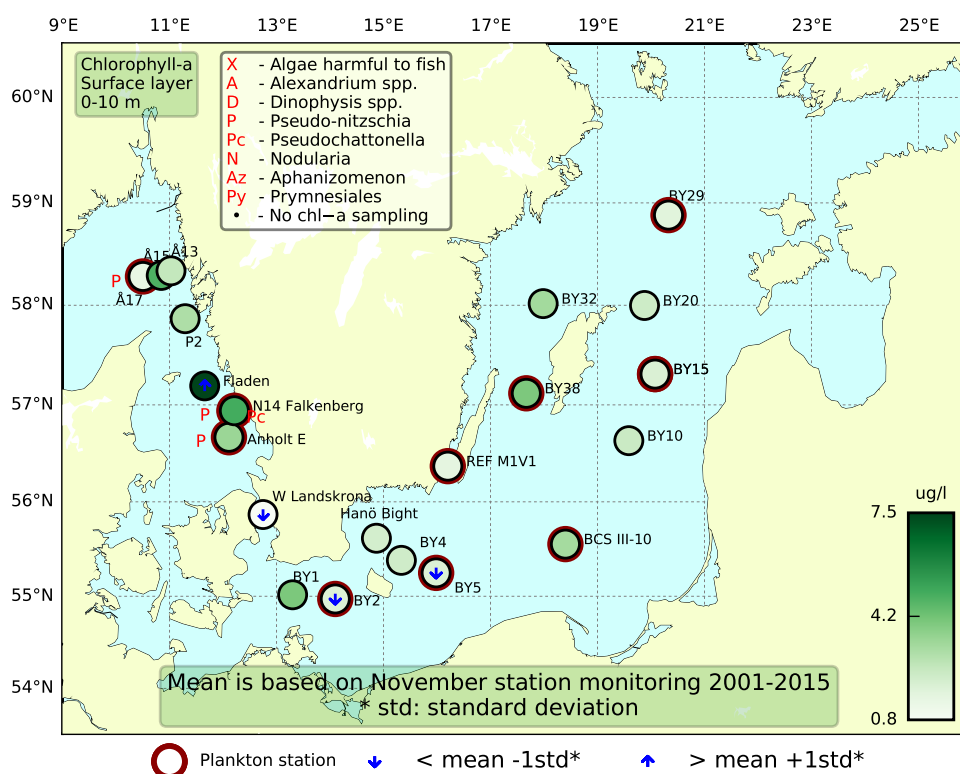


Sammanfattning

I Skagerraks utsjövatten samt i Kattegatt var celltätheten relativt hög. Det potentiellt giftiga kiselalgssläktet *Pseudo-nitzschia* * dominerade vid samtliga stationer. Kalkalgen *Emiliania huxleyi* var vanlig bland de små cellerna vid samtliga stationer. De integrerade klorofyllhalterna i ytvattnet (0-10 m) var inom det normala för månaden förutom vid Fladen där de var förhöjda. De integrerade klorofyllvärdena i vattenmassan mellan 0-20 m var inom det normala för månaden utom vid N14 Falkenberg där koncentrationer över det normala påvisades.

I Östersjön återfanns låga totala cellantal samt låg biodiversitet vid samtliga stationer. Kiselalgssläktet *Actinocyclus* återfanns i moderata mängder vid många stationer. Några filament av cyanobakterien *Aphanizomenon flosaquae* återfanns vid de södra stationerna. De integrerade klorofyllhalterna i ytvattnet (0-10 m) var inom det normala för månaden förutom i södra Östersjön där de var lägre än normalt. De integrerade klorofyllhalterna i vattenmassan mellan 0-20 m var inom det normala för månaden utom vid BY38 Karlsödjupet där de var något över det normala.



Abstract

The total cell concentrations in the open Skagerrak and in the Kattegat were relatively high. The potentially toxic diatom genus *Pseudo-nitzschia* * dominated at all stations. The coccolithophorid *Emiliania huxleyi* was common among the small cells at all stations. The integrated chlorophyll concentrations in the surface water (0-10 m) were within normal for this month except for Fladen where the concentration was above normal. The integrated chlorophyll concentrations in the deeper water (0-20 m) were within normal for the month except at N14 Falkenberg where the concentration was above normal for the month.

