SMHI
Oceanographic Unit
No 5, 10 – 15 July 2011

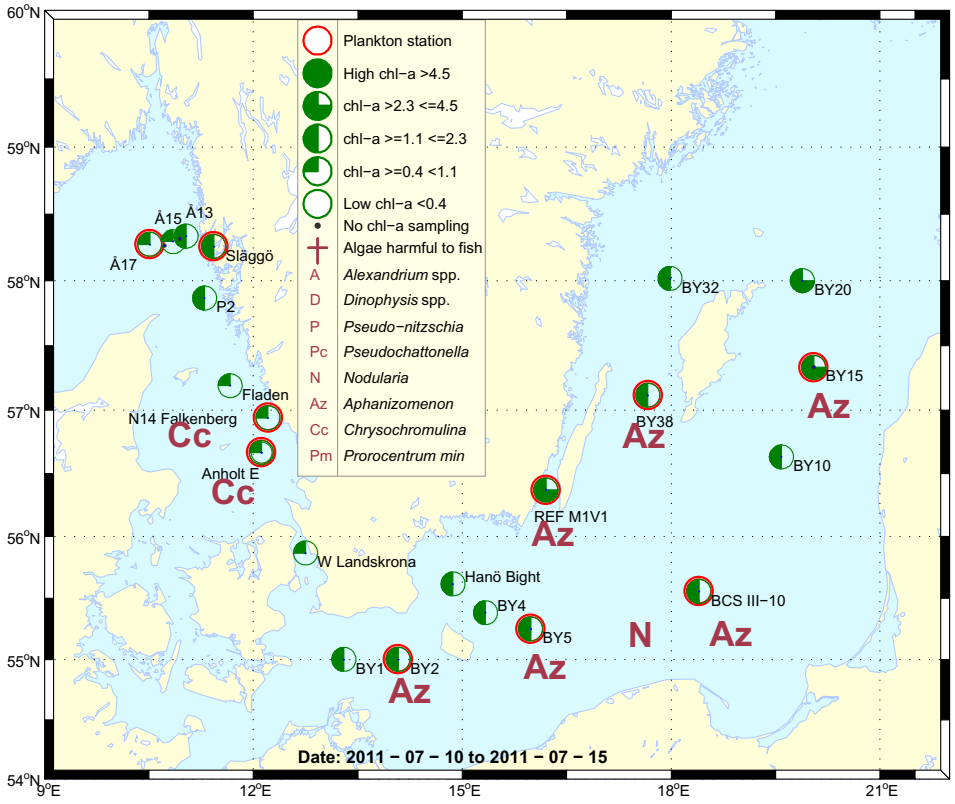
AlgAware
ALGAL SITUATION IN
MARINE WATERS SURROUNDING SWEDEN

Sammanfattning

Låg diversitet präglade växtplanktonproverna från Västerhavet generellt. Små arter som cryptomonader och *Chrysochromulina* spp.* dominerade. Ett fåtal kiselalger var vanligt förekommande vid kusten i Skagerrak och vid båda Kattegattstationerna. Dinoflagellaten *Prorocentrum minimum** och den filamentösa cyanobakterien *Anabaena* spp. var vanliga i Kattegatt.
De integrerade (0-20 m) klorofyll *a* värdena låg inom det normala för månaden i Skagerrak. I Kattegatt låg värdena på gränsen till att vara under det normala.

Östersjöstationerna var väldigt lika vad det gäller växtplankton. Två till tre av de vanligast förekommande filamentösa cyanobakterierna återfanns i större eller mindre mängder vid samtliga stationer och i övrigt dominerade små flagellater. Cyanobakterien *Nodularia spumigena** var vanlig vid BY5, BCSIII-10 och BY15 och det var också i dessa områden som ytansamlingar av cyanobakterier observerats.

De integrerade klorofyll *a* värdena låg inom det normala för månaden vid alla Östersjöstationerna.



