SMHI
Oceanographic Unit
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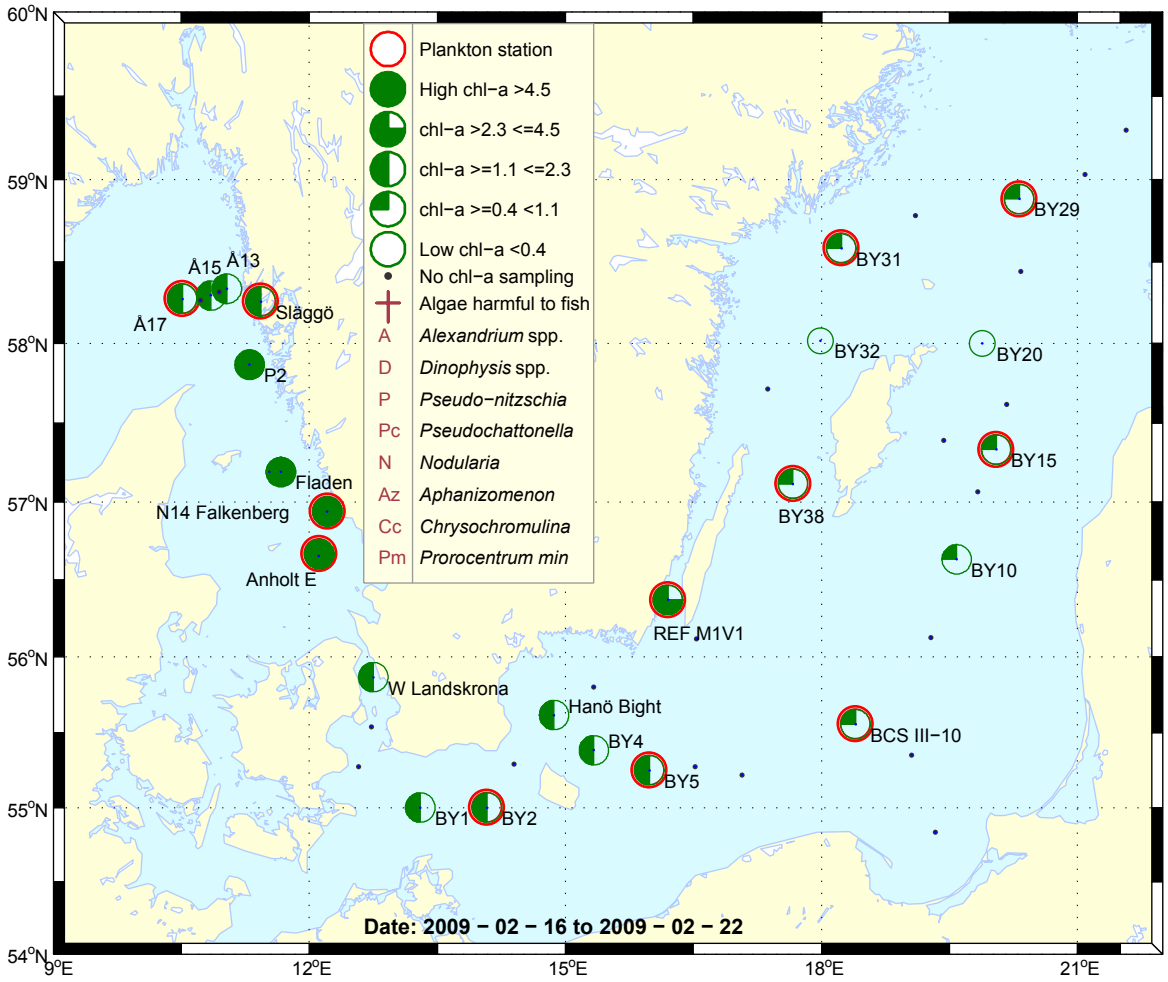
AlgAware
ALGAL SITUATION IN
MARINE WATERS SURROUNDING SWEDEN

Sammanfattning

Höga maximavärden av klorofyllfluorescens samt integrerade (0-20 m) klorofyll *a* värden långt över medel indikerade att vårblomningen hade kommit i gång i Skagerrak och Kattegatt. Detta kunde också bekräftas vid analyserna av växtplanktonproverna, där det var relativt många arter av kiselalger men framför allt *Skeletonema costatum* som var dominerande art vid alla fyra planktonstationer. *Pseudo-nitzschia delicatissima*-gruppen* fanns också med höga cellantal vid alla stationer och kiselalgsläktena *Chaetoceros* och *Thalassiosira* var representerade med många arter. Det för fisk skadliga släktet *Pseudochattonella** (tidigare *Chattonella*) observerades vid Å17, N14 och Anholt E.

