SMHI
Oceanographic Unit
No 10, 5 – 16 December 2011

AlgAware
ALGAL SITUATION IN
MARINE WATERS SURROUNDING SWEDEN

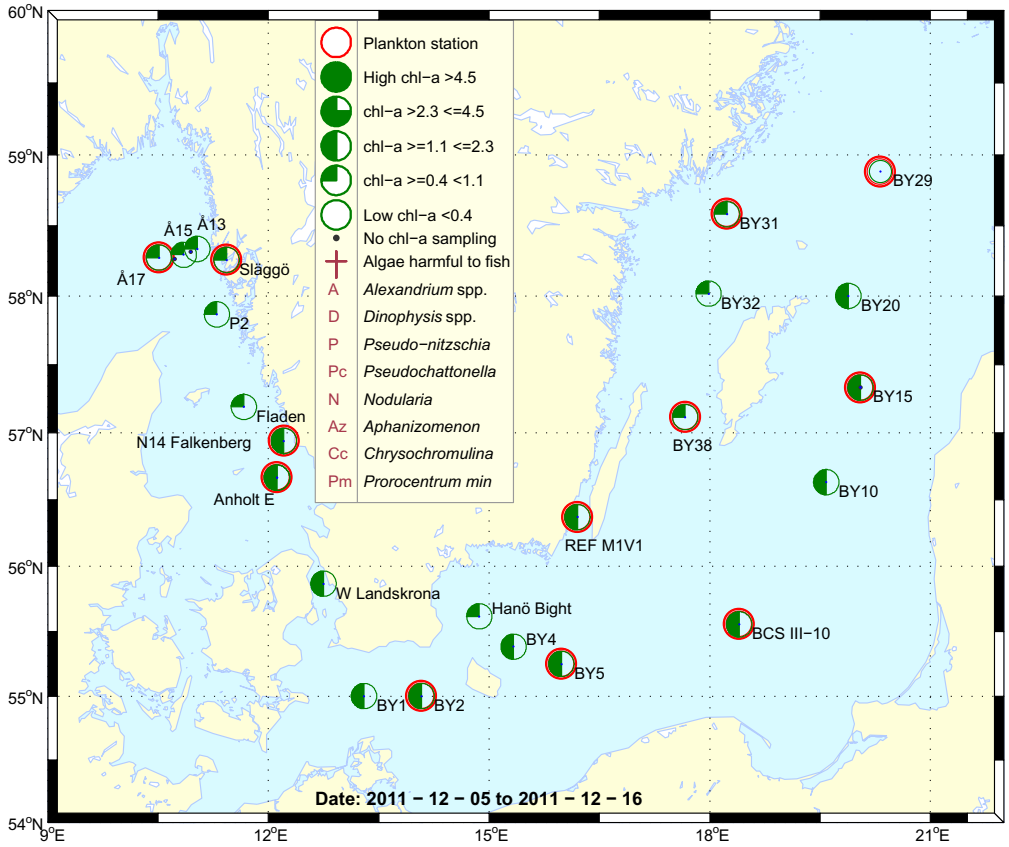
Sammanfattning

Växtplanktondiversiteten var relativt låg vid båda Skagerrakstationerna. Släktet *Ceratium* som förekommit i höga cellantal under hela hösten återfanns även nu i relativt höga celltätheter.

Artdiversiteten var lite högre i Kattegatt jämfört med Skagerrak förutom vid den sista provtagningen vid Anholt E. Bland de större arterna så var det framför allt dinoflagellater som förekom. Släktet *Ceratium* som har återfunnits i höga celltätheter under hela hösten återfanns i relativt höga cellantal.

Östersjön dominerades av cryptomonader, framförallt från släktet *Teleaulax*. Släktet *Chrysochromulina* fanns vid det flesta stationerna. Det förekom även filamentösa cyanobakterier på de flesta stationer. Vid enstaka stationer fanns celler från släktet *Dinophysis*.

De integrerade (0-20 m) klorofyll *a* värdena var låga, men normala för månaden i alla provtagningsområden.



Abstract

Overall the phytoplankton diversity was low at the Skagerrak sampling sites. The genus *Ceratium* that has been found in high amounts during autumn was observed with moderate cell numbers.

The species diversity was a bit higher at the Kattegat sampling sites compared to the Skagerrak area, except on the second sampling occasion at Anholt E. Dinoflagellates were the most common among the larger species and the genus *Ceratium* was found with relatively high cell numbers.

The Baltic phytoplankton stations were dominated by small cells such as cryptomonads, mainly from the genus *Teleaulax*. The genus *Chrysochromulina* was present at all stations. Filamentous cyanobacteria were present at most stations and the genus *Dinophysis* at some.

