

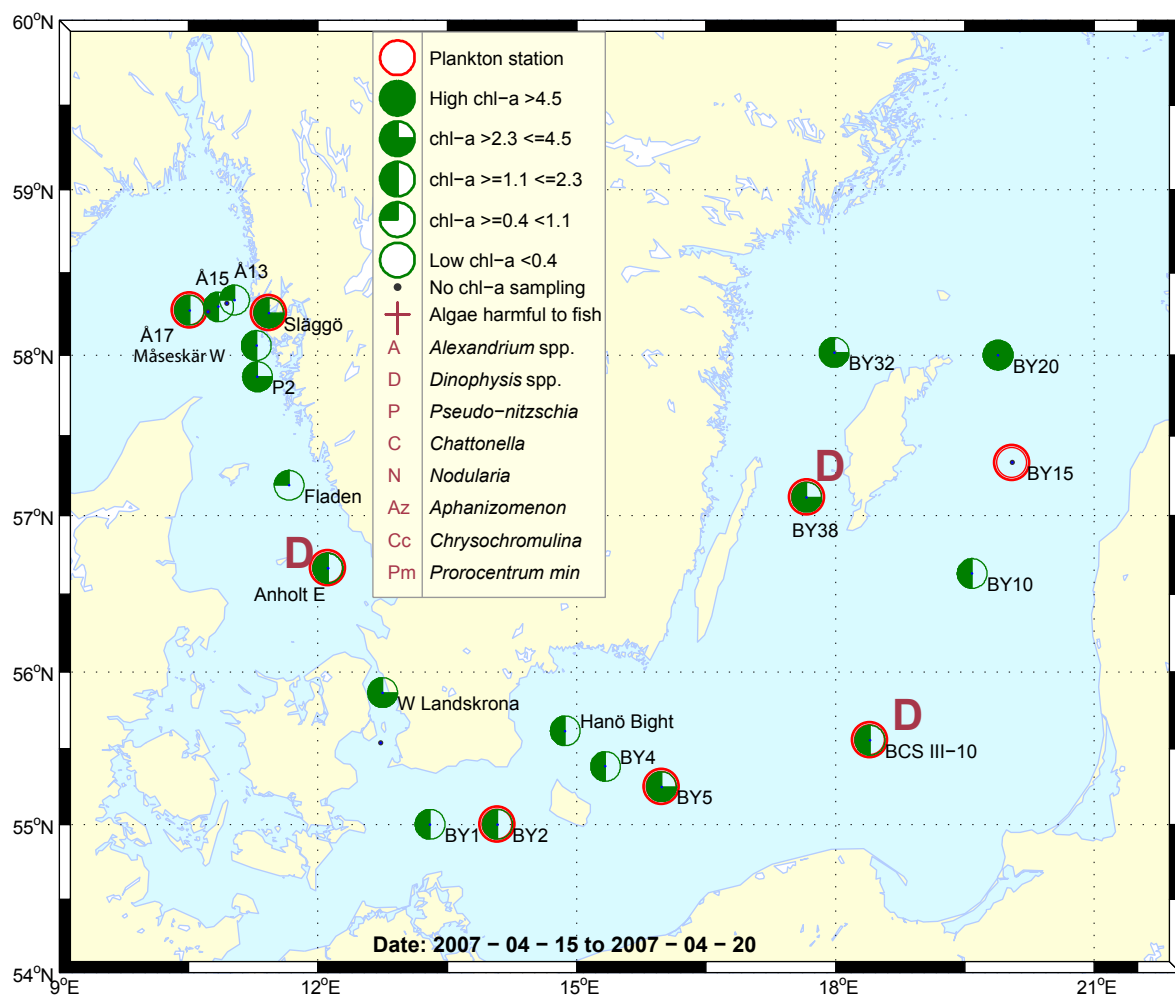
## Sammanfattning

Under april månads provtagningar dominerade kiselalger, med framför allt *Skeletonema costatum* i Kattegatt-Skagerrak området. Jämfört med mars månad hade *Chattonella* cf. *verruculosa* minskat mycket i antal och observerades nu bara vid Släggö. Den potentiellt giftiga dinoflagellaten *Dinophysis acuta* fanns över den kritiska gränsen om 300 celler/l vid det första provtagningstillfället vid Anholt E.

Vid stationerna i Östersjön dominerade dinoflagellater, och kiselalger var fåtaliga eller saknades helt. Vid de flesta stationer, men framför allt vid BY 15, återfanns dinoflagellaten *Peridiniella catenata* med höga cellantal.

Både i Västerhavet och i Östersjön var nanoflagellater vanliga, särskilt cryptophycéen *Teleaulax amphioxeia* och prasinophycéen *Pyramimonas* spp.

Ytvärdena av klorofyll *a* låg vid eller något över medel, förutom i västra Gotlandsbassängen där värdet låg på hela 7,9 µg/l, troligtvis orsakat av det stora antalet av *Peridiniella catenata*.



## Abstract

In the Kattegat-Skagerrak diatoms exclusively dominated with high abundances of *Skeletonema costatum* as a continuation of the spring bloom. *Chattonella* cf. *verruculosa* had decreased considerably in comparison to March and appeared only at Släggö. The toxic dinoflagellate *Dinophysis acuta* appeared at Anholt E (16th April) with cell numbers above the critical level (300 cells/l).

