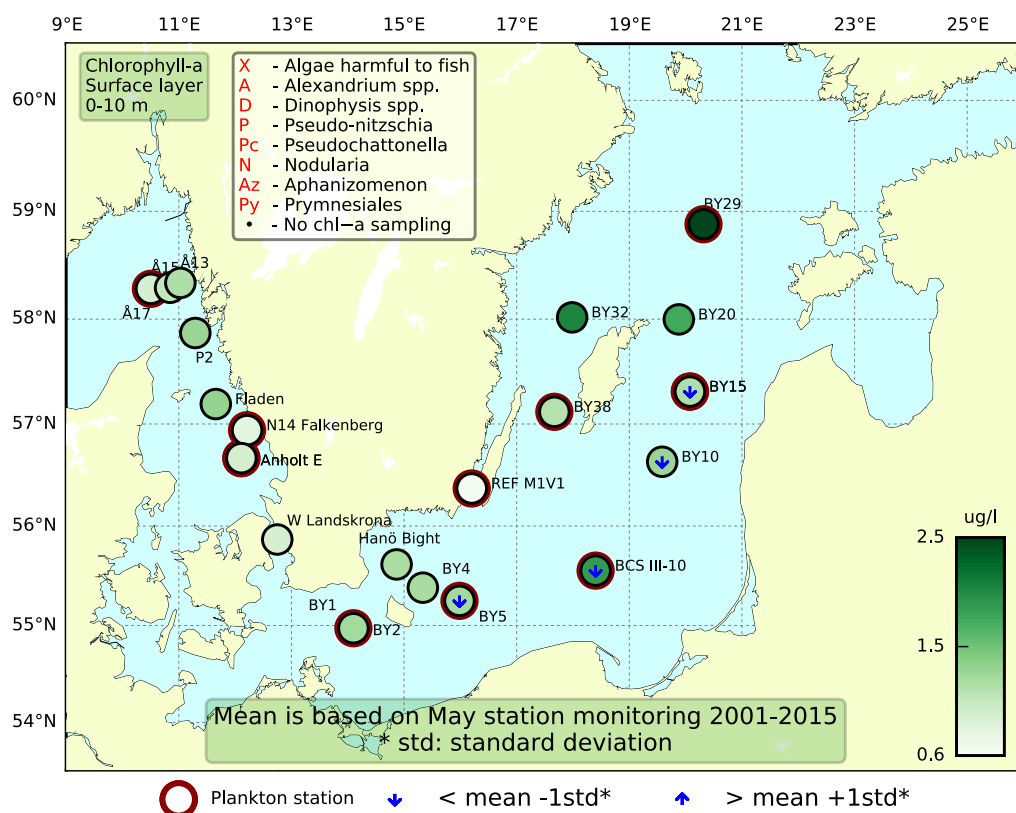


Sammanfattning

Vid de flesta växtplanktonstationer i Västerhavet dominerade små celler. Kalkalgen *Emiliania huxleyi* dominerade vid Å17 och var vanlig vid övriga stationer i Västerhavet. Vid Kattegattstationerna återfanns spår av vårblomningen då både *Skeletonema marinoi* och *Guinardia delicatula* återfanns i högre cell antal. De integrerade klorofyllhalterna visade på låga halter, men inom det normala för månaden.

Generellt sätt var både cellantal och artdiversiteten låg på samtliga stationer i Östersjön. Låga till måttliga antal av filament av cyanobakterien *Aphanizomenon flosaquae* återfanns vid samtliga stationer. Det potentiellt giftiga dinoflagellatsläktet *Dinophysis** återfanns i högre tätheter vid ett par stationer. De integrerade klorofyllhalterna visade på låga halter och ibland under det normala för månaden.



Abstract

Most stations along the Swedish West coast had a domination of small cells. The coccolithophore *Emiliania huxleyi* was common at all stations and even dominated in cell numbers at Å17. In Kattegat remnants of the spring bloom could be seen with higher cell numbers of the diatoms *Skeletonema marinoi* and *Guinardia delicatula*. The integrated chlorophyll concentrations were low but within normal for the month.

