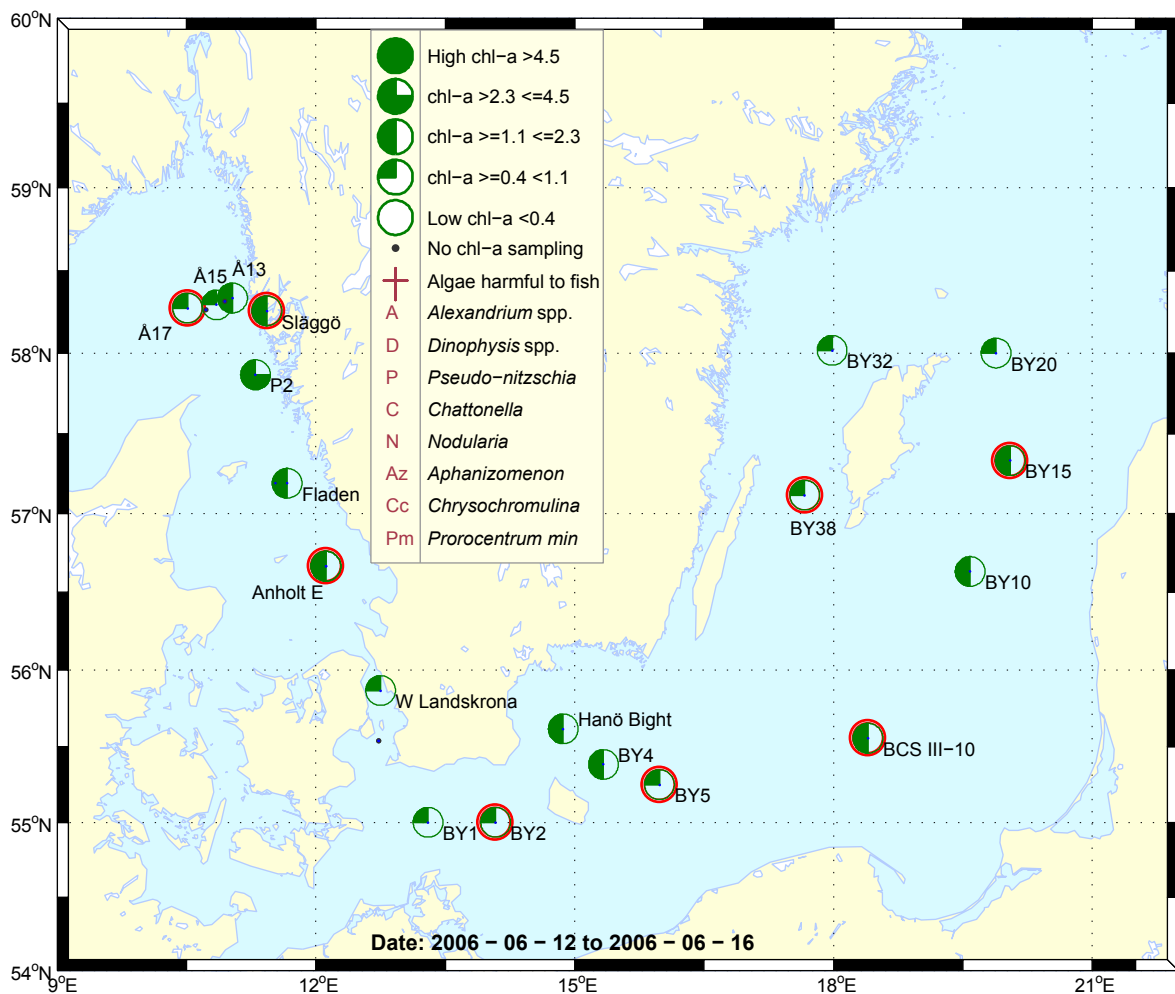


Sammanfattning

Växtplanktonbiomassan var låg både i Östersjön och i Västerhavet. Störst mängd fanns på 15-20 m djup. De högsta klorofyllmängderna observerades vid stationerna P2 och Släggö vid Bohuskusten. var vänlig läs den engelska versionen vad gäller arterer.



