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SMHI
Oceanographic Unit
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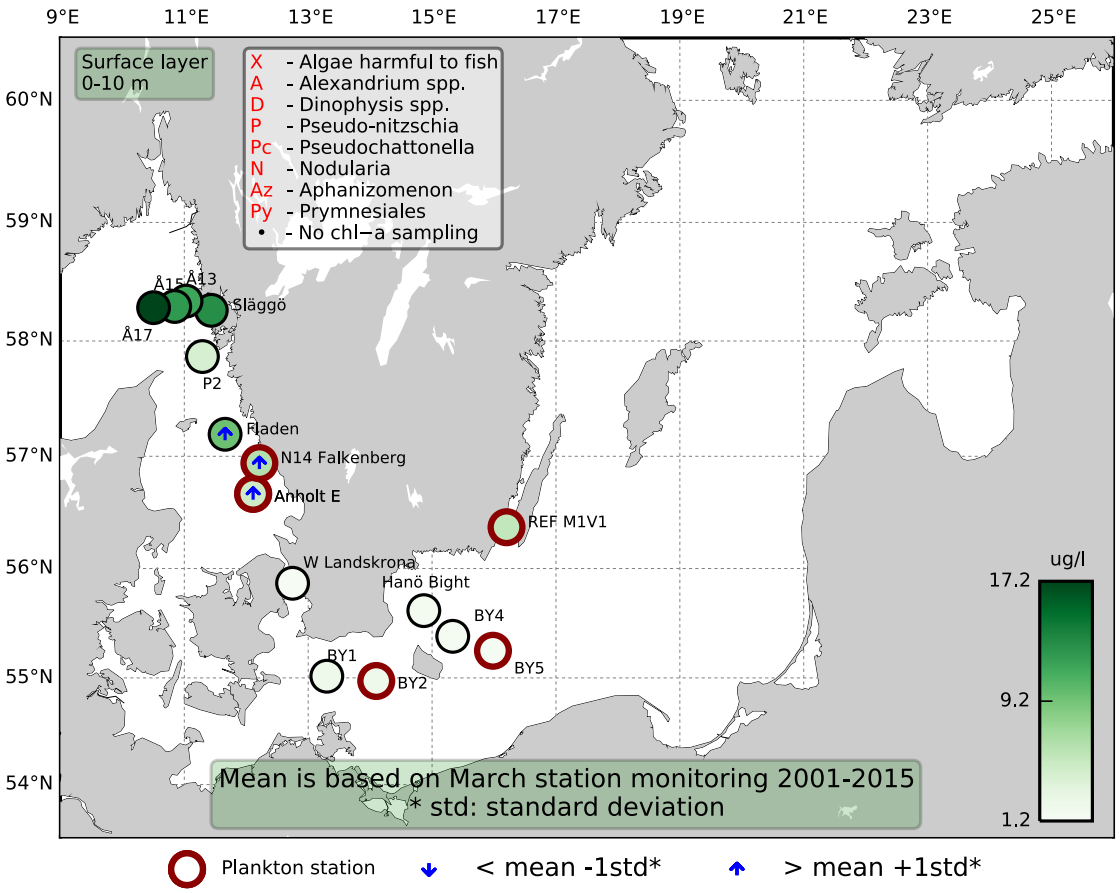
AlgAware
ALGAL SITUATION IN MARINE WATERS SURROUNDING SWEDEN

Sammanfattning
Alla stationer runt Gotland samt i östra Östersjön utgick på grund av för blåsigt och kyligt väder.

Årets vårblomning pågick i Västerhavet vid tidpunkten för mars månads utsjöexpeditionen. Kiselalger dominerade och klorofyllvärdena var höga. *Skeletonema marinoi* var i antal den mest dominerande kiselalgen. Kiselalgsläktena *Chaetoceros* och *Thalassiosira* var talrika i antal arter och antal celler.

