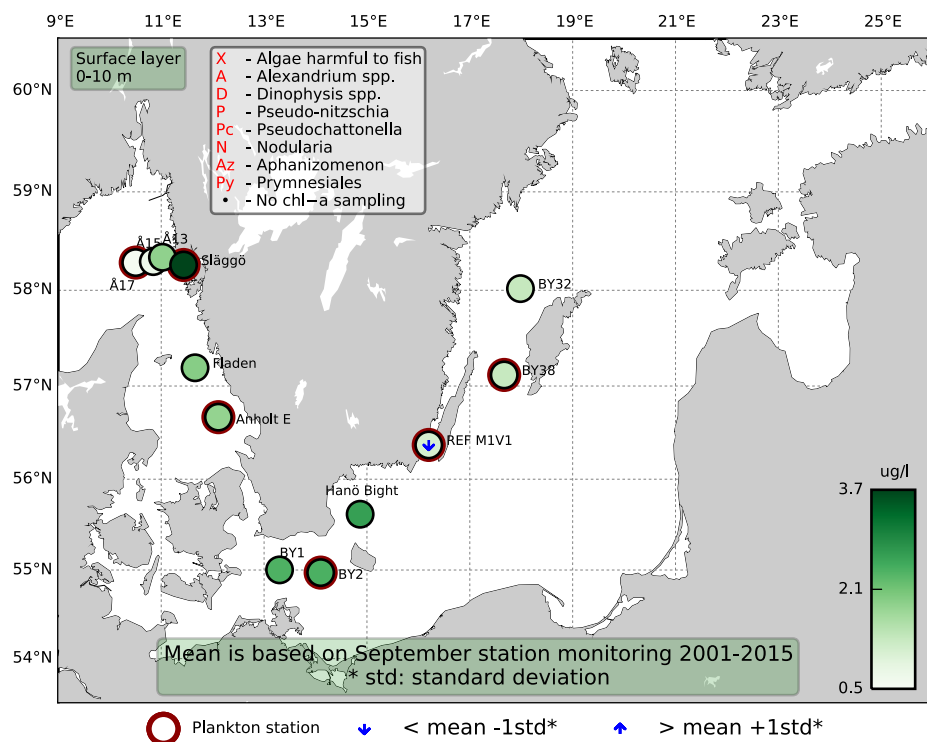


Sammanfattning

Denna provtagning var förkortad och endast tre stationer i Västerhavet samt tre stationer i Östersjön provtogs för växtplankton. Stationerna Släggö och Anholt E uppvisade ett artrikt samhälle där kalkalgen *Emiliana huxleyi* återfanns i höga tätheter med upp till en miljon celler per liter vid Släggö. Satellitbilder från perioden indikerar att de troligtvis funnits i höga tätheter i större delen av Västerhavet under perioden. Bland de övriga algerna var det främst olika kiselalger som dominerade, men även dinoflagellaten *Prorocentrum compressum* var vanlig vid Anholt E. Station Å17 hade lågt totalt cellantal. De integrerade (0-10 m och 0-20 m) klorofyllvärdena var låga men inom det normala för månaden vid samtliga provtagna stationer i Västerhavet, förutom vid Släggö.

Vid Östersjöstationerna utmärkte sig den kustnära stationen RefM1VI med en relativt hög täthet av kiselalgen *Skeletonema marinoi*. Cyanobakteriesläktet *Aphanizomenon* återfanns i högre antal vid BY2 tillsammans med relativt höga celltätheter av kiselalgen *Dactyliosolen fragilissimus*. De integrerade (0-10 m och 0-20 m) klorofyllvärdena var inom det normala för månaden vid de flesta stationer i Östersjön. Undantagen var BY2 där de var högre än normalt, BY32 där de var lägre än normalt och vid REF M1VI där den ytligare delen (0-10m) visade på lägre koncentrationer av klorofyll än vad som är normalt för månaden.



Abstract

This cruise was not a full cruise with phytoplankton sampling at only three west coast stations and three stations in the Baltic Sea. The west coast stations Släggö and Anholt E displayed relatively high biodiversity. The coccolithophore *Emiliana huxleyi* was found at high cell numbers at both Släggö and Anholt E with the highest cell numbers of about one million cells per litre at Släggö. Satellite images from the same period indicated that there was high abundance of this species in many areas of the coast. Different diatoms were also common, but also the dinoflagellate *Prorocentrum compressum*. The sample from the off shore station Å17 had few cells. The integrated (0-10 m and 0-20 m) chlorophyll *a* concentrations were low but within normal for this month at all stations along the west coast, except at Släggö.

