SMHI
Oceanographic Unit
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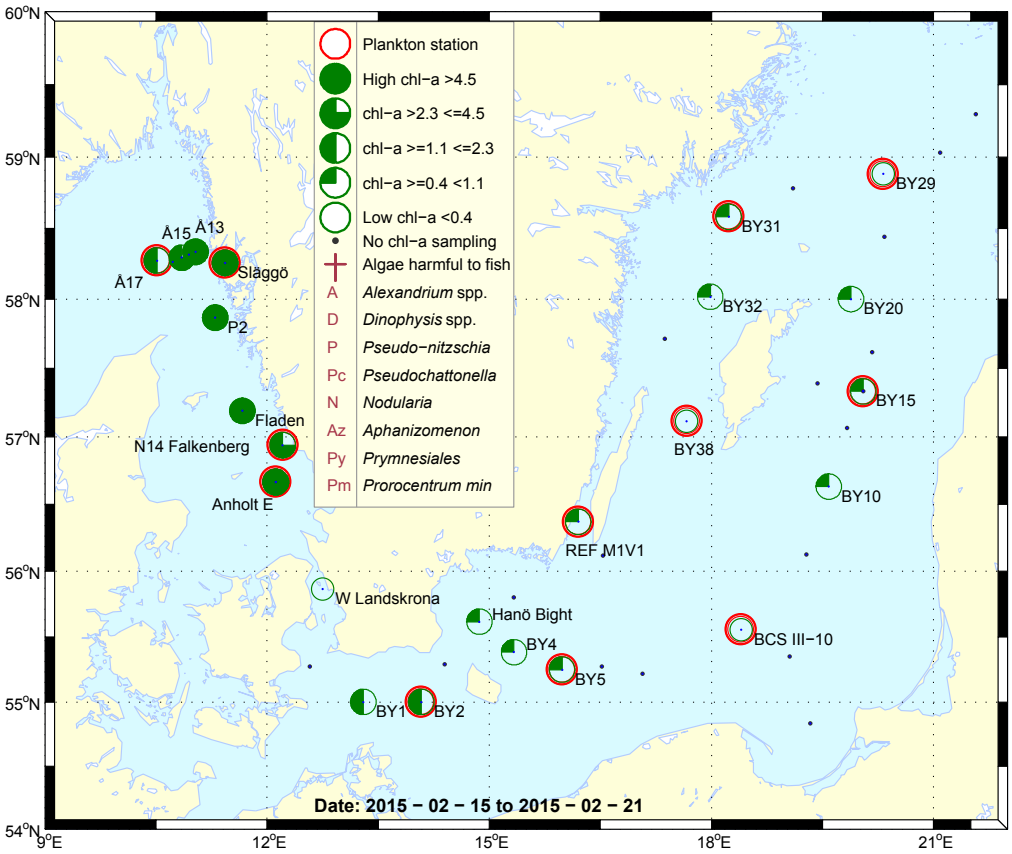
AlgAware

ALGAL SITUATION IN MARINE WATERS SURROUNDING SWEDEN

Sammanfattning

I provet från den yttre stationen Å17 i Skagerrak var cellkoncentrationen mycket låg. Detta beror troligtvis på att vårblomningen ännu inte kommit igång vilket bekräftades av de höga närsaltshalterna i området. På den kustnära stationen Släggö samt vid stationerna i Kattegatt, var kiselalgernas vårblomning i full gång. Detta bekräftades av de höga värdena i klorofyllfluorescensmätningarna och låga närsalthalterna. Det var kiselalgen *Skeletonema marinoi* som dominerade planktonsamhället i detta område. Östersjön hade fortsatt låga cellkoncentrationer vid alla stationerna som besöktes.

De integrerade (0-10 m) klorofyll *a* värdena var mycket högre än normalt för denna månad vid kuststationerna i Skagerrak och Kattegatt. Vid de yttre stationerna var värdena normala för att vara i februari.



Abstract

The cell concentration was very low at Å17 in the open Skagerrak. The chlorophyll fluorescence measurements and the high nutrient concentrations showed that the spring bloom had not yet started here. The diatom spring bloom was ongoing in the Kattegat and at Släggö on the Skagerrak coast. The diatom *Skeletonema marinoi* dominated the phytoplankton community in this area. The cell density was generally very low in the Baltic Sea during this visit.

The integrated (0-10 m) chlorophyll *a* concentrations were higher than normal at the coastal stations in Skagerrak and Kattegat. The values were normal for this month at the stations in the open water of Kattegat and Skagerrak and in the Baltic Sea.

