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SMHI

Oceanographic Unit
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AlgAware

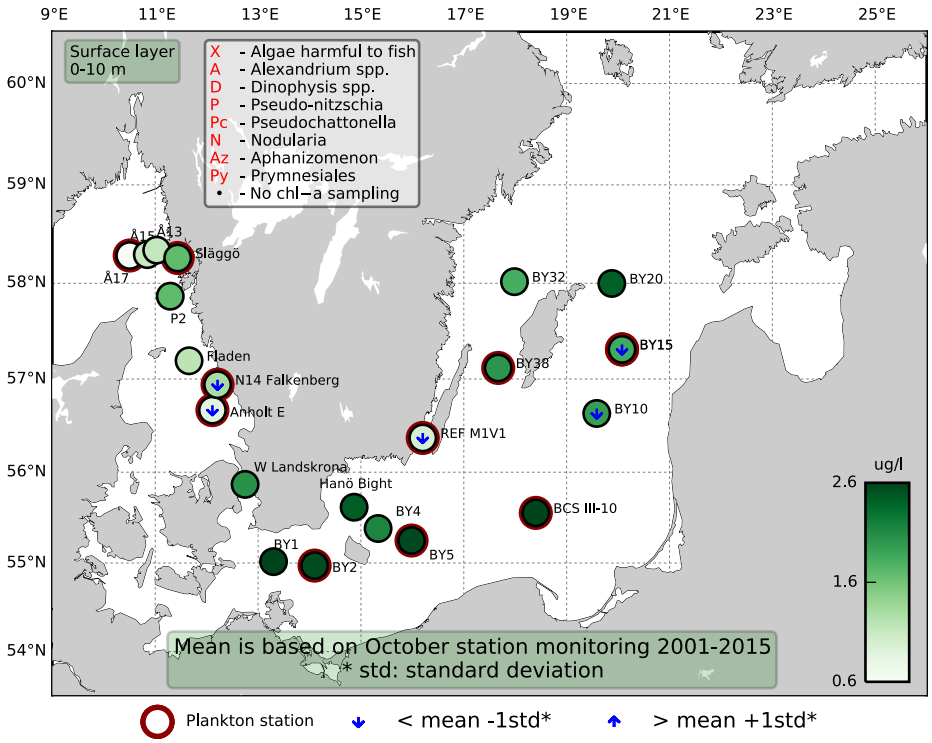
ALGAL SITUATION IN MARINE WATERS SURROUNDING SWEDEN

Sammanfattning

Artdiversiteten var relativt stor i Kattegatt och vid Släggö vid Skagerraks kust. De totala cellantalen var låga, och de talrikaste arterna var dinoflagellaten *Prorocentrum compressum* och kiselalgen *Pseudosolenia calcar-avis*. Kalkflagellaten *Emiliania huxleyi* noterades i Kattegatt och fanns i något högre cellantal i Skagerraksproverna. Den potentiellt giftiga dinoflagellaten *Azadinium* spp förekom i Skagerrak där livsmedelsverkets toxinprover av musslor visat på azaspirsyra denna vecka.

I Östersjön var växtplanktondiversiteten generellt låg, med mest små arter i låga mängder.

De integrerade klorofyllvärdena från 0-20 meter (diagram) låg inom det normala för denna månaden för samtliga stationer. Från 0-10 meter (karta) var de integrerade värdena under en standardavvikelse vid N14 och Anholt E i Kattegatt samt i östra Gotlandsbassängen och i Kalmar Sund.



Abstract

The species diversity was fairly high in the Kattegat and at Släggö at the Skagerrak coast. The total cell numbers were low and the most numerous species were the dinoflagellate *Prorocentrum compressum* and the diatom *Pseudosolenia calcar-avis*. The coccolithophorid *Emiliania huxleyi* was present in the Kattegat and was found in somewhat higher cell numbers in the Skagerrak samples. The potentially toxic dinoflagellate *Azadinium* spp was found in the Skagerrak where the National food agency`s toxin samples also had azaspiracids in them this week.

In the Baltic Sea the phytoplankton diversity was generally low with mostly small species in low cell numbers.

The integrated chlorophyll concentrations from 0-20 meters (diagrams) were normal for this month at all stations. From 0-10 meters (map) however the integrated concentrations were below one standard deviation at N14 at Anholt E in the Kattegat as well as in the Eastern Gotland Basin and in the Kalmar Sound.

