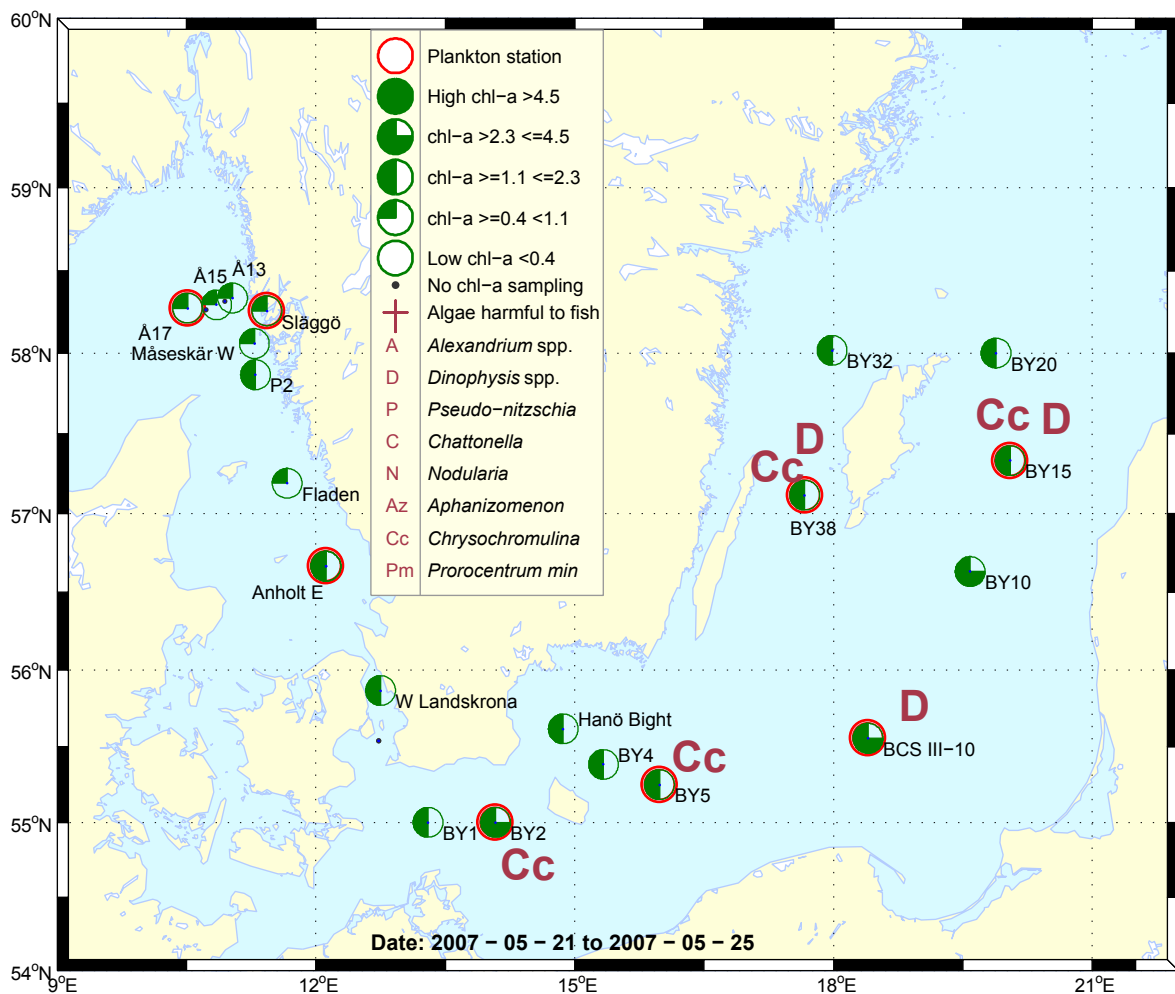


Sammanfattning

En typisk efterblomningssituation observerades i Skagerrak och Kattegatt, med en fattig planktonflora och låga klorofyll *a* värden. De senare låg under det normala vid samtliga stationer.

I Östersjön var det små arter som dominerade proverna. Den för fisk skadliga flagellaten *Chrysochromulina* spp. och cyanobakterien *Aphanizomenon* spp. fanns vid alla stationer i olika antal. En liten population av den potentiellt toxiska dinoflagellaten *Dinophysis acuminata* observerades vid BCS III. Klorofyll *a* värdena var normala eller över det normala i södra och sydöstra Östersjön, medan de var något under det normala öster och väster om Gotland.



