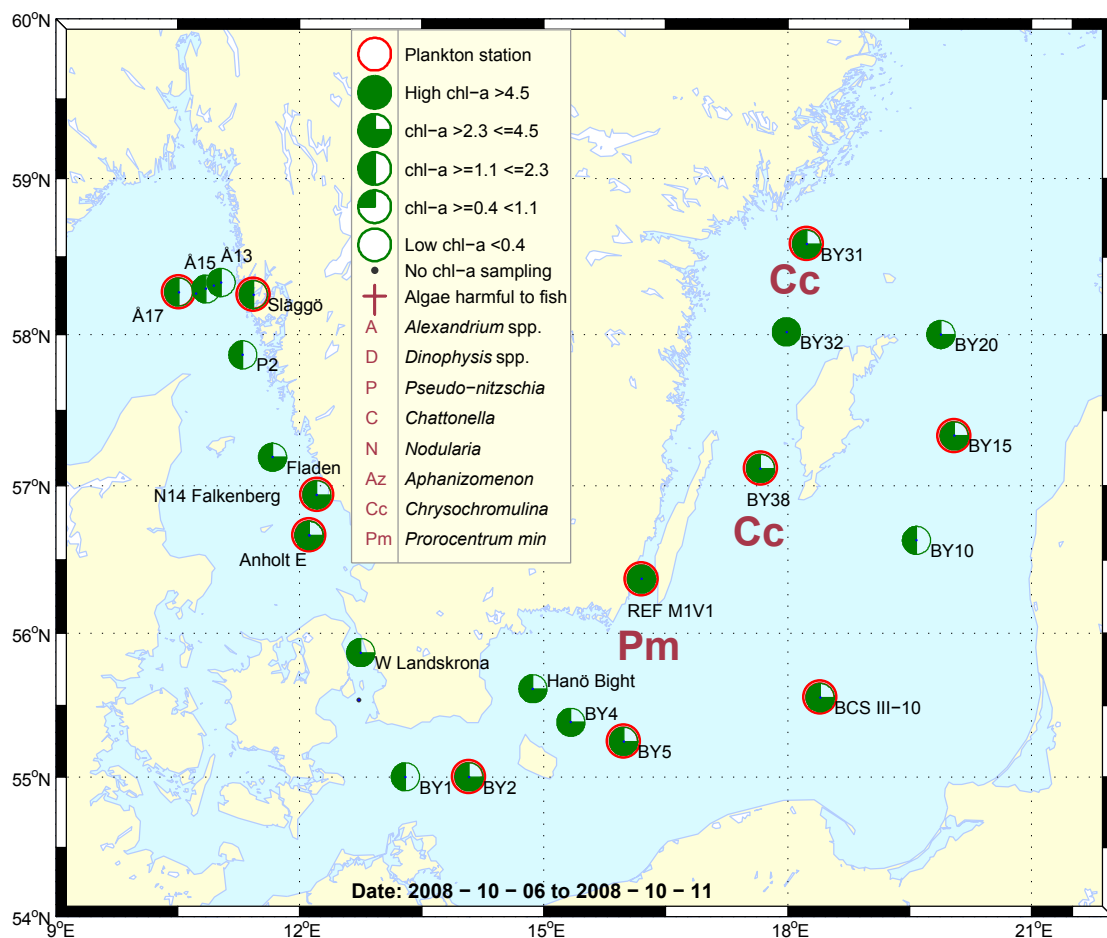


## Sammanfattning

I yttre Skagerrak var växtplanktonprovet relativt tunt med ungefär lika många arter av dinoflagellater som kiselalger. Vid kuststationen Släggö var det kiselalgsblomning, och de talrikaste arterna var *Pseudo-nitzschia* spp.\*, *Skeletonema costatum*, *Leptocylindrus danicus* och *Cylindrotheca closterium*. Den vanligaste dinoflagellaten var *Prorocentrum redfeldii*. Även i Kattegatt var kiselalgsblomningen utpräglad, med dominans av *Pseudo-nitzschia* spp.\* och *Cylindrotheca closterium* vid båda stationer.

I Östersjön var det delvis lågsäsong i växtplanktonvärlden, och små arter som cryptomonader, *Pyramimonas* spp. och dinoflagellaten *Heterocapsa rotundata* dominerade vid de flesta stationerna. Intressanta stationer var BY31, BY38 och Ref M1-V1 (Kalmar sund). Vid de två första blomnade *Chrysochromulina polylepis*\* och vid den sistnämnda blomnade dinoflagellaten *Prorocentrum minimum*\*.



## Abstract

The phytoplankton diversity was rather poor in open Skagerrak with equal amounts of diatom and dinoflagellate species. At the coastal station, Släggö, a diatom bloom was observed, *Pseudo-nitzschia* spp.\*, *Skeletonema costatum*, *Leptocylindrus danicus* and *Cylindrotheca closterium* being the most numerous species. Also in the Kattegatt area a diatom bloom was obvious, dominated by *Pseudo-nitzschia* spp.\* and *Cylindrotheca closterium* at both stations.

