SMHI
Oceanographic Unit
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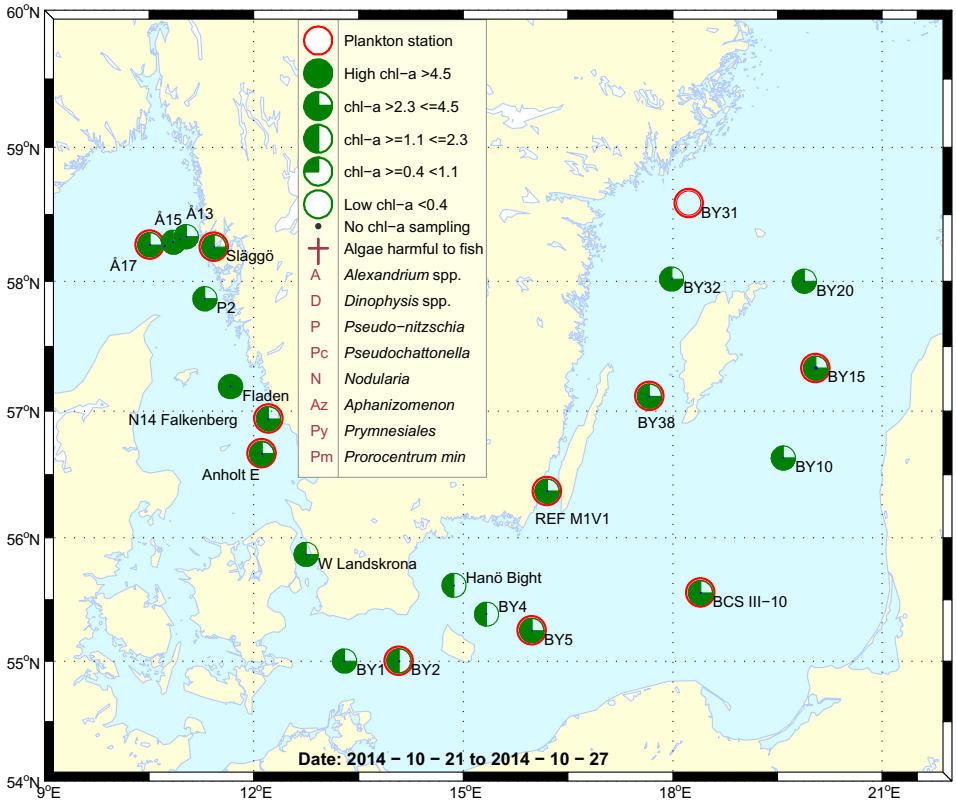
AlgAware
ALGAL SITUATION IN MARINE WATERS SURROUNDING SWEDEN

Sammanfattning

I Kattegatt och Skagerrak var artdiversiteten hög. Växtplanktonsamhället dominerades av kiselalger. En flagellat som troligtvis är *Vicicitus globosus* eller möjligtvis ett naket stadie av arterna *Dictyocha speculum* eller *D. fibula* var vanlig i dessa vatten.

I Östersjön var både artdiversiteten och celltätheten låg. Arter från kiselalgssläktet *Coscinodiscus* observerades i alla områden.

De integrerade (0-10 m) klorofyll a värdena låg inom det normala för denna månad i de besökta havsområdena.



Abstract

The diversity was high and diatoms dominated the phytoplankton community in the Kattegat and the Skagerrak. A flagellated cell that most likely is *Vicicitus globosus* or a naked stage of *Dictyocha speculum* or *D. fibula,* was common in this area.

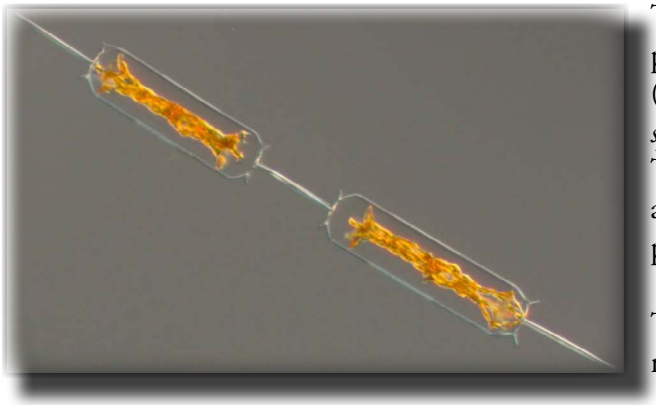
The species diversity and cell density was generally low in the Baltic Sea. Species from the diatom genus *Coscinodiscus* were common or present in all regions of the Baltic Sea.

