SMHI
Oceanographic Unit
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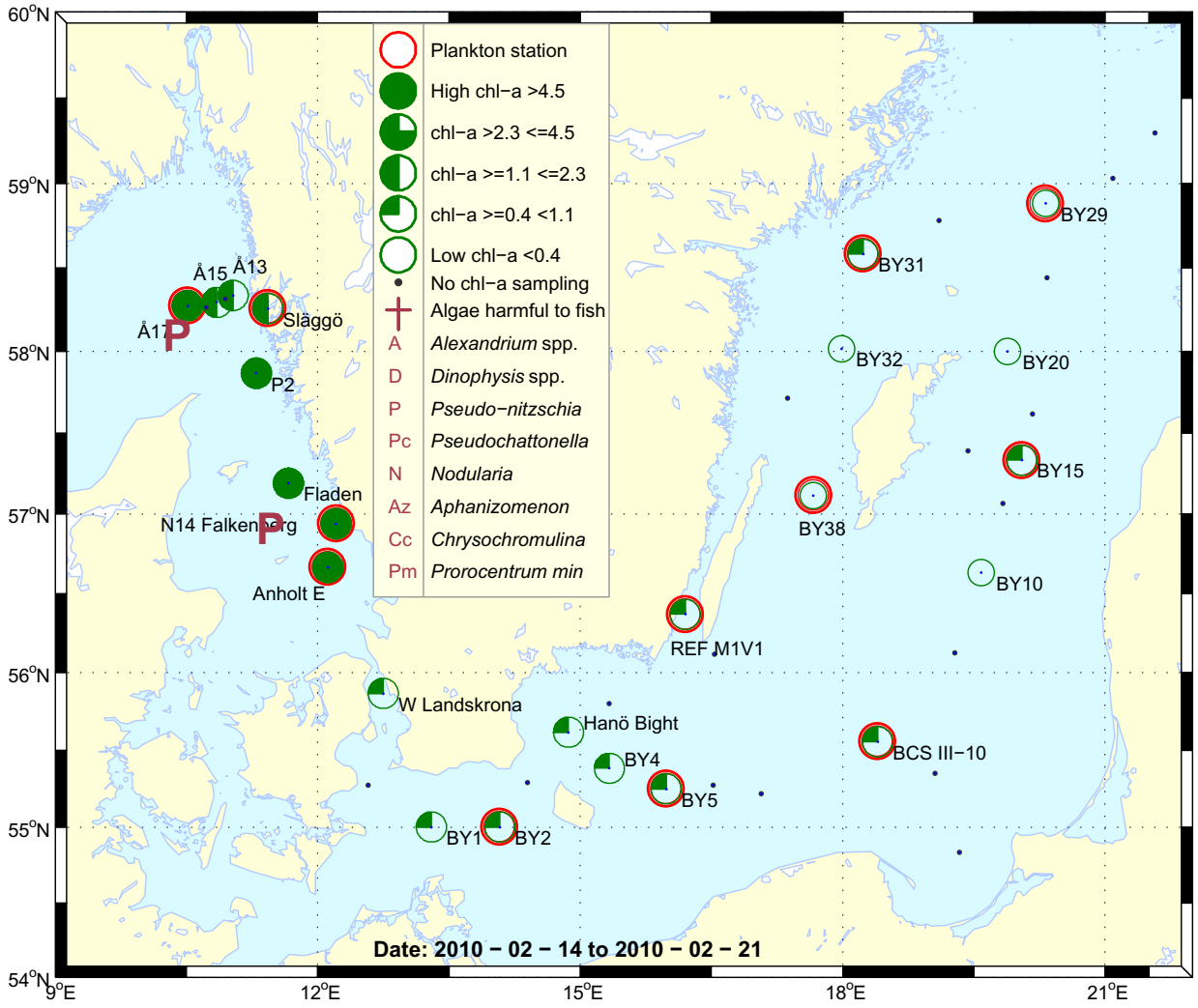
AlgAware
ALGAL SITUATION IN
MARINE WATERS SURROUNDING SWEDEN

Sammanfattning

Ovanligt höga klorofyllhalter och cellantal uppmättes i Västerhavet i mitten av februari. Fluorescens maxima återfanns på ca 10 meter på ett flertal stationer. Kiselalger dominerade proverna med framför allt arterna *Skeletonema costatum*, *Pseudo-nitzschia delicatissima*-gruppen* och *Thallassiosira nordenskioeldii*. *P. delicatissima*-gruppen* observerades över gränsvärdet vid Å17 samt N14. Vissa kloner av detta släkte kan producera giftet AST (Amnesic Shellfish Toxin). Inga rapporter om AST har dock rapporterats i svenska vatten.

