SMHI
Oceanographic Unit
No 2, 28 Feb – 6 March 2012

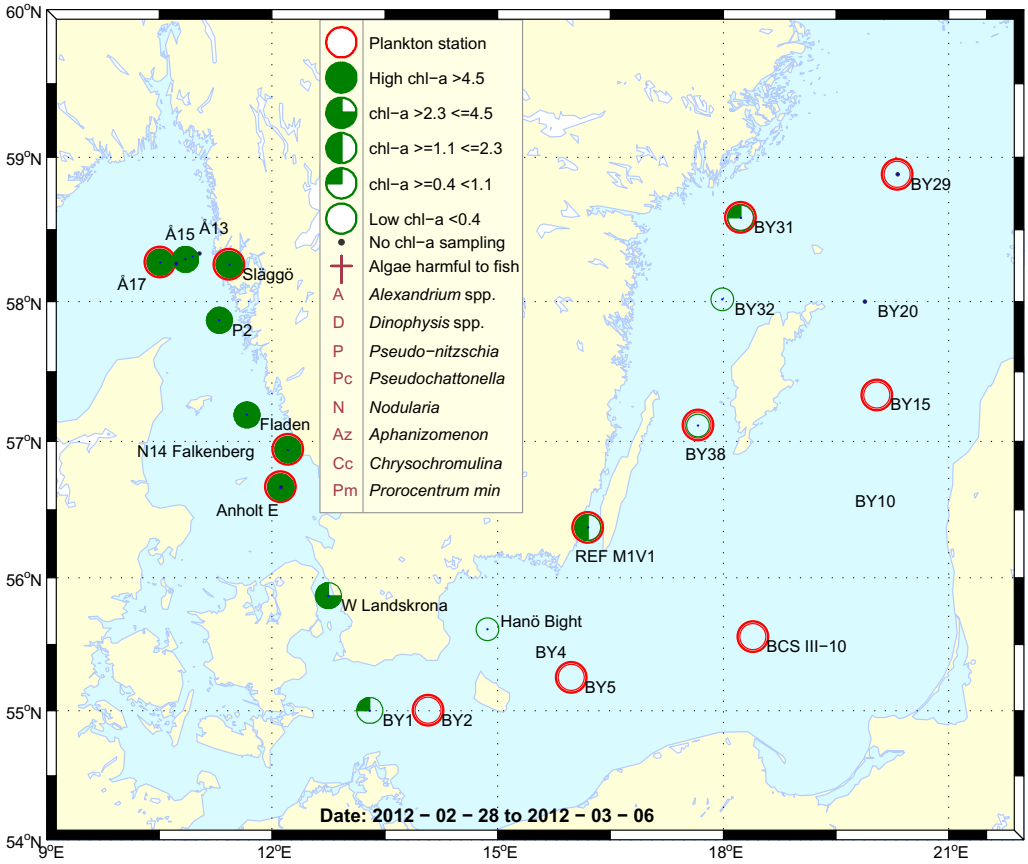
AlgAware
ALGAL SITUATION IN
MARINE WATERS SURROUNDING SWEDEN

Sammanfattning

En rejäl vårblomning observerades i Västerhavet vid samtliga växtplanktonstationer. Det var framför allt kiselalgen *Skeletonema marinoi* som dominerade och den övriga artsammansättningen var mer eller mindre densamma vid alla stationer, många arter av kiselalger i stora cellantal och ett fåtal dinoflagellater i låga cellantal. Bland andra grupper var ögonflagellaten *Eutreptiella braarudii* vanlig. De integrerade klorofyll *a*-värdena (0-20m) var över medel i Kattegatt och Skagerrak.

Vinterlugnet var forfarande påtagligt i Östersjön förutom vid ref.M1V1 i Kalmarsund, där det var kiselalgsblomning och dominans av *Skeletonema marinoi*. Klorofyllvärdena var låga där vi har resultat att redovisa.

