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Report from SMHI's marine monitoring cruise with R/V Svea – March 2025

Photo: Ola Kalén, SMHI

Survey period: 2025-03-08 to 2025-03-13

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SUMMARY

During the expedition, which is part of the Swedish pelagic monitoring program, the Skagerrak, Kattegat, Öresund, and the Baltic Proper were visited. In addition to the regular sampling, several special tasks were carried out, such as the deployment of an ocean data buoy, a bottom rig, and various method tests and additional sampling.
In all marine areas, surface water temperatures were normal for the season.
The concentrations of nutrients in the surface water had decreased compared to the sampling in February in the Skagerrak and Kattegat, due to increased production commonly seen during the spring bloom. In the Baltic Proper, concentrations had also decreased, although the spring bloom had not fully started there.
The oxygen situation was generally good in the Skagerrak, Kattegat, and Öresund, with no signs of oxygen deficiency observed. In the Baltic Proper, good oxygen conditions in bottom waters were only found in the Arkona Basin. In the Hanö Bay and the Bornholm Basin, acute oxygen deficiency (< 2 ml/l) was measured from 70 meters depth, with bottom water levels ranging between 0.4–0.7 ml/l. In the Bornholm Basin, this represents a significant decrease compared to February, when levels were above 2 ml/l, compared to 0.7 ml/l measured in March.
In both Gotland Basins, acute oxygen deficiency was observed from 70 meters depth, and hydrogen sulfide was detected from 80 and 90 meters depth in the Western and Eastern Gotland Basins, respectively. At several stations, hydrogen sulfide concentrations in bottom water were higher than normal, and the long-term trend shows increasing levels of hydrogen sulfide at multiple stations.

The next expedition with R/V *Svea* is planned to start on April 7 in Kalmar and conclude in Lysekil around April 13.

EXPEDITION OVERVIEW

The expedition was carried out with the research vessel R/V Svea and started in Kalmar on March 8th, ending in Gothenburg on March 13th. In addition to the regular sampling, the SMHI Huvudskär Ost ocean buoy was deployed north of Gotland, and a seabed measurement system, P22, was installed in the Skåne region of the Kattegat.

The weather during the expedition was pleasant, with light to moderate winds from varying directions. Air temperatures ranged between 0 and 6°C throughout the week. All planned stations were successfully sampled.

CTD and water sampling

Profiles of salinity, temperature, oxygen, and fluorescence in the water column were measured using a CTD mounted on a rosette with space for 24 water samplers. At all stations, the water samplers were closed using so-called autofire during the cast. This saves time at the stations and has been made possible through the development of the in house software used for CTD sampling, developed and maintained by SMHI, SHARKtools.

The motion-compensated CTD winch also contributes to improved depth precision for the water samples and provides smooth profiling at a nearly constant speed through the water column, even in rough seas.

There were some issues with the water samplers failing to close at a few stations, but the cause is not fully understood. However, the issue was detected using the rosette's camera system, and extra backup samplers on the rosette could be closed instead.

Photosynthetically Available Radiation (PAR) – the light available for photosynthesis – is also measured on the CTD rosette. To obtain more useful data on light attenuation in the water column, a surface reference measurement is desired during profiling. Therefore, installation of instruments and integration of data into SMHI's CTD system was initiated.

Additional Sampling

eDNA samples were collected for the Swedish Museum of Natural History as part of the SAMBAH II project, which focuses on harbor porpoises in the Baltic Sea.

Additional samples were collected and preserved (using zinc acetate) for hydrogen sulfide analysis, for a comparative study with Stockholm University and IOW (The Leibniz Institute for Baltic Sea Research Warnemünde).

Gelatinous zooplankton sampling using a WP3 net and a "PhotoBox" developed by the University of Gothenburg was tested. The net sample volume was measured with a graduated cylinder and then poured into the PhotoBox for photographing and later species identification. Afterward, the sample was sieved and re-measured to calculate the displaced volume of gelatinous zooplankton.

FerryBox

To enable carbonate system calculations and validate the measurements of the pCO_2 instrument (HydroC) installed on Svea's FerryBox, reference samples for pHT and alkalinity were collected in three areas of the Skagerrak. These areas have minimal influence from humic substances and organic matter, resulting in the best calculation outcomes.

A comparative measurement was conducted in Svea's FerryBox between its thermosalinograph (SBE45) and three identical SBE45s from the Swedish Polar Research Secretariat (from the vessel Oden).

Other Onboard Measurement Systems

The Moving Vessel Profiler (MVP), used to measure profiles while underway, was operated during daytime for a large portion of the expedition.

Svea's current measurement instruments, the RDI ADCP OS150 & WH600, were operated continuously throughout the expedition, except for the first day when the WH600 had an incorrect baud rate. WH600, which had recently undergone servicing, was angle-calibrated during transit between Släggö and the final port, Gothenburg.

Fixed Measurement Systems

The Huvudskär Ost ocean buoy was successfully deployed in calm weather on the afternoon of March 9 after its winter break and servicing at the SMHI buoy workshop in Gothenburg. It measures meteorological parameters (air temperature, air pressure, wind speed, and direction) and oceanographic parameters. At the surface, it measures wave height and direction, conductivity, temperature, oxygen, fluorescence of chlorophyll-a and phycocyanin. In the water column, it measures conductivity and temperature at depths of 5, 10, 15, 20, 25, 30, 40, 50, 60, and 70 meters, and oxygen at 5, 50, 60, and 70 meters.

P22 is a measurement system deployed on the seabed off Kullen in the Skåne region of the Kattegat for the County Administrative Board of Skåne. It measures current speed and direction, as well as conductivity (salinity), temperature, and oxygen at the seafloor.

Data Analysis

The report is based on data that has undergone an initial quality control and has been compared to monthly mean values for the period 1991–2020. Once further quality assurance is completed, some values may be subject to change. The values presented in the report have been rounded to the nearest tenth and may therefore differ from published values. Data is published as soon as possible on the data host's website, typically within about a week after the expedition is completed. Some analyses are conducted after the expedition and are therefore published at a later date.

For more information about our role as data host and to download data, please see this link:

https://www.smhi.se/data/oceanografi/datavardskap-oceanografi-och-marinbiologi

More information about the algal situation can be found in the AlgAware report:
https://www.smhi.se/publikationer-fran-smhi

Skagerrak

Surface water temperatures were normal at all stations, ranging between 4.8–5.1°C. Surface salinity varied between 25 and 30 PSU and was higher than normal at station Släggö, located at the mouth of the Gullmar Fjord (28 PSU). In the deep water, salinity was 35 PSU and the temperature ranged from 6.9 to 7.2°C.

Nutrient concentrations in the surface water had decreased significantly since the last visit in February. Inorganic nitrogen levels were now between 0.1–1.9 µmol/l, phosphate around 0.15 µmol/l, and silicate 0.1–1.9 µmol/l. The sharp decline in nutrients suggests that high biological production has occurred in the area since the previous sampling.

Fluorescence measurements indicated high activity in the surface layer and at the thermocline located at 10–20 meters depth.

Kattegat and Öresund

Surface water temperatures were around 4°C, and salinity ranged between 18–24 PSU in the Kattegat, while in the Öresund it was approximately 9 PSU. At all stations, a well-mixed surface layer was present, with a thermocline at 10–20 meters depth.

Concentrations of silicate, dissolved inorganic nitrogen, and phosphate in the surface water had decreased markedly compared to the latest measurements in February (inorganic nitrogen 0.1–1.8 µmol/l, phosphate 0.1–0.5 µmol/l, and silicate 0.2–16 µmol/l). Silicate and phosphate levels were lower than normal at some stations.

Oxygen levels in the bottom waters of the Kattegat and Öresund showed no signs of oxygen deficiency and were normal at all stations, ranging between 5.8–6.3 ml/l.

Chlorophyll fluorescence was highest at the thermocline, with clear and pronounced peaks.

The Baltic Proper

The average surface water temperature ranged between 2.8–4.3°C, which was above normal for the southeastern Baltic Sea and the Gotland Basin stations, with the exception of BY31, which had a normal temperature. In the Arkona and Bornholm basins, as well as in the Hanö Bight, surface water temperatures were within the normal range. Surface salinity was normal or slightly above normal at most stations, ranging from 6.5 to 8.2 PSU. Only station BY29, located in the northern part of the Baltic Proper, had a below-normal salinity level, which was also the lowest recorded value.

At most stations, a well-mixed surface layer extended down to 40–60 meters. At stations BY31 and BY29, multiple layers were observed, and the well-mixed surface layer only extended down to 20 meters. In the deep waters of the Gotland Basins, temperatures were generally slightly above normal, ranging from 5.8 to 7.2°C. Salinity near the bottom ranged from 10 to 12 PSU, slightly higher at BY15. These values were normal for most stations, except for BY38, where salinity from 40 to 90 meters depth was slightly above normal. In the Bornholm Basin, salinity below the halocline was normal, with values around 16 PSU near the bottom. The temperature was slightly above normal, around 10°C. In the Arkona Basin, bottom water salinity was higher than normal, with values of 18–19 PSU, while the temperature remained normal.

The concentration of dissolved inorganic nitrogen (DIN) was within normal levels at all stations and had slightly decreased compared to February. Concentrations were lowest in the southern basins and increased toward the north, ranging between 1.0–4.1 µmol/l. In contrast to nitrogen, phosphate concentrations were above normal in the southern basins (Hanö Bight and Bornholm) but normal in the Gotland Basins. In the southern areas, phosphate was around 1.0 µmol/l, and in the Gotland Basins, it ranged between 0.7–0.8 µmol/l. Silicate concentrations were generally above normal, ranging between 15–23 µmol/l.

In the Baltic Proper, the Arkona Basin was the only area where bottom water oxygen conditions were good. Here, values above 8 ml/l were measured, and the entire water column was well oxygenated. In the Hanö Bight and Bornholm Basin, severe oxygen deficiency (< 2 ml/l) was observed from 70 meters depth, and bottom water oxygen levels were significantly lower than in the Arkona Basin, with concentrations of just 0.4–0.7 ml/l. At station BY5, this represented a clear decrease from the previous month when levels were just above 2 ml/l, compared to 0.7 ml/l recorded in March. At the station in the southeastern Baltic Sea, no hydrogen sulfide was detected—as it had been in February—but the oxygen concentration was only slightly above 0.1 ml/l at the bottom, with severe oxygen deficiency from 70 meters depth.

In both the Western and Eastern Gotland Basins, severe oxygen deficiency occurred from 70 meters depth, and hydrogen sulfide was detected from 80 and 90 meters depth, respectively. At several stations, hydrogen sulfide concentrations in the bottom water were higher than normal, and the long-term trend at multiple stations shows increasing hydrogen sulfide levels.

Fluorescence measurements generally indicated low plankton activity in the surface layer. At station BY1 in the Arkona Basin, slightly higher plankton activity was observed from the surface down to 20 meters.

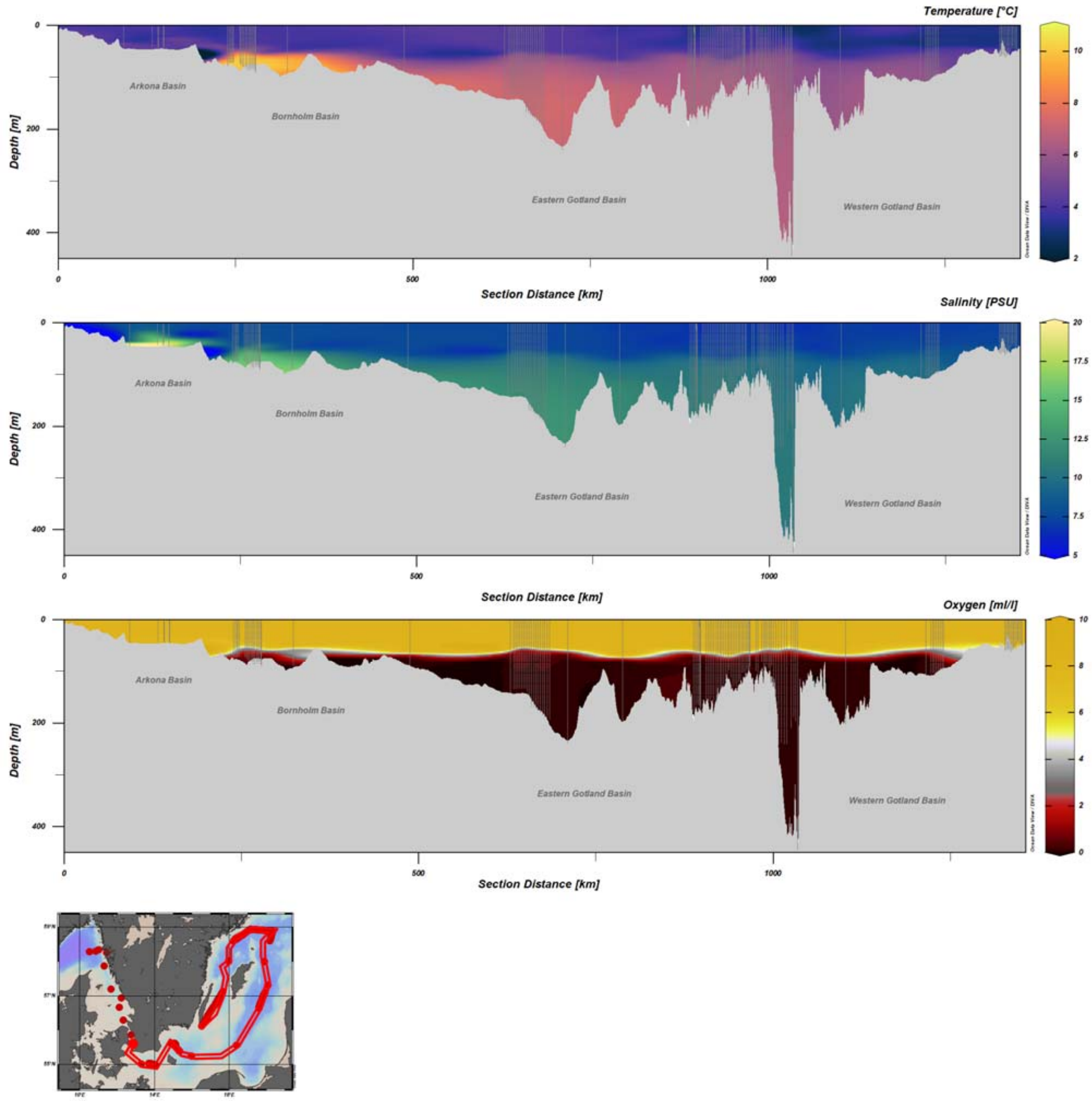


Figure 1. Transect showing temperature, salinity and oxygen concentration from CTD- and MVP-measurements, from the Sound through Eastern Gotland Basin into Western Gotland (map at the bottom).

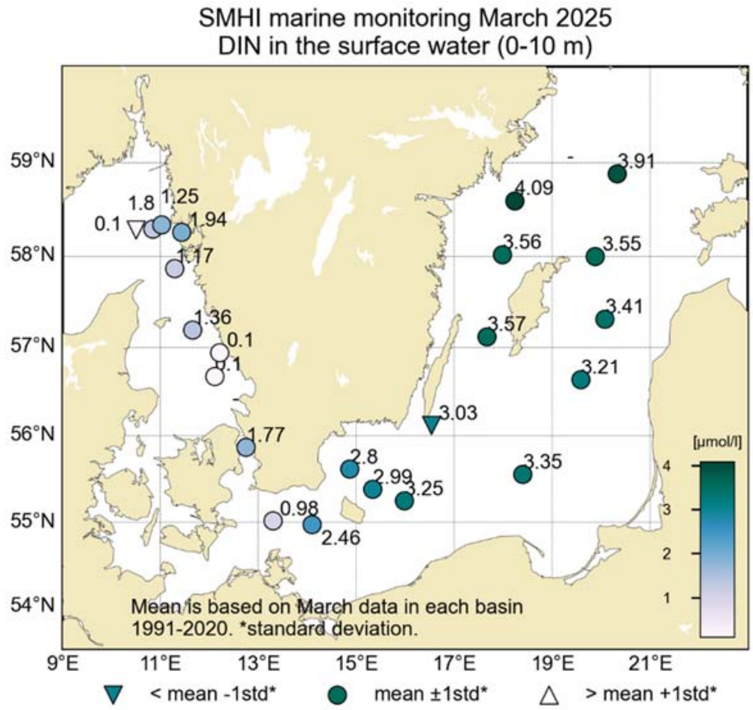


Figure 2. Concentration (µmol/l) of inorganic nitrogen (DIN) in the surface water (0 – 10 m). Mean value is based on data for the month at each station during the years 1991 – 2020.

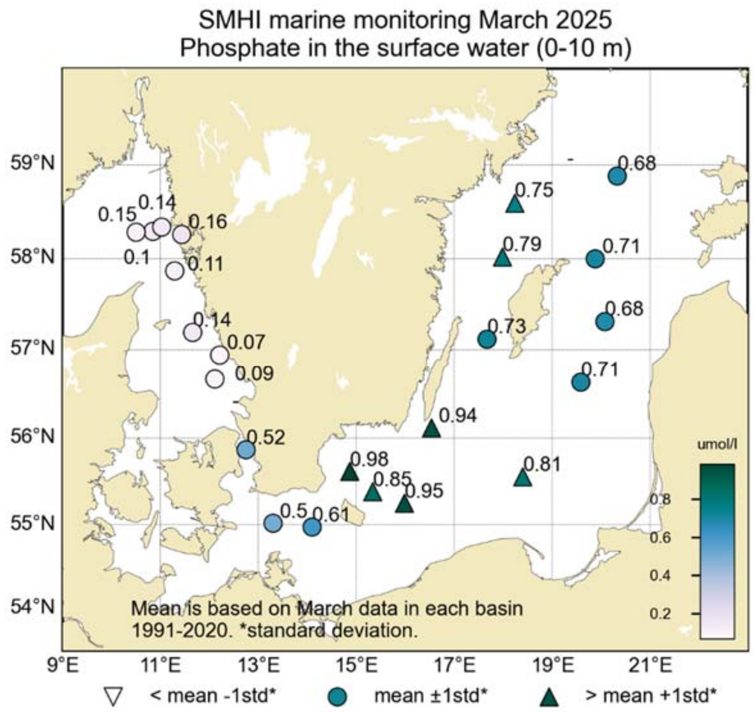


Figure 3. Concentration (µmol/l) of phosphate in the surface water (0 – 10 m). Mean value is based on data for the month at each station during the years 1991 – 2020.

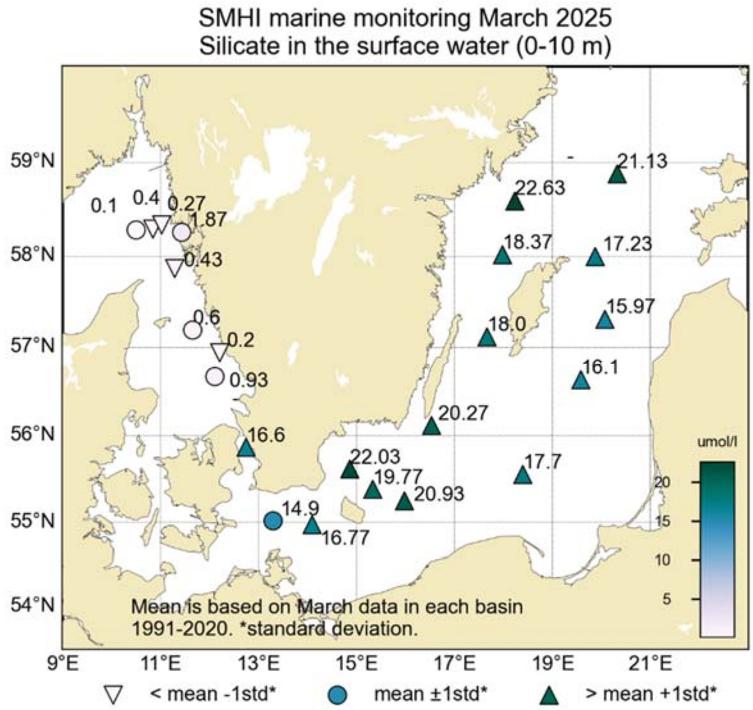


Figure 4. Concentration (µmol/l) of silicate in the surface water (0 – 10 m). Mean value is based on data for the month at each station during the years 1991 – 2020.

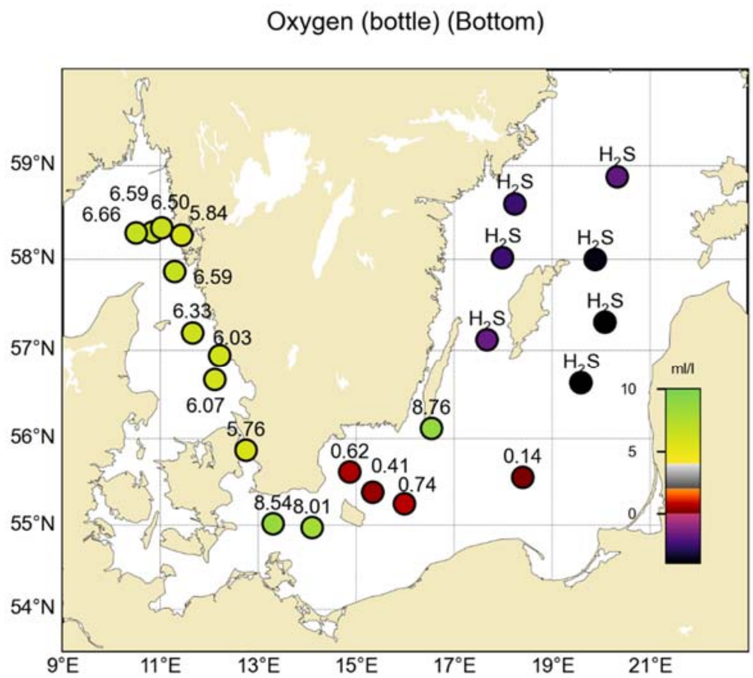


Figure 5. Dissolved oxygen concentration (ml/l) in the bottom water, approx. one meter above the seafloor. Presence of hydrogen sulphide is shown as H2S. Note that values have not been compared to statistics as in similar figures and only circles are shown.

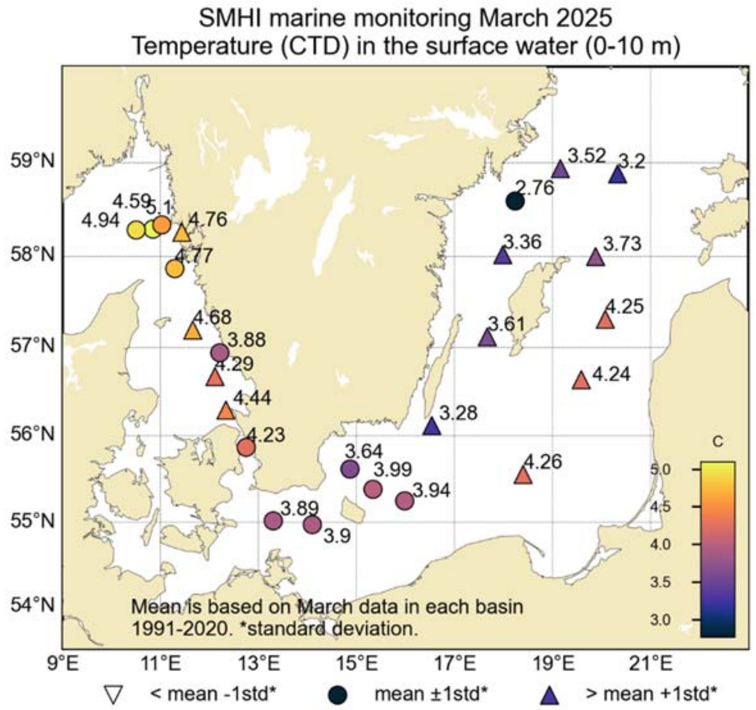


Figure 6. Temperature in the surface water (0 – 10 m). Mean value is based on data for the month at each station during the years 1991 – 2020

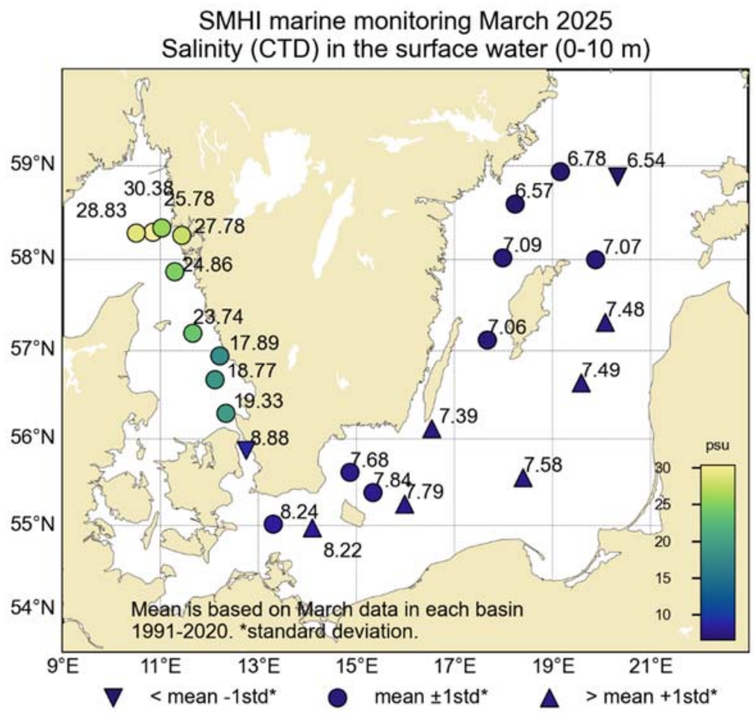


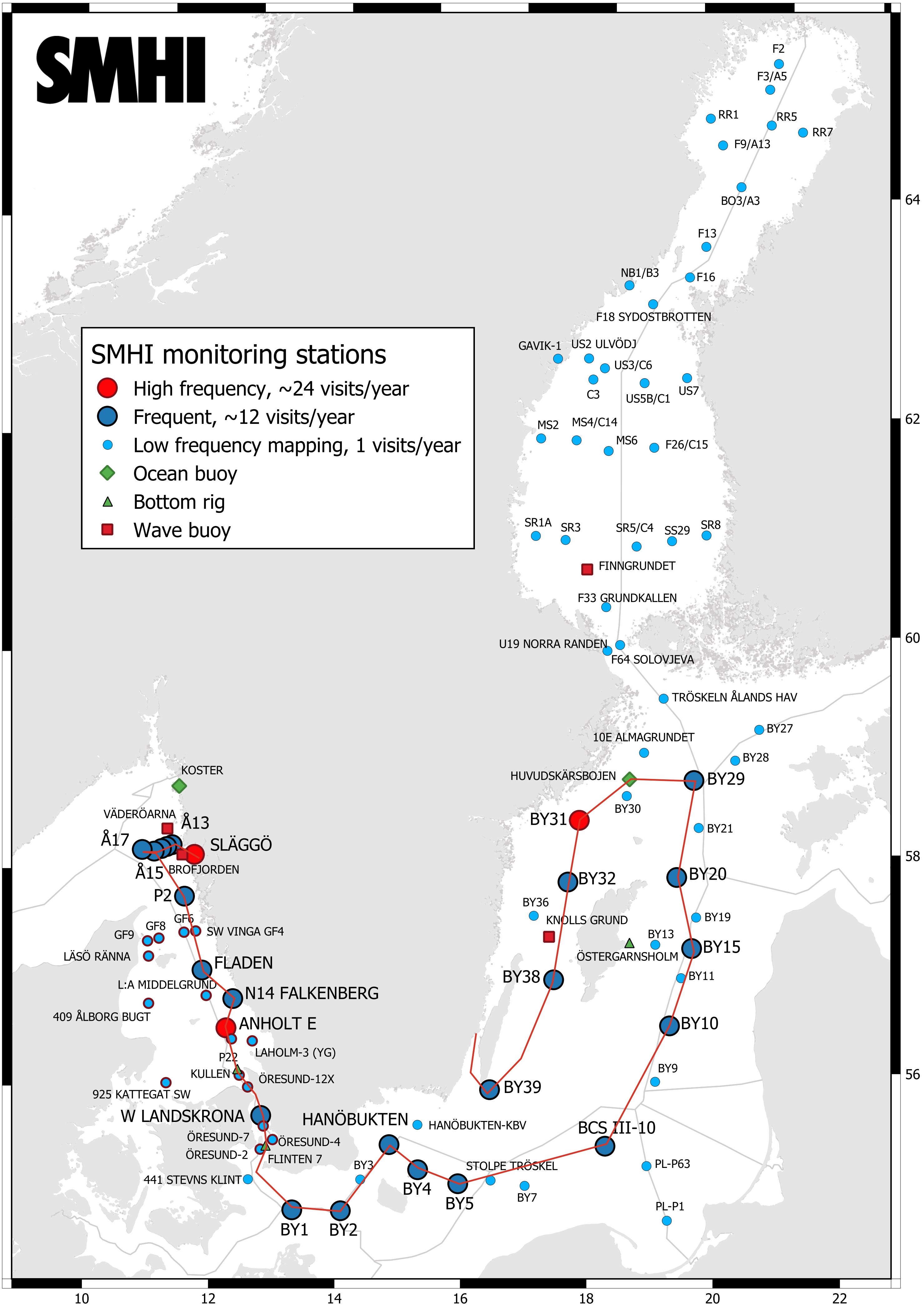
Figure 7. Salinity in the surface water (0 – 10 m). Mean value is based on data for the month at each station during the years 1991 – 2020.