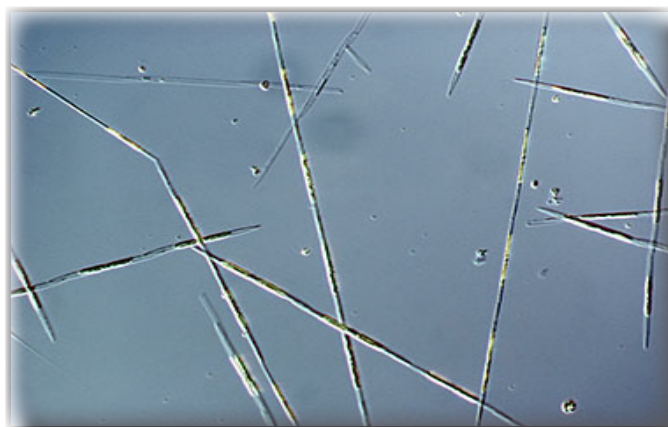
The total cell concentrations and biodiversity were low in the whole Baltic proper. The diatom genus *Actinocyclus* was present in moderate amounts at many stations. Some filaments of the cyanobacteria *Aphanizomenon flosaquae* were present at the sampling stations in the southern part. The integrated chlorophyll concentrations in the surface water (0-10 m) were within normal for this month except for the southern Baltic where the concentrations were below normal. The integrated chlorophyll concentrations in deeper water (0-20 m) were within normal for the month except at BY38 Karlsö deep where the concentration was slightly above normal for the month.

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

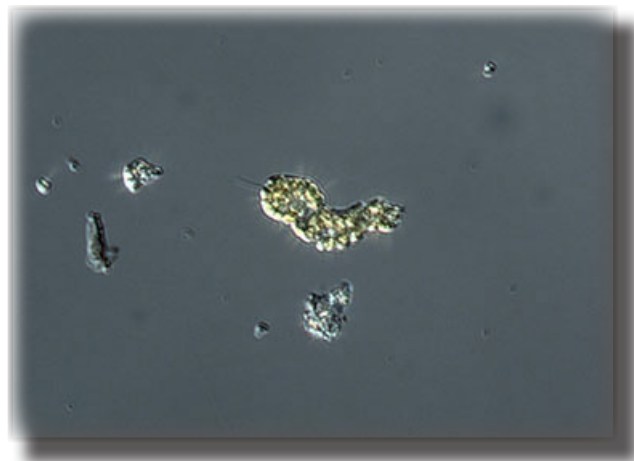
The Skagerrak

Å17 (open Skagerrak) 14th of November

The total cell concentrations and biodiversity were both moderate. The plankton community was dominated by diatoms and most abundant was the potentially toxic genus *Pseudo-nitzschia**. The coccolithophorid *Emiliania huxleyi* was most common among the small cells. The dinoflagellates *Ceratium macroceros* and *Karenia mikimotoi* were also found in higher cell numbers. The integrated chlorophyll concentration at both 0-10 m and 0-20 m were within normal for the month



The potentially toxic diatom genus *Pseudo-nitzschia* was common at all stations along the west coast.



The flagellate genus *Psudochattonella** was found in moderate cell concentrations at N14 Falkenberg.

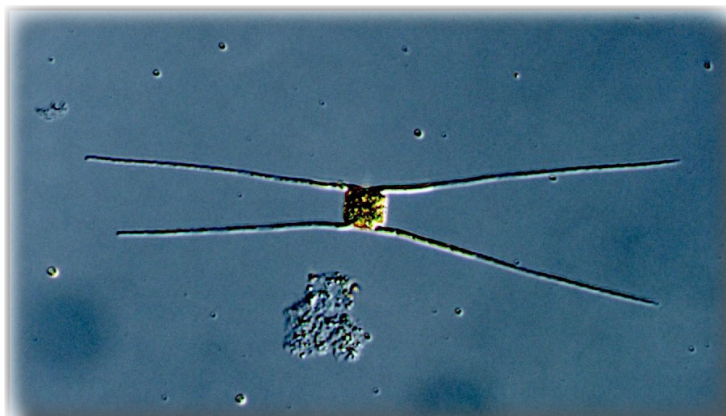
The Kattegat

Anholt E 13th of November

The total cell concentrations and biodiversity were both relatively high. The plankton community was dominated by different diatoms. Most abundant was the potentially toxic genus *Pseudo-nitzschia** together with *Cerataulina pelagica* in a bit lower concentrations. The coccolithophorid *Emiliania huxleyi* was most common among the small cells. The integrated chlorophyll concentrations at both 0-10 and 0-20 m were within normal for the month.

N14 Falkenberg 13th of November

The total cell concentrations and species diversity were moderate. Different diatoms dominated in the sample. The most dominant taxon was the potentially toxic genus *Pseudo-nitzschia**. The flagellate genus *Psudochattonella** was found in moderate cell concentrations. The integrated chlorophyll concentration at 0-10 m was within normal whereas the integrated concentration at 0-20 m was slightly above normal for the month.



The diatom *Chaetoceros danicus* was present at several stations in the Baltic.