In the Baltic Sea, dinoflagellates were the prominent component with a scarcity or absence of diatoms. Most of the Baltic Sea stations, BY15 in particular, exhibited noticeable high cell numbers of *Peridiniella catenata*. In almost all stations, in both Kattegat-Skagerrak and the Baltic Sea, nanoplankton were rather common, particularly the Cryptophycean *Teleaulax amphioxeia* and the Prasinophycean *Pyramimonas* spp.

The surface chlorophyll *a* concentrations were in general within or slightly above average values, except in the Western Gotland Basin (BY38) where it reached 7.9 µg/l due to the high numbers of *Peridiniella catenata*.

## 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 algbloomingar finns på [www.smhi.se](http://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](http://www.smhi.se).

Art / Species	Gift / Toxin	Eventuella symptom	Clinical symptoms
<i>Alexandrium</i> spp.	Paralytic shellfish poisoning (PSP)	<b>Milda symptom:</b> 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 <b>Extrema symptom:</b> 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.	<b>Mild case:</b> 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. <b>Extreme case</b> 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)	<b>Milda symptom:</b> Efter cirka 30 minuter till några timmar: yrsel, illamående, kräkningar, diarré, magont <b>Extrema symptom:</b> Upprepad exponering kan orsaka cancer	<b>Mild case:</b> Within 30 min-a few hours: dizziness, nausea, vomiting, diarrhoea, abdominal pain. <b>Extreme case:</b> Repeated exposure may cause cancer.
<i>Chattonella</i> spp.	Fish toxin	<b>Låg celltäthet:</b> Ingen påverkan. <b>Hög celltäthet:</b> Fiskens gälar skadas, fisken dör.	<b>Low cell numbers:</b> No effect on fish. <b>High cell numbers:</b> Fish death due to gill damage.
<i>Pseudo-nitzschia</i> spp.	Amnesic shellfish poisoning (ASP)	<b>Milda symptom:</b> Efter 3-5 timmar: yrsel, illamående, kräkningar, diarré, magkramper <b>Extrema symptom:</b> Yrsel, hallucinationer, förvirring, förlust av korttidsminnet, kramper	<b>Mild case:</b> Within 3-5 hours: dizziness, nausea, vomiting, diarrhoea, abdominal cramps. <b>Extreme case:</b> 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

### Släggö 15<sup>th</sup> of April 2007



*Pyramimonas* sp.

The spring bloom became more clear at this station in comparison to March and was mainly formed by *Skeletonema costatum* with a highest cell number of  $1.58 \times 10^6$  cells/l. This species however was the only diatom that appeared in the plankton. *Chattonella* cf. *verruculosa* was present with low cell numbers (5 202 cells/l). The total number of species encountered was low and mainly formed of dinoflagellates and cryptophytes; *Heterocapsa* cf. *minima*, *Teleaulax* spp. and *Pyramimonas* spp. were the dominant components. The chlorophyll *a* concentration was rather high this month, 6.4 µg/l.

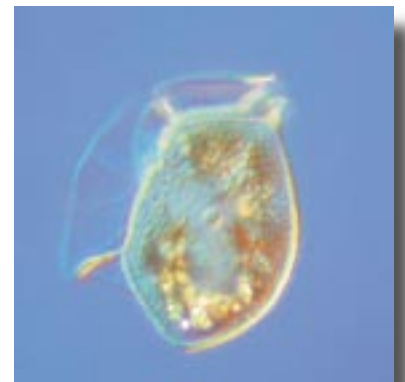
### Å17 15<sup>th</sup> of April 2007

The phytoplankton bloom had decreased remarkably from the previous month and the total cell density did not exceed  $0.79 \times 10^6$  cells/l. The major contributors were *Skeletonema costatum*, *Teleaulax* spp and several other small cryptophytes. Dinoflagellates were poorly represented with only four species, among which only *Heterocapsa* cf. *minima* was found in relatively high numbers. The surface chlorophyll *a* value was slightly above the average.

## The Kattegat

### Anholt E 16<sup>th</sup> and 20<sup>th</sup> of April 2007

The spring bloom which started in March was still the common feature at both sampling dates, although with less species diversity. *Skeletonema costatum* continued to dominate with cell numbers of  $1.36 \times 10^6$  and  $4.12 \times 10^6$  cells/l at the two sampling occasions respectively. Diatoms were represented by a few species, and apart from *S. costatum* they constituted only a small fraction of the total cell numbers. Dinoflagellates were rather common, but with low cell numbers. *Dinophysis acuta*, in particular, appeared in rather high numbers (908 cells/l) on the 16<sup>th</sup> of April, which is above its critical toxic level, but its numbers dropped to 226 cells/l at the second sampling date. Cryptophytes appeared in large numbers. The surface chlorophyll *a* concentration was in the normal range at the 20th but exhibited a low value at the 16th of April (1.4 µg/l).