Among the Baltic Sea stations the coastal station RefM1VI had quite high cell numbers of *Skeletonema marinoi*. Quite a few filaments of the cyanobacteria genus *Aphanizomenon* together with the diatom *Dactyliosolen fragilissimus* was found at the southern station BY2. The integrated (0-10 m and 0-20 m) chlorophyll *a* concentrations were within normal for most stations in the Baltic Sea. The exceptions being BY2 with higher concentrations than normal, BY32 where lower concentrations than what is normal was found and RefM1VI with lower than normal concentrations of chlorophyll *a* concentrations in the upper part (0-10m) of the water column.

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

The Skagerrak

Släggö (Skagerrak coast) 24th of September

The total cell concentrations was high and clearly dominated by the coccolithophore *Emiliana huxleyi* that was found in around one million cells per litre. Several diatom species were also found in high cell numbers, such as *Leptocylindrus minimus*, *Nitzschia longissima* and the genus *Chaetoceros*. The integrated (0-10 m and 0-20 m) chlorophyll *a* concentrations were within normal at station Släggö.

Å17 (open Skagerrak) 24th of September

The total cell concentration was low. The potentially toxic diatom genus *Pseudo-nitzschia** was present in moderate cell numbers. The genus *Dinobryon* belonging to the Chrysophyceae was also found in higher cell numbers. The integrated (0-10 m and 0-20 m) chlorophyll *a* concentrations was low.



Photo 1: *Emiliana huxleyi* dominated at Släggö with around 1 million cells per litre and the concentration could be seen visually from satellite images as the one above. (Photo: NASA)

The Kattegat

Anholt E 23rd of September

The plankton community was dominated by the dinoflagellate *Prorocentrum compressum* and the diatoms *Pseudosolenia calcar-avis* and *Nitzschia longissima*. The coccolithophore *Emiliana huxleyi* was also found in moderate cell numbers. The integrated (0-10 m and 0-20 m) chlorophyll *a* concentrations were within normal at station Anholt E.

The Baltic Sea

BY2 22nd of September

The community at this station was quite diverse. *Aphanizomenon flos-aquae* was found in quite high cell numbers, as well as the diatom *Dactyliosolen fragilissimus*. The integrated (0-10 m) chlorophyll *a* concentrations was normal for the month but the integrated (0-20 m) chlorophyll *a* concentrations was slightly higher than normal at BY2 due to elevated concentrations down to 20 meters.

REFM1V1 Kalmar Sound 22nd of September

The diatom *Skeletonema marinoi* dominated in cell numbers. The dinoflagellate *Heterocapsa triquetra* was also found in high cell numbers. The integrated (0-20 m) chlorophyll *a* concentrations were within normal, but the shallow water (0-10m) was lower than normal.

BY38 21st of September

This was the only Baltic Sea station where the filamentous cyanobacteria was completely absent, and the genus *Oocystis* was most abundant. The large diatom *Coscinodiscus granii* was found in moderate amounts. The integrated (0-20 m) chlorophyll *a* concentrations were below normal for BY38 but within normal for the more shallow water (0-10m).