I Östersjön var antalet arter och cellantal låga vilket ledde till låga klorofyllhalter normala för årstiden.



Abstract

Extraordinarily high levels of chlorophyll *a* and high cell numbers were found in the Skagerrak and Kattegat areas in mid January. Fluorescence maxima were found at about 10 meters depth at several stations. The diatoms *Skeletonema costatum*, *Pseudo-nitzschia delicatissima*-group* and *Thalassiosira nordenskioeldii* dominated the phytoplankton samples. *P. delicatissima*-group* was found with cell numbers above its critical limit at Å17 and N14. Some clones of this genus can produce AST (Amnesic Shellfish Toxin). No AST have however been reported in Swedish waters.

In the Baltic Sea the number of species and the cell numbers were low causing low chlorophyll *a* values which are normal for the season.

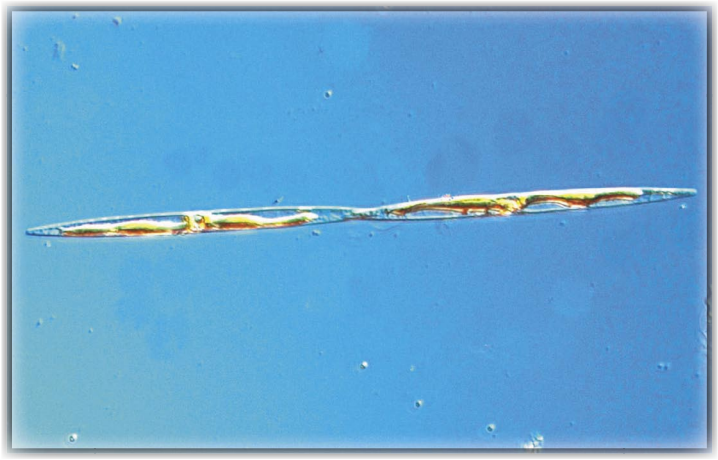
More detailed information on species composition and abundance

The Skagerrak

Å17 14th of February (open Skagerrak)
A diatom bloom was observed with large amounts of *Skeletonema costatum* and *Pseudo-nitzschia delicatissima*-group* above all. *Thalassiosira nordenskioeldii* together with many other ordinary spring bloom diatom species normal were also abundant. Cell numbers of *Pseudo-nitzschia delicatissima*-group* appeared above critical limits. The chlorophyll a maximum was found at 10 meters but high values were recorded from surface down to 10 meters. The integrated chlorophyll value was consequently well above average for the time of the year.

Släggö 14th of February (Skagerrak coast)
The cell counts were a bit lower compared to Å17, but the species composition was more or less the same with a slightly higher abundance of the *Pseudo-nitzschia delicatissima-group** compared to *Skeletonema costatum*. The chlorophyll *a* maximum was found at about 10 meters but was not as high as at Å17. The integrated chlorophyll value was relatively high and above average for this month but less pronounced as in January.

The integrated (0-20m) chlorophyll *a* values were otherwise above average for this month at all of the Skagerrak sampling sites.



Pseudo-nitzschia sp. Photo: Ann-Turi Skjevik.

The Kattegat

N14 Falkenberg 15th of February
The highest total cell number was found at this station. The dominant species was *Pseudo-nitzschia delicatissima*-group* with abundances above its critical limit. The community structure was about the same as in Skagerrak waters. The integrated (0-20m) chlorophyll *a* value was high.

Anholt E 15th of February
The species composition did not differ significantly from the rest of the Kattegat and Skagerrak stations. The diatom *Skeletonema costatum* dominated, followed by *Pseudo-nitzschia delicatissima*-group* and *Thalassiosira nordenskioeldii*. Quite high abundances of *Thalassionema nitzschioides* were also found. The integrated (0-20m) chlorophyll *a* value was high above average.

The integrated (0-20m) chlorophyll *a* values were above average for Fladen and within average for W Landskrona.

The Baltic Sea

Low cell numbers and low species diversity was found at all of the phytoplankton stations.

The integrated chlorophyll *a* values were within normal for the season.

The cryptophyte *Plagioselmis prolonga* (top) and the diatom *Cyclotella choctawhatcheana*. The phytoplankton samples from the Baltic stations were scarce. Photo: Ann-Turi Skjevik.