More detailed information on species composition and abundance

The Skagerrak

Å17 (open Skagerrak) and Släggö (Skagerrak coast) 18th of February
The cell concentration, chlorophyll fluorescence measurements and the high nutrient concentrations in the open Skagerrak indicated that the diatom spring bloom had not yet started here. In the coastal area at Släggö there was an ongoing spring bloom. Several diatom species dominated the plankton community (Fig.1) and the potentially toxic genus *Pseudo-nitzschia* spp. was very common at Släggö.

The integrated (0-10 m) chlorophyll a concentrations were higher than normal at the coastal stations in Skagerrak and normal for this month at the stations in the open water.

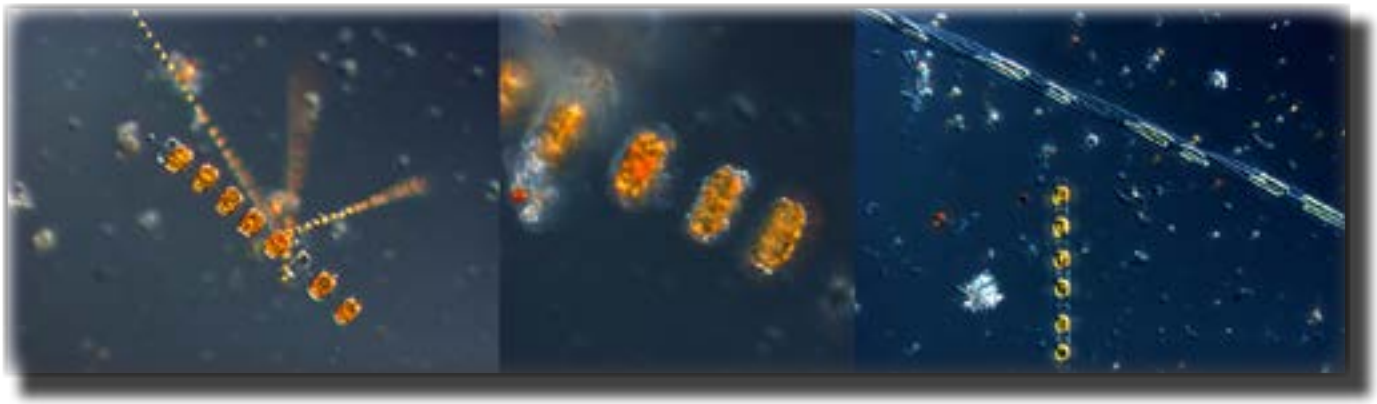


Fig.1: Diatoms dominated at Släggö in February, from the left *Thalassiosira* sp., *Thalassiosira anguste-lineata*, *Pseudo-nitzschia* spp. (upper right) and *Skeletonema marinoi* (lower right) at Släggö in February.

The Kattegat

Anholt E 17th and 18th of February and N14 Falkenberg 17th of February
The species diversity (Fig.2) and cell density in the Kattegat was similar to the situation at Släggö, a dense spring bloom with diatoms that dominated the phytoplankton community.

The integrated (0-10 m) chlorophyll *a* concentrations were higher than normal at the station N14 in Kattegat and normal for this month at Anholt E.

Fig.2 Diatoms dominated the phytoplankton community in the Kattegat in February, from the left *Chaetoceros brevis*, *Thalassiosira rotula* and *Skeletonema marinoi*.

The Baltic Sea

The species diversity and cell density was very low in the Baltic Sea. The phytoplankton community was represented by a few cells from the species registered in Table 2.

The integrated (0-10 m) chlorophyll *a* concentrations were low which is normal in the Baltic Sea for this month.

