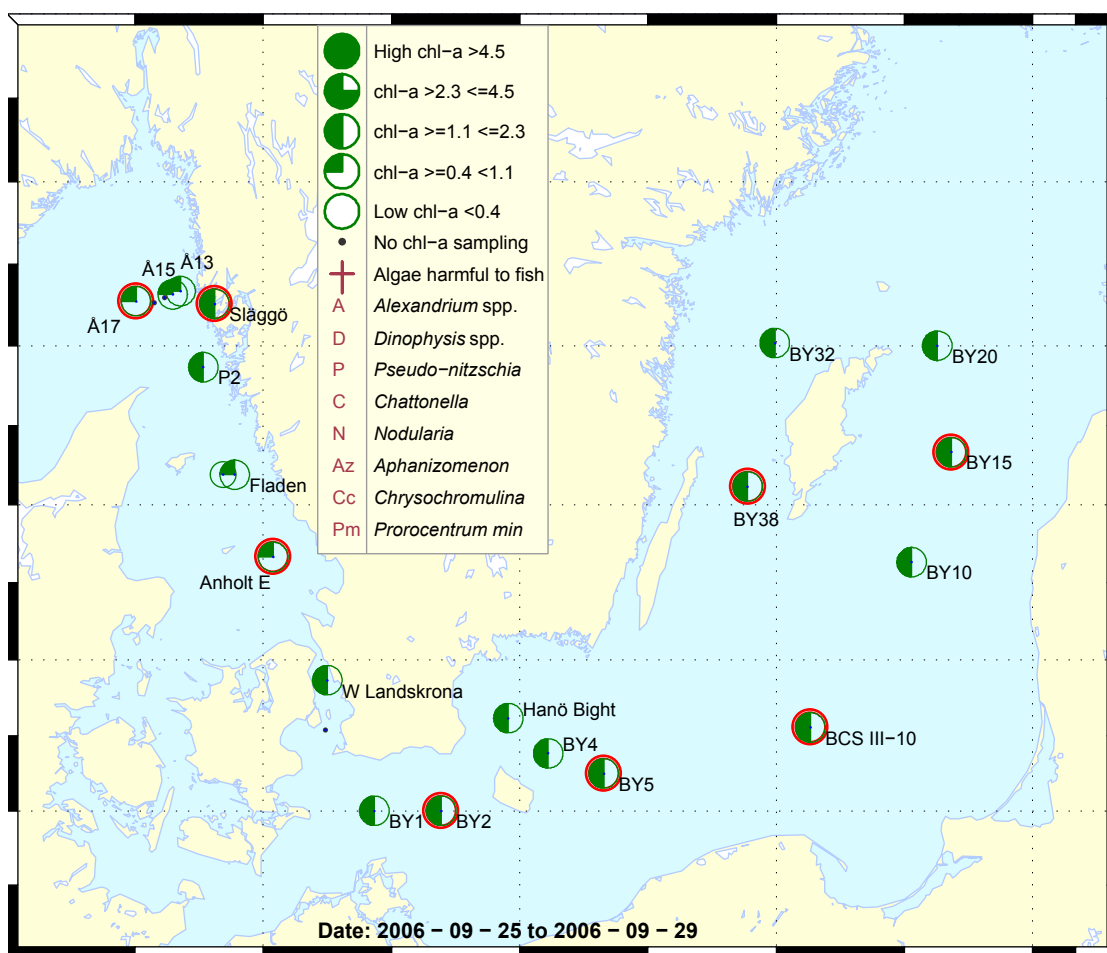


## Sammanfattning

I yttre Skagerrak var planktonfloran mycket fattig med ett fåtal arter i låga cellantal. Vid kusten däremot var planktonprovet mera divers, med relativt många arter och dominans av kiselalger. Klorofyllhalterna låg under medel vid samtliga stationer. I Kattegatt var planktonsituationen som kustnära Skagerrak och klorofyll a halterna låg under eller vid medel.

I Östersjön dominerade små flagellater. Vid två stationer observerades en mindre population av *Prorocentrum minimum*\*. Filamentösa cyanobakterier observerades vid BY 2, BY 15 och BY 38.



## Abstract

In the open Skagerrak the plankton flora was very poor, as just a few species were found in low cell numbers. At the coast the flora was richer with a dominance of diatoms. The chlorophyll a concentrations were below average at all stations. In the Kattegat the plankton situation was similar to the one in coastal Skagerrak and the chlorophyll a concentrations were at or below average.

