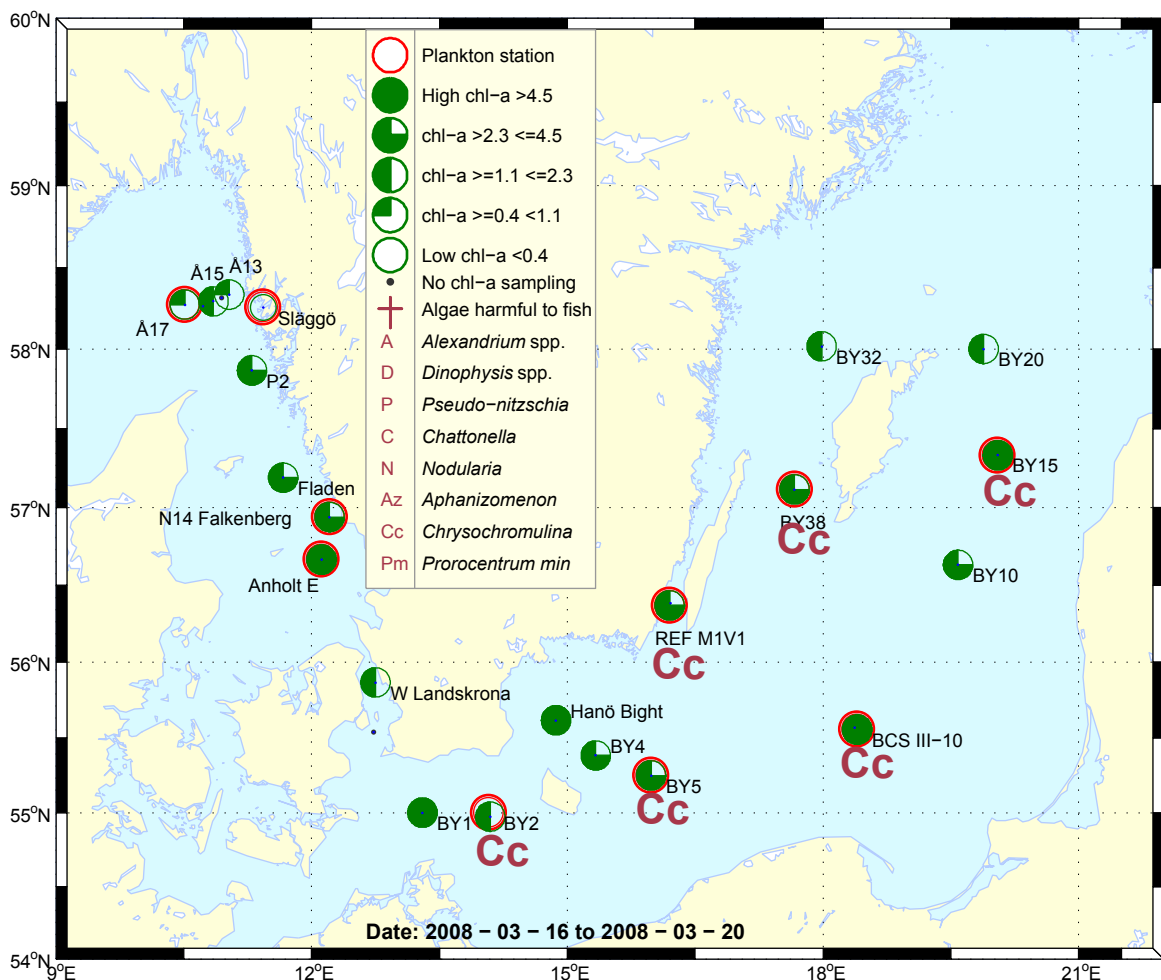


Sammanfattning

Vårblomningen var över i yttre Skagerrak vid tidpunkten för provtagningen, medan rester av den kunde skönjas vid Släggö. I Kattegatt observerades en utdragen vårblomning med dominans av kiselalger.

En relativt stor art av släktet Chrysochromulina, som funnits i prover från Östersjön under höst och vinter återfanns i stora cellantal vid samtliga Östersjö-stationer. I övrigt var dinoflagellaten Heterocapsa rotundata och kiselalgen Skeletonema costatum vanliga vid de flesta stationer.

Små kolonibildande cyanobakterier var talrika vid flera Östersjöstationer och den filamentösa cyanobakterien Aphanizomenon sp. observerades vid BY5 och BCSIII-10.



Abstract

The spring bloom was over in open Skagerrak at the time of the sampling. At the coast, at Släggö, small remains of the bloom could be observed. In the Kattegat area, spring bloom lingered, with diatoms dominating the samples.

A rather big species of the genus Chrysochromulina was found at all Baltic stations with high cell numbers. The same species was found numerous during autumn and winter. The dinoflagellate Heterocapsa rotundata and the diatom Skeletonema costatum were common at most of the Baltic stations.

Small colony forming cyanobacteria were abundant at several stations in the Baltic, and the filamentous cyanobacterium Aphanizomenon sp. was observed at BY5 and at BCSIII-10.

