SMHI
Oceanographic Services
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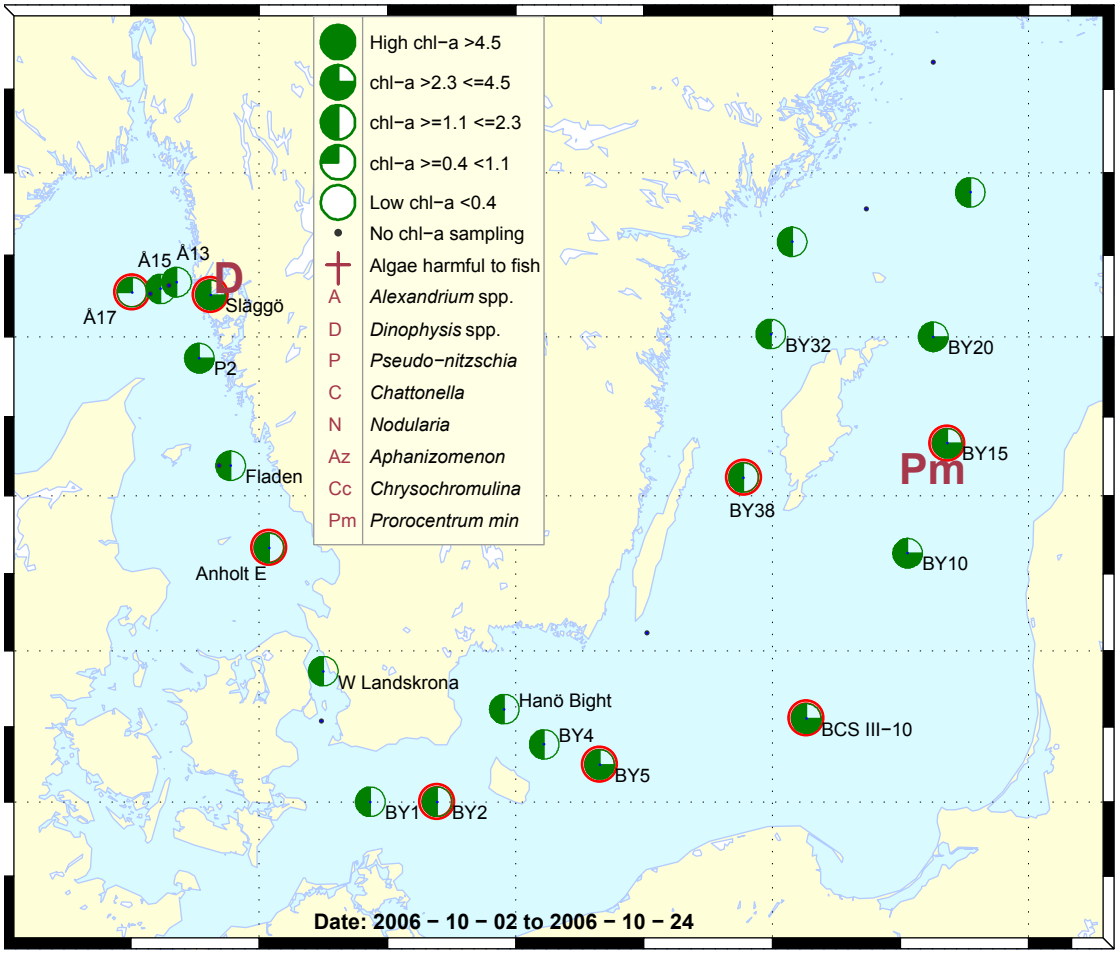
AlgAware
ALGAL SITUATION IN MARINE WATERS SURROUNDING SWEDEN

Sammanfattning

Generellt sett hade spridningen och förekomsten av växtplankton inte förändrats nämnvärt jämfört med den förra expeditionen. Detta med undantag av att trådformade cyanobakterier observerades, och att kolonibildande cyanobakterier inte observerades. Vid samtliga Östersjöstationer var planktonfloran fattig, och bara små, oidentifierade flagellater var talrika på vissa stationer. I kustnära Skagerrak däremot, var situationen annorlunda med många arter av både kiselalger och dinoflagellater, dock i låga cellantal. I Kattegatt observerades färre växtplankton än i Skagerrak, men flera än vid Östersjöstationerna.



