SMHI
Oceanographic Unit
No 4, 14 – 19 April 2009

AlgAware
ALGAL SITUATION IN
MARINE WATERS SURROUNDING SWEDEN

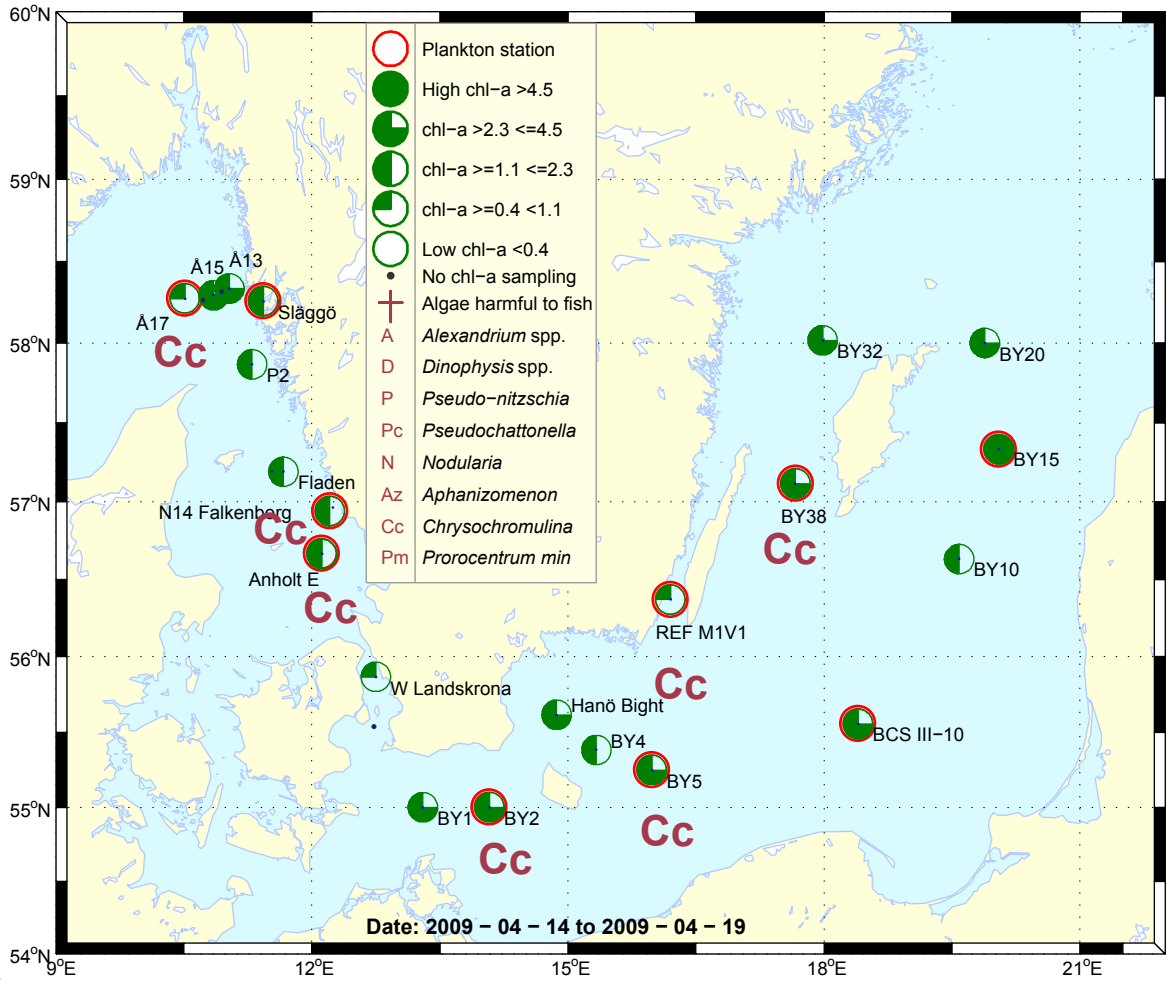
Sammanfattning

Låg diversitet preglade växtplankotnproverna från Skagerrak och det var små arter som cryptomonader och chrysophycéer som fanns med högst cellantal. I Kattegatt fanns prymnesiophyten *Chrysochromulina* spp.* med höga cellantal.

Flera intressanta klorofyll fluorescensmaxima uppmättes i Skagerrak och Kattegatt, men de integrerade (0-20 m) klorofyll *a* värdena låg inom det normala för månaden.

I Östersjön var det kiselalgsblomning vid många stationer och prymnesiophyten *Chrysochromulina polylepis** fanns med höga cellantal i framför allt de södra delarna.