Om AlgAware

SMHI genomför ca en gång per månad expeditioner med U/F Argos i Östersjön och Västerhavet. Resultat baserade på mikroskopanalys av planktonprover samt klorofyllmätningar presenteras kortfattat i denna rapport. Information från SMHI:s satellitövervakning av algblomningar 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 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>Chattonella</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.

More detailed information on species composition and abundance

The Skagerrak

Å17 20th of March 2008 (open Skagerrak)



Pyramimonas sp.

The spring bloom was already over at this station, with only a few diatom species in low cell numbers to show for it. The dominant species were small flagellates as *Pyramimonas* spp. and cryptomonads.

Släggö 20th of March 2008 (Skagerrak coast)

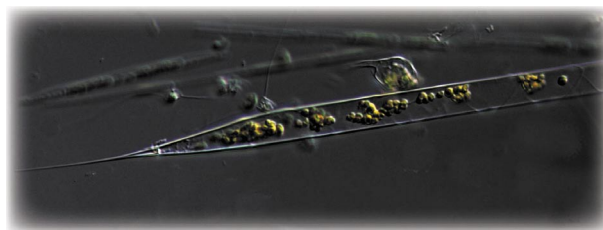
A touch of spring bloom was still visible in the shape of the diatom *Skeletonema costatum*. Apart from *S. costatum*, the cell numbers were low. The most abundant dinoflagellate was the small thecate *Heterocapsa rotundata*.

The chlorophyll *a* concentrations were below average at Å13 and at Släggö, at the other Skagerrak stations, the values were within average for this month.

The Kattegat

N14 Falkenberg 19th of March 2008

A lingering spring bloom was more obvious in the samples from the Kattegat stations as compared to the Skagerrak areas. The most abundant diatom was *Chaetoceros socialis*, but *Rhizosolenia hebetata* was also quite common.



Rhizosolenia hebetata

Anholt E 19th of March 2008

The same diatoms dominated as at N14, but small flagellates were more numerous at Anholt E. Above all, cryptomonads were abundant, but also *Pyramimonas* spp. and the heterotrophic species *Calliakantha longicaudata*.

The chlorophyll *a*-concentrations were at average for this month in the whole Kattegat area.

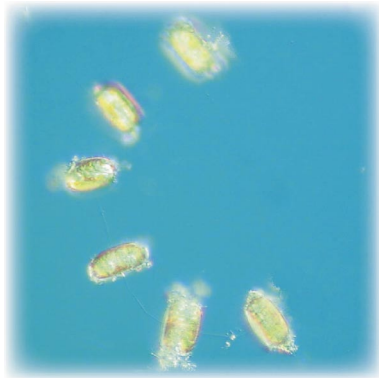
Selection of observed species Red=potentially toxic species	Å17 2008-03-20 cells/l	Släggö 2008-03-20 cells/l	N14 2008-03-19 cells/l	Anholt E 2008-03-19 cells/l
<i>Chaetoceros lacinosus</i>			present	
<i>Chaetoceros socialis</i>	present		very common	very common
<i>Chaetoceros</i> spp.		present		
<i>Chaetoceros tenuissimus</i>			present	
<i>Coscinodiscus</i> spp.			present	present
<i>Cylindrotheca closterium</i>	present	present	present	
<i>Guinardia delicatula</i>	present		present	common
<i>Leptocylindrus danicus</i>			present	
<i>Navicula</i> spp.		present	present	present
<i>Proboscia alata</i>		present	present	present
<i>Pseudo-nitzschia delicatissima</i> -group		present	present	
<i>Pseudo-nitzschia seriata</i> -group	present		present	present
<i>Rhizosolenia hebetata</i>	present		common	very common
<i>Rhizosolenia setigera</i>		present		present
<i>Skeletonema costatum</i> complex	present	common	present	present
<i>Thalassiosira anguste-lineata</i>			present	
<i>Thalassiosira</i> spp.		present		
<i>Amphidinium sphenoides</i>			present	present
<i>Ceratium furca</i>			present	
<i>Ceratium lineatum</i>			present	present
<i>Dinophysis acuminata</i>		present		
<i>Gyrodinium flagellare</i>		present		present
<i>Gyrodinium galeatum</i>			present	
<i>Gyrodinium spirale</i>	present	present	present	present
<i>Heterocapsa rotundata</i>	present	common	present	
<i>Heterocapsa triquetra</i>		present	present	
<i>Oxytoxum gracile</i>		present		
<i>Peridiniella danica</i>			present	
<i>Protoperidinium bipes</i>	present		present	present
<i>Protoperidinium depressum</i>				present
<i>Protoperidinium</i> cf. <i>pallidum</i>				present
<i>Protoperidinium pentagonum</i>			present	
Cryptomonadales spp.	very common	common	common	very common
<i>Dictyocha speculum</i>	present			present
<i>Apedinella radians</i>	present			
<i>Pseudopedinella</i> spp.	present	present	present	present
<i>Eutreptiella</i> spp.			present	
<i>Pyramimonas</i> spp.	very common	present	common	common
<i>Leucocryptos marina</i>	present	present	present	
<i>Calliakantha longicaudata</i>	present		present	present
<i>Calliakantha natans</i>			present	present
<i>Laboea strobila</i>			present	present
<i>Mesodinium rubrum</i>	present	present	present	present

The Baltic Sea

Arkona Basin BY2 19th of March

Small colony forming cyanobacteria were the most abundant. A population of the still unidentified *Chrysochromulina* species found during the fall and winter at Baltic stations was observed. The diatoms *Skeletonema costatum* and *Chaetoceros* spp. were common.

