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SMHI
Oceanographic Unit
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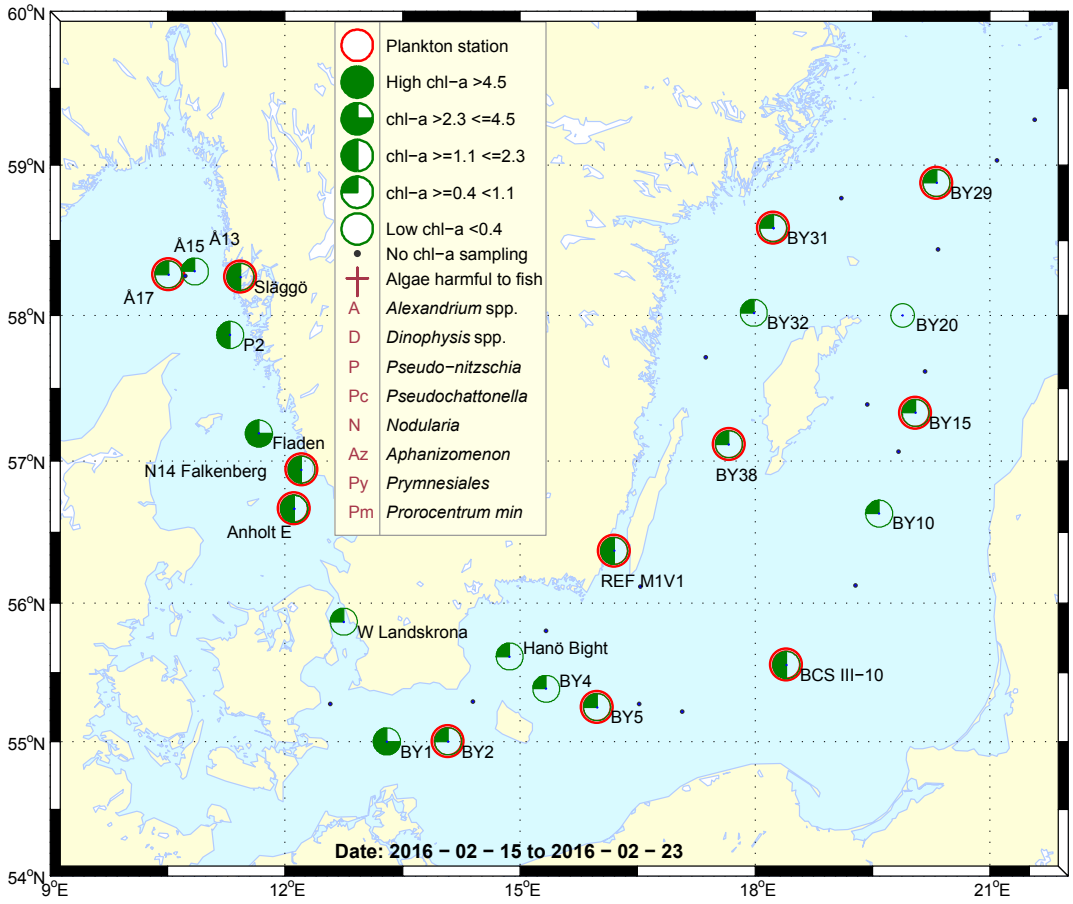
AlgAware
ALGAL SITUATION IN
MARINE WATERS SURROUNDING SWEDEN

Sammanfattning

Artdiversiteten och cellkoncentrationerna var låga vid Å17 i öppna Skagerrak medan en start på vårblomningen kunde skönjas vid den inre stationen Släggö. I både Skagerrak och Kattegatt förekom kiselalgen *Skeletonema marinoi* i förhållandevis höga antal vid samtliga stationer. Arten är en vanlig vårblomningsart och vid Släggö var den så talrik att den troligtvis påvisade en begynnande vårblomning.

Artdiversiteten och celltätheten var låg vid samtliga stationer i Östersjön. Vid de östra stationerna var kiselalgen *Skeletonema marinoi* lite vanligare. Vid övriga stationer dominerade framför allt små flagellater så som cryptomonader.

