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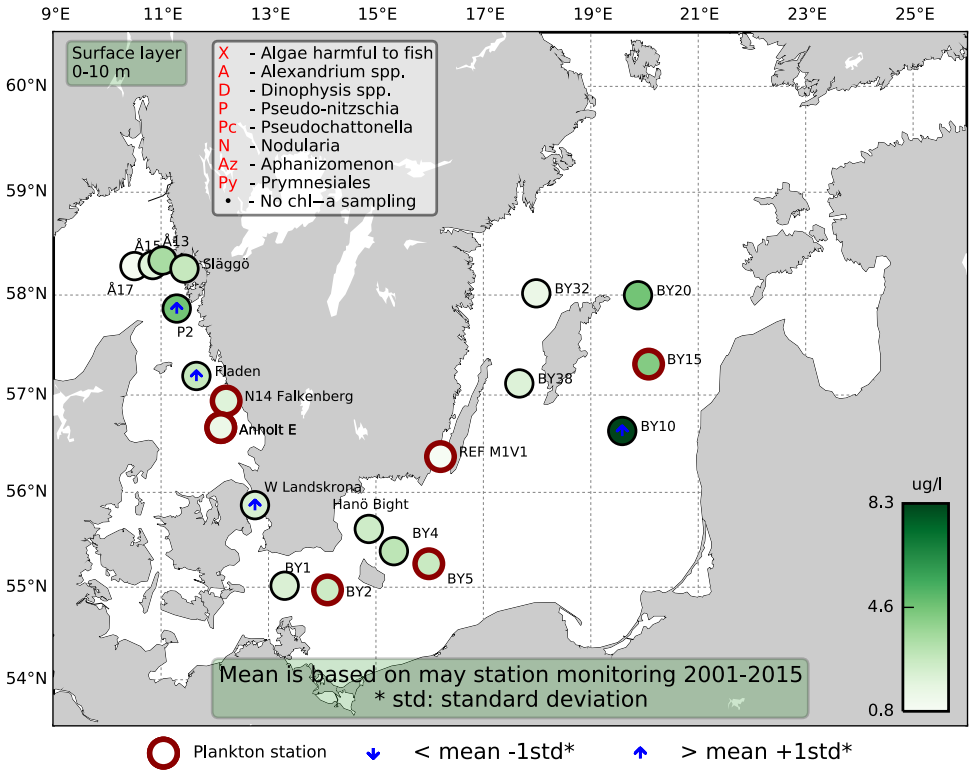
SMHI
Oceanographic Unit
No 5, May 2017

AlgAware
ALGAL SITUATION IN MARINE WATERS SURROUNDING SWEDEN

Sammanfattning
Kiselalger dominerade i hela Västerhavet, men de totala celltätheterna var relativt låga. Klorofyllkoncentrationerna var något förhöjda i mitten av Å-snittet (Norra Skagerrak) för att annars vara inom det normala vid de flesta stationer i Västerhavet. Klorofyllfluorescenstoppar återfanns vid W Landskrona och vid station P2 på västkusten. Vid W Landskrona återfanns den mindre runda formen av den för fisk skadliga flagellaten *Pseudochattonella* spp.*, som observerats vid de senaste tre expeditionerna. Vid P2 i södra Skagerrak bestod flourescenstoppen framför allt av den lilla kiselalgen *Phaeodactylum tricornutum* som även var talrik vid övriga västkuststationer.

I Östersjön var cellantalen relativt låga i samtliga prover. Den filamentösa cyanobakterien *Aphanizomenon flos-aquae* var talrik vid samtliga stationer förutom i Kalmar sund där den endast noterades. De integrerade klorofyllhalterna var överlag normala eller strax under vid samtliga stationer förutom de östra delarna där de var något förhöjda.



