

Expeditionsrapport från U/F Dana Cruise report from R/V Dana



Expeditionens varaktighet / period: 2015-08-20 - 2015-08-31
Undersökningsområde / area: Skagerrak / Kattegatt
Uppdragsgivare / principal: SLU / Swedish University of Agricultural Sciences
SMHI/ Swedish Agency for Marine and Water Management

SUMMARY

The expedition was included within SLUs International Bottom Trawl Survey and covered the Skagerrak and the Kattegat. Also during the expedition, SMHIs standard frequent stations were visited.

In Skagerrak 5 stations with complete hydrography were sampled and in Kattegat 4 stations.

Surface temperatures were typical for the season, while the surface salinity was clearly below normal.

All nutrients showed normal values in both areas.

Oxygen conditions in the bottom waters of Skagerrak were good, while in parts of the southern Kattegat some low values were measured.

PRELIMINÄRA RESULTAT

Expeditionen, som ingick i SLU:s beståndsuppskattning av bottenlevande fisk i Skagerrak och Kattegatt, startade i Hirtshals torsdagen den 20 augusti och avslutades i Lysekil måndagen den 31. Vid 5 stationer i Skagerrak, vilka ingick i SMHI:s ordinarie stationsnät, togs fullständig hydrografi. Vid 19 stationer i området gjordes CTD-mätningar i samband med trålning.

I Kattegatt togs komplett hydrografi på 4 stationer, varav 3 ingick i SMHI:s ordinarie program. Vid ytterligare 26 stationer utfördes CTD-mätningar i samband med trålning, vid 16 av dessa togs dessutom syreprov i djupvattnet.

Vindarna under expeditionen var i huvudsak svaga till måttliga, under första delen i huvudsak från nord till ost, därefter viridande till sydväst. Lufttemperaturen varierade mellan 16 och 21°C.

Skagerrak

Ytvattentemperaturerna låg mellan 16.7 och 18.9°C, lägst i väster och högst i de östra delarna närmast kusten. Ytsalthalten var mycket lägre än normalt i hela det undersökta området och varierade från 17.9 psu i de östra delarna till 33.8 psu längst västerut. Haloklinen låg på 10 till 20 meters djup, medan termoklinen, vilken var svagt utvecklad, återfanns på djup mellan 10 och 50 meter.

Samtliga närsalter uppvisade normala koncentrationer i ytvattnet, fosfathalterna låg mellan 0.04 och 0.12 µmol/l, summa nitrit + nitrat låg under detektionsgränsen (< 0.10 µmol/l) medan halterna av silikat varierade från 0.1 till 0.8 µmol/l.

Syreförhållandena i bottenvattnet var goda i hela området. Det lägsta värdet uppmättes till 4.59 ml/l.

Kattegatt

I Kattegatt låg ytvattentemperaturerna vid de besökta stationerna mellan 17.4 och 18.2°C. Även här låg ytsalthalten klart under det normala, i sydväst uppmättes 14.5 psu, i sydost 16.5 psu, medan de högsta värdena ca 19 psu återfanns längst i norr. I Kattegatt återfanns både haloklin och termoklin på djup mellan 10 och 20 meter.

Fosfathalten i ytlagret låg mellan 0.11 och 0.19 µmol/l, summa nitrit + nitrat låg under detektionsgränsen, medan silikatkoncentrationerna låg i intervallet 1.7 till 3.7 µmol/l.

De lägsta syrehalterna i bottenvattnet uppmättes i Skälderviken och Laholmsbukten, 2.65 respektive 3.52 ml/l. I öppna Kattegatt uppmättes som lägst 3.54 ml/l utanför Kullen samt 3.76 ml/l utanför Grenå.



DELTAGARE

Namn

Lars Andersson
Johan Håkansson
Daniel Bergman-Sjöstrand

Expeditionsledare

Från

SMHI
SMHI
SMHI

BILAGOR

- Tabell över stationer, antal parametrar och provtagningsdjup
- Karta över syrehalter i bottenvattnet
- Vertikalprofiler för basstationer
- Månadsmedelvärdesplottar för ytvatten

Date: 2015-09-24
Time: 11:14

Ser no	Stat code	P r o j	Station-----	Lat-----	Lon-----	Date yyyymmdd	Time hhmm utc	Bottom depth m	Secchi depth m	Wind di ve	Air temp C	Air pres hPa	WCSI elec t aoe hd	C PPCPZT Cilyooa motPBw PrP l	No de	T e m l p i n	S h a h y g	O x 2 S 4	P o o t 2	H o o 3 4	P t 2 3 4	N o o 3 4	N t 2 3 4	N t 2 3 4	A s h o l i k o m a 3 u n	S h o l i k o m a 3 u n	L p o o n c c	P t 0 0 C m	T o o C m				
0801	SKSX00IBT		19WNW LÖKKEN	N5730.51	E0903.06	20150821	0409	26		16 8	16.9	1026	0030 x	-----B	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	x		
0802	SKSX00IBT		20W LÖKKEN	N5723.10	E0915.91	20150821	0810	21		16 7	17.7	1027	0030 x	-----B	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	x		
0803	SKSX00IBT		10N HANSTHOLM	N5718.87	E0831.36	20150821	1107	30		14 4	19.2	1026	0030 x	-----B	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	x		
0804	SKSX00IBT		16N HANSTHOLM	N5726.39	E0835.78	20150821	1539	43		20 2	19.9	1025	1120 x	-----B	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	x		
0805	SKSX00IBT		26NNE HANSTHOLM	N5730.66	E0851.54	20150821	1626	41		12 6	19.6	1025	0030 x	-----B	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	x		
0806	SKSX00IBT		4S REVET	N5735.37	E0900.24	20150822	0448	43		15 5	17.4	1025	1320 x	-----B	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	x		
0807	SKSX00IBT		9N REVET	N5754.00	E0921.14	20150822	0930	173		13 4	18.6	1026	1120 x	-----B	13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	x		
0808	SKSX00IBT		12N REVET	N5756.32	E0923.86	20150822	1011	210		11 4	18.0	1026	1120 x	-----B	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	x		
0809	SKSX00IBT		11N HIRTSHALS	N5745.88	E0948.92	20150822	1447	39		12 7	19.8	1025	0030 x	-----B	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	x		
0810	SKSX00IBT		27N HIRTSHALS	N5802.89	E0951.51	20150822	1732	178		12 3	19.0	1024	0020 x	-----B	13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	x		
0811	SKSX00EXT		29.5N HIRTSHALS	N5803.99	E0950.76	20150822	1835	220	8	10 3	18.5	1025	1220 x	-X----	10	-	x	-	x	-	x	x	x	x	x	-	x	-	-	-	-	x	
0812	SKEX00IBT		SKAGBANKEN NORD	N5751.84	E1017.11	20150823	0446	91		11 5	17.5	1023	0020 x	-----B	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	x		
0813	SKEX00IBT		16N SKAGEN VÄST	N5803.93	E1031.87	20150823	0850	156		12 6	17.8	1023	0030 x	-----B	12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	x	
0814	SKEX00IBT		2E BRATTEN	N5824.29	E1032.88	20150823	1205	275		99 2	18.6	1022	0030 x	-----B	14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	x	
0815	SKEX00IBT		2SSE PERSGRUNDEN	N5839.66	E1050.12	20150823	1524	84		09 6	21.8	1020	1130 x	-----B	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	x	
0816	SKEX14BAS		A13	N5820.2	E1102	20150823	1740	93		07 8	21.5	1019	1130 x	--X----	10	-	x	-	x	-	x	x	x	x	x	-	x	-	-	-	-	-	x
0817	SKEX16BAS	</																															

Date: 2015-09-24
Time: 11:14

Ser no	Stat code	P r o j	Station-----	Lat-----	Lon-----	Date yyyymmdd	Time hhmm utc	Bottom depth m	Secchi depth m	Wind di ve	Air temp C	Air pres hPa	WCSI elec tuoae hd	C PPCPZZT Hrhhoo Cilyooa motPBw PrP l	No de	T eal pli g	S ex yS	O x2 4 t	H P tN	N o 0 3	N h 4 t	N o 0 3	N a 3 t	T ho l i k o	A sh u o m g	L ui n c	P 0 O C	T 0 C m			
0828	FIBG27BAS		SLÄGGÖ	N5815.5	E1126.0	20150825	1540	50	7	20 9	18.9	1005	2720 x	--xx---	8	-	x	-	x	-	x	x	x	x	x	-	x	-	-	-	x
0829	SKEX00IBT		8NE SKAGEN	N5748.99	E1057.42	20150826	0441	56		21 11	16.3	1009	2730 x	-----B	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	x	
0830	KANX00IBT		HERTAS FLAK	N5740.67	E1057.43	20150826	0713	31		20 10	17.0	1010	2820 x	-----B	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	x	
0831	KANX00IBT		7ENE HIRSHOLM	N5732.62	E1049.42	20150826	1023	30		20 10	16.6	1009	2830 x	-----B	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	x	
0832	KANX00IBT		GROVES FLAK	N5709.51	E1127.31	20150826	1500	67		20 10	18.4	1011	2730 x	-----B	11	-	x	-	x	-	-	-	-	-	-	-	-	-	-	x	
0833	KANX25BAS		FLADEN	N5711.5	E1140	20150826	1610	70		22 14	18.4	1011	2830 x	--x----	11	-	x	-	x	x	x	x	x	x	-	x	-	-	-	x	
0834	KAEX29BAS		ANHOLT E	N5640.0	E1207.0	20150826	2010	54		17 11	19.3	1011	9990 x	--XX---	10	-	x	-	x	-	x	x	x	x	x	-	x	-	-	-	x
0835	KAEX00IBT		7S ANHOLTS KNOB	N5637.49	E1149.93	20150827	0442	34		16 8	18.8	1006	6830 x	-----B	8	-	x	-	x	-	-	-	-	-	-	-	-	-	-	x	
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0839	KAES82IBT		S2 SKÅLDERVIKEN	N5621.53	E1233.12	20150828	0405	24		29 10	16.3	1009	2820 x	-----B	6	-	x	-	x	-	-	-	-	-	-	-	-	-	-	x	
0840	KAEX00IBT		7W KULLEN	N5622.09	E1215.59	20150828	0626	32		28 9	16.5	1009	1230 x	-----B	8	-	x	-	x	-	-	-	-	-	-	-	-	-	-	x	
0841	KAELO0IBT		YTTRE LAHOLMSBUKTEN	N5632.74	E1233.51	20150828	0911	23		28 11	16.7	1012	1330 x	-----B	6	-	x	-	x	-	-	-	-	-	-	-	-	-	-	x	
0842	KANX00IBT		SW MORUPS BANK	N5648.96	E1212.95	20150828	1225	39		26 8	18.1	1013	1330 x	-----B	8	-	x	-	x	-	-	-	-	-	-	-	-	-	-	x	
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0844	KANX50BAS		N14 FALKENBERG	N5656.40	E1212.70	20150828	1735	31	6	22 9	17.7	1014	1330 x	--xx---	7	-	x	-	x	-	x	x	x	x							

Bottom water oxygen concentration (ml/l)

