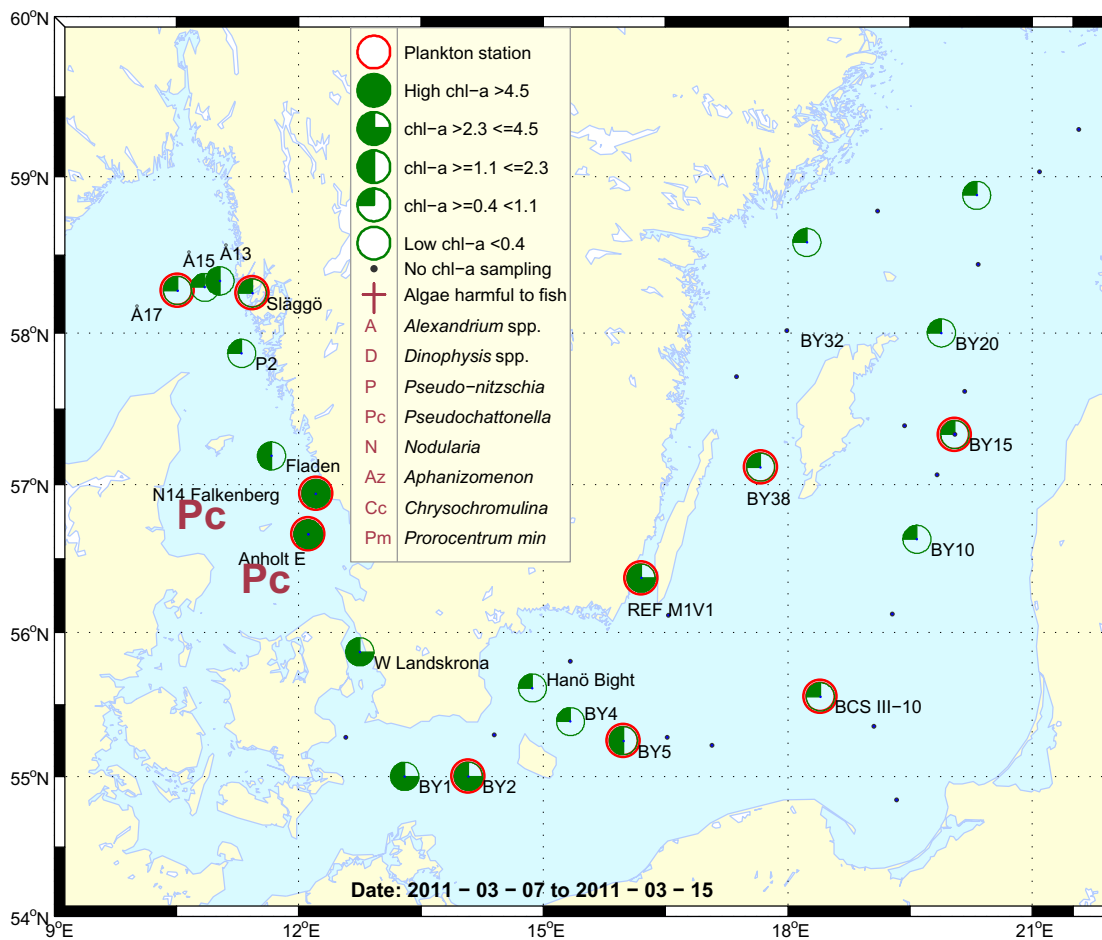


## Sammanfattning

I Skagerrak var växtplanktonfloran mycket fattig och dominerades av små flagellater. De integrerade (0-20m) klorofyllvärdena var låga, men inom det normala för denna månaden.

I Kattegatt var resterna efter vårbloomingen tydliga och den för fisk skadliga arten *Pseudochattonella* sp.\* blommade både vid den kustnära stationen N14 och vid utsjöstationen Anholt E. De integrerade klorofyllvärdena var höga, men inom det normala för denna månaden.

Vid två stationer i södra Östersjön, BY2 och Ref M1V1, avslöjade förekomsten av ett flertal kedjebildande kiselalger att vårbloomingen var nära förestående. I övrigt var det mest små flagellater, ciliater och små sfäriska kolonibildande cyanobakterier i växtplanktonproverna. De integrerade klorofyllvärdena motsvarade växtplanktonresultaten med förhöjda värden i södra Östersjön.



## Abstract

The phytoplankton flora was poor in the Skagerrak area and small flagellated species dominated the samples. The integrated (0-20m) chlorophyll concentrations were low but within normal for this month.

Traces from the spring bloom were obvious in the Kattegatt area and the species *Pseudochattonella* sp.\*, which is toxic for fish was blooming at N14 close to the coast and at Anholt E, farther out. The integrated (0-20m) chlorophyll concentrations were high but within normal for this month.

At two of the Baltic stations, BY2 and Ref M1V1, the presence of several chain forming diatoms revealed that spring bloom was close. Apart from this, there were mostly small flagellates, ciliates and small spheric colony forming cyanobacteria in the phytoplankton samples. Enhanced integrated chlorophyll concentrations were found in the Southern Baltic.