Abstract

Although all stations share the same feature of few diatom species and a rather more occurrence of dinoflagellates, yet all samples contain a relative dominance of unidentified cyanobacterial colonies of small cells (1-3 μm) as well as small flagellates (3-5 μm). However, these are more prominent in the Baltic than in the Skagerrak-Kattegat. Among the later, Släggö was more productive with a rather higher species abundance. The Baltic Sea stations were characterized by a very low diatom representation, and a high flagellates production, particularly *Pyramimonas* sp and *Chrysochromulina* sp which were common. Apart from the appearance of the filamentous cyanobacterium *Nodularia* cf *spumigena*, phytoplankton population seems similar to that of May in almost all stations. Chlorophyll a concentration was rather low in the Baltic and Skagerrak-Kattegat. Higher values were recorded at 15-20 m depth. P2 and Släggö stations that are close to Bohus coast area showed higher Chlorophyll a concentrations.

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 12th of June

The number of species is quite low with no clear dominance of any. The only diatom that appeared in moderate numbers was *Dactyliosolen fragilissimum*. Dinoflagellates were rare and only represented by few species. Instead, the phytoplankton population was dominated by small flagellates and unidentified cyanobacterial colonies. The total cell count reached 284 726 cells/l.

Släggö 12th of June

Cell numbers are higher than in Å17, reaching 425 462 cell/l. All species appeared in relatively higher numbers, particularly the diatoms *D. fragilissimus* and *S. costatum*. The flagellates *Chrysochromulina* spp and *Pyramimonas* spp have also jumped to 44 655 and 51 525 cells/l respectively. The small flagellates (3-5 µm) and the cyanobacterial colonies are common.

The Kattegat

Anholt_E 13th and 16th of June

The two samples varied considerably in both species composition and cell numbers. The most contributing species to high cell production was an unidentified small *Nitzschia*, that reached 211 548 cells/l. The overall cell numbers in the later date was 624 308 cell/l compared to the earlier sampling date where numbers reached 269 478. Both samples however contain high numbers of small flagellates and cyanobacterial colonies, mostly 3-5 µm in size. The 16th of June sample contain a considerable number of cyanobacterial filaments (cf. *Nodularia* spp.) which was absent in the earlier sample.

Selection of observed species	Å17 6/12/06 cells/L	Släggö 6/12/06 cells/L	Anholt E 6/13/06 cells/L	Anholt E 6/16/06 cells/L
<i>Cylindrotheca closterium</i>			present	
<i>Dactyliosolen fragilissimum</i>	5 824	22 119		
<i>Guinardia flaccida</i>		present	present	
<i>Proboscia alata</i>		8 439		present
<i>Skeletonema costatum</i>		24 045	present	
<i>Thalassionema nitzschioides</i>	present	present	present	present
<i>Rhizosolenia hebetata f. semispina</i>		present		
<i>Pseudo-nitzschia delicatissima</i>		2 628		
<i>Coscinodiscus</i> spp.	present			
<i>Nitzschia</i> spp	present	present		211548
<i>Ceratium fusus</i>	present		present	
<i>Ceratium tripos</i>	present	present	present	present
<i>Dinophysis norvegica</i>	present			
<i>Karlodinium micrum</i>		3435		
<i>Peridiniella danica</i>		3504		present
<i>Protoperidinium bipes</i>	present		present	
<i>Protoperidinium brevipes</i>	present		present	
<i>Protoperidinium pallium</i>	present			
<i>Pyramimonas</i> sp.		51525	93639	10404
<i>Chrysochromulina</i> spp.		44655		
Cyanobacteria spp. filament				24276

The Baltic Sea

Arkona Deep BY2 13th of June

The most obvious feature in this sample is the dominance of the diatom *Chaetoceros simplex* and the increasingly high number of cyanobacterial filaments (cf. *Nodularia* spp.). These two accounted for more than 90% of the total cell production. Dinoflagellates were poorly represented in the sample. The small flagellates were less in numbers than the preceding stations. The total cell counts reached 1 727 446 cells/l.