Abstract

A post bloom situation was observed in the Skagerrak and Kattegat areas, with a poor plankton flora and low chlorophyll *a* values, which were below average at all stations.

In the Baltic small species dominated the samples. The ichthyotoxic (toxic for fish) flagellate *Chrysochromulina* spp. was found at all stations in different numbers as was filaments of the cyanobacteria *Aphanizomenon* spp.. A small population of the potentially toxic dinoflagellate *Dinophysis acuminata* was present at BCS III. The chlorophyll *a* levels were at or above average in southern and south eastern Baltic, east and west of Gotland the levels were below average.

Om AlgAware

SMHI genomför ca en gång per månad expeditioner med U/F Argos i Östersjön och Västerhavet. Resultat baserade på 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 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
<i>Alexandrium</i> 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 or numbness around lips, gradually spreading to face and neck; prickly sensation in fingertips and toes; headache, dizziness, nausea, vomiting, diarrhoea. Extreme case 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)	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.
<i>Chattonella</i> 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.
<i>Pseudo-nitzschia</i> spp.	Amnesic shellfish poisoning (ASP)	Milda symptom: Efter 3-5 timmar: yrsel, illamående, kräkningar, diarré, magkramper Extrema symptom: Yrsel, hallucinationer, 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.

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

More detailed information on species composition and abundance

The Skagerrak

Å17 21st of May 2007 (outer Skagerrak)

A very poor plankton flora was revealed, of which half of the species observed are either heterotrophic or mixotrophic. This is a typical after spring bloom situation and occurs when the nutrients have been depleted.

Släggö 21st of May 2007 (inner Skagerrak)



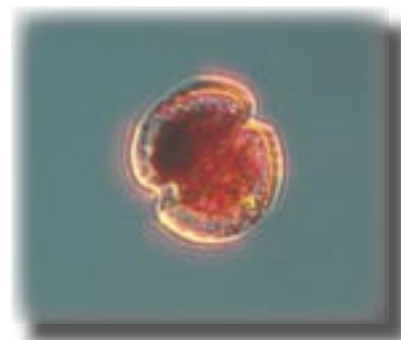
Skeletonema costatum

Low numbers of diatoms and dinoflagellates were observed, as well as low chlorophyll *a* values. The species with the highest cell numbers was the diatom *Skeletonema costatum*, probably a rudiment from the spring bloom. Cryptomonads, small flagellated species, were rather common.

The Kattegat

Anholt E 22nd and 25th of May 2007

As in the Skagerrak areas, the plankton flora was poor even in the Kattegat area. More or less the same species were found at the two occasions, a few more were found on the 22nd though. The species that were found in relatively high numbers were all small, i.e. cryptomonads, the dinoflagellate *Karlodinium micrum*, and *Leucocryptos marina*, which however does not belong to any taxonomical group (incertae sedis taxa).



Karlodinium micrum

Selection of observed species	Å17	Släggö	Anholt E	Anholt E
Red=potentially toxic species	2007-05-21	2007-05-21	2007-05-22	2007-05-25
	cells/L	cells/L	cells/L	cell/L
<i>Apedinella radians</i>	present			
<i>Chaetoceros curvisetus</i>		present		
<i>Coscinodiscus</i> spp.			present	
<i>Dactyliosolen fragilissimus</i>			present	present
<i>Pseudo-nitzschia delicatissima</i> -group		present		
<i>Skeletonema costatum</i>		200 000	present	
<i>Thalassionema nitzschioides</i>			present	present
<i>Ceratium longipes</i>		present	present	
<i>Dinophysis norvegica</i>		present	present	
<i>Heterocapsa rotundata</i>				present
<i>Heterocapsa triquetra</i>		present		
<i>Karlodinium micrum</i>	present	present	20 000	present
<i>Peridiniella danica</i>		present	present	15 000
<i>Prorocentrum minimum</i>		present		
<i>Protoperidinium bipes</i>	present	present		
<i>Protoperidinium depressum</i>	present		present	
<i>Chattonella cf. verruculosa</i>		present		
Cryptomonadales spp.	50 000	100 000	100 000	200 000
<i>Plagioselmis prolunga</i>	present	10 000	50 000	90 000
<i>Chrysochromulina</i> sp.		present	present	12 000
<i>Pyramimonas</i> sp.			12 000	9000
<i>Leucocryptos marina</i>	12 000	present	100 000	130 000
Choanoflagellates_colony	13 000		present	
<i>Mesodinium rubrum</i>		present	present	
<i>Strombidium</i> spp.	10 000	present	present	present