*Dinophysis acuta*

Selection of observed species	Å17	Släggö	Anholt E	Anholt E
Red=potentially toxic species	2007-04-15	2007-04-15	2007-04-16	2007-04-20
	cells/L	cells/L	cells/L	cells/L
Chaetoceros similis			present	
Cylindrotheca closterium	present		present	present
Coscinodiscus radiatus				present
Dactyliosolen fragilissimus				present
Guinardia delicatula				present
Leptocylindrus danicus				present
Leptocylindrus minimus				present
Pseudo-nitzschia delicatissima-group	20 784	present		17 176
Pseudo-nitzschia seriata-group			present	present
Thalassionema nitzschioides			present	present
Skeletonema costatum	239 458	1 584 876	1 363 726	4 086 390
Thalassiosira nordenskioe				6 554
Ceratium lineatum				present
Dinophysis acuminata			454	226
Dinophysis acuta		222	908	226
Dinophysis norvegica			227	
Gyrodinium spirale			present	present
Katodinium glaucum	present		presnt	present
Peridiniella danica	present	30 192	9 988	19 210
Protoceratium reticulatum			present	present
Proto-peridinium bipes		present		present
Proto-peridinium brevipes			present	present
Proto-peridinium depressum			present	present
Proto-peridinium pellucidum		present	present	present
Chattonella cf. verruculosa		5 202		
Apedinella radians		119 649	present	17 690
Teleaulax amphioxus	162 617	216 750	16 202	95 526
Plagioselmis prolunga	present	present	present	7 076
Chrysochromulina spp.	present	present		
Cryptomonadales spp.	184 061	523 668	71 120	311 344
Pyramimonas spp.	51 823	109 242	present	present
Mesodinium rubrum	present	present	present	present
Flagellates_spp	57 184	164 730	40 894	176 900

# The Baltic Sea

## Arkona Basin BY2 16th April 2007

Phytoplankton were poorly represented both in cell numbers and in species composition. The highest total cell count was  $248 \times 10^3$  cells/l. Diatoms were only represented by *Skeletonema costatum*, which appeared in small numbers. Apart from *Peridiniella catenata*, other dinoflagellates were rare. Small flagellates particularly cryptomonadales were the prominent constituents at this station. The surface chlorophyll *a* concentration was rather low but did not drop below its average values.

## Bornholm basin BY5 17th April 2007

The total phytoplankton cell numbers were rather low. Diatoms were absent and dinoflagellates were represented by a few species, among which *Peridiniella catenata* was the most common. Small flagellates dominated, particularly *Pyramimonas* spp. of which cell numbers reached 158 242 cells/l. The chlorophyll *a* concentration reached 4.3 µg/l.

## The South East Baltic BCS III-10 17th of April 2007

The phytoplankton community was low both in biomass and species composition. Diatoms were absent. Dinoflagellates were sparse, but dominated by *Gymnodinium* spp., *Gyrodinium* spp. and *Peridiniella catenata*. Small flagellates, most prominently the Prasinophycean *Pyramimonas* spp. and the Cryptophycean *Teleaulax amphioxeia* were common. The surface chlorophyll *a* concentration was slightly above its average values.

## Eastern Gotland Basin BY15 18th of April 2007

Dinoflagellates dominated the phytoplankton population with 14 species. *Dinophysis acuminata* was present with noticeable numbers (681 cells/l). This station was characterized by a remarkable abundance of *Peridiniella catenata*. Diatoms were scarce, only a few cells of *Chaetoceros danicus* and *C. similis* were observed. The total cell counts were 627 957 cells/l, of which dinoflagellates constituted 72%. Cryptomonadales were less prominent than at the other stations. The surface chlorophyll *a* concentration reached a highest value among all Baltic stations due to the high numbers of *P. catenata*.

## Western Gotland Basin BY38 18th of April 2007

As with the preceding station, dinoflagellates dominated the phytoplankton community. The toxic dinoflagellate *Dinophysis acuminata* appeared in relatively large numbers, 2 285 cells/l, which is above the critical level. *Peridiniella catenata* was less common with highest cell density of 115 621 cell/l. *Skeletonema costatum* reappeared at this station although relatively sparse. Both *Teleaulax amphioxeia* and *Pyramimonas* spp. were common among the nanoplankton community. The surface chlorophyll *a* value was above its average this month.

Phytoplankton analysis and text by Adil Yousif.

Swedish summary and layout by Ann-Turi Skjevik.

Reviewed by Lars Edler.