På grund av saknade tillstånd, fick ett antal stationer flyttas denna resa och ett fåtal strykas helt. Hydrografivinschen gick sönder vid BY29 i norra egentliga Östesjön, vilket innebar att bara ytprover kunde tas på återstående stationer, därför saknas också integrerat klorofyll *a*. http://www.smhi.se/polopoly_fs/1.20443!exp_0912.pdf



Abstract

An extensive spring bloom was observed at all phytoplankton stations in the Kattegat and Skagerrak areas. The diatom *Skeletonema marinoi* dominated the samples. The general species composition was more or less the same in the whole area, many diatom species in high cell numbers and a few dinoflagellates in low cell numbers. Among other groups, the flagellate *Eutreptiella braarudii* was common. The integrated chlorophyll *a* concentrations were above normal in the Kattegat and the Skagerrak.

Winter calm prevailed in the Baltic except at ref.M1V1 in the sound of Kalmar where diatoms bloomed, dominated by *Skeletonema marinoi.* The chlorophyll *a* concentrations were low.

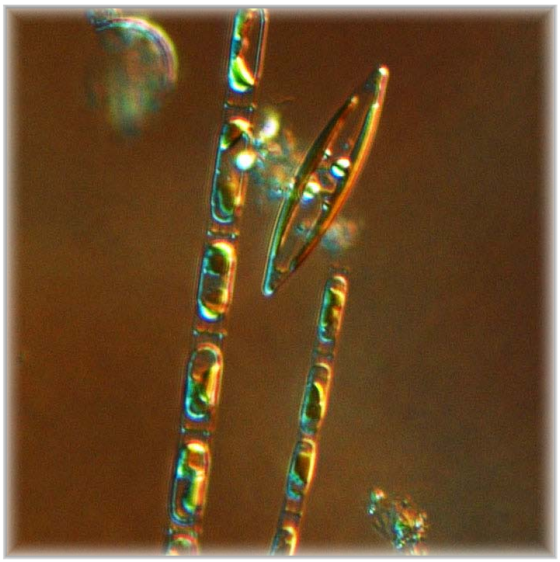
Missing permits caused that some of the stations were moved to Swedish waters this expedition and a few had to be excluded. At BY29 in the northern Baltic Proper the hydrographic winch broke down, why only surface samples were taken at the remaining stations. Integrated chlorophyll *a* is therefore missing at some stations. http://www.smhi.se/oceanografi/oce_info_data/reports/cruise/exp_0912eng.pdf

More detailed information on species composition and abundance

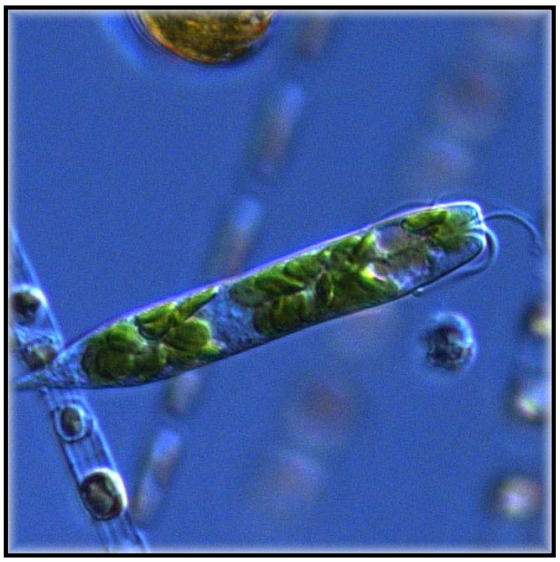
The Skagerrak

Å17 (open Skagerrak) and Släggö (Skagerrak coast) 28th of February
A diatom spring bloom dominated the samples totally. *Skeletonema marinoi* outnumbered all other species, and *Detonula confervacea* and *Thalassiosira* cf. *minima* were found in high cell numbers. The diatom diversity was high with many species of typical spring bloomers like the *Chaetoceros* and *Thalassioria* genera. Dinoflagellate species were few and those observed were found in low cell numbers. The prymnesiophyte *Phaeocystis pouchetii* was common. This species is listed to be toxic to cod larvae. It is colony forming and produces a mucus which when it blooms may form massive foam accumulations along the shoreline. The flagellate *Eutreptiella braarudii* was common at both stations.