The Baltic Sea

Arkona Basin BY2 22nd of May 2007 and Bornholm basin BY5 23rd of May 2007

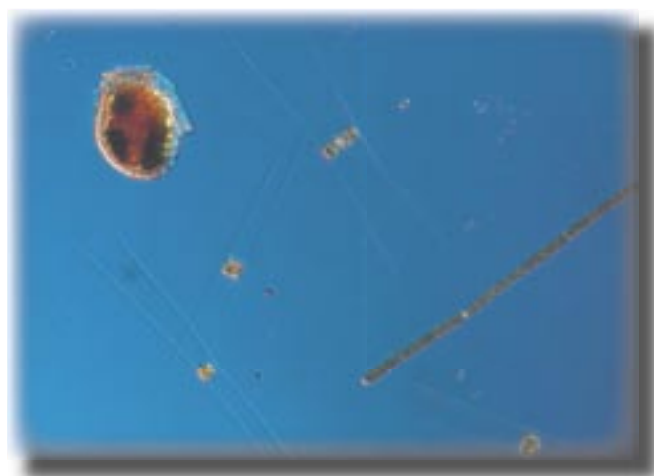


Calliakantha natans

The species composition was almost identical at the two stations and was dominated by small species. *Chrysochromulina* spp., a small flagellate which is known to be lethal to fish was quite common, as was unidentified thecate dinoflagellates. The choanoflagellate *Calliakantha natans* was observed at both stations and was rather numerous in the Arkona basin. A few cyanobacteria filaments were present. Chlorophyll *a* values were at average.

The South East Baltic BCS III-10 23rd of May 2007

Dinoflagellates dominated the sample, the most common being naked dinoflagellates and the potentially toxic species *Dinophysis acuminata* which was found in numbers high above its critical limits. The diatom *Chaetoceros similis* and the prasinophyceae *Pterosperma* sp. were common as were cyanobacteria filaments, most of which was the genus *Aphanizomenon* spp. The chlorophyll *a* content was above average.



D. acuminata (high left), *C. similis* (middle) and *Aphanizomenon* (right).

Eastern Gotland Basin BY15 24th of May 2007

The chlorophyll *a* value was slightly below average and the species composition somewhat different as compared to the previous station. The most abundant species was *Chrysochromulina* spp. and other common species were also small ones. *D. acuminata* was found above its limits, but a lot less numerous as compared to the south east Baltic. The small thecate dinoflagellate (ca 8-10 μm) *Heterocapsa rotundata* was common and *Peridiniella catenata* was present. Threads of cyanobacteria, mostly *Aphanizomenon* spp. were observed.

Western Gotland Basin B38 24th of May 2007



Chrysochromulina sp. and *Pterosperma* sp.