Bornholm Basin BY5 18th of March



Thalassiosira cf. *angulata*

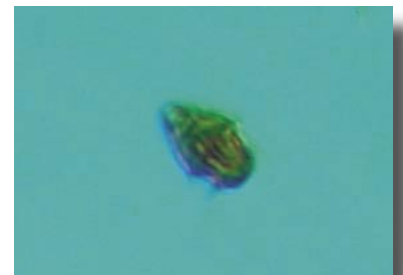
The population of the same *Chrysochromulina* species was found 5 times as many as at BY2 and thriving. The dinoflagellate *Heterocapsa rotundata* was common, as were the diatoms *S. costatum*, *Chaetoceros* spp. and *Thalassiosira* spp. Small colony forming cyanobacteria were abundant, and the filamentous cyanobacterium *Aphanizomenon* sp. was observed.

Kalmar Sound Ref. M1-V1 16th of March

Except for the bloom of the diatom *S. costatum*, the plankton situation was very similar to the one at BY5. The cyanobacteria were absent though.

The South East Baltic BCS III-10 18th of March

The *Chrysochromulina* species was found in a stage of bloom, the population being even larger than at the previous stations. The thecate dinoflagellate *Heterocapsa rotundata* was common, as well as *Pyramimonas* spp. and the ciliate *Mesodinium rubrum*. A few filaments of the cyanobacteria *Aphanizomenon* sp. were found.



Heterocapsa rotundata

Eastern Gotland Basin BY15 17th of March

The *Chrysochromulina* species, blooming, dominated the sample. Small colony forming cyanobacteria were abundant, and the dinoflagellate *H. rotundata* was common.



Chrysochromulina sp.