The integrated (0-20 meters) chlorophyll *a* concentrations in the Skagerrak area were above normal for the season. The chlorophyll *a* samples from Å13 are unfortunately missing.



The diatom *Skeletonema marinoi* (chain) dominated the samples and the diatom *Navicula transitans* was very common in the Skagerrak and the Kattegat samples.



The euglenophyte *Eutreptiella braarudii* was common in the samples.

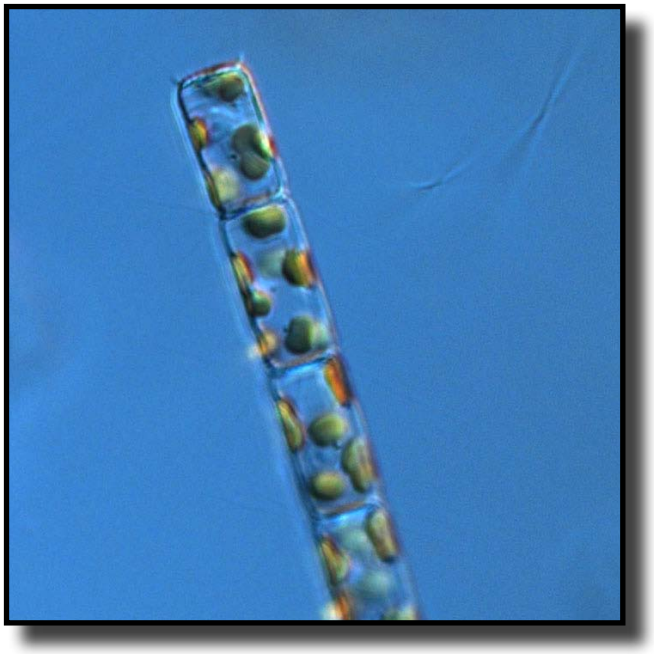
The Kattegat

N14 Falkenberg and Anholt E 29th of February and Anholt E 6th of March
The Kattegat samples were very much the same as the Skagerrak samples, look above.

The integrated (0-20 meters) chlorophyll *a* concentrations from the Kattegat area were above normal for the season at all stations.

The Baltic Sea

Ref M1V1 Kalmar Sound 1st of March
Spring bloom had probably just started in the sound of Kalmar at the time of the expedition. The chlorophyll *a* concentrations were not very high, but the diatom *Skeletonema marinoi* was blooming and *Detonula confervacea* was quite abundant.



The diatom *Detonula confervacea* was common in the sound of Kalmar as well as in the Kattegat and Skagerrak areas.

"BY2", BY9, BY15 and BY31
The phytoplankton diversity was low, merely a few diatom species in very low cell numbers were found, as were they a promise that spring bloom will come soon. Cyanobacteria colonies were present at all stations, the filamentous cyanobacterium *Aphanizomenon* sp. was found common at stations BY9 and BY31.