The cell abundance and biodiversity was generally quite low at most stations in the Baltic Proper. Low to moderate filaments of the cyanobacteria *Aphanizomenon flosaquae* was found at all stations. The potentially toxic dinoflagellate genus *Dinophysis** was found in relatively high numbers at a few stations. The integrated chlorophyll concentrations were low and sometimes even below 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) 12th of May

High total cell concentrations dominated by small cells. Only a few large cells were found. The community was dominated by the coccolithophore *Emiliana huxleyi* that was found in numbers close to half a million cells per litre. Among the larger cells the diatom *Skeletonema marinoi* was most common. The integrated chlorophyll concentrations were within normal for this month.

Släggö (Skagerrak coast) 14th of May

Total cell numbers was relatively high but biodiversity was moderate. The diatom *Skeletonema marinoi* dominated in cell numbers. The smaller cells were dominated by coccolithophore *Emiliana huxleyi*, the dinoflagellate *Karlodinium veneficum** and different Cryptomonadales. The sample was taken outside the ordinary cruise. The chlorophyll results are not shown in this report.

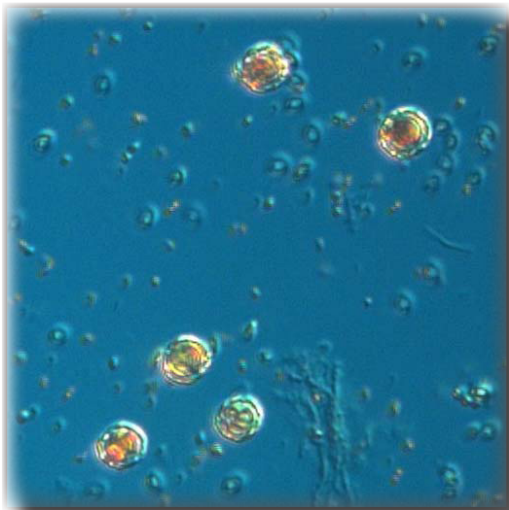


Photo 1: The coccolithophore *Emiliana huxleyi* was found in moderate to high cell numbers at all stations along the Swedish West coast.

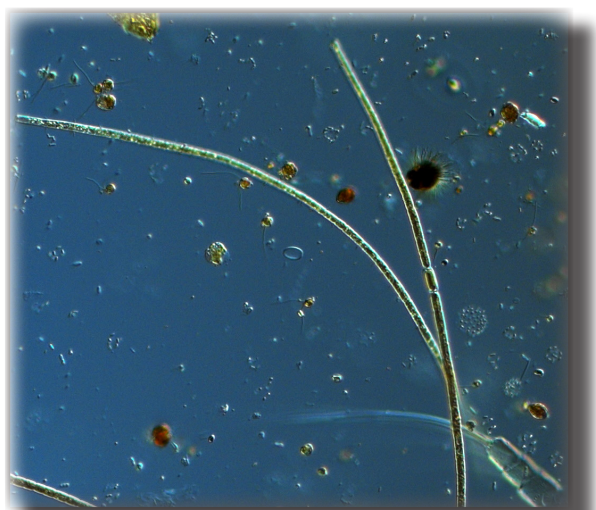


Photo 2: The filamentous cyanobacterium *Aphaniizomenon flosaquae* was found in low or moderate numbers at all of the Baltic stations.

The Kattegat

Anholt E 12th and 13th of May

The total cell number was low and dominated by small cells of unknown taxonomic place. Among the larger cells the diatoms *Proboscia alata*, *Skeletonema marinoi* and *Guinardia delicatula* were found in highest cell numbers. The coccolithophore *Emilia huxleyi* was found in moderate cell numbers on both occasions. The integrated (0-10 and 0-20 m) chlorophyll concentrations were low but within normal for this month.

