

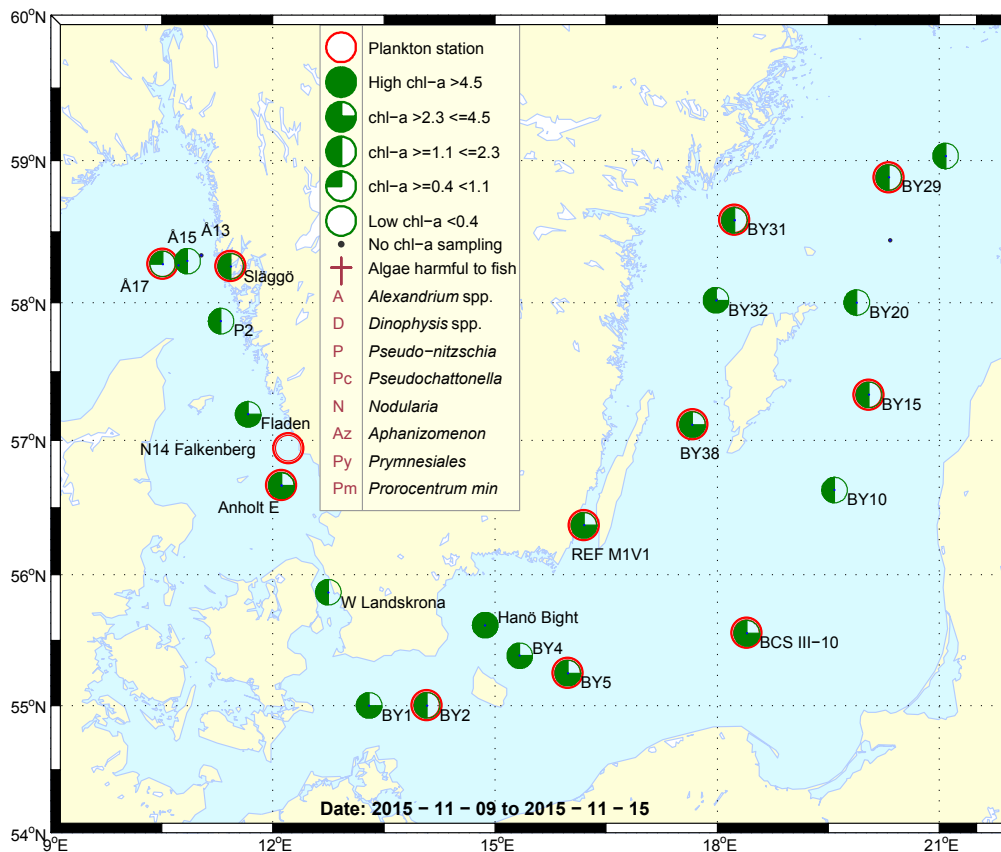
Sammanfattning

I Skagerrak var artdiversiteten och celltätheten låg. Antalsmässigt dominerade relativt små kiselalger. I Kattegatt var kiselalgssläktet *Pseudo-nitzschia* klart dominerande och talrik. Den potentiellt toxiska nakna dinoflagellaten *Karenia mikimotoi* förekom i låga antal.

De integrerade (0-10 m) klorofyll *a*-värdena var normala för denna månad men vid det andra besöket vid Anholt E var koncentrationerna något förhöjda.

Artdiversiteten och celltätheten var generellt låg vid samtliga stationer i Östersjön. De södra delarna av Östersjön dominerades av relativt stora kiselalger, de östra delarna av kolonibildande cyanobakterier och de västra hade ett samhälle med båda dessa grupper i jämnt antal.

De integrerade (0-10 m) klorofyll *a*-värdena var överlag normala för denna månad med undantag av västra Östersjön där de var något förhöjda mot normalt för säsongen.



Abstract

The phytoplankton diversity and cell concentrations were low in the Skagerrak area. Small diatoms dominated. In the Kattegat the potentially toxin producing genus *Pseudo-nitzschia* spp dominated the community. The potentially harmful naked dinoflagellate *Karenia mikimotoi* was present. The integrated (0-10 m) chlorophyll *a* concentrations were normal for this month at all stations except at the second visit at Anholt E where it was a bit higher than normal for the season.

The diversity and cell concentrations were low at all stations. The southern stations were dominated by relatively large diatoms, the eastern stations were dominated by small colony forming cyanobacteria and the western stations had a community with both of these groups represented in almost equal amounts. The integrated (0-10 m) chlorophyll *a* concentrations were normal for this month with an exception of the western stations where they were a bit above normal for this season.

More detailed information on species composition and abundance

The Skagerrak

Å17 (open Skagerrak) and Släggö (Skagerrak coast) 13th of November

The phytoplankton diversity and abundances were quite low this month. The diatom *Skeletonema marinoi* dominated at Släggö but only a few cells of the species were found at Å17. The coccolithophore, *Emiliana huxleyi*, was present in low amounts at both stations. The potentially harmful dinoflagellate *Karenia mikimotoi* (Fig 1) was present at Släggö.

