SMHI
Oceanographic Unit
No 7, 24 – 27 Sept 2007

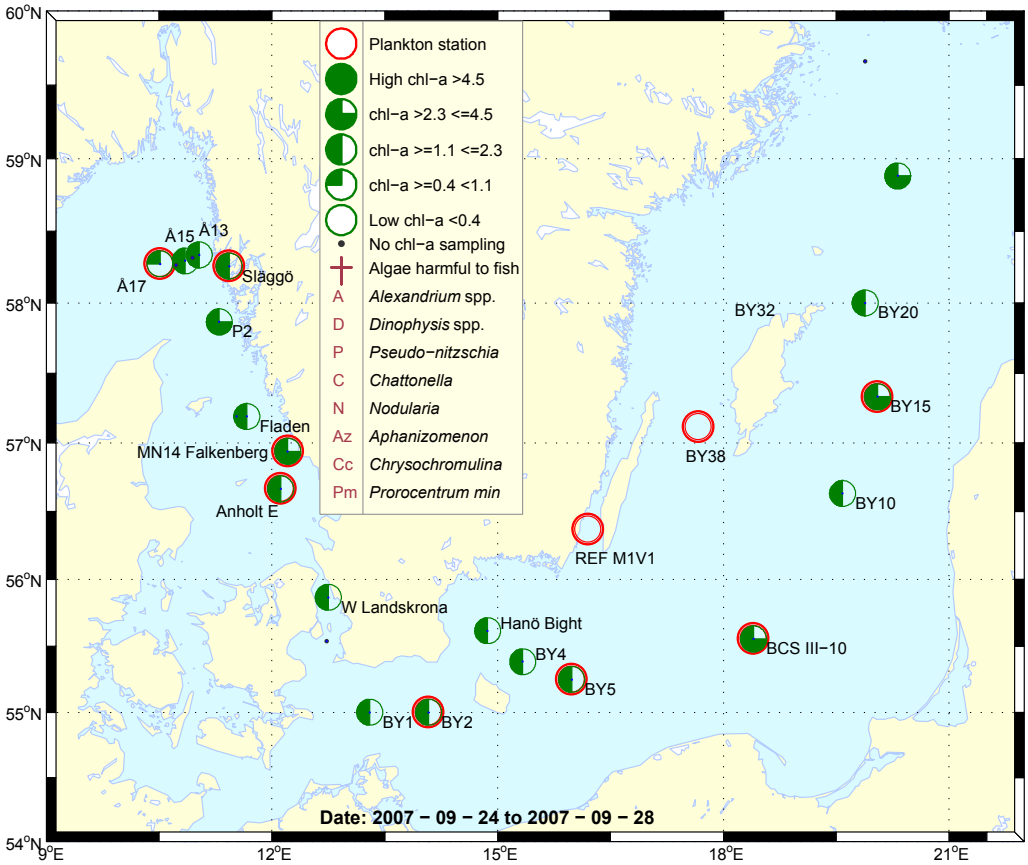
AlgAware
ALGAL SITUATION IN
MARINE WATERS SURROUNDING SWEDEN

Sammanfattning

I Skagerrak och Kattegatt dominerade kiselalger proverna och *Dactyliosolen fragilissimus, Leptocylindrus danicus* och *Cylindrotheca closterium* hade störst cellantal. Kiselalgen *Chaetoceros concavicornis* var vanlig i Kattegatt, en art som annars är mycket ovanlig i våra vatten. *C. concavicornis* är känd för att orsaka fiskdöd i Kanadensiska fiskodlingar, genom att den fastnar i fiskens gälar.

I Östersjön präglades proverna av små arter som cryptomonader och prasinophyceén *Pyramimonas* spp. Små dinoflagellater, som till exempel *Gymnodinium verruculosum* och *Heterocapsa rotundata* var vanliga. Cyanobakterien *Aphanizomenon* sp. förekom i södra Östersjön, östra Gotlandsbassängen och i norra egentliga Östersjön.

Klorofyll *a*-halterna var normala.