The integrated (0-10 m) chlorophyll *a* concentrations were normal for this month in the Skagerrak, the Kattegat and the Baltic Sea

More detailed information on species composition and abundance

The Skagerrak

Å17 (open Skagerrak) 24th of October and Släggö (Skagerrak coast) 24th of October



The diversity was high and diatoms dominated the phytoplankton community. The diatoms *Ditylum brightwellii* (Fig.1) *Proboscia alata* (Fig.2) the Silicoflagellates *Dictyocha speculum* and *D. fibula* (Fig.2) were numerous in this area. The potentially toxic diatom genus, *Pseudo-nitzschia* spp and species from the dinoflagellate genus *Dinophysis* , were present in small amounts.

The integrated (0-10 m) chlorophyll *a* concentrations were normal for this month in the Skagerakk.

Fig.1 The diatom *Ditylum brightwellii*, common in the open Skagerakk and the Kattegat.

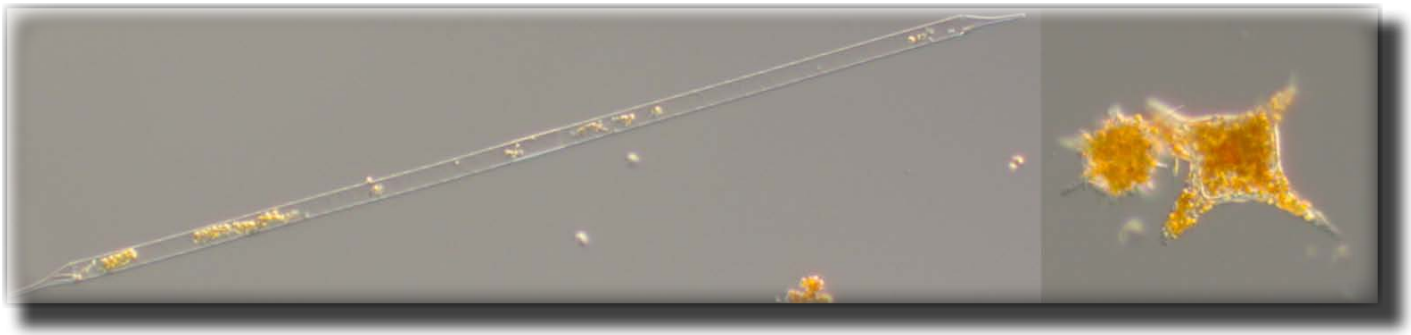
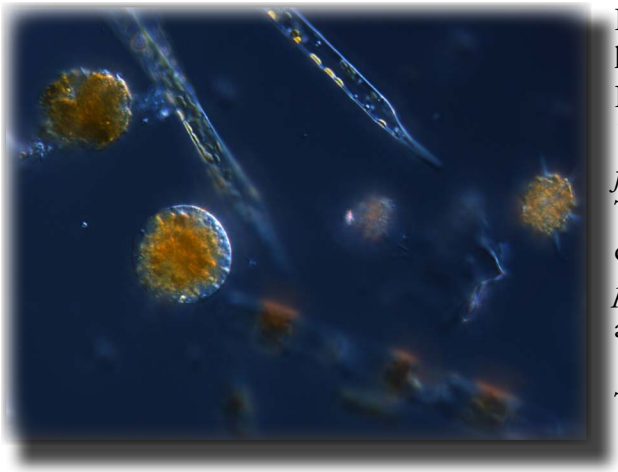


Fig.2 From left: The diatom Proboscia alata, the silicoflagellates *Dictyocha speculum* and *D. fibula* were common species in the Skagerrak and the Kattegat this month.

The Kattegat

Anholt E 23rd and 25th of October and N14 Falkenberg 23rd of October



In both Kattegat and Skagerakk, a flagellated cell that most likely belongs to the class Dictychophyceae was common. Phytoplankton experts have suggested that it may either be *Vicicitus globosus* or a naked stage of *Dictyocha speculum* or *D. fibula* (Fig.3).

The species diversity was high at Anholt and N 14. Diatoms dominated the phytoplankton community and *Cerataulina pelagica, Dactyliosolen fragilissimus* and *Proboscia alata* were among the most numerous species.

The integrated (0-10 m) chlorophyll *a* concentrations were normal in the Kattegat for this month.

Fig.3 This flagellated cell from the class Dictyophyceae, (cf. *Vicicitus globosus* or a naked stage of *Dictyocha speculum/fibula*), was common in the open sea and coastal waters in the Skagerrak/Kattegat region during September and October.

The Baltic Sea

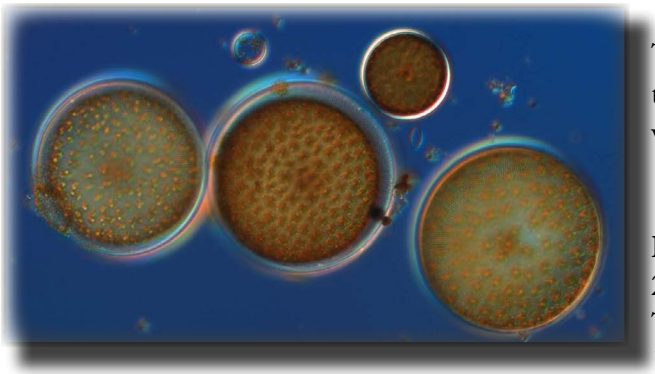


Fig.4 The diatom genus C*oscinodiscus* was present in the Eastern and Western Baltic Sea.