I Östersjön fanns inga tecken på vårblomning, klorofyll *a* värdena var låga, men inom medel för denna månad.



Abstract

High peaks in the chlorophyll fluorescence diagrams as well as the integrated (0-20 m) chlorophyll *a* values being well above average indicated that the spring bloom had started in the Skagerrak and Kattegat areas. The spring bloom was obvious analysing the phytoplankton samples, as many species of diatoms were present, of which *Skeletonema costatum* was the dominating species at all of the plankton stations. The *Pseudo-nitzschia delicatissima*-group* was also abundant at all of the stations and the diatom genera *Chaetoceros* and *Thalassiosira* were represented with many species. *Pseudochattonella** spp. (formerly known as *Chattonella*), which is toxic to fish, was observed at Å17, N14 and Anholt E.

There were no signs of spring bloom in the Baltic Sea. The chlorophyll *a* concentrations were low, although within average for this month.

Om AlgAware

SMHI genomför ca en gång per månad expeditioner med U/F Argos i Östersjön och Västerhavet. Resultat baserade på semikvantitativ 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 semi quantitative 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.
Pseudochattonella 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 innebär 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.

More detailed information on species composition and abundance

Due to the low phytoplankton activity, samples from the Baltic Sea have not been analysed.

The Skagerrak

The spring bloom had probably just started in the Skagerrak area, the chlorophyll *a* values being high only in the surface and the diversity still being relatively low.

Å17 16th of February (open Skagerrak)

Attheya septentrionalis

The diatom *Skeletonema costatum* dominated the sample and *Pseudo-nitzschia delicatissima*-group* was very common. Several other diatoms were common e.g. *Chaetoceros similis*, *C. laciniosus* and *Attheya septentrionalis*. The dinoflagellates *Dinophysis acuminata** and *Karenia mikimotoi** and the dictyochophyte *Pseudochattonella* spp.* were present with low cell numbers.

The integrated (0-20 m) chlorophyll *a* concentration was above average for this month.

Släggö 16th of February (Skagerrak coast)

The species composition was similar to the one at Å17, but the cell numbers were lower and *Karenia mikimotoi** and the dictyochophyte *Pseudochattonella* spp.* were absent.

The integrated (0-20 m) chlorophyll *a* concentration was above average for this month.

The Kattegat

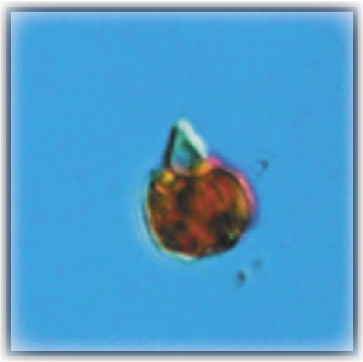
N14 Falkenberg and Anholt E 17th of February

The high chlorophyll *a* values were found not only at the surface as they were in the Kattegat area, but down to 5 and 10 meters at N14 and Anholt E respectively, indicating that the spring bloom started earlier than in the Skagerrak.

The cell numbers were higher than in the Skagerrak, but the species diversity was approximately the same in the two areas.

In addition to the species mentioned at Å17 the chrysophytes *Pseudopedinella* spp. and *Apedinella radians* were very common.

The integrated (0-20 m) chlorophyll *a* concentrations were well above average for this month.