PARTICIPANTS

Name	Role	From
Daniel Bergman Sjöstrand	Cruise leader, CTD-operations and water analysis	SMHI
Amanda Nylund	Water sampling and analysis	SMHI
Johan Håkansson	Nutrient analysis, quality control	SMHI
Ola Kalén	CTD-operations and water analysis, ADCP	SMHI
Martin Hansson	Water sampling and analysis	SMHI
Johan Kronsell	CTD-operations and water analysis	SMHI
Kristoffer Dale	Extra technician, ocean byoy/P22.	SMHI

APPENDICES

- Track chart
- Table with stations, analysed parameters and number of sampling depths
- Monthly average plots for surface water
- Vertical profiles


SMHI
SMHI monitoring stations
High frequency, ~24 visits/year
Frequent, ~12 visits/year
Low frequency mapping, 1 visits/year
Ocean buoy
Bottom rig
Wave buoy
F2
F3/A5
RR1
RR5
RR7
F9/A13
BO3/A3
F13
NB1/B3
F16
F18 SYDOSTBROTTEN
GAVIK-1
US2 ULVÖDJ
US3/C6
C3
US5B/C1
US7
MS2
MS4/C14
MS6
F26/C15
SR1A
SR3
SR5/C4
SS29
SR8
FINNGRUNDET
F33 GRUNDKALLEN
U19 NORRA RANDEN
F64 SOLOVJEVA
TRÖSKELN ÅLANDS HAV
BY27
10E ALMAGRUNDET
BY28
HUVUDSKÄRSBOJEN
BY29
BY30
BY31
BY21
BY32
BY20
BY36
KNOLLS GRUND
BY19
BY13
BY15
ÖSTERGARNSHOLM
BY38
BY11
BY10
BY39
BY9
KOSTER
VÄDERÖARNA
Å13
Å17
SLÄGGÖ
Å15
BROFJORDEN
P2
GF6
GF8
GF9
SW VINGA GF4
LÄSÖ RÄNNA
FLADEN
L:A MIDDELGRUND
N14 FALKENBERG
409 ÅLBORG BUGT
ANHOLT E
LAHOLM-3 (YG)
P22
KULLEN
ÖRESUND-12X
925 KATTEGAT SW
W LANDSKRONA
HANÖBUKTEN
HANÖBUKTEN-KBV
BCS III-10
ÖRESUND-7
ÖRESUND-4
ÖRESUND-2
FLINTEN 7
BY3
STOLPE TRÖSKEL
PL-P63
441 STEVNS KLINT
BY4
BY5
BY7
PL-P1
BY1
BY2
64
62
60
58
56
10
12
14
16
18
20
22

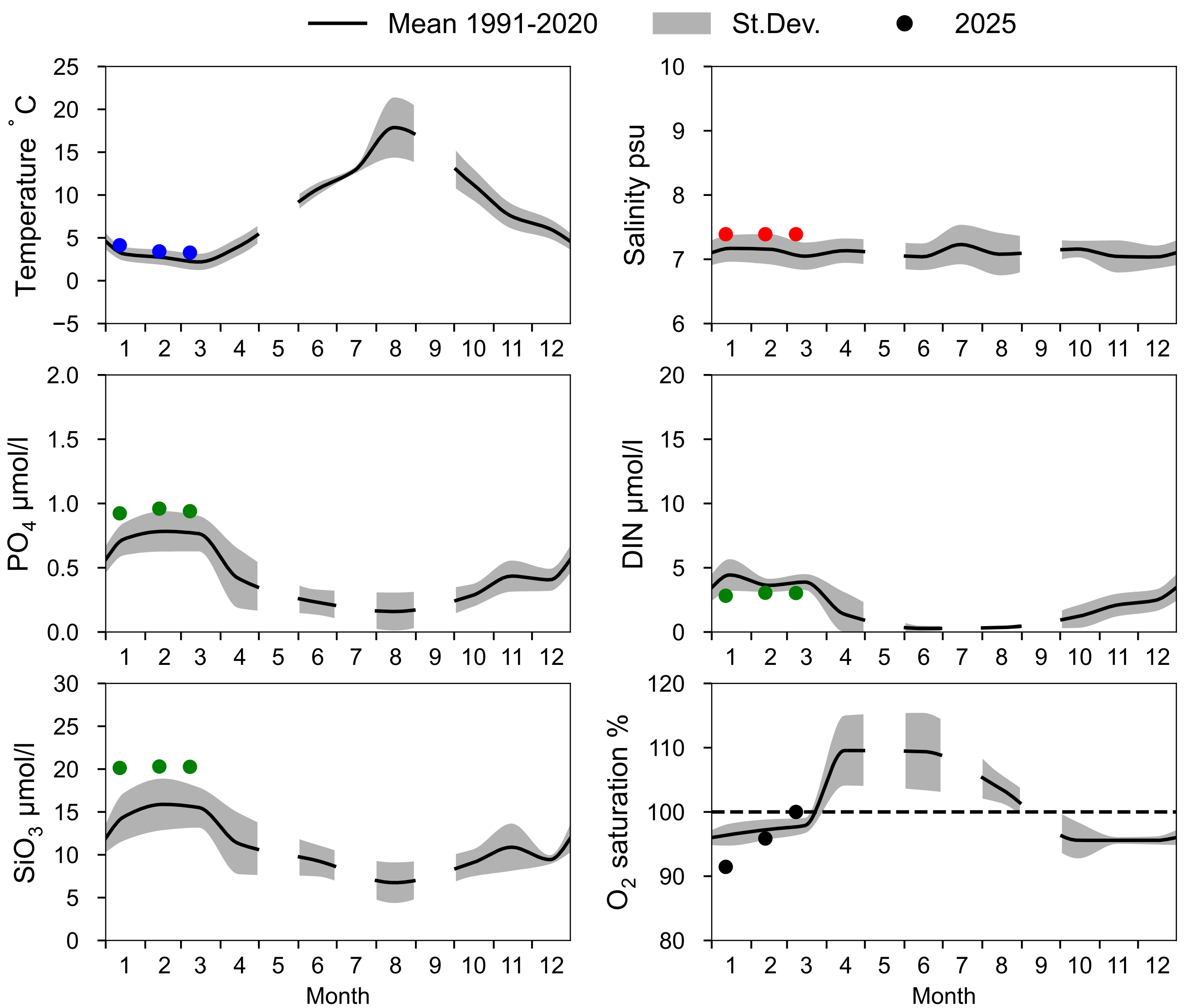
Date: 2025-03-21
Time: 11:35

Ship: 77SE
Year: 2025

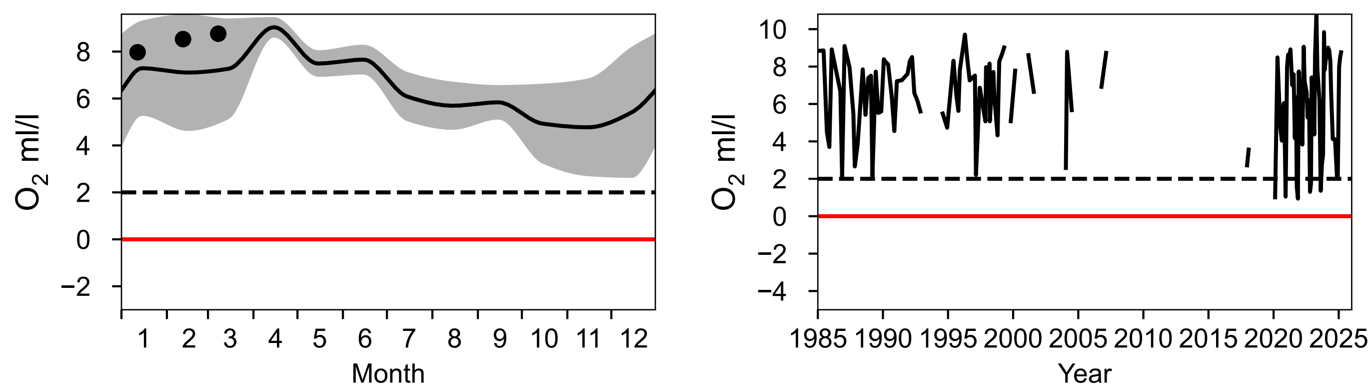
Ser no	Cru no	Stat code	Proj	Stat name	Lat	Lon	Start date yyyymmdd	Start time hhmm	Bottom depth m	Secchi depth m	Wind dir	Wind vel	Air temp C	Air pres hPa	WCWI	CZPP	No de	No btl	Temp_btl	Temp_ctd	Salt_btl	Salt_ctd	Ph	Doxy_btl	Doxy_ctd	H2s	Phos	Ptot	Ntri	Ntra	Ntrz	Amon	Ntot	Alky	Sio3-si	Humus	Comnt_visit	Comnt_samp
0258	08	BPSE49	BAS...	BY39 ÖLANDS S UDDE	5606.98	01632.17	20250308	1045	51	18	25	3	4.6	1021	2820	-x--	8		x	x	-	x	-	x	x	-	x	-	x	x	x	x	-	-	x	-	-	-
0259	08	BPWX45	BAS...	BY38 KARLSÖDJ	5707.03	01740.13	20250308	1930	110		08	6	4.7	1020	9990	----	14		x	x	-	x	-	x	x	x	x	-	x	x	x	x	-	-	x	-	x	-
0260	08	BPWX38	BAS...	BY32 NORRKÖPINGSDJ	5801.03	01759.09	20250309	0120	204		25	3	4.2	1020	9990	----	17		-	x	-	x	-	x	x	x	x	-	x	x	x	x	-	-	x	-	x	-
0261	08	BPNX37	BAS...	BY31 LANDSORTSDJ	5835.64	01814.25	20250309	0545	446		17	4	3.0	1019	1220	-x-x	22		-	x	-	x	x	x	x	x	x	-	x	x	x	x	-	-	x	-	-	-
0262	08	BPNX00	EXT...	HUVUDSKÄR	5856.21	01909.56	20250309	1100	91		21	5	4.0	1019	1320	----	12		-	x	-	x	-	-	x	-	-	-	-	-	-	-	-	-	-	-	-	-
0263	08	BPNX35	BAS...	BY29 / LL19	5852.91	02019.66	20250309	1700	177		15	5	3.7	1015	1520	----	16		-	x	-	x	-	x	x	x	x	-	x	x	x	x	-	-	x	-	x	-
0264	08	BPEX26	BAS...	BY20 FÅRÖDJ	5759.87	01952.70	20250309	2320	197		13	3	4.2	1012	9990	----	17		-	x	-	x	-	x	x	x	x	-	x	x	x	x	-	-	x	-	-	-
0265	08	BPEX21	BAS...	BY15 GOTLANDSDJ	5718.72	02004.6	20250310	0435	241		10	5	5.2	1008	9990	-x-x	23		-	x	-	x	x	x	x	x	x	-	x	x	x	x	-	-	x	-	-	-
0266	08	BPEX13	BAS...	BY10	5638.03	01935.17	20250310	1020	143	15	09	6	6.0	1009	2820	---x	15		x	x	-	x	-	x	x	x	x	-	x	x	x	x	-	-	x	-	-	-
0267	08	BPSE11	BAS...	BCS III-10	5533.30	01823.97	20250310	1800	89		06	5	5.3	999	9990	----	12		-	x	-	x	-	x	x	-	x	-	x	x	x	x	-	-	x	-	-	-
0268	08	BPSB07	BAS...	BY5 BORNHOLMSDJ	5514.95	01559.01	20250311	0350	90		24	12	2.9	1001	9990	----	12		x	x	-	x	x	x	x	-	x	-	x	x	x	x	-	-	x	-	-	-
0269	08	BPSB06	BAS...	BY4 CHRISTIANSÖ	5523	01520.15	20250311	0720	92		01	7	2.5	1003	2830	----	12		x	x	-	x	-	x	x	-	x	-	x	x	x	x	-	-	x	-	-	-
0270	08	BPSH05	BAS...	HANÖBUKTEN	5537.04	01452.01	20250311	1015	80	12	04	5	2.3	1004	2830	---x	11		-	x	-	x	-	x	x	-	x	-	x	x	x	x	-	-	x	-	x	-
0271	08	BPSA03	BAS...	BY2 ARKONA	5458.29	01405.88	20250311	1635	47		08	5	3.2	1002	2830	-x--	8		-	x	-	x	-	x	x	-	x	-	x	x	x	x	-	-	x	-	-	-
0272	08	BPSA02	BAS...	BY1	5500.95	01318.04	20250311	2025	46		11	5	3.4	1001	9990	----	8		-	x	-	x	-	x	x	-	x	-	x	x	x	x	-	-	x	-	x	-
0273	08	SOCX39	BAS...	W LANDSKRONA	5552.02	01244.92	20250312	0400	52		12	9	2.5	999	9990	----	9		x	x	-	x	-	x	x	-	x	-	x	x	x	x	-	-	x	-	-	-
0274	08	KAEX00	EXT...	P22	5617.43	01220.11	20250312	0710	27		13	9	2.7	999	2820	----	6		-	x	-	x	-	-	x	-	-	-	-	-	-	-	-	-	-	-	-	-
0275	08	KAEX29	BAS...	ANHOLT E	5640.17	01206.72	20250312	1140	60	6	12	7	3.0	1000	2820	-x--	10		-	x	-	x	x	x	x	-	x	-	x	x	x	x	-	-	x	-	-	-
0276	08	KANX50	BAS...	N14 FALKENBERG	5656.43	01212.64	20250312	1400	31		12	6	2.9	999	2820	-x--	7		-	x	-	x	-	x	x	-	x	-	x	x	x	x	-	-	x	-	-	-
0277	08	KANX25	BAS...	FLADEN	5711.57	01139.52	20250312	1655	82		09	6	2.7	1000	2820	----	13		-	x	-	x	-	x	x	-	x	-	x	x	x	x	-	-	x	-	-	-
0278	08	SKEX23	BAS...	P2	5752.02	01117.50	20250312	2135	93		06	7	1.1	1000	9990	----	10		-	x	-	x	-	x	x	-	x	-	x	x	x	x	-	-	x	-	-	-
0279	08	SKEX16	BAS...	Å15	5817.61	01050.75	20250313	0100	135		05	10	0.7	1001	7990	----	12		-	x	-	x	-	x	x	-	x	-	x	x	x	x	-	-	x	-	-	-
0280	08	SKEX18	BAS...	Å17	5817.06	01030.29	20250313	0250	351		05	10	1.0	1001	9990	-x--	15		-	x	-	x	x	x	x	-	x	-	x	x	x	x	-	-	x	-	-	-
0281	08	SKEX14	BAS...	Å13	5820.35	01101.6	20250313	0605	107		06	10	0.3	1001	2820	----	10		-	x	-	x	-	x	x	-	x	-	x	x	x	x	-	-	x	-	-	-
0282	08	FIBG27	BAS...	SLÄGGÖ	5815.58	01126.09	20250313	0820	75	4	04	10	-0.4	1002	2820	-x-x	9		x	x	-	x	-	x	x	-	x	-	x	x	x	x	-	-	x	-	-	-

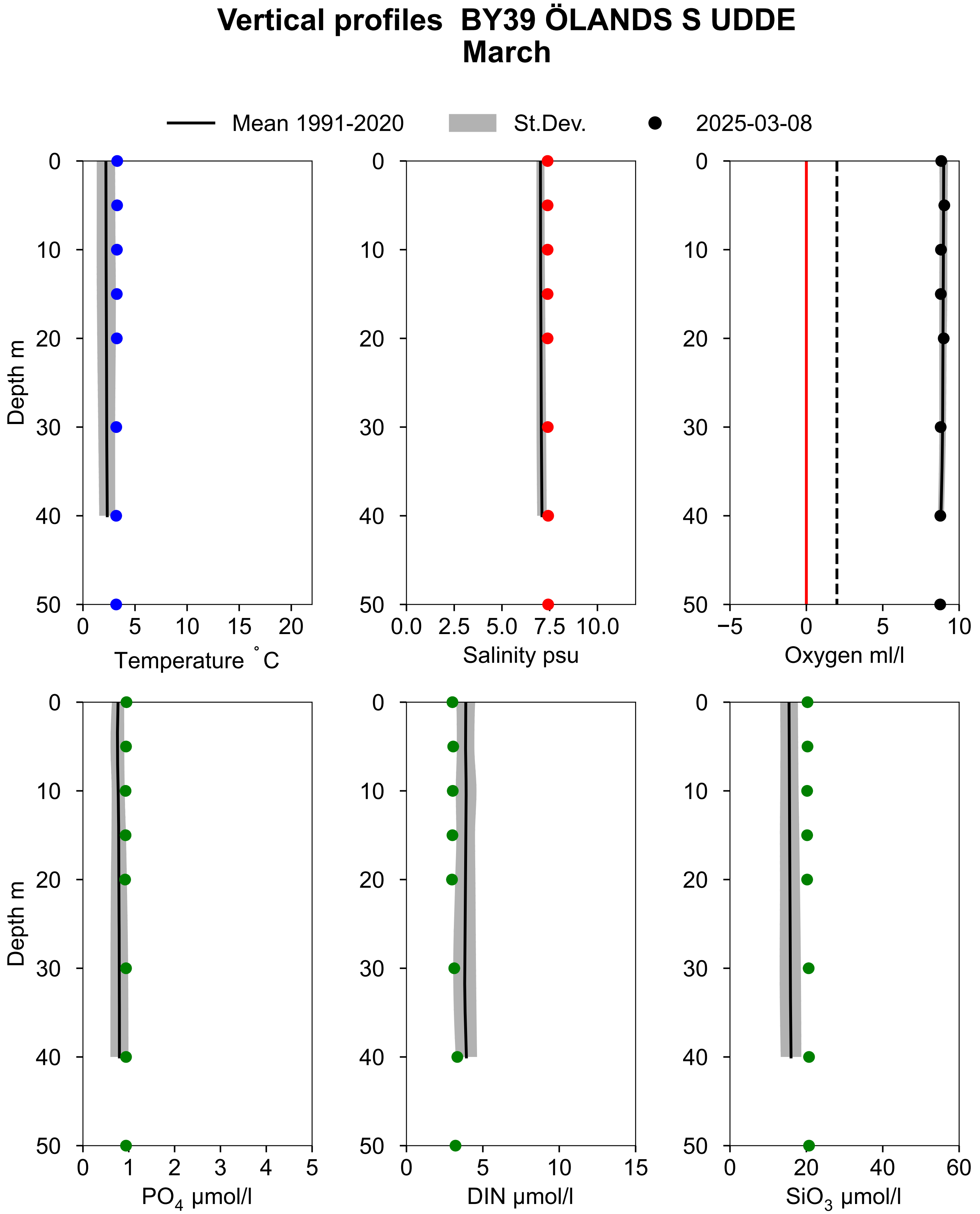
STATION BY39 ÖLANDS S UDDE SURFACE WATER (0-10 m)

Annual Cycles



OXYGEN IN BOTTOM WATER (depth >= 40 m)

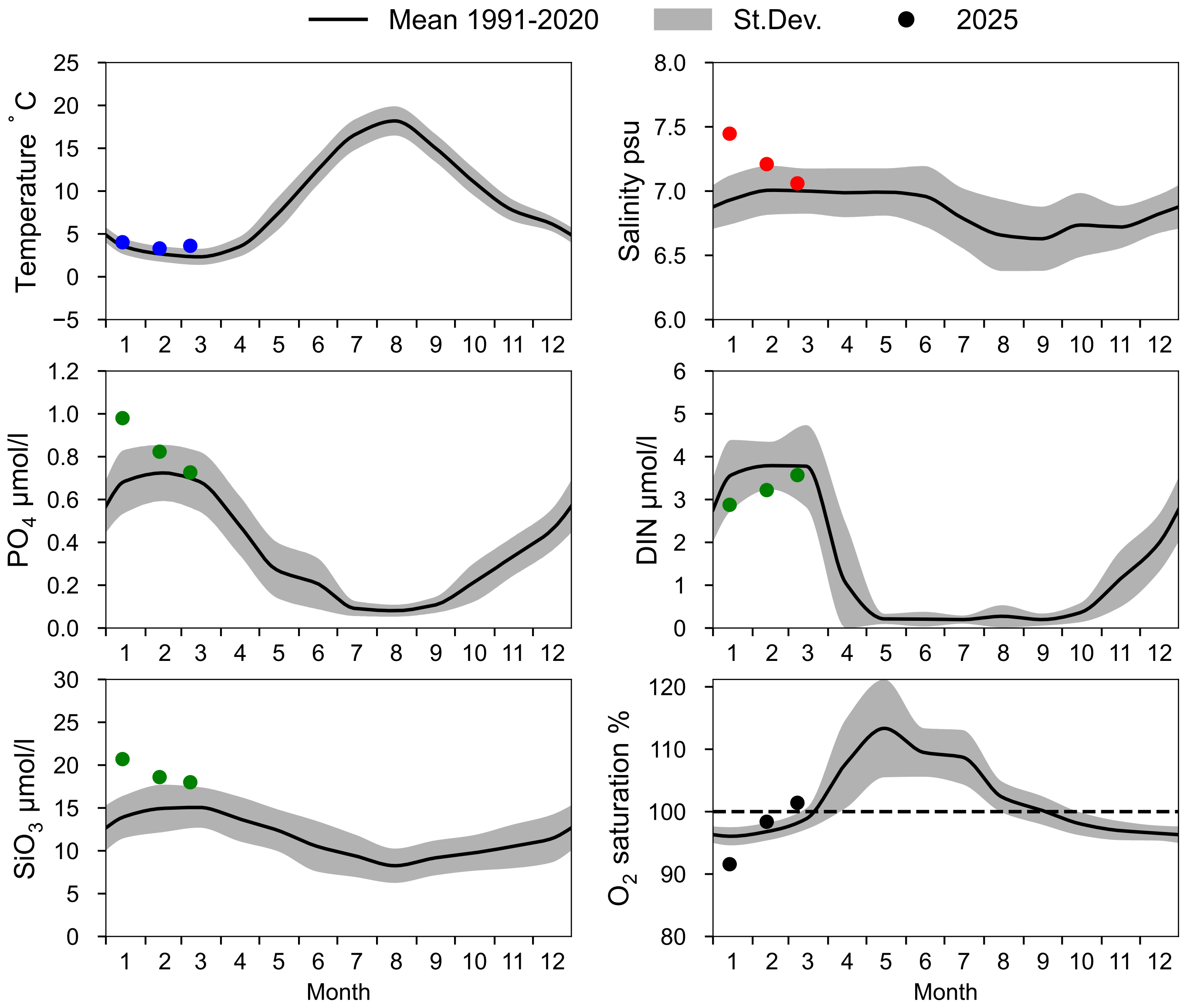




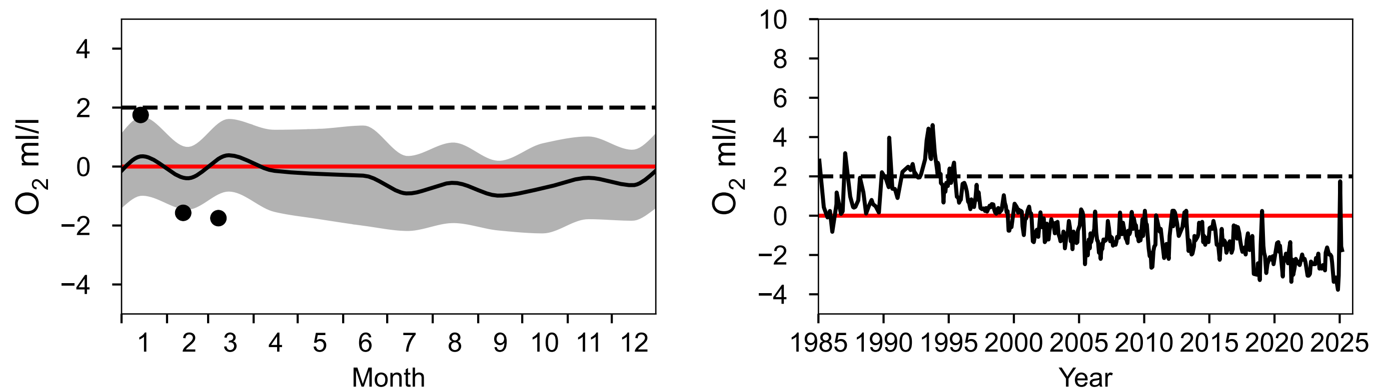
Vertical profiles BY39 ÖLANDS S UDDE
March
Mean 1991-2020
St.Dev.
2025-03-08
Depth m
Temperature °C
Salinity psu
Oxygen ml/l
PO_4 µmol/l
DIN µmol/l
SiO_3 µmol/l

STATION BY38 KARLSÖDJ SURFACE WATER (0-10 m)

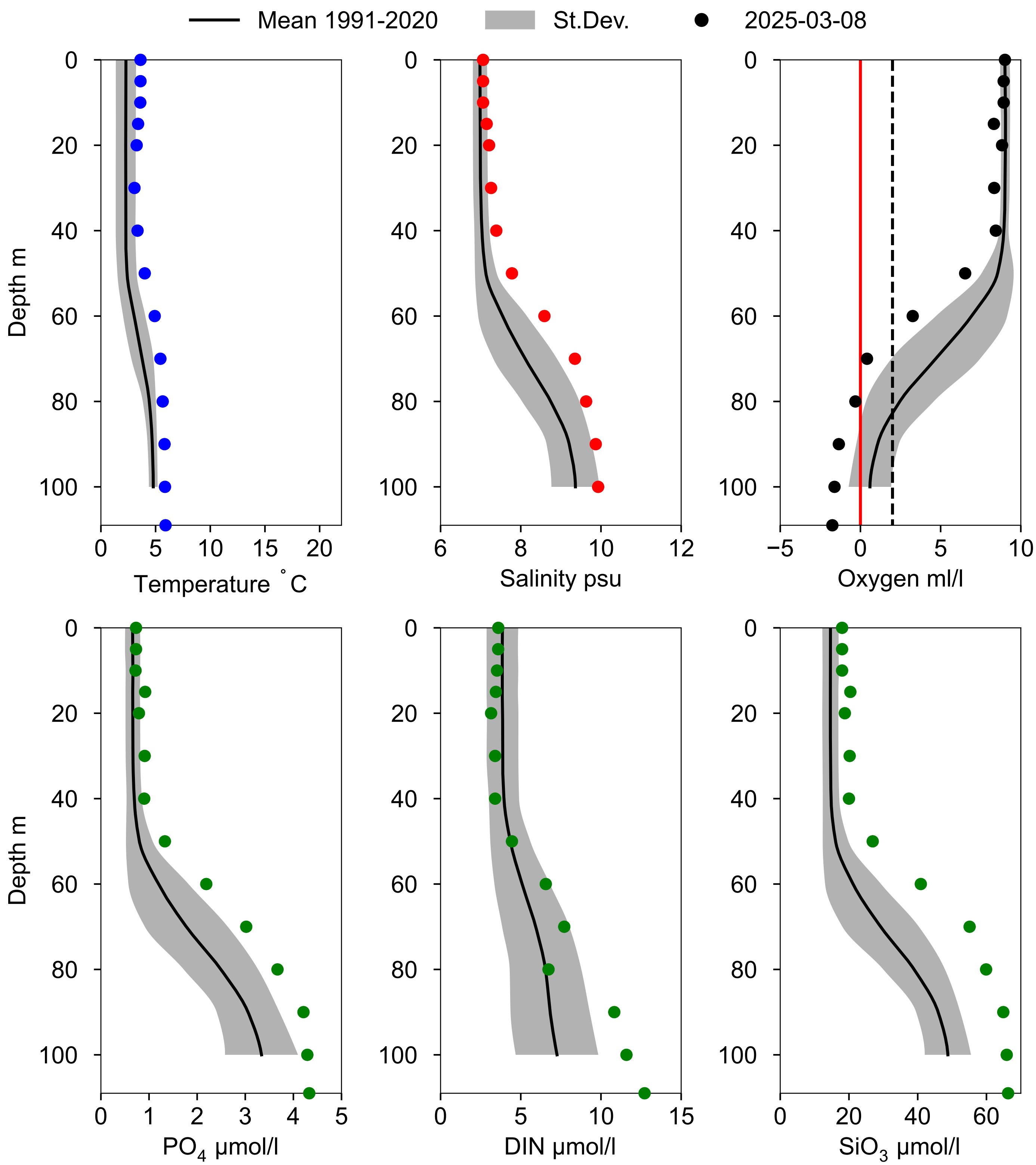
Annual Cycles



OXYGEN IN BOTTOM WATER (depth >= 100 m)

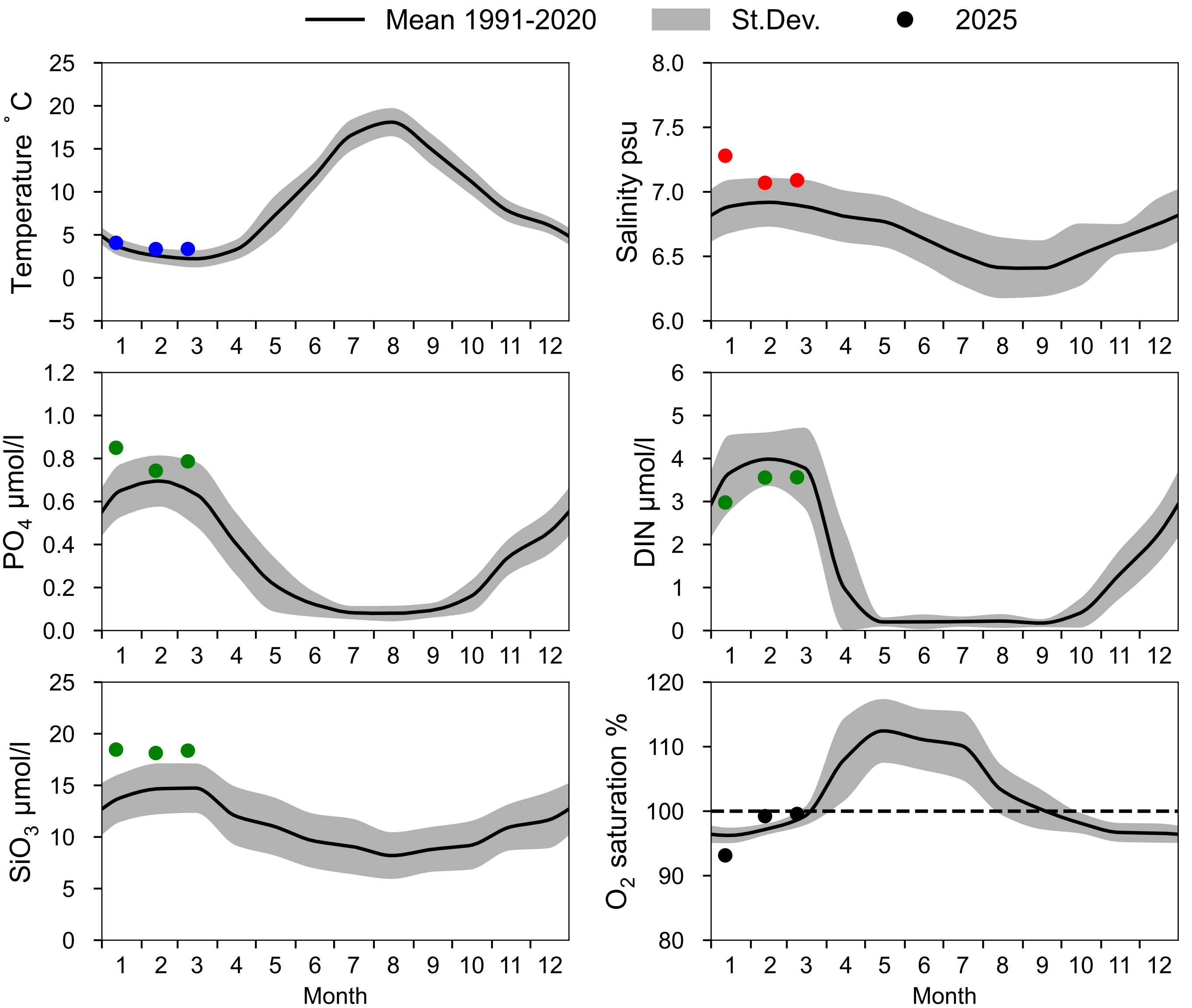


Vertical profiles BY38 KARLSÖDJ
March

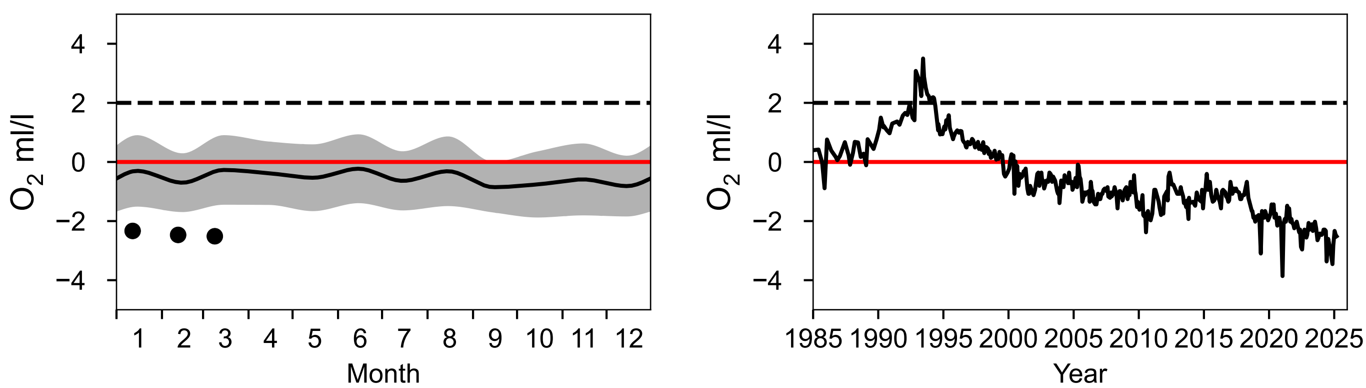


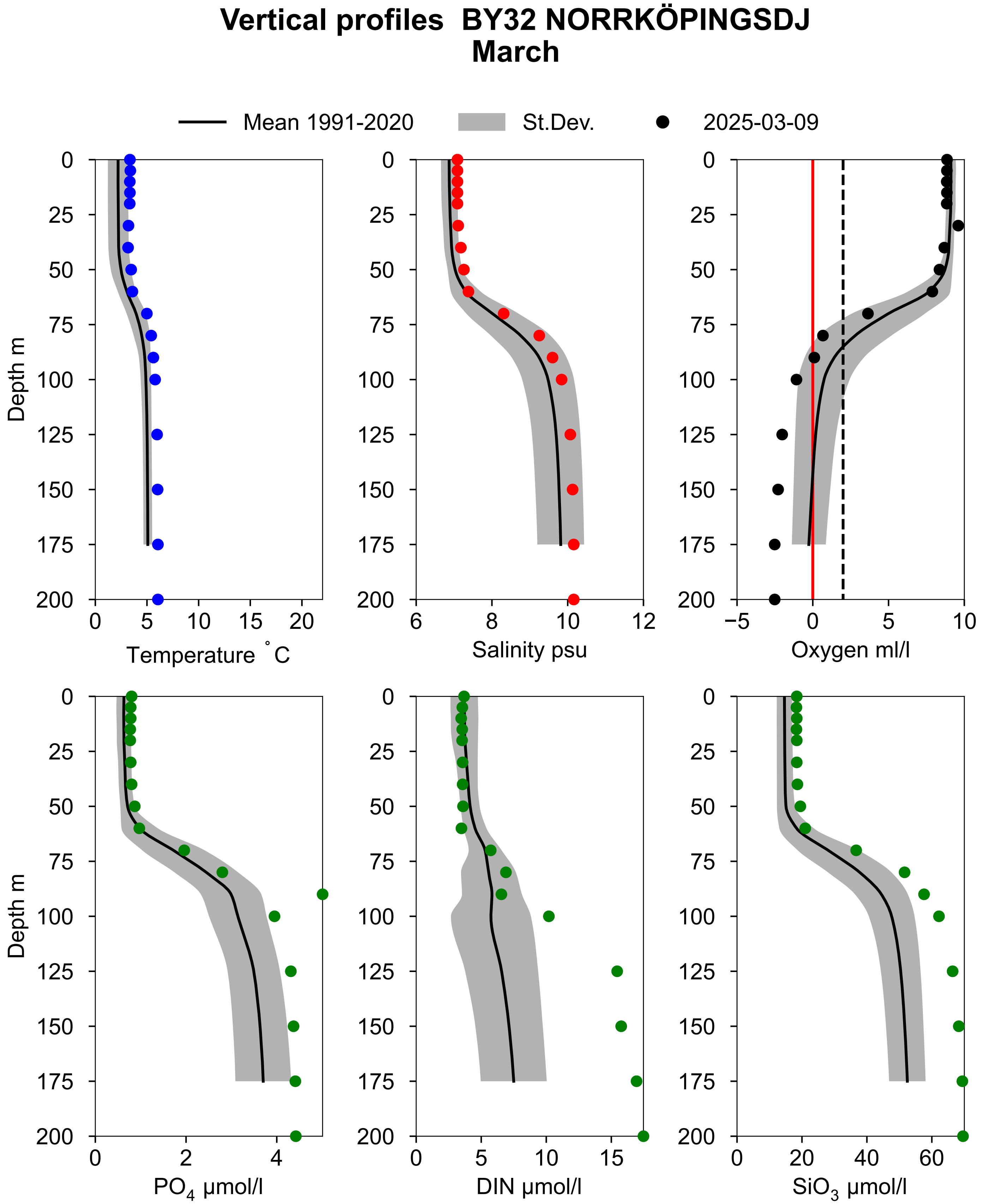
STATION BY32 NORRKÖPINGSDJ SURFACE WATER (0-10 m)

