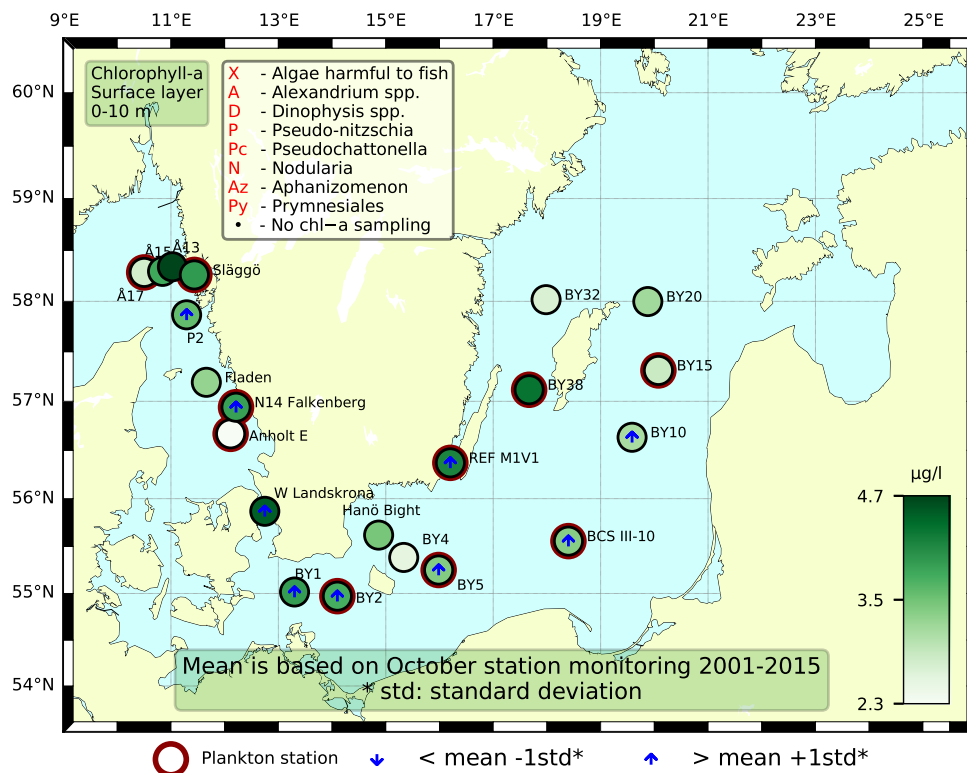


Sammanfattning

Diversiteten av växtplankton var över lag hög i Västerhavet. Kiselalger dominerade i antal vid samtliga stationer. Framför allt var kiselalgen *Leptocylindrus danicus* vanlig vid samtliga stationer. Vid Å17, den yttersta stationen i Skagerrak återfanns enstaka celler av arter som normalt förekommer i Nordsjön. De integrerade klorofyllhalterna (0-20 m) var över det normala vid N14 Falkenberg och även förhöjda vid båda stationerna i Skagerrak. De integrerade ytproverna (0-10 m) som sammanfaller i djup med slangproverna var förhöjda vid N14 Falkenberg, men inom det normala vid övriga stationer.

Antalet arter av växtplankton var allmänt högt för att vara i Östersjön, men med mestadels små celler och i låga antal. Klorofyllhalterna var ändå höga för månaden och vid flera stationer var de integrerade värdena (0-10 och 10-20 m) över det normala vilket inte speglades i de låga totala cellantalen.



Abstract

The phytoplankton diversity was over all high at all stations along the Swedish west coast. Diatoms dominated in numbers at all stations. Especially the diatom *Leptocylindrus danicus* was common at all stations. At Å17, the outer most station in the Skagerrak, a few cells of species more commonly found in the North Sea were found. The integrated (0-20 m) chlorophyll concentrations were above normal at N14 Falkenberg and at both stations in the Skagerrak for this month. The integrated (0-10 m) chlorophyll concentrations that coincide with the depth of the hose samples were above what is normal at N14 Falkenberg and within normal at the other stations.

The number of phytoplankton species was relatively high for the Baltic stations, but there were mainly small cells in low numbers. The chlorophyll concentrations were high for this month however, and the integrated concentrations (0-10 and 10-20 m) were above normal at several stations which did not really reflect the low total cell counts in the phytoplankton samples.

Below follows a more detailed information on species composition and abundance. Species marked with * are potentially toxic or harmful.