In the Baltic, small flagellated species dominated. At two of the stations a population of *Prorocentrum minimum* was observed. Filamentous cyanobacteria were found at BY 2, BY 15 and BY 38.

## Om AlgAware

SMHI genomför ca en gång per månad expeditioner med U/F Argos i Östersjön och Västerhavet. Resultat baserade på mikroskopianalys av planktonprover samt klorofyllmätningar presenteras kortfattat i denna rapport. Information från SMHI:s satellitövervakning av algbloomningar 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><br>Inom 30 min.:<br>Stickningar eller en känsla av bedövning runt läpparna, som sprids gradvis till ansiktet och nacken; stickningar i fingertoppar och tår;<br>Huvudvärk; yrsel, illamående, kräkningar, diarré<br><b>Extrema symptom:</b><br>Muskelförlamning; andningssvårigheter; känsla av att kvävas;<br>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><br>Within 30 min:<br>tingling sensation or numbness around lips, gradually spreading to face and neck; prickly sensation in fingertips and toes; headache, dizziness, nausea, vomiting, diarrhoea.<br><b>Extreme case</b><br>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><br>Efter cirka 30 minuter till några timmar:<br>yrsel, illamående, kräkningar, diarré, magont<br><b>Extrema symptom:</b><br>Upprepad exponering kan orsaka cancer                                                                                                                                                                                                                                                               | <b>Mild case:</b><br>Within 30 min-a few hours:<br>dizziness, nausea, vomiting, diarrhoea, abdominal pain. <b>Extreme case:</b><br>Repeated exposure may cause cancer.                                                                                                                                                                                                                                    |
| <i>Chattonella</i> spp.      | Fish toxin                           | <b>Låg celltäthet:</b><br>Ingen påverkan.<br><b>Hög celltäthet:</b><br>Fiskens gälar skadas, fisken dör.                                                                                                                                                                                                                                                                                                                                              | <b>Low cell numbers:</b><br>No effect on fish.<br><b>High cell numbers:</b><br>Fish death due to gill damage.                                                                                                                                                                                                                                                                                             |
| <i>Pseudo-nitzschia</i> spp. | Amnesic shellfish poisoning (ASP)    | <b>Milda symptom:</b><br>Efter 3-5 timmar:<br>yrsel, illamående, kräkningar, diarré, magkramper<br><b>Extrema symptom:</b><br>Yrsel, hallucinationer, förvirring, förlust av korttidsminnet, kramper                                                                                                                                                                                                                                                  | <b>Mild case:</b><br>Within 3-5 hours: dizziness, nausea, vomiting, diarrhoea, abdominal cramps.<br><b>Extreme case:</b><br>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.

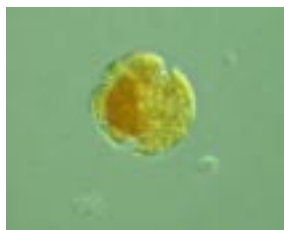
More detailed information on species composition and abundance. \* = potentially toxic.

## The Skagerrak

### Å17 25<sup>th</sup> of September

A few species in low cell numbers were observed, mostly diatoms.

### Släggö 25<sup>th</sup> of September



*Karenia mikimotoi*

The diatom *Leptocylindrus minimus* was the most abundant with 760 000 cells/L. *L. danicus* was common, as was *Chaetoceros* spp. As far as toxic algae are concerned, *Pseudo-nitzschia* spp\*, *Dinophysis acuta*\* and *Karenia mikimotoi*\* were present, all in very low numbers.

The chlorophyll *a* concentrations were below average in the whole Skagerrak area.