Country: Denmark

Ship : Dana

Date : 20150821-20150831

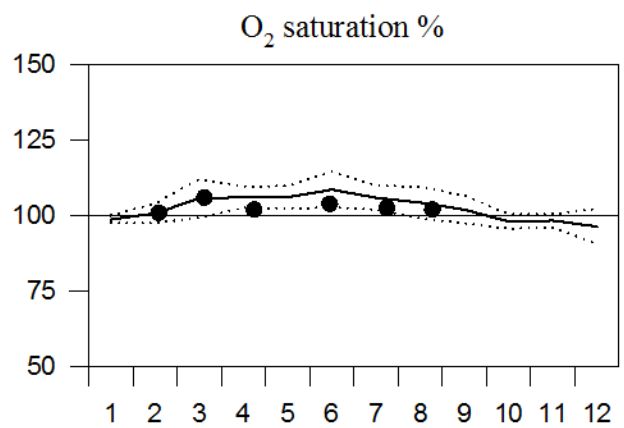
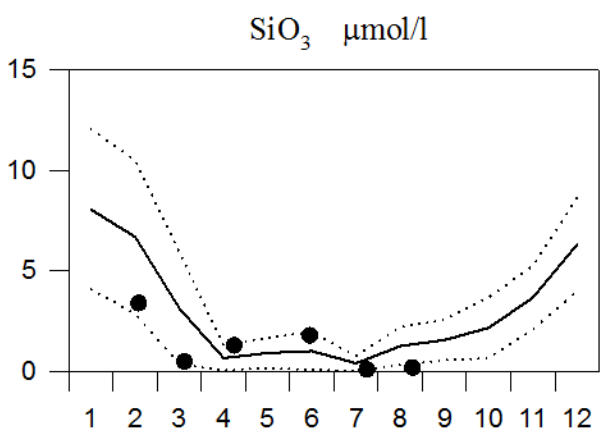
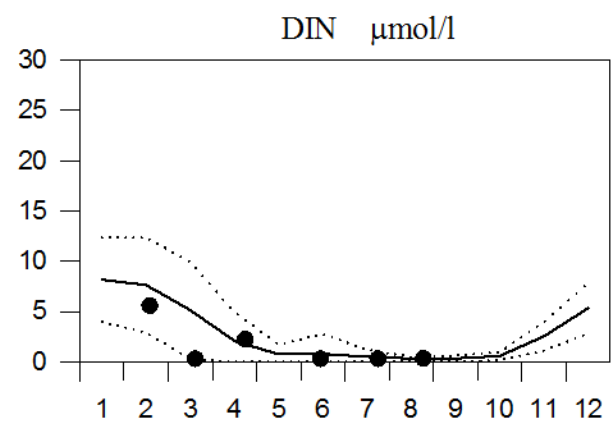
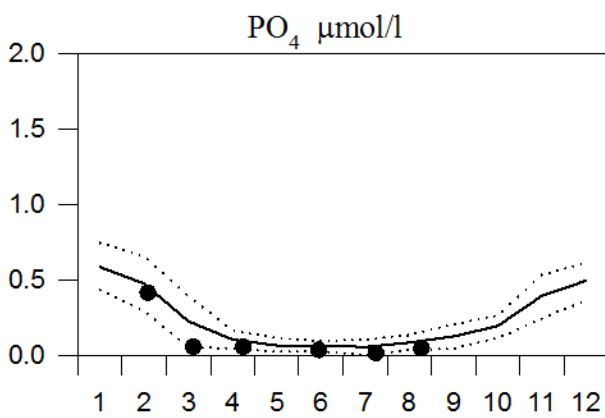
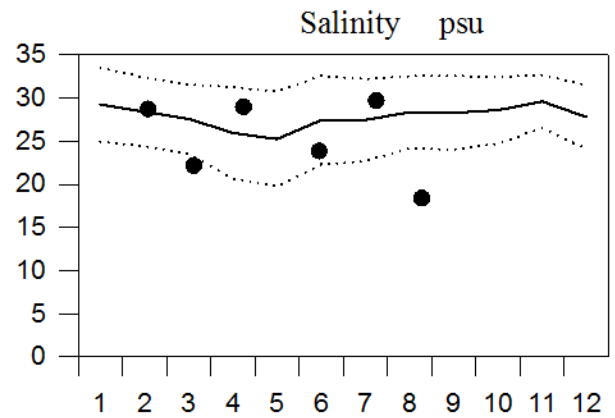
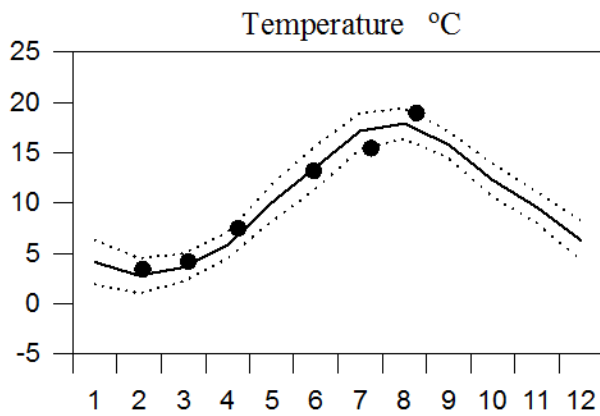
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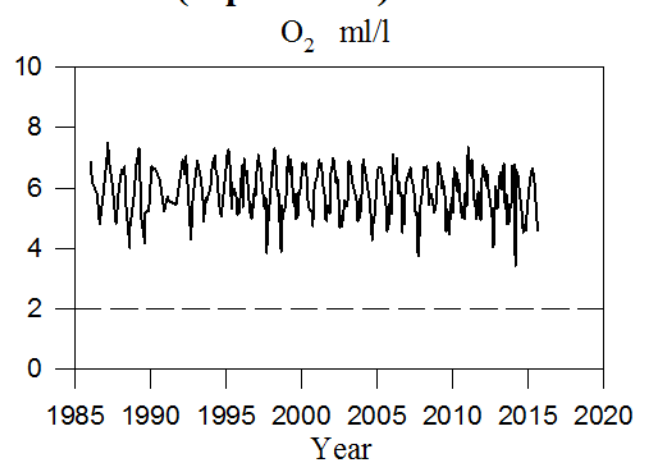
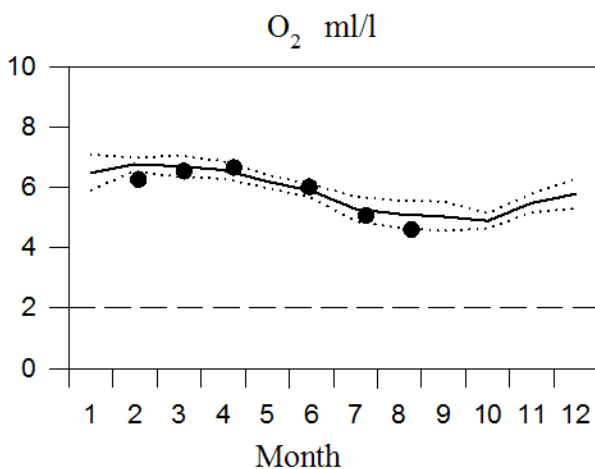
STATION P2 SURFACE WATER

Annual Cycles

— Mean 1996-2010 St.Dev. ● 2015

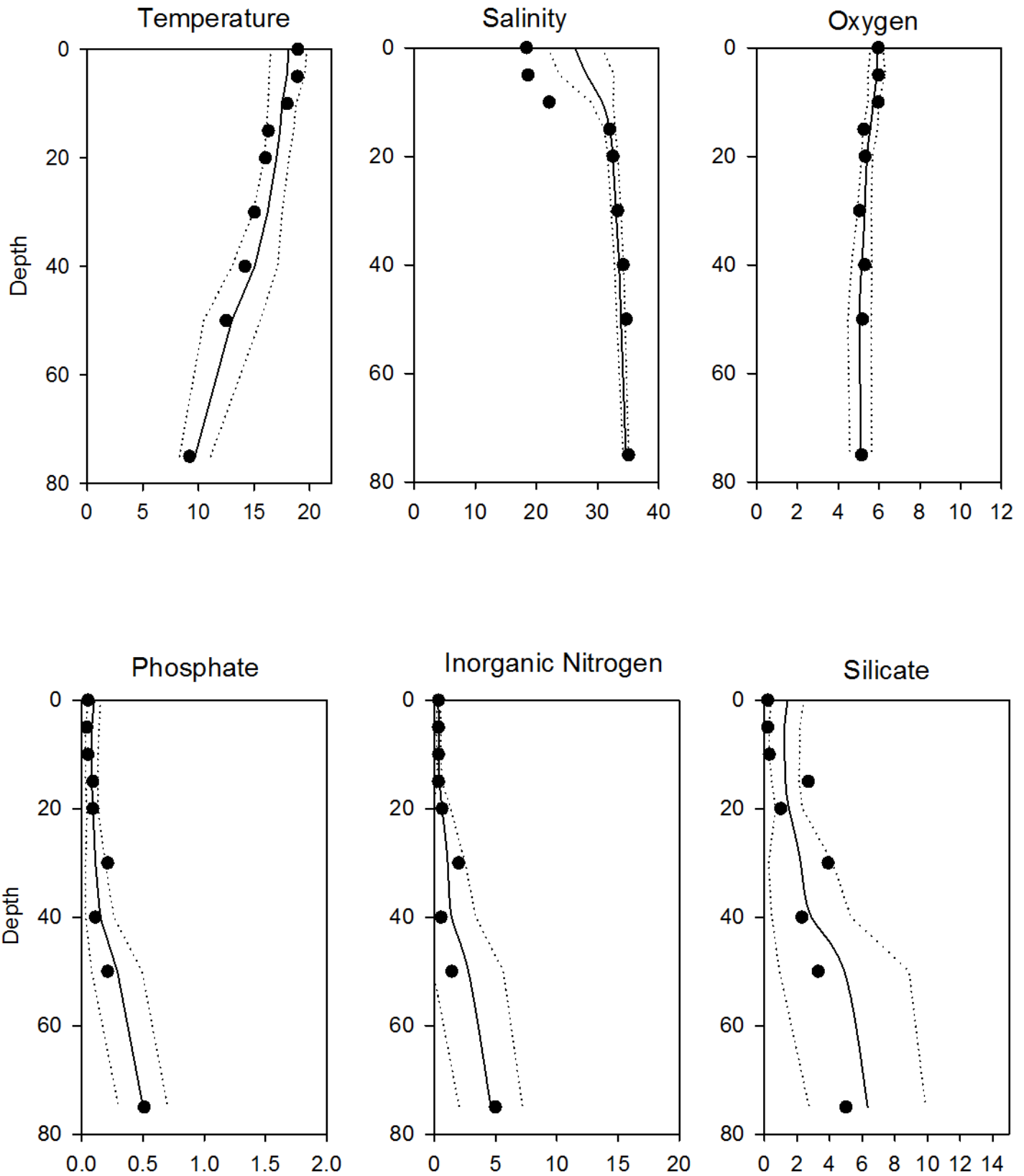


OXYGEN IN BOTTOM WATER (depth >75m)