Abstract

In the Skagerrak and the Kattegat areas diatoms dominated, *Dactyliosolen fragilissimus, Leptocylindrus danicus* and *Cylindrotheca closterium* being the most numerous. The diatom *Chaetoceros concavicornis*, which normally is very rare here, was common in the Kattegat area. In Canadian aquaculture, *C. concavicornis* is known to be lethal to salmon by becoming trapped between the fish gill filaments.

In the Baltic small species as cryptomonads and the prasinophyceae *Pyramimonas* spp. dominated the samples. Small dinoflagellates like *Gymnodinium verruculosum* and *Heterocapsa rotundata* were common. The cyanobacterium *Aphanizomenon* sp. was present in the southern Baltic, in the eastern Gotland basin and in the northern Baltic proper.

The chlorophyll *a* concentrations were at 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
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 ro 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- nitzschia 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.

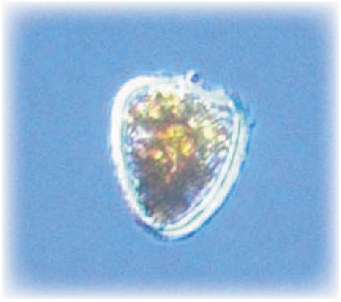
Översikt av potentiellt skadliga alger och det aktuella giftets effekt. Overview of potentially harmful algae and effects of toxins. Manual on harmful marine microalgae (2003 - UNESCO Publishing).

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. Då cirkeln är tom innäbär 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 cirkel indicates that there has been no sampling at that station.

The Skagerrak

Å17 24th of September 2007 (open Skagerrak)



Prorocentrum minimum

Generally, the plankton sample was rather low in diversity. Diatoms dominated and the most abundant specie was *Dactyliosolen fragilissimus*. The diatoms *Leptocylindrus danicus, L. minimus, Cylindrotheca closterium* were common as well. The potentially toxic dinoflagellate *Prorocentum minimum* was present.

Släggö 24th of September 2007 (coastal Skagerrak)

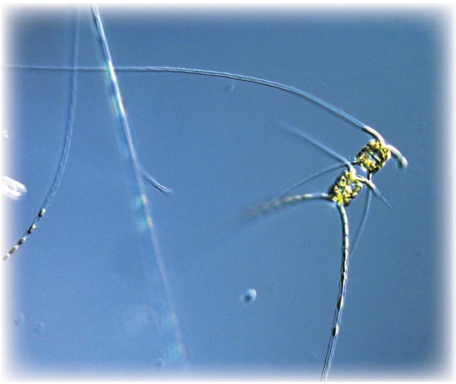
The same species composition was found as at Å17, although the cell numbers were higher at Släggö.

The chlorophyll *a* concentration was at average for the season in the Skagerrak areas.

The Kattegat

N14 Falkenberg 25th of September 2007

Diatoms dominated the plankton, with *Cylindrotheca closterium* being the most abundant. Among several species from the diatom genus *Chaetoceros, C. concavicornis* was the most common. Even though *C. concavicornis* is extremely rare in the Kattegat/Skagerrak areas it has been observed with quite high cell numbers along the coast in September and October samplings. In Canadian aquaculture, the specie is known to be lethal to salmon by becoming trapped between the fish gill filaments.



Chaetoceros concavicornis

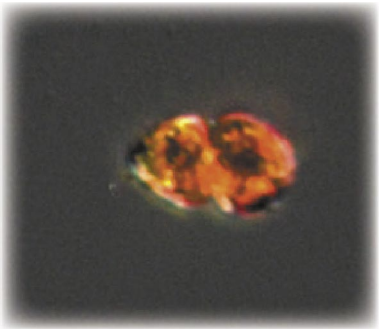
Anholt E 25th of September 2007

The plankton situation was very alike in the Skagerrak and Kattegat areas, and the same species dominated at Anholt E as at N14. The chlorophyll *a* concentration was slightly enhanced, but still within average.