Abstract
Diatoms dominated along the Swedish west coast. The total cell concentrations were overall quite low. Chlorophyll concentrations were within normal at most stations except in the northern stations Å15 and Å13 where they were above normal for the month. The flagellate *Pseudochattonella* spp.*, potentially toxic to fish, was found at a fluorescence maximum at W Landskrona. The flagellate has been observed during the three previous cruises as well.

The cell concentrations were quite low at all stations in the Baltic Sea. The filamentous cyanobacterium *Aphanizomenon flos-aquae* was found in high cell numbers at all stations except in Kalmar Sound where it was only noted. The chlorophyll concentrations were within normal at all stations except the eastern part of the Baltic where they were above normal.

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

The Skagerrak

Å17 (open Skagerrak) 19th of May
The phytoplankton community contained a few species. The diatom *Skeletonema marinoi* was found in moderate cell numbers and only a few cells of other species were recorded. The integrated (0-20 m) chlorophyll concentration was within normal for this month. The two stations Å15 and Å13 had chlorophyll concentrations slightly above normal.

Släggö (Skagerrak coast) 20th of May
The species diversity was low. Diatoms dominated the phytoplankton community. The small diatom *Phaeodactylum tricornutum* was most common together with almost the same amount of *Dactyliosolen fragilissimus*. The integrated (0-20 m) chlorophyll concentration was within normal for this month.

A chlorophyll fluorescence peak was found at station P2 in the southern part of Skagerrak at 12 m and it mainly contained the small diatom *Phaeodactylum tricornutum*. The peak caused the integrated chlorophyll concentrations (0-20m) to be above normal for this month

The small diatom *Phaeodactylum tricornutum* was found in high cell numbers at many stations along the west coast of Sweden.

The Kattegat

Anholt E 19th and 20th of May and N14 Falkenberg 19th of May
Diatoms dominated the community at all three sampling occasions and the community was overall similar. The small diatom *Phaeodactylum tricornutum* dominated. The diatom *Dactyliosolen fragilissimus* was also present in high cell numbers on all occasions. The integrated (0-20 m) chlorophyll concentrations were all within normal for this month.

A fluorescence maximum was found at W Landskrona at 10 m that contained high numbers of round cell types of the ichtyotoxic flagellate genus *Pseudochattonella* together with numerous cells of the diatom *Dactyliosolen fragilissimus*.

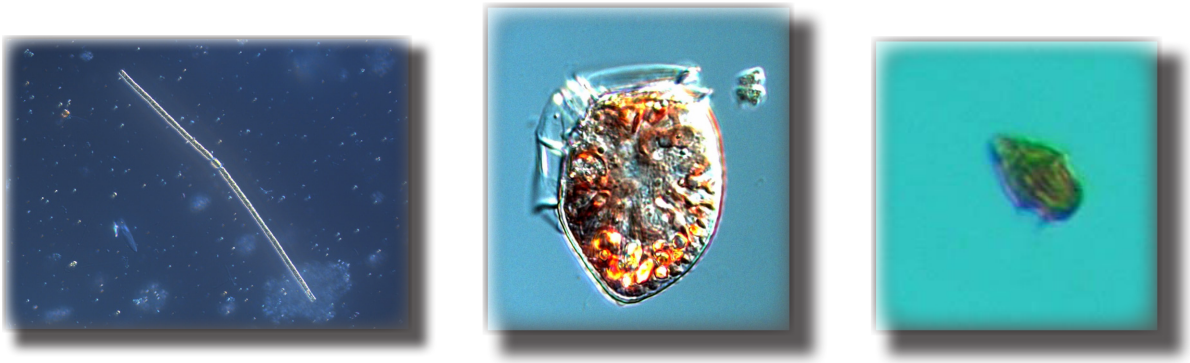
The Baltic Sea

BY2 and BY5 18th and 21st of May

The total cell concentrations and species diversity were quite low. The filamentous cyanobacteria *Aphanizomenon flos-aqua* was most common in the samples. The chlorophyte *Planctonema lauterbornii* was abundant. The small dinoflagellate *Heterocapsa rotundata* was found in high cell numbers at both stations. The integrated chlororphyll concentrations were normal for this month.

