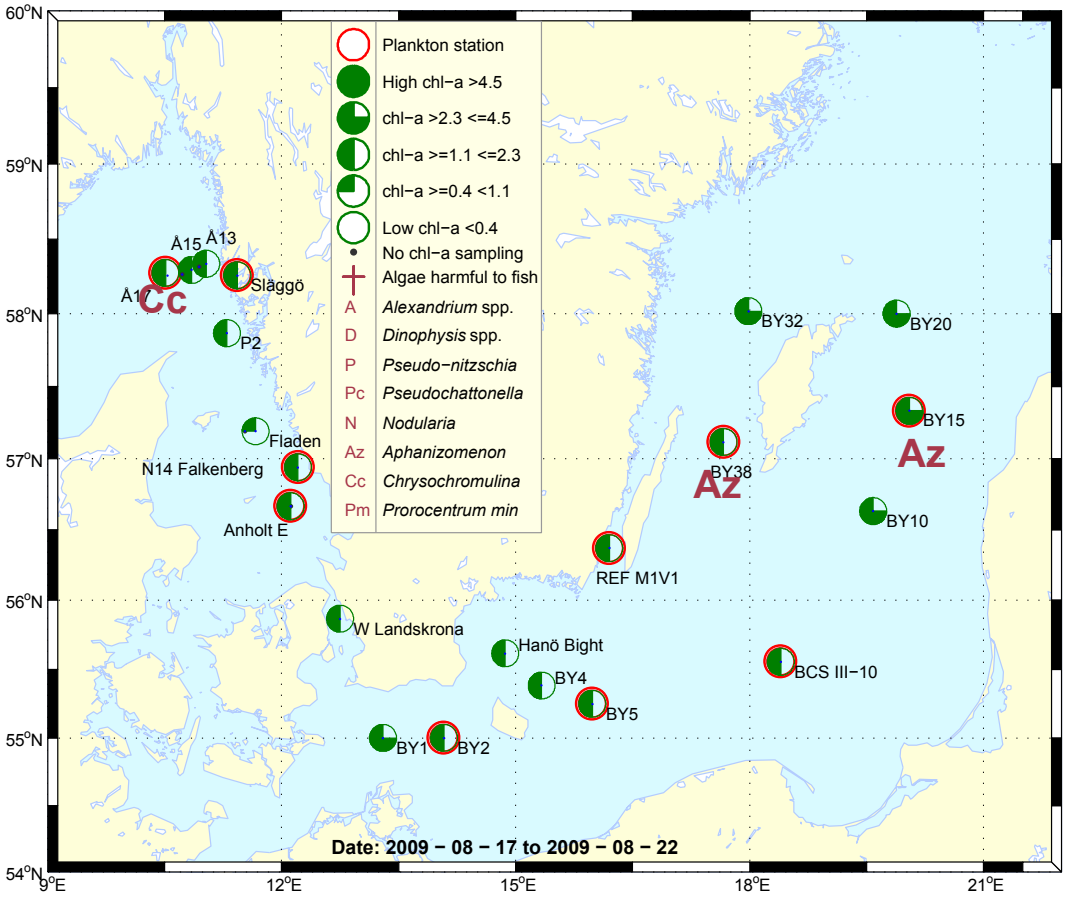
SMHI
Oceanographic Unit
No 9, 17 – 22 August 2009

AlgAware
ALGAL SITUATION IN
MARINE WATERS SURROUNDING SWEDEN

Sammanfattning

Det var kiselalgsblomning vid Skagerrak-kusten (Släggö) vid tidpunkten för den senaste provtagningen, den 22 augusti. Det var framför allt kiselalgen *Skeletonema costatum* som fanns i höga cellantal, och det var generellt artrikt vid stationen. Klorofyllvärdet i ytan vid Släggö var något förhöjt, men det integrerade värdet (0-20 m) låg inom medel vid Släggö, som det också gjorde vid samtliga Skagerrak- och Kattegattstationer vid provtagningstillfället.

Låga klorofyllvärden, dock inom medel för denna tid på året, präglade samtliga stationer i Östersjön. Artdiversiteten var generellt låg, men relativt stora mängder av filamentösa cyanobakterier återfanns vid BY15, BY38 och i Kalmarsund. Små kolonibildande cyanobakterier fanns i stora antal vid alla Östersjö-stationer.



Abstract

A diatom bloom was observed at the Skagerrak coast (Släggö) at the time of the latest sampling, 22nd of August. The diatom *Skeletonema costatum* was found with high cell numbers and the species diversity was high. The chlorophyll *a* concentration in the surface was enhanced, although the integrated chlorophyll value (0-20 m) was within average at Släggö, as well as at all of the Skagerrak and Kattegat stations.