Selection of observed species	Å17	Släggö	N14	Anholt E
Red=potentially toxic species	2007-09-24	2007-09-24	2007-09-25	2007-09-25
	cells/l	cells/l	cells/l	cells/l
Cerataulina pelagica	28000	10 000	20 000	20 000
Chaetoceros affinis	present			
Chaetoceros concavicornis		present	10 000	28 000
Chaetoceros danicus			present	present
Chaetoceros decipiens	present		present	
Chaetoceros didymus		present		
Chaetoceros laciniosus	present	present		
Chaetoceros similis		present	present	present
Cylindrotheca closterium	35 000	35 000	180 000	120 000
Dactyliosolen fragilissimus	60 000	135 000	15 000	35 000
Ditylum brightwellii		present	present	present
Guinardia delicatula	present	present	15 000	present
Guinardia flaccida		present	present	present
Leptocylindrus danicus	45 000	95 000	90 000	75 000
Leptocylindrus minimus	20 000	70 000	25 000	35 000
Proboscia alata	present	present		present
Pseudo-nitzschia delicatissima-group	present	present		present
Pseudo-nitzschia seriata-group		present	present	
Rhizosolenia setigera	present	present	present	present
Skeletonema costatum	present	10 000	50 000	45 000
Ceratium tripos			present	present
Dinophysis acuminata		present	present	present
Dinophysis acuta		present		
Heterocapsa cf. minima	present			
Heterocapsa rotundata	present	present		
Katodinium glaucum	present		present	
Lessardia elongata	present			
Oxytoxum gracile	present			
Prorocentrum minimum	12 500	23 000	present	present
Scrippsiella-group spp.		present		present
Cryptomonadales spp.	15 000	95 000	50 000	25 000
Chrysochromulina spp.	present		present	present
Dictyocha fibula	present	5 000	present	present
Dictyocha speculum	present	present	present	present
Pyramimonas spp.	present	present	present	
Laboea strobila	present	present	present	present
Strombidium spp		present		

The Baltic Sea

Arkona Basin BY2 25th of September 2007



Gymnodinium verruculosum

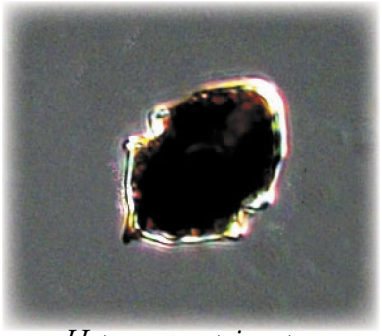
The sample was dominated by small species as cryptomonads, e.g. *Plagioselmis prolonga*. The most abundant genus was the prasinophycé *Pyramimonas*. Several small dinoflagellate species were observed, as for example *Gymnodinium verruculosum* and *Heterocapsa rotundata*. The diatom *Dactyliosolen fragilissimus* was present in small numbers as well as the cyanobacterium *Aphanizomenon* sp. The chlorophyll *a* concentration was at average.

Bornholm basin BY5 26th of September 2007

The plankton and the chlorophyll *a* situation was the same as at BY2, except the species were somewhat fewer.

The South East Baltic BCS III-10, the Eastern Gotland Basin and the Northern Baltic proper 26th and 27th September 2007

The diversity was low, and only small species were found. The most abundant was *Pyramimonas* spp. followed by cryptomonads. The dinoflagellates *Heterocapsa rotundata* and *H. triquetra* were common, and the chlorophyll *a* concentration was at average. The cyanobacterium *Aphanizomenon* sp. was present at BY15 and BY29.



Heterocapsa triquetra

Selection of observed species Red=potentially toxic species [1] quantified in m/l	**BY2** **2007-09-25** **cells/l**	**BY5** **2007-09-26** **cells/l**	**BCS III 10** **2007-09-26** **cells/l**	**BY15** **2007-09-27** **cells/l**	**BY29** **2007-09-27** **cells/l**
Chaetoceros danicus				present	present
Chaetoceros impressus	present				
Cyclotella choctawhatcheea	present				present
Cylindrotheca closterium	present				
Dactyliosolen fragilissimus	present	18 000			
Pseudo-nitzschia spp.	present				
Gymnodinium verruculosum	present	10 000			
Heterocapsa rotundata	present	15 000	10 000	present	
Heterocapsa triquetra	present		15 000		present
Katodinium glaucum	present	present			
Peridiniella danica	present			present	
Chrysochromulina spp.	present	present		present	present
Cryptomonadales spp.	75 000	75 000	70 000	160 000	60 000
Plagioselmis prolonga	20 000	16 000	7 000	40 000	25 000
Pyramimonas spp.	150 000	130 000	140 000		32 000
Aphanizomenon sp.[1]	present	present		present	present
Mesodinium rubrum	present	present	present	present	present
Strombidium spp.	present	present	present	present	