The species diversity and cell density was generally low in the Baltic Sea. Species from the diatom genus *Coscinodiscus* were common or present in all parts of the Baltic Sea. (Fig.4)

BY2 Arkona 22nd of October and BY5 Bornholms basin 22nd of October

The diatom *Coscinodiscus centralis* and the cyanophyte *Woronichinia* spp was common in The Bornholm basin. Species composition was with the exception from these two species, equivalent to the Arkona basin.The dinoflagellate *Prorocentrum minimum* was present in small amounts at both stations.

The integrated (0-10 m) chlorophyll *a* concentrations were normal for this month in the Southern Baltic Sea.

BY15 21st of October and BCS III-10 22nd of October

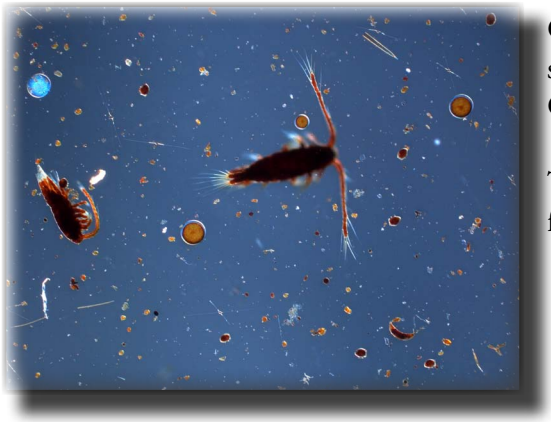


Fig.5 Grazers were common at BY15.

Grazers were common in this part of the Baltic Sea (Fig.5). Three species from the dinoflagellate genus *Dinophysis* were found at the Gotland basin and *D. acuminata* was also found at BCS III-10.

The integrated (0-10 m) chlorophyll *a* concentrations were normal for this month in the Eastern Baltic Sea.

BY38 26th of October and REF M1V1 Kalmar Sound 26th of October

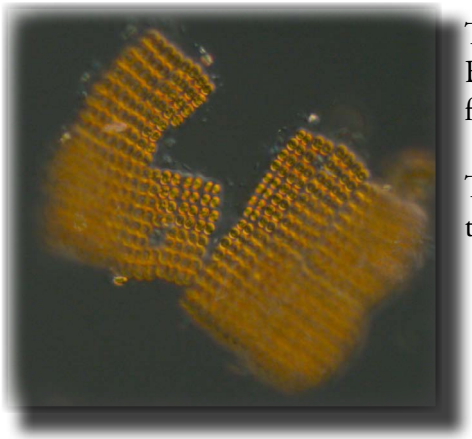


Fig.6 The cyanobacteria *Merismopedia* spp found in the Western Baltic Sea samples.

The species density and diversity was low in the Kalmar Sound but high at BY38. The Cyanophyte *Merismopedia* spp. (Fig.6) was one of many colony forming cyanobacteria found at BY38.

