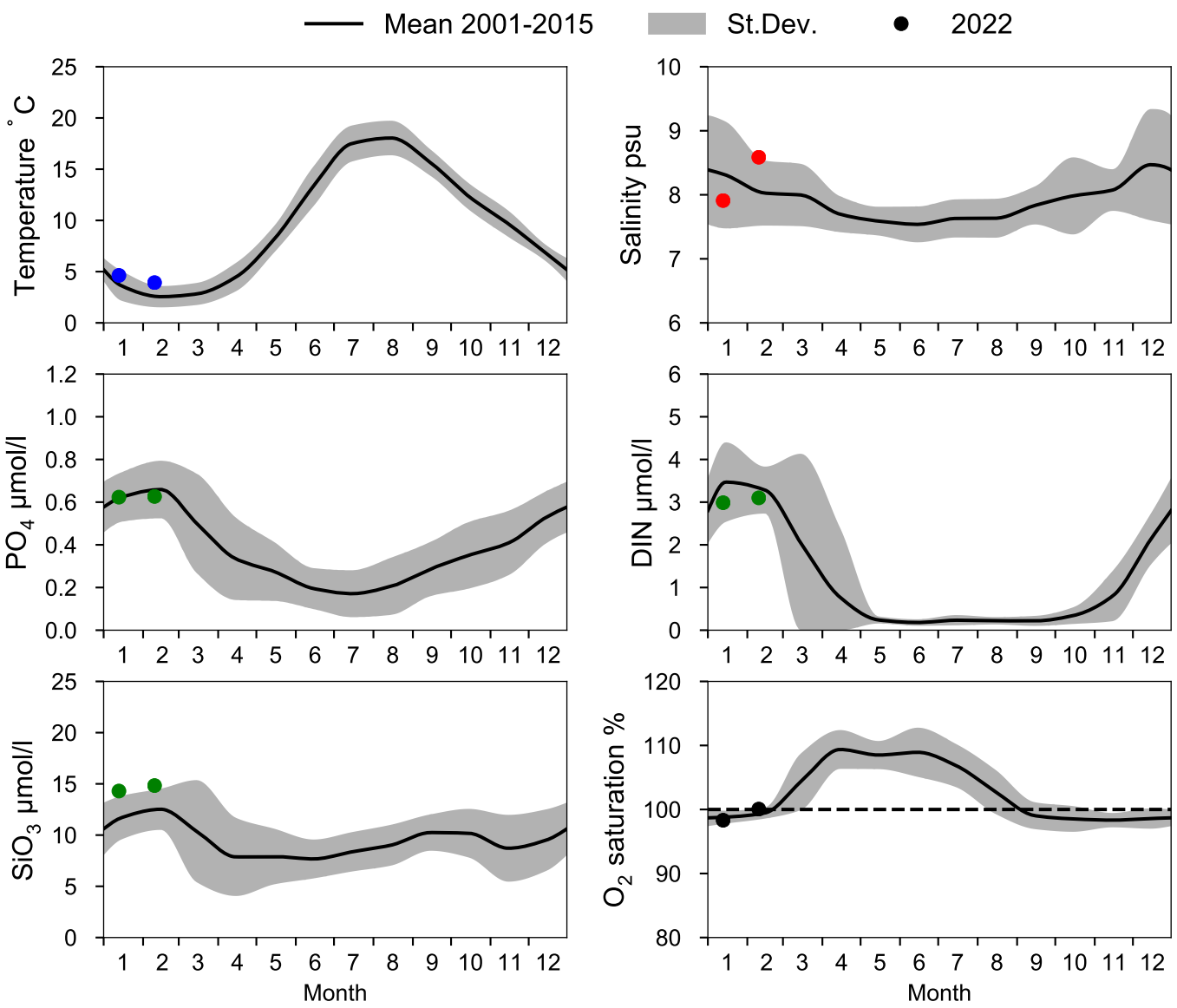


Vertical profiles 441 STEVNS KLINT
February

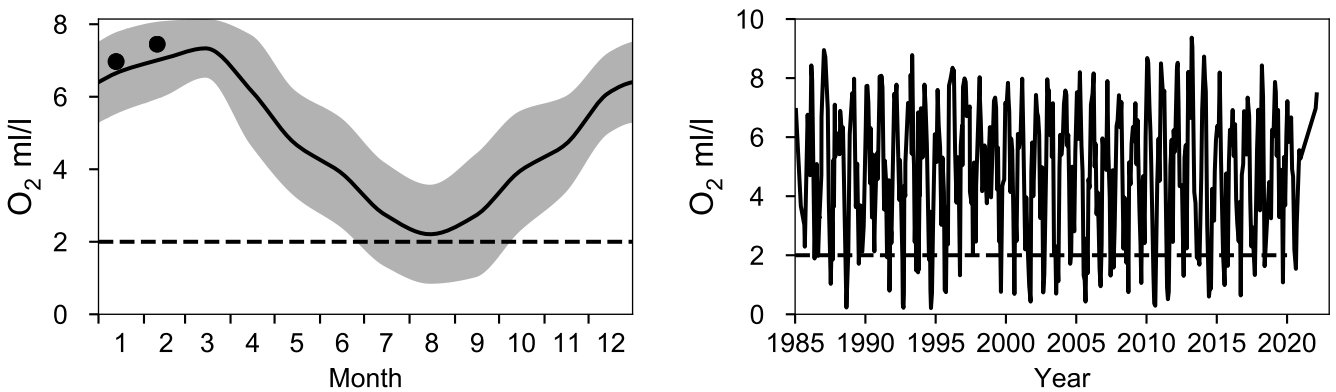


STATION BY1 SURFACE WATER (0-10 m)

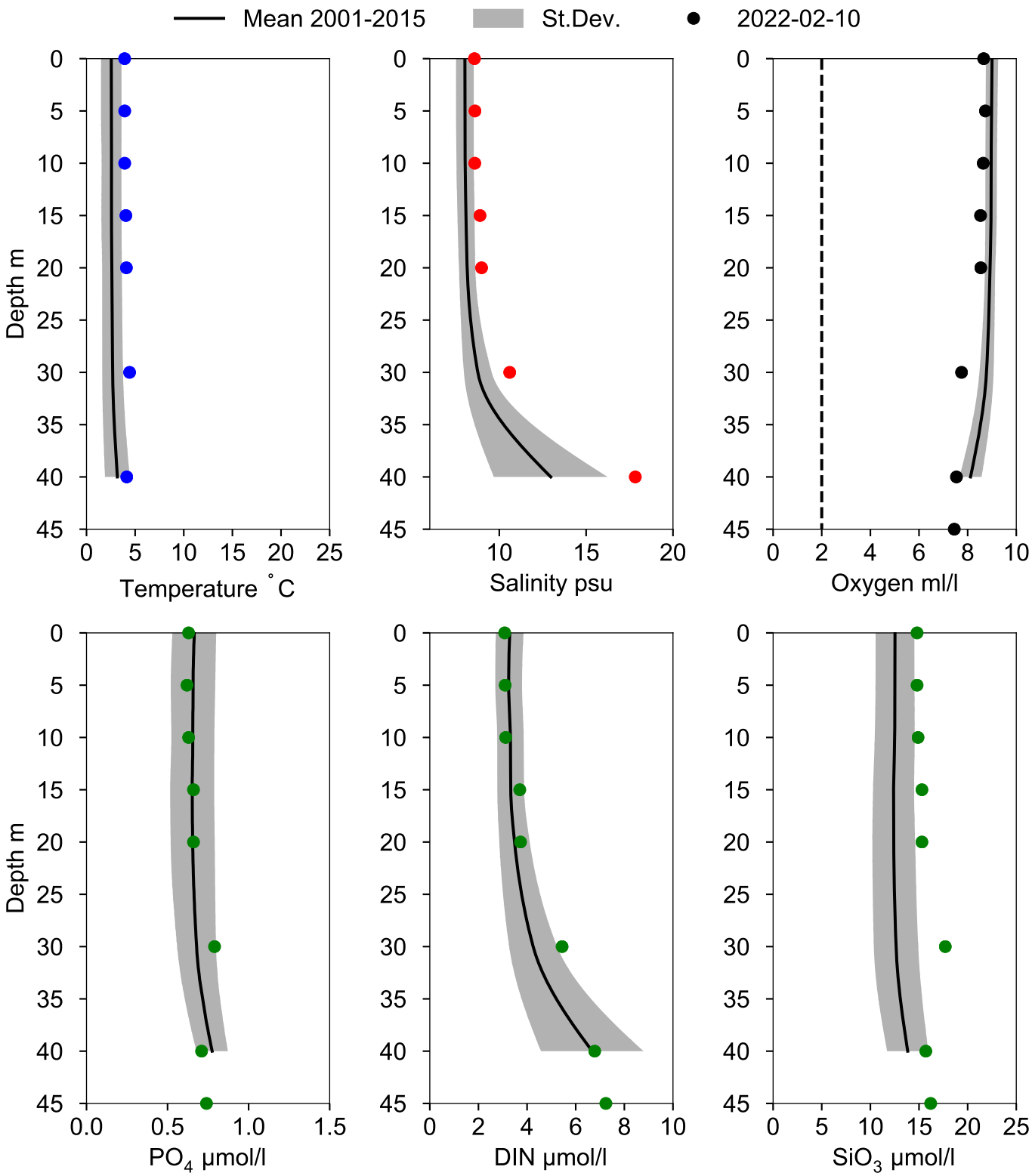
Annual Cycles



OXYGEN IN BOTTOM WATER (depth >= 39 m)

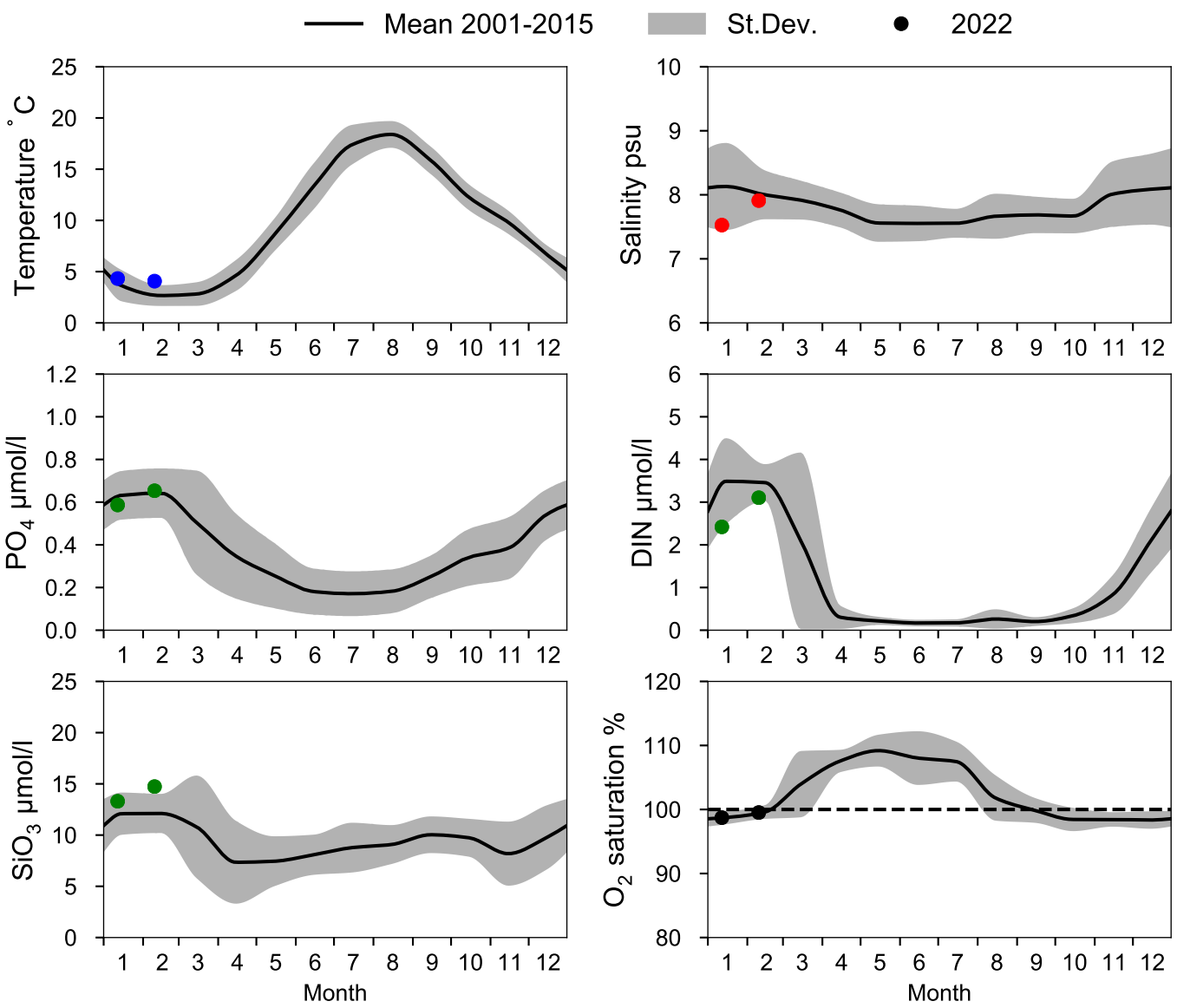


Vertical profiles BY1
February

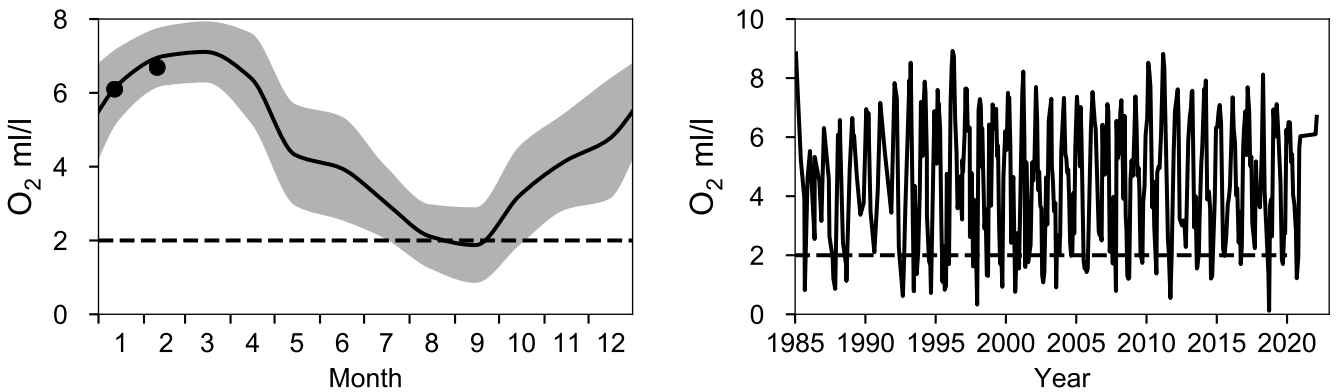


STATION BY2 ARKONA SURFACE WATER (0-10 m)

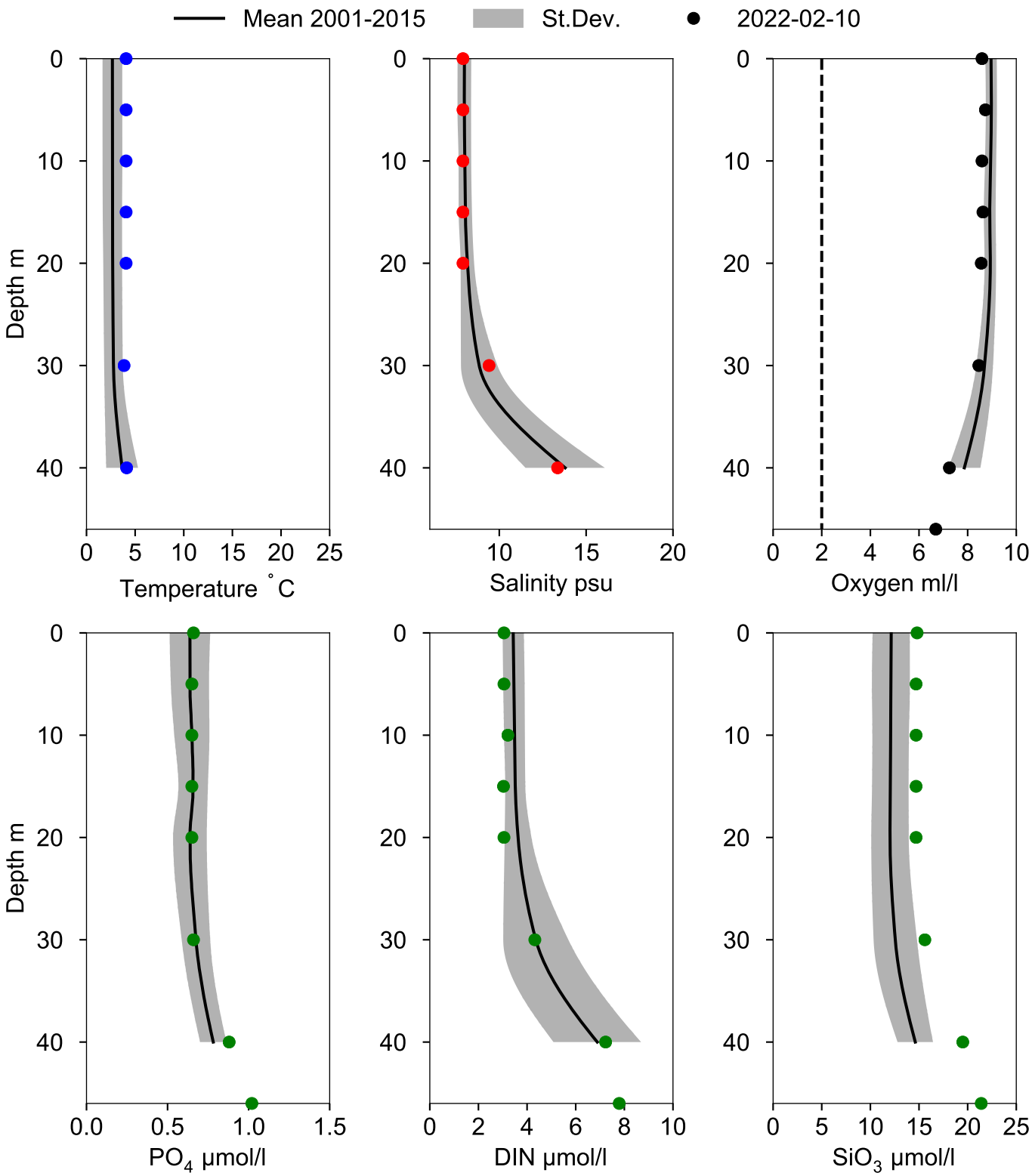
Annual Cycles



OXYGEN IN BOTTOM WATER (depth >= 40 m)



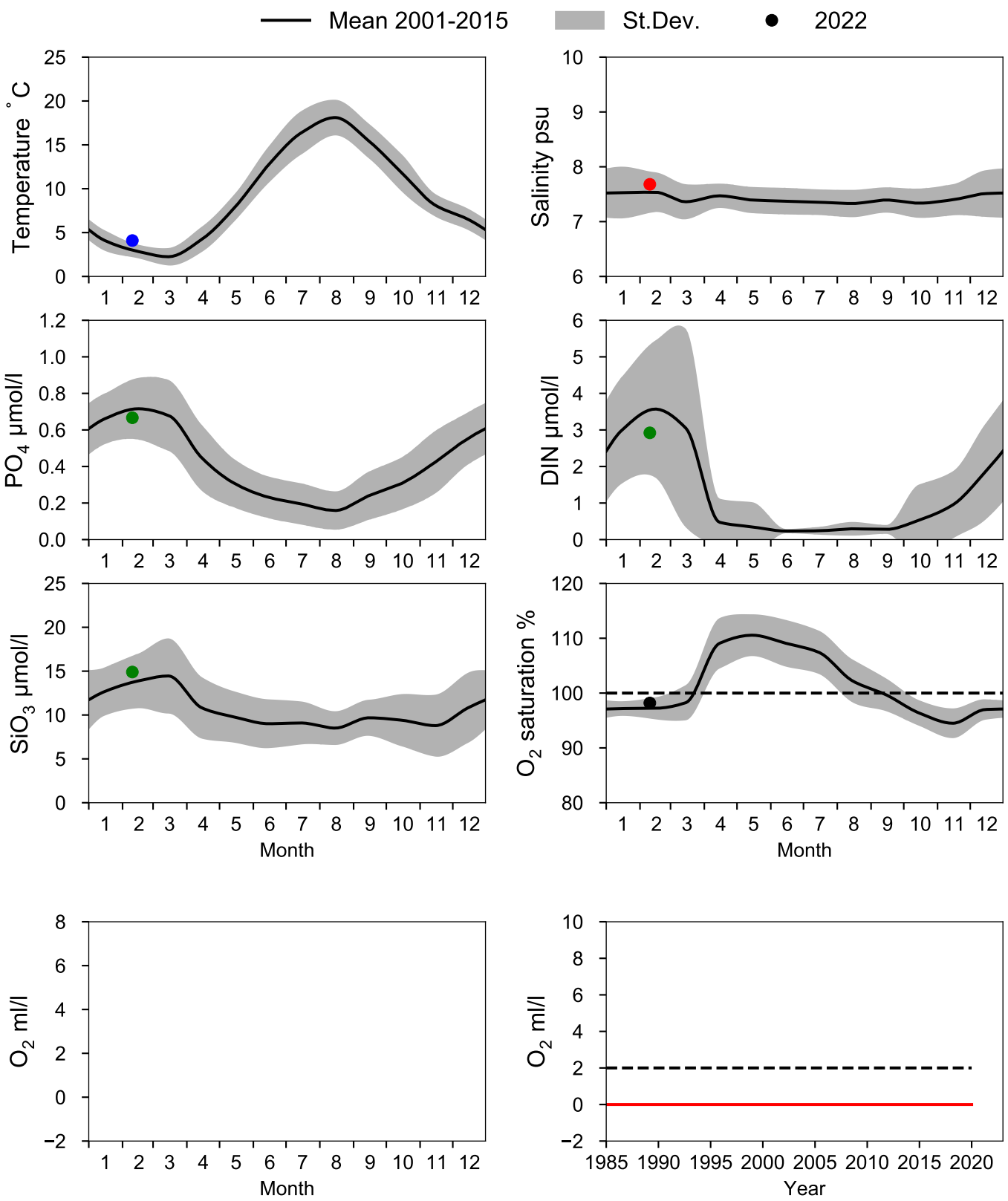
Vertical profiles BY2 ARKONA
February



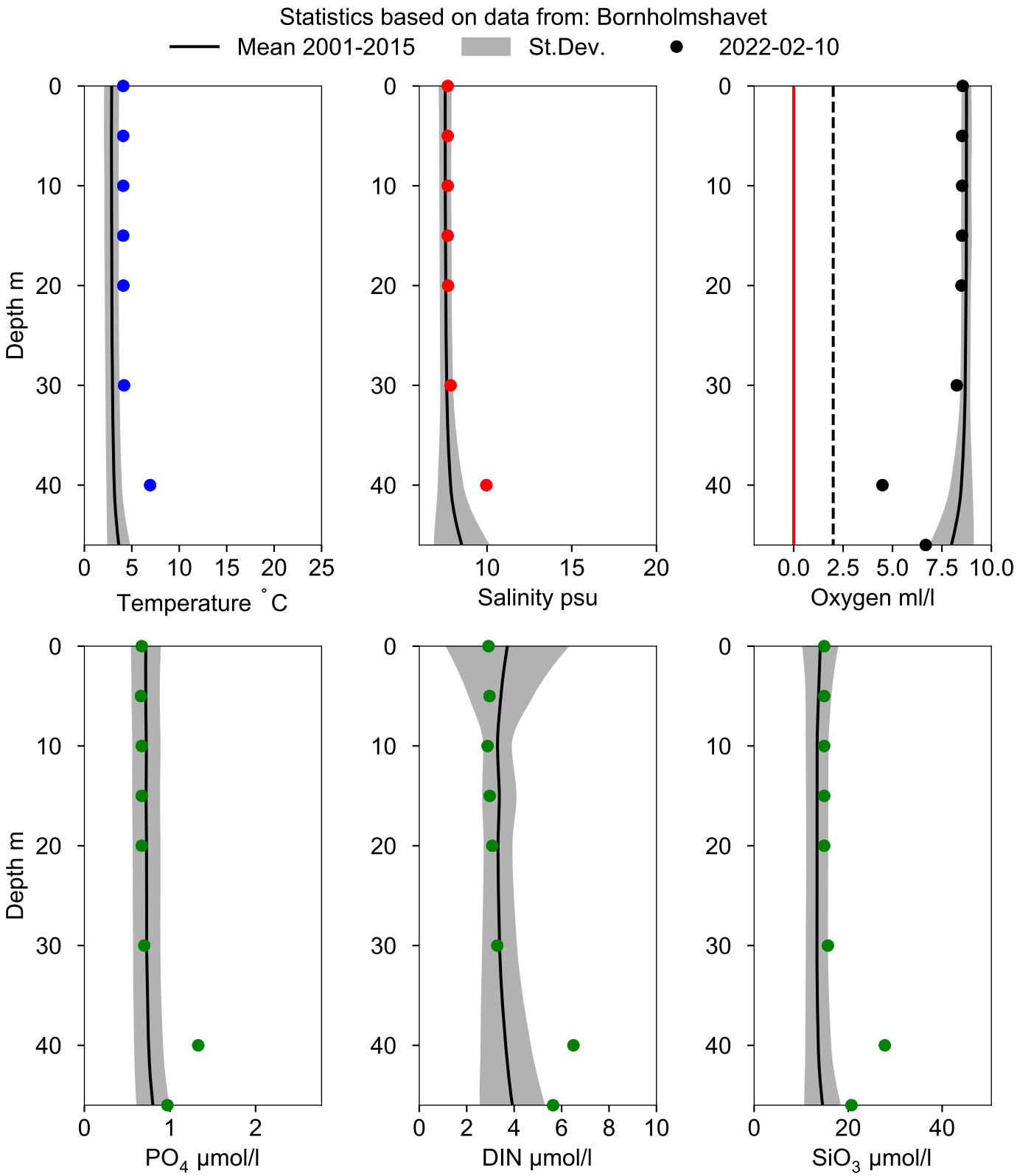
STATION BY3 HAMRARNE SUND SURFACE WATER (0-10 m)

Annual Cycles

Statistics based on data from: Bornholmshavet

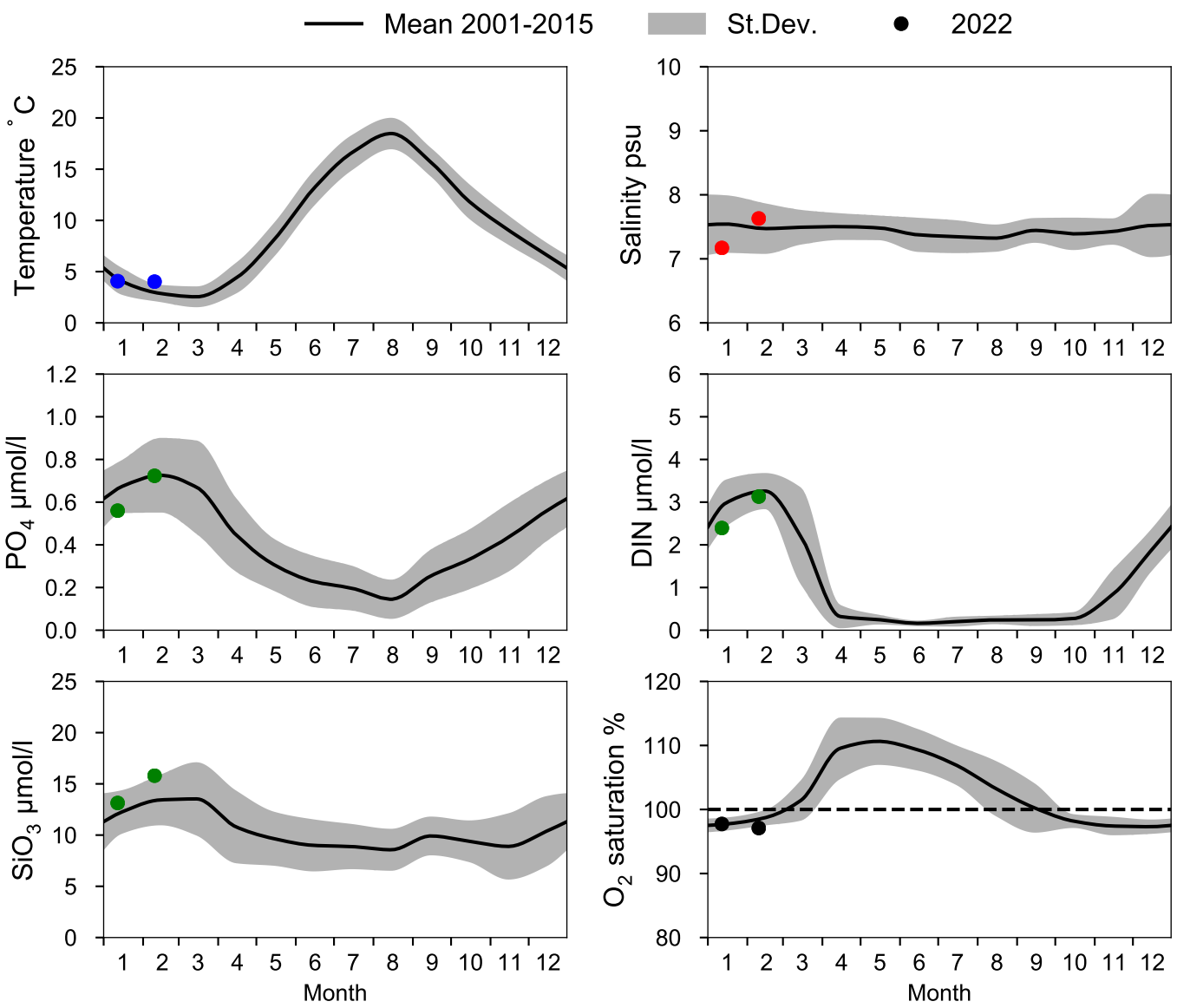


Vertical profiles BY3 HAMRARNE SUND
February

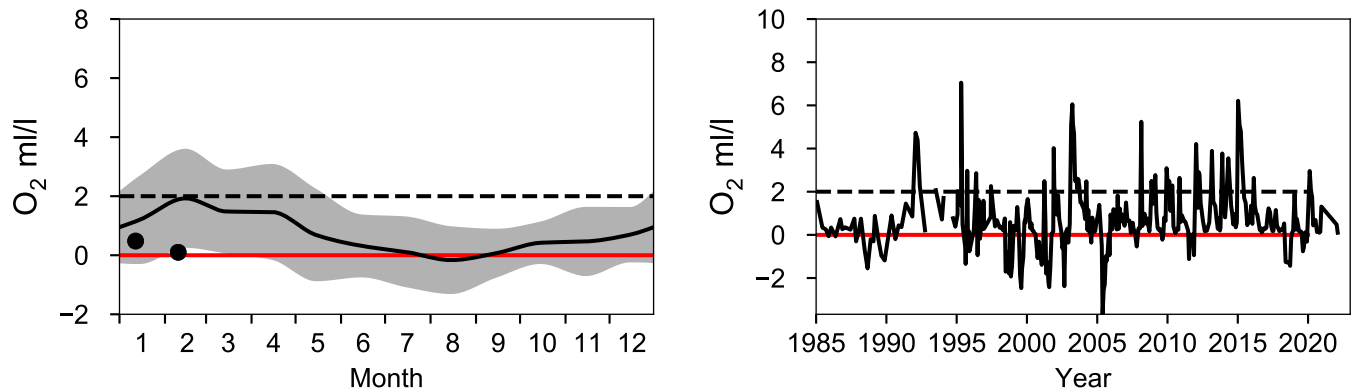


STATION HANÖBUKTEN SURFACE WATER (0-10 m)