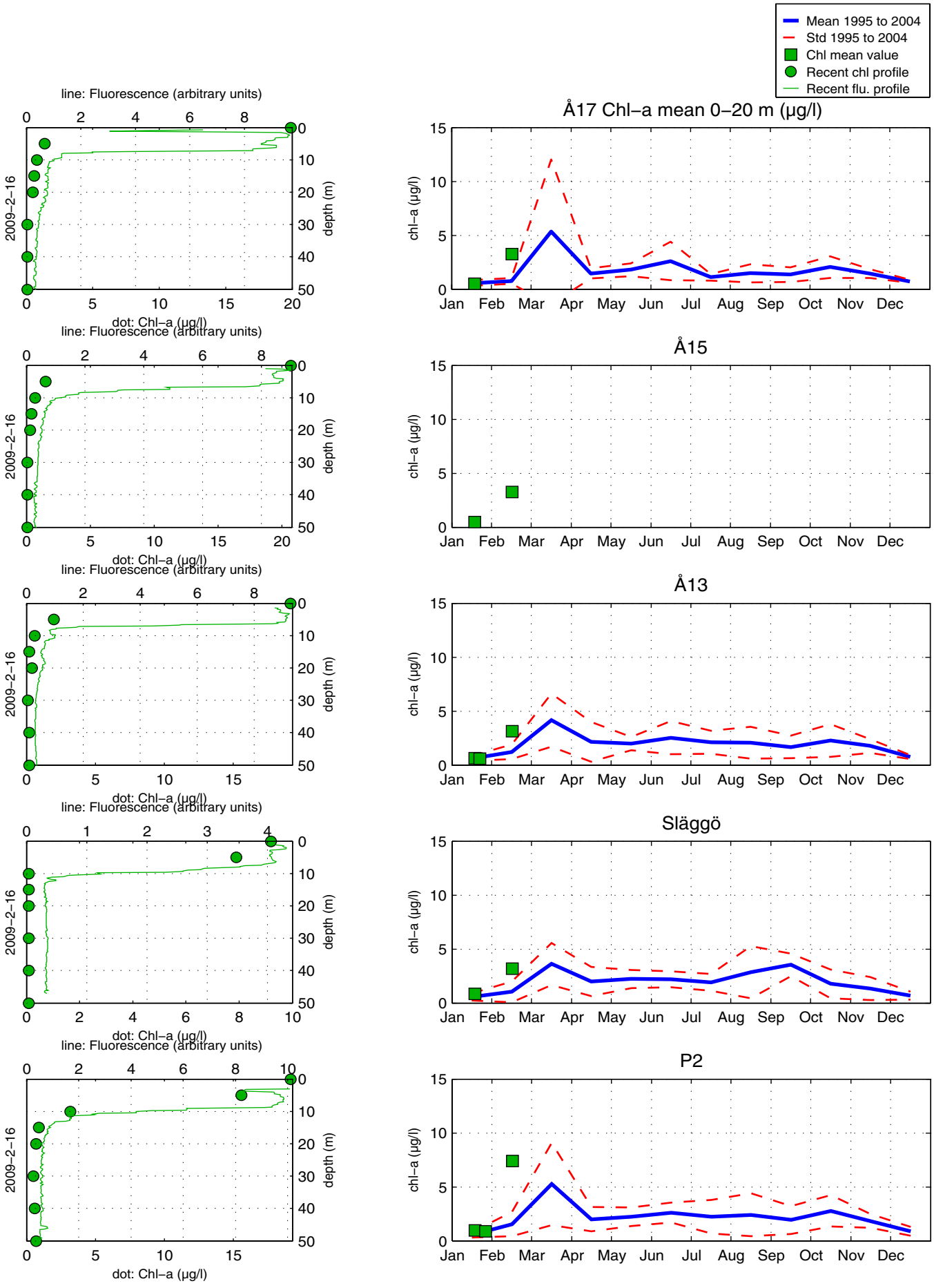


Pseudopedinella cf. *pyriforme*

