SMHI
Oceanographic Unit
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AlgAware
ALGAL SITUATION IN
MARINE WATERS SURROUNDING SWEDEN

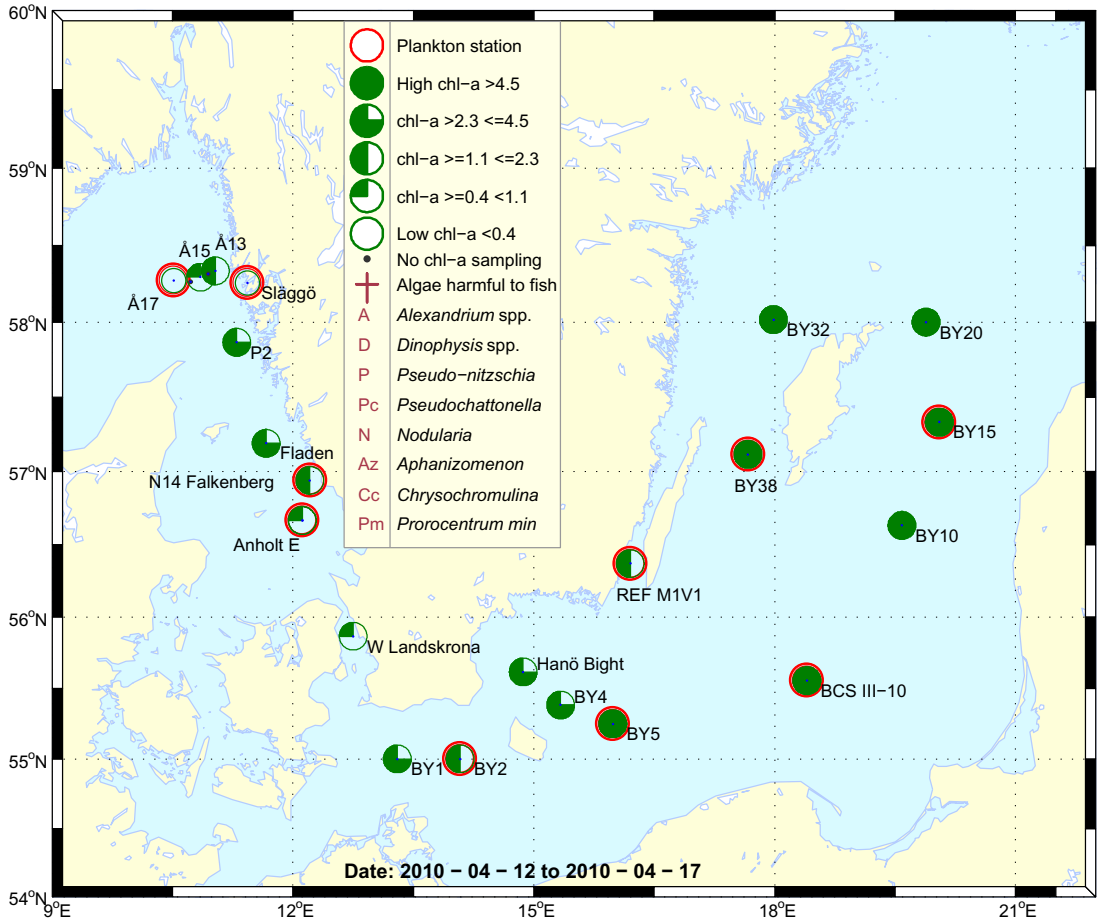
Sammanfattning

Vid provtagningstillfället i mitten av april var artdiversiteten mycket låg vid växtplanktonstationerna i Skagerrak. Vid Å17, där växtplanktonen var talrikast en månad tidigare återfanns inga kiselalger, bara ciliater, små flagellater och dinoflagellater. I Kattegatt observerades många flera arter än i Skagerrak, men det var bara små flagellater som fanns i höga cellantal.

Det integrerade (0-20m) klorofyll *a* värdet låg under medel vid Å17, i övrigt låg det inom medel vid stationerna i Västerhavet.

Vårblomning präglade växtplanktonproverna från Östersjön. De vanligaste arterna var kiselalgerna *Skeletonema costatum* och *Chaetoceros wighamii.* Dinoflagellaten *Peridiniella catenata* var också vanlig vid de flesta stationer.

Enlig 10 års medelvärde för integrerat klorofyll *a* så förekom vårblomningen i år precis vid den vanligaste tidpunkten vid Östersjöstationerna.



Abstract

During the mid April phytoplankton sampling the species diversity was very low at the Skagerrak stations. Whereas the total cell counts were the highest one month earlier at Å17, the situation was the opposite now. Diatoms were absent, only a few ciliates, small flagellates and dinoflagellates were present. Although the species numbers were high in the Kattegat compared to the Skagerrak, only small flagellates were numerous.