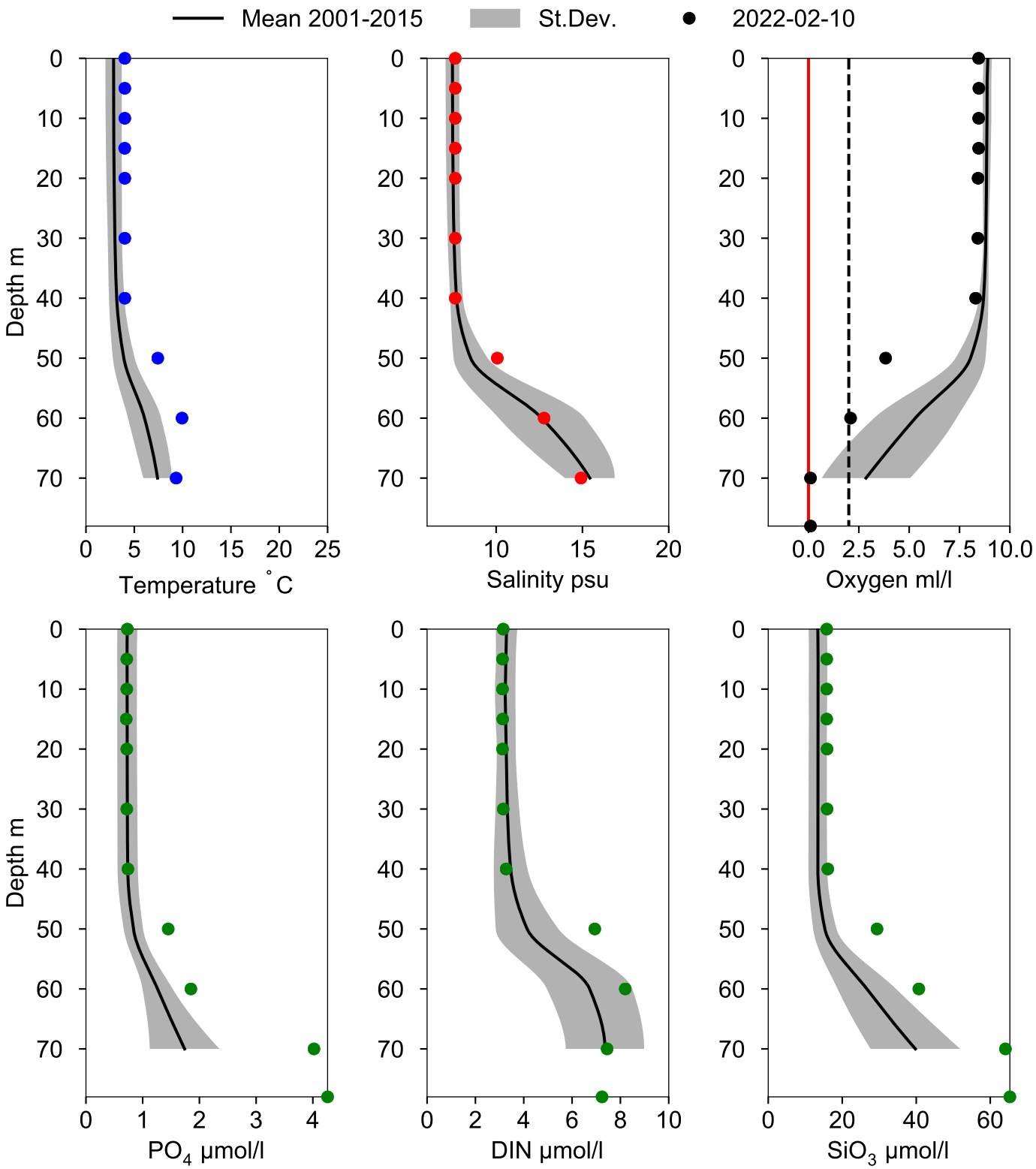
Annual Cycles



OXYGEN IN BOTTOM WATER (depth >= 70 m)



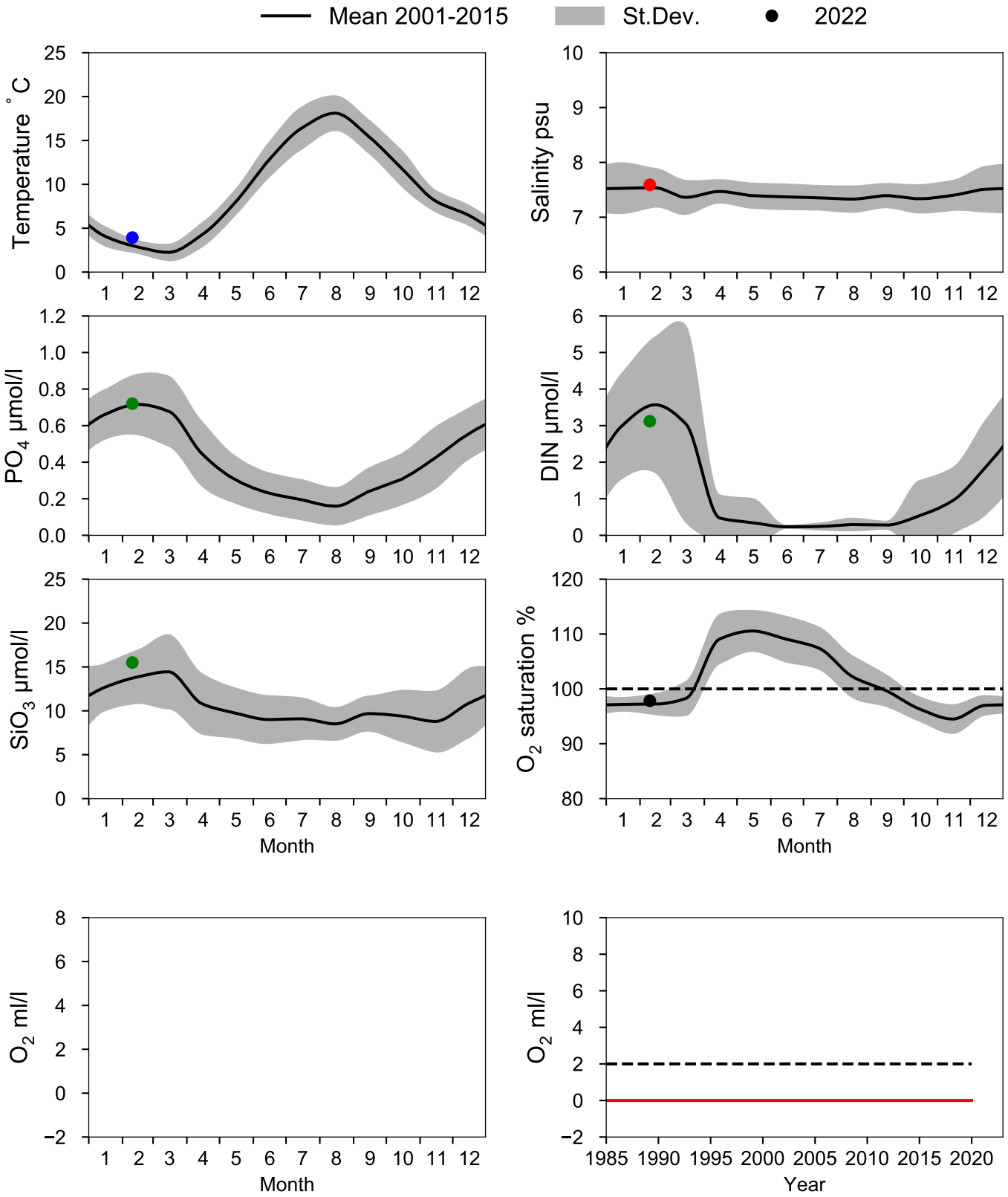
Vertical profiles HANÖBUKTEN
February



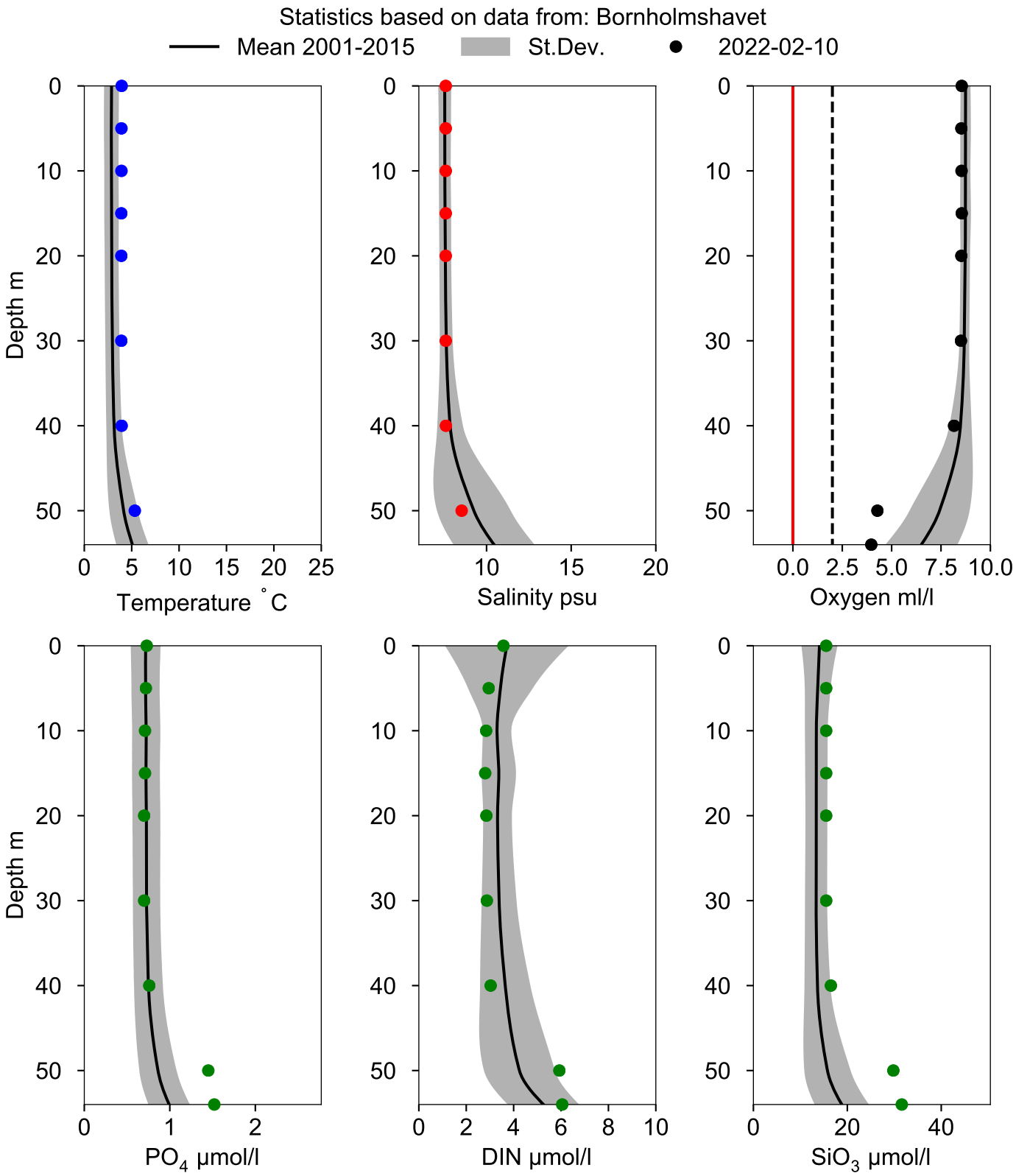
STATION HANÖBUKTEN-KBV SURFACE WATER (0-10 m)

Annual Cycles

Statistics based on data from: Bornholmshavet

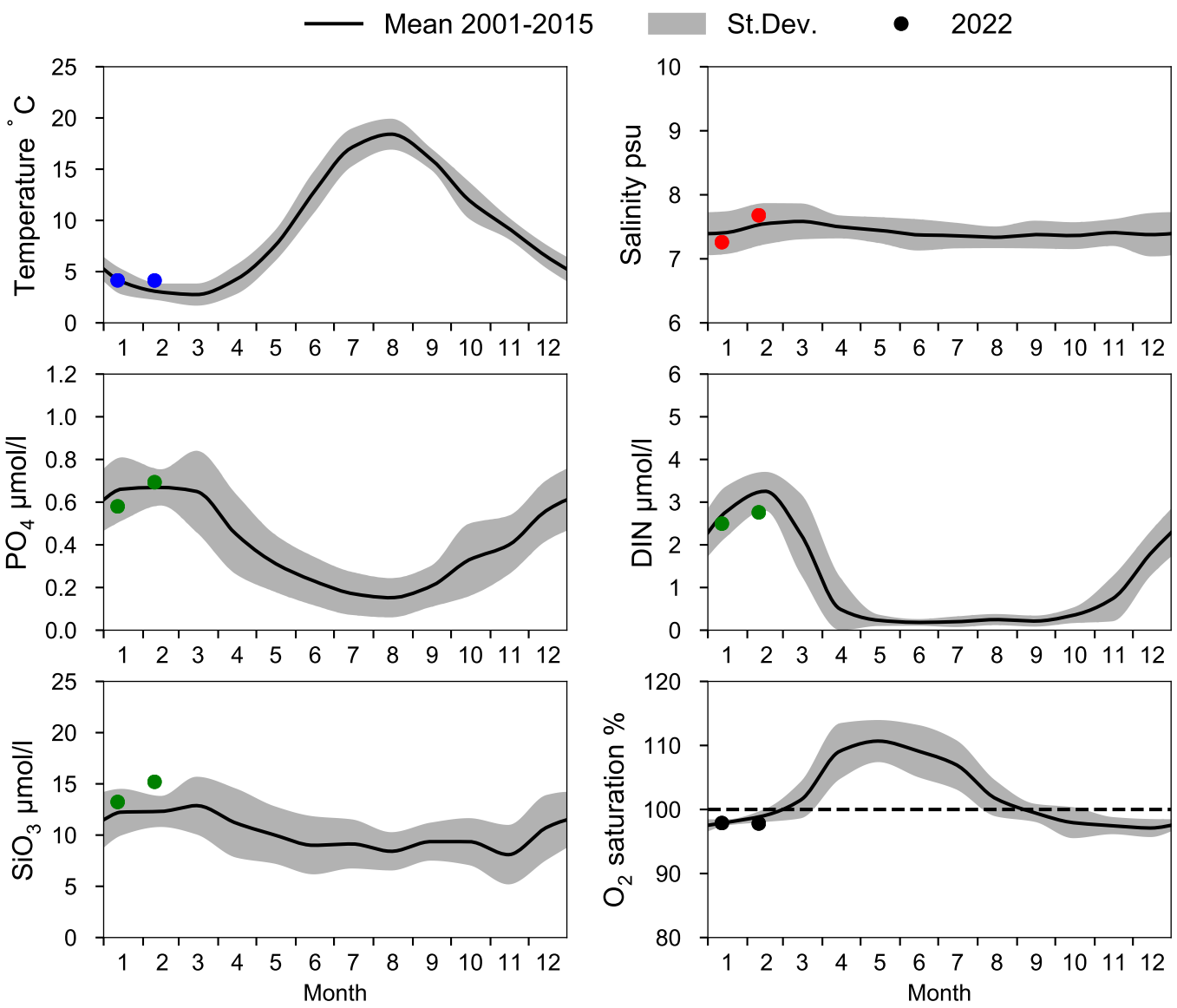


Vertical profiles HANÖBUKTEN-KBV
February

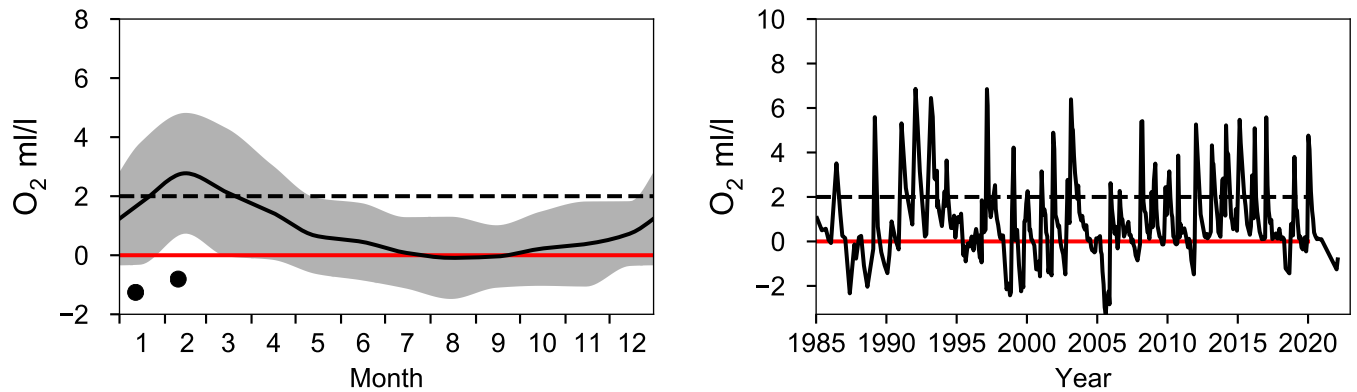


STATION BY4 CHRISTIANSÖ SURFACE WATER (0-10 m)

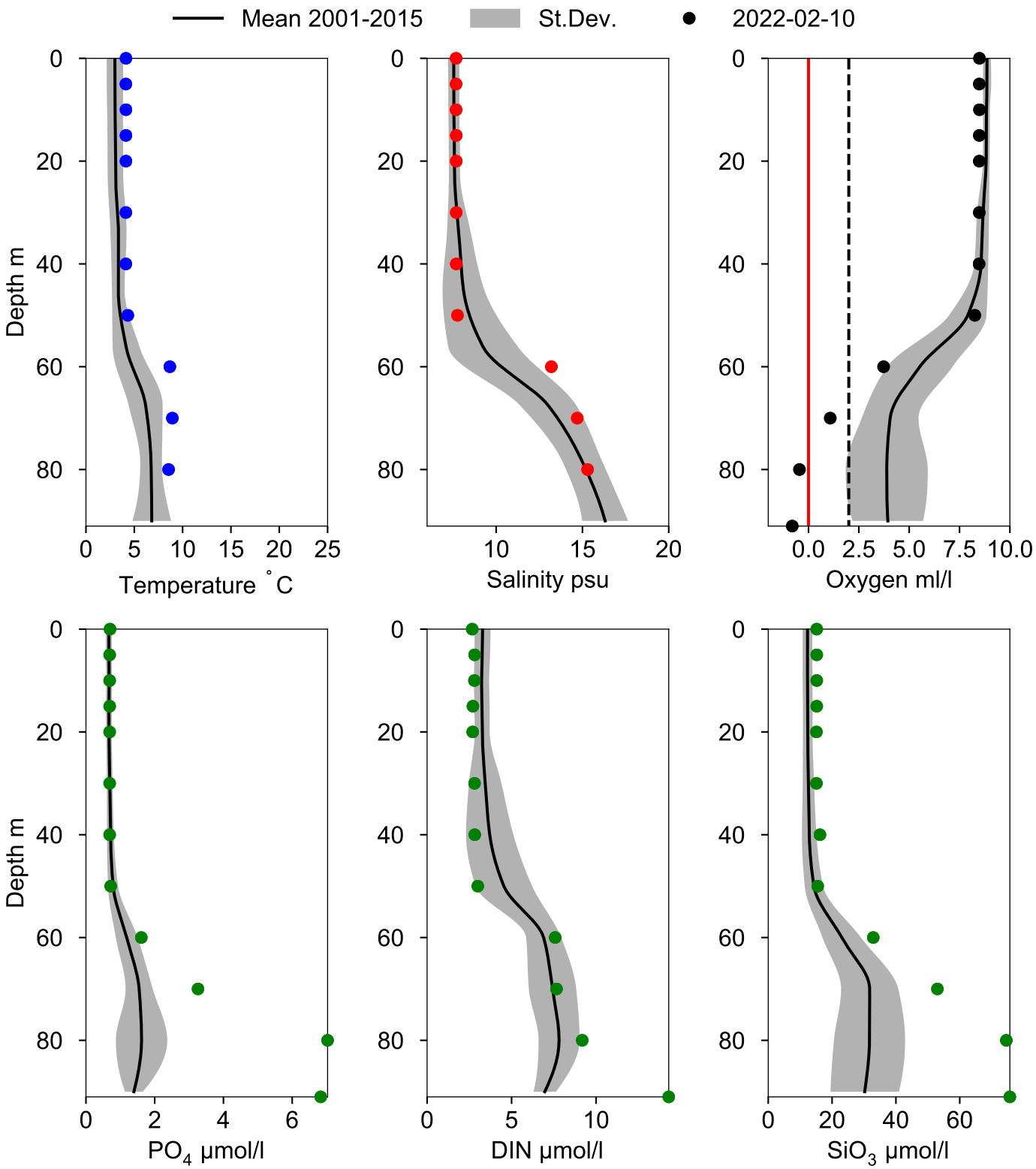
Annual Cycles



OXYGEN IN BOTTOM WATER (depth >= 80 m)

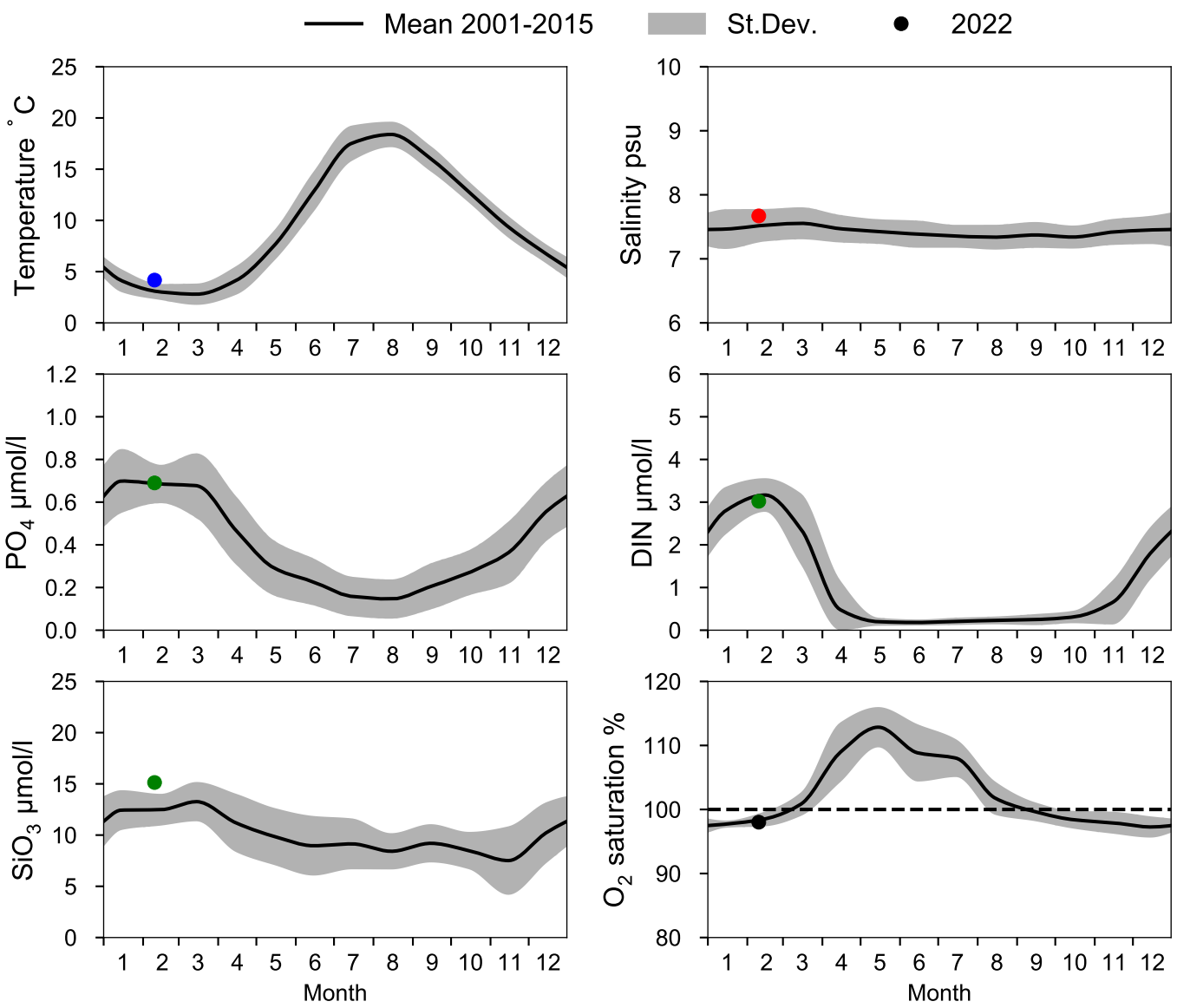


Vertical profiles BY4 CHRISTIANSÖ
February

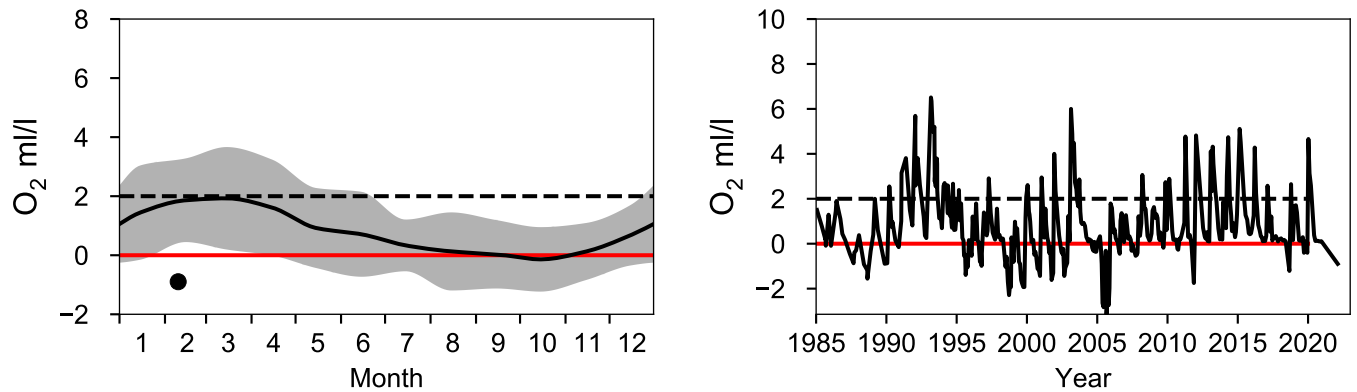


STATION BY5 BORNHOLMSDJ SURFACE WATER (0-10 m)

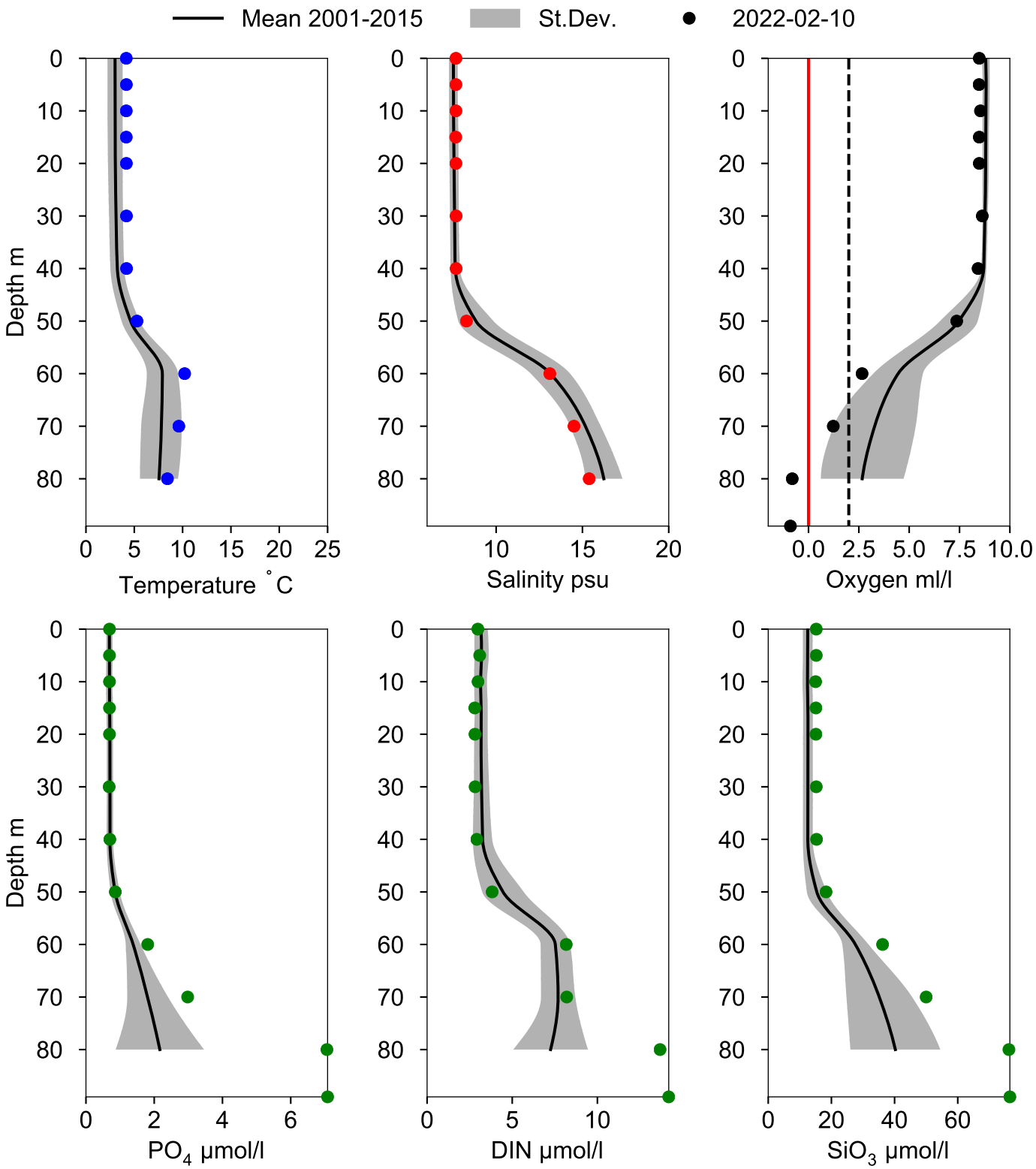
Annual Cycles



OXYGEN IN BOTTOM WATER (depth >= 80 m)