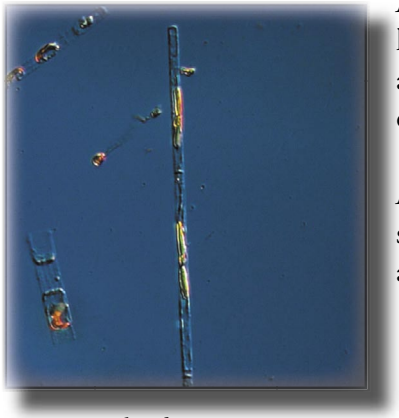
Low chlorophyll values, within average for this time of the year, were found at all of the Baltic stations. The species diversity was low, but relatively large amounts of filamentous cyanobacteria were present at BY15, BY38 and in the Kalmar Sound. Colonies of small cyanobacteria were abundant at all of the Baltic stations.

The Skagerrak

Å17 22nd of August (open Skagerrak)

The phytoplankton diversity was rather low. The prymnesiophyte *Chrysochromulina* spp.* was common as well as the diatom *Cylindrotheca closterium* and the dinoflagelllate *Heterocapsa rotundata*.

Släggö 22nd of August (Skagerrak coast)



Leptocylindrus minimus

A diatom bloom was observed and *Skeletonema costatum* was found to have the highest cell numbers. Other abundant diatom species were *Chaetoceros* spp. and *Leptocylindrus minimus*. The dinoflagellate *Lingulodinium polyedrum** was common.

Although the surface sample concentration of chlorophyll *a* at Släggö was somewhat high, the integrated chlorophyll *a* were within average for this month at the Skagerrak sampling sites.

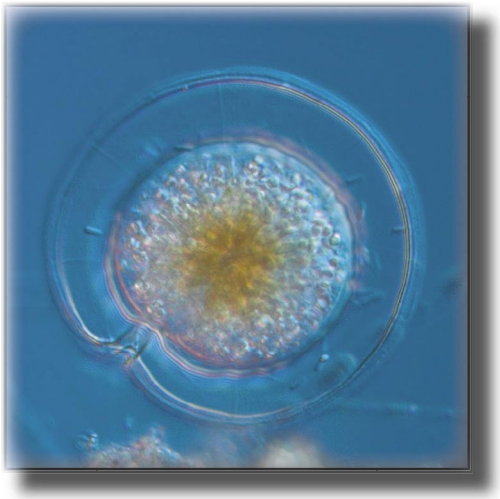
The Kattegat

N14 Falkenberg 17th of August

The diatom *Skeletonema costatum* was the most numerous species, and *Leptocylindrus minimus* and *Pseudo-nitzschia* spp.* were common. The number of diatom versus dinoflagellate species were about 50/50 although diatoms dominated the cell counts. The prymnesiophyte *Chrysochromulina* spp.* was common.

Anholt E 17th and 21st of August

The plankton samples were very similar on both occasions, diatoms dominated, but no specific species. Several species were common though, e.g. *Leptocylindrus minimus* and *Pseudo-nitzschia* spp.*.