More detailed information on species composition and abundance

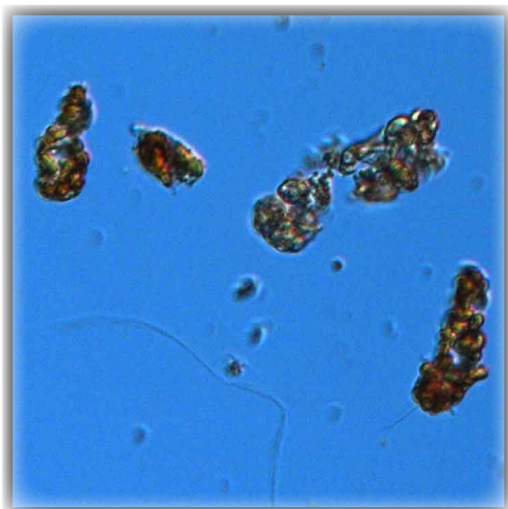
## The Skagerrak

### Å17 7<sup>th</sup> of March (open Skagerrak)

The phytoplankton flora was poor and dominated by small flagellates.

### Släggö 7<sup>th</sup> of March (Skagerrak coast)

The phytoplankton flora was poor. The species *Pseudochattonella* sp.\* which is toxic for fish and presently blooming in the Kattegat was observed with low cell numbers.



*Pseudochattonella* sp.\* in Lugol's. The species was abundant in the Kattegat.



A living cell of *Pseudochattonella* sp.\*

## The Kattegat

### N14 Falkenberg 8<sup>th</sup> of March and Anholt E 15<sup>th</sup> of March

A bloom of the flagellate *Pseudochattonella* sp.\* was observed. The species has been blooming for a period of time in Danish waters (southern Kattegat) and in the beginning of March the *Pseudochattonella*\* bloom reached 6 million cells per liter according to Danish reports. The bloom has been moving northwards and as it seems has just reached the Skagerrak area.

The heterotrophic dinoflagellate *Peridiniella danica* was common, a typical post spring bloom species.

## The Baltic Sea

### Ref M1V1 Kalmar Sound 9<sup>th</sup> of March and BY2 14<sup>th</sup> of March

These were the only stations where several species of chain forming diatoms revealed a beginning of the Baltic spring bloom. *Skeletonema marinoi* was the most numerous but several species of *Thalassiosira* and *Chaetoceros* were also common.

### BY5 and BCSIII-10 14<sup>th</sup> of March

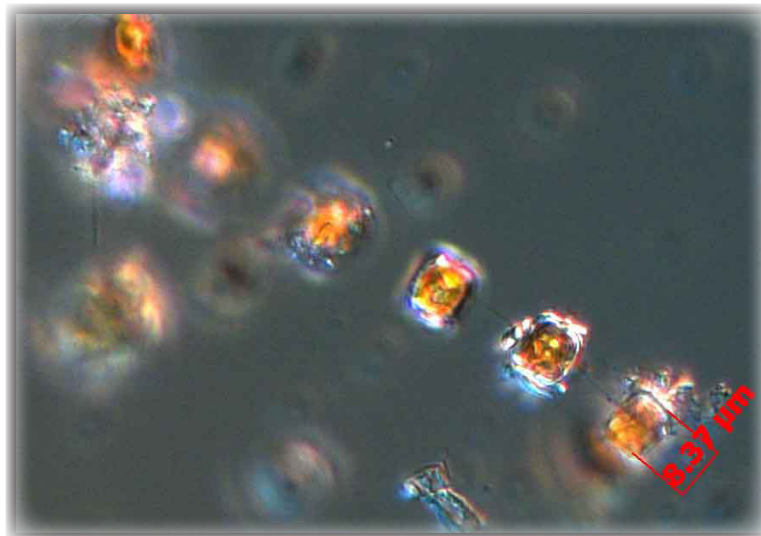
Small flagellates, colonies of small spheric pico cyanobacteria and the ciliate *Mesodinium rubrum* were common.

### BY38 10<sup>th</sup> of March, BY31 11<sup>th</sup> of March and BY15 12<sup>th</sup> of March

Very few phytoplankton were found, only small flagellates such as cryptomonads were common.

### BY29 11<sup>th</sup> of March

The phytoplankton sample was relatively diverse. Several diatom and dinoflagellate species were found with low cell numbers. Small flagellates, colonies of small spheric pico cyanobacteria and the ciliate *Mesodinium rubrum* were common.