BY2 13th and BY5 12th of November

Low total cell abundancies and species diversity were recorded. Some cells of the diatom genus *Actinocyclus* were found together with a few filaments of the cyanobacterium *Aphanizomenon flosaquae*. The integrated chlorophyll concentration at 0-10 m was below normal whereas the integrated concentration at 0-20 m was in the lower range of what is normal for the month.

BY29 10th of November

Total cell concentrations and biodiversity were both very low. Some cells of the diatom genus *Actinocyclus* were present together with moderate cell numbers of the order Cryptomonadales. No chlorophyll data was available for this station.

BY15 11th of November

Total cell concentrations and biodiversity were both low. Some cells of the diatom genus *Actinocyclus* were present together with moderate cell numbers of the order Cryptomonadales. . The integrated chlorophyll concentrations at both 0-10 and 0-20 m were within normal for the month.

BCSIII-10 11th of November

The total cell concentrations and biodiversity was low. The sample was dominated by small cells of the mixtrophic ciliate *Mesodinium rubrum* and different flagellates belonging to the order Cryptomonadales. The integrated chlorophyll concentrations at both 0-10 and 0-20 m were within normal for the month.

RefM1V1 12th of November

The sample had a lot of detritus in it. The total cell concentrations and biodiversity was very low. A few chains of the diatom *Skeletonema marinoi* were present. Different species of the order Cryptomonadales were also quite common. . The integrated chlorophyll concentrations at both 0-10 and 0-20 m were within normal for the month.

BY31 10th of November

The total cell concentrations and biodiversity were low. Different cells of the order cryptomonadales dominated. The mixotrophic ciliate *Mesodinium rubrum* was present in moderate concentrations. Different colonies of cyanobacteria were also present in moderate amounts. No chlorophyll data was available for this station.