Bornholm Deep BY5 14th of June

Number of species is also small with no clear dominance of a particular taxon except for *Pyramimonas* sp. which reached 48 090 cells/l. Cyanobacterial filaments are less than in BY2 but the cyanobacterial colonies which belong to more than one species appeared in large numbers. The overall cell count was 848 795 cells/l, mostly due to the small (3-5 µm) flagellates and the cyanobacterial colonies.

The South East Baltic BCS III-10 14th of June

The diatoms in this station are remarkably scarce both in species occurrence and cell production. Both *Chrysochromulina* sp. and *Pyramimonas* sp. appeared in relatively large numbers. The cyanobacterial colonies together with small flagellates contribute most to the overall cell counts that reached 694 043 cells/l.

Gotland Deep BY15 15th of June

Diatoms are only represented by two species in this station which appeared in small numbers. Dinoflagellates are relatively more diversified but none of the species are dominating. As with the other stations, the flagellates constitute the major bulk of the phytoplankton population. *Pyramimonas* sp is also common here. *Ebria tripartia* appeared only in this station. The total cell counts reached 914 058 cells/l.

The Karlsö deep BY38 15th of June

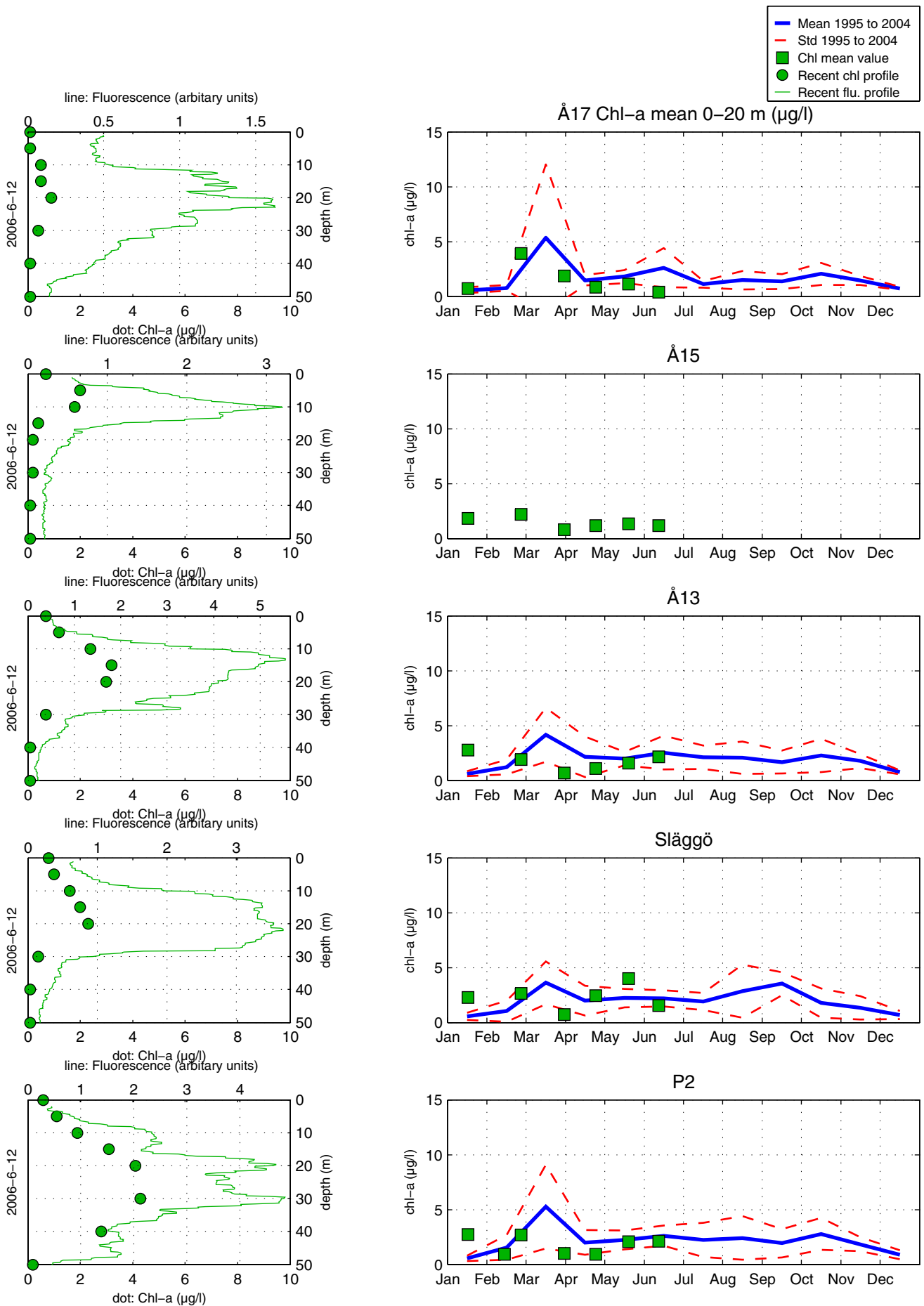
The situation here is quite similar to the other stations. Only one diatom species were observed; *Thalassionema nitzschioides* . Both *Chrysochromulina* sp and *Pyramimonas* sp were common. The cyanobacterial filaments are less common. The small flagellates (3-5 µm) dominates the population, constituting more than 95% . The overall cell count was 895 983 cells/l.