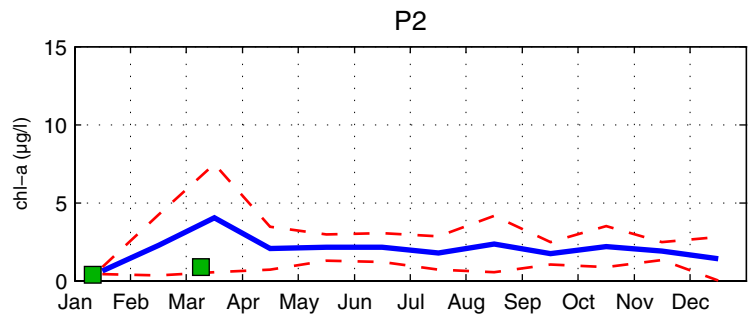
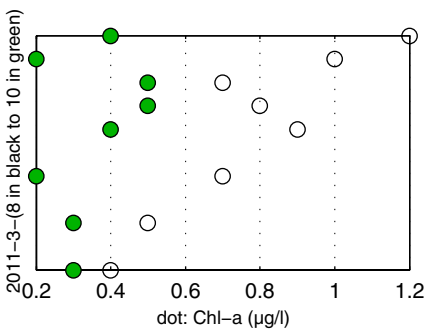
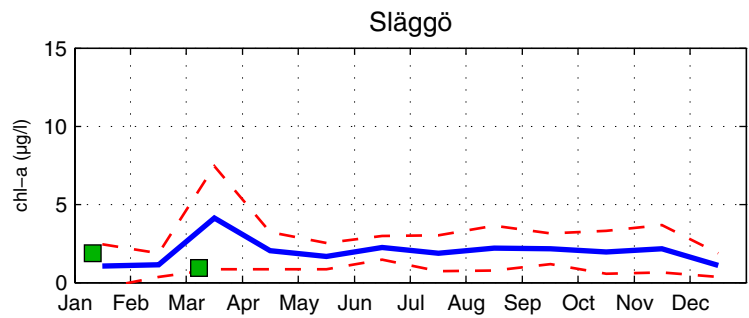
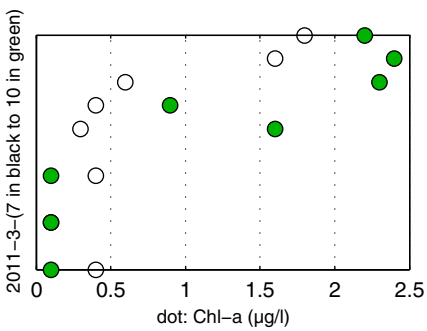
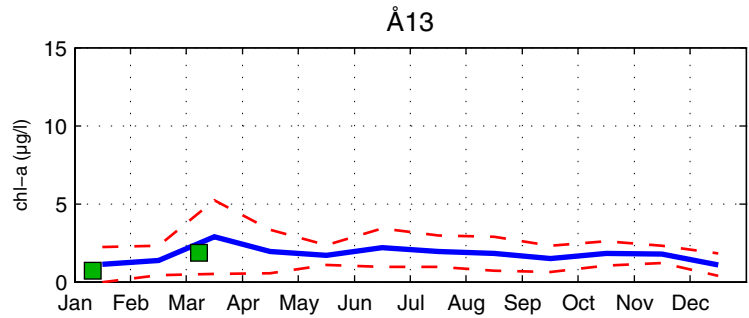
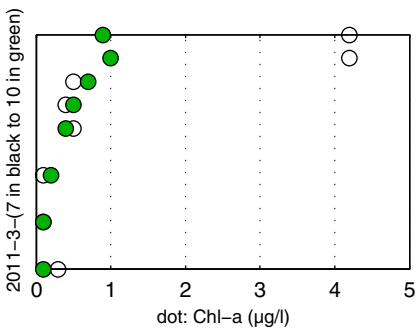
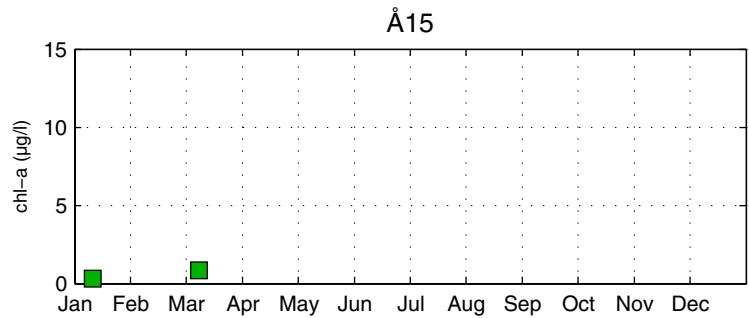
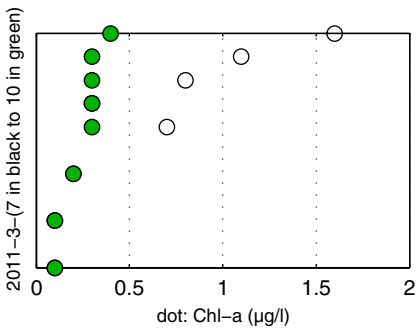
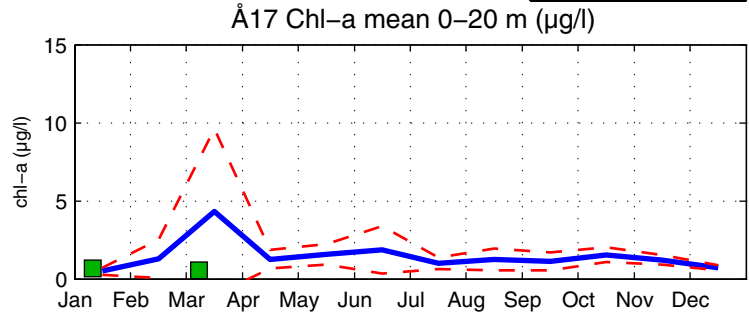
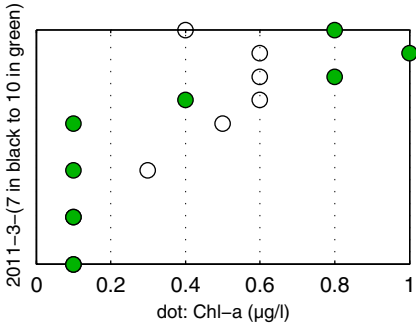
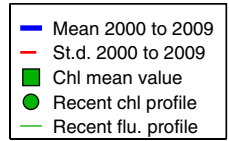