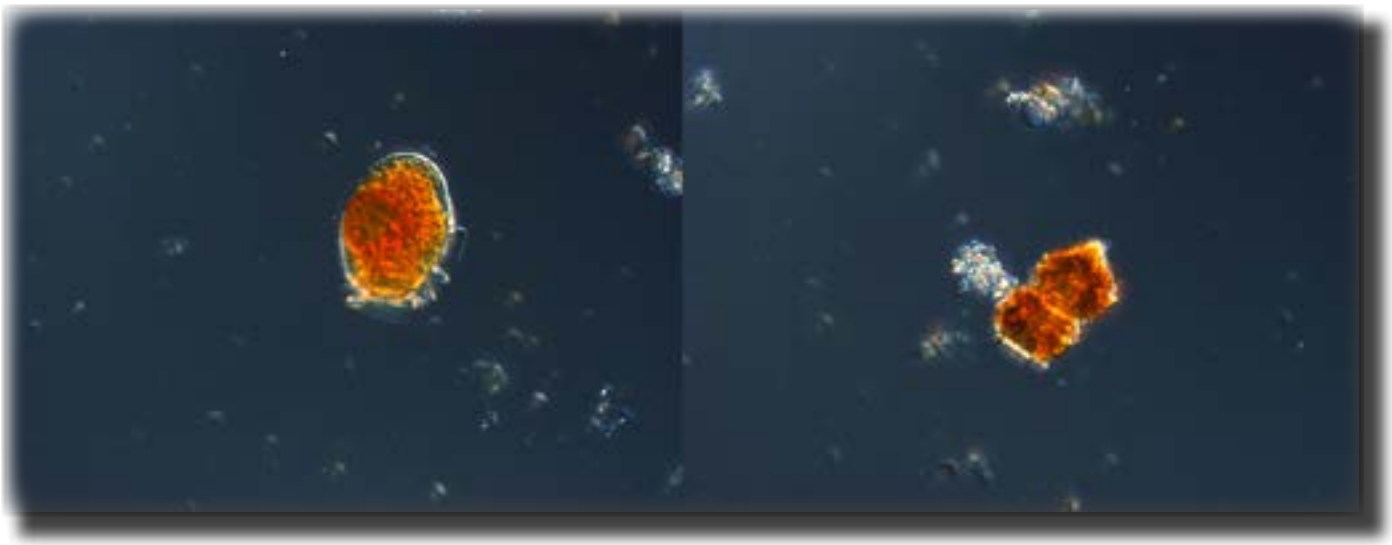


Fig.3 A few dinoflagellate species were present at BY 29. *Dinophysis acuminata* (left) and *Peridiniella catenata* (rigth).

Fig.4 This beautiful zooplankton was found in the sample from BCS III in the Baltic Sea.