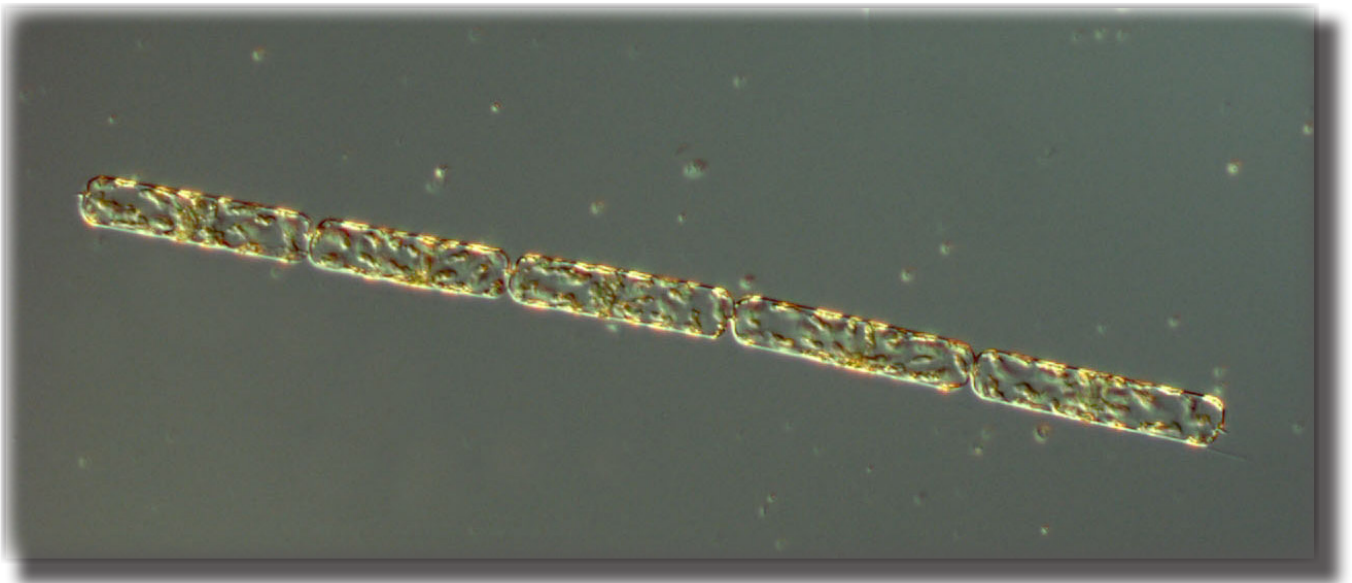
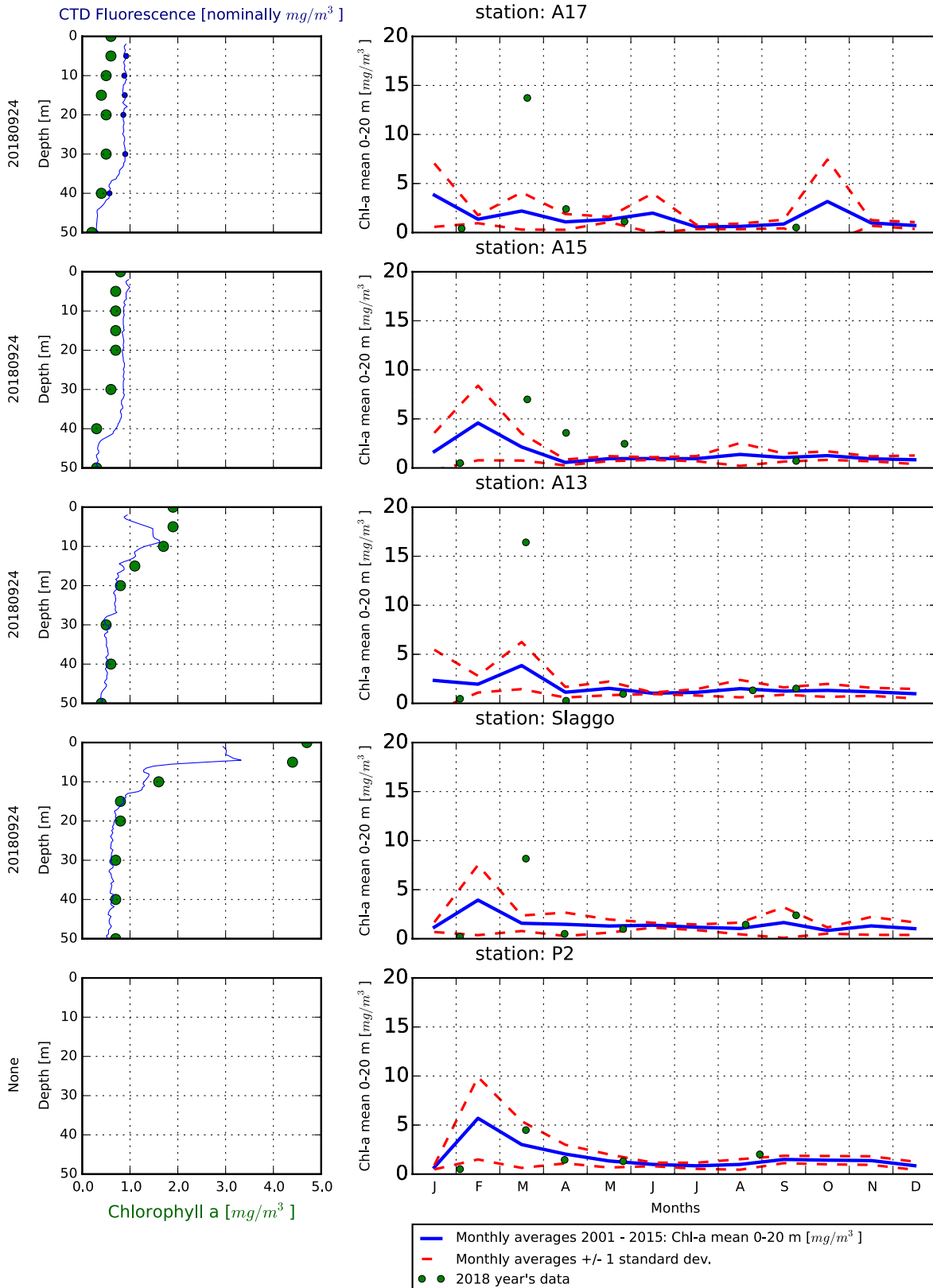