The diatom *Thalassiosira cf. minima*

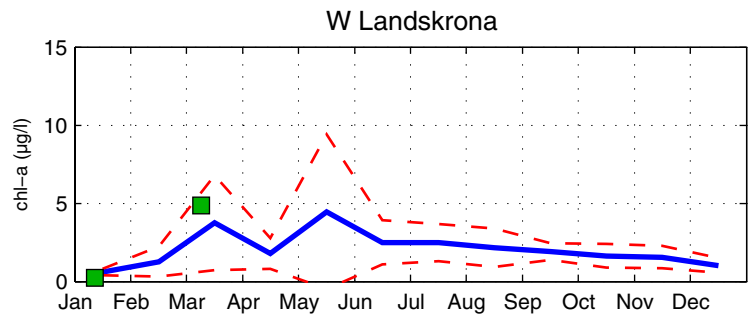
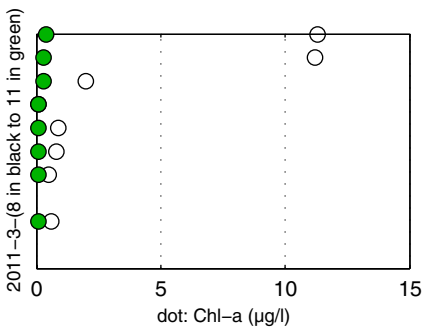
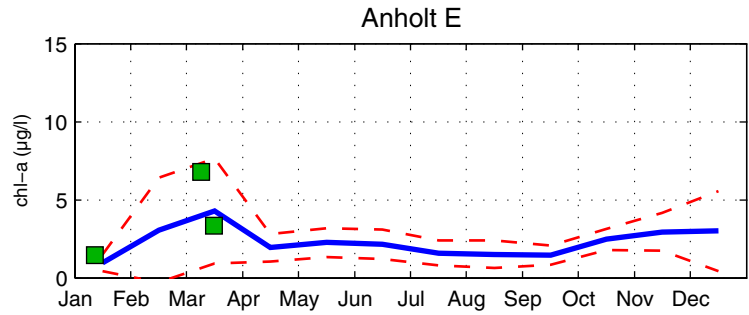
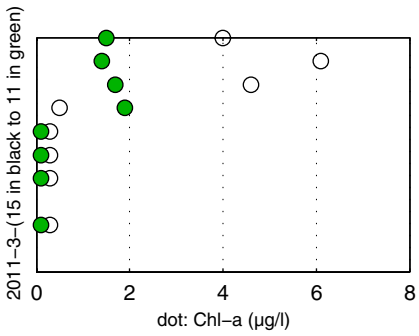
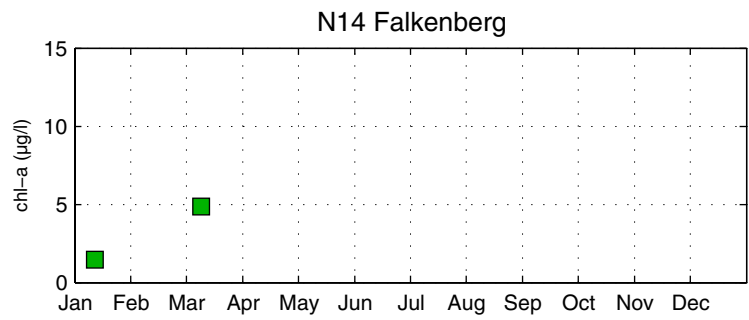
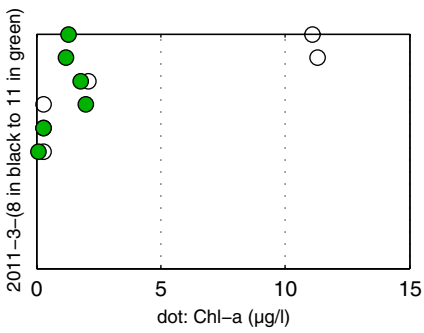
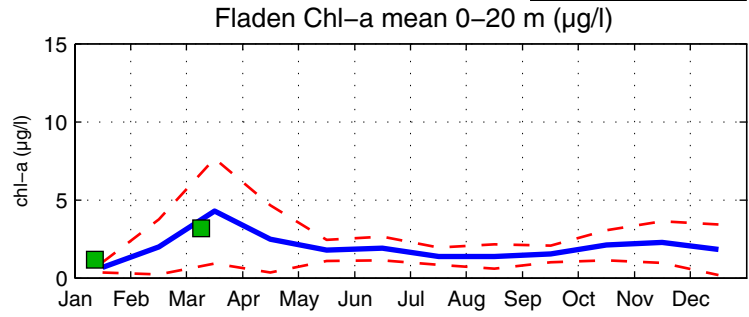
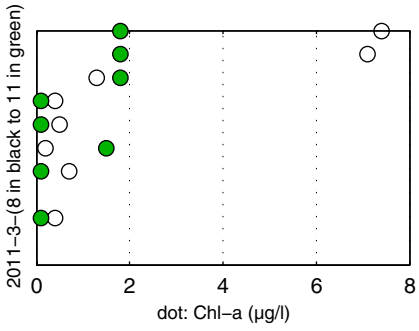
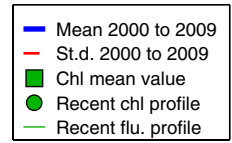
Selection of observed species	Å17	Släggö	N14	Anholt E
Red=potentially toxic species	7/3	7/3	8/3	15/3
	cells/l	cells/l	cells/l	cells/l
<i>Chaetoceros lacinosus</i>			present	
<i>Chaetoceros similis</i>			present	
<i>Chaetoceros tenuissimus</i>			present	
<i>Coscinodiscus cf. concinnus</i>		present		present
<i>Coscinodiscus radiatus</i>			present	
<i>Guinardia delicatula</i>			present	
<i>Rhizosolenia setigera</i>		present	present	present
<i>Skeletonema marinoi</i>			present	present
<i>Thalassiosira anguste-lineata</i>				present
<i>Thalassiosira nordenskiöldii</i>				present
<i>Dinophysis norvegica</i>		present	present	
<i>Dinophysis rotundata</i>				
<i>Gyrodinium spirale</i>	present	present	present	present
<i>Heterocapsa rotundata</i>	present		common	present
<i>Katodinium glaucum</i>	present		present	present
<i>Peridiniella danica</i>		present	very common	very common
<i>Protoperidinium spp.</i>		present		present
<i>Chrysochromulina hirta</i>	present			present
<i>Chrysochromulina spp.</i>			present	
Cryptomonadales spp.	common	common	common	common
<i>Heterosigma akashiwo</i>		present	present	present
<i>Apedinella radians</i>		present	common	common
<i>Pseudopedinella spp.</i>			present	present
<i>Dictyocha speculum</i>				present
<i>Pseudochattonella spp.</i>		present	2.5 million	1.5 million
<i>Eutreptiella spp.</i>			present	present
cf. <i>Oltmannsiellopsis spp.</i>			common	present
<i>Pyramimonas spp.</i>	present		present	present
Craspedophyceae spp.	present		present	present
<i>Ebria tripartita</i>				present
<i>Katablepharis remigera</i>			present	
<i>Leucocryptos marina</i>	present	present	present	
<i>Telonema subtile</i>			present	
<i>Laboea strobila</i>			present	present
<i>Mesodinium rubrum</i>	present		present	
<i>Strombidium spp.</i>	present	present		present