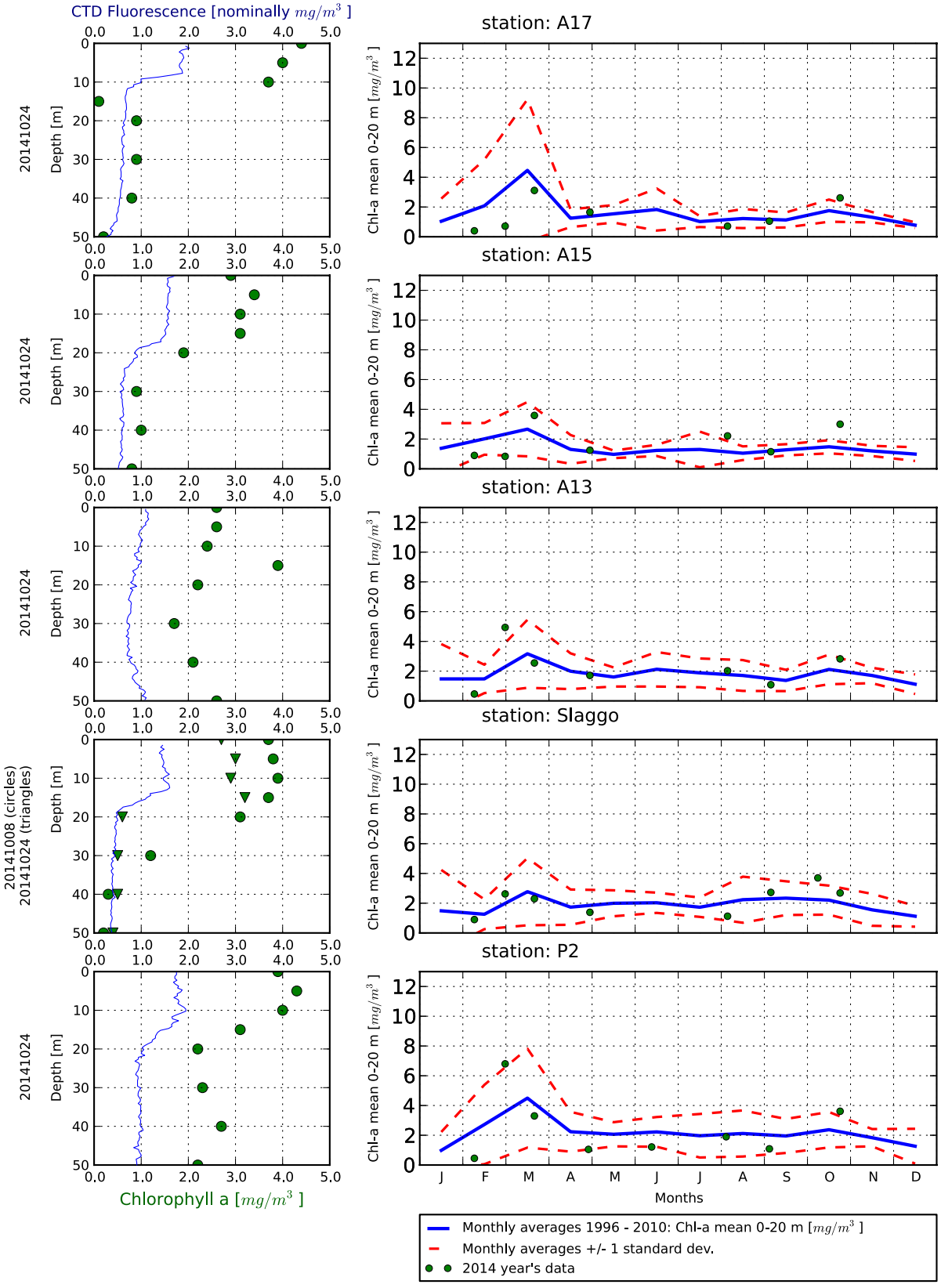
The integrated (0-10 m) chlorophyll *a* concentrations were normal or close to normal for this month in the Western Baltic Sea.

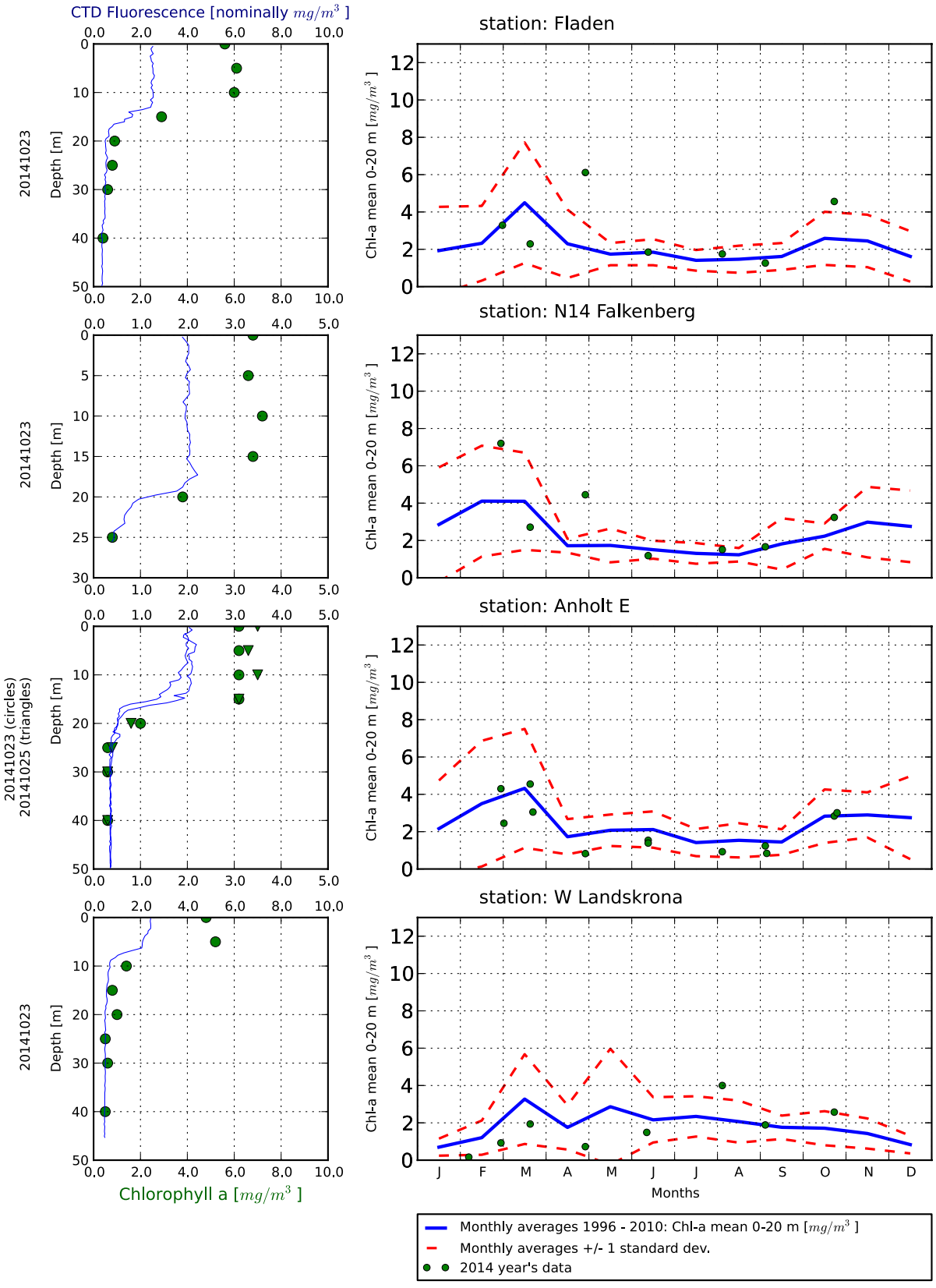
Phytoplankton analysis and text by: Malin Mohlin