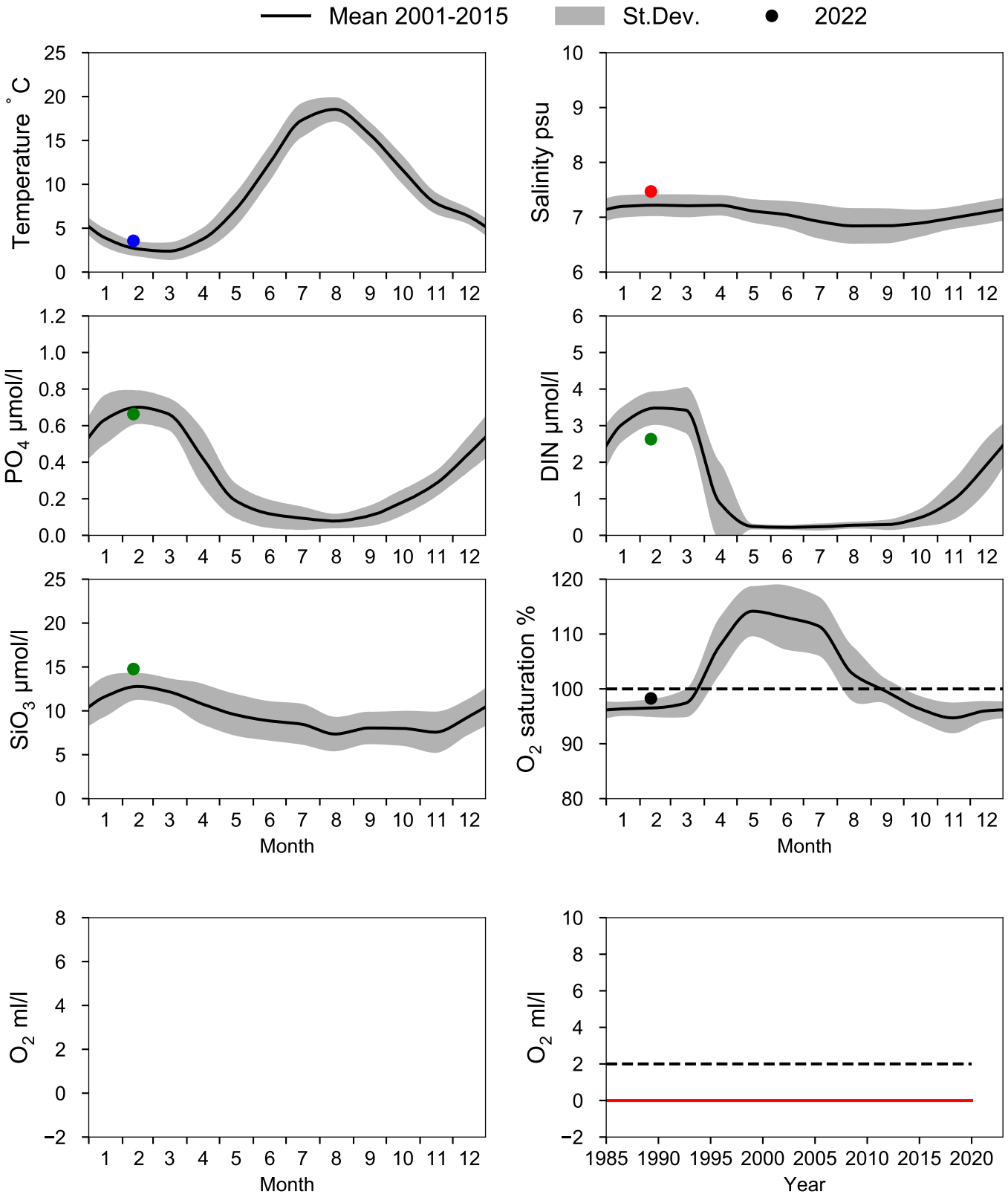
Vertical profiles BY5 BORNHOLMSDJ
February



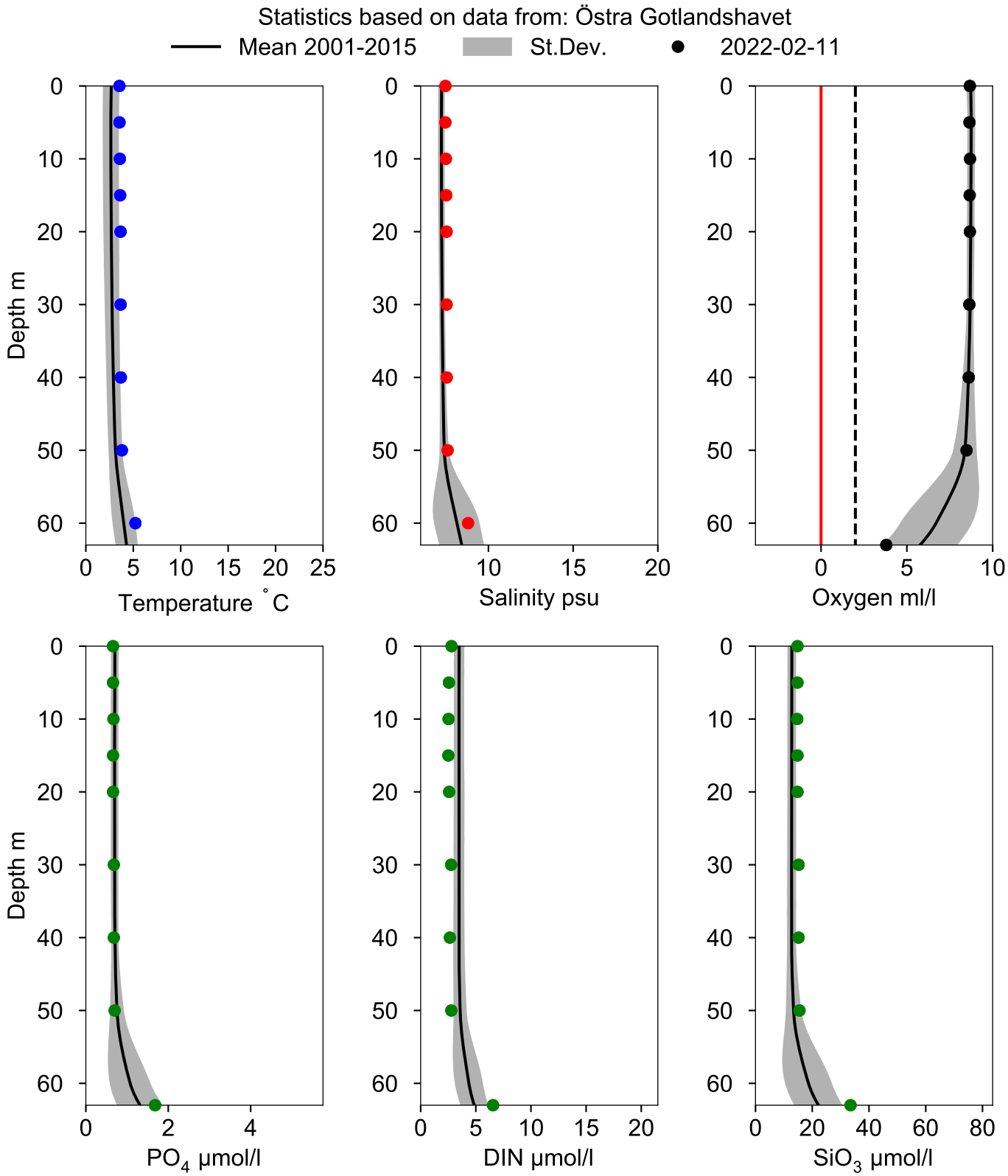
STATION STOLPE TRÖSKEL SURFACE WATER (0-10 m)

Annual Cycles

Statistics based on data from: Östra Gotlandshavet



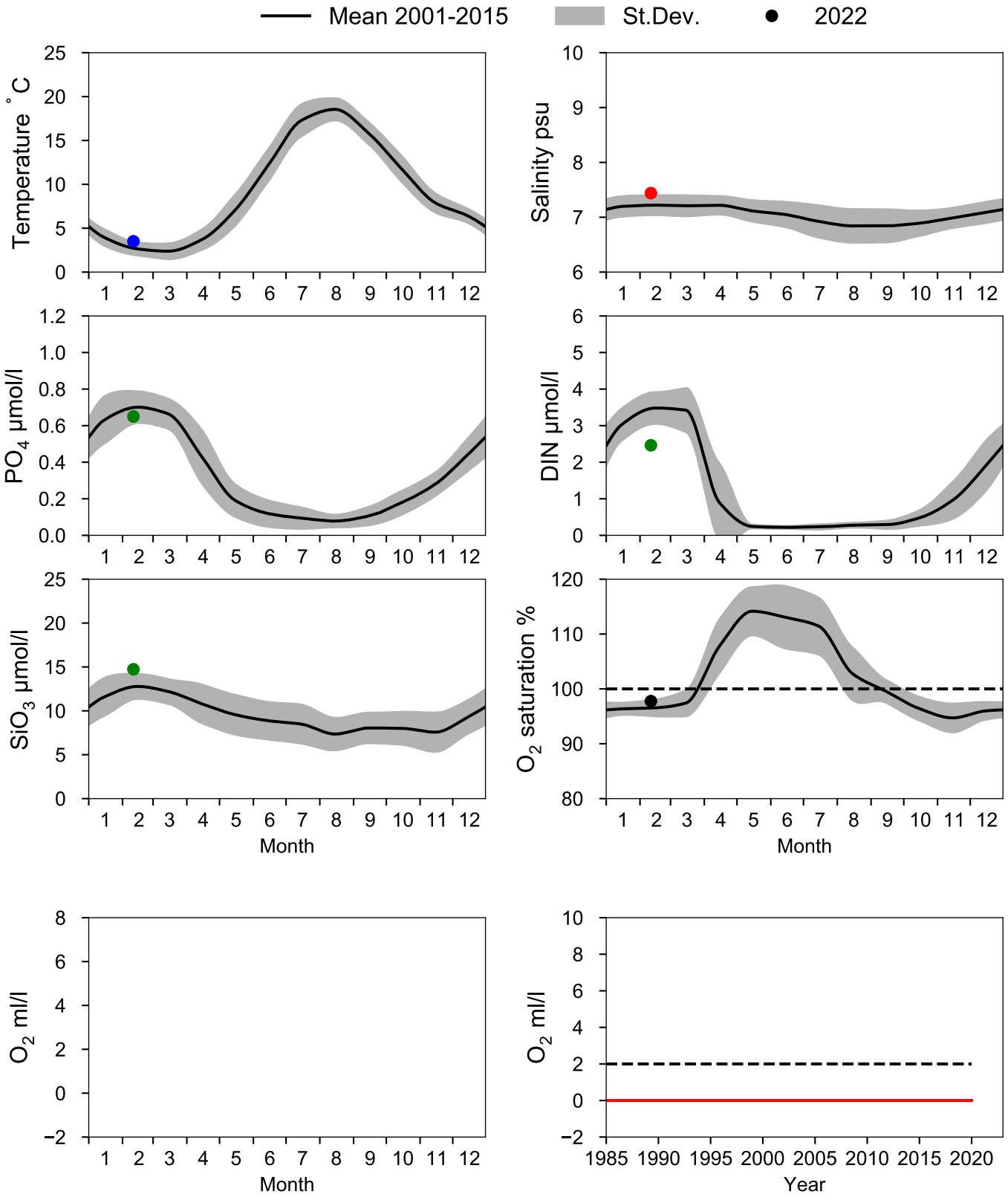
Vertical profiles STOLPE TRÖSKEL
February



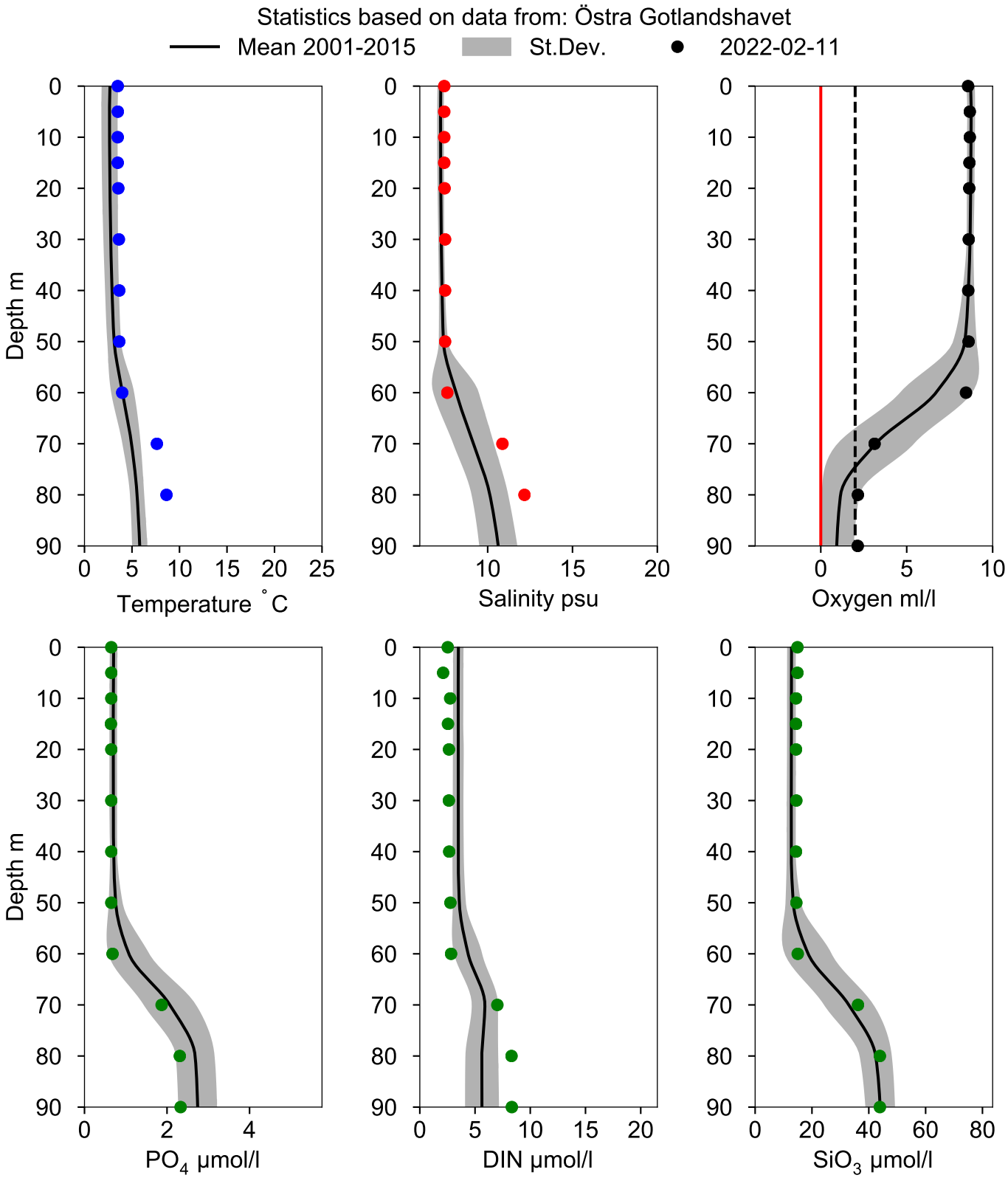
STATION BY7 STOLPE RÄNNA SURFACE WATER (0-10 m)

Annual Cycles

Statistics based on data from: Östra Gotlandshavet



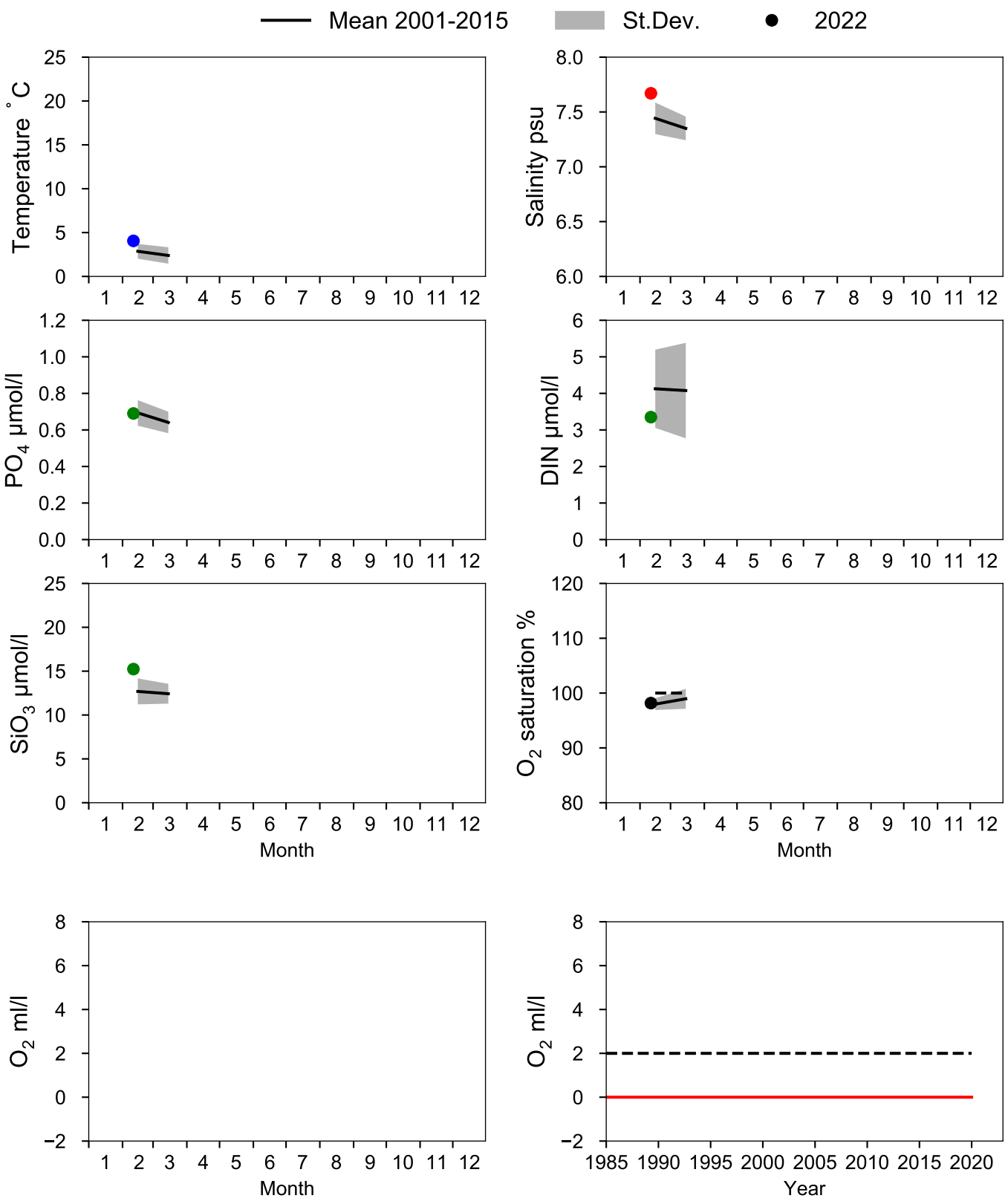
Vertical profiles BY7 STOLPE RÄNNA
February



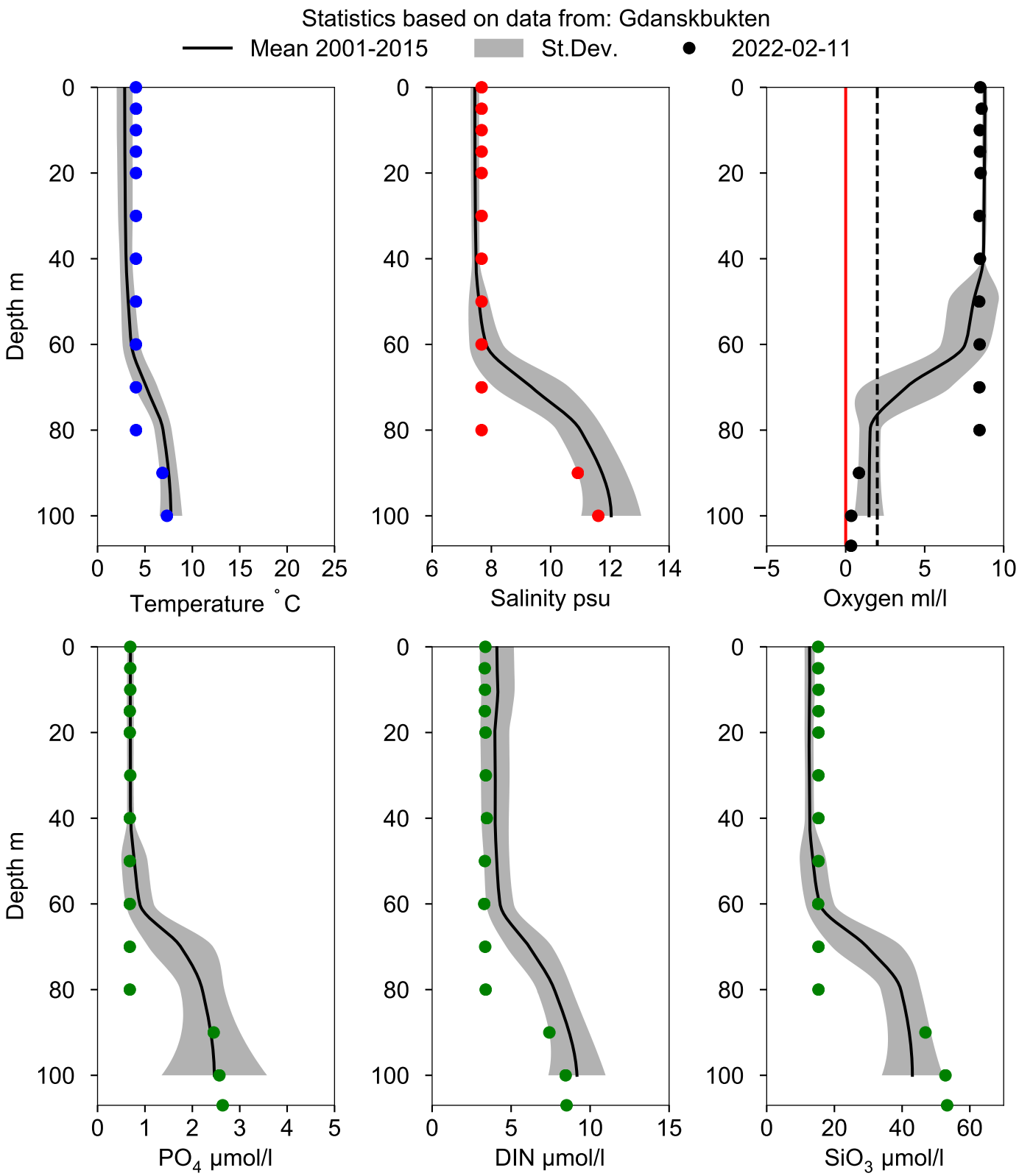
STATION PL-P1 SURFACE WATER (0-10 m)

Annual Cycles

Statistics based on data from: Gdanskbukten



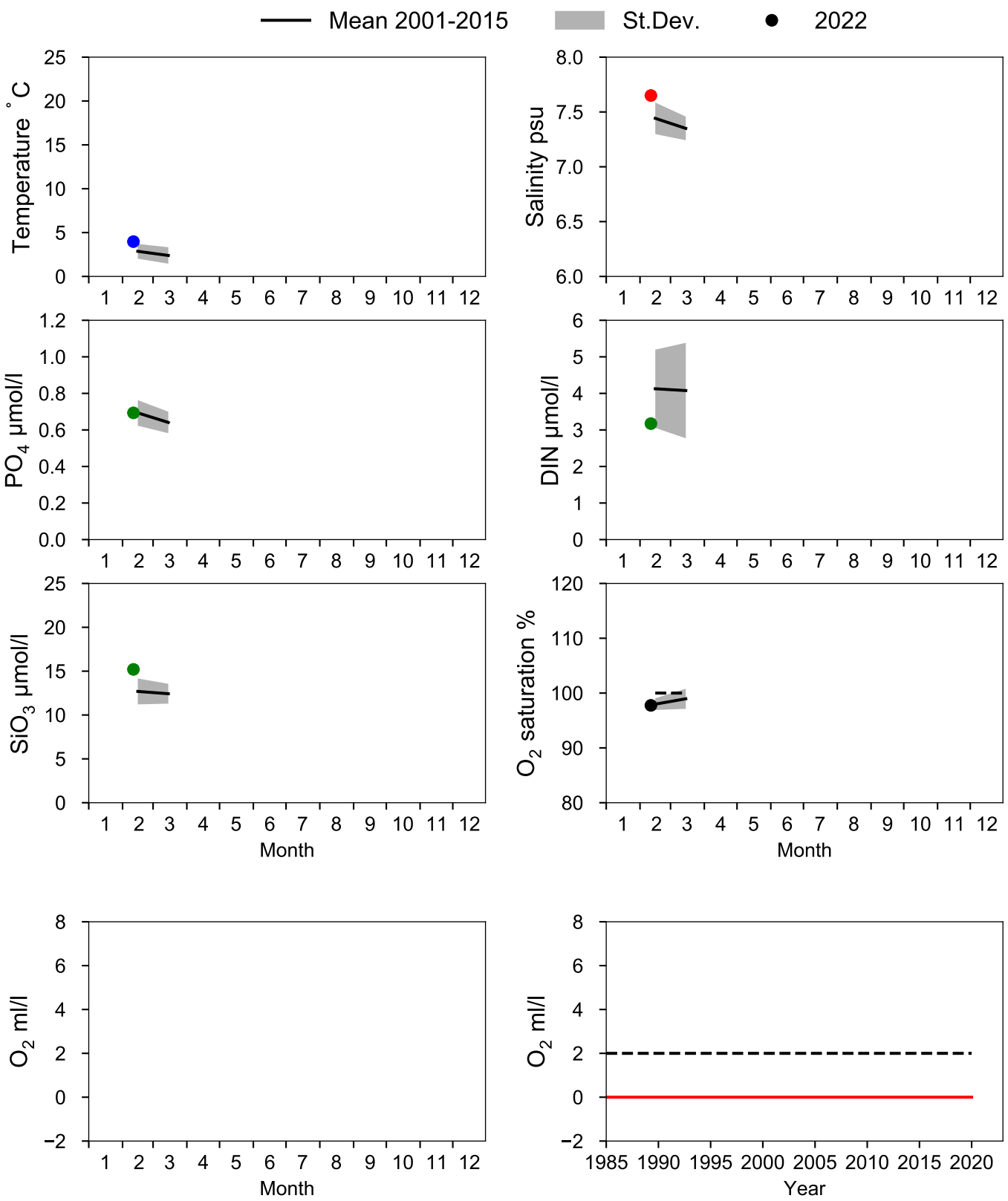
Vertical profiles PL-P1
February



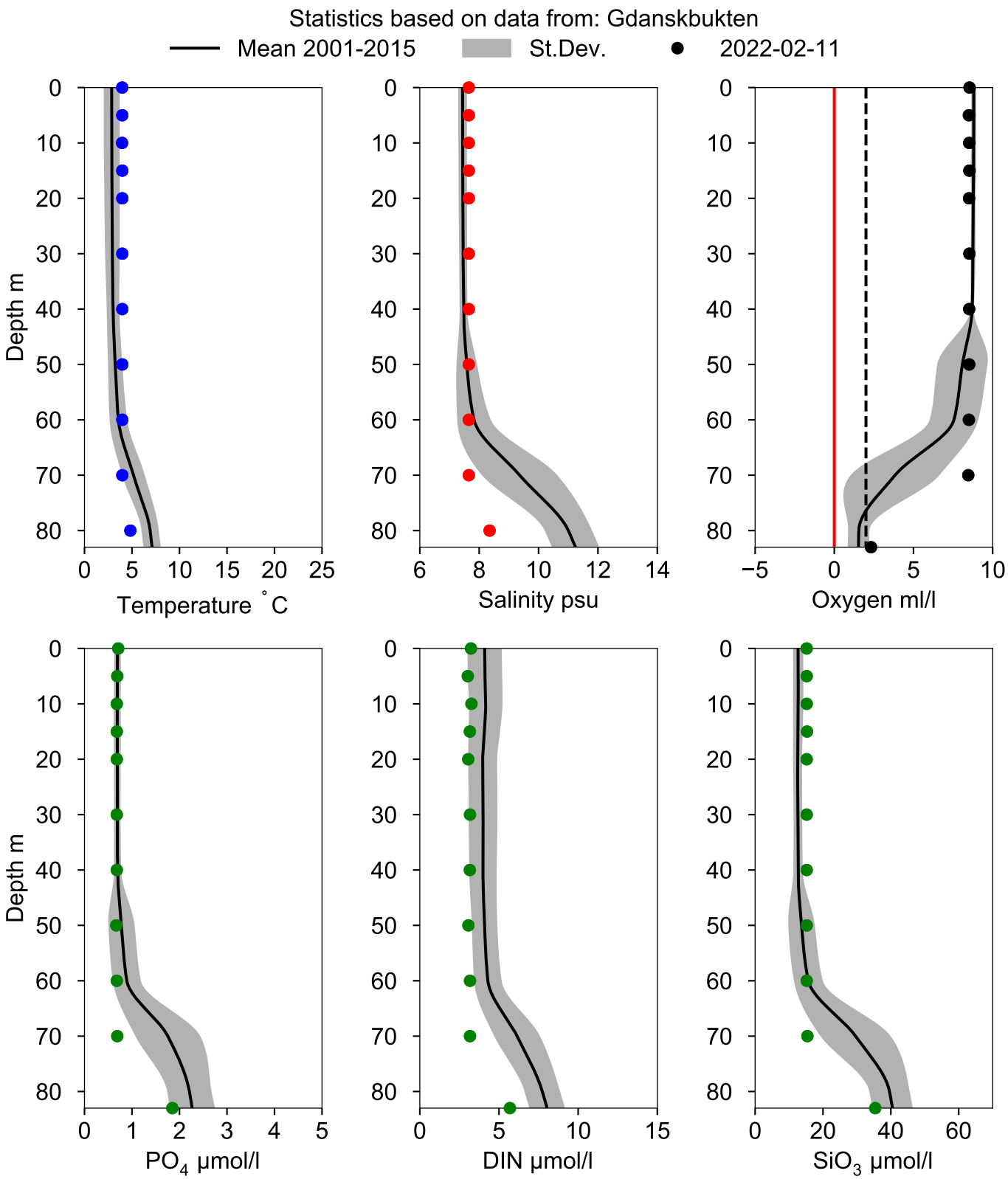
STATION PL-P63 SURFACE WATER (0-10 m)