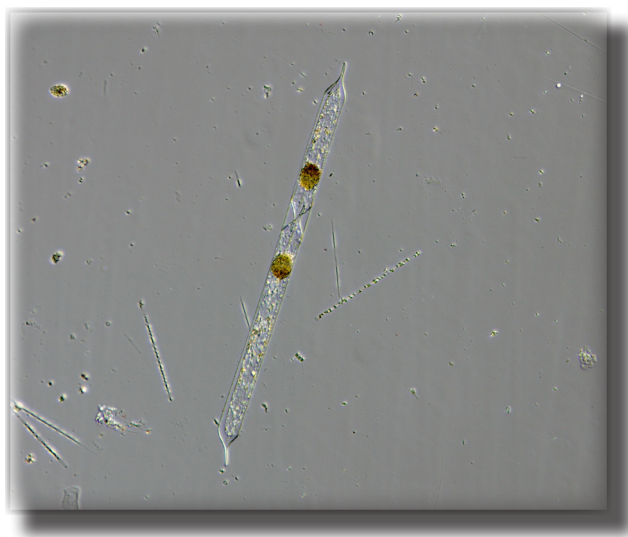
The Skagerrak

Å17 (open Skagerrak) 21st of October

The biodiversity and total cell numbers were moderate and consisted mainly of different diatoms. The potentially toxic diatom genus *Pseudo-nitzschia** was found in highest cell numbers. A few cells of species more commonly found in the North Sea such as *Guinardia striata*, *Lauderia annulata* and *Proboscia indica* were found. The integrated (0-20 m) chlorophyll concentration was above normal for this month but the integrated (0-10 m) was within normal.

Släggö (Skagerrak coast) 21st of October

The species diversity was high and the total cell numbers were moderate. Diatoms dominated clearly with several species in high cell numbers such as *Leptocylinndrus danicus*, the genus *Pseudo-nitzschia** and *Pseudosolenia calcar-avis*. Among the dinoflagellates different species of the genus *Tripes* was most numerous. The coccolithophorid *Emiliania huxleyi* was found in relatively high cell numbers among the smaller cells. The integrated (0-20 m) chlorophyll concentrations were slightly above normal for this month whereas the shallower integrated sample (0-10 m) was within normal for the month.



A few cells of species normally found in the North Sea was recorded at Å17, for example the diatom *Proboscia indica*.

The Kattegat

Anholt E 20th of October

The species diversity and total cell numbers were both relatively high. Diatoms dominated clearly with several species in high cell numbers such as *L. danicus*, the genus *Pseudo-nitzschia**, *Chaetoceros socialis* and *P. calcar-avis*. Among the dinoflagellates, *Tripes lineatus* was found in high cell numbers. The integrated (0-10 m and 0-20 m) chlorophyll concentrations were within normal for this month.

N14 Falkenberg 20th of October

The species diversity and cell numbers were relatively high. Diatoms dominated clearly with several species with high cell numbers. *Leptocylinndrus danicus* had the highest cell numbers, but the genus *Pseudo-nitzschia**, *Chaetoceros socialis* and *Pseudosolenia calcar-avis* were also found in high cell numbers. The coccolithophorid *E. huxleyi* was found in relatively high cell numbers among the smaller species. The integrated (0-10 m) and (0-20 m) chlorophyll concentrations were both above normal for this month

The Baltic

BY2 Arkona basin 20th of October

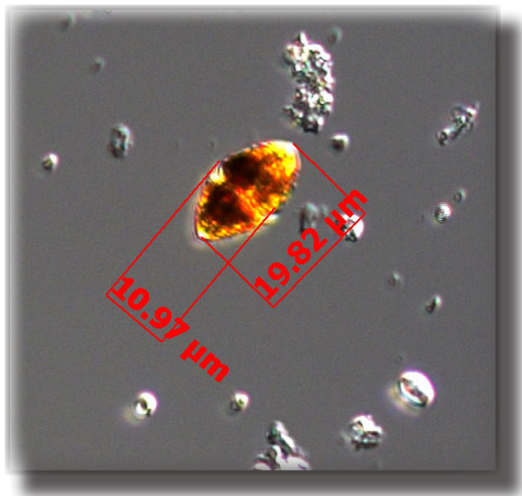
The species diversity was moderate but the total cell numbers were low, only cryptomonads were abundant. Several species of the diatom genus *Chaetoceros* were present in low cell numbers.

BY5 Bornholm basin 19th of October

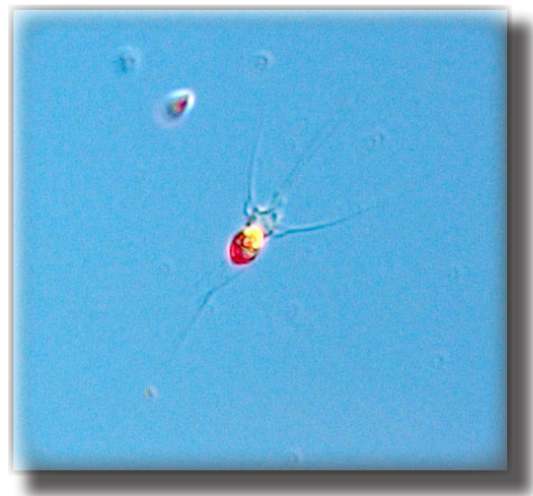
The species diversity was moderate, but the small dinoflagellate *Gymnodinium verruculosum* and cryptomonads were abundant. The dinoflagellate *Prorocentrum cordatum** was present in low cell numbers.

BCSIII-10 19th of October

The phytoplankton diversity was low although the diatom *Dactyliosolen fragilissimus* and cryptomonadales were abundant.



The dinoflagellate *Gymnodinium verruculosum* was abundant at BY5.



The choanoflagellate *Calliacantha natans* was numerous at REFM1V1.

BY15 18th of October

The phytoplankton diversity was low, only cryptomonads were abundant.

BY38 17th of October

The species diversity was moderate and represented mainly by small species.