Annual Cycles



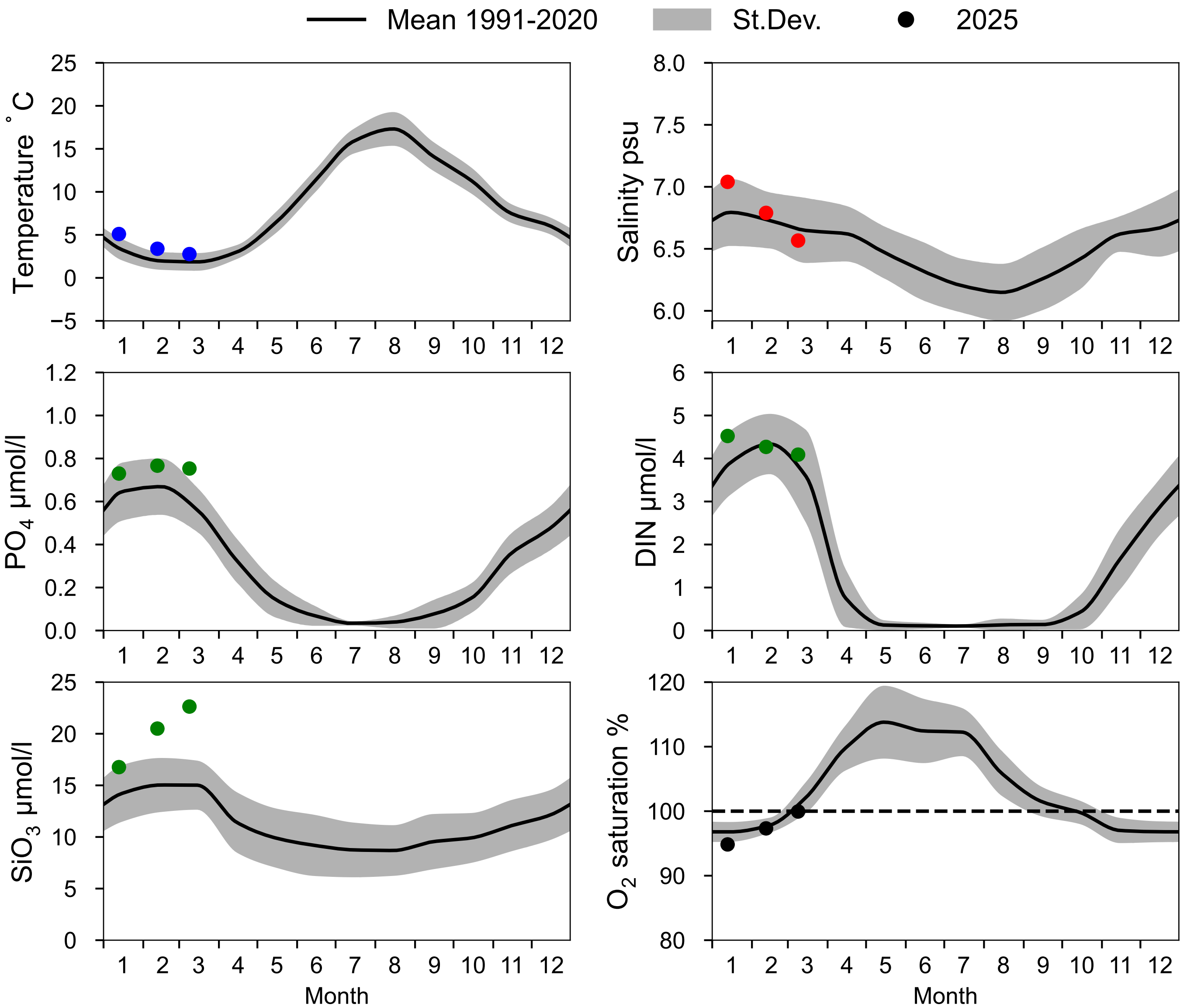
OXYGEN IN BOTTOM WATER (depth >= 175 m)



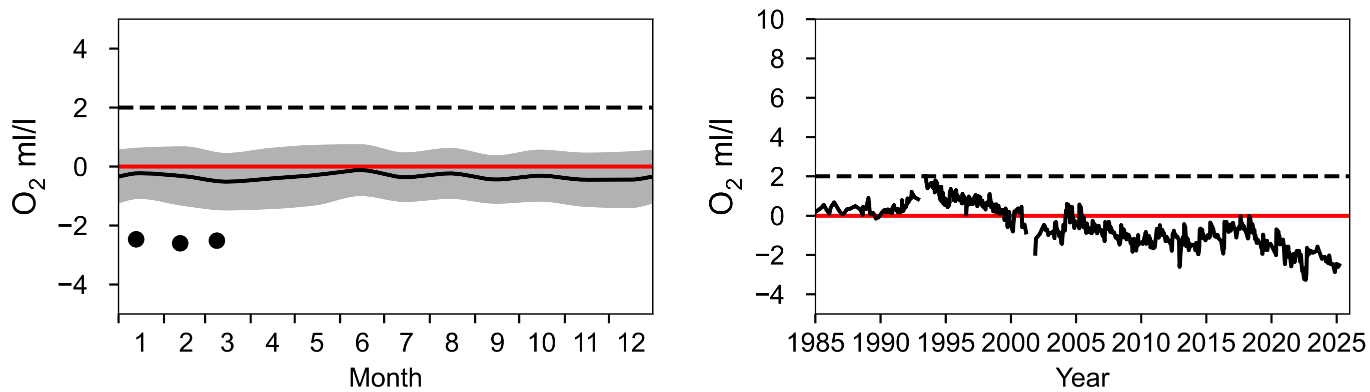

Vertical profiles BY32 NORRKÖPINGSDJ
March
Mean 1991-2020
St.Dev.
2025-03-09
Depth m
Temperature °C
Salinity psu
Oxygen ml/l
PO4 µmol/l
DIN µmol/l
SiO3 µmol/l

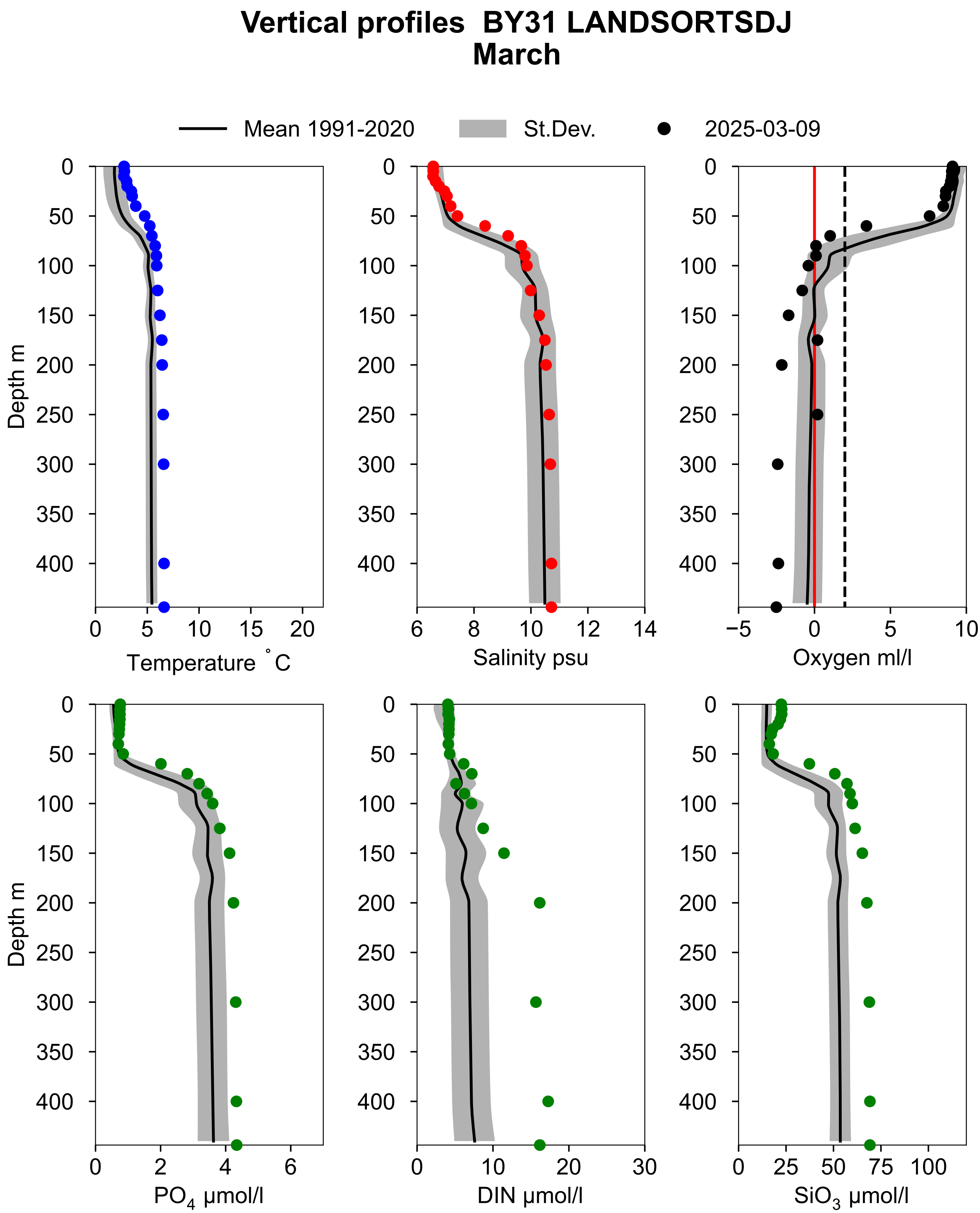
STATION BY31 LANDSORTSDJ SURFACE WATER (0-10 m)

Annual Cycles



OXYGEN IN BOTTOM WATER (depth >= 419 m)



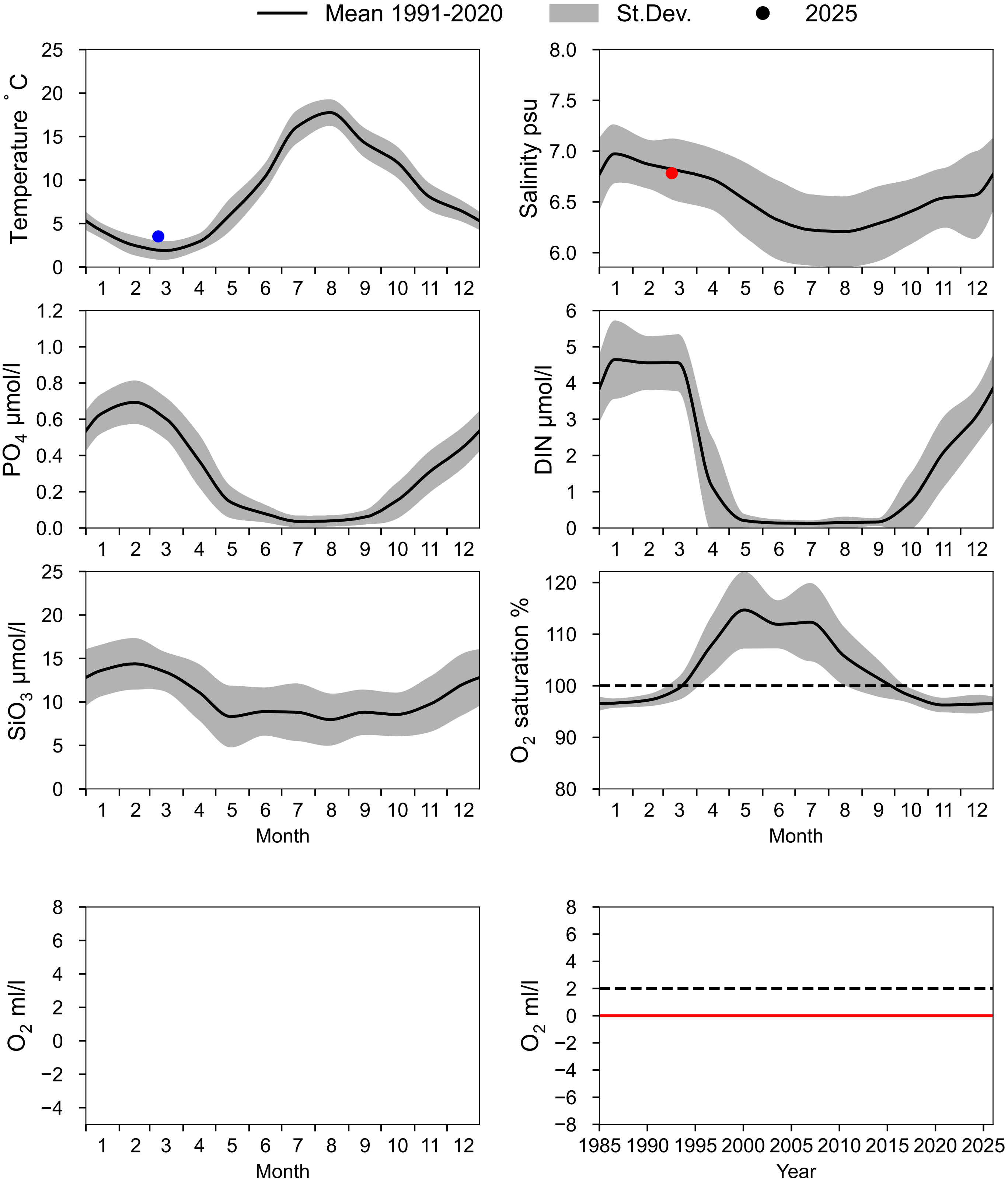


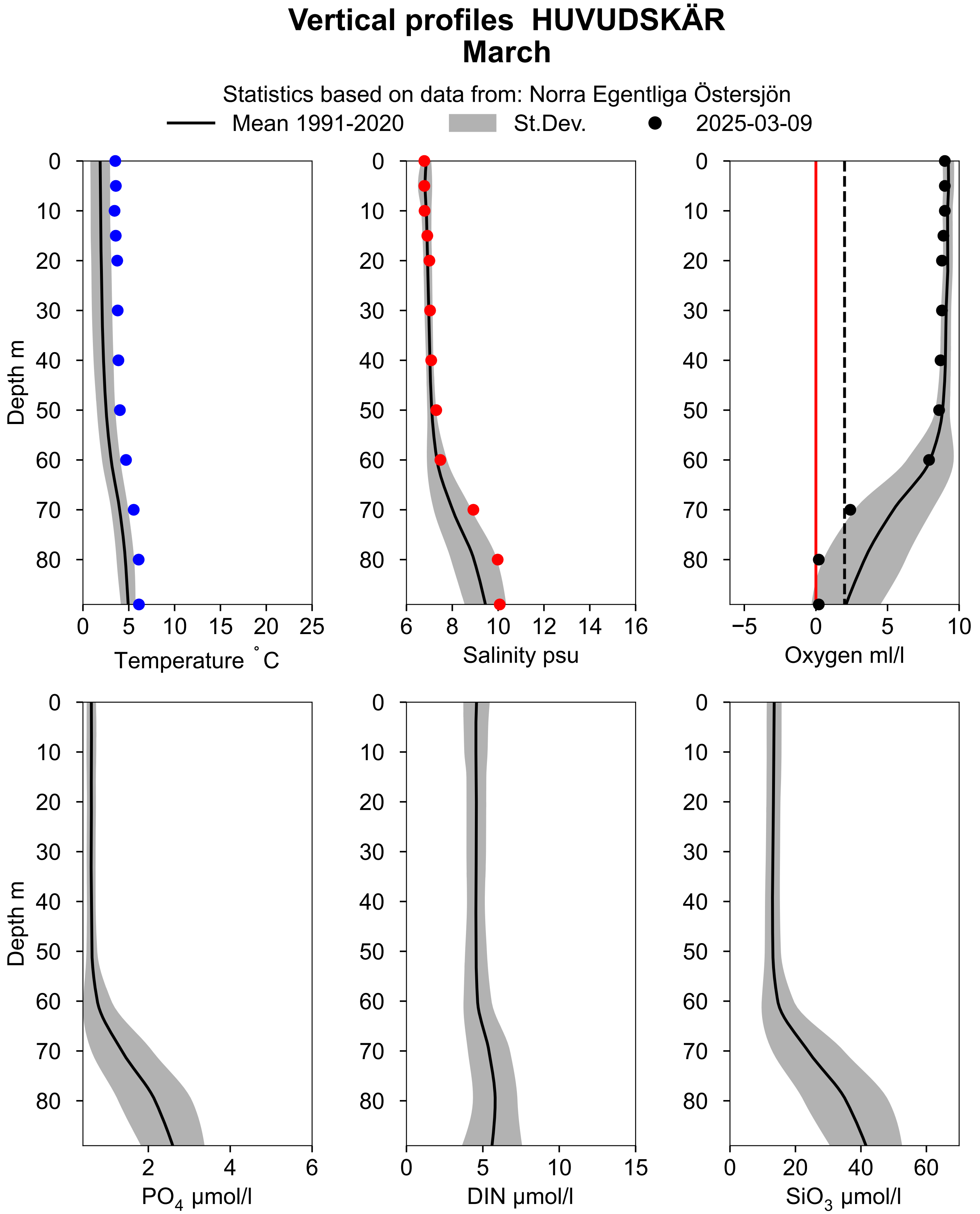
Vertical profiles BY31 LANDSORTSDJ
March
Mean 1991-2020
St.Dev.
2025-03-09
Depth m
Temperature °C
Salinity psu
Oxygen ml/l
PO4 µmol/l
DIN µmol/l
SiO3 µmol/l

STATION HUVUDSKÄR SURFACE WATER (0-10 m)

Annual Cycles

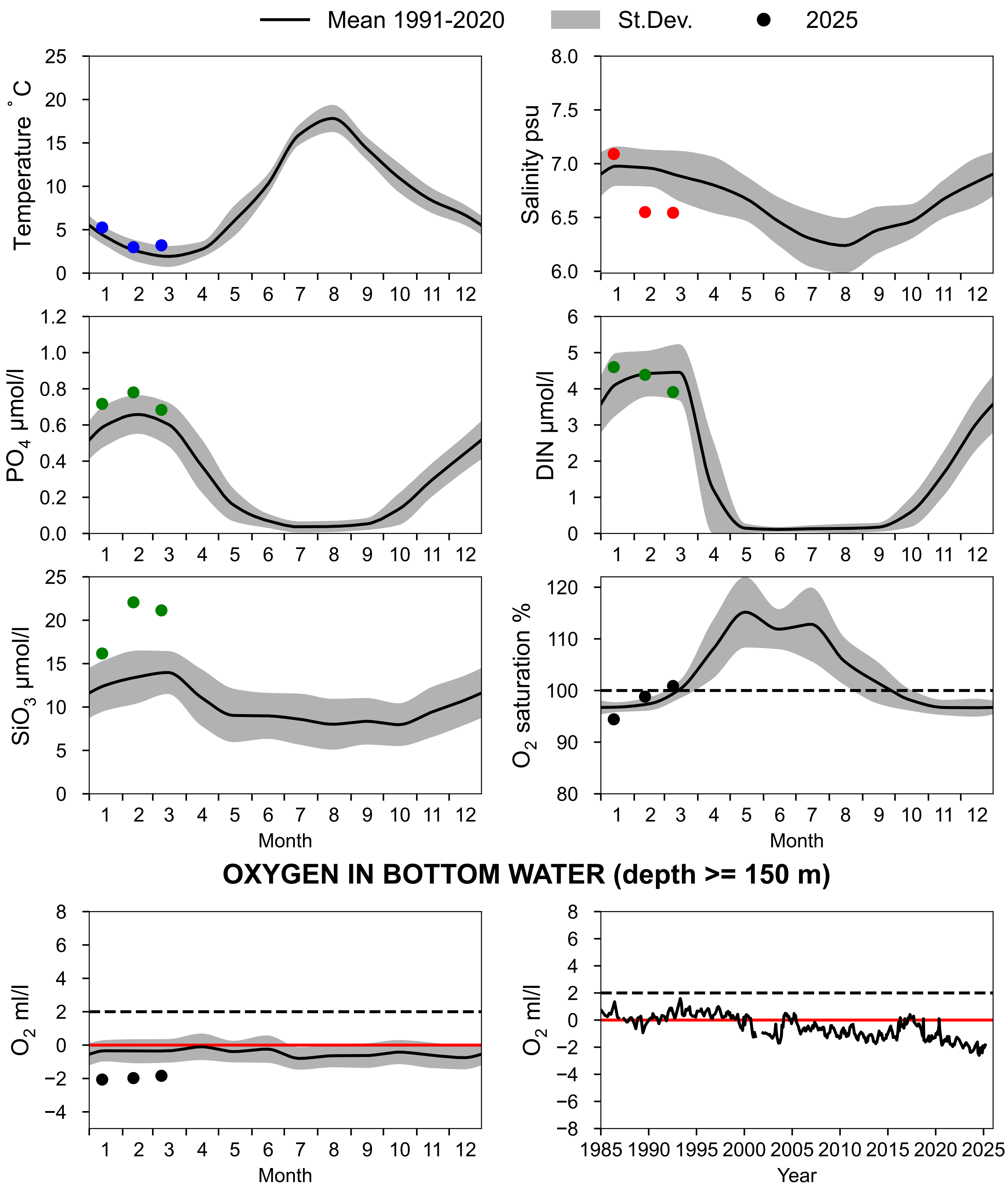
Statistics based on data from: Norra Egentliga Östersjön

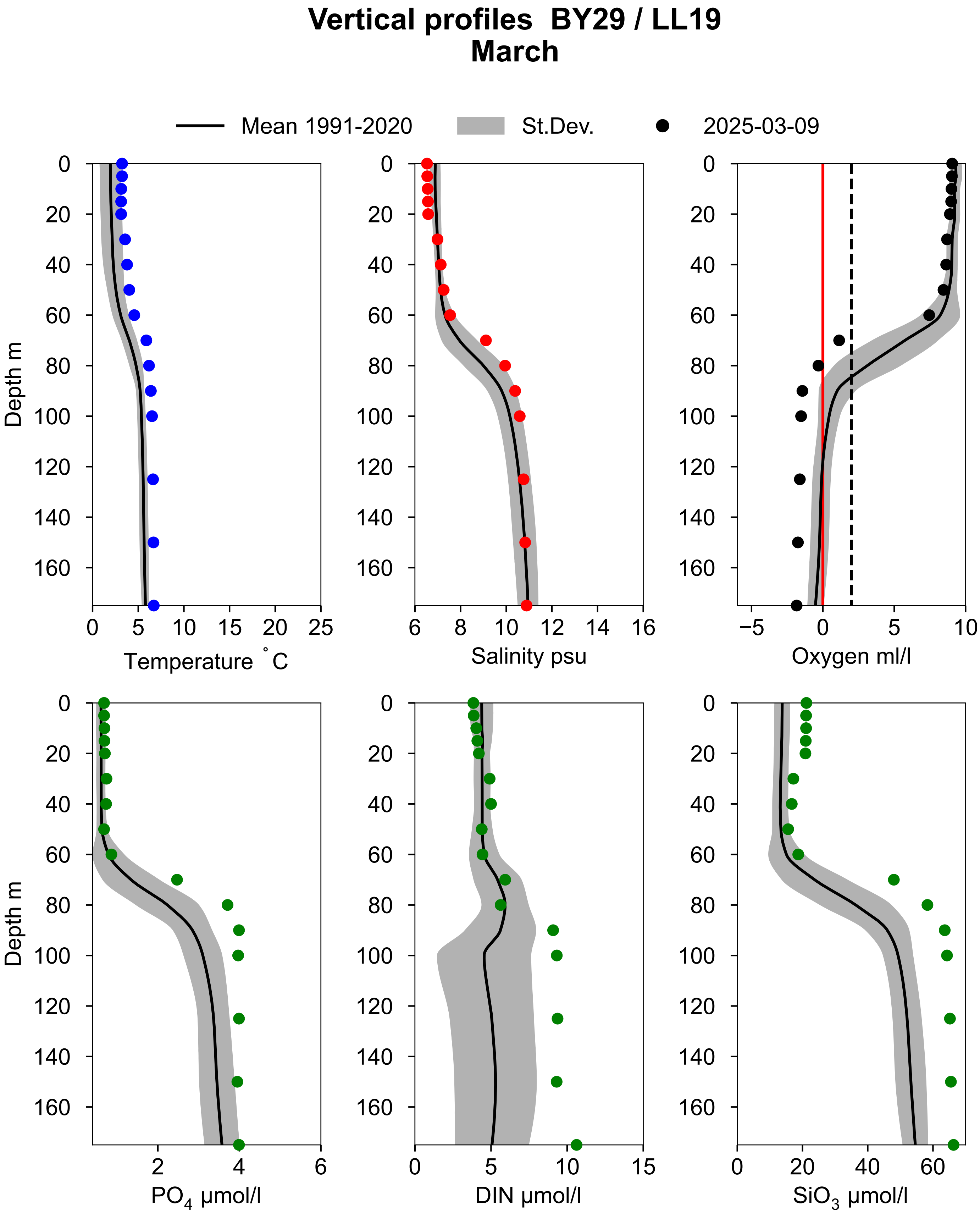



Vertical profiles HUVUDSKÄR
March
Statistics based on data from: Norra Egentliga Östersjön
Mean 1991-2020
St.Dev.
2025-03-09
Depth m
Temperature °C
Salinity psu
Oxygen ml/l
PO4 µmol/l
DIN µmol/l
SiO3 µmol/l

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

Annual Cycles

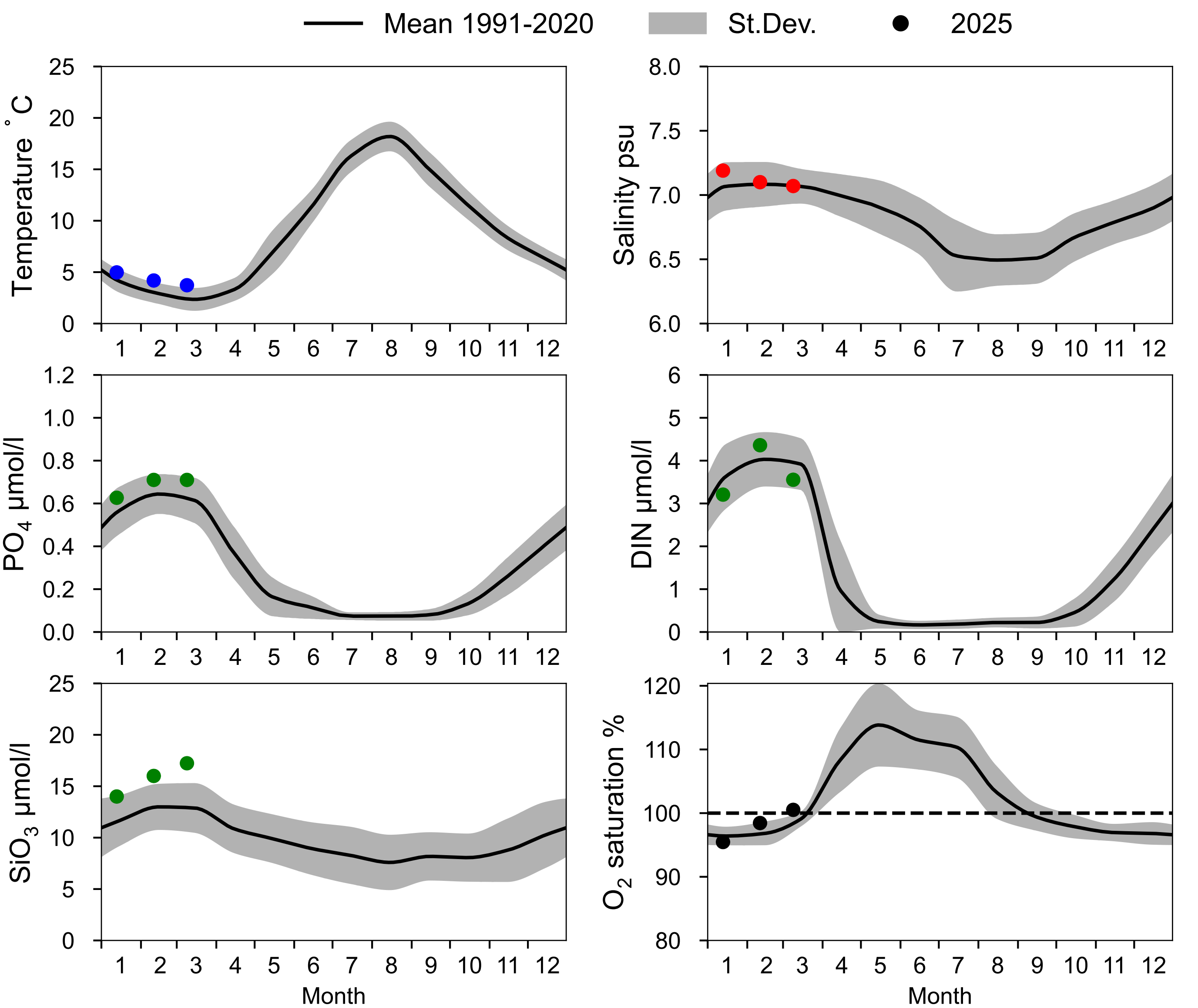




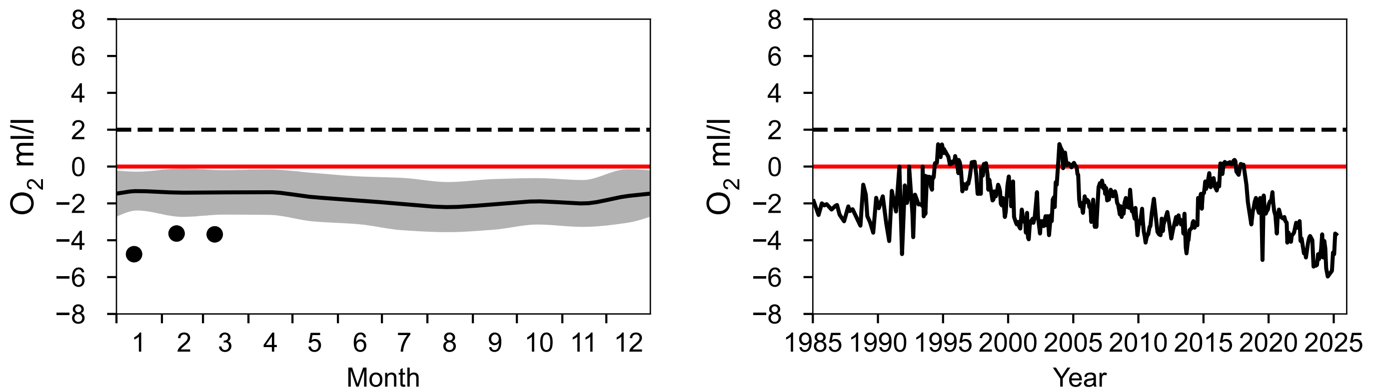
Vertical profiles BY29 / LL19
March
Mean 1991-2020
St.Dev.
2025-03-09
Depth m
Temperature ˚C
Salinity psu
Oxygen ml/l
PO4 µmol/l
DIN µmol/l
SiO3 µmol/l