De integrerade (0-10 m) klorofyll *a*-värdena visade inga uppseendeväckande koncentrationer under denna expedition utan var låga, vilket är normalt för årstiden.



Abstract

The phytoplankton diversity and cell concentrations were low in the open Skagerrak area while the beginning of a spring bloom was recorded at the inner station Släggö. The diatom *Skeletonema marinoi* was found in relatively high concentrations at all stations and this species is often dominating the spring bloom.

The diversity and cell concentrations in the Baltic Sea were low at all stations. The diatom *Skeletonema marinoi* was found in high numbers at the eastern stations whereas small flagellates dominated at the other stations.

The integrated (0-10 m) chlorophyll *a* concentrations were low which is normal for the season at all stations visited.

More detailed information on species composition and abundance

The Skagerrak

Å17 (open Skagerrak) 19th of February
The phytoplankton diversity and the cell concentration were low. Single cells of different diatoms were found except for S*keletonema marinoi* where a few cells were found. There was no sign of a spring bloom.

The integrated (0-10 m) chlorophyll *a* concentrations were in the lower part of what is normal for the season.

Släggö (Skagerrak coast) 20th of February
The phytoplankton diversity was quite low this month and diatoms were dominating. The cell concentration were relatively high and the diatom *Skeletonema marinoi*, a common spring bloom species, where found in amounts indicating that the spring bloom had been initiated. The diatom genus *Thalassiosira* was also quite common.

The integrated (0-10 m) chlorophyll *a* concentrations were within normal for the season.

Figure1. The diatom *Skeletonema marinoi* was found at all stations along the Swedish west coast. At some stations in cell concentrations indicating an early stage of a spring bloom.

The Kattegat

Anholt E 19th and 21st of February
The phytoplankton diversity was quite low, mainly represented by different diatoms such as the genus *Thalassiosira* and species *Skeletonema marinoi*. They were common during the spring bloom and found in moderate cell amounts.

The integrated (0-10 m) chlorophyll *a* concentration was in the lower part of what is normal for the season.

N14 Falkenberg 22nd of February
The phytoplankton diversity was moderate and with a dominance of diatoms. Several species that usually occur in high cell concentrations during the spring bloom, such as *Skeletonema marinoi* and the genus *Thalassiosira*, were found in moderate cell concentrations.

The integrated (0-10 m) chlorophyll *a* concentration was in the lower part of what is normal for the season.

The Baltic Sea

The phytoplankton diversity and cell concentrations were low at all stations.

BY2 Arkona Basin and BY5 Bornholm Basin 18th of February
The phytoplankton diversity and the cell concentrations were low. Different species of ciliates dominated at both stations.

The integrated (0-10 m) chlorophyll *a* concentrations were low but within normal for the season.

BY15 and BY29 16th of February and BCS III-10 18th of February
The total cell numbers and phytoplankton diversity were low except at BY29 (the most northern station) where both were moderate. The taxonomic group cryptomonadales containing different small flagellates, were most common at all stations. A few filaments of the cyanobacteria *Aphanizomenon* were found at BCS III-10.

The integrated (0-10 m) chlorophyll *a* concentrations were within normal for the season.

BY31 and BY38 22nd of February and REF M1V1 Kalmar Sound 21st of February
The phytoplankton diversity and total cell concentrations were low at both BY31 and REF M1V1 and slightly higher at BY38 Karlsö deep. The common spring bloom forming diatom Skeletonema marinoi was found in slightly higher concentrations. Cyanobacteria, both colony forming and filamentous, were present at BY38.

The integrated (0-10 m) chlorophyll *a* concentrations were within normal for the season.