Photo 2: At BY2 the diatom *Dactyliosolen fragilissimus* was abundant. Photo: Marie Johansen

Selection of observed species	Anholt E	Släggö	Å17
Red=potentially toxic species	2018-09-23	2018-09-24	2018-09-24
Hose 0-10 m	presence	presence	presence
Centrales	present		
<i>Cerataulina pelagica</i>		common	
<i>Chaetoceros</i>	present	very common	present
<i>Chaetoceros affinis</i>	present		
<i>Chaetoceros similis</i>		present	
<i>Chaetoceros socialis</i>	present		
<i>Chaetoceros tenuissimus</i>	present	present	present
<i>Cyclotella</i> spp		present	
<i>Cylindrotheca closterium</i>	common		
<i>Dactyliosolen fragilissimus</i>	present	present	present
<i>Guinardia delicatula</i>	present		
<i>Guinardia flaccida</i>	present		
<i>Leptocylindrus danicus</i>		present	present
<i>Leptocylindrus minimus</i>	present	very common	
<i>Nitzschia longissima</i>	very common	very common	present
<i>Proboscia alata</i>	present		
<i>Pseudo-nitzschia</i> spp	present	common	common
<i>Pseudosolenia calcar-avis</i>	very common	common	
<i>Rhizosolenia setigera</i>		present	
<i>Skeletonema marinoi</i>		common	
<i>Amphidinium</i> spp			present
<i>Ceratium fusus</i>	present		
<i>Ceratium lineatum</i>	present		
<i>Ceratium tripos</i>	present		
<i>Dinophysis norvegica</i>	present		
Gymnodiniales	present		common
<i>Karenia mikimotoi</i>			present
Peridinales	common	present	present
<i>Polykrikos schwartzii</i>		present	
<i>Prorocentrum compressum</i>	very common	present	
<i>Prorocentrum micans</i>	common		
<i>Scrippsiella</i> CPX	present	present	
<i>Dinobryon</i> spp			common
<i>Dinobryon faculiferum</i>	present		
Cryptomonadales		common	common
<i>Emiliania huxleyi</i>	common	dominating	common
<i>Apedinella radians</i>		present	
<i>Pseudopedinella pyriformis</i>		present	
<i>Pseudanabaena</i> spp	present		
Choanoflagellatea			present
Ciliophora	common	common	common
<i>Laboea strobila</i>		present	
<i>Rhizomonas setigera</i>			present