The integrated (0-10 m) chlorophyll *a* concentrations were low which is normal for this season.

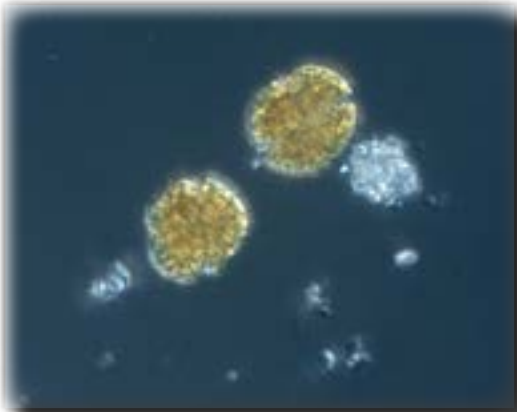


Figure 1. The potentially harmful dinoflagellate *Karenia mikimotoi* was present in low concentrations in both Skagerrak and Kattegat areas.

The Kattegat

Anholt E 12th and 14th of November

The phytoplankton community in the Kattegat area was quite diverse, the diatom *Pseudo-nitzschia* spp. (Fig 2) dominated. The coccolithophore *Emiliana huxleyi* was present in low amounts on both occasions. The potentially harmful dinoflagellate *K. mikimotoi* was observed.

The integrated (0-10 m) chlorophyll *a* concentration was normal at the first visit and slightly high for the season at the second visit.



Figure 2. The potentially toxic diatom genus *Pseudo-nitzschia* dominated the phytoplankton community at Anholt E on both occasions.

The Baltic Sea

The phytoplankton community in the Baltic Sea was mainly dominated by colonies of small cyanobacteria and other small unicells. The cell concentrations were overall low.

The Southern Baltic Sea

BY2 Arkona Basin 12th of November and BY5 Bornholm Basin 11th of November

Diatoms dominated in a community with low overall abundance. The diatoms *Coscinodiscus centralis* and *Actinocyclus* spp were the most common species.

The integrated (0-10 m) chlorophyll *a* concentrations were normal for this season.

The Eastern Gotland Basin

BY15 10th of November and BCS III-10 11th of November

The total cell number was low. Colonies of small cyanobacteria were most common. *Aphanocapsa* spp. and *Woronichinia* spp. dominated at BY15 but were also quite common at BCS III-10. Remnants of the filamentous cyanobacteria *Aphanizomenon* were found at BY15.

The integrated (0-10 m) chlorophyll *a* concentrations were normal for this season.

The Western Gotland Basin

BY38 and REF M1V1 Kalmar Sound 14th of November

The phytoplankton diversity in The Western Gotland Basin was a bit higher than the other Baltic areas but the cell concentrations were low. Both diatoms and cyanobacteria were present in equal concentrations at BY38. Cyanobacteria, both colony forming and filamentous, were present at BY38.

The total cell concentration at REF M1V1 was low. Diatoms dominated the sample and *Skeletonema marinoi* and *Chaetoceros danicus* (Fig 3) were relatively common.

The integrated (0-10 m) chlorophyll *a* concentrations were slightly higher than normal for the season at both stations.