Abstract

The phytoplankton diversity was generally low in the Skagerrak and Kattegat areas. Small species like Cryptomonads and *Chrysochromulina* spp. * dominated the samples. A few diatoms were found with moderate cell numbers at Släggö (Skagerrak coast) and in the Kattegat. The dinoflagellate *Prorocentrum minimum** and the filamentous cyanobacterium *Anabaena* spp. were found with moderate cell numbers at the Kattegat phytoplankton stations.
The integrated (0-20 m) chlorophyll *a* concentrations were within average for this month in the Skagerrak area. In the Kattegat the integrated values were on the limit to being below average.

The phytoplankton situation was very similar within the Baltic stations. Two or three of the most common filamentous cyanobacteria were observed in various amounts at all stations as well as high numbers of small flagellated species. The potentially toxic cyanobacterium *Nodularia spumigena** was common at BY5, BCSIII-10 and BY15, in the same areas as surface aggregations of cyanobacteria were observed.

The integrated chlorophyll *a* concentrations were within average for this month at all Baltic stations.

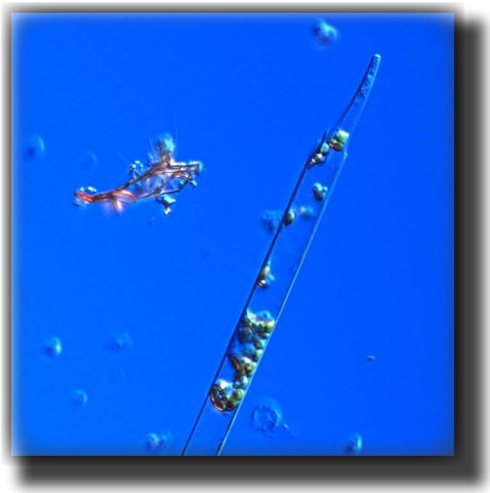
More detailed information on species composition and abundance

The Skagerrak

Å17 10th of July (open Skagerrak)
The species diversity was low. The potentially harmful flagellate *Chrysochsomulina* spp. was abundant and the diatom *Proboscia alata* was found with slightly enhanced cell numbers.

Släggö 10th of July (Skagerrak coast)
Small flagellated species dominate the phytoplankton sample. A few diatoms and small dinoflagellates were common.

The integrated chlorophyll concentrations were within normal for this month in the Skagerrak area.



The diatom *Proboscia alata.*

The dinoflagellate *Prorocentrum minimum** was abundant at the Kattegat stations.

The Kattegat

N14 Falkenberg 11th of July and Anholt E 11th and 15th of July
Small flagellates were abundant and the most numerous was the prymnesiophyte *Chrysochromulina* spp.*. The dinoflagellate *Prorocentrum minimum** and the filamentous cyanobacterium *Anabaena* spp. were common at both stations. The potentially toxic cyanobacterium *Nodularia spumigena** was observed at the second visit at Anholt E.

The integrated chlorophyll *a* concentrations were on the limit to being below average at both of the Kattegat stations.

För att följa utvecklingen av ytansamlingar av cyanobakterier med hjälp av SMHIs tolkningar samt högupplösta satellitbilder, gå in på: http://www.smhi.se/vadret/hav-och-kust/algsituationen-1.11383

To follow the surface accumulations of cyanobacteria in the Baltic Sea by satellite interpretations and high resolution images: http://www.smhi.se/en/Weather/Sweden-weather/the-algae-situation-1.11631

The cyanobacteria *Nodularia spumigena** (large filaments) and *Aphanizomenon* sp.

The Baltic

Small flagellated species dominated the phytoplankton samples from the Baltic stations and cyanobacteria were common. *Nodularia spumigena** was present at all station except at BY2 and was common only at BY5, BCS III-10 and BY15. Among the cyanobacteria either *Aphanizomenon* sp. or *Anabaena* sp. dominated.