The integrated (0-20 meters) chlorophyll *a* concentrations were low but within average for this month at all of the Skagerrak sampling sites except at Å17 where it was below average.

Spring bloom was ongoing at the Baltic phytoplankton stations. The dominating species were the diatoms *Skeletonema costatum* and *Chaetoceros wighamii*. The dinoflagellate *Peridiniella catenata* was common at most of the stations.
According to the integrated chlorophyll *a* 10 years average, spring bloom happened at exactly the “right time”.

More detailed information on species composition and abundance

The Skagerrak

Å17 12th of April (open Skagerrak)
The phytoplankton diversity was very low and the chlorophyll *a* concentrations accordingly low, below average even. Diatoms were absent.

Släggö 12th of April (Skagerrak coast)
The phytoplankton diversity was very low although a few more species was found than at Å17 and diatoms were present.

The integrated (0-20 meters) chlorophyll *a* concentrations were low but within average for this month at all of the Skagerrak sampling sites except at Å17 where it was below average.

The diatom *Chaetoceros debilis* is common during spring bloom. The species was present at Släggö in low cell numbers.

The Kattegat

N14 Falkenberg 13th of April
The number of species was quite high, but the total cell counts were low. Small flagellates like cryptomonads and the golden algae *Dinobryon balticum* were the most common species.

Anholt E 13th and 17th of April
The phytoplankton situation was similar to the one at N14 at both visits. The cell numbers were low and the most common species were small flagellates.

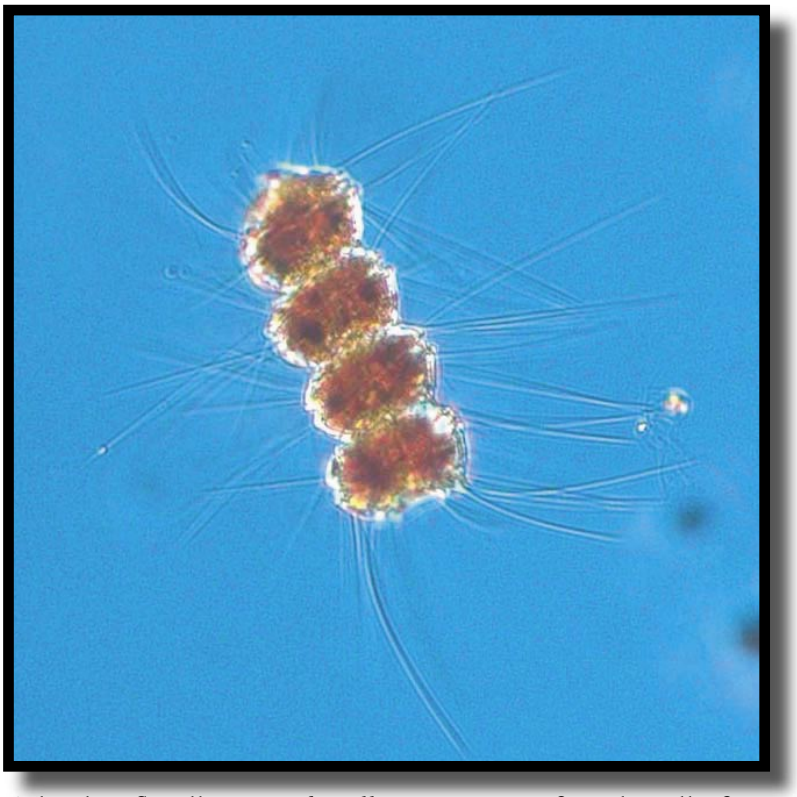
The Baltic Sea

The spring bloom was obvious at all of the Baltic phytoplankton stations. For station names, locations and sampling dates see map on the front page or species list. Because of the over all similarity between the stations a general description is made.

Diatoms dominated the samples and *Skeletonema costatum* was the most numerous species. The diatoms *Thalassiosira* spp. and *Chaetoceros* spp. were very common, and amongst the latter genus the species *Chaetoceros wighamii*, *Chaetoceros subtilis* and *Chaetoceros ceratosporus* were found with the highest cell numbers.

Peridiniella catenata was the most common dinoflagellate and the highest cell counts were made from the BY15 phytoplankton sample.

Most of the integrated (0-20 m) chlorophyll *a* concentrations from the Baltic stations were "spot on" spring bloom compared to a ten year average.



