SMHI
Oceanographic Unit
No 9, 15 – 20 November 2011

AlgAware
ALGAL SITUATION IN
MARINE WATERS SURROUNDING SWEDEN

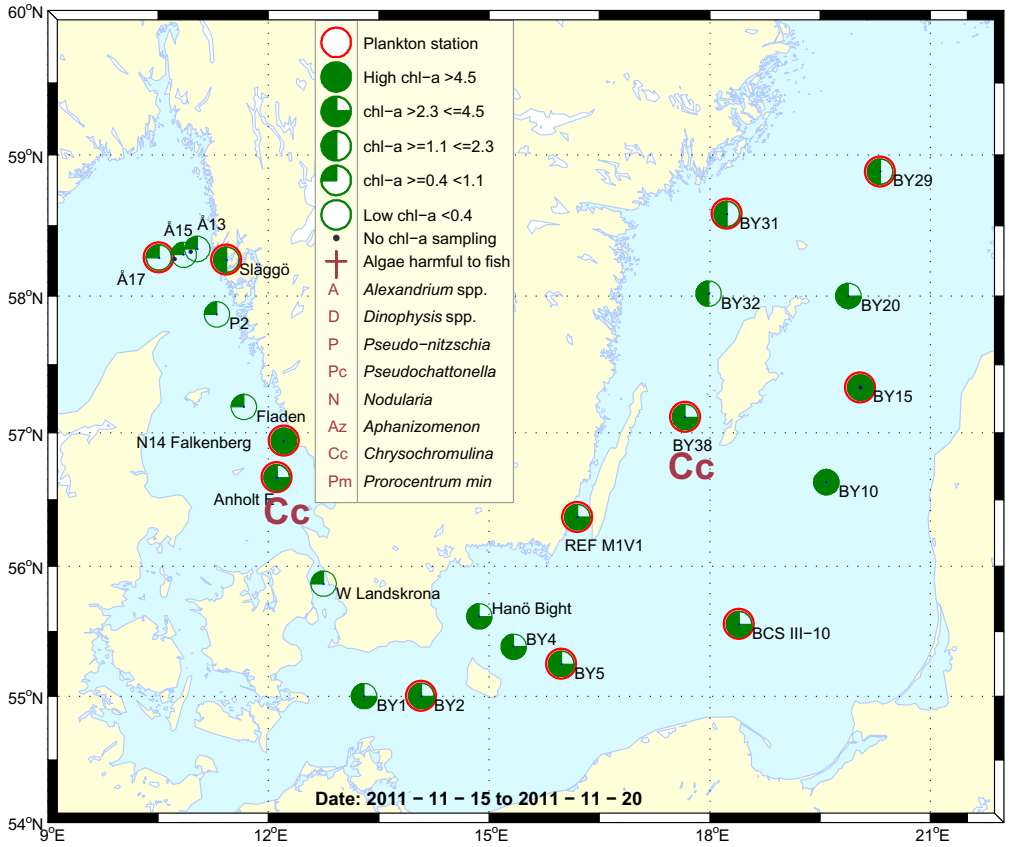
Sammanfattning

De integrerade klorofyll *a* värdena (0-20m) i Skagerrak var inom det normala för årstiden. I Kattegatt återfanns däremot förhöjda klorofyll *a* värden vid N14 samt vid provtagningstillfälle två vid Anholt E.

Växtplanktonsamhället i Skagerrak och Kattegatt dominerades i november dels av stora mängder av olika små cryptomonader men även relativt stora mängder av stora dinoflagellater tillhörande släktet *Ceratium*. Artdiversiteten var dock överlag låg.

I Östersjön var de integrerade klorofyll *a* värdena (0-20m) höga för årstiden och översteg tioårsmedel vid de sydliga samt östliga stationerna. Endast vid de nordliga stationerna återfanns lägre klorofyll *a* halter.

