SMHI
Oceanographic Unit
No 5, 11 – 16 May 2009

AlgAware
ALGAL SITUATION IN MARINE WATERS SURROUNDING SWEDEN

Sammanfattning

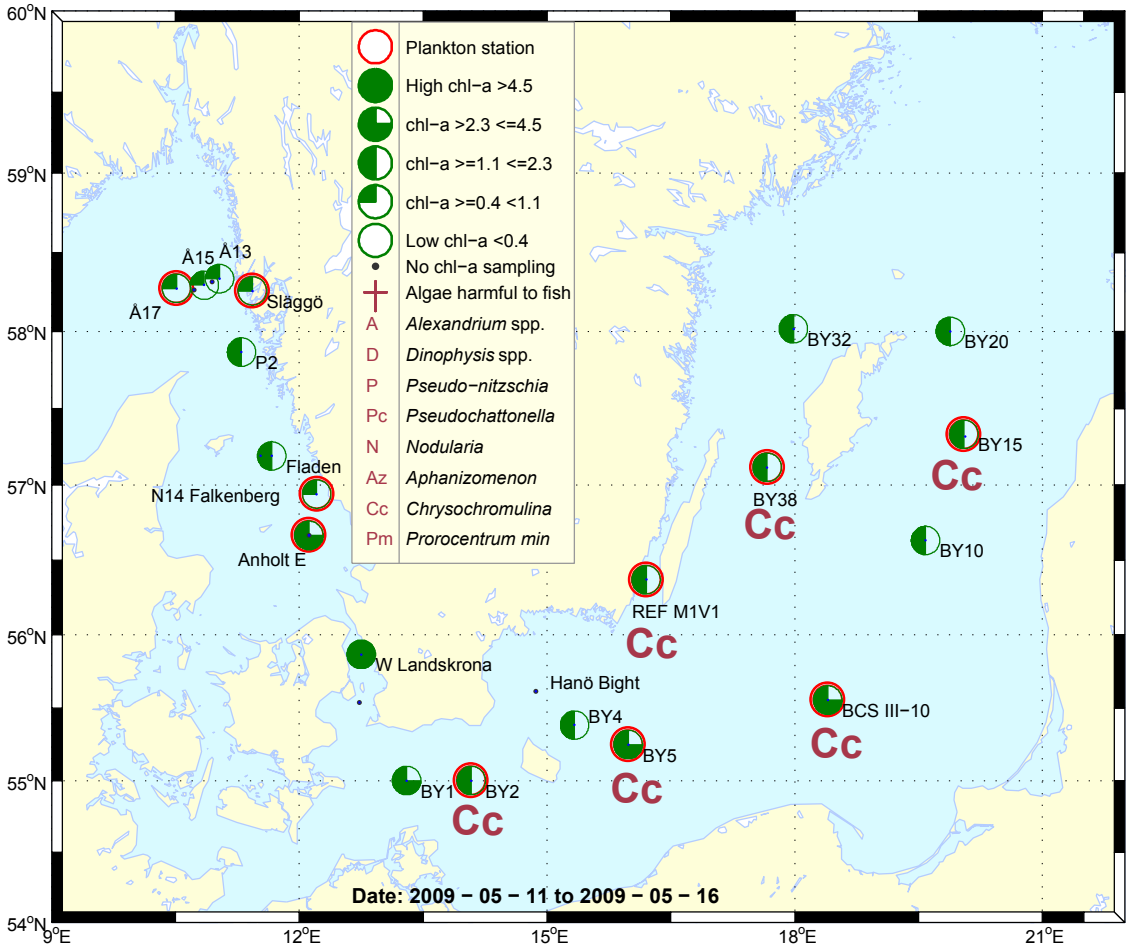
Trots låga klorofyll *a*-halter var det kiselalgsblomning med framför allt *Skeletonema costatum* och *Pseudo-nitzschia delicatissima*-gruppen* i Skagerrak-området.

I Kattegatt dominerade små arter, som kiselalgen *Phaeodactylum tricornutum* och flagellaten *Chrysochromulina* spp.*

Höga klorofyll *a*-halter uppmättes på 15-20 meters djup vid Anholt E och W Landskrona, vilket gav höga integrerade (0-20 m) värden.

I Östersjön observerades prymnesiophyten *Chrysochromulina polylepis** med höga cellantal vid samtliga planktonstationer.

De integrerade klorofyll *a* värdena var inom det normala för månaden vid alla Östersjö-stationer.



Abstract

In spite of low chlorophyll *a* concentrations, a diatom bloom was observed in the Skagerrak area with *Skeletonema costatum* and *Pseudo-nitzschia delicatissima*-group* dominating the samples.

Small species, like the diatom *Phaeodactylum tricornatum* and the flagellate *Chrysochromulina* spp.*, dominated the samples from the Kattegat area.

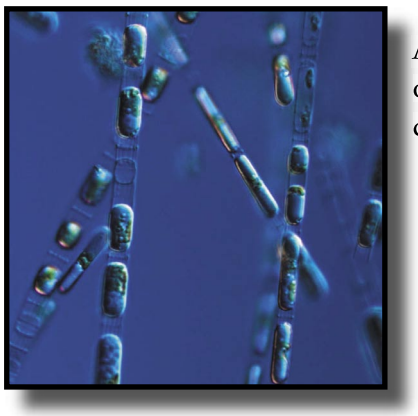
High chlorophyll *a* concentrations at 15-20 meters depths at stations Anholt E and W Landskrona caused high integrated (0-20 m) values.