Annual Cycles

Statistics based on data from: Gdanskbukten

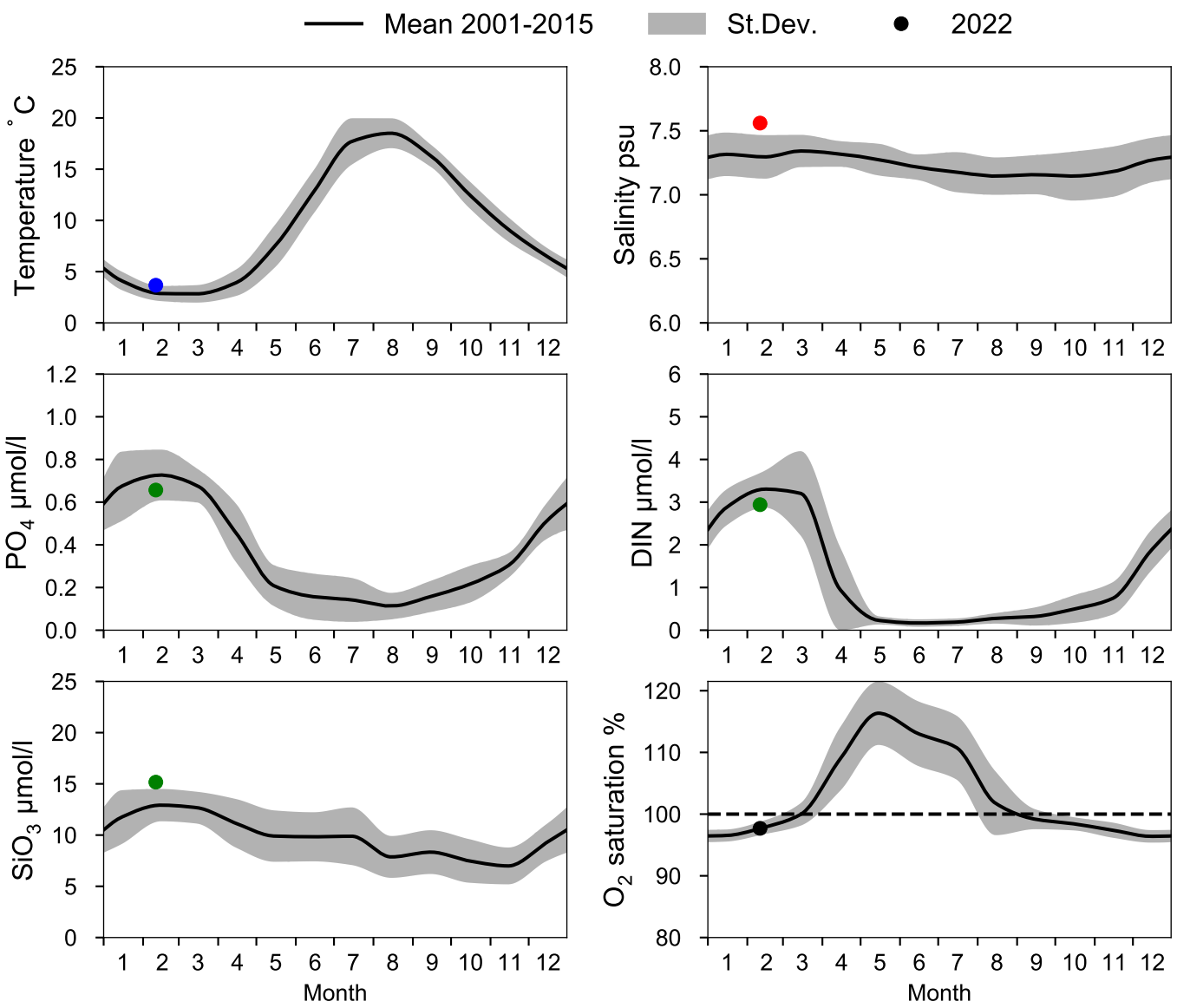


Vertical profiles PL-P63
February

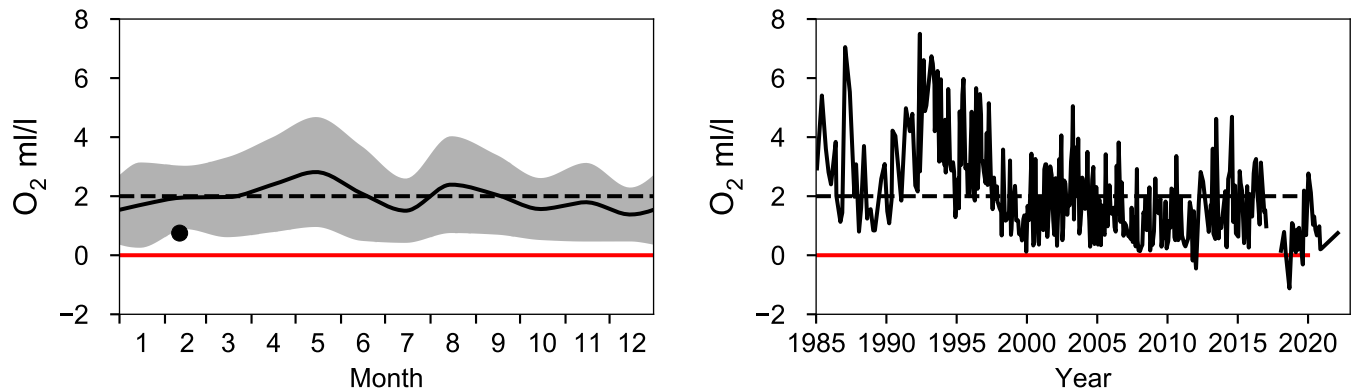


STATION BCS III-10 SURFACE WATER (0-10 m)

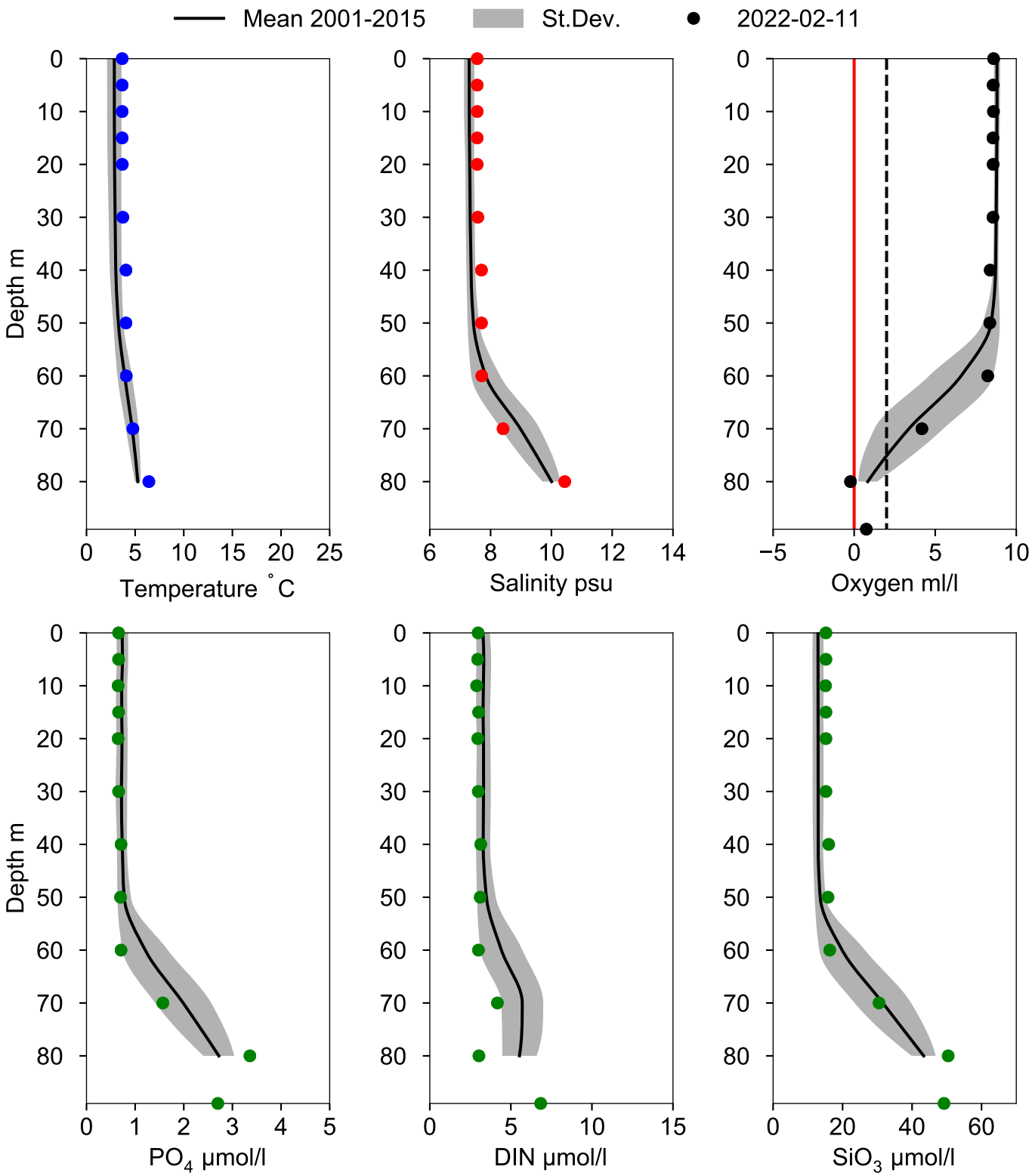
Annual Cycles



OXYGEN IN BOTTOM WATER (depth >= 80 m)



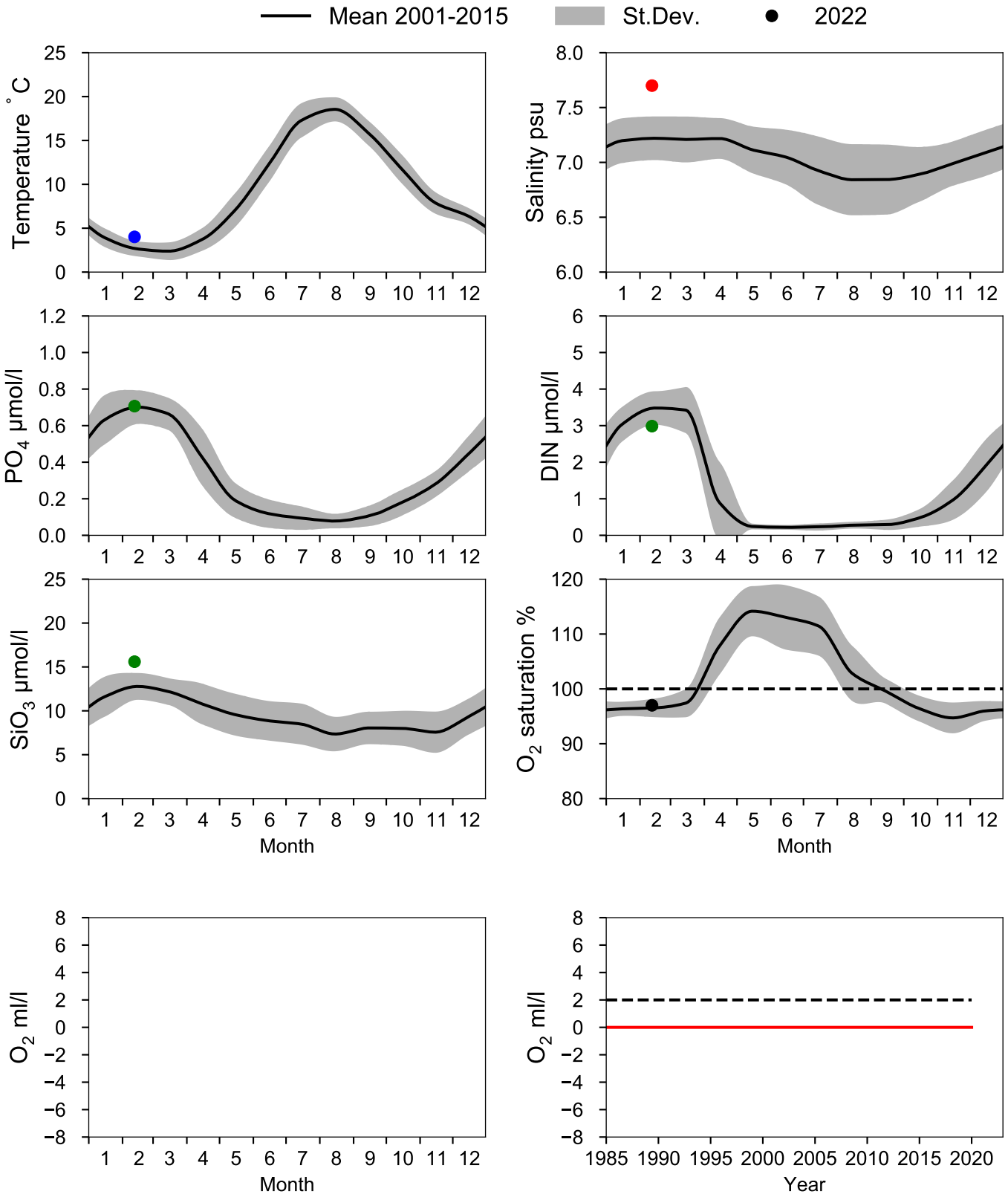
Vertical profiles BCS III-10
February



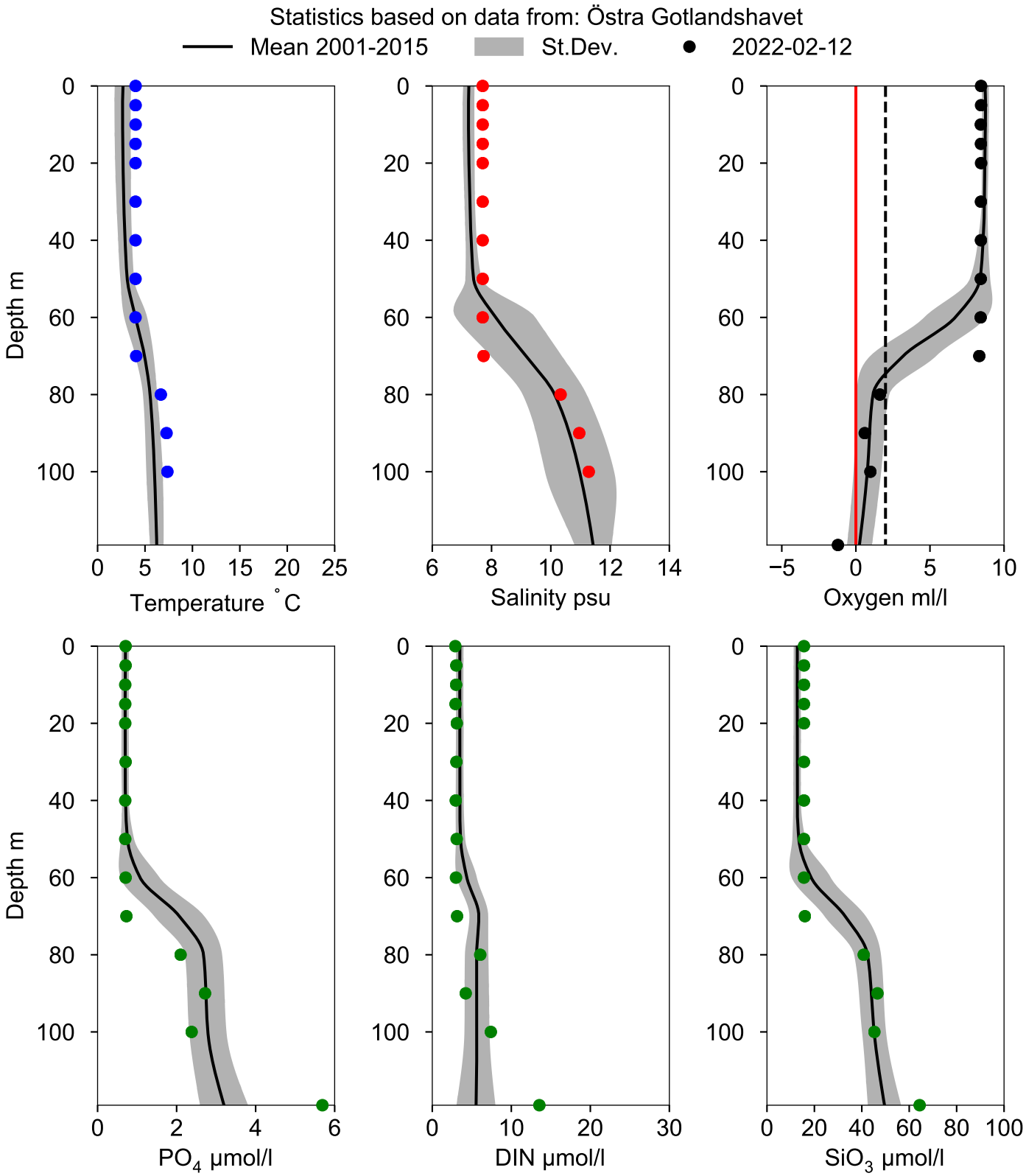
STATION BY9 KLAIPEDA SURFACE WATER (0-10 m)

Annual Cycles

Statistics based on data from: Östra Gotlandshavet

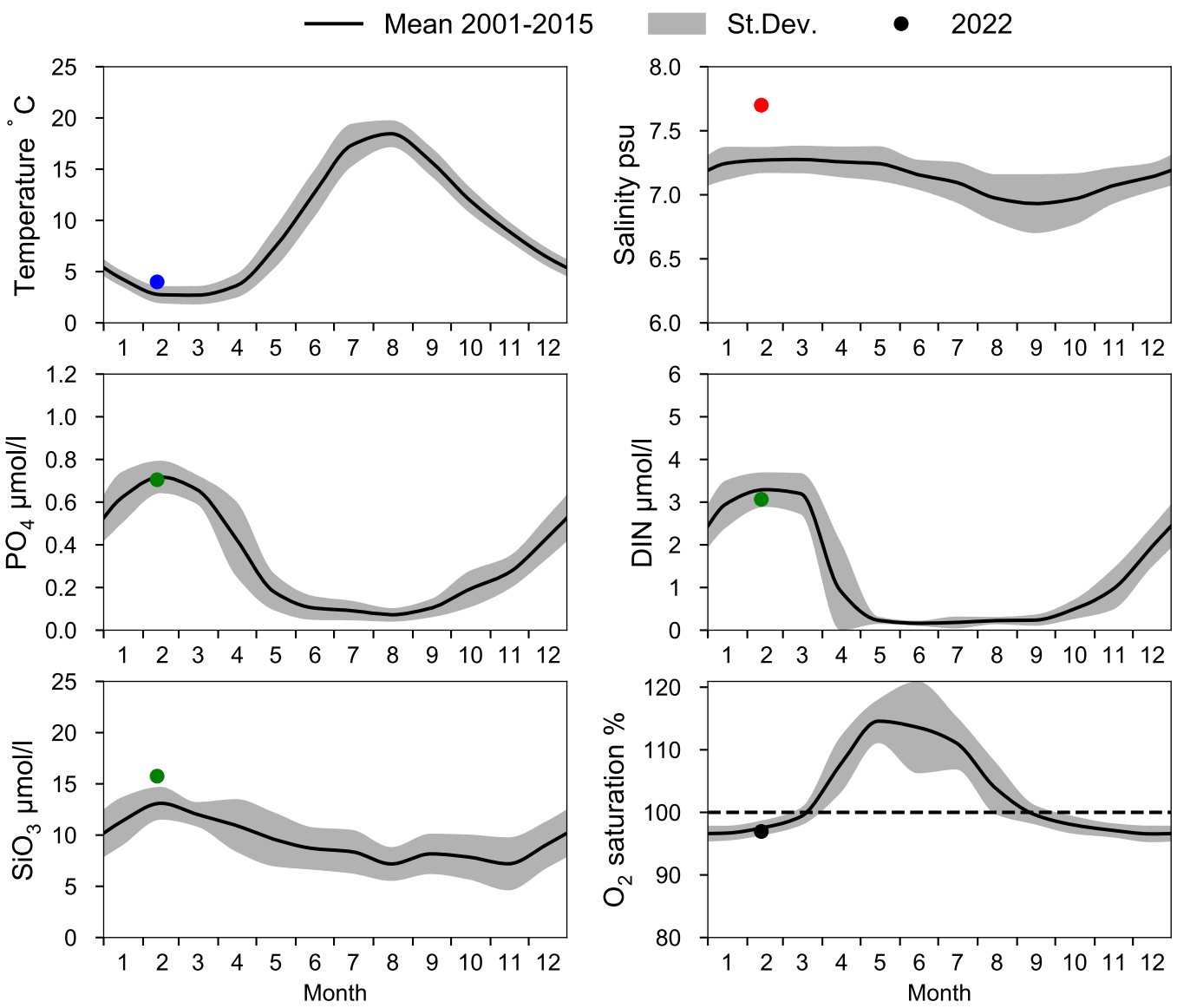


Vertical profiles BY9 KLAIPEDA
February

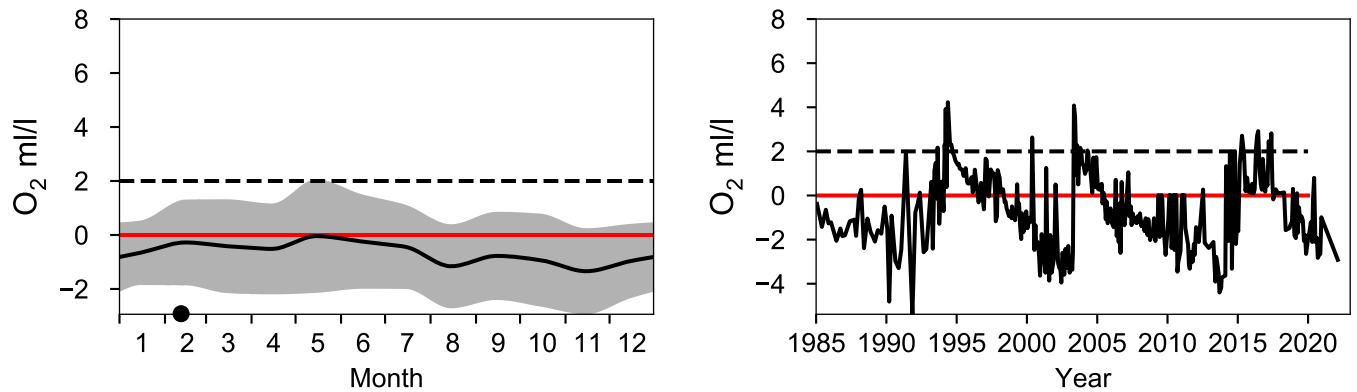


STATION BY10 SURFACE WATER (0-10 m)

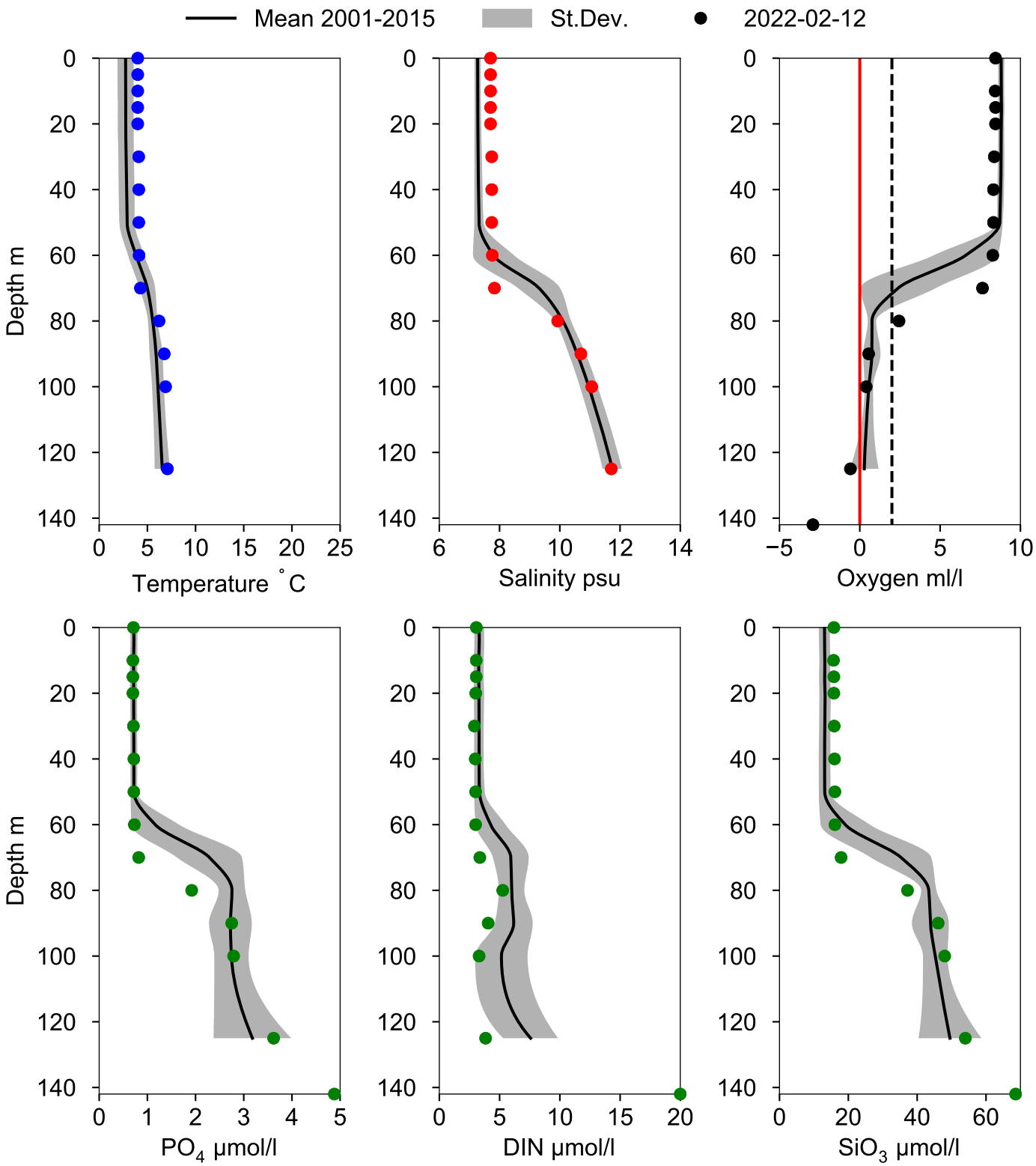
Annual Cycles



OXYGEN IN BOTTOM WATER (depth >= 125 m)



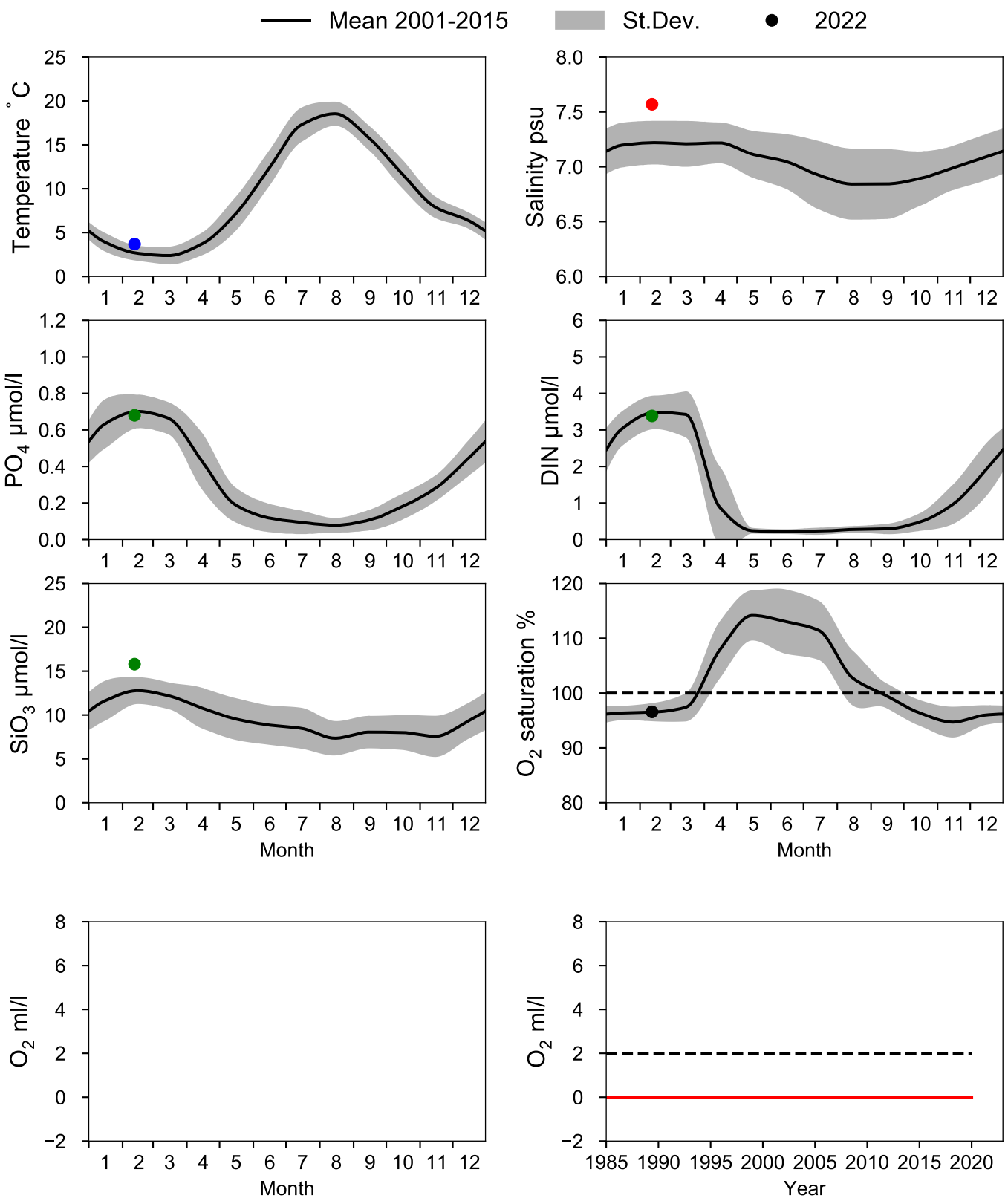
Vertical profiles BY10
February



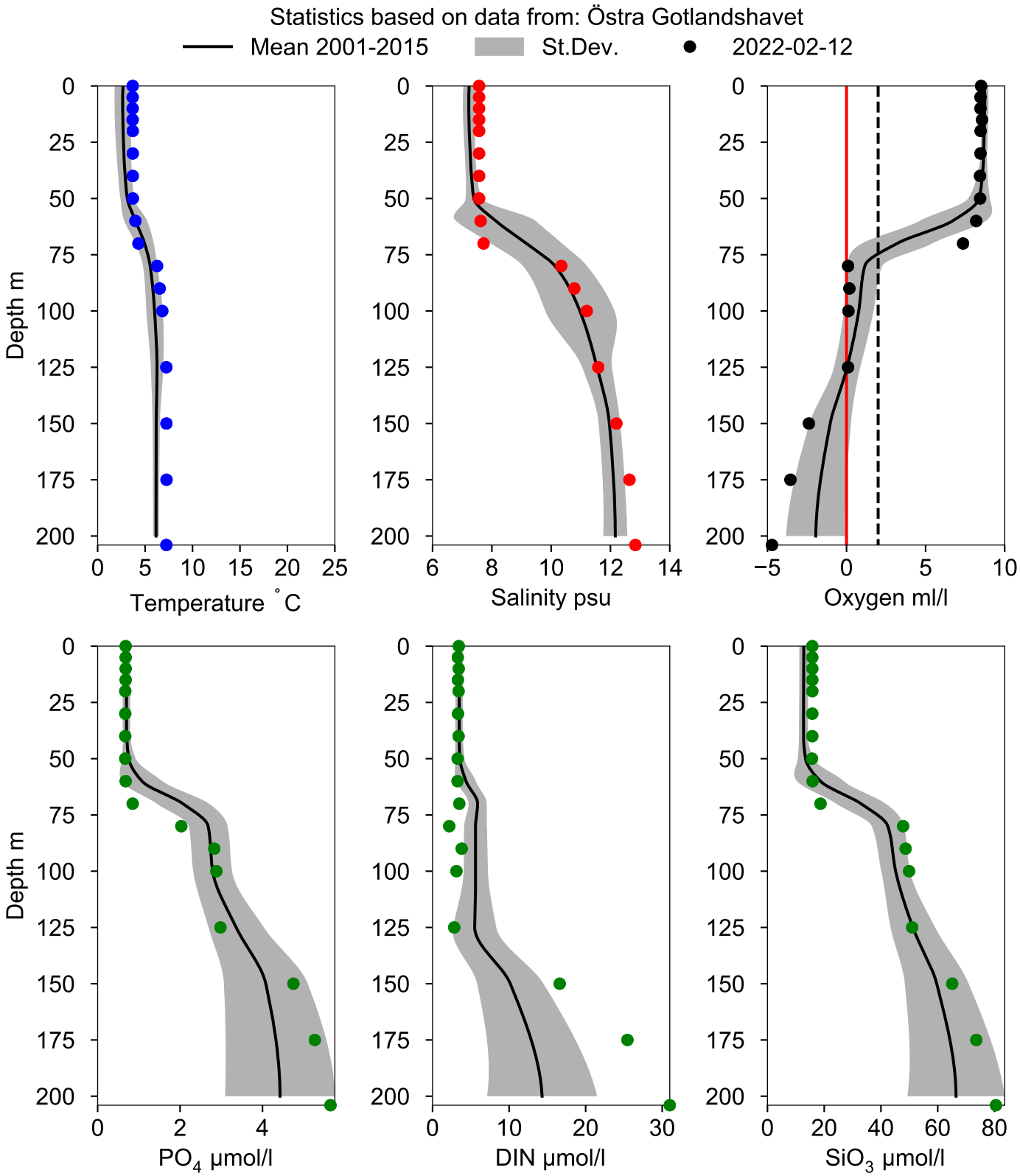
STATION BY11 SURFACE WATER (0-10 m)