Abstract

The general picture of phytoplankton species distribution and occurrence did not exhibit any remarkable changes from what it was in the previous expedition, except that cyanobacterial filaments were observed and that cyanobacterial colonies were not observed. A shared feature among all Baltic Sea stations was the poor representations of phytoplankton. The relatively high number of cell counts in some stations was due to the presence of many small unidentified flagellates. In the Skagerrak, however, the situation was completely different especially at Släggö, where both diatoms and dinoflagellates were diversified. Although cell numbers were not high (384710 cells/l), yet relatively large number of species appeared. Phytoplankton in the Kattegat was less abundant than in the Skagerrak, but, on the other hand, more species occurred there than in all of the Baltic stations.

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
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 or 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.
Chattonella 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- niztschia 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.

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. * = potentially toxic.

The Skagerrak

Å17 24th of October

Phytoplankton was quite rare with no specific dominance of any species. The overall cell density was remarkably low whereas cell numbers did not exceed 78 661 cells/l, most of which were small unidentified flagellates.

Släggö 24th of October

Peridiniella danica

In contrast to all other stations, Släggö exhibited a completely different picture of phytoplankton occurrence. Although none of the species dominated the whole phytoplankton population, yet both diatoms and dinoflagellates appeared in a rather similar species distribution. Diatoms were represented by 18 species of which *Chaetoceros* spp. were rather common, and the dinoflagellates represented by 20 species among which *Peridiniella danica* and unidentified naked dinoflagellates were more common. Total cell count reached 384 710 cells/l.

The chlorophyll *a* concentration was below average in open Skagerrak, whereas the concentrations were above average in the coastal parts of the area.

The Kattegat

Anholt E 23rd of October

In general, number of species and cell density were not high at this station. The most common among diatoms was *Leptocylindrus minimus*. Dinoflagellates were poorly represented except for very small naked dinoflagellates which accounted for most of the cell density that reached 187 904 cell/l.
Other plankton constituents, mostly ciliates were rather common.

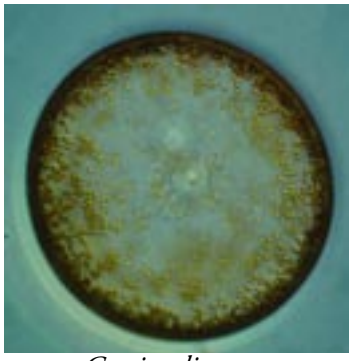
At West Landskrona, the chlorophyll *a* concentration was normal for this month, whereas the concentrations were below average in the rest of the area.

Leptocylindrus minimus

Selection of observed species Red=potentially toxic species	**Å17** **2006-10-24** **cells/L**	**Släggö** **2006-10-24** **cells/L**	**Anholt E** **2006-10-23** **cells/L**
Attheya longicornis		present	
Chaetoceros curvisetus		9 639	
Chaetoceros danicus			present
Chaetoceros decipiens		present	present
Chaetoceros laciniosis		present	
Chaetoceros similis	present		present
Chaetoceros spp.		9 639	
Cylindrotheca closterium	present	present	present
Dactyliosolen fragilissima			present
Ditylium brightwellii		present	
Guinardia flaccida		present	
Leptocylindrus danicus		present	
Leptocylindrus minimus	present	present	13 311
Nitzschia longissima		present	
Proboscia alata	present	present	present
Pseudo-nitzschia delicatissima-group	present	14 229	present
Pseudo-nitzschia seriata-group	present	present	present
Rhizosolenia imbricata	present		
Rhizosolenia pungens		present	
Rhizosolenia setigera			present
Skeletonema costatum		present	
Thalassionema nitzschioides		present	present
Amphidinium spp.		10 770	
Ceratium furca		present	present
Ceratium fusus	present		present
Ceratium lineatum		present	present
Ceratium macroceros		present	
Ceratium tripos	present	present	present
Dinophysis acuminata		1377	present
Dinophysis acuta		present	
Dinophysis norvegica		present	
Dinophysis rotundatum		present	
Peridiniella danica	present	20655	present
Pronoctiluca pelagica		10776	
Prorocentrum micans		present	present
Prorocentrum minimum		present	
Apedinella radians		8980	
Gymnodiniales		35920	12795
Cryptomonadales spp.	10830	19756	present
Pyramimonas sp.		present	

The Baltic Sea

Arkona Basin BY2 23rd of October



Coscinodiscus sp.

It did not seem that phytoplankton distribution had changed since the last two expeditions in the Baltic. Only three species of diatoms were encountered, of which *Coscinodiscus centralis* was rather common. Dinoflagellates on the other hand were represented by four species, none of which appeared in high numbers. The total cell number was 80 866 cells/l, mostly attributed to the small unidentified flagellates of different taxonomical groups. The chlorophyll *a* concentration was below average.