N14 Falkenberg 13th of May

The total cell concentration was low and the biodiversity moderate. Mainly small cells were found. Among the larger cells the diatoms *Proboscia alata* and *Guinardia delicatula* were most common. The small cells were dominated by moderate cell numbers of *Emiliana huxleyi*. The integrated (0-10 and 0-20 m) chlorophyll concentrations were low but within normal for this month.

The Baltic Sea

BY2 11th of May

Low total cell numbers was found mainly represented by small cells such as the dinoflagellate *Heterocapsa rotundata*. Different colony forming cyanobacteria such as *Aphanocapsa* spp., and *Snowella* spp. were also present in higher numbers. Different species belonging to the order cryptomonadales were present in higher cell concentrations. The filamentous cyanobacteria *Aphanizomenon flosaquae* was present with several filaments. The integrated (0-10 and 0-20 m) chlorophyll concentrations were low but within normal for this month.

BY5 11th of May

Low total cell numbers was found. The dinoflagellate *Dinophysis norvegica** was found in moderate cell numbers. The filamentous cyanobacteria *Aphanizomenon flosaquae* was also present in higher numbers. Different ciliates were common and among these *Mesodinium rubrum*. The integrated (0-10 and 0-20 m) chlorophyll concentrations were low but within normal for this month.

BY15 10th of May

Total cell numbers were moderate. The filamentous cyanobacteria *Aphanizomenon flosaquae* was found in relatively high filaments. The dinoflagellate *Peridiniella catenata* was also found in higher cell numbers together with *Dinophysis acuminata**. Among the small cells, the Crysiophyceae *Dinobryon balticum* was found in high cell numbers. The integrated (0-10 and 0-20 m) chlorophyll concentrations were below of what is normal for this month.

BY20 10th of May

Total cell numbers were low. Among the larger cells the dinoflagellates *Peridiniella catenata* and *Dinophysis acuminata* were found in highest numbers. Among the small cells the Crysiophyceae *Dinobryon balticum* was found in higher cell numbers. The mixotrophic ciliate *Mesodinium rubrum* was also abundant. The integrated (0-10 and 0-20 m) chlorophyll concentrations were just below of what is normal for this month.

BCSIII-10 11th of May

Low total cell concentration mainly small cells found. A few filaments of the cyanobacteria *Aphanizomenon flosaquae* were found. Among the small cells the dinoflagellate *Heterocapsa rotunda* was most abundant together with lesser amount of the order Cryptomonadales and different species of *Pyramimonas* spp. Smaller unicells without flagella was also found but could not be classified to any taxonomic group. The integrated (0-10 and 0-20 m) chlorophyll concentrations were just below of what is normal for this month.

BY29 10th of May

Moderate cell concentrations were found. The larger cells were dominated by cells belonging to the dinoflagellate order Gymnodiniales. The smaller cells were dominated by different species belonging to the genus *Dinobryon*. The integrated (0-10 and 0-20 m) chlorophyll concentrations were just below of what is normal for this month. No chlorophyll is presented for this station.

RefM1V1 14th of May

There was low cell concentration and biodiversity at this station. Common species were the diatom *Skeletonema marinoi* and several cells of the potentially toxic dinoflagellate *Dinophysis acuminata**. Large cells of a ciliate were also present in higher amounts together with *Mesodinium rubrum*. The integrated (0-10 and 0-20 m) chlorophyll concentrations were below of what is normal for this month.