Pyrophacus horologicum

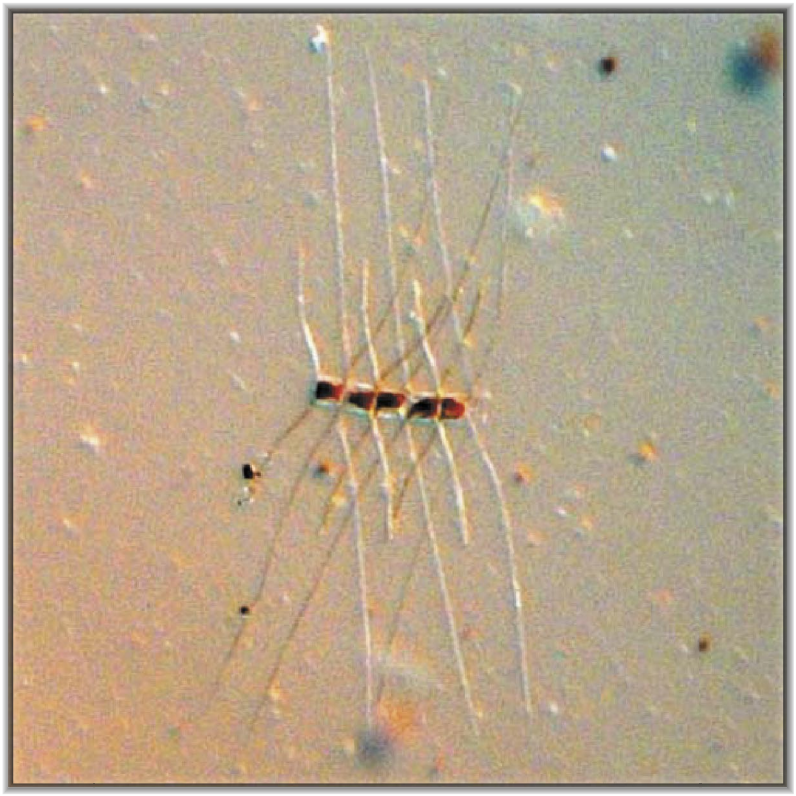
Selection of observed species	Å17	Släggö	N14	Anholt E	Anholt E
Red=potentially toxic species	2009-08-22	2009-08-22	2009-08-17	2009-08-17	2009-08-21
	cells/l	cells/l	cells/l	cells/l	cells/l
Chaetoceros decipiens		present			
Chaetoceros impressus				present	present
Chaetoceros laciniosus		present	present		present
Chaetoceros socialis		present			
Chaetoceros tenuissimus		present			present
Coscinodiscus spp.				common	
Cylindrotheca closterium	common	common	present	common	common
Dactyliosolen fragilissimus	present	present			present
Guinardia delicatula	present	present		common	
Guinardia flaccida		present		present	present
Lennoxia faveolata	present				
Leptocylindrus danicus	present	common	present	present	present
Leptocylindrus minimus		common	common	common	common
cf. *Nitzschia longissima*		common	present	common	common
Proboscia alata			present	present	present
Pseudo-nitzschia delicatissima-group		present	present	present	common
Pseudo-nitzschia seriata-group		present	present	present	common
Rhizosolenia pungens			present		present
Rhizosolenia setigera				present	present
Skeletonema costatum complex	present	1.5 million	125 000	common	
Thalassionema nitzschioides				common	
Amylax triacantha		present			
Ceratium furca		present		present	
Ceratium fusus	present	present	present	present	present
Ceratium lineatum			present		present
Ceratium tripos			present		
Dinophysis acuminata		present		present	
Diniophysis acuta				present	
Dinophysis norvegica				present	present
Heterocapsa cf. *minima*	present			present	present
Heterocapsa rotundata	common	common	common	common	common
Heterocapsa triquetra		present	present	present	
Katodinium glaucum	present	present			
Lingulodinium polyedrum		common		present	
Noctiluca scintillans		present			
Oxytoxum gracile	present	present	present		
Prorocentrum balticum	present				
Prorocentrum micans		present			
Prorocentrum redfeldii		present			
Protoperidinium divergens				present	present
Protoperidinium oblongum		present			present
Pyrophacus horologicum				present	
Chrysochromulina spp.	70 000	present	common	common	common
Cryptomonadales spp.	60 000	50 000	present	present	common
Pyramimonas spp.	common	common	common	present	present
Apedinella radians		present			
Dinobryon balticum		present	present	present	present
Dinobryon faculiferum		present	present		
Pseudochattonella farcimen			present		
Anabaena spp.		present		present	common
Leucocryptos marina	present	present	present		
Mesodinium rubrum	present	present			

The Baltic Sea

Arkona Basin BY2, Bornholm Basin BY5 and South East Baltic BCS III-10 18th-19th of August
The phytoplankton diversity was very low. Traces of the prymnesiophyte *Chrysochromulina polylepis** were found at BY2 and BCSIII-10. Cyanobacteria colonies were abundant.

Eastern Gotland Basin BY15, Western Gotland Basin BY38 and Kalmar Sound Ref. M1-V1 19th-20th of August
The phytoplankton diversity was very low, but filamentous cyanobacteria and cyanobacteria colonies were common. Traces of the prymnesiophyte *Chrysochromulina polylepis** were found at BY38 and in the Kalmar Sound. Other soecies of *Chrysochromulina* were common at all of the three phytoplankton stations.

The integrated chlorophyll *a* values were within average for this month at the Baltic stations.