The integrated (0-20 m) chlorophyll *a* concentrations were low, but within normal for this month in all sampling areas.

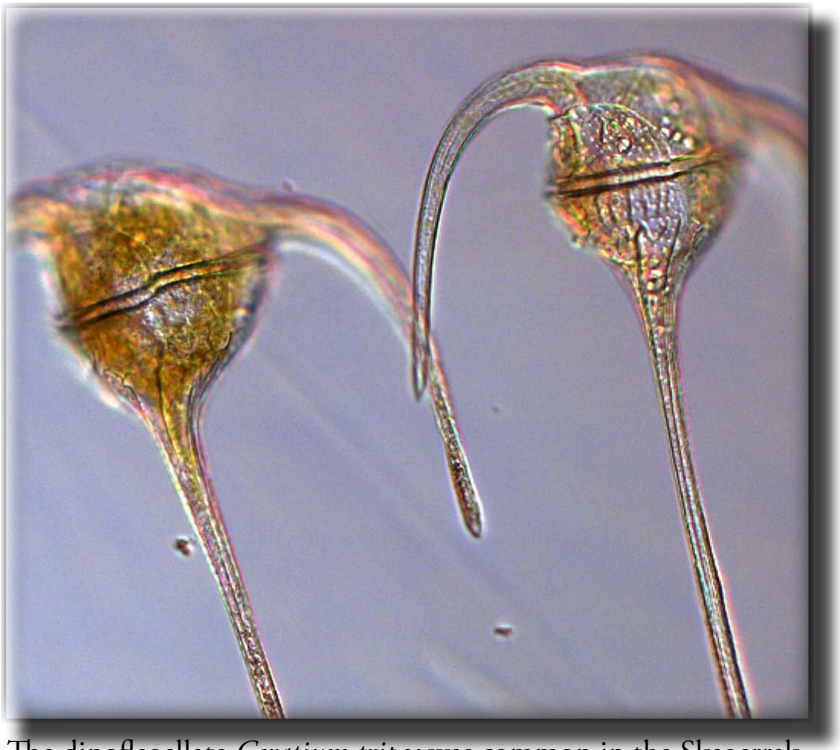
More detailed information on species composition and abundance

The Skagerrak

Å17 5th of December (open Skagerrak)
The phytoplankton diversity was quite low. Diatoms were more abundant than dinoflagellates and consisted mostly of *Skeletonema marinoi* whereas *Ceratium lineatum* was most common among the dinoflagellates. Small flagellates such as cryptomonads were quite common.

Släggö 5th of December (Skagerrak coast)
The diversity was low. Dinoflagellates were more common than diatoms and the genus *Ceratium* was most abundant. *Ceratium lineatum* and *C. tripos* were found with relatively high cell numbers. *Skeletonema marinoi* dominated among the diatoms.

The integrated (0-20 m) chlorophyll *a* concentrations were low, but within normal for this month in the Skagerrak.



The dinoflagellate *Ceratium tripos* was common in the Skagerrak and Kattegat areas.

The Kattegat

N14 Falkenberg 6th of December
The species richness was a bit higher than at the Skagerrak stations. The dinoflagellate genus *Ceratium* was present with several species but predominantly *C. lineatum* and *C. tripos* were found. Small flagellates belonging to the group cryptomonads were also found. Several species of the potentially toxic diatom genus *Pseudo-nitzschia* was present in low amounts.

Anholt E 6th and 16th of December
A little more diverse community was found on the first occasion than the last. Dinoflagellates were most common among the large species on both occasions and the genus *Ceratium* was the most common. The diatom *Skeletonema marinoi* was relatively common on the first stop but not on the second visit.

The integrated (0-20 meters) chlorophyll *a* concentrations were within normal for the season in the Kattegat.