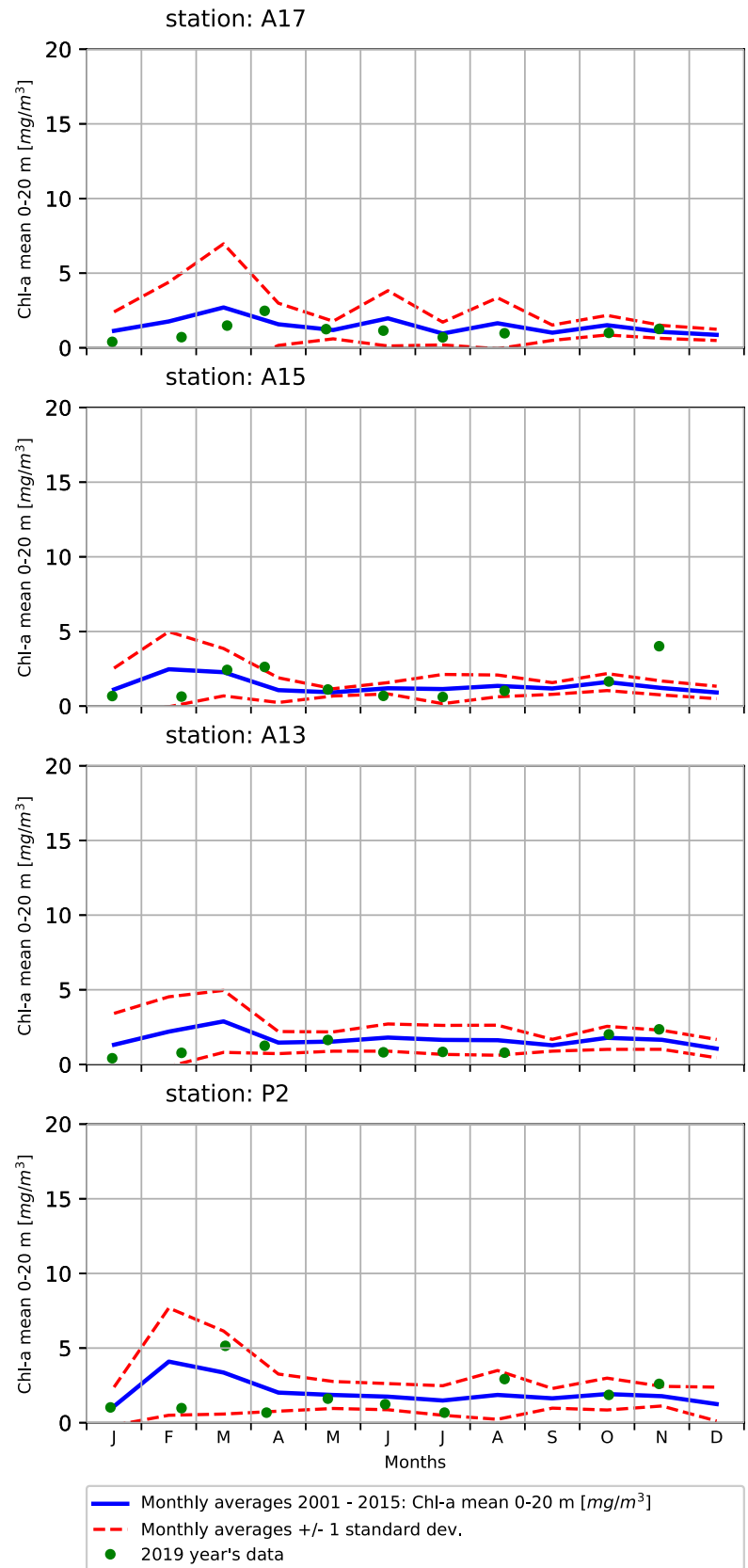
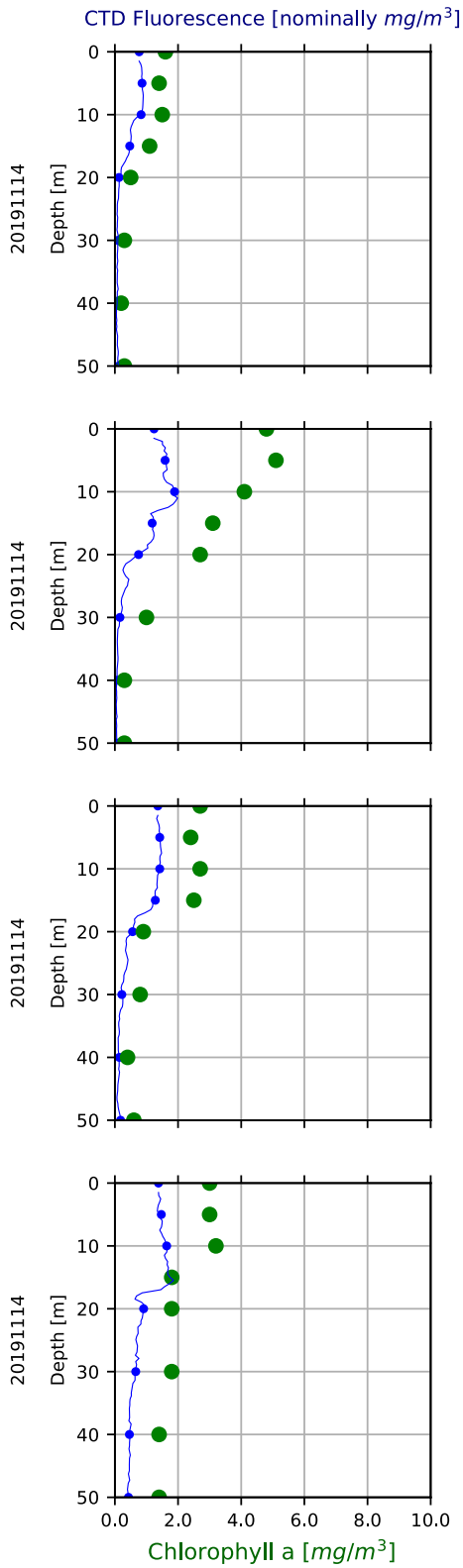
BY38 11th of November

The total cell concentrations and biodiversity were low. The diatom genus *Actinocyclus* was found in high concentrations. The mixotrophic ciliate *Mesodinium rubrum* was found in moderate cell numbers. The colony forming cyanobacterium genus *Snowella* was found in high cell numbers. The integrated chlorophyll concentration at 0-10 m was within normal whereas the integrated concentration at 0-20 m was slightly above normal for the month.