De integrerade (0-20 m) klorofyllvärdena var över det normala för denna månad vid de flesta stationerna i Västerhavet och klorofyllfluorescensmaxima orsakades av kiselalger.

För att vara i södra Östersjön var kiselalgsarterna rätt många, särskilt vid REF M1V1 där det såg ut som om vårblomningen var precis runt hörnet. Cellantalen var dock låga och de integrerade klorofyllvärdena var normala för denna månad.



Abstract
All of the stations surrounding Gotland and the stations in the Eastern Baltic could not be visited due to the bad weather conditions.

The spring bloom was ongoing in the Kattegat and Skagerrak areas at the time of the cruise in March. Diatoms dominated the samples and chlorophyll concentrations were high. *Skeletonema marinoi* was the most dominant diatom. The diatom genera *Chaetoceros* and *Thalassiosira* were abundant in both species and cell numbers.

The integrated (0-20 m) chlorophyll concentrations were above normal for this month at most stations in the Kattegat and Skagerrak and chlorophyll fluorescence maxima in these areas were caused by diatoms.

There were quite a few diatoms for this area in the Southern Baltic phytoplankton samples. Especially at REF M1V1 where it looked as if the spring bloom was just around the corner. Cell numbers were low though and the integrated chlorophyll concentrations were normal for this month.

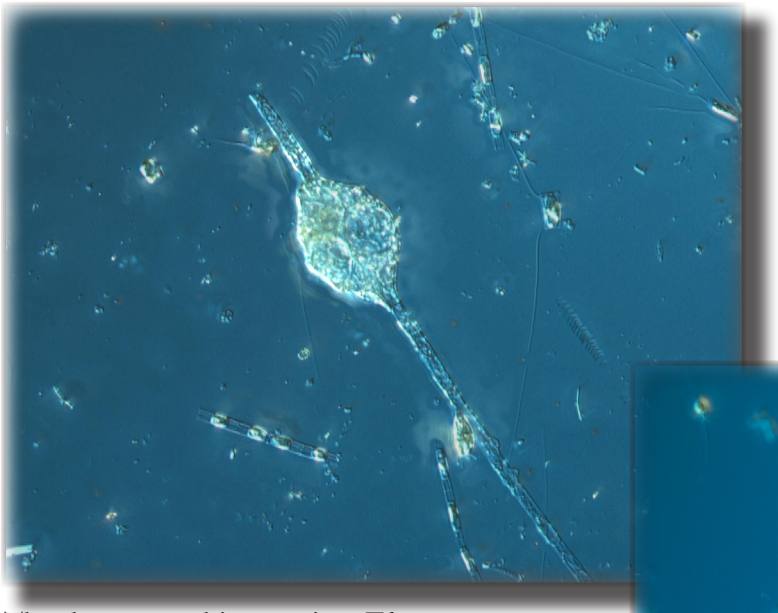
Below follows a more detailed information on species composition and abundance. Species marked with * are potentially toxic or harmful.

The Skagerrak

Å17 (open Skagerrak) 20th of March
The phytoplankton sample was very divers in diatoms and *Skeletonema marinoi* was the most numerous species.

Släggö (Skagerrak coast) 19th of March
The diatom bloom was prominent with a dominance of *S. marinoi, Thalassiosira cf. minima* and *Pseudo-nitzschia* spp amongst many others.

The chlorophyll fluorescence maxima in the Skagerrak were caused by diatoms. The highest measured chlorophyll concentration was found at Å13 at 15 meters depth and was also caused by diatoms.



The heterotrophic species *Ebria tripartita* was abundant at Anholt E. In the picture the species seems to be feeding on a diatom chain.

The flagellate *Eutreptiella braarudii* was present at Anholt and Släggö.