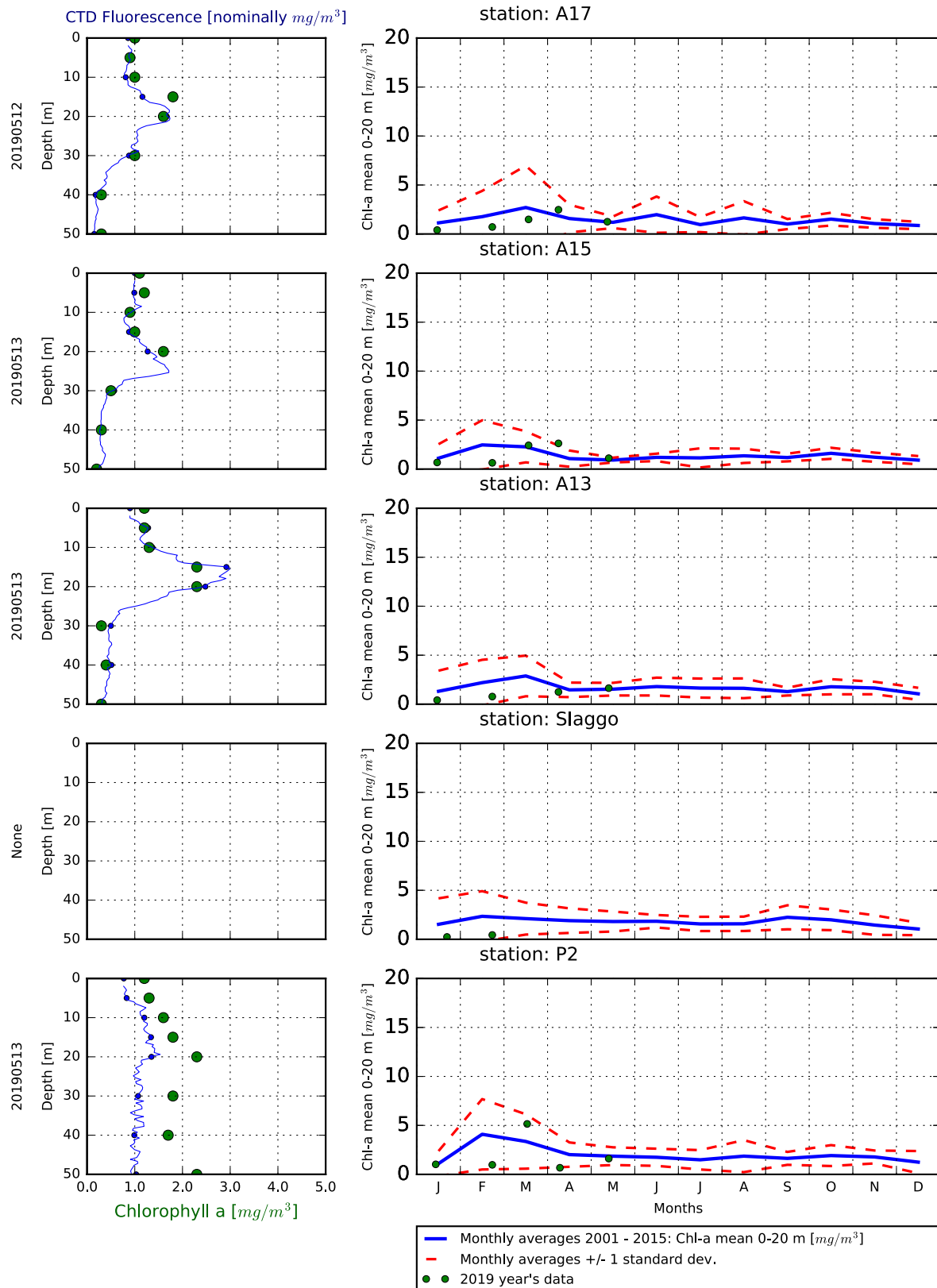
BY38 15th of May

Low cell concentrations and mainly small cells were found. Among the larger cells the cyanobacteria *Aphanizomenon flosaquae* and the potentially toxic species *Dinophysis acuminata** were present. Among the smaller cells the chrysophyte *Dinobryon balticum* was found in moderate cell concentrations. Quite a few cells of different ciliates were also found. The integrated (0-10 and 0-20 m) chlorophyll concentrations were low but within normal for this month.

