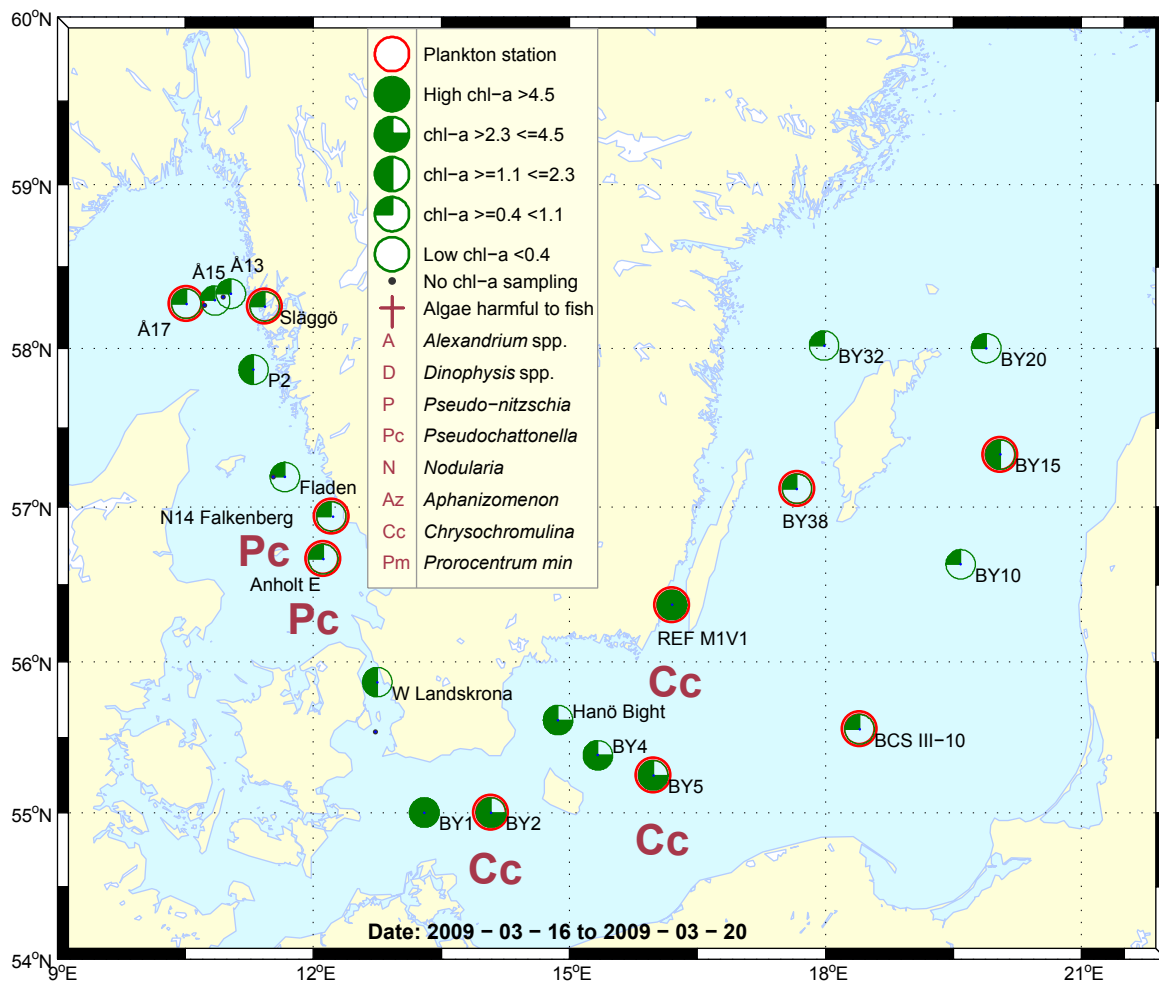


Sammanfattning

Låga klorofyllhalter och låg artdiversitet noterades i Skagerrak och Kattegatt vid provtagningarna i mitten av mars månad. Den för fisk skadliga arten *Pseudochattonella farcimen* var vanlig i yttre Skagerrak (Å17), och vid Kattegattstationerna N14 och Anholt E var samma art en av de talrikaste i de annars tunna planktonproverna.

I södra Östersjön, vid BY2, och i Kalmar sund (M1V1) var det kiselalgsblomning med höga cellantal av framför allt *Skeletonema costatum*. Prymnesiophyten *Chrysochromulina polylepis* fanns vid samtliga stationer i Östersjön, men var talrikast vid BY2 och i Kalmar sund. Den integrerade (0-20 m) klorofyll *a*-halten var inom det normala för månaden vid alla stationer. Klorofyllvärdet var dock högt i Kalmar sund, där 10 års medel inte finns som jämförelse.



Abstract

Low concentrations of chlorophyll *a* and low species diversity were observed in the Skagerrak and Kattegat areas at the time of sampling in the middle of March. The fish toxic species *Pseudochattonella farcimen* was common in open Skagerrak (Å17). At the Kattegat stations N14 and Anholt E, *P. farcimen* was one of the most numerous species amongst few others.