The green algae *Planctonema lauterbornii* was abundant at all of the Baltic stations.

Surface aggregations were observed between BY5 and BCS III-10

For more specific species composition see page 5.

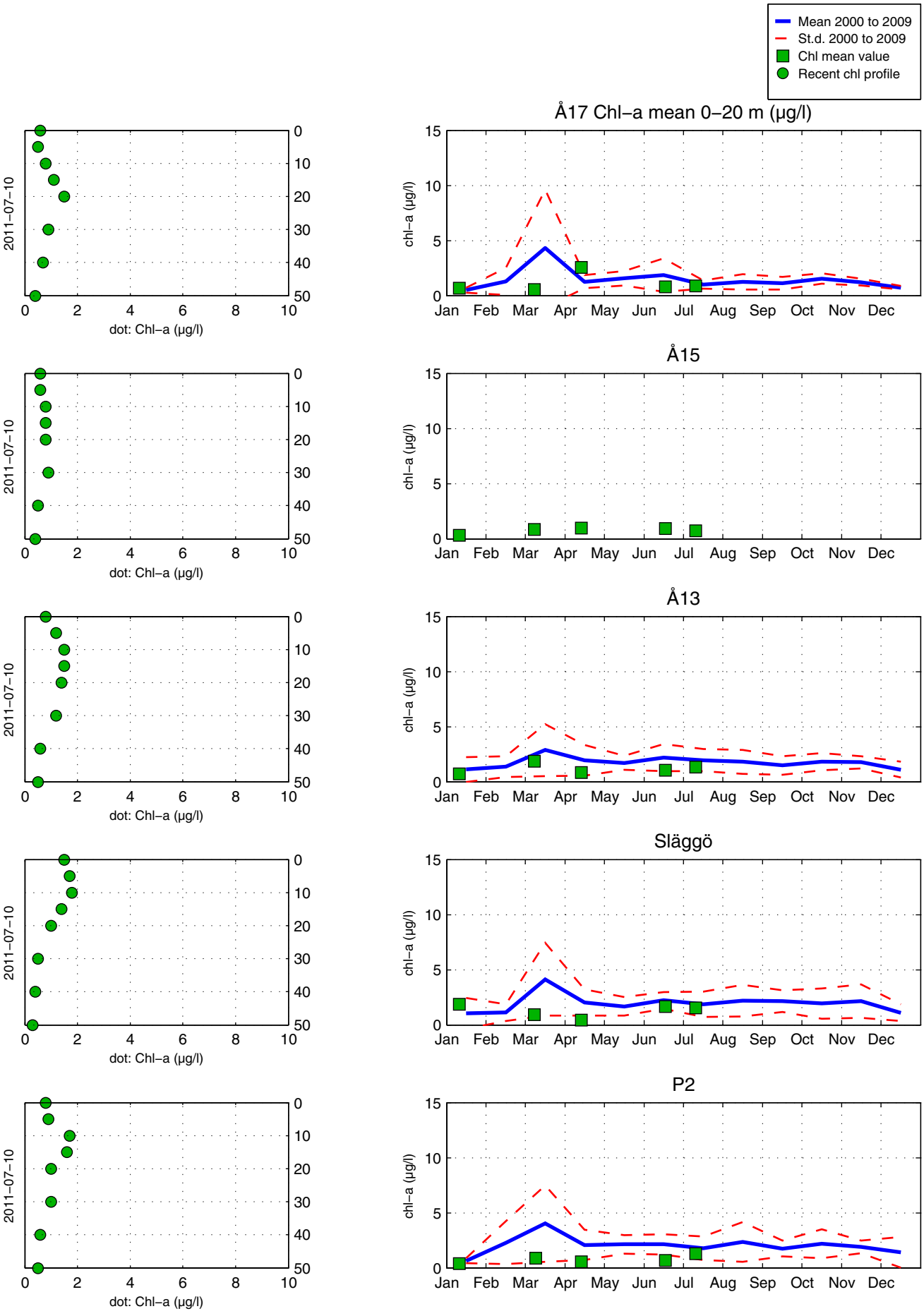
Phytoplankton analysis and text by:
Ann-Turi Skjevik