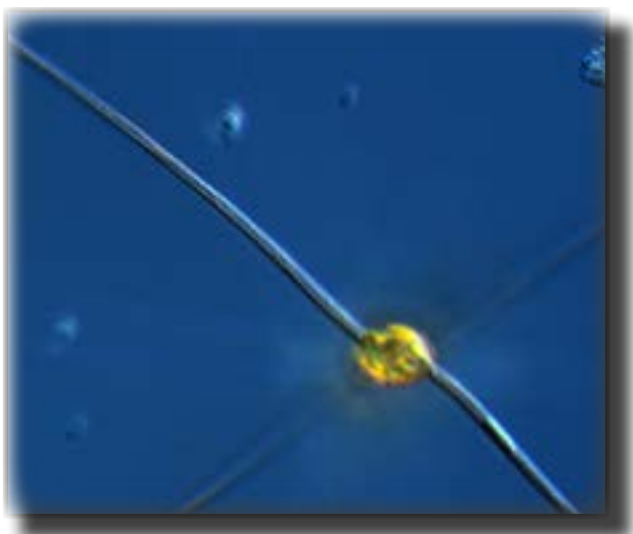
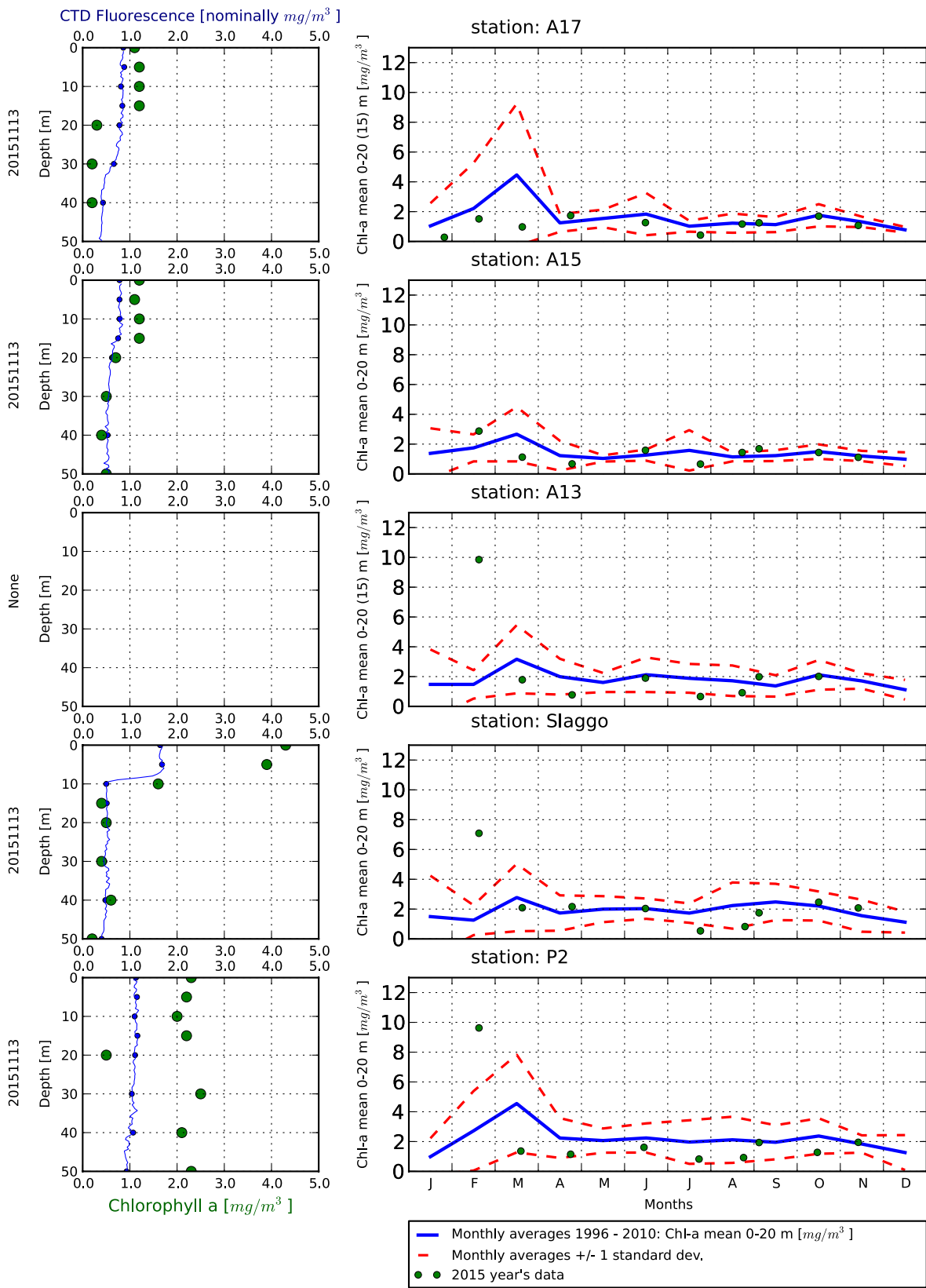


Figure 3. The diatom *Chaetoceros danicus* was common at REF M1V1.