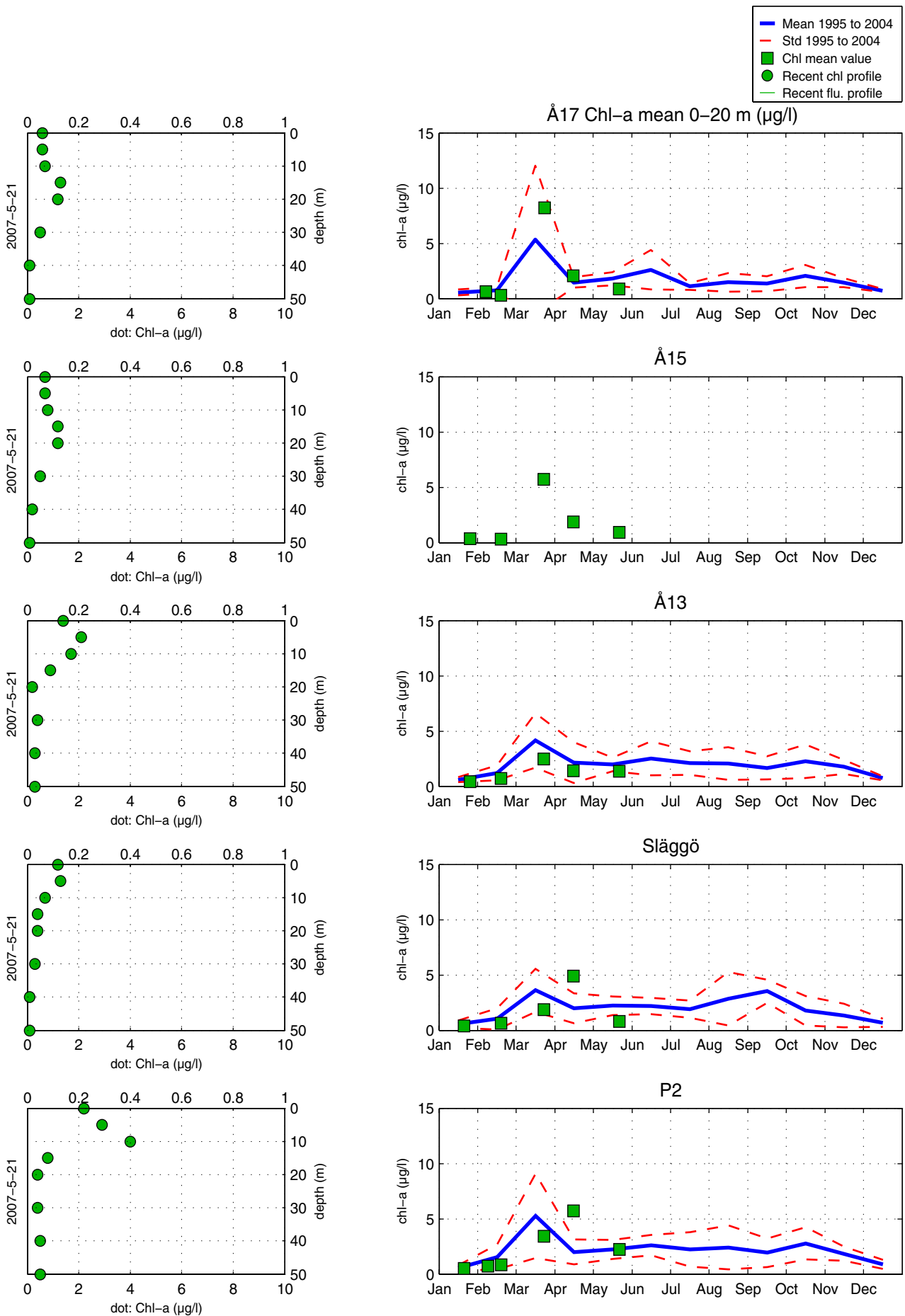
Cyanobacteria filaments, were common along with small cryptomonads, the dinoflagellate *H. rotundata*, the prasinophyceae *Pterosperma* spp. and the choanoflagellate *Calliakantha longicaudata*. The most abundant though, was *Chrysochromulina* spp.. Although the total count of autotrophic cells almost reached 500 000/l, the fact that the species are so small explains why the chlorophyll *a* content was quite low.

Selection of observed species	BY2	BY5	BCS III 10	BY15	BY38
Red=potentially toxic species ¹ quantified in m/L	2007-05-22	2007-05-23	2007-05-23	2007-05-24	2007-05-24
	cells/L	cells/L	cells/L	cells/L	cells/L
<i>Chaetoceros similis</i>			150 000	present	
<i>Pterosperma</i> spp.			40 000		30 000
<i>Dinophysis acuminata</i>		present	20 000	3 700	1 500
<i>Dinophysis norvegica</i>			present	present	present
<i>Dinophysis rotundata</i>				present	
Gymnodiniales spp.	100 000	40 000	25 000	30 000	80 000
<i>Heterocapsa rotundata</i>				20 000	20 000
<i>Heterocapsa triquetra</i>	present				present
<i>Katodinium glaucum</i>	present	2 000	present	present	present
Peridinales spp.	present	20 000	present	12 000	14 000
<i>Peridiniella catenata</i>		present	present	present	
<i>Chrysochromulina</i> spp.	90 000	170 000	20 000	115 000	130 000
Cryptomonadales spp.			present	present	present
<i>Dinobryon balticum</i>				10 000	
<i>Pyramimonas</i> spp.	present	present	present	30 000	32 000
<i>Aphanizomenon</i> sp. ¹	present	present	present	present	present
<i>Calliacantha longicaudata</i>	present		present	18 000	25 000
<i>Calliacantha natans</i>	30 000	present	present		present
<i>Mesodinium rubrum</i>	present	present	25 000	present	12 000
<i>Strombidium</i> spp.	present		present	present	present