STATION BY20 FÅRÖDJ SURFACE WATER (0-10 m)

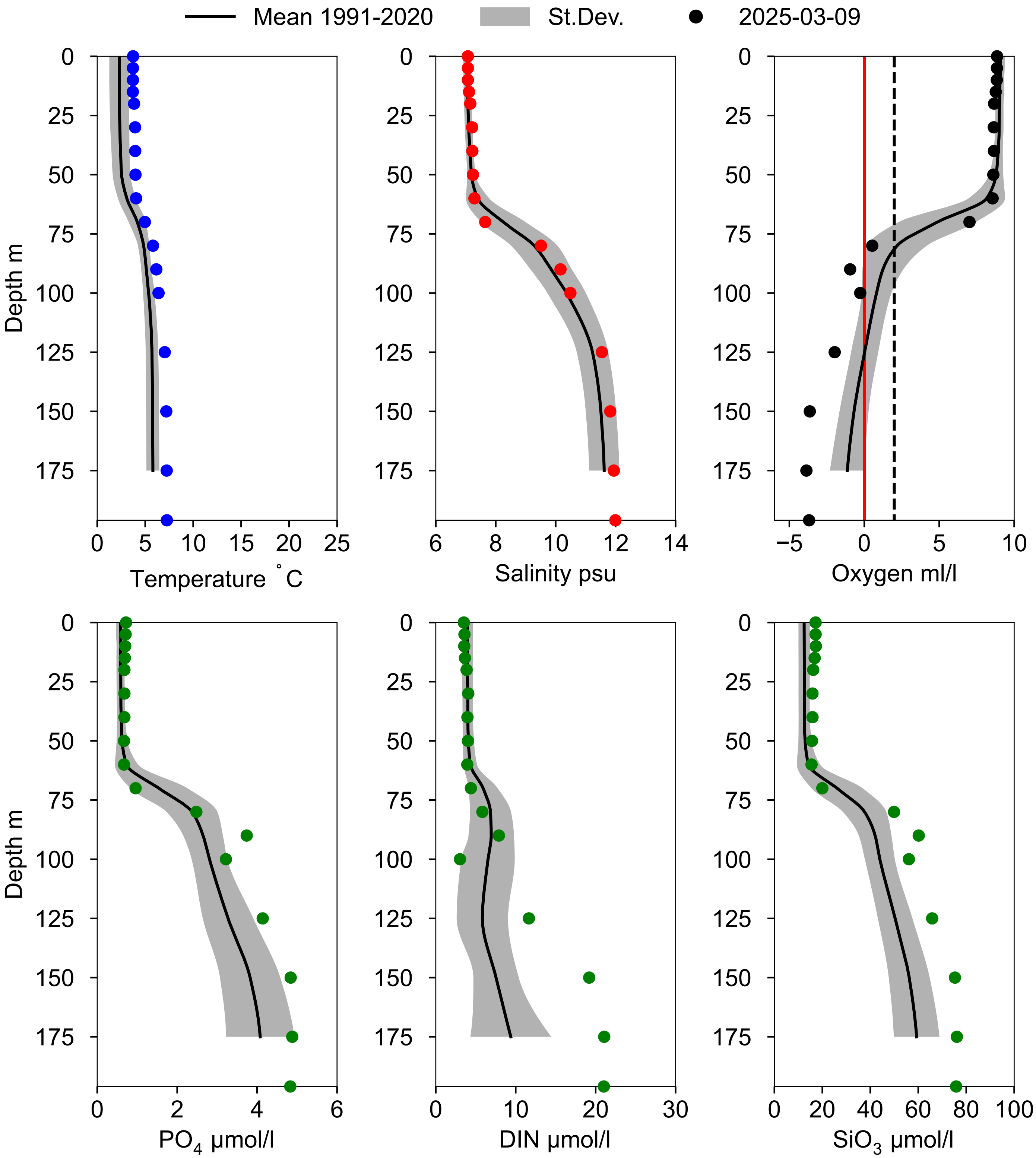
Annual Cycles



OXYGEN IN BOTTOM WATER (depth >= 175 m)

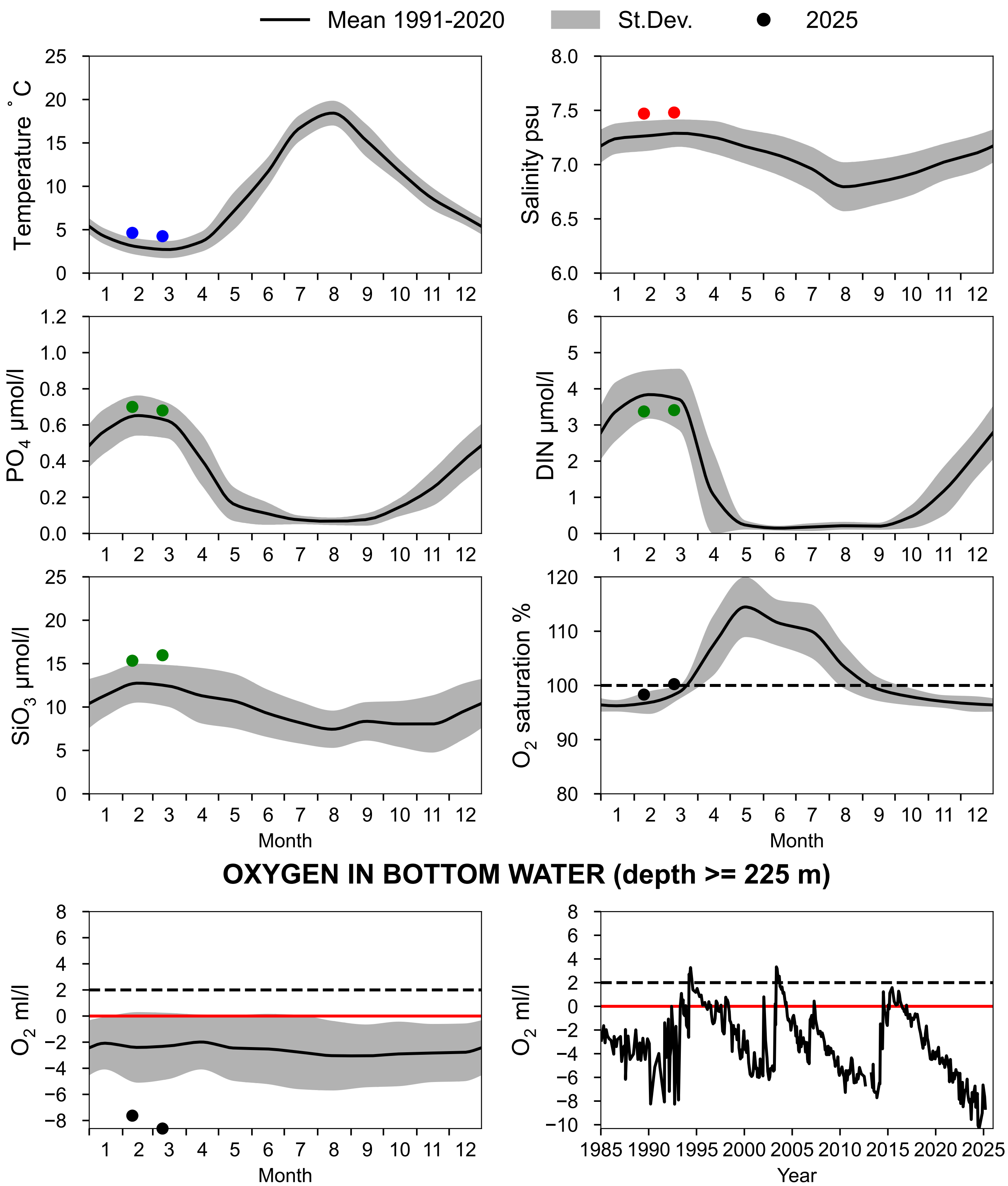


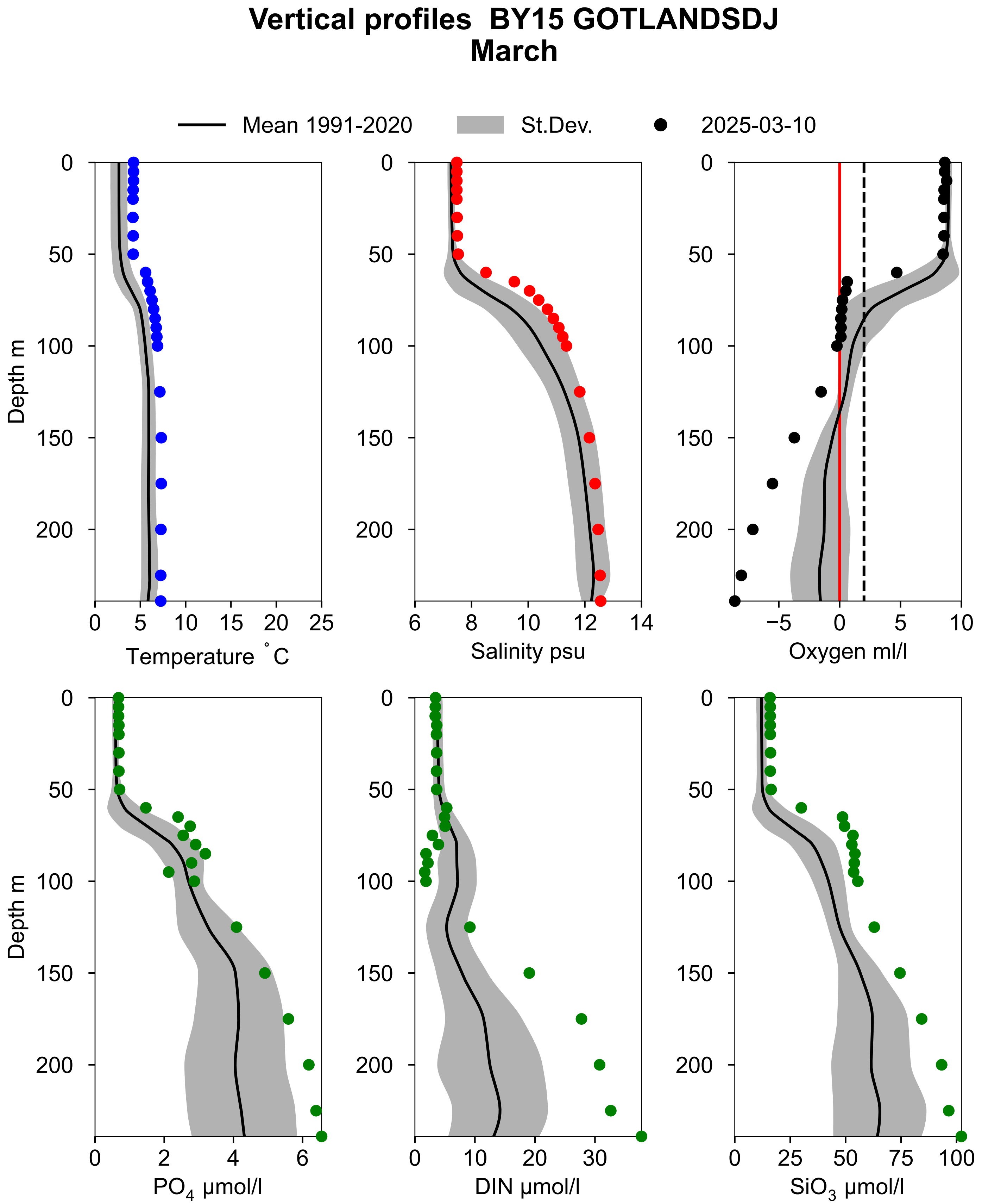
Vertical profiles BY20 FÅRÖDJ
March



STATION BY15 GOTLANDSDJ SURFACE WATER (0-10 m)

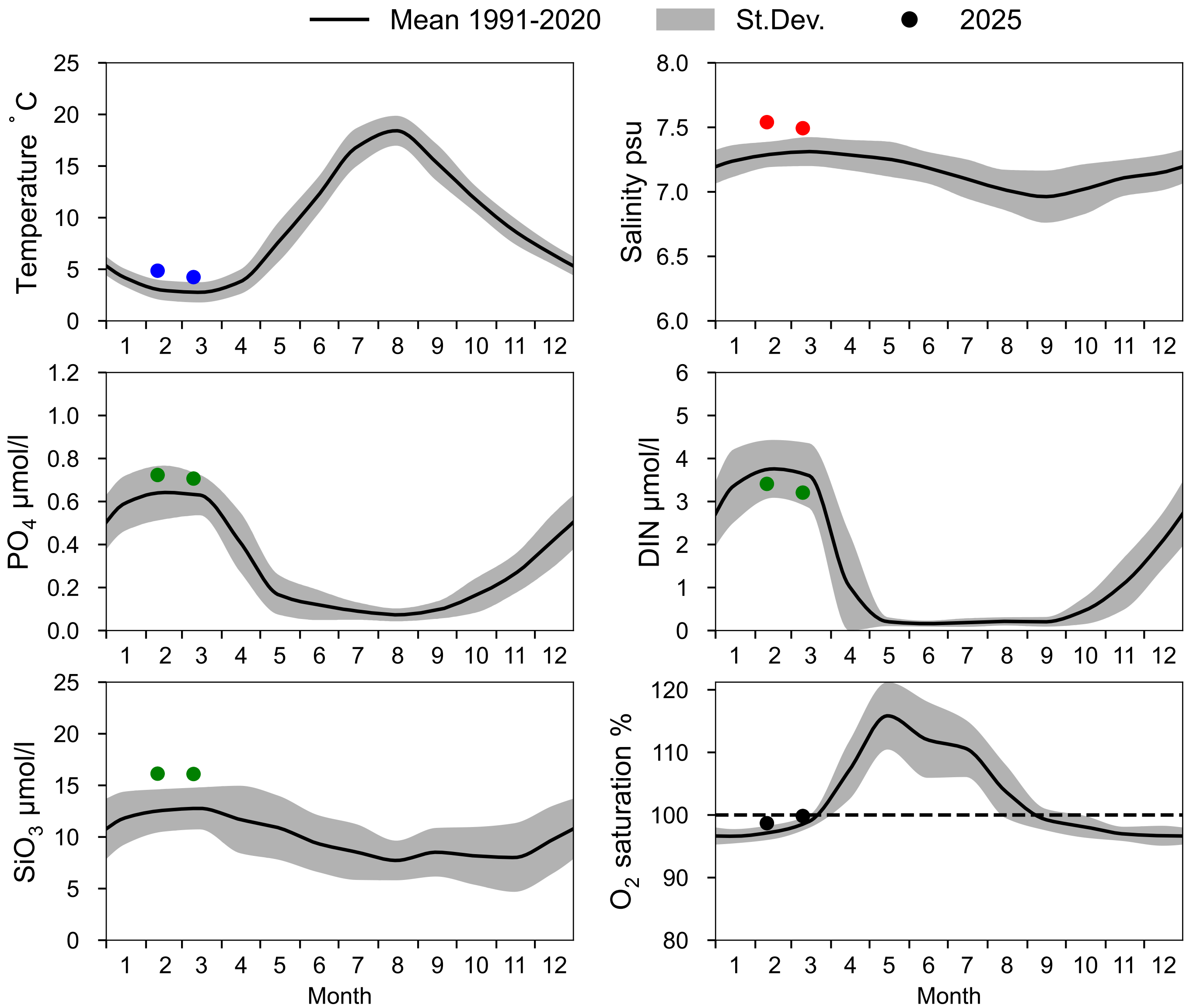
Annual Cycles



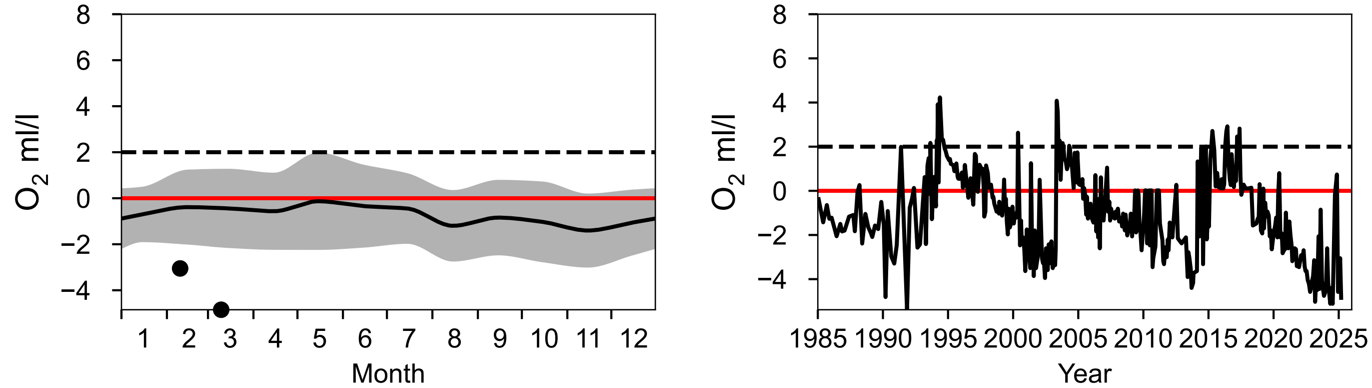

Vertical profiles BY15 GOTLANDSDJ
March
Mean 1991-2020
St.Dev.
2025-03-10
Depth m
Temperature °C
Salinity psu
Oxygen ml/l
PO_4 µmol/l
DIN µmol/l
SiO_3 µmol/l

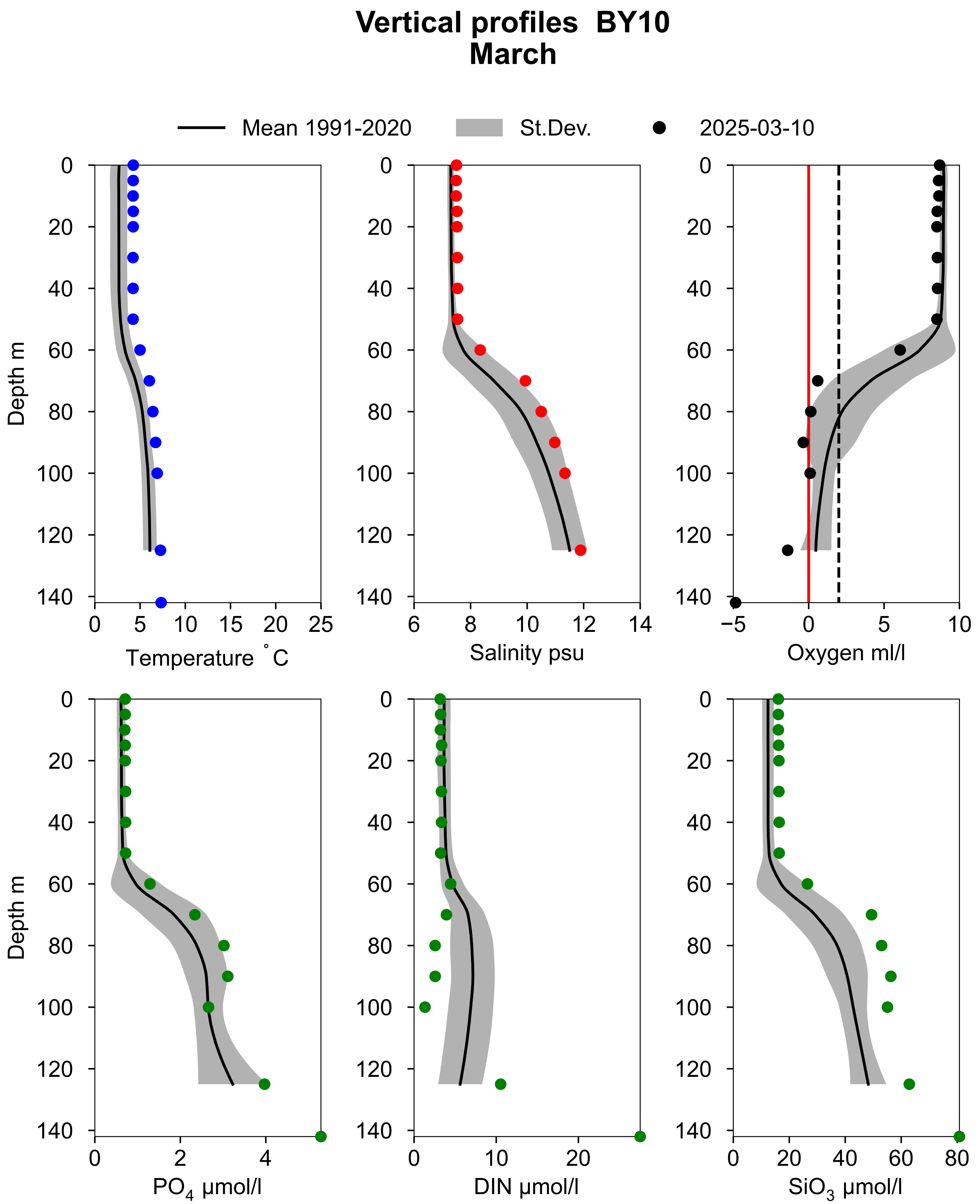
STATION BY10 SURFACE WATER (0-10 m)

Annual Cycles



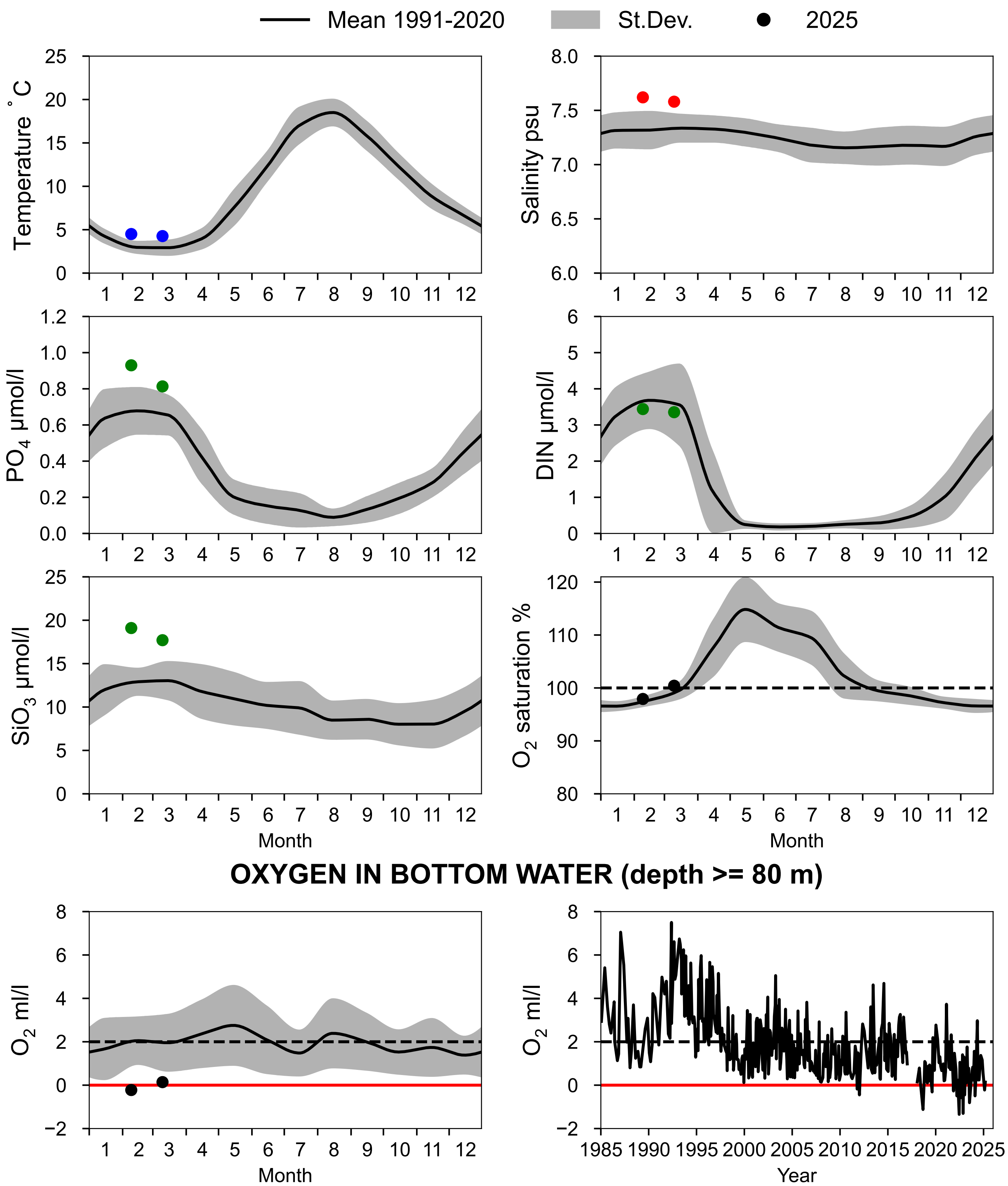
OXYGEN IN BOTTOM WATER (depth >= 125 m)

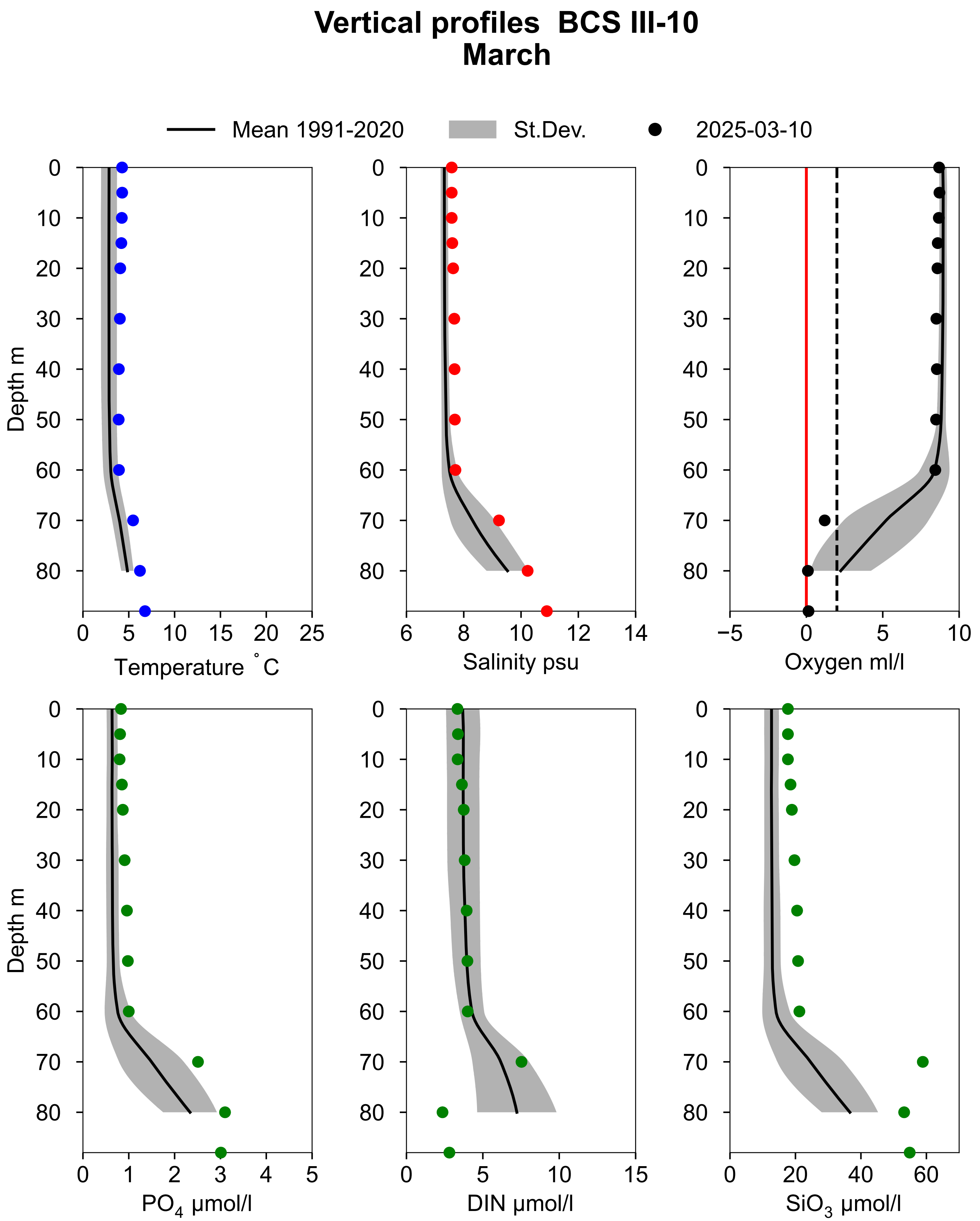



Vertical profiles BY10
March
Mean 1991-2020
St.Dev.
2025-03-10
Depth m
Temperature ˚C
Salinity psu
Oxygen ml/l
PO4 µmol/l
DIN µmol/l
SiO3 µmol/l

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

Annual Cycles

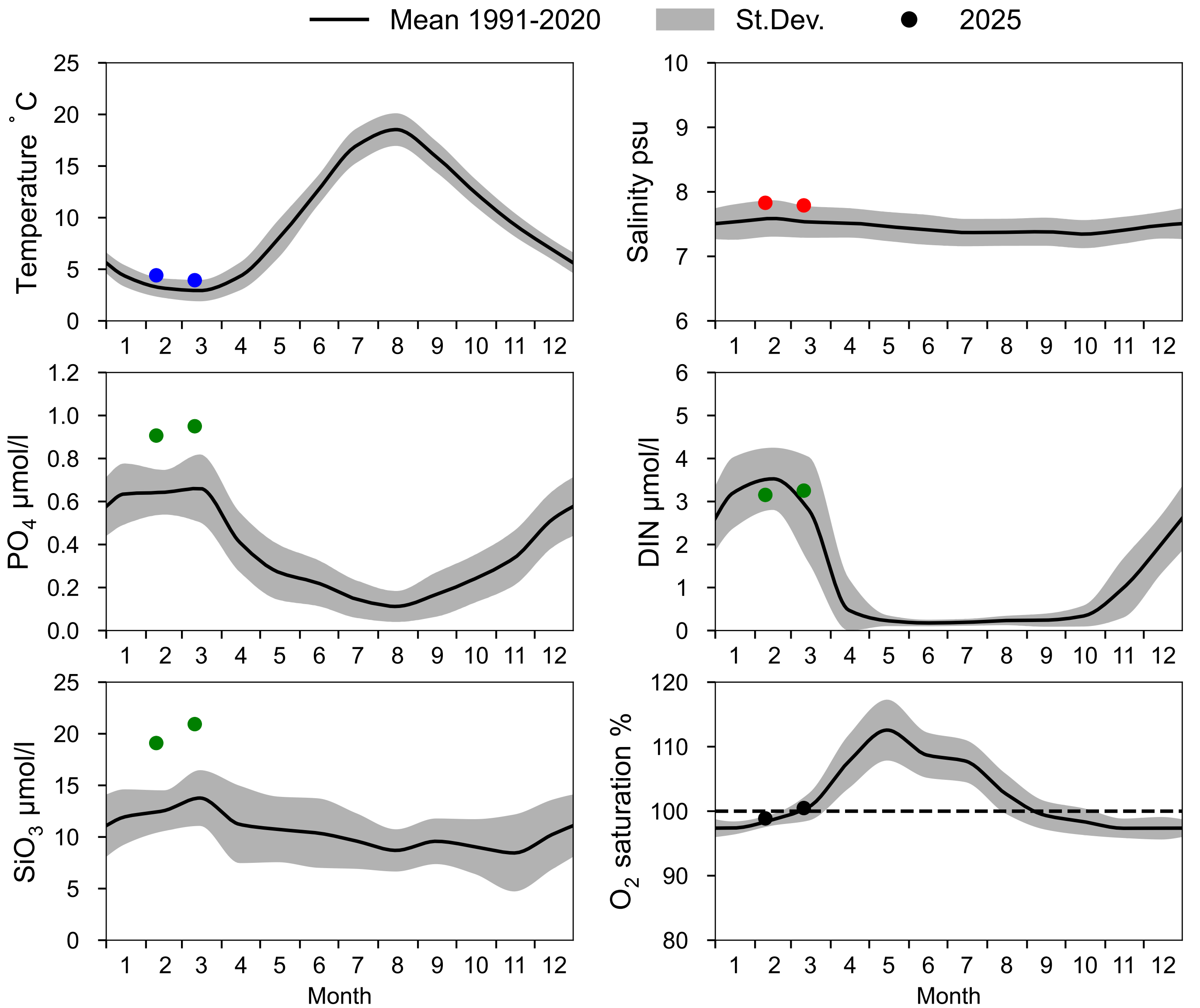




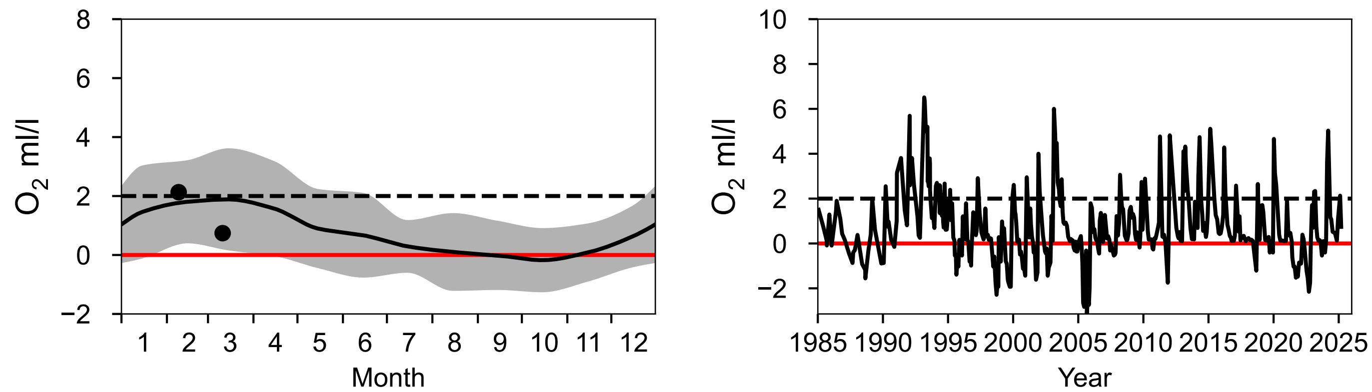
Vertical profiles BCS III-10
March
Mean 1991-2020
St.Dev.
2025-03-10
Depth m
Temperature ˚C
Salinity psu
Oxygen ml/l
PO4 µmol/l
DIN µmol/l
SiO3 µmol/l