In the Baltic Sea the prymnesiophyte *Chrysochromulina polylepis** was found with high cell numbers at all of the plankton stations.

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

The Skagerrak

Å17 11th of May (open Skagerrak)



Skeletonema costatum

Although the chlorophyll *a* concentration was quite low, a diatom bloom was observed, *Skeletonema costatum* dominating the phytoplankton sample. The diatom *Pseudo-nitzschia delicatissima*-group* was also abundant.

Släggö 11th of May (Skagerrak coast)

The total number of cells was lower than at Å17, but still there was a diatom bloom going on with *S. costatum* and *P. delicatissima*-group* being the most abundant. The diatom *Leptocylindrus danicus* was also common in spite of quite low chlorophyll *a* concentrations, below average for this month.

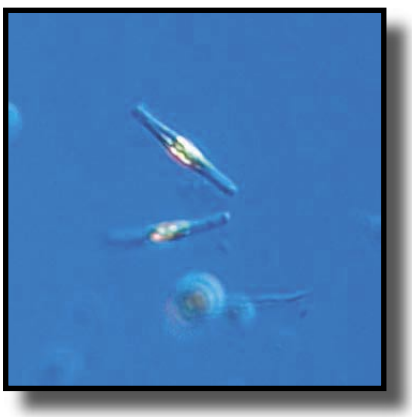
The Kattegat

N14 Falkenberg 12th of May

The most of the species that were observed were small ones, the most abundant being the diatom *Phaeodactylum tricornutum. Skeletonema costatum* and the flagellates *Chrysochromulina* spp.* and *Leucocryptos marina* were common. The integrated chlorophyll *a* value was low, which is normal for this month.

Anholt E 12th and 16th of May

High chlorophyll *a* concentrations were found at both visits at 15-20 meters depth with consequently high integrated (0-20 m) values. These were not reflected in the phytoplankton countings though which were sampled from 0-10 meters. The plankton flora was poor especially at the second visit. The same small species that were found at N14 were common.



Phaeodactylum tricornutum

Selection of observed species	Å17	Släggö	N14	Anholt E	Anholt E
Red=potentially toxic species	2009-05-11	2009-05-11	2009-05-12	2009-05-12	2009-05-16
	cells/l	cells/l	cells/l	cells/l	cells/l
Cerataulina pelagica		present			
Chaetoceros danicus			present	present	present
Chaetoceros decipiens		present	present		
Chaetoceros impressus				present	
Cylindrotheca closterium	present	present			
Dactyliosolen fragilissimus	present	present	present	present	
Guinardia delicatula		present			
Guinardia flaccida		present			
Leptocylindrus danicus	present	70 000	common	present	
Leptocylindrus minimus		present	present		
cf. *Nitzschia longissima*	present	present	present	present	
Phaeodactylum tricornutum	present	present	158 000	common	common
Proboscia alata	present	present	present	present	present
Pseudo-nitzschia delicatissima-group	140 000	320 000	present		
Pseudo-nitzschia seriata-group	present	present			
Rhizosolenia hebetata	present		present	present	present
Skeletonema costatum complex	2 070 000	510 000	common	present	
Thalassionema nitzschioides	present	present	present	present	
Thalassiosira angulata	present				
Thalassiosira anguste-lineata			present		
Thalassiosira nordenskioeldii		present			
Ceratium horridum					present
Ceratium fusus	present	present			
Ceratium longipes	present				
Ceratium macroceros			present		
Ceratium tripos	present	present	present		
Dinophysis acuminata	present	present			
Dinophysis norvegica		present	present		
Gymnodinium verruculosum	present				
Heterocapsa rotundata	common		present		
Heterocapsa spp.	present		present	present	
Heterocapsa triquetra				present	present
Karlodinium micrum	present	present		present	present
Katodinium glaucum	present	present	present	present	present
Peridiniella danica	present		present	present	present
Prorocentrum cf. *balticum*	present			present	
Protoceratium reticulatum		present			
Protoperidinium conicum		present			
Protoperidinium steinii			present		
Chrysochromulina spp.	common		common	common	common
Cryptomonadales spp.	70 000	present	35 000	common	present
Eutreptiella spp.			present	present	present
Pyramimonas spp.	present	present			
Apedinella radians					
Dinobryon balticum	present	common	present		
Pseudopedinella pyriforme		present	present		
Pseudopedinella spp.	present				
Calliacantha longicaudata		present			
Calliacantha natans	present	present			
Leucocryptos marina	common	present	71 000	97 000	128 000
Laboea strobila	present	present	present	present	
Mesodinium rubrum		present	present		
Strombidium spp.	present	present	present	present	present

The Baltic Sea

Arkona Basin BY2 and Bornholm Basin BY5 13th of May
The prymnesiophyte *Chrysochromulina polylepis** is still going strong, and was the most abundant species in the plankton samples. There were traces of diatoms and the most common dinoflagellate genus was *Heterocapsa* spp. The prasinophyte *Pyramimonas* spp. and the cyanobacterium *Aphanizomenon* spp. were common. The integrated chlorophyll *a* concentration was at average for this month.