The Kattegat

Anholt E and N14 Falkenberg 14th and 19th of March
The numbers of diatom species noted were higher at N14 than at both of the Anholt visits. The bloom was striking even in the Kattegat with the same species dominating as in the Skagerrak, ie *S. marinoi, T.* cf. *minima* and *Pseudo-nitzschia* spp. amongst others. The heterotrophic species *Ebria tripartita* was abundant, often stuck to a diatom chain, probably feeding.

The chlorophyll fluorescence maxima in the Kattegat were caused by diatoms.

The Baltic Sea

Due to the weather conditions, only three of the Baltic phytoplankton stations were visited.

BY2 and BY5 18th of March

The diatom *Chaetoceros subtilis* was quite abundant and a few more diatoms were present in low cell numbers. Several species of pico cyanobacteria colonies were present. The integrated (0-20m) chlorophyll concentration was normal for this month.

REF M1V1 Kalmar Sound 11th of March

The diatom *Skeletonema marinoi* was quite abundant. Several other diatoms were present assuming this was the beginning of the spring bloom. Chlorophyll concentrations were rather high, but the integrated (0-20m) concentration was normal for this month.

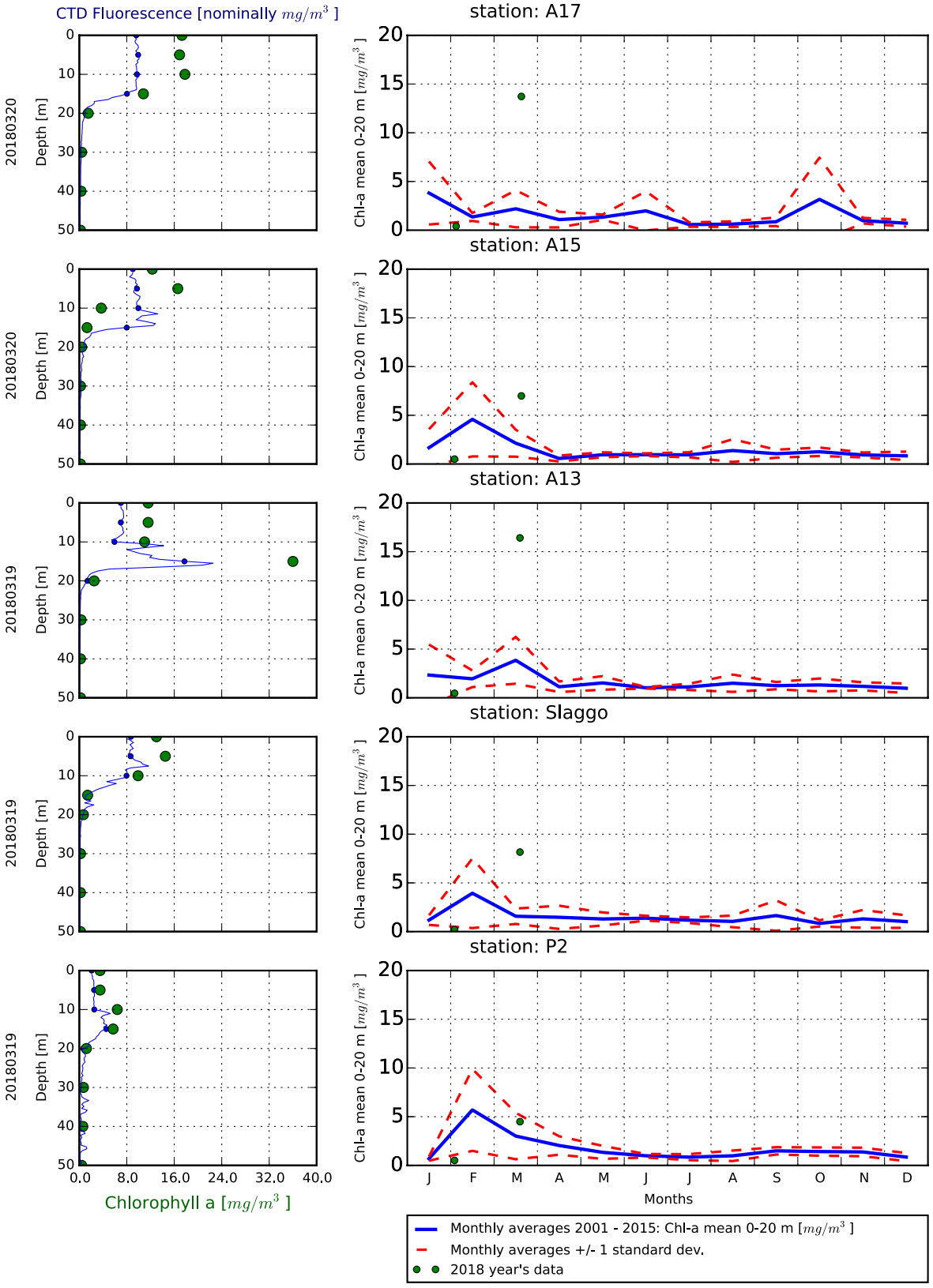
The diatom *Chaetoceros similis* (larger cell) was present at BY5. *Chaetoceros subtilis* was abundant in the southern Baltic and in the Kattegat.