| Selection of observed species<br>Red=potentially toxic species | Å17<br>2006-09-25<br>cells/L | Släggö<br>2006-09-25<br>cells/L | Anholt E<br>2006-09-26<br>cells/L |
|----------------------------------------------------------------|------------------------------|---------------------------------|-----------------------------------|
| <i>Asterionellopsis glacialis</i>                              |                              |                                 | 34 500                            |
| <i>Cerataulina pelagica</i>                                    | present                      | present                         | 122 500                           |
| <i>Chaetoceros curvisetus</i>                                  |                              |                                 | 36 200                            |
| <i>Chaetoceros</i> cf. <i>didymus</i>                          |                              | 13 000                          |                                   |
| <i>Chaetoceros laciniatus</i>                                  |                              |                                 | 10 000                            |
| <i>Chaetoceros socialis</i>                                    |                              |                                 | 11 000                            |
| <i>Chaetoceros</i> spp.                                        |                              | 67 000                          |                                   |
| <i>Cylindrotheca closterium</i>                                | present                      | present                         | 15 500                            |
| <i>Leptocylindrus danicus</i>                                  | present                      | 10 000                          | 141 500                           |
| <i>Leptocylindrus minimus</i>                                  | present                      | 764 000                         | 41 400                            |
| <i>Proboscia alata</i>                                         |                              | present                         | present                           |
| <i>Pseudo-nitzschia delicatissima</i> -group                   | present                      | present                         | 124 000                           |
| <i>Pseudo-nitzschia</i> cf. <i>pungens</i>                     |                              | present                         | 33 000                            |
| <i>Pseudo-nitzschia seriata</i> -group                         |                              | present                         |                                   |
| <i>Skeletonema costatum</i>                                    |                              | present                         |                                   |
| <i>Thalassiosira anguste-lineata</i>                           |                              | present                         |                                   |
| <i>Ceratium furca</i>                                          |                              | present                         | present                           |
| <i>Ceratium fusus</i>                                          |                              |                                 | present                           |
| <i>Ceratium macroceros</i>                                     |                              | present                         |                                   |
| <i>Ceratium tripos</i>                                         |                              |                                 | present                           |
| <i>Dinophysis acuminata</i>                                    |                              |                                 | present                           |
| <i>Dinophysis acuta</i>                                        |                              | present                         |                                   |
| <i>Heterocapsa</i> cf. <i>minima</i>                           | present                      | present                         | 13800                             |
| <i>Karenia mikimotoi</i>                                       |                              | present                         |                                   |
| <i>Prorocentrum micans</i>                                     |                              | present                         | present                           |
| <i>Dinobryon balticum</i>                                      |                              | 10000                           | 15500                             |
| <i>Chrysochromulina</i> sp.                                    | present                      | present                         |                                   |
| Cryptomonadales spp.                                           | 32600                        | 84000                           | 19000                             |
| <i>Pyramimonas</i> sp.                                         |                              | present                         |                                   |

## The Kattegat

### Anholt E 26<sup>th</sup> of September



*Cerataulina pelagica*

Dominance of diatoms was observed from the only visit at the station during this expedition, and *Leptocylindrus danicus*, *Cerataulina pelagica* and *Pseudo-nitzschia* spp.\* were the most abundant species. *Heterocapsa* cf. *minima* was the most abundant dinoflagellate.

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

## The Baltic Sea

### Arkona Basin BY2 27<sup>th</sup> of September



*Chrysochromulina* sp.

A poor plankton flora was observed with a dominance of small species as *Pyramimonas* spp., *Chrysochromulina* spp.\* and other flagellates. The cyanobacterium *Aphanizomenon* sp. was common and some diatom species were present in low cell numbers. The chlorophyll *a* concentration was below average.

### Bornholm Basin BY5 27<sup>th</sup> of September

A similar situation was found at BY 5 as at BY 2. Except *Aphanizomenon* sp., which was not present, the same species were observed and the chlorophyll *a* concentration was below average.

### The South East Baltic BCS III-10 27<sup>th</sup> of September

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 28<sup>th</sup> of September

The three filamentous cyanobacteria, *Anabaena* sp., *Aphanizomenon* sp. and *Nodularia spumigena*\* were present in various amounts, *Aphanizomenon* sp. being the most common. *Pyramimonas* sp. was abundant, and *P. minimum*\* was common. The chlorophyll *a* concentration was below average.