De integrerade klorofyll *a* värdena var inom det normala för månaden vid alla Östersjö-stationer, förutom vid BY38 där värdet var lägre än normalt.



Abstract

The phytoplankton diversity was low in the Skagerrak area and small species like cryptomonads and chrysophytes were the most numerous. In the Kattegat area the prymnesiophyte *Chrysochromulina* spp.* was very abundant.

Several interesting chlorophyll fluorescence maxima were found in the Skagerrak and the Kattegat areas, but the integrated (0-20 m) chlorophyll *a* concentrations were within average for this month.

In the Baltic Sea diatom blooms were observed at many stations and the prymnesiophyte *Chrysochromulina polylepis** was very abundant in the southern parts.

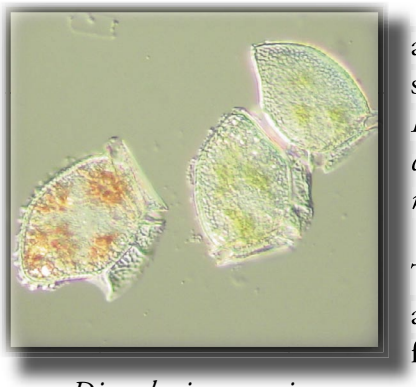
The integrated chlorophyll *a* values were within average for this month at all of the Baltic stations except at BY38 where the value was below average.

The Skagerrak

Å17 14th of April (open Skagerrak)

The phytoplankton diversity was very low and only very small species were numerous.

Släggö 14th of April (Skagerrak coast)



Dinophysis norvegica

The amount of diatoms and dinoflagellates was about equal. The most abundant species was the chrysophyte *Dinobryon balticum*, but several other small species like the dinoflagellate *Heterocapsa rotundata*, the prasinophyte *Pyramimonas* spp. and cryptomonads were numerous. The diatom *Skeletonema costatum* was very common. The dinoflagellates *Dinophysis acuminata** and *D. norvegica** were present.

There were interesting fluorescense peaks in the diagrams from the Skagerrak area, but all of the integrated (0-20 m) chlorophyll *a* values were within average for this month.

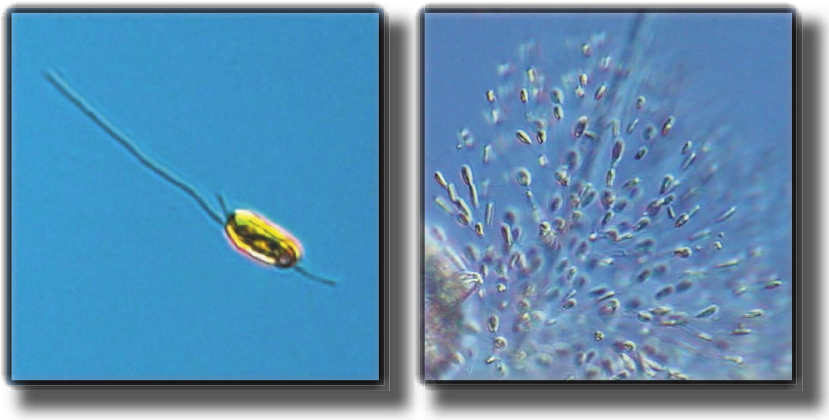
The Kattegat

N14 Falkenberg 15th of April

The phytoplankton diversity was low, and the most abundant species was the prymnesiophyte *Chrysochromulina* spp.* The number of diatoms was very low and the most numerous autotrophic dinoflagellate was *Karlodinium micrum.**

Anholt E 15th and 19th April

The phytoplankton situation was very similar at the two visits. The prymnesiophyte *Chrysochromulina* spp.* and other small species like the chrysophyte *Dinobryon balticum* were very abundant. The dinoflagellate *Karlodinium micrum** was common. At the first occasion, cells very similar to the *Chrysochromulina polylepis** found in the Baltic were observed.



Dinobryon balticum, solitary cell to the left and in colony to the right.