In the southern Baltic, BY2, and in the sound of Kalmar (M1V1), a diatom bloom was observed with high cell numbers of *Skeletonema costatum*. The prymnesiophyte *Chrysochromulina polylepis* was present at all of the Baltic stations, but had the highest cell numbers at BY2 and in the sound of Kalmar. The integrated (0-20 m) chlorophyll *a* values were within average for this month at all stations. The chlorophyll value was high in the sound of Kalmar though, where a 10 year average is not available.

More detailed information on species composition and abundance

The Skagerrak

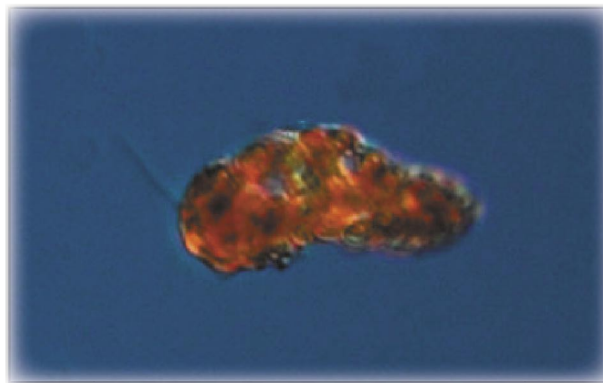
Å17 20th of March (open Skagerrak)

The phytoplankton diversity was low. A few species of diatoms and dinoflagellates were found in low cell numbers. The small prasinophyte *Pyramimonas* spp. and the fish toxic species *Pseudochattonella farcimen** were common. Cryptomonads were very common.

Släggö 19th of March (Skagerrak coast)

The phytoplankton diversity was low and the number of dinoflagellate species was more than diatom species although the cell numbers of diatoms were higher.

The chlorophyll *a* concentrations were low for this month in the Skagerrak area.



Pseudochattonella farcimen

The Kattegat

N14 Falkenberg 19th of March

Diatoms were very few and the sample was dominated by small dinoflagellates, small chrysophytes and the dictyochophyte *Pseudochattonella farcimen**. The integrated (0-20 m) chlorophyll *a* value was very low.

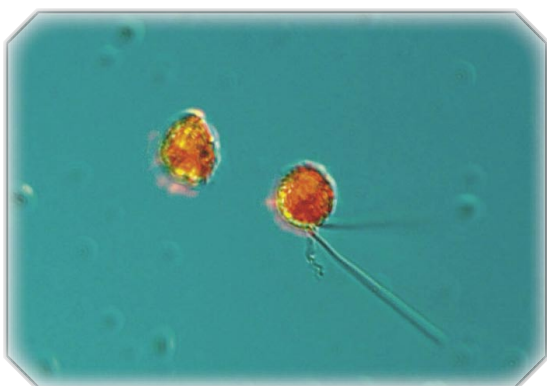
Anholt E 19th and 23rd March

The phytoplankton situation was similar to the one at N14 but *Pseudochattonella farcimen** were twice as many. The integrated chlorophyll *a* value was below average for this month.

Selection of observed species	Å17	Släggö	N14	Anholt E
Red=potentially toxic species	2009-03-20	2009-03-19	2009-03-19	2009-03-19
	cells/l	cells/l	cells/l	cells/l
<i>Chaetoceros danicus</i>	present			
<i>Chaetoceros</i> spp.	present			
<i>Coscinodiscus</i> spp.		present	present	
<i>Leptocylindrus danicus</i>				present
<i>Proboscia alata</i>	present	present	present	present
<i>Pseudo-nitzschia delicatissima</i> -group	present	common		
<i>Rhizosolenia hebetata</i>	present		present	present
<i>Skeletonema costatum</i> complex	present	common		present
<i>Thalassiosira nordenskiöldii</i>		common		
<i>Ceratium lineatum</i>		present		
<i>Ceratium tripos</i>		present		present
<i>Cladopyxis claytonii</i>				present
<i>Dinophysis acuminata</i>		present		present
<i>Dinophysis norvegica</i>			present	present
<i>Gonyaulax</i> spp.				present
<i>Gymnodinium verruculosum</i>				present
Gymnodiniales spp.	common		common	common
<i>Heterocapsa rotundata</i>	present		present	
<i>Heterocapsa triquetra</i>		present		
<i>Karlodinium micrum</i>		present		
<i>Katodinium glaucum</i>	present	present	present	present
<i>Peridiniella danica</i>	present	present	common	common
<i>Protoperidinium bipes</i>	present	present	present	present
<i>Protoperidinium brevipes</i>			present	
<i>Protoperidinium steinii</i>			present	
<i>Protoperidinium</i> spp.	present	present	present	present
<i>Chrysochromulina</i> spp.		present	present	present
Cryptomonadales spp.	190 000	common	common	present
<i>Eutreptiella</i> spp.			present	
<i>Pyramimonas</i> spp.	common	present		
<i>Dictyocha speculum</i>	present			
<i>Pseudochattonella farcimen</i>	common		71 000	140 000
<i>Apedinella radians</i>		present		present
<i>Dinobryon balticum</i>			present	present
<i>Pseudopedinella pyriforme</i>	present	present	present	present
<i>Pseudopedinella tricostata</i>			present	
<i>Pseudopedinella</i> spp.	present		common	
<i>Calliacantha longicaudata</i>	present		present	present
<i>Calliacantha natans</i>	present		present	present
<i>Leucocryptos marina</i>	present		present	present
<i>Laboea strobila</i>	present	present		present
<i>Mesodinium rubrum</i>	present	present		