Selection of observed species	Anholt E	Anholt E	N14 Falkenberg	Släggö	Å17
Red=potentially toxic species	12/5	13/5	13/5	14/5	12/5
Hose 0-10 m	presence	presence	presence	presence	presence
Chaetoceros decipiens				present	
Chaetoceros similis		present			
Chaetoceros subtilis			present		
Coscinodiscus radiatus			present		
Ditylum brightwellii		present	present		
Guinardia delicatula	common	present	common	present	present
Lennoxia faveolata		present	present		
Nitzschia longissima				present	
Phaeodactylum tricornutum		present			
Proboscia alata	common	present	common		present
Rhizosolenia setigera	present				
Skeletonema marinoi	common	present	present	very common	common
Ceratium furca					present
Ceratium fusus			present	present	present
Ceratium lineatum					present
Ceratium longipes	present	present			present
Ceratium tripos	present	common	present	common	present
Dinophysis acuminata			present		
Dinophysis norvegica		present			present
Gymnodiniales		present	present	present	common
Gyrodinium spirale				present	
Heterocapsa rotundata				present	
Heterocapsa triquetra				present	
Karlodinium veneficum				common	present
Peridinales			present	present	
Peridiniella danica			present		
Protoperidinium spp					present
Protoperidinium depressum				present	
Scrippsiella CPX				present	
Dinobryon faculiferum			present		
Cryptomonadales		common	common	common	common
Emiliana huxleyi	common	common	common	common	dominating
Phaeocystis spp				present	
Prymnesiales		present	present		
Planctonema lauterbornii		present	present		
Oocystis spp	present				
Pseudopedinella pyriformis				present	
Leucocryptos marina		present	present	present	
Ciliophora	present		present	common	common
Mesodinium rubrum	present				
Favella spp					common
Laboea strobila	present		present	present	present