Cryptomonader och *Pyramimonas* spp. dominerade i Östersjön. På ett flertal stationer hittades även släktet *Coscinodiscus* i såpass stor omfattning att det är värt att nämnas. *Chrysochromulina* observerades i relativt stor mängd mellan Öland och Gotland. Filament av Cyanobakteriesläktet *Aphanizomenon flos-aqua* återfanns vid ett par stationer.



Abstract

The integrated (0-20 meters) chlorophyll *a* concentrations were normal for the season at all Skagerrak sites. Chlorophyll *a* concentrations were however above normal in Kattegat at N14 and on the second sampling occasion at Anholt E.

The phytoplankton community in the Skagerrak and the Kattegat was dominated by several species of small cryptomonads, but also quite high numbers of the large dinoflagellates *Ceratium* were found. The species diversity was however low.

The integrated (0-20 meters) chlorophyll *a* concentrations were high and above normal for the season in the southern and eastern parts of the Baltic Sea.

Cryptomonads, and *Pyramimonas* spp. dominated in the Baltic Sea. The large diatom genus *Coscinodiscus* was found with relatively high numbers at several stations. High cell numbers of the genus *Chrysochromulina* was found between the islands Öland and Gotland. Some filaments of the cyanobacteria genus *Aphanizomenon flos-aqua* were observed at a couple of stations.

More detailed information on species composition and abundance

The Skagerrak

Å17 15th of November (open Skagerrak)
The phytoplankton cell density was quite low as it has been during both September and October. Different species belonging to the cryptomonadales group dominated, and the most numerous species was *Plagioselmis prolonga*. The toxin producing species *Azadinium* spp. was observed. No diatoms were found.

Släggö 15th of November (Skagerrak coast)
The species diversity and cell density were quite low. The dinoflagellate *Ceratium lineatum*, was present with rather high cell numbers but was outnumbered by different small cryptomonads.

The integrated (0-20 meters) chlorophyll *a* concentration was within normal for the season at Släggö. At the other Skagerrak stations the concentrations were below normal.

The dinoflagellate *Ceratium lineatum* is one of several *Ceratium* species forming a massive bloom along the Swedish west coast this autumn. The species was common at Släggö, N14 and Anholt E.

The Kattegat

N14 Falkenberg 16th of November
The dinoflagellate species *Ceratium lineatum* dominated at this station with more than 100 000 cells per liter. Different cryptomonad species were common. The potentially toxic dinoflagellate genus *Dinophysis* was represented by several species with low cell numbers. Diatoms were scarce, but the genus *Thalassiosira* and the potentially toxic genus *Pseudo-nitzschia* were observed.

The integrated (0-20 meters) chlorophyll *a* concentration was relatively high due to the elevated concentrations at the surface and ten meters below.

Anholt E 16th and 20th of November
The total cell number was higher on the first sampling occasion compared to the second. There were only minor differences in species composition between the two samplings. The dinoflagellate *Ceratium lineatum* was very common at the first visit whereas *Ceratium tripos* dominated within the *Ceratium* genus on the second stop. Cryptomonads, with emphasis on the genus *Teleaulax* dominated the cell counts on both occasions. The potentially toxic flagellate *Chrysochromulina* was found with elevated cell numbers on the second occasion.

The integrated (0-20 meters) chlorophyll *a* concentrations were within normal for the season at the first visit and above normal at the second. The chlorophyll *a* values did not correspond well to the cell counts.

The Baltic Sea

The phytoplankton community in the Baltic Sea was mainly dominated by small flagellates such as cryptomonads and *Pyramimonas* spp.. The diatom genus *Coscinodiscus* was common.

High cell numbers of the genus *Chrysochromulina,* potentially toxic for fish and other organisms, were found at BY 38 between Öland and Gotland. Some filaments of the cyanobacteria species *Aphanizomenon flos-aqua* were observed in the northern part of the sampling route and between Öland and Gotland (BY 38).

The integrated (0-20 meters) chlorophyll *a* concentrations were above normal for the season in the southern and eastern part of the Baltic Sea. In the western part the concentrations were lower, but within normal.