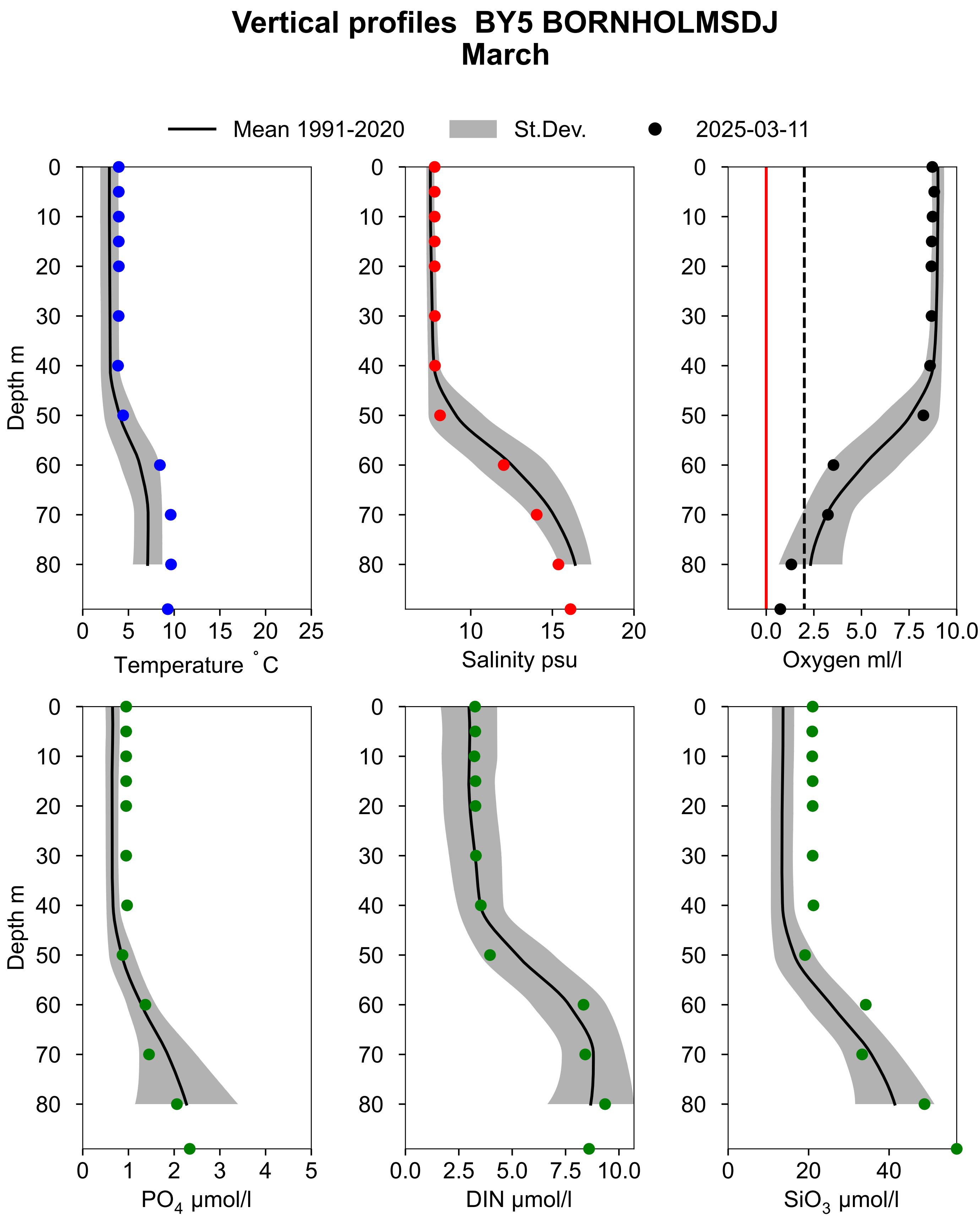
STATION BY5 BORNHOLMSDJ SURFACE WATER (0-10 m)

Annual Cycles



OXYGEN IN BOTTOM WATER (depth >= 80 m)

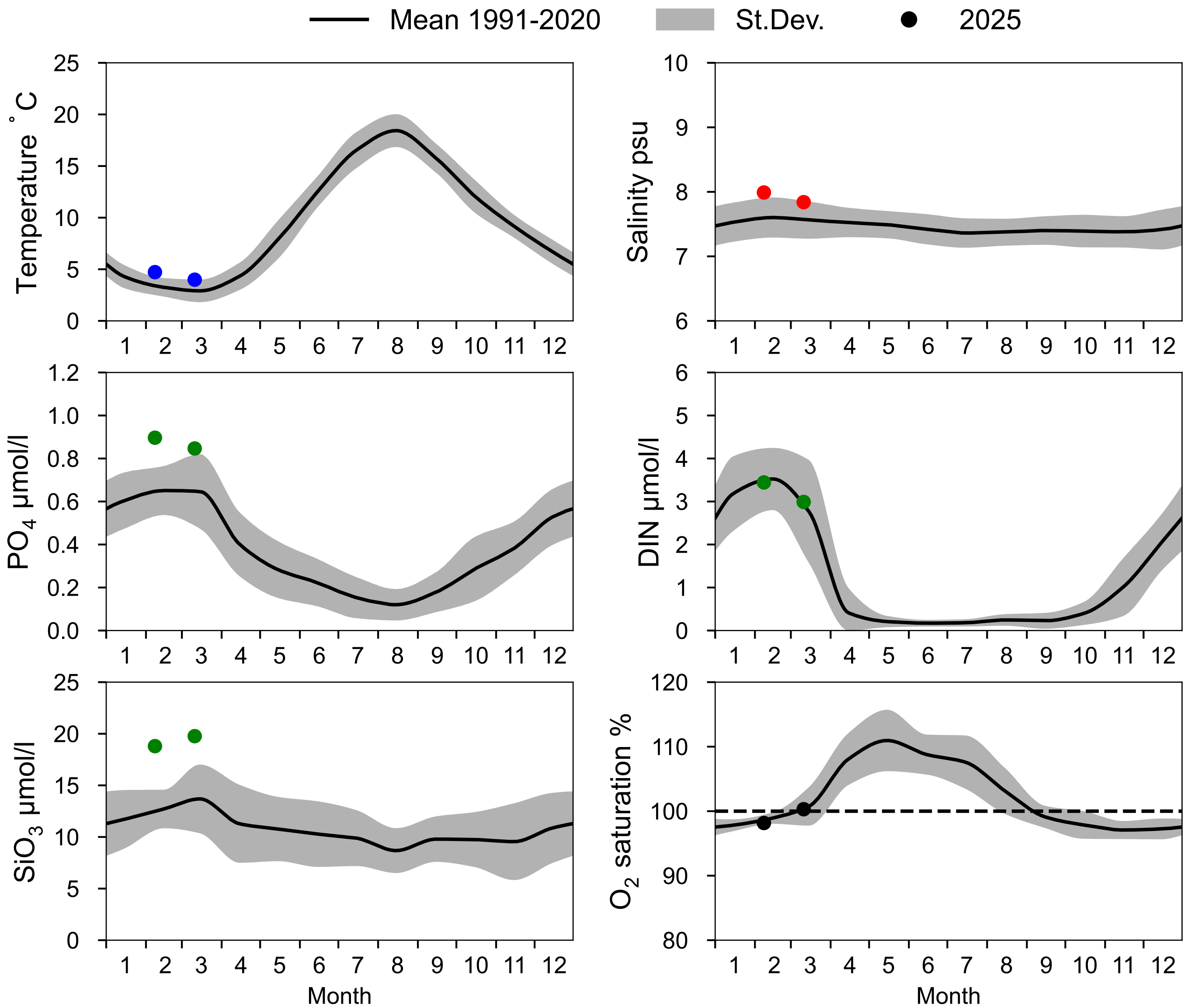




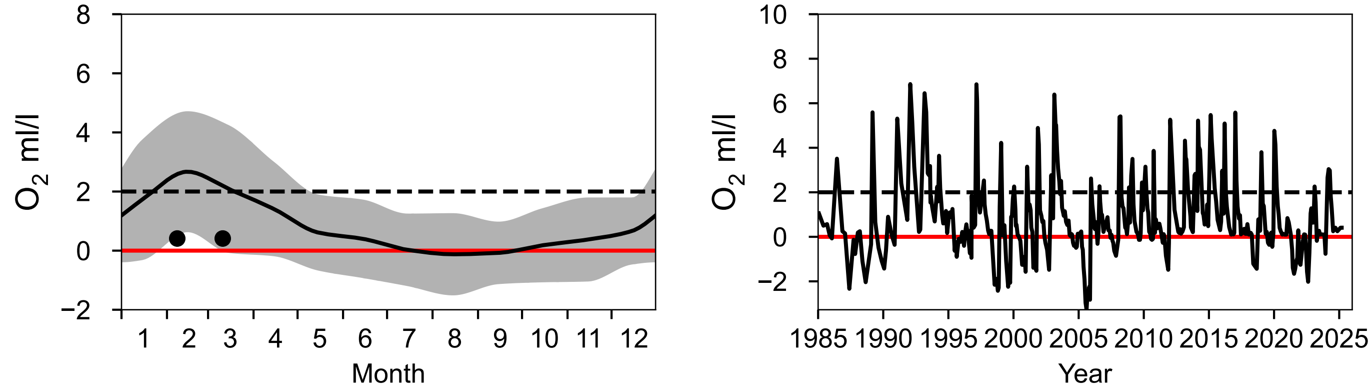
Vertical profiles BY5 BORNHOLMSDJ
March
Mean 1991-2020
St.Dev.
2025-03-11
Depth m
Temperature ˚C
Salinity psu
Oxygen ml/l
PO4 µmol/l
DIN µmol/l
SiO3 µmol/l

STATION BY4 CHRISTIANSÖ SURFACE WATER (0-10 m)

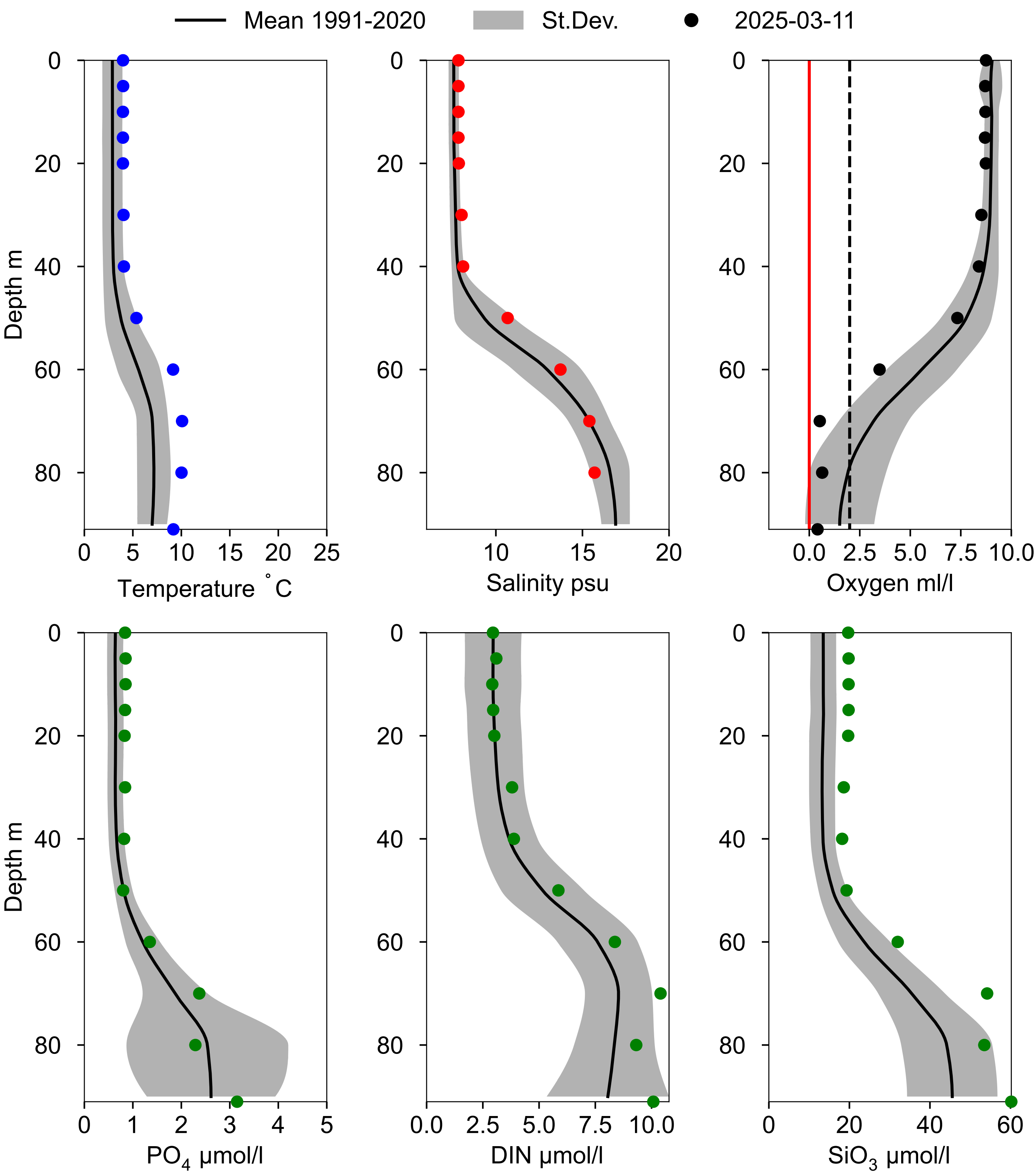
Annual Cycles



OXYGEN IN BOTTOM WATER (depth >= 80 m)

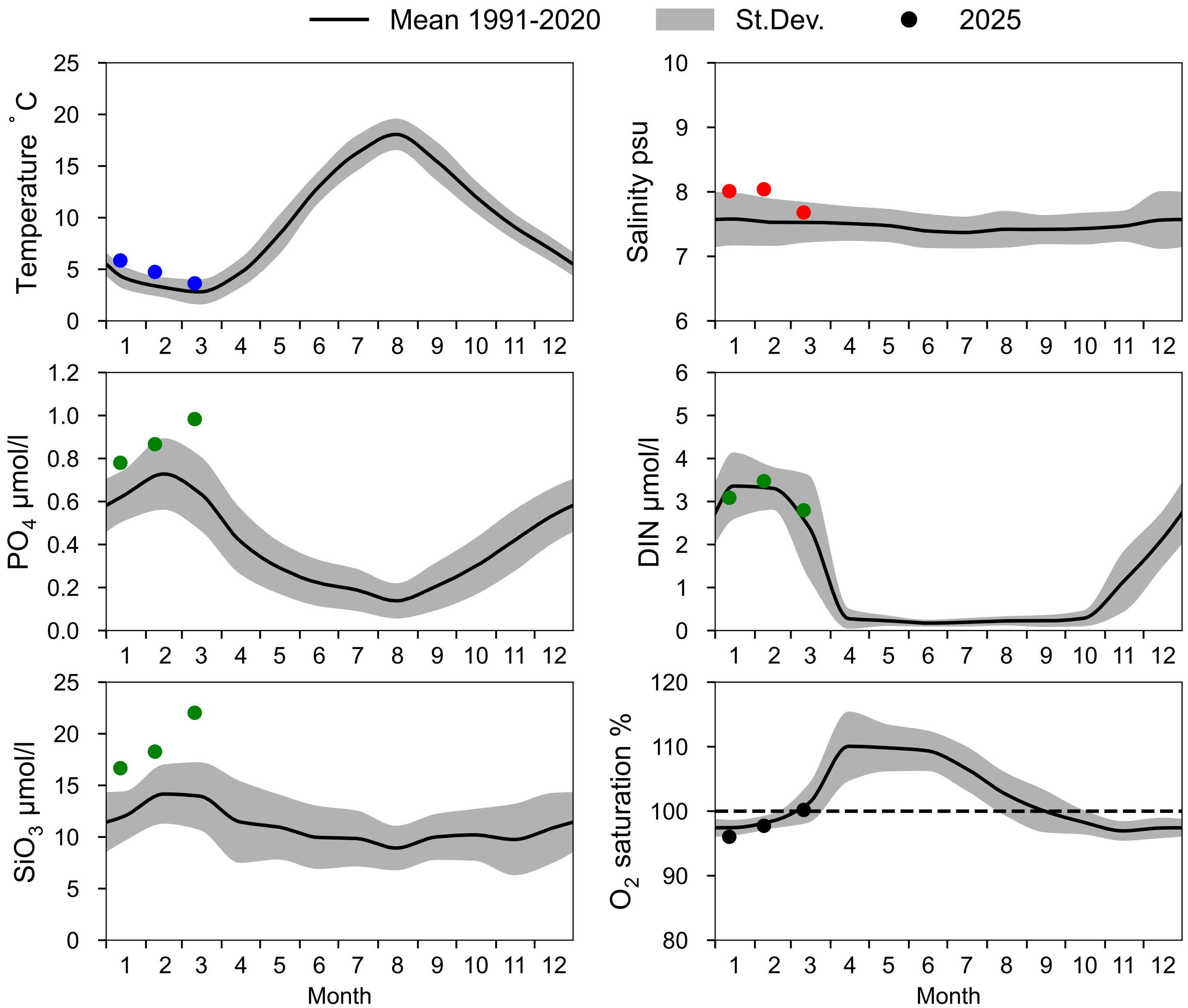


Vertical profiles BY4 CHRISTIANSÖ
March

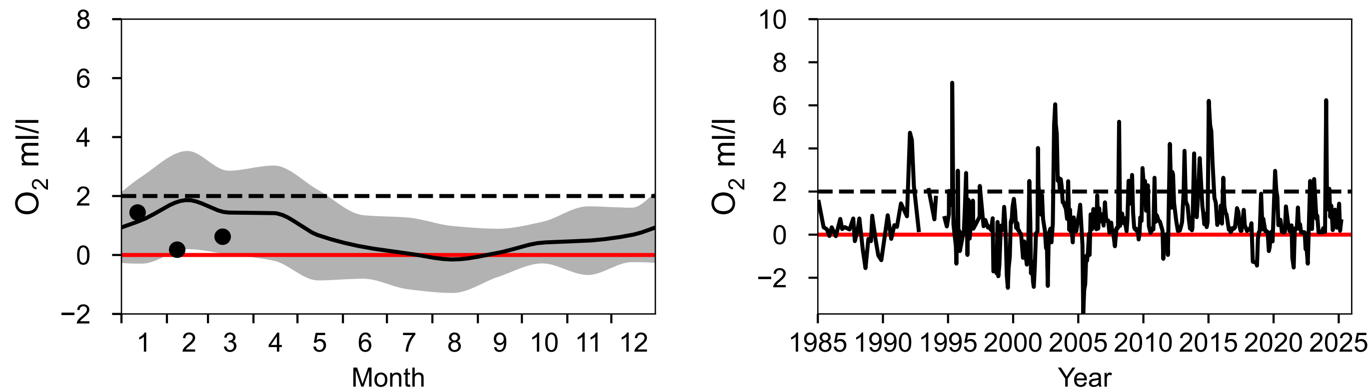


STATION HANÖBUKTEN SURFACE WATER (0-10 m)

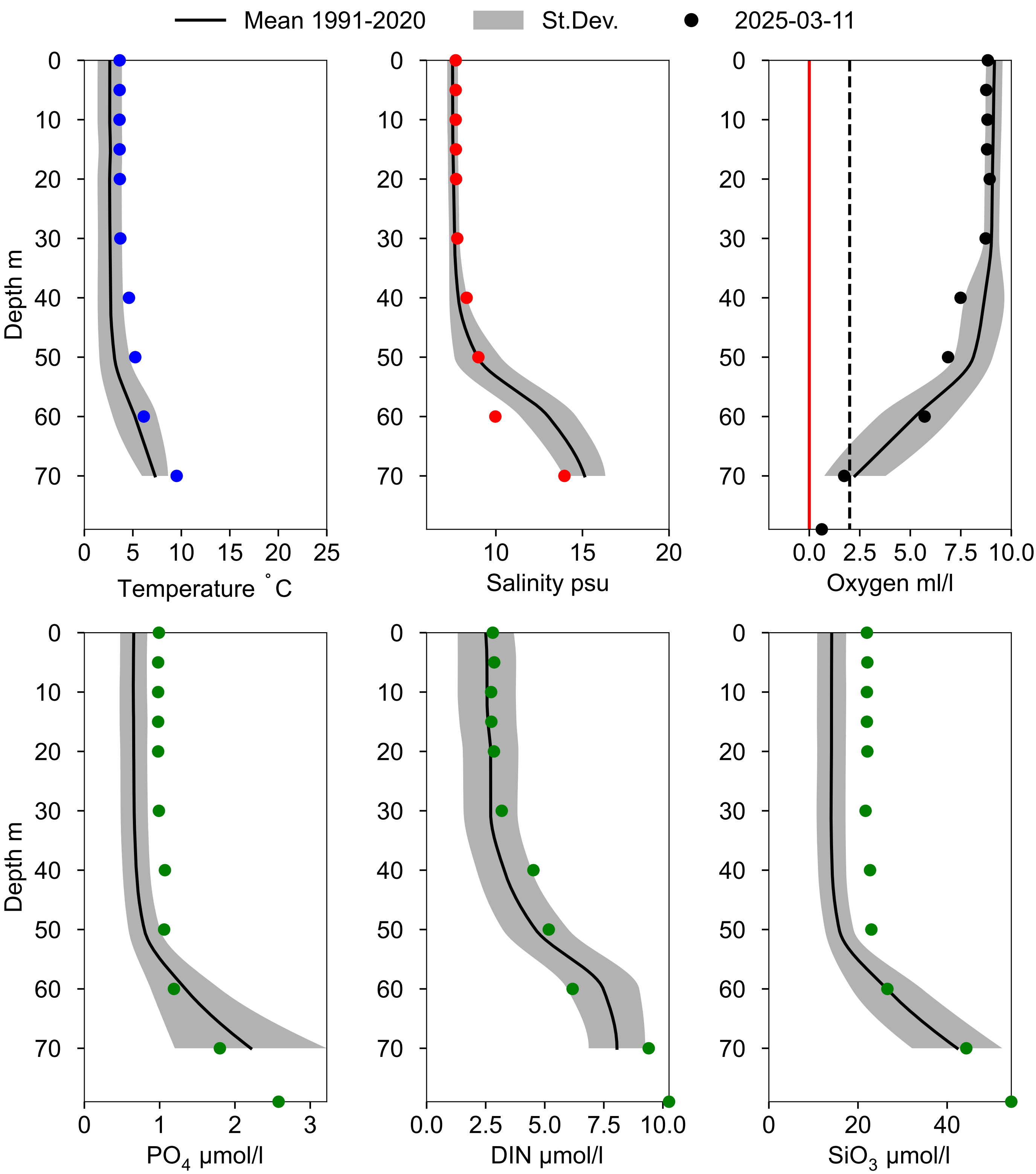
Annual Cycles



OXYGEN IN BOTTOM WATER (depth >= 70 m)

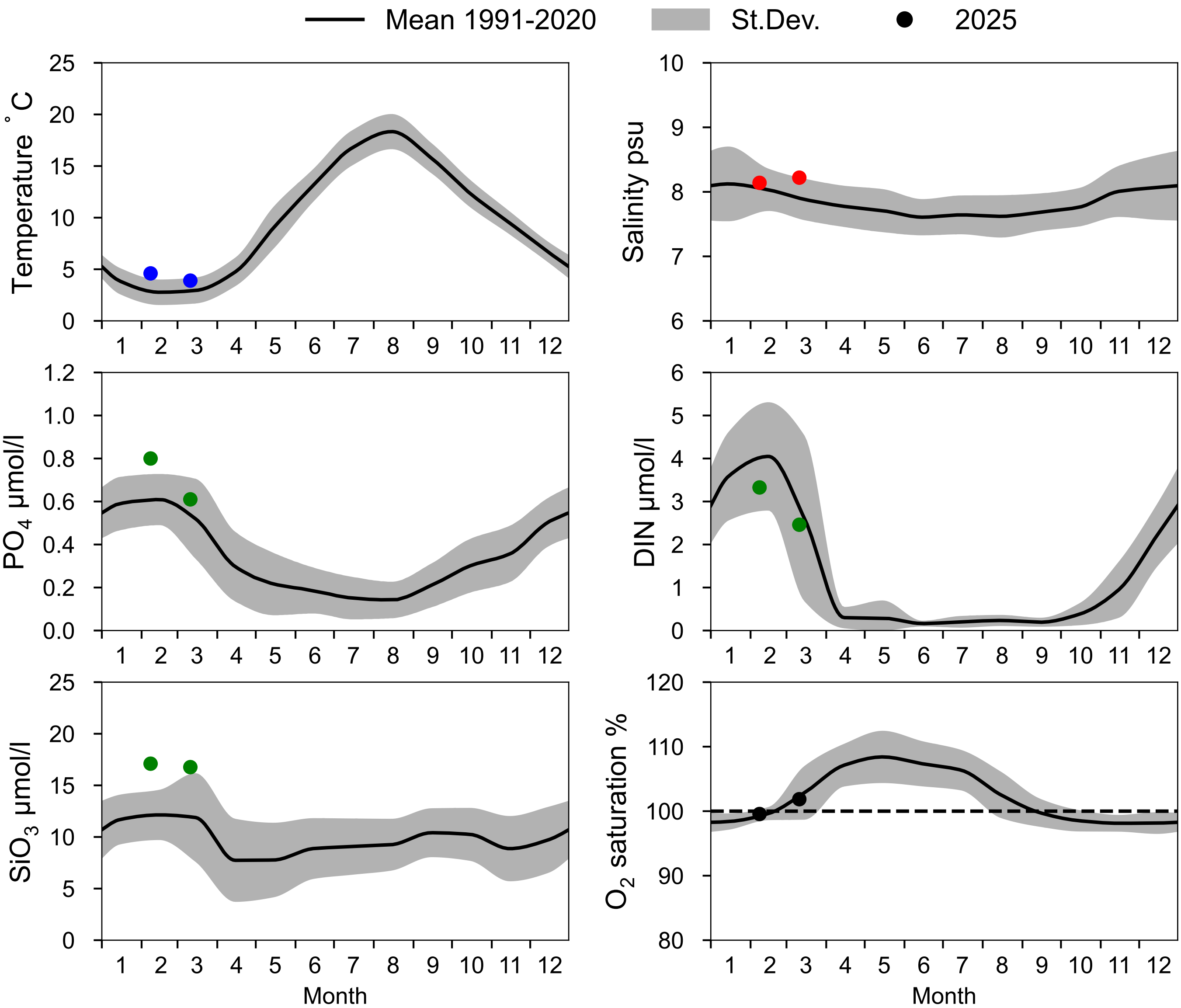


Vertical profiles HANÖBUKTEN
March

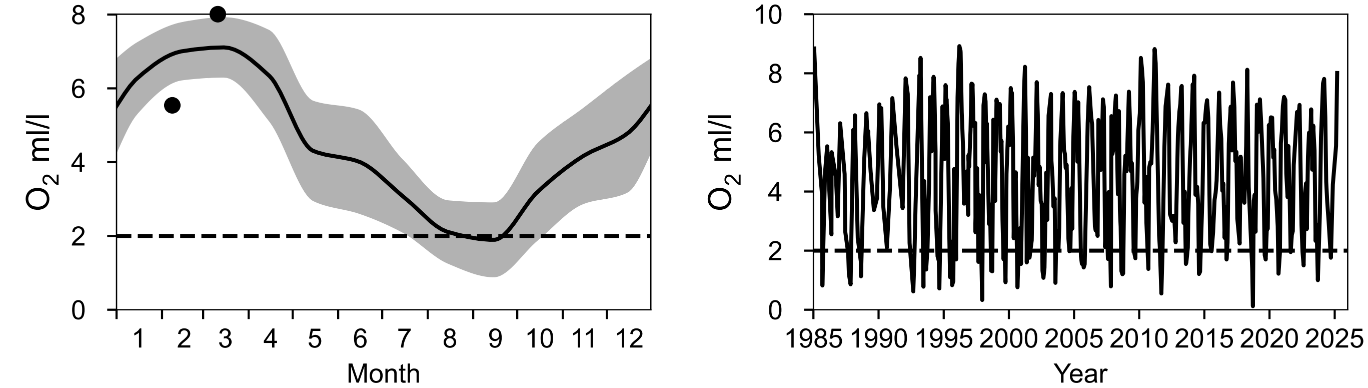


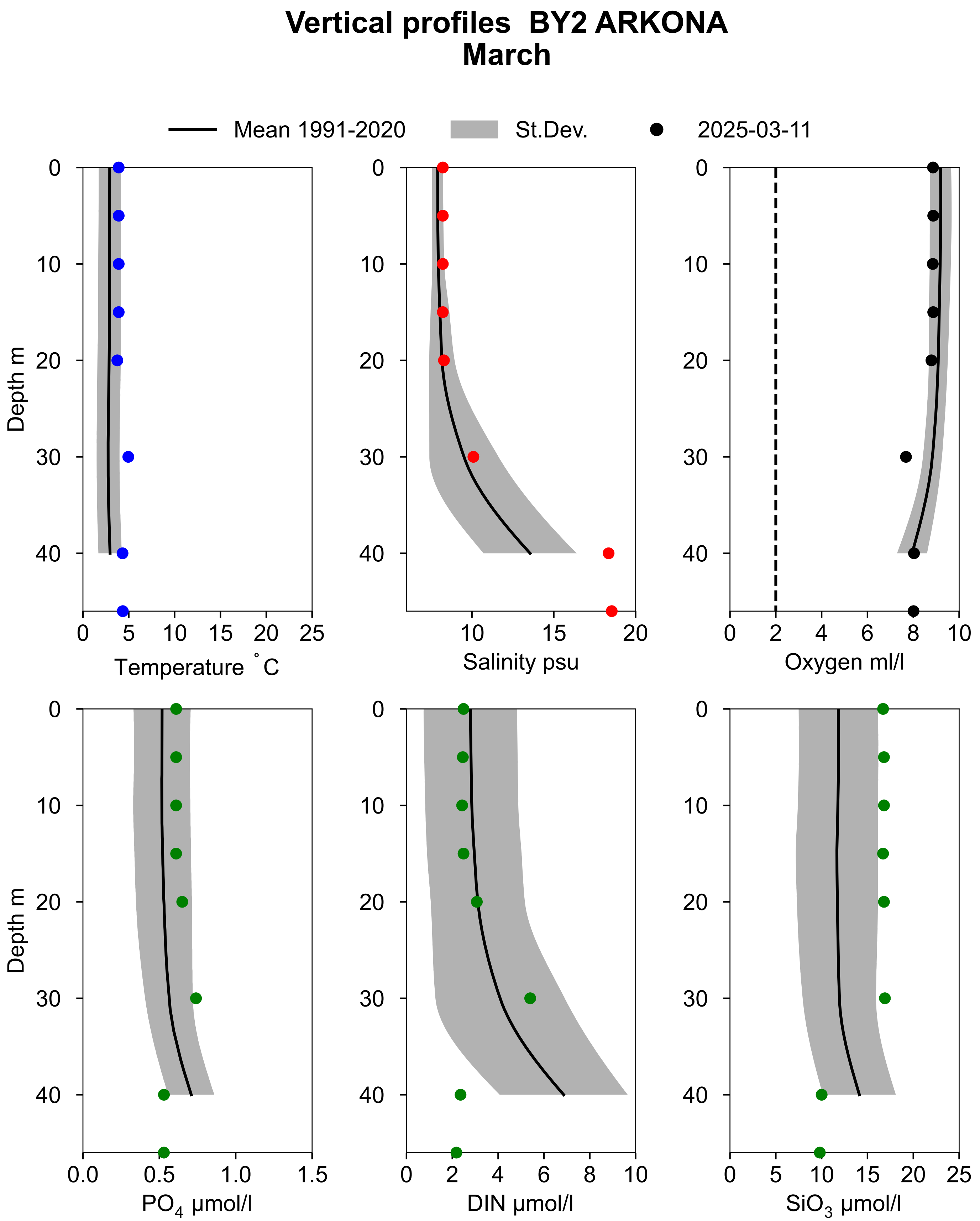
STATION BY2 ARKONA SURFACE WATER (0-10 m)