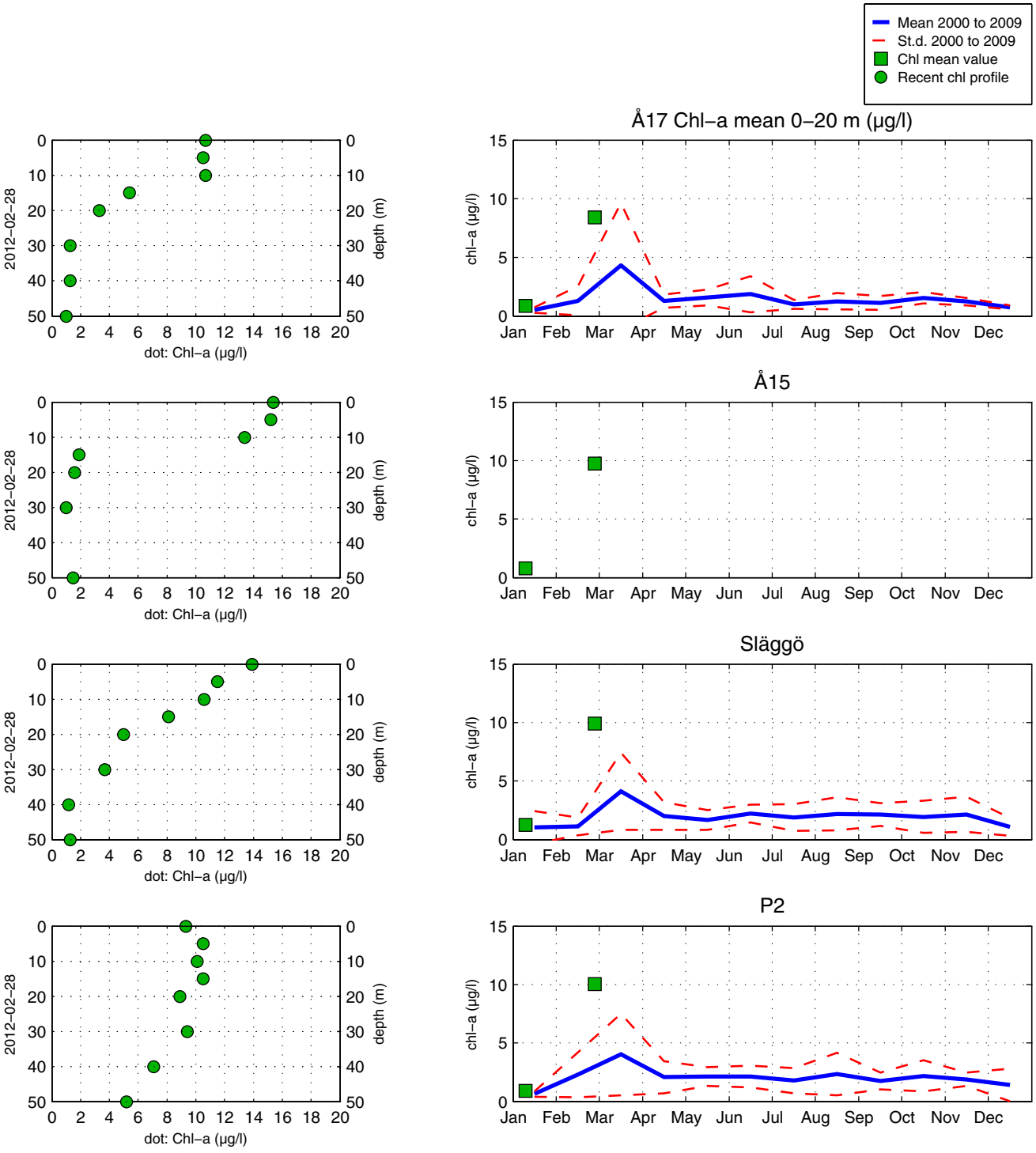
The integrated (0-20 meters) chlorophyll *a* concentrations from the Baltic Sea were low but normal for the season where sampling was possible and not excluded due to winch problems or lack of permits.