In most parts of the Baltic Sea, the phytoplankton world had entered the low season. Small species, such as cryptomonads, *Pyramimonas* spp. and the dinoflagellate *Heterocapsa rotundata* dominated the samples. BY31, BY38 and Ref M1V1 (Kalmar Sound) were interesting stations. At the first two, *Chrysochromulina polylepis*\* was blooming, and at the latter the dinoflagellate *Prorocentrum minimum*\* was.

## 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 algbloomningar finns på [www.smhi.se](http://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](http://www.smhi.se).

Art / Species	Gift / Toxin	Eventuella symptom	Clinical symptoms
<i>Alexandrium</i> spp.	Paralytic shellfish poisoning (PSP)	<b>Milda symptom:</b> 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 <b>Extrema symptom:</b> 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.	<b>Mild case:</b> 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. <b>Extreme case</b> 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)	<b>Milda symptom:</b> Efter cirka 30 minuter till några timmar: yrsel, illamående, kräkningar, diarré, magont <b>Extrema symptom:</b> Upprepad exponering kan orsaka cancer	<b>Mild case:</b> Within 30 min-a few hours: dizziness, nausea, vomiting, diarrhoea, abdominal pain. <b>Extreme case:</b> Repeated exposure may cause cancer.
<i>Chattonella</i> spp.	Fish toxin	<b>Låg celltäthet:</b> Ingen påverkan. <b>Hög celltäthet:</b> Fiskens gälar skadas, fisken dör.	<b>Low cell numbers:</b> No effect on fish. <b>High cell numbers:</b> Fish death due to gill damage.
<i>Pseudo-nitzschia</i> spp.	Amnesic shellfish poisoning (ASP)	<b>Milda symptom:</b> Efter 3-5 timmar: yrsel, illamående, kräkningar, diarré, magkramper <b>Extrema symptom:</b> Yrsel, hallucinationer, förvirring, förlust av korttidsminnet, kramper	<b>Mild case:</b> Within 3-5 hours: dizziness, nausea, vomiting, diarrhoea, abdominal cramps. <b>Extreme case:</b> 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.

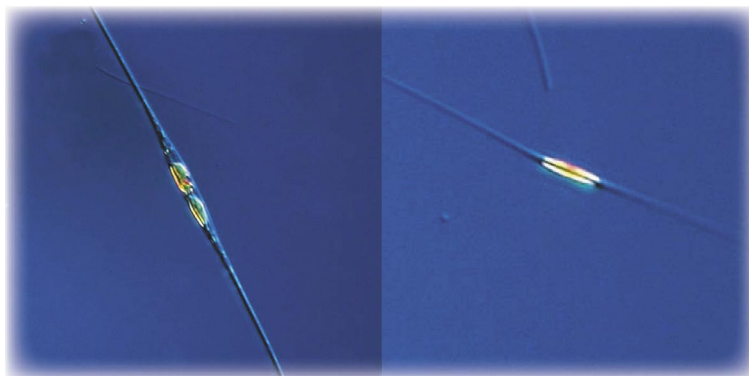
The map on the front page shows weighted mean of chlorophyll *a*, µg/l (0-20 m) at sampling stations. Presence of harmful algae at stations where species analysis is performed is shown with a symbol. An empty circle indicates that there has been no sampling at that station.

More detailed information on species composition and abundance

## The Skagerrak

### Å17 9<sup>th</sup> of October (open Skagerrak)

The phytoplankton diversity was low, with equal amounts of diatom and dinoflagellate species. The most common dinoflagellate, was the tiny species *Gymnodinium flagellare*. The two very similar species *Cylindrotheca closterium* and *Lennoxia faveolata* were the most common diatoms. In comparison to *C. closterium*, *L. faveolata* is distinguished by its small size and by the fact that it has one chloroplast in stead of two.



*Cylindrotheca closterium* (left) with two chloroplasts and *Lennoxia faveolata* with one.

### Släggö 9<sup>th</sup> of October (Skagerrak coast)

A diatom bloom was observed with many species in high cell numbers. The most numerous species were *Pseudo-nitzschia* spp.\*, *Skeletonema costatum*, *Leptocylindrus danicus* and *Cylindrotheca closterium*. The most common dinoflagellate was *Prorocentrum redfeldii*.

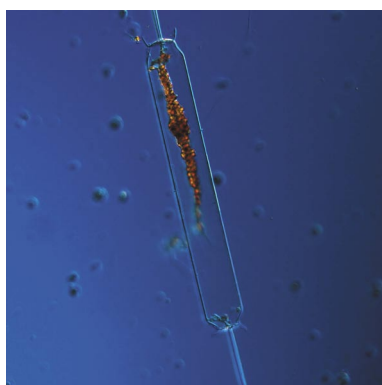
The chlorophyll *a* concentrations were within average for this month in the Skagerrak area.

## The Kattegat

### N14 Falkenberg and Anholt E 8<sup>th</sup> of October

Diatoms dominated the sample and *Pseudo-nitzschia* spp.\* was the most abundant. Many other diatom species were numerous, and altogether the situation was very similar to the one at Släggö.

The chlorophyll *a* concentrations were somewhat elevated, but within average for this month. At West Landskrona there was a conspicuous chlorophyll fluorescence peak at about 5 meters depth.