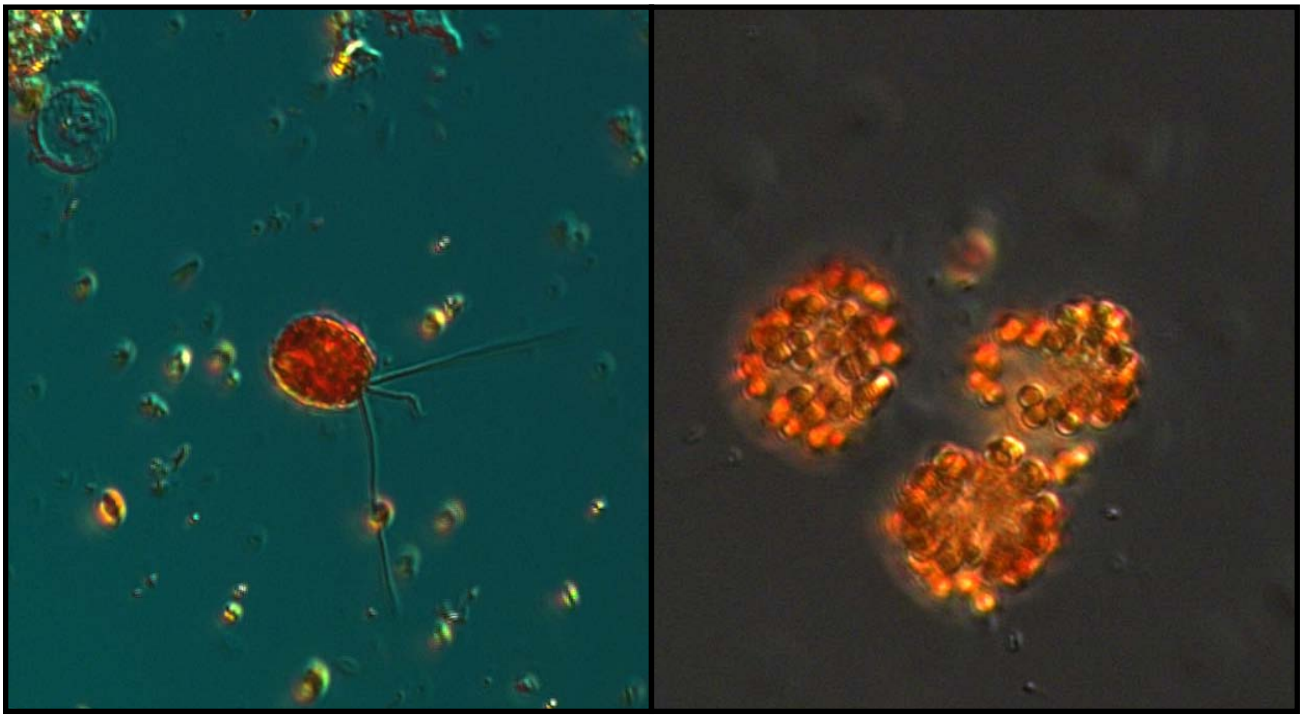
The Baltic Sea

The phytoplankton species composition was very similar to the situation in November. The cell density was low and dominated by small cells such cryptomonads, mainly from the genus *Teleaulax*. There were also large cells belonging to the genus *Coscinodiscus* at most stations. Furthermore, cells from the genus *Dinophysis* were present at some stations.

The genus *Chrysochromulina* was common or at least present at most stations. *Aphanizomenon flos-aqua* and unidentified filamentous cyanobacteria were also present at most stations and even common at some stations. Colony forming cyanobacteria from the genus *Woronichinia* spp., were present at almost all stations.

The cell density was very low at the station Ref. M1V1 in the Kalmar sound. The depth at the Kalmar sound sampling site (21 m) and the stormy weather during the expedition this month resulted in a phytoplankton sample dominated by detritus.

The integrated (0-20 meters) chlorophyll *a* concentrations were low but normal for the season at all stations. Despite a low cell density, the highest chlorophyll *a* concentrations were found at Ref. M1V1.