REF M1V1 Kalmar Sound 20th of May

The phytoplankton diversity was very low. The diatom *Skeletonema marinoi* and the chrysophyte genus *Dinobryon* were the most common. The integrated (0-20m) chlorophyll concentration was slightly below normal for this month.



The filamentous cyanobacterium *Aphanizomenon flos-aqua* (left) was found in relatively high cell numbers at many stations in the Baltic Sea. The dinoflagellates *Dinophysis norvegica* (middle) and *Heterocapsa rotundata* (right) were common in the southern Baltic Sea.

4CTRY BP 23rd of May

This station is sampled instead of BCSIII-10 for the time being.

The species diversity was moderate. The filamentous cyanobacterium *Aphanizomenon flos-aqua* was most common in the samples together with the dinoflagellate *Heterocapsa rotundata*. The potentially toxic dinoflagellate *Dinophysis norvegica* was found in relatively high cell numbers.

BY15 21st of May

The species diversity was quite high at this station. The filamentous cyanobacterium *Aphanizomenon flos-aqua* was the most common species. The dinoflagellates *Amylax buxus* and *Dinophysis norvegica* was found in moderate cell numbers. The integrated (0-20m) chlorophyll concentration at BY15 was within normal but the concentrations were above normal at the stations north of (BY10) and south of (BY20) BY15. No phytoplankton was however sampled at BY10 or BY20.

BY38 17th of May

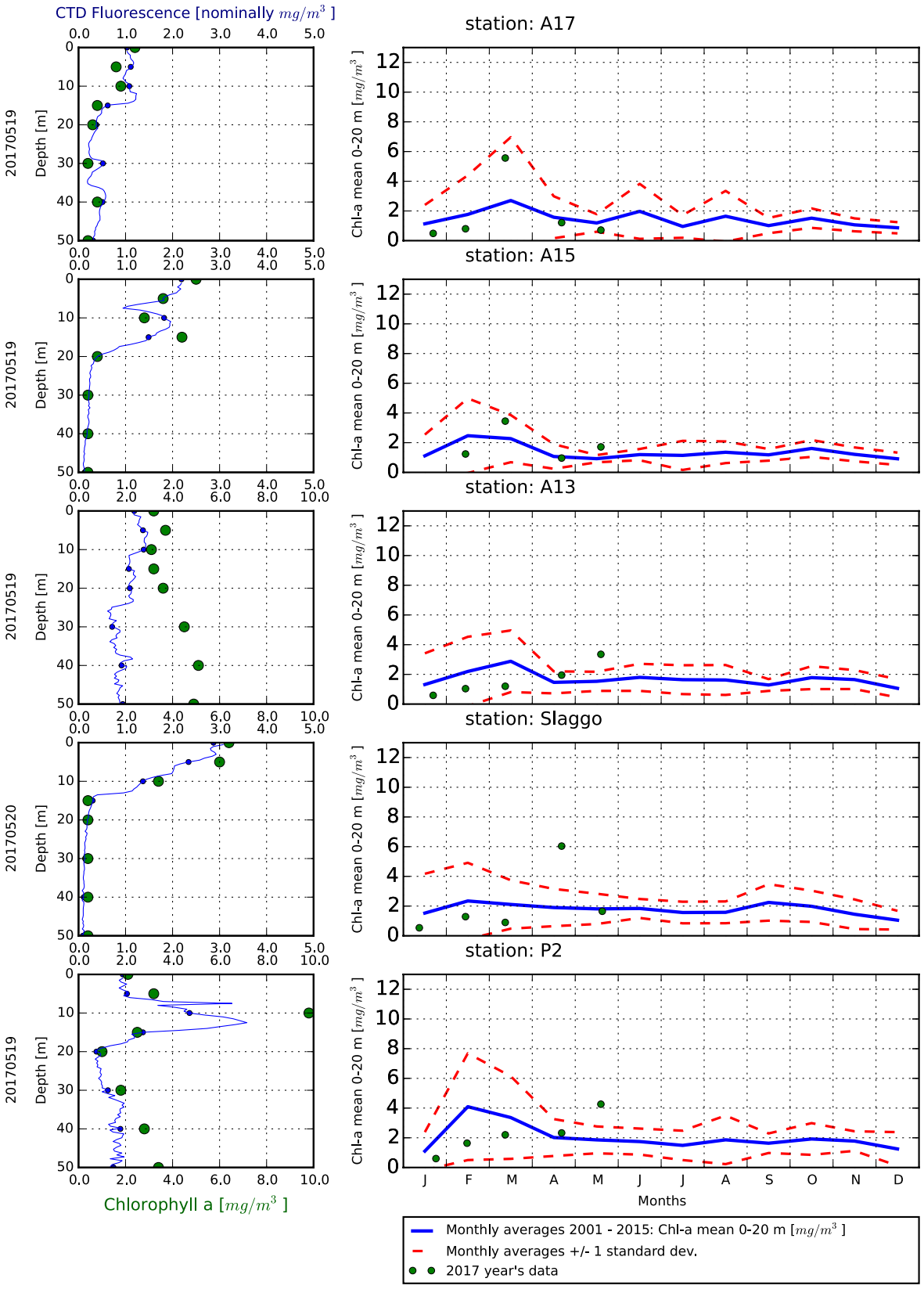
The number of species observed was relatively low. The filamentous cyanobacterium *Aphanizomenon flos-aqua* was recorded in the highest cell numbers this cruise. The integrated (0-20m) chlorophyll concentration was within normal for this month.