South East Baltic BCS III-10 13th of May
The prasinophyte *Pyramimonas* spp. was found with the highest cell numbers and the prymnesiophyte *Chrysochromulina polylepis** and the chrysophyte *Dinobryon balticum* were very common. The *C. polylepis* cell sizes were clearly smaller at this station compared to the previous ones. *Heterocapsa* spp. was the most common dinoflagellate and the cyanobacterium *Aphanizomenon* spp. was common. The integrated chlorophyll *a* concentration was somewhat elevated but within average.

Eastern Gotland Basin BY15 and Western Gotland Basin BY 38 14th of May
The prymnesiophyte *Chrysochromulina polylepis** was the most numerous species. The chrysophyte *Dinobryon balticum* and the prasinophyte *Pyramimonas* spp. were observed in more or less the same high cell numbers. The filamentous cyanobacterium *Aphanizomenon* spp. and the dinoflagellate *Peridiniella catenata* were common and the integrated chlorophyll *a* concentration was a bit low, but within average for this month.

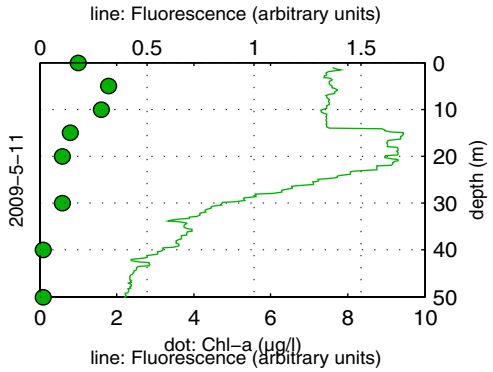
Kalmar Sound Ref. M1-V1 15th of May
The number of species and the total cell numbers were very low and the prymnesiophyte *Chrysochromulina polylepis** was the most abundant species. The prasinophyte *Pyramimonas* spp. was common and the cyanobacterium *Aphanizomenon* spp. was present.

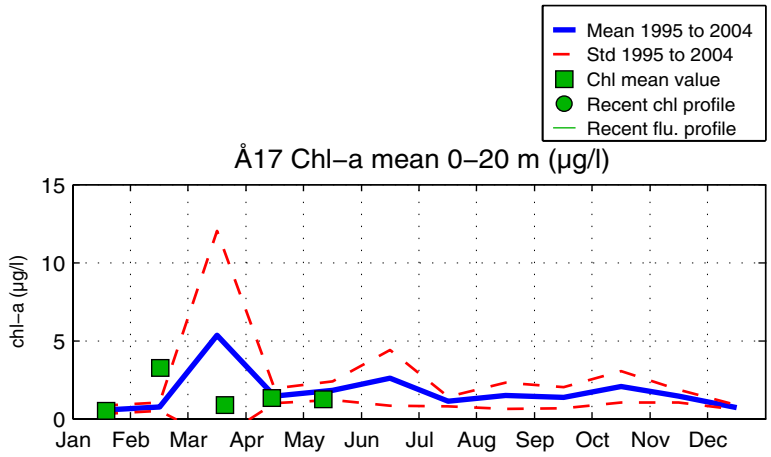
Chrysochromulina polylepis (left) and *Pyramimonas* spp. were the most common specie in the samples from the Baltic.

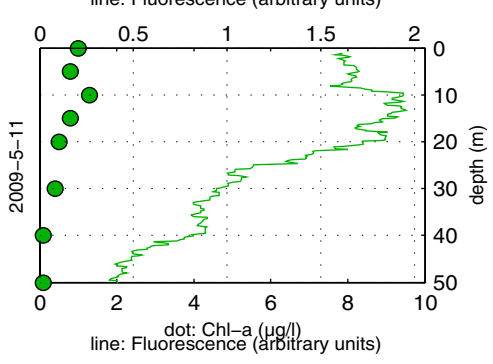
Phytoplankton analysis and text by:
Ann-Turi Skjevik

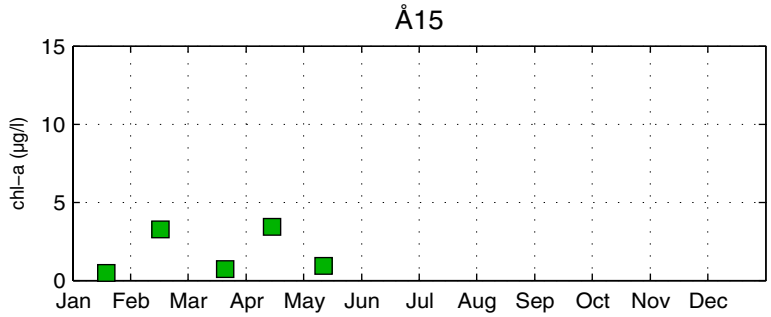
Selection of observed species	BY2	BY5	BCS III-10	BY15	BY38	Ref. M1-V1
Red=potentially toxic species	2009-05-13	2009-05-13	2009-05-13	2009-05-14	2009-05-15	2009-05-15
[1] quantified in m/l	cells/l	cells/l	cells/l	cells/l	cells/l	cells/l
Chaetoceros danicus		present	present			
Chaetoceros impressus		present	present			
Chaetoceros minimus	present					
Chaetoceros subtilis	present					
Skeletonema costatum complex						present
Amylax triacantha			present	present	present	
Cladopyxis claytonii			present			
Dinophysis acuminata			present	present	present	
Dinophysis norvegica	present	present	present	present	present	
Dinophysis rotundata			present			
Heterocapsa rotundata	present		present	present	present	present
Heterocapsa spp.	present	present	present	common	present	present
Karlodinium micrum	present					
Katodinium glaucum	present		present	present		present
Peridiniella catenata			common	common	present	
Protoperidinium bipes			present			present
Protoperidinium spp.				present	present	
Chrysochromulina polylepis	688 000	1 160 000	300 000	210 000	428 000	216 000
Chrysochromulina spp.	74 000	present	present	present	present	present
Cryptomonadales spp.	103 000	present	70 000	common	present	present
Dinobryon balticum	present		165 000	98 000	150 000	present
Dinobryon faculiferum			present			present
Pterosperma spp.		present			present	
Pyramimonas spp.	187 000	common	626 000	88 000	100 000	88 000
Aphanizomenon spp.	common	common	common	common	common	present
Calliacantha longicaudata				present		
Calliacantha natans	present			present		
Ebria tripartita	present					
Leucocryptos marina			present	present	present	
Mesodinium rubrum	present	present	present	present	present	present
Strombidium spp.	present					