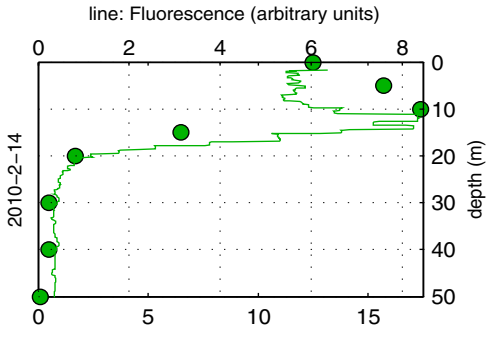
Phytoplankton analysis and text: Marie Johansen

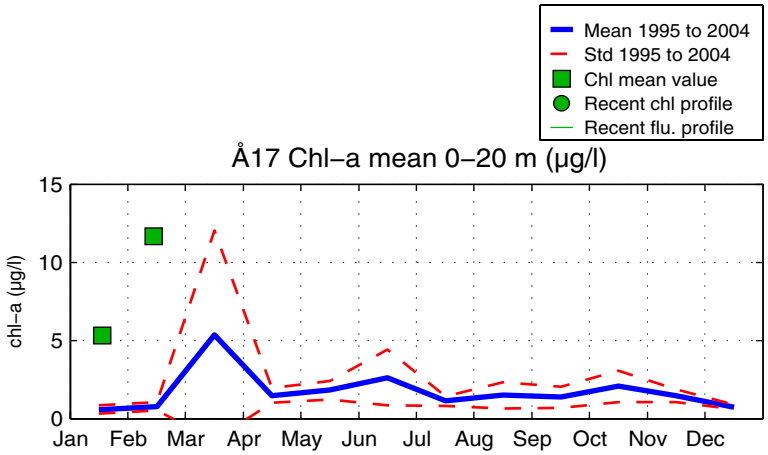
Layout: Ann-Turi Skjevik

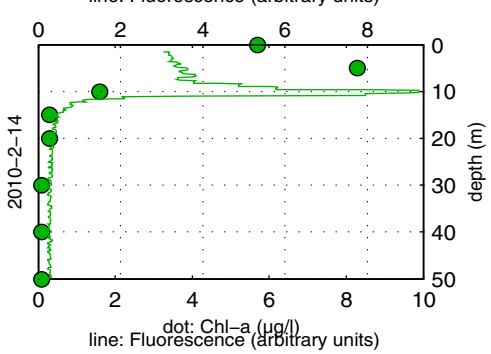
Selection of observed species	Å17	Släggö	N14	Anholt E
Red=potentially toxic species	2010-02-14	2010-02-14	2010-02-15	2010-02-15
	cells/l	cells/l	cells/l	cells/l
Attheya septentrionalis			present	
Chaetoceros concavicornis	present	present	present	
Chaetoceros curvisetus	present			
Chaetoceros brevis	present			
Chaetoceros danicus	present			present
Chaetoceros debilis	present	present		
Chaetoceros diadema	present	present		
Chaetoceros laciniosus	present	present	present	present
Chaetoceros similis		present	present	present
Chaetoceros subtilis	present			
Dactyliosolen fragilissimus		present	present	
Ditylum brightwellii		present		
Guinardia delicatula	present	present	present	
Leptocylindrus danicus	common	present	common	common
Leptocylindrus minimus		present	present	present
Proboscia alata		present	present	present
Pseudo-nitzschia delicatissima-group	1 080 000	531 000	1 870 000	386 000
Pseudo-nitzschia seriata-group	250 000	common	common	common
Rhizosolenia hebetata	present	present	present	present
Rhizosolenia setigera		present	present	present
Skeletonema costatum complex	1 250 000	400 000	890 000	738 000
Thalassionema nitzschioides	common	present	common	common
Thalassiosira anguste-lineata	present		present	
Thalassiosira nordenskioeldii	480 000	224 000	930 000	656 000
Thalassiosira spp.	present	present		
Gymnodiniales spp.	present	present	present	present
Gyrodinium spirale		present		present
Karlodinium micrum		present		
Katodinium glaucum		present		
Heterocapsa rotundata	present		present	
Heterocapsa spp.		present	present	present
Protoperidinium bipes		present		
Chrysochromulina spp.				present
Cryptomonadales spp.	present	present	present	present
Pyramimonas spp.		present		
Pseudopedinella spp.	present			
Calliacantha natans	present			present
Leucocryptos marina	present	present	present	present