The Baltic Sea

Arkona Basin BY2 18th of March



Chrysochromulina polylepis

The diatom *Skeletonema costatum* and the prymnesiophyte *Chrysochromulina polylepis** dominated the phytoplankton sample. *Chaetoceros* species and *Thalassiosira* species, both diatom genera, and the cyanobacterium *Aphanizomenon* spp. were common. The prasinophyte *Pyramimonas* spp. was also common. The altogether high cell numbers contributed to elevated chlorophyll *a* concentrations, although the integrated value was within average for this month.

Bornholm Basin BY5, 18th of March

The species composition was very similar to the one at BY2, but the cell numbers were much lower. The prymnesiophyte *Chrysochromulina polylepis** and cryptomonads were the most numerous species/groups. The diatom genus *Chaetoceros* spp. and the ciliate *Mesodinium rubrum* were common. The integrated chlorophyll *a* value was at average for this month.

South East Baltic BCS III-10 17th of March

The diversity was low, and the most common group of algae was the cryptomonads. *C. polylepis** was present. The integrated chlorophyll *a* value was within average for this month.

Eastern Gotland Basin BY15 17th of March

Cryptomonads and the cyanobacterium *Aphanizomenon* spp. were common. A few diatoms and dinoflagellates were present in low cell numbers, e.g. the dinoflagellate *Peridiniella catenata* and the diatom *Skeletonema costatum*. The chlorophyll *a* values were low, but at average for this month.



Peridiniella catenata

Western Gotland Basin BY 38 16th of March

The prymnesiophyte *Chrysochromulina polylepis** and cryptomonads were the most numerous species/groups and the ciliate *Mesodinium rubrum* was common. The integrated chlorophyll *a* value was low but within average for this month.