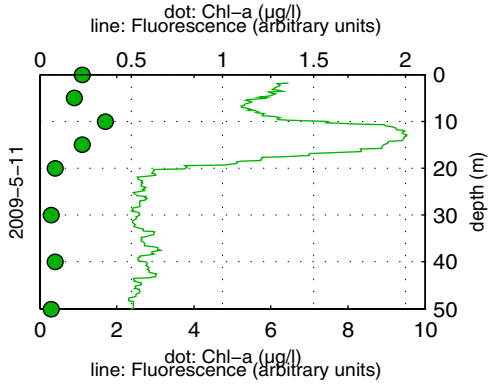
The Skagerrak

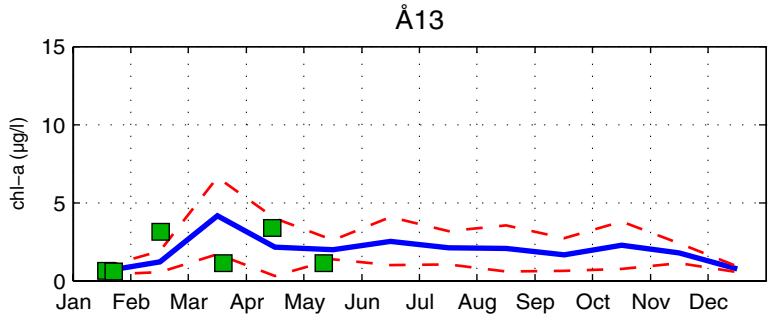


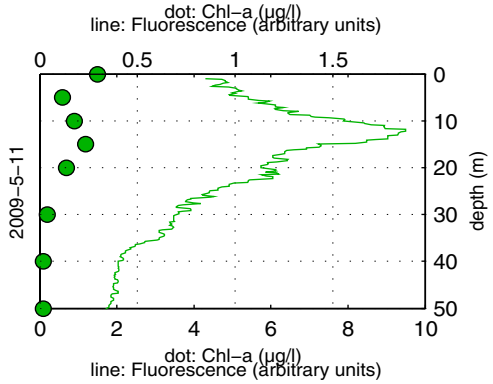


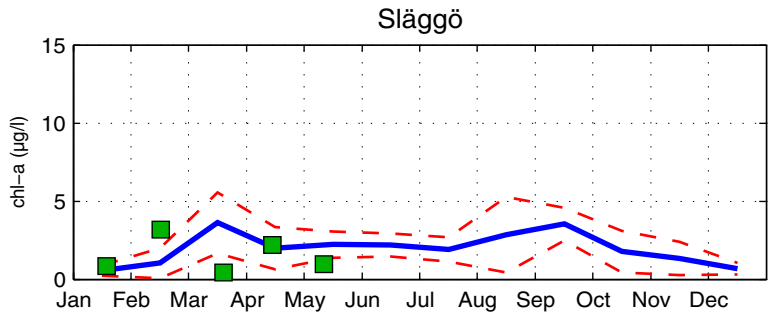


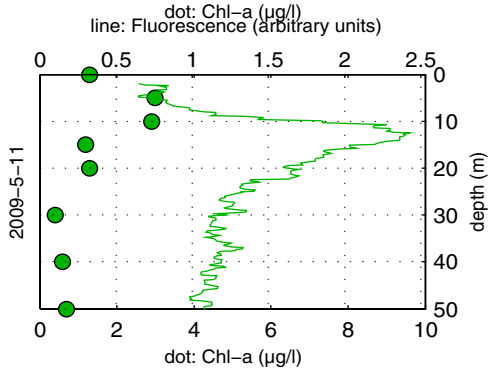


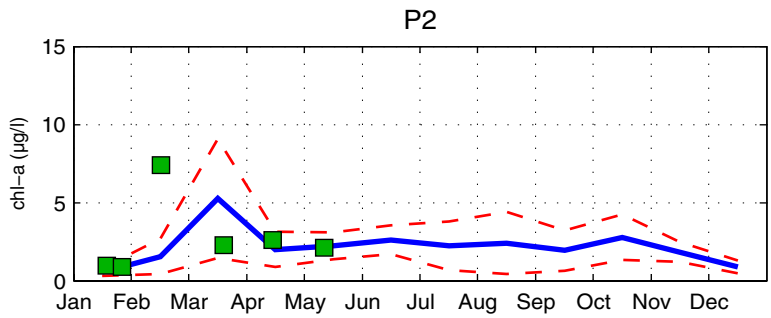




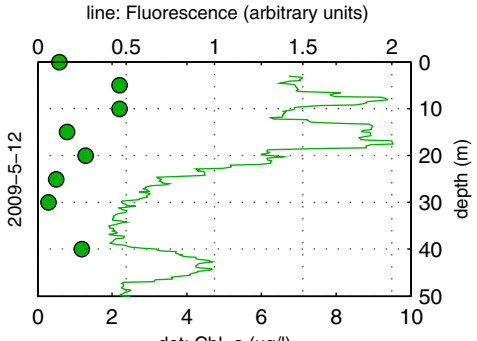