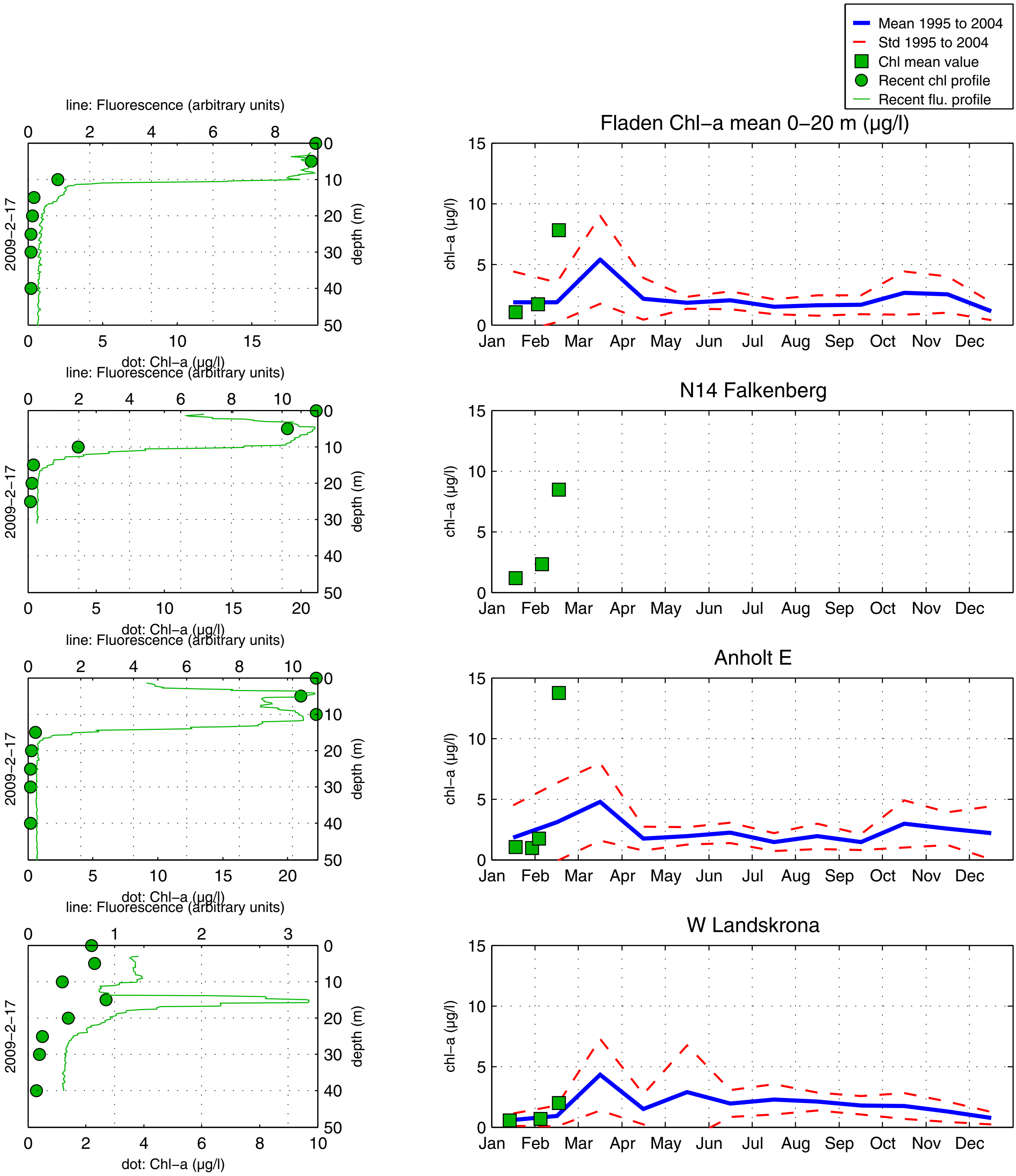
Phytoplankton analysis and text by:
Ann-Turi Skjevik