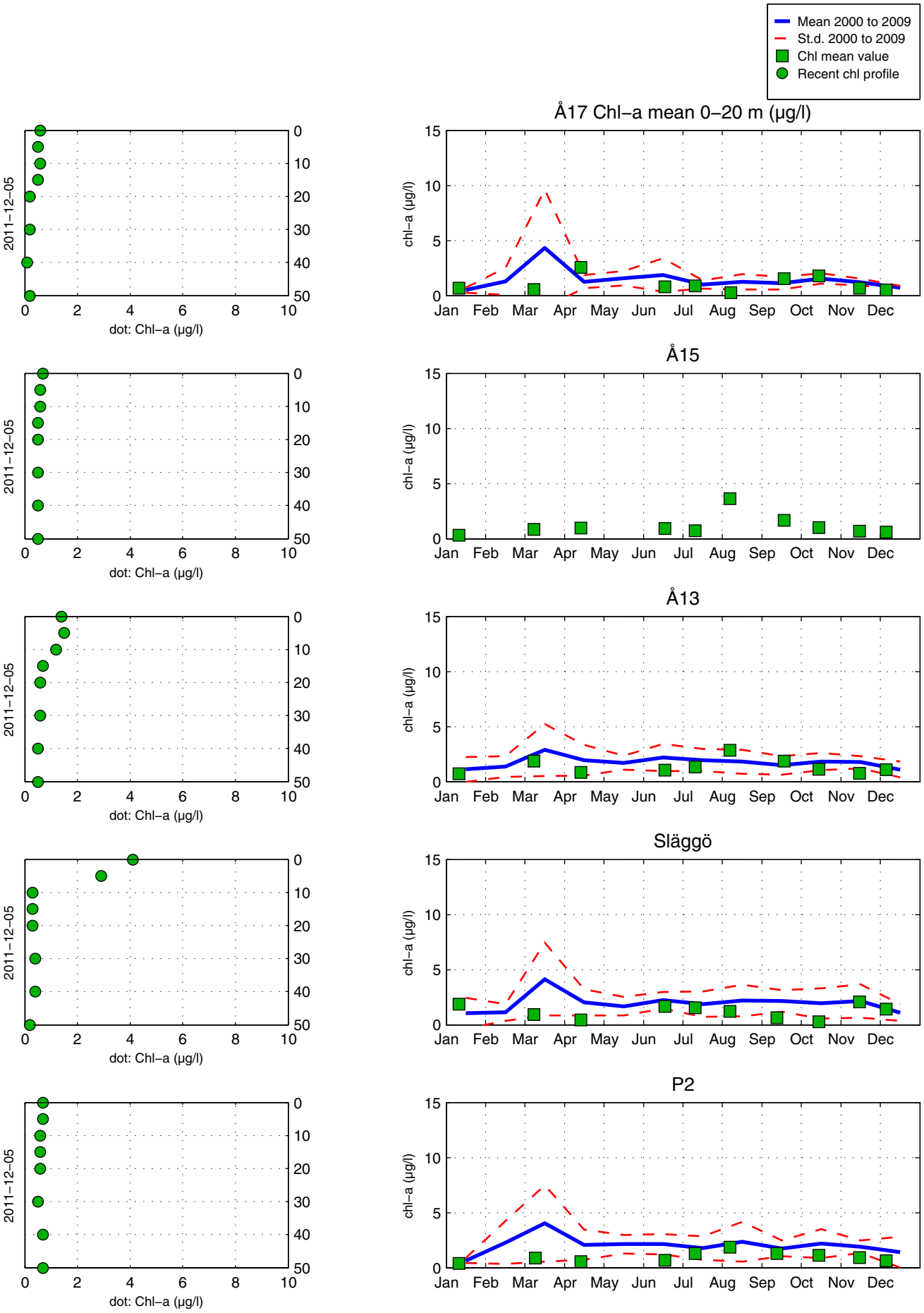
The genus *Chrysochromulina* (left) and the colonyforming cyanobacterium *Woronichinia* sp. was common or present at most stations in the Baltic Sea.

Phytoplankton analysis and text by:
Marie Johansen and Malin Mohlin.