Phytoplankton analysis and text by:
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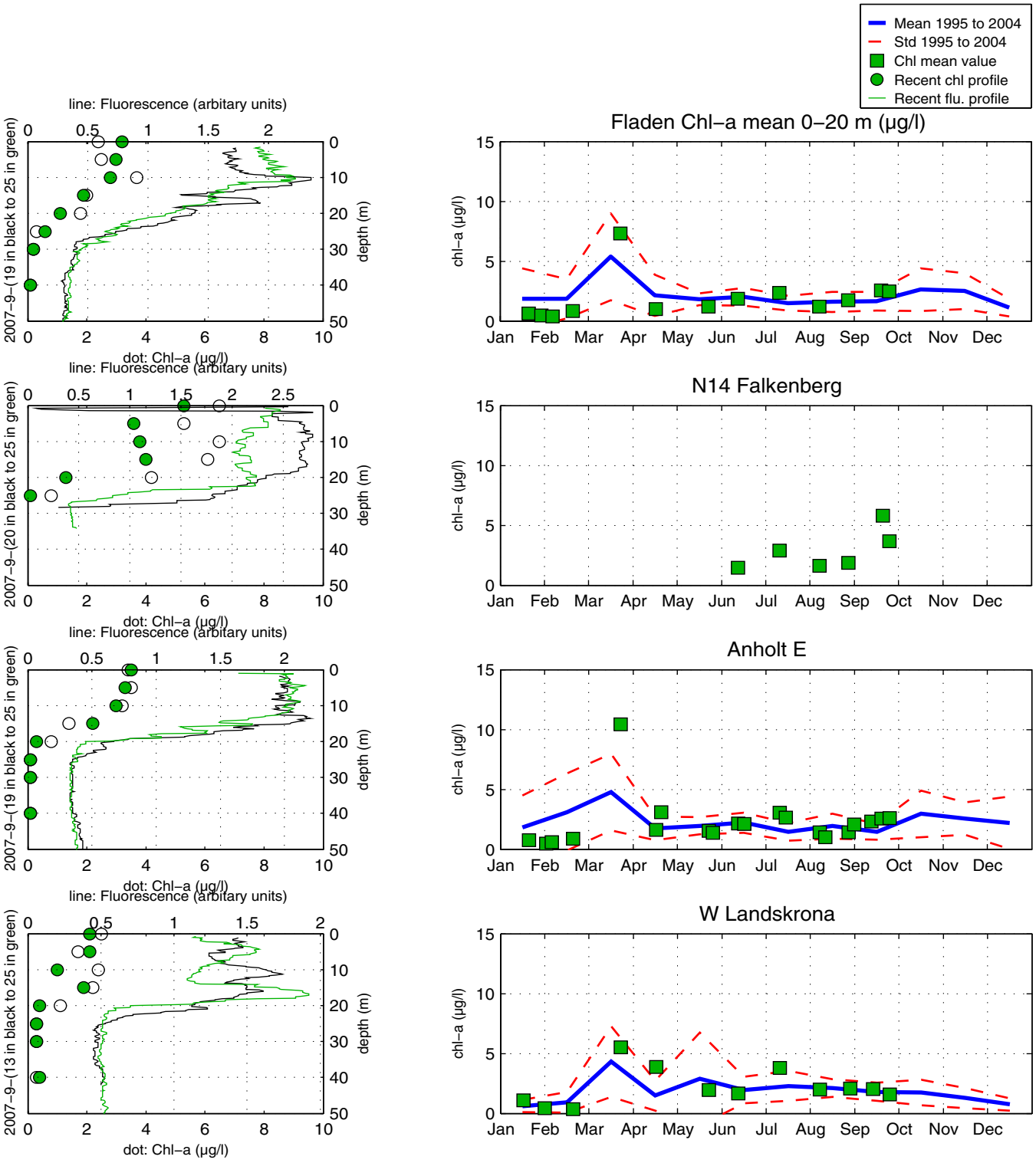
Reviewed by Lars Edler