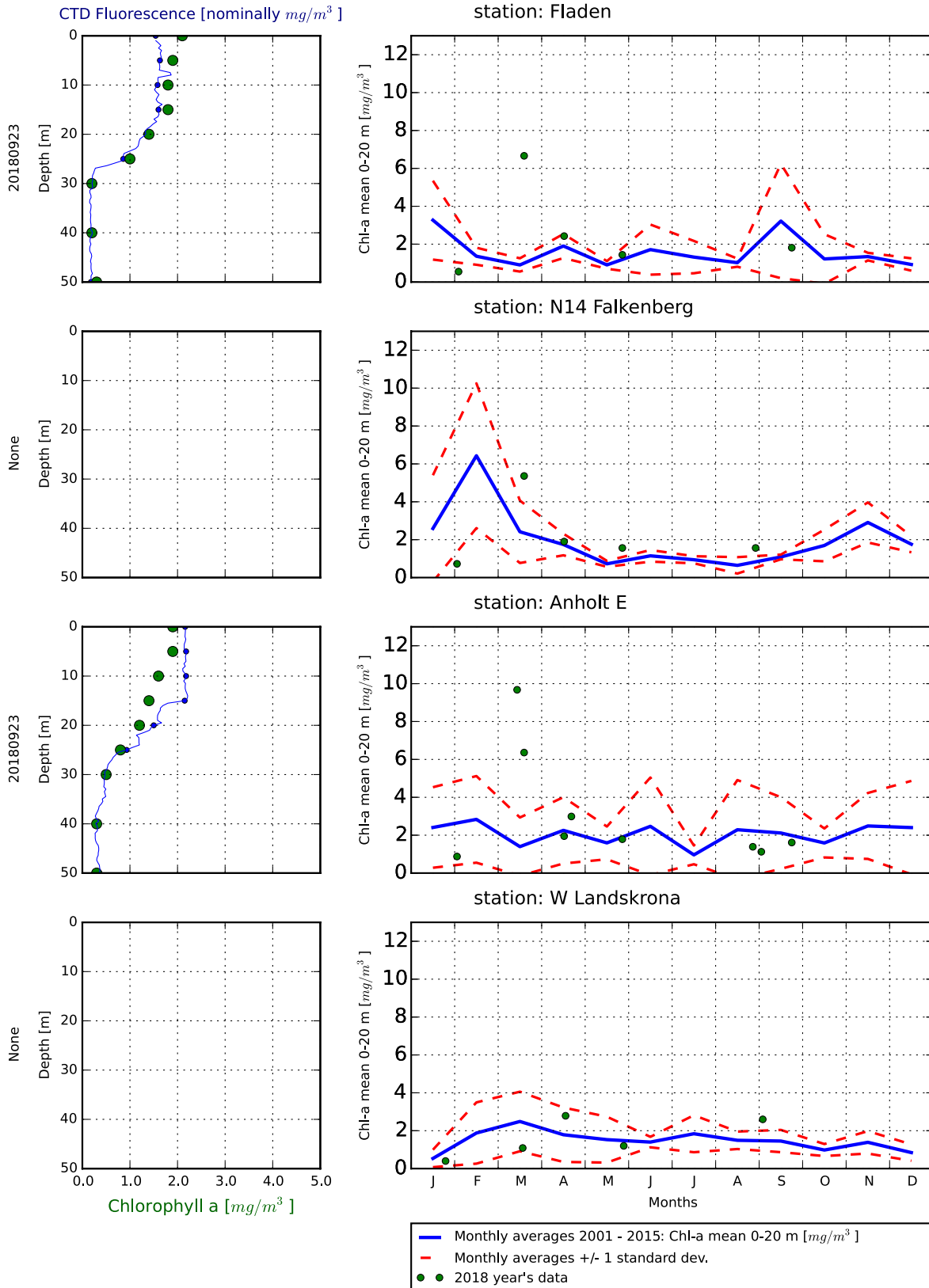
Selection of observed species	BY2	BY38	REFM1V1
Red=potentially toxic species	2018-09-22	2018-09-21	2018-09-22
Hose 0-10 m	presence	presence	presence
Centrales		present	
<i>Cerataulina pelagica</i>	present		
<i>Chaetoceros</i> spp	present		
<i>Chaetoceros castracanei</i>			present
<i>Chaetoceros danicus</i>		present	present
<i>Coscinodiscus granii</i>		present	
<i>Cyclotella</i> spp	present		present
<i>Dactyliosolen fragilissimus</i>	very common		
<i>Licmophora</i> spp			present
<i>Nitzschia longissima</i>			common
<i>Skeletonema marinoi</i>			dominating
<i>Ceratium tripos</i>	present		
<i>Dinophysis acuminata</i>	present		
Gymnodiniales	present	present	common
<i>Heterocapsa triquetra</i>			common
Peridinales	common		
<i>Prorocentrum balticum</i>	present		
<i>Dinobryon faculiferum</i>	present		
<i>Planctonema lauterbornii</i>		present	
<i>Oocystis</i> spp		common	
<i>Pyramimonas</i> spp	present	present	
Cryptomonadales	common	common	present
<i>Aphanizomenon</i> spp	very common		present
<i>Aphanocapsa</i> spp		present	present
<i>Snowella</i> spp			present
<i>Ebria tripartita</i>	common		
Ciliophora	common	common	common
<i>Mesodinium rubrum</i>			present
<i>Helicostomella subulata</i>		present	