Selection of observed species	BY2	BY5	BCS III-10	BY15	BY29	BY31	BY38	Ref. M1-V1
Red=potentially toxic species	14/3	14/3	13/3	12/3	12/3	11/3	10/3	9/3
	cells/l	cells/l	cells/l	cells/l	cells/l	cells/l	cells/l	cells/l
<i>Chaetoceros laciniosus</i>	present				present			
<i>Chaetoceros</i> spp.	present	present	present			present	present	present
<i>Navicula transitans</i>								present
<i>Navicula vanhoeffenii</i>	very common				present			very common
<i>Porosira glacialis</i>					present			present
<i>Skeletonema marinoi</i>	vrey common	present			present			present
<i>Thalassiosira cf. minima</i>	vrey common		present					
<i>Thalassiosira</i> spp.	present			present	present			present
<i>Heterocapsa rotundata</i>	present	present	present			present		present
<i>Heterocapsa</i> spp.	present	present	present				present	present
<i>Heterocapsa triquetra</i>								present
<i>Peridiniella catenata</i>					present			present
Cryptomonadales spp.	common	common	common	common	common	common	common	common
<i>Pseudopedinella</i> spp.					present			present
<i>Pyramimonas</i> spp.	present		present	present	common		present	present
<i>Aphanizomenon</i> spp.					present			
<i>Nodularia spumigena</i>								present
Cyanobacteria spp._colony	common	present	present		present			
<i>Eutroptiella</i> spp.	present							
Craspedophyceae spp.	present				present	present	present	present
<i>Ebria tripartita</i>			present		present			present
<i>Telonema subtile</i>	present	present	present					
<i>Mesodinium rubrum</i>	present	common	common	common	common	common	present	present

