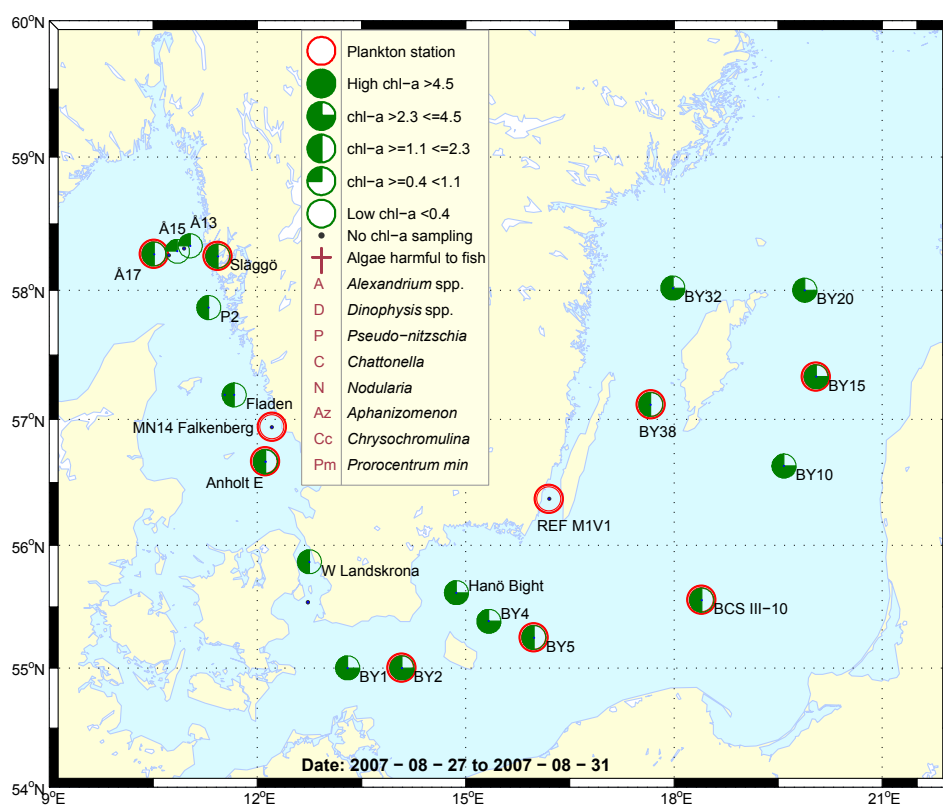


Sammanfattning

Kiselalger dominerade proven i Skagerrak- och Kattegatt områdena. Ett fåtal celler av det potentiellt giftiga dinoflagellatsläktet *Dinophysis* observerades. De integrerade klorofyll *a*-värdena var låga i de båda områdena, vilket är normalt för årstiden.

Vid BY2 i södra Östersjön, observerades en blomning av kiselalgen *Dactyliosolen fragilissimus*. Vid BY5 var samma art talrik. Cyanobakterier observerades vid samtliga stationer och med förhöjda mängder i östra och västra Gotlandsbassängen, samt i Kalmar sund. I Kalmar sund återfanns ett fåtal trådar av den giftiga cyanobakterien *Nodularia spumigena*.

Klorofyll *a*-värdena var något över det normala vid BY2 och BY10 i övrigt var de normala.



Abstract

Diatoms dominated the samples from the Skagerrak and the Kattegat areas. A few cells of the potentially toxic dinoflagellate genus *Dinophysis* were observed. The integrated chlorophyll *a* values were low in both areas, which is normal for the season.

A bloom of the diatom *Dactyliosolen fragilissimus* was observed at BY2 in the southern Baltic and the same species was quite numerous at BY5. Cyanobacteria were observed at all stations and were common in the eastern and western Gotland Basins as well as in the sound of Kalmar, where the toxic cyanobacterium *Nodularia spumigena* was found as well.

The chlorophyll *a* values were at average at all Baltic stations except BY2 and BY10 where they were slightly above average.