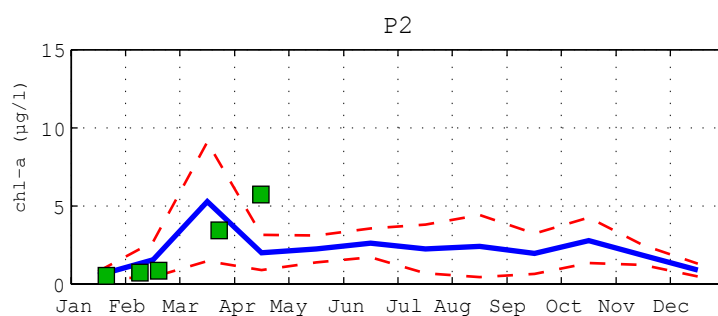
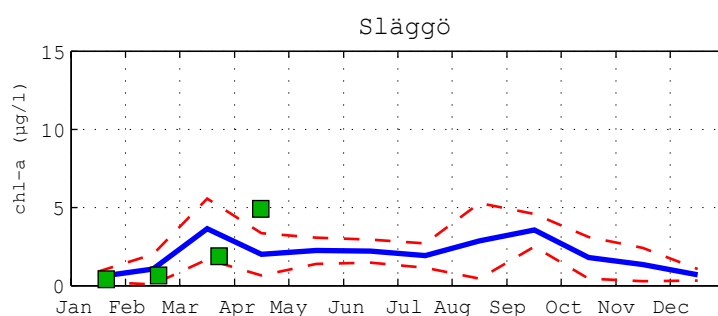
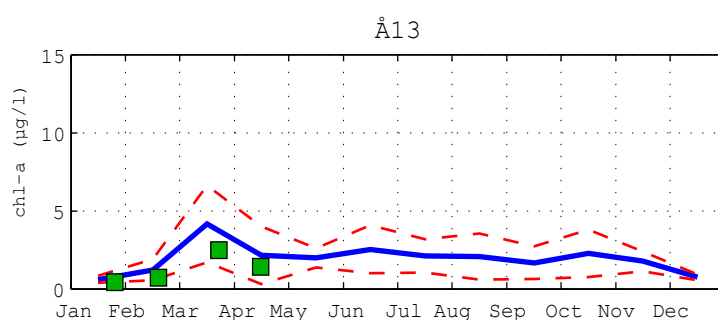
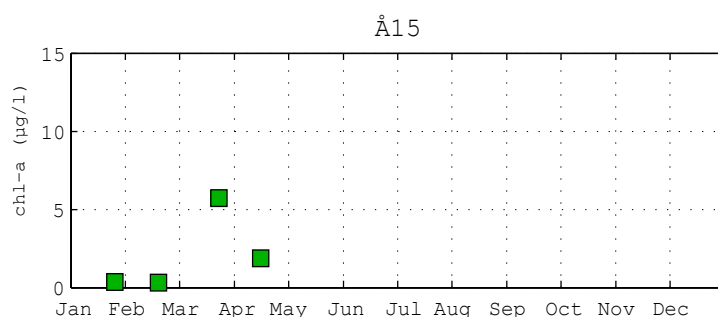
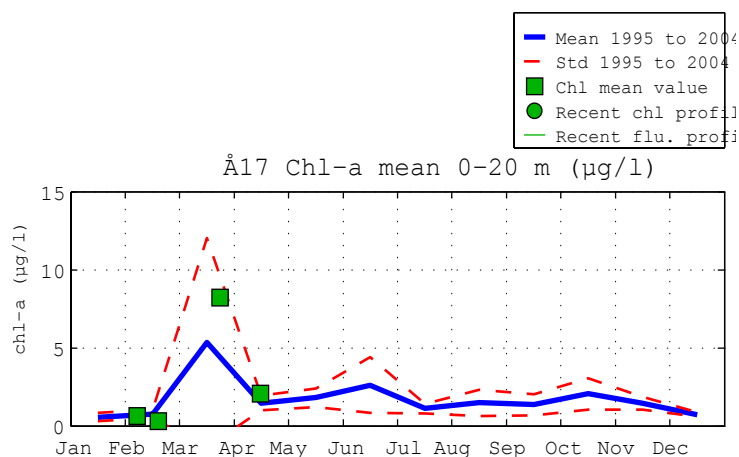
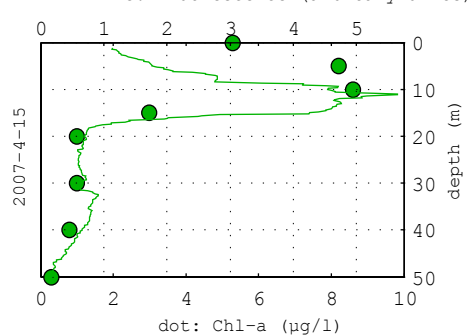
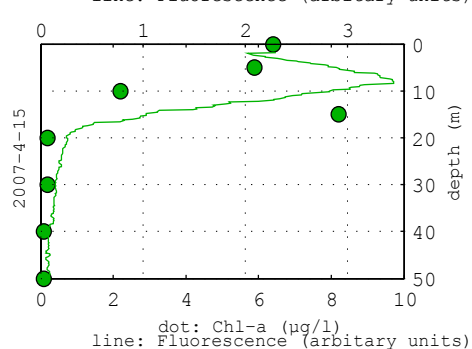
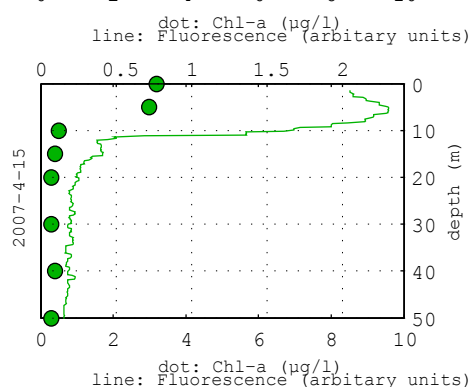
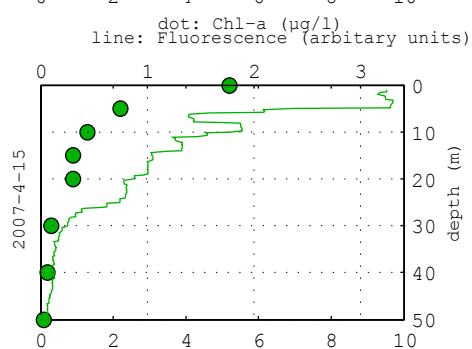
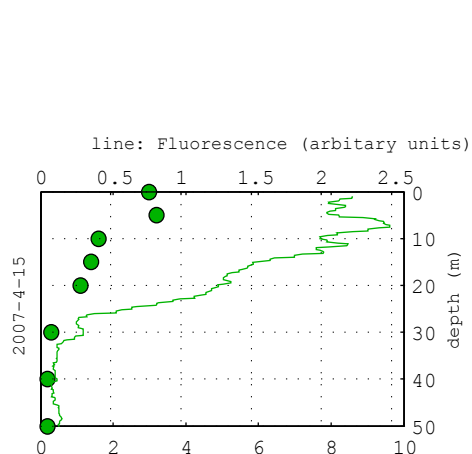
Selection of observed species Red=potentially toxic species <sup>1</sup> quantified in m/L	BY2 2007-04-16 cells/L	BY5 2007-04-17 cells/L	BCS III 10 2007-04-17 cells/L	BY15 2007-04-18 cells/L	BY38 2007-04-18 cells/L
Chaetoceros danicus				present	
Chaetoceros similis				present	present
Chaetoceros wighamii					present
Skeletonema costatum	present				67 636
Thalassiosira nordenskiöldii					present
<b>Dinophysis acuminata</b>	<b>221</b>	<b>514</b>	<b>2 519</b>	<b>681</b>	<b>2 285</b>
Gyrodinium fusiformis			present	present	present
Heterocapsa cf. minima	10 356		39 512	21 336	32 166
Karlodinium micrum	present				
Katodinium glaucum	present		present		
Peridiniella catenata	21 437	32 896	27 251	166 391	115 621
Peridiniella danica	5 083	present	4 809	present	present
Protoperidinium bipes	present		present	present	present
Protoperidinium pellucidum	present	present	present	present	
Protoperidinium steinii			present		
Gymnodiniales spp.	8 177	15 420	89 051	227 584	126 200
<b>Chrysochromulina spp.</b>	<b>5 178</b>	<b>8 890</b>		<b>16 002</b>	<b>16 083</b>
Cryptomonadales spp.	60 410	42 672	17 960	53 340	37 527
Plagioselmis prolunga			present		
Teleulax amphioxeia	43 150	present	14 368		25 018
Pyramimonas spp.	51 780	158 242	100 576	32 004	64 332
Mesodinium rubrum	present	present	10 076	present	present
Dinobryon balticum	present	28 448	present	present	7 184
Strobilidium spp.	present	present	present		present
Strombidium spp.		present	present		
Choanoflagellates spp.		present			