Below follows a more detailed information on species composition and abundance. Species marked with * are potentially toxic or harmful.

The Skagerrak

Å17 (open Skagerrak) 18th of October

The phytoplankton diversity was low and the most common species were *Emiliania huxleyi* and small cryptomonads.

Släggö (Skagerrak coast) 18th of October

The species diversity was fairly high with some more dinoflagellate than diatom species. The cell counts were low though and the dinoflagellate *Prorocentrum compressum* and *E. huxleyi* were the most abundant species.

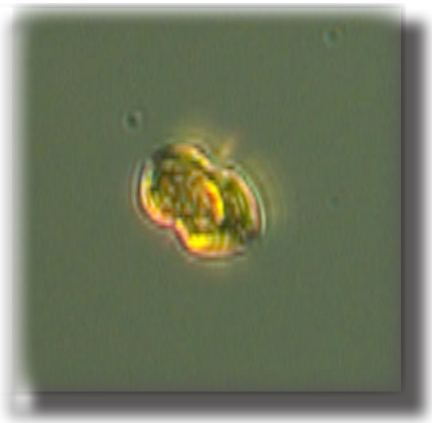


Photo 1: The dinoflagellate *Azadinium* sp.* was present at N14 in the Kattegat and at both of the Skagerrak phytoplankton stations.

Photo 2: The flagellate *Pyramimonas propulsa* was present at Å17. It is identified by having 8 flagelles.

The Kattegat

Anholt E 17th of October

The fairly high species diversity was dominated by dinoflagellates, the most abundant species being *P. compressum* and naked dinoflagellates as well as the diatom *Pseudosolenia calcar-avis*.

N14 Falkenberg 18th of October

The total number of species was more or less the same as at Anholt and Släggö, but there were more diatoms than dinoflagellates. The most numerous species was *P. compressum*, and the diatoms *Cerataulina pelagica, Pseudo-nitzschia*, Pseudosolenia calcar-avis* and *Skeletonema marinoi* were rather abundant.

BY2 and BY5 17th and 16th of October
The diatom *Cerataulina pelagica* was abundant in the southern Baltic and a few more diatom species were present. The phytoplankton diversity was generally low and mostly small species were present.

REF M1V1 Kalmar Sound 19th of October
The phytoplankton diversity was low, only the diatom *Skeletonema marinoi* was abundant. The species that were present were generally small species.

BY15 and BY20 15th of October, BCSIII-10 16th of October, BY38 19th of October
The phytoplankton diversity was low with a few generally small species in low cell numbers. The number of species was somewhat higher at BY20 where the small flagellates *Pyrammimonas* spp and Prymnesiales* were abundant.

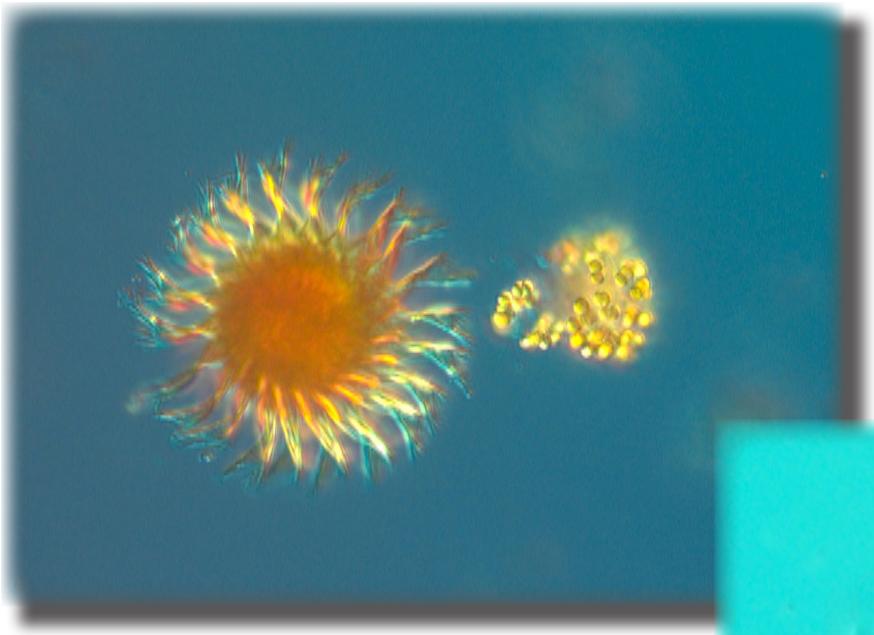


Photo 3: Various ciliates and pico cyanobacteria colonies were quite abundant at the Baltic phytoplankton stations.