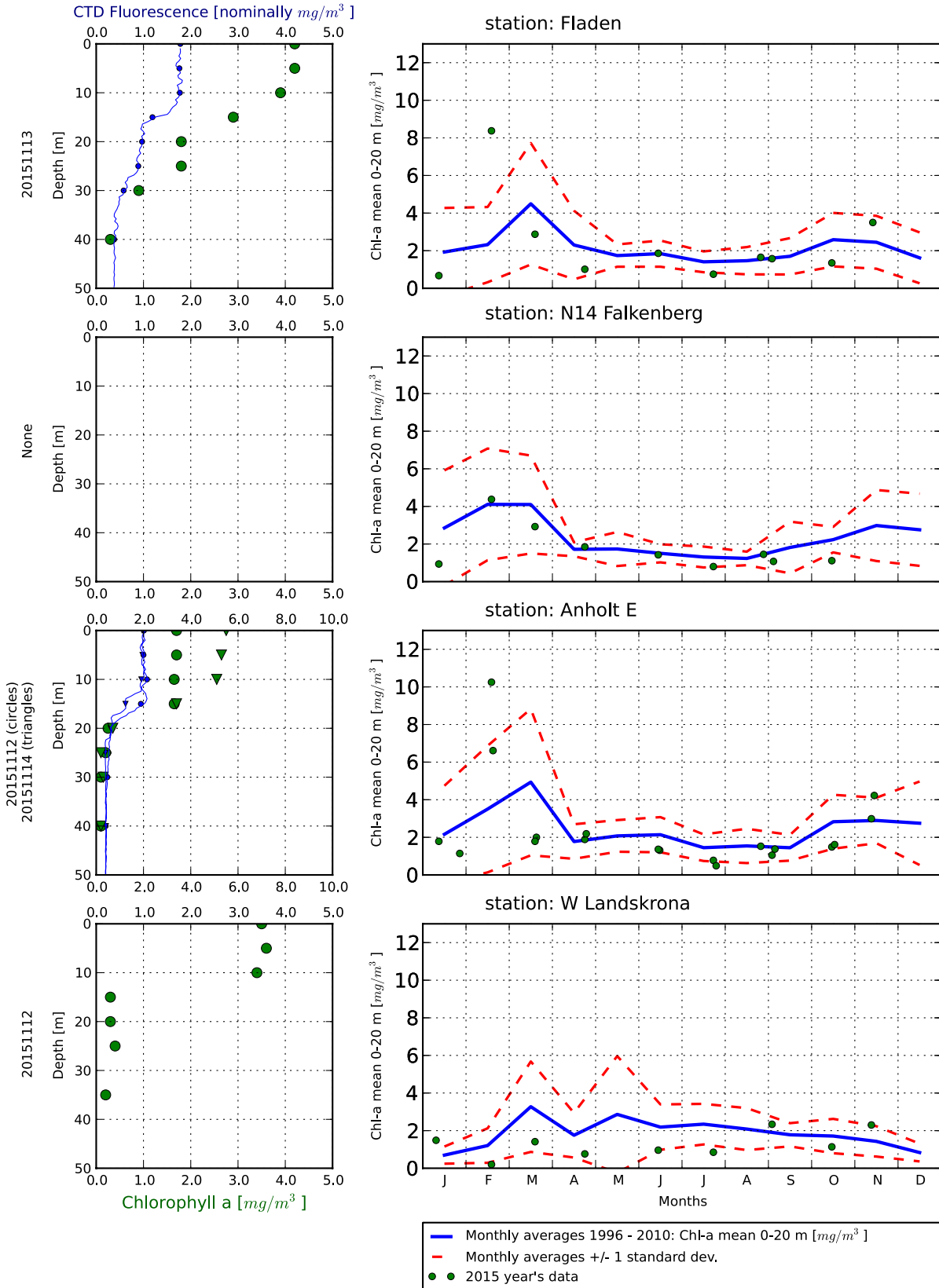
| Selection of observed species | Å17 | Släggö | Anholt E | Anholt E |
|----------------------------------|----------|----------|-------------|-------------|
| Red=potentially toxic species | 13/11 | 13/11 | 12/11 | 14/11 |
| Hose 0-10 m | presence | presence | presence | presence |
| <i>Pseudo-nitzschia</i> spp | present | common | very common | very common |
| <i>Guinardia delicatula</i> | | present | present | present |
| <i>Leptocylindrus danicus</i> | | present | present | present |
| <i>Proboscia alata</i> | | present | present | present |
| <i>Pseudosolenia calcar-avis</i> | | | present | present |
| <i>Rhizosolenia pungens</i> | | | present | present |
| <i>Rhizosolenia setigera</i> | | | present | |
| <i>Skeletonema marinoi</i> | present | common | | |
| <i>Thalassiosira</i> spp | | present | present | |
| <i>Thalassiosira angulata</i> | | | | present |
| <i>Thalassiosira punctigera</i> | | | present | present |
| <i>Thalassiosira rotula</i> | | | present | |
| <i>Chaetoceros danicus</i> | | | present | common |
| <i>Chaetoceros debilis</i> | | present | | |
| <i>Ditylum brightwellii</i> | | | | present |
| <i>Ceratium furca</i> | present | present | present | present |
| <i>Ceratium lineatum</i> | present | present | present | present |
| <i>Ceratium longipes</i> | present | | present | |
| <i>Dinophysis acuminata</i> | | | | present |
| <i>Diplopsalis</i> complex | | present | | |
| Gymnodiniales | | | present | |
| <i>Karenia mikimotoi</i> | | present | present | present |
| <i>Polykrikos schwartzii</i> | | present | | |
| <i>Protoperidinium crassipes</i> | | | | present |
| <i>Protoperidinium divergens</i> | | | present | |
| <i>Protoperidinium pallidum</i> | | | | present |
| <i>Emiliana huxleyi</i> | present | present | present | |
| <i>Heterosigma akashiwo</i> | | | | present |
| <i>Pseudanabaena</i> spp | | | present | |
| <i>Dictyocha fibula</i> | | | | present |
| <i>Dictyocha speculum</i> | | | present | present |
| Cryptomonadales | present | present | common | present |
| <i>Laboea strobila</i> | present | | present | |
| Ciliophora | present | present | | present |