Annual Cycles

Statistics based on data from: Östra Gotlandshavet

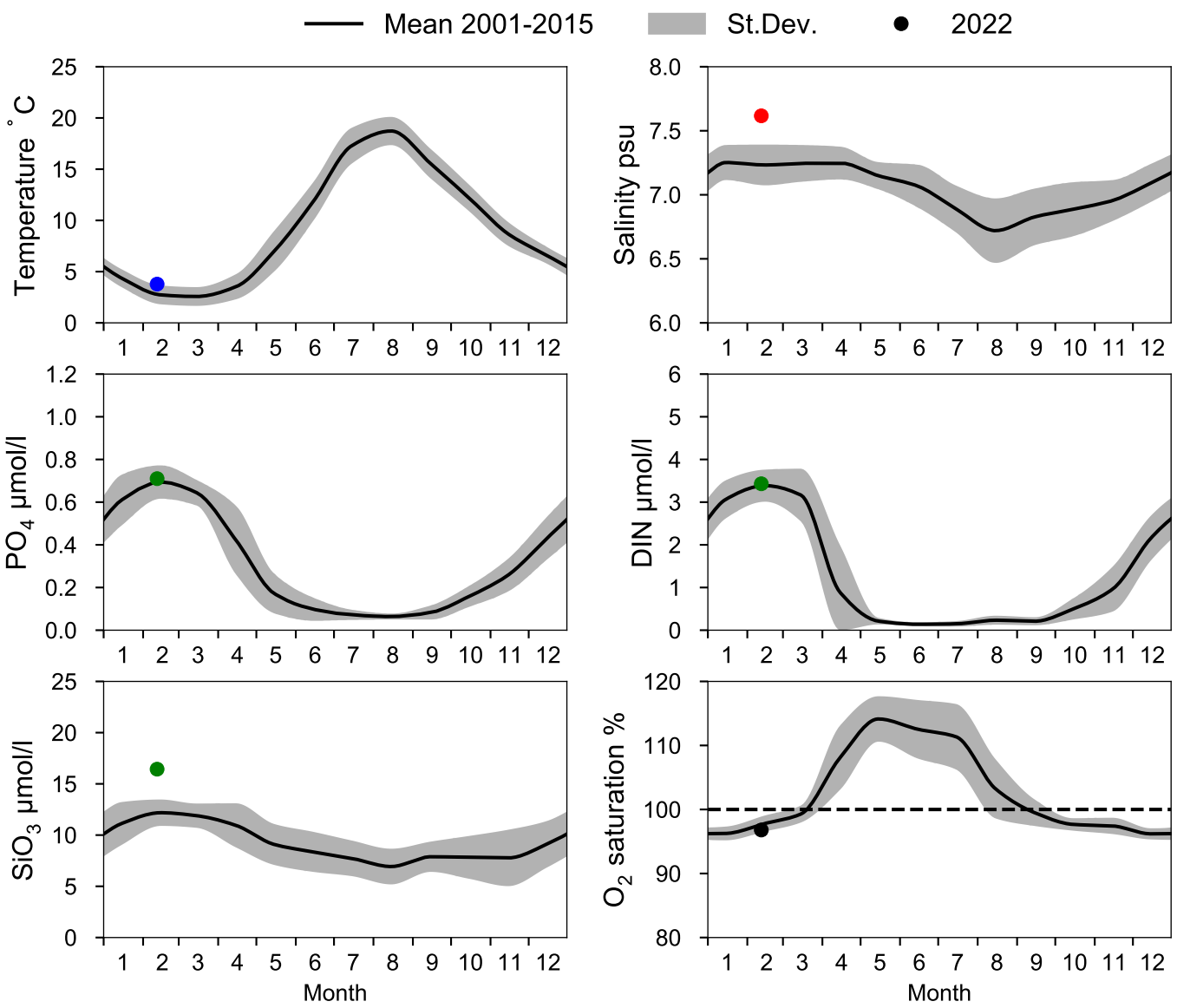


Vertical profiles BY11
February

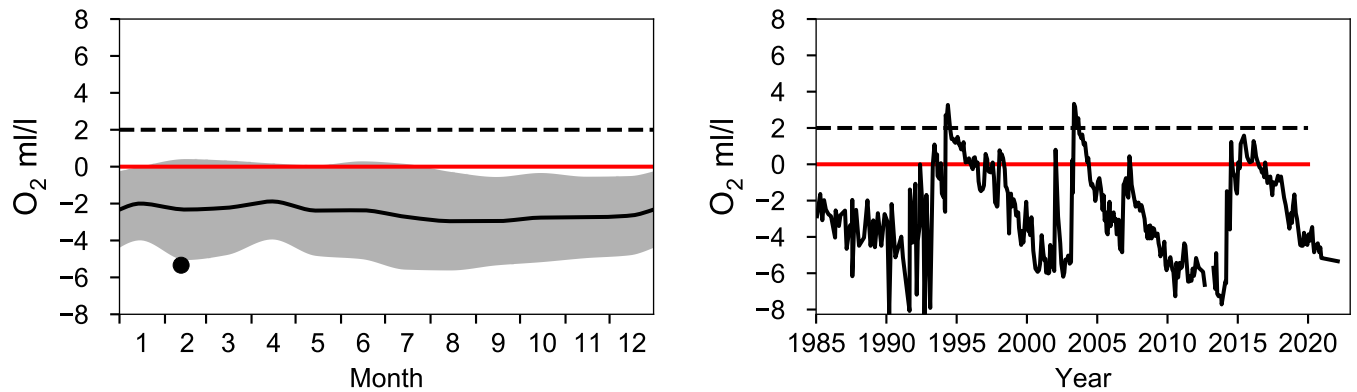


STATION BY15 GOTLANDSDJ SURFACE WATER (0-10 m)

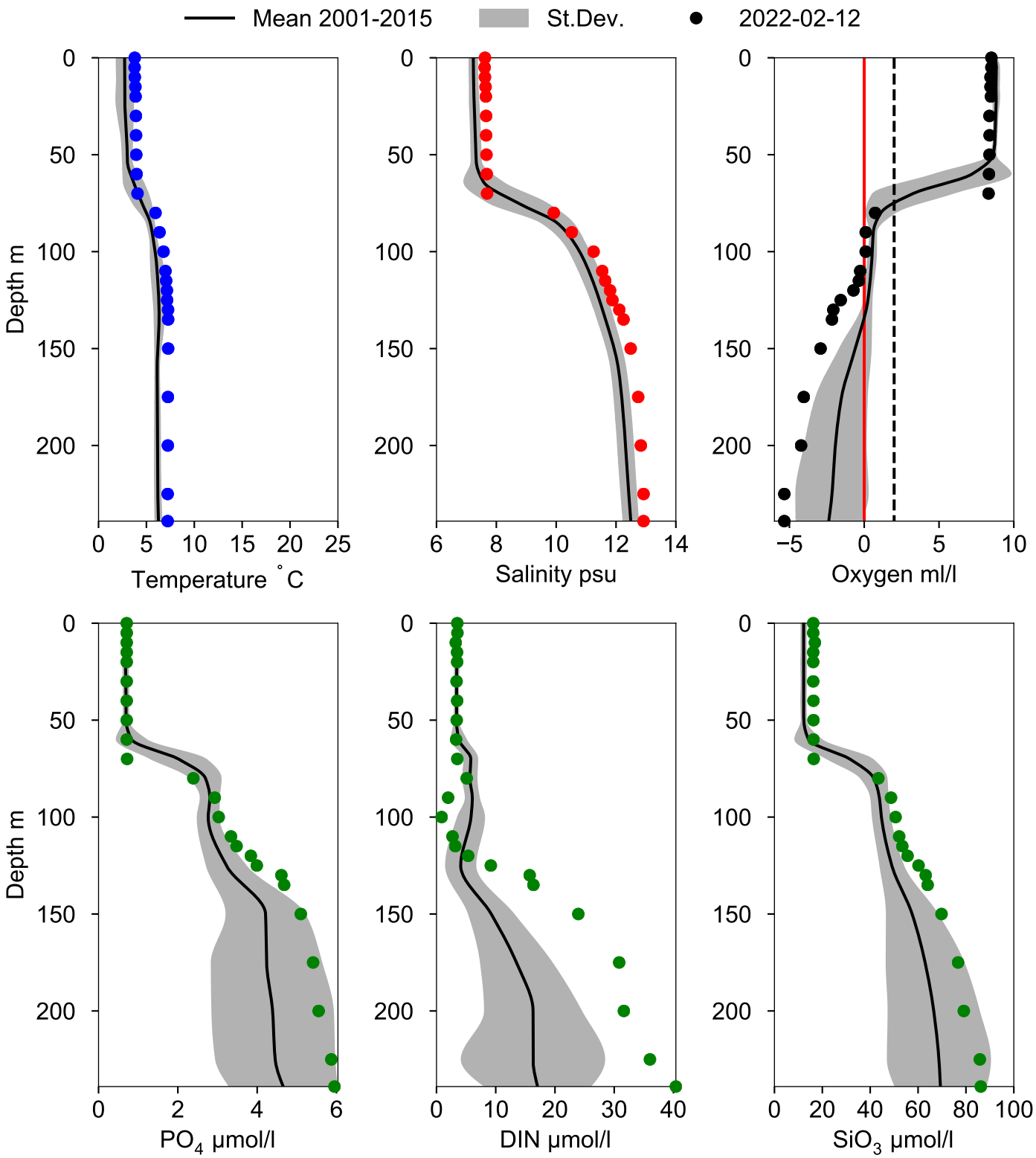
Annual Cycles



OXYGEN IN BOTTOM WATER (depth >= 225 m)



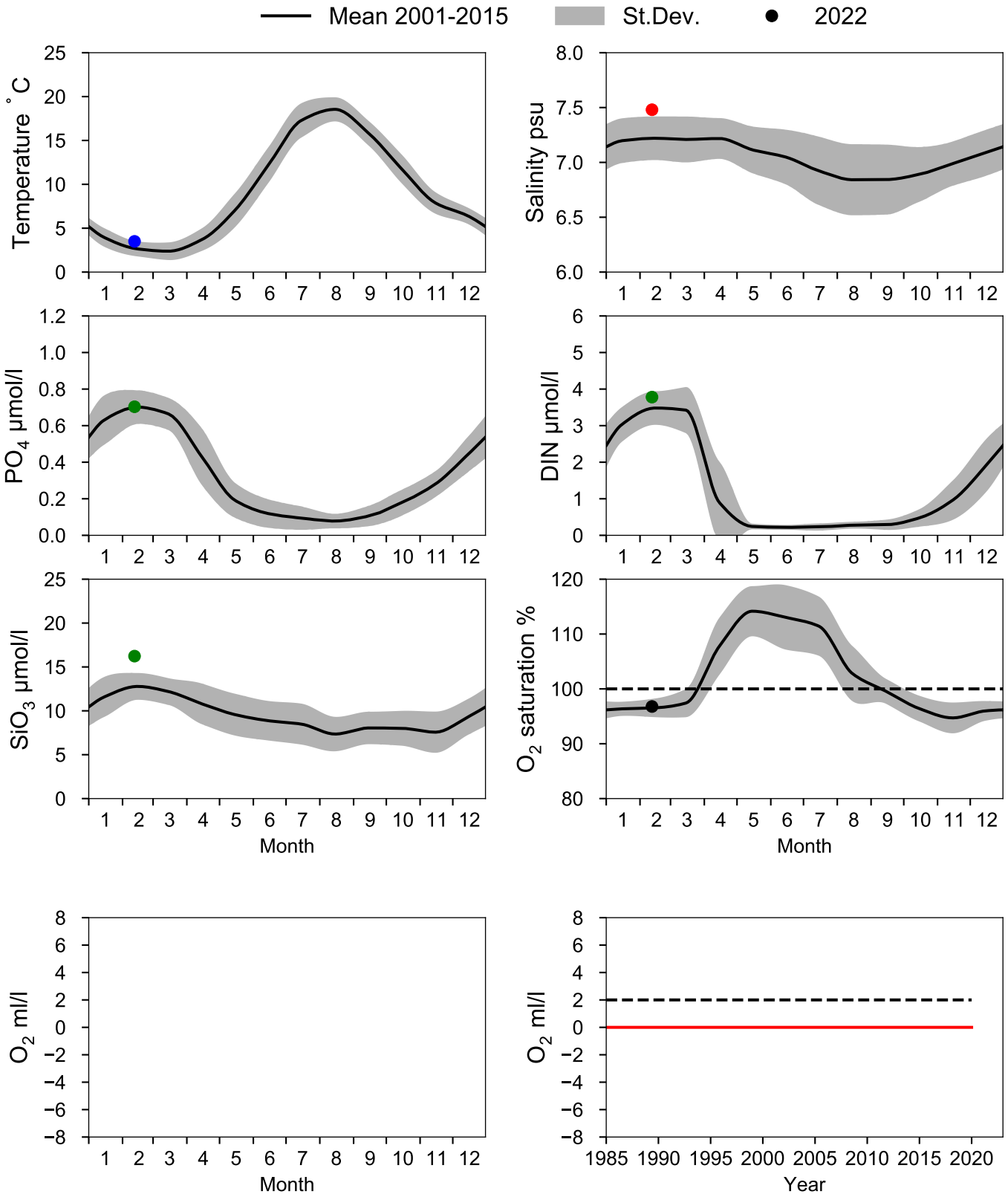
Vertical profiles BY15 GOTLANDSDJ
February



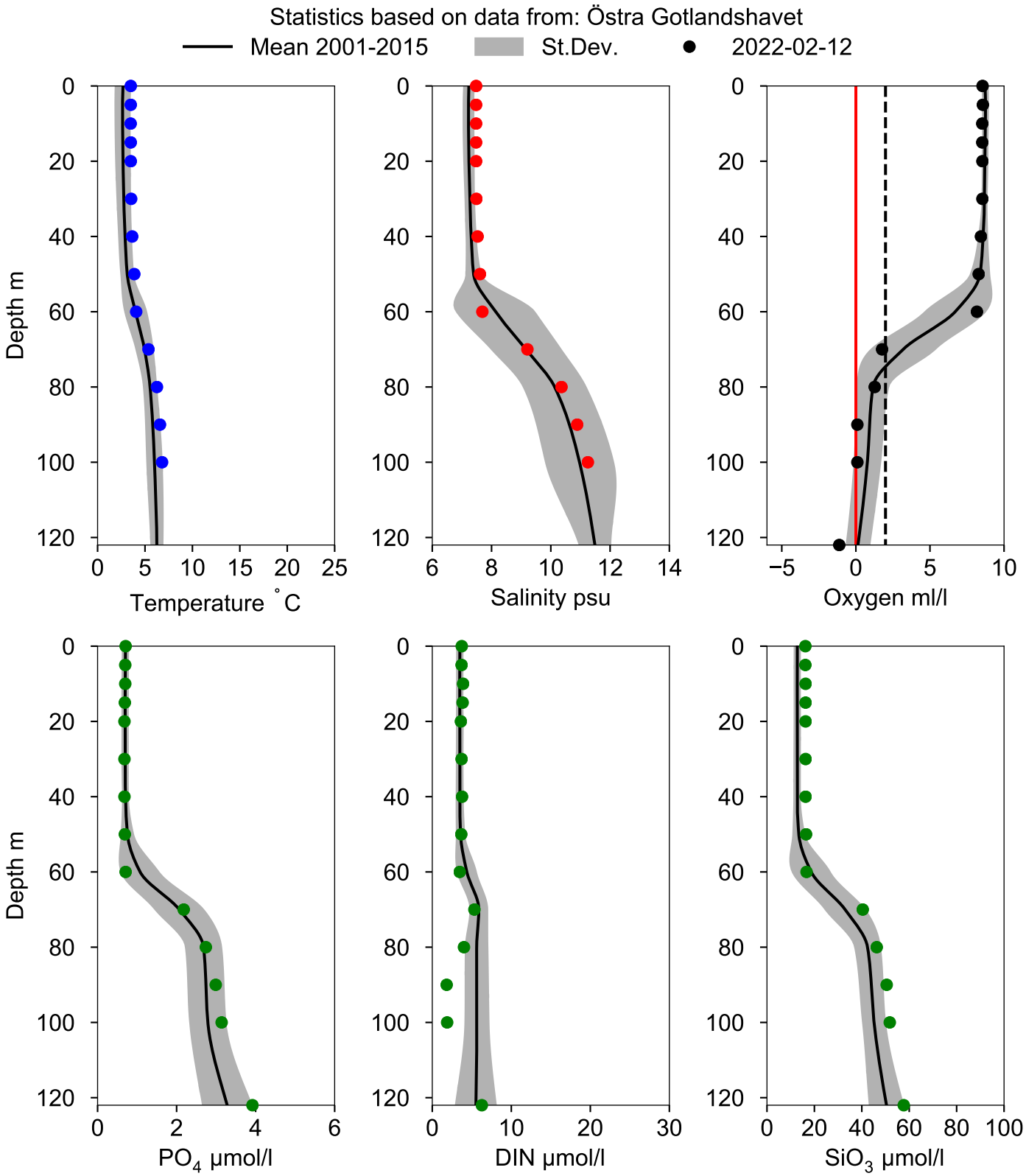
STATION BY13 SURFACE WATER (0-10 m)

Annual Cycles

Statistics based on data from: Östra Gotlandshavet



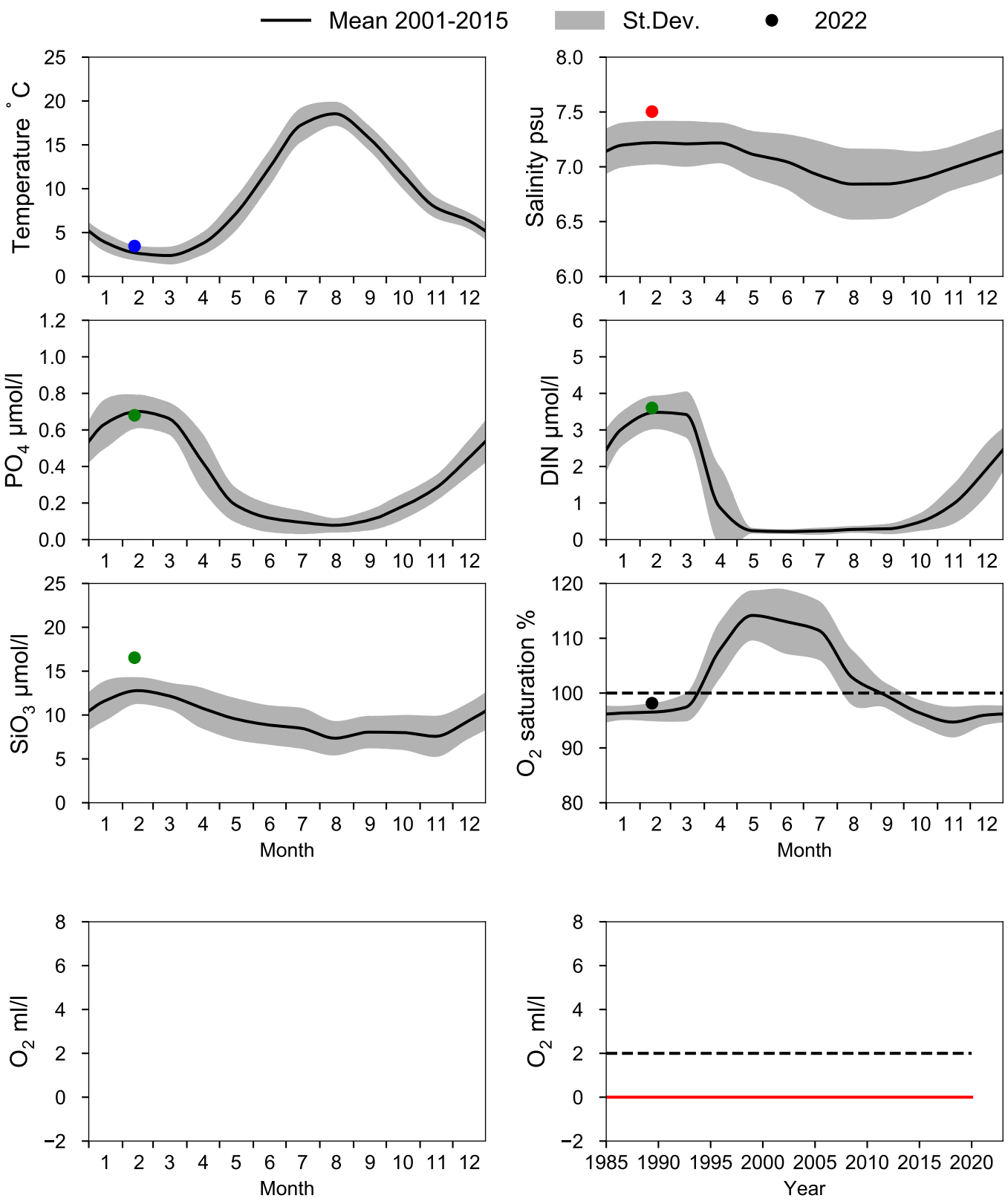
Vertical profiles BY13
February



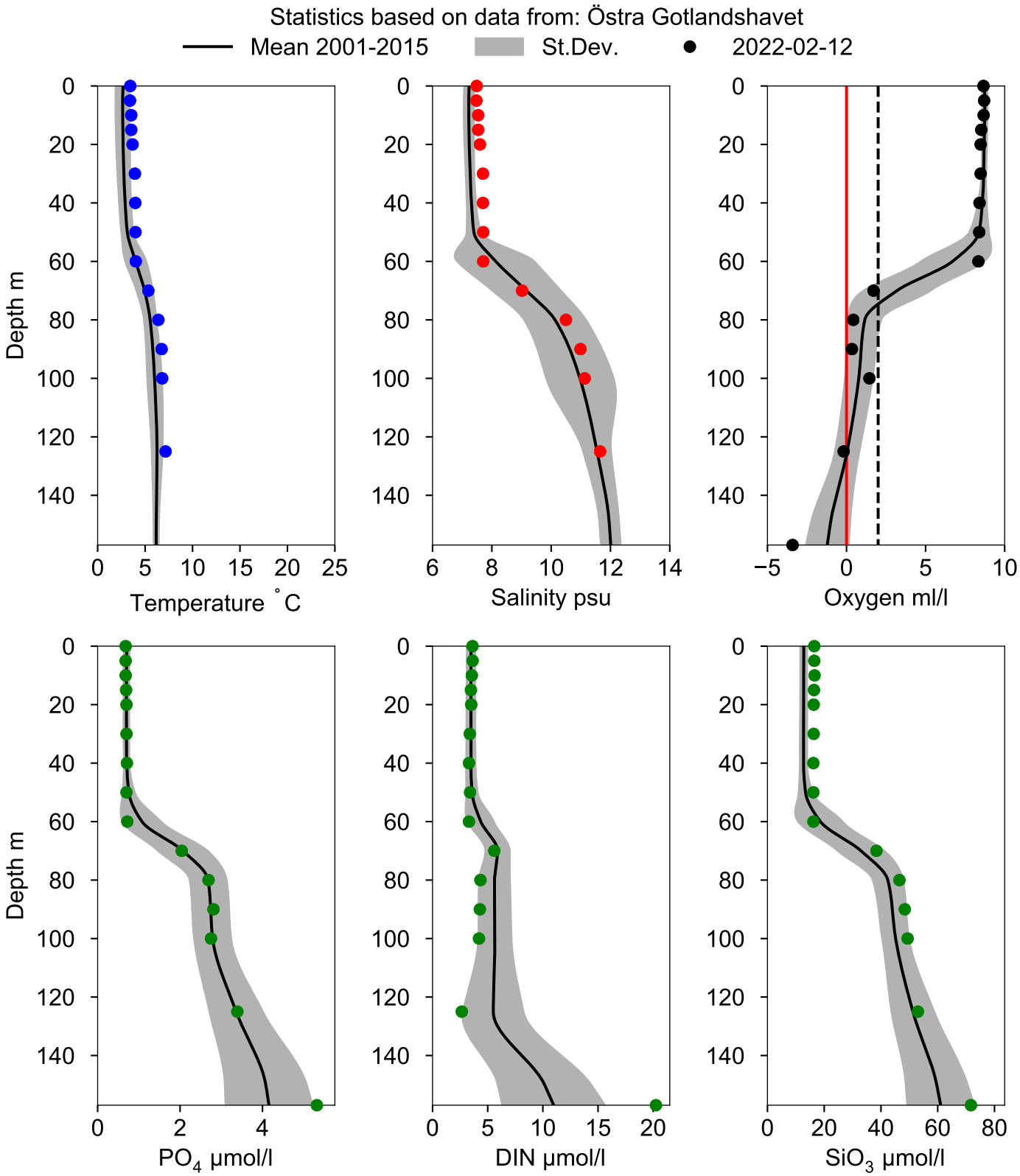
STATION BY19 SURFACE WATER (0-10 m)

Annual Cycles

Statistics based on data from: Östra Gotlandshavet

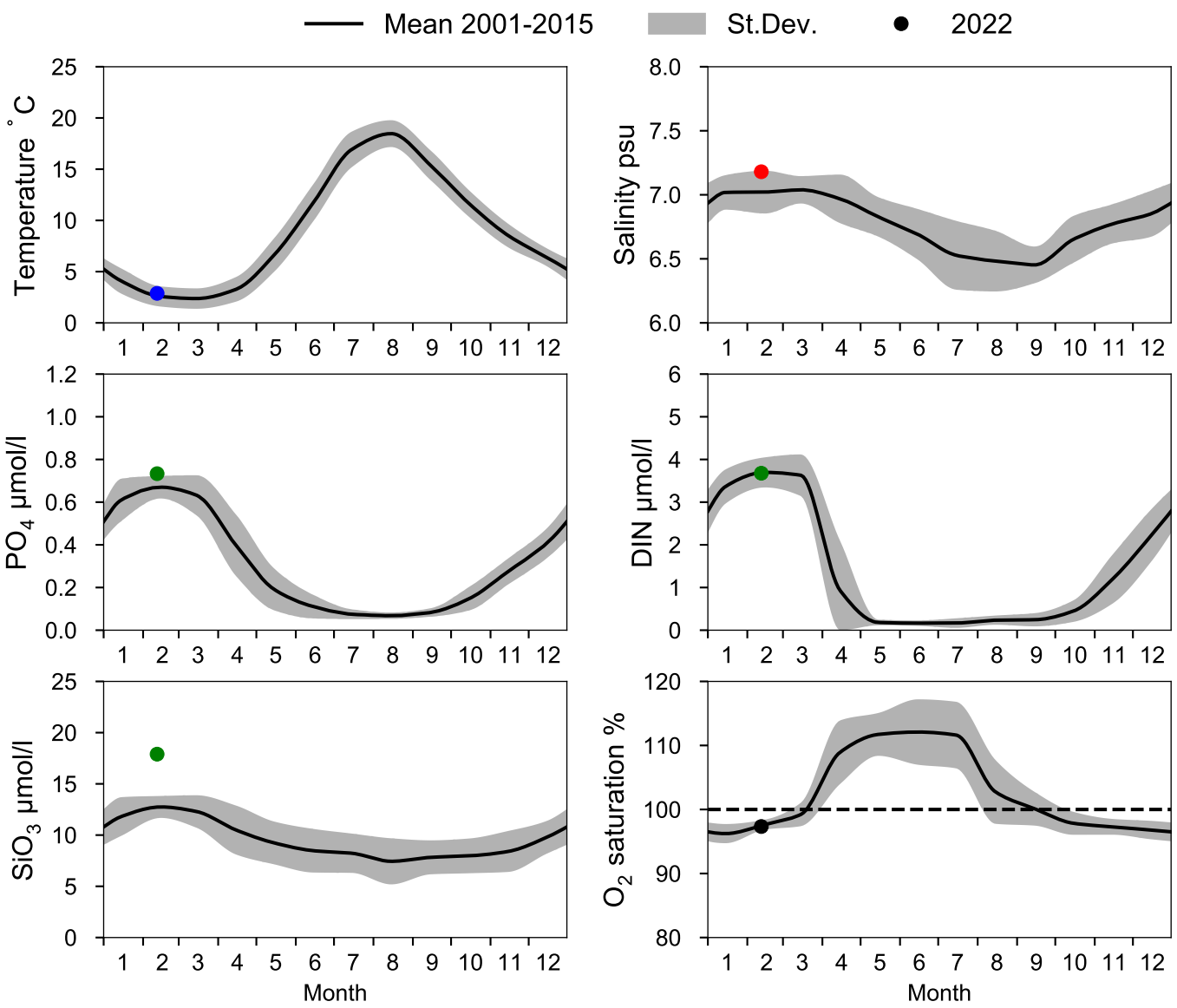


Vertical profiles BY19
February

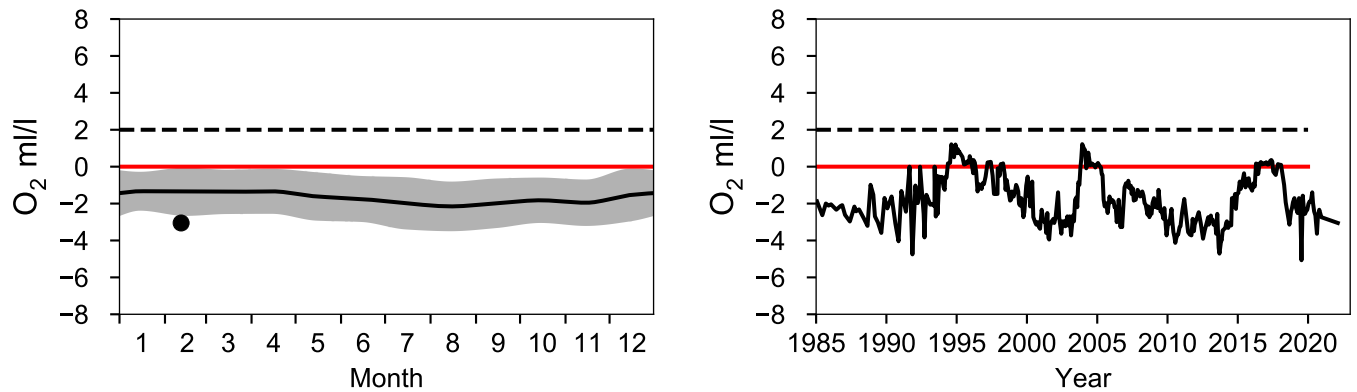


STATION BY20 FÅRÖDJ SURFACE WATER (0-10 m)