Om AlgAware

SMHI genomför ca en gång per månad expeditioner med U/F Argos i Östersjön och Västerhavet. Resultat baserade på mikroskopianalys av planktonprover samt klorofyllmätningar presenteras kortfattat i denna rapport. Information från SMHI:s satellitövervakning av algbloomningar 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

The Skagerrak

Å17 27th of August 2007 (open Skagerrak)



Cylindrotheca closterium

Diatoms dominated the plankton sample, the most numerous species being the diatom *Cylindrotheca closterium*. The genus *Chaetoceros* was common, as was *Leptocylindrus danicus*. A few cells of the potentially toxic dinoflagellate *Dinophysis acuta* were present.

Släggö 27th of August 2007 (coastal Skagerrak)

The plankton sample was richer in species and the cell numbers were higher compared to Å17, still the same diatom, *Cylindrotheca closterium* was the most common species. The diatoms *Leptocylindrus minimus* and *Skeletonema costatum* were very common as well. There were twice as much dinoflagellate species as diatom species, but the cell numbers were quite low, the most common was the small thecate dinoflagellate *Heterocapsa rotundata*.

Dinophysis acuminata and *D. acuta* were present in small amounts.

The chlorophyll *a* concentrations were at average.

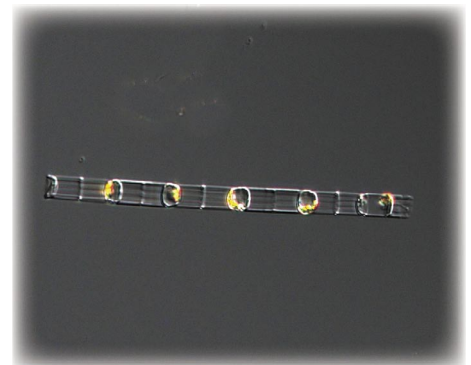
The Kattegat

N14 Falkenberg 27th of August 2007

Diatoms dominated the plankton, with *Skeletonema costatum* being the most common, and the chlorophyll *a* concentration was low.

Anholt E 27th and 31st of August 2007

At the second sampling occasion the chlorophyll *a* concentration was higher, but was still close to average. The cell numbers were also higher, and the diatoms *Skeletonema costatum* and *Cylindrotheca closterium* were numerous.