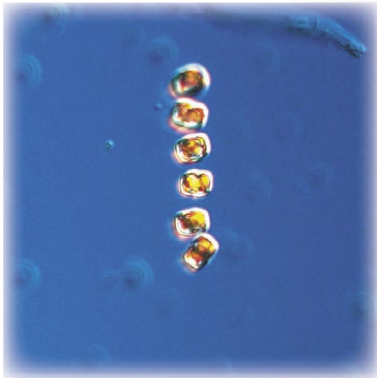


*Ditylum brightwellii*

Selection of observed species	Å17	Släggö	N14	Anholt E
Red=potentially toxic species	2008-10-09	2008-10-09	2008-10-08	2008-10-08
	cells/l	cells/l	cells/l	cells/l
<i>Asterionellopsis glacialis</i>		present		
<i>Attheya</i> spp.		present		
<i>Cerataulina pelagica</i>	present	33 000	common	present
<i>Chaetoceros affinis</i>			present	
<i>Chaetoceros concavicornis</i>		present	present	present
<i>Chaetoceros constrictus</i>			present	
<i>Chaetoceros curvisetus</i>		present	present	present
<i>Chaetoceros danicus</i>	present	present		present
<i>Chaetoceros decipiens</i>		present	present	
<i>Chaetoceros didymus</i>	present		present	present
<i>Chaetoceros laciniatus</i>			present	present
<i>Chaetoceros similis</i>		present	present	
<i>Chaetoceros socialis</i>			common	124 000
<i>Chaetoceros subtilis</i>		present		
<i>Cylindrotheca closterium</i>	present	102 000	179 000	204 000
<i>Dactyliosolen fragilissimus</i>		33 000	common	common
<i>Ditylum brightwellii</i>		common	common	common
<i>Guinardia delicatula</i>		present	present	common
<i>Guinardia flaccida</i>		present	present	present
<i>Lennoxia faveolata</i>	present		present	
<i>Leptocylindrus danicus</i>		104 000	27 000	28 500
<i>Leptocylindrus minimus</i>		present	39 000	35 500
<i>Proboscia alata</i>		present	present	present
<i>Pseudo-nitzschia</i> spp.	present	325 000	348 000	175 000
<i>Rhizosolenia pungens</i>			present	present
<i>Rhizosolenia setigera</i>		present	present	present
<i>Skeletonema costatum</i> complex		280 000	34 000	present
<i>Thalassionema nitzschioides</i>		present	present	present
<i>Thalassiosira nordenskiöldii</i>		present		
<i>Thalassiosira rotula</i>		present	present	
<i>Akashiwo sanguinea</i>		present		
<i>Amphidinium sphenoides</i>	present		present	present
<i>Ceratium furca</i>			present	
<i>Ceratium fusus</i>		present	present	
<i>Ceratium lineatum</i>			present	present
<i>Ceratium tripos</i>		present	present	present
<i>Gymnodinium verruculosum</i>	present	present	present	present
<i>Gyrodinium flagellare</i>	present	present		
<i>Heterocapsa rotundata</i>		present	present	
<i>Heterocapsa triquetra</i>			present	
<i>Heterocapsa</i> spp.	present		present	
<i>Karenia mikimotoi</i>	present	present		present
<i>Katodinium glaucum</i>	present			present
<i>Lessardia elongata</i>	present		present	present
<i>Oxytoxum gracile</i>	present	present		
<i>Peridiniella danica</i>	present			
<i>Prorocentrum redfeldii</i>	present	common		present
<i>Protoperdinium bipes</i>		present	present	present
<i>Scrippsiella</i> -complex		present	present	present
Cryptomonadales spp.	common	83 000	113 000	common
<i>Pyramimonas</i> spp.	present	present	present	present
<i>Chrysochromulina</i> spp.	present	present	present	present
<i>Heterosigma</i> spp.	present		present	present
<i>Dictyocha fibula</i>		present	present	present
<i>Dictyocha speculum</i>	present	present	common	present
<i>Apedinella radians</i>		present	present	
<i>Pseudopedinella</i> spp.		present		
<i>Leucocryptos marina</i>	present		present	
<i>Laboea strobila</i>		present		present
<i>Mesodinium rubrum</i>	present	present		
<i>Strombidium</i> spp.	present	present		

## The Baltic Sea

### Southern Baltic, BY2 and BY5 and Southeast Baltic, BCSIII-10 7<sup>th</sup> and 8<sup>th</sup> of October



*Cyclotella choctawhatcheana*

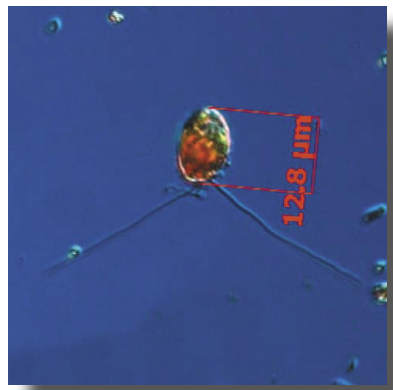
Small cryptomonads and the prasinophyte *Pyramimonas* spp. were the most numerous, and the dinoflagellate *Heterocapsa rotundata* was common at all three of the phytoplankton stations. The dinoflagellate *Prorocentrum minimum*\* was present at BY2 and BY5. At BCSIII-10, the diatom *Cyclotella choctawhatcheana* was common.