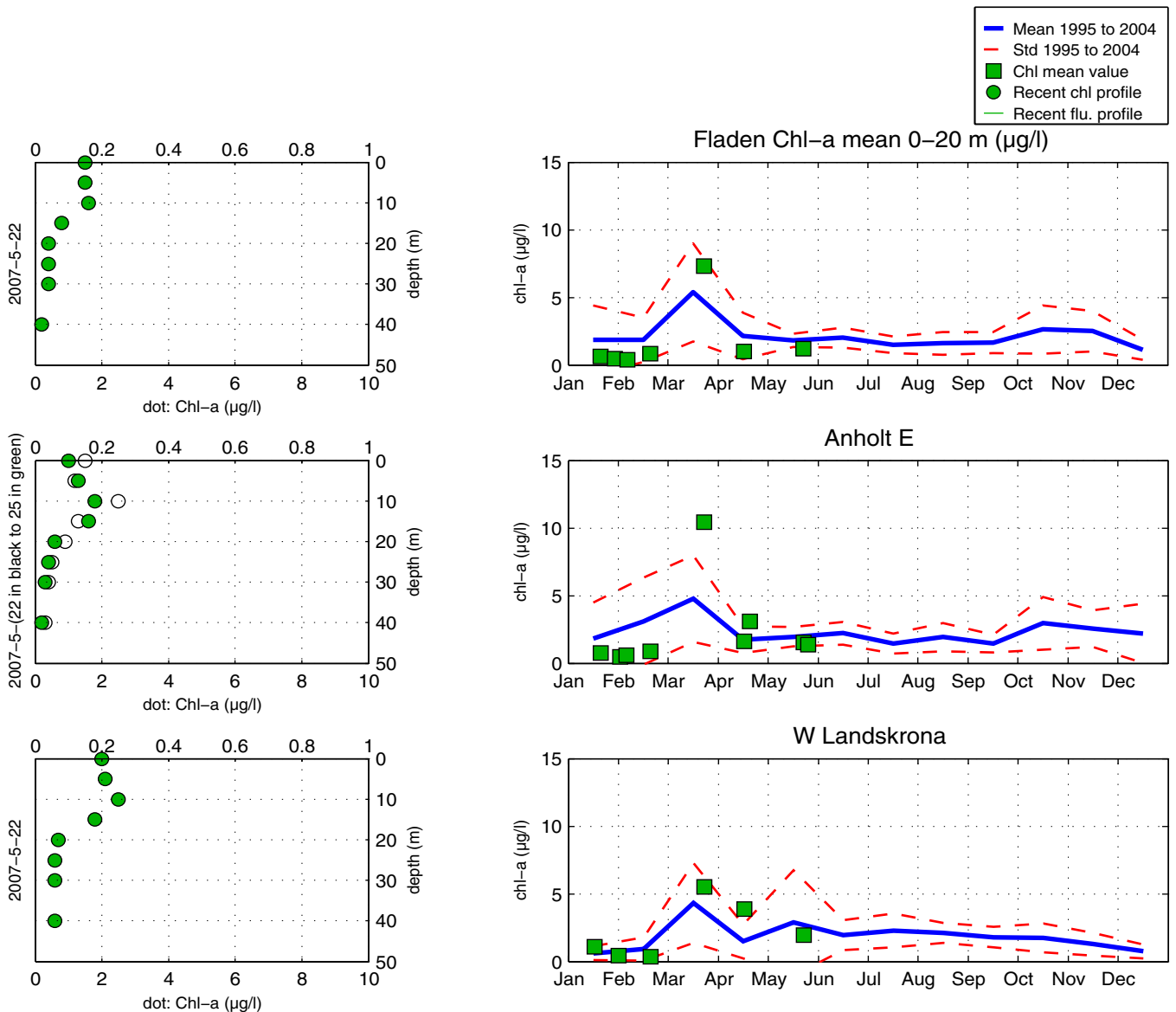
Phytoplankton analysis and text by Ann-Turi Skjevik.