| Selection of observed species | BY2 | BY5 | BCS III-10 | BY15 | REF M1V1 | BY29 | BY38 |
|-------------------------------------|----------|----------|------------|----------|----------|----------|----------|
| Red=potentially toxic species | 12/11 | 11/11 | 11/11 | 10/11 | 14/11 | 15/11 | 15/11 |
| Hose 0-10 m | presence | presence | presence | presence | presence | presence | presence |
| <i>Pseudo-nitzschia</i> spp | | | | present | | | |
| <i>Coscinodiscus centralis</i> | common | present | present | | common | present | present |
| <i>Coscinodiscus granii</i> | present | present | | | present | | |
| <i>Skeletonema marinoi</i> | | | | | common | present | |
| <i>Chaetoceros danicus</i> | | | present | present | common | present | present |
| <i>Chaetoceros impressus</i> | | | | present | | | |
| Centrales | present | present | | | | | |
| <i>Cyclotella choctawhatcheeana</i> | | present | | | | | |
| <i>Actinocyclus</i> spp | common | common | common | | present | present | present |
| <i>Dinophysis norvegica</i> | present | present | present | present | present | present | |
| <i>Dinophysis rotundata</i> | | | | present | | | |
| Gymnodiniales | common | present | | | present | | |
| <i>Katodinium glaucum</i> | | | | | present | present | |
| <i>Protoperidinium</i> spp | | | | | present | | |
| <i>Aphanizomenon</i> spp | | | | present | | | common |
| <i>Nodularia spumigena</i> | | | | | | | present |
| <i>Woronichinia</i> spp | | | present | common | present | present | present |
| cf. <i>Cyanodictyon</i> spp | | | | common | | | |
| <i>Aphanocapsa</i> spp | | | | present | | present | |
| <i>Aphanothece</i> spp | | | | | | | present |
| <i>Planctonema lauterbornii</i> | | | | present | present | present | common |
| <i>Oocystis</i> spp | | | | | | present | present |
| <i>Ebria tripartita</i> | present | | | | | | |
| Cryptomonadales | common | common | present | | common | present | present |
| <i>Mesodinium rubrum</i> | present | | present | present | present | present | present |
| Ciliophora | present | | present | common | | present | present |