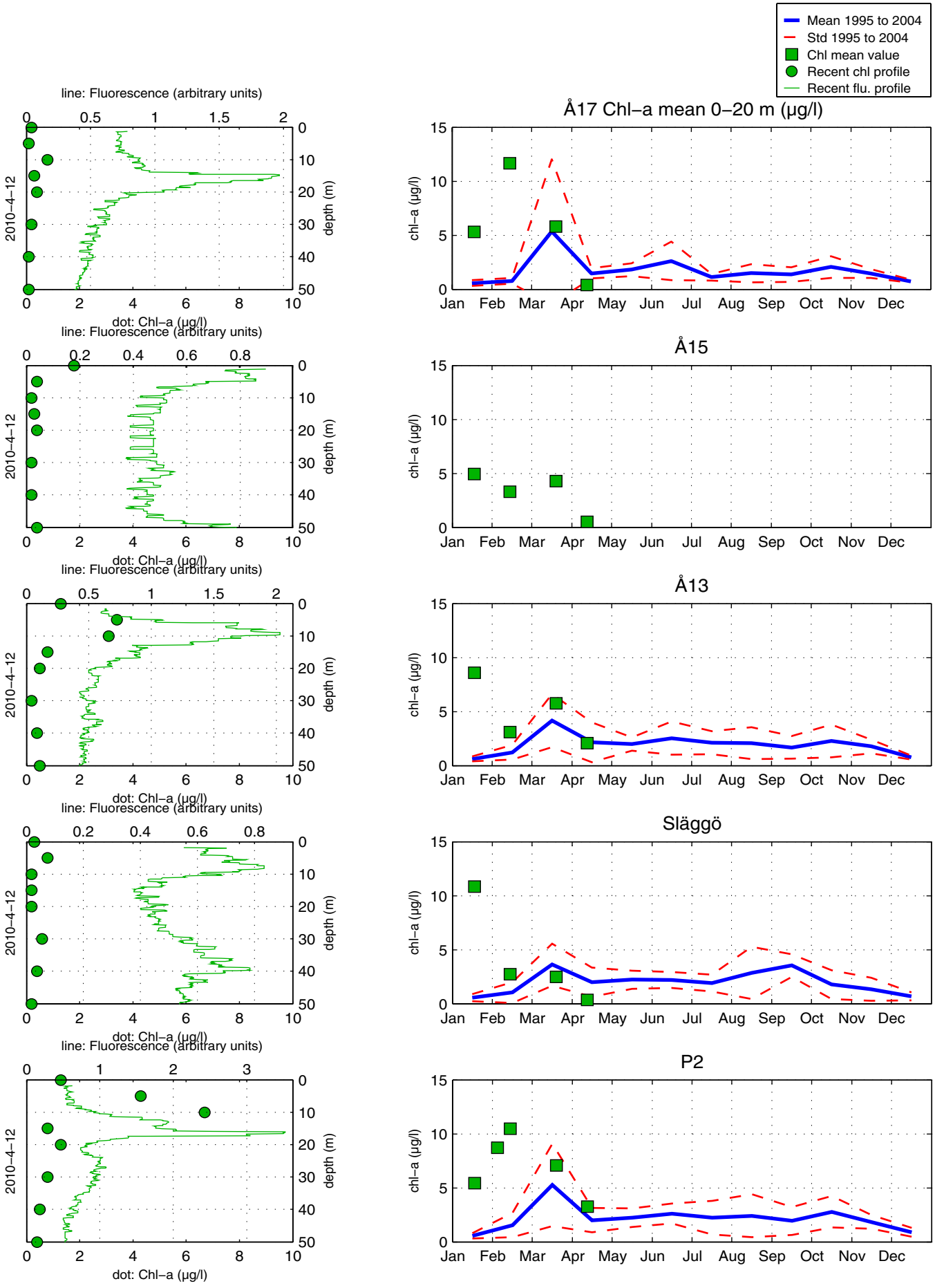
The dinoflagellate *Peridiniella catenata* was found at all of the Baltic stations