Phytoplankton analysis and text by:

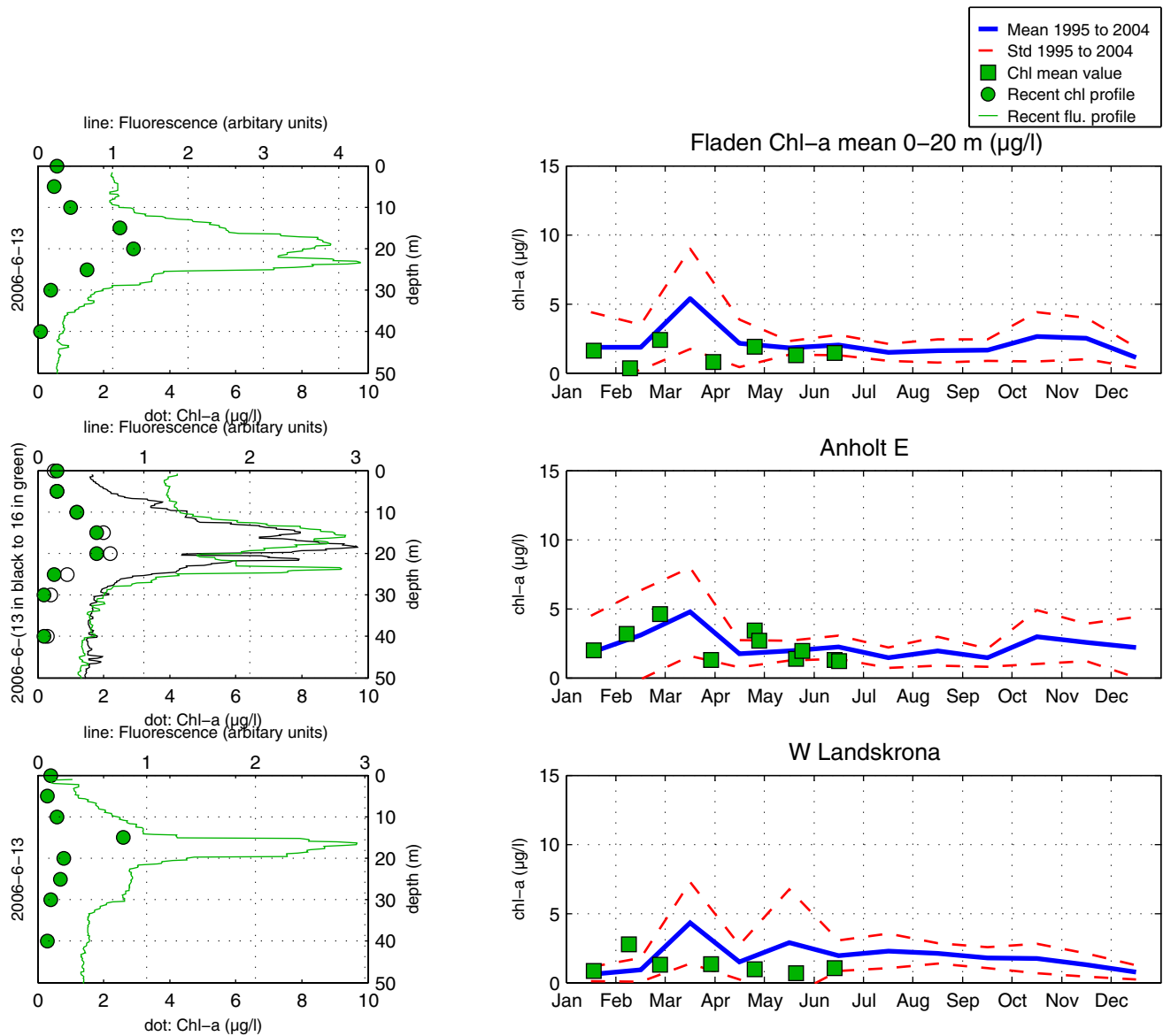
Adil Yousif

Selection of observed species	BY2 6/13/06 cells/L	BY5 6/14/06 cells/L	BCS III 10 6/14/06 cells/L	BY15 6/15/06 cells/L	BY38 6/15/06 cells/L
<i>Chaetoceros simplex</i>	987 846	present	present	present	
<i>Proboscia alata</i>	present	present		present	
<i>Skeletonema costatum</i>				13 200	present
<i>Coscinodiscus spp</i>	present				
<i>Thalassionema nitzschioides</i>			present	present	present
<i>Ceratium tripos</i>	present	present	present		present
<i>Ceratium fusus</i>			present		
<i>Ceratium longipes</i>					present
<i>Dinophysis norvegica</i>			present	present	present
<i>Dinophysis acuminata</i>	present		present	present	present
<i>Dinophysis odiosa</i>				present	
<i>Peridiniella danica</i>					
<i>Protoperidinium bipes</i>	present			present	present
<i>Protoperidinium brevipes</i>	present	present	present	present	present
<i>Karlodinium micrum</i>					6870
<i>Ebria tripartia</i>				6936	
<i>Chrysochromulina spp</i>			35030		54960
<i>Pyramimonas spp</i>		48090	56048	72828	51525
<i>Strombidium spp</i>		present			present
Cyanophyceae spp_filaments	599013	present	present	11074	13986