Phytoplankton analysis and text by:
Ann-Turi Skjevik

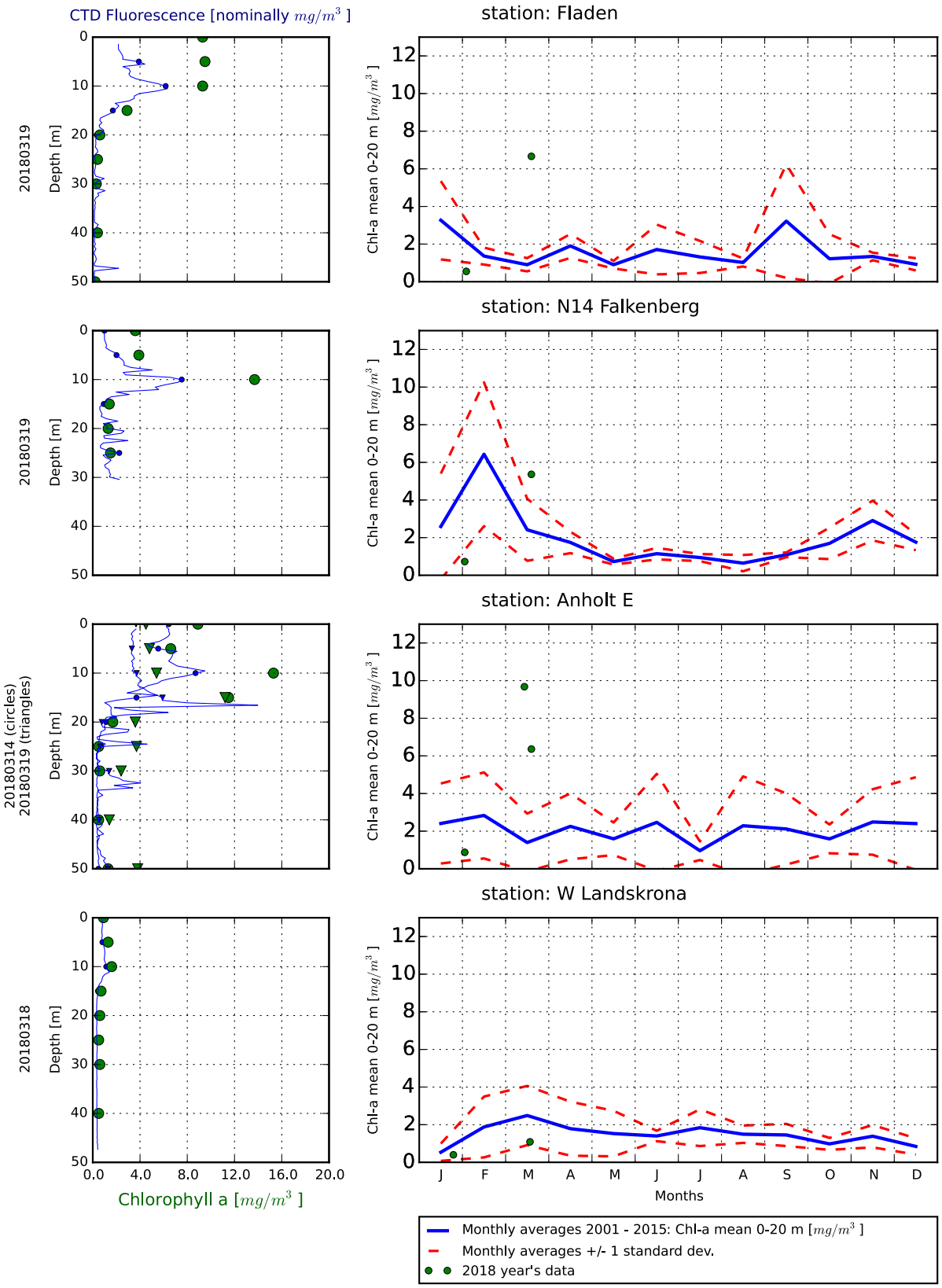
Selection of observed species	Anholt E	Anholt E	N14	Släggö	Å17
Red=potentially toxic species	14/3	19/3	19/3	19/3	20/3
Hose 0-10 m	presence	presence	presence	presence	presence
Attheya septentrionalis	common	present	present	common	present
Chaetoceros brevis			present	present	present
Chaetoceros danicus		present			present
Chaetoceros debilis	present		present	common	
Chaetoceros decipiens	present	present		present	present
Chaetoceros didymus			present		
Chaetoceros laciniosus	present		present		
Chaetoceros similis	present	present	present		present
Chaetoceros socialis			present	present	present
Chaetoceros subtilis	common	present	present		
Chaetoceros wighamii	present	present	common	common	present
Coscinodiscus concinnus			present	present	present
Detonula confervacea			present	present	present
Guinardia delicatula	present				present
Licmophora spp				present	
Melosira nummuloides		present			
Navicula spp	present				
Navicula transitans var. derasa f. delicatula				present	present
Nitzschia longissima			present	present	
Porosira glacialis	present	present			present
Pseudo-nitzschia spp	common	present	present	common	common
Rhizosolenia hebetata f. semispina	common	present	present	present	common
Rhizosolenia setigera	common	common	common	common	present