Phytoplankton analysis and text by:
Ann-Turi Skjevik

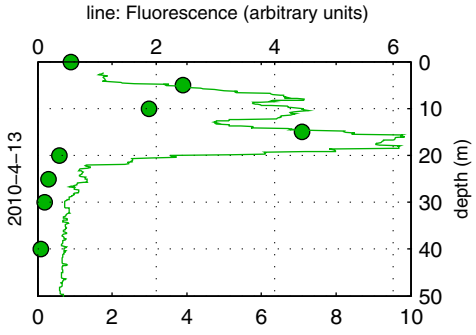
Selection of observed species	Å17	Släggö	N14	Anholt E	Anholt E
Red=potentially toxic species	2010-04-12	2010-04-12	2010-04-13	2010-04-13	2010-04-17
	cells/l	cells/l	cells/l	cells/l	cells/l
Attheya septentrionalis		present	present		
Chaetoceros debilis		present			
Chaetoceros socialis			present		
Chaetoceros subtilis		present	present		
Chaetoceros tenuissimus		present			
Cylindrotheca closterium			present		
Dactyliosolen fragilissimus				present	present
Leptocylindrus danicus		present	common	present	common
Leptocylindrus minimus					
Navicula transitans		present	present		
Proboscia alata		present	present	common	present
Pseudo-nitzschia delicatissima-group			present	present	
Pseudo-nitzschia seriata-group			present	present	
Pseudosolenia calcar-avis			present		
Rhizosolenia hebetata		present	common	common	present
Rhizosolenia setigera			present	present	present
Skeletonema costatum complex			present	present	present
Thalassionema nitzschioides		present	common	present	common
Ceratium longipes	present		present		
Ceratium tripos	present				present
Dinophysis acuminata					present
Dinophysis norvegica		present	present	present	
Gonyaulax spp.				present	
Gymnodinium verruculosum					present
Gyrodinium flagellare	present		present	present	present
Gyrodinium spirale		present	present	present	present
Heterocapsa rotundata			present	present	present
Heterocapsa triquetra			present		
Heterocapsa spp.			present	present	present
Karlodinium micrum			present		present
Katodinium glaucum		present	present	present	present
Peridiniella danica			present		present
Protoperidinium divergens		present			
Protoperidinium pallidum		present	present	present	present
Chrysochromulina spp.	present	present		present	present
Cryptomonadales spp.	common	common	130 000	common	150 000
Chlorodendrales spp.	present		present	present	present
cf. *Oltmannselliopsis* spp.			155 000	89 000	340 000
Pyramimonas spp.	present				present
Dinobryon balticum		present	103 000	170 000	92 000
Dinobryon faculiferum				present	
Pseudopedinella pyriforme		present	common	common	present
Pseudochattonella farcimen			present	present	
Calliacantha longicaudata	present	present		present	present
Calliacantha natans	present		present	present	present
Katablepharis remigera			present	present	present
Leucocryptos marina	present	present	present	present	present
Telonema subtile	present			present	present
Mesodinium rubrum		present			

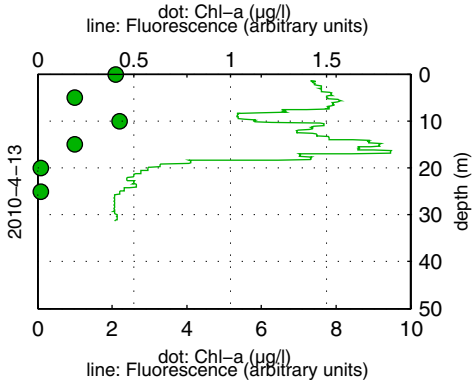
Selection of observed species	BY2	BY5	BCS III-10	BY15	BY38	Ref. M1-V1
Red=potentially toxic species	2010-04-14	2010-04-14	2010-04-14	2010-04-15	2010-04-16	2010-04-16
[1] quantified in m/l	cells/l	cells/l	cells/l	cells/l	cells/l	cells/l
cf. *Achnanthes taeniata*					common	160 000
Attheya septentrionalis	present	present	present		present	present
Chaetoceros ceratosporus	present	common	present	common	present	present
Chaetoceros decipiens					present	
Chaetoceros laciniosus					present	
Chaetoceros subtilis	206 000	common	108 000	common	present	present
Chaetoceros tenuissimus			present			
Chaetoceros wighamii	common	235 000	344 000	140 000	570 000	270 000
Cylindrotheca closterium						present
Lennoxia faveolata			present	present		
Melosira arctica		present		present	present	present
Skeletonema costatum complex	640 000	1 850 000	1 680 000	940 000	2 270 000	508 000
Thalassiosira spp.	present	common	common	common	common	present
Amphidinium sphenoides	present	present		present	present	present
Dinophysis acuminata		present		present		
Gymnodinium verruculosum	present					
Gyrodinium flagellare			present			present
Gyrodinium spirale						present
Heterocapsa rotundata	present	present	present	present	present	present
Heterocapsa spp.	present	present	common	present		present
Katodinium glaucum	present	present				present
Peridiniella catenata	present	common	present	24 000	common	common
Protoperidinium bipes		present			present	present
Chrysochromulina polylepis		present				
Chrysochromulina spp.	present	present	present	present		present
Cryptomonadales spp.	common	present	common	present	present	present
Pyramimonas virginica		present				
Pyramimonas spp.		present	present	present	present	present
Dinobryon balticum	present	present				present
Dinobryon faculiferum	present			present		present
Pseudopedinella pyriforme	present	present	present			common
Pseudopedinella spp.				present		
Aphanizomenon spp.	common	present	present		present	present
Cyanobacteria colonies	very common	present	common	present		very common
Planctonema lauterbornii				present		present
Calliacantha longicaudata		present	present		present	
Calliacantha natans	common	present	present	present	present	present
Ebria tripartita	present		present	present	present	present
Katablepharis remigera	present	present	present	present		present
Leucocryptos marina	present		present	present	present	
Telonema subtile	present	present		present		present
Mesodinium rubrum	present	present	present	present	present	