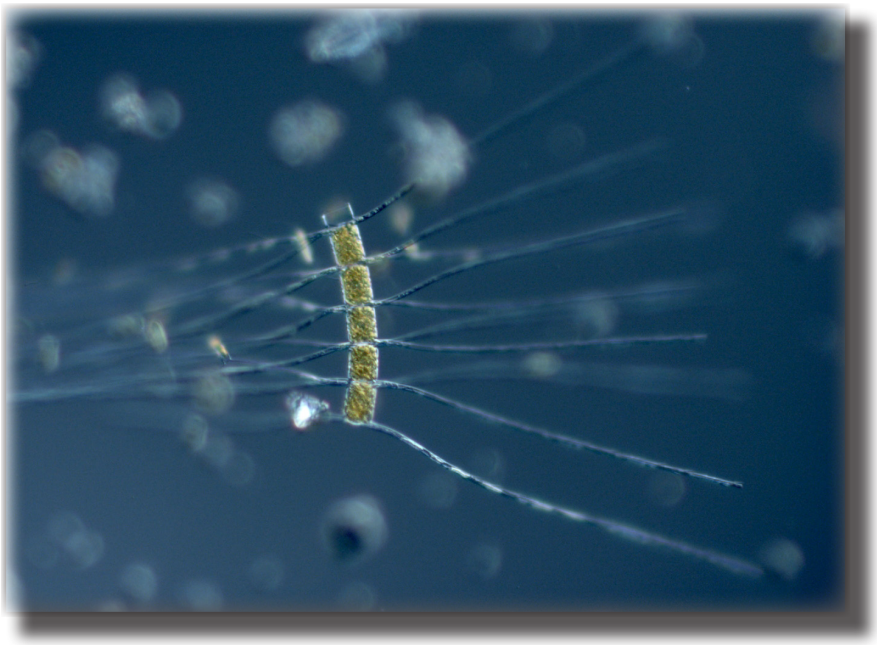


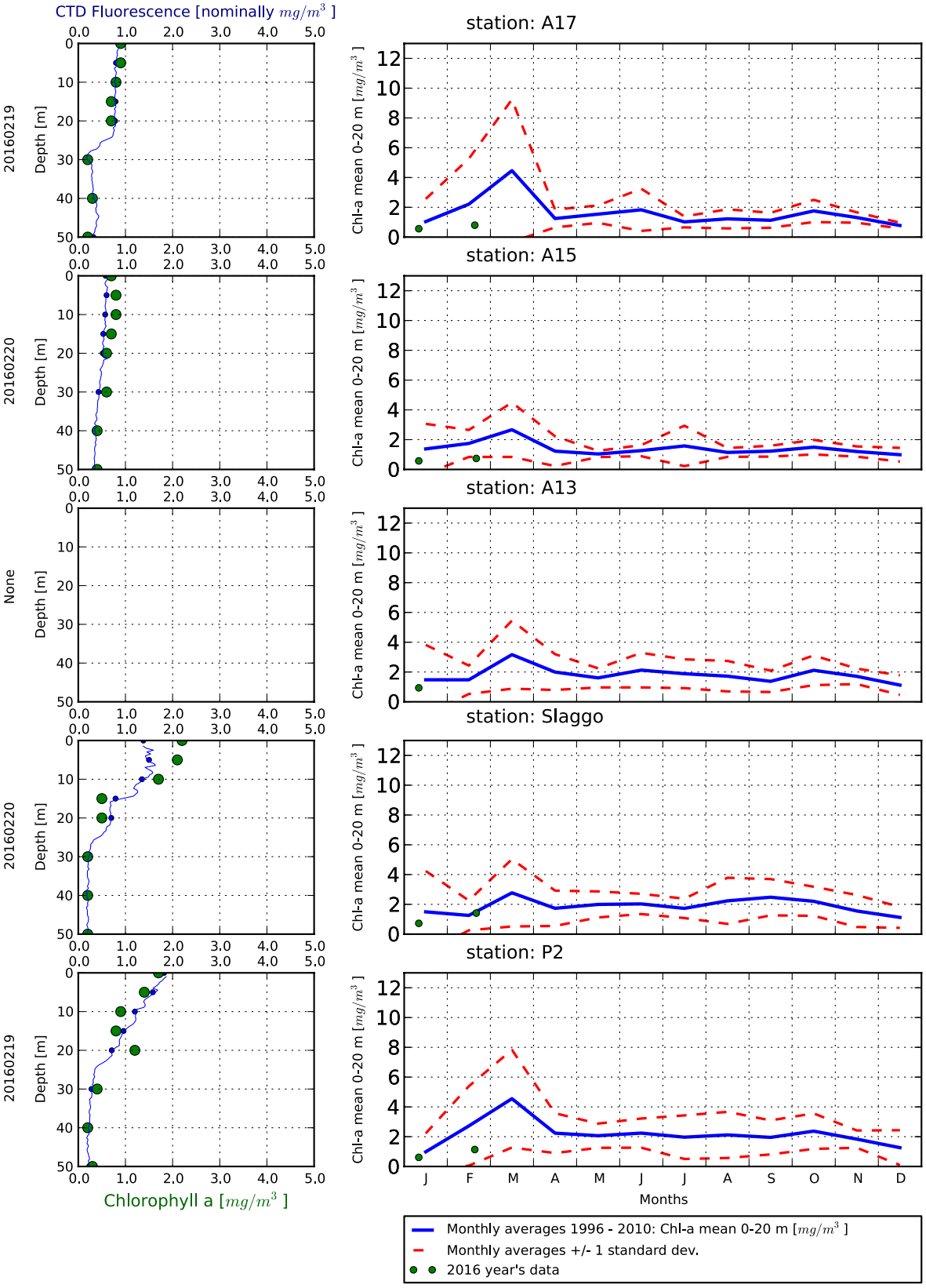
Figure 2. The diatom *Chaetoceros impressus* was found in low cell numbers in the southern part of the Baltic Sea.