### Eastern Gotland Basin BY15 6<sup>th</sup> of October

Cryptomonads, the prasinophyte *Pyramimonas* spp. and the ciliate *Mesodinium rubrum* were common.

### Northern Baltic proper BY31 6<sup>th</sup> of October

The prymnesiophyte *Chrysochromulina polylepis*\* was in a state of bloom. Cryptomonads, the prasinophyte *Pyramimonas* spp. and the cyanobacterium *Aphanizomenon* spp. were common.



*Chrysochromulina polylepis*

### Western Gotland Basin BY 38 11<sup>th</sup> of October

The prymnesiophyte *Chrysochromulina polylepis*\* was in a state of bloom. Cryptomonads, the prasinophyte *Pyramimonas* spp. and the ciliate *Mesodinium rubrum* were common.

### Kalmar Sound Ref. M1-V1 10<sup>th</sup> of October

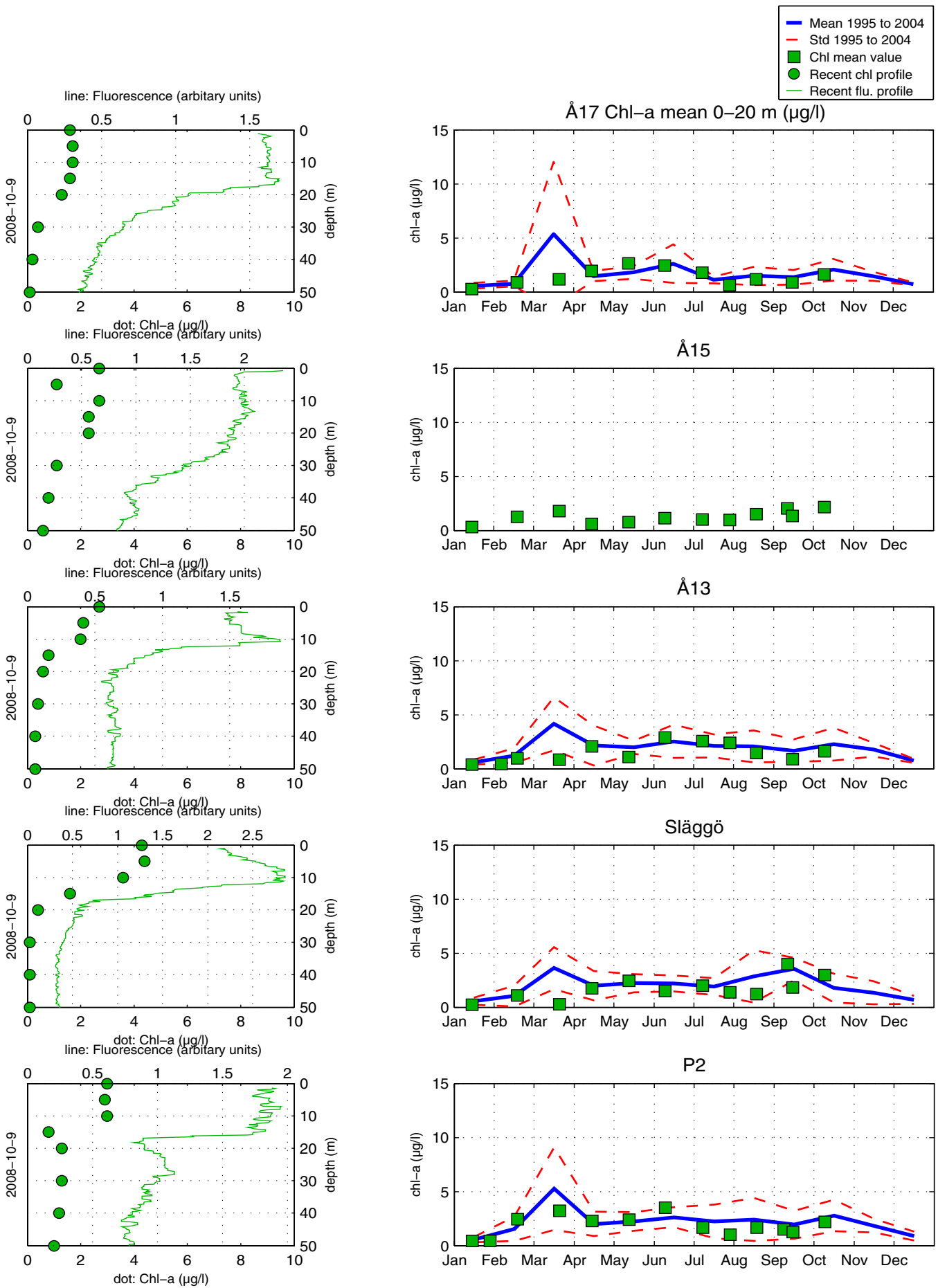
The dinoflagellate *Prorocentrum minimum* was blooming, and the diatom *Skeletonema costatum* was very common.