Karlsö Deep BY38 17th of March

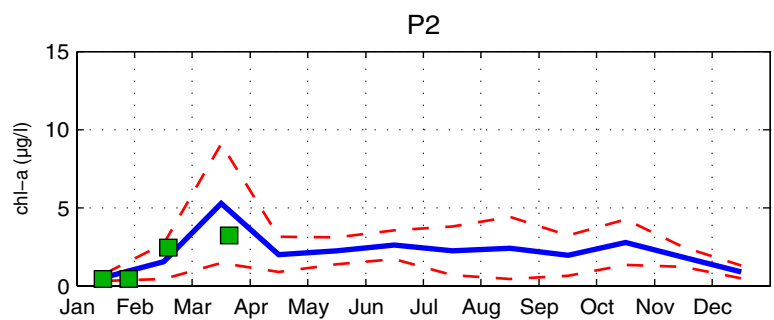
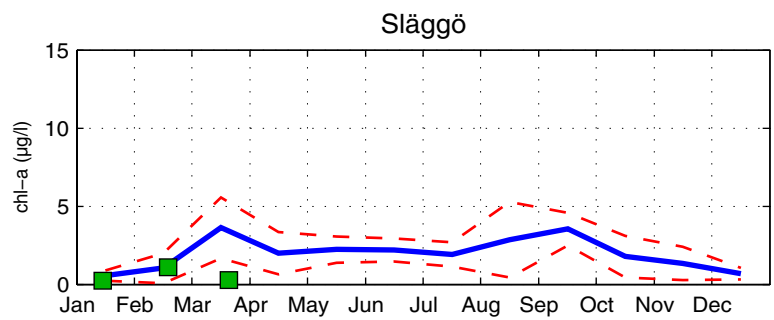
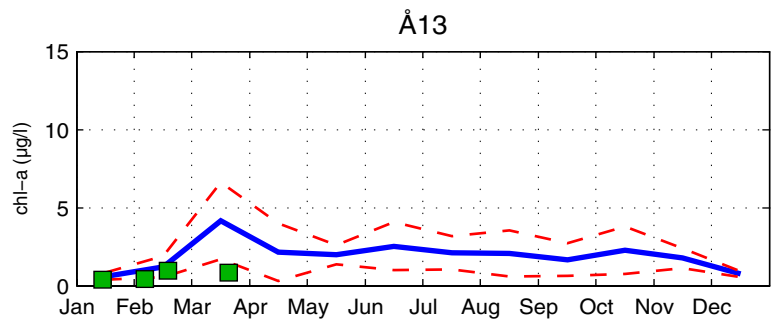
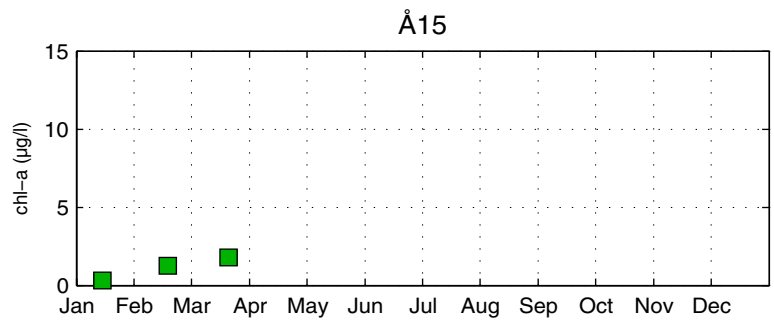
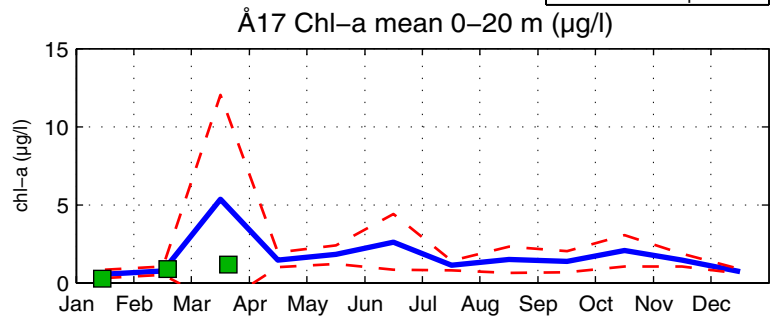
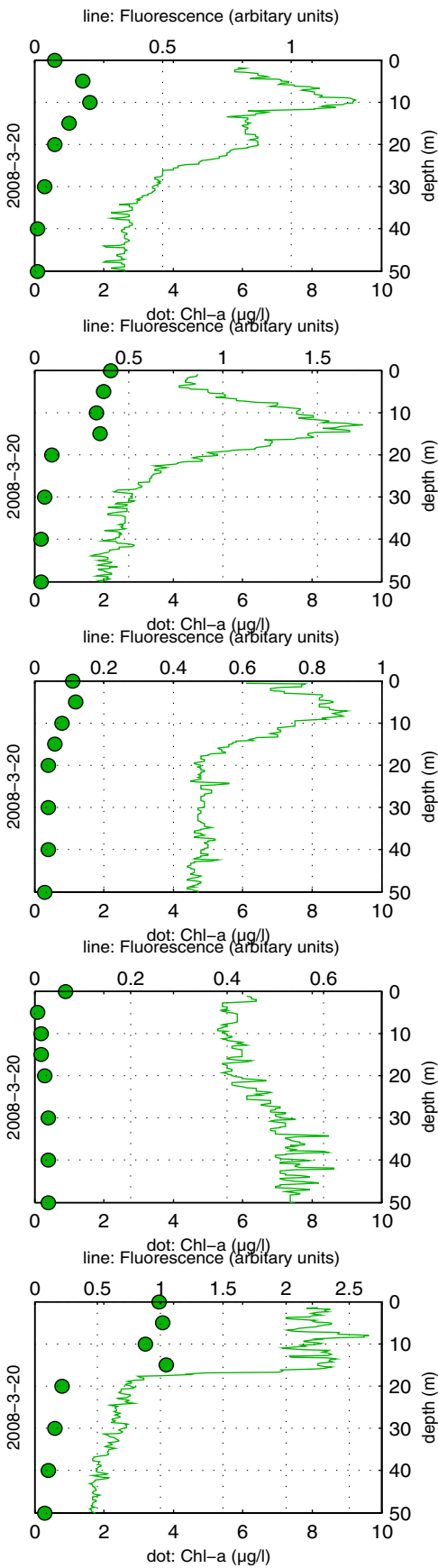
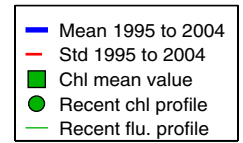
The *Chrysochromulina* species was very abundant at BY38, as it was at all the other Baltic stations. *H. rotundata* was the most abundant dinoflagellate, *S. costatum* was the most abundant diatom. Small flagellated species were numerous.

The chlorophyll *a* concentrations were above average at BCSIII, BY10 and BY15. At the rest of the Baltic stations, the chlorophyll *a* concentrations were at average.