Selection of observed species	Å17	Släggö	N14	Anholt E
Red=potentially toxic species	09-02-16	09-02-16	09-02-17	09-02-17
	cells/l	cells/l	cells/l	cells/l
Attheya septentrionalis	present	present	common	37 000
Cerataulina pelagica	present			
Chaetoceros curvisetus	present		present	present
Chaetoceros debilis				present
Chaetoceros danicus	present		present	
Chaeotoceros decipiens			present	
Chaetoceros laciniosus	16 000	common	14 000	16 000
Chaetoceros similis	19 000	common	25 000	58 000
Chaetoceros simplex				present
Chaetoceros socialis	present			
Chaetoceros subtilis	present		present	present
Chaetoceros throndsenii			present	
Chaetoceros tenuissimus	present	present		present
Cylindrotheca closterium	present	present	present	present
Dactyliosolen fragilissimus			present	present
Ditylum brightwellii			present	present
Guinardia delicatula		present	present	present
Lennoxia faveolata		present		
Leptocylindrus danicus				present
Navicula spp.	present	present	present	present
Porosira glacialis	present	present	common	common
Proboscia alata	present	present	present	present
Pseudo-nitzschia delicatissima-group	240 000	133 000	440 000	489 000
Pseudo-nitzschia seriata-group	present	common	common	present
Rhizosolenia hebetata	present		present	present
Rhizosolenia setigera		present	present	present
Skeletonema costatum complex	4.4 million	2.3 million	5.9 million	7.2 million
Thalassionema nitzschioides	present	present	present	present
Thalassiosira angulata	common	present	present	present
Thalassiosira anguste-lineata	common	present	common	present
Thalassiosira cf. *minima*	present	common	common	common
Thalassiosira nordenskioeldii	14 000	7 000	30 000	55 000
Thalassiosira rotula	present	present	present	present
Ceratium lineatum	present	present		
Ceratium longipes			present	present
Ceratium tripos	present	present	present	
Dinophysis acuminata	present		present	present
Dinophysis norvegica		present	present	present
Gymnodinium verruculosum			present	
Gyrodinium spirale			present	present
Heterocapsa rotundata	present	common	30 000	27 000
Heterocapsa triquetra		present		present
Karenia mikimotoi	present			
Katodinium glaucum	present	present		present
Protoperidinium bipes			present	
Protoperidinium spp.	present	present	present	present
Scrippsiella-complex		present		
Chrysochromulina spp.	present	present		present
Cryptomonadales spp.	32 000	38 000	60 000	49 000
Eutreptiella spp.	present	present	present	present
Pyramimonas spp.	present	present	present	present
Dictyocha speculum	present		present	
Pseudochattonella spp.	present		present	11 000
Apedinella radians	present	present	common	common
Pseudopedinella spp.	present	present	common	common
Calliacantha longicaudata	present	present	present	present
Calliacantha natans	present		common	40 000
Leucocryptos marina	present		present	present
Strombidium spp.	present	present	present	present

