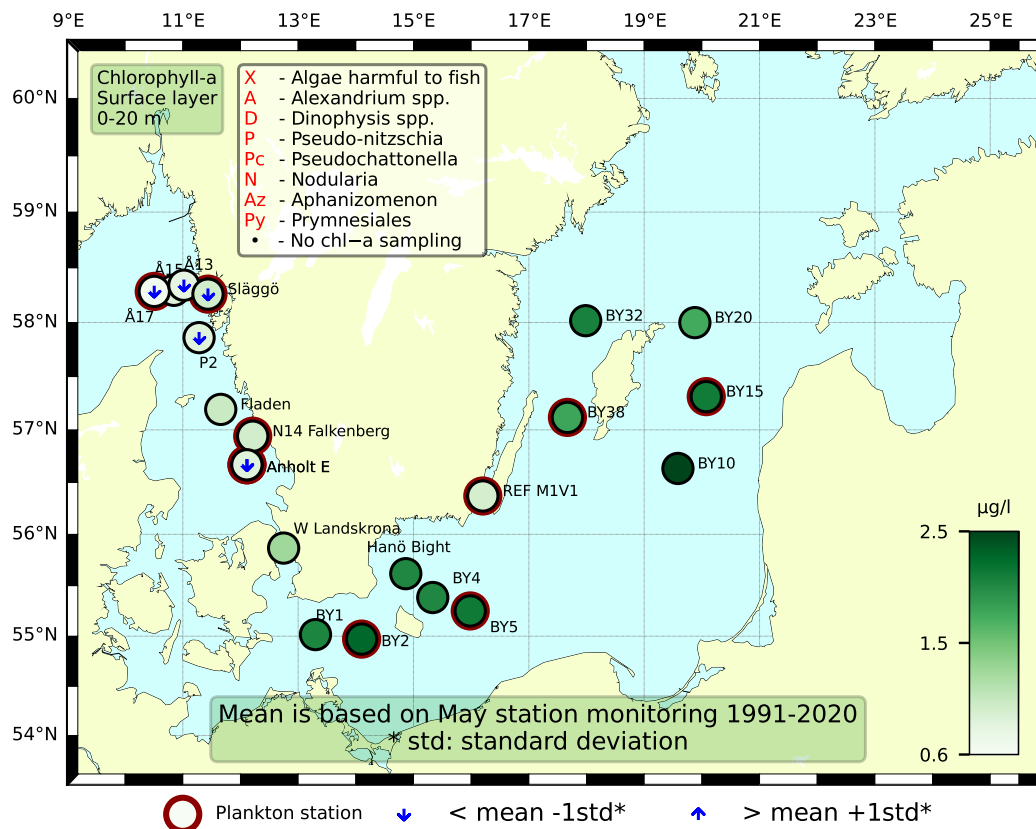


Sammanfattning

I Skagerrak och Kattegatt var både de totala cellantalen och biodiversiteten låga och små celler dominerade i de artfattiga proverna. Olika ciliater och nakna dinoflagellater var vanligast tillsammans med cryptomonader. Vid Å17 återfanns även relativt höga antal av kalkalgen *Emiliania huxleyi*. De integrerade klorofyllhalterna var låga och vid många stationer under vad som är normalt för månaden

Vid Östersjöstationerna var det även här lite i proverna och låg artdiversitet; mestadels små celler förekom. Bland de större cellerna var olika ciliater vanliga. Vid de nordligare stationerna BY15 samt BY38 återfanns relativt många filament av cyanobakterien *Aphanizomenon flosaquae*. Vid de sydliga stationerna BY2 och BY5 återfanns små flagellater tillhörande ordningen Prymnesiales* i högre antal. Även släktet *Dinophysis** var vanlig vid några stationer. De integrerade klorofyllhalterna var normala vid samtliga stationer.



Abstract

In the Skagerrak and Kattegat areas both cell abundance and diversity were low and small cells dominated the samples. Different ciliates and naked dinoflagellates were most common together with cryptomonads. At Å17 some cells of the coccolithophore *Emiliania huxleyi* were present. The integrated chlorophyll concentrations were low and even below what is normal for the month at several stations.