Vertical profiles P2 August

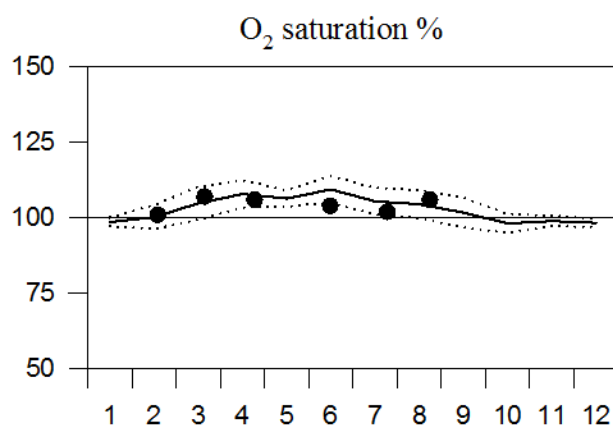
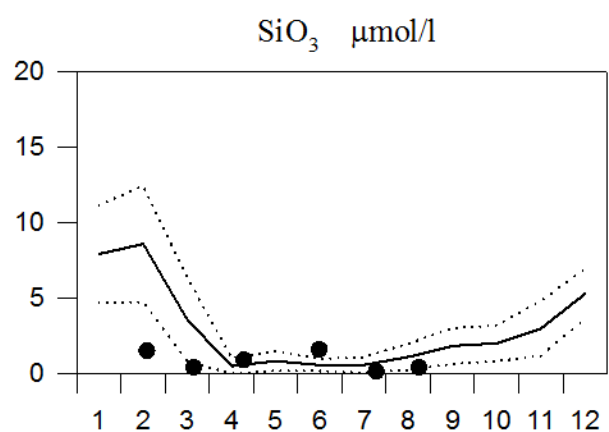
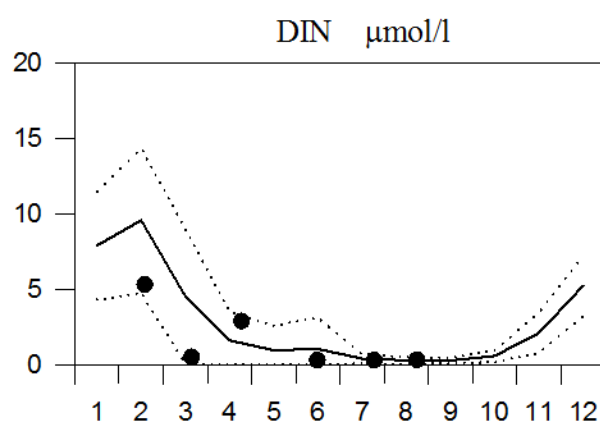
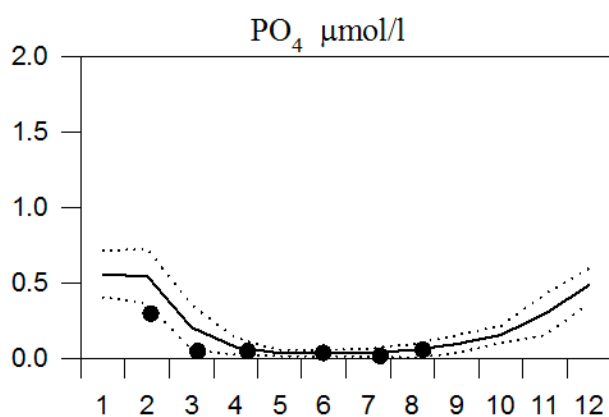
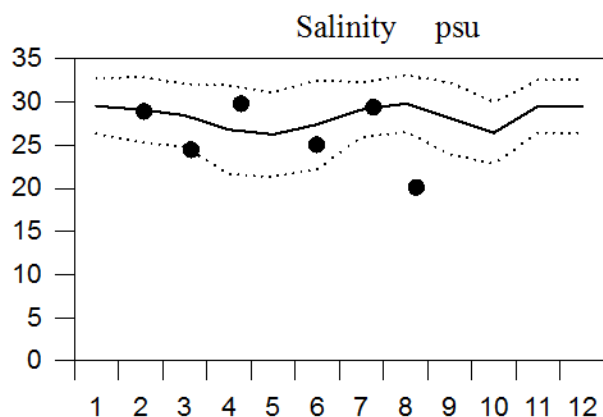
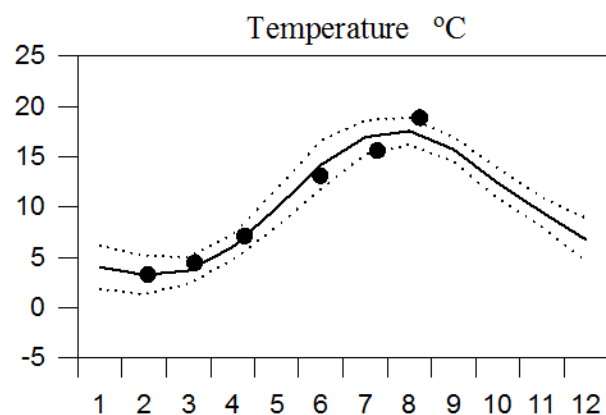
— Mean 1996-2010 St.Dev. ● 2015



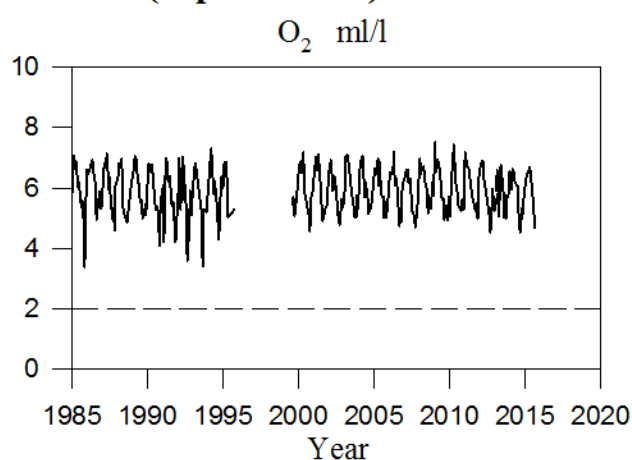
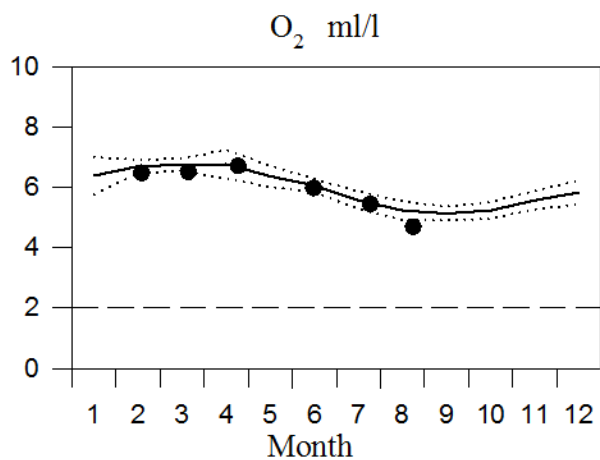
STATION Å13 SURFACE WATER

Annual Cycles

— Mean 1996-2010 St.Dev. ● 2015

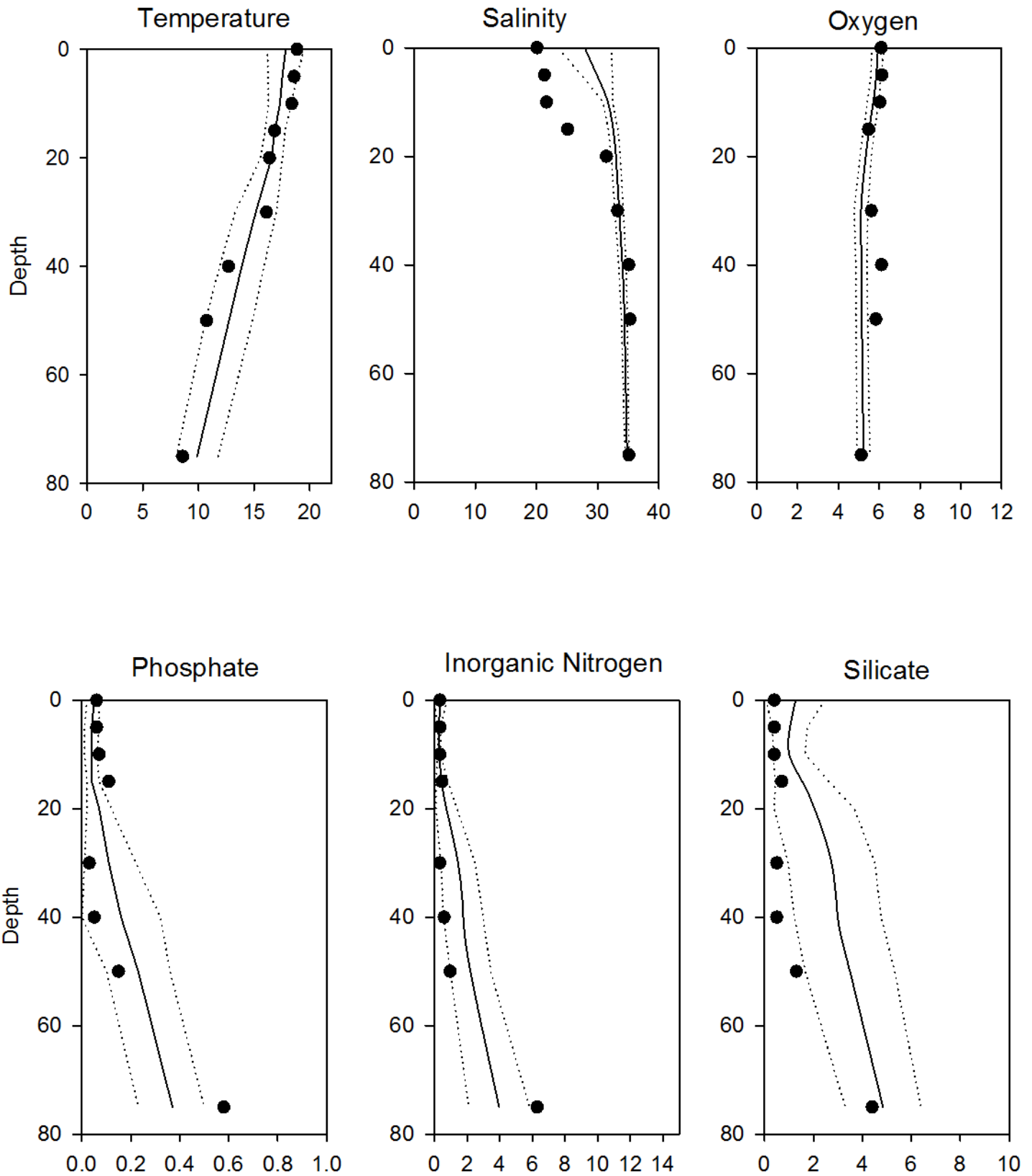


OXYGEN IN BOTTOM WATER (depth >=75m)