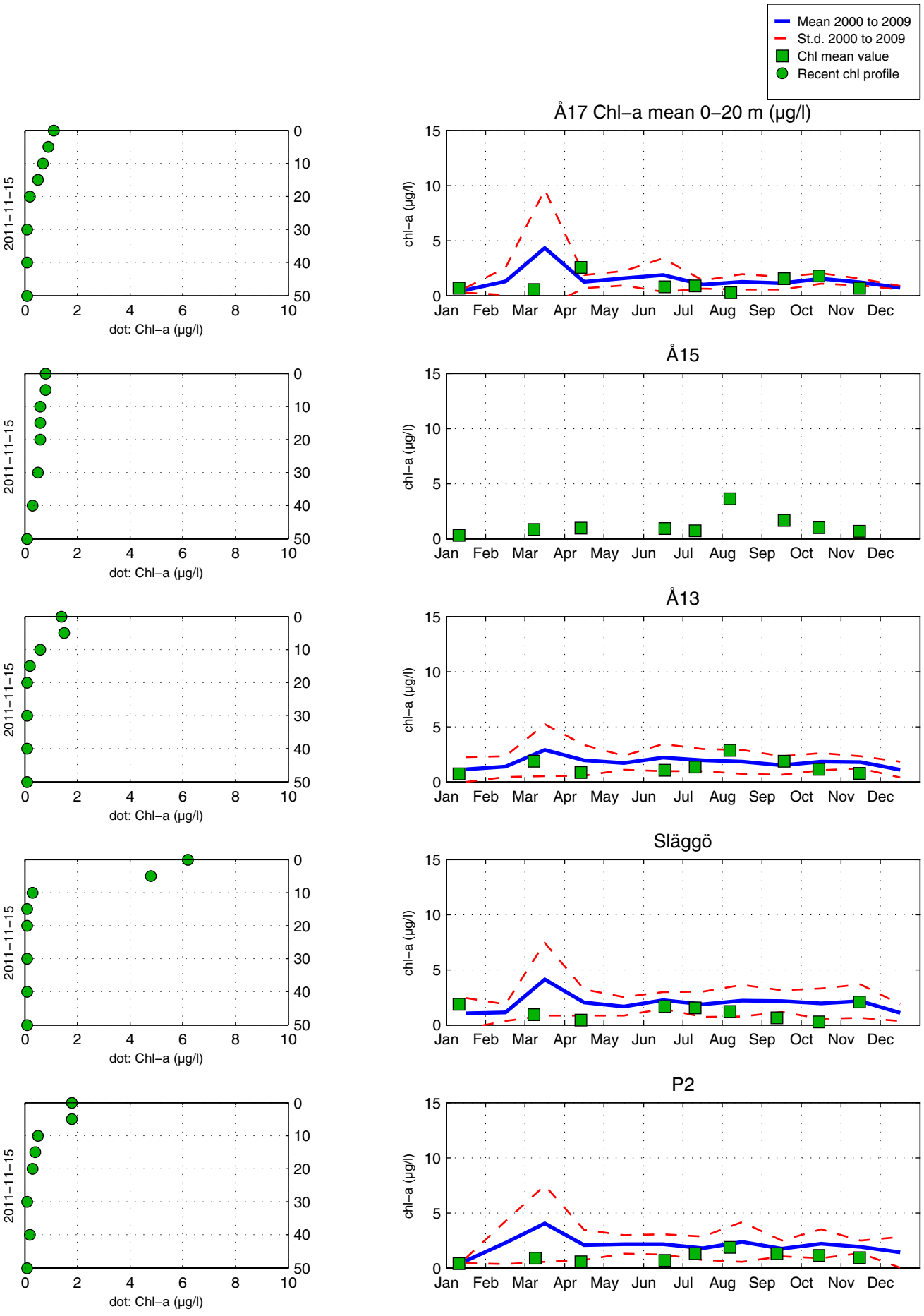
The diatom *Coscinodiscus granii.*

Phytoplankton analysis and text by:
Marie Johansen

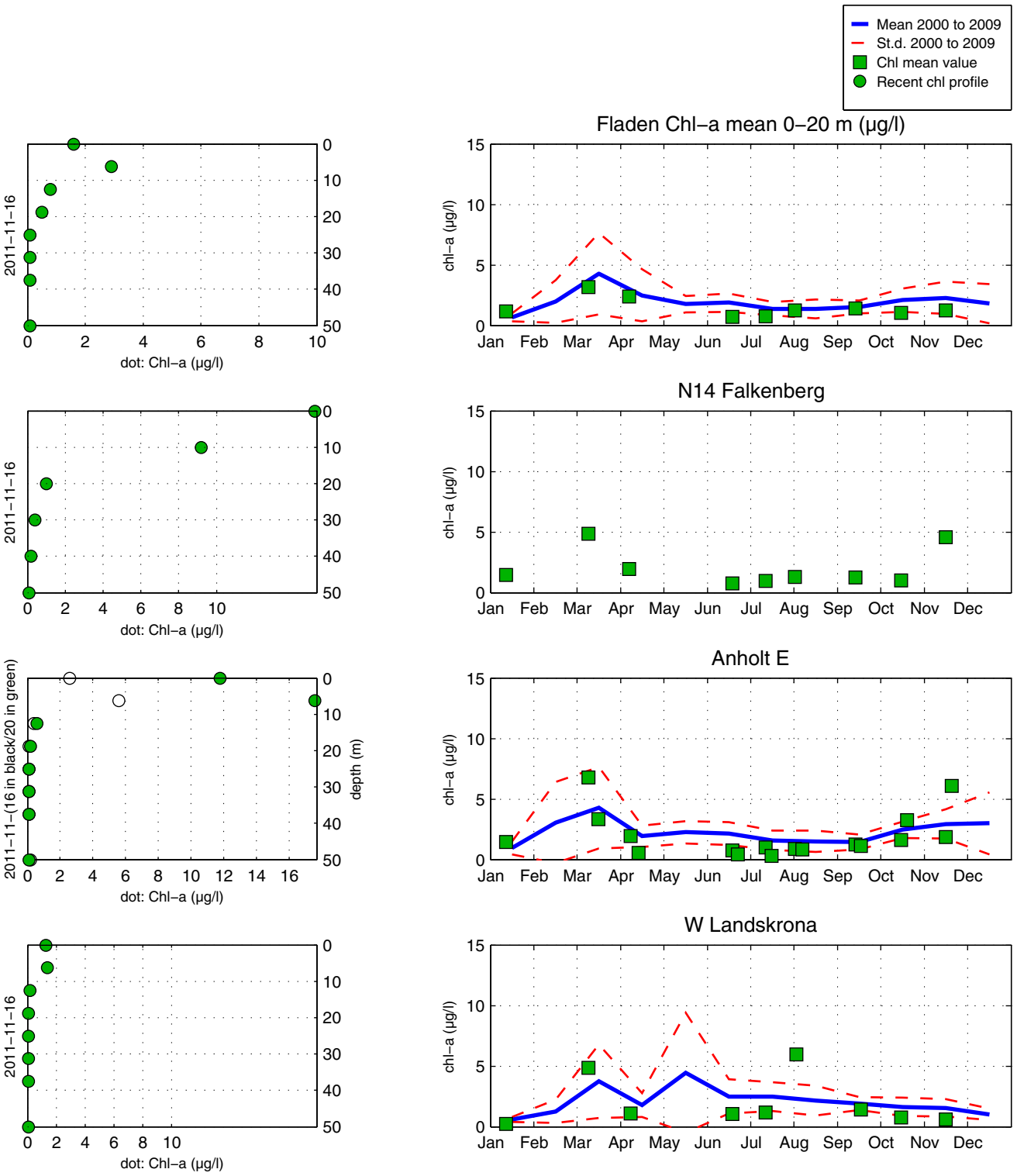
Selection of observed species	Å17	Släggö	N14	Anholt E	Anholt E
Red=potentially toxic species	15/11	15/11	16/11	16/11	20/11
	cells/l	cells/l	cells/l	cells/l	cells/l
Ceratulina pelagica				present	
Dactyliosolen fragilissimus					present
Guinardia delicatula		present		present	present
Leptocylindrus minimus					
Nitzschia longissima					present
Proboscia alata				present	
Pseudo-nizschia spp.			present		
Skeletonema marinoi				present	present
Thalassiosira punctigera			present	present	
Thalassiosira rotula					present
Thalassiosira spp.			present		present
Amphidinium sphenoides	present				
Azadinium spp. cf	present				
Ceratium furca		present			
Ceratium fusus		present	present	present	present
Ceratium lineatum	present	common	very common	common	present
Ceratium longipes			present		
Ceratium tripos	present	common	common	common	common
Claddopyxis claytonii	present				
Dinophysis acuminata		present	present		
Dinophysis acuta		present	present	present	
Dinophysis norvegica		present	present	present	present
Dinophysis rotundata			present		
Gymnodiniales	common	common	present	present	present
Gyrodinium spirale		present			
Heterocapsa spp.	present			present	present
Karenia mikimotoi	present				
Katodinium glaucum	present		present	present	present
Lingulodinium polyedrum			present		
Oxytoxum spp.	present				
Peridiniales	common		present		present
Prorocentrum micans				present	present
Protoperidinium spp.				present	
Protoperidinium steinii			present		
Dichtyocha speculum		present	present	common	common
Chrysochromulina spp.				present	common
Chlorodendrales	present				
Cryptomonadales spp.	present	common			
Hemiselmis virescens	present	present			
Plagioselmis prolonga	very common	very common	common	common	common
Teleaulax spp.	present	very common	common	very common	very common
Pyramimonas spp.	common	present	present	very common	present
Leucocryptos marina	common		present	present	common
Choanoflagellidea			present		
Ciliophora	present	present	present	present	present
Laboea strobila	present				
Mesodinium rubrum	present			present	present