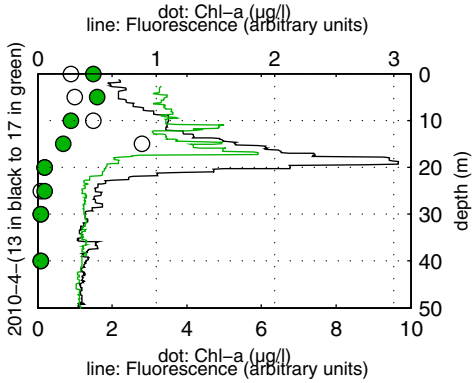
The Skagerrak

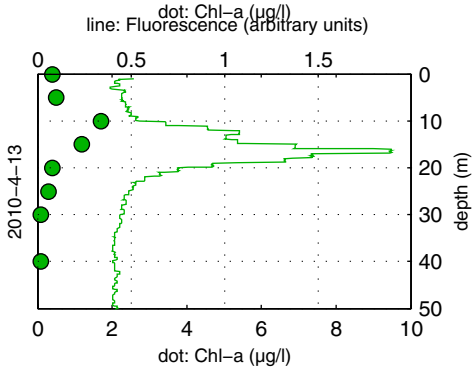


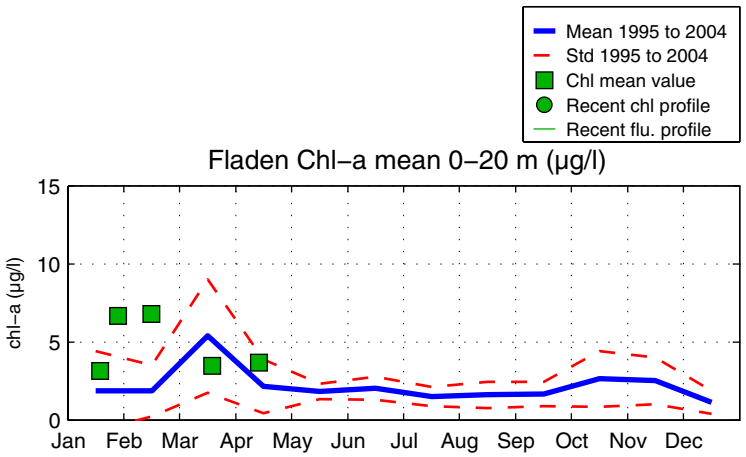