Bornholm Basin BY5 18th of October

Phytoplankton occurrence was similar to the one at BY2, both diatoms and dinoflagellates were very poorly represented. Only one diatom was observed; *Coscinodiscus centralis*. Most of the cells counted were small flagellates and ciliates. The chlorophyll *a* concentration was below average.

The South East Baltic BCS III-10 17th of October

Two species of diatoms appeared in very low numbers; *Chaetoceros impressus* and *Coscinodiscus centralis*. The total cell count was rather high (335 825 cells/l) compared to the two preceding stations and was completely attributed to small flagellates in the size range 3-5 micrometers. A small population of the dinoflagellate *Prorocentrum minimum** was quantified in addition to the same species as the two stations above. The chlorophyll *a* concentration was at average.

Eastern Gotland Basin BY15 10th of October

Two species occurred that were absent from the other stations; *Prorocentrum minimum** and *Nodularia spumigena**. These species contributed to almost 50% of the total cell amount which reached 299 099 cells/l. Diatoms were extremely rare both in number of species and in cell numbers. The dinoflagellate *Dinophysis acuminata** appeared in low cell numbers. The chlorophyll *a* concentration was at average.

Dinophysis acuminata

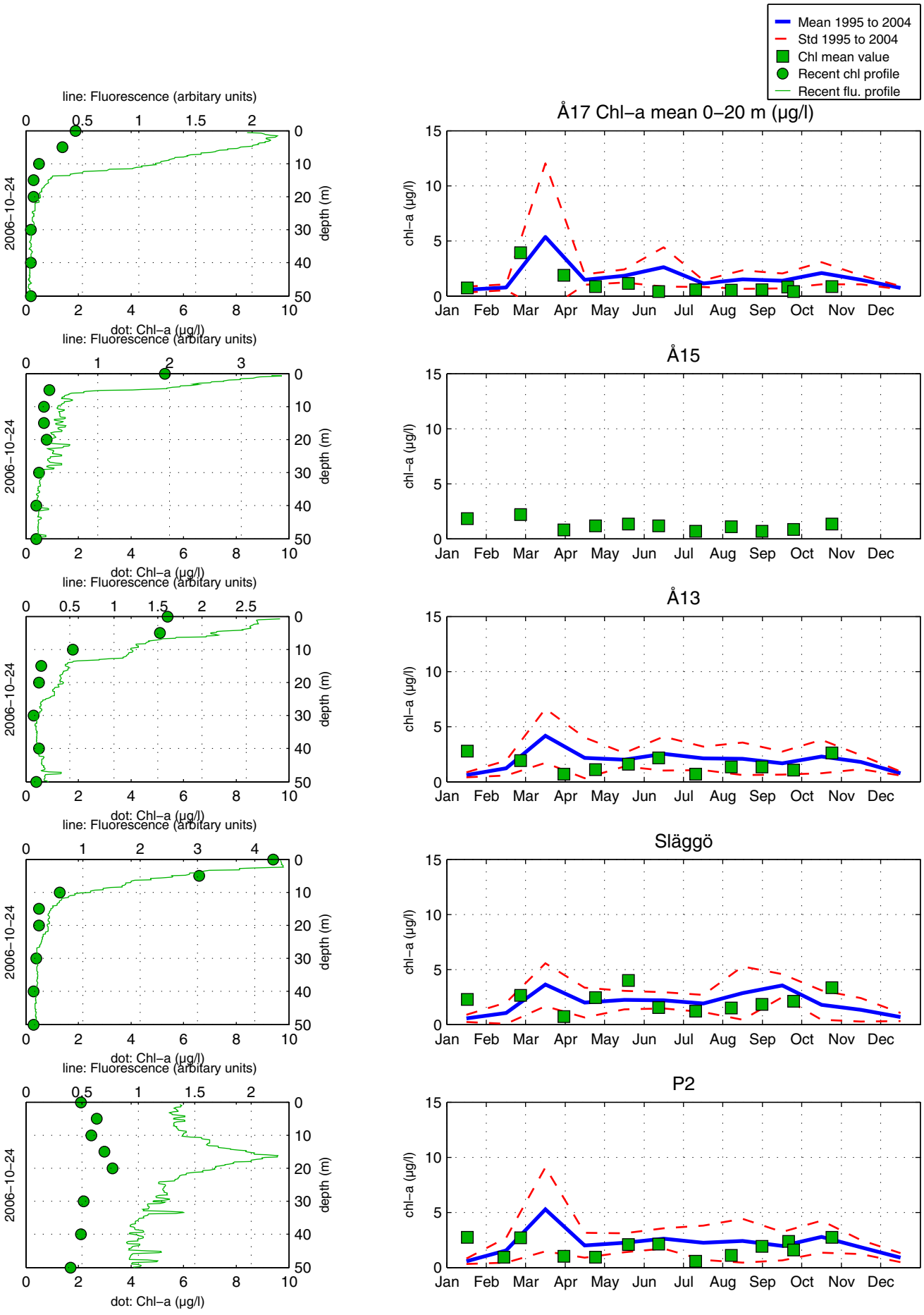
Western Gotland Basin BY38 11th of September