The chlorophyll *a* concentrations were within average for this month at all of the Baltic stations

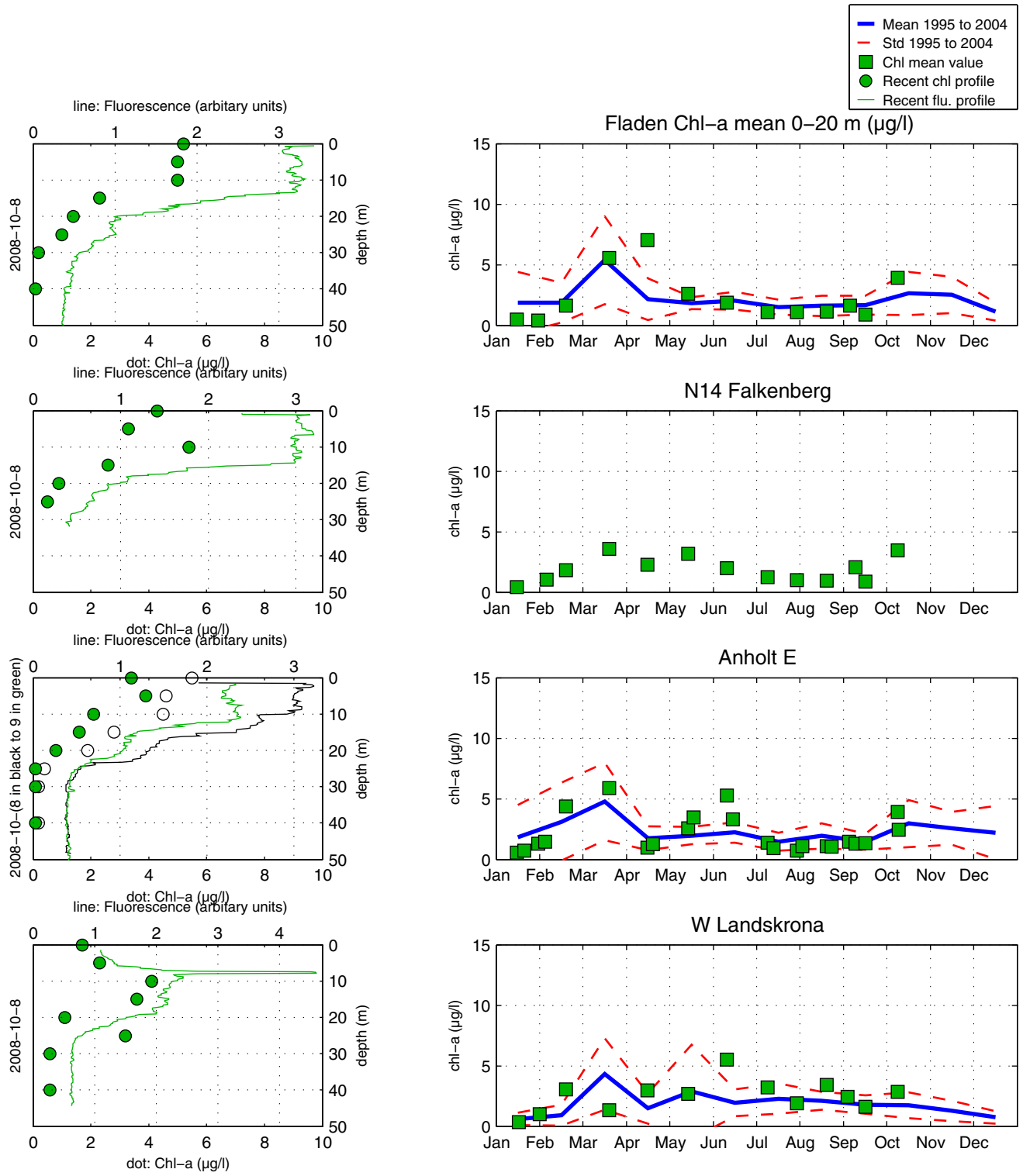
Phytoplankton analysis and text by:  
Ann-Turi Skjevik

Selection of observed species	BY2	BY5	BCS III-10	BY15	BY31	BY38	Ref. M1-V1
Red=potentially toxic species	2008-10-08	2008-10-07	2008-10-07	2008-10-06	2008-10-06	2008-10-11	2008-10-10
<sup>1</sup> quantified in m/l	cells/l	cells/l	cells/l	cells/l	cells/l	cells/l	cells/l
<i>Chaetoceros danicus</i>		present	present		present		present
<i>Chaetoceros impressus</i>			present	present		present	
<i>Cyclotella choctawhatcheana</i>			32 000		present		present
<i>Cylindrotheca closterium</i>							common
<i>Dactyliosolen fragilissimus</i>	present						
<i>Skeletonema costatum</i> complex							74 600
<i>Thalassiosira</i> spp.						present	
<i>Ceratium lineatum</i>	present						
<i>Ceratium tripos</i>	present					present	
<i>Dinophysis acuminata</i>		present			present		present
<i>Dinophysis norvegica</i>					present		
<i>Dinophysis rotundata</i>			present		present	present	
<i>Dissodinium pseudolunula</i>	present						
<i>Gymnodinium verruculosum</i>	present	present	present				
<i>Heterocapsa rotundata</i>	common	common	common		present	present	common
<i>Heterocapsa triquetra</i>	present	present	present				
<i>Prorocentrum minimum</i>	present	common					278 000
<i>Chrysochromulina polylepis</i>					1.1 million	391 000	
Cryptomonadales spp.	very common	very common	very common	very common	common	common	common
<i>Pyramimonas</i> spp.	very common	very common	very common	very common	common	common	common
<i>Aphanizomenon</i> spp.			present		common	present	
<i>Mesodinium rubrum</i>	present	69 000	present	33 000	present	56 000	present