Phytoplankton analysis and text by:
Marie Johansen

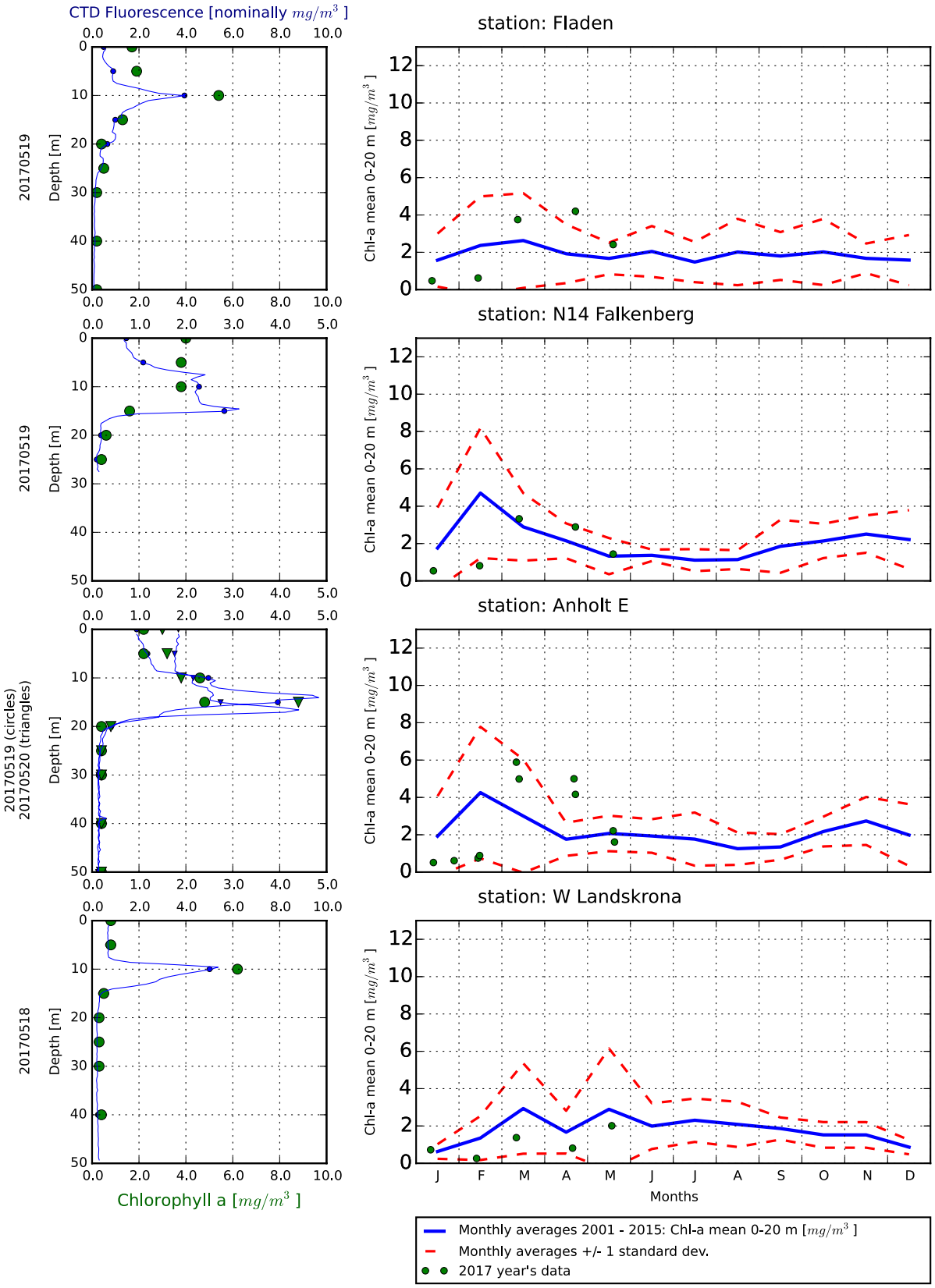
Selection of observed species	N14	Anholt E	Anholt E	Släggö	Å17
Red=potentially toxic species	19/5	19/5	20/5	20/5	19/5
Hose 0-10 m	presence	presence	presence	presence	presence
Chaetoceros spp		present			
Dactyliosolen fragilissimus	very common	very common	common	very common	present
Guinardia delicatula		common	present	common	
Guinardia flaccida	common				present
Lennoxia faveolata		present	present		present
Leptocylindrus danicus	present				
Nitzschia longissima		present			
Phaeodactylum tricornutum	very common	very common	very common	very common	
Skeletonema marinoi		present			common
Thalassionema nitzschioides	present	present	present	present	
Ceratium fusus				present	
Ceratium longipes				present	present
Ceratium tripos		present		present	present
Gymnodiniales	present				present
Karlodinium veneficum	present	present	present		
Peridiniales					present
Scrippsiella complex	present				
Aphanothece spp	present				
Pseudanabaena spp	present	present	present	present	
Pterosperma spp	present	present			
Pyramimonas spp					present
Emiliania huxleyi	present				
Prymnesiales	present	present			present
Telonema subtile		present	present		
Cryptomonadales	present	present	present	common	present