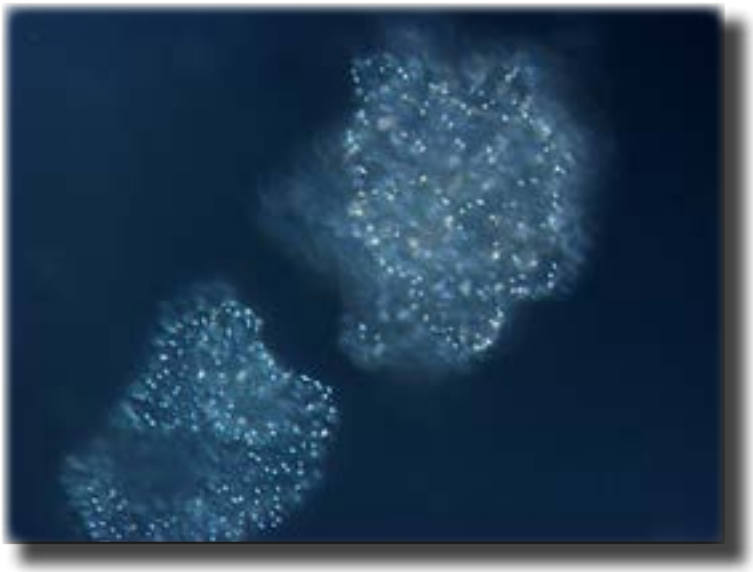


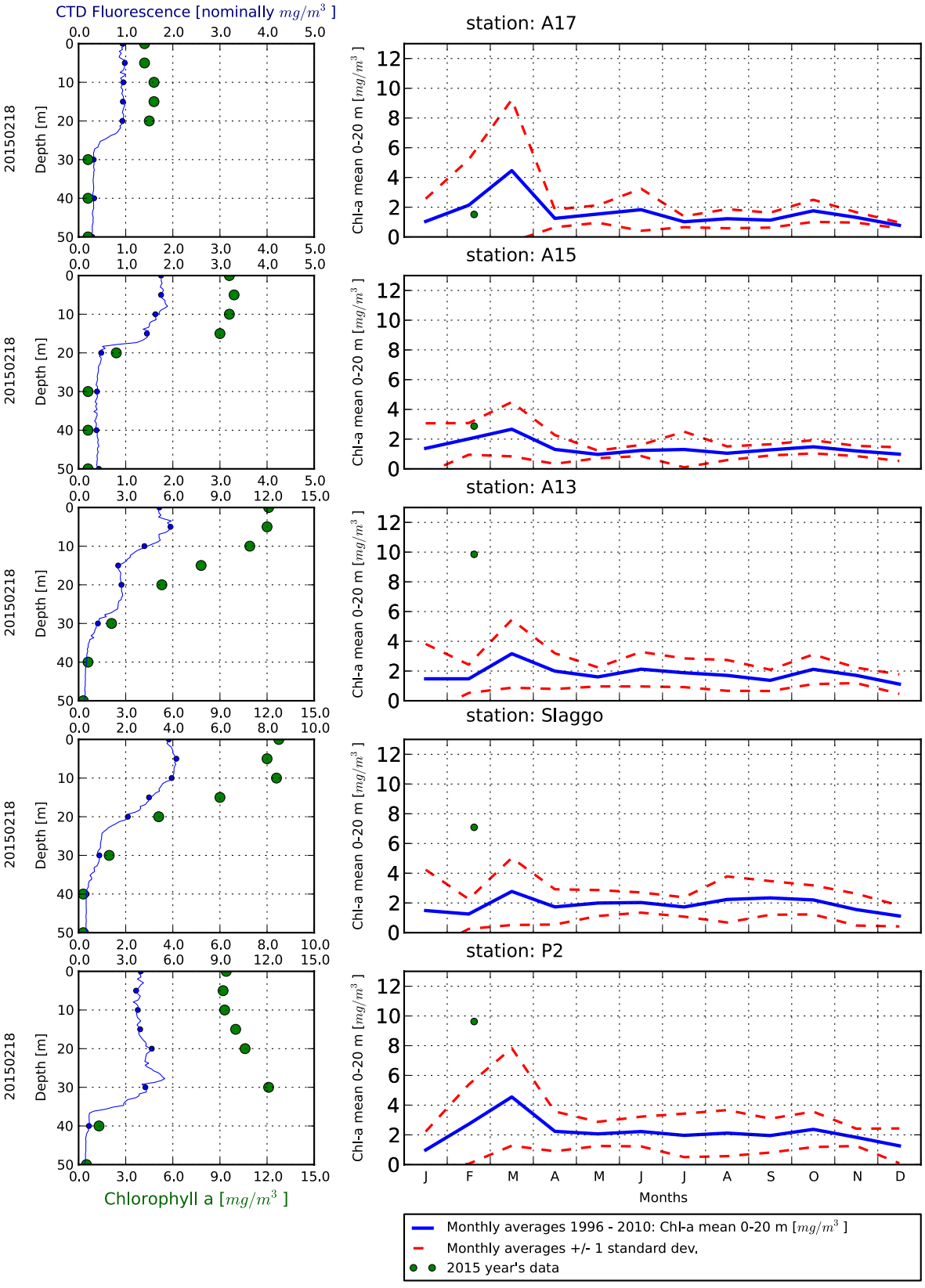
Fig.5 cf. *Cyanodictyon* spp, a colony forming cyanobacteria was present at Bornholm Deep and Karlsö Deep.