Reviewed by Lars Edler.

The Skagerrak



The Kattegat and the Sound



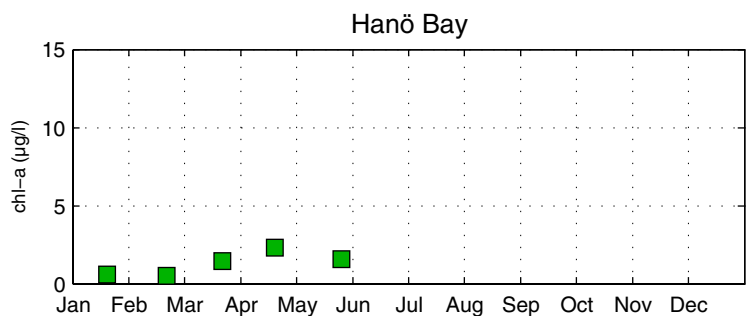
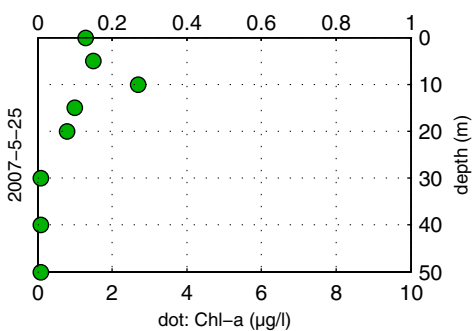
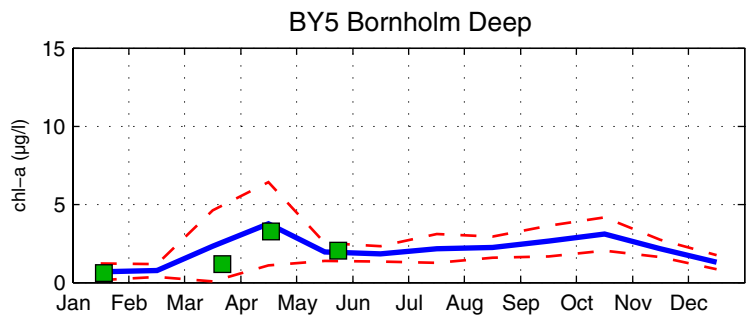
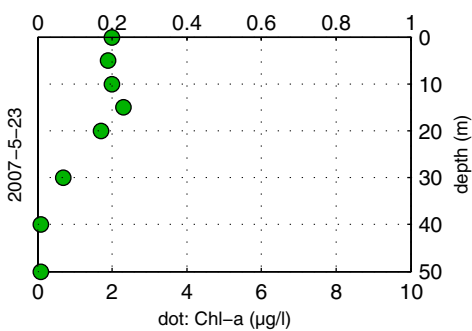
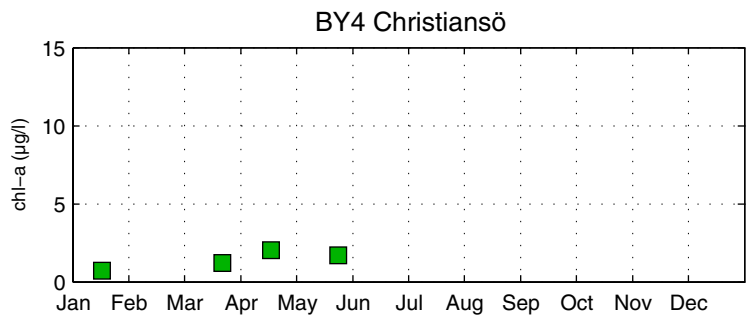