Phytoplankton analysis and text by:
Ann-Turi Skjevik

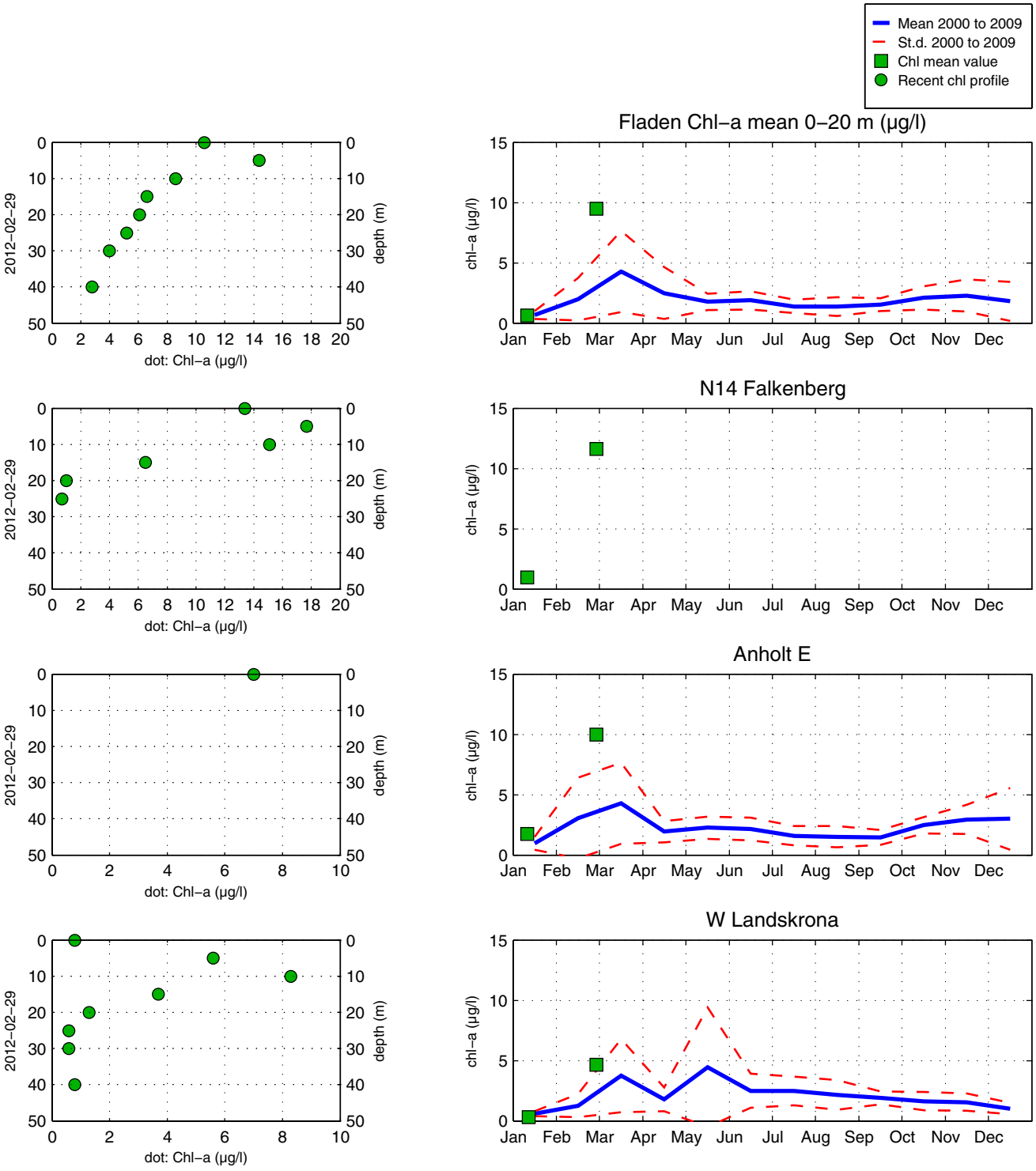
Selection of observed species	Å17	Släggö	N14	Anholt E	Anholt E
Red=potentially toxic species	28/2	28/2	29/2	29/2	6/3
	cells/l	cells/l	cells/l	cells/l	cells/l
Attheya septentrionalis			present		present
Chaetoceros affinis			present		present
Chaetoceros ceratosporus					present
Chaetoceros constrictus	present				
Chaetoceros debilis	present	present	present	present	present
Chaetoceros laciniosus	present	present	present	present	
Chaetoceros similis	present		present	present	
Chaetoceros socialis	common	present	common	common	common
Chaetoceros subtilis			present		
Chaetoceros tenuissimus	present		present	present	
Coscinodiscus spp.		present			
Detonula confervacea	very common	very common	very common	very common	very common
Guinardia delicatula	present				
Navicula transitans	very common	very common	very common	very common	very common
Nitzschia longissima	present	present			
Odontella aurita				present	
Porosira glacialis	present	present	common	present	present
Rhizosolenia setigera		present			present
Skeletonema marinoi	>12 million	>15 million	>12 million	>15 million	>12 million
Thalassionema nitzschioides	present	present	present	present	present
Thalassiosira cf. *angulata*	common	present	common	present	common
Thalassiosira anguste-lineata	present	present	common	present	present
Thalassioria constricta	present		present	present	present
Thalassiosira nordenskioeldii	present	present			present
Thalassiosira cf. minima	very common		very common	very common	very common
Thalassiosira nordenskioeldii	present	present	present	present	present
Thalassiosira punctigera		present			
Thalassiosira spp.		present			
Amphidinium sphenoides	present				
Ceratium lineatum		present			
Ceratium longipes	present				
Ceratium tripos	present	present	present	present	present
Dinophysis norvegica		present			
Gymnodiniales	present	present	present		
Gyrodinium sp.	present				
Gyrodinium cf. *spirale*	present	present		present	present
Heterocapsa rotundata			present	present	present
Katodinium glaucum	present				
Protoperidinium bipes		present			
Protoperdinium brevipes	present				
Pyrophacus horologium					present
Dichtyocha speculum	present	present		present	present
Pseudochattonella sp.				present	
*Pseudpedinella*cf. p*yriforme*	present			present	
Cryptomonadales spp.	common	present	common	present	present
Phaeocystis pouchetii	common	present	common	common	present
Eutreptiella braarudii	common	common	common	common	common
Eutreptiella gymnastica			present	present	
Pyramimonas spp.	present	present			
Ebria tripartita			present		
Leucocryptos marina	present	present	present	present	
Cryothecomonas scybalophora	present			present	
Ciliophora	present		present	present	present
Mesodinium rubrum		present	present	present	present
Strombidium spp.	present		present	present	present