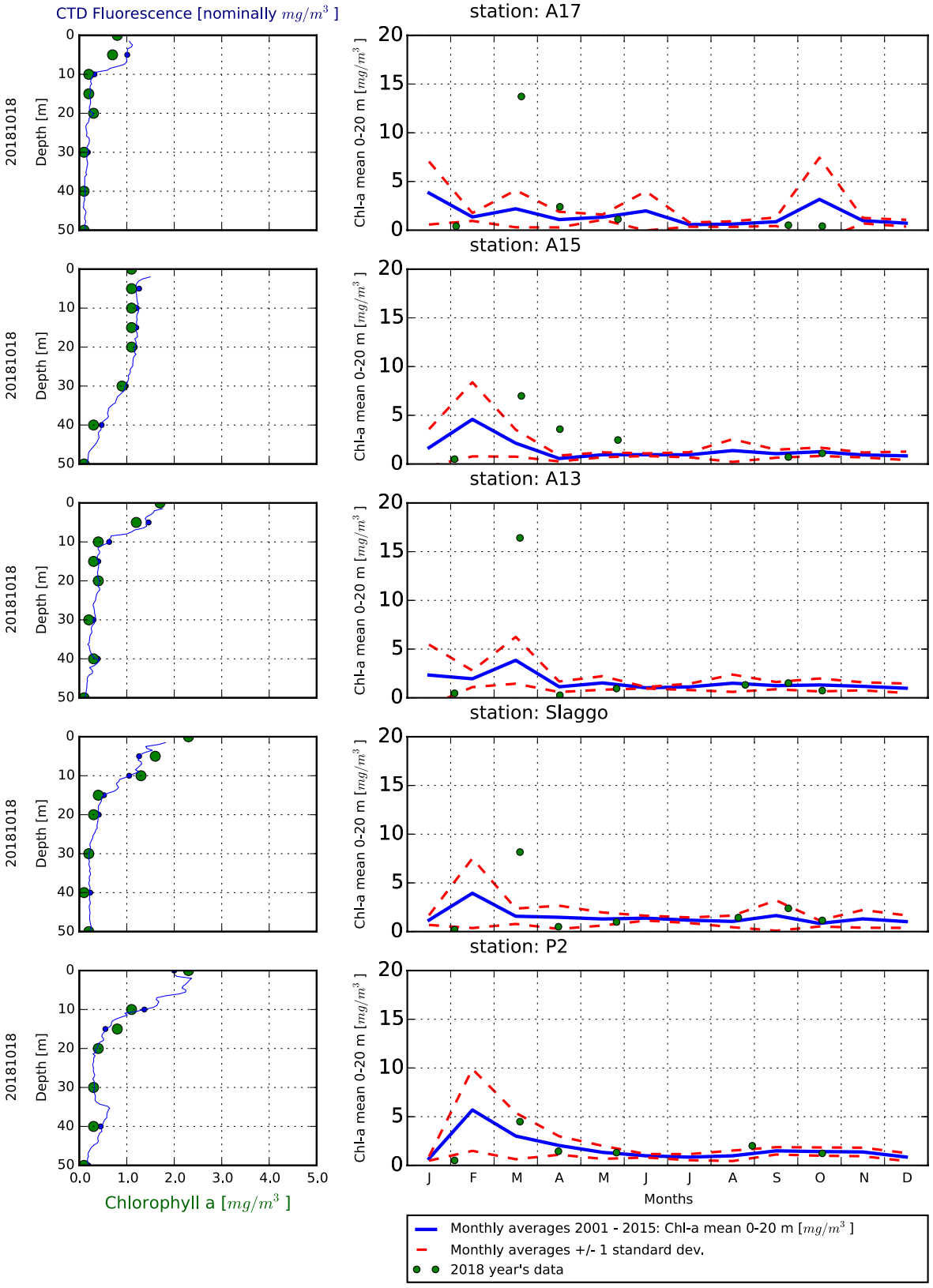
Photo 4: The dinoflagellate *Dissodinium pseudolunula* was present at BCSIII-10. In the conspicuous cyst stage in the photo the species is easily recognized. Other stages are not as known.