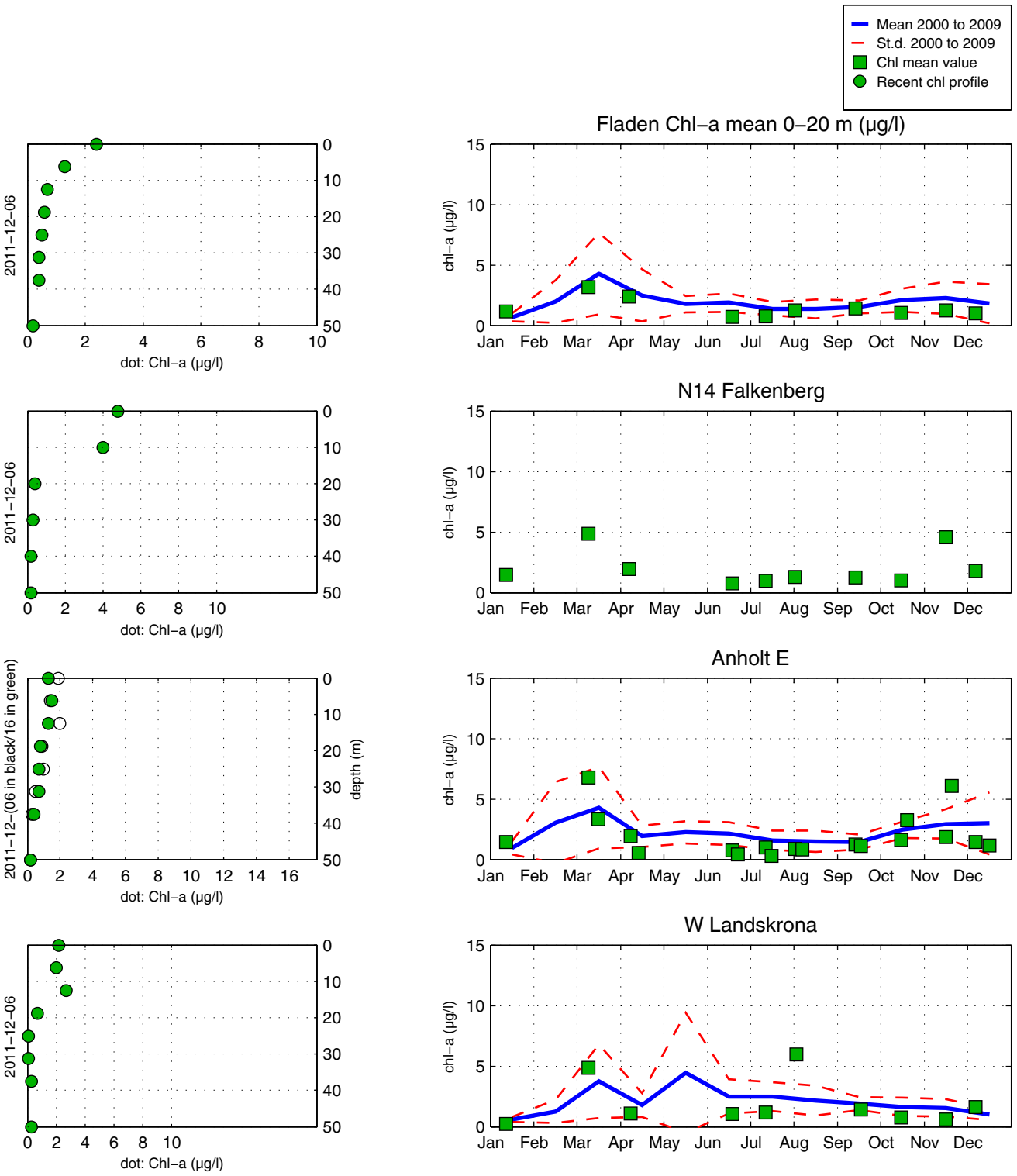
Selection of observed species	Å17	Släggö	N14	Anholt E	Anholt E
Red=potentially toxic species	5/12	5/12	6/12	6/12	16/12
	cells/l	cells/l	cells/l	cells/l	cells/l
Ceratulina pelagica	present				
Chaetoceros danicus	present				
Chaetoceros subtilis					present
Chaetoceros cf. *tenuissimus*	present				present
Cylindrotheca closterium				present	present
Leptocylindrus minimus	present				
Porosira glacialis			present	present	present
Pseudo-nizschia spp.	present		common		
Rhizosolenia hebetata					present
Rhizosolenia imbricata		present			
Skeletonema marinoi	common	common		common	
Thalassionema nitzschioides		present		present	
Thalassiosira angulata	common		present	present	
Thalassiosira punctigera				present	
Thalassiosira rotula					present
Akashiwo sanguinea	present	present		present	
Amphidinium sphenoides	present				
cf. Azadinium sp.	present			present	present
Ceratium furca			present	present	present
Ceratium fusus			present	present	present
Ceratium lineatum	common	common	common	common	common
Ceratium longipes					present
Ceratium macroceros				present	
Ceratium tripos	present	common	common	common	common
Dinophysis acuta				present	
Dinophysis norvegica				present	present
Dinophysis rotundata			present		
Gymnodiniales	present	present	present	common	present
Gyrodinium spirale			present		
Karenia mikimotoi		present		present	
Katodinium glaucum					present
Peridiniales			present		
Prorocentrum micans			present	present	present
Protoperidinium cf. *crassipes*			present		
Protoperidinium divergens				present	
Protoperidinium steinii			present		
Dichtyocha speculum		present	common	present	present
Chrysochromulina spp.		present	present	present	present
Heterosigma akashiwo	present				
Cryptomonadales spp.		common	present	present	present
Hemiselmis virescens			present		
Plagioselmis prolonga	common		common	present	present
Teleaulax spp.	common		present	common	common
Pyramimonas spp.				present	
Cyanobacteria colony	present				
Pleurochrysis spp.	present				
Leucocryptos marina	present	present	present		
Choanoflagellidea	present	present	common		
Ciliophora	present	present	present	present	present
Mesodinium rubrum			present	present	