REFM1V1 16th of October

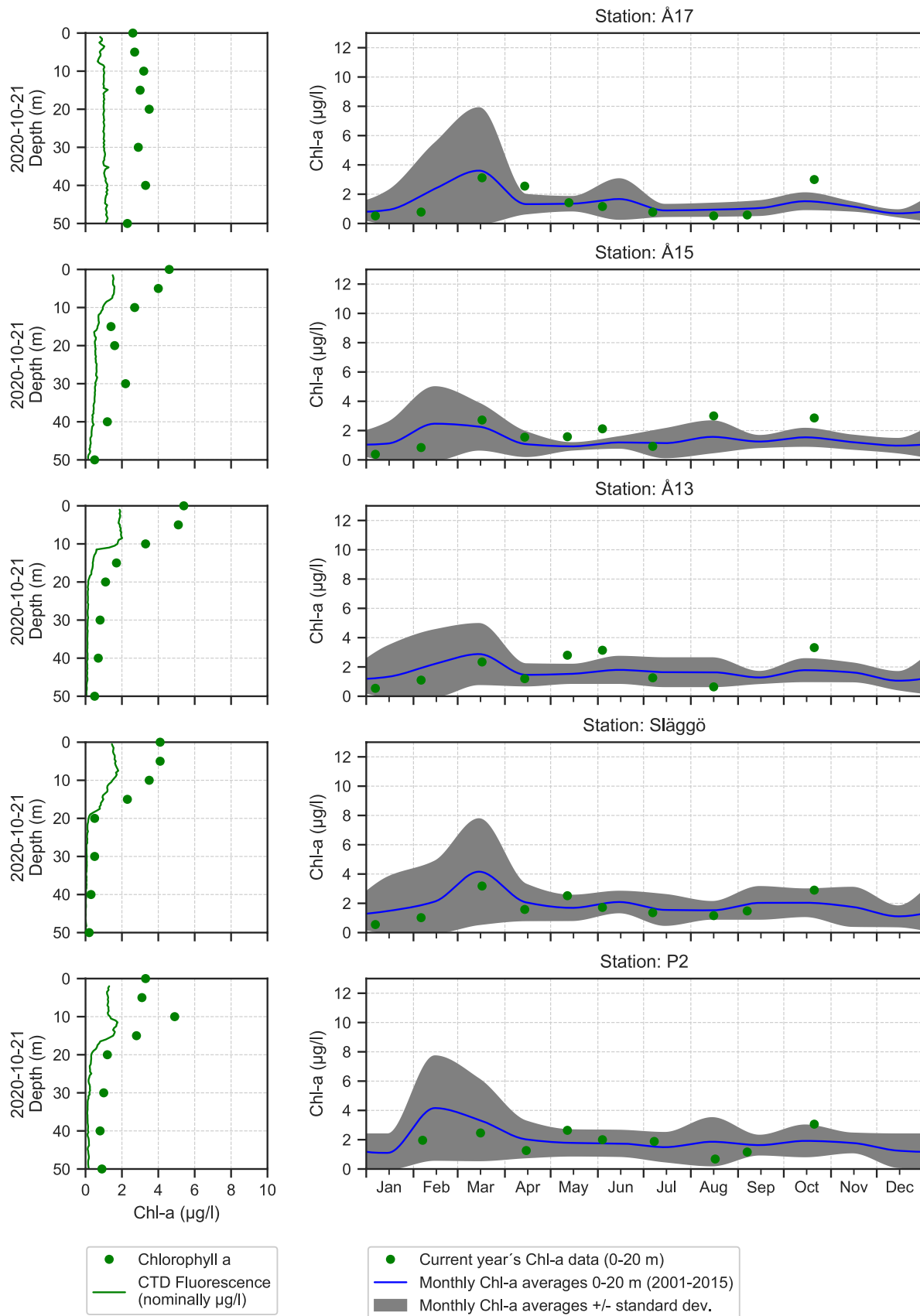
The phytoplankton diversity was low and there were low amounts of *Aphanizomenon flosaquae*. Cryptomonads and the choanoflagellate *Calliacantha natans* were abundant.

The integrated chlorophyll concentrations were above normal for this month at most of the Baltic stations.