Annual Cycles



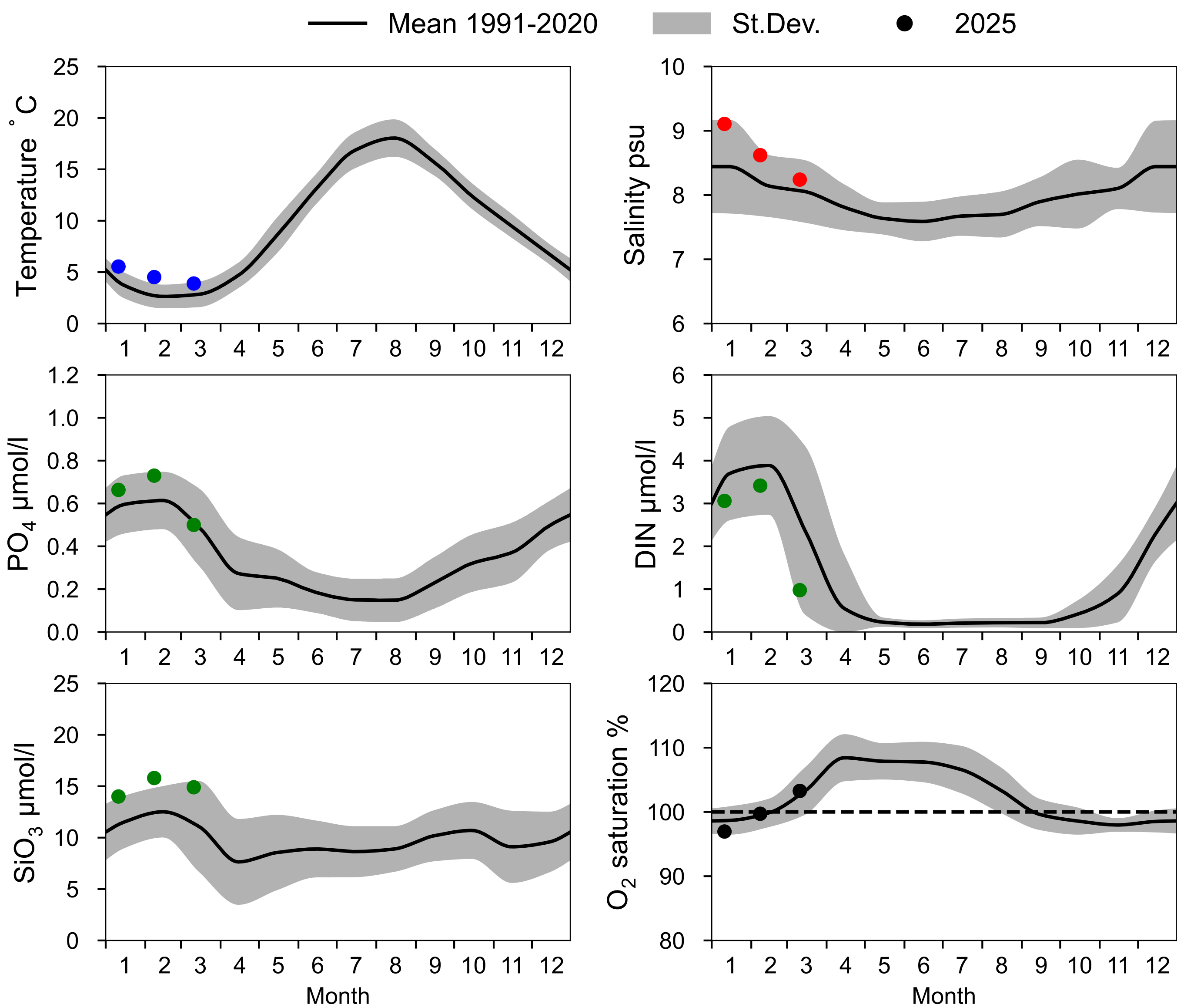
OXYGEN IN BOTTOM WATER (depth >= 40 m)



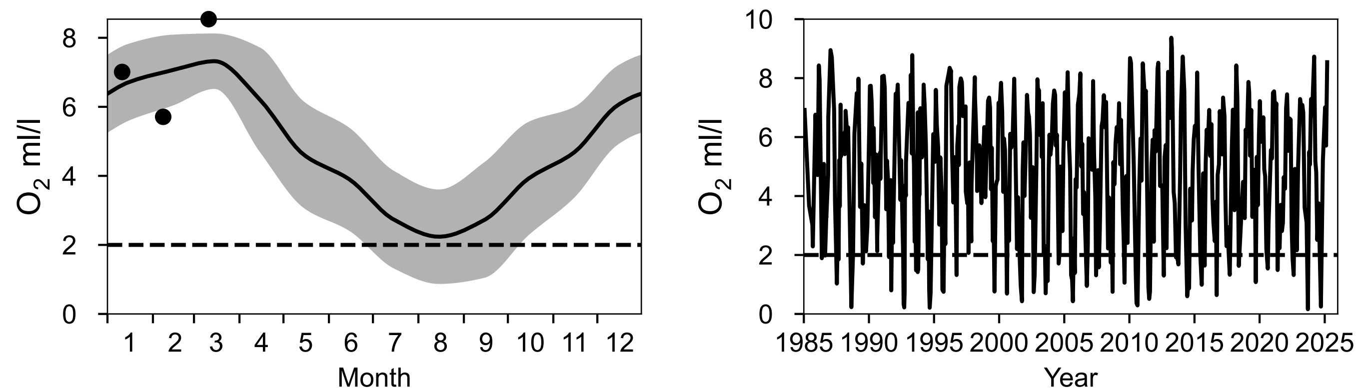

Vertical profiles BY2 ARKONA
March
Mean 1991-2020
St.Dev.
2025-03-11
Depth m
Temperature °C
Salinity psu
Oxygen ml/l
PO4 µmol/l
DIN µmol/l
SiO3 µmol/l

STATION BY1 SURFACE WATER (0-10 m)

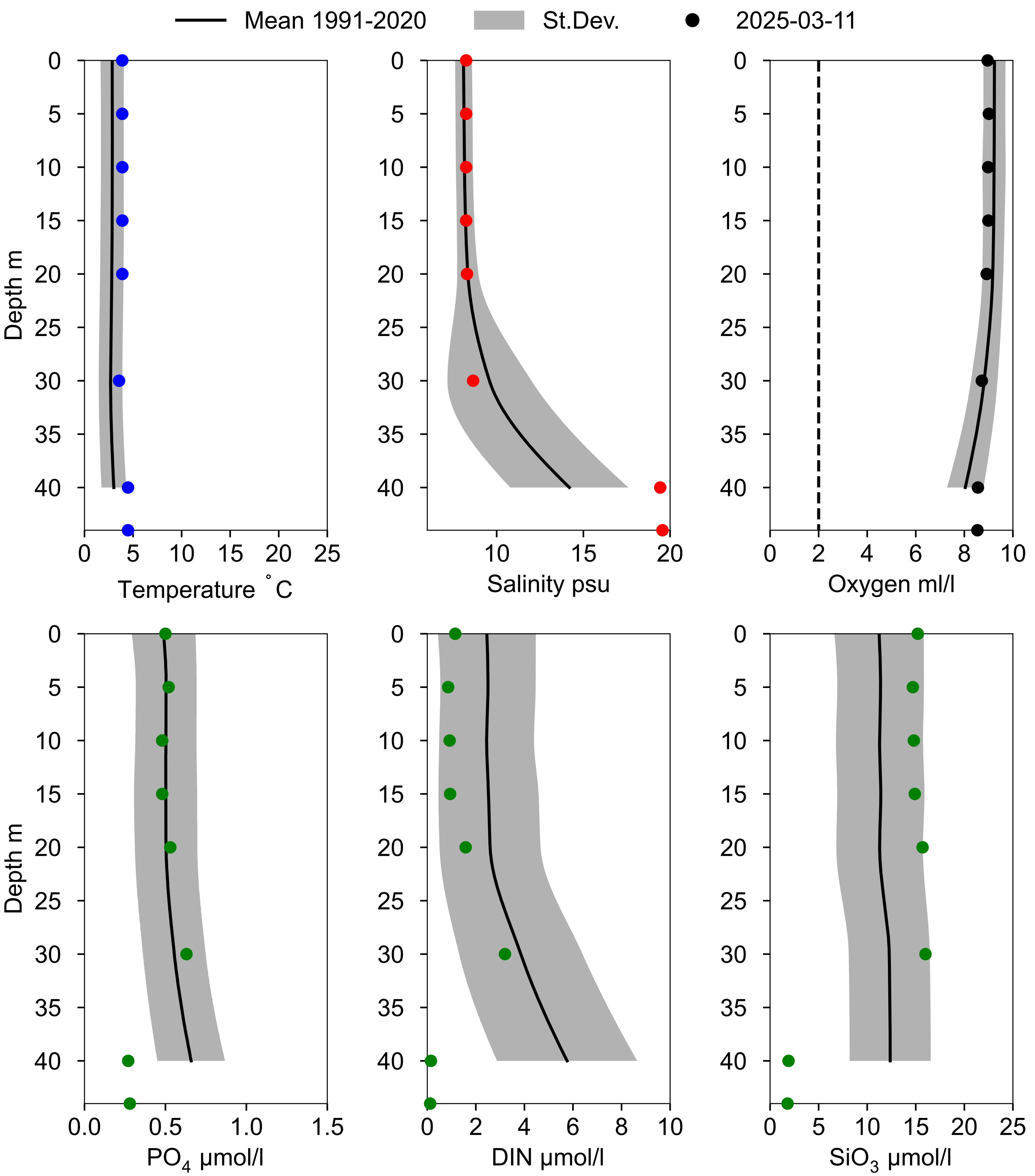
Annual Cycles



OXYGEN IN BOTTOM WATER (depth >= 39 m)

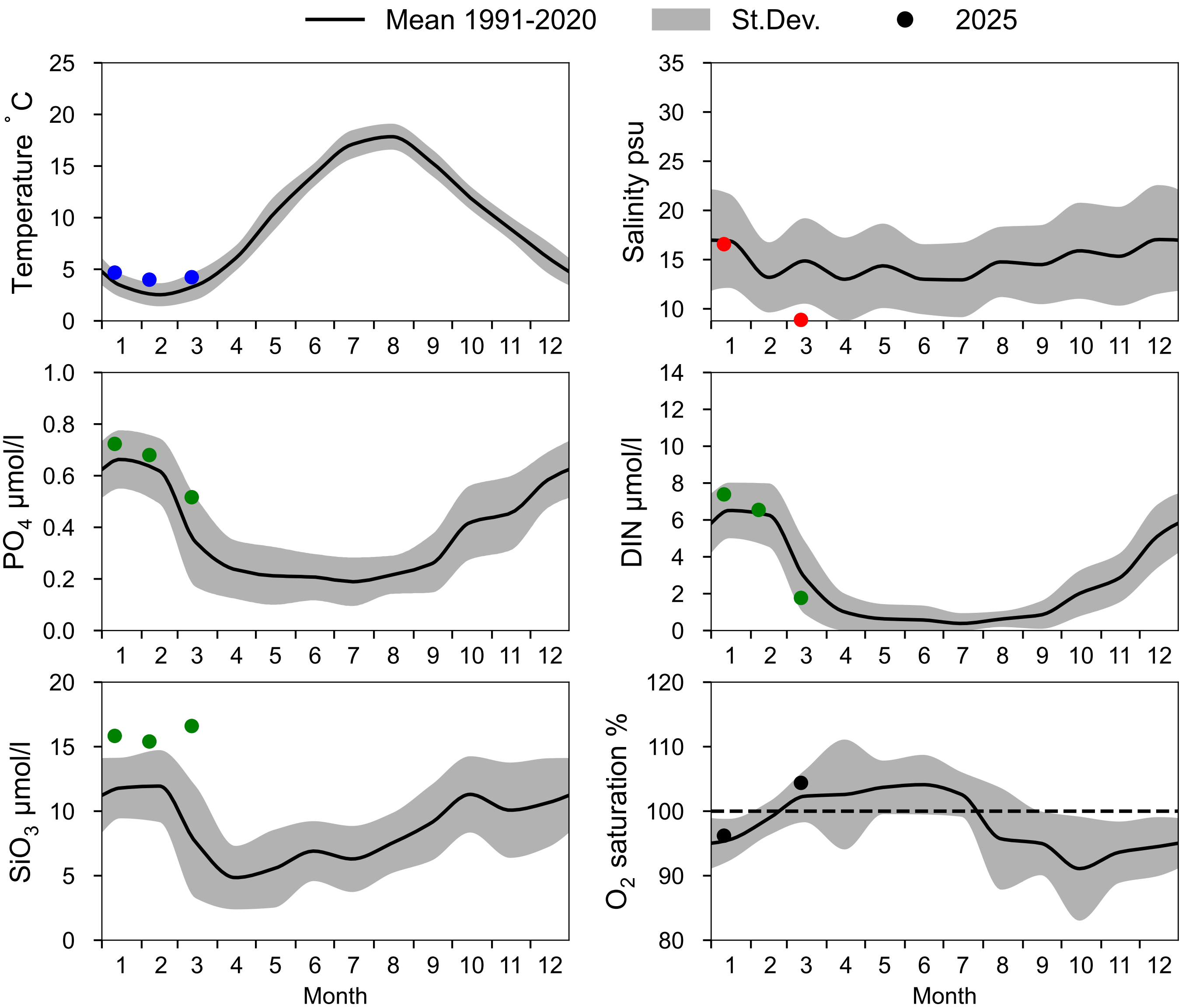


Vertical profiles BY1
March

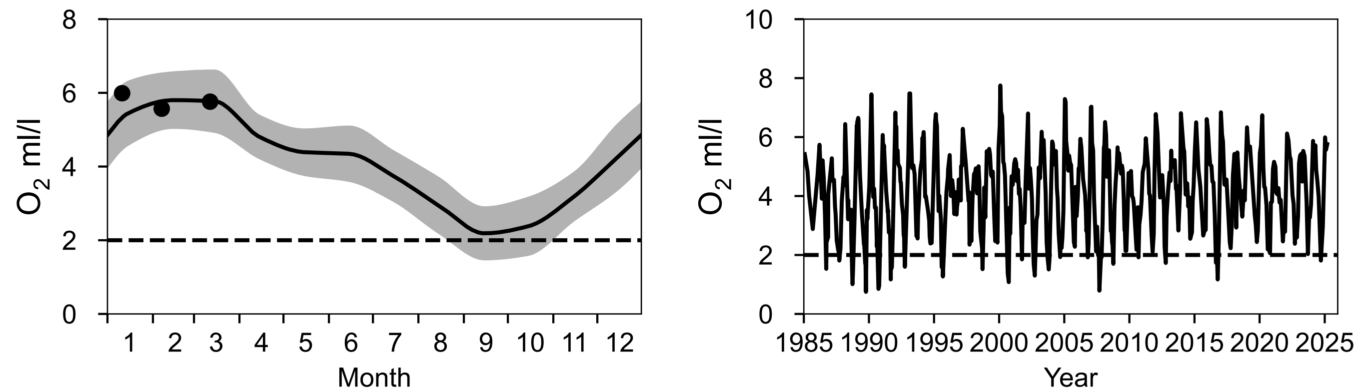


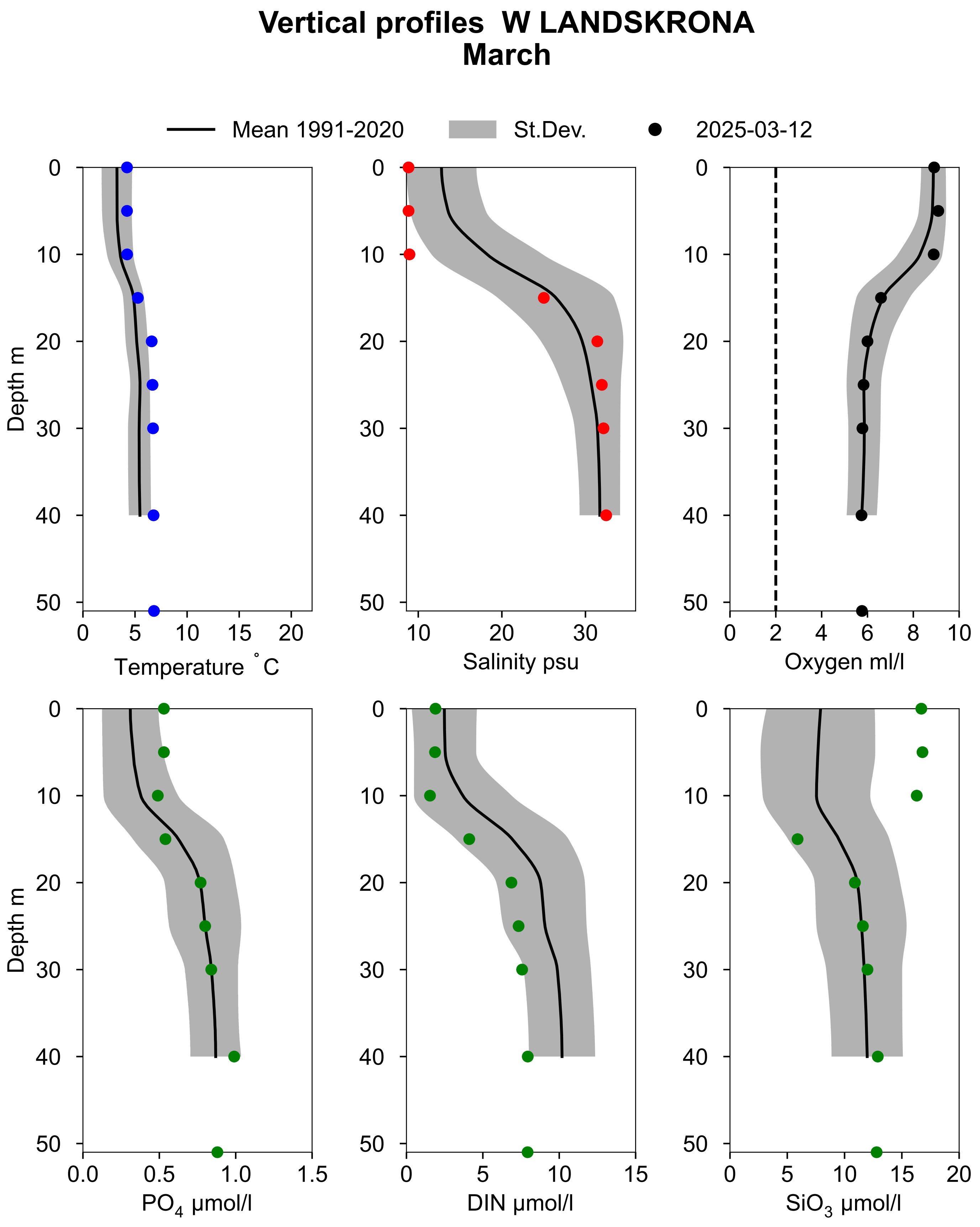
STATION W LANDSKRONA SURFACE WATER (0-10 m)

Annual Cycles



OXYGEN IN BOTTOM WATER (depth >= 40 m)



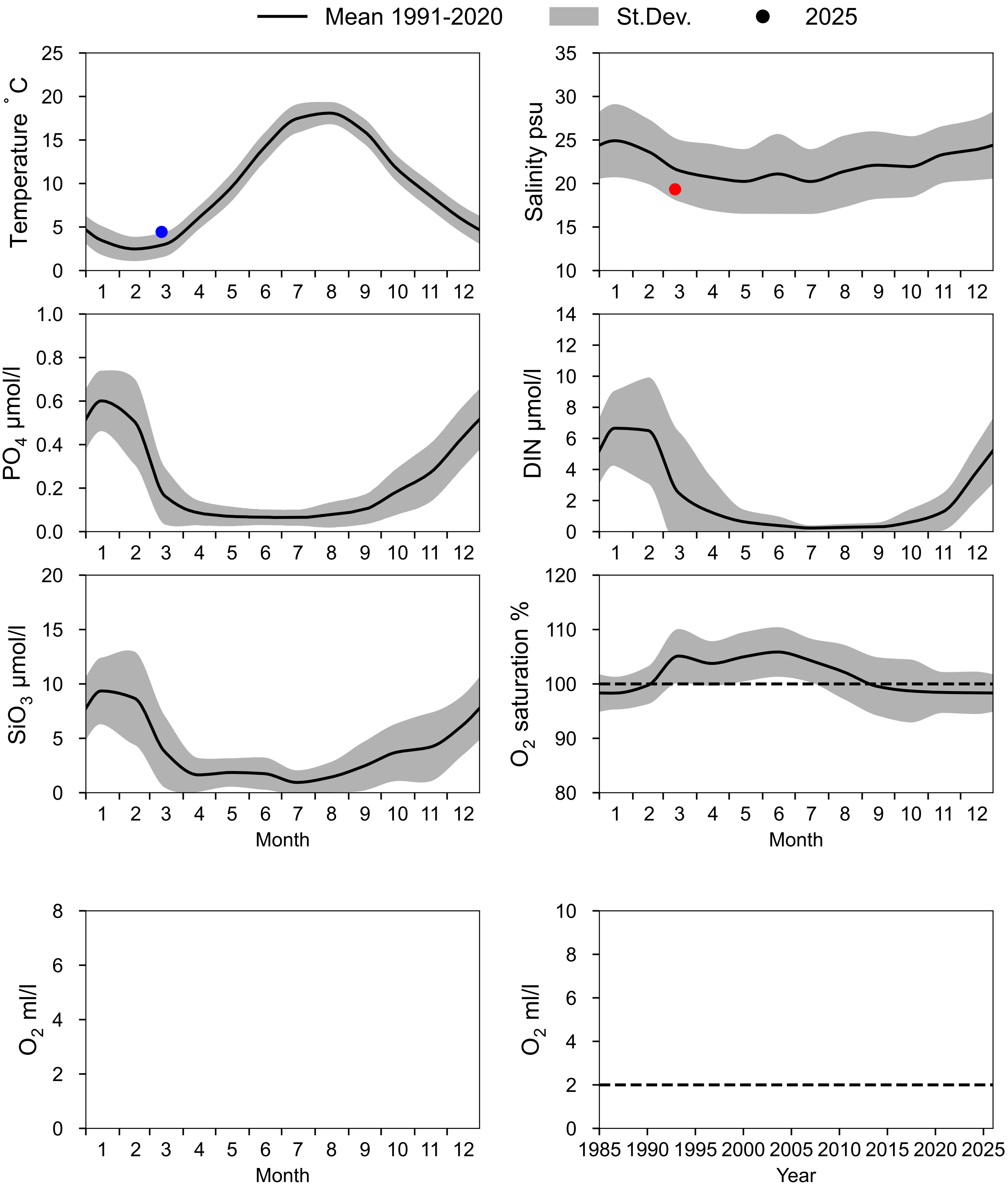


Vertical profiles W LANDSKRONA
March
Mean 1991-2020
St.Dev.
2025-03-12
Depth m
Temperature °C
Salinity psu
Oxygen ml/l
PO_4 µmol/l
DIN µmol/l
SiO_3 µmol/l

STATION P22 SURFACE WATER (0-10 m)

Annual Cycles

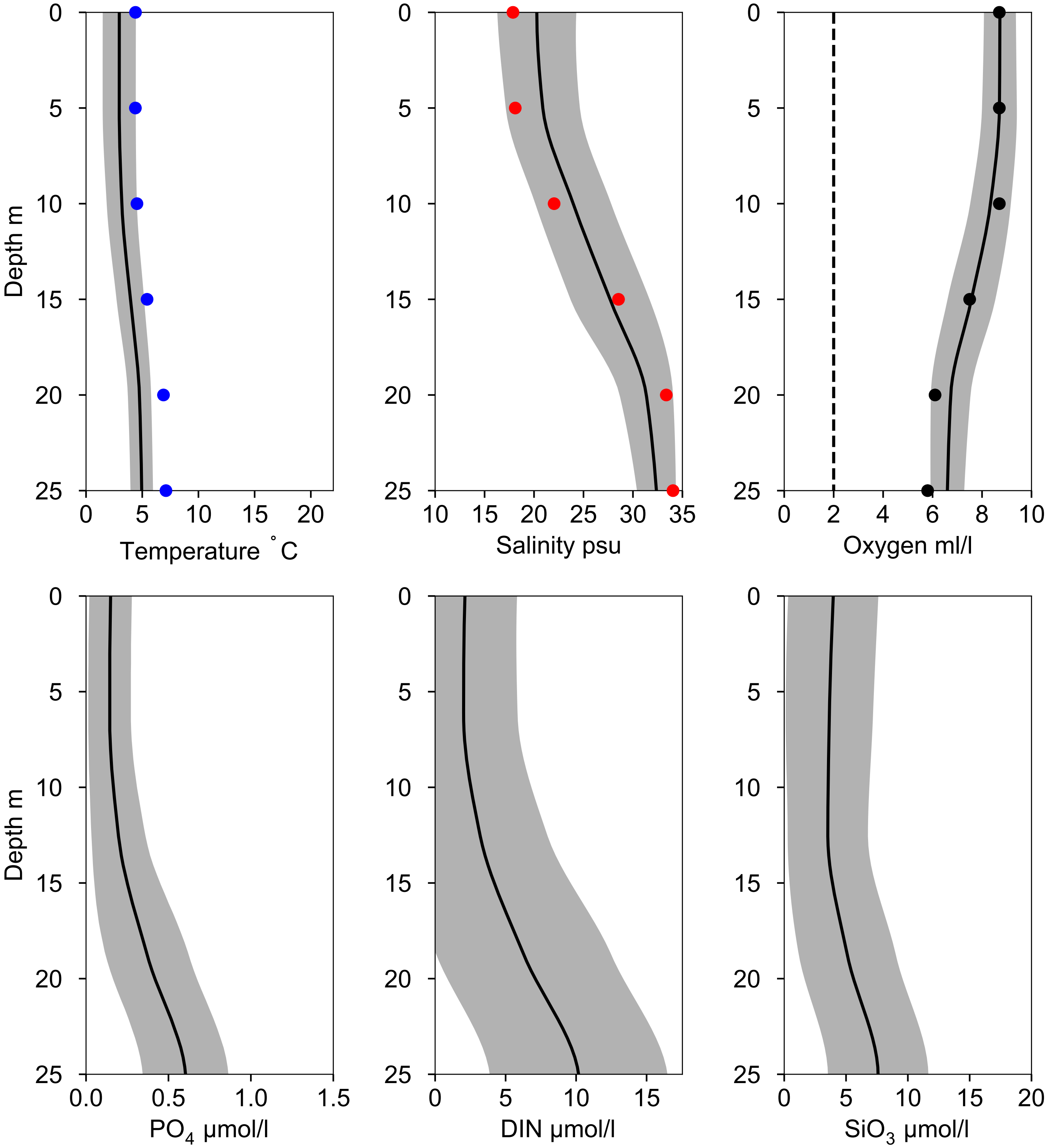
Statistics based on data from: Kattegatt



Vertical profiles P22
March

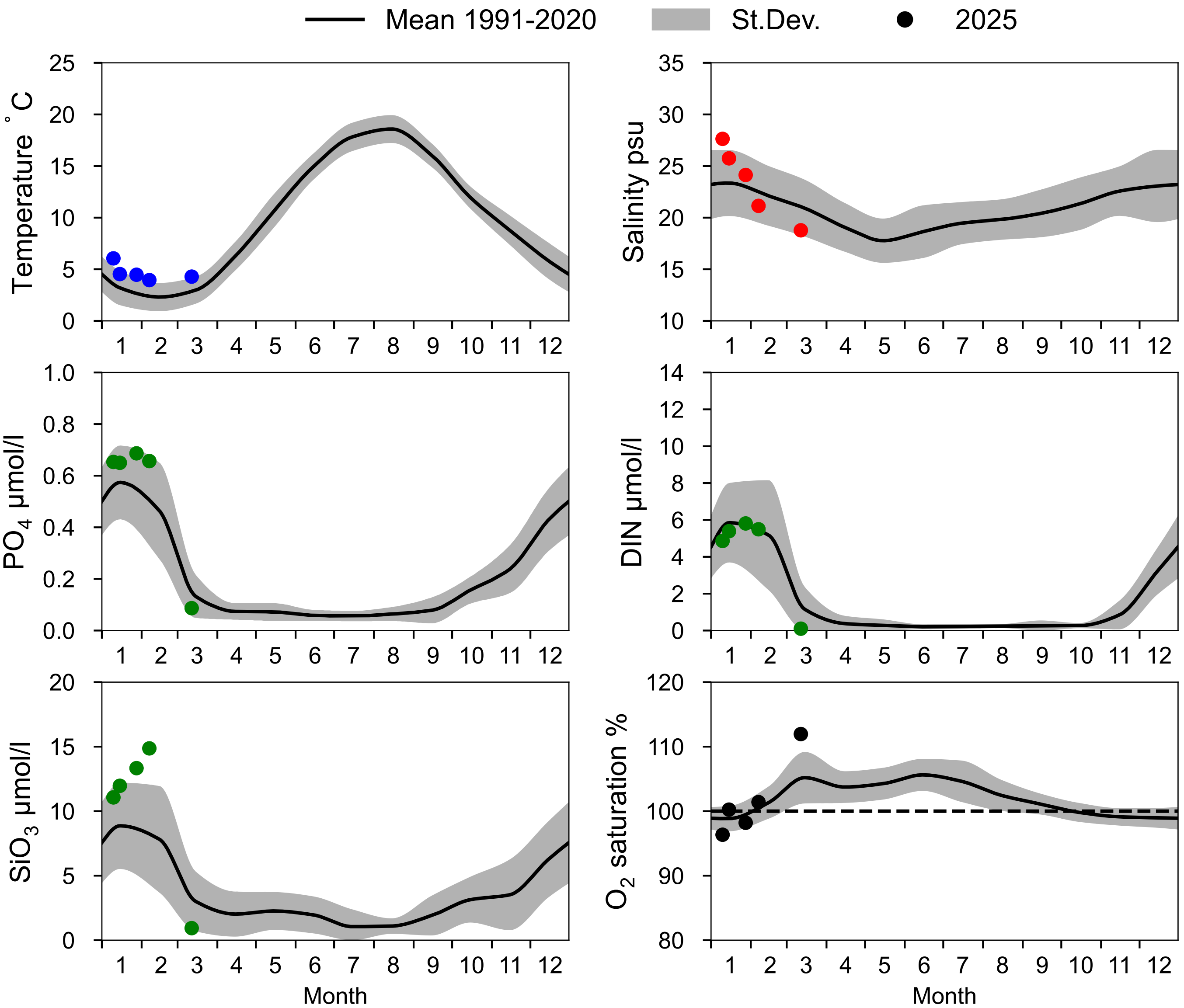
Statistics based on data from: Kattegatt