The Skagerrak



The Kattegat and the Sound



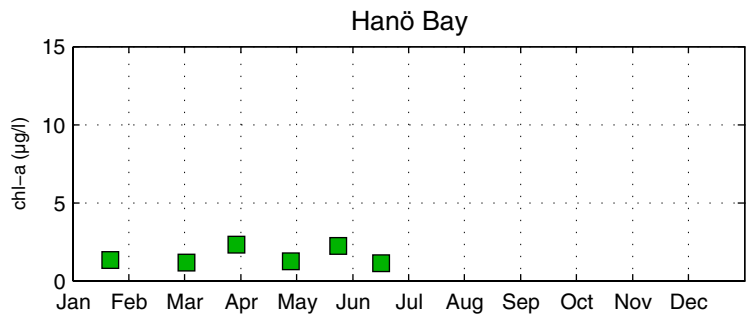
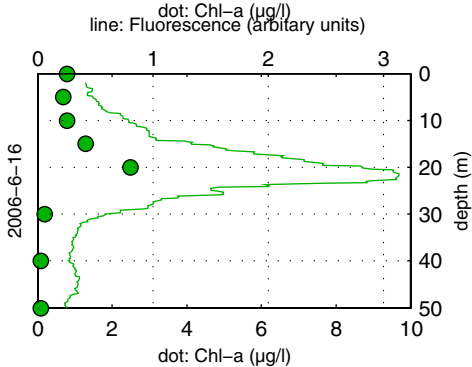
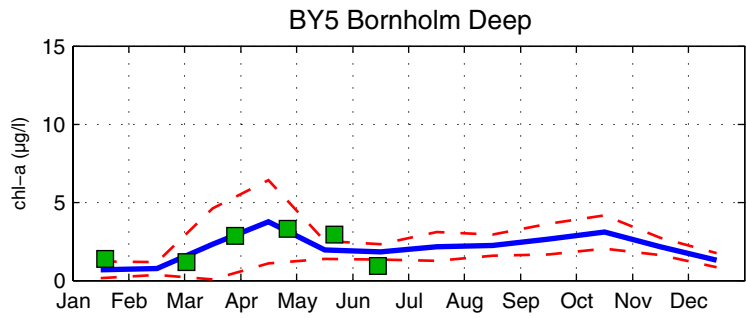
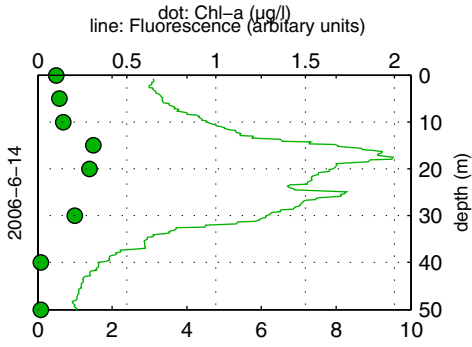
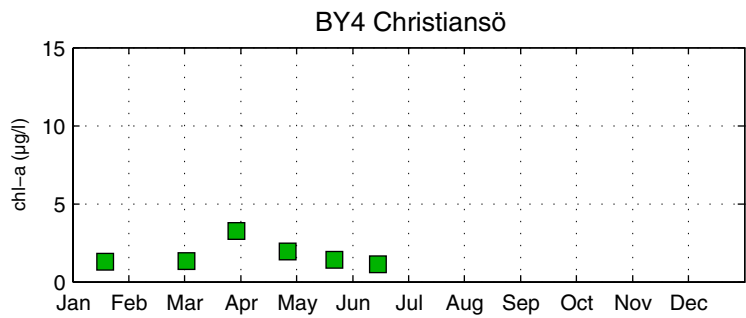