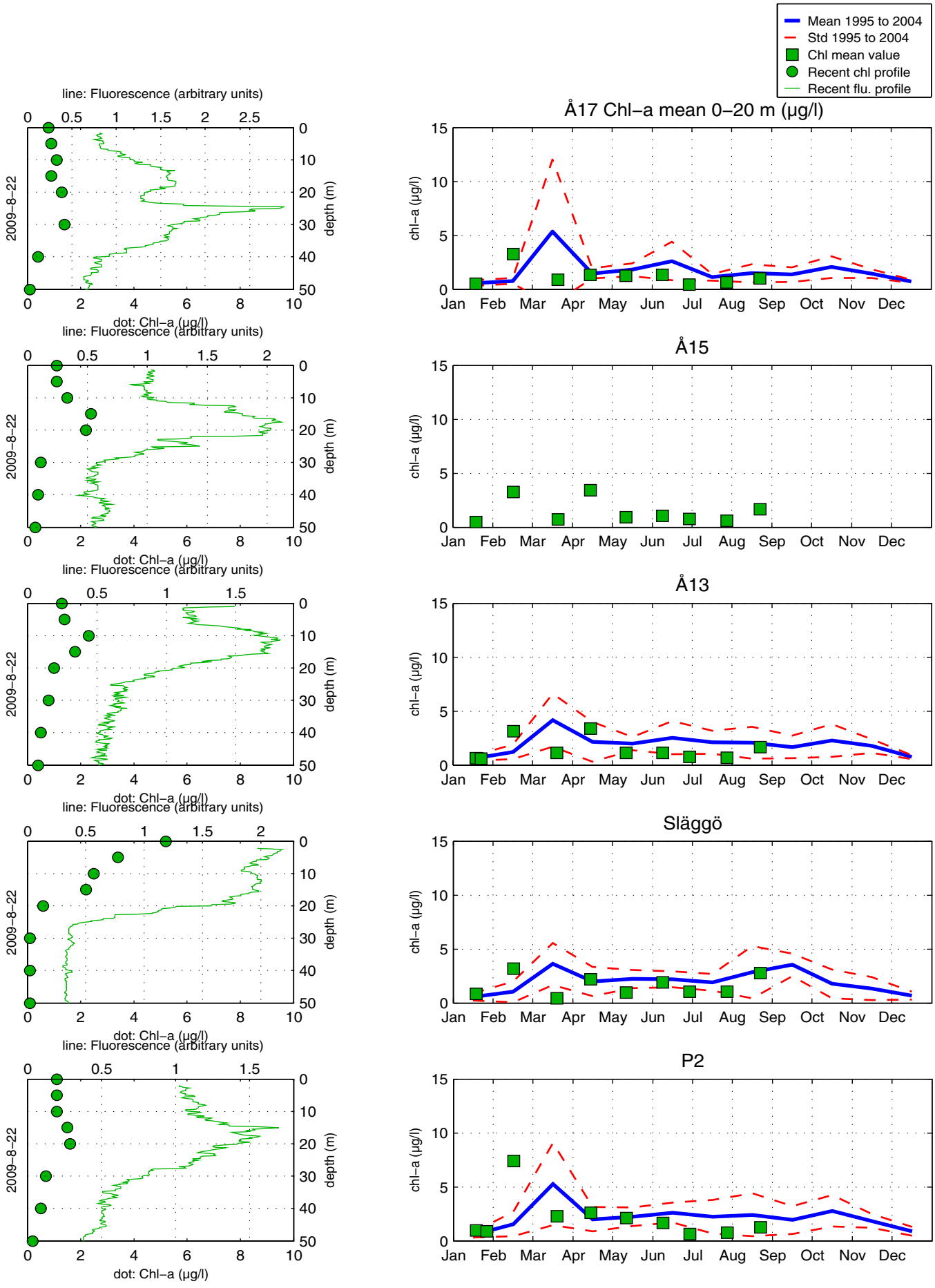


Chaetoceros impressus

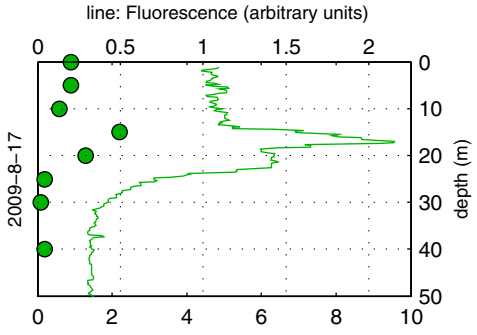
Phytoplankton analysis, text and photos by:
Ann-Turi Skjevik