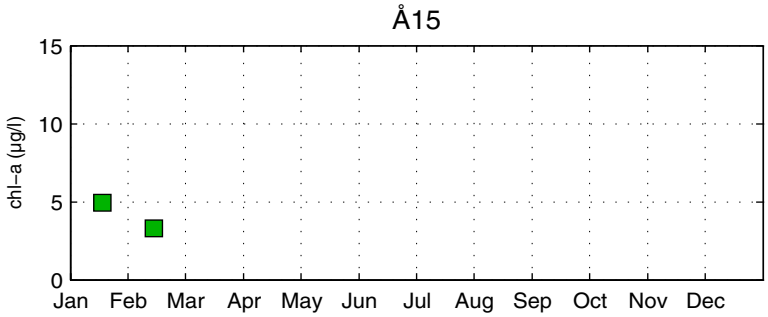
Selection of observed species	BCS III-10	Ref. M1-V1	BY2	BY5	BY15	BY29	BY31	BY38
Red=potentially toxic species	2010-02-17	2010-02-21	2010-02-16	2010-02-16	2010-02-18	2010-02-19	2010-02-20	2010-02-20
[1] quantified in m/l	cells/l	cells/l	cells/l	cells/l	cells/l	cells/l	cells/l	cells/l
Chaetoceros ceratosporus		present					present	
Chaetoceros spp.					present			
Pseudo-nitzschia seriata-group			present					
Pseudo-nitzschia delicatissima-group			present					
Skeletonema costatum complex		170 000	common	present		present		present
Thalassiosira spp.		present	present			present		
Amphidinium spp.			present		present			
Gymnodiniales spp.	present		present	present				
Heterocapsa spp.						present		present
Chrysochromulina spp.	present	present	present	present	present	present	present	present
Cryptomonadales spp.	present	present	present	common	common	common	common	common
Pyramimonas spp.	present		present			present		
Pterosperma spp.			present					
Aphanizomenon spp.						present		present
Calliacantha natans	present	present						
Leucocryptos marina			present				present	present
Telonema subtile								present
Mesodinium rubrum	present		present	present	present	present	present	present