Vertical profiles Å13 August

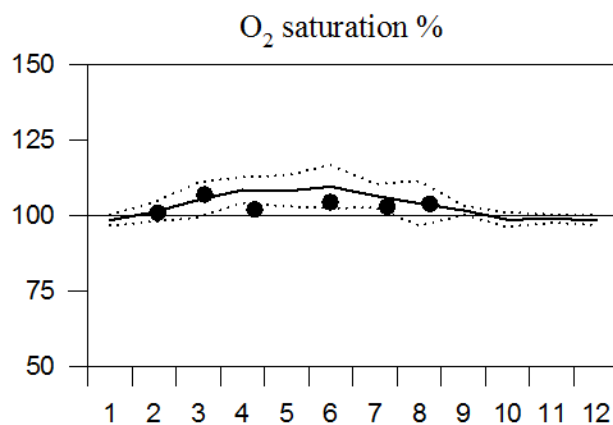
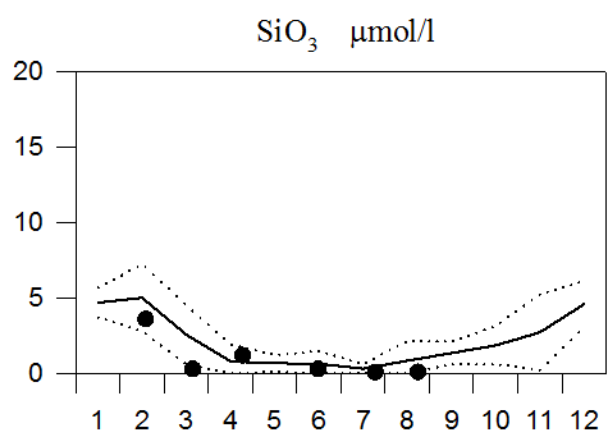
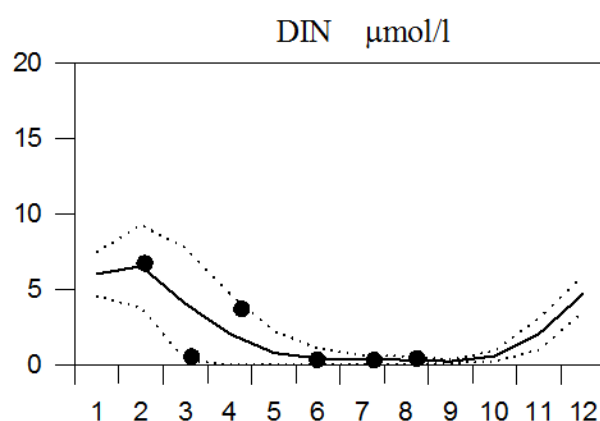
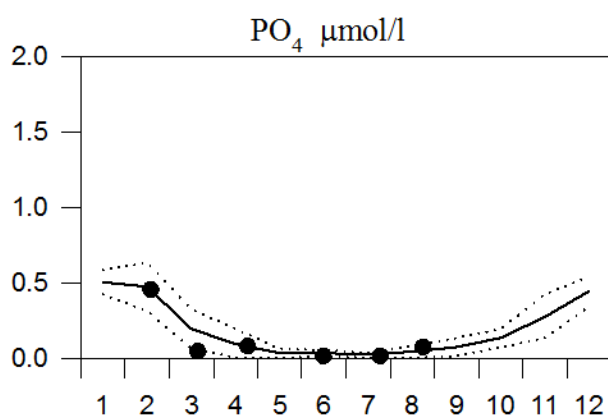
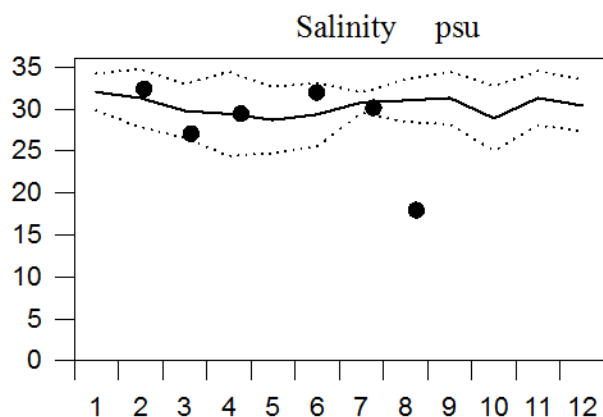
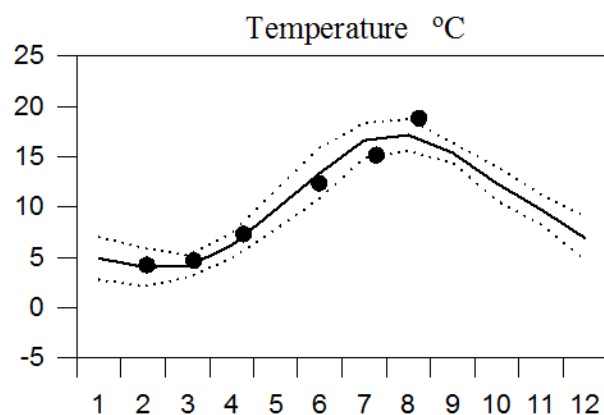
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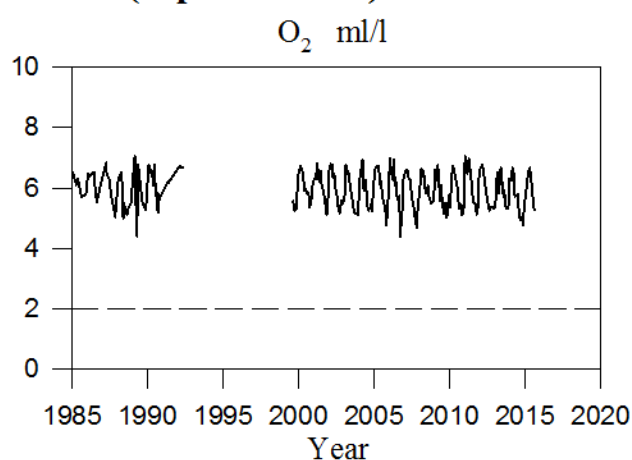
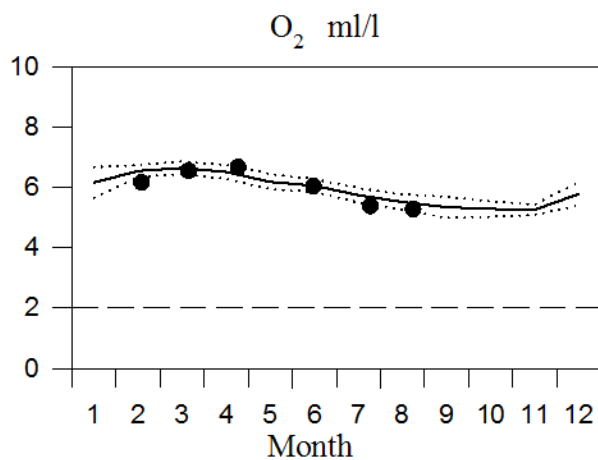
STATION Å15 SURFACE WATER

Annual Cycles

— Mean 1996-2010 St.Dev. ● 2015

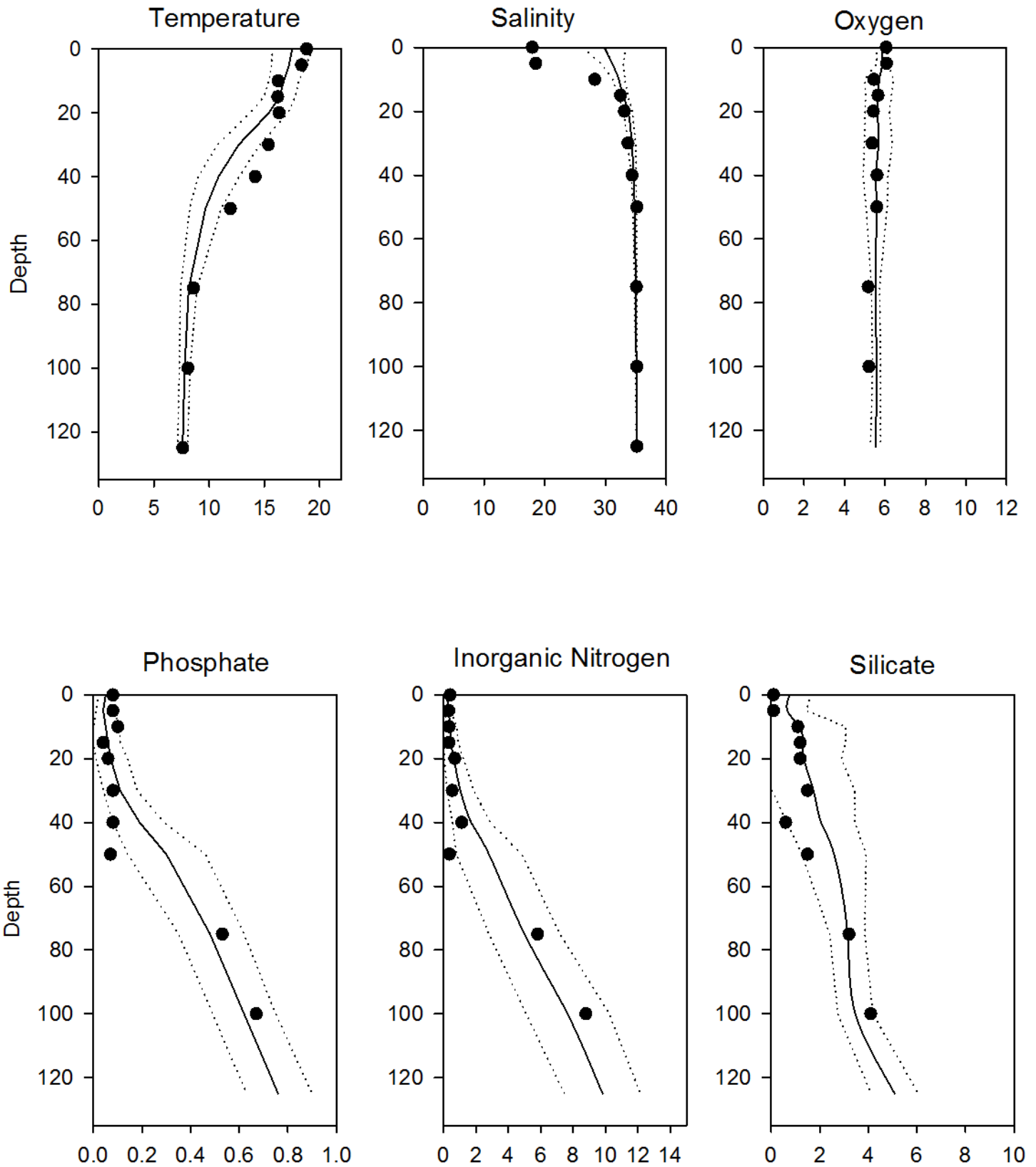


OXYGEN IN BOTTOM WATER (depth >=125m)



Vertical profiles Å15 August

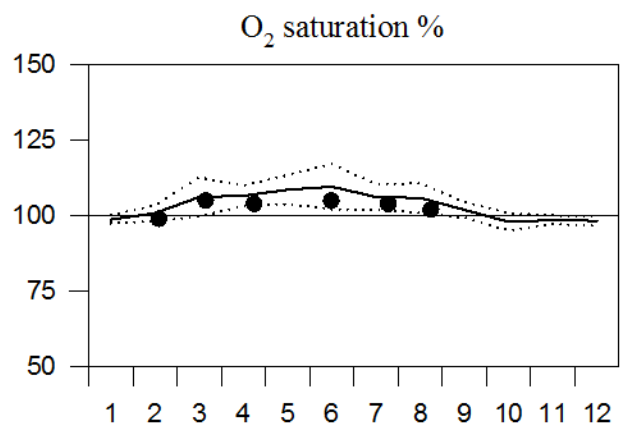
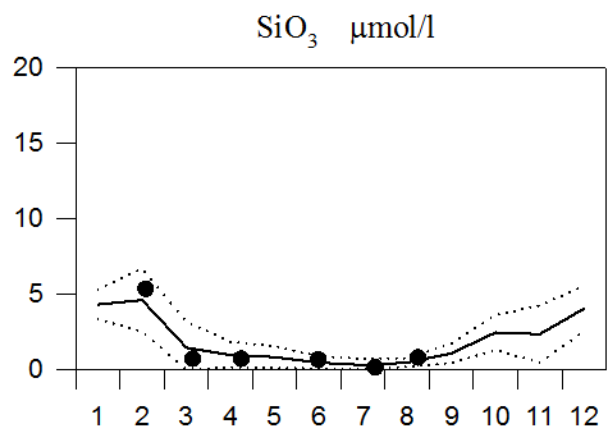
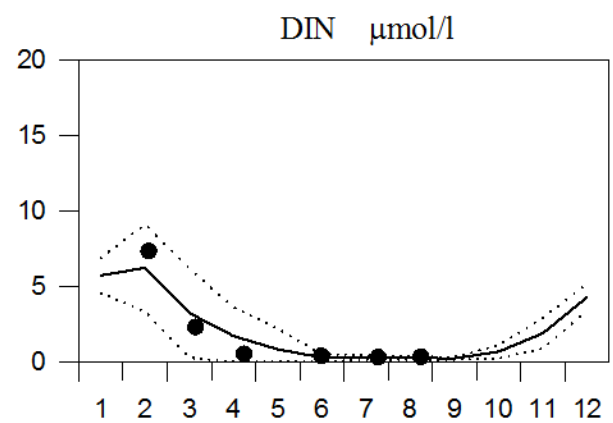
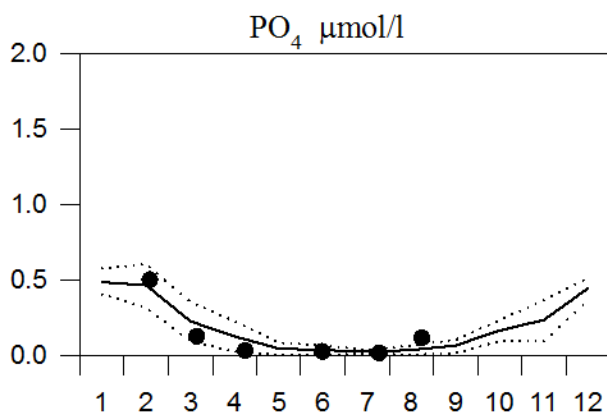
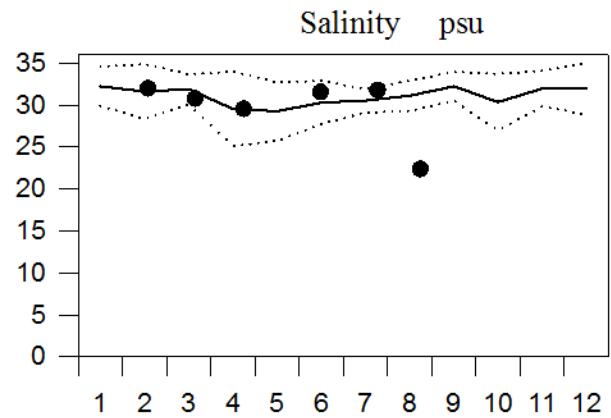
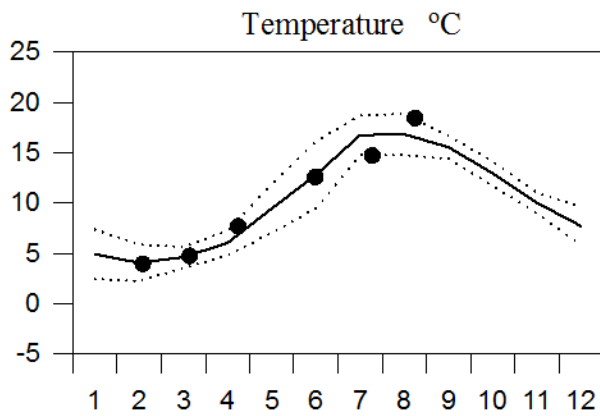
— Mean 1996-2010 St.Dev. ● 2015