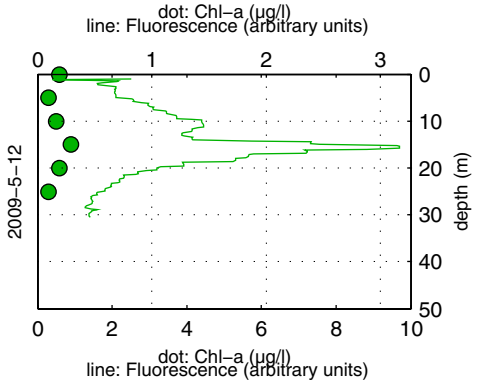


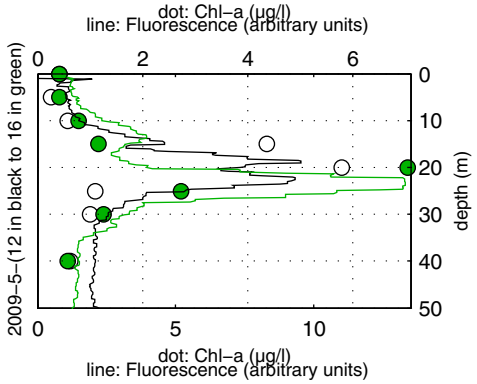


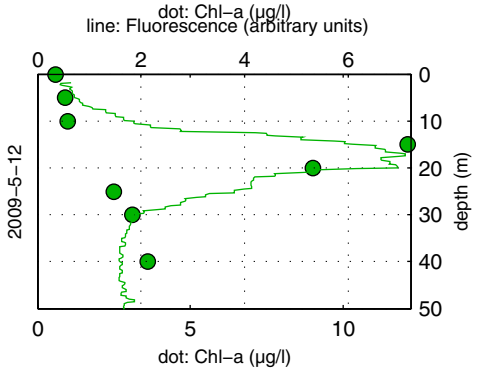


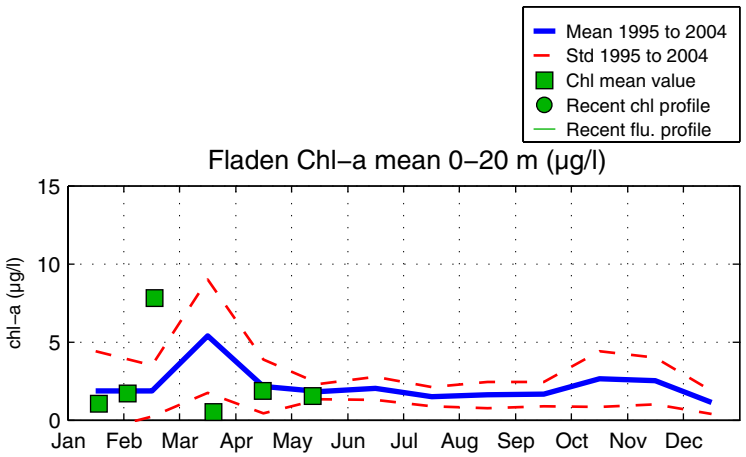
The Kattegat and the Sound

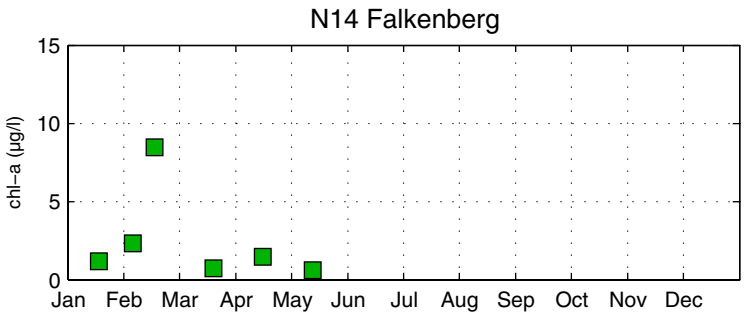


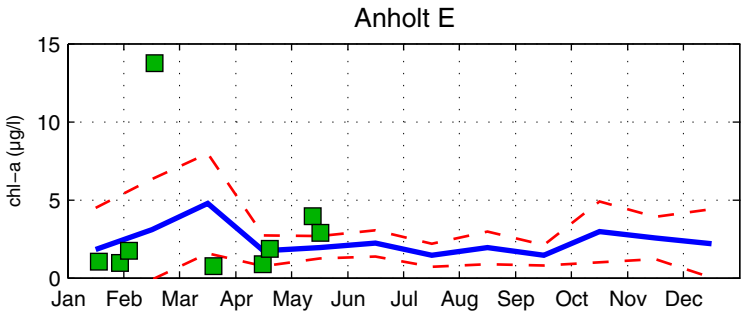


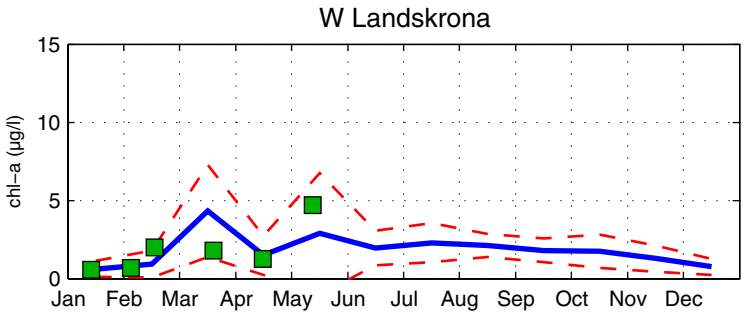