The total cell number and biodiversity at the Baltic stations were mostly low mainly consisting of smaller cells. Quite a few filaments of *Aphanizomenon flosaquae* were found at the more northern stations BY15 and BY38. At the southern stations BY2 and BY5 quite many flagellates belonging to the order Prymnesiales* were found. The genus *Dinophysis** was also common at several stations. The integrated chlorophyll concentrations were normal at all stations.

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

The Skagerrak

Å17 (open Skagerrak) 23rd of May

Both the phytoplankton diversity and abundance were low. There were some cells of the genus *Tripes*, *Dinophysis norvegica** and some ciliates among the larger cells. The smaller *Emiliana huxleyi* and cryptomonadales were found in highest cell numbers. The integrated (0-20 m) and (0-10 m) chlorophyll concentrations were below the normal range for this month.

Släggö (Skagerrak coast) 20th of May

Both the phytoplankton diversity and abundance were low. The sample was dominated by small cells. The dinoflagellate genus *Tripes* was most common of the larger species. Among the smaller cells cryptomonadales were most common but the coccolithophore *Emiliana huxleyi* was also present. The integrated (0-20 m) and (0-10 m) chlorophyll concentrations were below the normal range for this month.

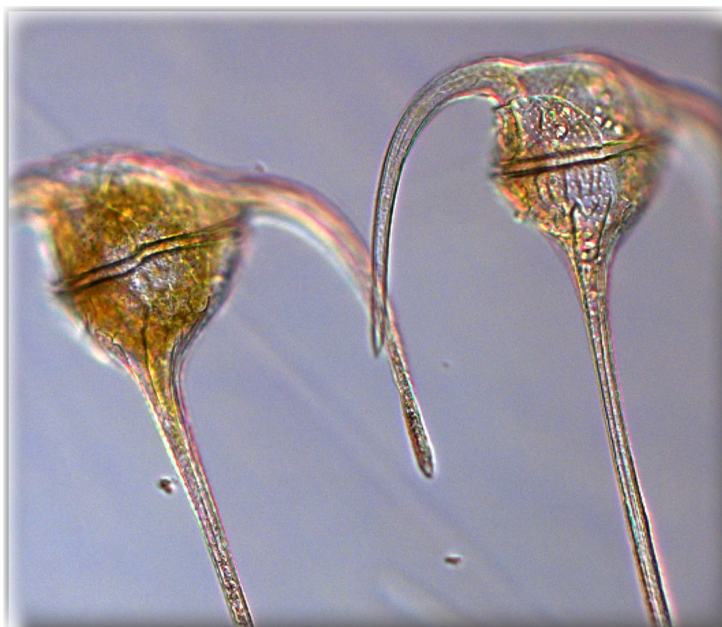


Fig 1 The dinoflagellate *Tripes muelleri* was present in the Skagerrak and Kattegat samples. Photo: A. Skjevik.

The Kattegat

Anholt E 22nd and 24th of May

Both the phytoplankton diversity and abundance were low on both occasions. The samples were dominated by small cells where many could not be identified even to order. Among the smaller cells the order cryptomonadales was found in highest cell numbers. The integrated (0-20 m) and (0-10 m) chlorophyll concentrations were below the normal range for this month.

N14 Falkenberg 22nd of May

Both the phytoplankton diversity and abundance were low. The sample was dominated by smaller cells. The larger cells were few but a couple of cells of *Tripes muelleri* were found. The smaller cells were mainly cells that could not be identified to any taxonomic level but *Telonema subtile* was found in relatively high cell numbers. The integrated (0-20 m) and (0-10 m) chlorophyll concentrations were low but within the normal range for this month.

The Baltic

BY2 21st of May

Both phytoplankton diversity and abundance were relatively low. Mostly small cells were present in the sample. Among the smaller cells different cells belonging to Prymnesiales* were common together with different cryptomonadales. Different colony forming cyanobacteria were also common. Both the integrated (0-20 m) and (0-10 m) chlorophyll concentrations were normal range for this month.

BY5 21st of May

Both phytoplankton diversity and abundance were low. Mostly small cells dominated in the sample. Among the smaller cells different smaller cells belonging to Prymnesiales* were most common. Among the larger cells different naked dinoflagellates and ciliates were present. Both the integrated (0-20 m) and (0-10 m) chlorophyll concentrations were normal range for this month.