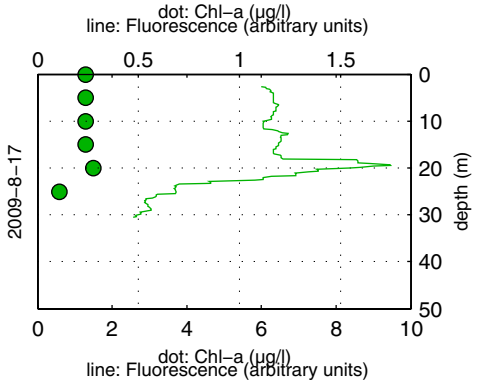
Selection of observed species	BY2	BY5	BCS III-10	BY15	BY38	Ref. M1-V1
Red=potentially toxic species	2009-08-18	2009-08-18	2009-08-19	2009-08-19	2009-08-20	2009-08-20
[1] quantified in m/l	cells/l	cells/l	cells/l	cells/l	cells/l	cells/l
Attheya septentrionalis		present	present			
Chaetoceros impressus		common	present	common	present	present
Chaetoceros throndsenii					present	present
Cyclotella choctawhatcheana					common	common
Cylindrotheca closterium	present					present
Leptocylindrus danicus	present					
Ceratium fusus	present					
Dinophysis norvegica						present
Dinophysis rotundata					present	
Heterocapsa triquetra					present	
Chrysochromulina polylepis	present		present		present	present
Chrysochromulina spp.	present		present	common	common	common
Cryptomonadales spp.	common	present	common	present	common	common
Dinobryon faculiferum						present
Planctonema lauterbornii				present	present	
Pyramimonas spp.	common	common	common	present	common	common
Pseudopedinella cf. *pyriforme*	present	present				present
Anabaena spp.	present			present	common	very common
Aphanizomenon spp.	present		common	very common	very common	common
Nodularia spumigena				common	common	common
Ebria tripartita	present	present				present
Leucocryptos marina	present		present	common	common	common
Mesodinium rubrum	common	present	present	present	present	common