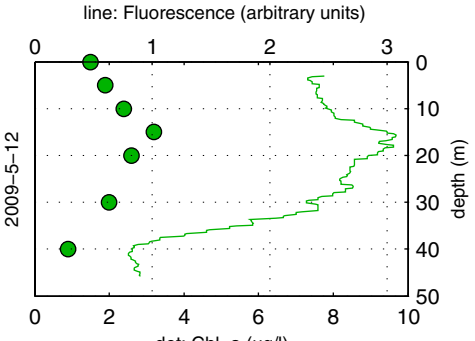


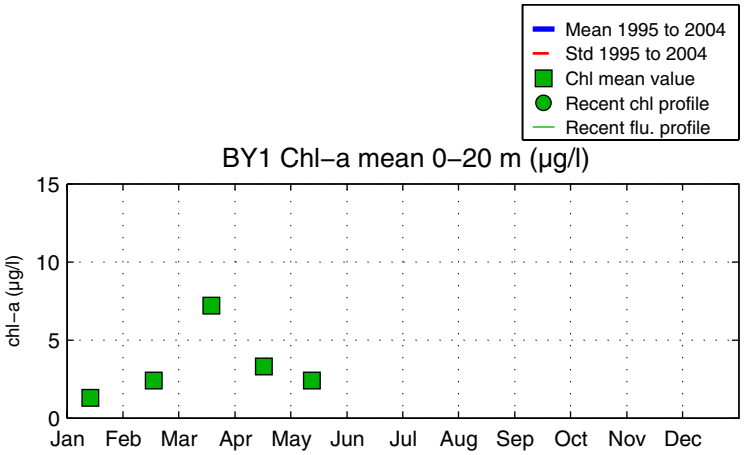


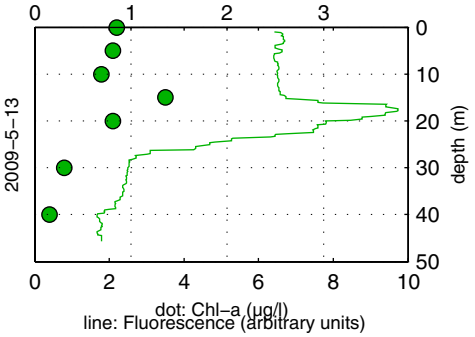


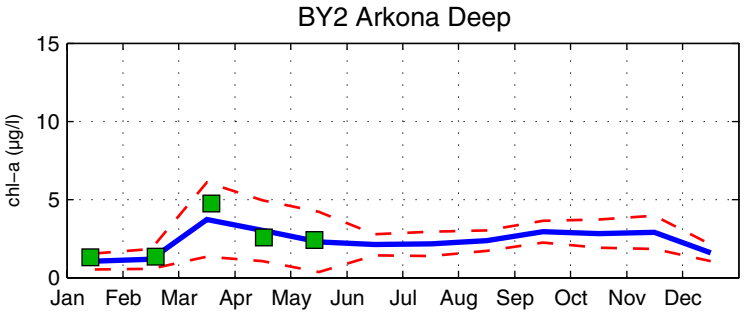


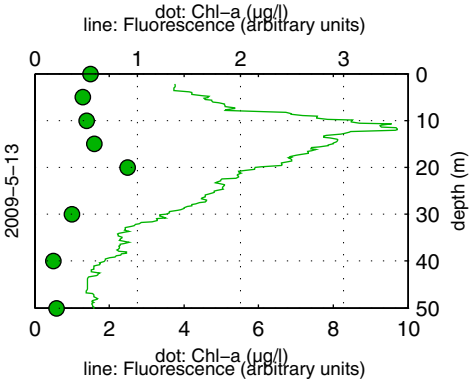
The Southern Baltic

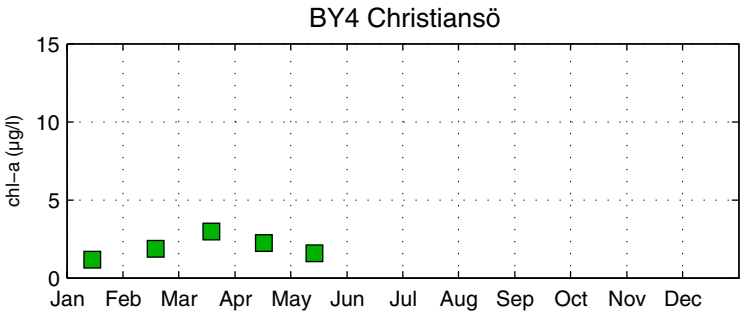


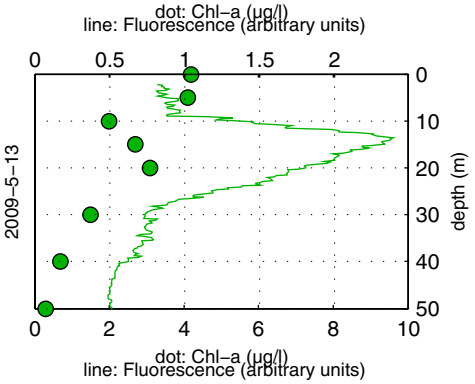