Mean 1991-2020 — St.Dev. — 2025-03-12

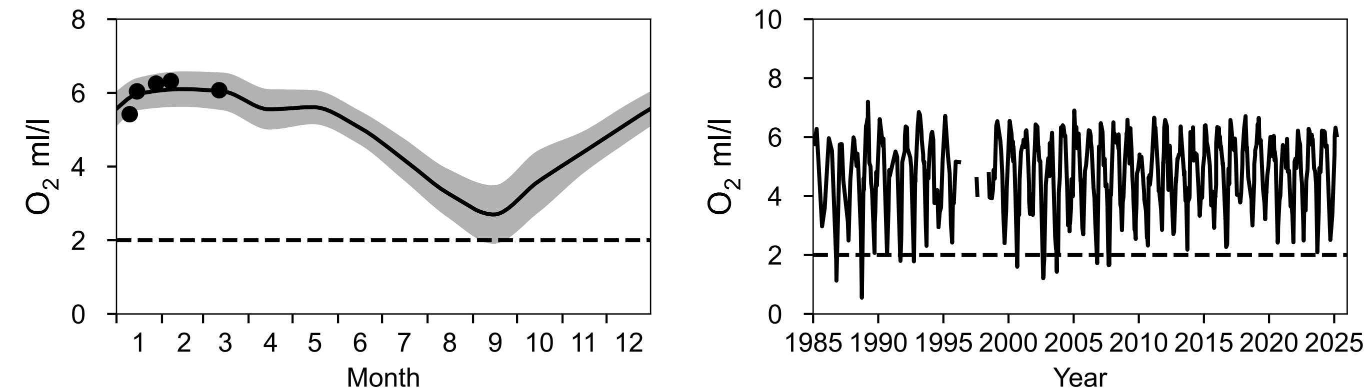


STATION ANHOLT E SURFACE WATER (0-10 m)

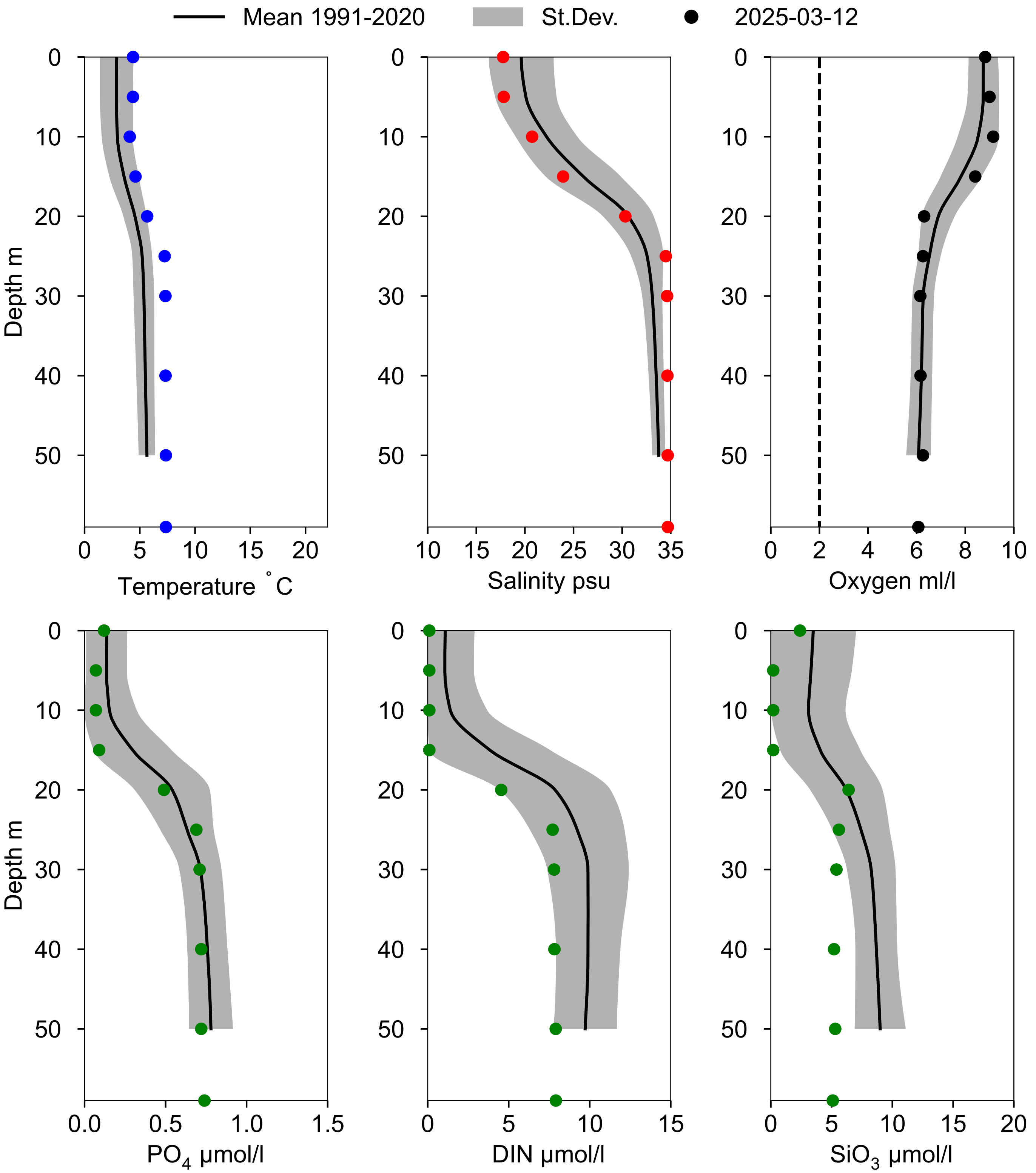
Annual Cycles



OXYGEN IN BOTTOM WATER (depth >= 52 m)

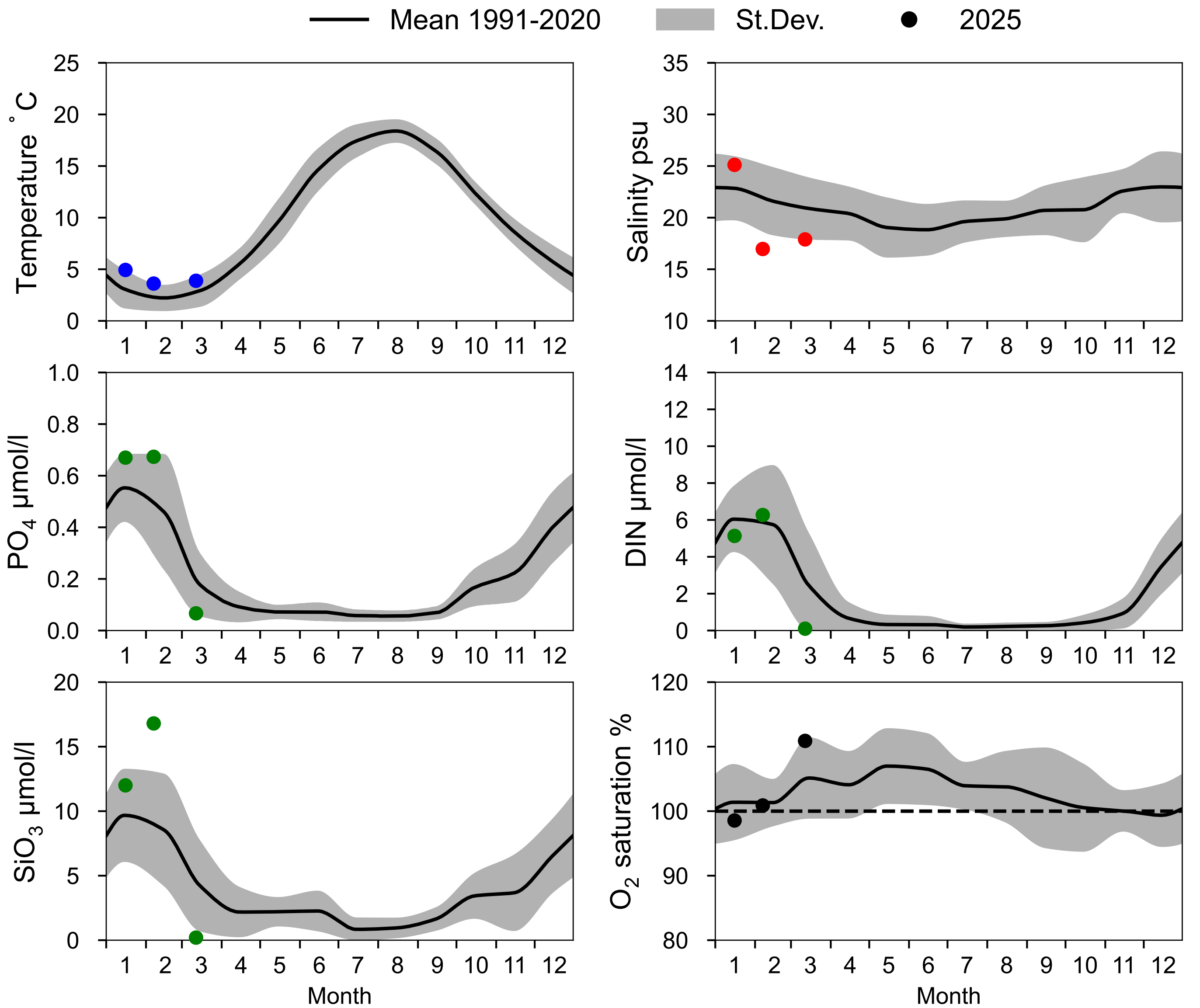


Vertical profiles ANHOLT E
March

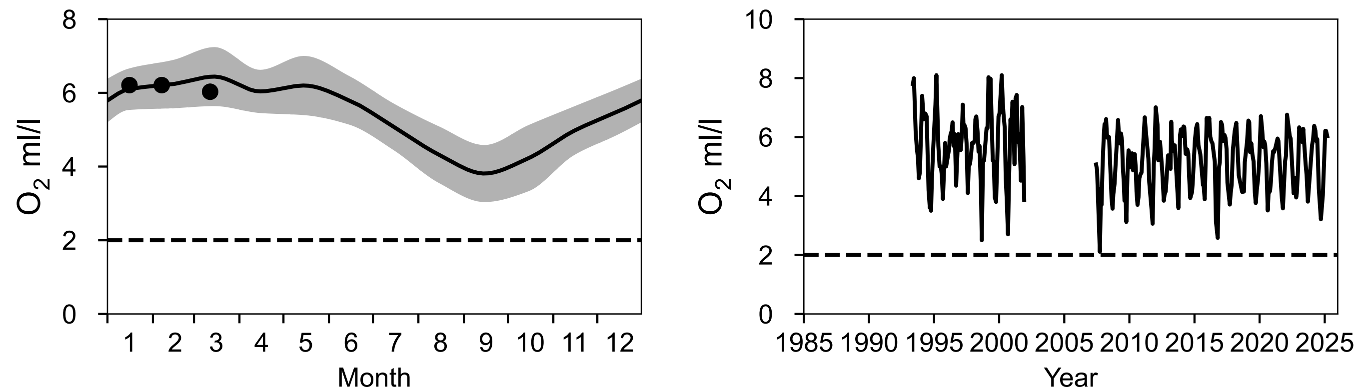


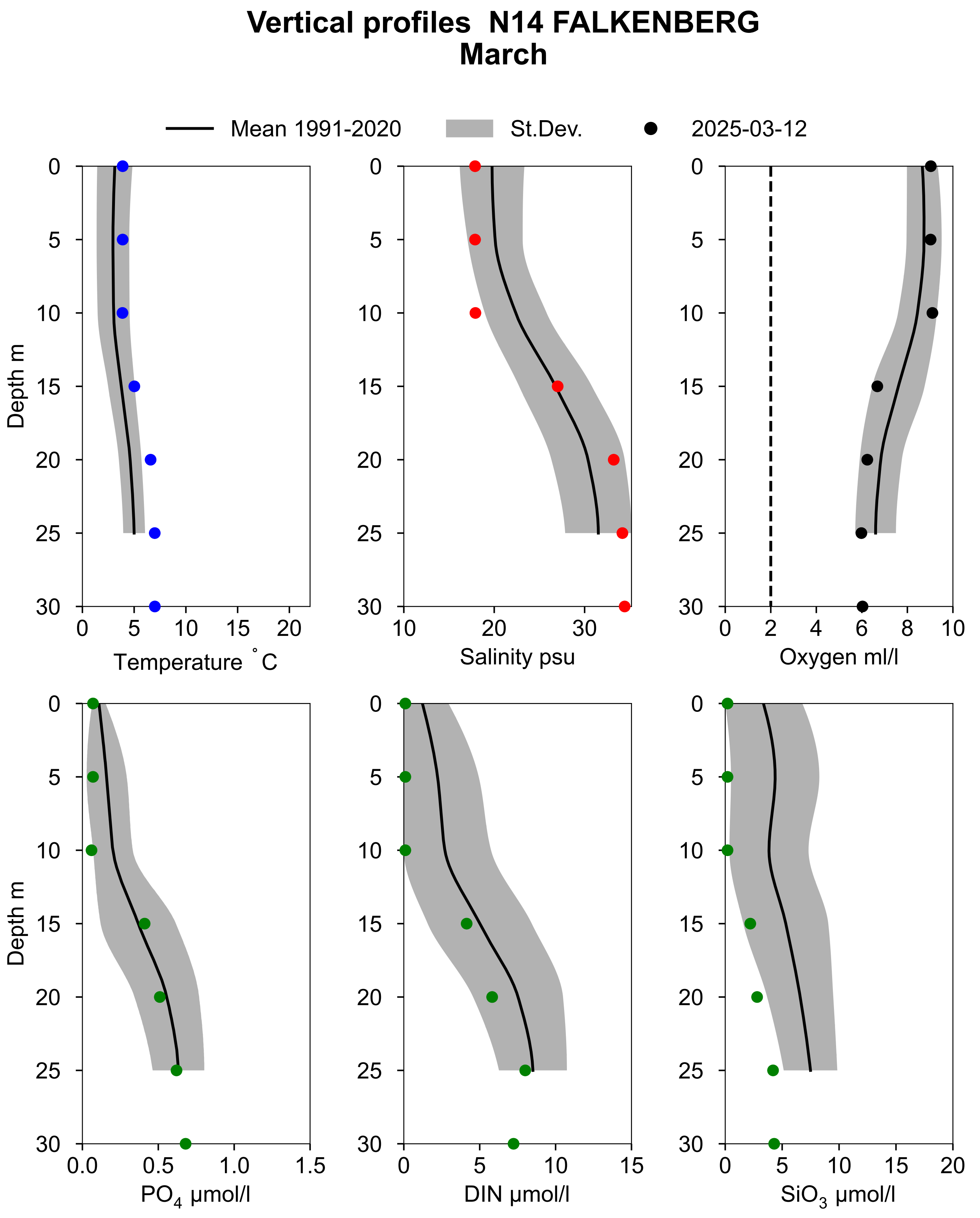
STATION N14 FALKENBERG SURFACE WATER (0-10 m)

Annual Cycles



OXYGEN IN BOTTOM WATER (depth >= 25 m)

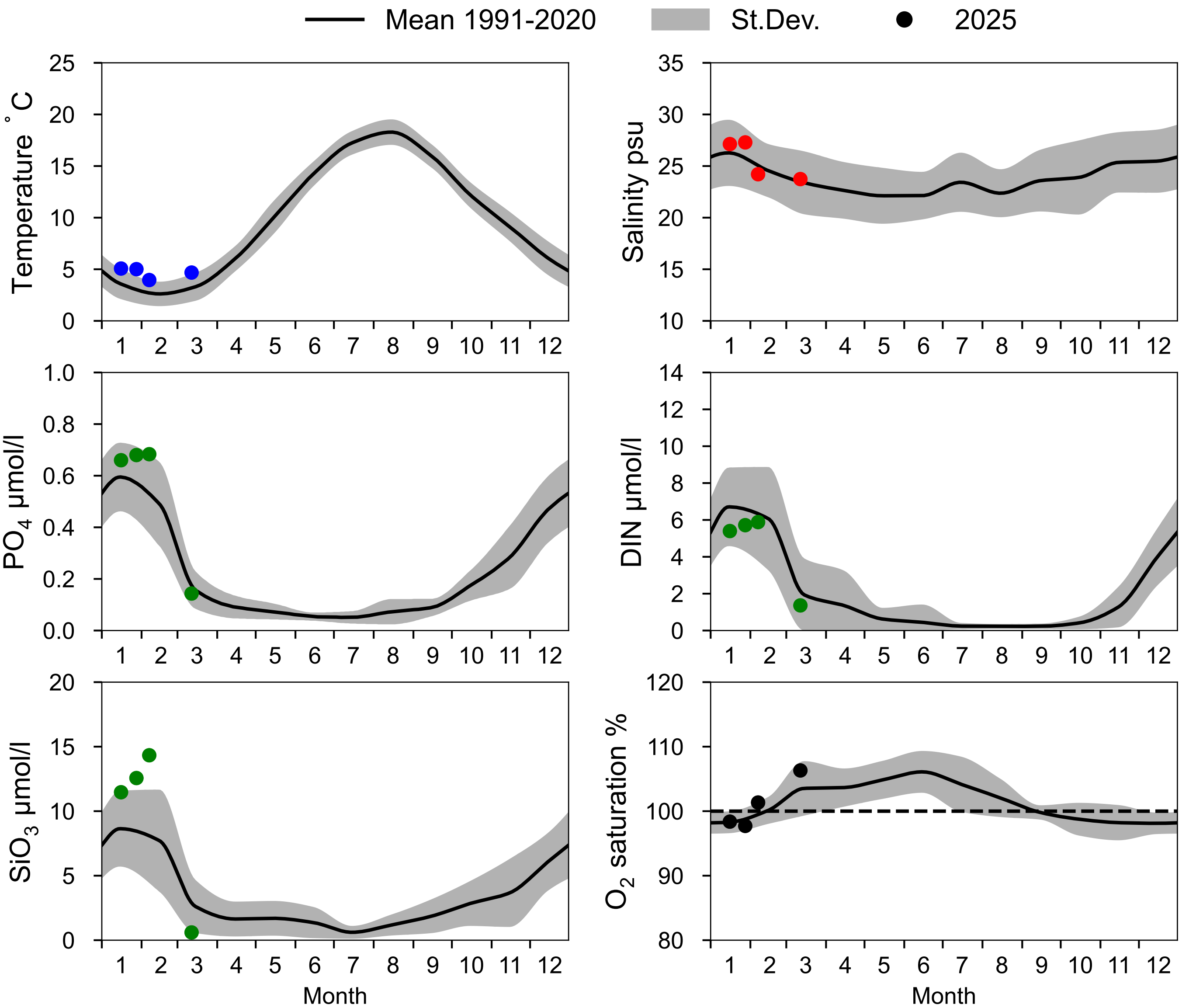




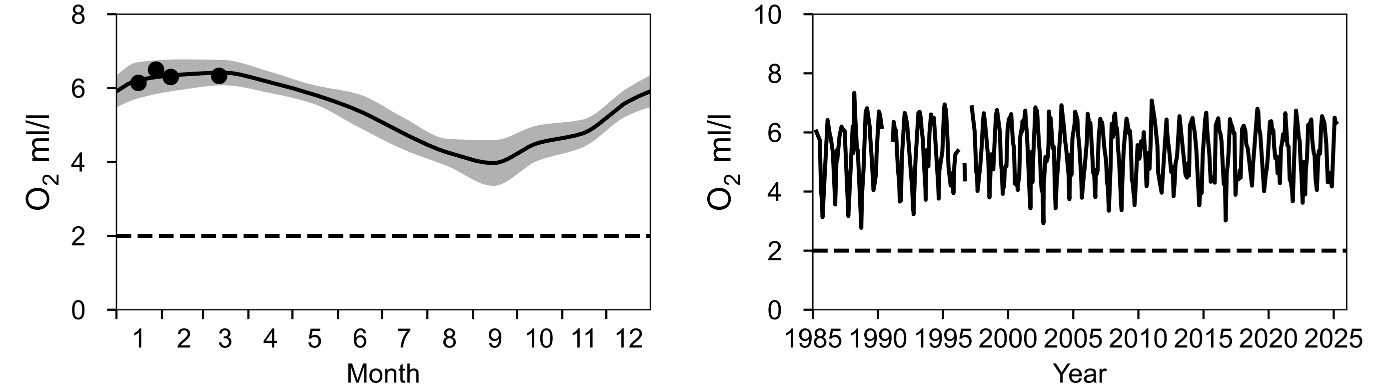
Vertical profiles N14 FALKENBERG
March
Mean 1991-2020
St.Dev.
2025-03-12
Depth m
Temperature ˚C
Salinity psu
Oxygen ml/l
PO4 µmol/l
DIN µmol/l
SiO3 µmol/l

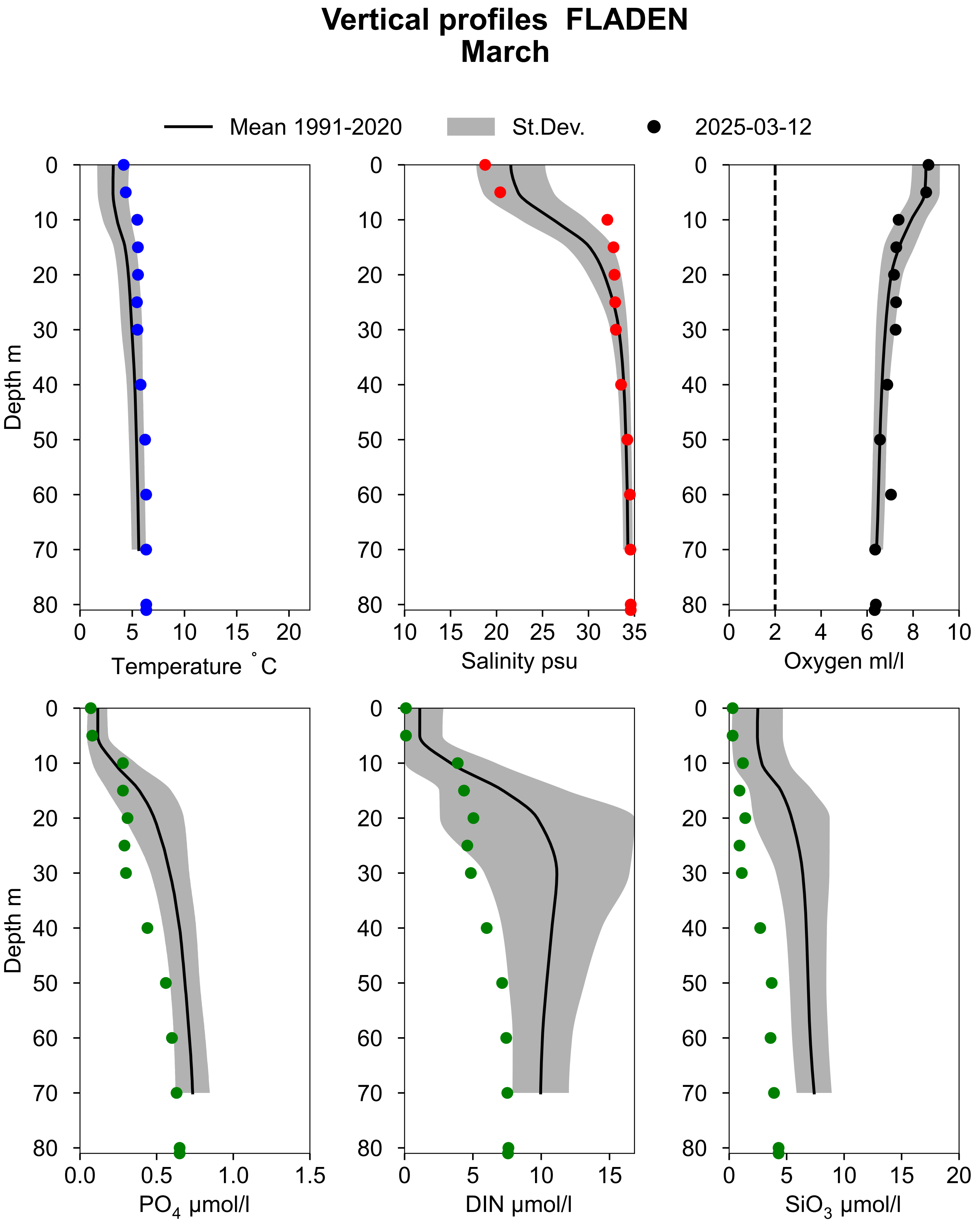
STATION FLADEN SURFACE WATER (0-10 m)

Annual Cycles

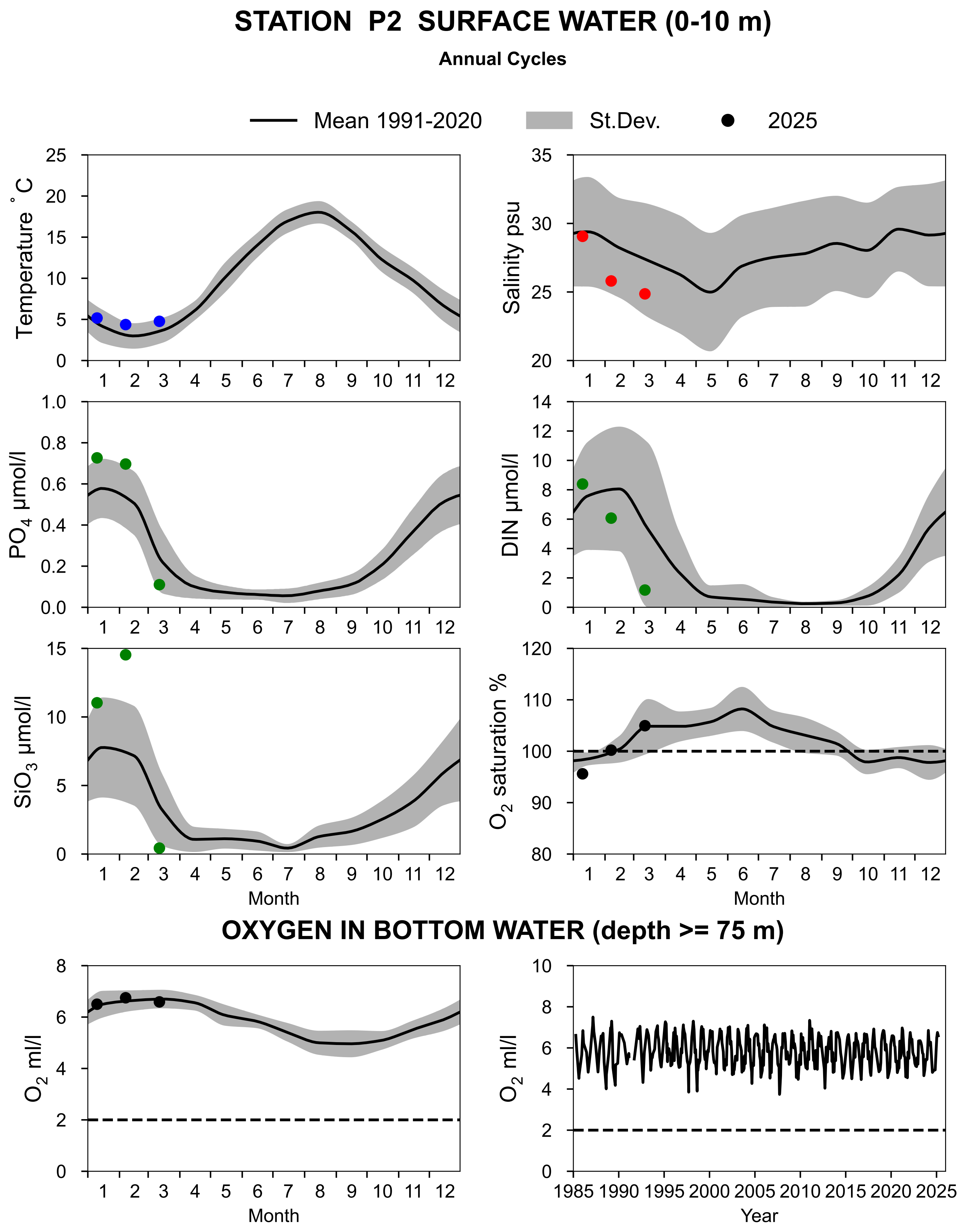


OXYGEN IN BOTTOM WATER (depth >= 74 m)

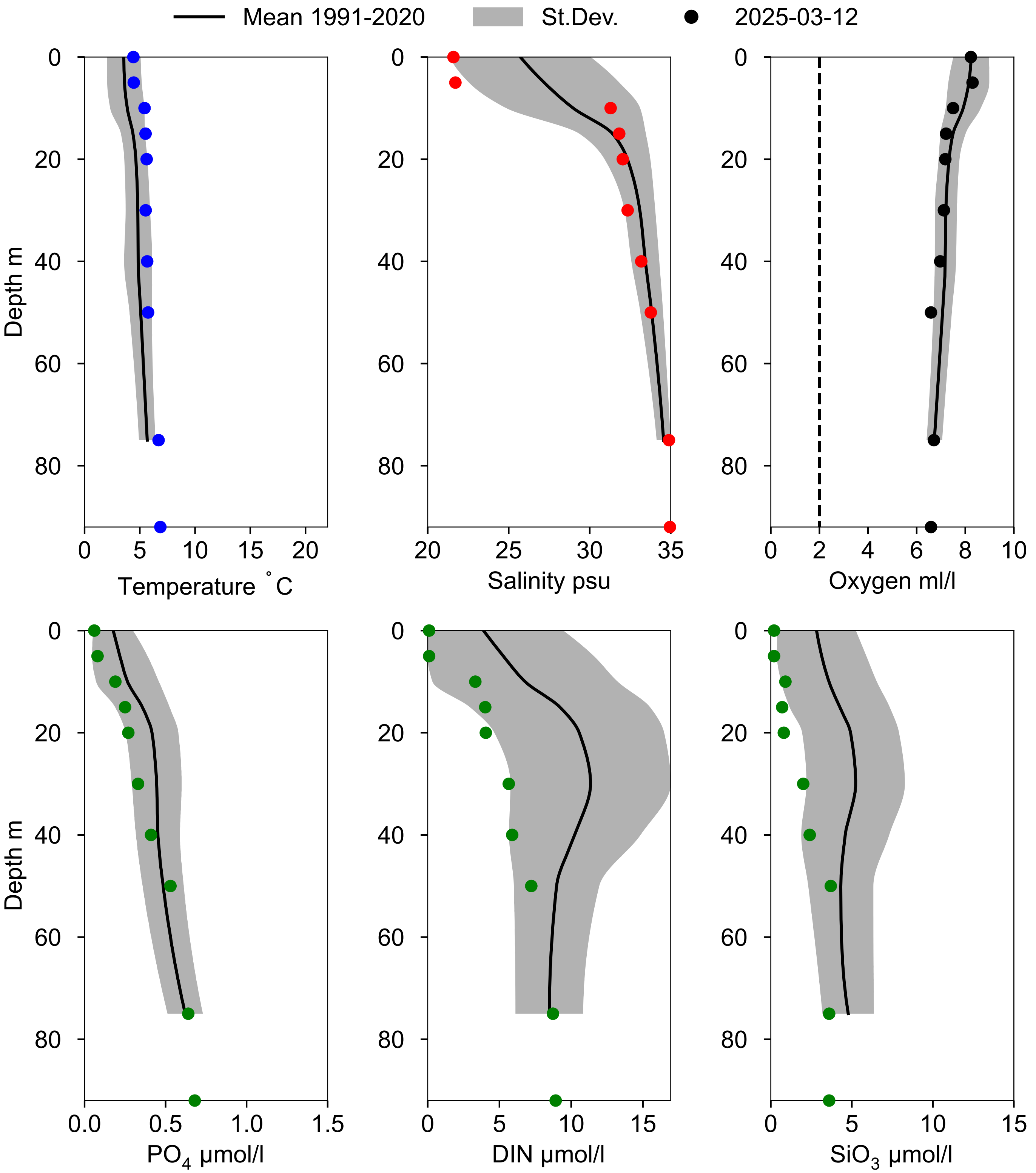




Vertical profiles FLADEN
March
Mean 1991-2020
St.Dev.
2025-03-12
Depth m
Temperature ˚C
Salinity psu
Oxygen ml/l
PO4 µmol/l
DIN µmol/l
SiO3 µmol/l