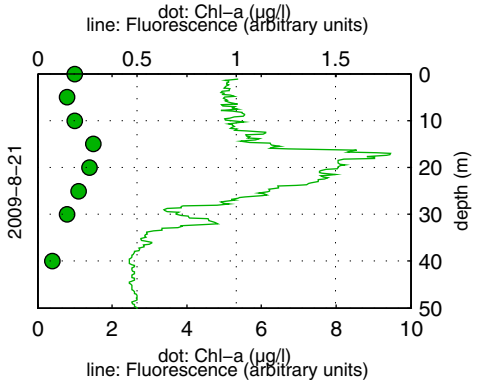
The Skagerrak

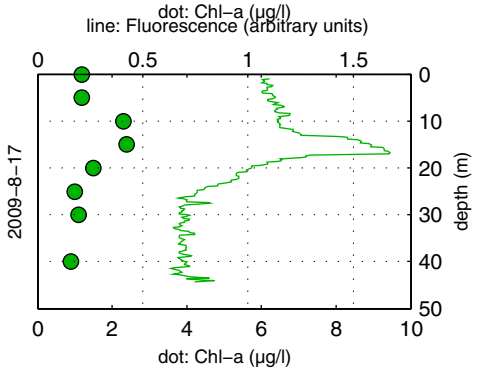


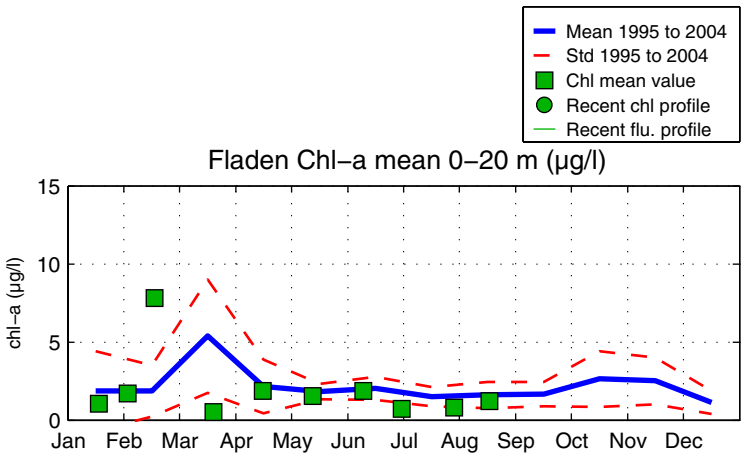
The Kattegat and the Sound