Selection of observed species	Å17	Släggö	N14	Anholt E	Anholt E
Red=potentially toxic species	2009-04-14	2009-04-14	2009-04-15	2009-04-15	2009-04-19
	cells/l	cells/l	cells/l	cells/l	cells/l
Chaetoceros decipiens		present			
Chaetoceros impressus		present			
Chaetoceros laciniosus		present			
Chaetoceros spp.		present			
Coscinodiscus spp.			present		
Leptocylindrus danicus		present	present		
Proboscia alata		present	present	present	present
Rhizosolenia hebetata		present	present	present	present
Skeletonema costatum complex		138 000			
Thalassionema nitzschioides		present	present	common	
Thalassiosira angulata				present	
Thalassiosira spp.				present	
Ceratium tripos		present	present	present	present
Dinophysis acuminata		present	present	present	present
Dinophysis norvegica	present	common	present	present	present
Gyrodinium spirale				present	
Heterocapsa rotundata	present	50 000	present	present	present
Heterocapsa spp.				present	
Lingulodinium polyedrum		present	present		present
Karlodinium micrum	present	present	common	present	common
Katodinium glaucum		present		present	present
Peridiniella danica		common	72 000	present	83 000
Prorocentrum cf. *balticum*		common			
Prorocentrum minimum			present		
Protoperidinium depressum		present			
Protoperidinium pallidum			present		
Protoperidinium spp.	present	present		present	
Chrysochromulina cf. *polylepis*				present	
Chrysochromulina spp.	50 000	common	220 000	147 000	90 000
Cryptomonadales spp.	498 000	175 000	45 000	55 000	120 000
Eutreptiella spp.				present	
Pterosperma spp.		present	130 000	common	present
Pyramimonas spp.	320 000	117 000		present	present
Apedinella radians		present	present		
Dinobryon balticum		830 000	common	73 000	108 000
Dinobryon faculiferum				present	
Pseudopedinella pyriforme		present			
Pseudopedinella spp.	present	present	present		present
Leucocryptos marina	present	81 000	105 000	common	99 000
Laboea strobila	present	present		present	
Mesodinium rubrum		present			
Strombidium spp.	present	present			present

The Baltic Sea

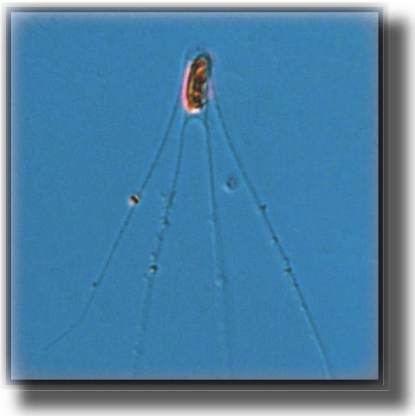
Arkona Basin BY2 and Bornholm Basin BY5 16th of April
The diatom *Skeletonema costatum* was in a state of bloom and dominated the phytoplankton samples. The prymnesiophyte *Chrysochromulina polylepis** also bloomed although less than *S. costatum*. The diatom *Chaetoceros subtilis* and other *Chaetoceros* species were very common. The cyanobacterium *Aphanizomenon* spp. was present and the integrated chlorophyll *a* values were at average for this month.

South East Baltic BCS III-10 16h of April
The diatoms *Skeletonema costatum* and *Chaetoceros* spp. were blooming. The dinoflagellates *Heterocapsa* spp. and *Peridiniella catenata* and small cryptomonads were common. The integrated chlorophyll *a* was a bit low although within average for this month.

Eastern Gotland Basin BY15 17th of April
The species composition was more or less the same as at BCS III-10. The fluorescence peak and the measured chlorophyll *a* value at about 10 meters depth could not quite be explained by the phytoplankton sample and high cell numbers of one or more species was probably just missed when using the hose (0-10 m).

Western Gotland Basin BY 38 18th of April
The prymnesiophyte *Chrysochromulina polylepis** was the most numerous species and the dinoflagellate *Heterocapsa rotundata* was very common. The integrated chlorophyll *a* value was below average.

Kalmar Sound Ref. M1-V1 18th of April
The number of species was very low and the prymnesiophyte *Chrysochromulina polylepis** was the most abundant among the few species observed. The chlorophyll *a* values were low.