Unidentified cyanobacterial filaments were observed in low numbers. Other phytoplankton components were remarkably rare and cell numbers were low. Diatoms were only represented by two *Chaetoceros* species; *C. impressus* and *C. danicus*. Apart from some small naked cells, dinoflagellates were completely absent in the sample. The chlorophyll *a* concentration was below average.

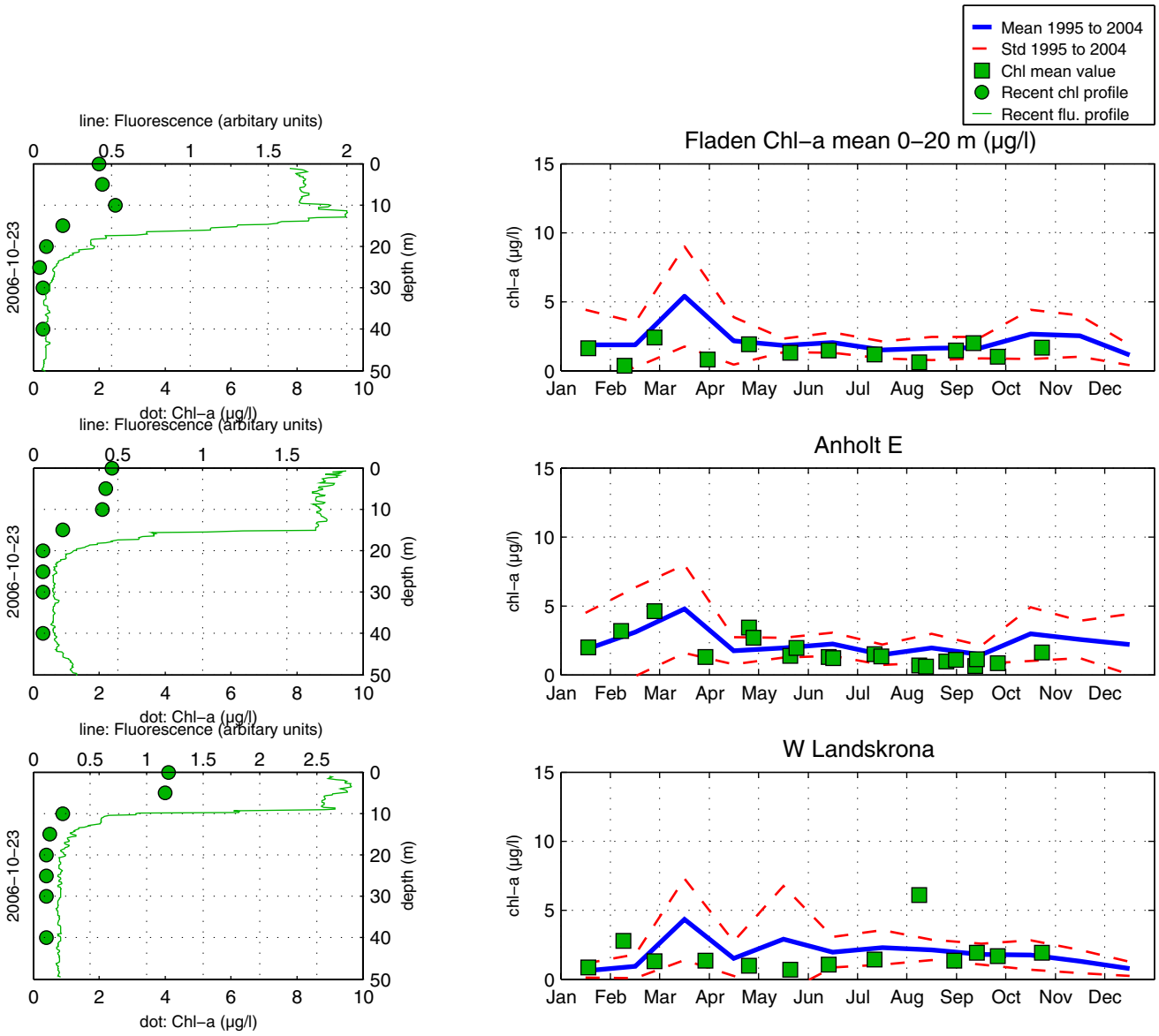
Text: Adil Yousif
Layout: Ann-Turi Skjevik