Leucocryptos marina	present				
Choanoflagellatea					present
Ciliophora	common		present		

Selection of observed species	BY2	BY5	4CTRY BP	BY15	REF M1V1	BY38
Red=potentially toxic species	18/5	21/5	21/5	21/5	18/5	17/5
Hose 0-10 m	presence	presence	presence	presence	presence	presence
Actinocyclus spp			present			
Chaetoceros similis			present			
Chaetoceros subtilis	present					
Skeletonema marinoi			present		common	
Amylax buxus				common		
Dinophysis acuminata			present	common		present
Dinophysis norvegica			common			
Gymnodiniales						present
Heterocapsa rotundata	very common	common	very common		present	present
Peridiniales					present	present
Peridiniella catenata				present		common
Peridiniella danica				present		
Protoperidinium brevipes				present		
Aphanizomenon flos-aquae	very common	very common	very common	very common	present	very common
Lemmermanniella	present					
Prymnesiales		present				
Pyramimonas	common	common	common	present		present
Dinobryon balticum			common	common		present
Dinobryon faculiferum					common	
Cryptomonadales	common	common	common	present	common	common
Planctonema lauterbornii		common	present	present		present
Telonema subtile			present			
Mesodinium rubrum		present				present
Ciliophora	present	common	very common	very common		