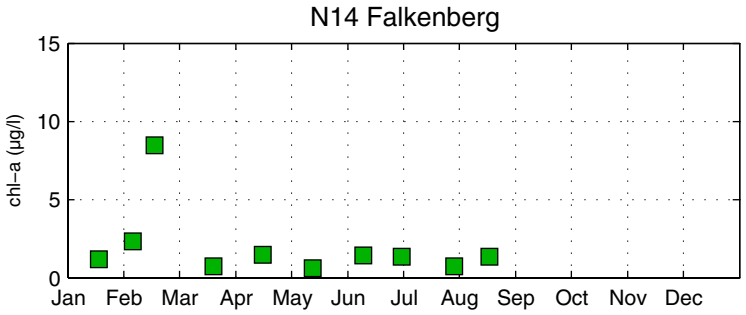


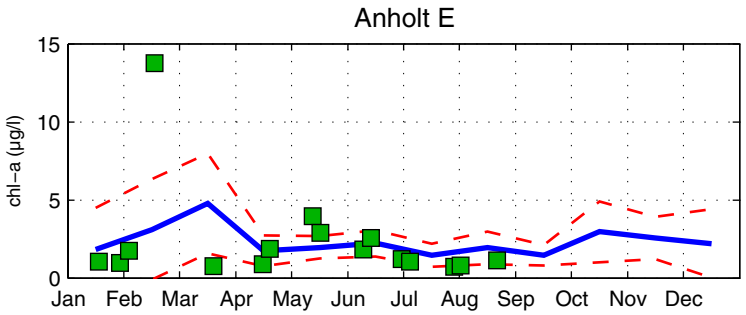


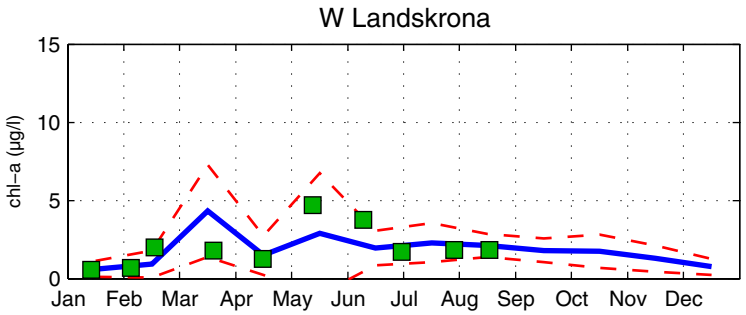




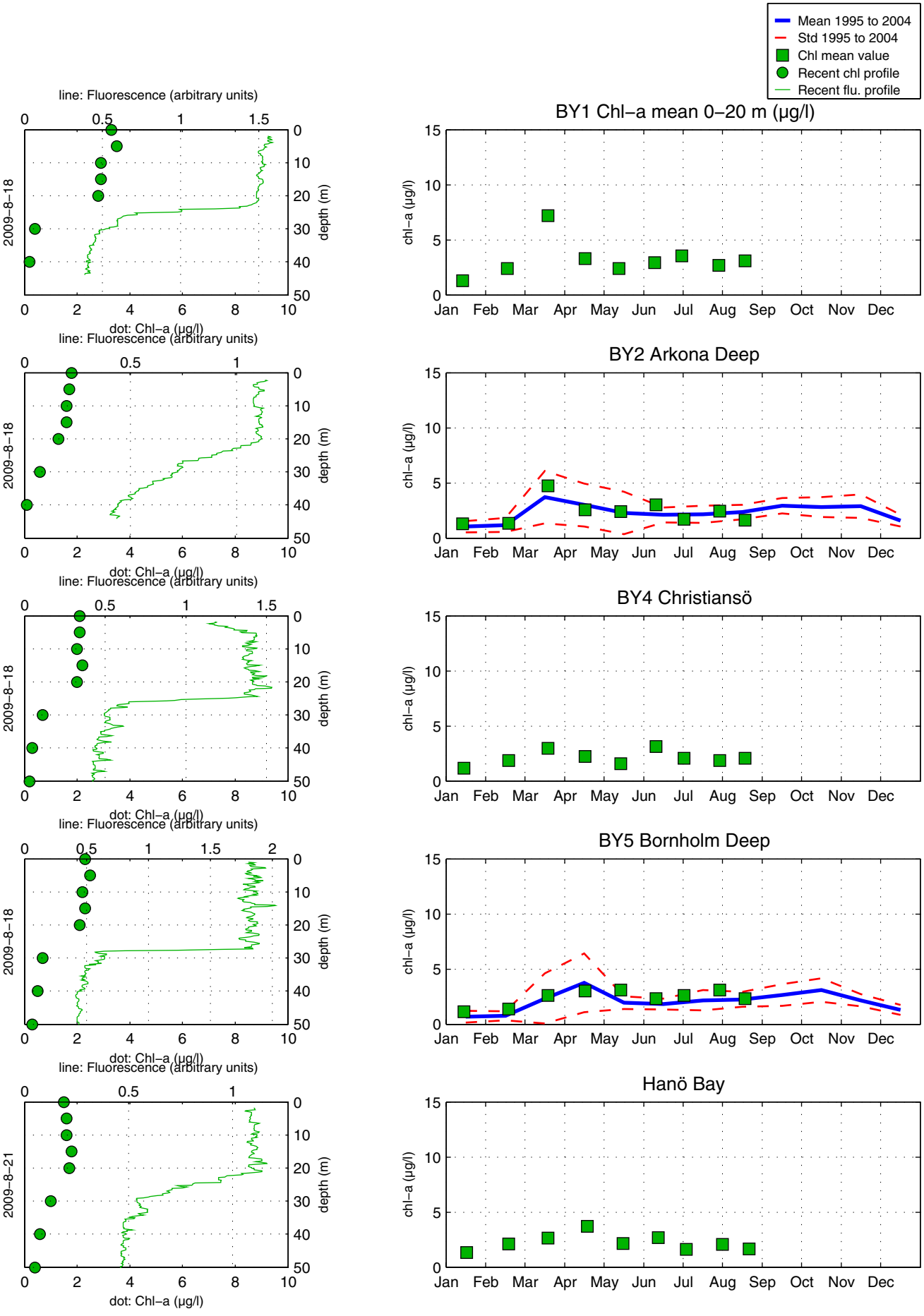