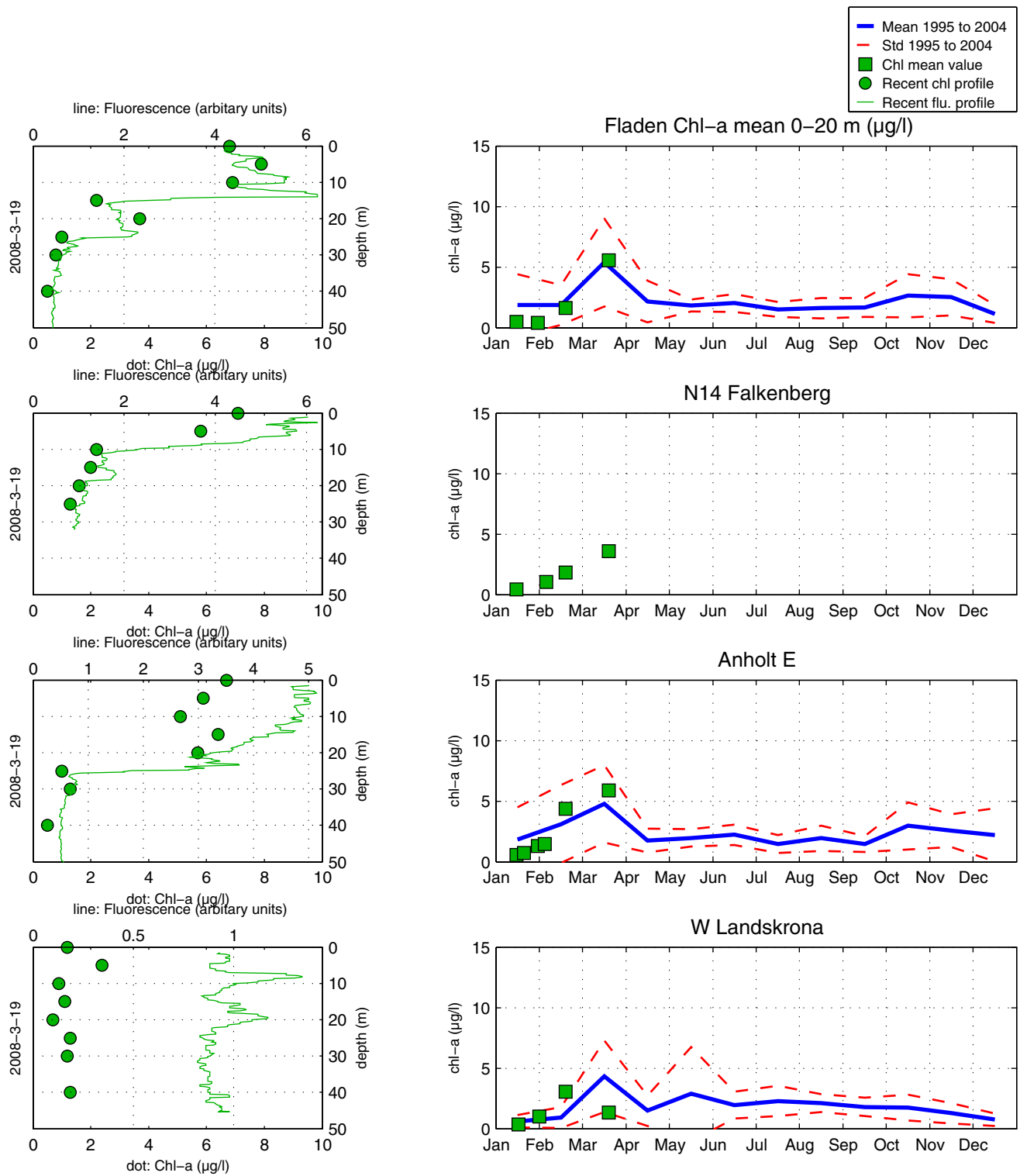
Selection of observed species	BY2	BY5	Ref. M1-V1	BCS III-10	BY15	BY38
Red=potentially toxic species	2008-03-19	2008-03-18	2008-03-16	2008-03-18	2008-03-17	2008-03-17
¹ quantified in m/l	cells/l	cells/l	cells/l	cells/l	cells/l	cells/l
<i>Chaetoceros danicus</i>		present				
<i>Chaetoceros subtilis</i>	present	present		present	present	present
<i>Chaetoceros tenuissimus</i>				present		
<i>Cylindrotheca closterium</i>				present		
<i>Skeletonema costatum</i> complex	common	present	very common	present	present	present
<i>Thalassiosira</i> spp.	present	present	common			present
<i>Dinophysis acuminata</i>					present	present
<i>Heterocapsa rotundata</i>	present	common	present	common	common	common
<i>Katodinium glaucum</i>	present			present		
<i>Peridiniella catenata</i>			present	present	present	
<i>Peridiniella danica</i>				present		
<i>Chrysochromulina</i> sp.	common	very common	very common	very common	very common	very common
Cryptomonadales spp.	common	common	common	common	common	common
<i>Pyramimonas</i> spp.	present	present	present		present	present
<i>Eutreptiella</i> spp.	present					
<i>Calliakantha</i> spp.	present	present	present	present	present	present
<i>Aphanizomenon</i> sp.		present		present		
Cyanobacteria spp. colony	very common	very common			very common	very common
<i>Leucocryptos marina</i>		present	present	present		present
<i>Mesodinium rubrum</i>	present	present	present	present	present	present