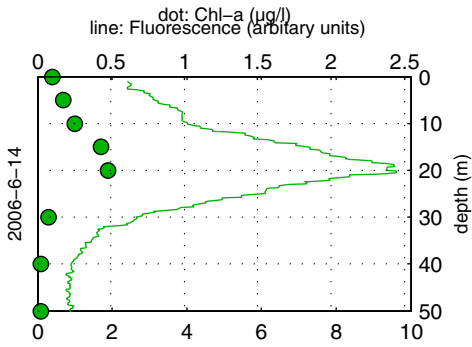
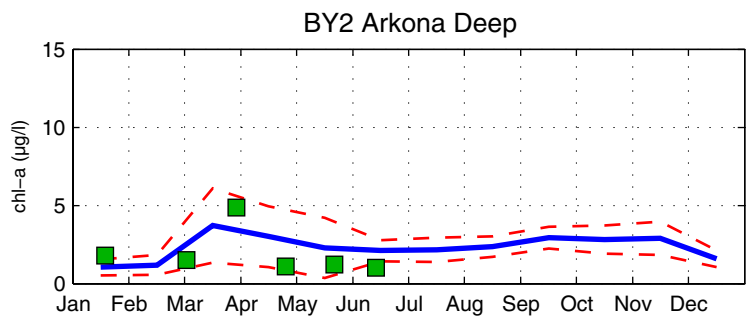
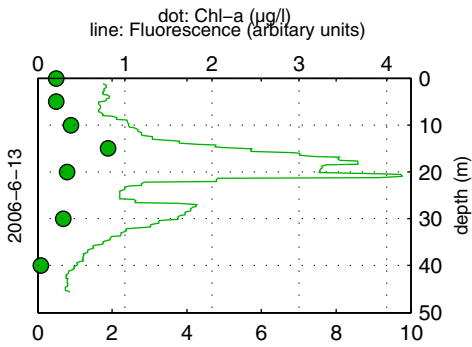
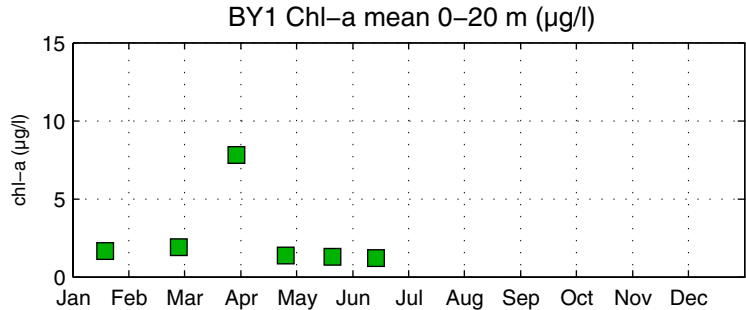
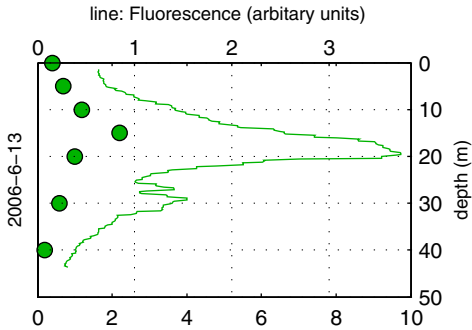
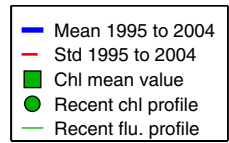
Om klorofylldiagrammen