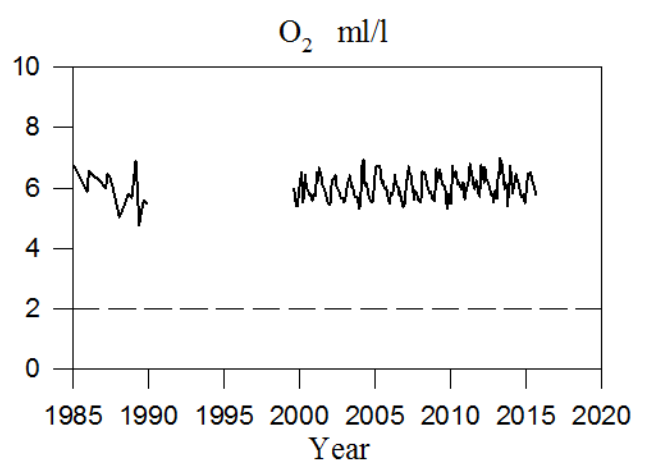
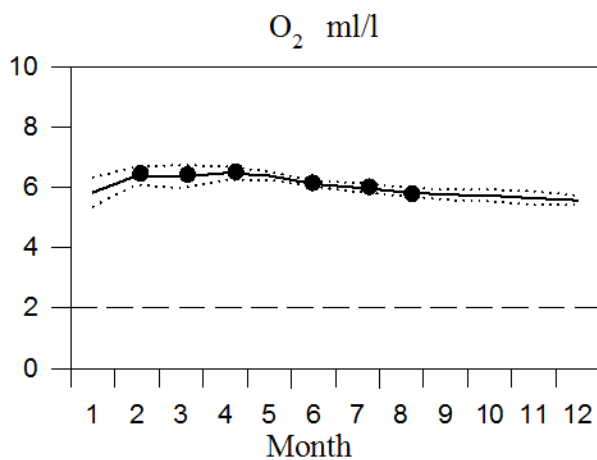
STATION Å17 SURFACE WATER

Annual Cycles

— Mean 1996-2010 St.Dev. ● 2015

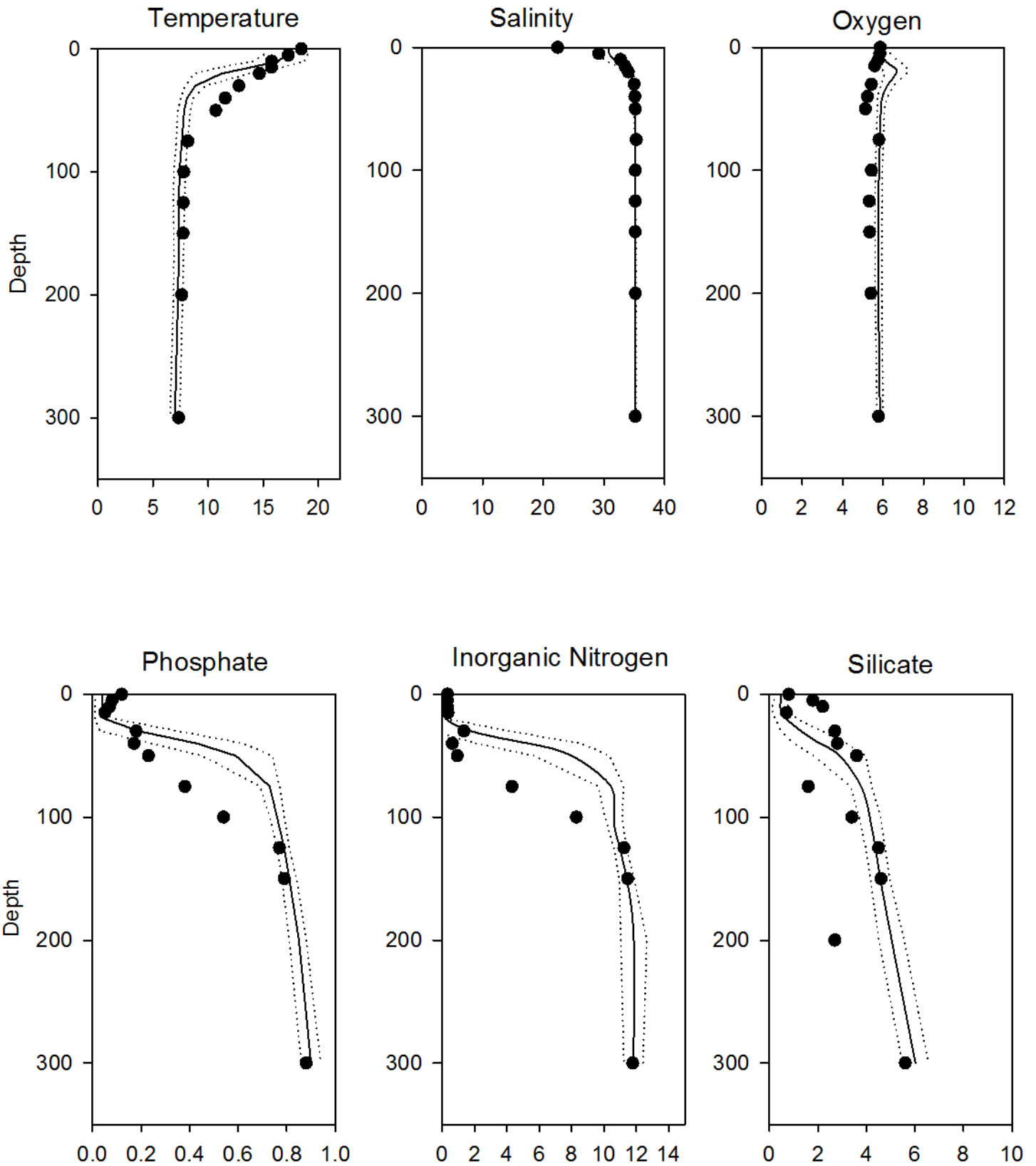


OXYGEN IN BOTTOM WATER (depth = 300m)



Vertical profiles Å17 August

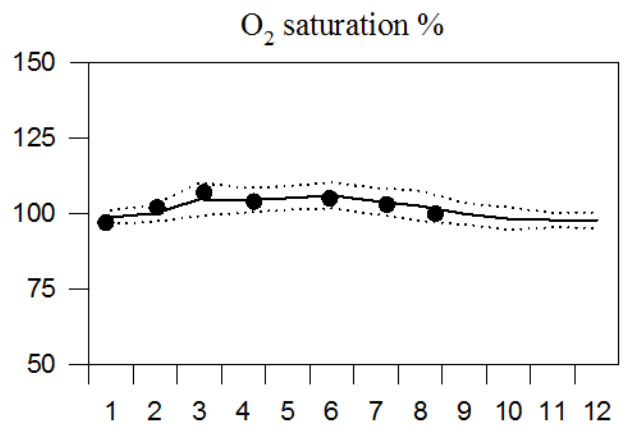
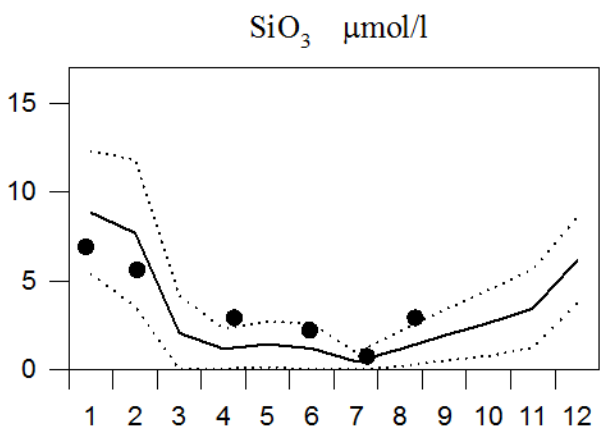
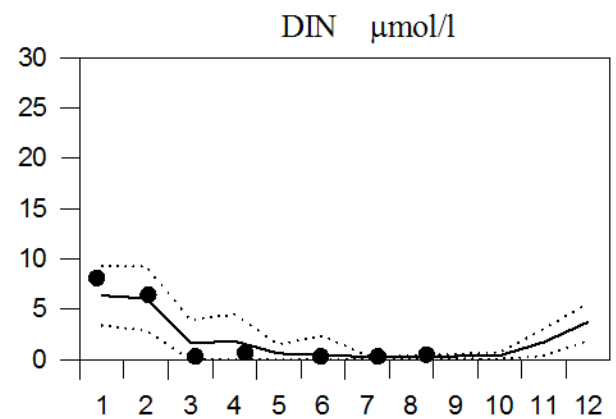
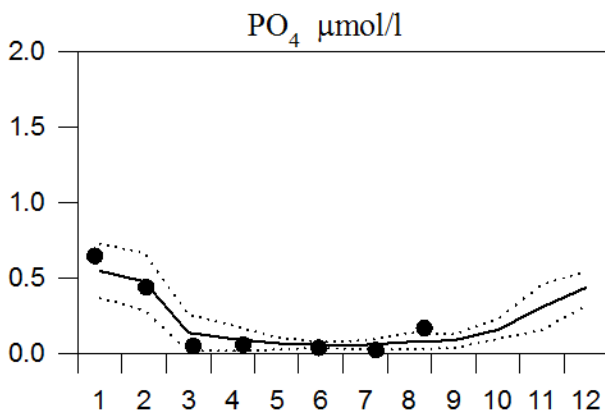
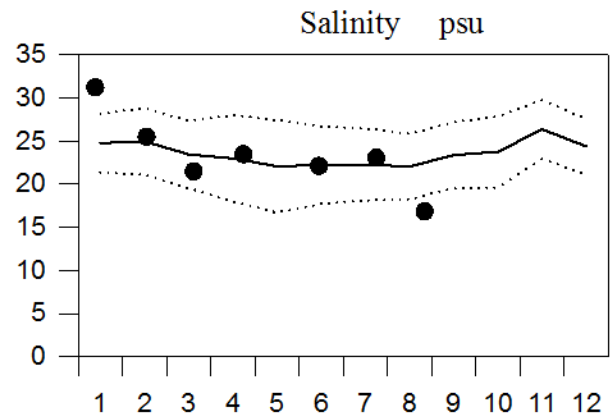
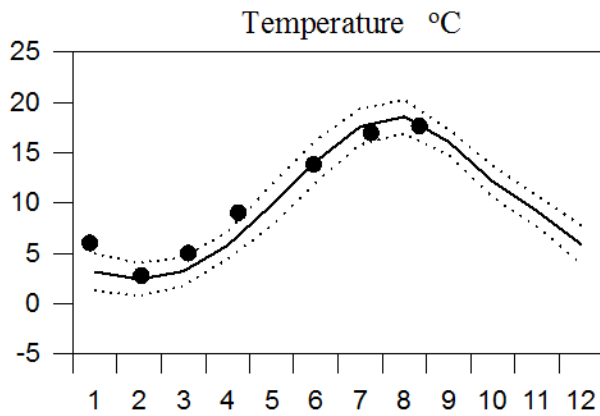
— Mean 1996-2010 St.Dev. ● 2015