Phytoplankton analysis and text by:
Marie Johansen

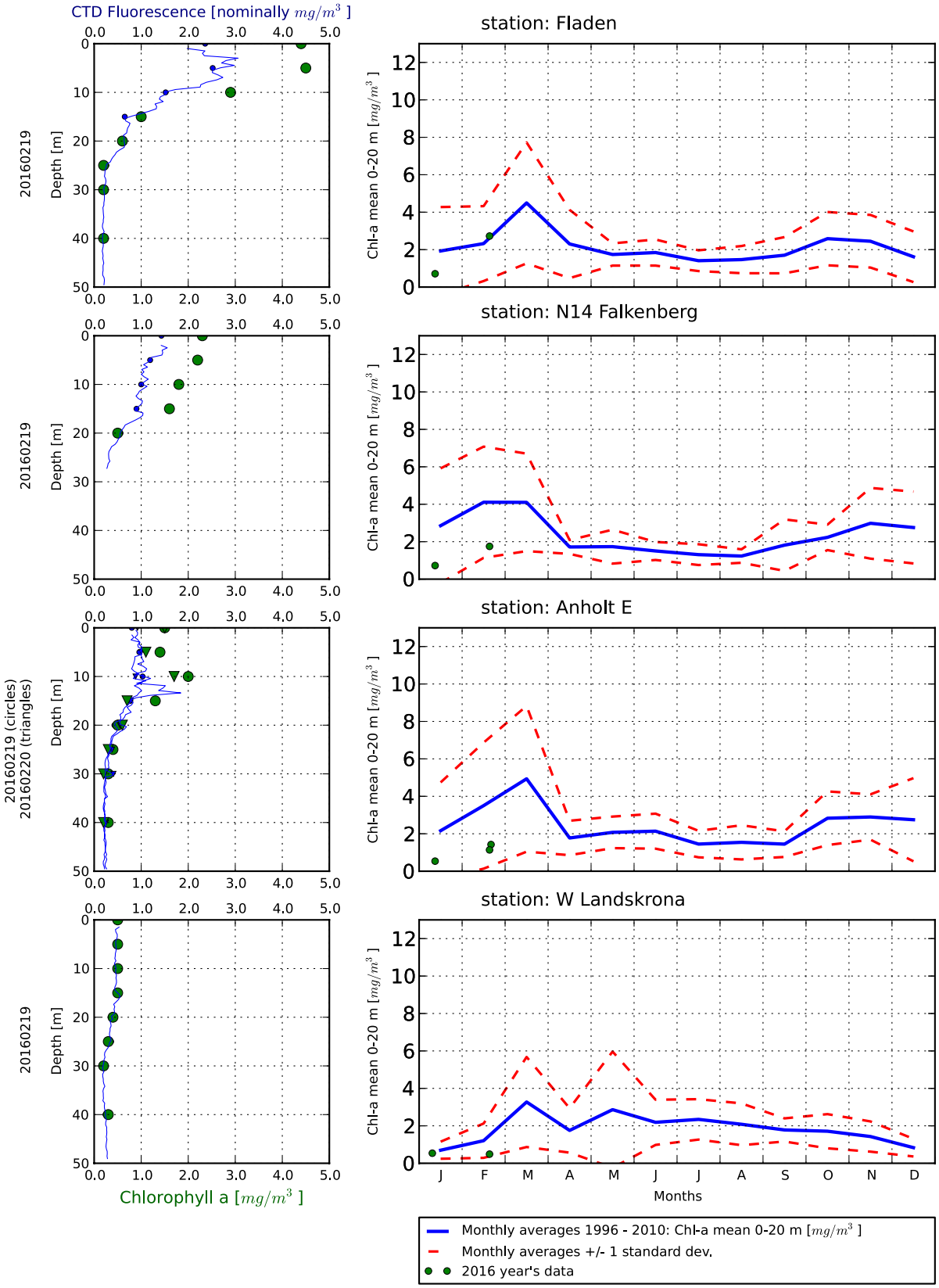
Selection of observed species	Å17	Släggö	N14	Anholt E	Anholt E
Red=potentially toxic species	19/2	20/2	22/2	19/2	21/2
Hose 0-10 m	presence	presence	presence	presence	presence
Nitzschia longissima					present
Pseudo-nitzschia spp	present				
Thalassionema nitzschioides					present
Coscinodiscus spp	present			present	
Coscinodiscus concinnus		present			
Guinardia delicatula		present	present	present	
Proboscia alata		present	present	present	present
Skeletonema marinoi	present	very common	common	common	present
Thalassiosira spp	present		common	present	present
Thalassiosira anguste-lineata		common	present	present	present
Thalassiosira constricta		present			
Thalassiosira nordenskioeldii		common	present	common	present
Thalassiosira rotula		present			
Chaetoceros affinis				present	
Chaetoceros ceratosporus var. *ceratosporus*			present		
Chaetoceros contortus		present			
Chaetoceros danicus				present	present
Chaetoceros debilis		present			
Chaetoceros decipiens		present	present		present
Chaetoceros subtilis var. *subtilis*			present		
Ditylum brightwellii		present			
Thalassiosira cf. *constricta*				present	
Ceratium lineatum	present				
Ceratium tripos	present				
Dinophysis acuminata			present		
Gymnodinium spp			present	present	present
Gyrodinium spirale	present		present	present	
Heterocapsa spp			present		
Emiliania huxleyi					present
Prymnesiales			present		
Pyramimonas spp			present		
Cryptomonadales			present	present	present