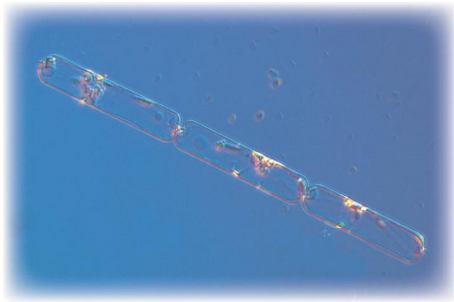


Skeletonema costatum

Selection of observed species	Å17	Släggö	N14	Anholt E	Anholt E
Red=potentially toxic species	2007-08-27	2007-08-27	2007-08-27	2007-08-27	2007-08-31
	cells/l	cells/l	cells/l	cells/l	cells/l
<i>Cerataulina pelagica</i>	present	50 000	present		present
<i>Chaetoceros affinis</i>				present	
<i>Chaetoceros brevis</i>		present			
<i>Chaetoceros contortus</i>	present			present	
<i>Chaetoceros curvisetus</i>	common		present	45 000	15 000
<i>Chaetoceros decipiens</i>			12 000		
<i>Chaetoceros laciniosus</i>	14 000		35 000	present	present
<i>Chaetoceros similis</i>		present			present
<i>Chaetoceros subtilis</i>	present		present		present
<i>Cylindrotheca closterium</i>	20 000	540 000	40 000	70 000	110 000
<i>Dactyliosolen fragilissimus</i>	present	20 000	20 000	10 000	present
<i>Ditylum brightwellii</i>			present	present	present
<i>Guinardia delicatula</i>	present	10 000	present		
<i>Guinardia flaccida</i>					present
<i>Leptocylindrus danicus</i>	common	50 000	60 000	present	50 000
<i>Leptocylindrus minimus</i>	present	350 000	35 000	present	25 000
<i>Proboscia alata</i>	present				present
<i>Pseudo-nitzschia delicatissima</i> -group			40 000	present	present
<i>Pseudo-nitzschia seriata</i> -group	present	20 000		present	10 000
<i>Rhizosolenia setigera</i>	present		12 000	15 000	present
<i>Skeletonema costatum</i>	10 000	310 000	315 000	15 000	400 000
<i>Alexandrium</i> sp.					present
<i>Ceratium furca</i>		present	present	present	
<i>Ceratium lineatum</i>		present			
<i>Ceratium tripos</i>			present		
<i>Dinophysis acuminata</i>		present	present	present	
<i>Dinophysis acuta</i>	present	present			
<i>Gymnodinium galeatum</i>		present			
<i>Gymnodinium verruculosum</i>		present			present
<i>Gyrodinium</i> cf. <i>pingue</i>		present			
<i>Gyrodinium</i> cf. <i>spirale</i>		present	present	present	present
<i>Heterocapsa</i> cf. <i>minima</i>	present	present		present	present
<i>Heterocapsa rotundata</i>	present	20 000	present	30 000	15 000
<i>Karenia mikimotoi</i>	present				
<i>Katodinium glaucum</i>	present			present	present
<i>Prorocentrum micans</i>	present	present			present
<i>Protoceratium reticulatum</i>				present	
<i>Dinobryon balticum</i>				180 000	
Cryptomonadales spp.	20 000	55 000	30 000	20 000	12 000
<i>Chrysochromulina</i> spp.	present	present			present
<i>Pyramimonas</i> spp.	15 000	10 000	present	present	present
<i>Heterosigma akashiwo</i>	present		present	present	
<i>Telonema subtile</i>	present				
<i>Mesodinium rubrum</i>		present	present		
<i>Strombidium</i> spp.	present		present	present	

The Baltic Sea

Arkona Basin BY2 28th of August 2007



Dactyliosolen fragilissimus

An ongoing bloom of the diatom *Dactyliosolen fragilissimus* was observed. A few other species were present of which small flagellated species as the prasinophyceae *Pyramimonas* spp. were common. The chlorophyll *a* concentration was above average with a maximum value of 4.2 µg/l from the surface down to 15 meters depth. A few threads of the cyanobacteria *Anabaena* spp. and *Aphanizomenon* spp. were observed.

Bornholm basin BY5 28th of August 2007

Similar to the previous station, the diatom *Dactyliosolen fragilissimus* was the most common species together with the prasinophyceae *Pyramimonas* spp. The chlorophyll *a* concentration was at average.

The South East Baltic BCS III-10 29th August 2007

Small flagellated species were by far the most common. The present dinoflagellates and diatoms were represented by small species, like the dinoflagellates *Heterocapsa* spp., and the diatoms *Attheya longicornis* and *Chaetoceros danicus*. The chlorophyll *a* concentration was at average.

Eastern Gotland Basin BY15 29th and Western Gotland Basin BY38 30th of August 2007

The plankton situation was similar to BCS III-10, with domination of small species. Some filaments of the cyanobacteria *Anabaena* spp. and *Aphanizomenon* spp. were observed, the latter being the most common. The chlorophyll *a* concentration was at average.