Phytoplankton analysis and text: Ann-Turi Skjevik

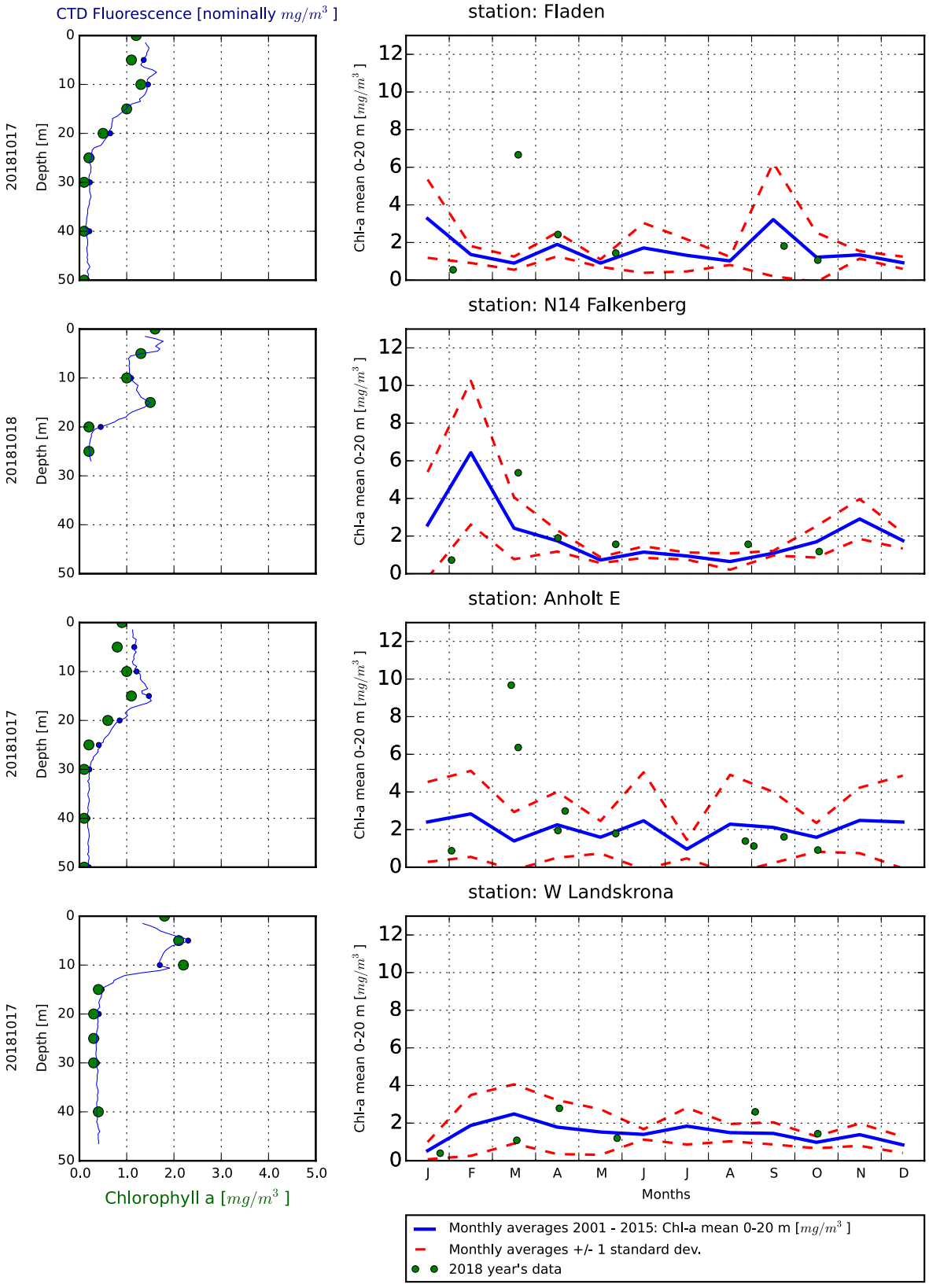
Selection of observed species	Anholt E	N14	Släggö	Å17
Red=potentially toxic species	17/10	18/10	18/10	18/10
Hose 0-10 m	presence	presence	presence	presence
Cerataulina pelagica		common	present	
Chaetoceros spp				present
Chaetoceros affinis		present		
Chaetoceros castracanei	present			
Chaetoceros socialis		present		
Chaetoceros subtilis	present			
Coscinodiscus granii	present			
Cylindrotheca closterium	present	present	present	present
Dactyliosolen fragilissimus	present	present		
Ditylum brightwellii		present		
Guinardia delicatula		present		
Guinardia flaccida	present	present	present	
Gyrosigma spp				present
Lauderia annulata			present	
Leptocylindrus danicus	present	present	present	
Leptocylindrus minimus	present	present		
Nitzschia longissima	present	present		
Paralia sulcata				present
Proboscia alata			present	
Pseudo-nitzschia spp		common	present	present
Pseudosolenia calcar-avis	common	common	present	
Rhizosolenia pungens	present	present		
Skeletonema marinoi		common	present	
Thalassiosira spp				present
Thalassiosira rotula			present	
Akashiwo sanguinea			present	
Amphidinium crassum		present		
Azadinium spp		present	present	present
Ceratium fusus			present	
Ceratium lineatum		present	present	present
Ceratium macroceros			present	
Ceratium tripos	present	present	present	present
Dinophysis acuminata	present			
Dinophysis norvegica			present	
Gymnodiniales	common			present
Gyrodinium flagellare			present	present
Gyrodinium spirale			present	
Heterocapsa spp		present		present
Katodinium glaucum	present			
Lessardia elongata	present	present		
Oxytoxum criophilum	present		present	
Oxytoxum gracile	present			present
Peridiniales	present			present
Phalacroma rotundatum	present			
Pronoctiluca pelagica	present			
Prorocentrum compressum	very common	very common	common	present
Prorocentrum cordatum	present	present		
Prorocentrum micans	present	present	present	
Prorocentrum triestinum	present		present	
Protoperidinium divergens	present	present	present	
Protoperidinium oblongum	present			
Dictyocha fibula			present	
Dictyocha speculum			present	
Pterosperma spp			present	present
Emiliania huxleyi	present	present	common	common
Prymnesiales	present	present		present
Cryptomonadales	present	present	common	common
Leucocryptos marina				present
Pseudanabaena spp	present		present	
Pyramimonas propulsa				present
Mesodinium rubrum	present	present	present	
Strombidium spp				present
Ciliophora		common	common	present