The Skagerrak



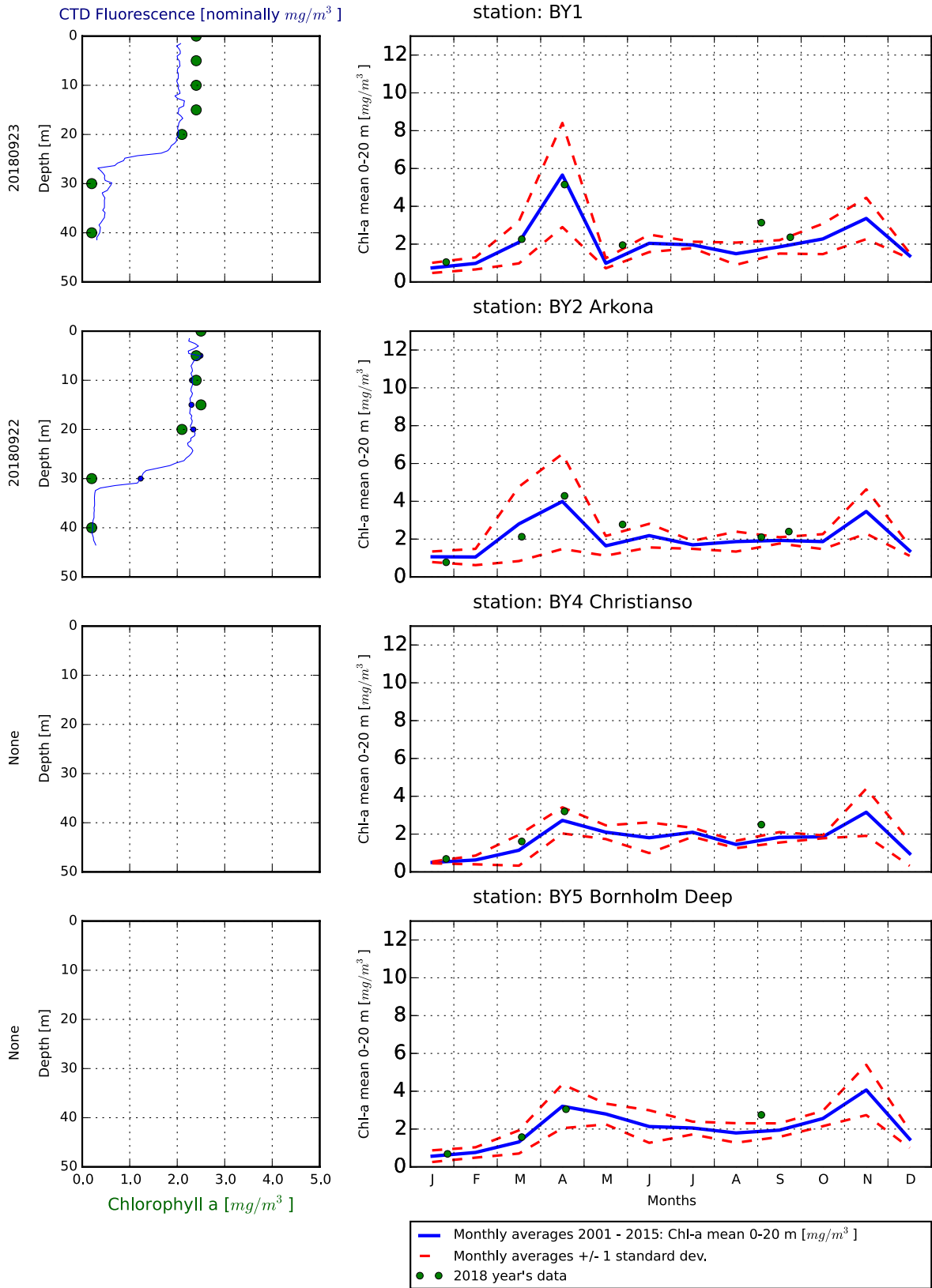
P2 was not visited during the cruise.