*Prorocentrum minimum*

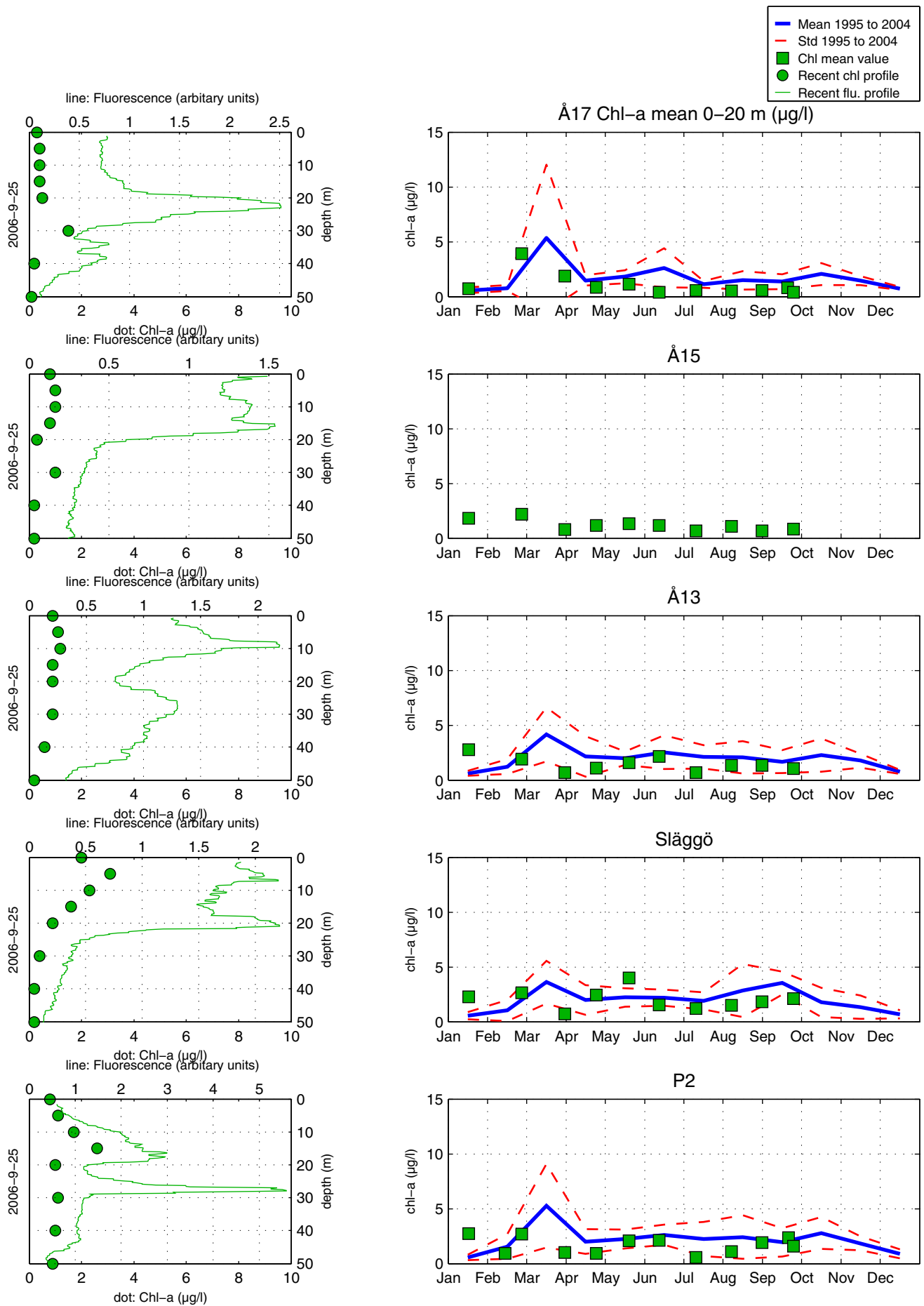
### Western Gotland Basin BY38 29<sup>th</sup> of September

Some filaments of *N. spumigena*\* were found and *Aphanizomenon* sp. was quite common with about 1 m/L. The diatoms *Chaetoceros impressus* and *C. danicus* were present in low cell numbers, and *Pyramimonas* sp. was abundant. The chlorophyll *a* concentration was below average.