Phytoplankton analysis and text by Adil Yousif.

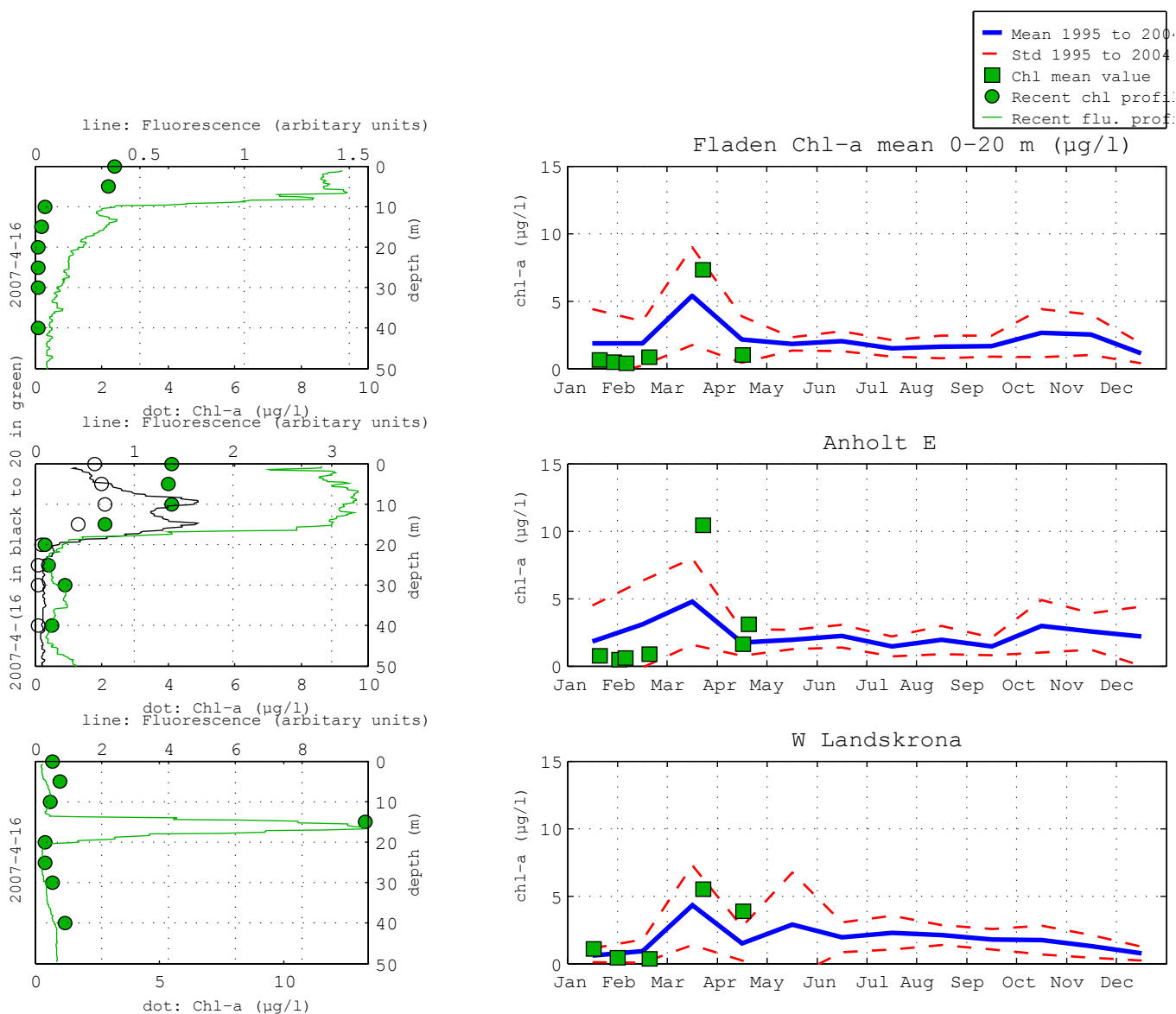
Swedish summary and layout by Ann-Turi Skjevik.

Reviewed by Lars Edler.