Selection of observed species	Å17	Släggö	N14	Anholt E	Anholt E
Red=potentially toxic species	10/7	10/7	11/7	11/7	15/7
	cells/l	cells/l	cells/l	cells/l	cells/l
Chaetoceros danicus		present	present		
Cyclotella choctawhatcheana		present	present		present
Cylindrotheca closterium			present	present	
Dactyliosolen fragilissimus		common	common	present	present
Guinardia flaccida	present				
Leptocylindrus danicus		common			
Leptocylindrus minimus				present	
Nitzschia longissima		present		present	present
Proboscia alata	common	common	present	present	present
Skeletonema marinoi		present	present		present
Thalassionema nitzschioides			present		present
Alexandrium pseudogonyaulax		present	present	present	present
Azadinium spp.	present				
Ceratium fusus	present	present			present
Ceratium tripos				present	present
Gymnodinium simplex	present			present	present
Gyrodinium flagellare	present			present	present
Heterocapsa rotundata				present	present
Heterocapsa spp.	present	present	present	present	present
Karlodinium micrum	present	present	present		present
Lessardia elongata	present				
Peridiniella danica			present	present	present
Prorocentrum minimum			very common	common	common
Protoceratium reticulatum			present		
Protoperidinium depressum		present			
Chrysochromulina spp.	very common	present	very common	very common	very common
Cryptomonadales spp	common	very common	very common	very common	very common
Rhodomonas marina				present	
Dinobryon faculiferum	present	common	common	common	common
Planctonema lauterbornii			present	present	common
Quadricoccus euryalinicus		common	present	present	present
Pyramimonas spp.	common	very common	common	common	present
Anabaena spp.		present	common	common	common
Nodularia spumigena					present
Emiliana huxleyi				present	
Ebria tripartita					present
Leucocryptos marina	present	common	common	present	present
Mesodinium rubrum	present	present	present	present	present