Phytoplankton analysis and text by Ann-Turi Skjevik

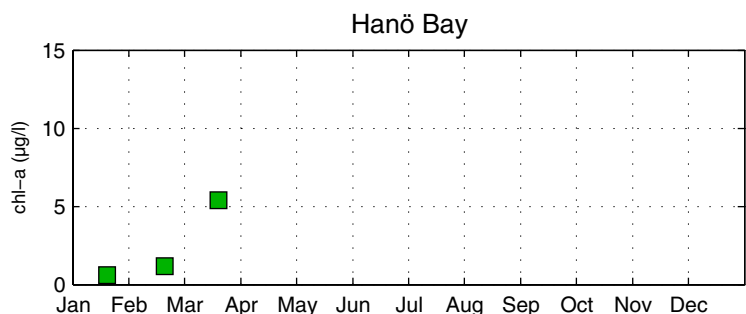
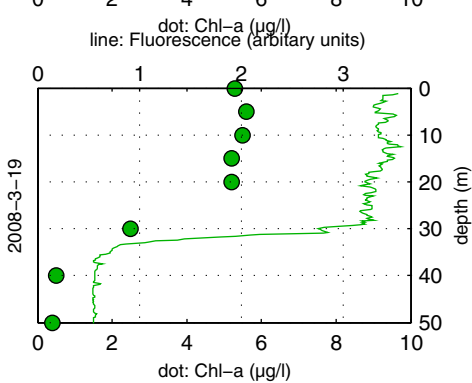
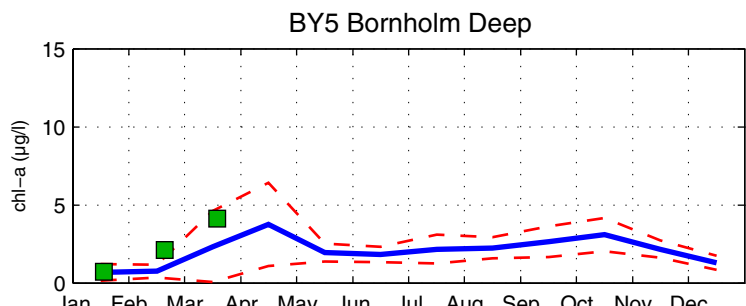
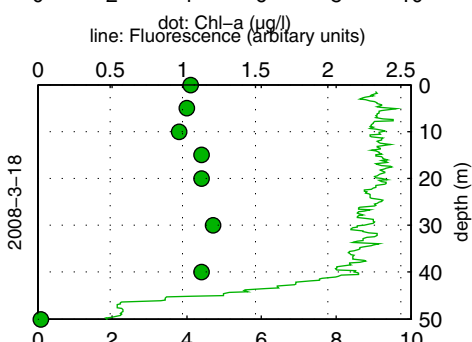
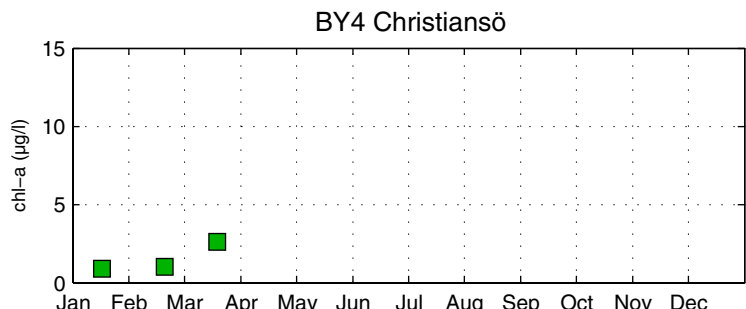
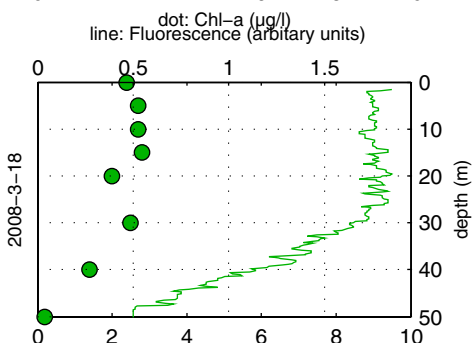
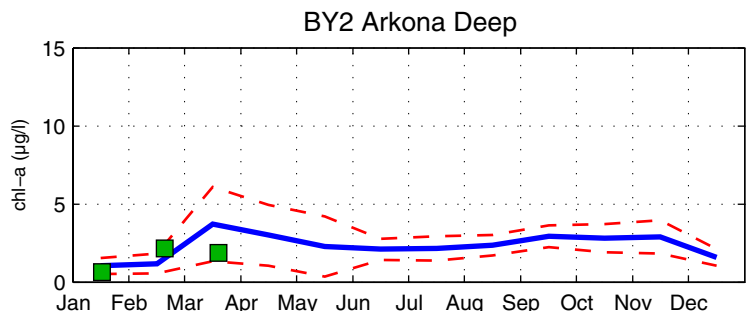
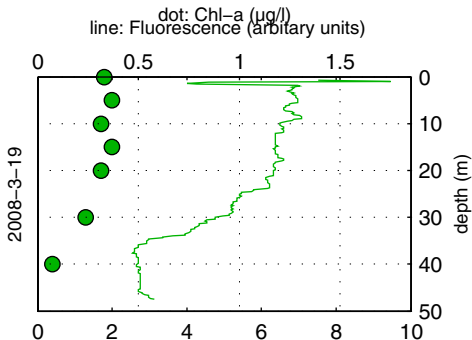
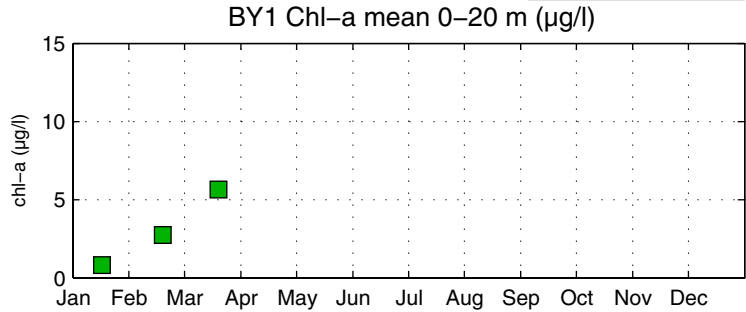
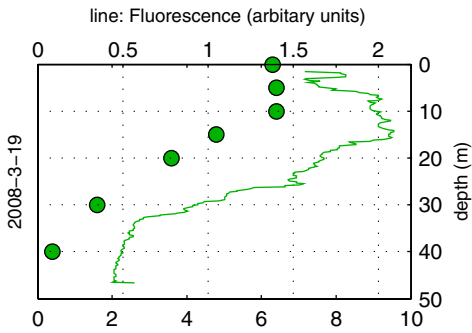
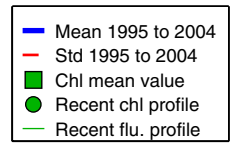
The Skagerrak