Leucocryptos marina			present		
Dictyocha speculum		present		present	
Pseudopedinella pyriformis			present		present
Ciliophora	present		present	present	present

Selection of observed species	BY2	BY5	BCS III-10	BY15	BY29	BY31	BY38	REF M1V1
Red=potentially toxic species	18/2	18/2	18/2	16/2	16/2	22/2	22/2	21/2
Hose 0-10 m	presence	presence	presence	presence	presence	presence	presence	presence
Actinocyclus spp	present		present	present				
Skeletonema marinoi		present	present	present	common	present	common	common
Chaetoceros spp	present				present	present		
Chaetoceros danicus					present		present	
Chaetoceros impressus	present							
Chaetoceros subtilis var. *subtilis*	present						present	
Dinophysis acuminata				present				
Dinophysis norvegica				present	present			
Gymnodiniales			present	present	present	present	present	common
Heterocapsa spp						present		
Peridiniella catenata							present	
Peridiniales			present	present	present	present	present	present
Planctonema lauterbornii		present	present	present	present		present	
Monoraphidium spp					present			
Oocystis spp		present			present		present	
Cryptomonadales	common	present	common	present	common		present	present
Eutreptiella spp		present	present					present
Aphanizomenon flos-aquae			present			present	present	
Aphanocapsa spp					present			
Aphanothece spp	present	present			present		present	
Woronichinia spp	present	present	present			present	common	
Mesodinium rubrum	present	present	present		present	present		present
Ciliophora	common	common	present	present	present		present	present