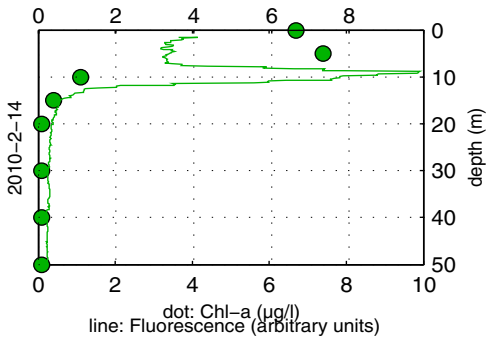
The Skagerrak

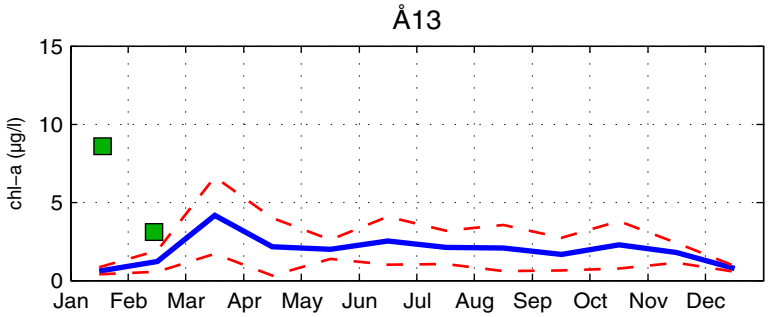


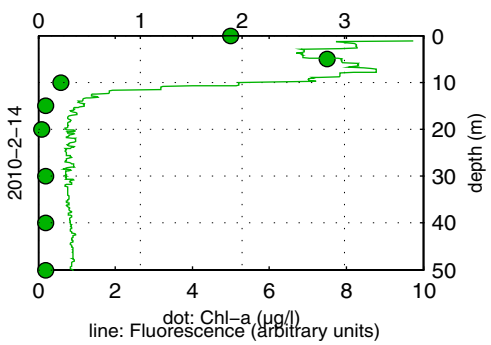


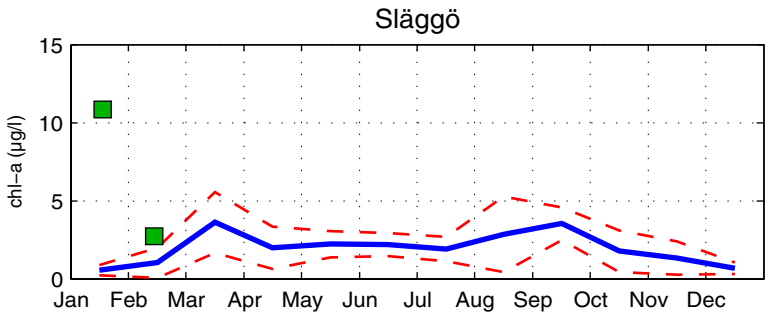


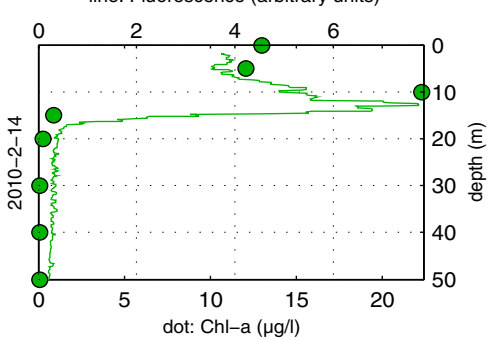