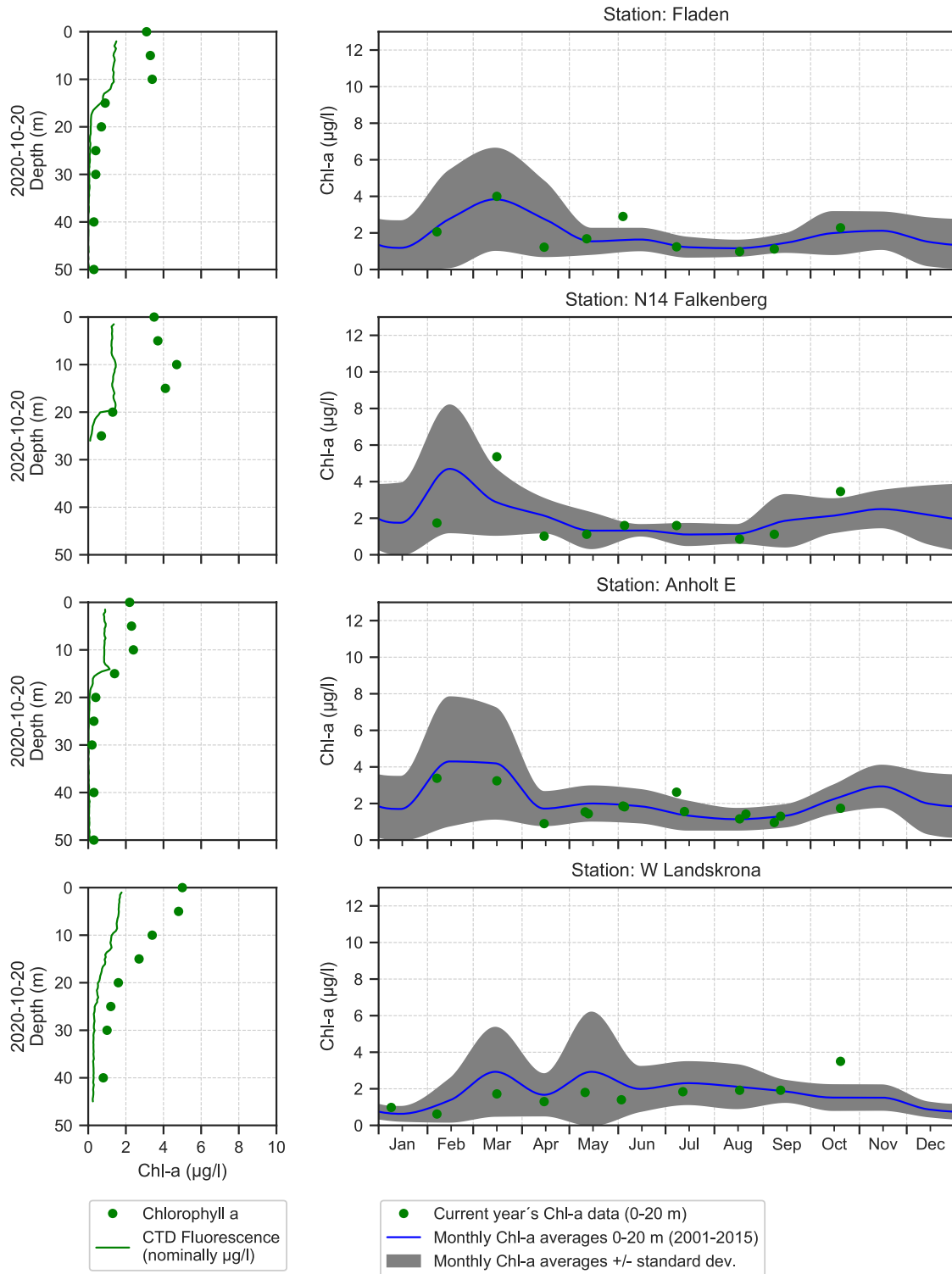
Selection of observed species	Anholt E	N14	Släggö	Å17
Red=potentially toxic species	20/10	20/10	21/10	21/10
Hose 0-10 m	presence	presence	presence	presence
<i>Cerataulina pelagica</i>			present	
<i>Chaetoceros</i>			present	present
<i>Chaetoceros affinis</i>	present		present	
<i>Chaetoceros cf. convolutus</i>	present	present	present	common
<i>Chaetoceros debilis</i>			present	
<i>Chaetoceros socialis</i>	common	common	present	present
<i>Chaetoceros thronsenii</i>	present		present	
<i>Coscinodiscus</i>			present	
<i>Dactyliosolen fragilissimus</i>	present	present	present	present
<i>Guinardia flaccida</i>	present	present	present	
<i>Guinardia striata</i>				present
<i>Lauderia annulata</i>				present
<i>Leptocylindrus danicus</i>	common	very common	very common	very common
<i>Nitzschia longissima</i>	common	common	present	
<i>Proboscia indica</i>				present
<i>Pseudo-nitzschia</i>	common	common	common	very common
<i>Pseudosolenia calcar-avis</i>	common	common	common	common
<i>Rhizosolenia imbricata</i>			present	
<i>Rhizosolenia setigera</i>	present	present	present	
<i>Rhizosolenia setigera f. pungens</i>	present	present	present	
<i>Thalassionema nitzschioides</i>				present
<i>Thalassiosira</i>			present	
<i>Thalassiosira gravida</i>			present	
<i>Dinophysis acuminata</i>		present		
<i>Diplopsalis cpx</i>				present
Gymnodiniales	common	present		
<i>Gymnodinium cf. litoralis</i>	present	present	present	
<i>Gyrodinium flagellare</i>	present		present	present
<i>Gyrodinium spirale</i>	present	present	present	
<i>Heterocapsa rotundata</i>	present			
<i>Karenia mikimotoi</i>		present	present	
<i>Noctiluca scintillans</i>	present		present	present
<i>Pentaparsodinium dalei</i>			present	
Peridiniales	present	present	present	
<i>Phalacroma rotundatum</i>		present		
<i>Polykrikos schwartzii</i>	present	present	present	
<i>Prorocentrum micans</i>	present			
<i>Protoperidinium bipes</i>			present	
<i>Protoperidinium claudicans</i>			present	
<i>Protoperidinium crassipes</i>				present
<i>Protoperidinium divergens</i>	present	present	present	
<i>Protoperidinium pallidum</i>	present	present		
<i>Scrippsiella cpx</i>			present	
<i>Tripos furca</i>	present	present	common	present
<i>Tripos fusus</i>		present		present
<i>Tripos lineatus</i>	common	present	present	present
<i>Tripos macroceros</i>			present	present
<i>Tripos muelleri</i>	present		present	present
<i>Dinobryon faculiferum</i>	present	present		
Cryptomonadales	present	present	common	common
<i>Emiliania huxleyi</i>	present	common	common	present
<i>Leucocryptos marina</i>	present		present	present
<i>Dictyocha NK</i>			present	
<i>Dictyocha fibula</i>			present	
<i>Pseudopedinella pyriformis</i>	present	present		
Choanoflagellata	present		present	