Phytoplankton analysis and text by:
Malin Mohlin

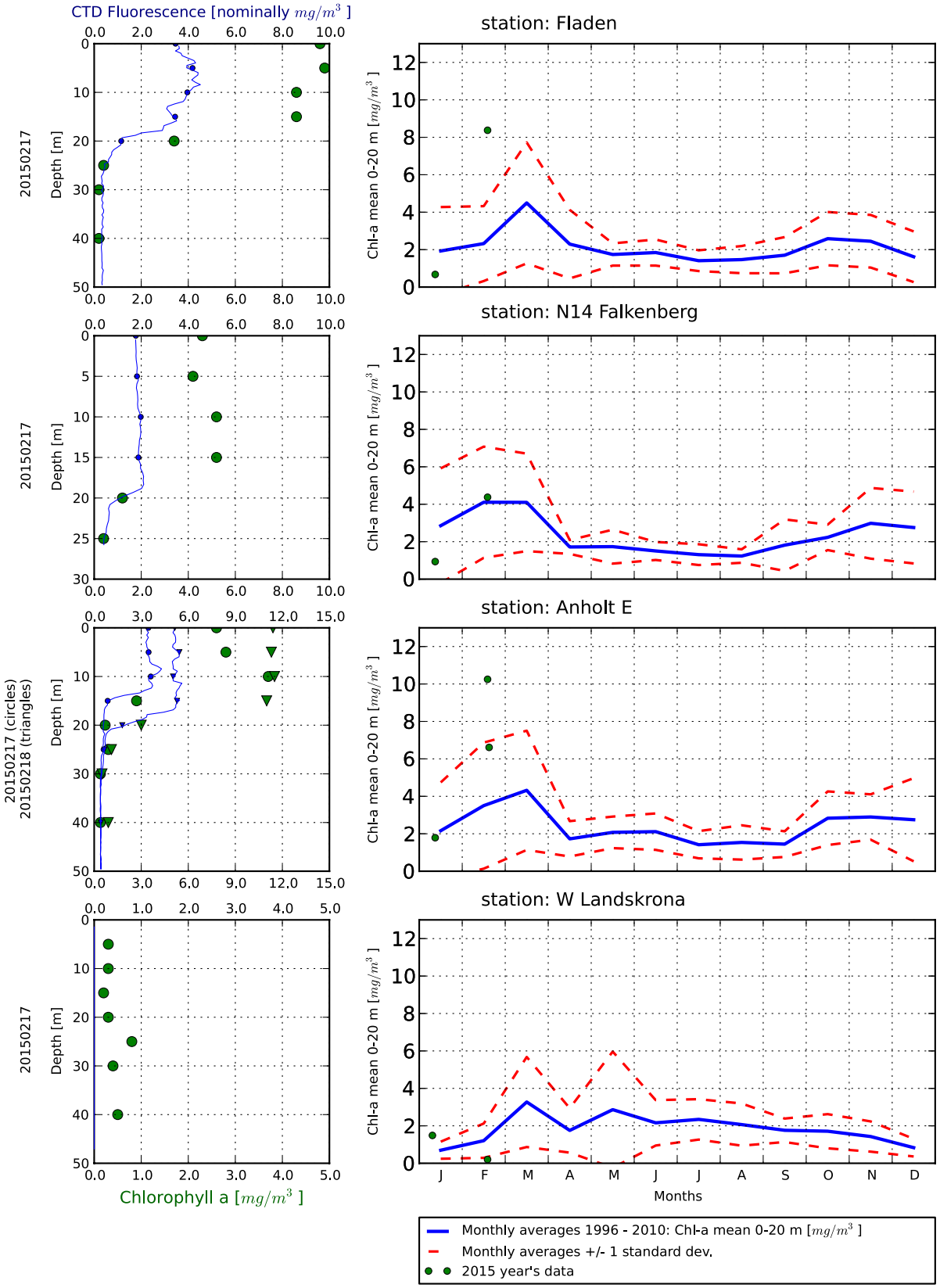
Selection of observed species	Anholt E	Anholt E	N14 Falkenberg	Släggö	Å17
Red=potentially toxic species	2015-02-17	2015-02-18	2015-02-17	2015-02-18	2015-02-18
Hose 0-10 m	presence	presence	presence	presence	presence
Chaetoceros brevis	common	present			
Chaetoceros danicus		present	common		
Chaetoceros debilis	common				
Chaetoceros socialis				common	
Chaetoceros spp	common	present			
Coscinodiscus radiatus	common				
Cylindrotheca closterium				common	
Detonula confervacea			common		
Ditylum brightwellii				common	
Guinardia delicatula	common	present	common	common	common
Guinardia flaccida		present			
Leptocylindrus danicus				common	
Nitzschia longissima			common	common	
Proboscia alata	common	present		common	
Pseudo-nitzschia spp	common	present	common	very common	
Rhizosolenia setigera	common	present	common		
Skeletonema marinoi	very common	very common	very common	very common	very common
Thalassionema nitzschioides		present			
Thalassiosira angulata	common	common	common	common	
Thalassiosira anguste-lineata		present		common	common
Thalassiosira minima	common		common		
Thalassiosira nordenskioeldii	common	present	common	common	
Thalassiosira rotula	common	present			
Thalassiosira spp				common	
Ceratium lineatum	common			common	present
Ceratium longipes	common			common	
Ceratium tripos	common	present		common	
Dinophysis acuminata	common		common		
Dinophysis norvegica	common		common	present	
Gymnodiniales		present			
Gyrodinium spp				present	
Protoperidinium spp		present	present		
Dictyocha speculum	common	present			