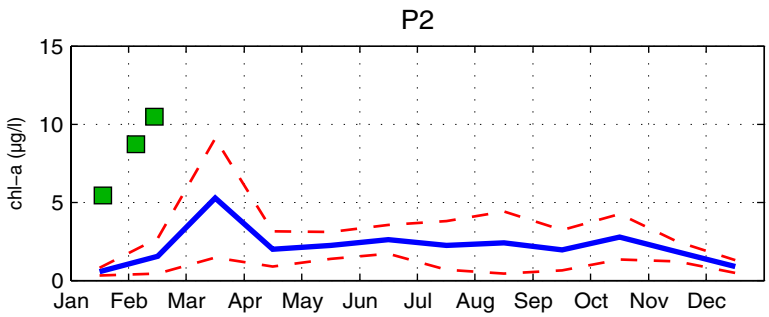




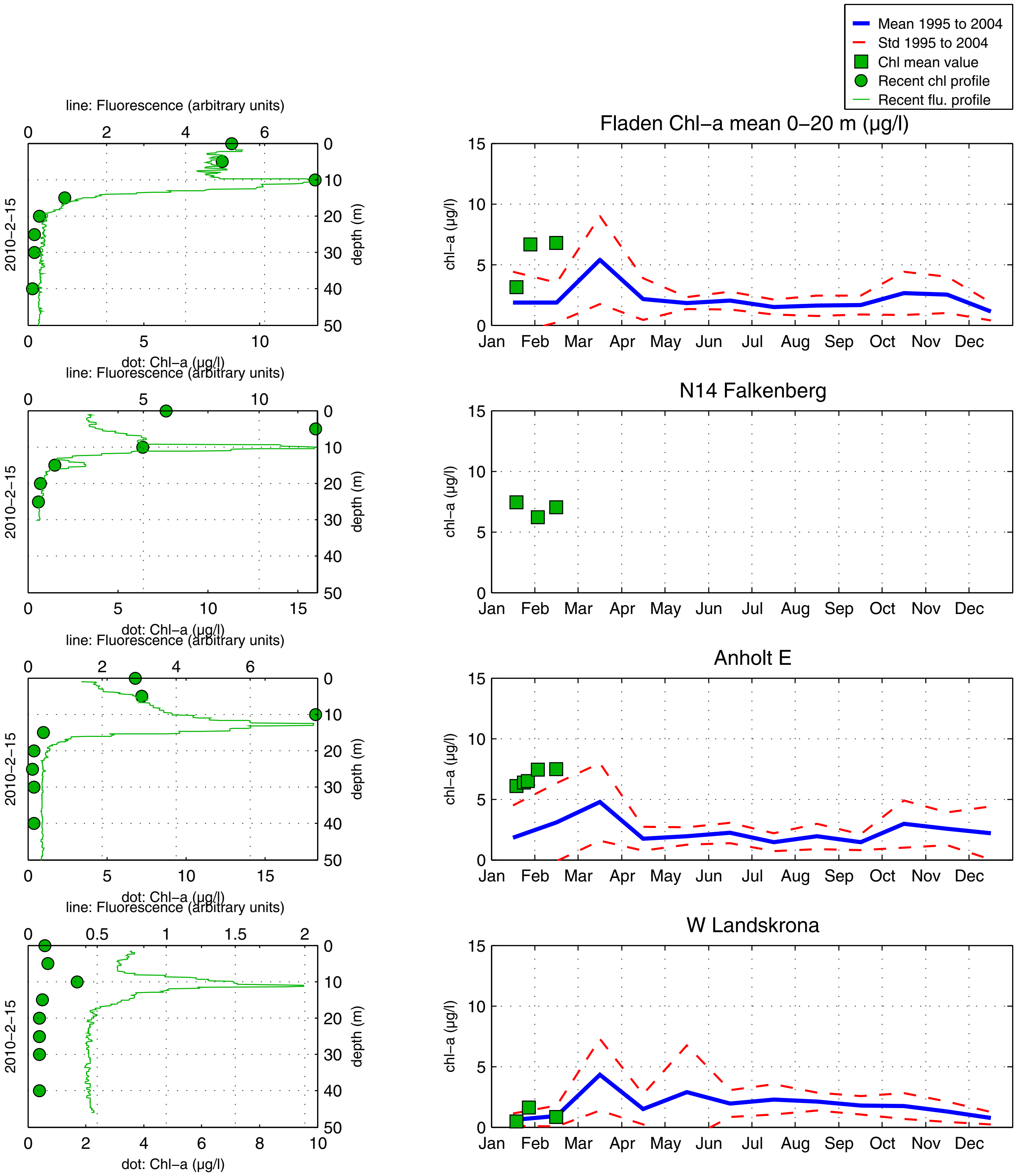




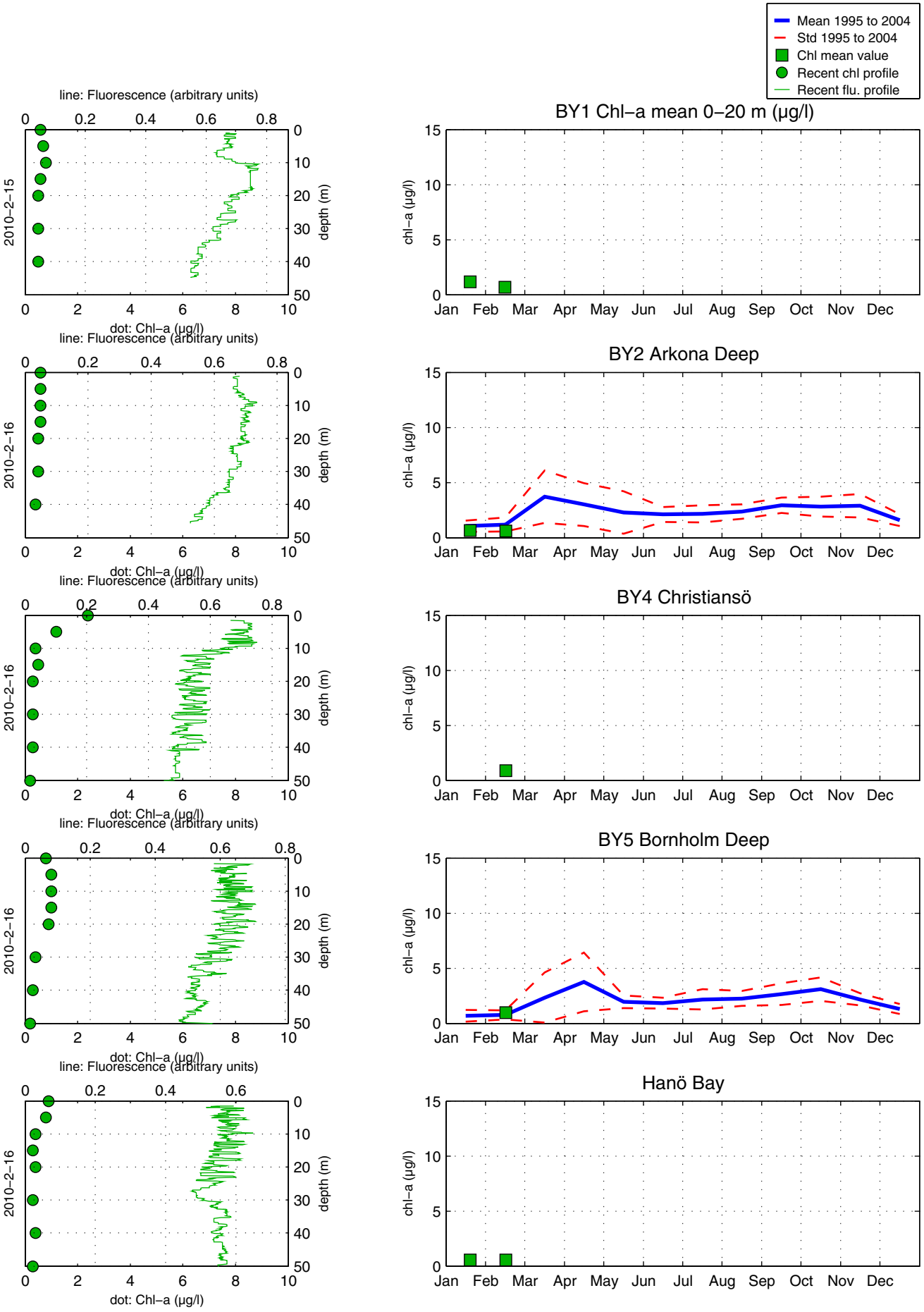




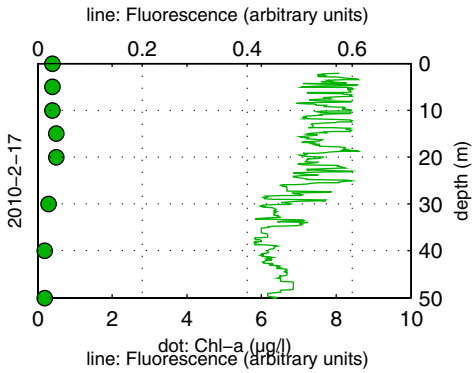
The Kattegat and the Sound

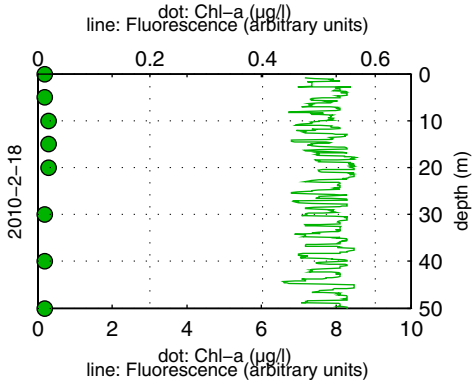