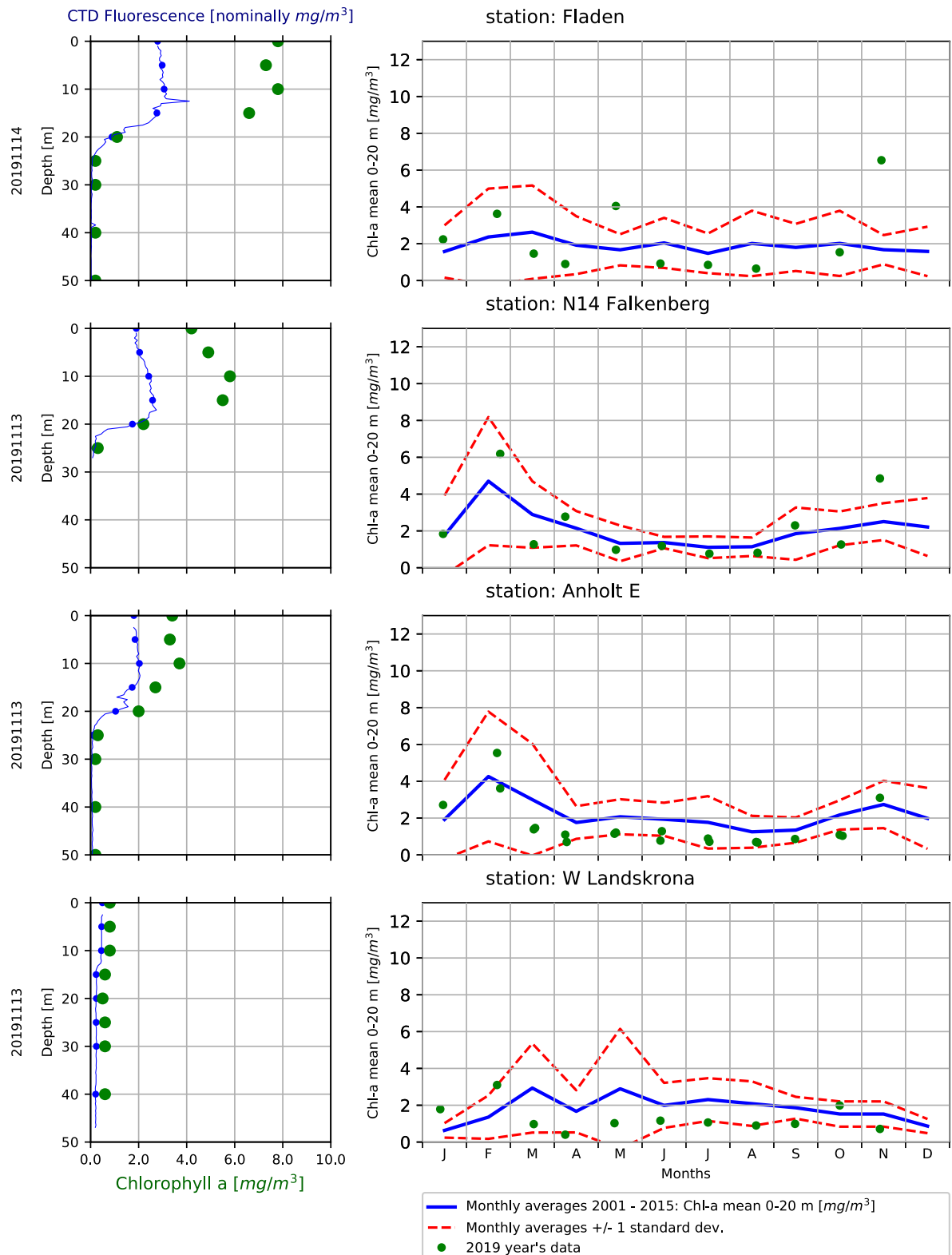
Selection of observed species	Anholt E	N14 Falkenberg	Å17
Red=potentially toxic species	13/11	13/11	14/11
Hose 0-10 m	presence	presence	presence
<i>Cerataulina pelagica</i>	common	common	present
<i>Chaetoceros affinis</i>	present	present	
<i>Chaetoceros convolutus</i>	present	present	
<i>Chaetoceros curvisetus</i>	present		
<i>Chaetoceros danicus</i>	present	present	present
<i>Chaetoceros debilis</i>	common	common	present
<i>Chaetoceros socialis</i>	present		
<i>Coscinodiscus concinnus</i>		present	
<i>Dactyliosolen blavyanus</i>			present
<i>Dactyliosolen fragilissimus</i>	common	common	
<i>Ditylum brightwellii</i>	present	present	present
<i>Guinardia flaccida</i>	present		
<i>Lauderia annulata</i>			present
<i>Leptocylindrus danicus</i>	common	present	present
<i>Nitzschia longissima</i>		present	present
<i>Paralia sulcata</i>			present
<i>Proboscia alata</i>	common	common	present
<i>Pseudo-nitzschia</i> spp	dominating	dominating	dominating
<i>Pseudosolenia calcar-avis</i>	present	present	
<i>Rhizosolenia pungens</i>	present	present	
<i>Rhizosolenia setigera</i>	present	present	present
<i>Skeletonema marinoi</i>	common	present	present
<i>Thalassiosira</i> spp			present
<i>Thalassiosira gravis</i>	present	present	present
<i>Akashiwo sanguinea</i>			present
<i>Ceratium fusus</i>	present		
<i>Ceratium lineatum</i>		present	present
<i>Ceratium macroceros</i>			present
<i>Ceratium tripos</i>	present	present	
<i>Gyrodinium spirale</i>	present		
<i>Karenia mikimotoi</i>			common
<i>Prorocentrum cordatum</i>	present	present	
<i>Prorocentrum micans</i>	present		
<i>Protoperidinium</i> spp	present		
<i>Protoperidinium depressum</i>		present	
<i>Protoperidinium divergens</i>			present
<i>Protoperidinium pellucidum</i>			present
<i>Emiliana huxleyi</i>	common	common	common
<i>Prymnesiales</i>		present	
<i>Cryptomonadales</i>	present	present	present
<i>Telonema subtile</i>		present	
<i>Dictyocha speculum</i>	present	present	present
<i>Pseudochattonella</i> spp	present	common	
Choanoflagellata	present		
Ciliophora	common	present	present