Selection of observed species	BCSIII-10	BY15	BY20	BY2	BY5	BY38	REFM1V1
Red=potentially toxic species	16/10	15/10	15/10	17/10	16/10	19/10	19/10
Hose 0-10 m	presence	presence	presence	presence	presence	presence	presence
Centrales	present						present
Cerataulina pelagica				common	common		
Chaetoceros castracanei	present	present	present	present	present		
Chaetoceros danicus	present	present	present	present	present	present	present
Chaetoceros lorenzianus					present		
Chaetoceros throndsenii							present
Coscinodiscus spp			common			present	
Coscinodiscus centralis	present	present					
Coscinodiscus granii			present				
Coscinodiscus radiatus	present						
Cyclotella choctawhatcheeana			present	present	present		
Dactyliosolen fragilissimus				present	present		
Pseudosolenia calcar-avis				present			
Skeletonema marinoi							common
Amphidinium crassum							present
Ceratium tripos				present	present		
Dinophysis acuminata	present	present		present	present	present	
Dinophysis norvegica		present					
Dissodinium pseudolunula	present						
Gymnodiniales						present	present
Gymnodinium verruculosum	present				present		
Gyrodinium spirale							present
Heterocapsa spp	present	common	present		common		present
Heterocapsa rotundata	present	present			present	present	present
Heterocapsa triquetra					present		
Katodinium glaucum		present	present			present	present
Peridiniales							present
Prorocentrum compressum							present
Prorocentrum cordatum				present	common		
Prorocentrum micans				present			
Ebria tripartita	present		present	present	present	present	
Eutreptiella spp		present					
Aphanizomenon spp				present	present		present
Aphanothece spp			present				
Aphanothece paralleliformis		present	present				
Cyanodictyon spp							present
Lemmermanniella spp			present				
Microcystis spp			present				
Pseudanabaena spp		present	present				present
Snowella spp		present	present			present	present
Woronichinia spp			present				
Pseudopedinella spp		present		present			
Pseudopedinella pyriformis				present		present	present
Planctonema lauterbornii			present				present
Pterosperma spp	present		present	present			
Pyramimonas spp	present	present	common	present	present	common	present
Prymnesiales spp			common		present	present	present
Telonema subtile							present
Oocystis spp		present	present			present	
Monoraphidium spp			present				
Choanoflagellatea						present	present
Dinobryon faculiferum							present
Cryptomonadales	common	common	very common	present	common	common	present
Leucocryptos marina			present				
Mesodinium rubrum	present	present	present	present	present	present	present
Coxliella helix		present	present	present		present	
Helicostomella subulata	present					present	
Strombidium spp	present	present	present		present	present	
Ciliophora	common	common	common	common	common	common	present