Selection of observed species Red=potentially toxic species [1] quantified in m/L	**BY2** **2006-10-23** **cells/L**	**BY5** **2006-10-18** **cells/L**	**BCS III 10** **2006-10-17** **cells/L**	**BY15** **2006-10-10** **cells/L**	**BY38** **2006-10-11** **cells/L**
Apedinella radians	present	present			
Attheya longicornis	present				
Chaetoceros danicus				present	present
Chaetoceros impressus	present		present	present	present
Coscinodiscus centralis	present	present	present		
Leptocylindrus minimus	present				
Amphidinium sp.	present				
Dinophysis acuminata	present			present	
Dinophysis norvegica	present				
Prorocentrum minimum		present	present	54934	
Protoperidinium steinii			present		
Scrippsiella sp.	present				
Gymnodiniales		14368	present	present	16002
Cryptomonadales spp.			present		present
Pyramimonas spp.					present
Nodularia spumigena[1]				0.8	
Mesodinium rubrum	present		present		present
Cyanobacterial filaments[1]				0.1	present

The Skagerrak



The Kattegat and the Sound



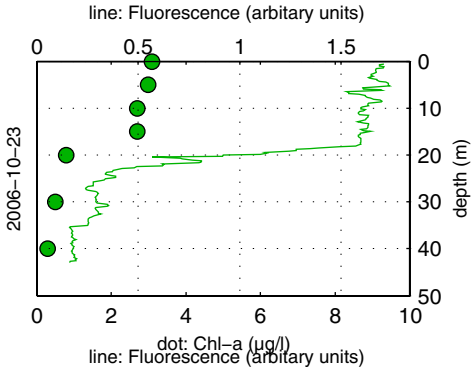
Om klorofylldiagrammen

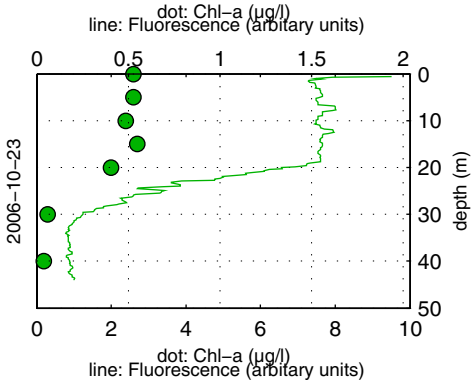
Klorofyll *a* är ett mått på mängden växtplankton. Prover tas från ett antal djup från U/F Argos. Data presenteras både från de fasta djupen och som medelvärden 0-20 m. Utöver resultaten från laboratorieanalyserna av vattenprover mäts klorofyll *a* som fluorescens från ett automatiskt instrument som sänks ned från fartyget. På så sätt kan djupt liggande, ibland, tunna alger av växtplankton observeras.

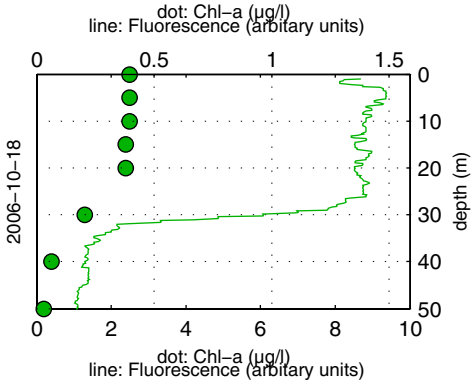
About the chlorophyll graphs

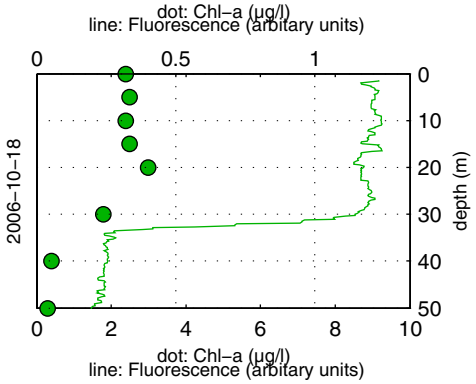
Chlorophyll *a* is sampled from several depths from the R/V Argos. Data is presented both from the discrete depths and as an average 0-20 m. In addition to the laboratory analysis from the water samples chlorophyll fluorescence is measured in continuous depth profiles from the ship. This is a way to observe thin layes of phytoplankton occuring below the surface.