Selection of observed species	BCSIII-10	BY2	BY5	BY15	BY29	BY31	BY38	RefM1V1
Red=potentially toxic species	11/11	13/11	12/11	11/11	10/11	10/11	11/11	12/11
Hose 0-10 m	presence	presence	presence	presence	presence	presence	presence	presence
Actinocyclus spp	common	common	common	common	present	present	common	
Chaetoceros castracanei		present		present				
Chaetoceros danicus	present	present	present	present	present	present		
Cf. Cyclotella choctawhatcheeana				present				
Skeletonema marinoi								common
<i>Dinophysis acuminata</i>					present	present		
Gymnodiniales	present	present		present	present	present	present	common
Heterocapsa spp						present	present	
Heterocapsa rotundata						present		
Phalacroma rotundatum						present		
Prorocentrum cordatum								present
Prymnesiales								present
Monoraphidium spp							present	
Oocystis spp						present		
Binuclearia lauterbornii				present	present	present	present	
Cryptomonadales	common	present	common	common	common	common	present	common
<i>Aphanizomenon flosaquae</i>		common	present					
Aphanocapsa spp	present					present	present	
Aphanothece spp			present	present		present		
Lemmermanniella	present				present	present	present	
cf. Snowella spp	present	present	present	present	present	present	common	
Choanoflagellatea				present				
Ebria tripartita			present					
Ciliophora	present	present	present	present	common		present	common
Mesodinium rubrum	common			present	present	common	common	common