The Kattegat and the Sound

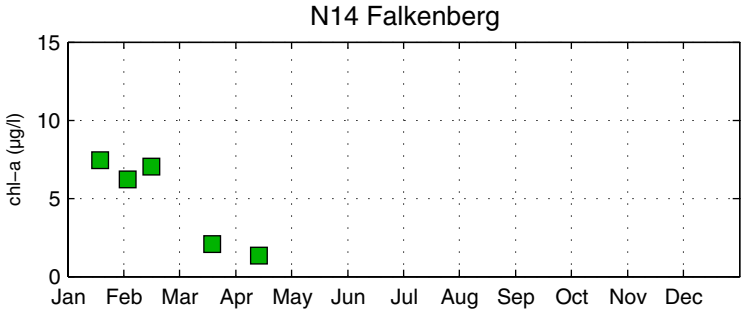


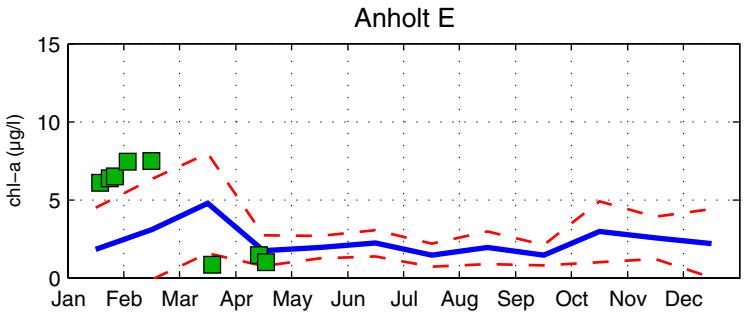