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.

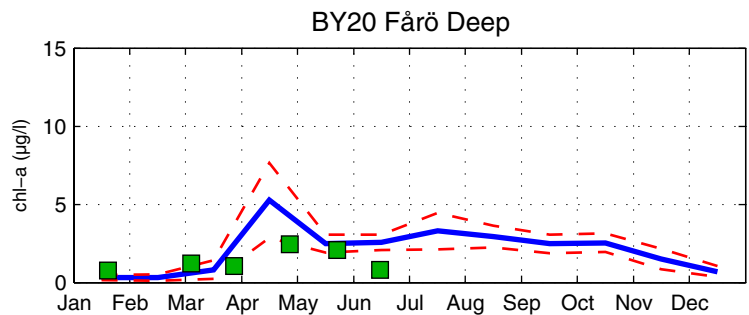
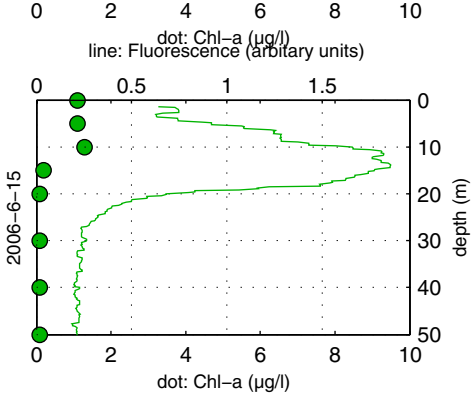
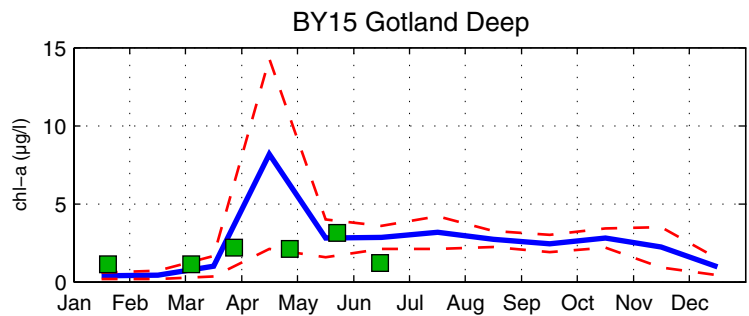
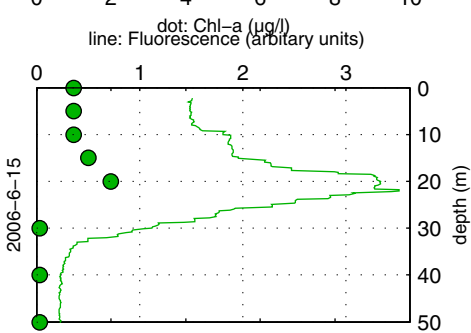
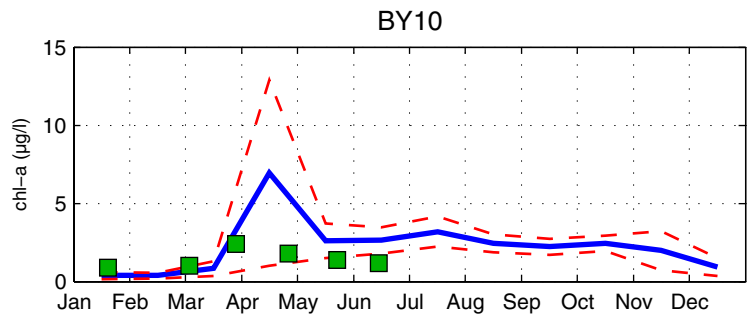