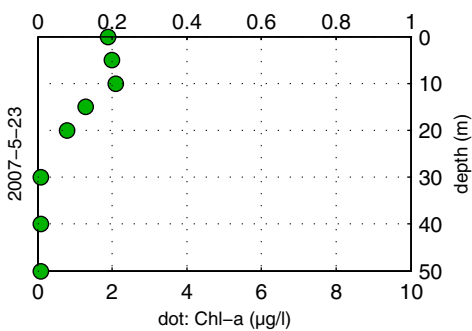
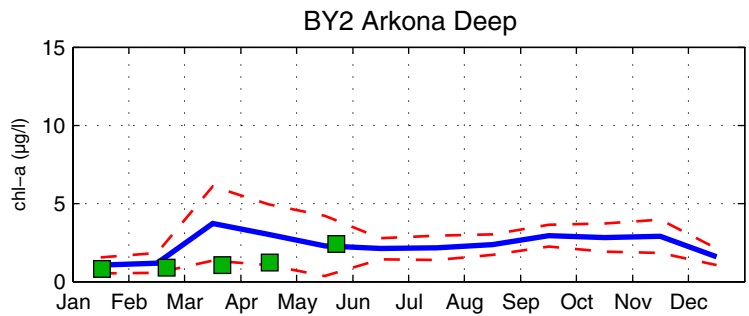
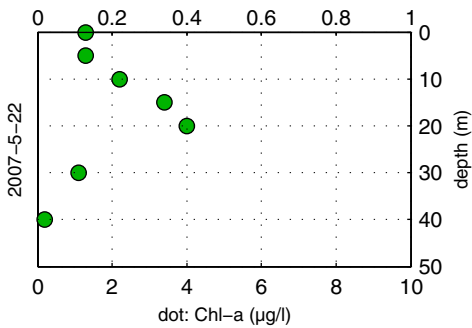
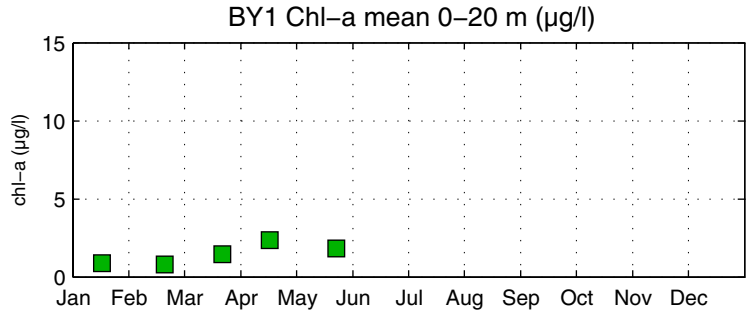
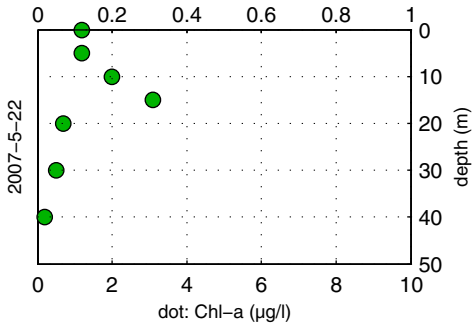
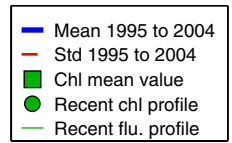
Om klorofylldiagrammen