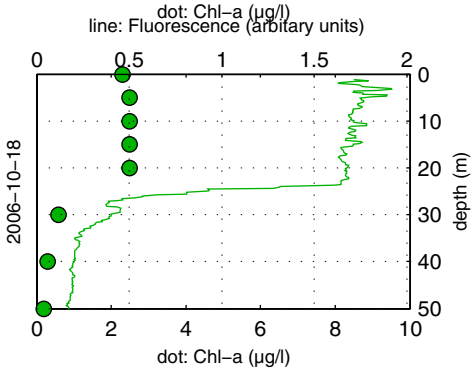
The Southern Baltic

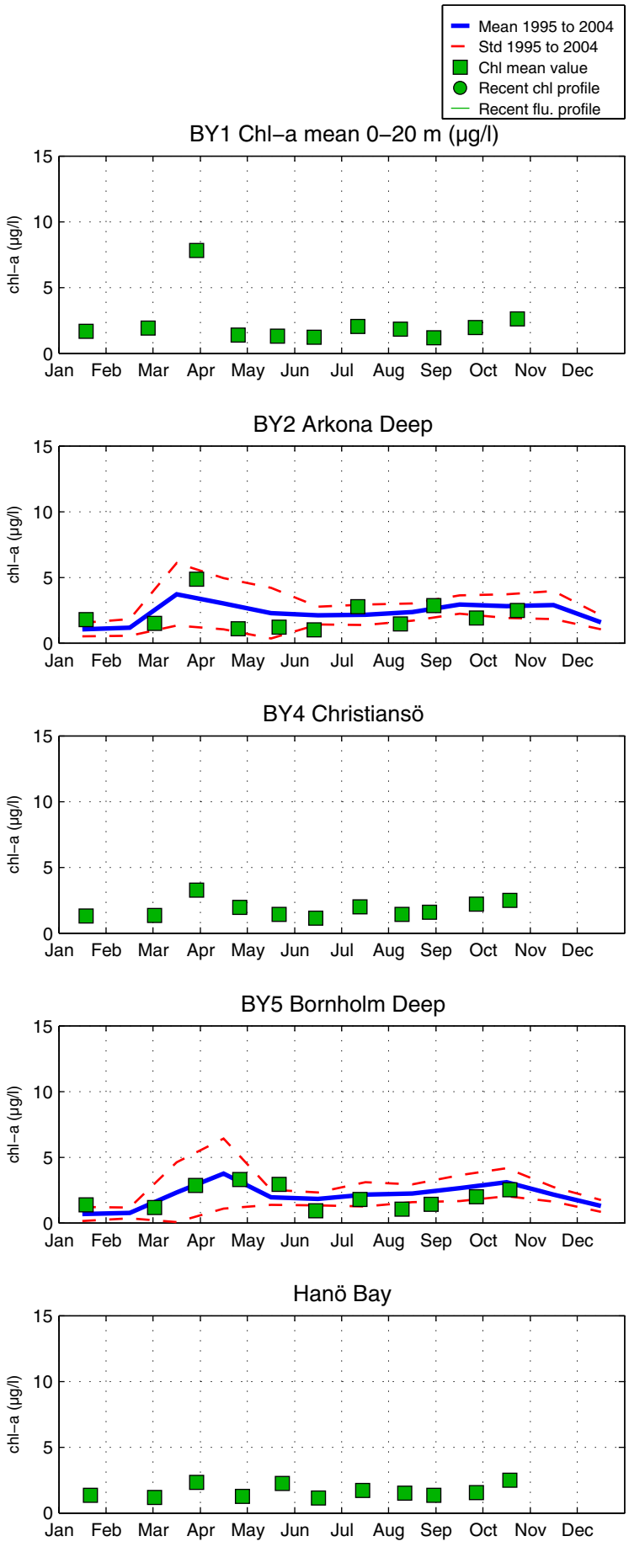




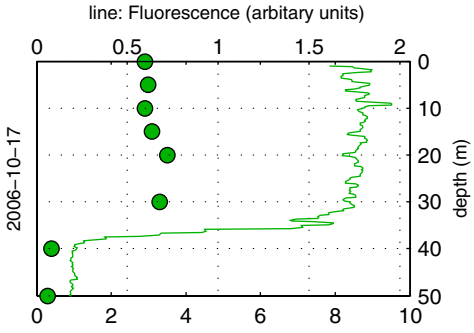


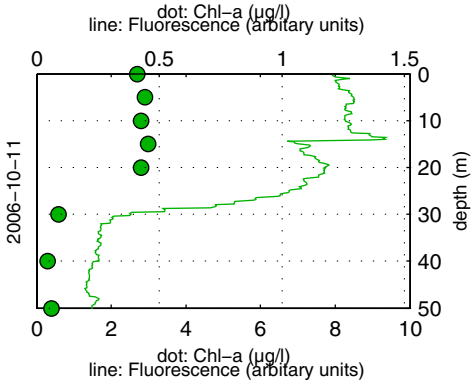


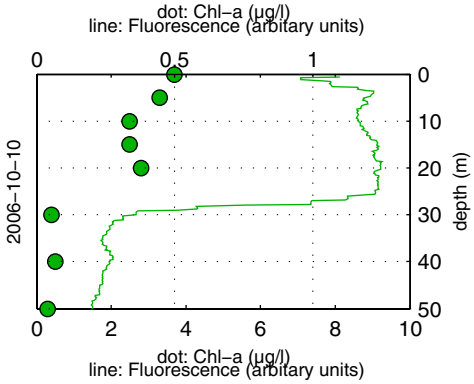