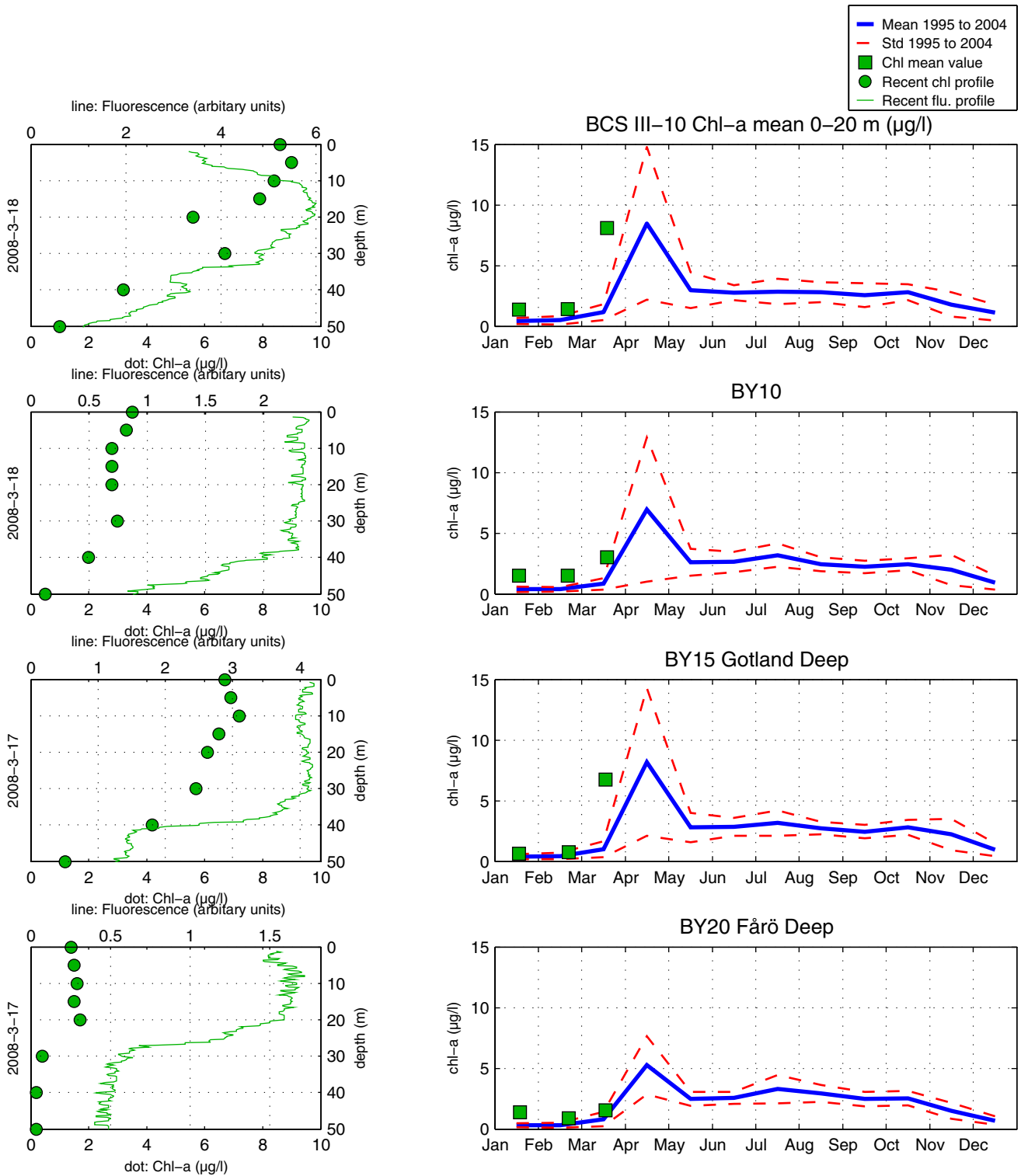
The Kattegat and the Sound



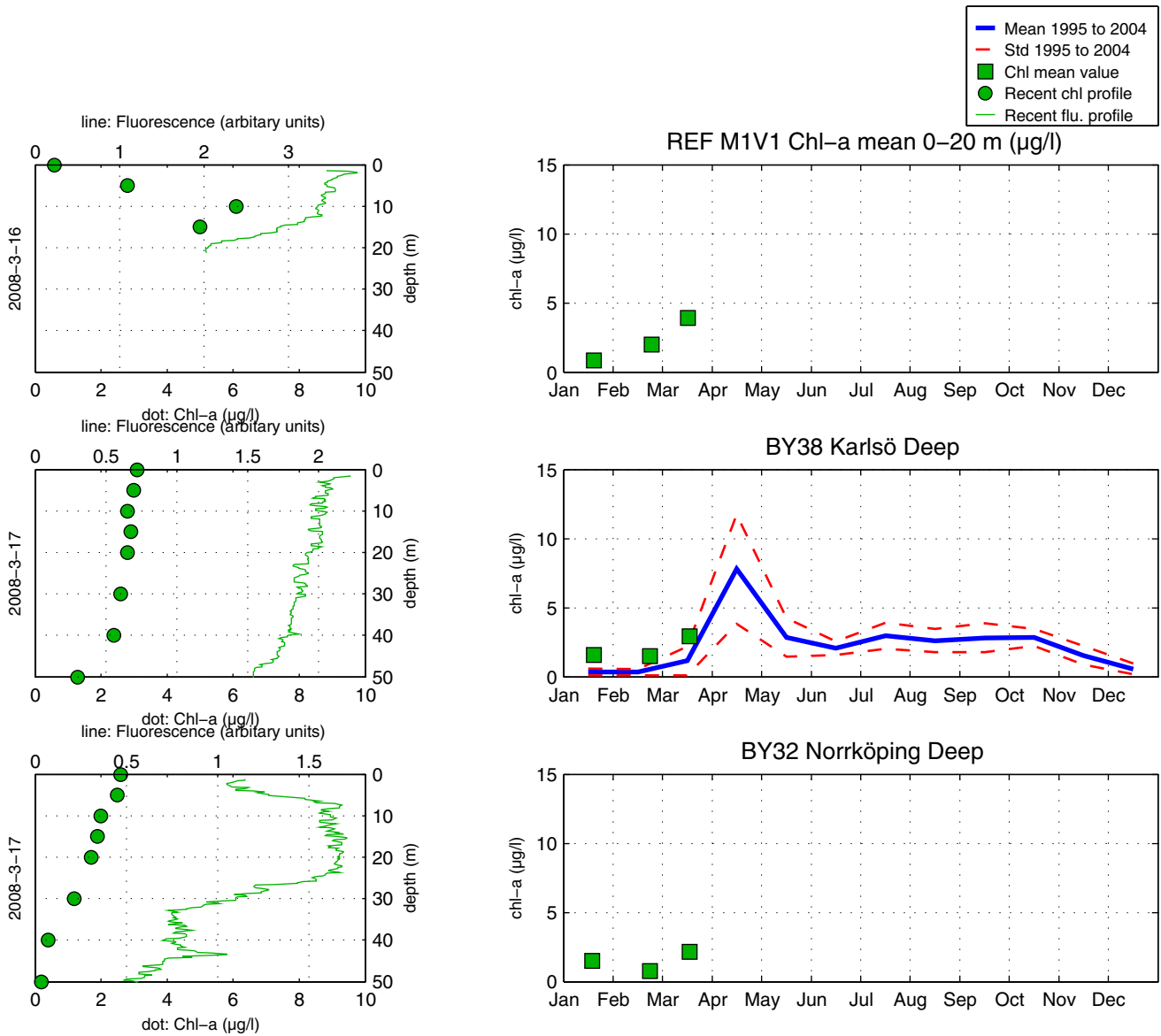
The Southern Baltic



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 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 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.