## The Skagerrak



# The Kattegat and the Sound



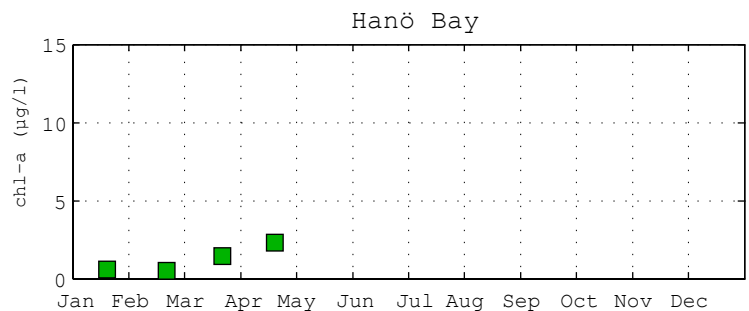
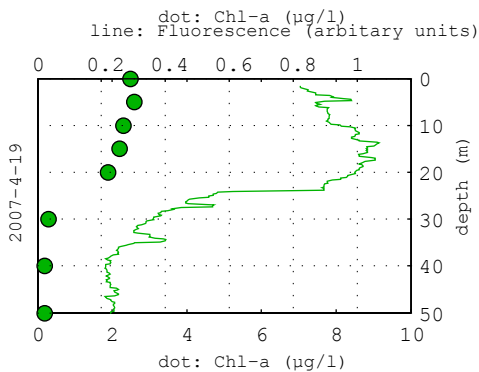
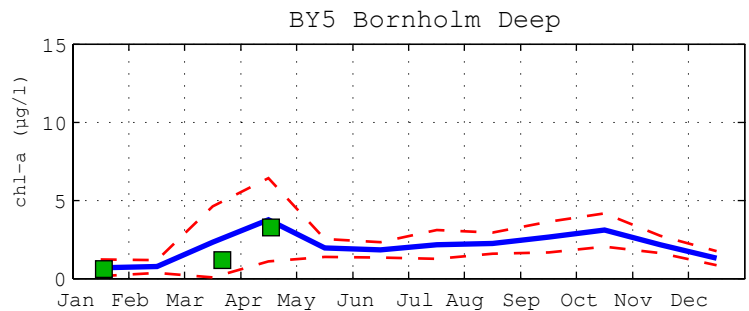
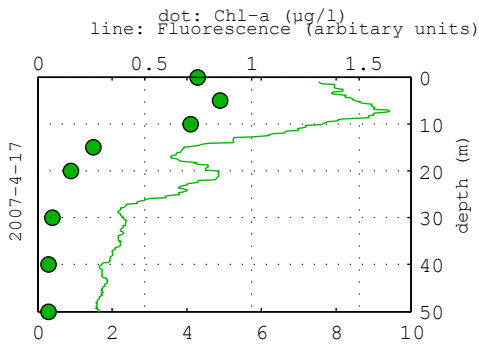
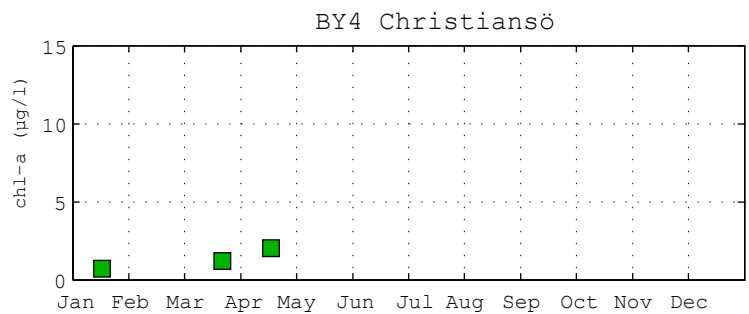
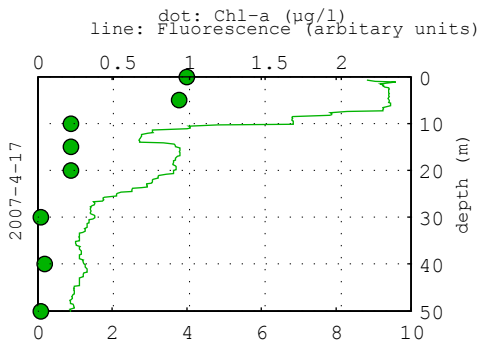
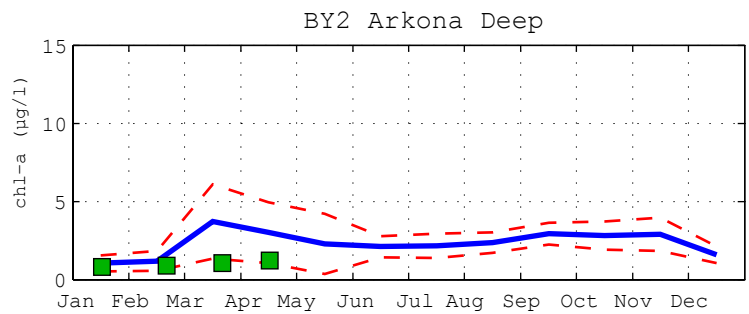
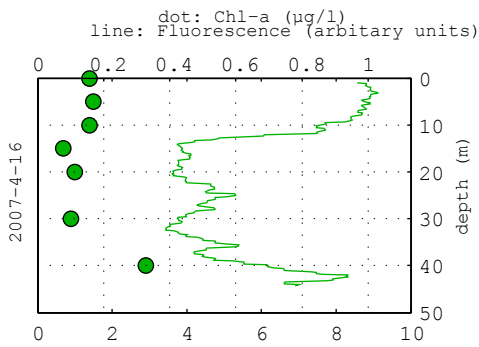
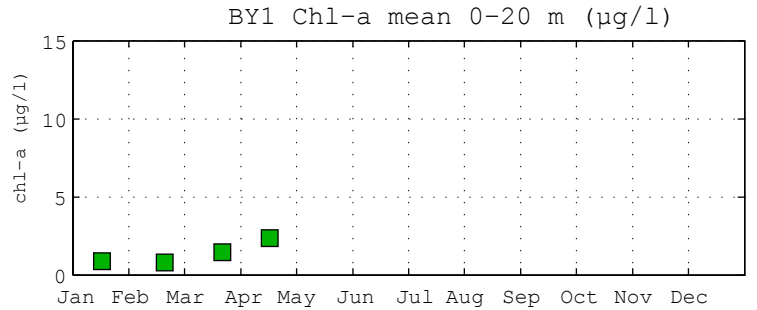
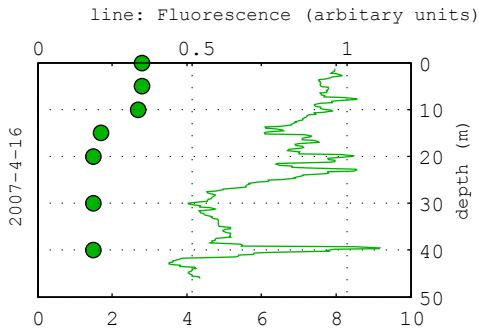
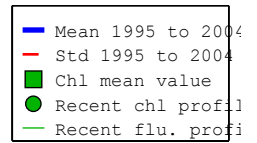
## Om klorofylldiagrammen

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.