Selection of observed species	BCSIII-10	BY2	BY5	BY15	BY38	RefM1V1
Red=potentially toxic species	19/10	20/10	19/10	18/10	17/10	16/10
Hose 0-10 m	presence	presence	presence	presence	presence	presence
<i>Cerataulina pelagica</i>	present	present	present			
<i>Chaetoceros castracanei</i>		present	present	present	present	present
<i>Chaetoceros convolutus</i>		present				
<i>Chaetoceros curvisetus</i>		present				
<i>Chaetoceros danicus</i>	present	present	present	present	present	present
<i>Chaetoceros lorenzianus</i>		present	present			
<i>Chaetoceros thronsenii</i>						present
<i>Coscinodiscus centralis</i>		present				
<i>Coscinodiscus concinnus</i>					present	
<i>Cyclotella choctawhatcheeana</i>						present
<i>Cylindrotheca closterium</i>			present			
<i>Dactyliosolen fragilissimus</i>	common	present	present			
<i>Skeletonema marinoi</i>			present			present
<i>Amphidinium crassum</i>		present				
<i>Dinophysis acuminata</i>		present				
<i>Dinophysis norvegica</i>						present
Gymnodiniales	present	present	present		present	present
<i>Gymnodinium verruculosum</i>	present	present	common	present	present	present
<i>Heterocapsa</i>	present	present	present		present	
<i>Heterocapsa rotundata</i>	present		present	present	present	present
<i>Heterocapsa triquetra</i>			present			present
<i>Katodinium glaucum</i>				present	present	
Peridiniales		present	present	present	present	
<i>Prorocentrum cordatum</i>	present	present	present	present	present	
<i>Prorocentrum micans</i>		present				
<i>Protodinium simplex</i>			present			
<i>Tripos muelleri</i>		present	present			
<i>Aphanizomenon flosaquae</i>		present		present		present
<i>Snowella</i>				present	present	
<i>Woronichinia</i>	present			present	present	
<i>Binuclearia lauterbornii</i>				present		
<i>Eutreptiella</i>		present	present	present	present	present
<i>Pseudopedinella</i>	present	present		present	present	present
<i>Dinobryon acuminatum</i>						present
Cryptomonadales	common	common	common	common	common	common
<i>Pterosperma</i>	present	present		present	present	present
<i>Pyramimonas</i>	present	present	present	present	present	
<i>Ebria tripartita</i>	present	present	present		present	
<i>Calliakantha natans</i>	present	present	present	present	present	present
Choanoflagellata	present			present	present	present
<i>Leucocryptos marina</i>						present
Ciliophora	present	present	present	present	present	present
<i>Coxiella helix</i>			present			
<i>Didinium nasutum</i>					present	
<i>Mesodinium rubrum</i>			present		present	present