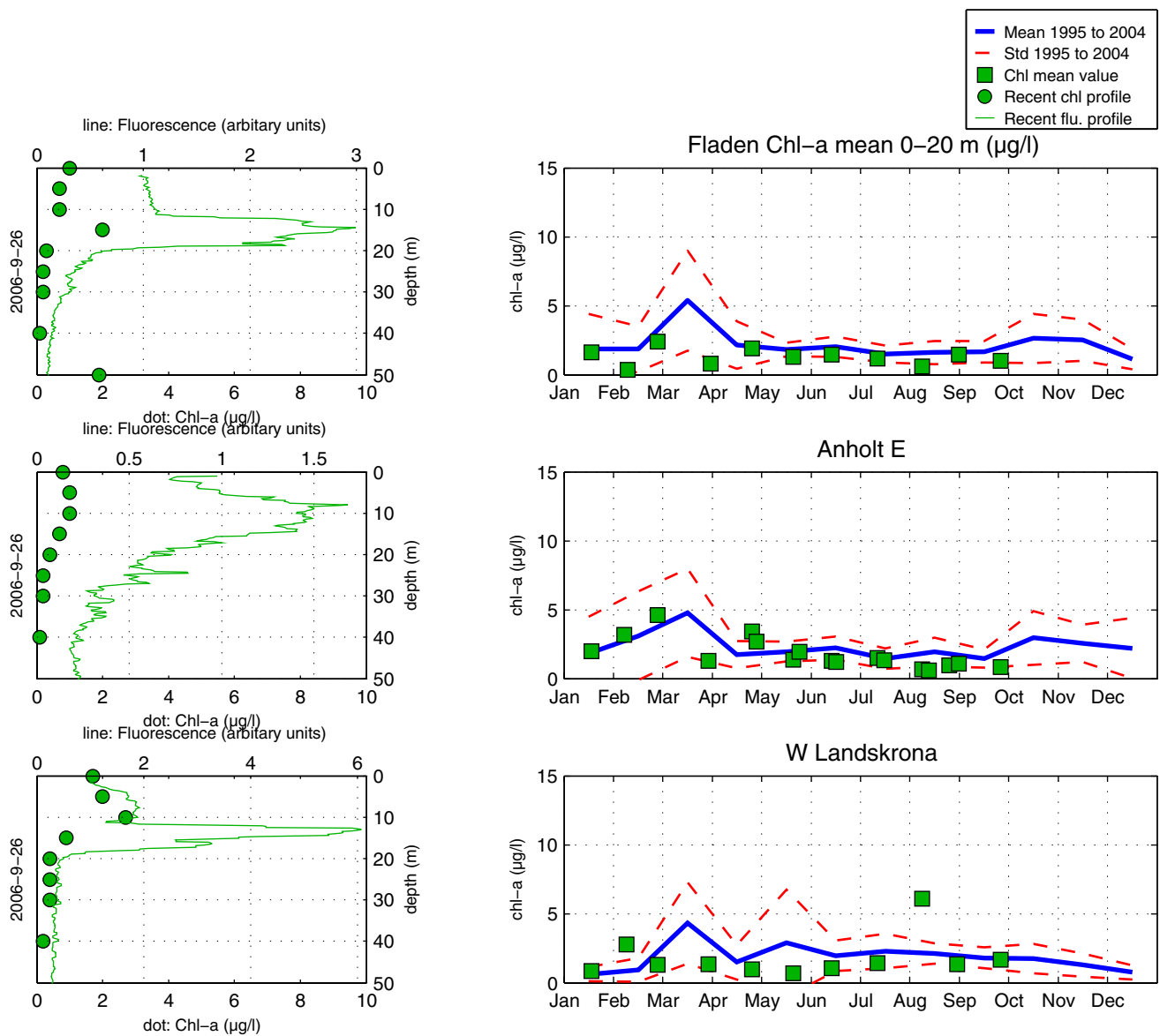
*Ann-Turi Skjevik*

| Selection of observed species           | BY2        | BY5        | BCS III 10 | BY15       | BY38       |
|-----------------------------------------|------------|------------|------------|------------|------------|
| Red=potentially toxic species           | 2006-09-27 | 2006-09-27 | 2006-09-27 | 2006-09-28 | 2006-09-29 |
| <sup>1</sup> quantified in m/L          | cells/L    | cells/L    | cells/L    | cells/L    | cells/L    |
| <i>Apedinella radians</i>               | present    |            |            |            | present    |
| <i>Chaetoceros impressus</i>            | present    | present    |            | present    | present    |
| <i>Leptocylindrus minimus</i>           | present    |            |            |            | present    |
| <i>Dinophysis acuminata</i>             |            | present    |            | present    |            |
| <i>Dinophysis acuta</i>                 |            |            |            | present    |            |
| <i>Heterocapsa rotundata</i>            | present    | present    | present    |            | 12 400     |
| <i>Prorocentrum minimum</i>             |            |            | 11000      | 17800      | 3600       |
| <i>Chrysochromulina</i> spp             | 37 000     | present    |            | 25000      | 5300       |
| Cryptomonadales spp                     | 102 000    | 196000     | 307000     | 117000     | 123 000    |
| <i>Pyramimonas</i> spp                  | 4400       | 100000     | 19000      | 158000     | 114000     |
| <i>Anabaena</i> sp.                     |            |            |            | present    |            |
| <i>Aphanizomenon</i> sp. <sup>1</sup>   | 0.9        |            |            | 6          | 1.1        |
| <i>Nodularia spumigena</i> <sup>1</sup> |            |            |            | 0.2        | present    |
| <i>Mesodinium rubrum</i>                | present    | present    | present    | present    | present    |