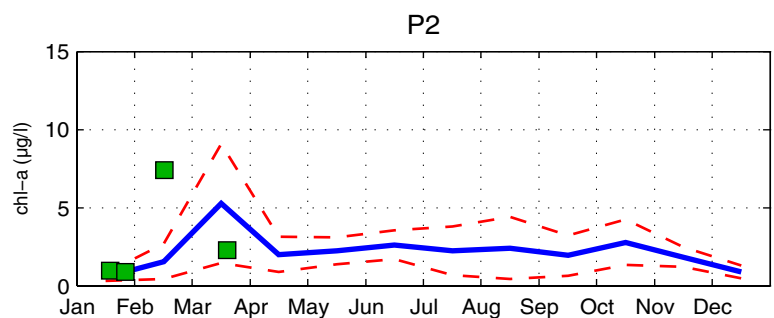
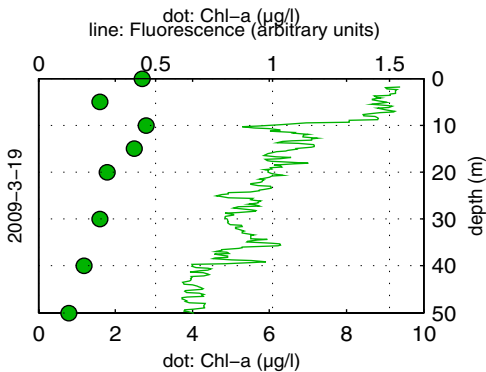
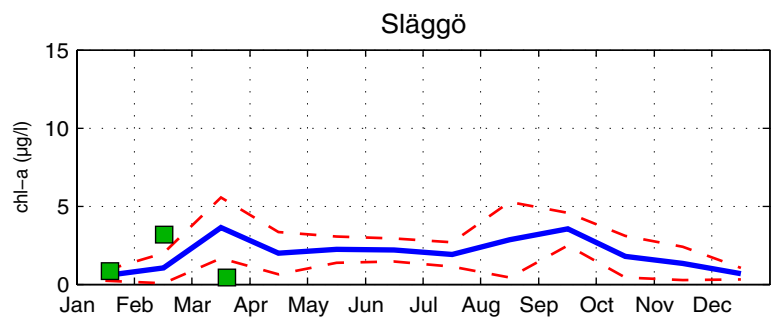
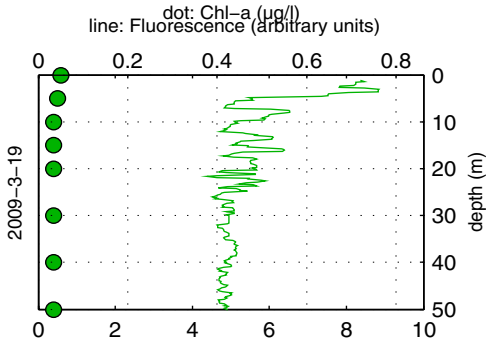
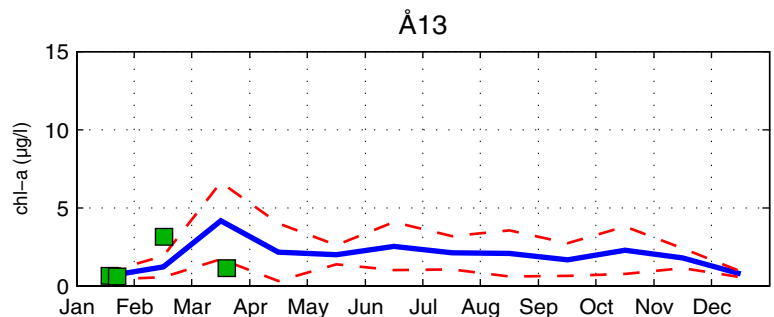
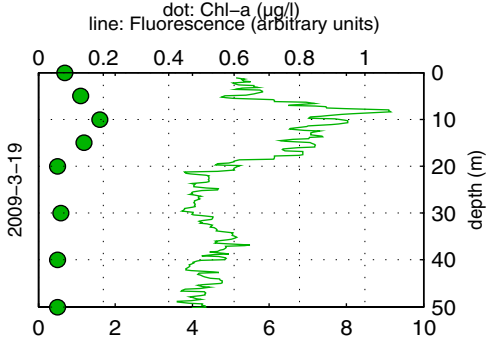
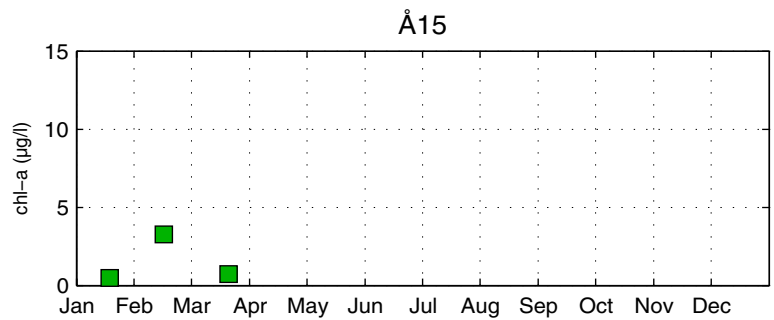
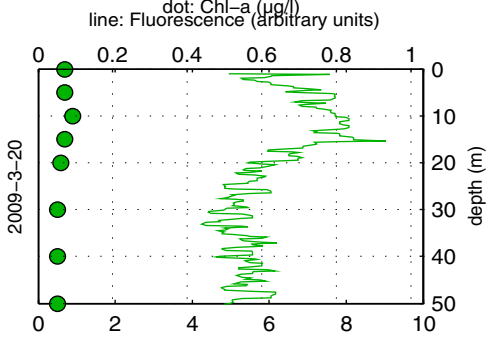
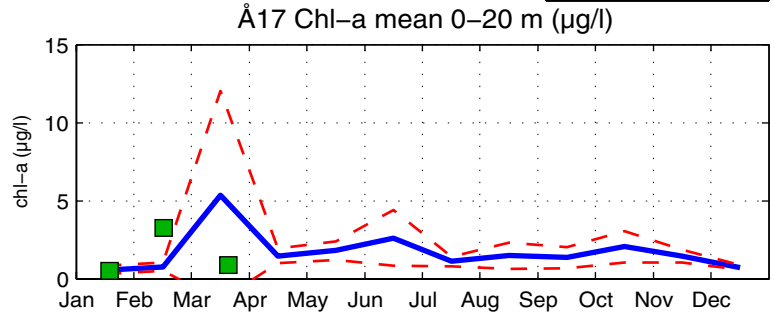
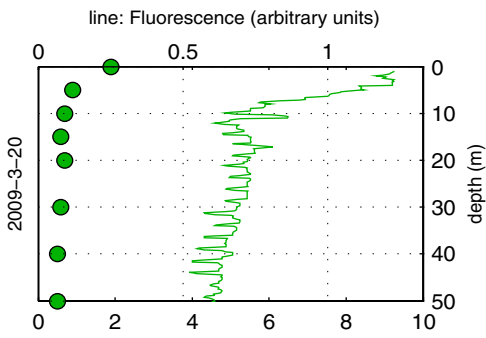
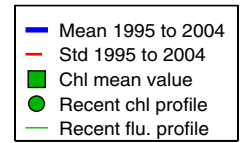
Kalmar Sound Ref. M1-V1 16th of March

A diatom bloom was observed with very high cell numbers of *Skeletonema costatum*, and several species of *Chaetoceros* and *Thalassiosira*. The prymnesiophyte *Chrysochromulina polylepis** was numerous and the cyanobacterium *Aphanizomenon* spp. was present. The chlorophyll *a* concentrations were consequently high. No 10 year average is available for this station though, but compared to the other stations both the values from the discrete depths and the integrated value were high.