Selection of observed species	BY2	BY5	BCS III-10	BY15	BY29	BY38	BY31	Ref. M1-V1
Red=potentially toxic species	17/11	17/11	17/11	18/11	18/11	19/11	19/11	18/11
	cells/l	cells/l	cells/l	cells/l	cells/l	cells/l	cells/l	cells/l
Actinocyclus spp.		present						
Chaetoceros danicus	present	present			present		present	
Chaetoceros impressus	present			present		present		
Coscinodiscus cf. *granii*	present	present	present	present			present	
Cyclotella choctawhatcgeeana	present	present						
Skeletonema marinoi		present						
Thalassiosira spp.	present							
Dinophysis acuminata								present
Dinophysis norvegica					present	present		
Gymnodiniales				present	present	present		present
Gyrodinium spirale						present	present	
Heterocapsa spp.								common
Katodinium glaucum		present	present					present
Peridiniales				present				
Protoperidinium spp.								present
Cryptomonadales spp.			present	present	present		present	present
Hemiselmis virescens	common	present		common			present	present
Plagioselmis prolonga	very common	very common	common	common	present	common	present	very common
Teleaulax spp.	present	common	common	common		present	common	present
Chrysochromulina spp.	present	present	present	present	present	very common		present
Cyanobacteria colony forming						common		
Aphanizomenon flos-aquae					common	present	present	
Pseudanabaena spp.					common	present	present	present
Pyramimonas spp.			present	present	very common	present	common	common
Choanoflagellidea	present	present	present			common	present	present
Leucocryptus marina	present						present	
Ciliophora	present	common	common	present	present	common	present	present
Mesodinium rubrum	present	common	common	present	present	common	common	present