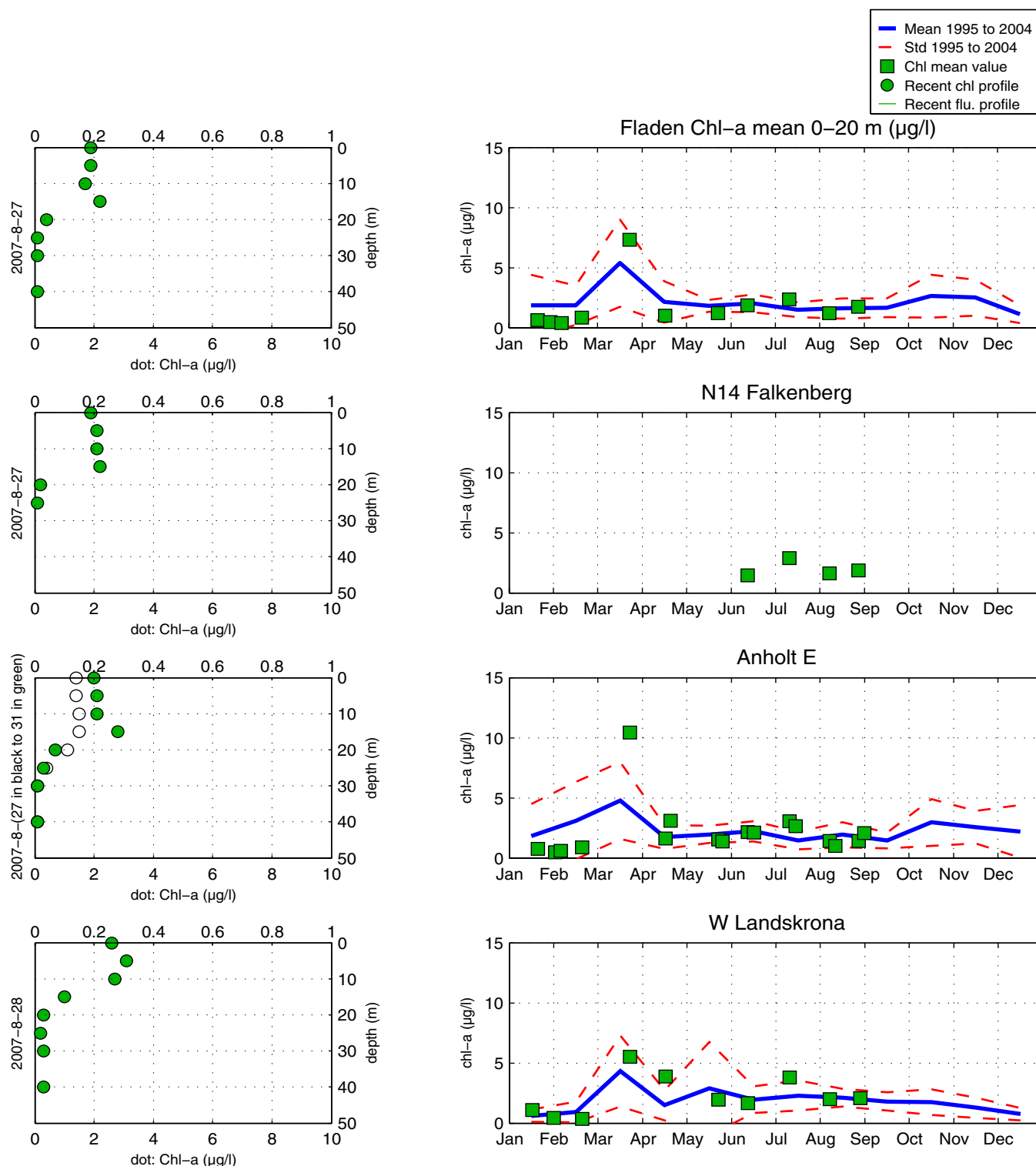
Kalmar Sound Ref. M1-V1 15th of June 2007

The cyanobacteria *Anabaena* spp. and *Aphanizomenon* spp. were present with equal amounts. A few threads of the toxic cyanobacterium *Nodularia spumigena* were also observed, as were small flagellated species like *Pyramimonas* spp., small diatoms like *Cylindrotheca closterium* and small dinoflagellates like *Gyrodinium flagellare*.