BY15 20th of May

Both phytoplankton diversity and abundance were low. Several filaments of the cyanobacteria *Aphanizomenon flosaquae* were found. Different ciliates were also common, among those *Mesodinium rubrum* was very common. *Dinophysis acuminata** was present in low numbers. Among the smaller cells small naked dinoflagellates were most common together with different species of the order cryptomonadales. The integrated (0-20 m) and (0-10 m) chlorophyll concentrations were within normal for this month.

BY38 19th of May

Both phytoplankton diversity and abundance were relatively high. Several filaments of the cyanobacteria *Aphanizomenon flosaquae* were found. Among the dinoflagellates both *Peridiniella catenata* and the genus *Dinophysis* were common. Different ciliates were also common, such as *Mesodinium rubrum*. Among the smaller cells small naked dinoflagellates were most common. The integrated (0-20 m) and (0-10 m) chlorophyll concentrations were within normal for this month.

REFM1V1 19th of May

Both phytoplankton diversity and abundance were low. The sample mainly contained different species of the genus *Dinobryon* where *D. faiculiferum* was most common. Other more common species were the ciliate *Mesodinium rubrum*, the genus *Pyramimonas* and the dinoflagellate *Heterocapsa rotundata*. The integrated (0-20 m) and (0-10 m) chlorophyll concentrations were within normal for this month.

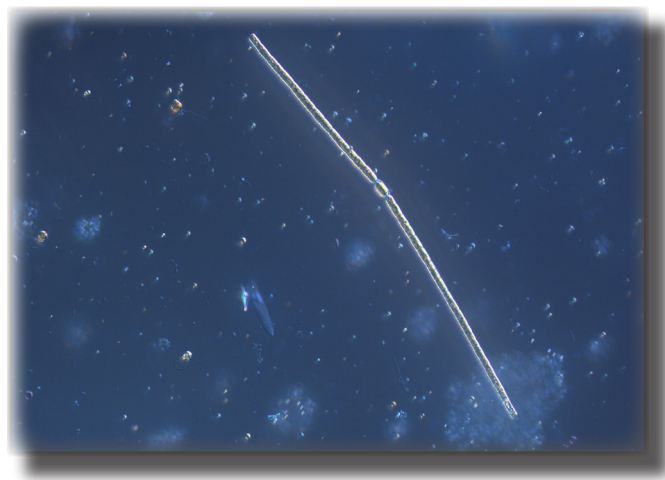
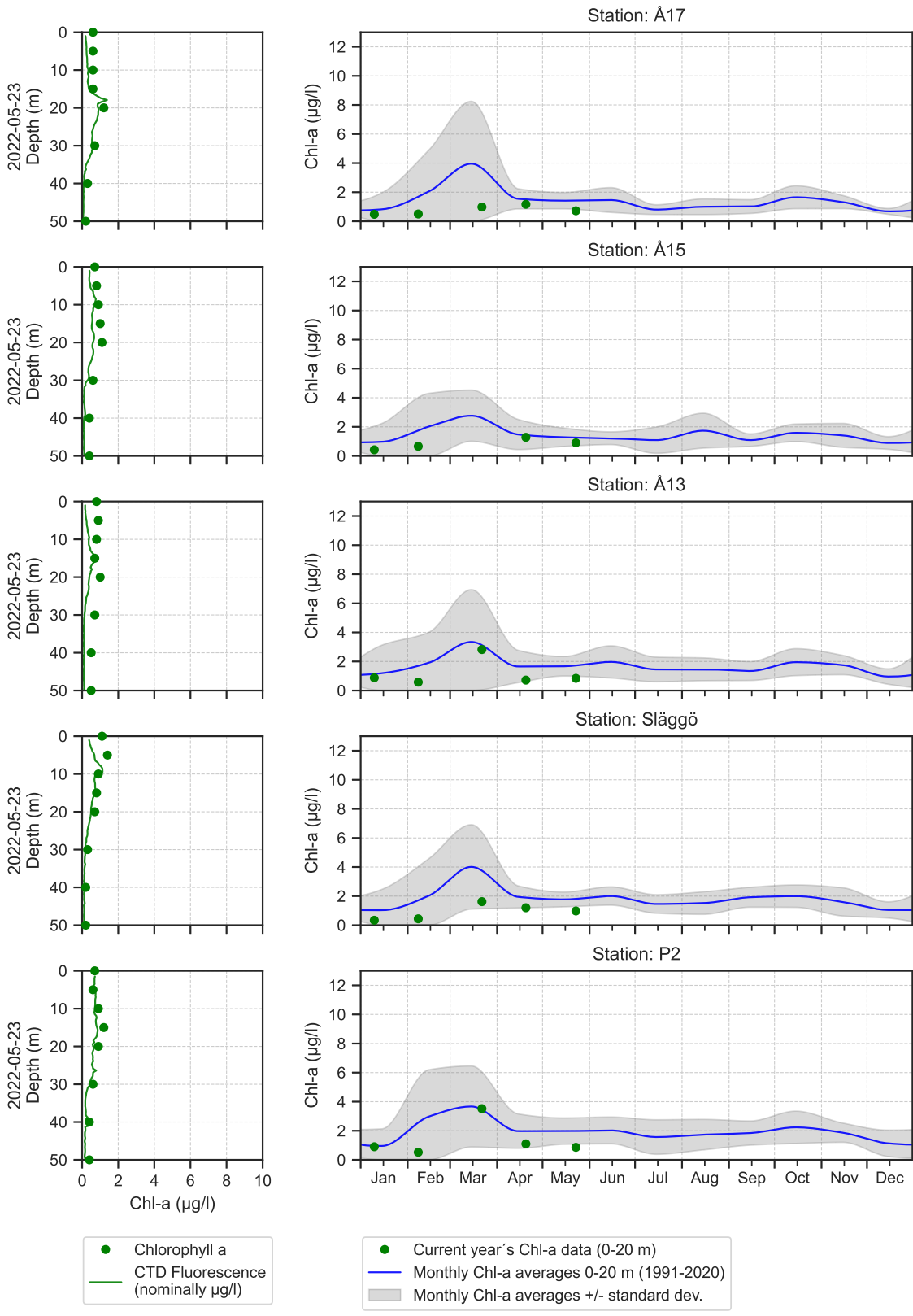