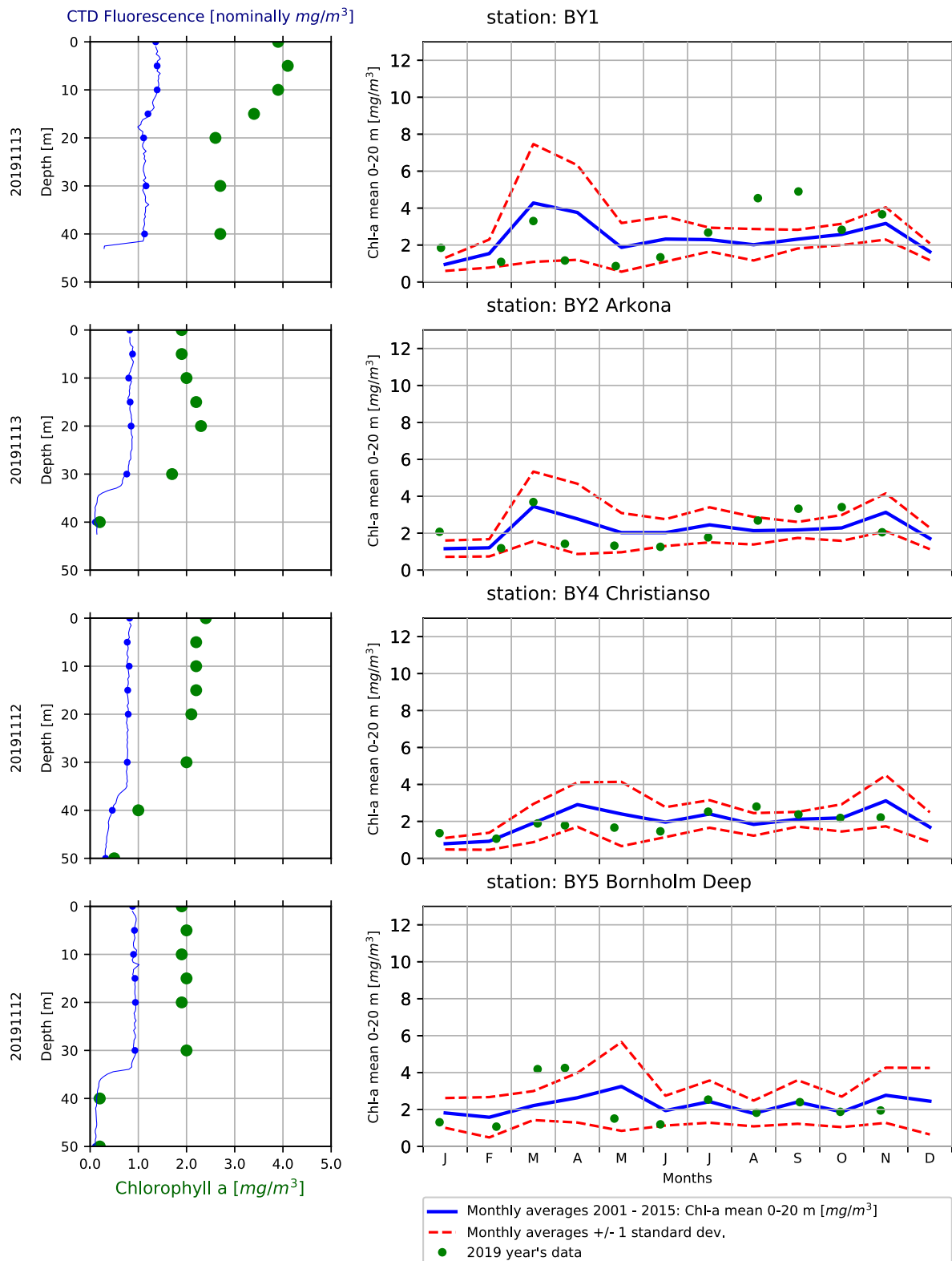
The Skagerrak



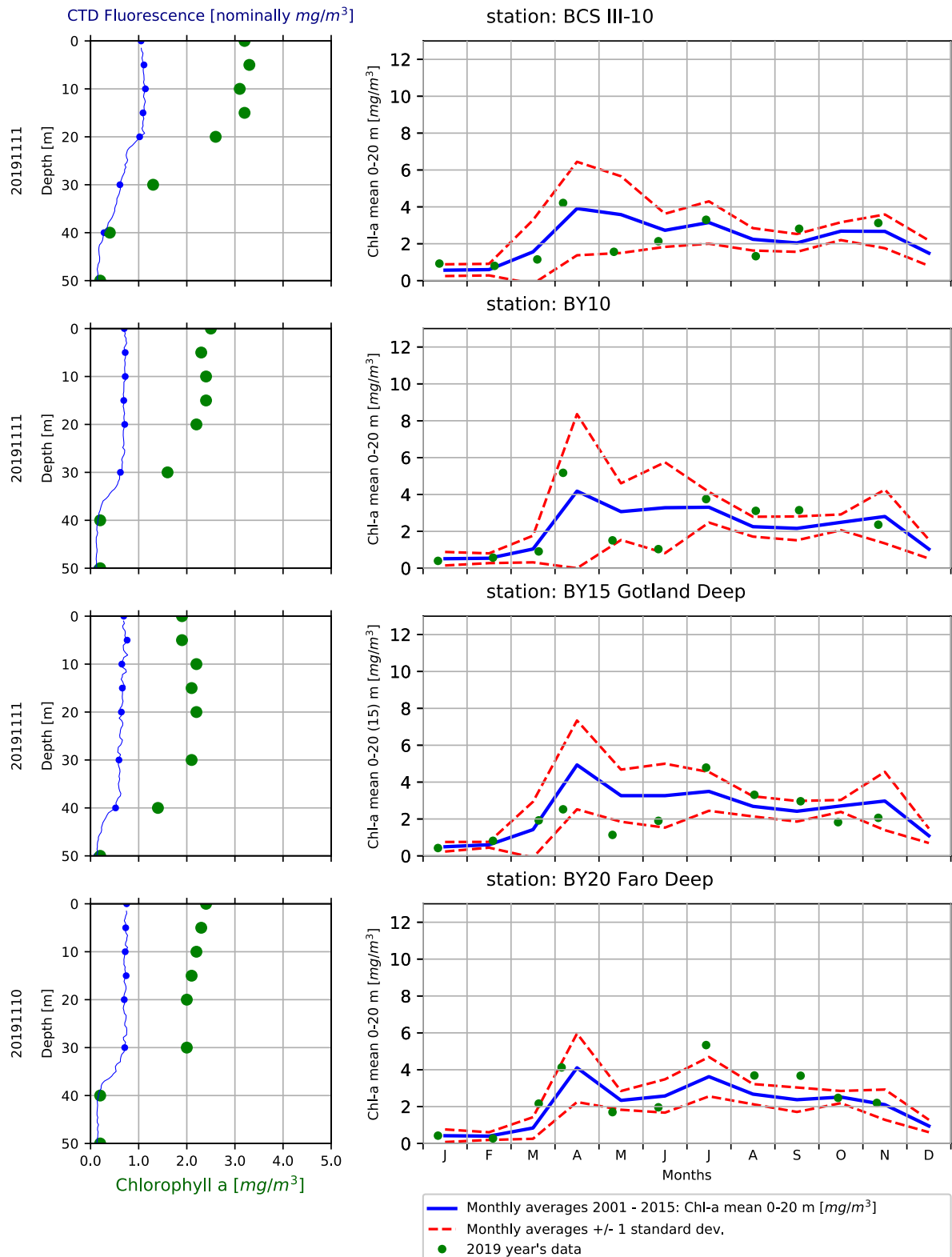
The Kattegat and The Sound