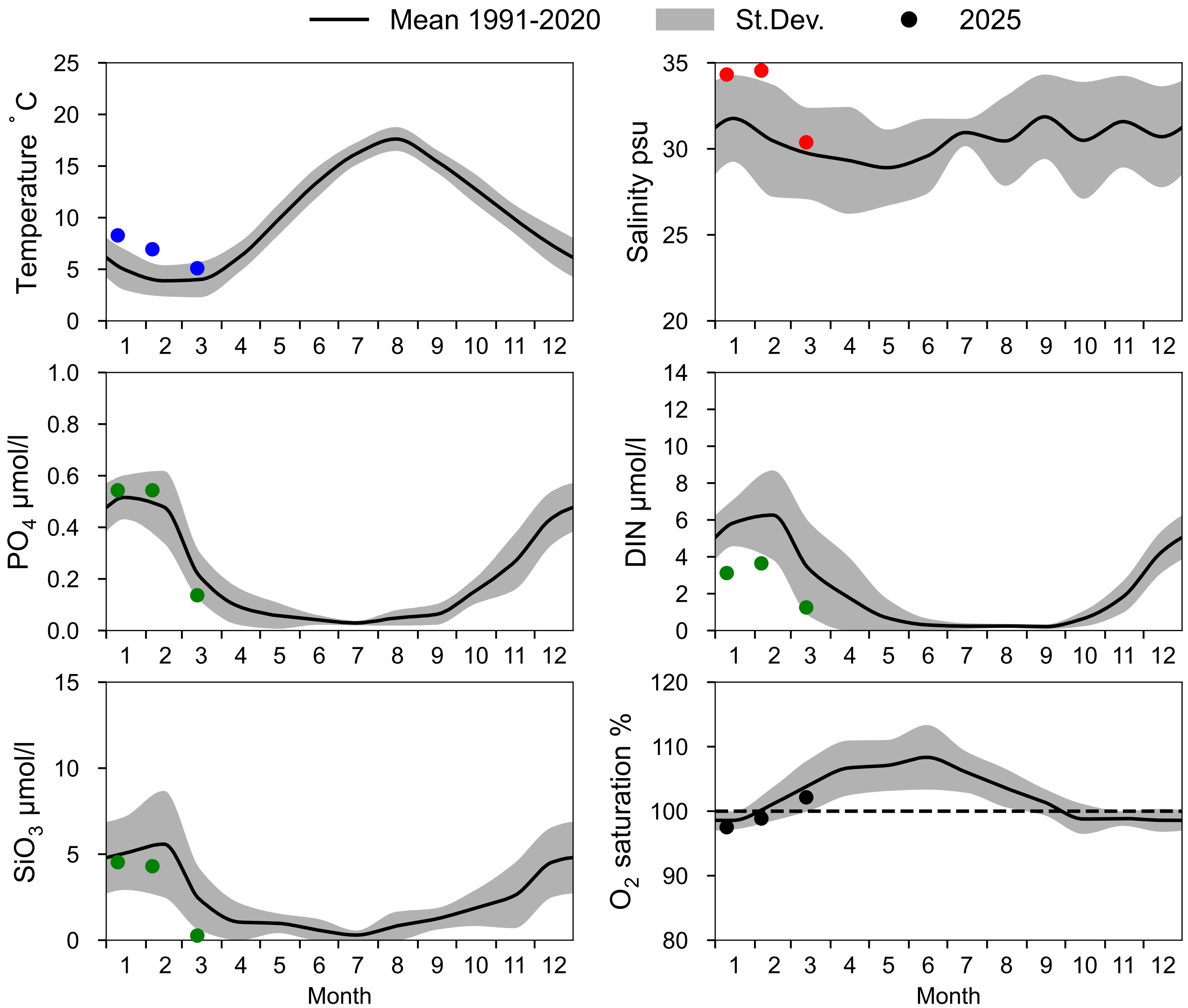

STATION P2 SURFACE WATER (0-10 m)
Annual Cycles
Mean 1991-2020
St.Dev.
2025
Temperature °C
Salinity psu
PO4 µmol/l
DIN µmol/l
SiO3 µmol/l
O2 saturation %
Month
OXYGEN IN BOTTOM WATER (depth >= 75 m)
O2 ml/l
Year

Vertical profiles P2
March

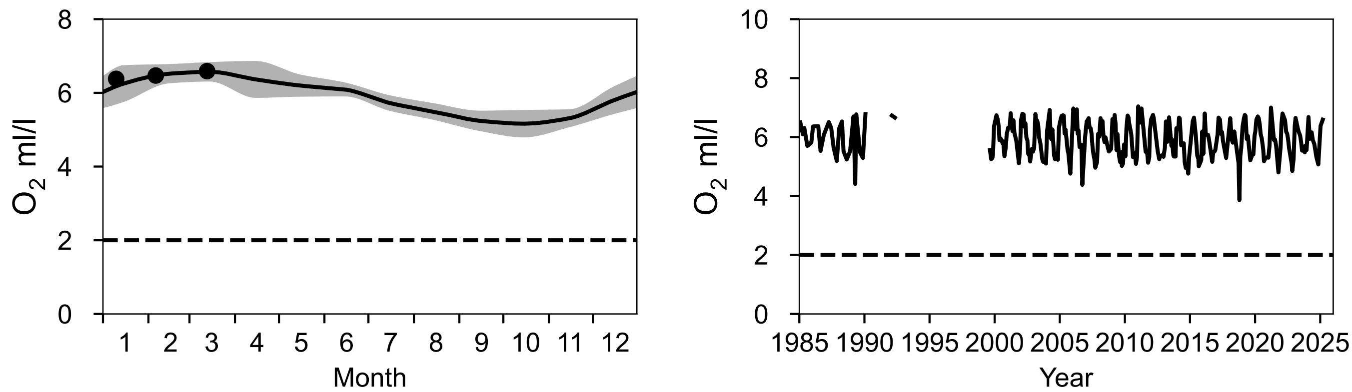


STATION Å15 SURFACE WATER (0-10 m)

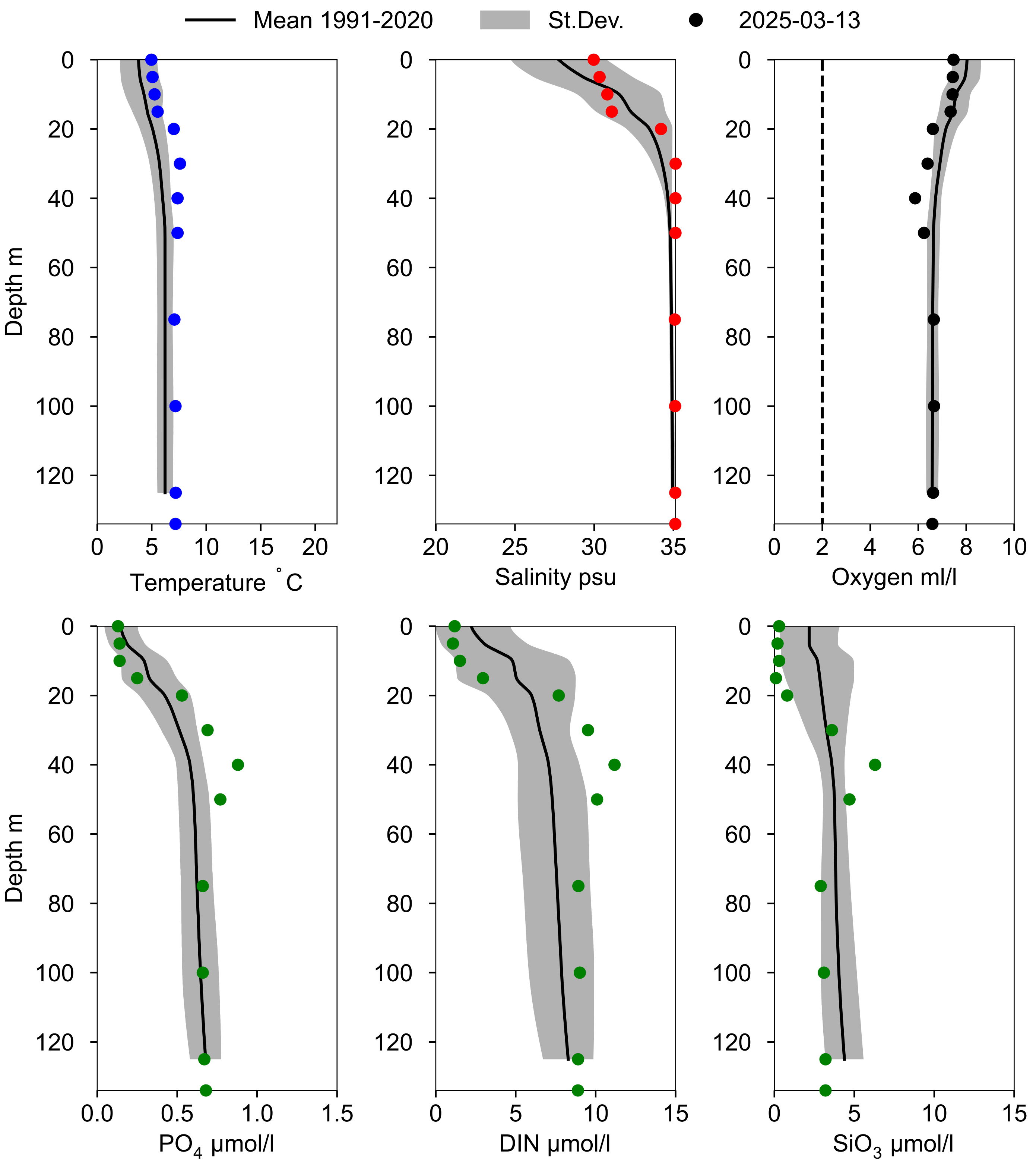
Annual Cycles



OXYGEN IN BOTTOM WATER (depth >= 125 m)

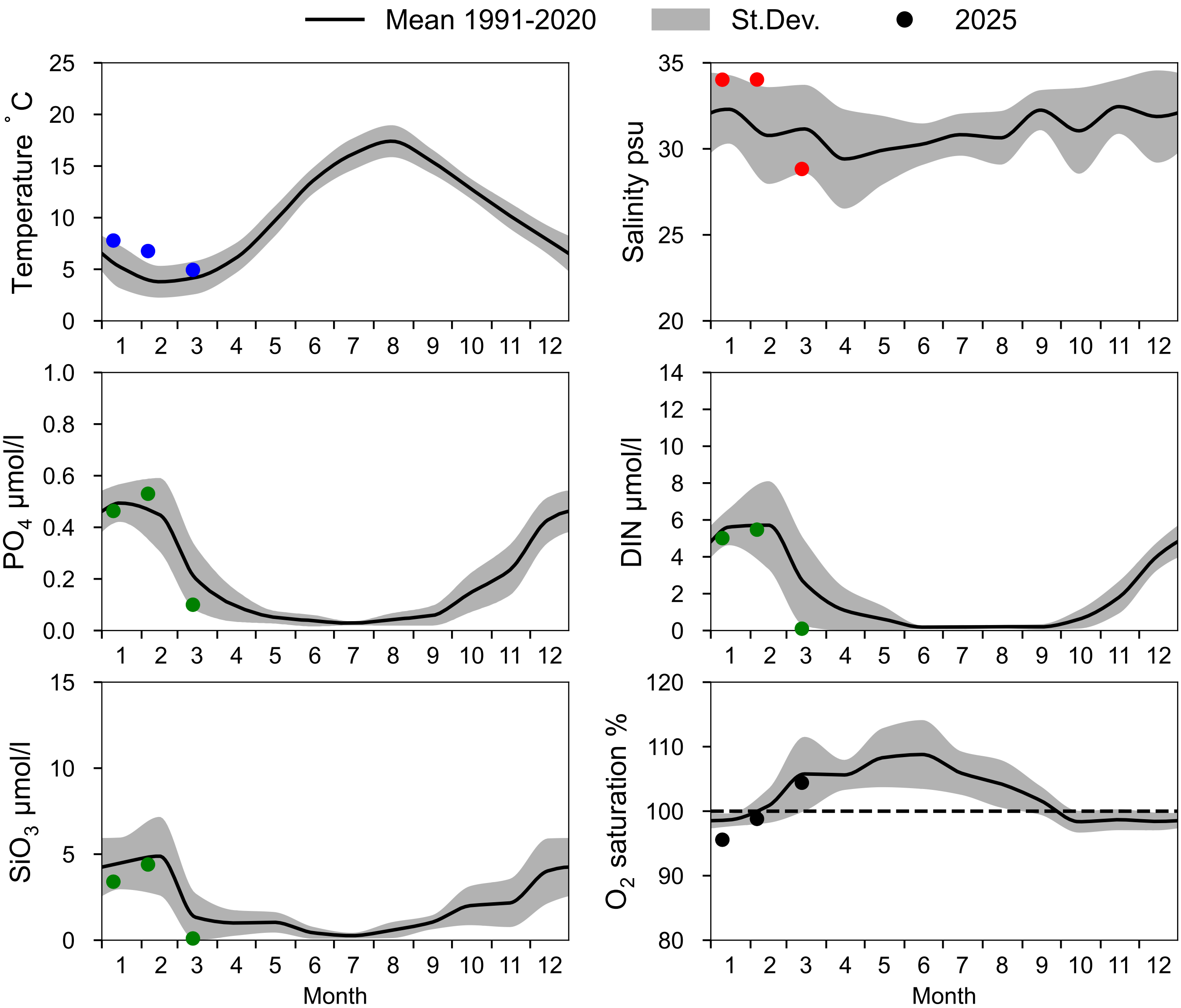


Vertical profiles Å15
March

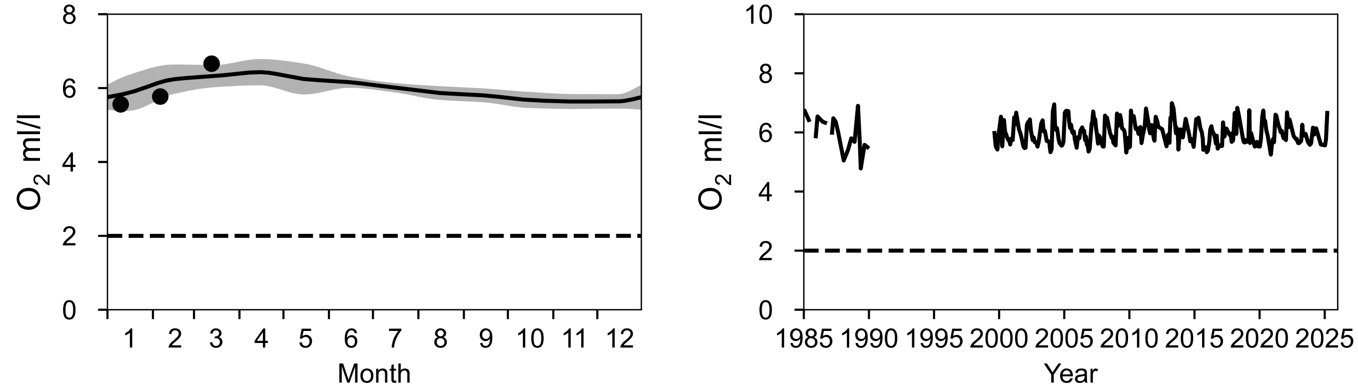


STATION Å17 SURFACE WATER (0-10 m)

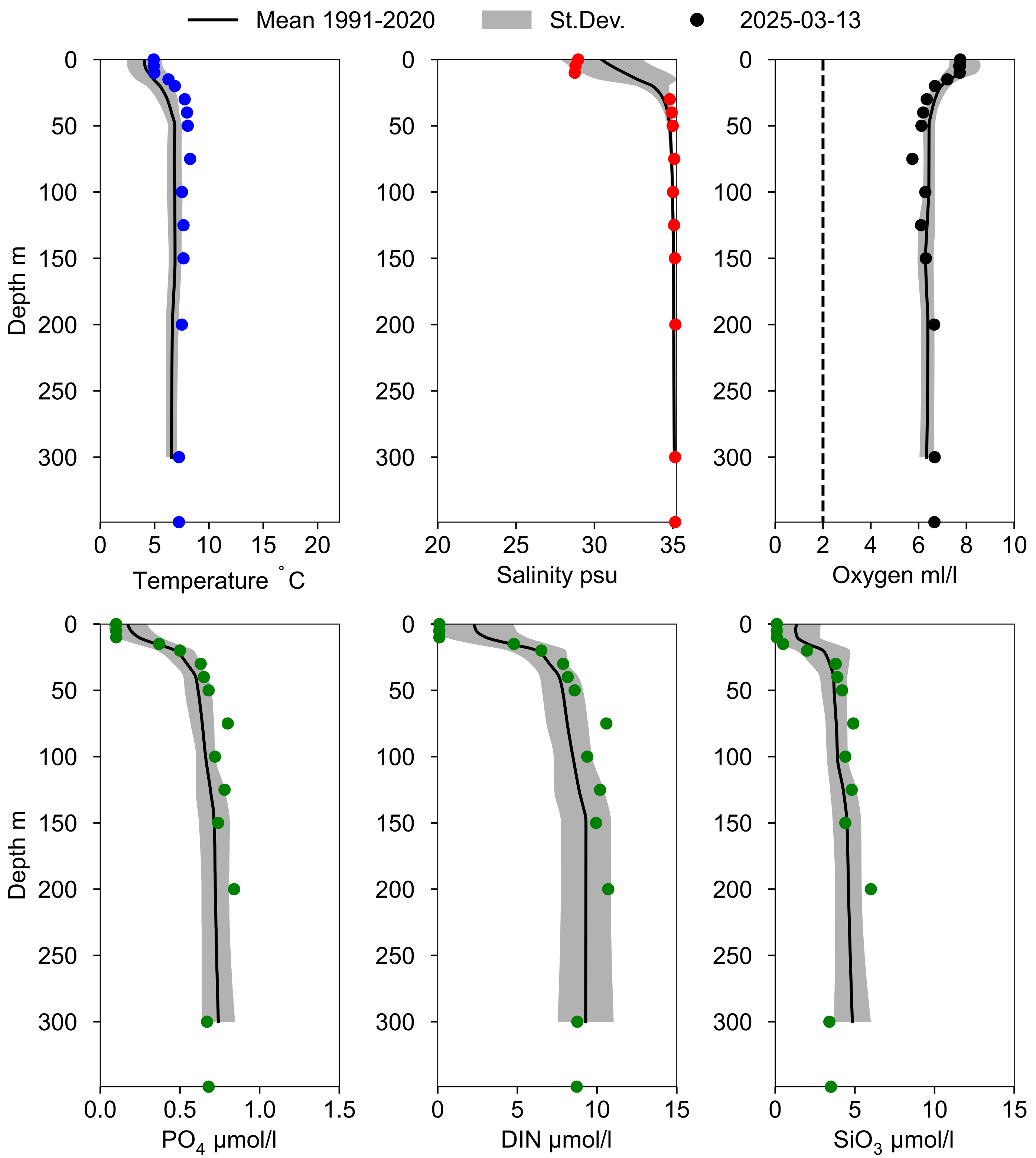
Annual Cycles



OXYGEN IN BOTTOM WATER (depth >= 300 m)

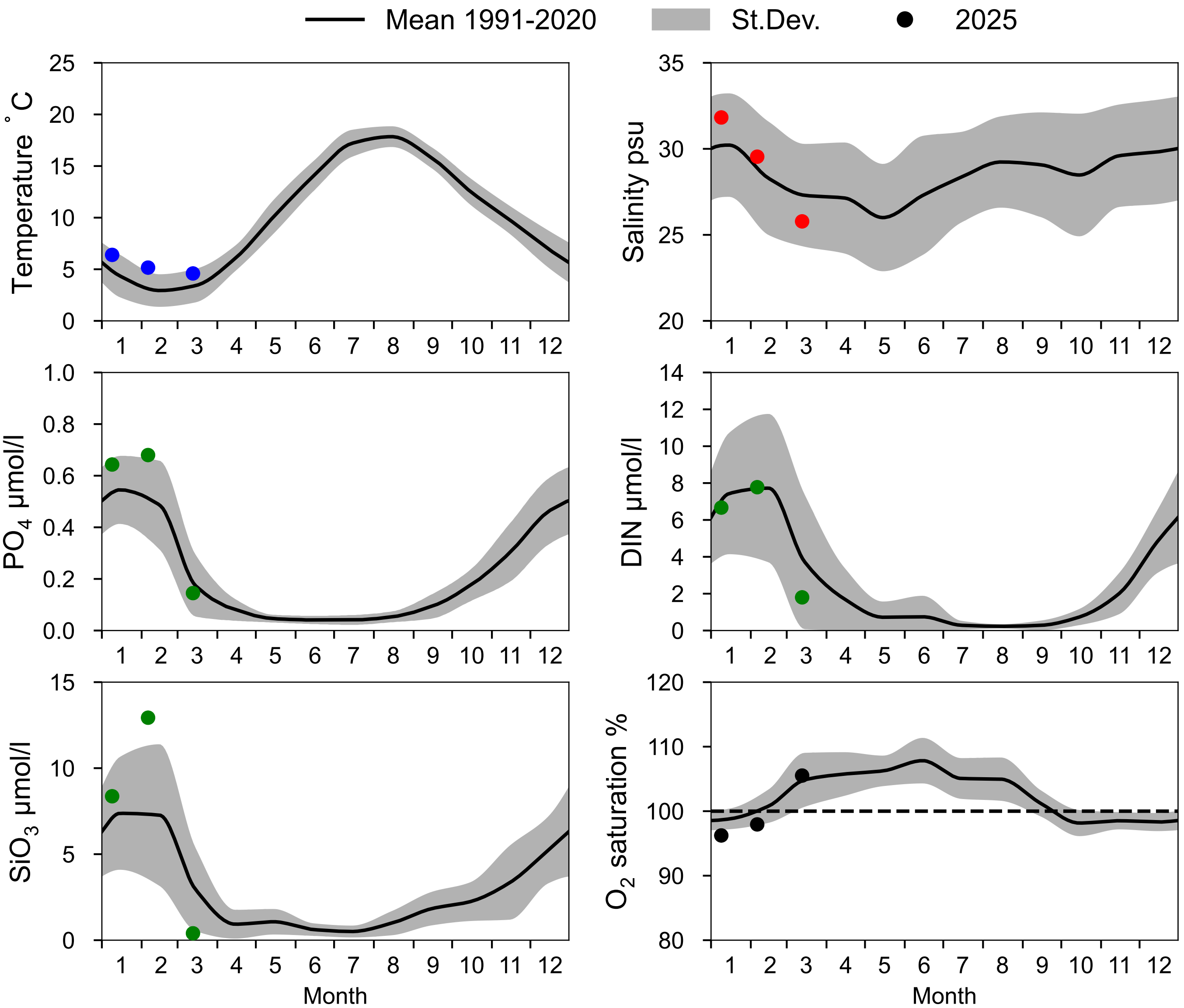


Vertical profiles Å17
March

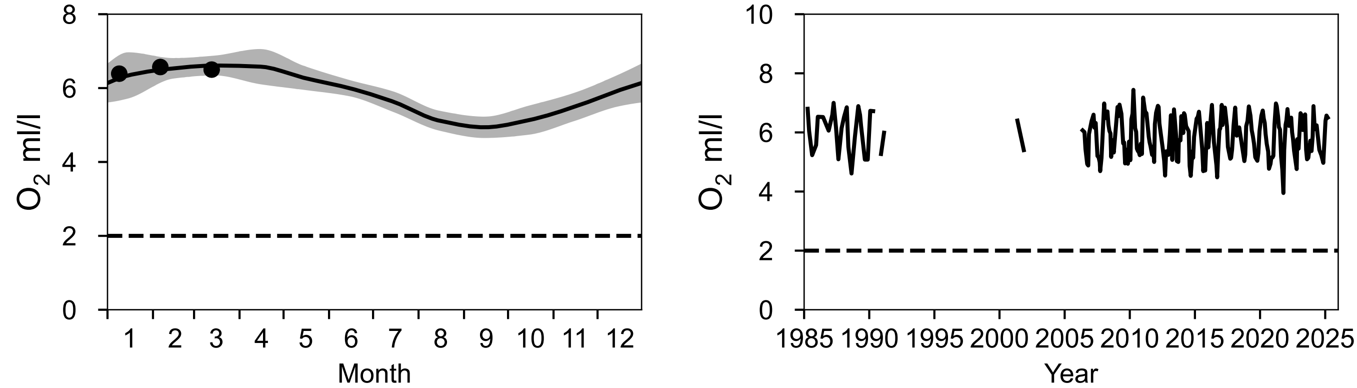


STATION Å13 SURFACE WATER (0-10 m)

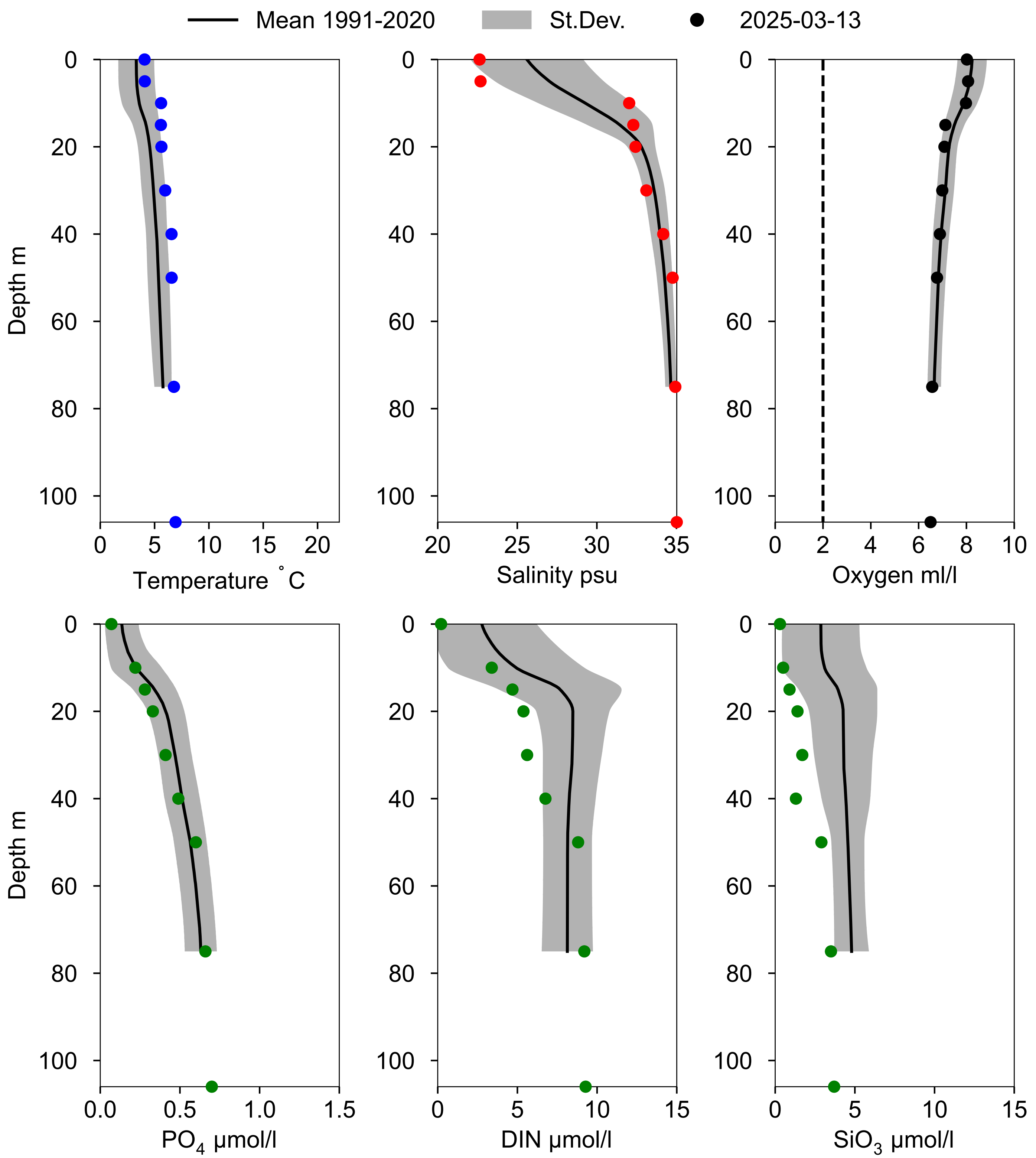
Annual Cycles



OXYGEN IN BOTTOM WATER (depth >= 82 m)

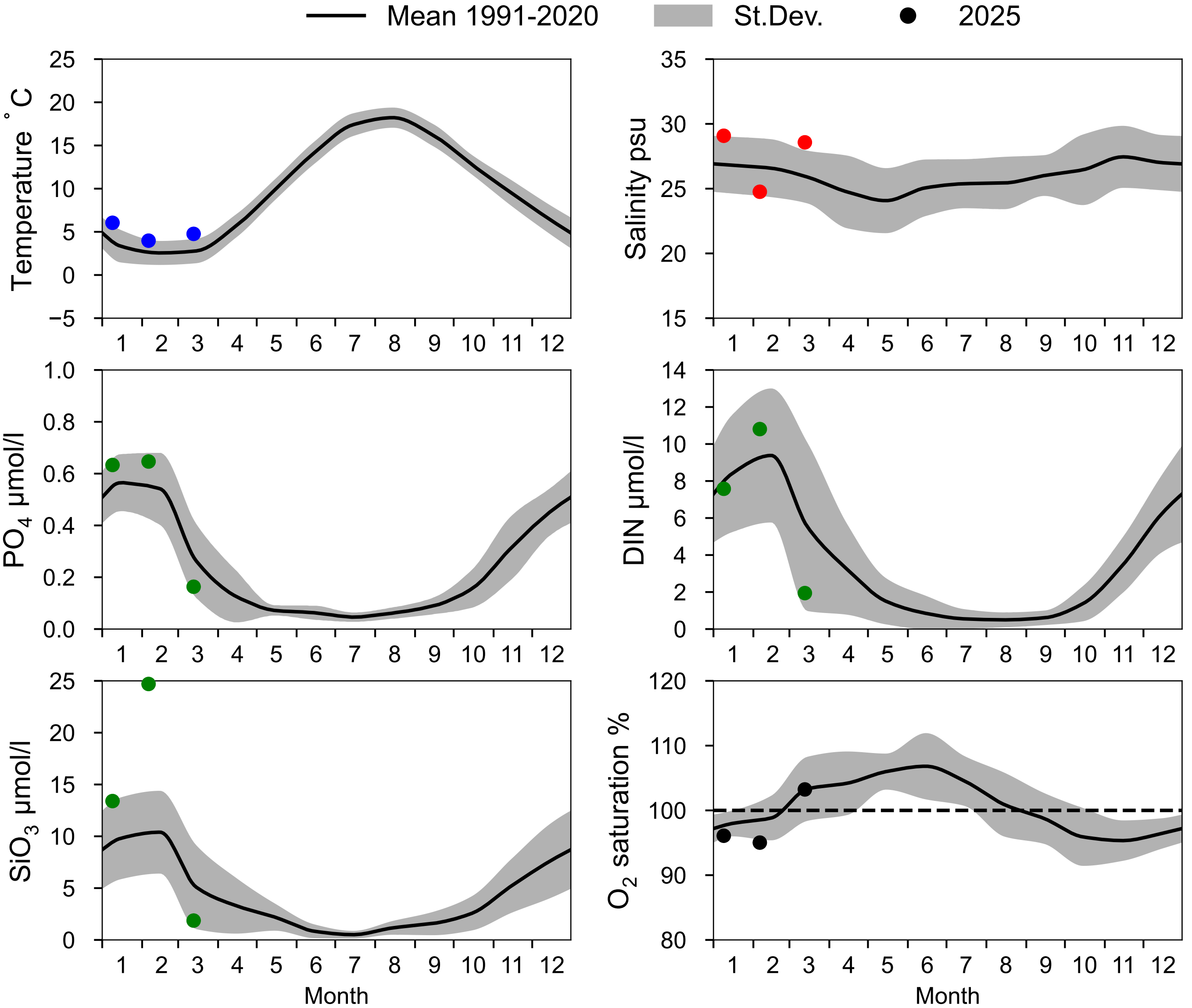


Vertical profiles Å13
March

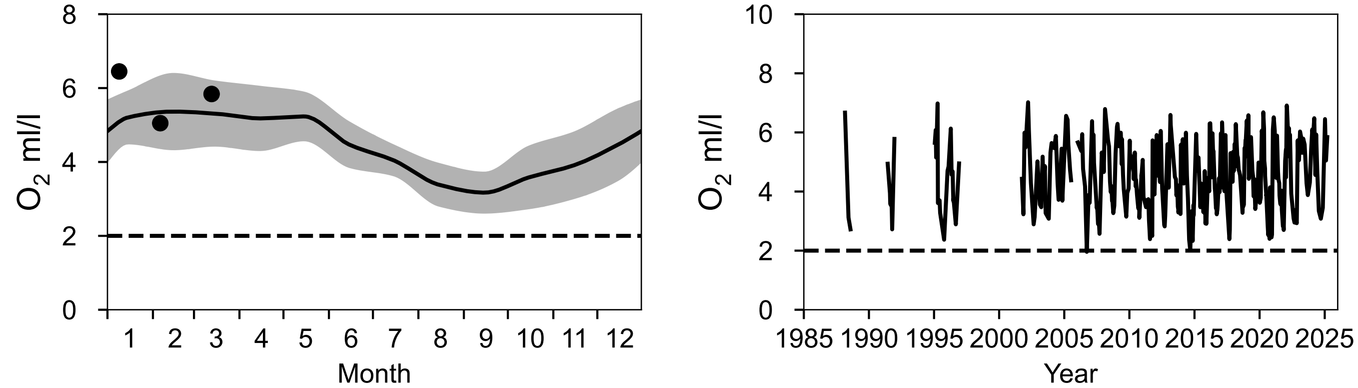


STATION SLÄGGÖ SURFACE WATER (0-10 m)

Annual Cycles



OXYGEN IN BOTTOM WATER (depth >= 64 m)



Vertical profiles SLÄGGÖ
March