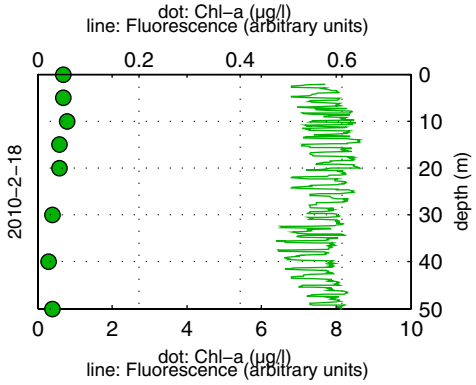
The Southern Baltic

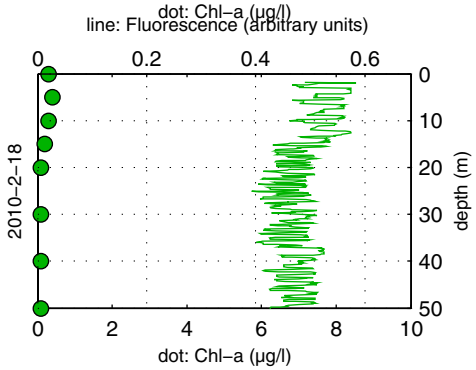


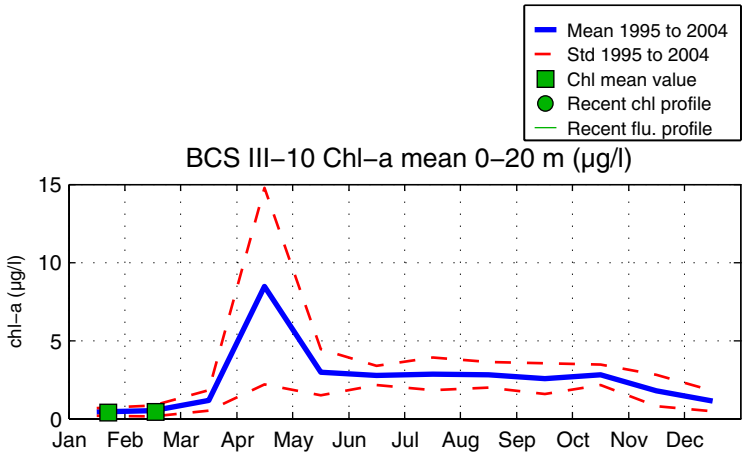
The Eastern Baltic

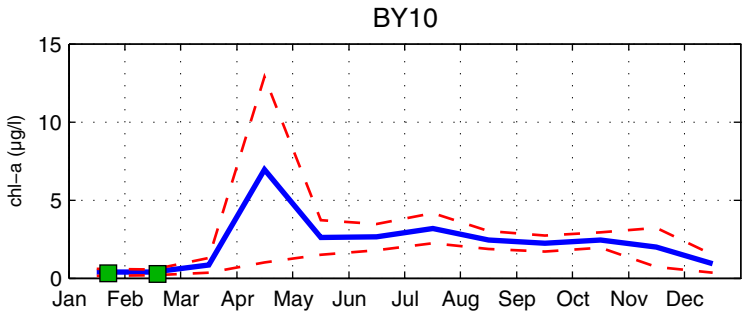


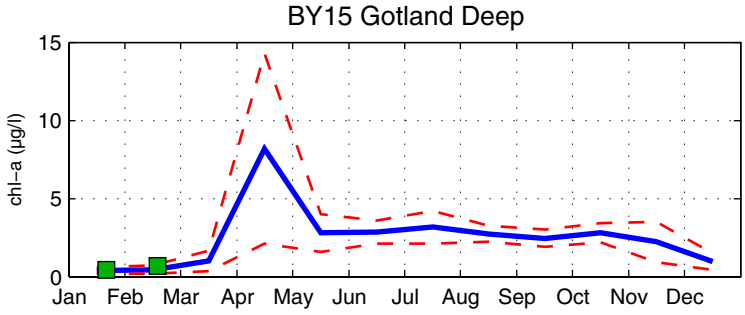