# The Skagerrak

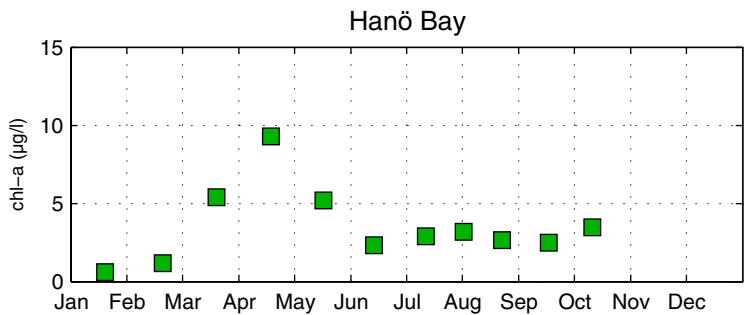
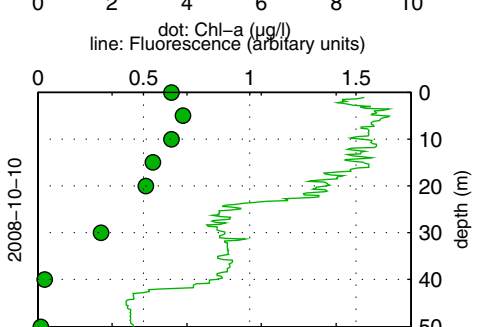
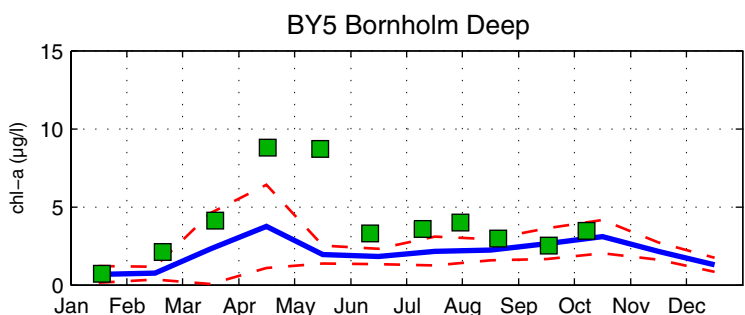
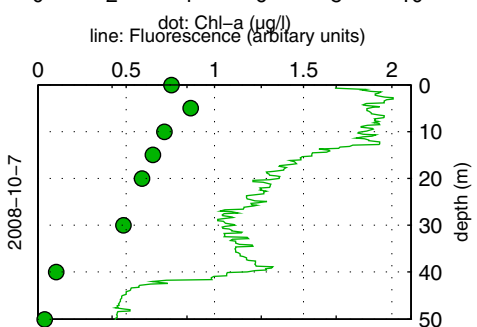
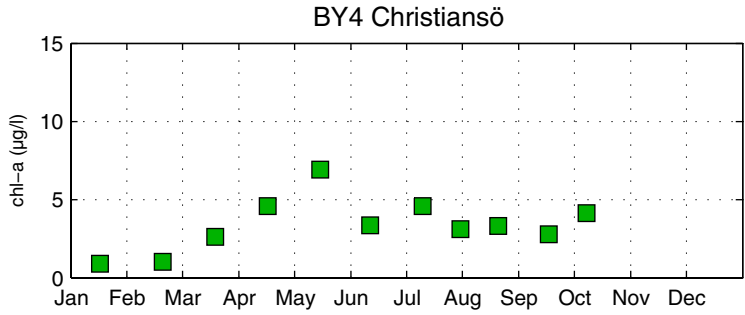
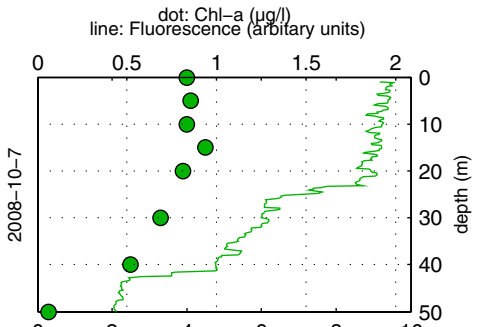
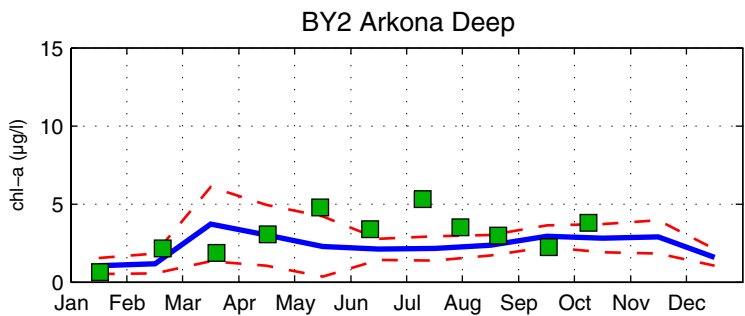
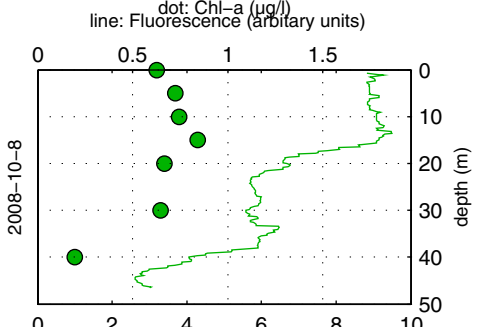
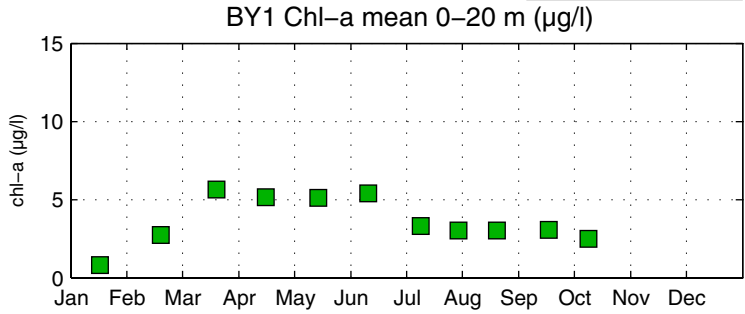
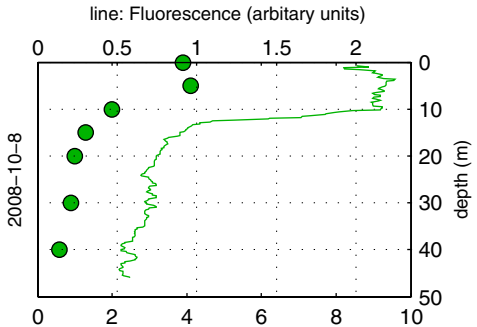
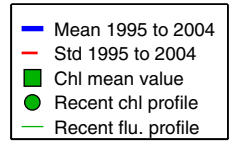