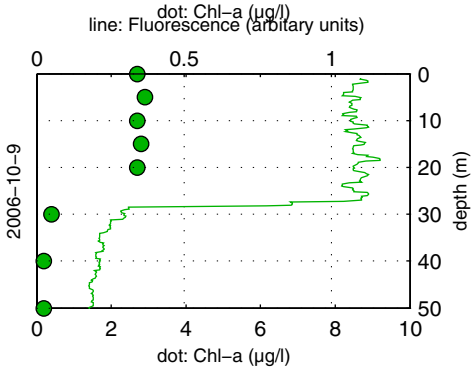


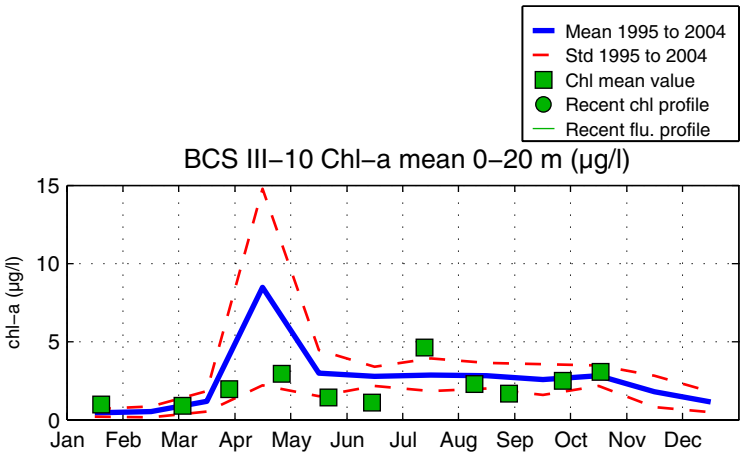
The Eastern Baltic

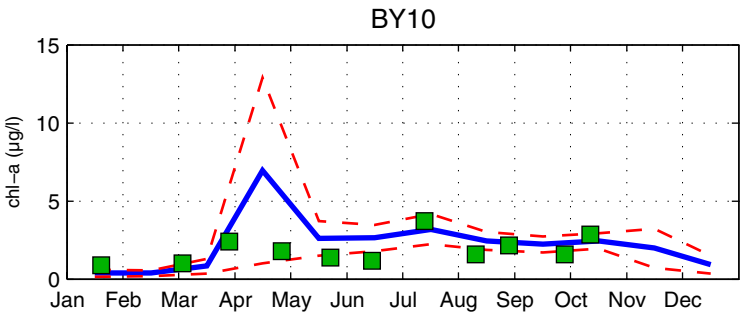


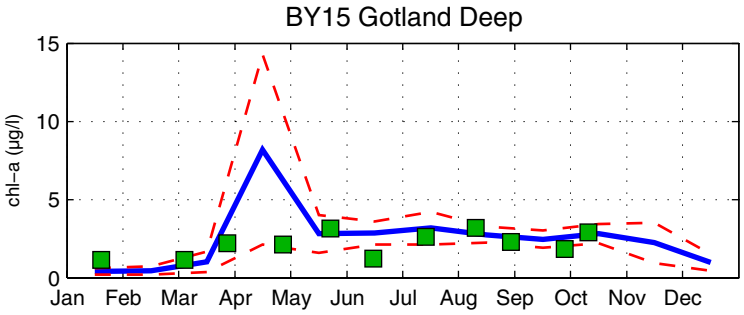