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 alger av växtplankton observeras.

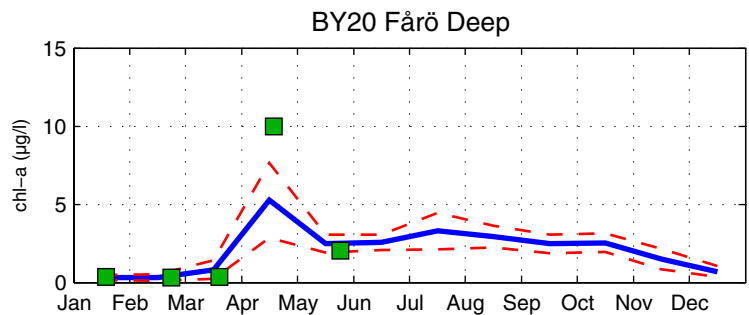
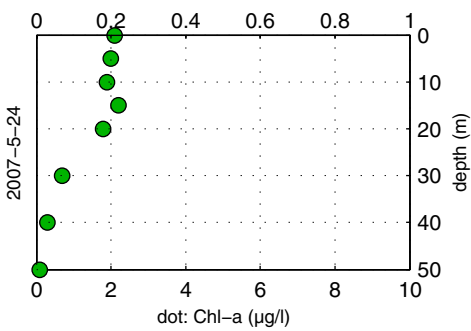
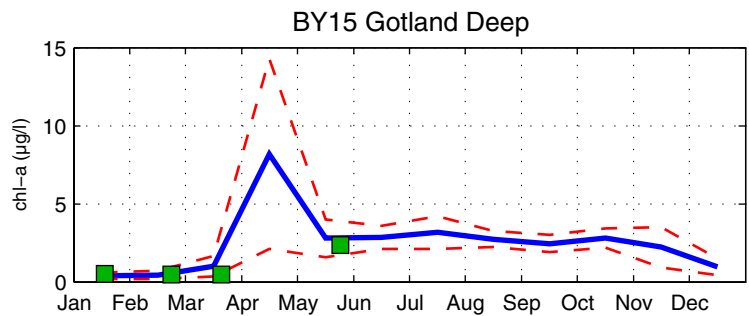
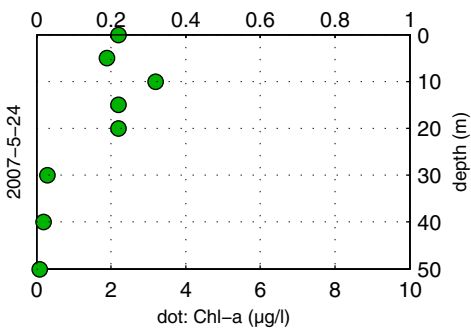
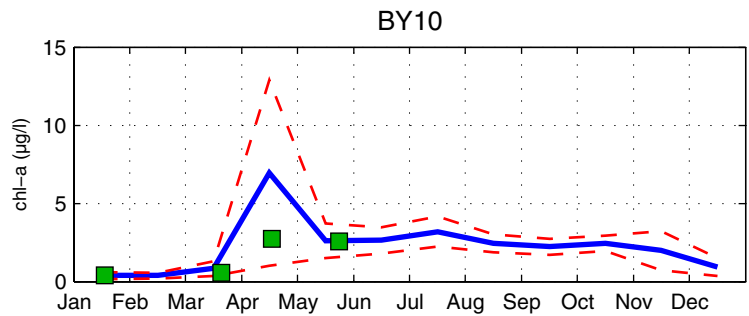
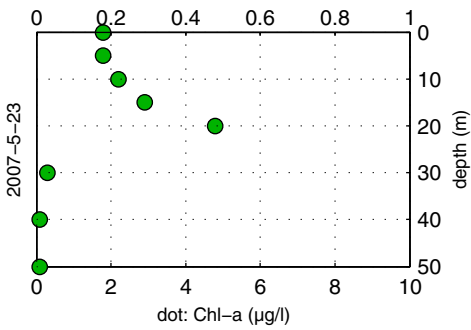
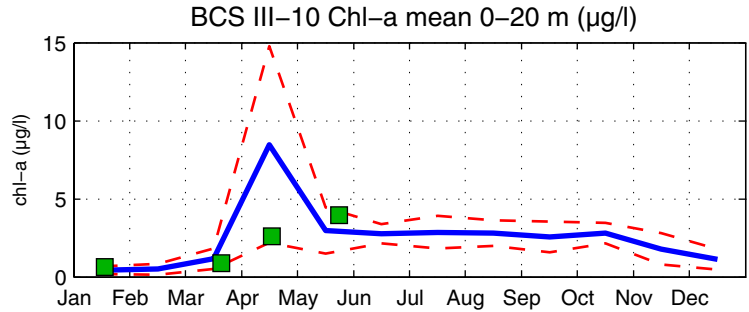
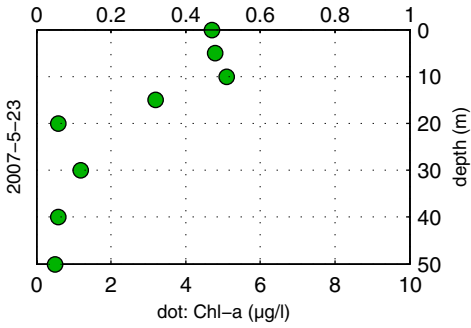
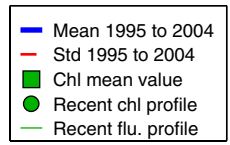
About the chlorophyll graphs

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 layers of phytoplankton occurring below the surface.

The Southern Baltic



The Eastern Baltic



The Western Baltic