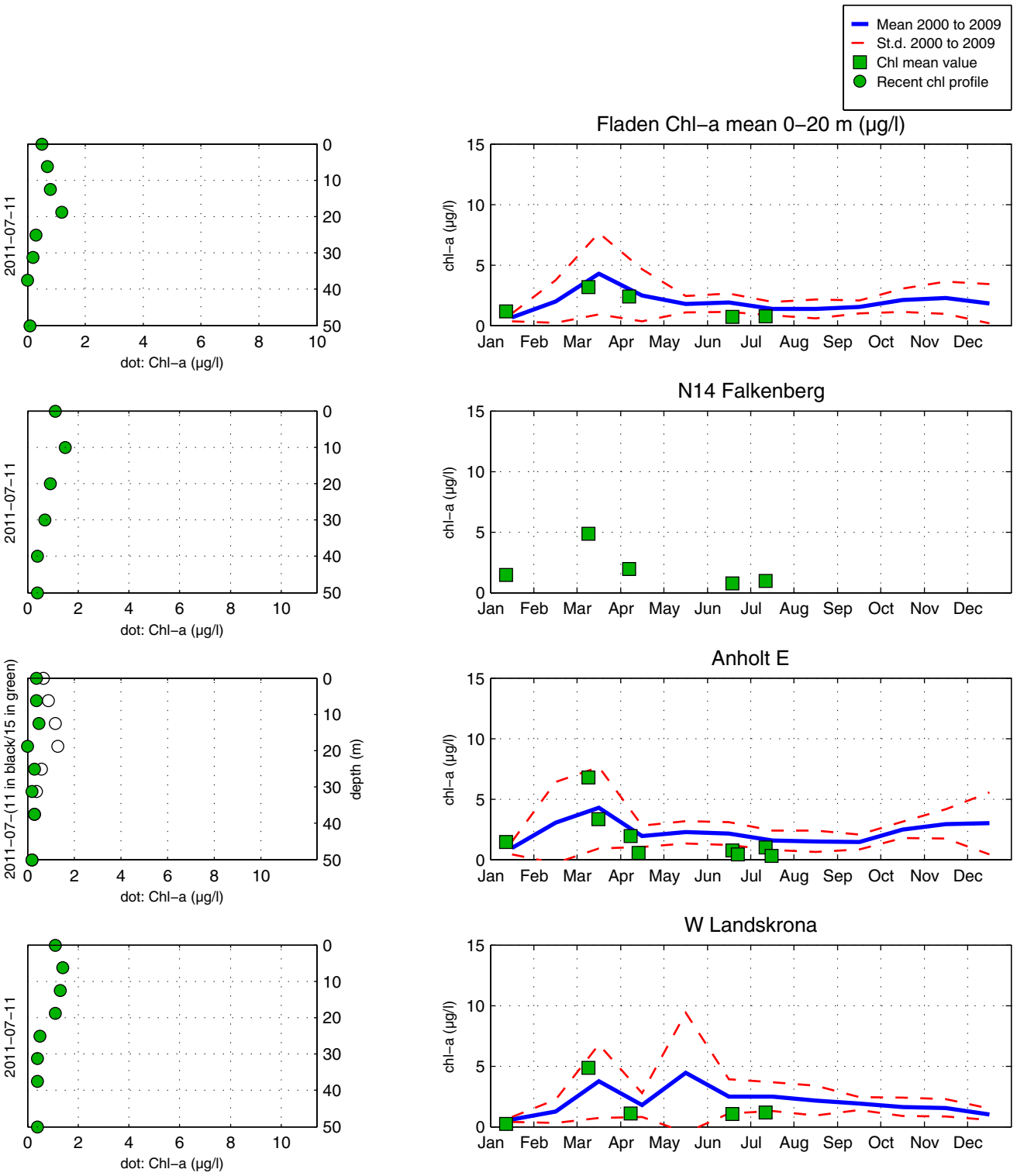
Selection of observed species	BY2	BY5	BCS III-10	BY15	BY38	Ref. M1-V1
Red=potentially toxic species	12/7	12/7	12/7	13/7	13/7	14/7
	cells/l	cells/l	cells/l	cells/l	cells/l	cells/l
Chaetoceros danicus	present		present		present	
Chaetoceros impressus	present		present	present	present	present
Cyclotella choctawhatcheana	present					
Heterocapsa spp.	present	common	present	present	common	present
Karlodinium micrum	present			present	present	
Cryptomonadales spp.	very common	very common	very common	very common	very common	very common
Dinobryon faculiferum	present		present	present		present
Chrysochromulina spp	very common	common	common	common	common	common
Pyramimonas spp.	common	common	common	common	common	present
Anabaena spp	present	common	very common	very common	present	present
Aphanizomenon sp.	very common	very common	common	very common	common	common
Nodularia spumigena		common	common	common	present	present
Eutreptiella spp.				present	present	
Planctonema lauterbornii	very common	very common	common	common	common	common
Katablepharis remigera	common	common	common	common	common	present
Mesodinium rubrum	present	present	present	present	present	present

Aphanizomenon sp.