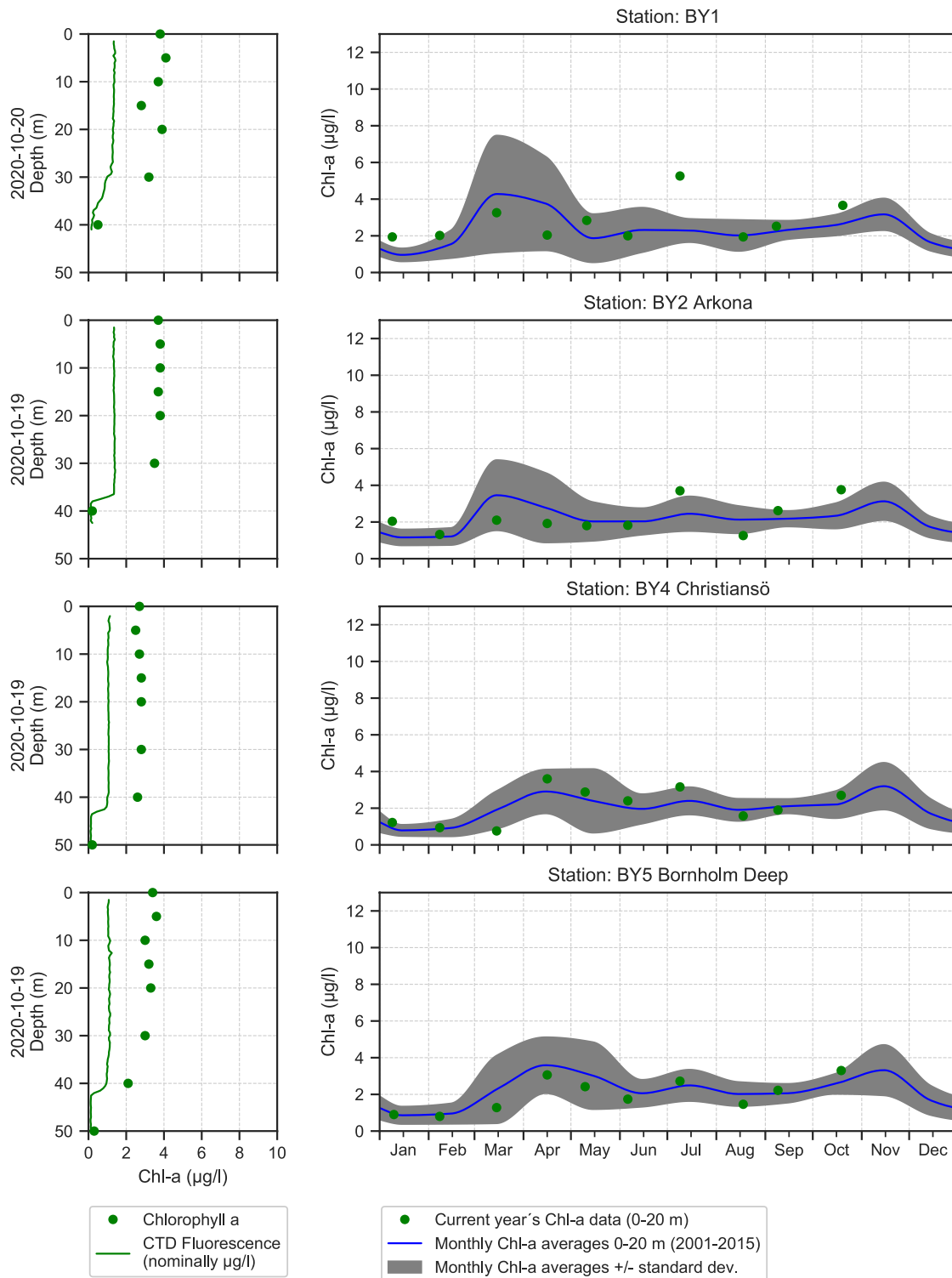
The Skagerrak



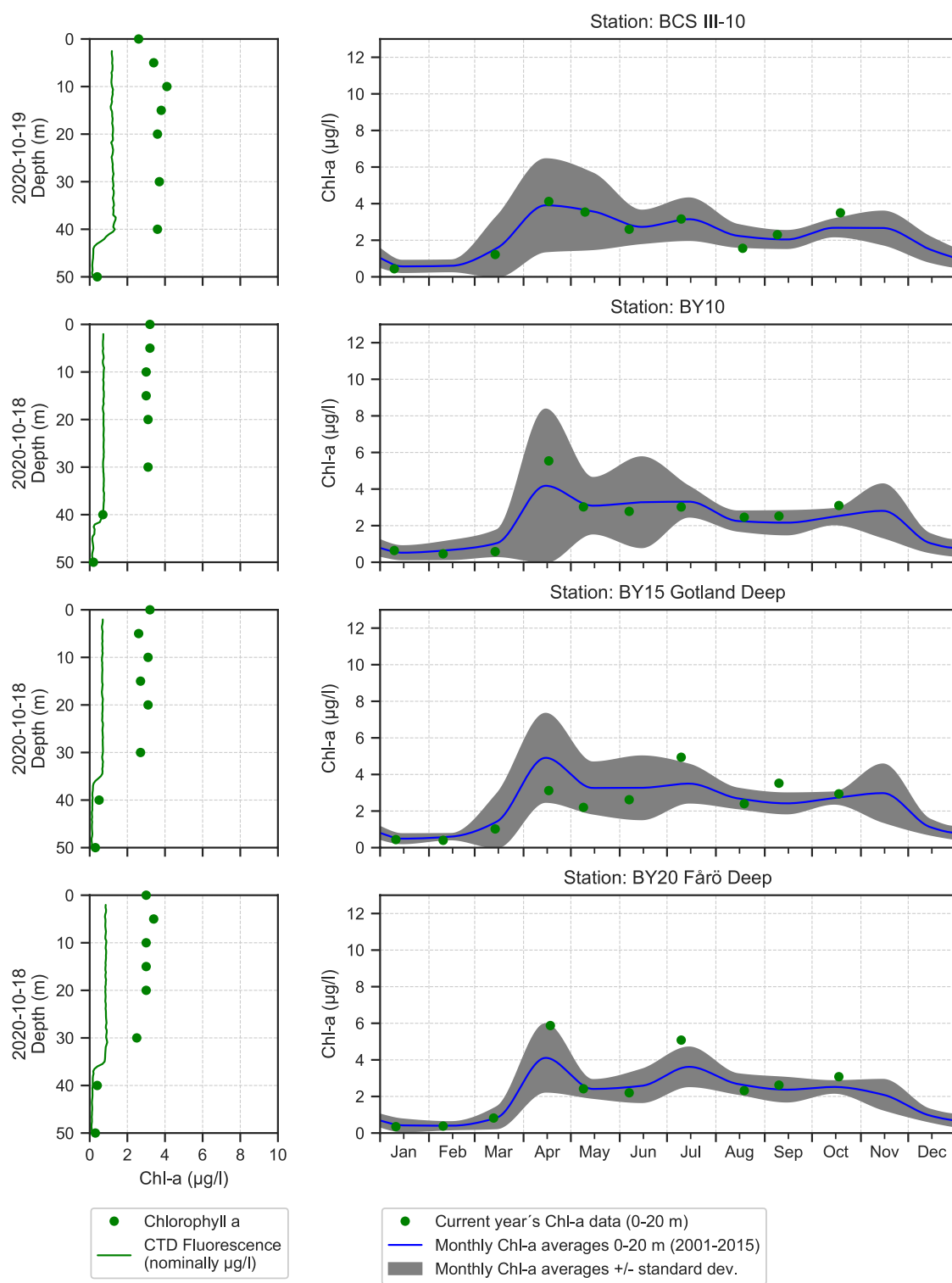
The Kattegat and The Sound



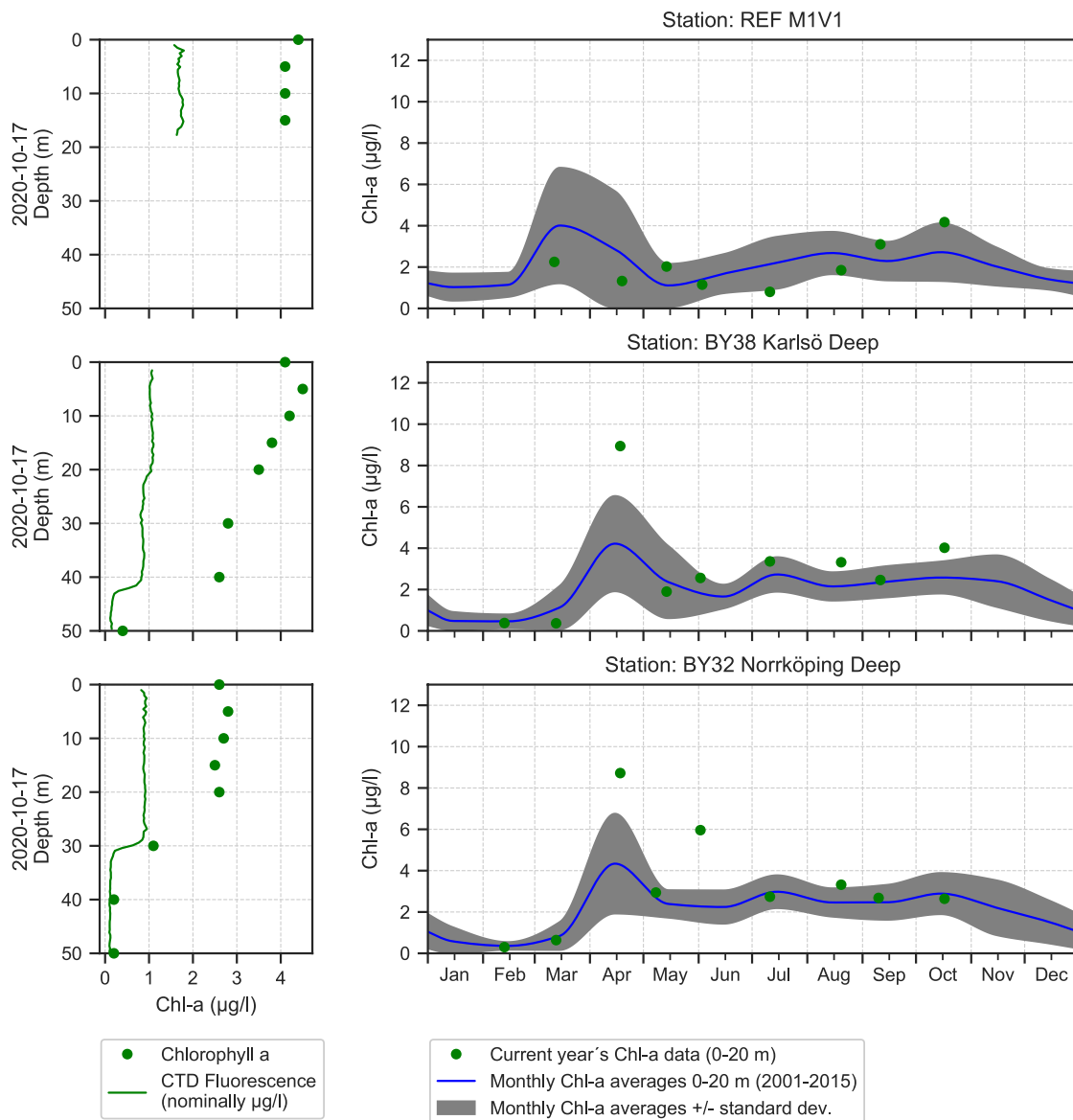
The Southern Baltic



The Eastern Baltic



The Western Baltic



Om klorofylldiagrammen

Klorofyll *a* är ett mått på mängden växtplankton. Prover tas från ett antal djup. Data presenteras både från de fasta djupen och som medelvärden 0-20 m. Utöver resultaten från laboratorieanalyserna av vattenprover mäts klorofyll *a* som fluorescens från ett automatiskt instrument som sänks ned från fartyget. På så sätt kan djupt liggande, ibland tunna lager av växtplankton observeras.