Fig 2. The filamentous cyanobacteria *Aphanizomenon flosaquae* was found at the more northern stations of the Baltic Proper. Photo: A. Skjevik.

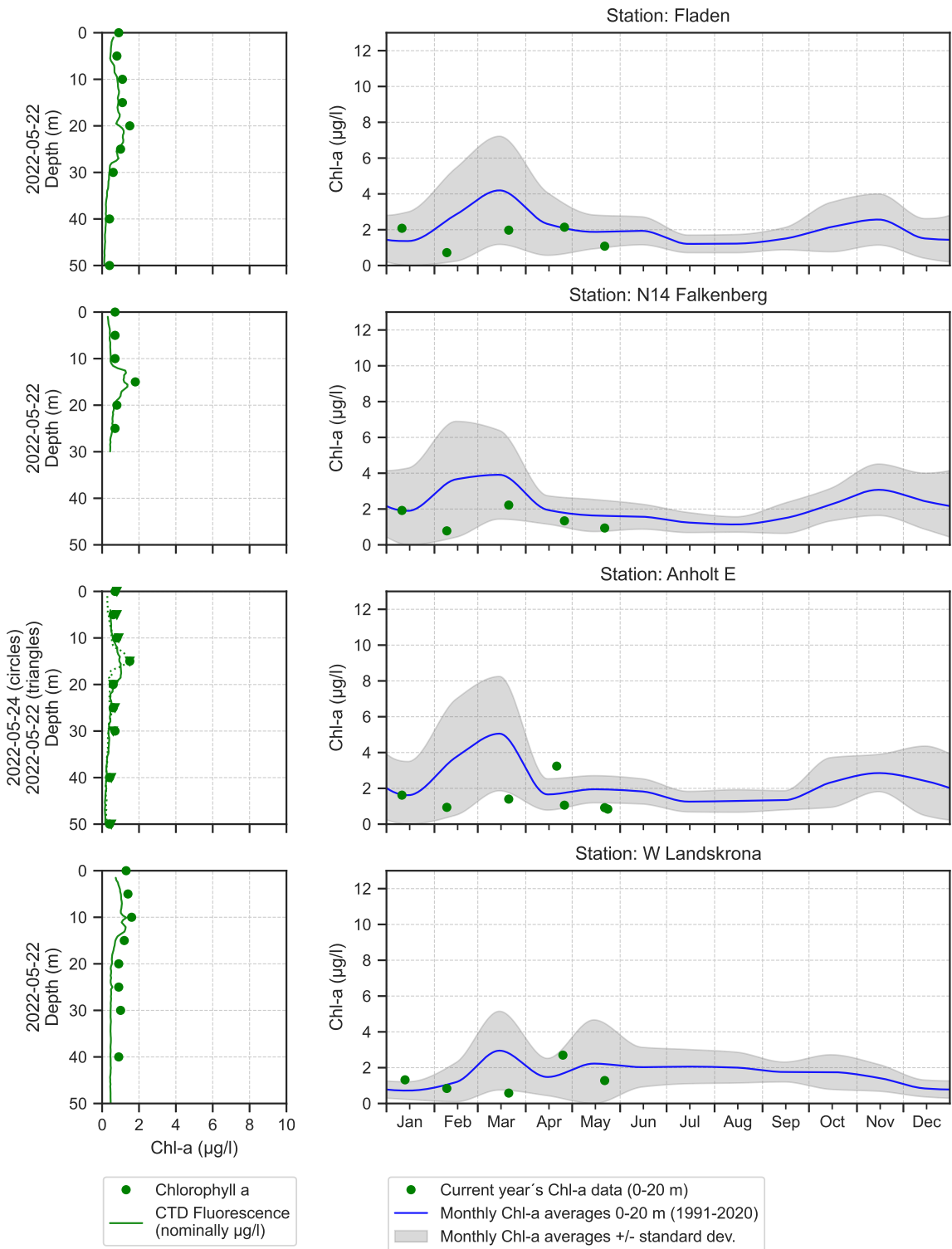
Selection of observed species	Anholt E	Anholt E	N14	Släggö	Å17
Red=potentially toxic species	22/5	24/5	22/5	23/5	22/5
Hose 0-10 m	presence	presence	presence	presence	presence
Skeletonema marinoi	present		present		
Choanoflagellata			present		present
<i>Dinophysis norvegica</i>				present	present
Gymnodiniales	common	common	common	present	present
Heterocapsa rotundata	present				
Peridinales	present				present
Tripos fusus					present
Tripos longipes				common	present
Tripos muelleri	present	present	present	present	present
Dinobryon balticum					present
Dinobryon faculiferum	present				
Ollicola vangoorii	present				present
Emiliana huxleyi				present	common
Oocystis		present			
Pyramimonas		present			
Cryptomonadales	common		common	common	common
Telonema subtile	present	present	common	present	
Ebria tripartita		present			
Ciliophora	common	common	common	common	common
Mesodinium rubrum				present	

Selection of observed species	BY2	BY5	BY15	BY38	REFM1V1
Red=potentially toxic species	21/5	21/5	20/5	19/5	19/5
Hose 0-10 m	presence	presence	presence	presence	presence
Chaetoceros similis			present		
Amphidinium					present
Amylax triacantha				present	
Amylax triacantha var. buxus				present	
<i>Dinophysis acuminata</i>			present	common	
<i>Dinophysis norvegica</i>		present	present	present	present
Gymnodiniales	common	common	present	common	common
Gyrodinium spirale				present	
Heterocapsa				present	
Heterocapsa rotundata	present				
Heterocapsa triquetra					present
Peridinales		present			present
Peridiniella catenata				common	
Protoperidinium bipes					present
Protoperidinium brevipes				present	present
Dinobryon	present			present	present
Dinobryon balticum	present				present
Dinobryon faculiferum					common
<i>Prymnesiales</i>	common	common			present
Oocystis	present				
Binuclearia lauterbornii	present	present	present	present	
Pyramimonas	present		present	present	present
Cryptomonadales	common	present	common		present
Telonema subtile	present	present			
Eutreptiella					present
Eutreptiella gymnastica					present
Aphanizomenon flosaquae				common	
Aphanocapsa	present	present			
Aphanothece		present	present		
Lemmermanniella	present	present			
Snowella		present			
Choanoflagellata		present		present	present
Ciliophora	present	common	common	common	present
Mesodinium rubrum		present	common	common	present