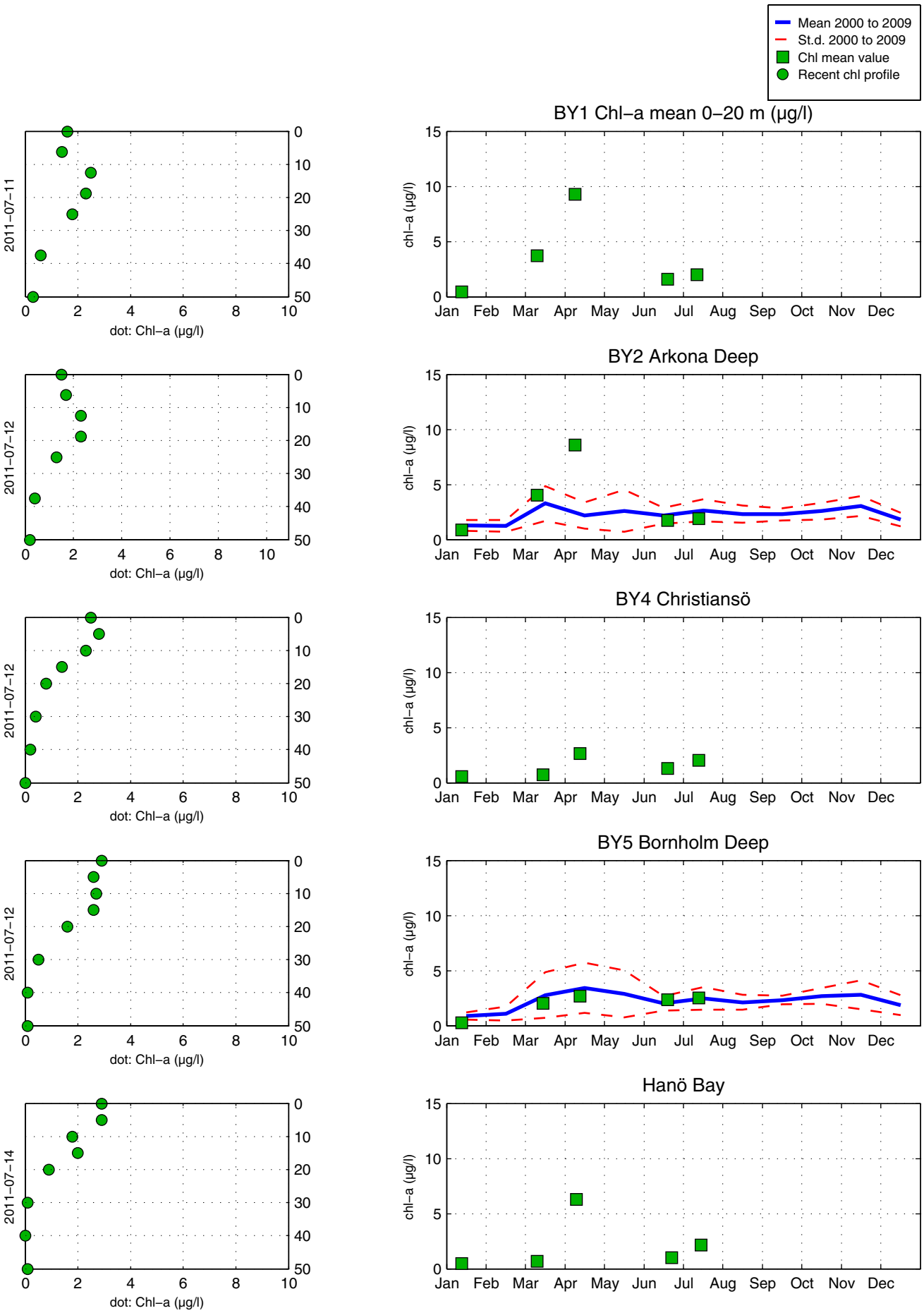
The Skagerrak



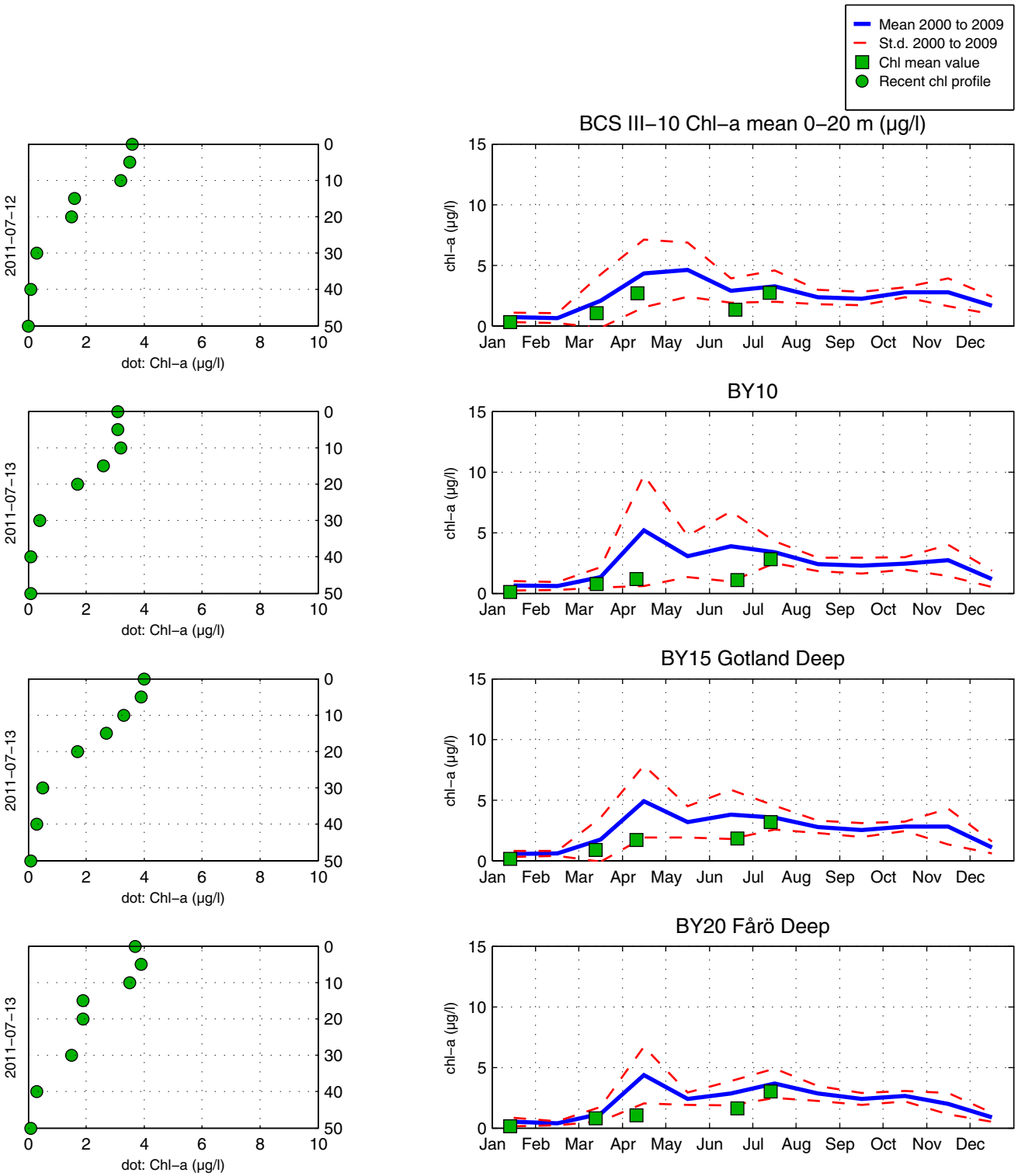
The Kattegat and the Sound



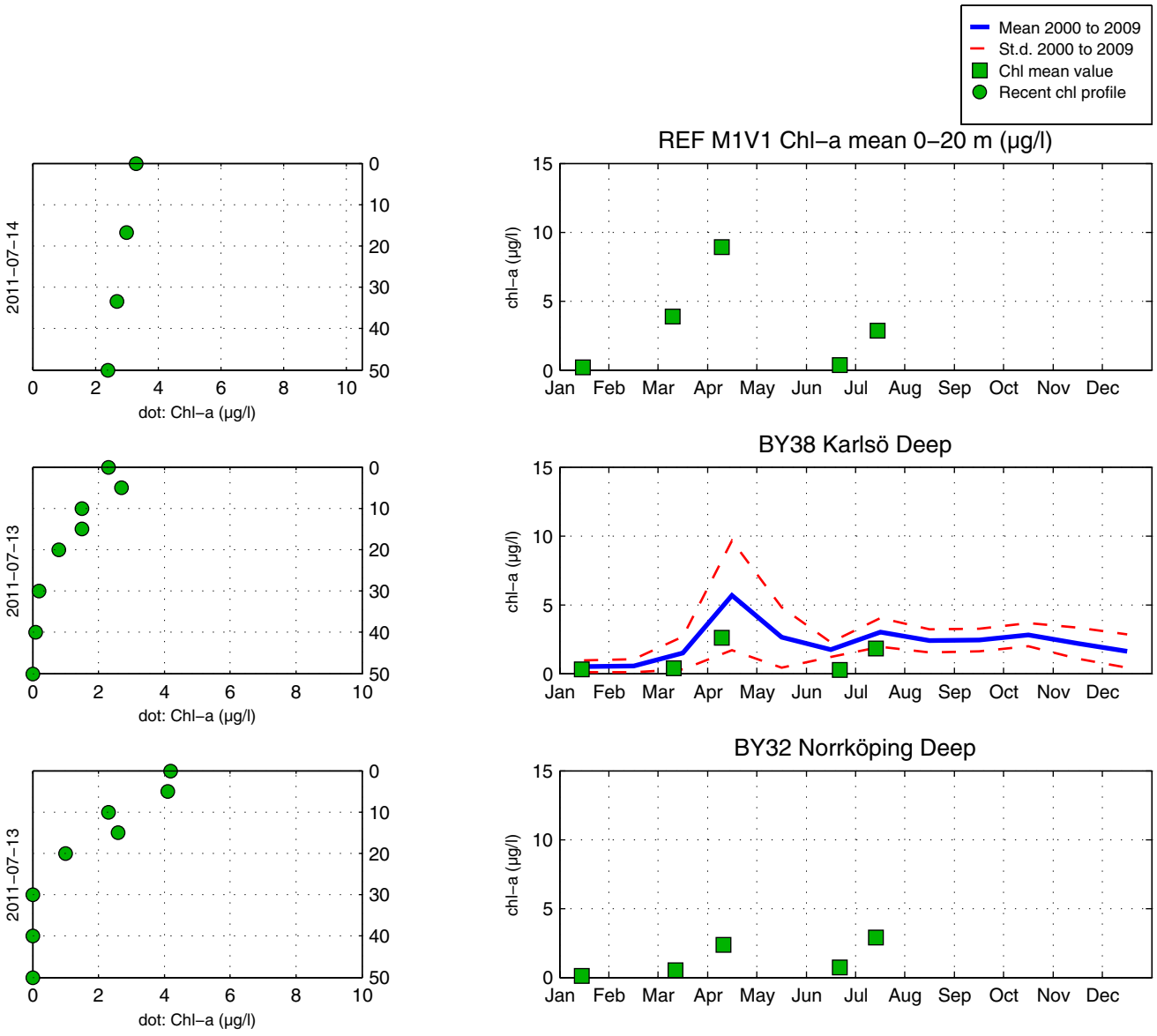
The Southern Baltic



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. Tekniska problem ombord satte stopp för månadens fluorescens-mätningar.

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. Chlorphyll fluorescence was not measured this month due to technical problems on board.

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 or 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.
Pseudo- niztschia 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.
Chaetoceros concavicornis/ C.convolutus	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.
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.

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. 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.