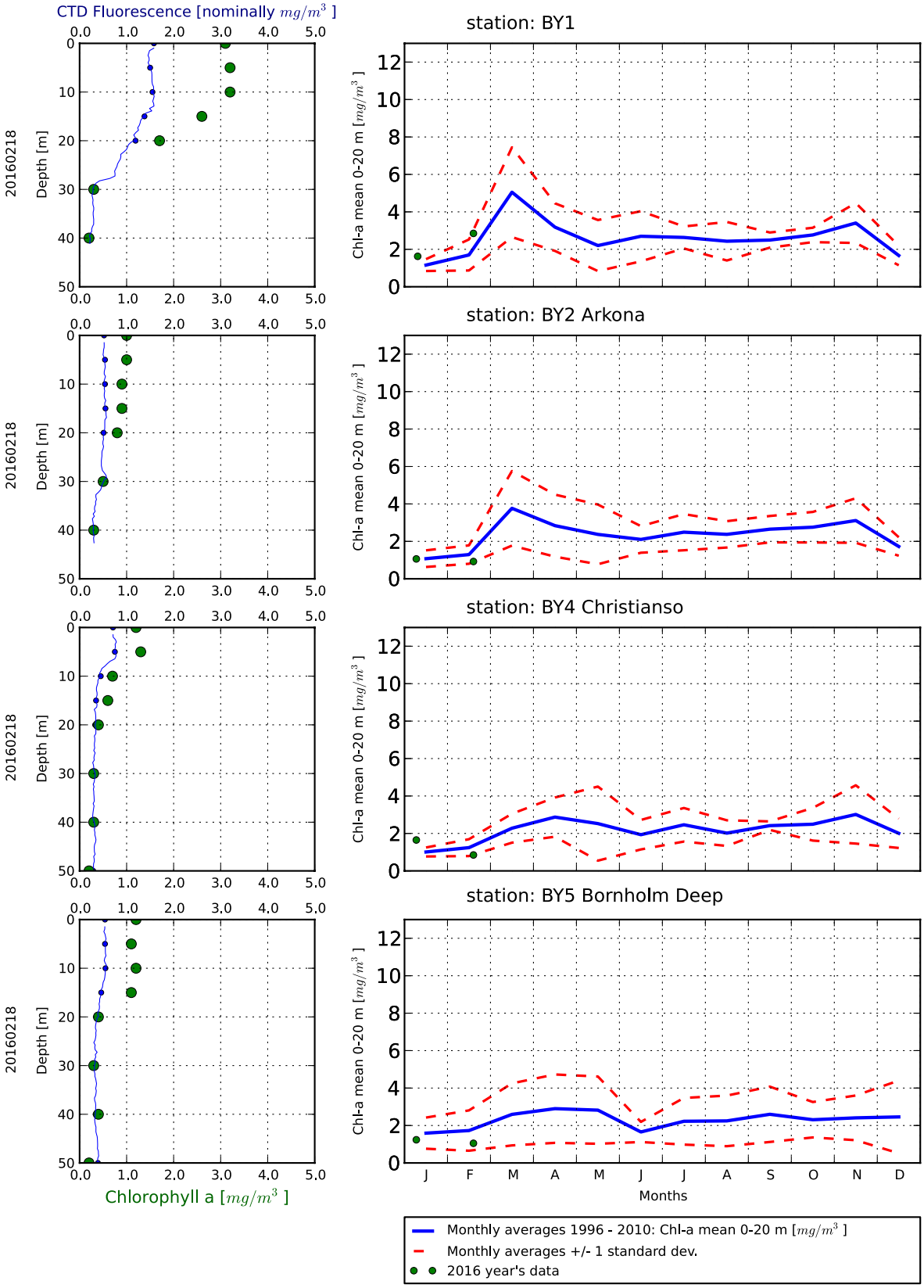
The Skagerrak



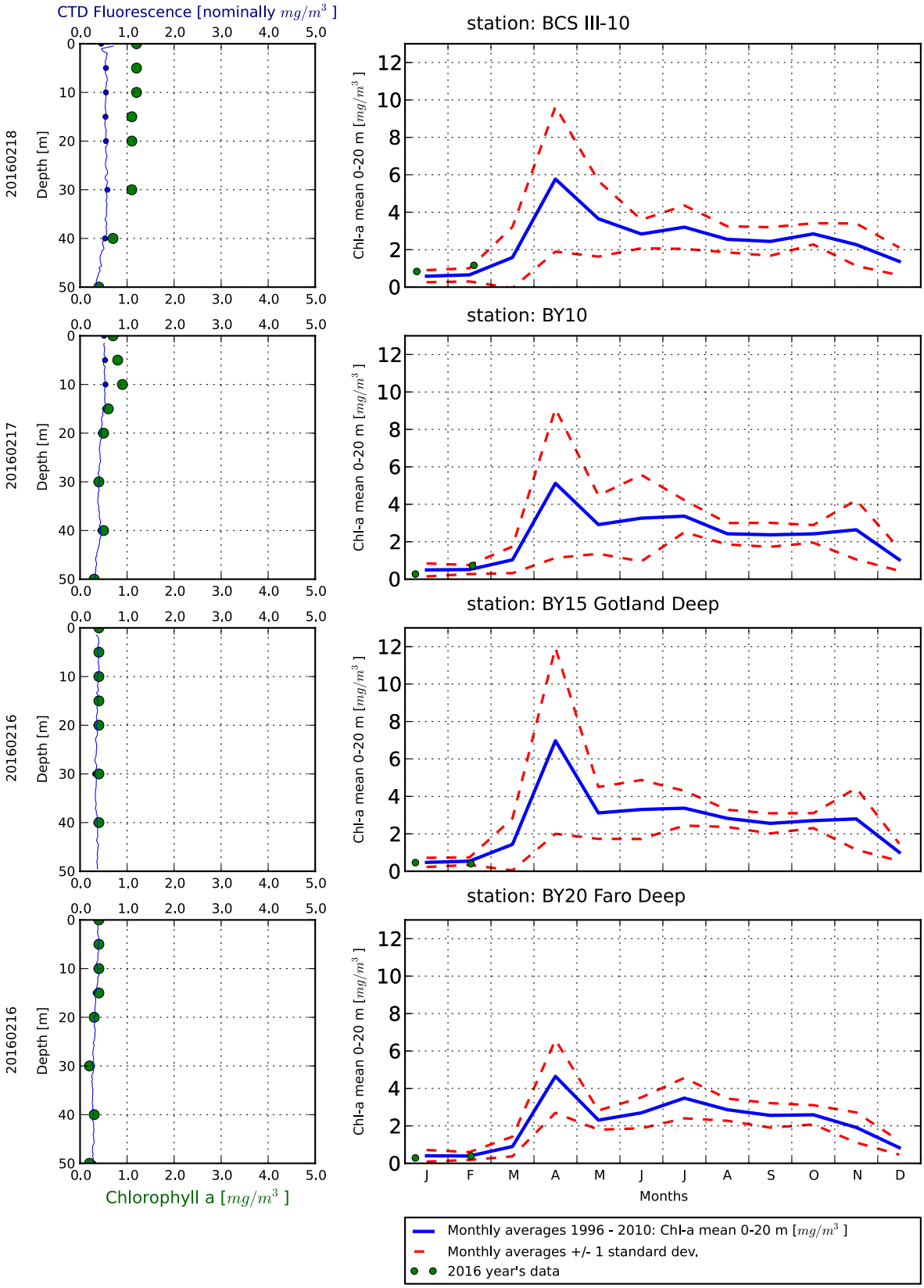
The Kattegat and The Sound

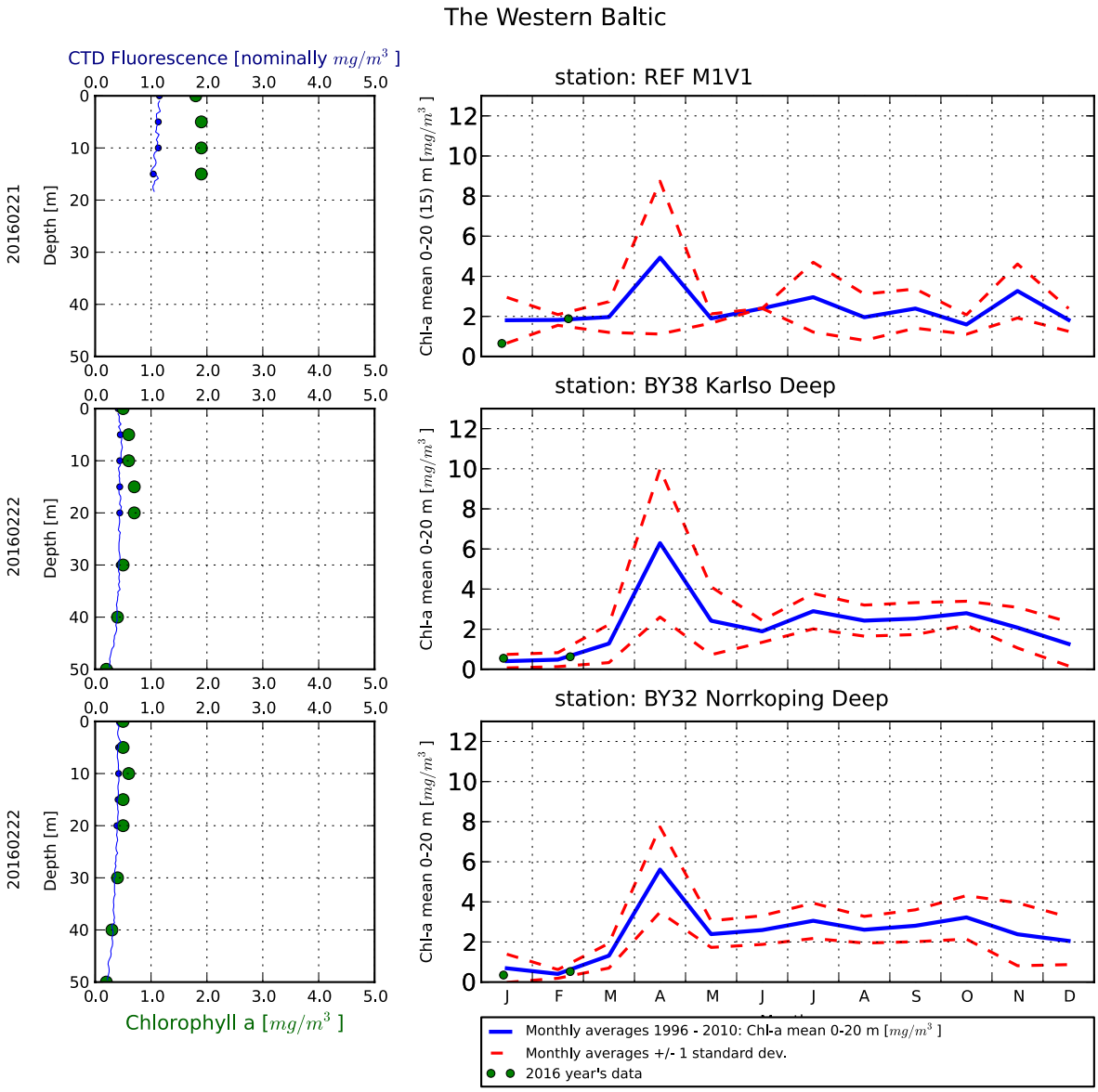


The Southern Baltic



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 occuring 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
Alexandrium 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; headake, dizziness, nausea, vomiting, diarrhoea. **Extreme case** Muscular paralysis; pronounced respiratory difficulty; choking sensation; death trough respiratory paralysis may occur within 2-24 hours after ingestion.
Dinophysis spp.	Diarrehetic 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.
Pseudo- niztschia 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.
Chaetoceros concavicornis/ C.convolutus	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.
Pseudochattonella 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 (0-20 m) vid de olika stationerna. 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 (0-20 m) at sampling stations. Presence of harmful algae at stations where species analysis is performed is shown with a symbol.