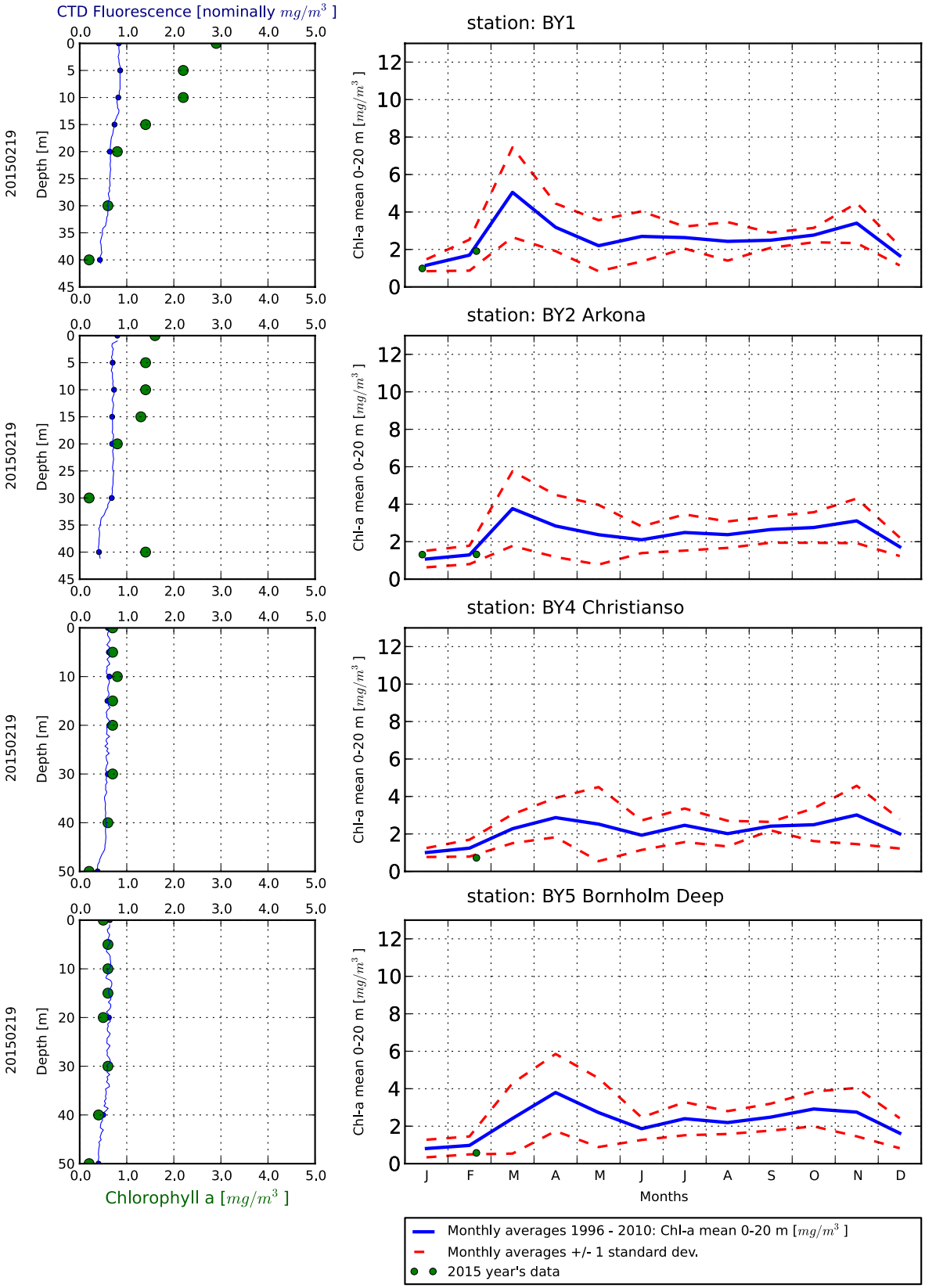
Selection of observed species	BCS III-10	BY2 Arkona	BY5 Bornholmsdj	BY15 Gotlandsdj	BY29	BY31 Landsortsdj	BY38 Karlsödj	Ref M1-V1
Red=potentially toxic species	2015-02-20	2015-02-19	2015-02-19	2015-02-21	2015-02-15	2015-02-15	2015-02-16	2015-02-16
Hose 0-10 m	presence	presence	presence	presence	presence	presence	presence	presence
Chaetoceros danicus	present	present						
Chaetoceros spp		present						
Coscinodiscophyceae			present					
Coscinodiscus radiatus						present		
Skeletonema marinoi	present	present	present	present	present		present	common
Dinophysis acuminata				present	present			
Dinophysis norvegica	present			present	present		present	
Peridiniales							present	present
Peridiniella catenata					present			
Aphanizomenon spp						present		
cf. Aphanothece spp	present							
cf. Cyanodictyon spp			present			present	present	
Woronichinia spp				present	present	present		
Oocystis spp					present			
Planctonema lauterbornii	present	present		present				
Eutreptiella gymnastica								present
Cryptomonadales						present	present	present
Mesodinium rubrum	present	present		present	present	present	present	