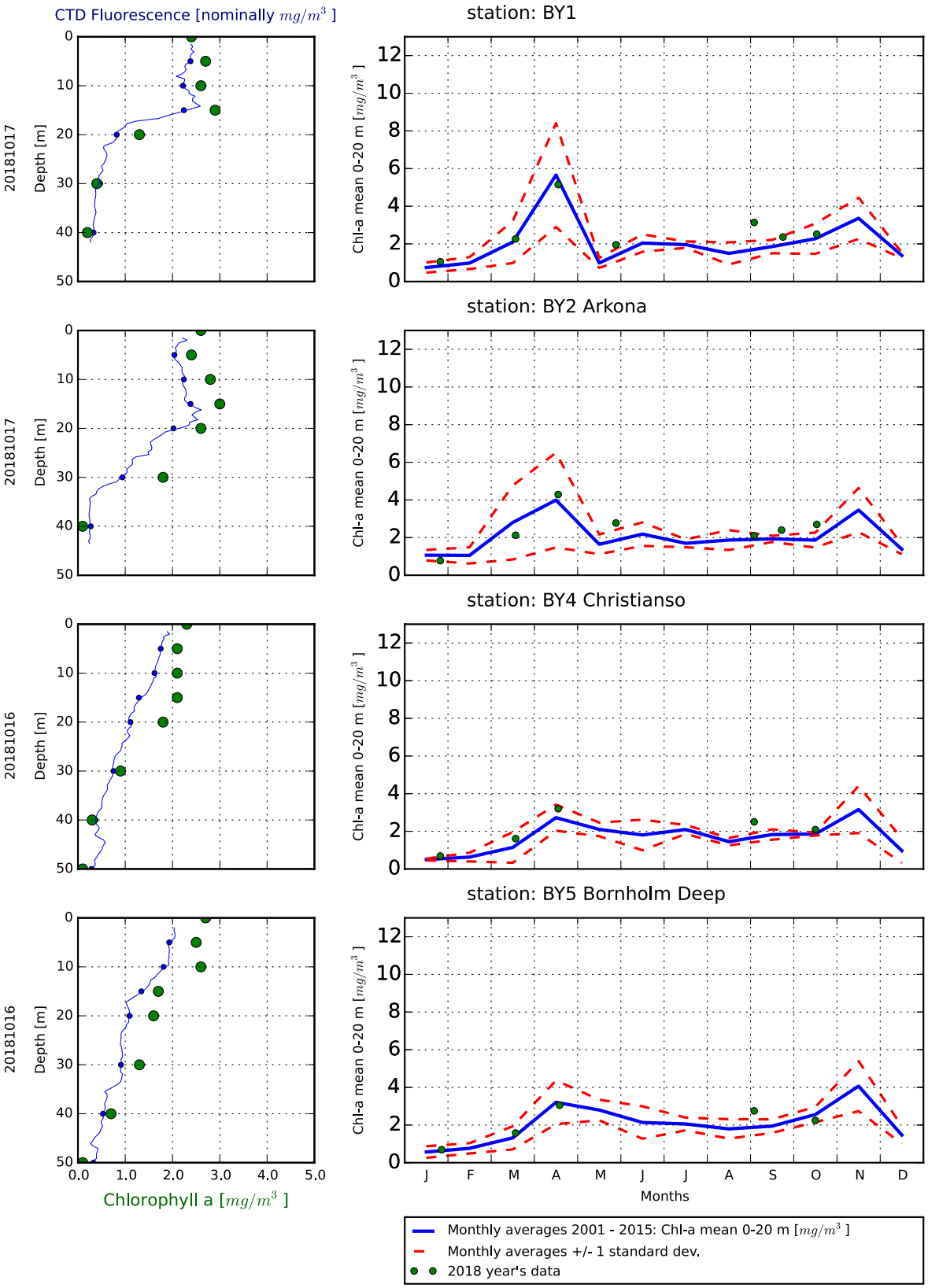
The Skagerrak

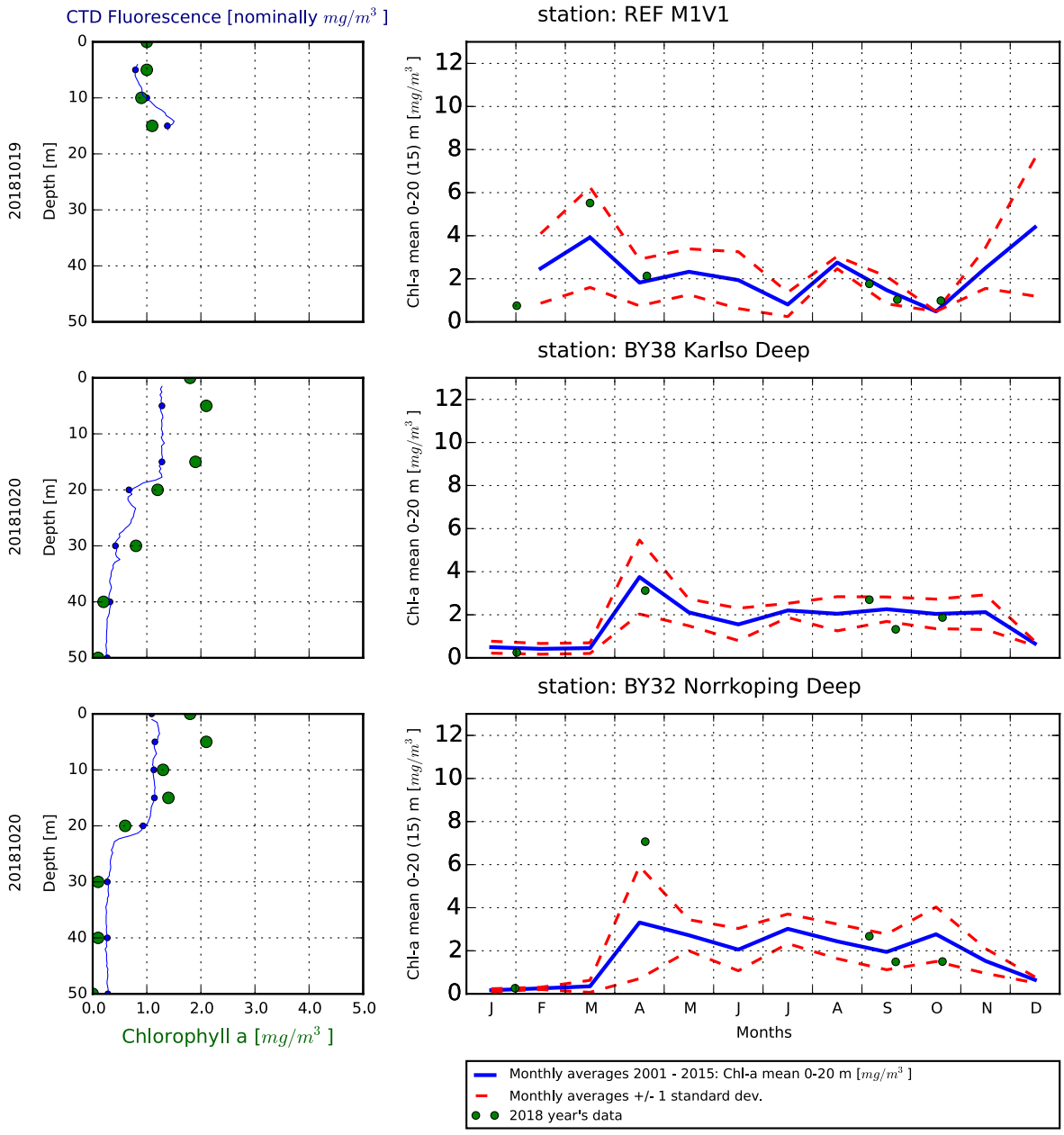


The Kattegat and The Sound



The Southern 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.

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, hallucinationer, 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 (0-10 m) vid de olika stationerna. Pil upp eller ned indikerar om resultatet är över eller under en standardavvikelse från medel. Medel är beräknat utifrån aktuell månad under perioden 2001-2015. 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 (0-10 m) at sampling stations. The arrow up or down indicate whether the result is above or below one standard deviation from mean. The mean value is calculated using results from the actual month during the period 2001-2015. Presence of harmful algae at stations where species analysis is performed is shown with a symbol.

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