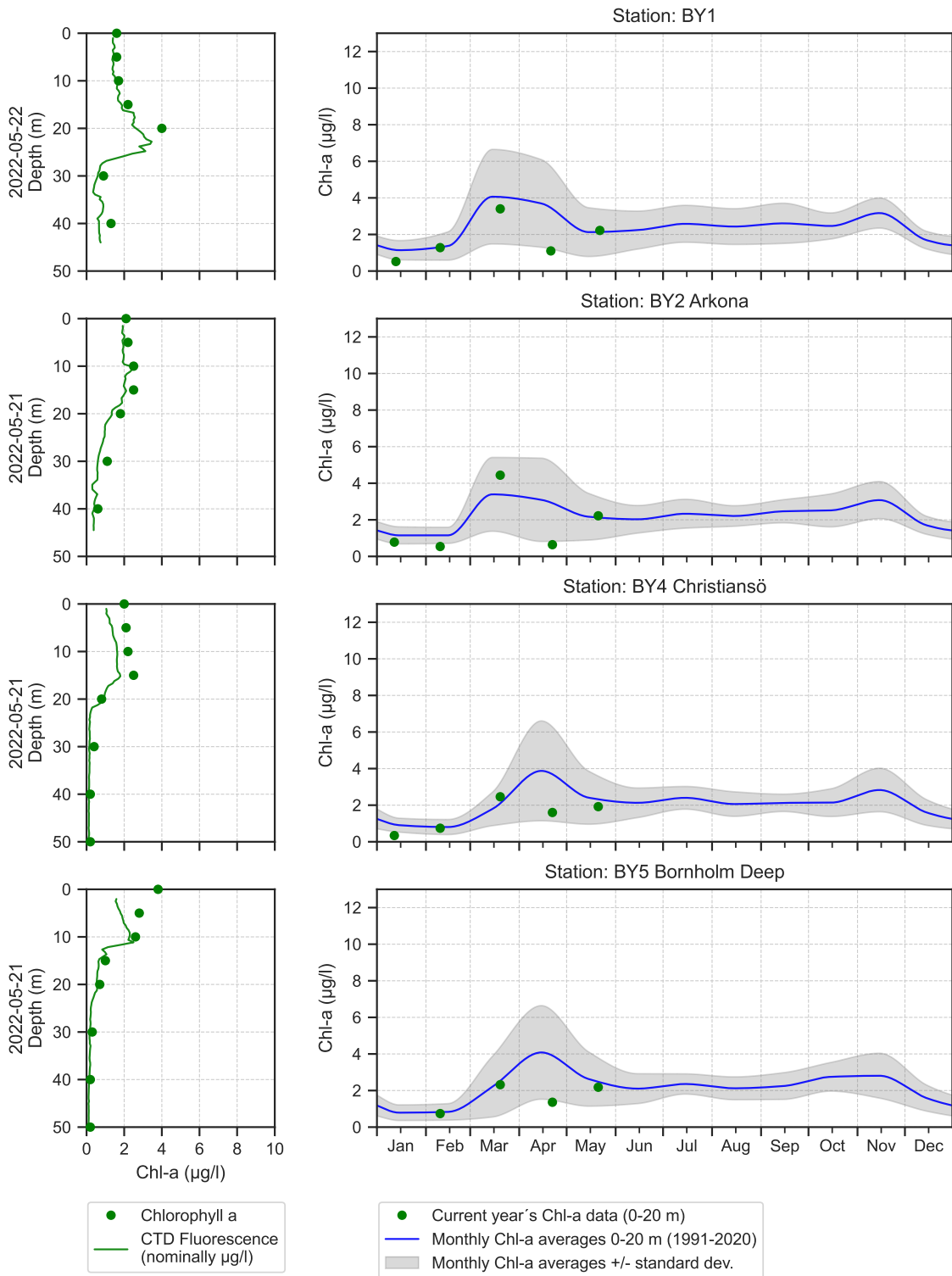
The Skagerrak



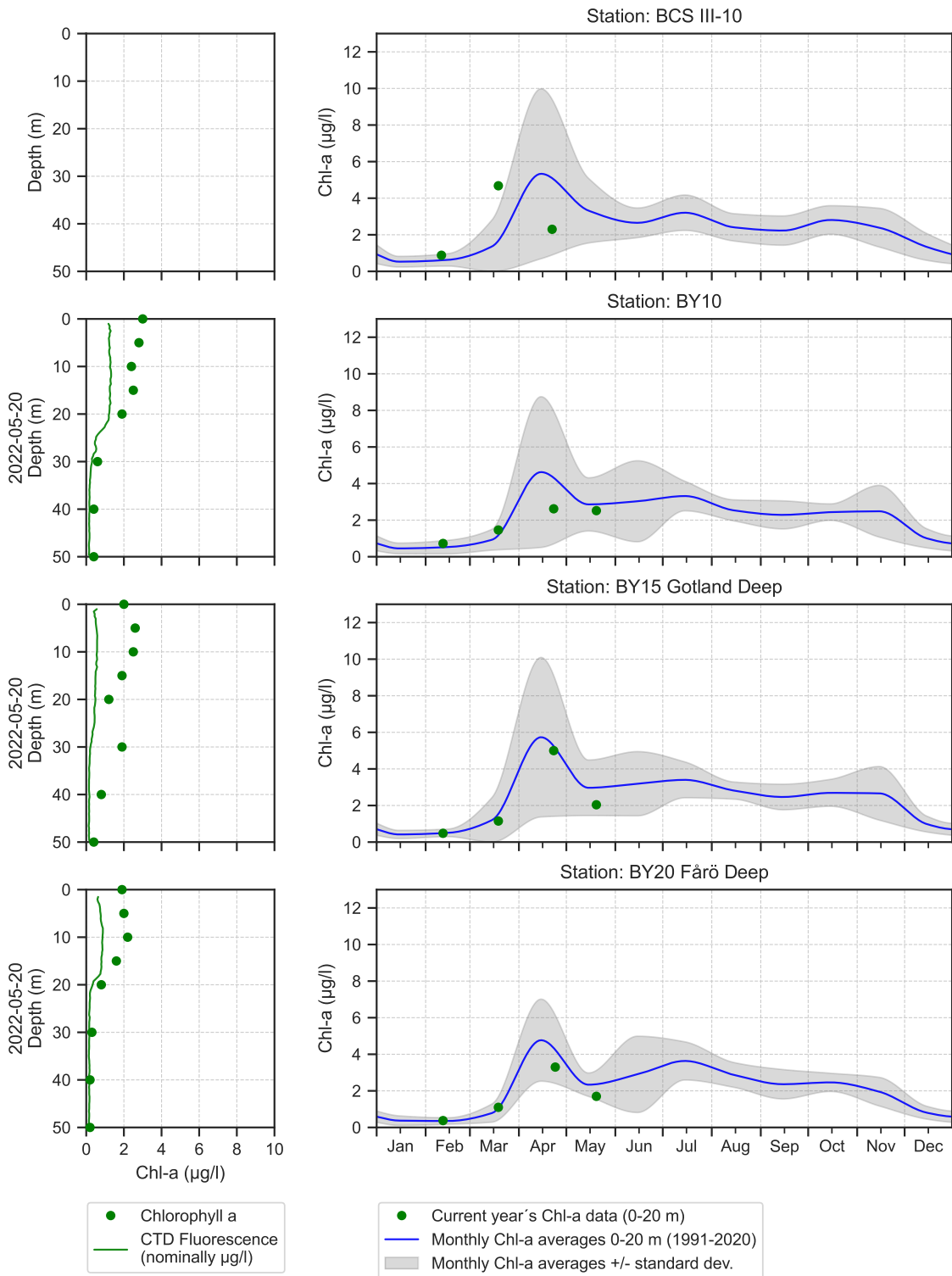
The Kattegat and The Sound



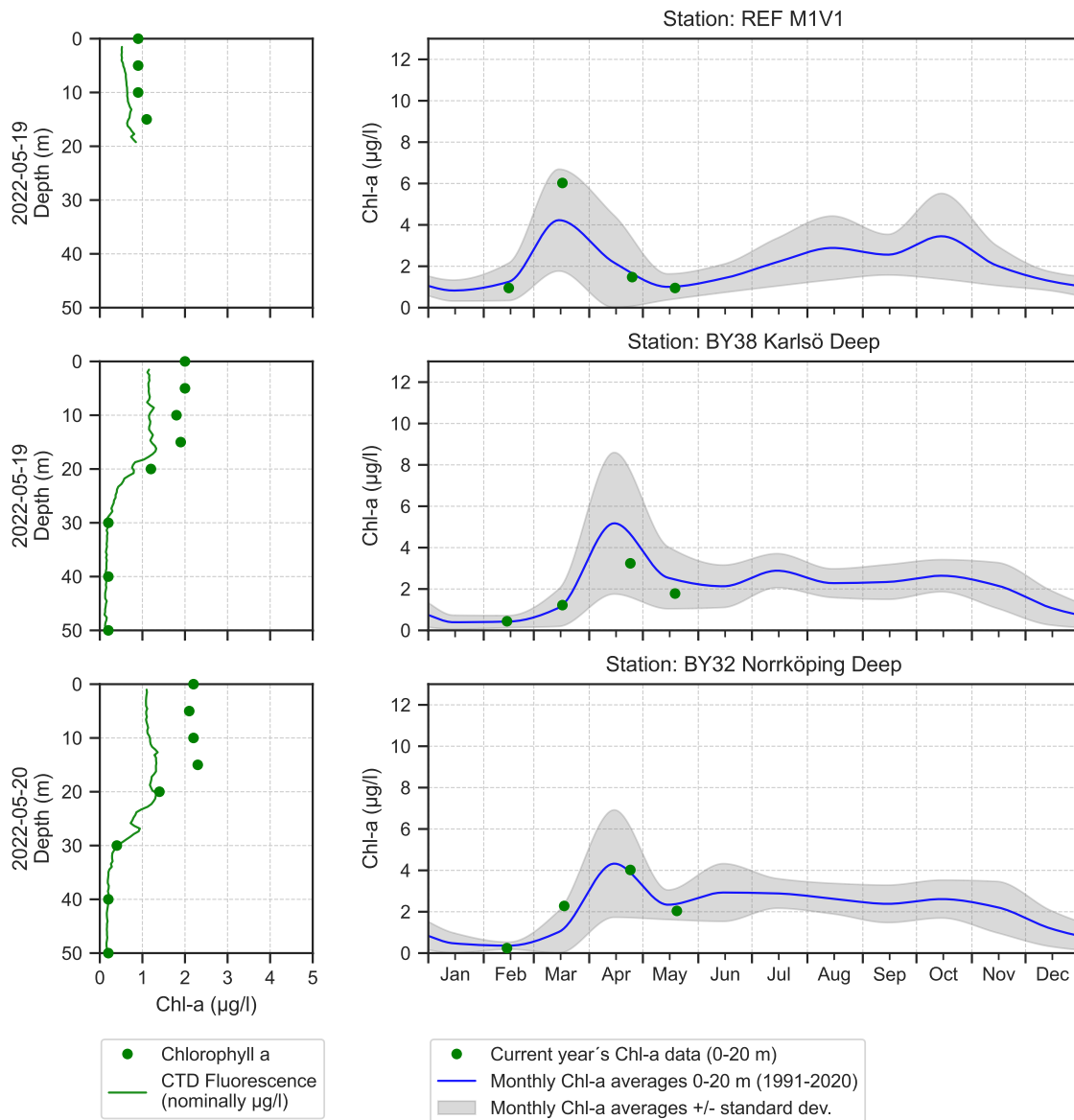
The Southern Baltic



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 algbloomingar 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, magkramper Extrema symptom: Yrsel, hallucinationer, förvirring, förlust av korttidsminnet, kramper	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.