Selection of observed species	"BY2"	BY9	BY15	BY31	Ref. M1-V1
Red=potentially toxic species	5/3	4/3	4/3	3/3	1/3
	cells/l	cells/l	cells/l	cells/l	cells/l
Achnanthes taeniata		present		present	
Centrales spp.			present		
Chaetoceros ceratosporus		present			present
Chaetoceros impressus				present	
Chaetoceros tenuissimus	present				
Chaetoceros spp.			present	present	
Detonula confervacea					common
Navicula transitans					present
Nitzschia longissima				present	
Porosira glacialis					present
Skeletonema marinoi		present	present	present	> 700 000
Thalassiosira cf. *angulata*					present
Thalassiosira spp.					present
Dinophysis norvegica		present			
Gymnodiniales	present	present	present	present	
Heterocapsa spp.	present			present	present
Katodinium glaucum		present			
Peridiniales				present	
Peridiniella catenata					present
Protoperidinium spp.					present
Cryptomonadales spp.	common	common	common	common	common
Cf. *Prymnesium polylepis*		present		present	present
Prymnesiales spp.				present	present
Aphanothece spp.	present	present	present		common
Aphanizomenon spp.		common		common	
Woronichinia spp.	present	present			
Planctonema lauterbornii		present	present		
Pseudopedinella cf. *pyriforme*	present				
Pseudopedinella spp.					present
Pyramimonas spp.	present			present	present
Eutreptiella cf. *gymnastica*	present			present	present
Choanoflagellidea				present	present
Calliacantha longicaudata		present			
Calliacantha natans	present				present
Cryothecomonas scybalophora				present	
Ebria tripartita			present		
Katablepharis remigera					present
Leucocryptos marina		present	present	present	present
Ciliophora	common	present	present	present	present
Mesodinium rubrum	present	present	present	present	present
Strombidium spp.					present