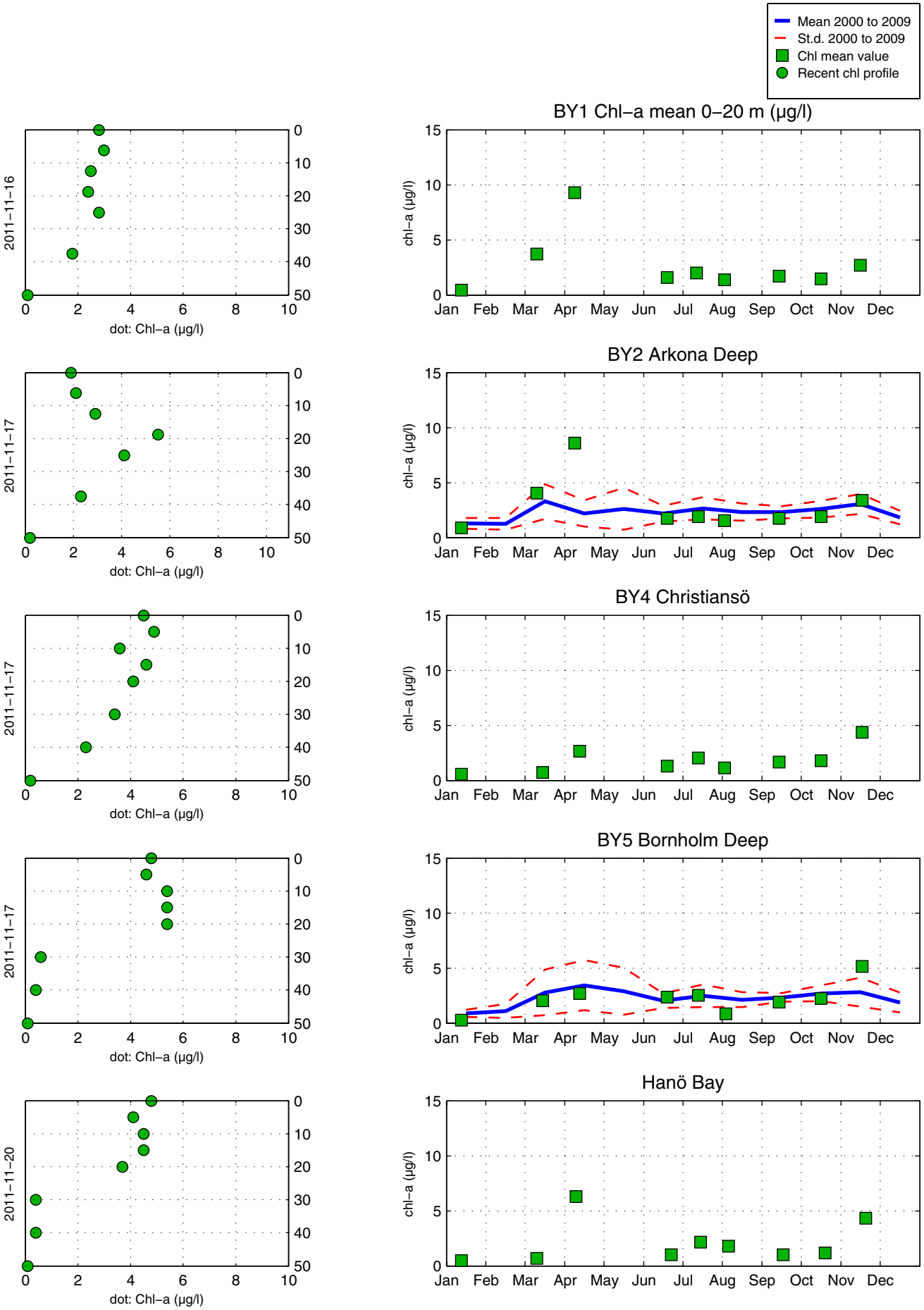
The Skagerrak



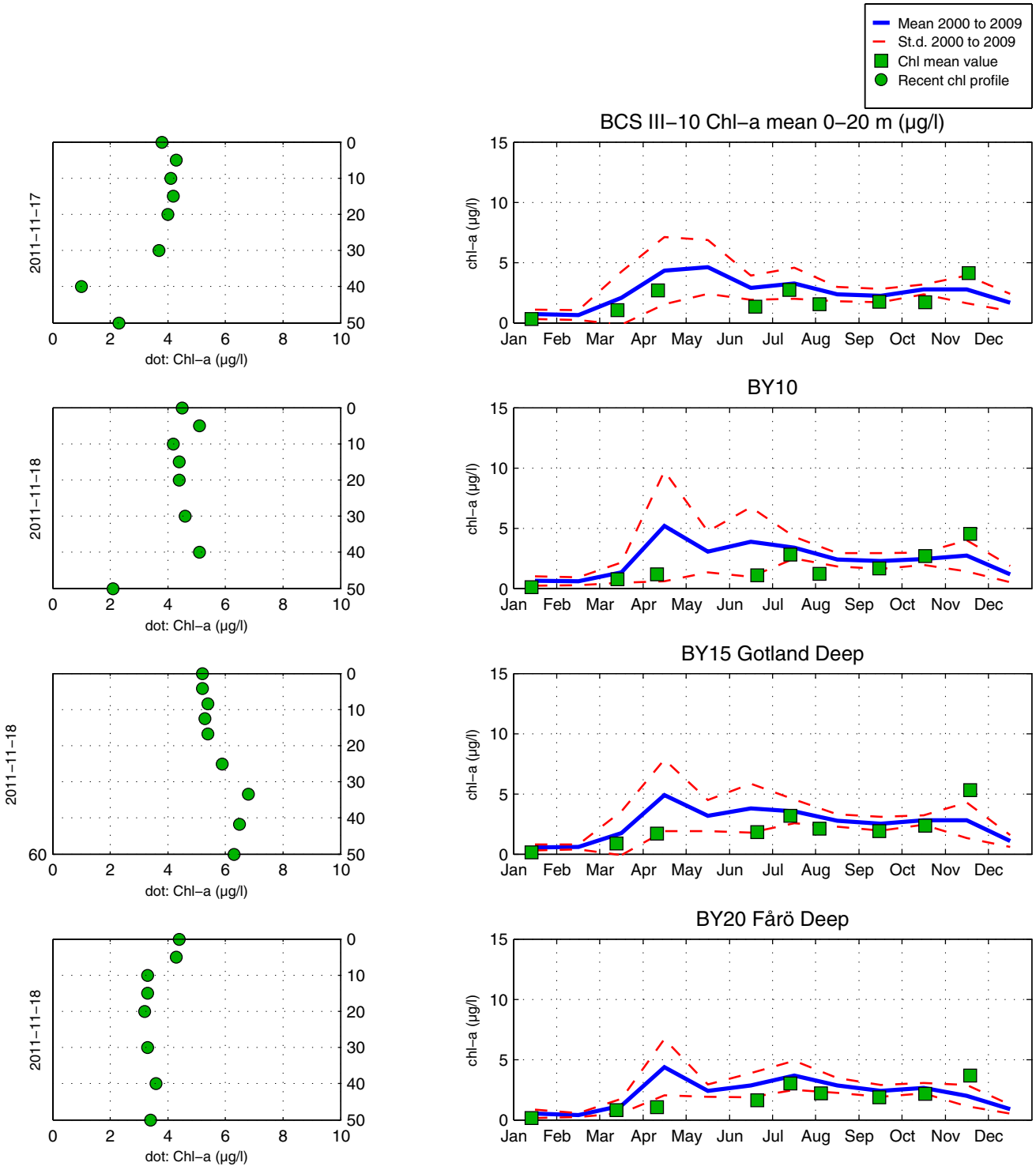