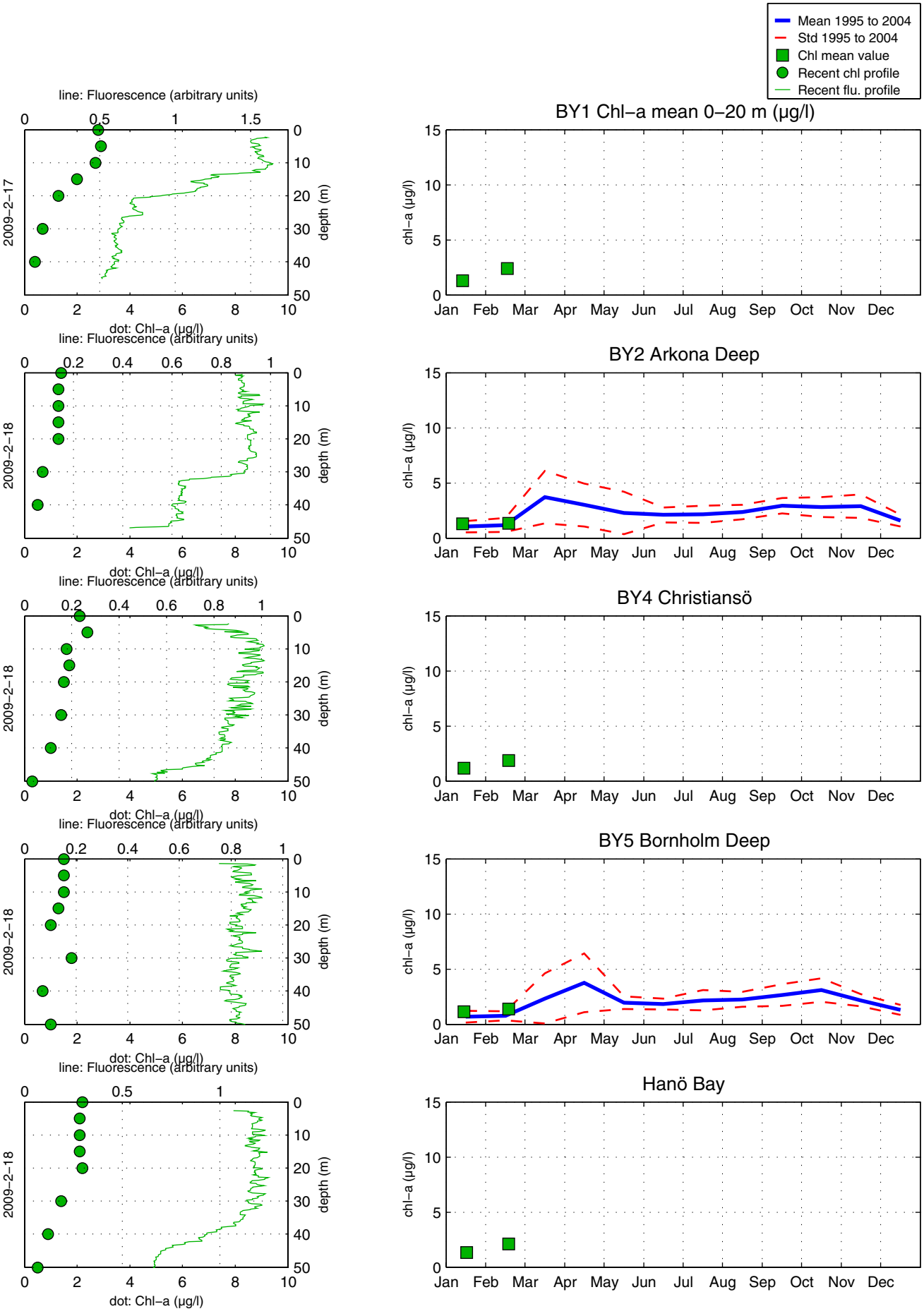
The Skagerrak



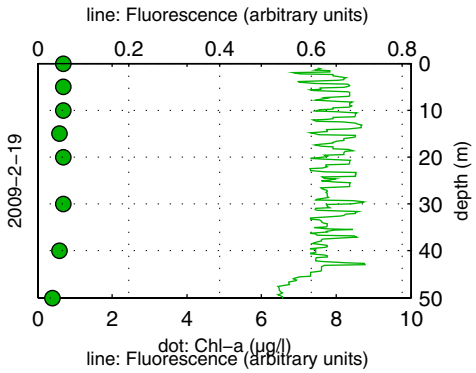
The Kattegat and the Sound

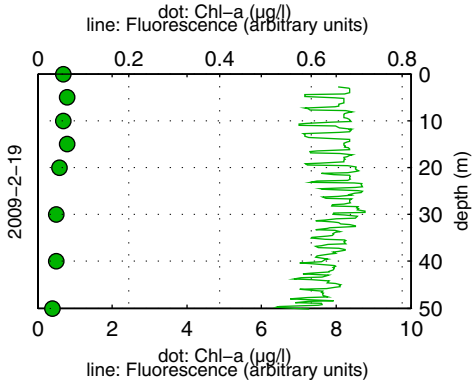