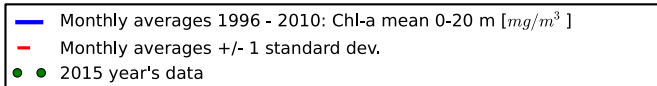
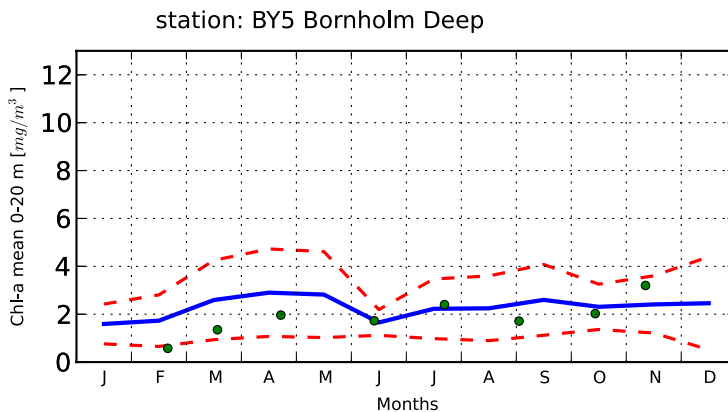
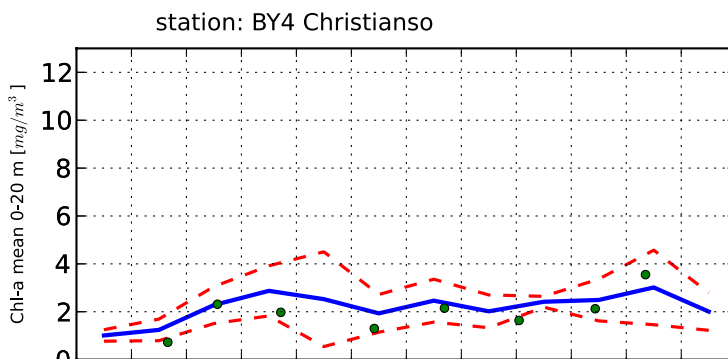
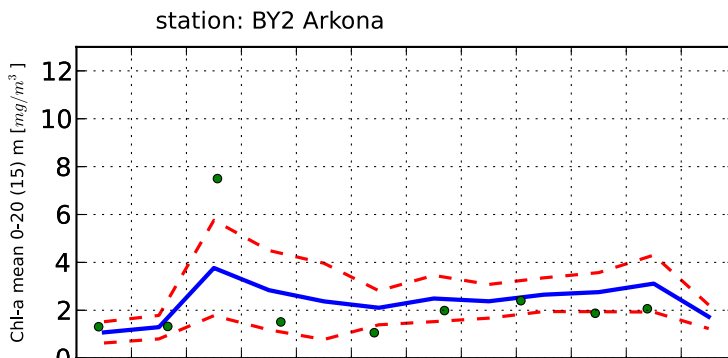
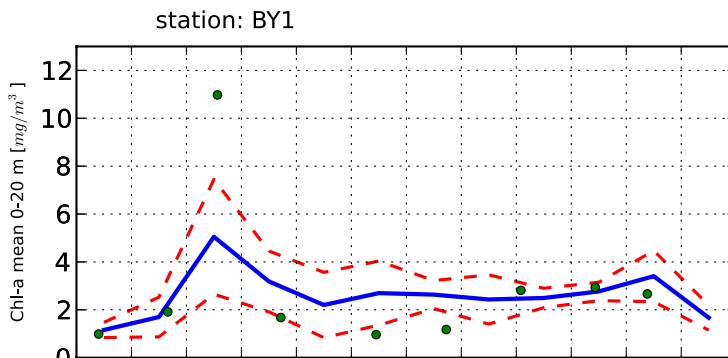
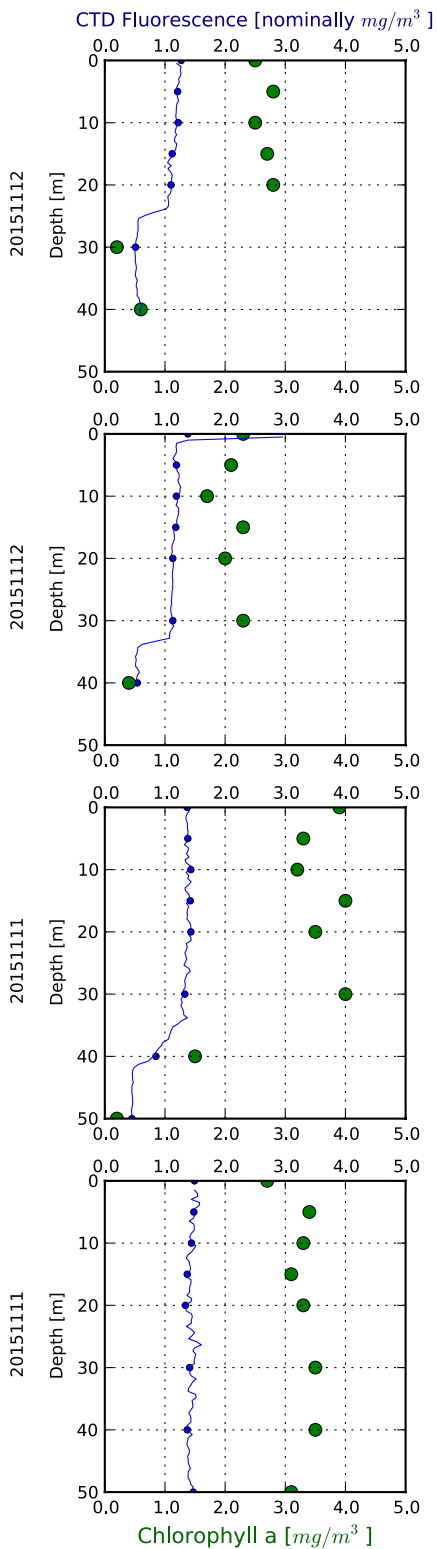
The Skagerrak