The Kattegat and The Sound



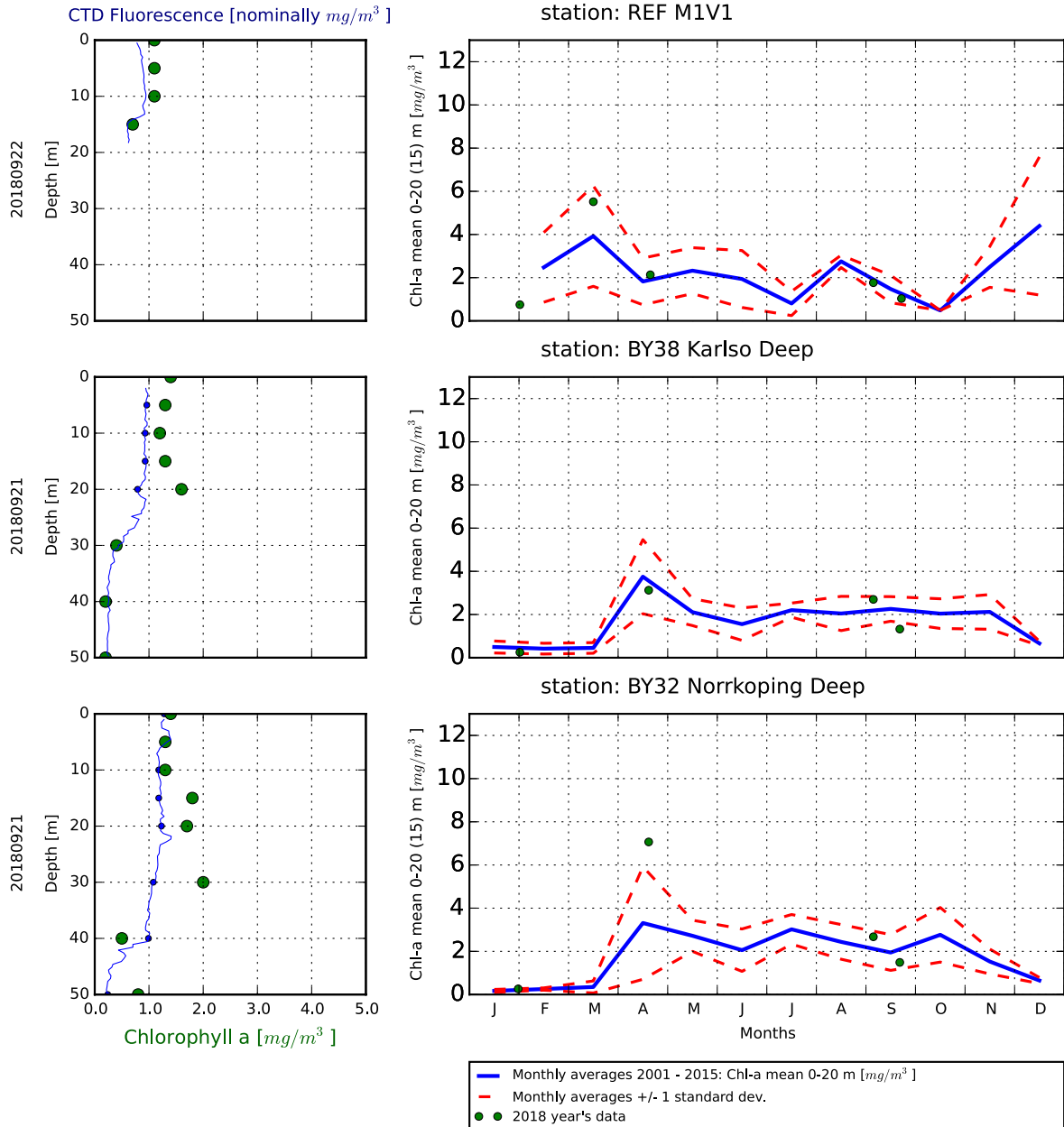
N14 Falkenberg and W Landskrona were not visited during the cruise.

The Southern Baltic



BY4 and BY5 were not visited during the cruise.

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 algblomningar finns under perioden juni-augusti på www.smhi.se.

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.

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, 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.