About the chlorophyll graphs

Chlorophyll *a* is sampled from several depths. Data are presented both from the discrete depths and as an average 0-20 m. In addition to the laboratory analysis from the water samples chlorophyll fluorescence is measured in continuous depth profiles from the ship. This is a way to observe thin layers of phytoplankton occurring below the surface.

Om AlgAware

SMHI genomför månatliga expeditioner i Östersjön och Västerhavet. Resultat baserade på semikvantitativ mikroskopanalys av planktonprover samt klorofyllmätningar presenteras kortfattat i denna rapport. Information från SMHIs satellitövervakning av algbloomningar finns under perioden juni-augusti på www.smhi.se. Resultat från provtagningarna kan hämtas från SMHI:s databas på sharkweb.smhi.se. Hydrografidata läggs ut varje månad, växtplanktondata läggs ut en gång per år.

About AlgAware

SMHI carries out monthly cruises in the Baltic and the Kattegat/Skagerrak. Results from semi quantitative microscopic analysis of phytoplankton samples as well as chlorophyll measurements are presented in brief in this report. Information from SMHIs satellite monitoring of algal blooms is found on www.smhi.se during the period June-August. Results from the expeditions are found in the SMHI database, sharkweb.smhi.se. Data are published monthly, phytoplankton data however, are published once a year.

Art / Species	Gift / Toxin	Eventuella symptom	Clinical symptoms
<i>Alexandrium</i> spp.	Paralytic shellfish poisoning (PSP)	Milda symptom: Inom 30 min.: Stickningar eller en känsla av bedövning runt läpparna, som sprids gradvis till ansiktet och nacken; stickningar i fingertoppar och tår; Huvudvärk; yrsel, illamående, kräkningar, diarré Extrema symptom: Muskelförlamning; andningssvårigheter; känsla av att kvävas; Man kan vara död inom 2-24 timmar efter att ha fått i sig giftet, på grund av att andningsmuskulaturen förlamas.	Mild case: Within 30 min: tingling sensation or numbness around lips, gradually spreading to face and neck; prickly sensation in fingertips and toes; headache, dizziness, nausea, vomiting, diarrhoea. Extreme case Muscular paralysis; pronounced respiratory difficulty; choking sensation; death through respiratory paralysis may occur within 2-24 hours after ingestion.
<i>Dinophysis</i> spp.	Diarrhetic shellfish poisoning (DSP)	Milda symptom: Efter cirka 30 minuter till några timmar: yrsel, illamående, kräkningar, diarré, magont Extrema symptom: Upprepad exponering kan orsaka cancer	Mild case: Within 30 min-a few hours: dizziness, nausea, vomiting, diarrhoea, abdominal pain. Extreme case: Repeated exposure may cause cancer.
<i>Pseudo-nitzschia</i> spp.	Amnesic shellfish poisoning (ASP)	Milda symptom: Efter 3-5 timmar: yrsel, illamående, kräkningar, diarré, magkramp Extrema symptom: Yrsel, hallucinationer, förvirring, förlust av korttidsminnet, kramp	Mild case: Within 3-5 hours: dizziness, nausea, vomiting, diarrhoea, abdominal cramps. Extreme case: dizziness, hallucinations, confusion, loss of memory, cramps.
<i>Chaetoceros concavicornis</i> / <i>C. convolutus</i>	Mechanical damage through hooks on setae	Låg celltäthet: Ingen påverkan. Hög celltäthet: Fiskens gälar skadas, fisken dör.	Low cell numbers: No effect on fish. High cell numbers: Fish death due to gill damage.
<i>Pseudochattonella</i> spp.	Fish toxin	Låg celltäthet: Ingen påverkan. Hög celltäthet: Fiskens gälar skadas, fisken dör.	Low cell numbers: No effect on fish. High cell numbers: Fish death due to gill damage.

Översikt över några potentiellt skadliga alger och det aktuella giftets effekt. Overview of potentially harmful algae and effects of toxins. Manual on harmful marine microalgae (2003 - UNESCO Publishing).

Kartan på framsidan visar viktat medelvärde för klorofyll *a*, µg/l (0-10 m) vid de olika stationerna. Pil upp eller ned indikerar om resultatet är över eller under en standardavvikelse från medel. Medel är beräknat utifrån aktuell månad under perioden 2001-2015. Förekomst av skadliga alger vid stationer där arter analyseras markeras med symbol.

The map on the front page shows weighted mean of chlorophyll *a*, µg/l (0-10 m) at sampling stations. The arrow up or down indicate whether the result is above or below one standard deviation from mean. The mean value is calculated using results from the actual month during the period 2001-2015. Presence of harmful algae at stations where species analysis is performed is shown with a symbol.