Selection of observed species	**BY2**	**BY5**	**BCS III-10**	**BY15**	**BY29**	**BY38**	**BY31**	**Ref. M1-V1**
Red=potentially toxic species	**7/12**	**7/12**	**7/12**	**8/12**	**8/12**	**14/12**	**14/12**	**15/12**
	cells/l	**cells/l**	**cells/l**	**cells/l**	**cells/l**	**cells/l**	**cells/l**	**cells/l**
Actinocyclus spp.		present			present			
Chaetoceros spp.								present
Chaetoceros impressus	present	present		present	present	present	present	present
Coscinodiscus granii		common	present	present	present		present	
Cyclotella choctawhatcgeeana	present							
Ceratium tripos	present							
Dinophysis acuminata				present	present			present
Dinophysis norvegica					present	present	present	
Gymnodiniales	present	present	present	present	present	present	common	present
Gyrodinium spirale	present	present					present	
Heterocapsa spp.	present	present			present	present		present
Katodinium glaucum		present	present	present			present	
Peridiniales					present	present	present	present
Protoperidinium spp.						present	present	present
Cryptomonadales spp.	very common	very common	common	common	present	present	common	common
Teleaulax spp.	very common	common	present	common	common	common	common	common
Dictyocha speculum	present							
Chrysochromulina spp.	common	present	present	present		present		
Pterosperma spp.	present			present		present		present
Cyanobacteria spp. filament					present	common	present	
Cyanobacteria colony forming	common	present	present	present		present	present	
Aphanizomenon flos-aquae				present	common	present	common	
Nodularia spumigena		present						
Pseudanabaena spp.								
Woronichinia spp.	common	present	present	present	present	present	present	
Planctonema lauterbornii	present				present		common	
Pyramimonas spp.	common	common	common	present	present	present	present	present
Oocystis spp.		present		present		present		present
Pediastrum spp.				present				
Choanoflagellidea	common	common	common		present	present	common	
Leucocryptus marina	present							
Ciliophora	present	present	present	present	present	present	present	present
Mesodinium rubrum	present	present	present	present	present	present	present	present