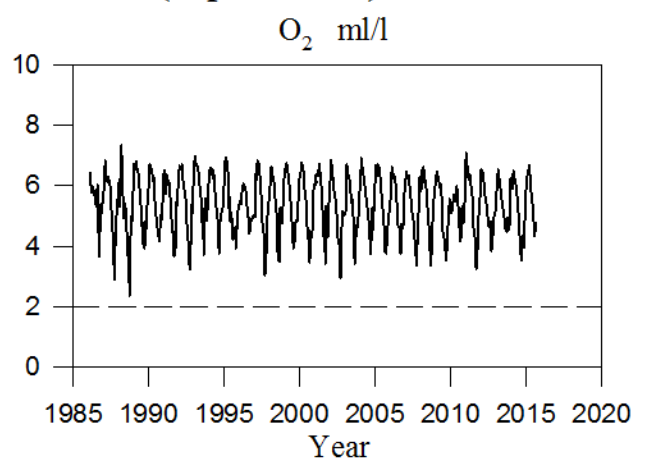
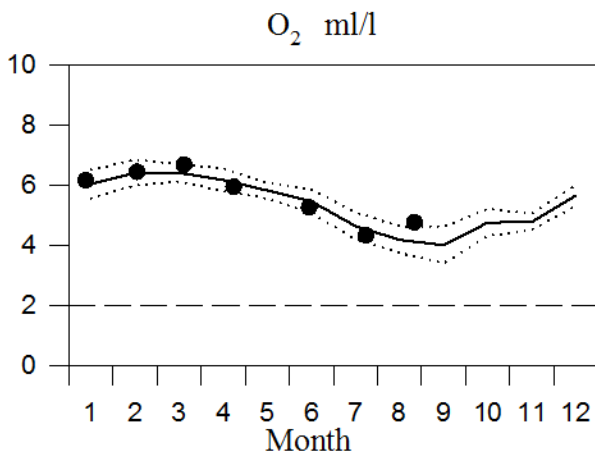
STATION FLADEN SURFACE WATER

Annual Cycles

— Mean 1996-2010 St.Dev. ● 2015

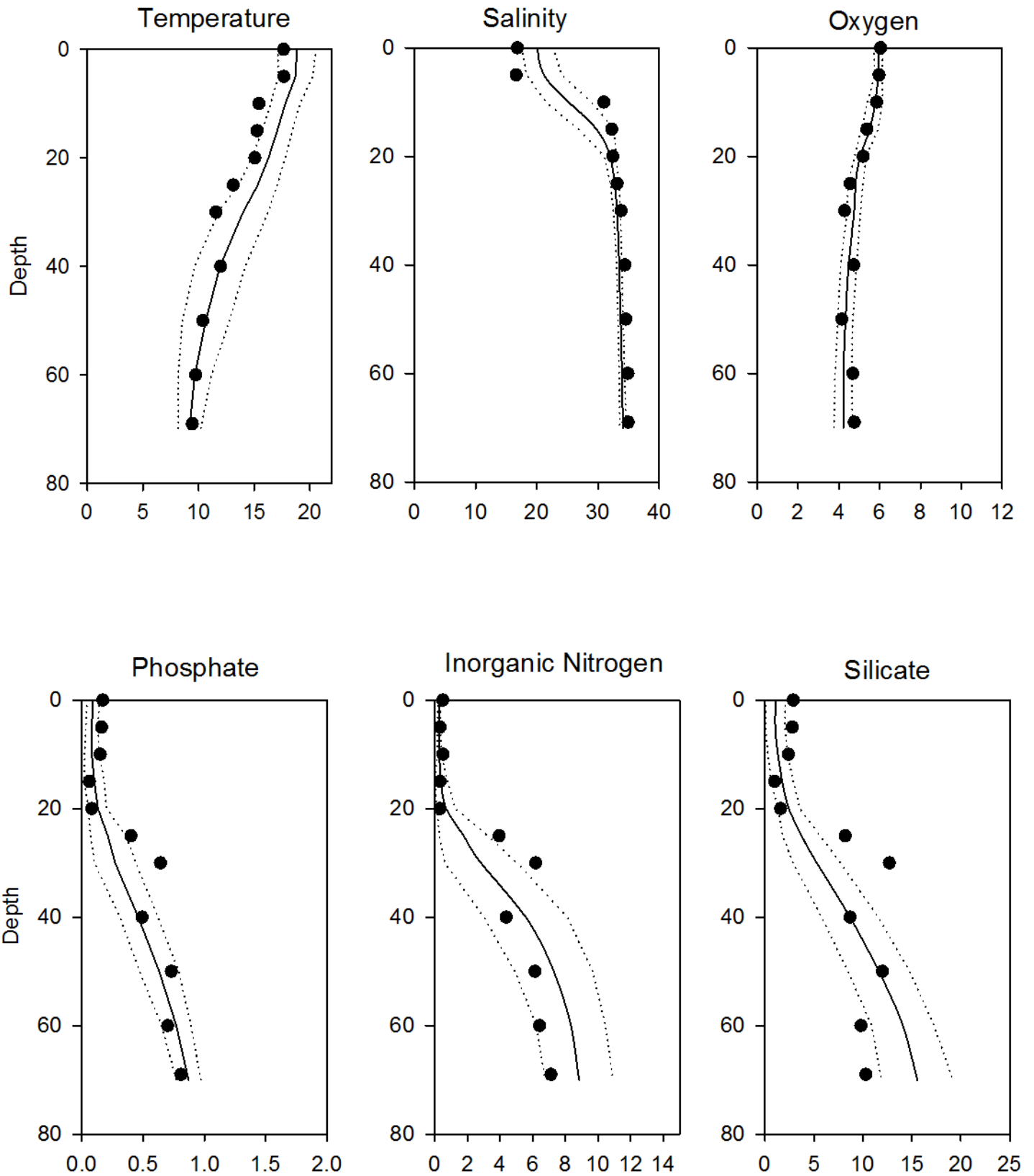


OXYGEN IN BOTTOM WATER (depth > 70m)



Vertical profiles Fladen August

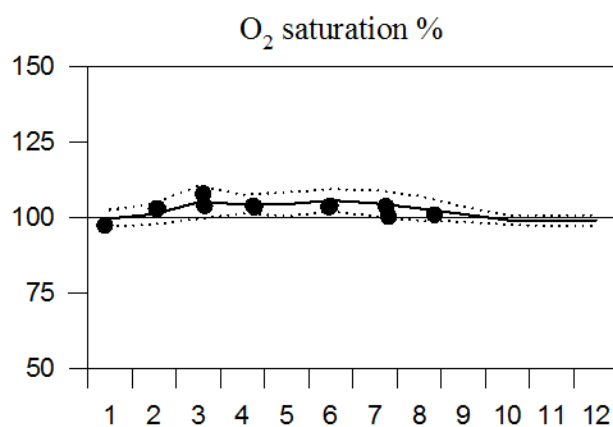
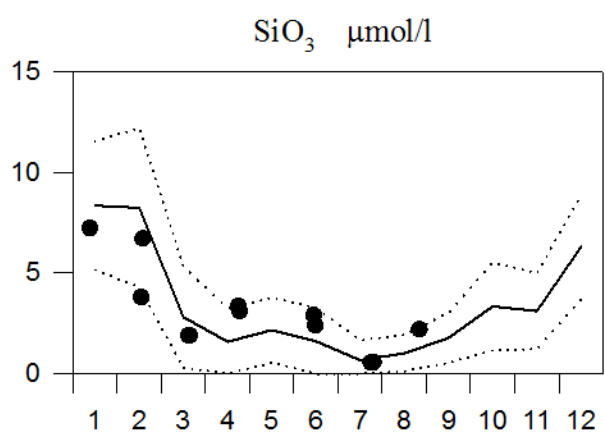
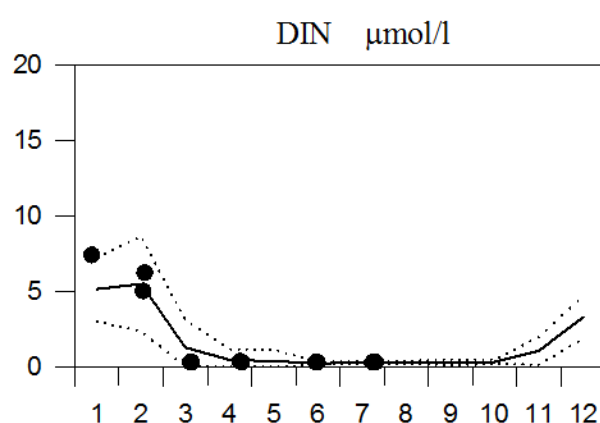
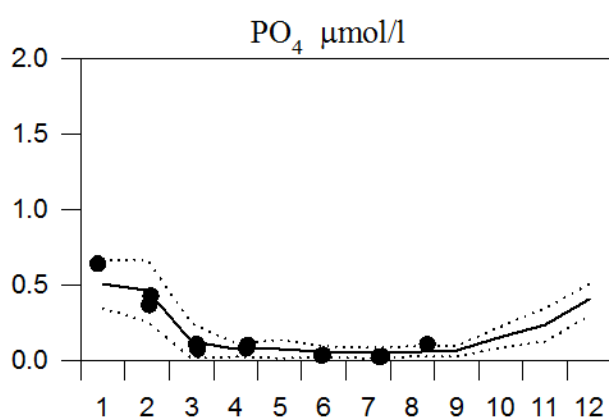
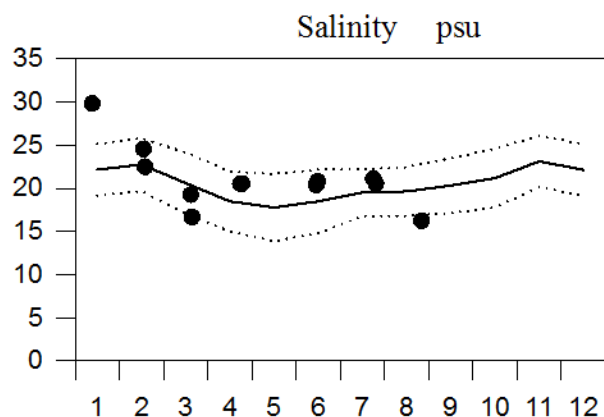
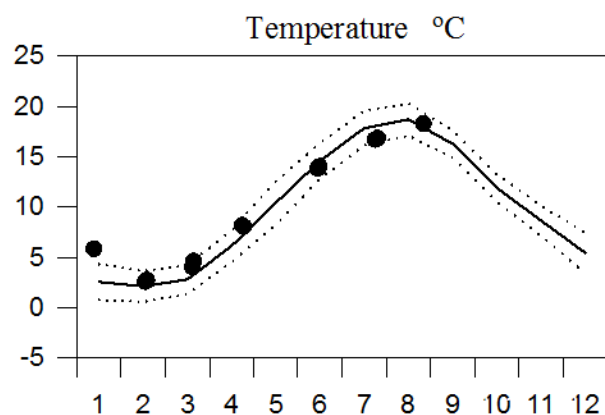
— Mean 1996-2010 St.Dev. ● 2015