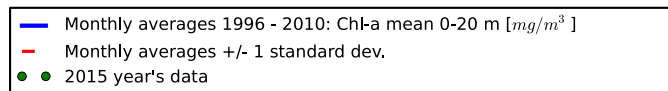
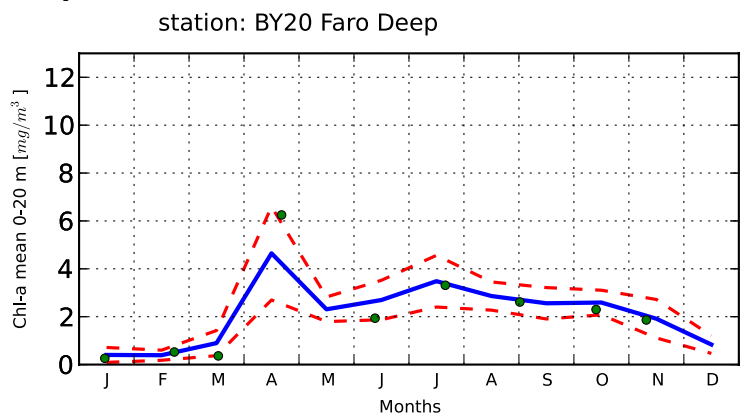
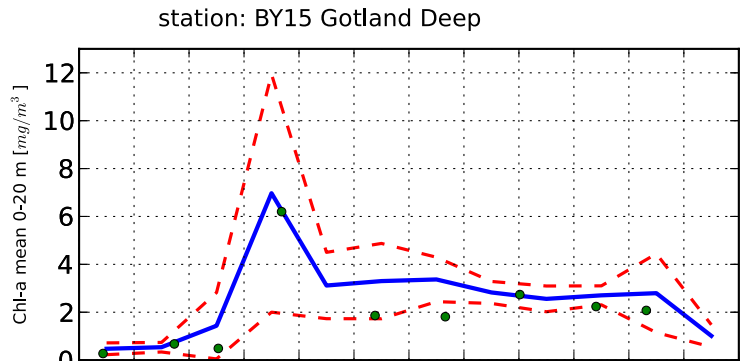
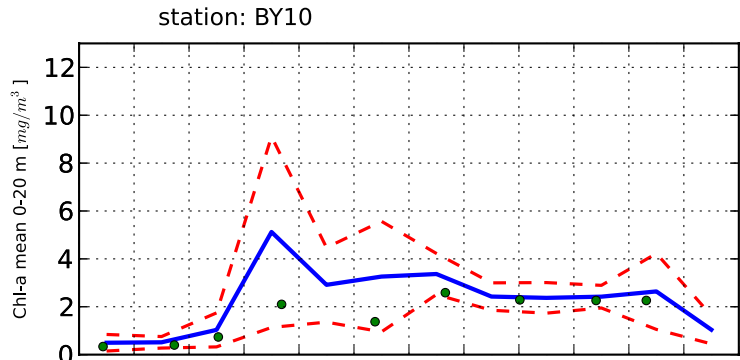
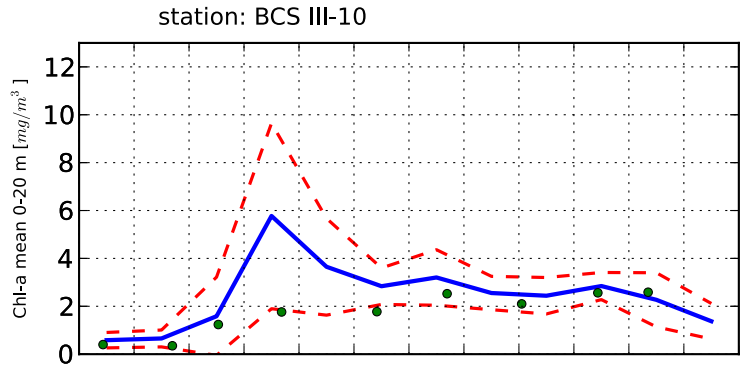
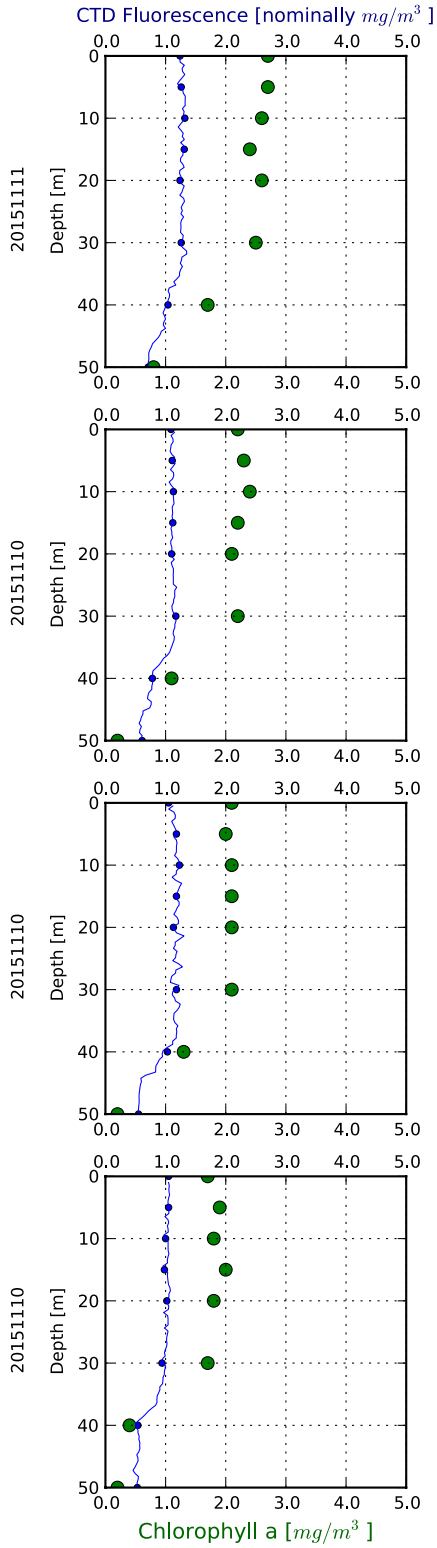
The Kattegat and The Sound