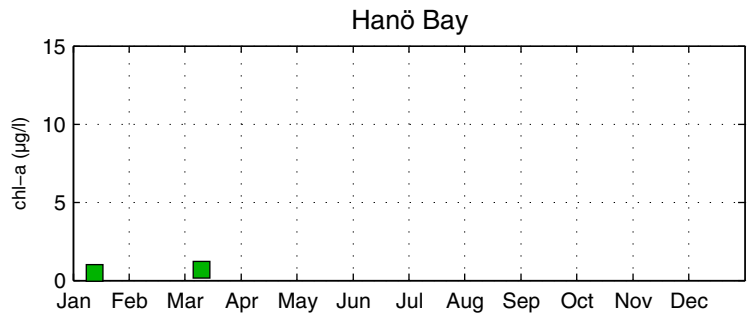
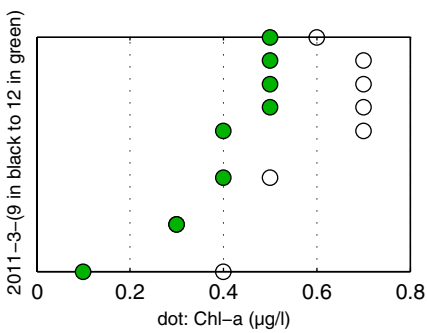
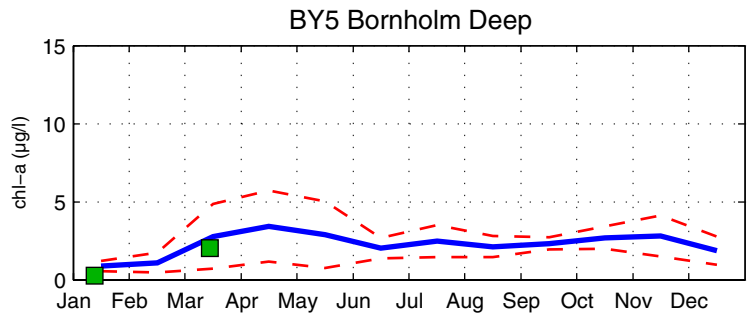
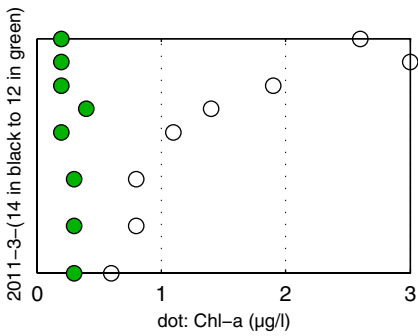
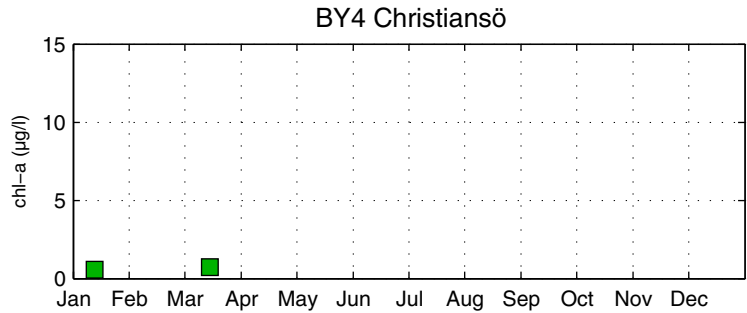
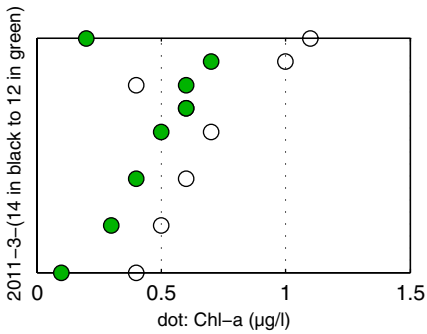
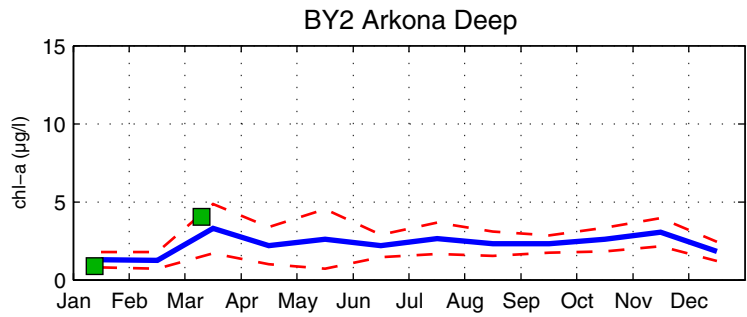
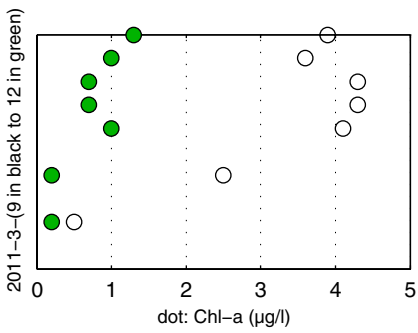
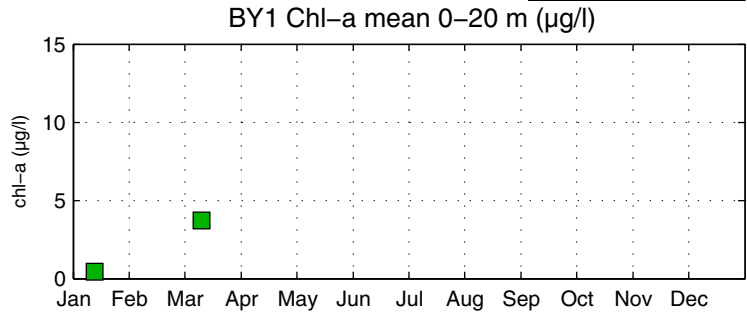
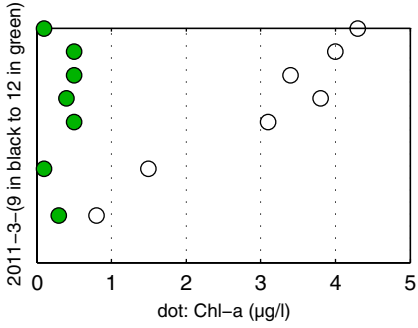
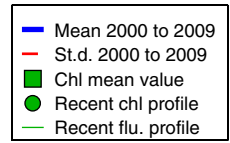
# The Skagerrak