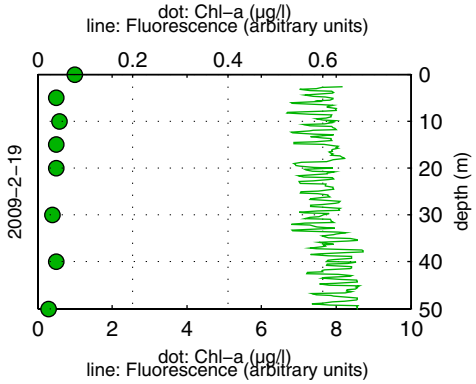
The Southern Baltic

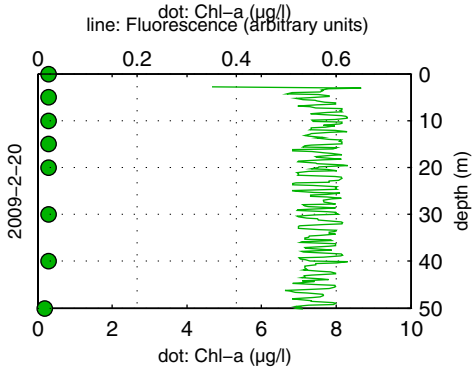


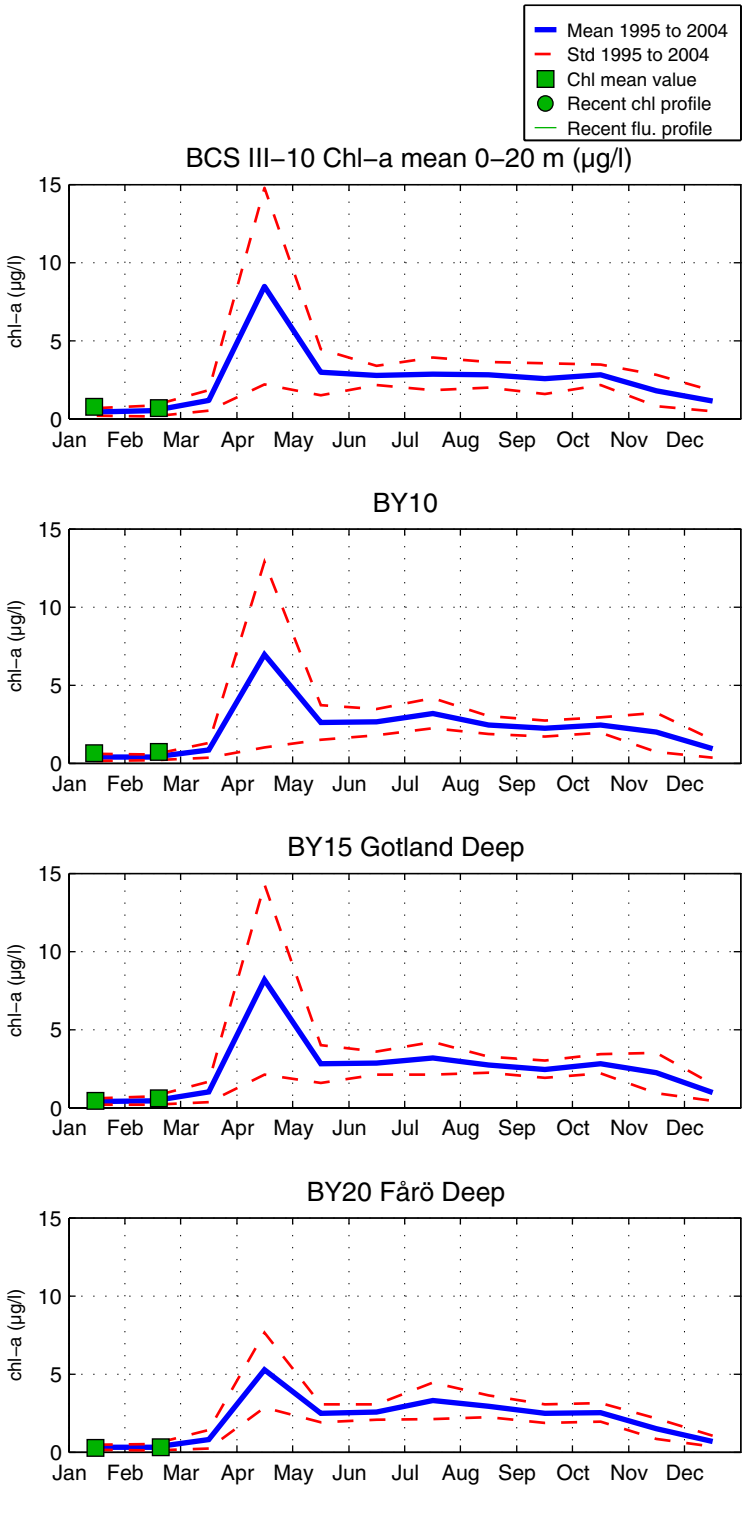
The Eastern Baltic