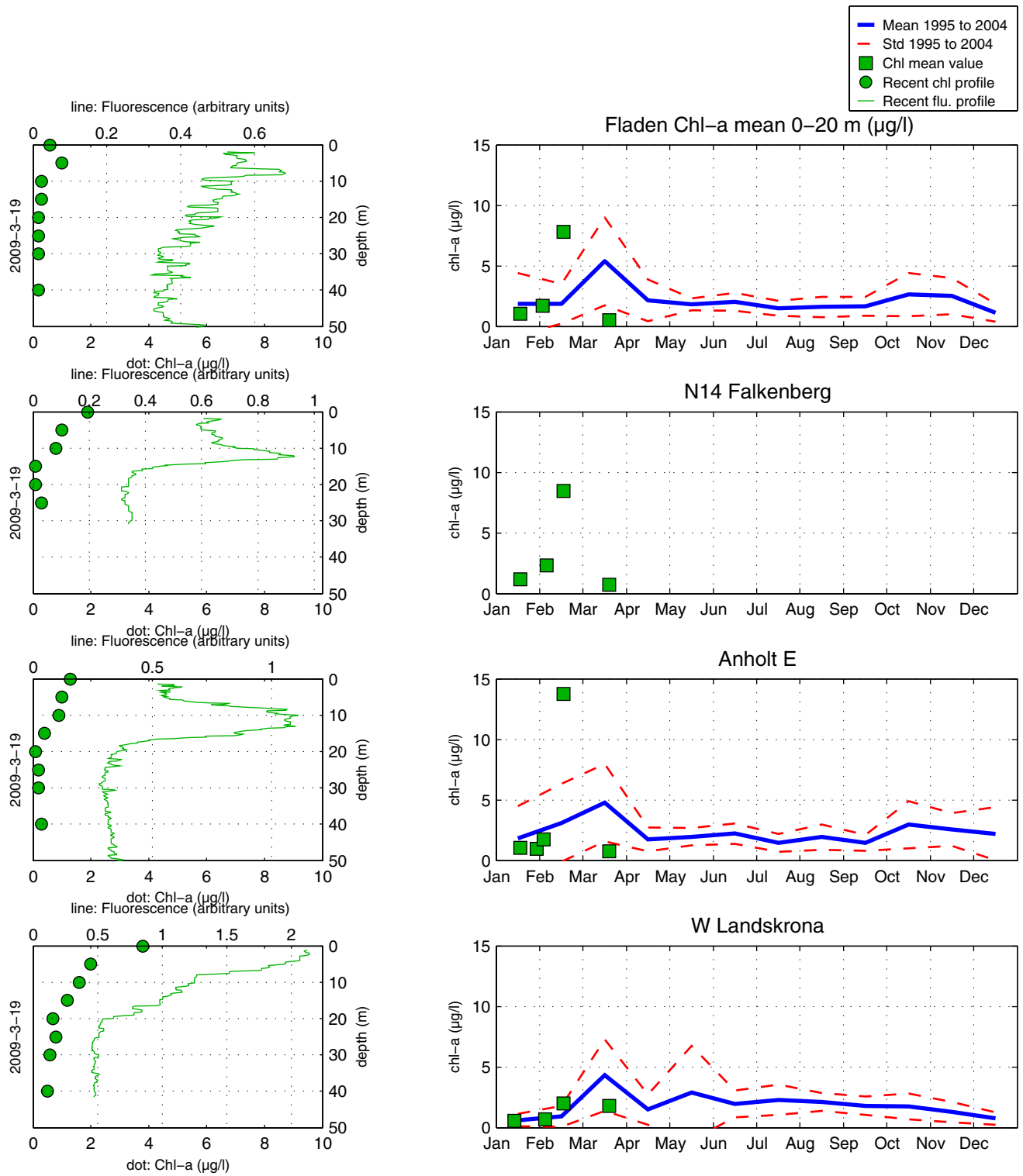
Phytoplankton analysis and text by:
Ann-Turi Skjevik