# The Kattegat and the Sound

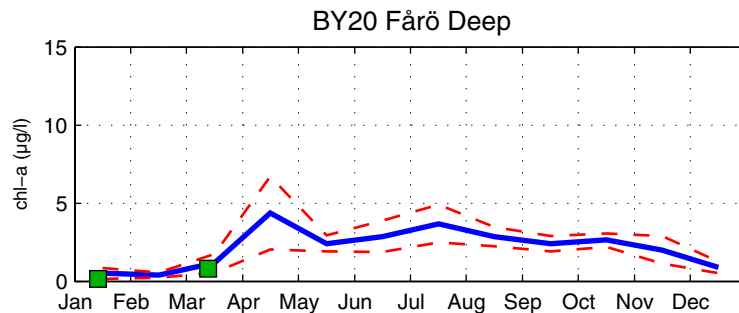
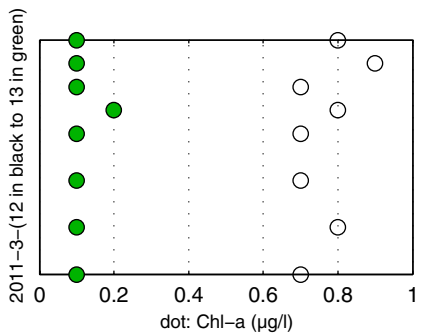
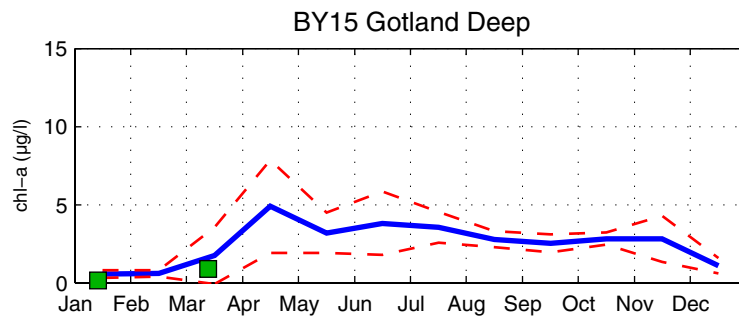
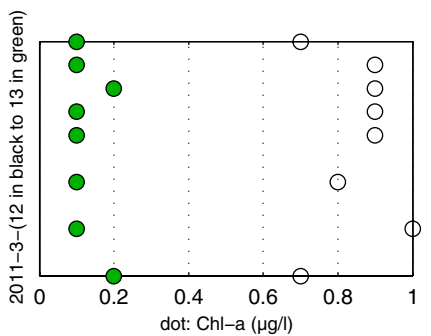
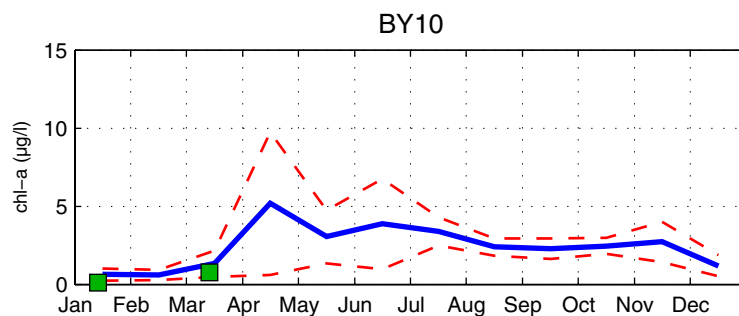
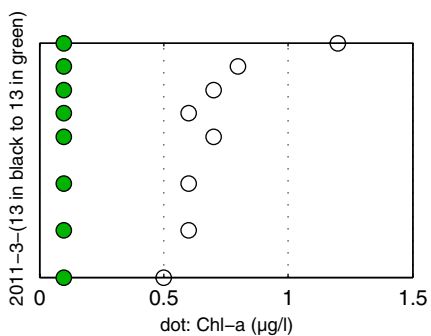
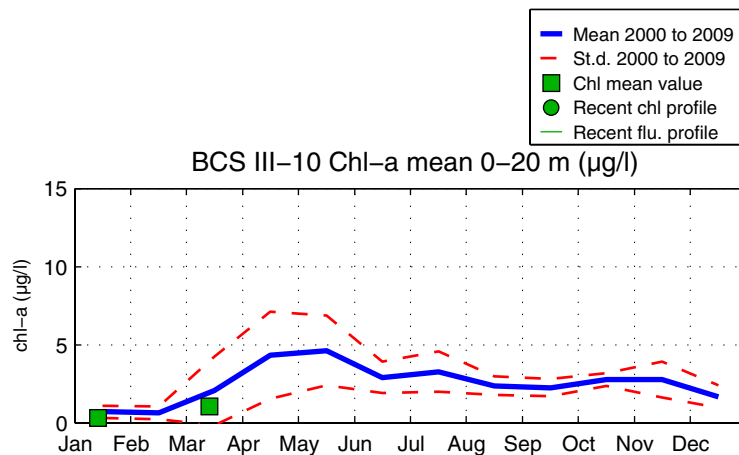
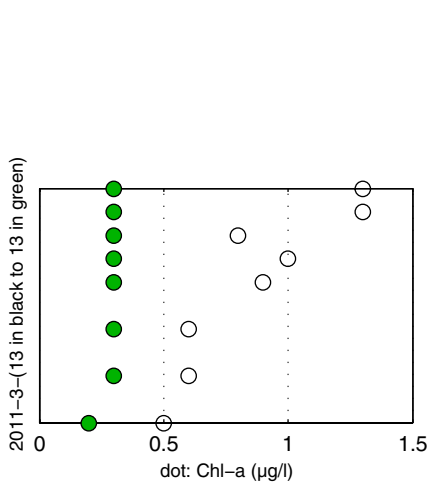