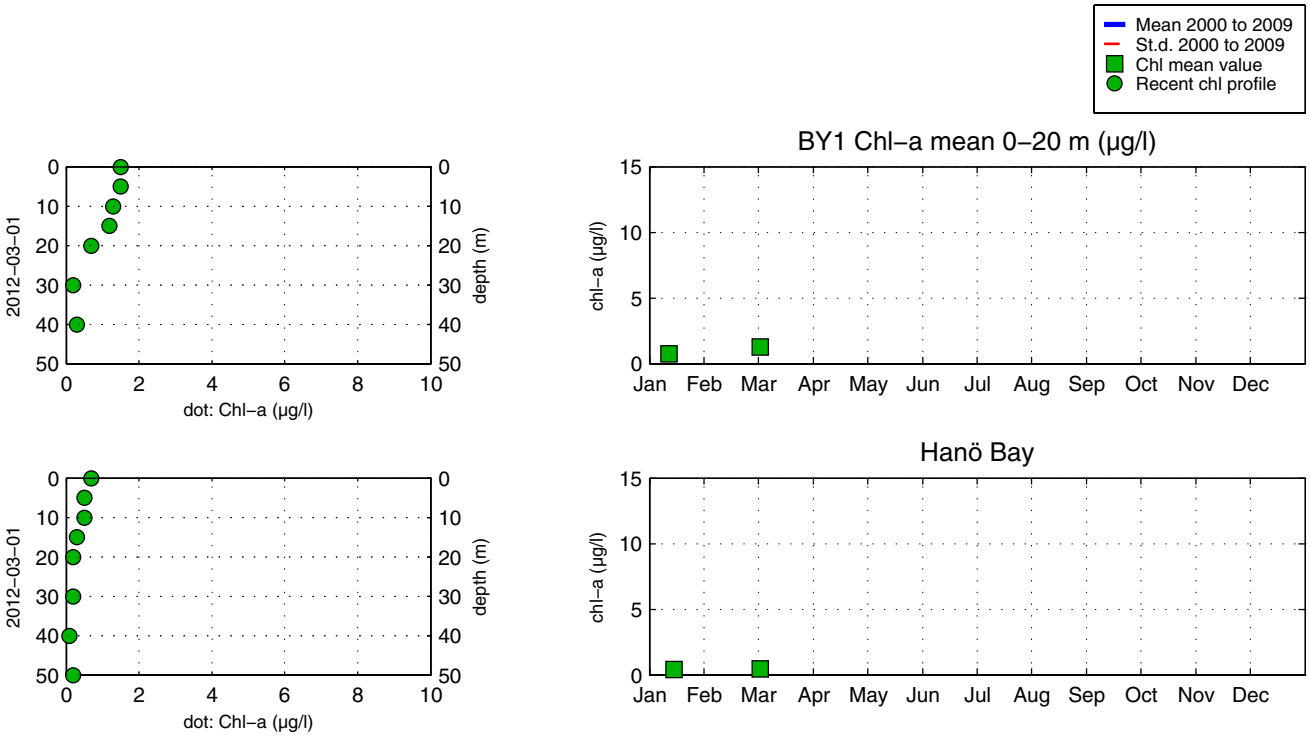
The Skagerrak



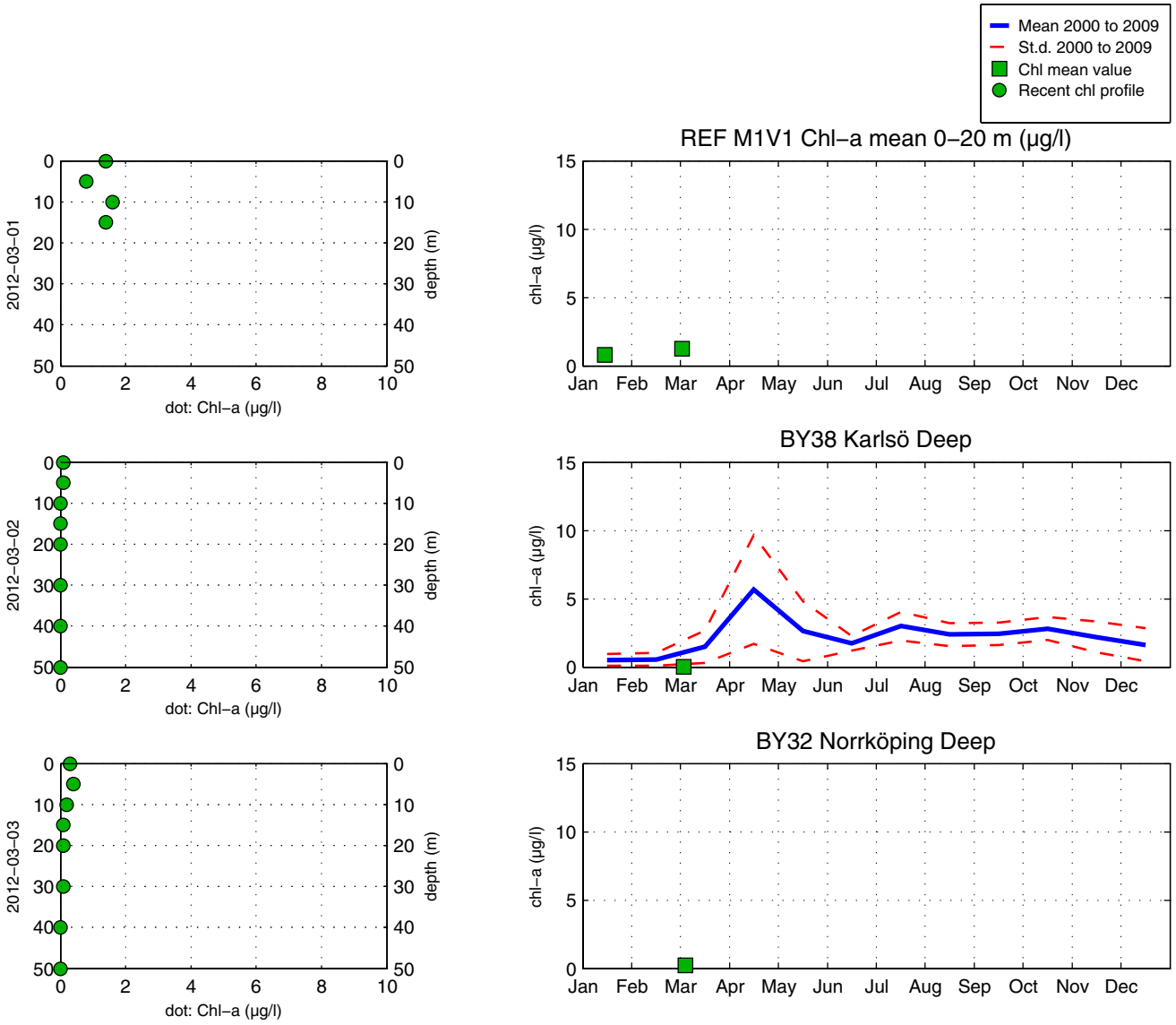
The Kattegat and the Sound



The Southern 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. Tekniska problem med fluorescensmätaren har orsakat den senare tidens brist på data, dessa data läggs till i diagrammen igen så fort det är åtgärdat.

About the chlorophyll graphs

Chlorophyll *a* is sampled from several depths. 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. Due to technical problems with the fluorescence measuring device, data have not been available lately. These data will be added to the diagrams as soon as the problems are solved.

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.