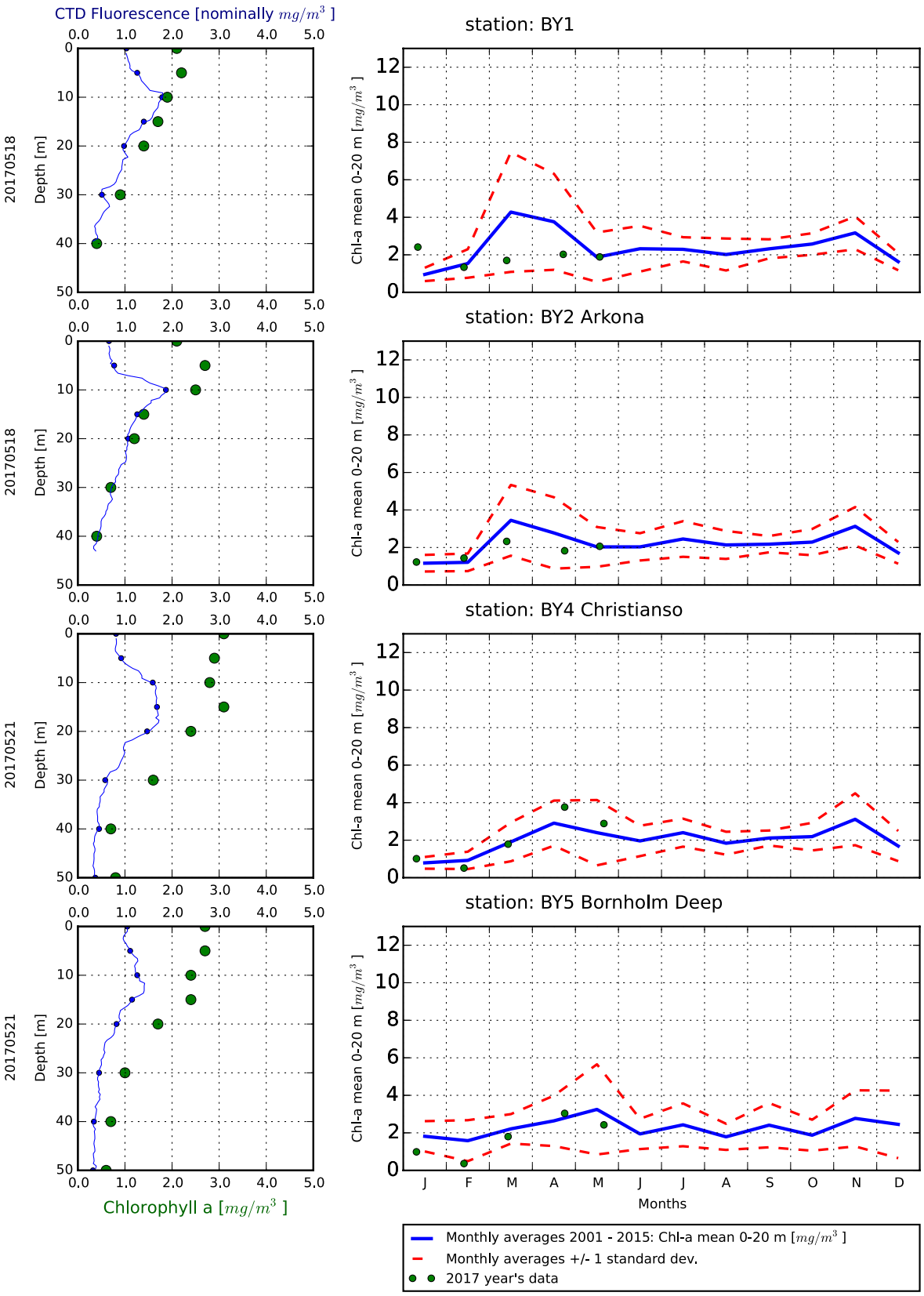
The Skagerrak

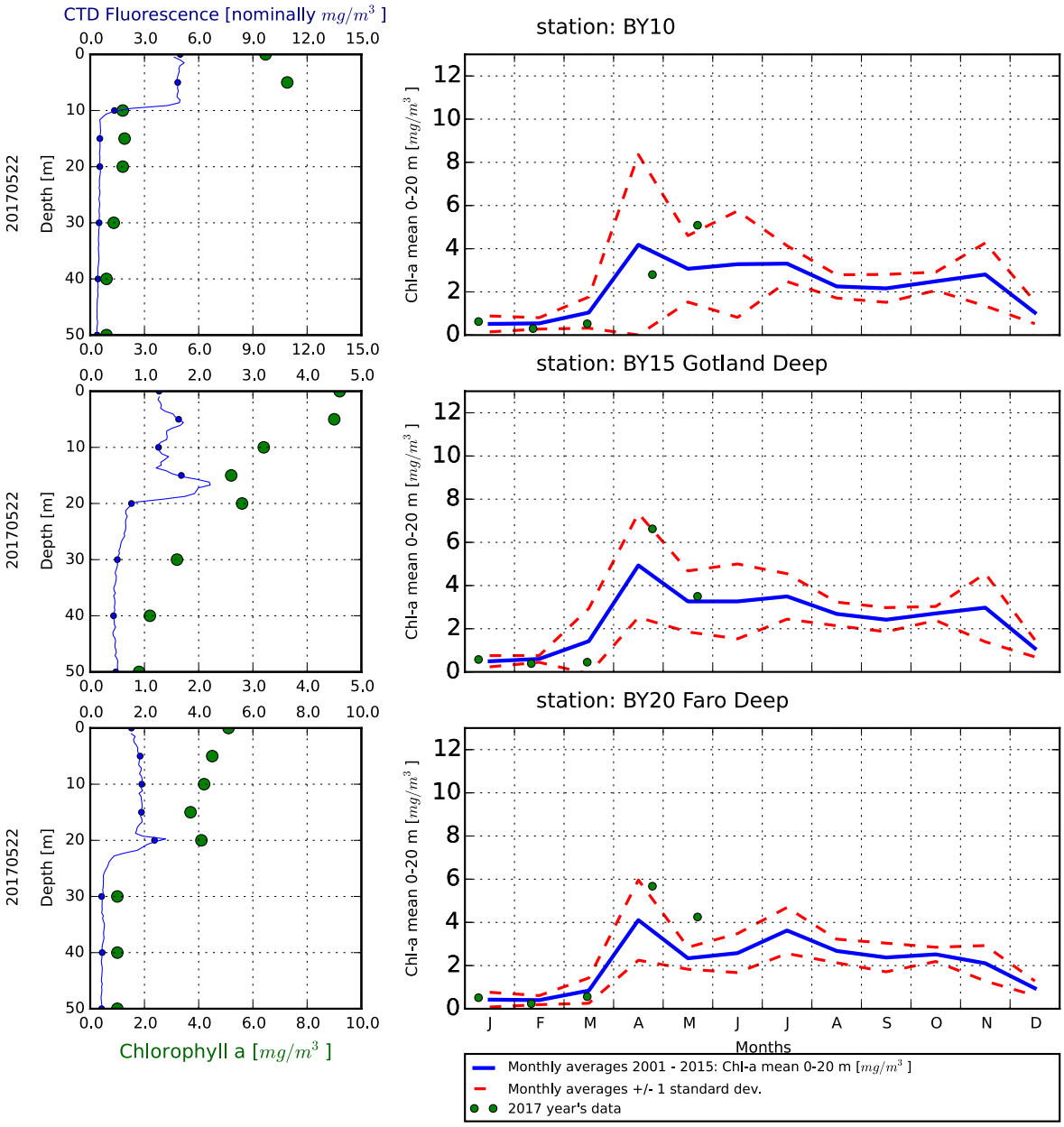


The Kattegat and The Sound