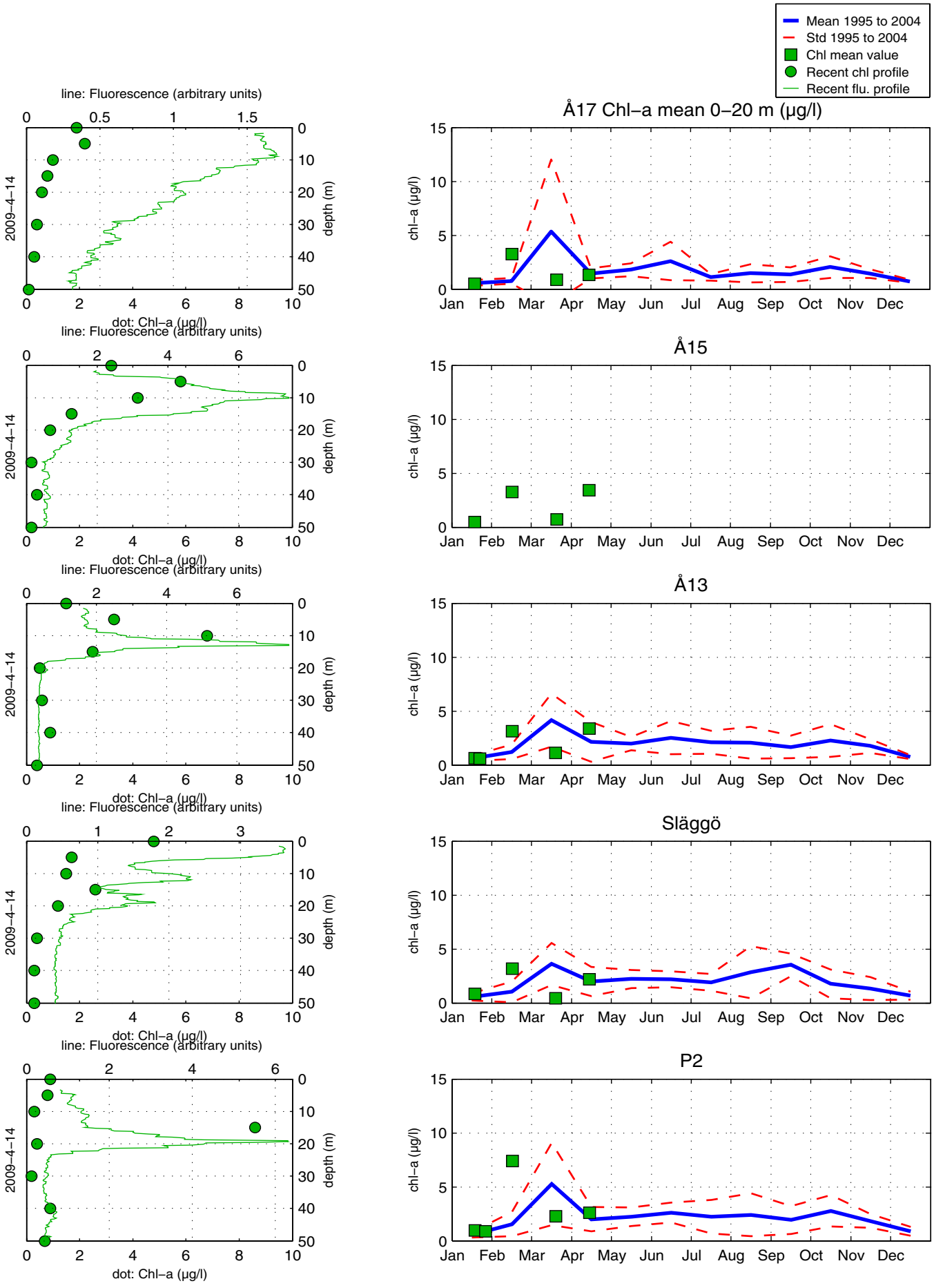


Chaetoceros subtilis

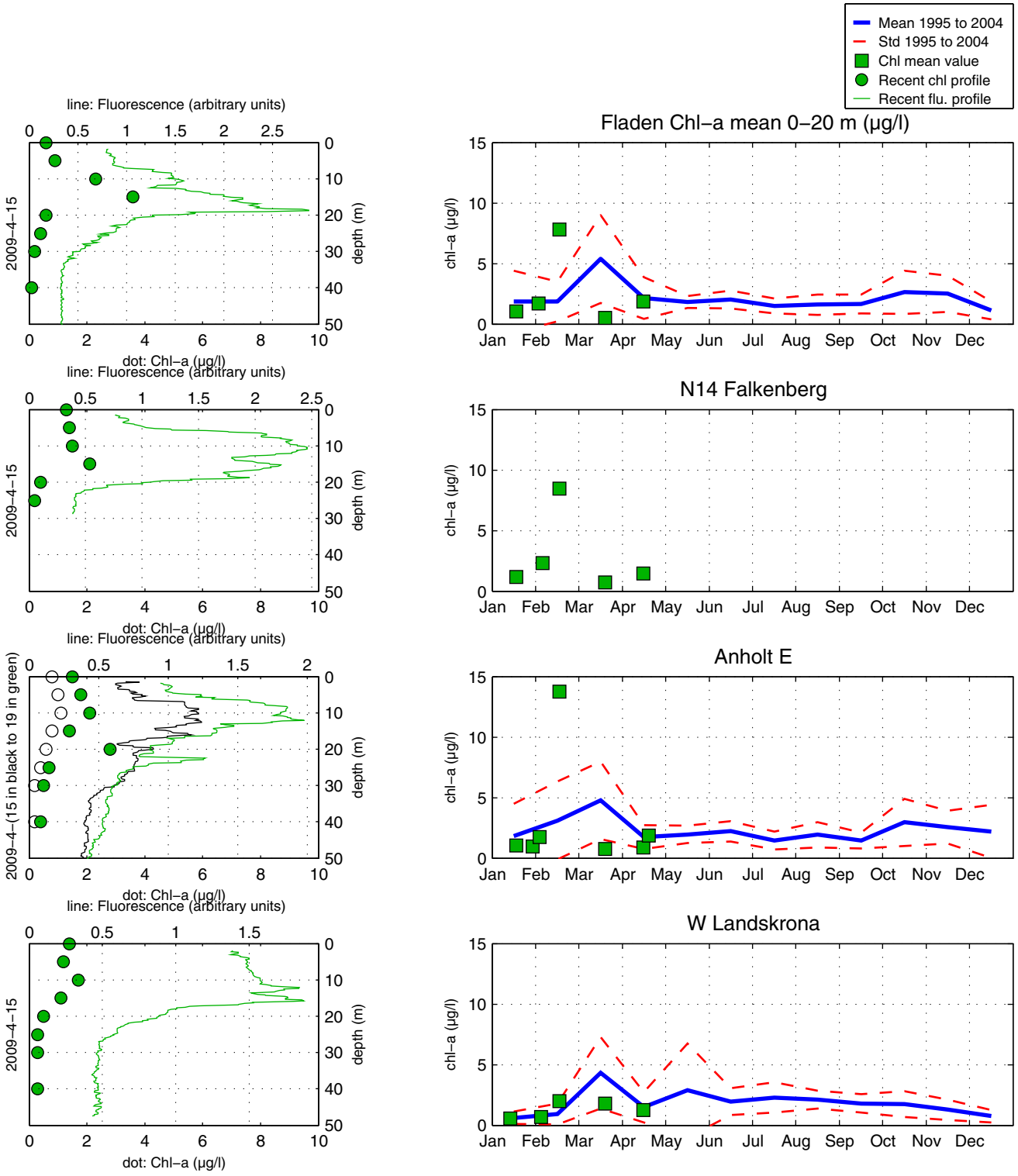
Phytoplankton analysis and text by:
Ann-Turi Skjevik

Selection of observed species	BY2	BY5	BCS III-10	BY15	BY38	Ref. M1-V1
Red=potentially toxic species	2009-04-16	2009-04-16	2009-04-16	2009-04-17	2009-04-18	2009-04-18
[1] quantified in m/l	cells/l	cells/l	cells/l	cells/l	cells/l	cells/l
Attheya septentrionalis	present	common	present	present		
Chaetoceros danicus				present		
Chaetoceros socialis			147 000			
Chaetoceros subtilis	154 000	56 000	present			
Chaetoceros cf. *wighamii*				75 000		
Chaetoceros spp.	144 000	305 000	284 000	165 000		
Cyclotella choctawhatcheana	present					
Melosira nummuloides			present	present		
Skeletonema costatum complex	1 867 000	1 119 000	772 000	142 000		common
Thalassiosira spp.		present	present		present	
Amphidinium sphenoides	present					
Amylax triacantha			present	present		
Dinophysis norvegica		present	present		present	present
Dinophysis rotundata				present	present	
Heterocapsa rotundata	common	common	present	common	common	common
Heterocapsa spp.	present	present	common	present		
Katodinium glaucum	present	present	present		present	
Peridiniella catenata			common	113 000	common	present
Peridiniella danica	present					
Protoperidinium bipes					present	present
Protoperidinium spp.	present			present		present
Chrysochromulina polylepis	510 000	440 000	present	common	152 000	91 000
Chrysochromulina spp.	common	common	present	present	common	common
Cryptomonadales spp.	67 000	57 000	common	common	common	common
Dinobryon balticum	present			present		present
Dinobryon faculiferum	present	present				
Pseudopedinella cf. *pyriforme*	present					
Pyramimonas spp.	common	present	present	present	present	present
Aphanizomenon spp.	present	present		present	present	
Calliacantha natans	present	present	present	present		
Leucocryptos marina		present		present	present	present
Mesodinium rubrum	present		present	present	present	present
Strombidium spp.		present		present	present	