# The Skagerrak



# The Kattegat and the Sound



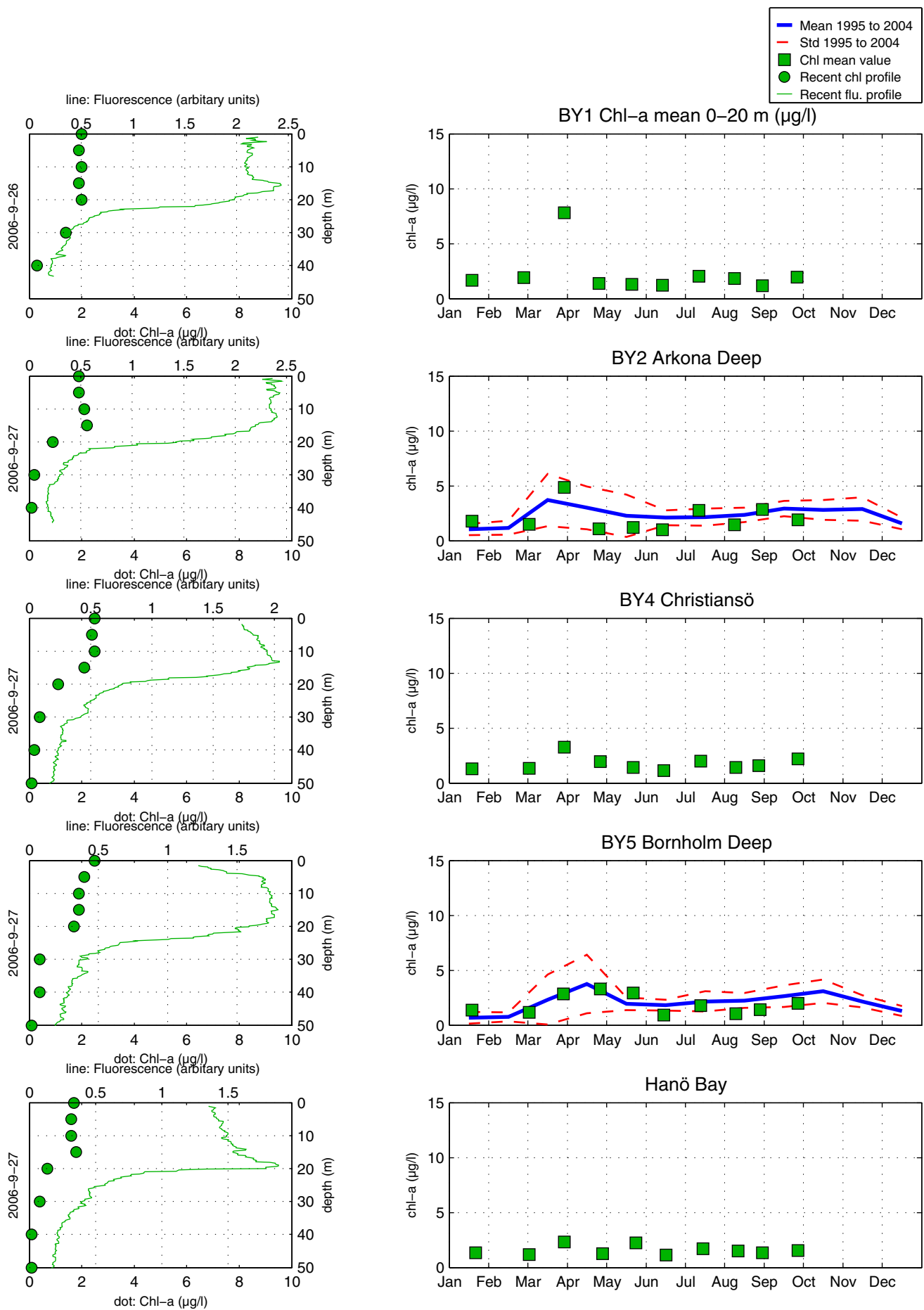
## Om klorofylldiagrammen

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

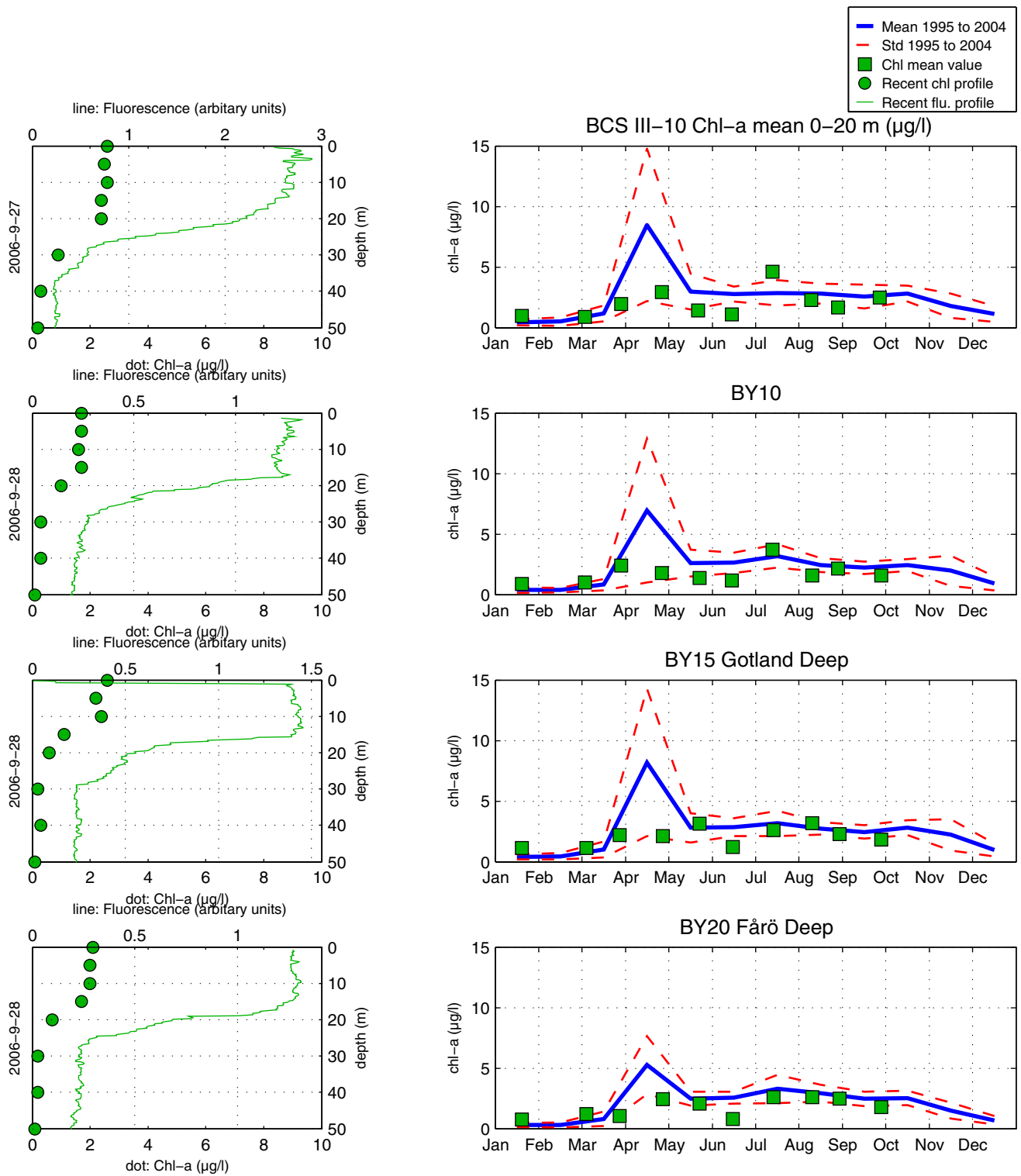
Chlorophyll *a* is sampled from several depths from the R/V Argos. Data is presented both from the discrete depths and as an average 0-20 m. In addition to the laboratory analysis from the water samples chlorophyll fluorescence is measured in continuous depth profiles from the ship. This is a way to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

# The Southern Baltic





# The Eastern Baltic



# The Western Baltic