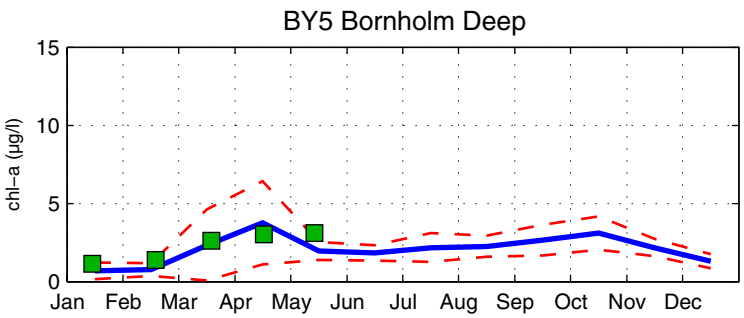


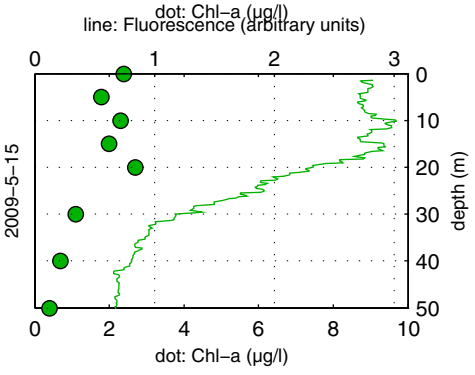


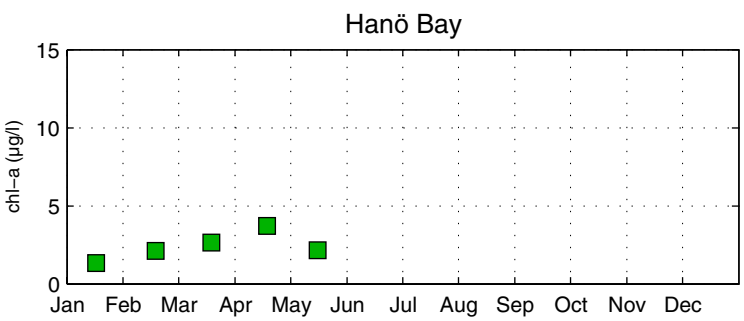




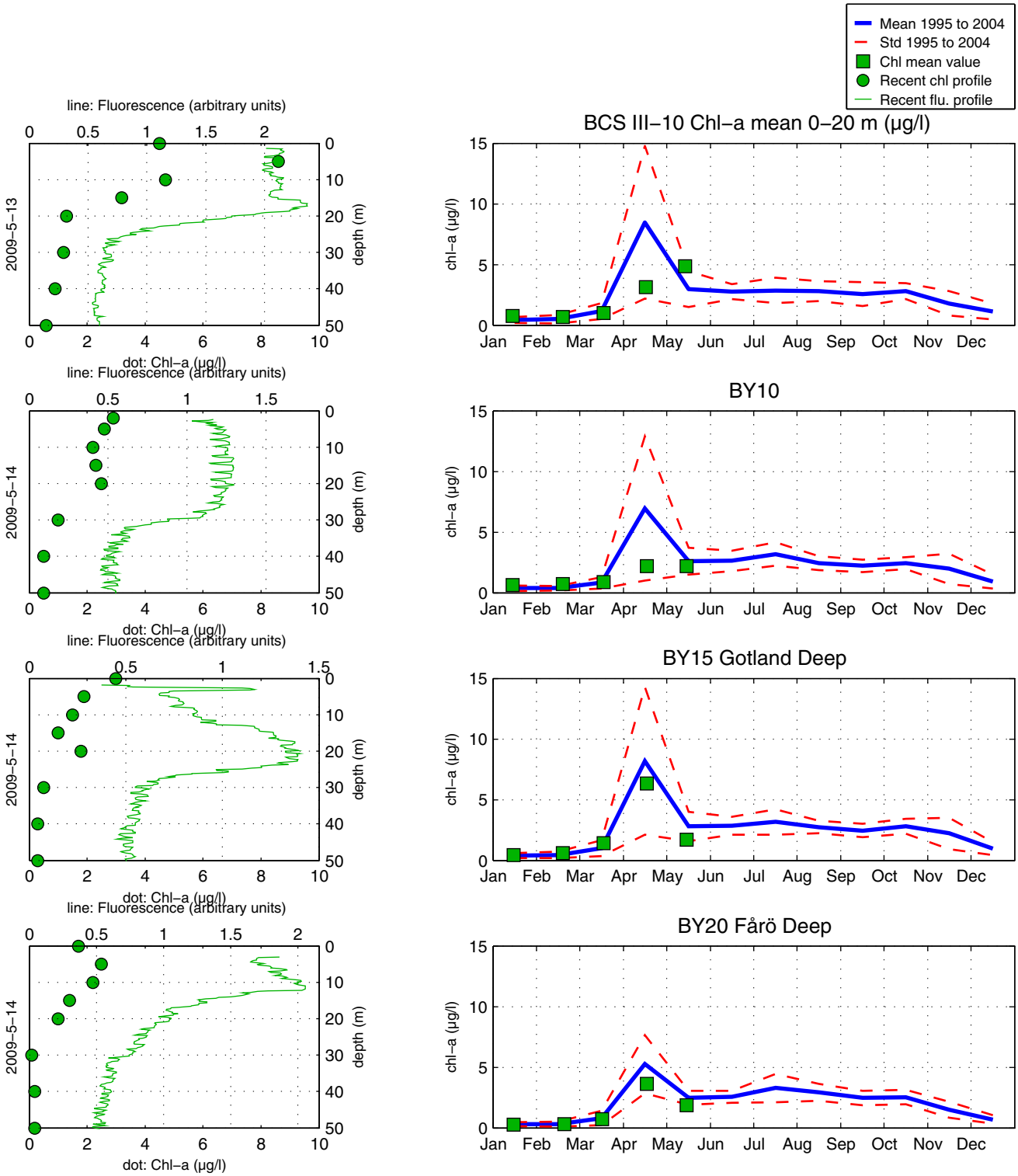




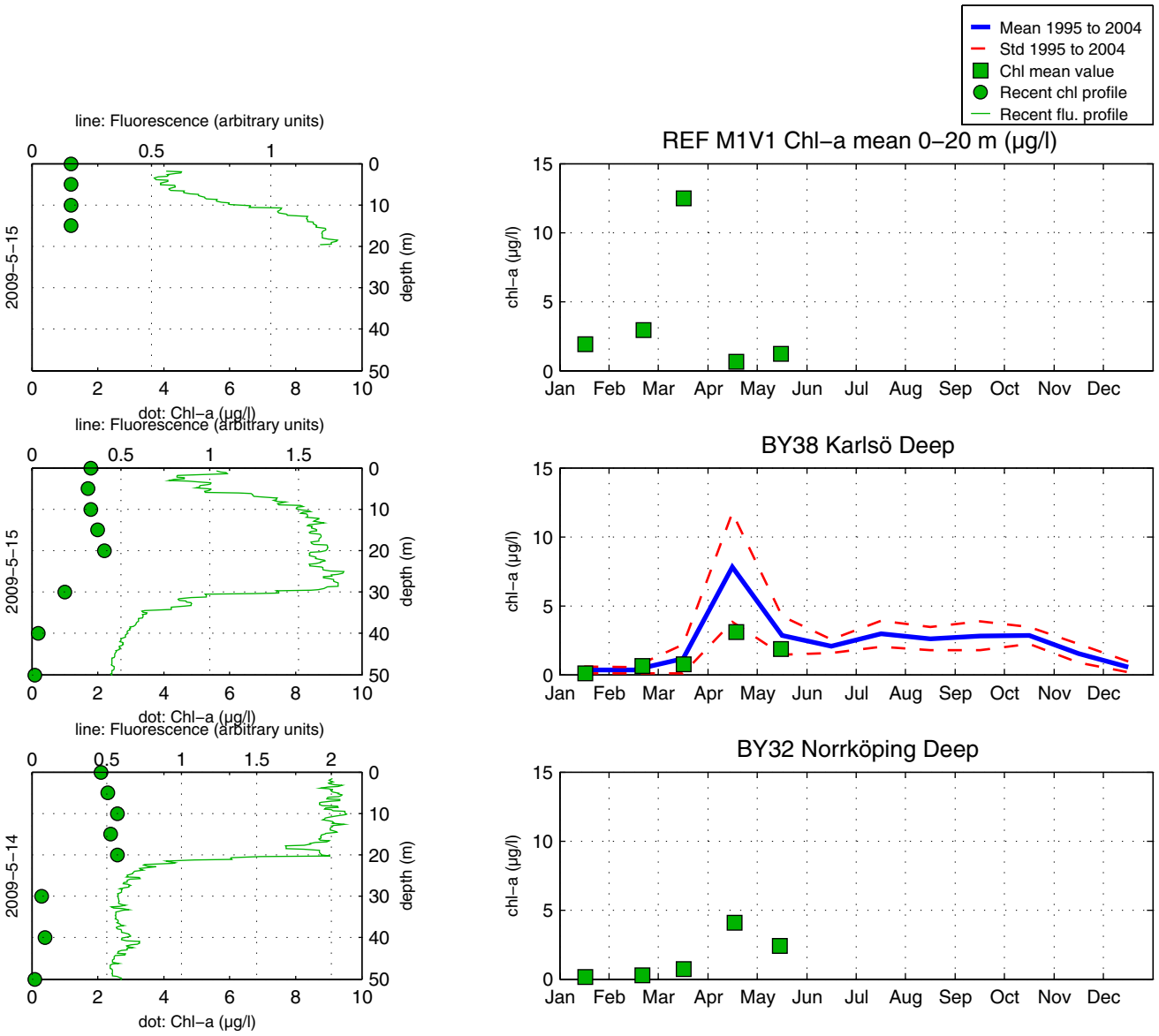




The Eastern Baltic



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.

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.

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 ro 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.
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.
Pseudo- nitzschia 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.

Översikt av 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.