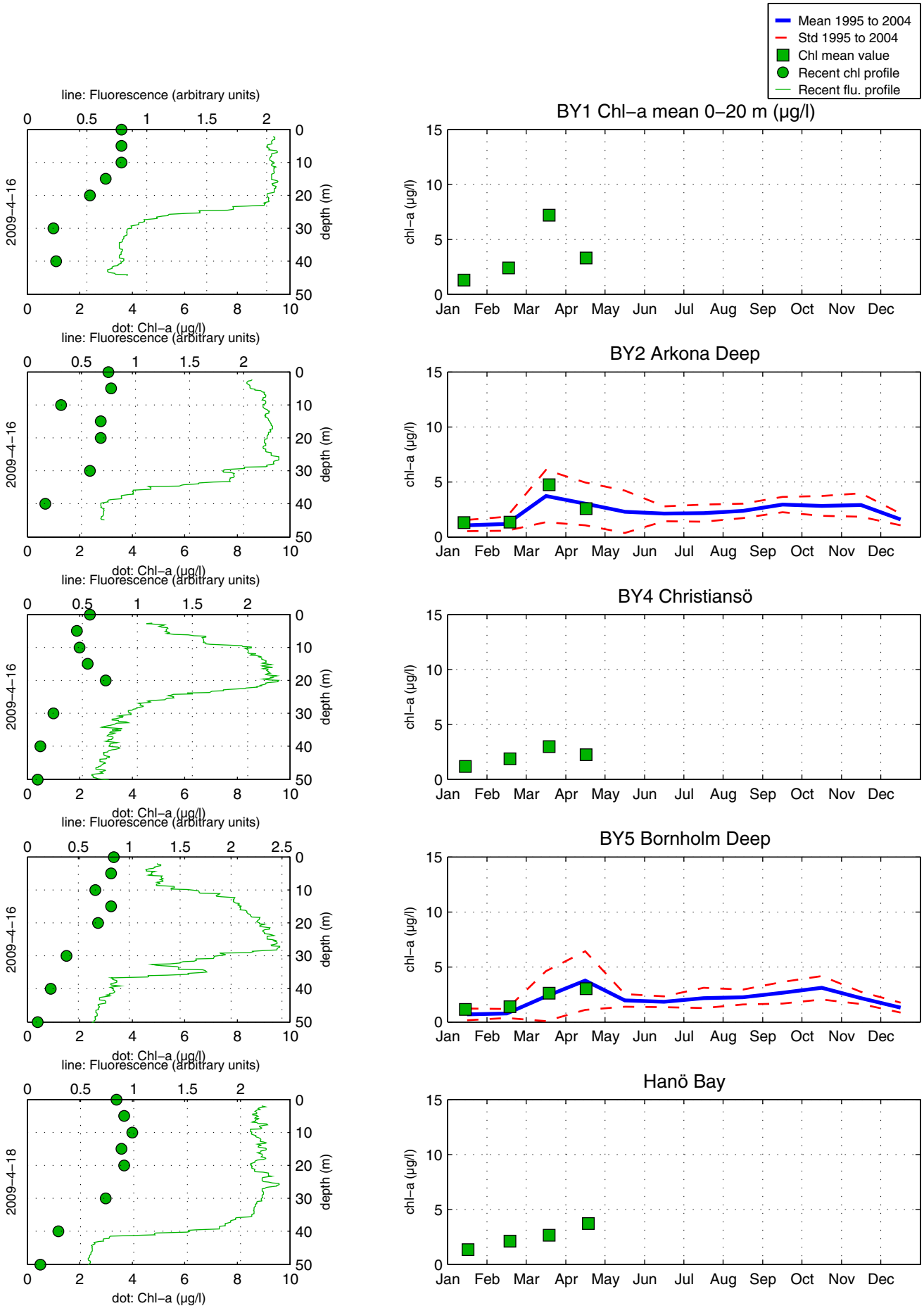
The Skagerrak



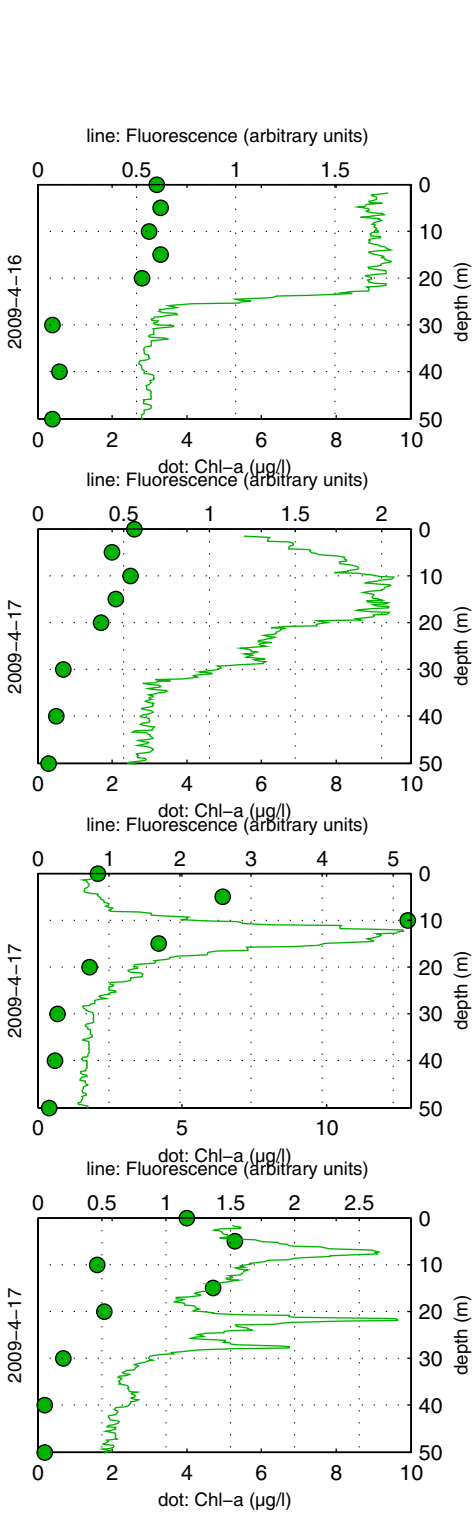
The Kattegat and the Sound

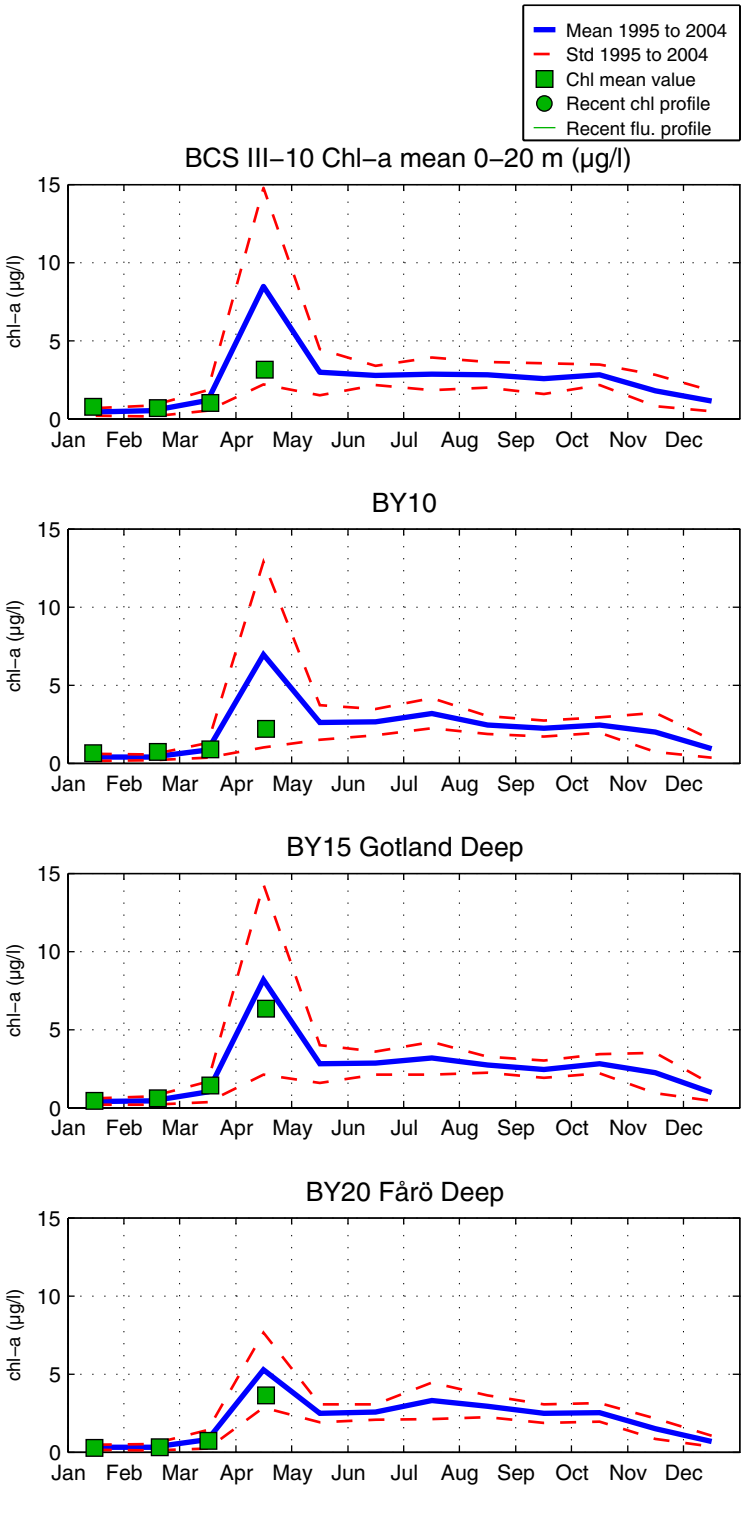


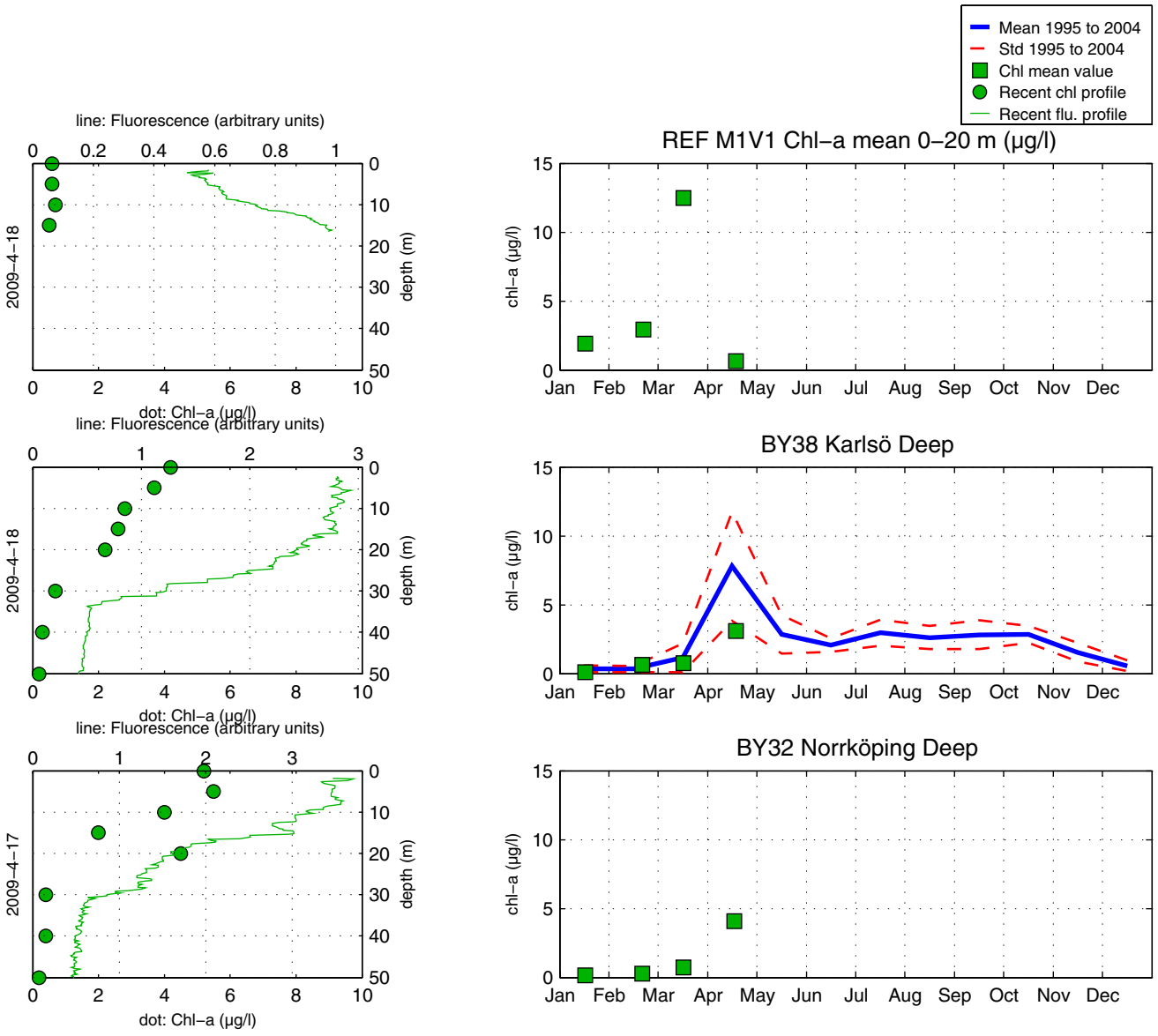
The Southern Baltic



The Eastern Baltic







Om klorofylldiagrammen

Klorofyll *a* är ett mått på mängden växtplankton. Prover tas från ett antal djup 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 layes of phytoplankton occuring 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 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 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
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 ro 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.
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.
Pseudo- nitzschia 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.

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 cirkel indicates that there has been no sampling at that station.