The Kattegat and the Sound



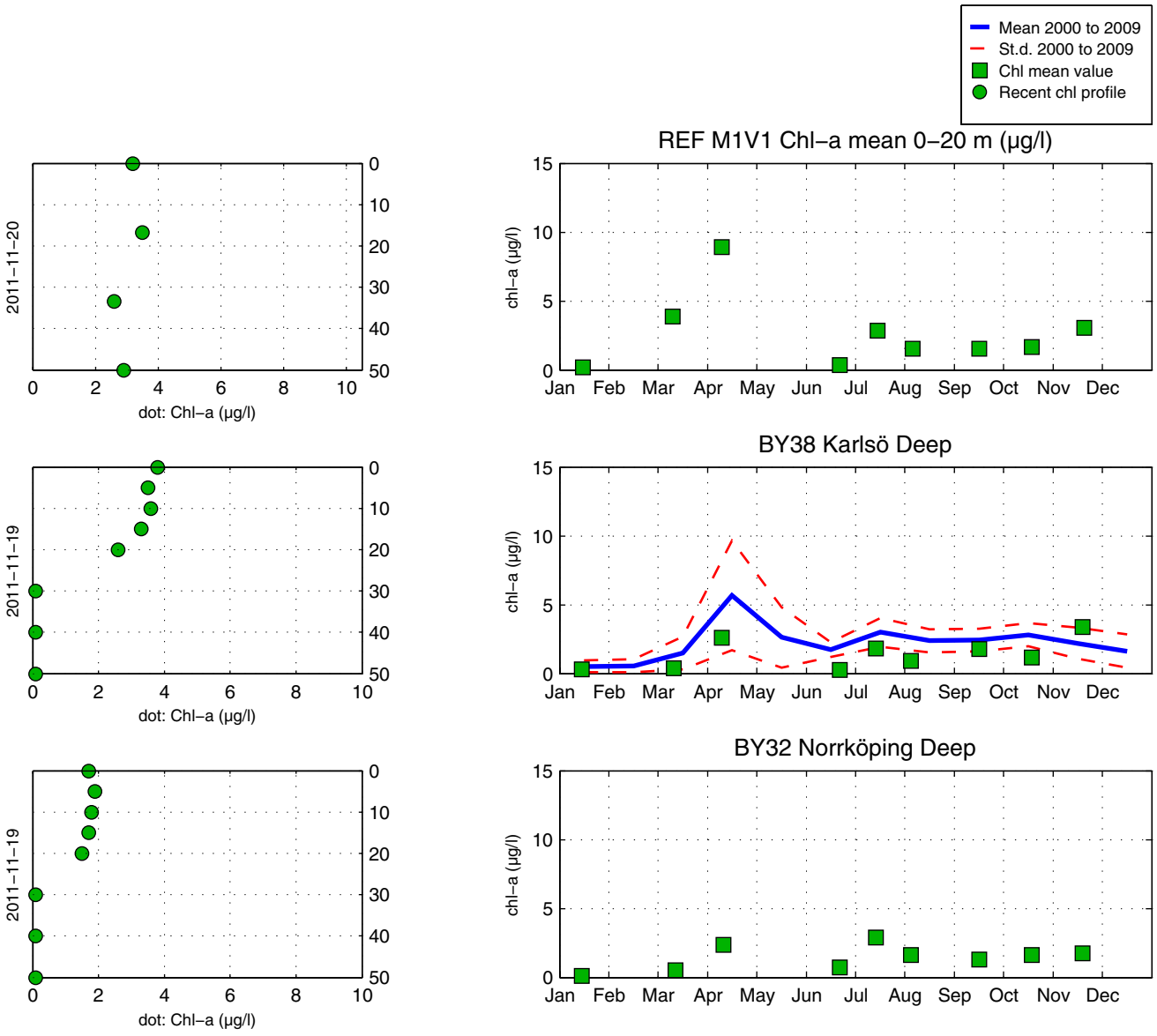
The Southern Baltic



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.