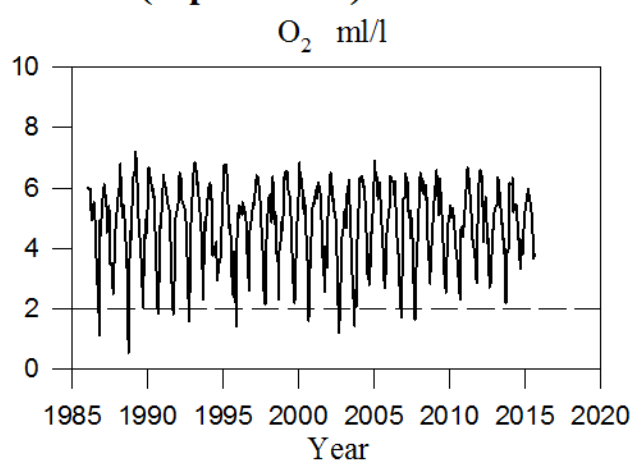
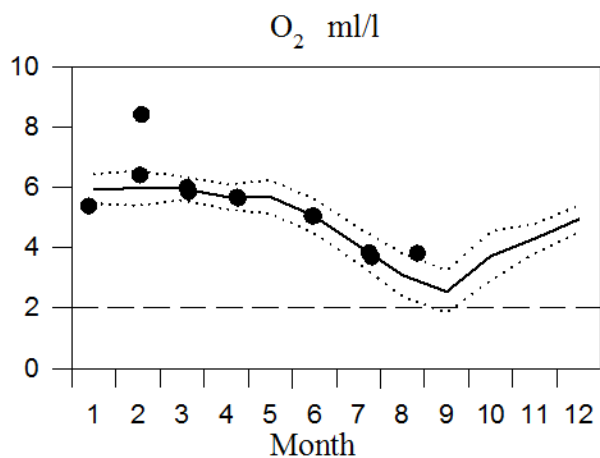
STATION ANHOLT E SURFACE WATER

Annual Cycles

— Mean 1996-2010 St.Dev. ● 2015

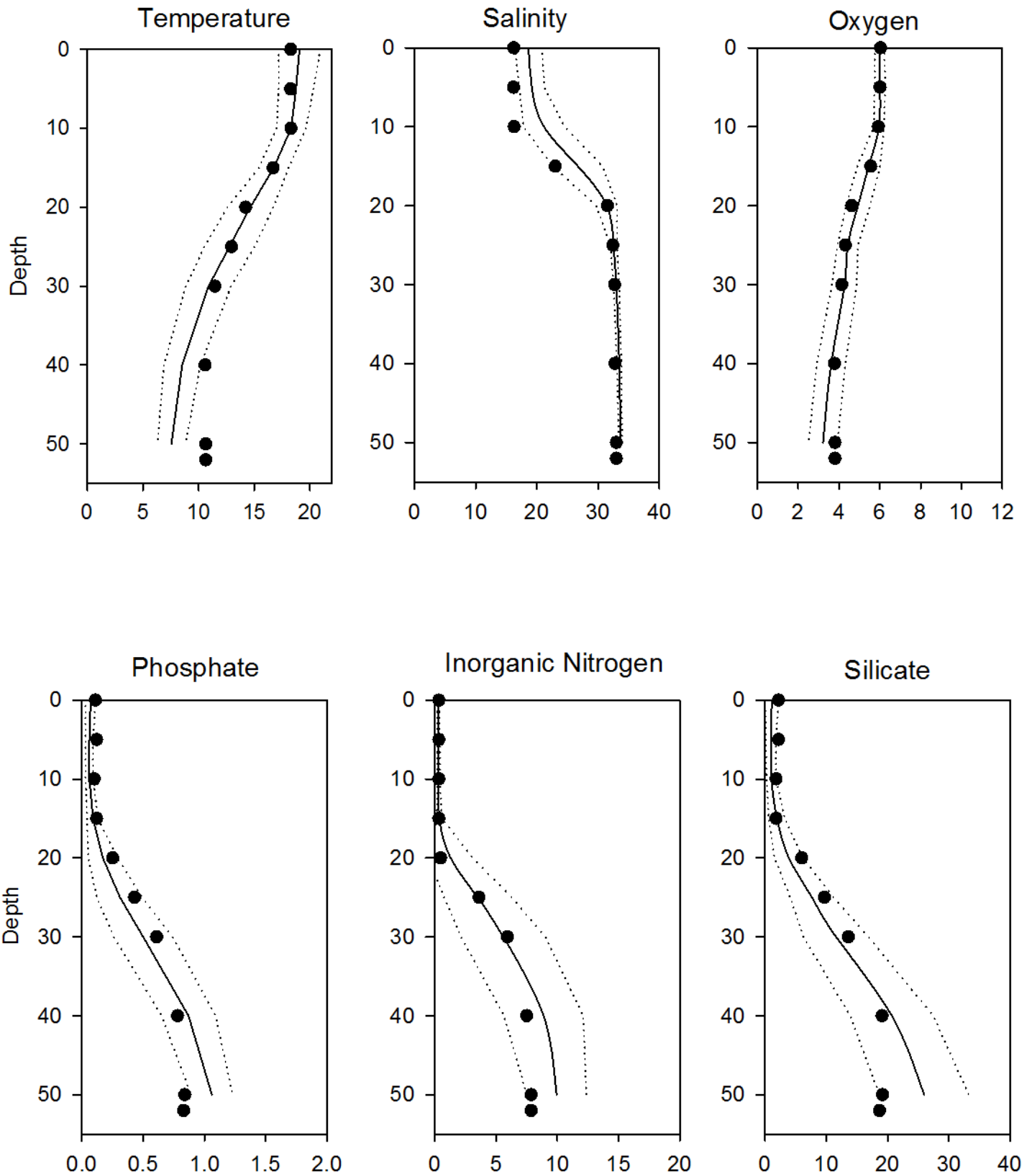


OXYGEN IN BOTTOM WATER (depth > 50m)



Vertical profiles Anholt E August

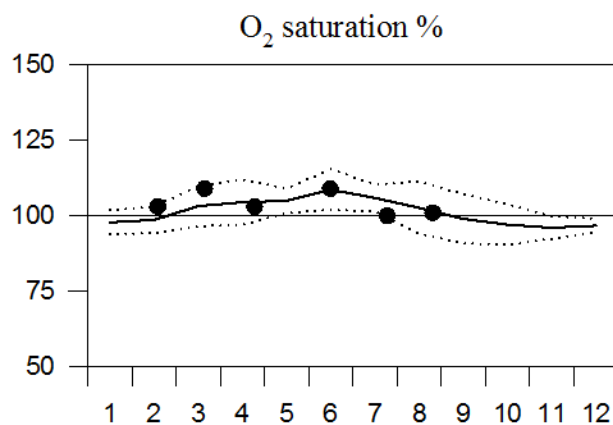
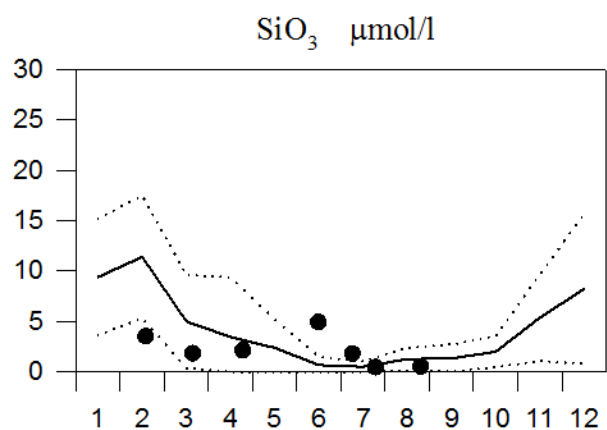
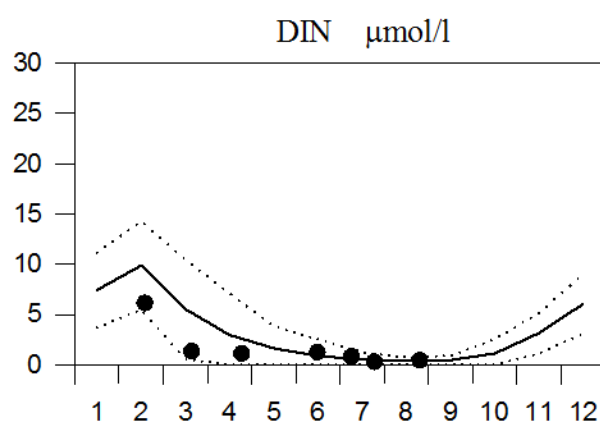
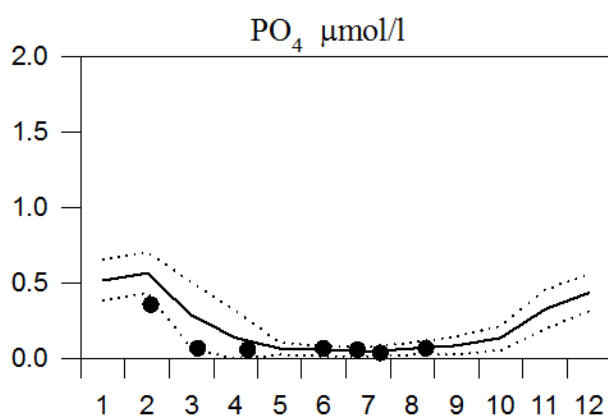
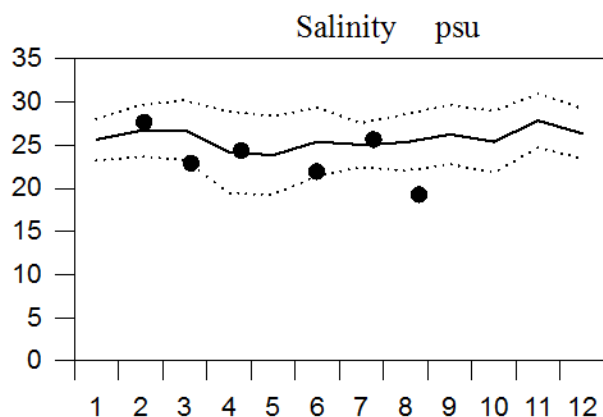
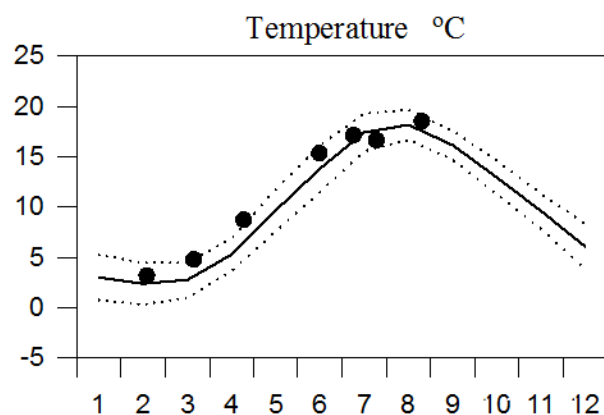
— Mean 1996-2010 St.Dev. ● 2015



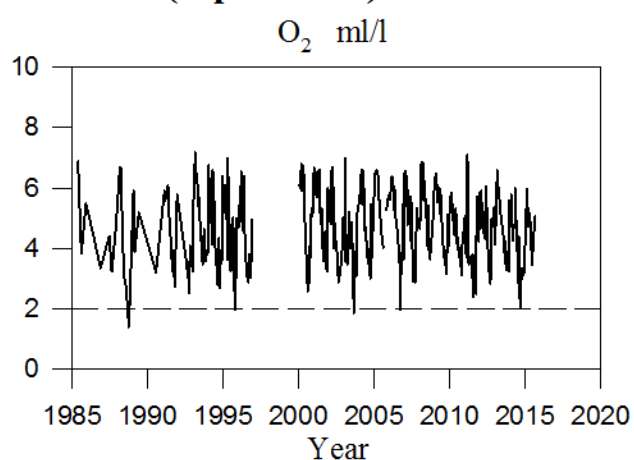
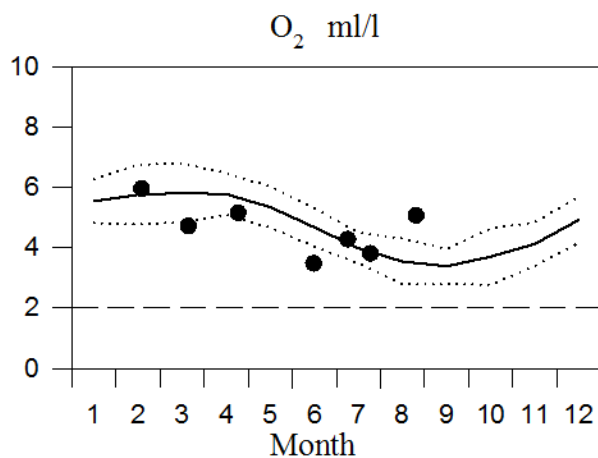
STATION SLÄGGÖ SURFACE WATER