Selection of observed species	Anholt E	Anholt E	N14	Släggö	Å17
Red=potentially toxic species	2014-10-23	2014-10-25	2014-10-23	2014-10-24	2014-10-24
Hose 0-10 m	presence	presence	presence	presence	presence
Attheya septentrionalis			present		
Cerataulina pelagica	common	present	present		present
Chaetoceros affinis			present		
Chaetoceros danicus	present	present	present	present	present
Chaetoceros debilis	present		present		
Chaetoceros spp		present	present	present	present
Coscinodiscophyceae	present				
Coscinodiscus centralis	present	present			present
Coscinodiscus concinnus	present				
Coscinodiscus radiatus	present	present	present		present
Cyclotella spp	present			present	
Dactyliosolen fragilissimus		common	common	present	
Dactyliosolen phuketensis	common				
Ditylum brightwellii	common	present	present	present	common
Eucampia zodiacus	present	present	present		present
Guinardia delicatula	common	present	present	present	present
Guinardia flaccida		present			
Leptocylindrus danicus	common	present	present	present	
Leptocylindrus minimus	present			present	present
Nitzschia longissima	present	present	present	present	present
Porosira glacialis	present	present			
Proboscia alata	common	common	common	present	common
Pseudo-nitzschia spp		present	present		present
Pseudosolenia calcar-avis	present	present			
Rhizosolenia pungens		present	present		present
Rhizosolenia setigera		present		present	present
Rhizosolenia spp		present		present	present
Rhizosolenia styliformis				present	
Skeletonema marinoi	present	present	present		present
Thalassiosira spp	common	present			present
Ceratium furca	present			present	
Ceratium fusus	present		present	present	
Ceratium lineatum	present	present	present		
Ceratium macroceros					present
Ceratium tripos	present	present	present		present
Dinophysis acuminata	present	present		present	present
Dinophysis acuta		present		present	present
Dinophysis norvegica	present	present	present		
Dinophysis rotundata	present				
Dinophysis spp		present			
Gymnodiniales	present		present		present
Gyrodinium dominans				present	
Noctiluca scintillans			present		
Peridiniales	present		present		
Prorocentrum micans	present				
Prorocentrum minimum	present				
Protoperidinium bipes	present				
Protoperidinium spp	present	present		present	present
cf. naked stage Dictyocha spp or cf. Vicicitus globosus	common	present	present	present	present
Dictyocha fibula	common		common	present	present
Dictyocha speculum	common	present	present	present	present
Craspedophyceae			present		
Ebria tripartita	common		present		
Cryptomonadales			present	present	present