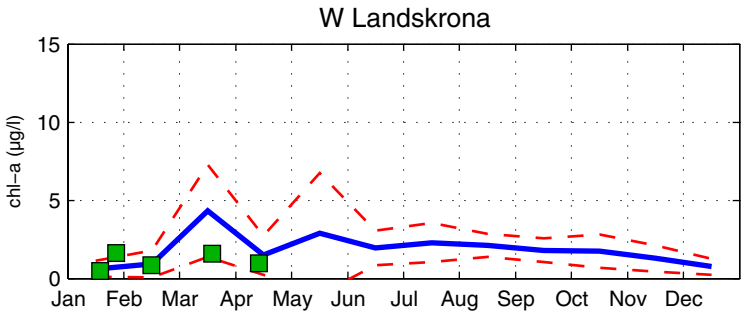




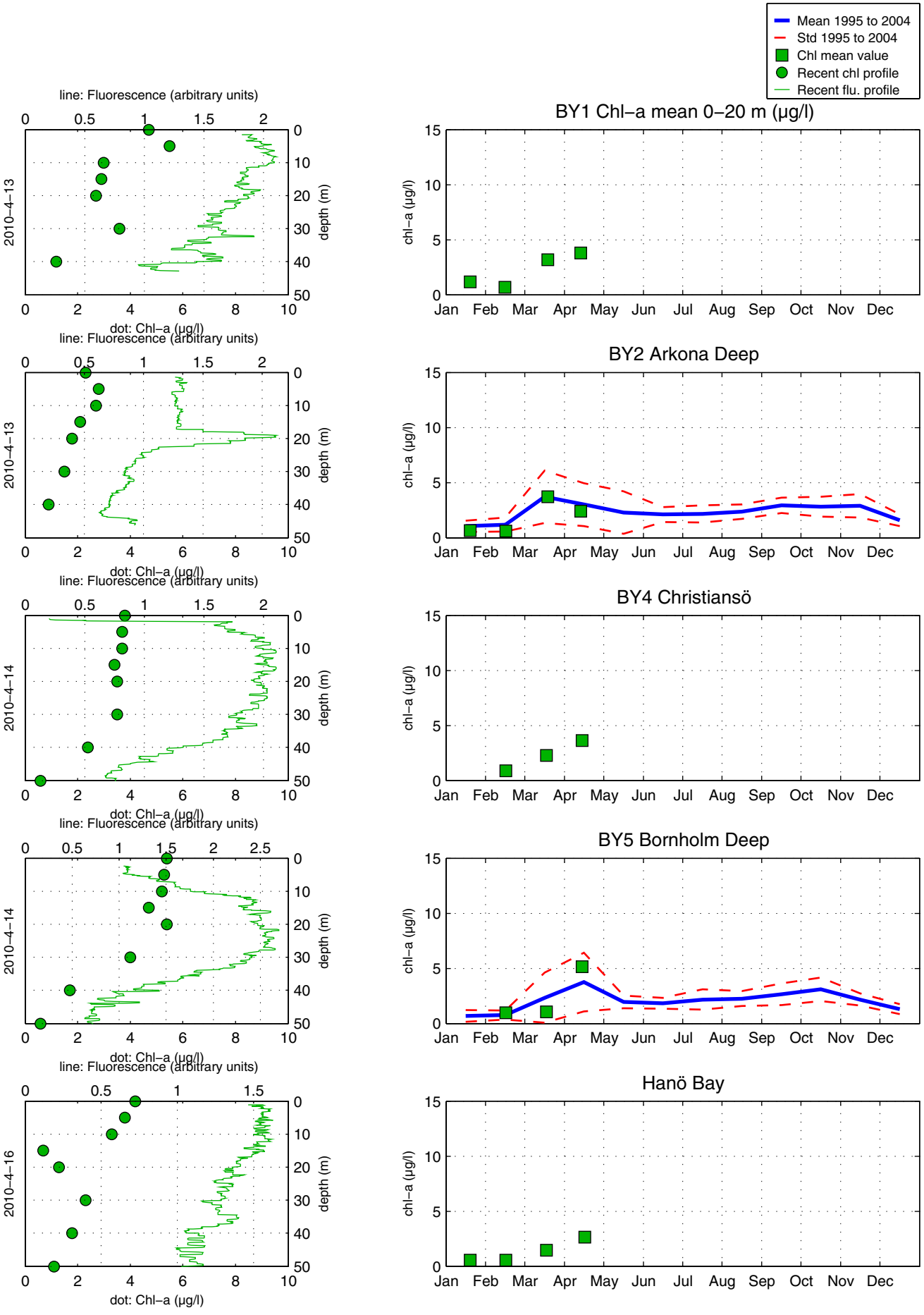




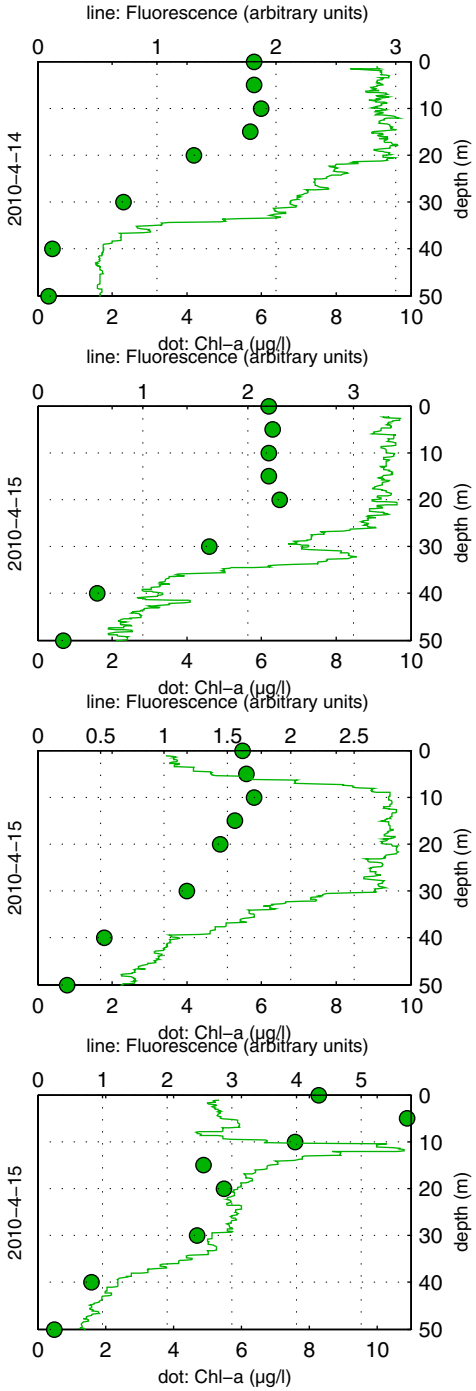


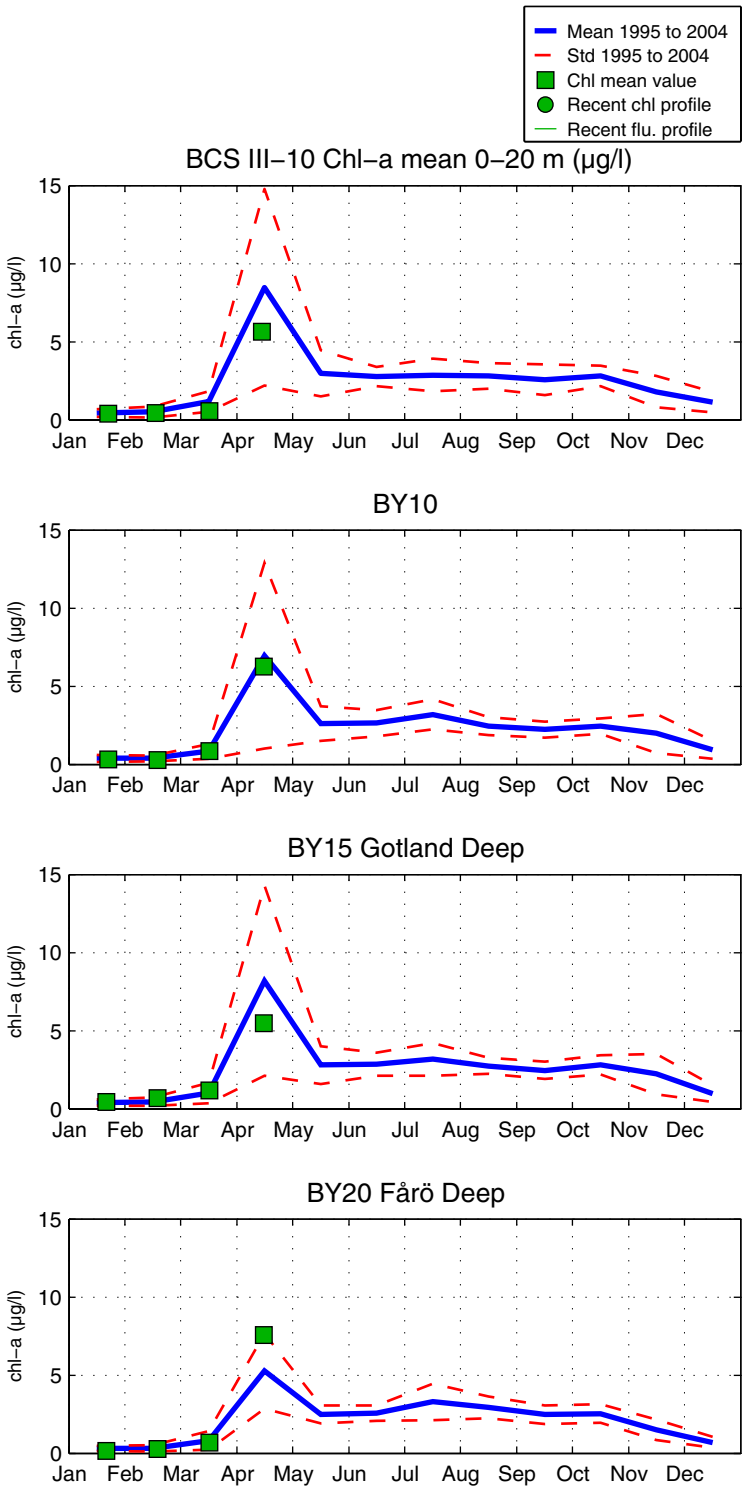