Annual Cycles

— Mean 1996-2010 St.Dev. ● 2015

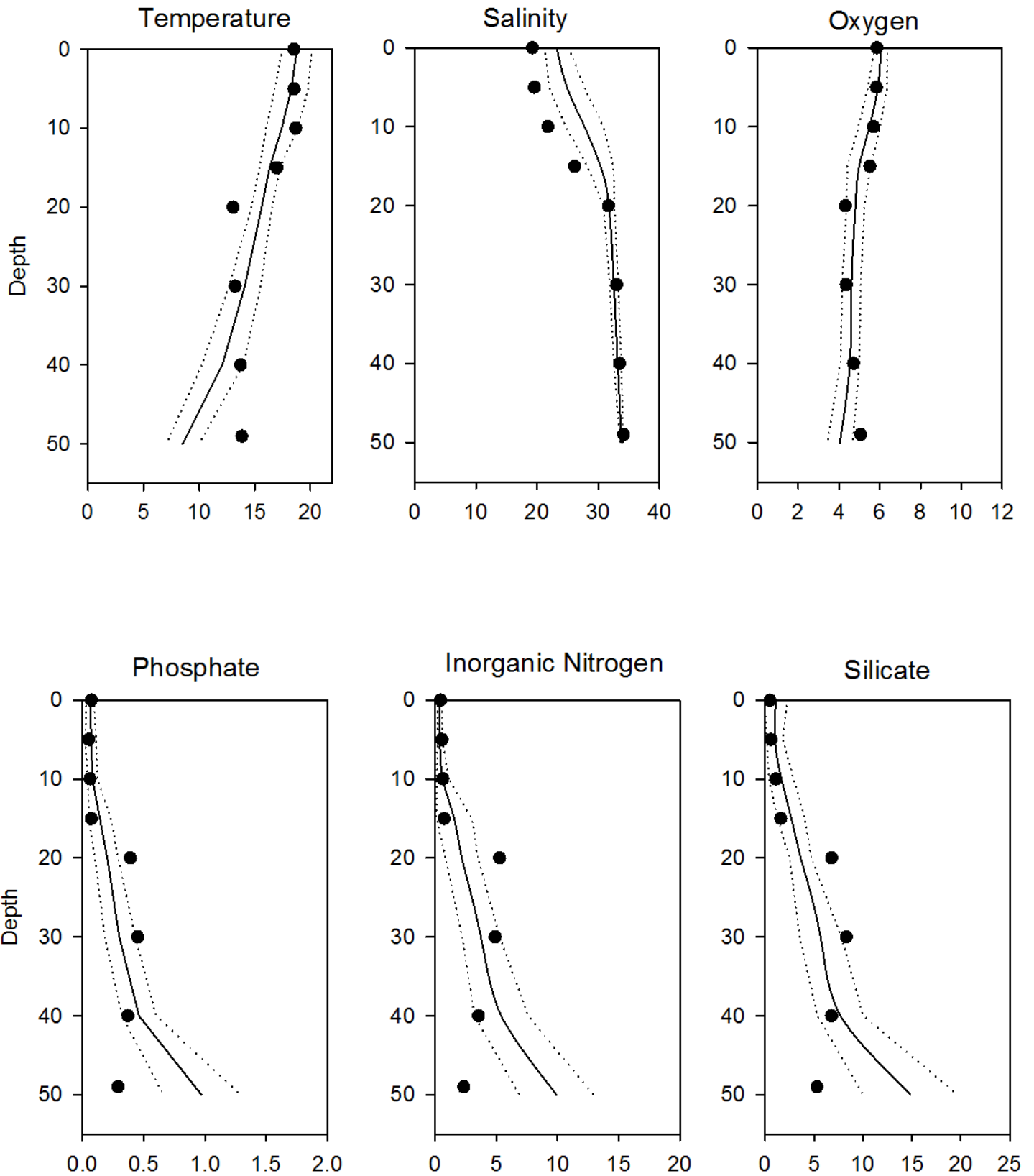


OXYGEN IN BOTTOM WATER (depth >50m)



Vertical profiles Släggö August

— Mean 1996-2010 St.Dev. ● 2015



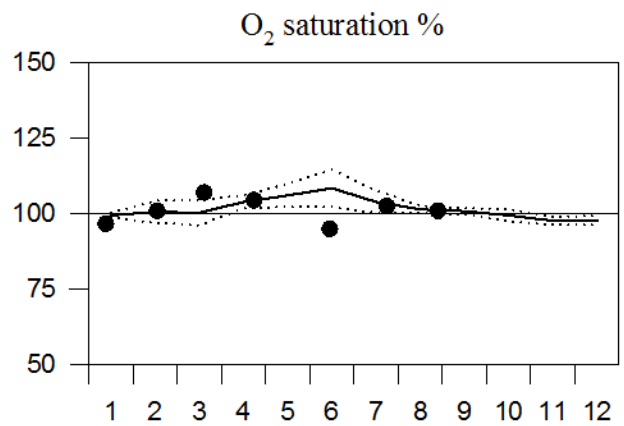
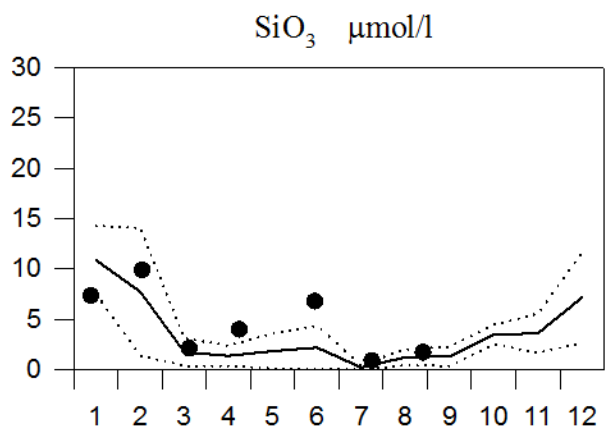
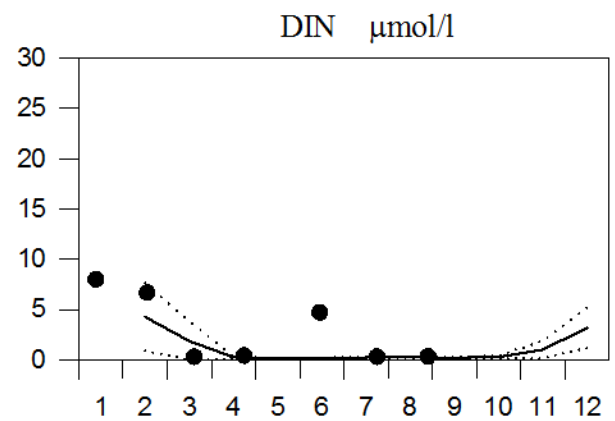
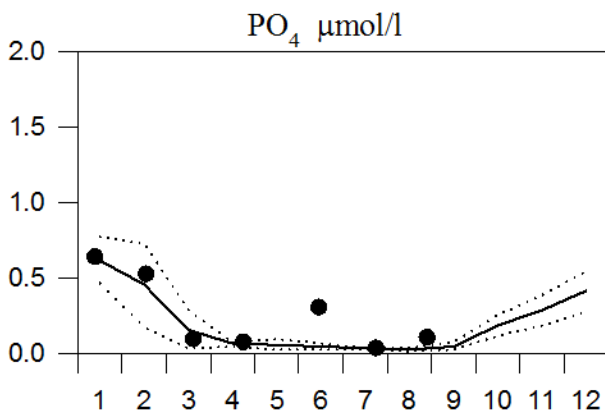
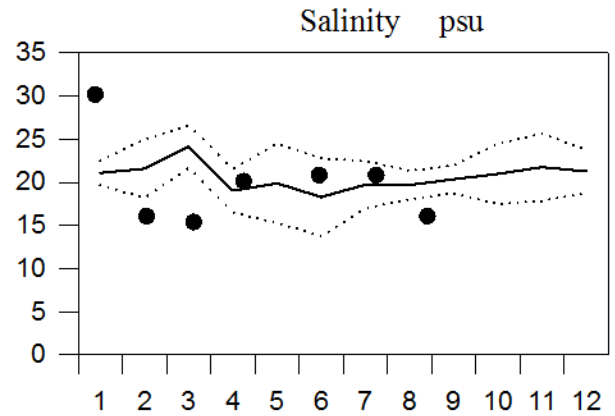
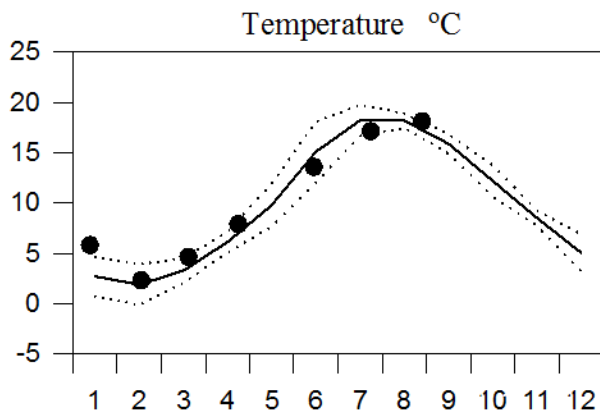
STATION N14 Falkenberg SURFACE WATER

Annual Cycles

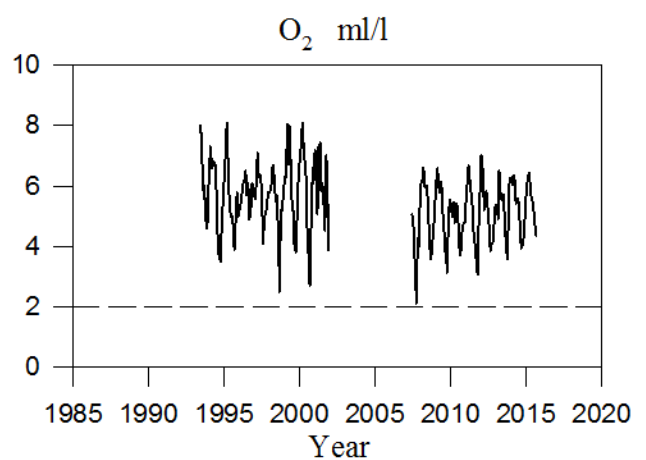
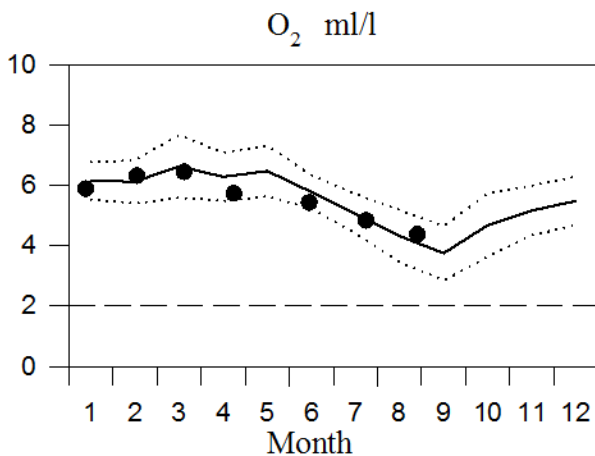
— Mean 2007-2010

..... St.Dev.

● 2015



OXYGEN IN BOTTOM WATER (depth > 25m)



Vertical profiles N14 Falkenberg August

— Mean 1996-2010 St.Dev. ● 2015