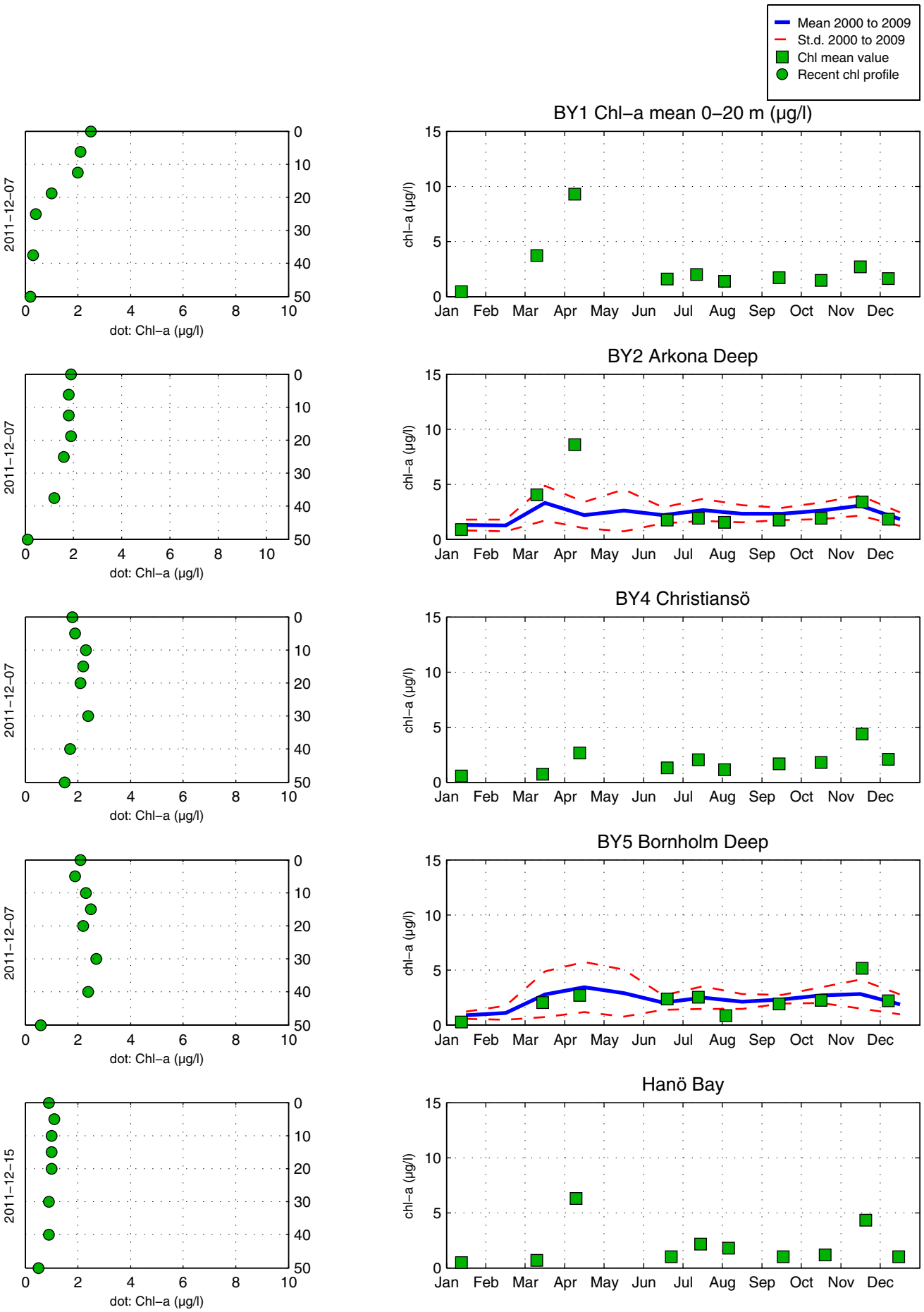
The Skagerrak



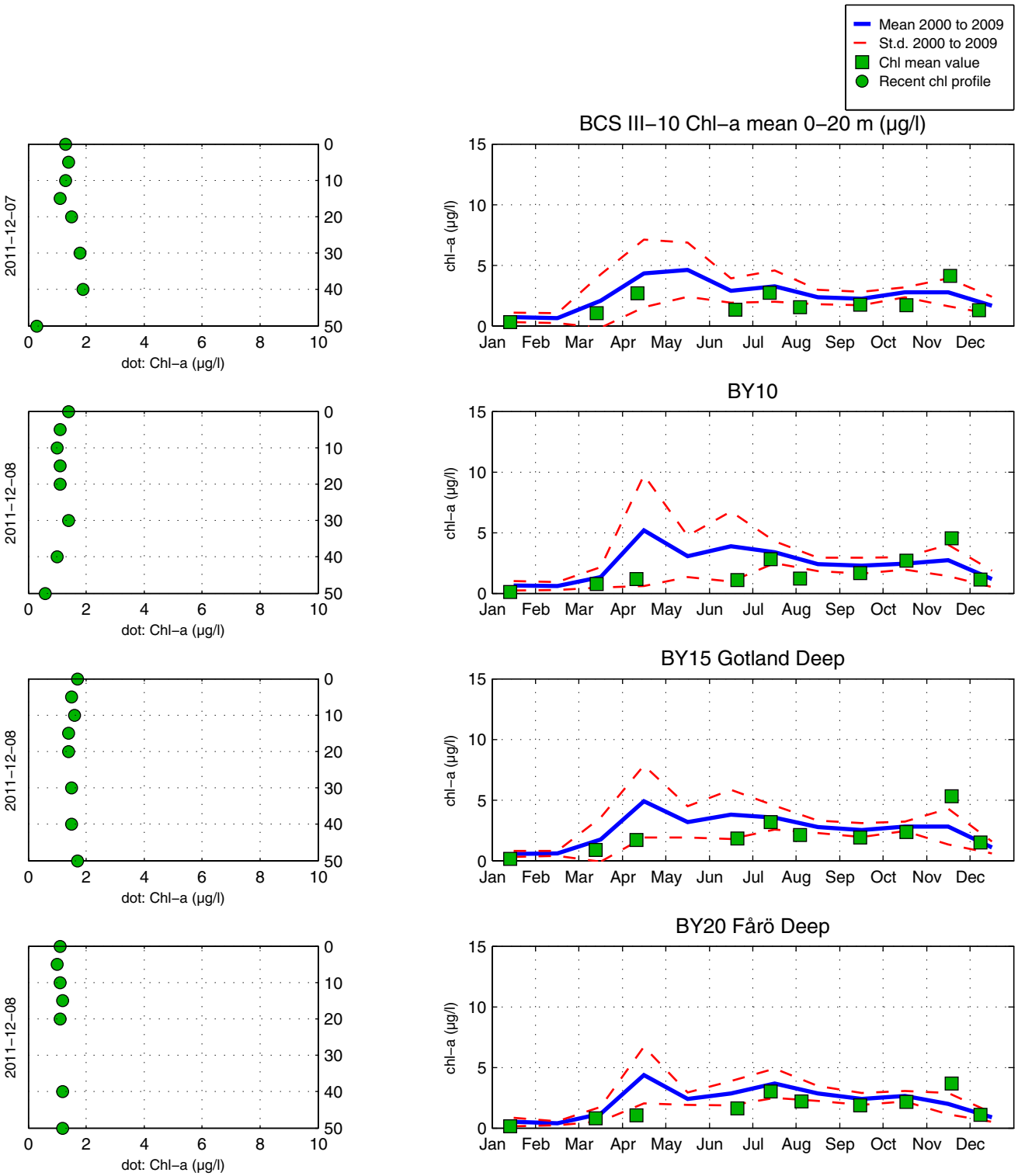
The Kattegat and the Sound



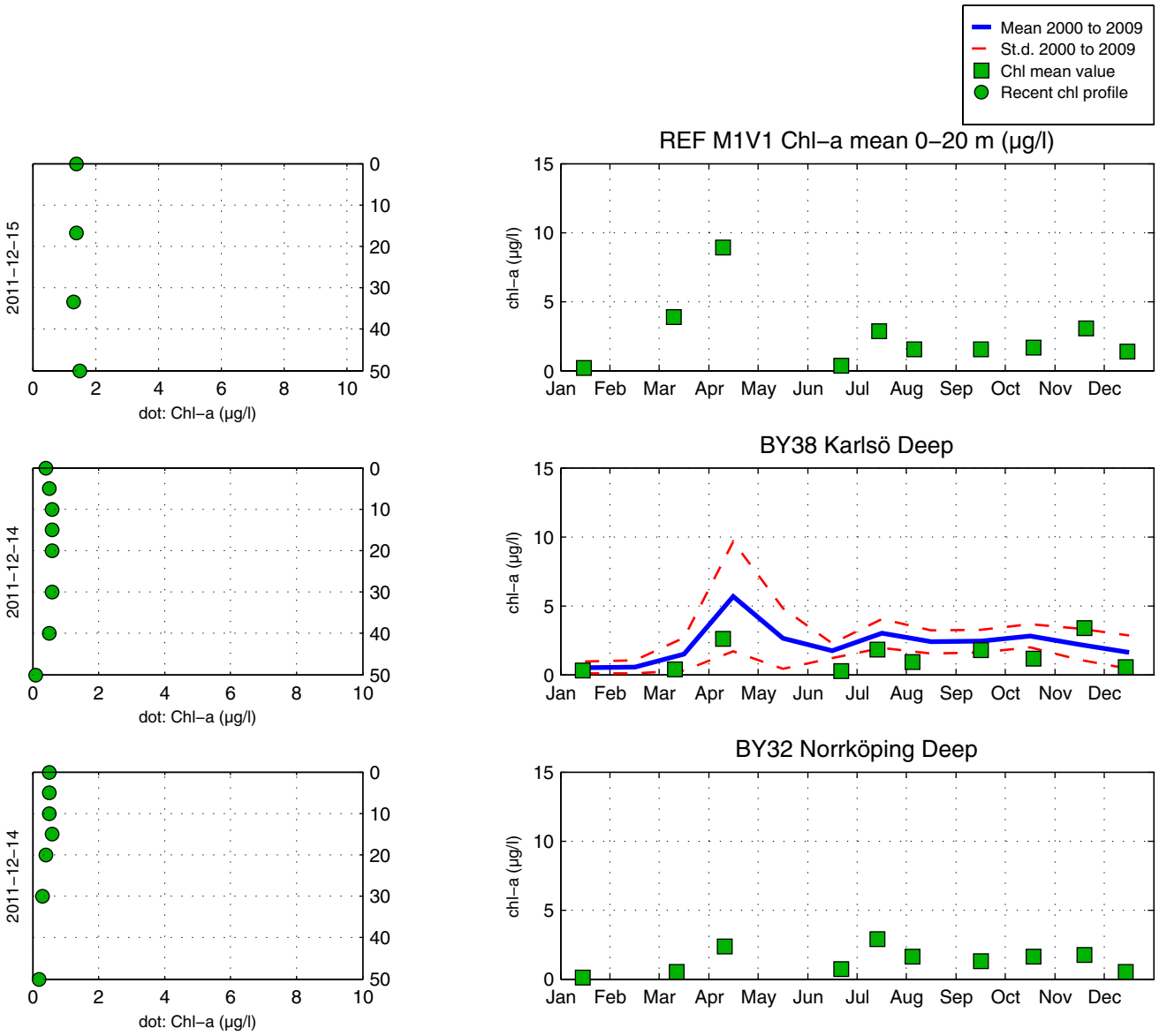
The Southern Baltic



The Eastern Baltic



The Western Baltic



Om klorofylldiagrammen

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