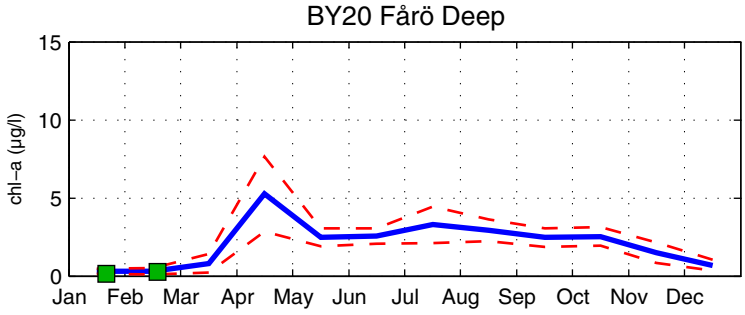




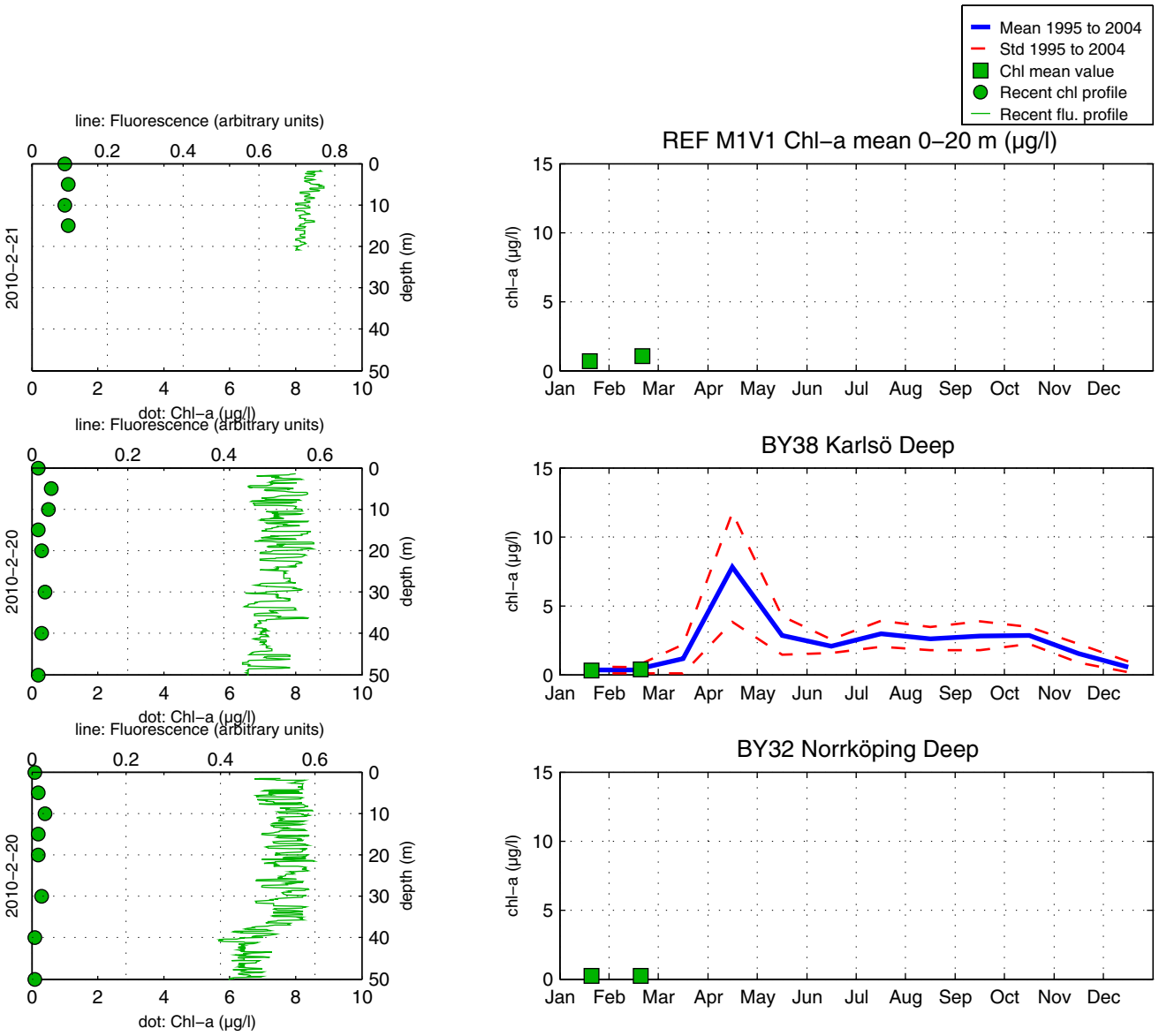








The Western Baltic



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 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.