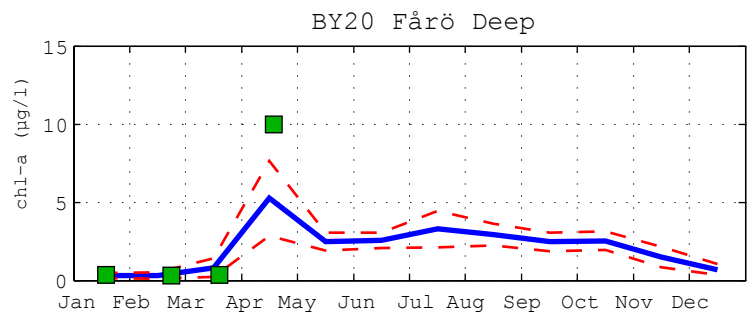
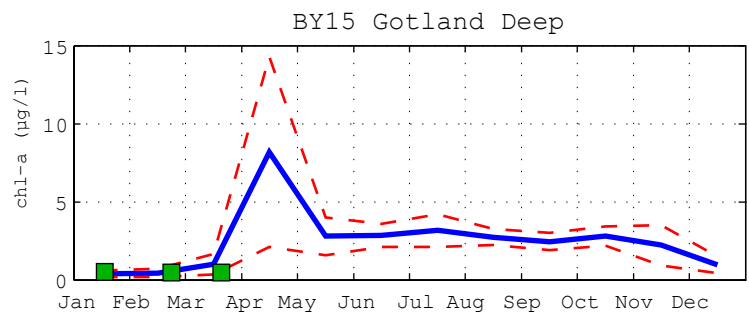
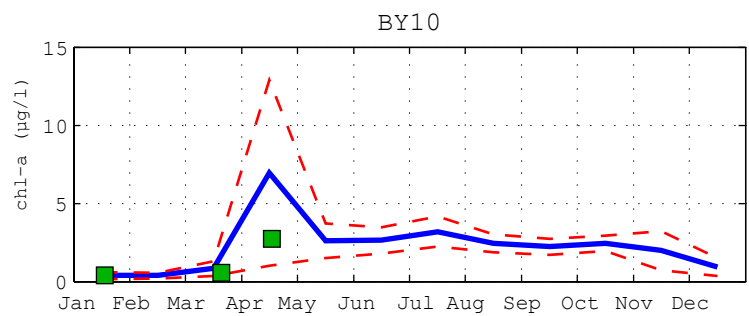
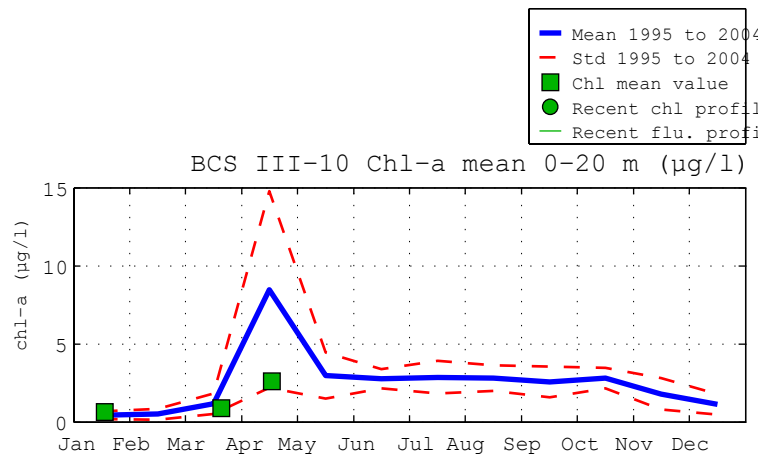
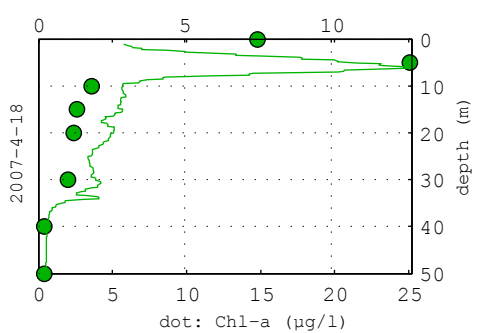
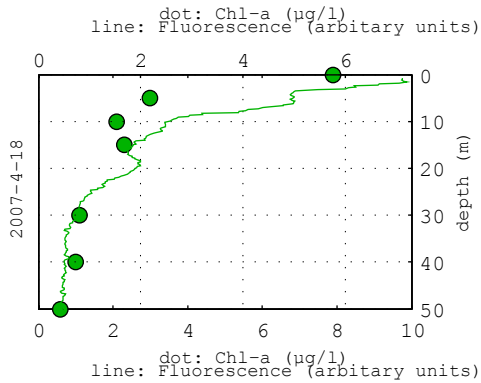
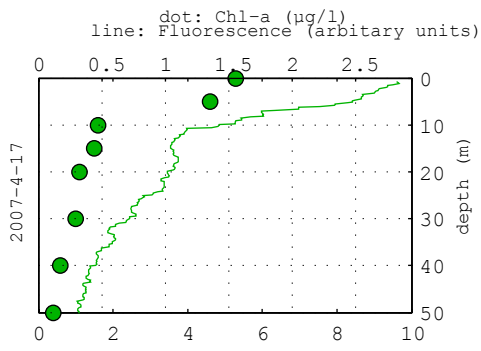
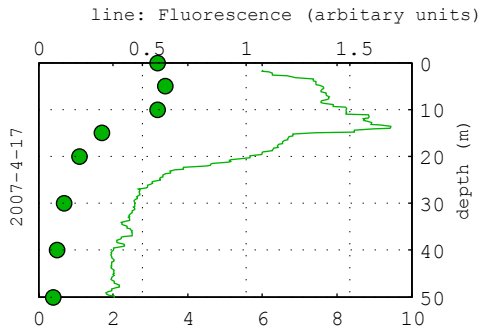
## About the chlorophyll graphs

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