Selection of observed species	BY2	BY5	BCS III-10	BY15	BY38	Ref. M1-V1
Red=potentially toxic species	2009-03-18	2009-03-18	2009-03-17	2009-3-17	2009-03-16	2009-03-16
¹ quantified in m/l	cells/l	cells/l	cells/l	cells/l	cells/l	cells/l
<i>Chaetoceros danicus</i>				present		present
<i>Chaetoceros decipiens</i>	present					
<i>Chaetoceros lacinosus</i>						present
<i>Chaetoceros similis</i>	present					present
<i>Chaetoceros subtilis</i>	present	present				
<i>Chaetoceros thronsenii</i>				present		
<i>Chaetoceros wighamii</i>						present
<i>Chaetoceros</i> spp.	present	common		present		common
<i>Coscinodiscus</i> spp.						present
<i>Porosira glacialis</i>						present
<i>Skeletonema costatum</i>	367 000	present		present	present	5 049 000
<i>Thalassiosira</i> spp.	common			present		34 500
<i>Dinophysis rotundata</i>						present
<i>Gymnodinium verruculosum</i>						
<i>Heterocapsa rotundata</i>	present	present	present	present	present	present
<i>Heterocapsa</i> spp.		present	present		present	
<i>Karlodinium micrum</i>				present		
<i>Katodinium glaucum</i>		present	present		present	
<i>Peridiniella catenata</i>				common	present	common
<i>Peridiniella danica</i>	present				present	present
<i>Protoperidinium brevipes</i>	present					
<i>Chrysochromulina polylepis</i>	212 000	common	present	present	common	217 000
<i>Chrysochromulina</i> spp.	50 000	common	present	present	present	common
Cryptomonadales spp.	present	common	85 000	81 000	common	present
<i>Eutreptiella</i> spp.	present	present	present	present		
<i>Pseudopedinella</i> cf. <i>pyriforme</i>	present					
<i>Pyramimonas</i> spp.	common	present	present		present	present
<i>Aphanizomenon</i> spp.	common			common		present
<i>Calliakantha natans</i>	present	present			present	
<i>Ebria tripartita</i>	present	present			present	present
<i>Leucocryptos marina</i>		present	present		present	
<i>Mesodinium rubrum</i>	present	27 000	present	common	common	25 300
<i>Strombidium</i> spp.				present		present