The Kattegat and the Sound



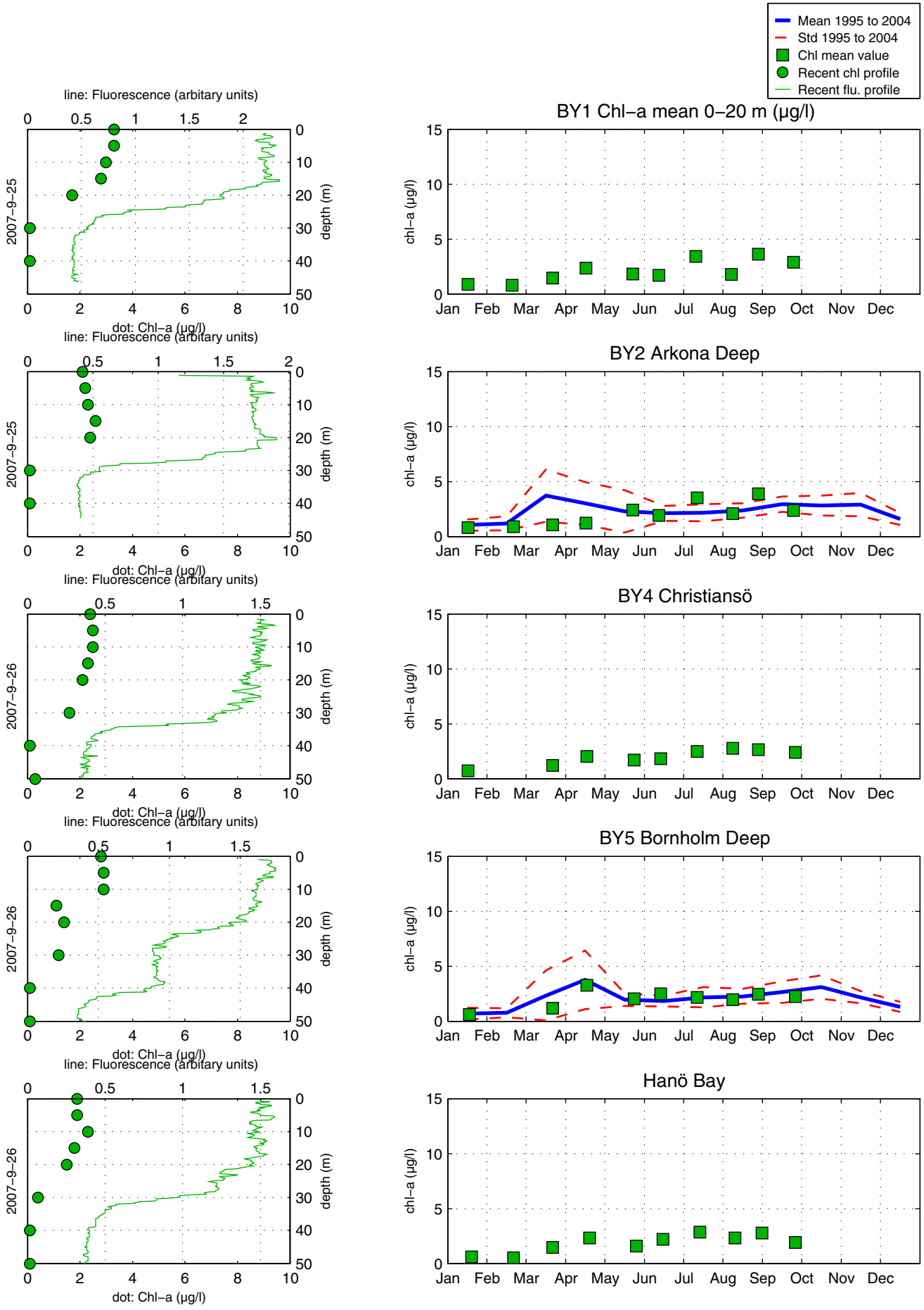
Om klorofylldiagrammen

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