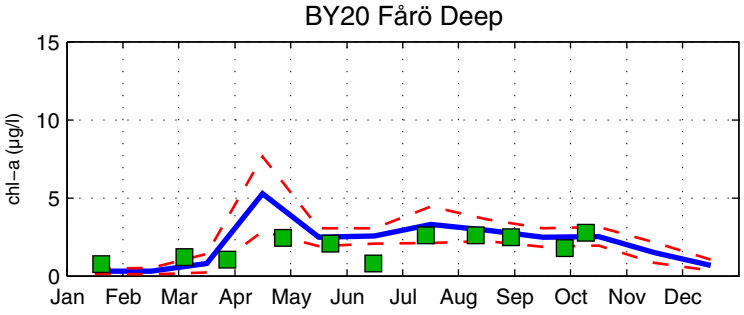


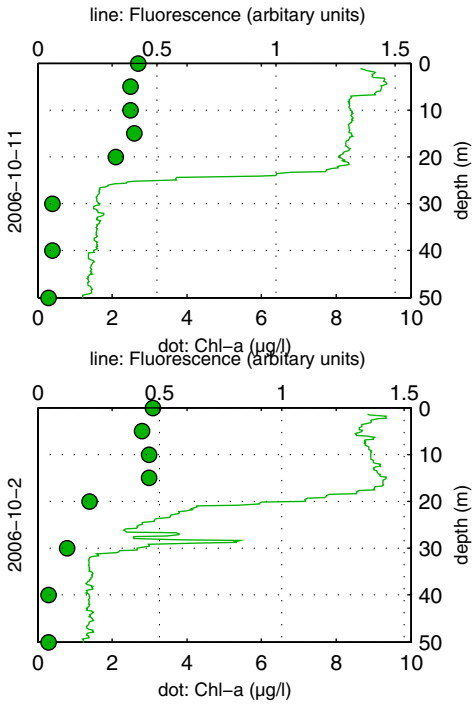


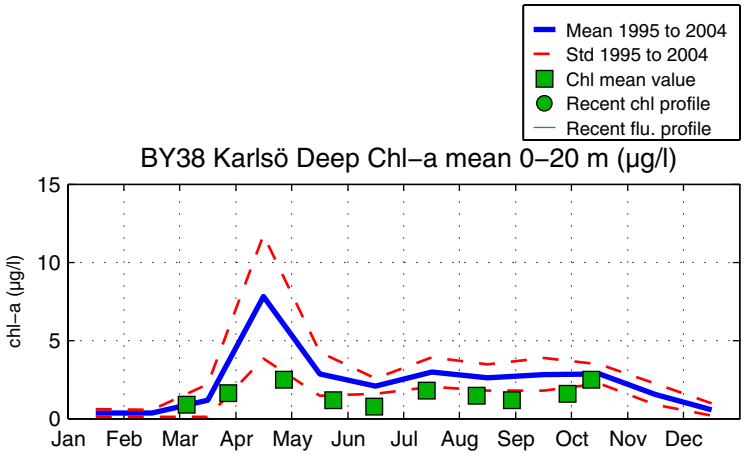


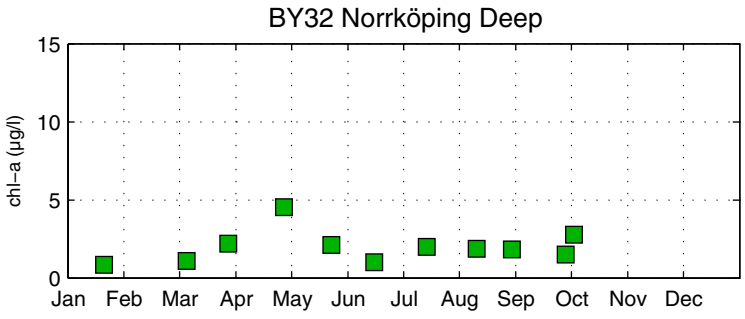












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