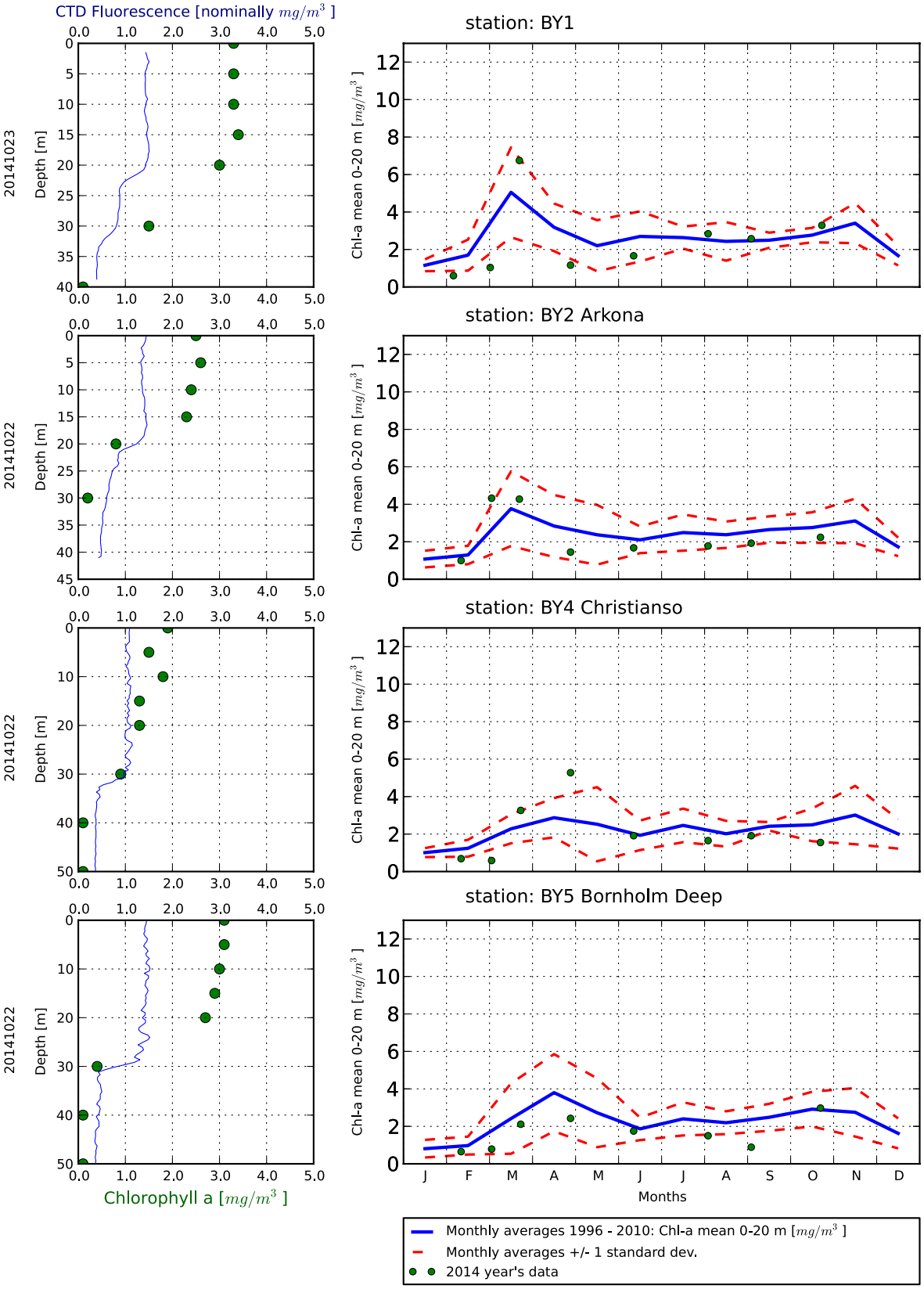
Selection of observed species	BCS III-10	BY2	BY5	BY15	BY38	REF M1-V1
Red=potentially toxic species	2014-10-22	2014-10-22	2014-10-22	2014-10-21	2014-10-26	2014-10-26
	presence	presence	presence	presence	presence	presence
Actinocyclus spp	present	present	present		present	
Aulacoseira spp	present				present	
Centrales						present
Chaetoceros danicus			present	present		
Chaetoceros impressus	present	present	present		present	
Chaetoceros spp		present				present
Coscinodiscophyceae		present	present			
Coscinodiscus centralis	present	present	common	present	common	present
Coscinodiscus granii	present			present		present
Coscinodiscus radiatus						present
Coscinodiscus spp				present		
Cyclotella spp				present		
Proboscia alata					present	
Skeletonema marinoi					present	present
Thalassiosira nordenskioeldii			present			
Amphidinium spp	present			present		
Ceratium tripos			present			
Cladopyxis claytonii	present	present		present		present
Dinophysis acuminata	present			present	present	present
Dinophysis norvegica				present		
Dinophysis rotundata				present		
Gymnodiniales		present		present	present	present
Gyrodinium spp					present	
Heterocapsa triquetra						present
Katodinium glaucum	present		present	present		
Peridiniales				present	present	
Prorocentrum minimum	present	present	present			
Prorocentrum spp				present		
Protoperidinium brevipes						present
Protoperidinium spp				present		
Aphanizomenon flos-aquae		present				
Aphanizomenon spp				present		
Aphanocapsa spp					present	
Aphanothece spp					present	
Cyanodictyon spp					present	
Lemmermanniella spp					present	
Merismopedia spp					present	
Woronichinia compacta					common	
Woronichinia spp			common	present		
Eutreptiella spp				present		
Oocystis spp				present	common	
Planctonema lauterbornii	present			present	present	
Pyramimonas spp		present				
Ebria tripartita	present	present	present	present	present	
Craspedophyceae					present	
Cryptomonadales	present	present	present	present	present	present
Ciliophora	present	present	present	present	present	
Helicostomella subulata	present		present		present	present
Mesodinium rubrum	present	present	present	present	present	