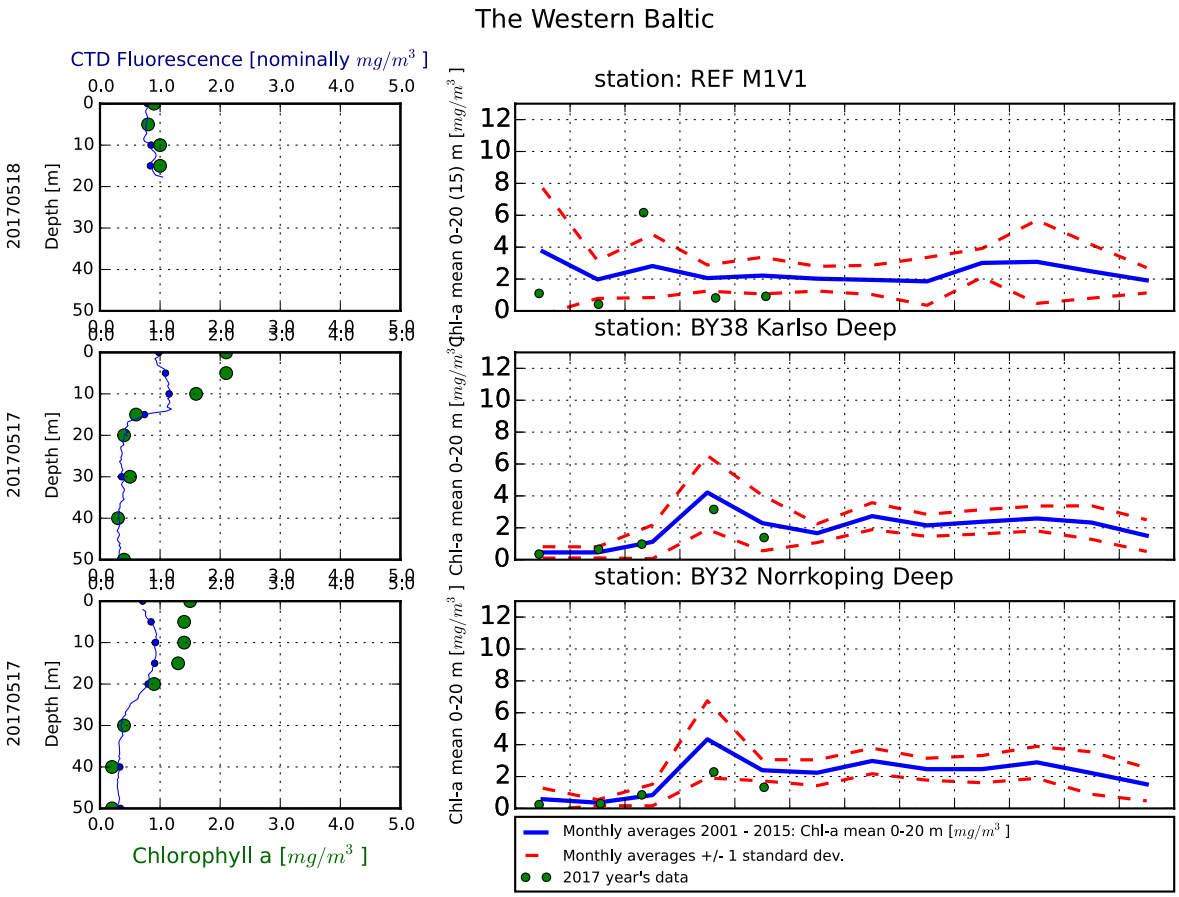


The Southern Baltic





Due to new Polish regulations, BCSIII-10 can not be visited for the time being.



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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