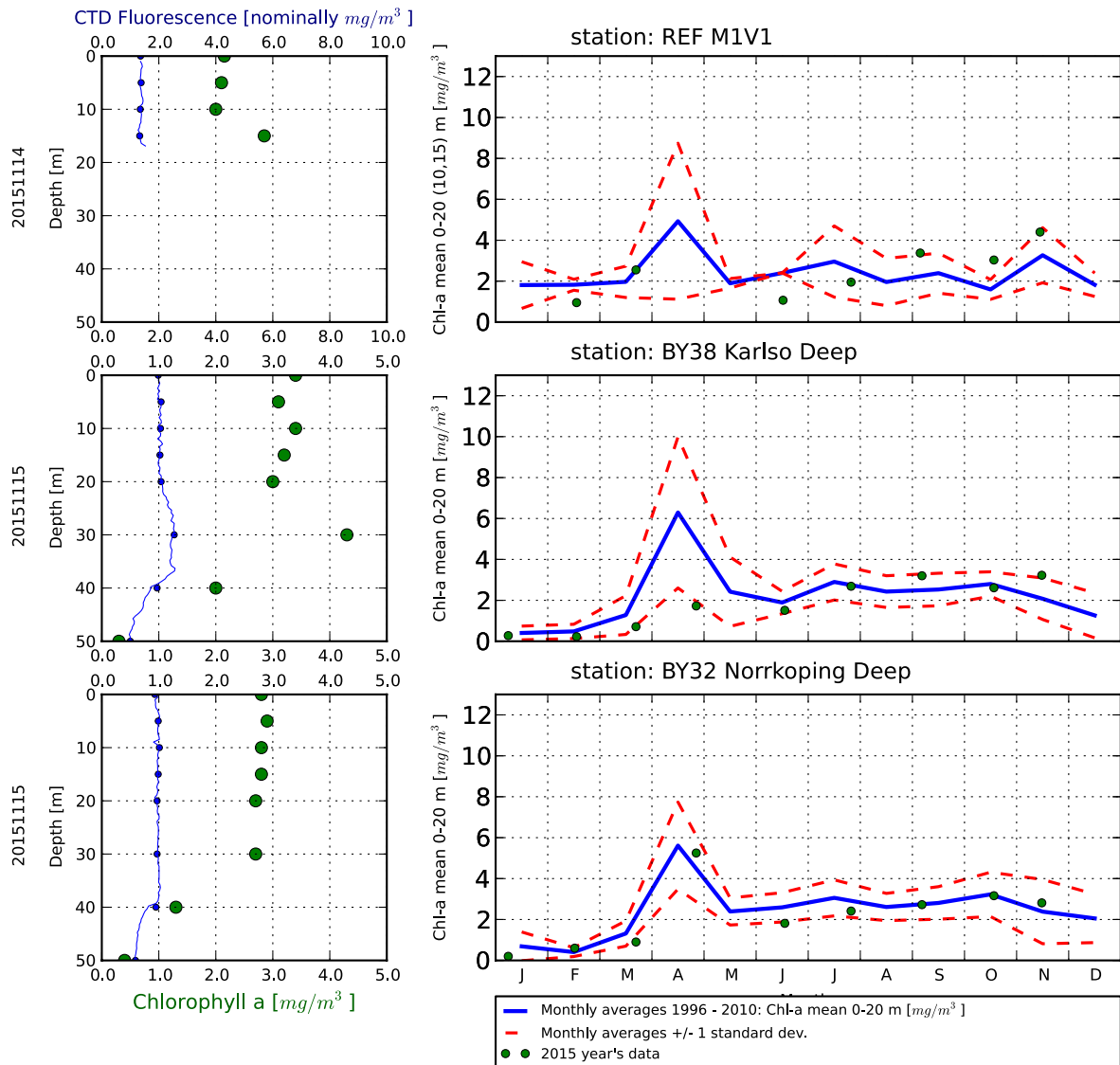
The Southern Baltic



The Eastern Baltic



The Western Baltic



Om klorofylldiagrammen

Klorofyll *a* är ett mått på mängden växtplankton. Prover tas från ett antal djup. 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. Data are 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.

Om AlgAware

SMHI genomför månatliga expeditioner i Östersjön och Västerhavet. Resultat baserade på semikvantitativ mikroskopanalys av planktonprover samt klorofyllmätningar presenteras kortfattat i denna rapport. Information från SMHIs satellitövervakning av algblomningar finns under perioden juni-augusti på www.smhi.se.

About AlgAware

SMHI carries out monthly cruises 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 SMHIs satellite monitoring of algal blooms is found on www.smhi.se during the period June-August.

| Art / Species | Gift / Toxin | Eventuella symptom | Clinical symptoms |
|--|--|--|---|
| <i>Alexandrium</i> 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; headache, dizziness, nausea, vomiting, diarrhoea. Extreme case 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) | 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. |
| <i>Pseudo-nitzschia</i> spp. | Amnesic shellfish poisoning (ASP) | Milda symptom: Efter 3-5 timmar: yrsel, illamående, kräkningar, diarré, magkramp Extrema symptom: Yrsel, hallucinationer, 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. |
| <i>Chaetoceros concavicornis</i> / <i>C. convolutus</i> | Mechanical damage through hooks on setae | 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. |
| <i>Pseudochattonella</i> 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. |

Översikt över några 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.