Selection of observed species	BY2	BY5	BCS III 10	BY15	BY38	Ref-M1V1
Red=potentially toxic species	2007-08-28	2007-08-28	2007-08-29	2007-08-29	2007-08-30	2007-08-30
¹ quantified in m/l	cells/l	cells/l	cells/l	cells/l	cells/l	cells/l
<i>Attheya longicornis</i>			10 000			
<i>Chaetoceros danicus</i>			20 000			
<i>Chaetoceros impressus</i>			present	present	present	present
<i>Cylindrotheca closterium</i>	15 000					present
<i>Dactyliosolen fragilissimus</i>	1 220 000	270 000	present			
<i>Nitzschia</i> sp.			30 000			
<i>Phaeodactylum tricornutum</i>	present					
<i>Pseudo-nitzschia</i> spp.	present		present			
<i>Thalassionema nitzschioides</i>	present					
<i>Ceratium tripos</i>	present					
<i>Gymnodinium verruculosum</i>	present	present	present			
<i>Heterocapsa</i> cf. <i>minima</i>	present					
<i>Heterocapsa rotundata</i>	present		present		present	
<i>Heterocapsa triquetra</i>	present		present			present
<i>Katodinium glaucum</i>	present					
<i>Prorocentrum micans</i>	present					
<i>Chrysochromulina</i> spp.	present		present		present	present
Cryptomonadales spp.	510 000	100 000	480 000	250 000	170 000	100 000
<i>Pyramimonas</i> spp.	400 000	120 000	200 000	100 000	80 000	55 000
<i>Anabaena</i> sp. ¹	present					common
<i>Aphanizomenon</i> sp. ¹	present	present	present	present	common	common
<i>Nodularia spumigena</i> ¹						present
<i>Mesodinium rubrum</i>	present	present	present	present	present	present
<i>Strombidium</i> spp.	present	present	present	present	present	present