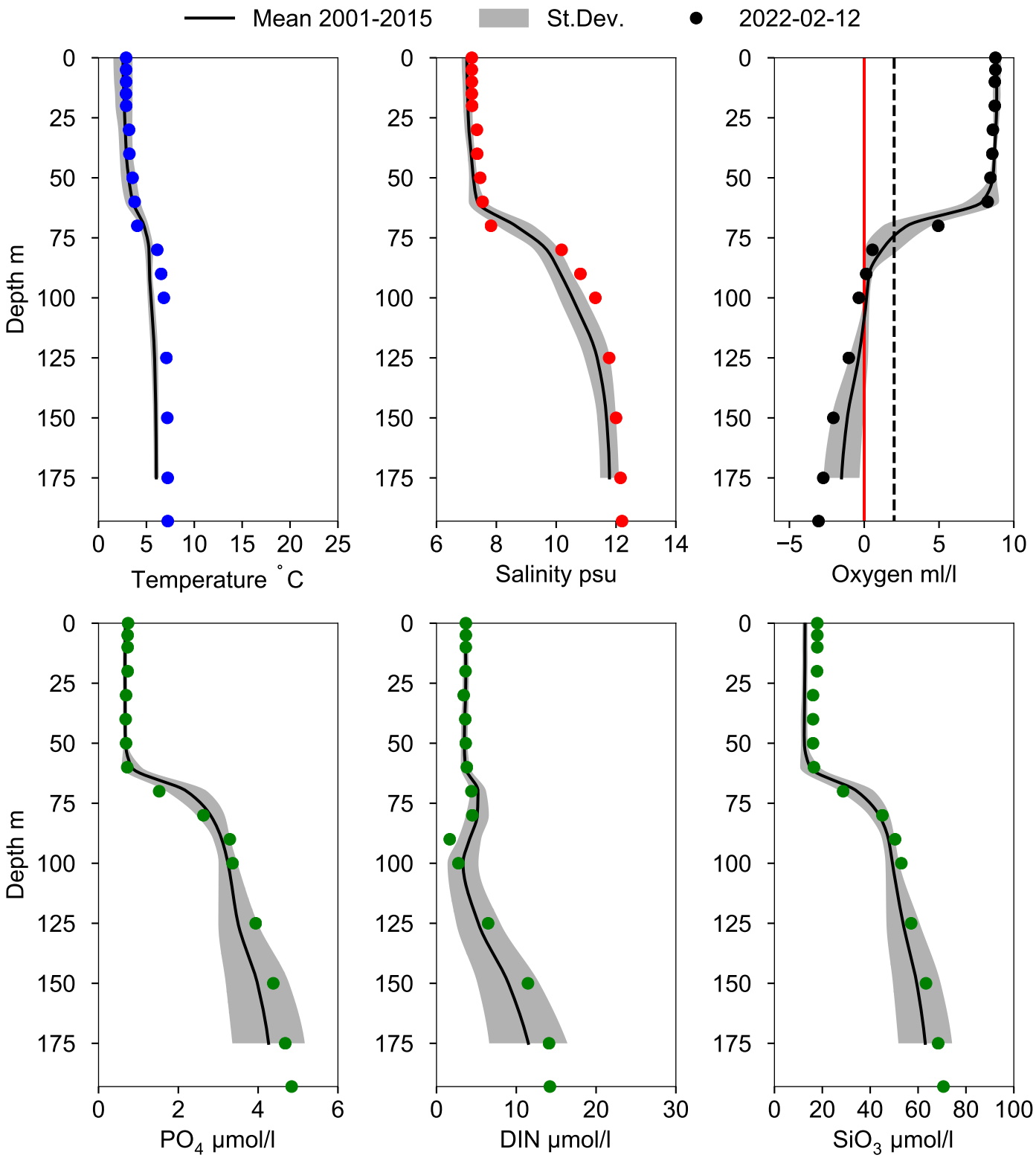
Annual Cycles



OXYGEN IN BOTTOM WATER (depth >= 175 m)



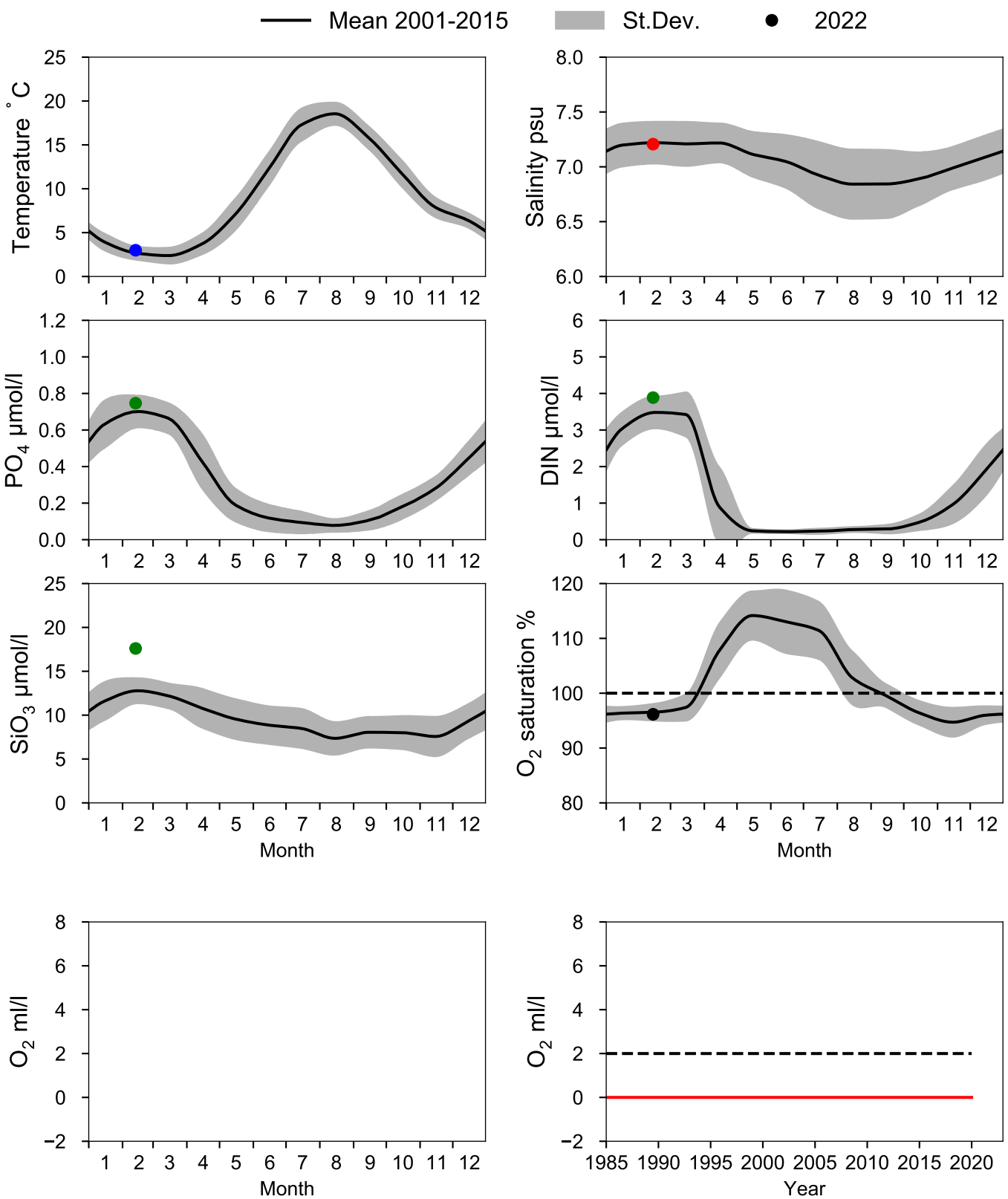
Vertical profiles BY20 FÅRÖDJ
February



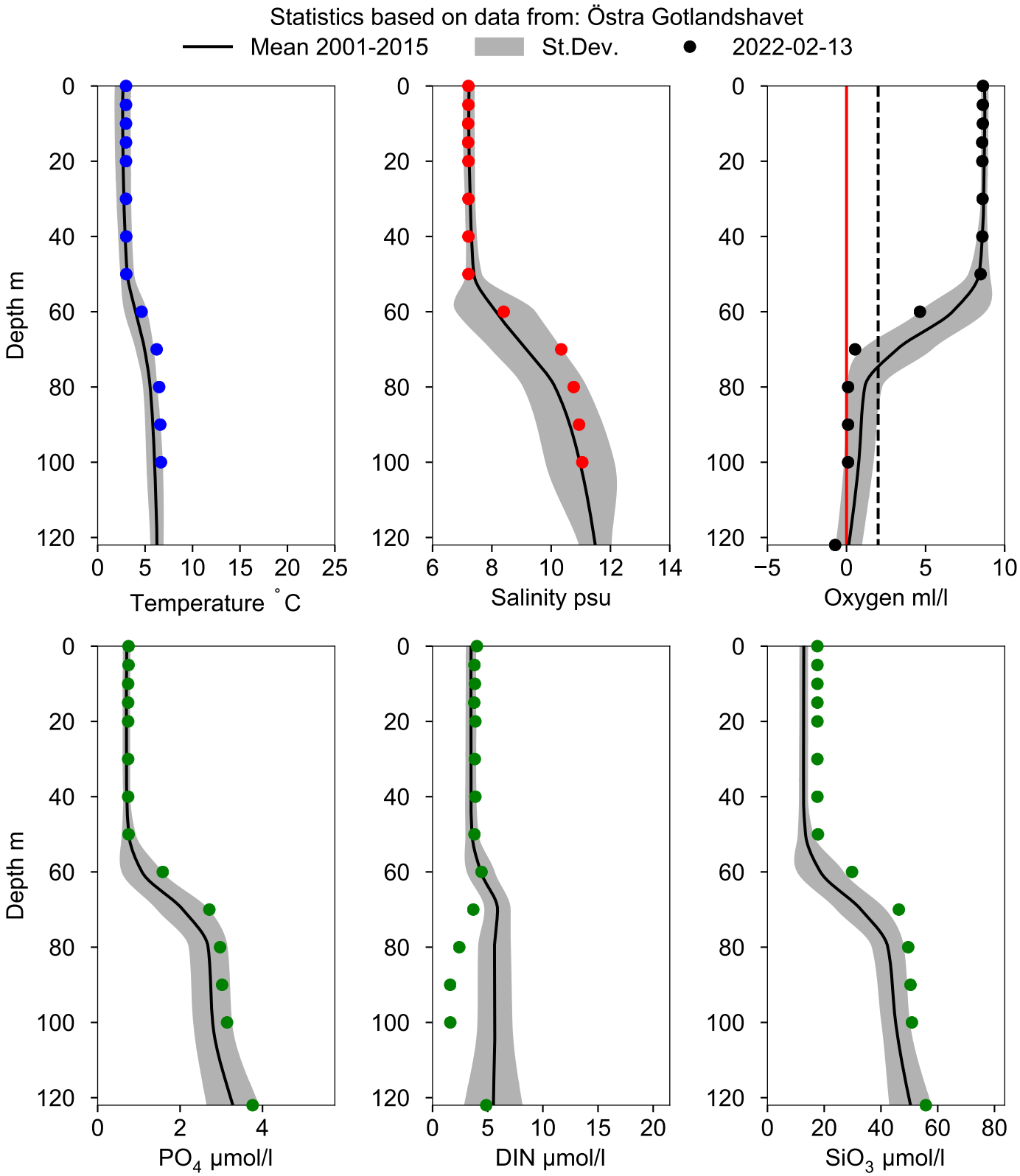
STATION BY21 SURFACE WATER (0-10 m)

Annual Cycles

Statistics based on data from: Östra Gotlandshavet



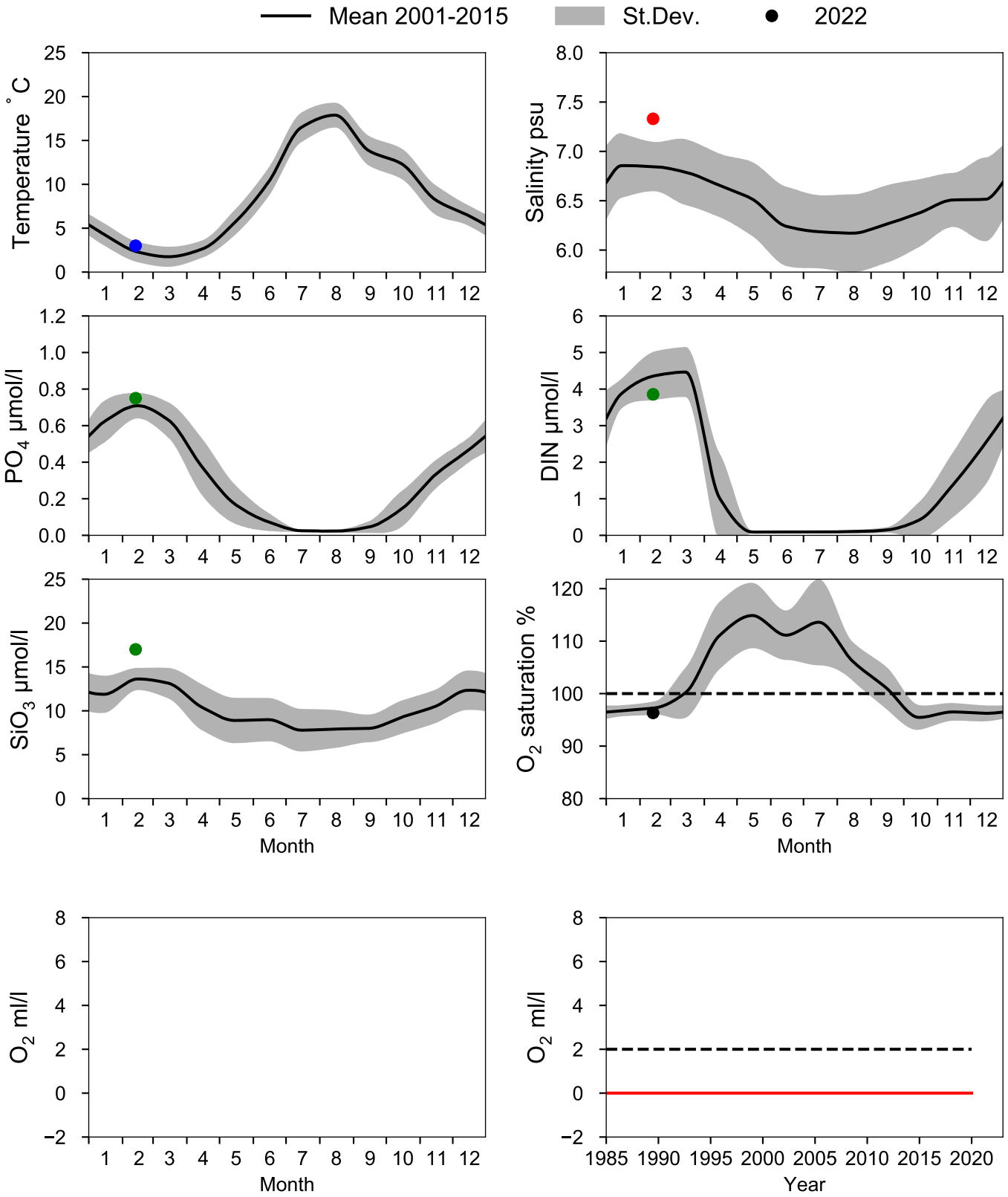
Vertical profiles BY21
February



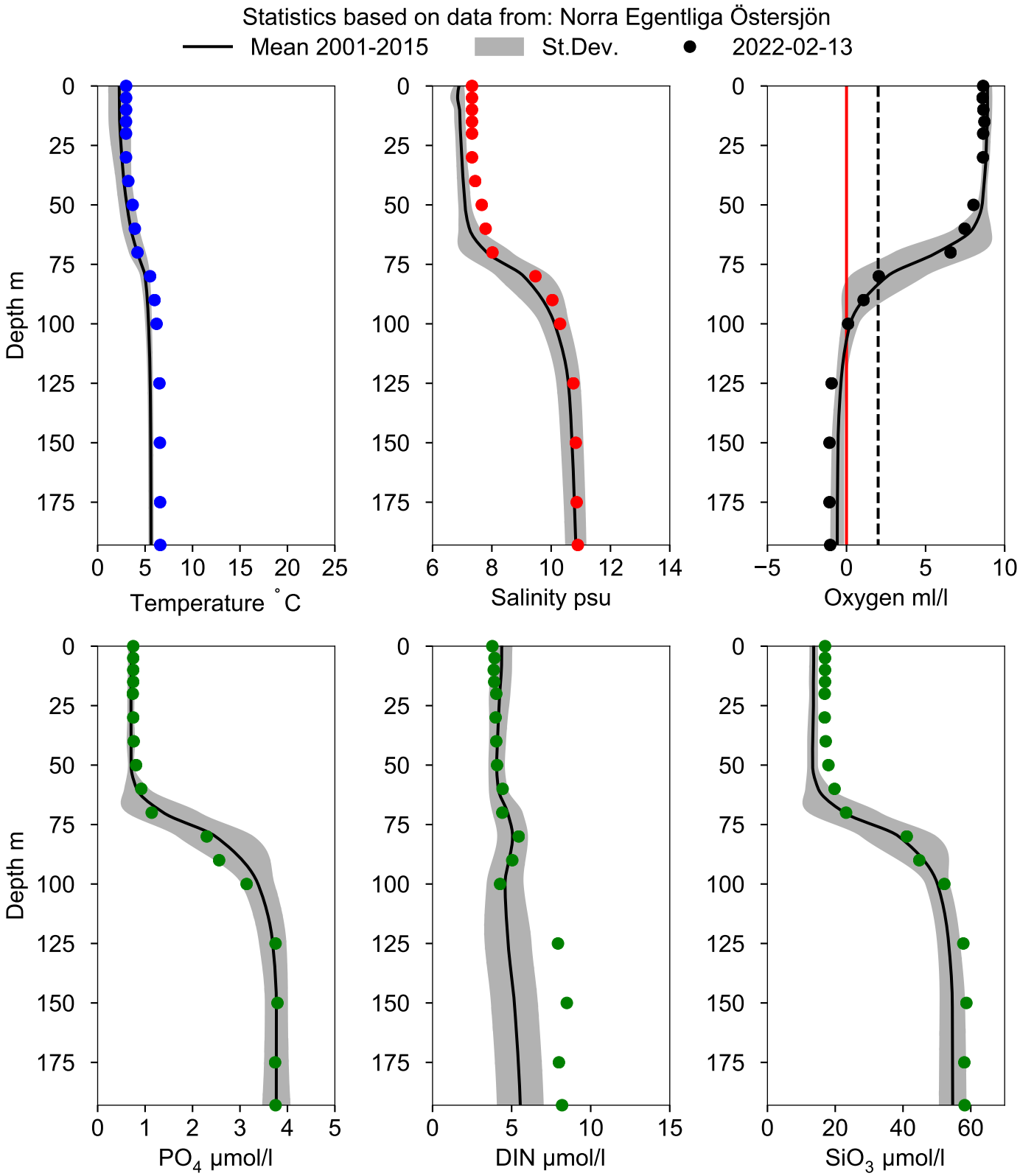
STATION BY28 SURFACE WATER (0-10 m)

Annual Cycles

Statistics based on data from: Norra Egentliga Östersjön



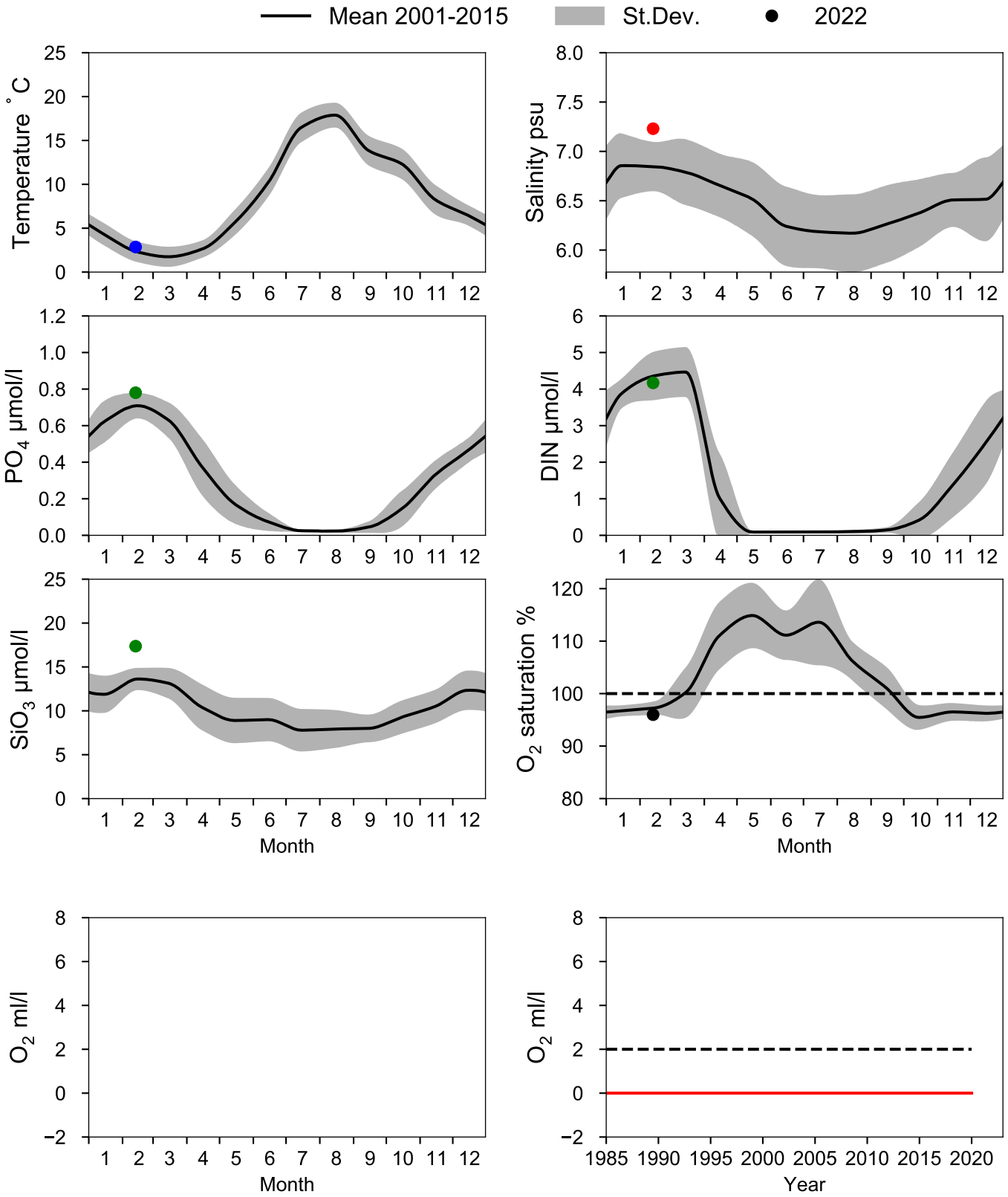
Vertical profiles BY28
February



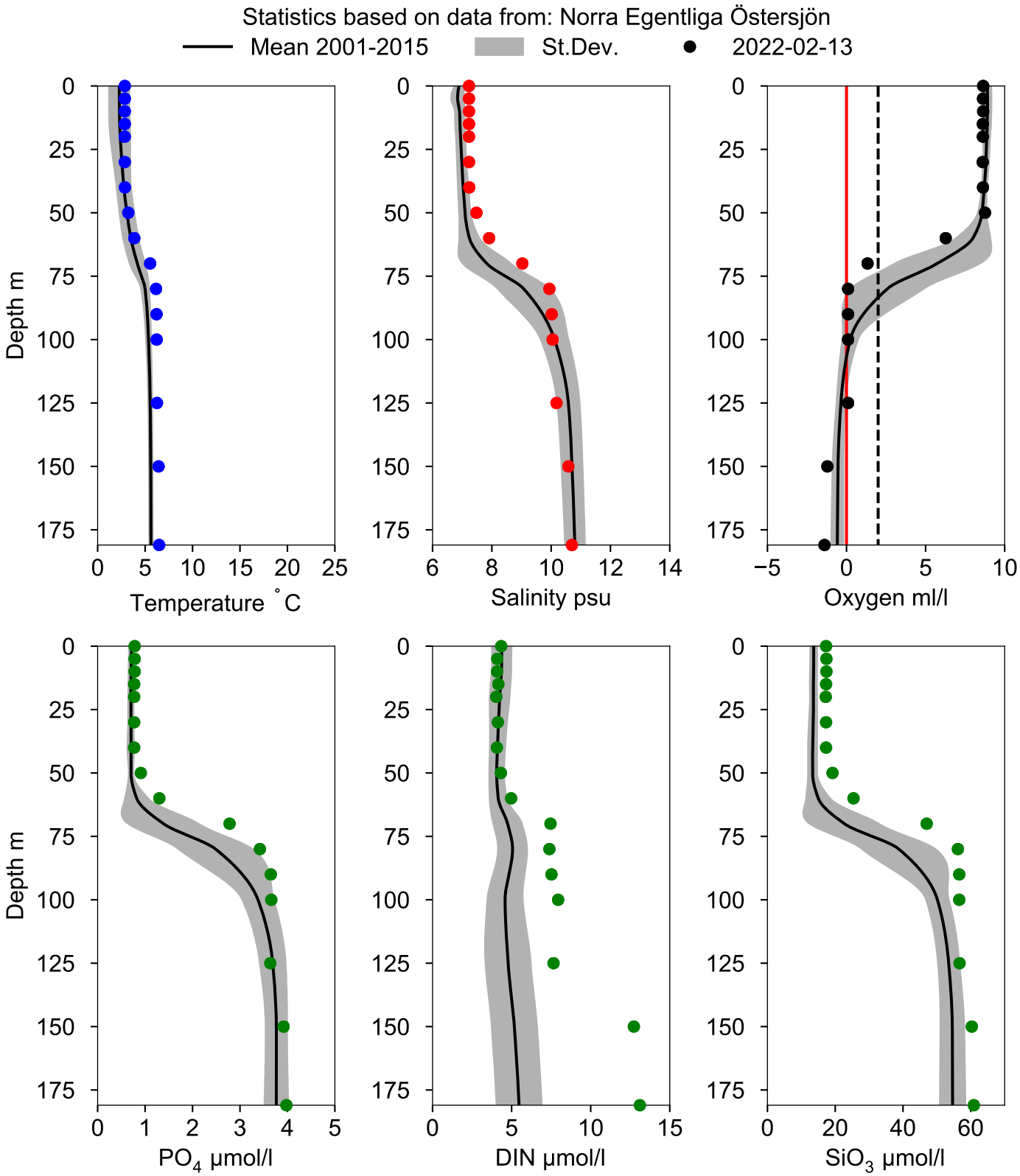
STATION BY27 SURFACE WATER (0-10 m)

Annual Cycles

Statistics based on data from: Norra Egentliga Östersjön

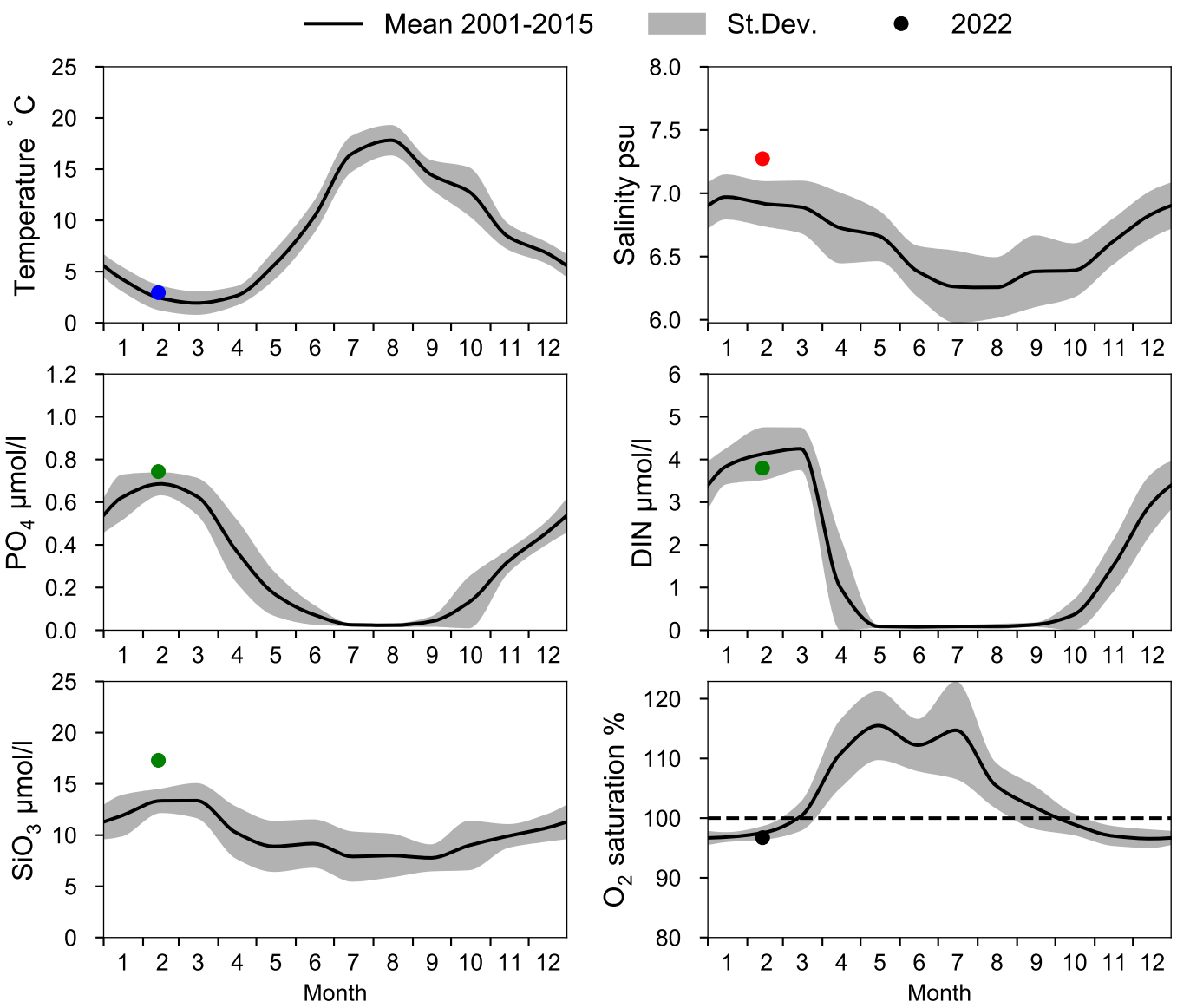


Vertical profiles BY27
February

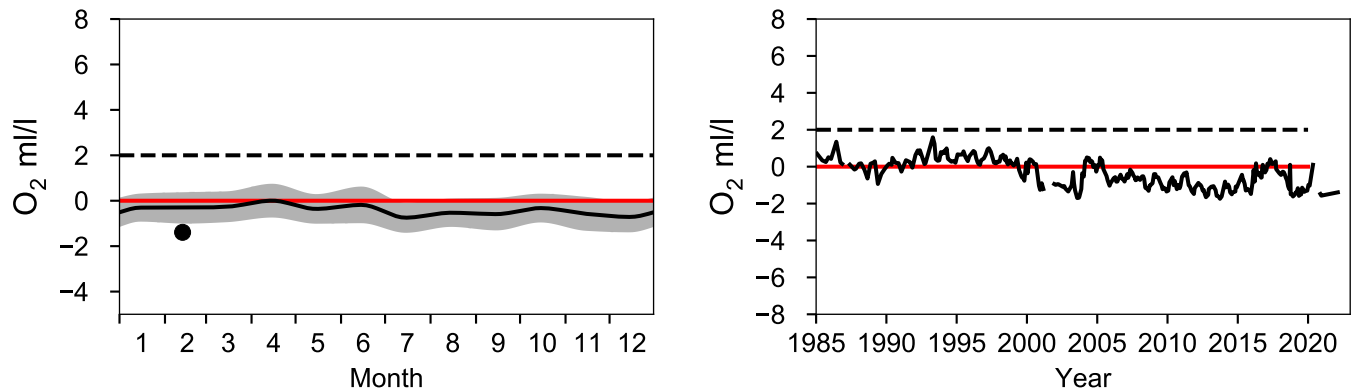


STATION BY29 / LL19 SURFACE WATER (0-10 m)