# The Kattegat and the Sound

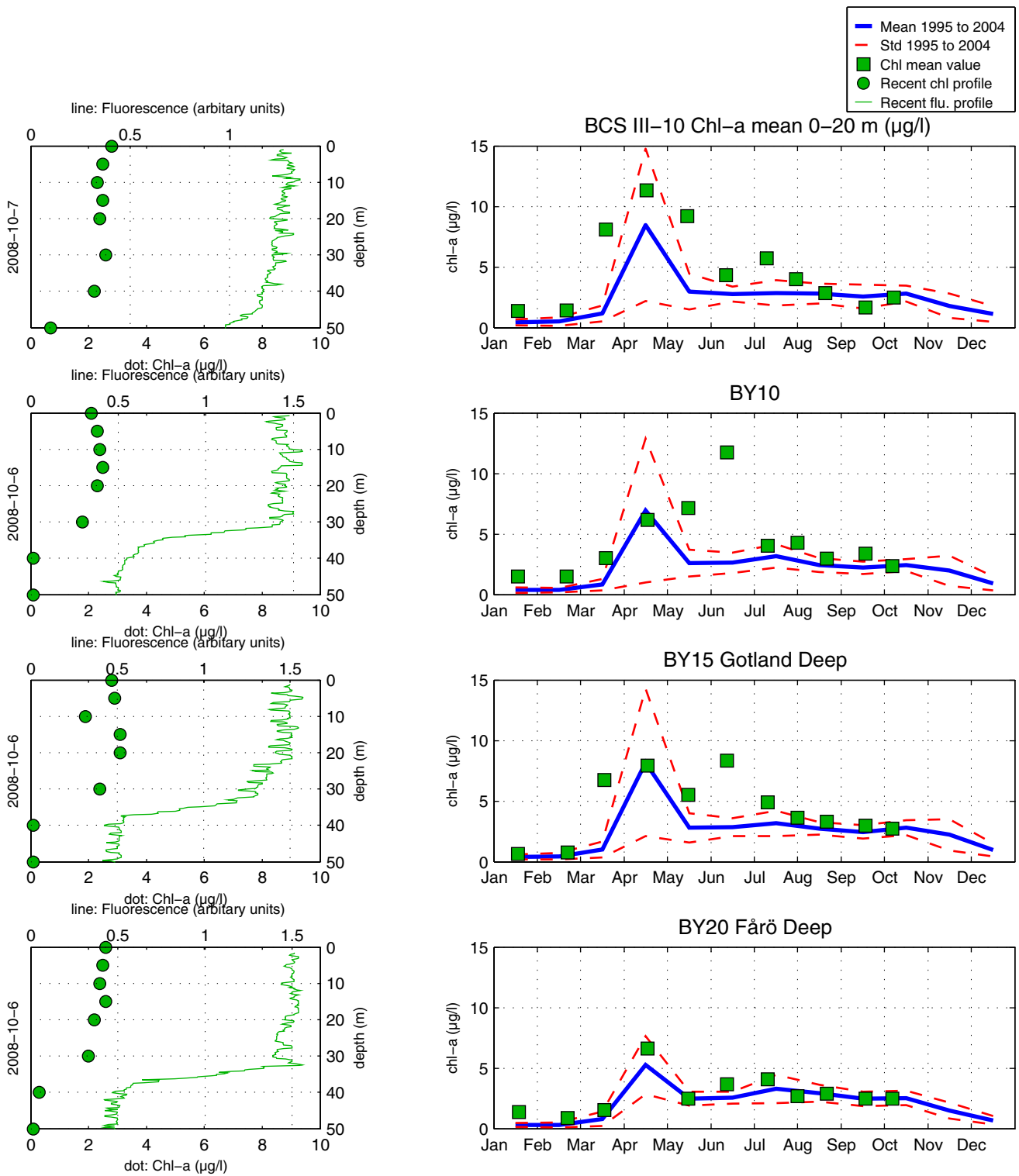




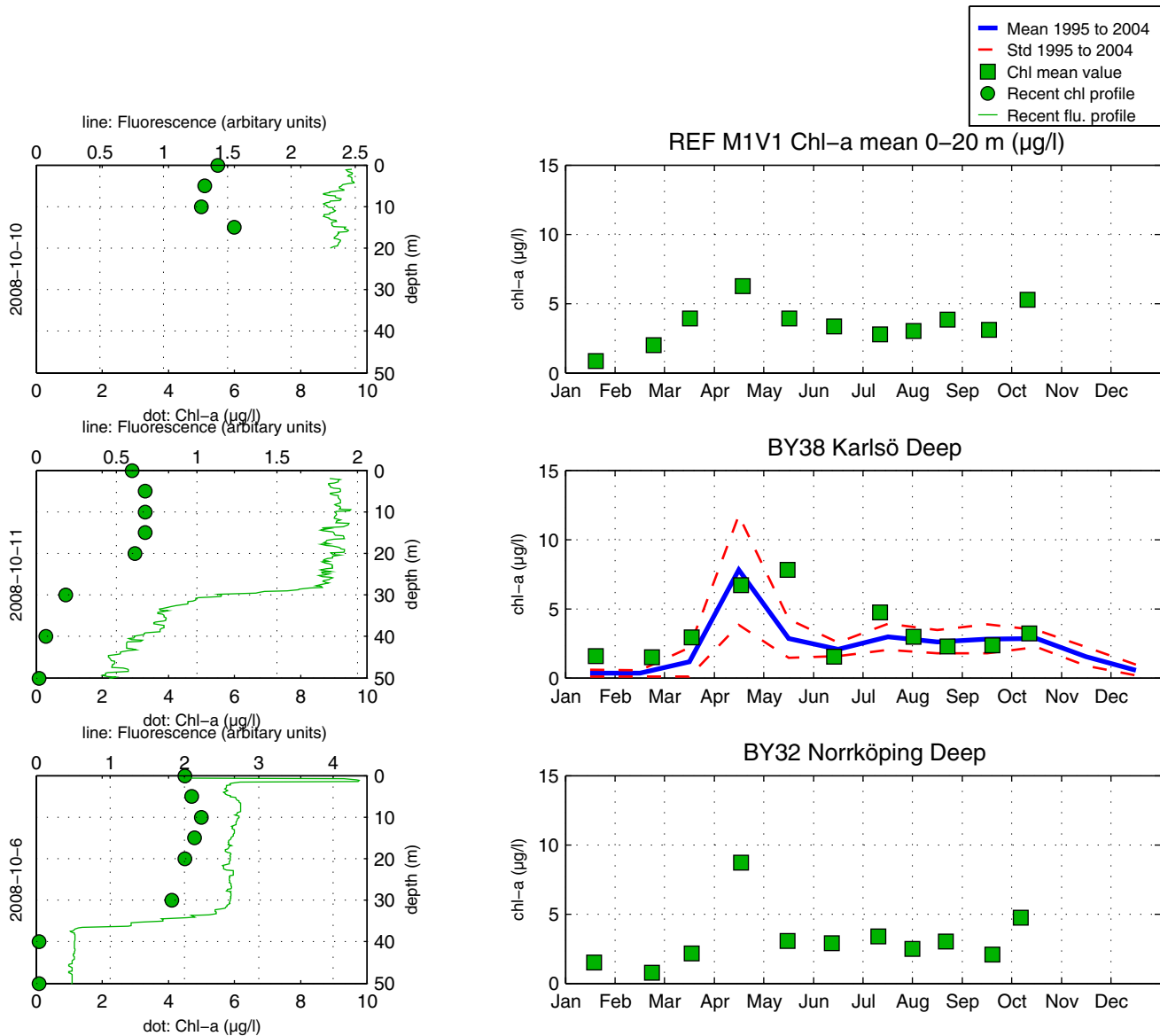
# The Southern Baltic



# 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 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.