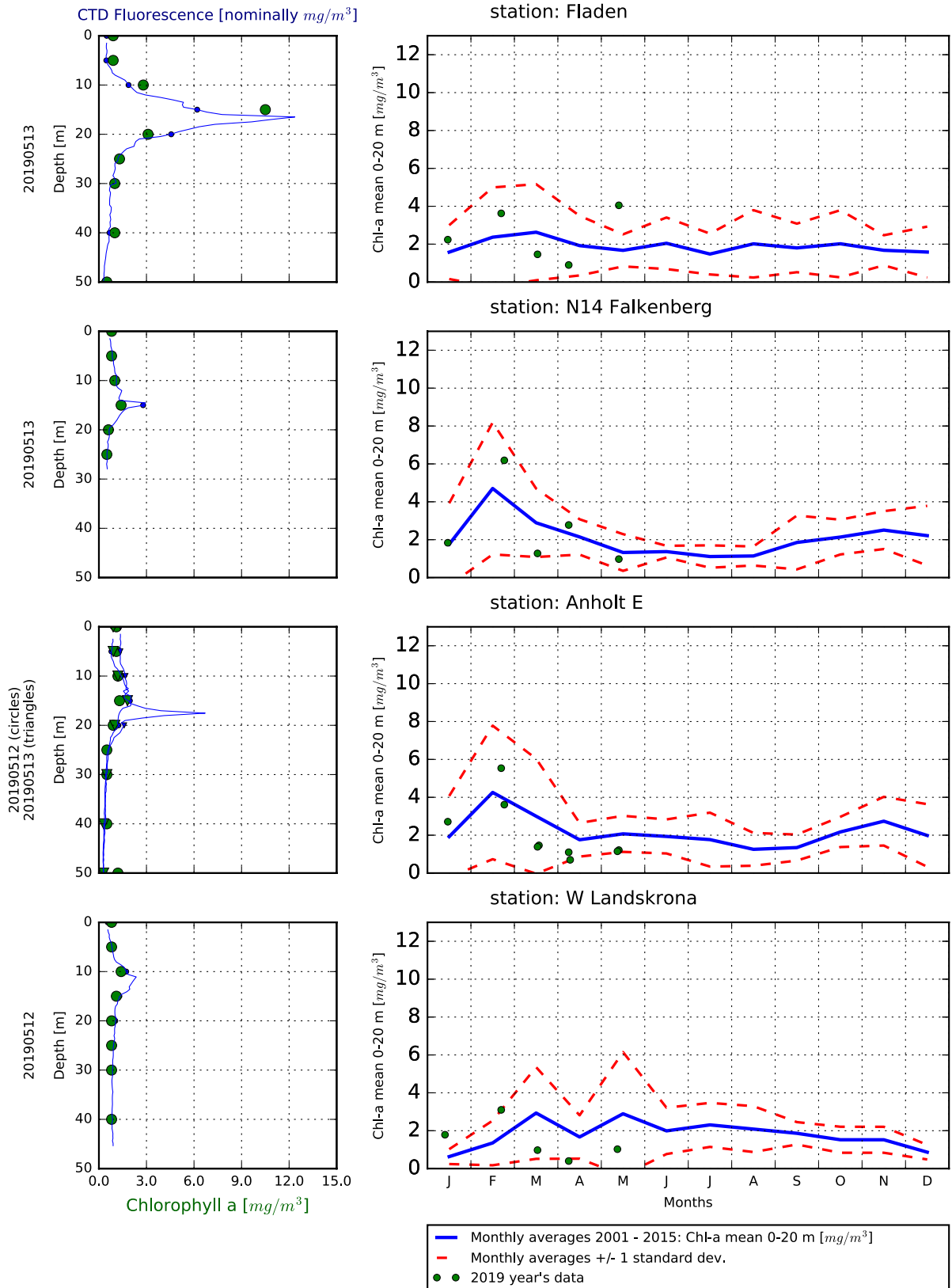
Selection of observed species	BY2	BY5	BCSIII-10	BY15	BY20	BY38	BY29	Ref M1V1
Red=potentially toxic species	11/5	11/5	11/5	10/5	10/5	15/5	10/5	14/5
Hose 0-10 m	presence	presence	presence	presence	presence	presence	presence	presence
Centrales	present				present			
Chaetoceros castracanei		present	present					
Chaetoceros danicus		present	present					
Chaetoceros similis		present						
Skeletonema marinoi								common
Thalassiosira baltica						present		
Amylax triacantha								present
Dinophysis acuminata		present	present	common	common	present	present	common
Dinophysis norvegica	present	common		present	present			
Gonyaulax verior							present	
Gymnodiniales	present		present			present	common	common
Gyrodinium spirale					present	present	present	
Heterocapsa rotundata	common		very common	common	common	present	present	
Peridinales							present	present
Peridiniella catenata			present	very common	common	present	present	
Peridiniella danica					present			
Protoperidinium bipes						present		
Protoperidinium brevipes					common	common	present	present
Dinobryon balticum				very common	common	common	present	
Dinobryon faculiferum	present						present	
Prymnesiales			present	present		present		
Planctonema lauterbornii	common	common	present	present		present		
Monoraphidium spp							present	
Oocystis spp	present							
Pyramimonas spp	present		common	present	present			
Cryptomonadales	common	present	common		present	present	present	
Telonema subtile	present							
Aphanizomenon flosaquae	common	common	common	very common	present	common	present	present
Aphanocapsa spp	common	common	present					
Aphanocapsa cf. holsatica	present	present						
Aphanothece spp	present							
Aphanothece paralleliformis			present					
Lemmermanniella	present	present	present	present				
Nodularia spumigena		present						
Snowella spp	present							
Woronichinia spp							present	present
Choanoflagellatea						present		present
Ebria tripartita							present	
Ciliophora	present	common	present	common	common	common	present	common
Mesodinium rubrum	present	common	present	present	common	present	present	common
Tintinnidae								present