Phytoplankton analysis and text by:
Ann-Turi Skjevik

The Kattegat and the Sound



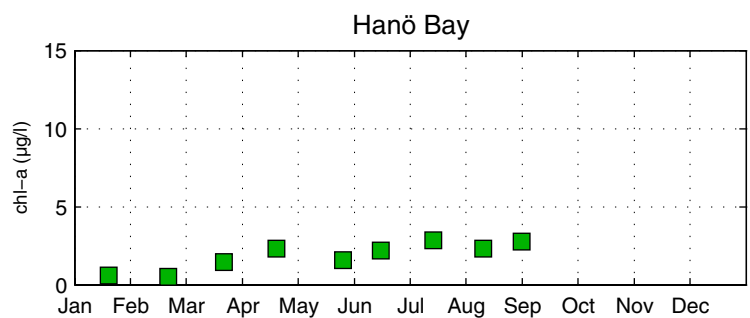
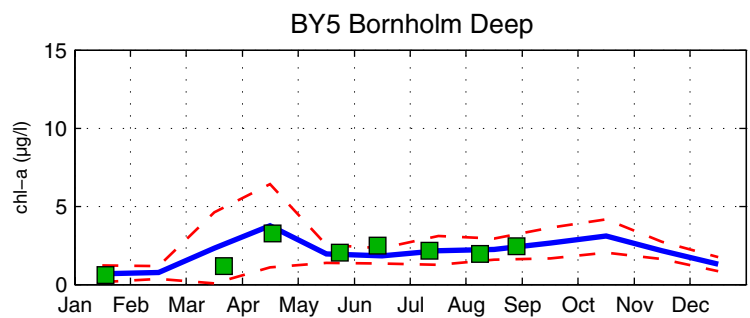
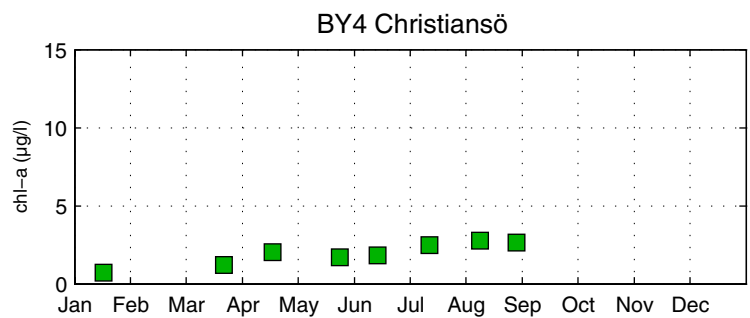
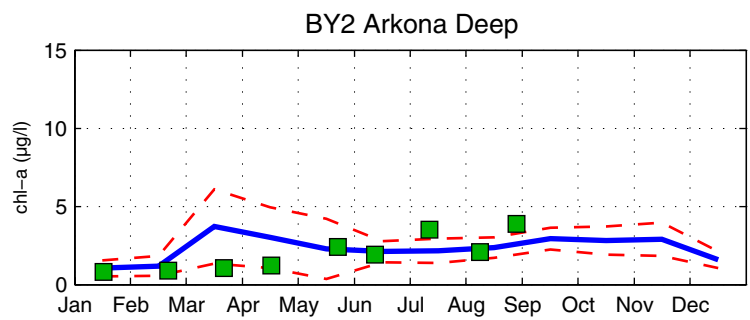
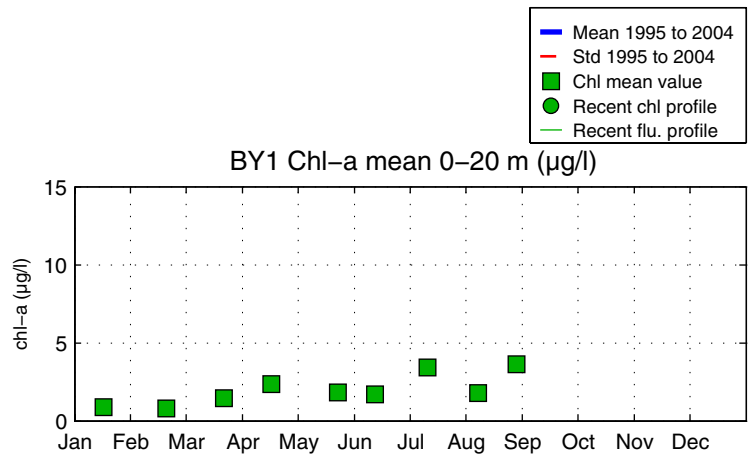
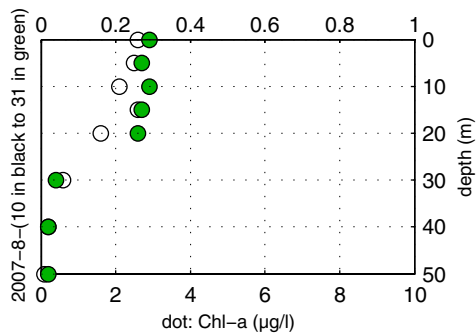
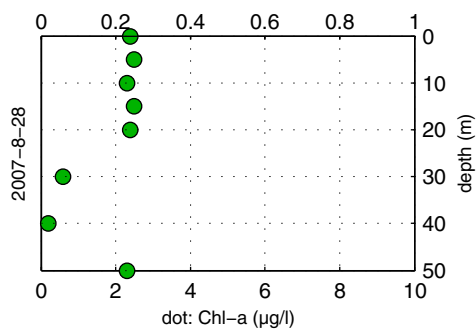
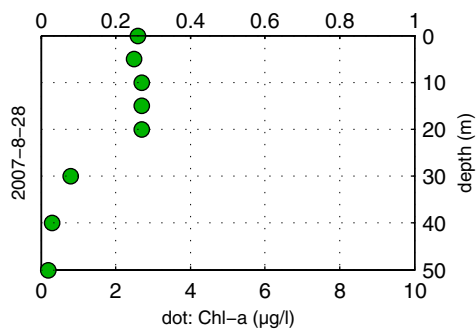
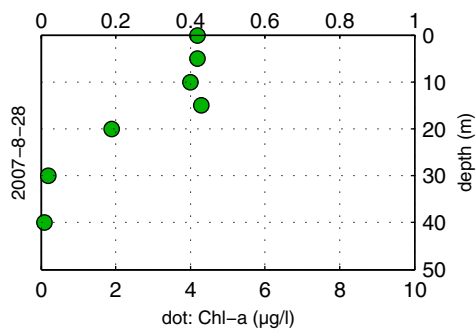
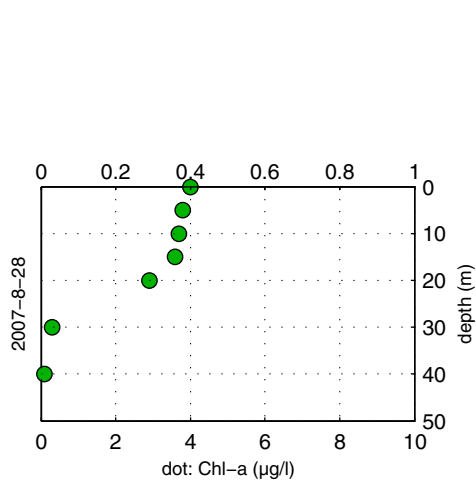
Om klorofylldiagrammen

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.