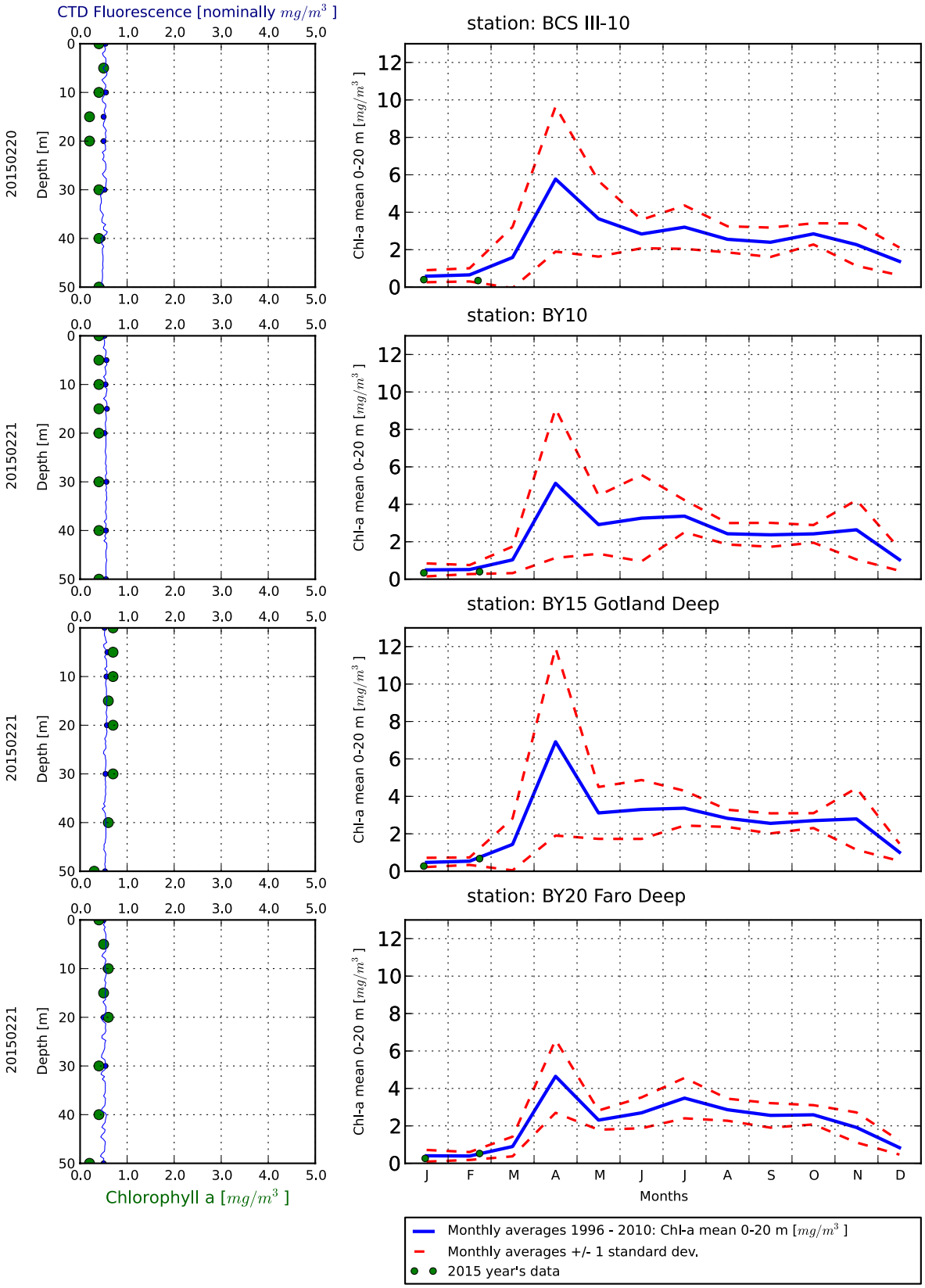
The Skagerrak

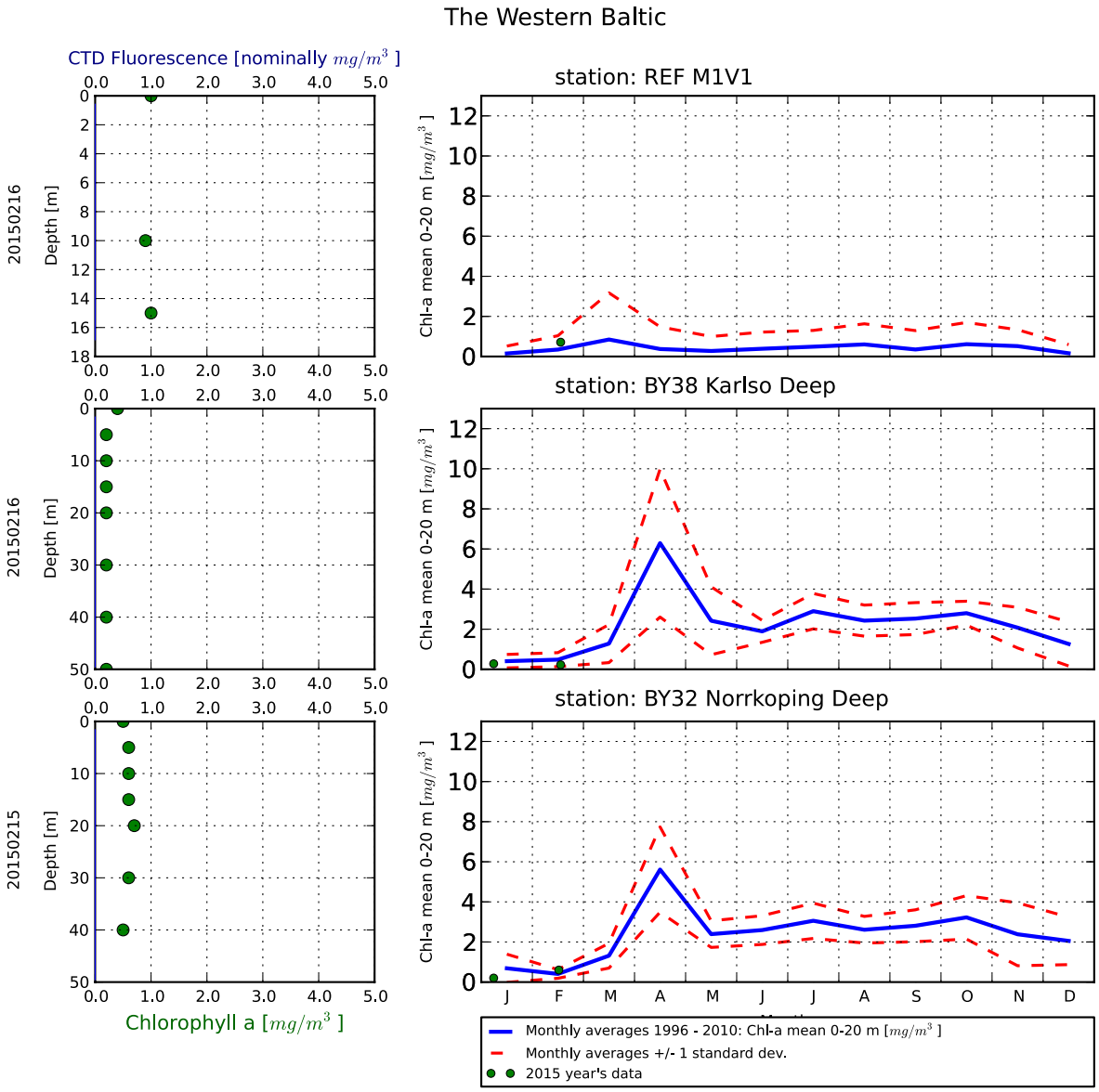


The Kattegat and The Sound




CTD Fluorescence [nominally mg/m^3]
20150219
Depth [m]
Chlorophyll a [mg/m^3]
station: BY1
station: BY2 Arkona
station: BY4 Christianso
station: BY5 Bornholm Deep
Chl-a mean 0-20 m [mg/m^3]
J F M A M J J A S O N D
Months
Monthly averages 1996 - 2010: Chl-a mean 0-20 m [mg/m^3]
Monthly averages +/- 1 standard dev.
2015 year's data


CTD Fluorescence [nominally mg/m^3]
station: BCS III-10
station: BY10
station: BY15 Gotland Deep
station: BY20 Faro Deep
20150220
20150221
20150221
20150221
Depth [m]
Chl-a mean 0-20 m [mg/m^3]
Chlorophyll a [mg/m^3]
J F M A M J J A S O N D
Months
Monthly averages 1996 - 2010: Chl-a mean 0-20 m [mg/m^3]
Monthly averages +/- 1 standard dev.
2015 year's data



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, hallucinationationer, 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.