The Skagerrak

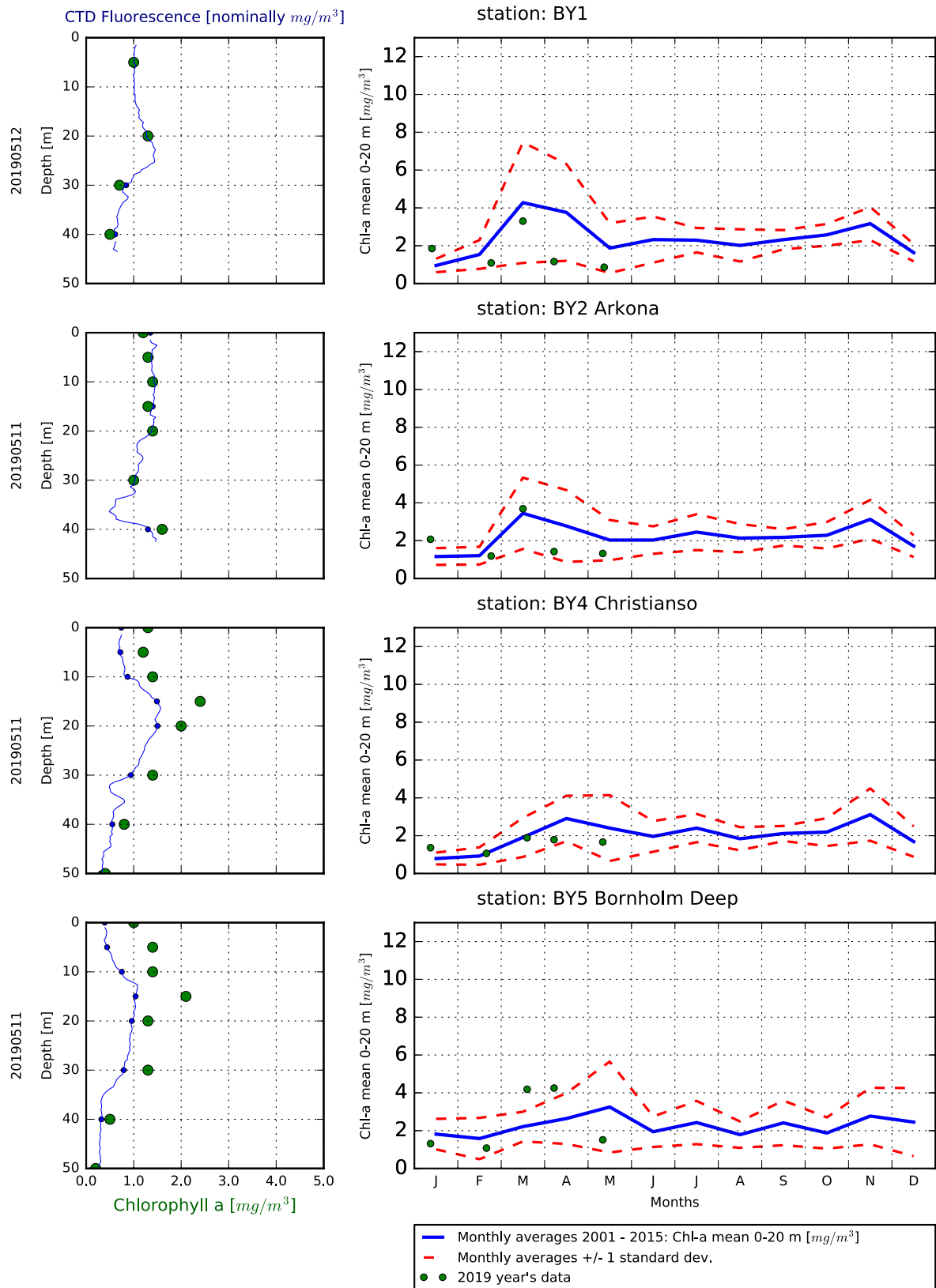


No permission was granted to sample at Släggö close to the Skagerrak coast due to using the foreign vessel R/V Aranda.