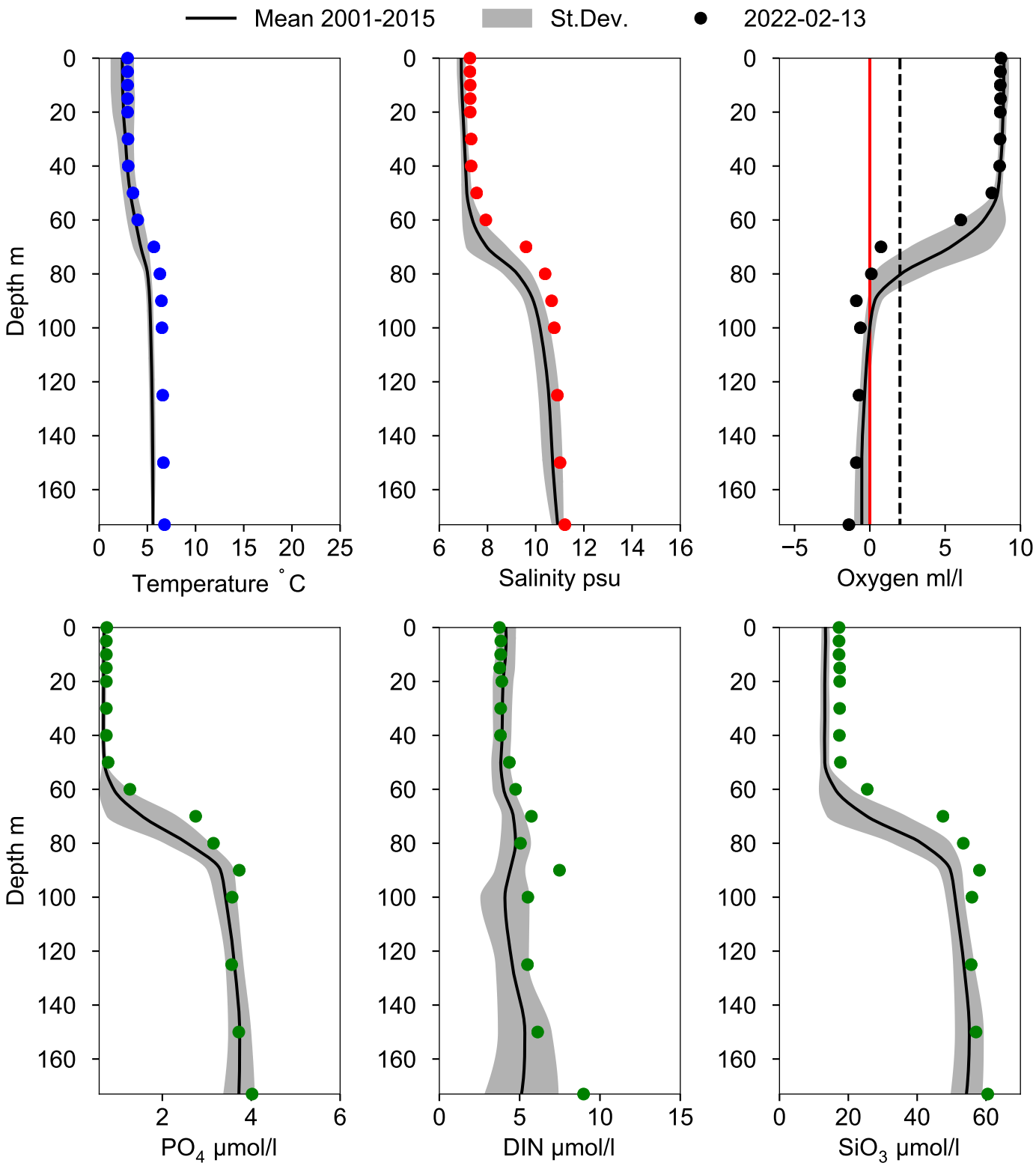
Annual Cycles



OXYGEN IN BOTTOM WATER (depth >= 150 m)



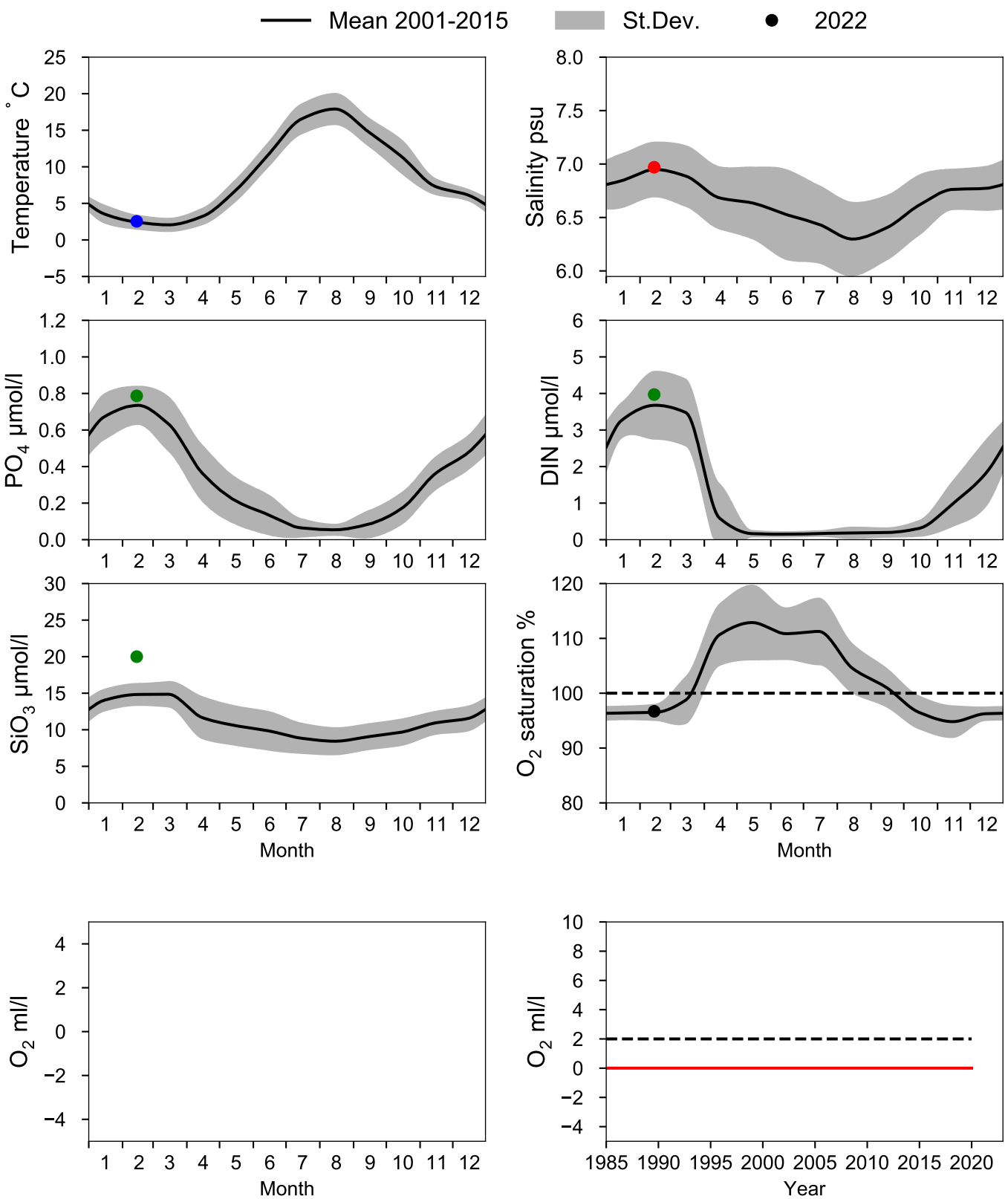
Vertical profiles BY29 / LL19
February



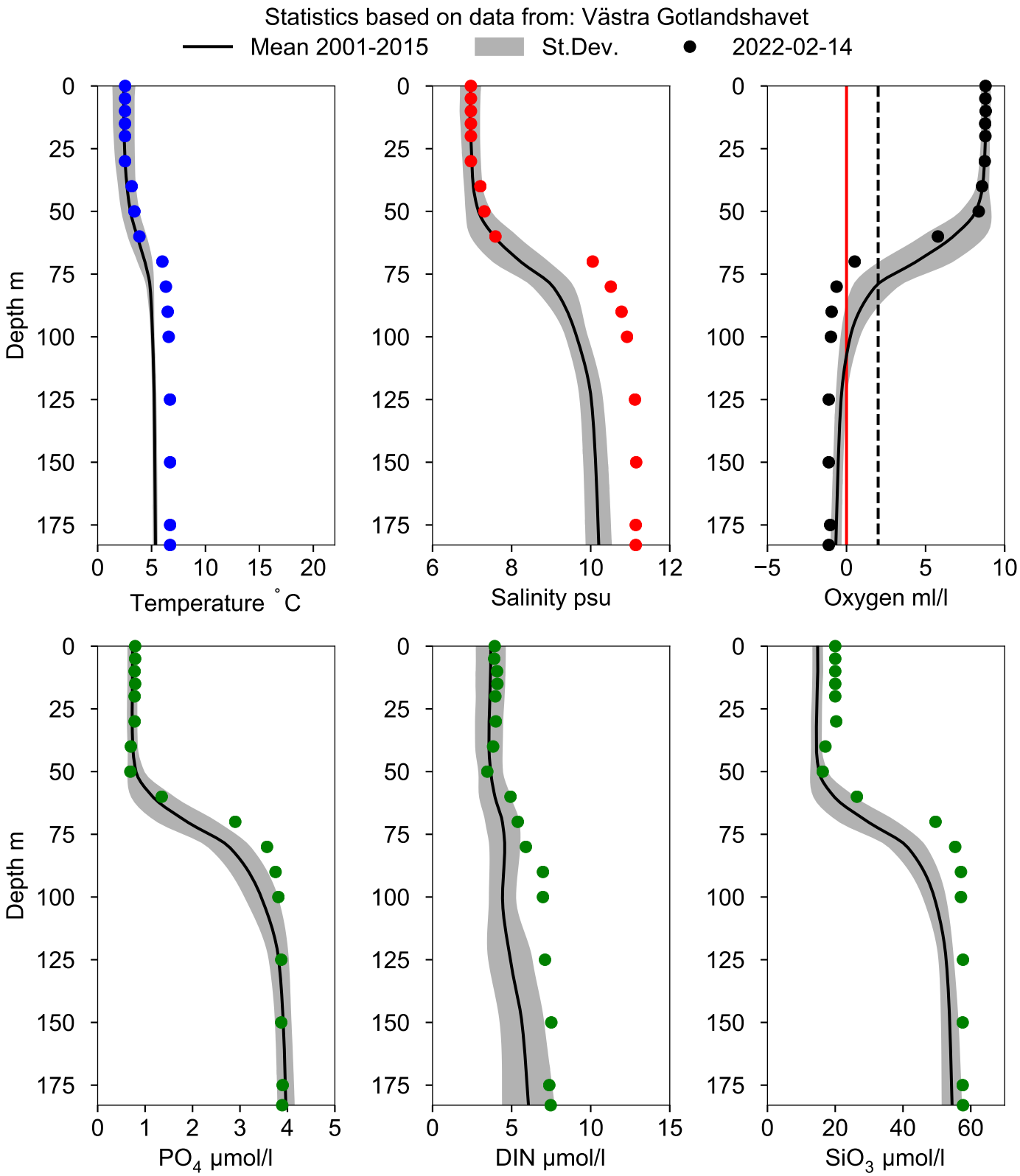
STATION BY30 SURFACE WATER (0-10 m)

Annual Cycles

Statistics based on data from: Västra Gotlandshavet

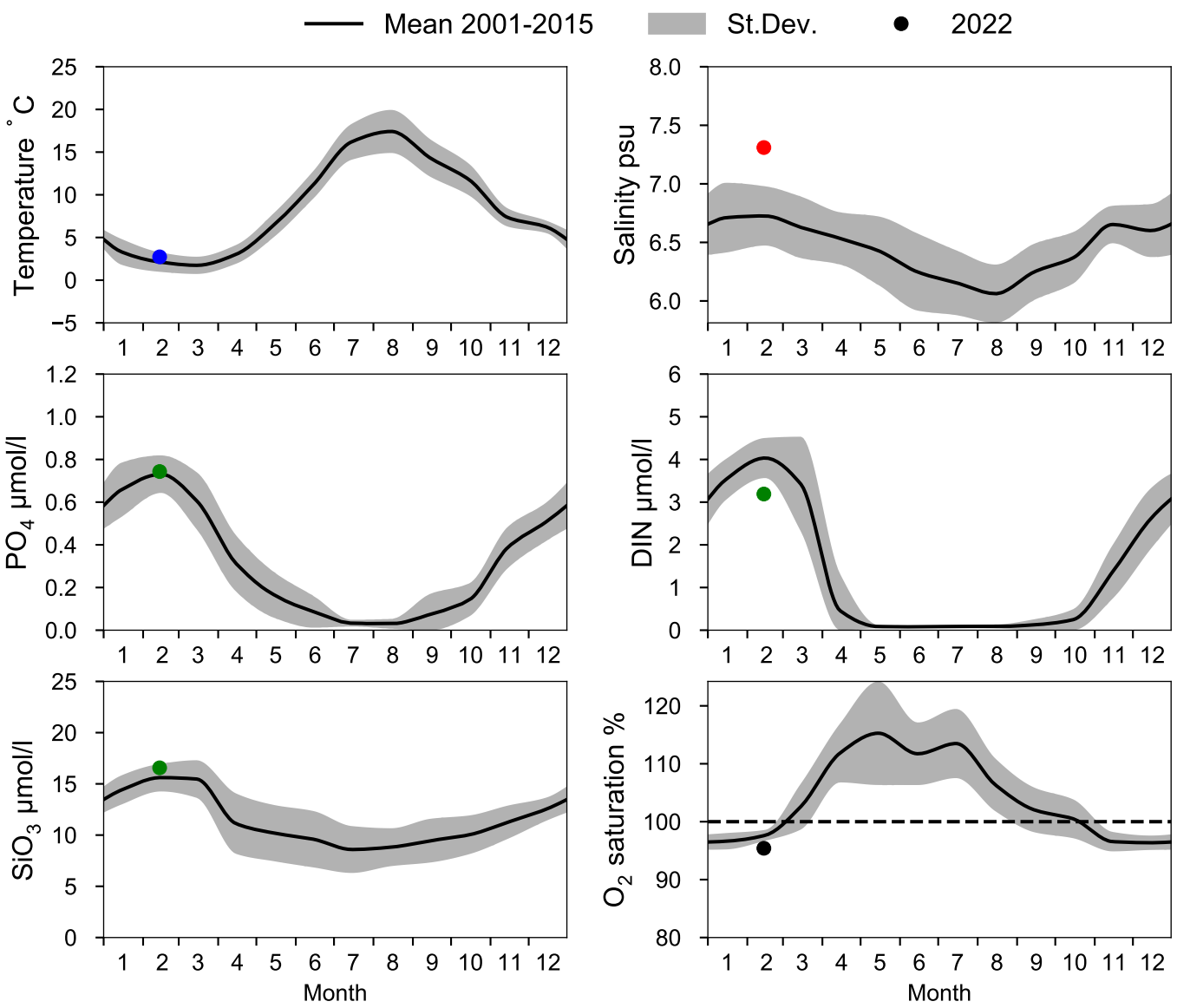


Vertical profiles BY30
February

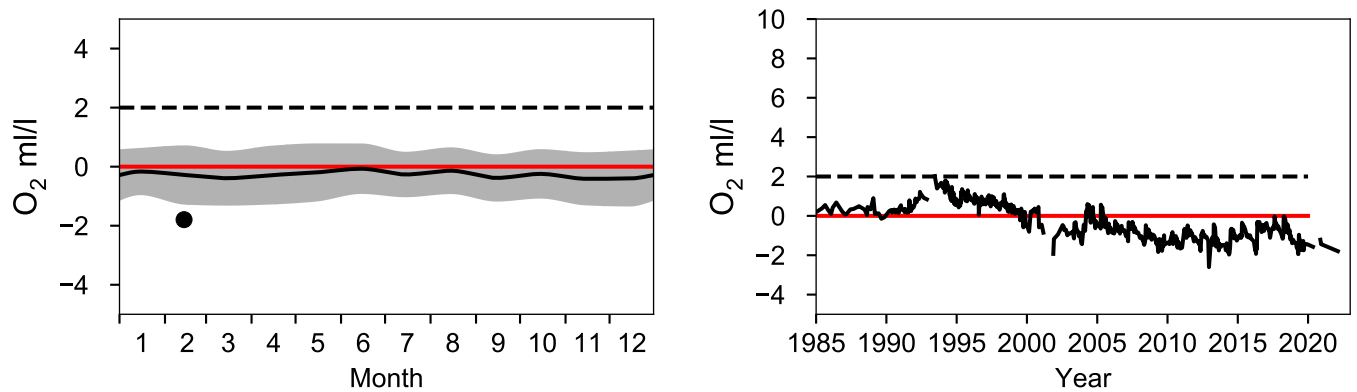


STATION BY31 LANDSORTSDJ SURFACE WATER (0-10 m)

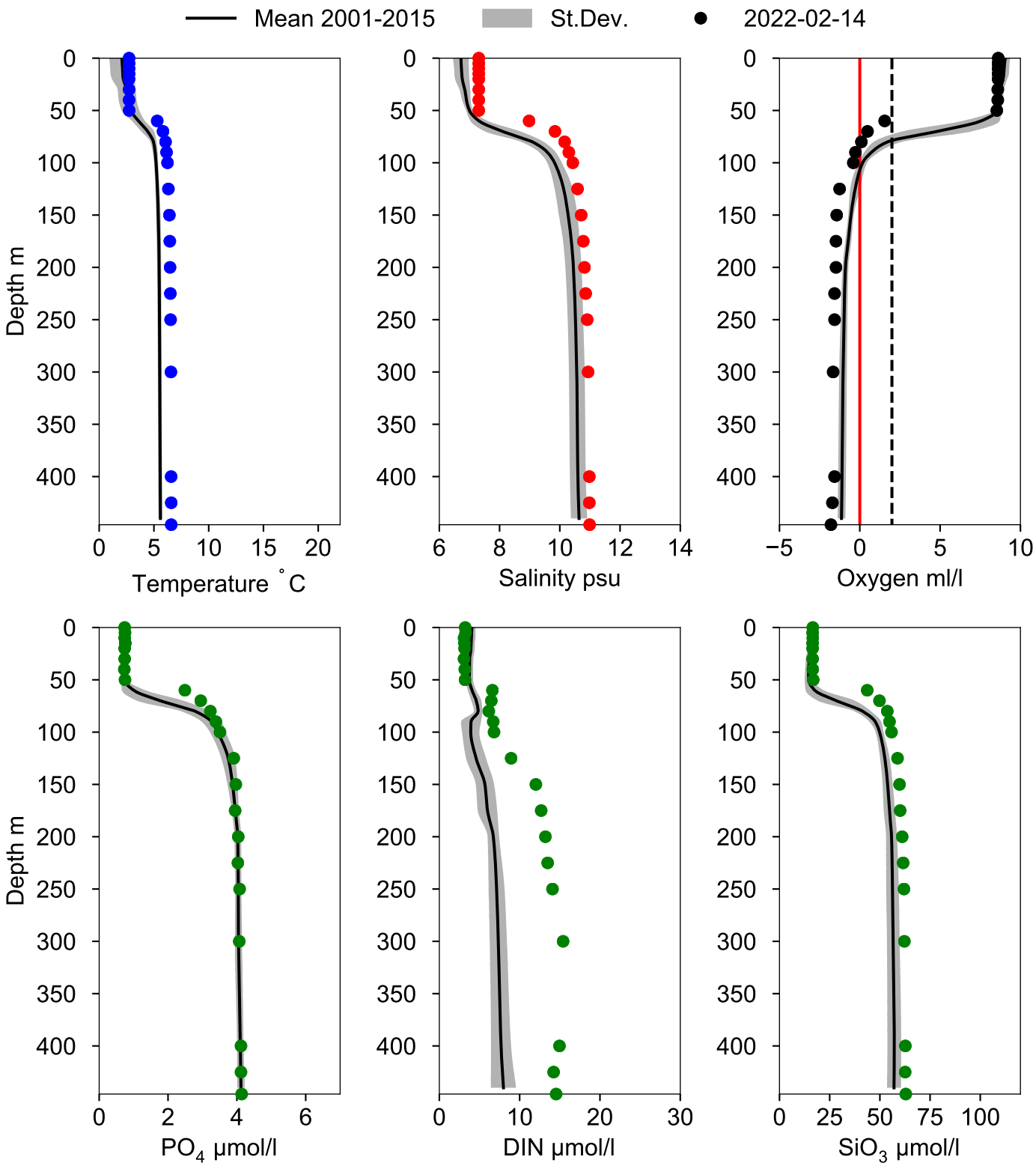
Annual Cycles



OXYGEN IN BOTTOM WATER (depth >= 419 m)

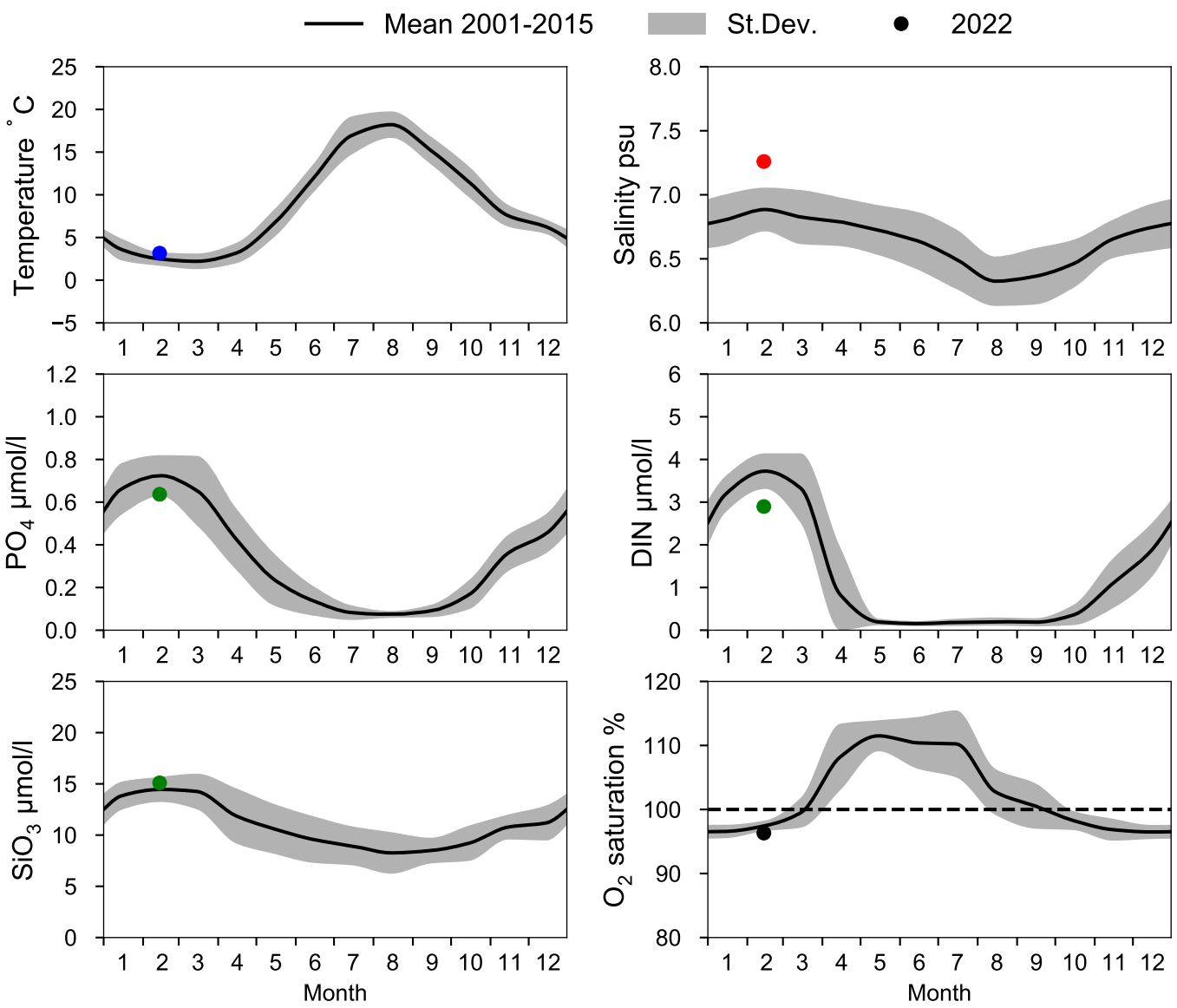


Vertical profiles BY31 LANDSORTSDJ
February

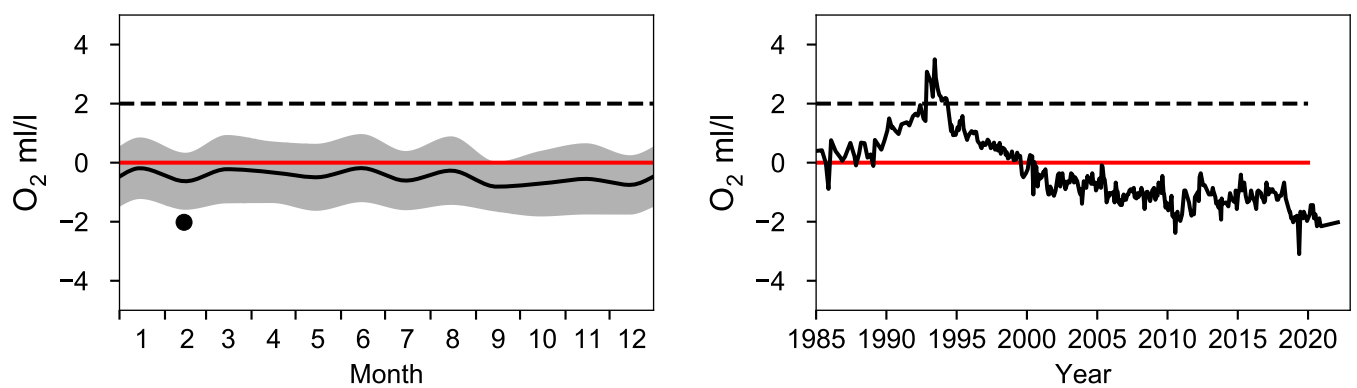


STATION BY32 NORRKÖPINGSDJ SURFACE WATER (0-10 m)

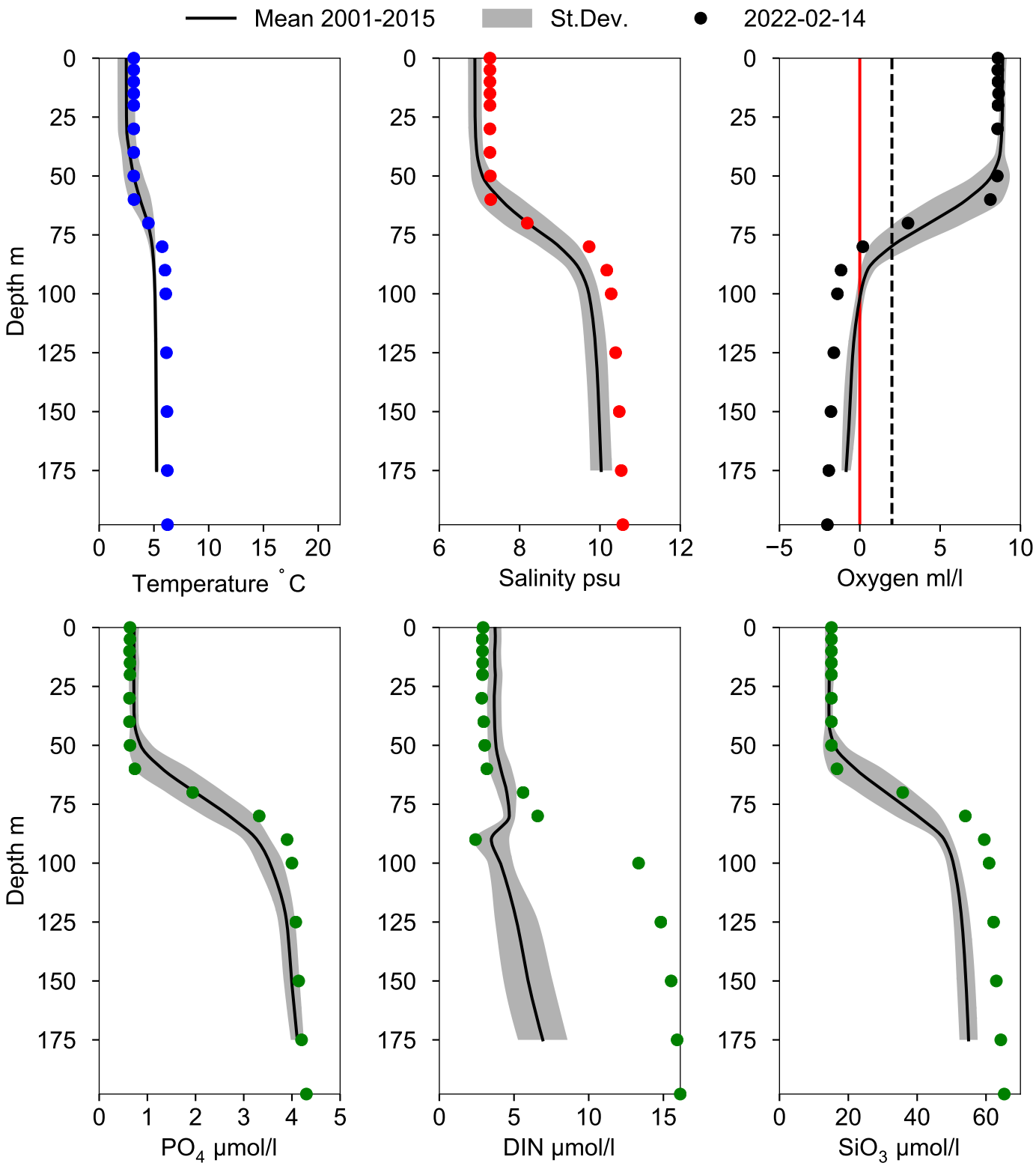
Annual Cycles



OXYGEN IN BOTTOM WATER (depth >= 175 m)