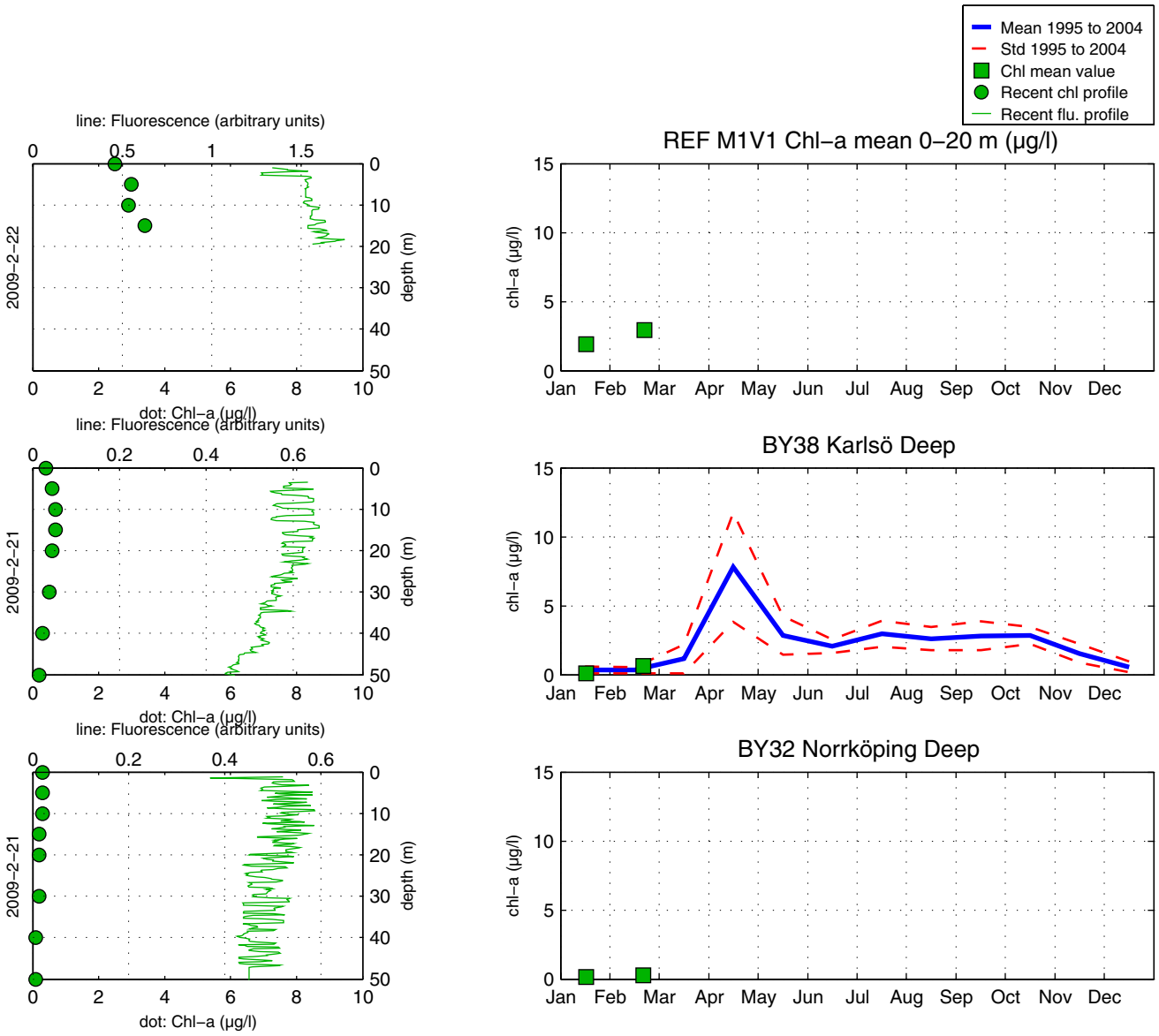








The Western Baltic



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 lager 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.