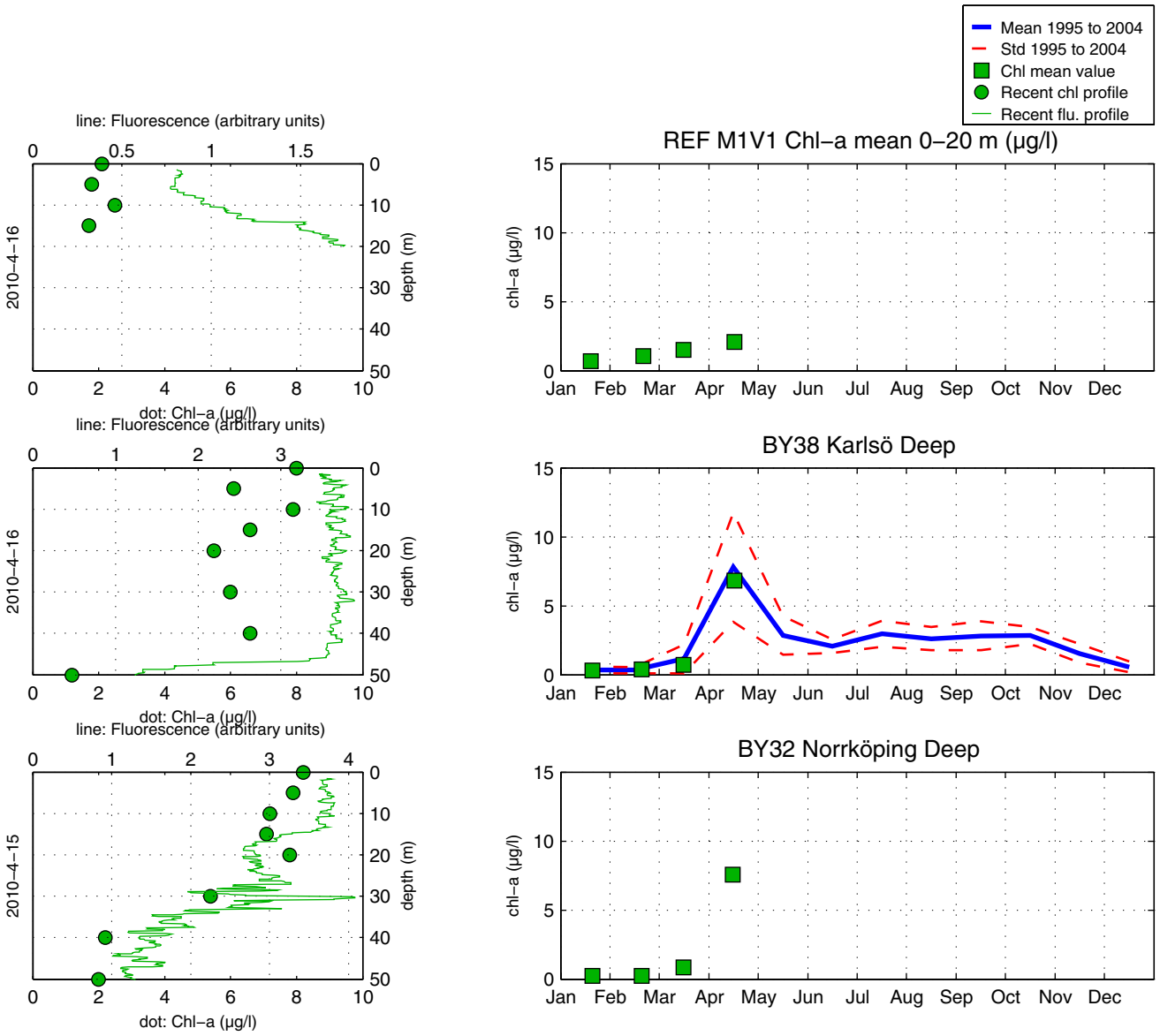
The Southern Baltic



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.