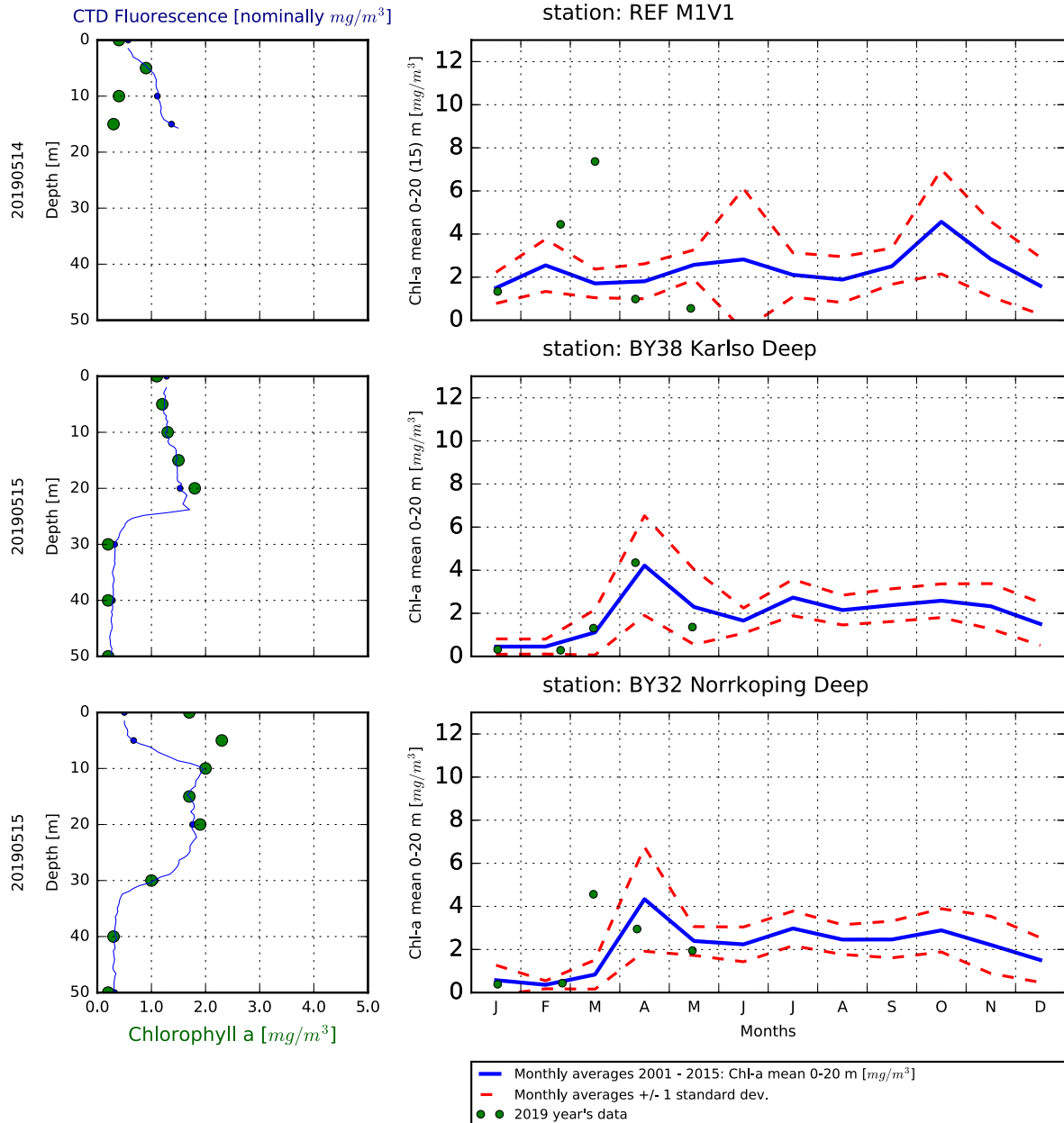
The Kattegat and The Sound



The Southern 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.