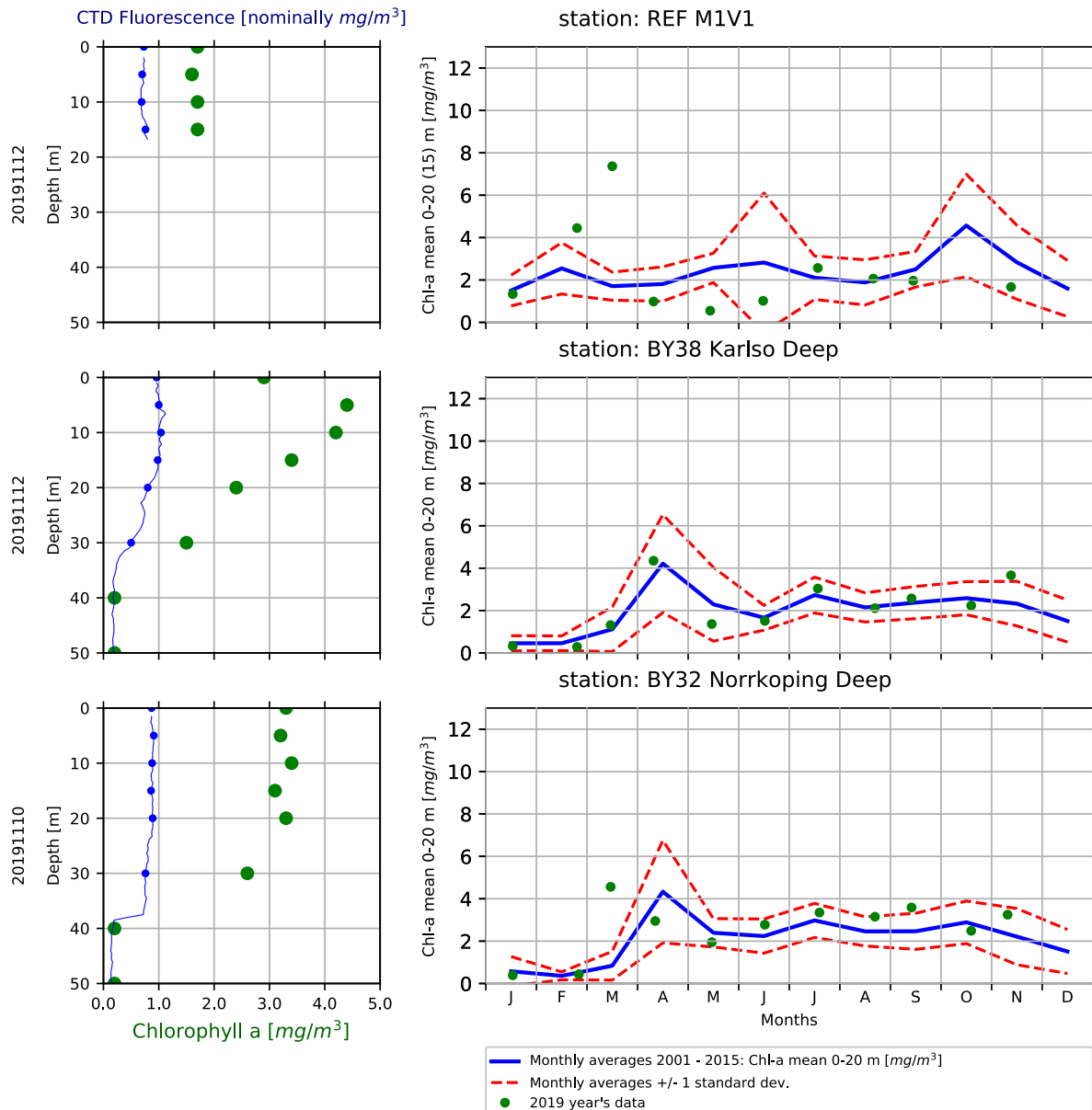


The Southern Baltic



The Eastern 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.