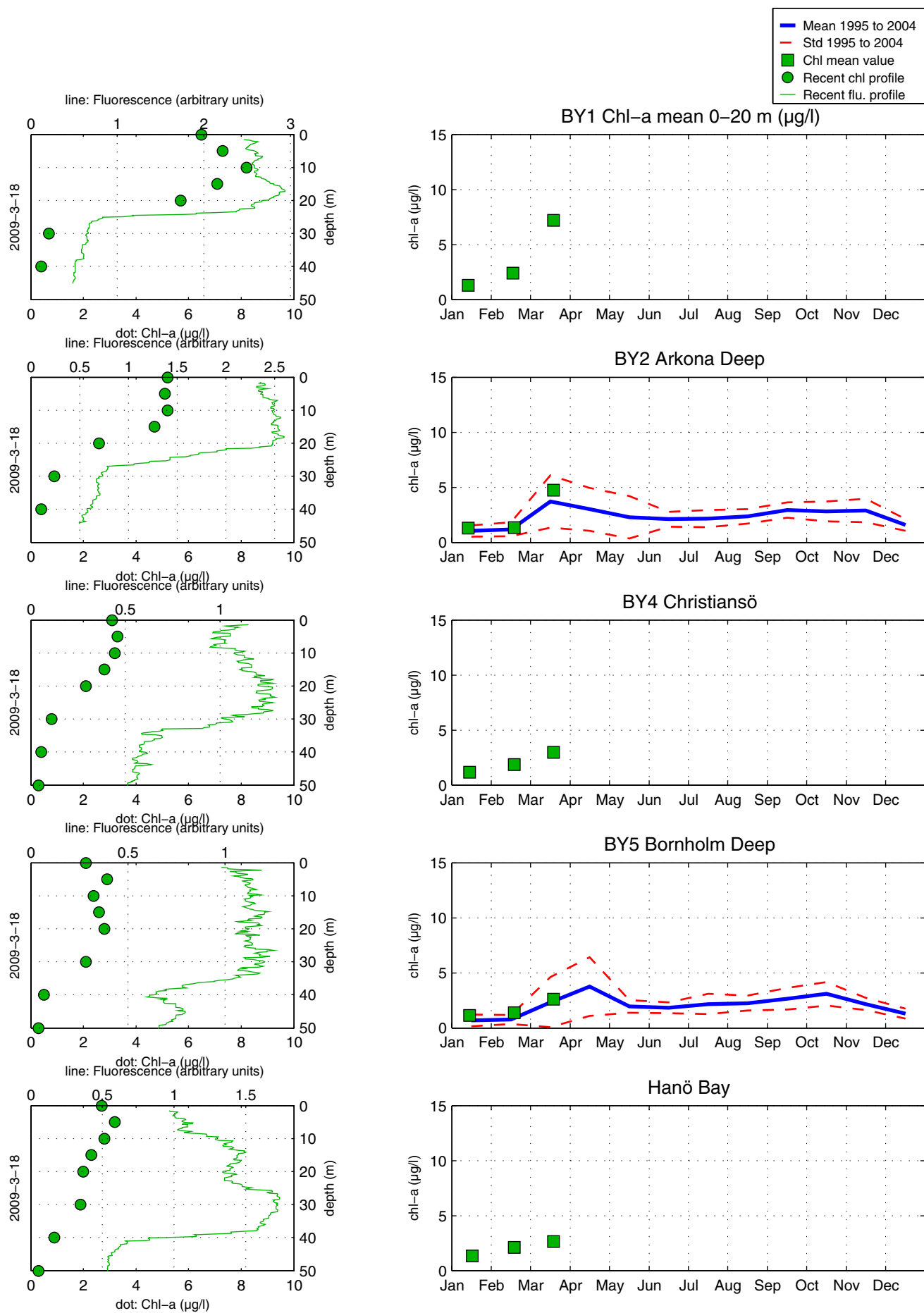
The Skagerrak



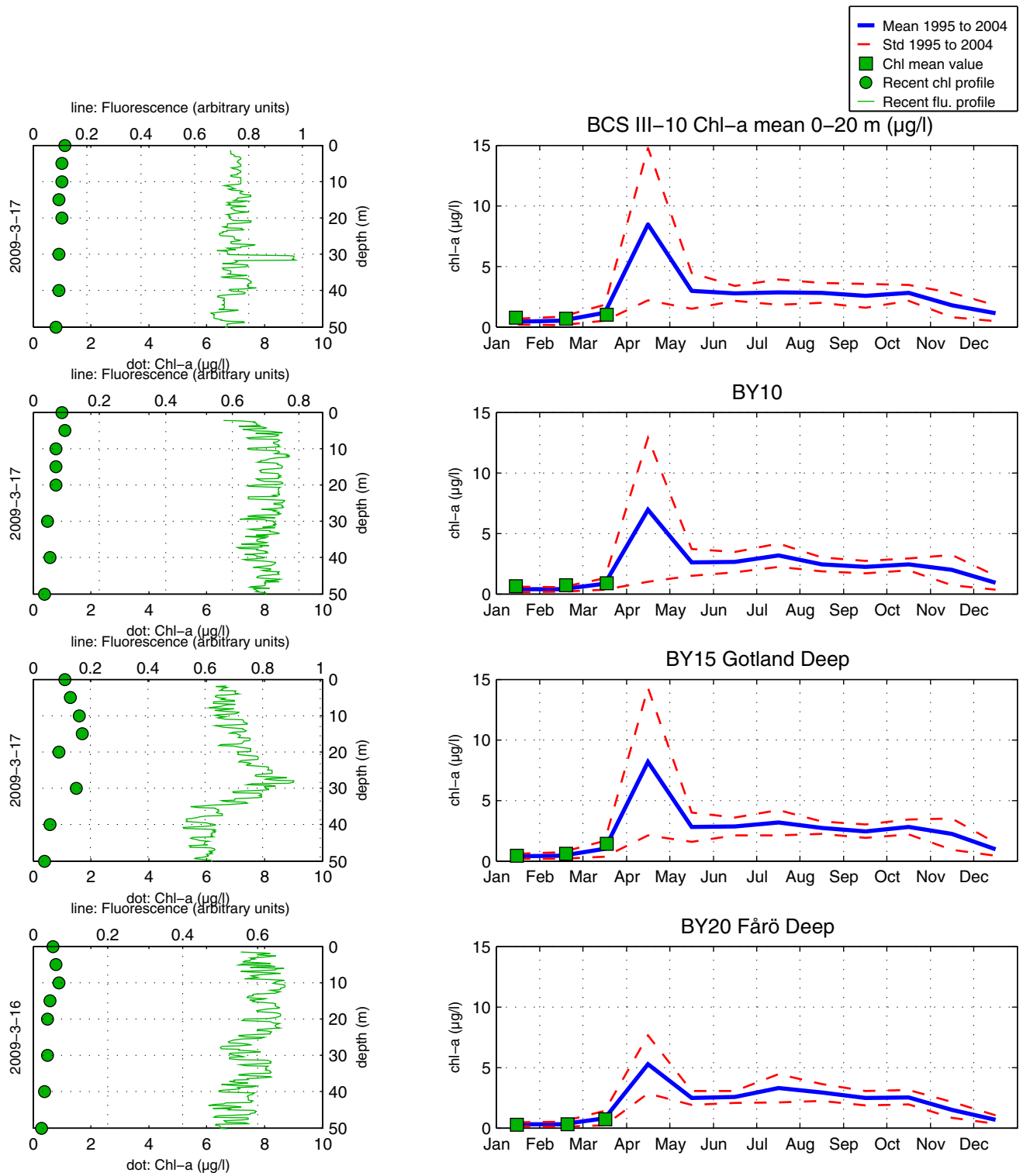
The Kattegat and the Sound



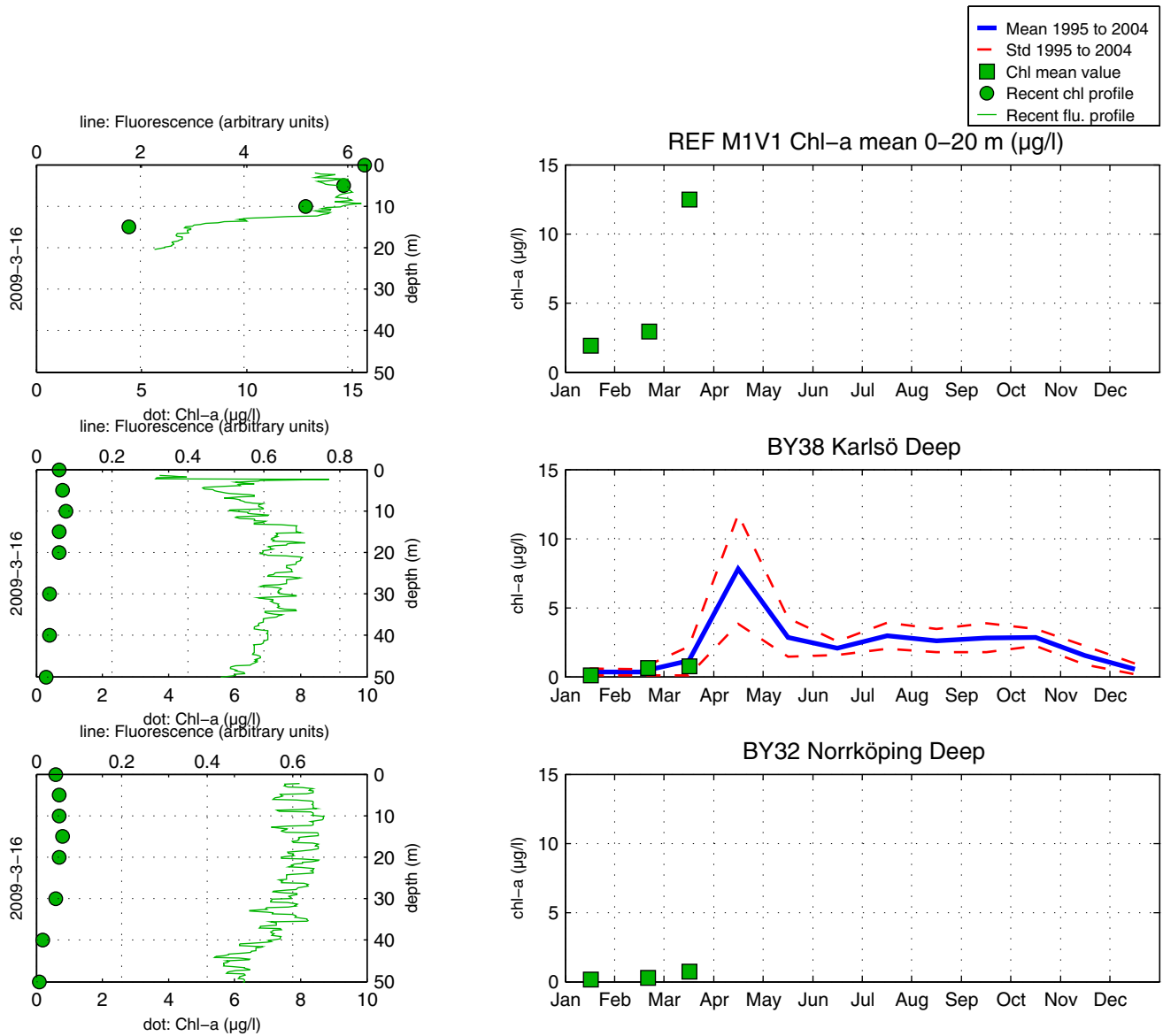
The Southern Baltic



The Eastern Baltic



The Western Baltic



Om klorofylldiagrammen

Klorofyll *a* är ett mått på mängden växtplankton. Prover tas från ett antal djup från U/F Argos. Data presenteras både från de fasta djupen och som medelvärdet 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 from the R/V Argos. Data is 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 ca en gång per månad expeditioner med U/F Argos i Östersjön och Västerhavet. Resultat baserade på semikvantitativ mikroskopanalys av planktonprover samt klorofyllmätningar presenteras kortfattat i denna rapport. Information från SMHI:s satellitövervakning av algbloomingar finns på www.smhi.se.

About AlgAware

SMHI carries out monthly cruises with R/V Argos 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 SMHI:s satellite monitoring of algal blooms is found on www.smhi.se.

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>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.
<i>Pseudo-nitzschia</i> 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.

Översikt av 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. Då cirkeln är tom innebär detta att stationen inte provtagits.

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. An empty circle indicates that there has been no sampling at that station.