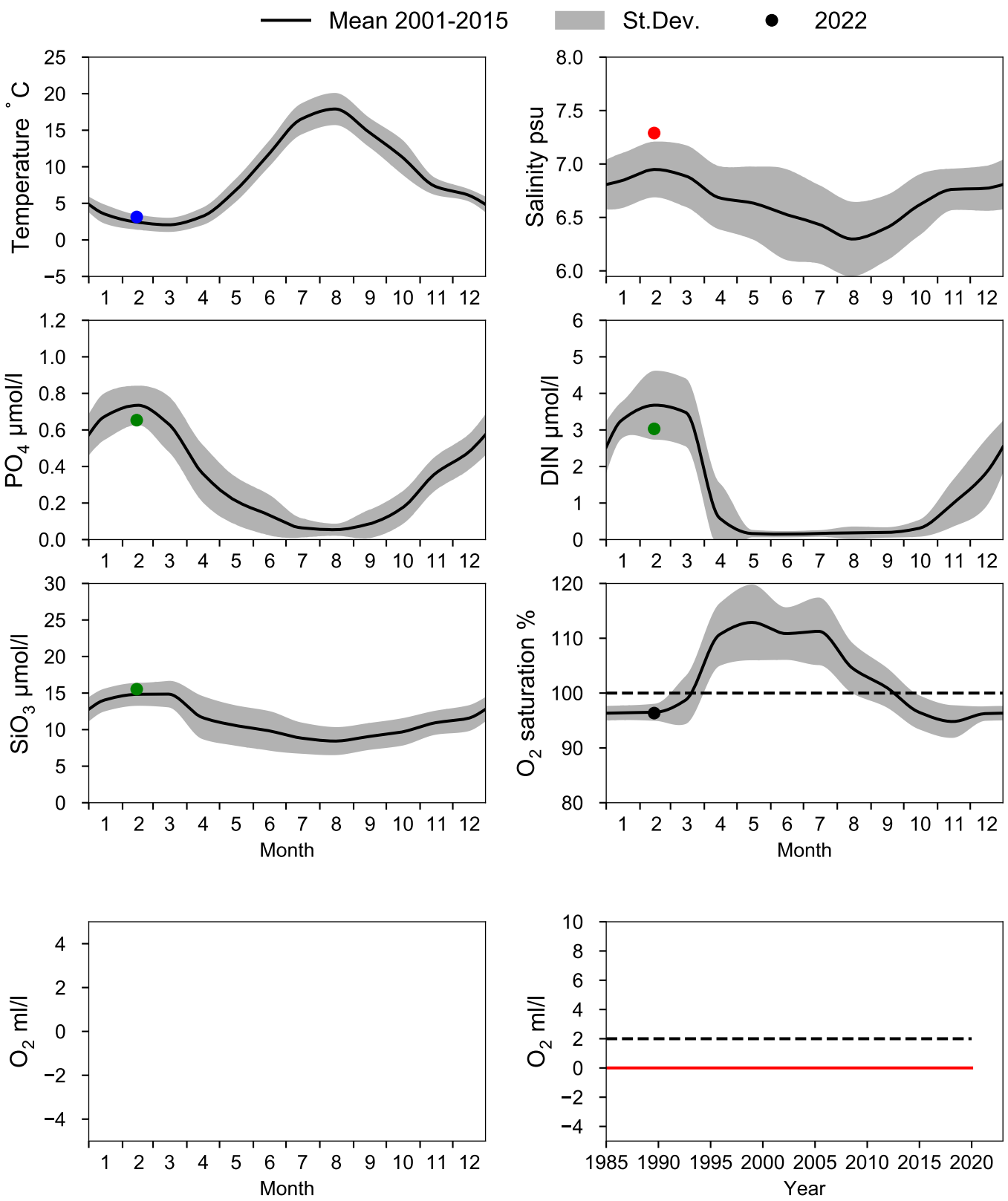
Vertical profiles BY32 NORRKÖPINGSDJ
February



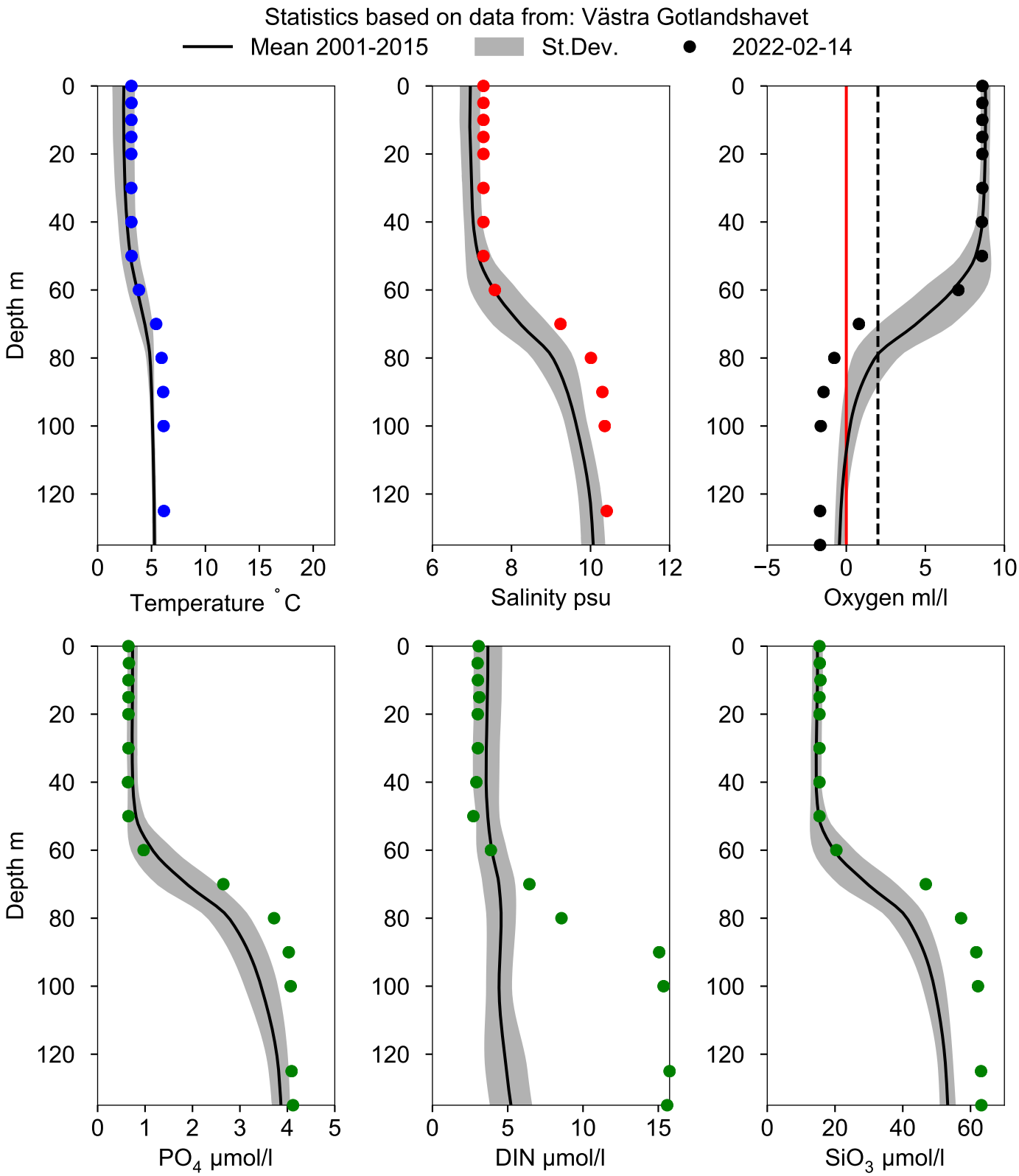
STATION BY36 SURFACE WATER (0-10 m)

Annual Cycles

Statistics based on data from: Västra Gotlandshavet

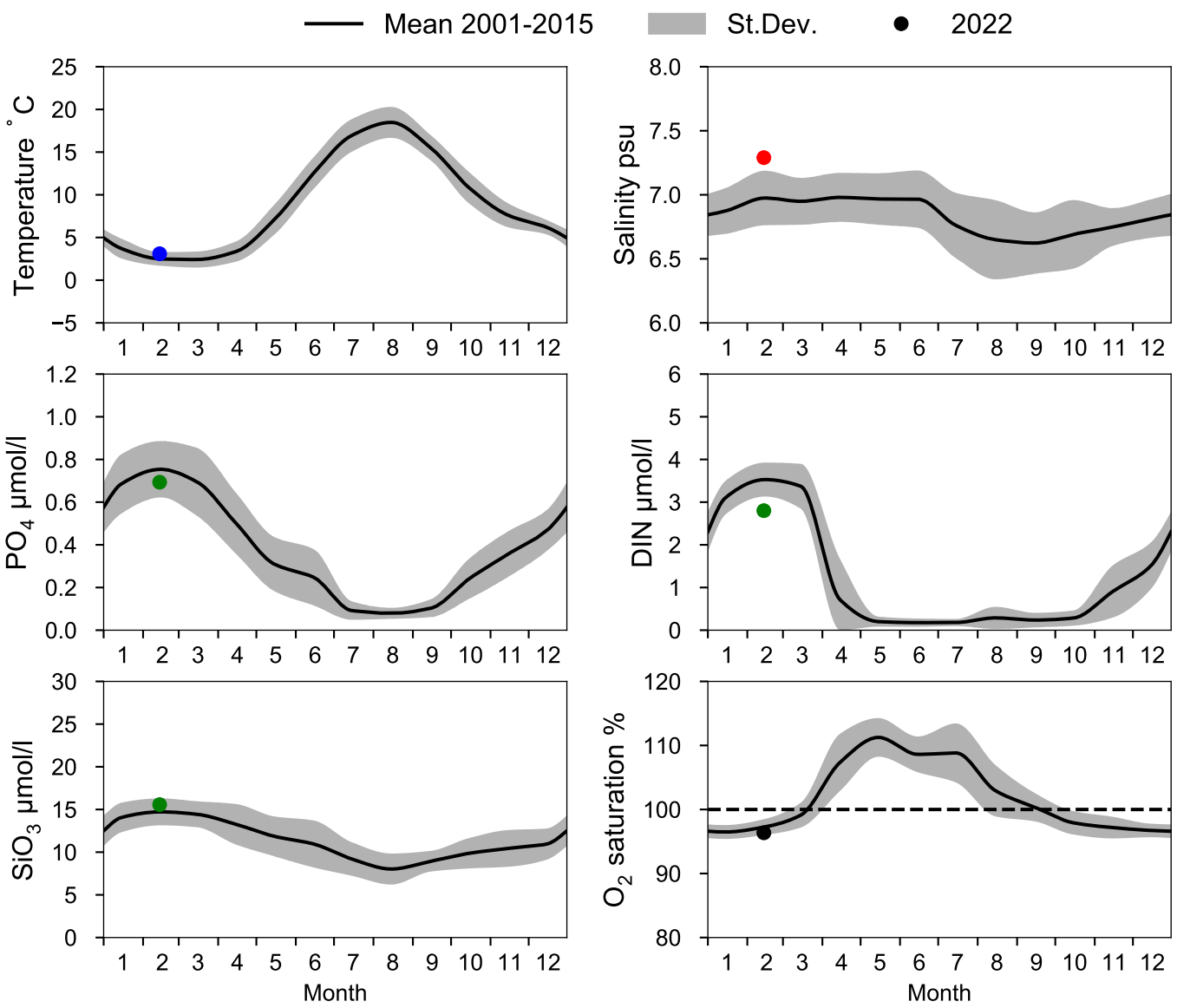


Vertical profiles BY36
February

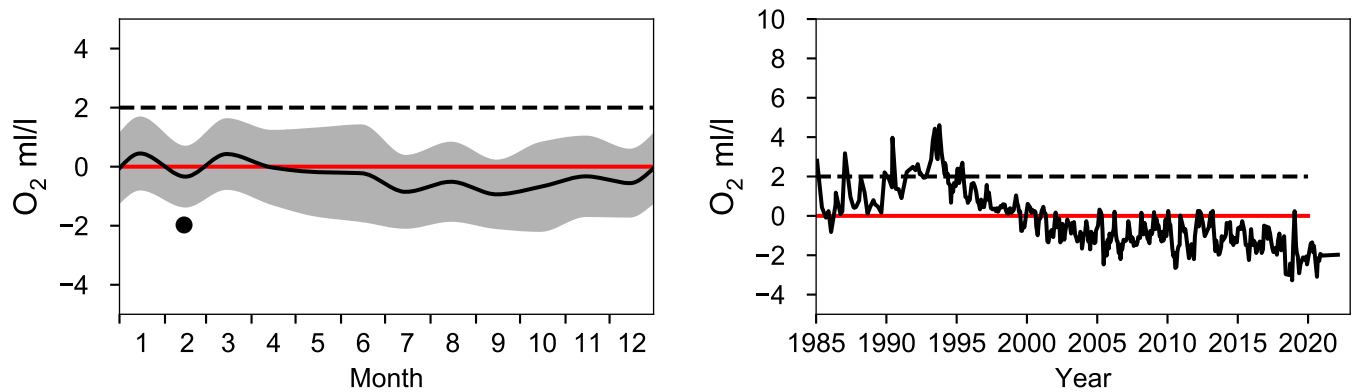


STATION BY38 KARLSÖDJ SURFACE WATER (0-10 m)

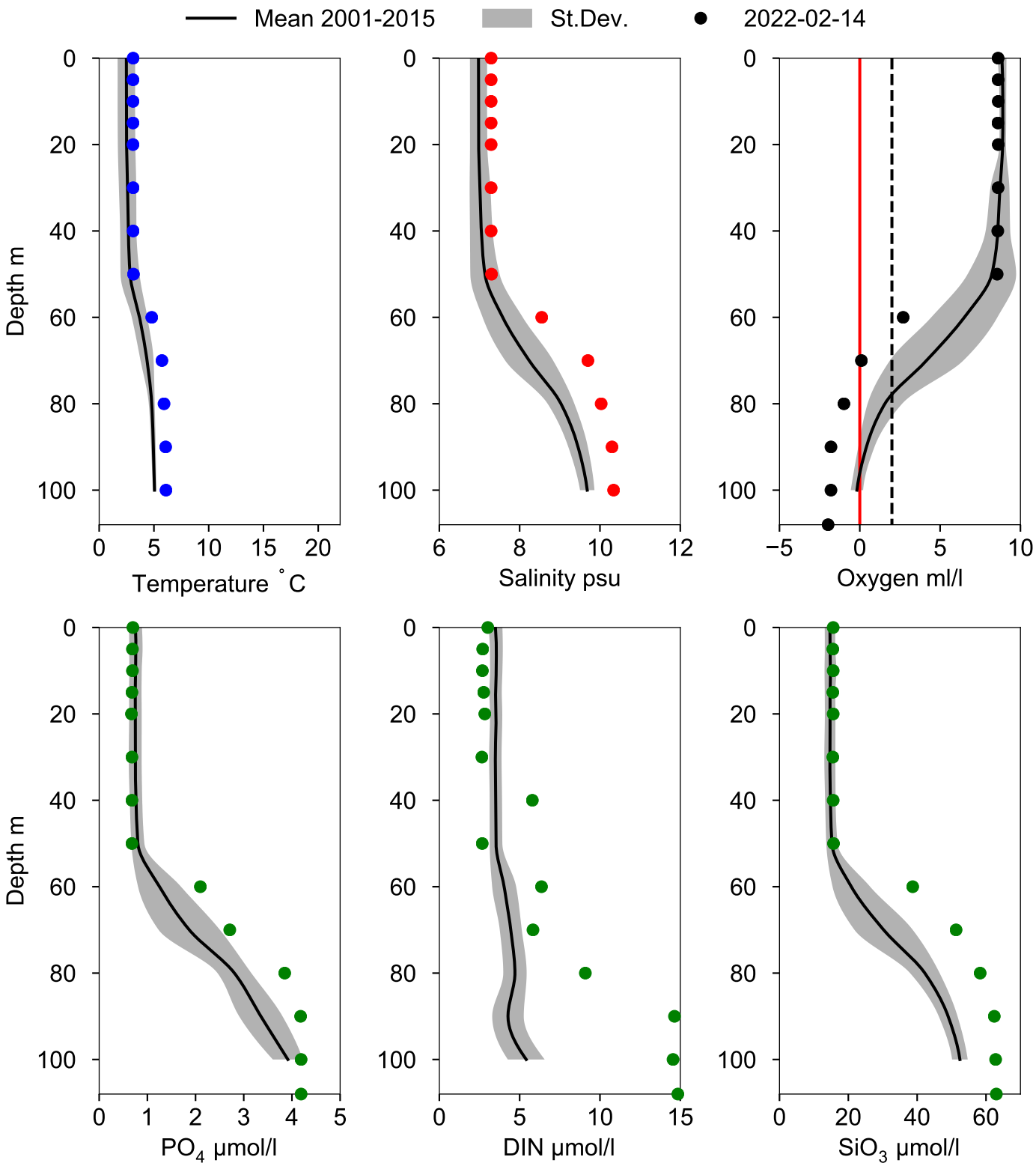
Annual Cycles



OXYGEN IN BOTTOM WATER (depth >= 100 m)



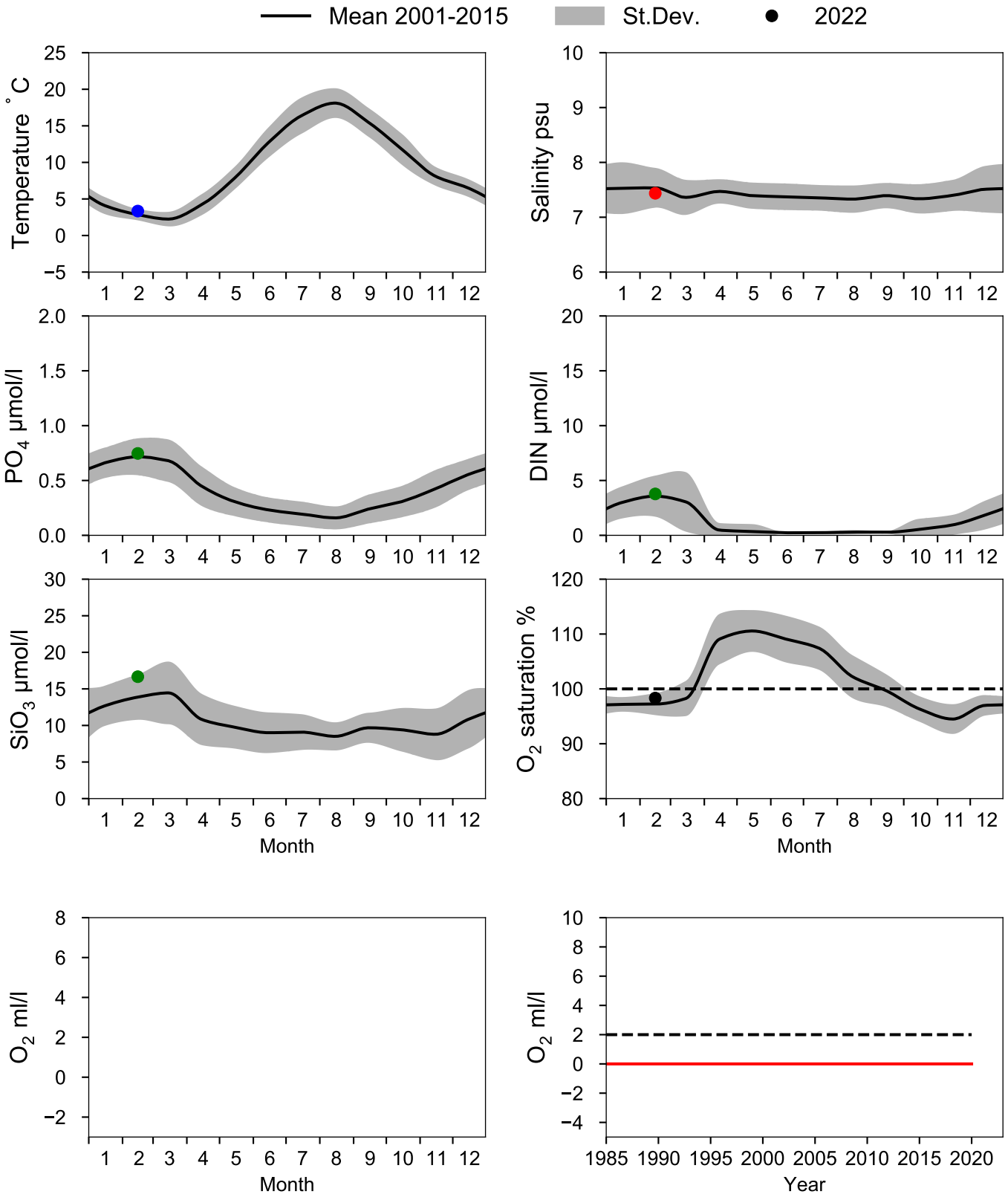
Vertical profiles BY38 KARLSÖDJ
February



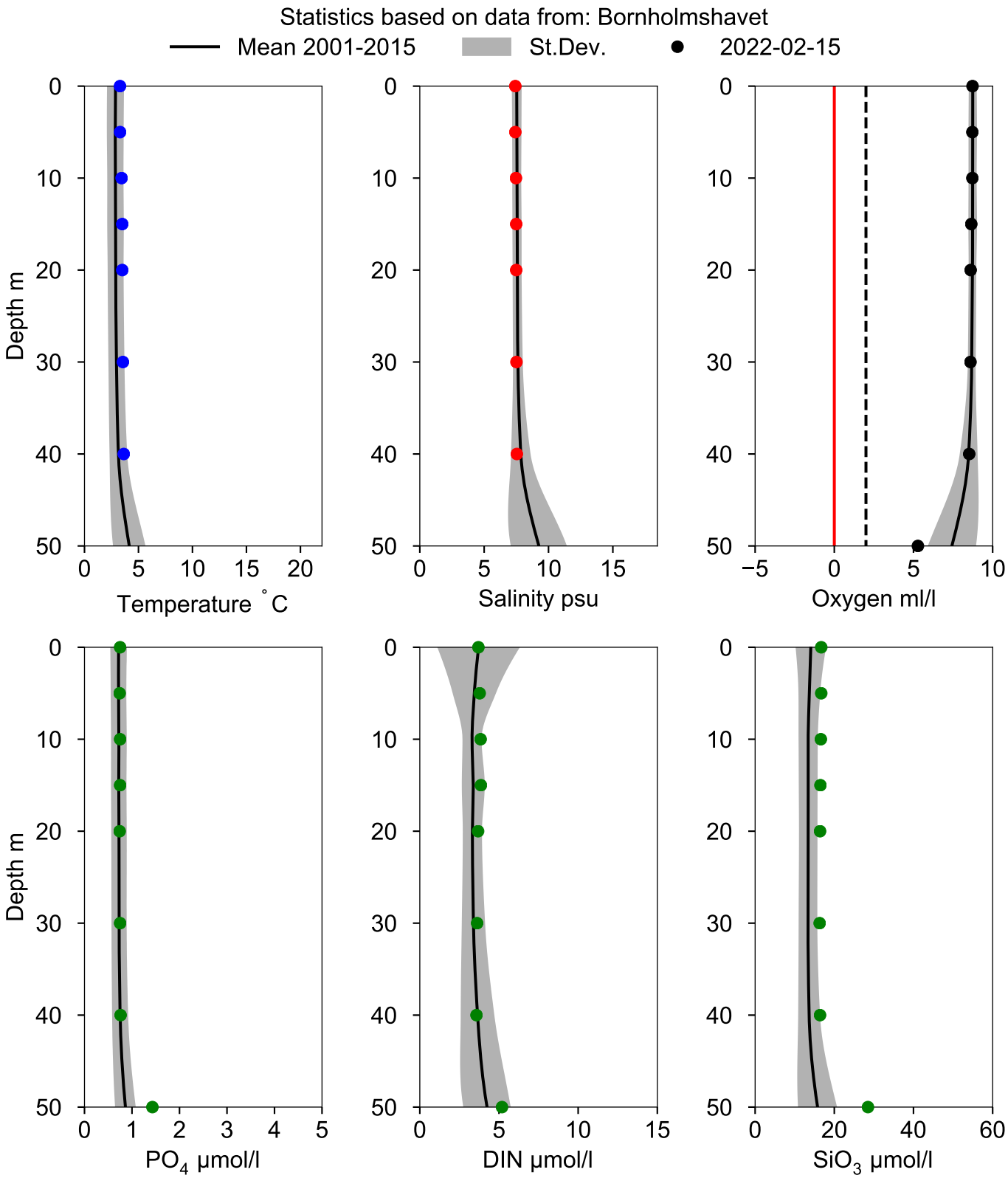
STATION BY39 ÖLANDS S UDDE SURFACE WATER (0-10 m)

Annual Cycles

Statistics based on data from: Bornholmshavet

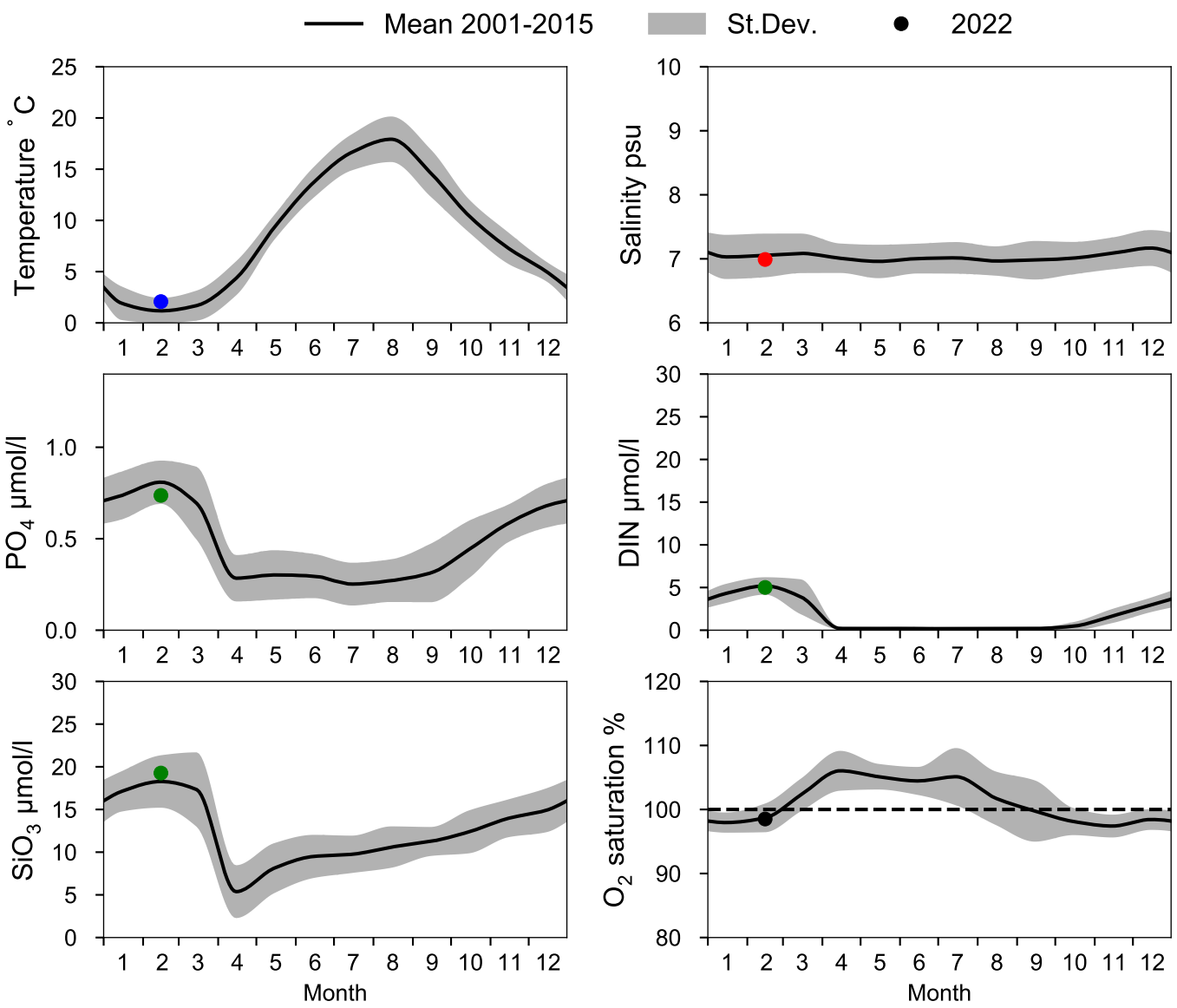


Vertical profiles BY39 ÖLANDS S UDDE
February

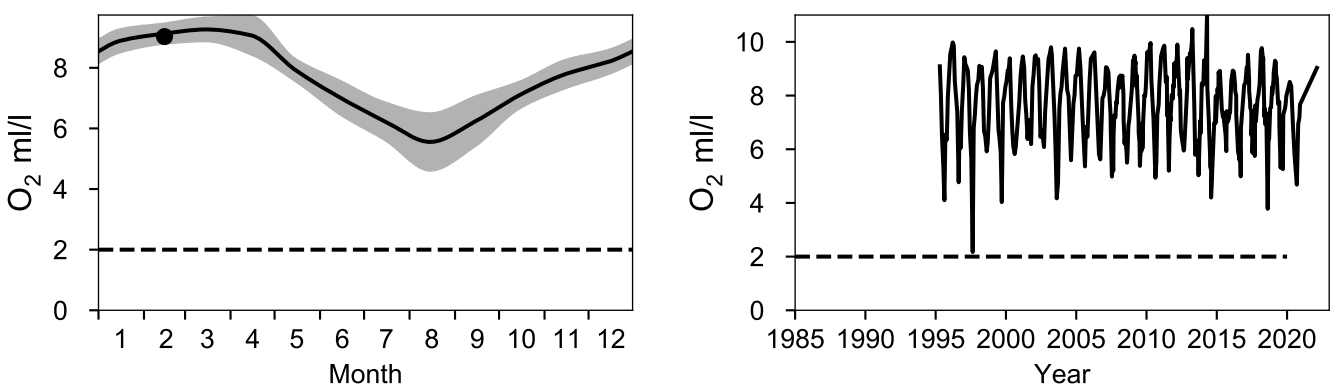


STATION REF M1V1 SURFACE WATER (0-10 m)

Annual Cycles



OXYGEN IN BOTTOM WATER (depth >= 15 m)



Vertical profiles REF M1V1
February