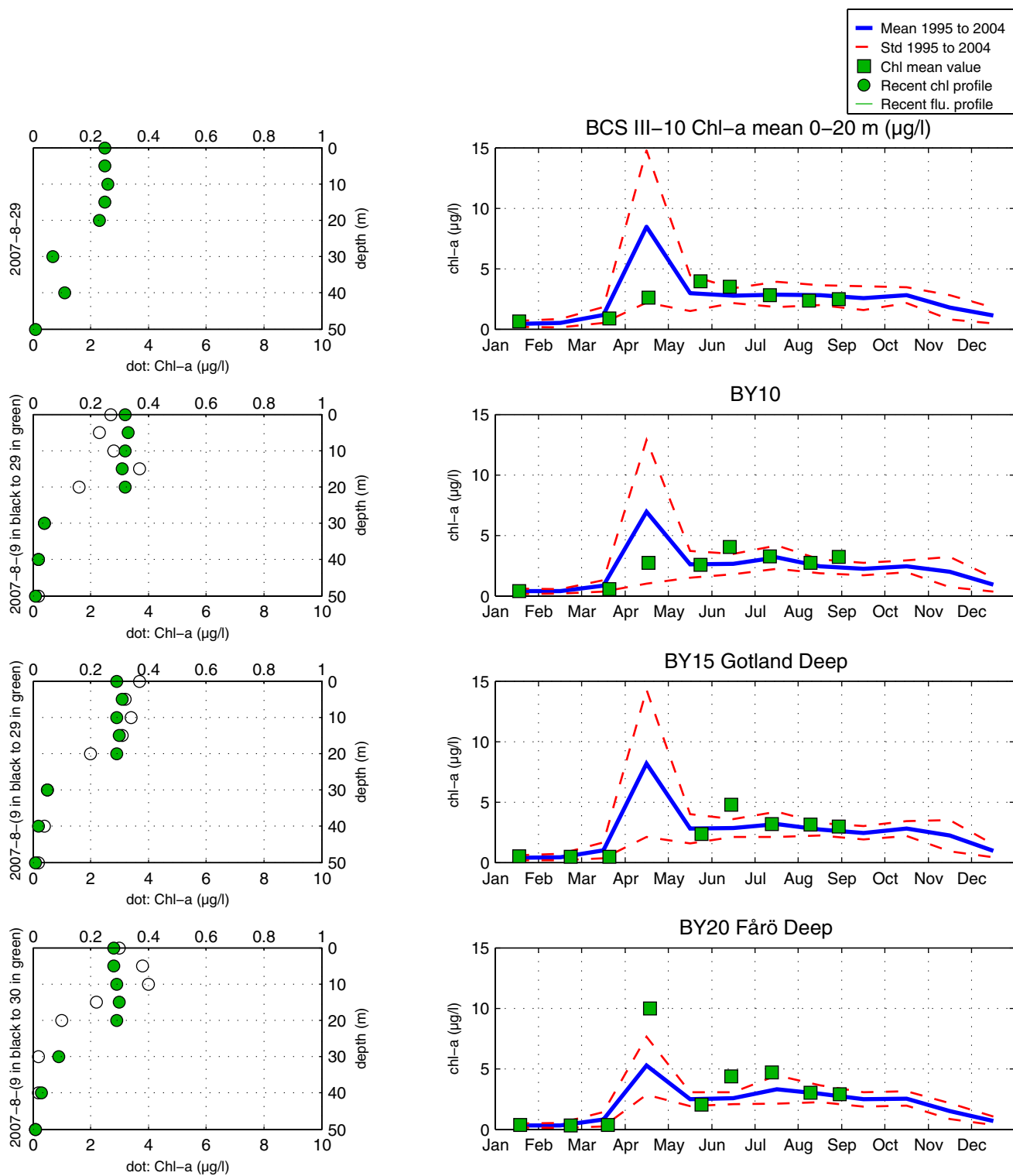
About the chlorophyll graphs

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