# The Southern Baltic

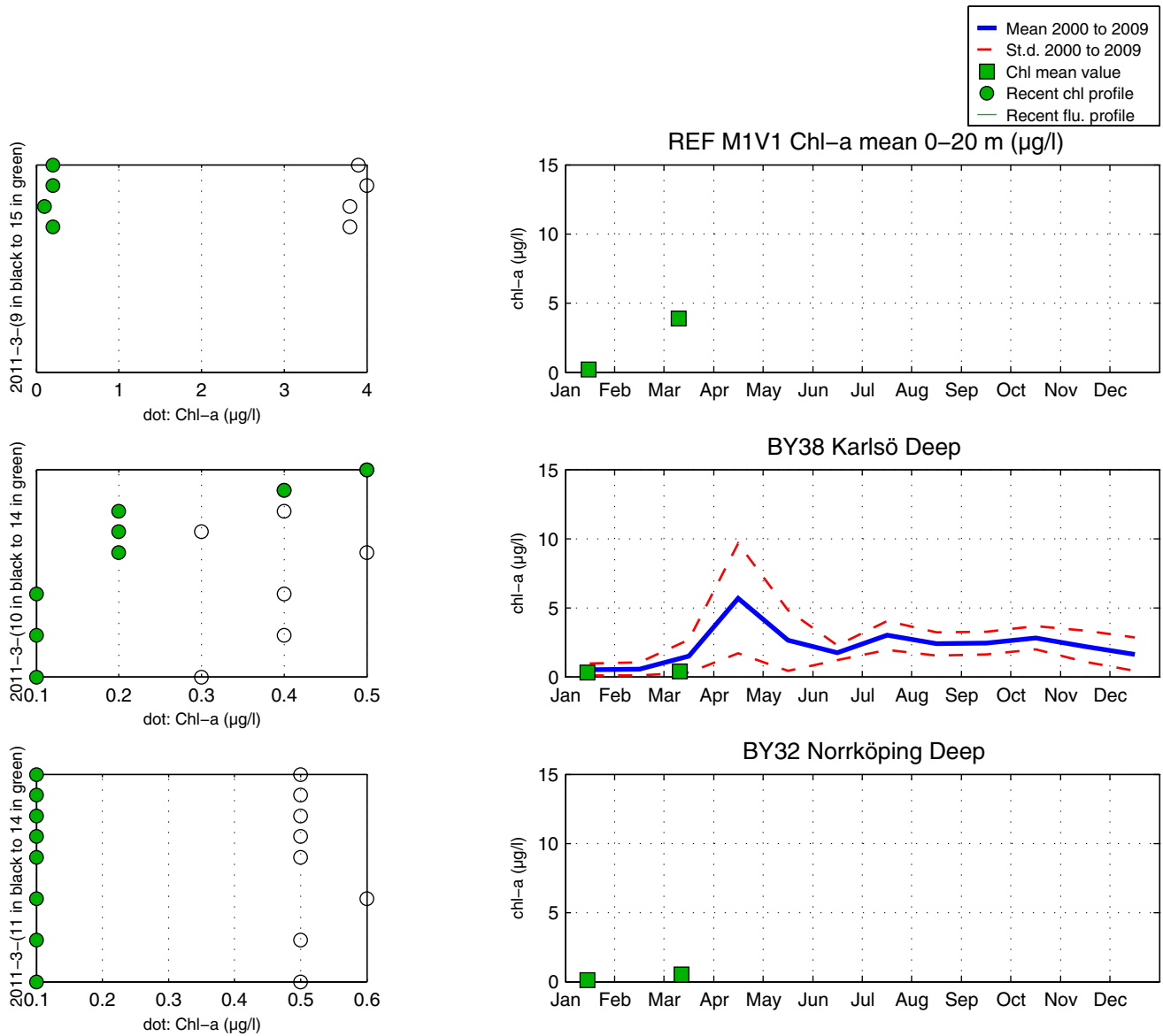




# The Eastern Baltic



# 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. Tekniska problem ombord satte stopp för månadens fluorescens-mätningar.

## 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. Chlorophyll fluorescence was not measured this month due to technical problems on board.

## 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 algbloomingar 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>Pseudo-nitzschia</i> spp.	Amnesic shellfish poisoning (ASP)	<b>Milda symptom:</b> Efter 3-5 timmar: yrsel, illamående, kräkningar, diarré, magkramp <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.
<i>Chaetoceros concavicornis</i> / <i>C. convolutus</i>	Mechanical damage through hooks on setae	<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>Pseudochattonella</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.

Översikt över några 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.