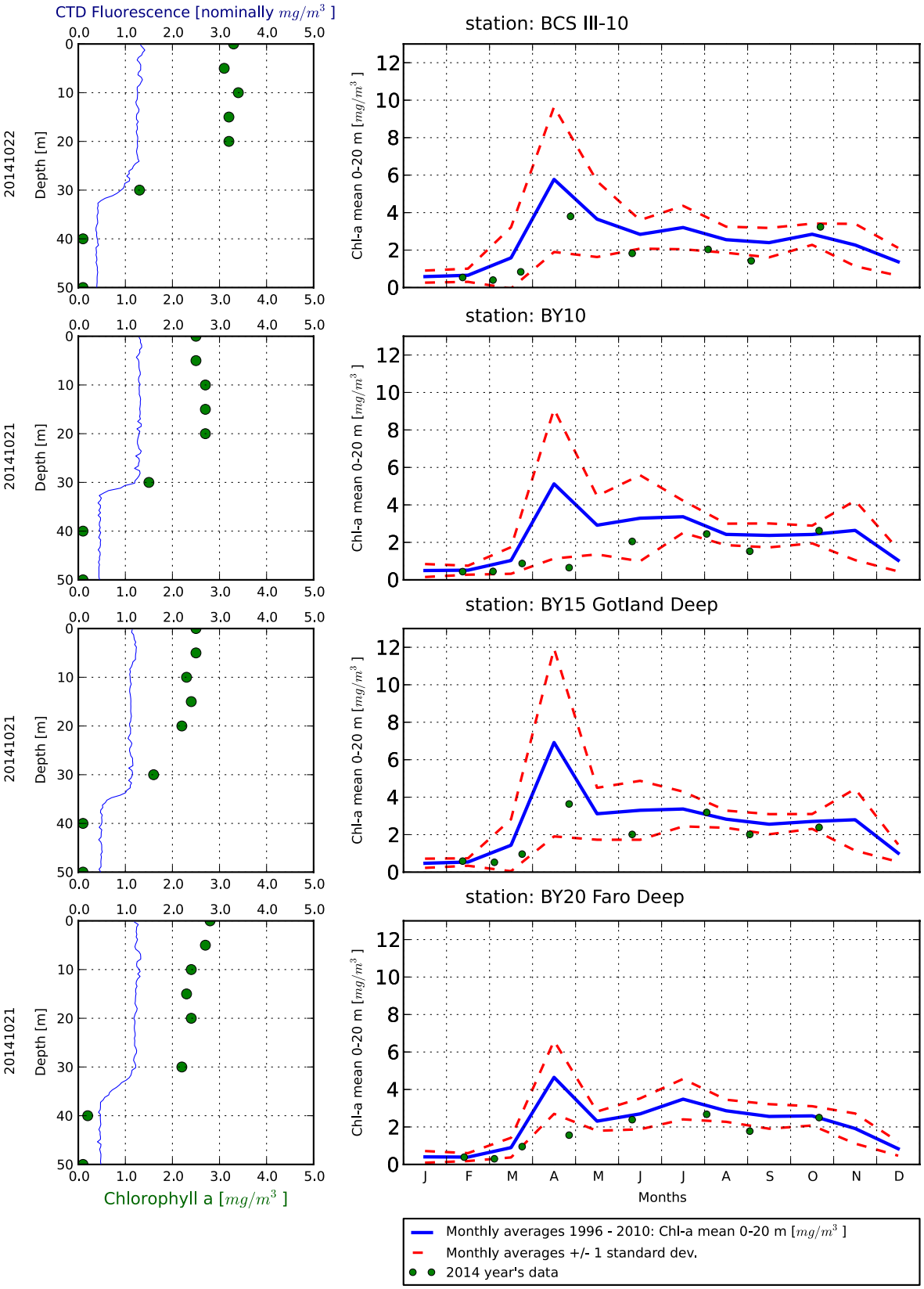
The Skagerrak

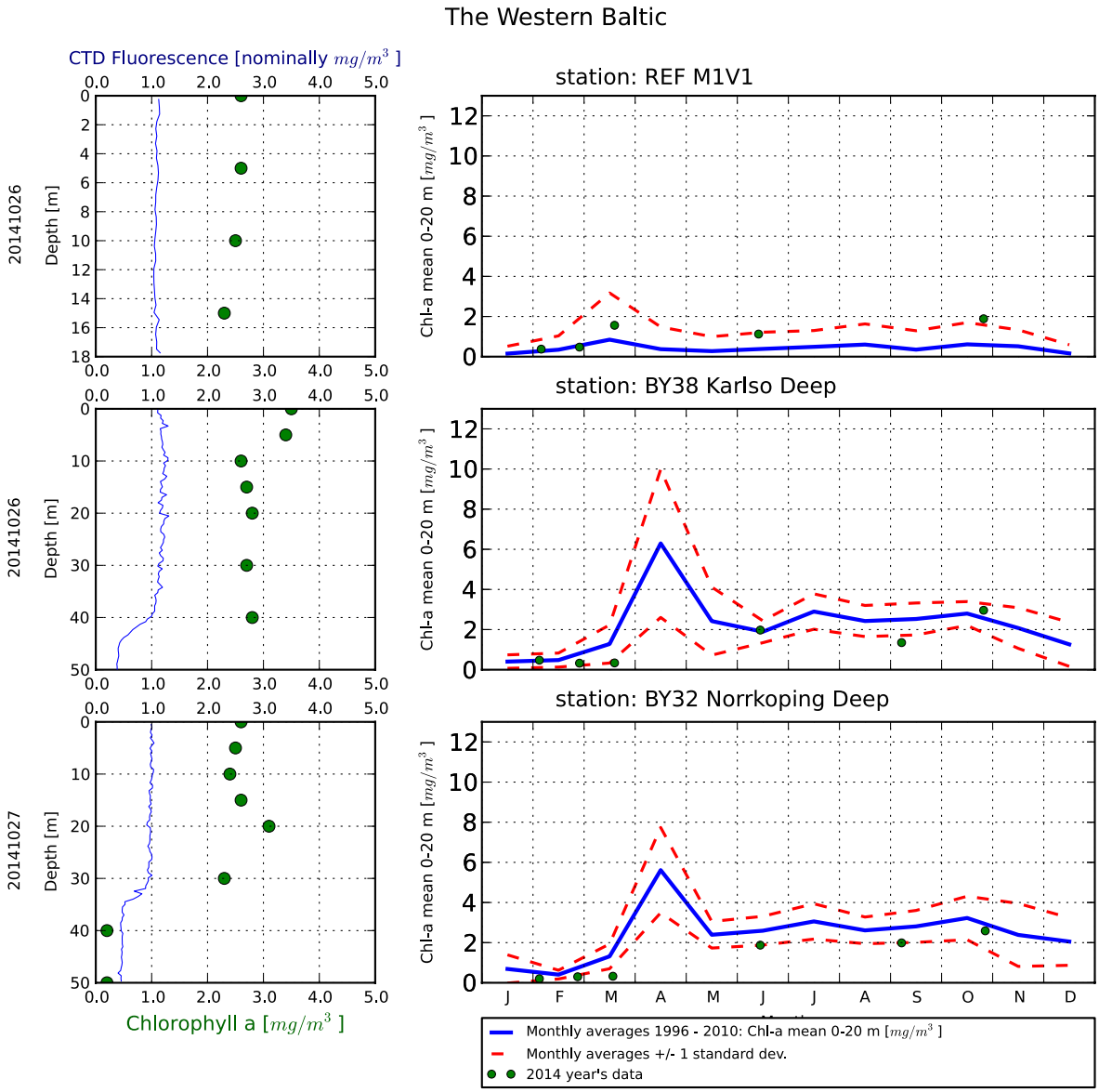



CTD Fluorescence [nominally mg/m^3]
20141023
Depth [m]
station: Fladen
station: N14 Falkenberg
station: Anholt E
station: W Landskrona
20141023 (circles)
20141025 (triangles)
Chl-a mean 0-20 m [mg/m^3]
J F M A M J J A S O N D
Months
Chlorophyll a [mg/m^3]
Monthly averages 1996 - 2010: Chl-a mean 0-20 m [mg/m^3]
Monthly averages +/- 1 standard dev.
2014 year's data

The Southern Baltic




CTD Fluorescence [nominally mg/m^3]
20141022
20141021
20141021
20141021
Depth [m]
Chlorophyll a [mg/m^3]
station: BCS III-10
station: BY10
station: BY15 Gotland Deep
station: BY20 Faro Deep
Chl-a mean 0-20 m [mg/m^3]
J F M A M J J A S O N D
Months
Monthly averages 1996 - 2010: Chl-a mean 0-20 m [mg/m^3]
Monthly averages +/- 1 standard dev.
2014 year's data



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.

About the chlorophyll graphs

Chlorophyll *a* is sampled from several depths. Data are 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 layers of phytoplankton occuring below the surface.

Om AlgAware

SMHI genomför månatliga expeditioner i Östersjön och Västerhavet. Resultat baserade på semikvantitativ mikroskopanalys av planktonprover samt klorofyllmätningar presenteras kortfattat i denna rapport. Information från SMHIs satellitövervakning av algblomningar finns under perioden juni-augusti på www.smhi.se.

About AlgAware

SMHI carries out monthly cruises 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 SMHIs satellite monitoring of algal blooms is found on www.smhi.se during the period June-August.

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.

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.