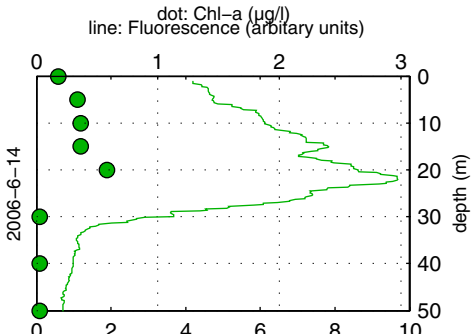
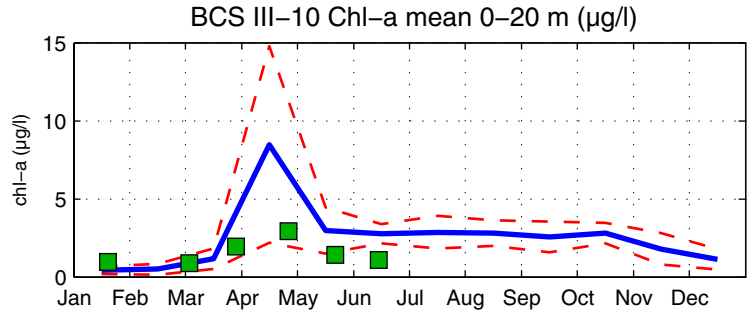
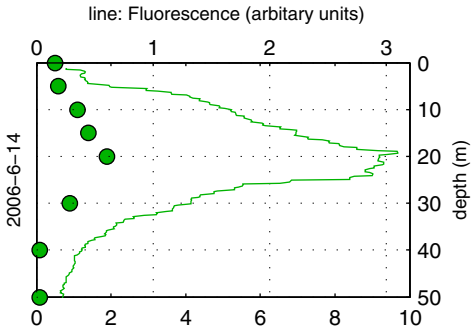
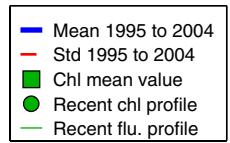
About the chlorophyll graphs

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