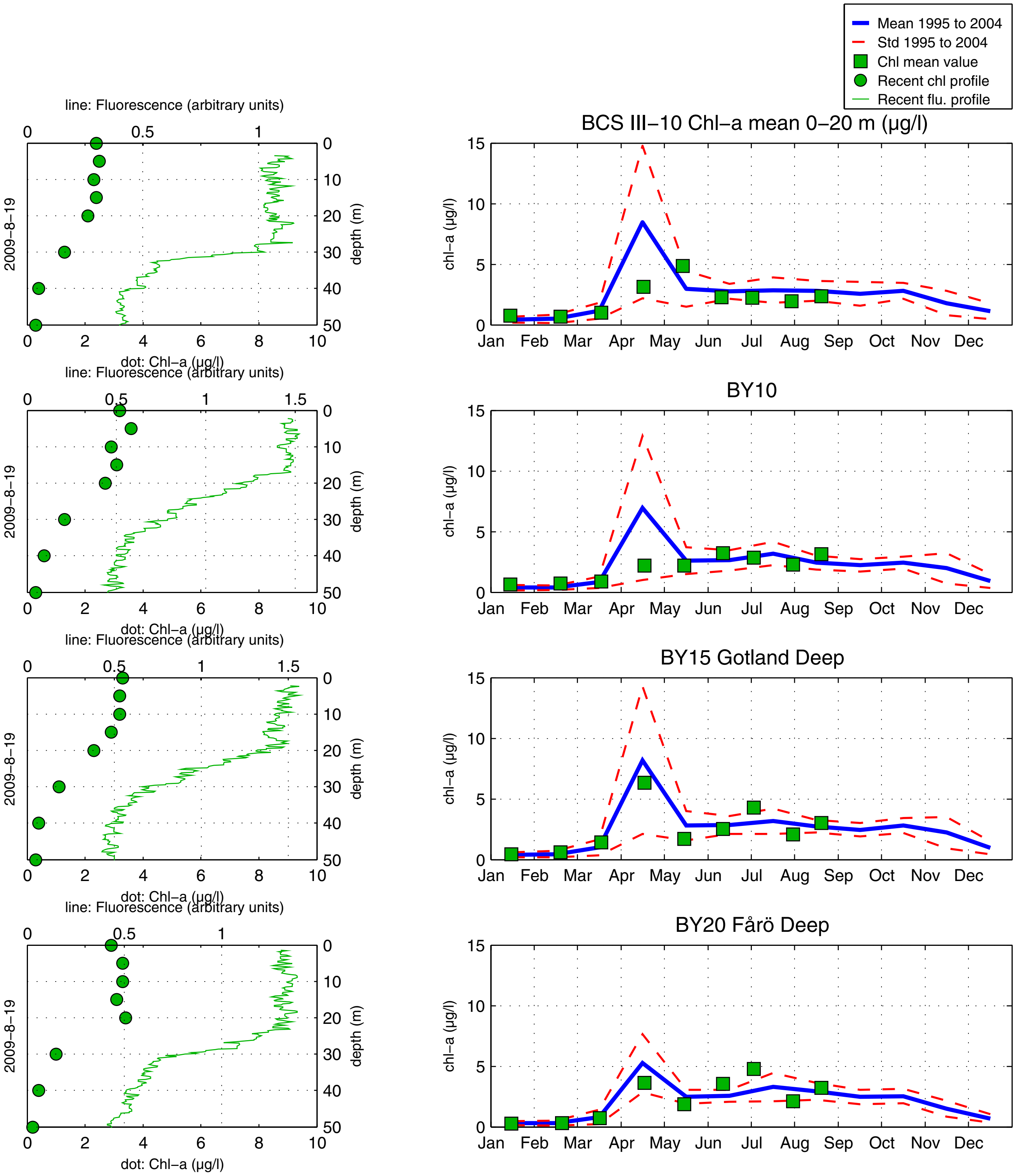


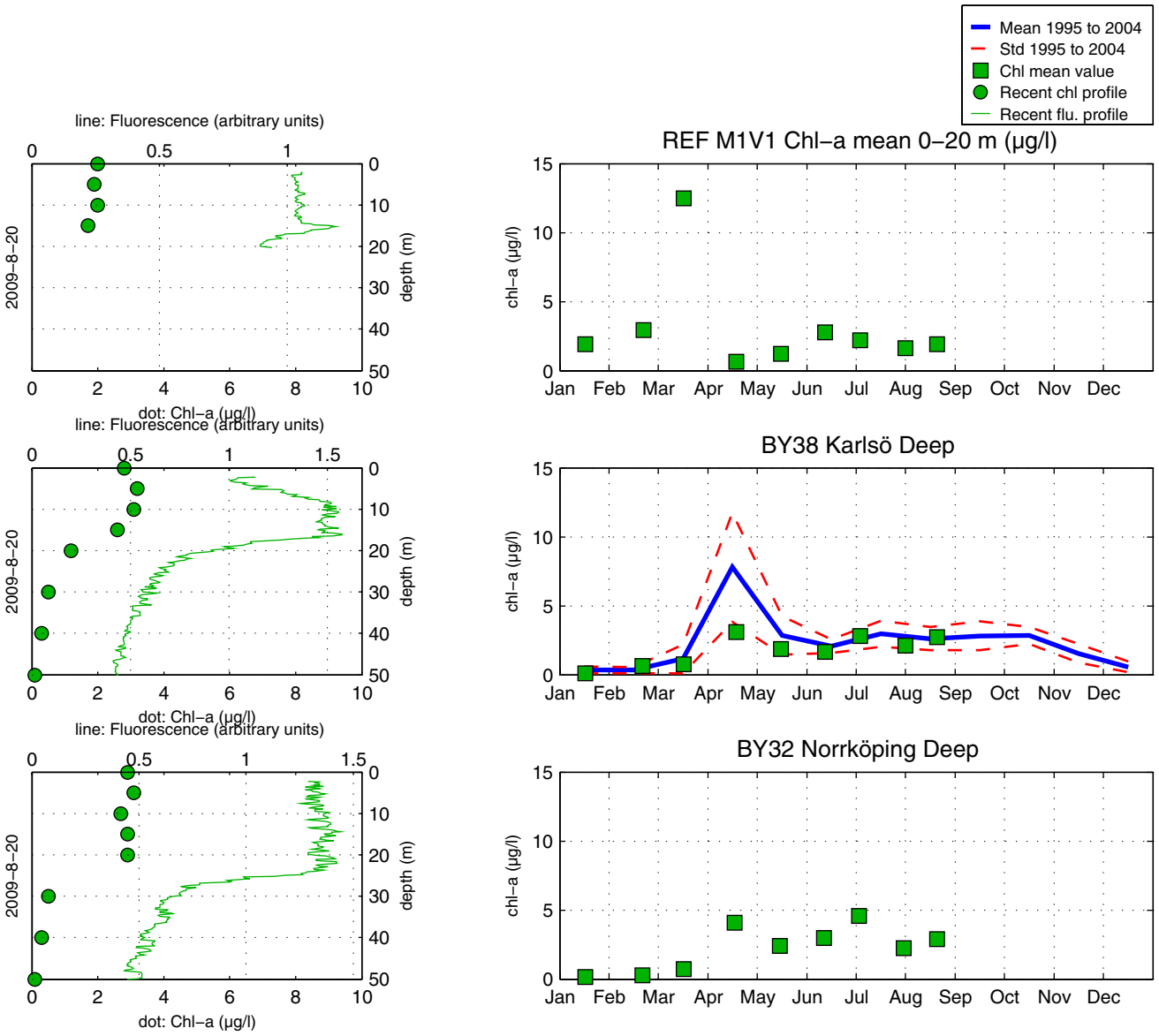


The Southern Baltic



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.