Skeletonema marinoi	dominating	very common	very common	dominating	dominating
Thalassionema nitzschioides	present	common	common	common	present
Thalassiosira angulata			present	present	
Thalassiosira anguste-lineata		present	present	present	common
Thalassiosira constricta				present	present
Thalassiosira minima	common	common	common	very common	very common
Thalassiosira nordenskioeldii					present
Thalassiosira rotula				present	
Ceratium tripos	present	present	present		
Dinophysis acuminata				present	
Dinophysis norvegica	present	present	present	present	present
Heterocapsa rotundata	present	present			
Heterocapsa triquetra				present	
Katodinium glaucum		present			present
Protoperidinium pellucidum		present			
Planctonema lauterbornii			present		
Dinobryon faculiferum					present
Cryptomonadales	common	common	common	common	common
Telonema subtile				present	
Katablepharis remigera					present
Leucocryptos marina		present	present		present
Cryothecomonas scybalophora					present
Apedinella radians		present			present
Dictyocha speculum	present				
Pseudopedinella spp		present	present	present	present
Eutreptiella spp	present			present	
Eutreptiella braarudii		present		present	present
Ebria tripartita	common	common	present	present	present
Calliacantha natans	present	present	present	common	common
Choanoflagellatea	present			present	common
Mesodinium rubrum	present				
Strombidium spp		present	present	present	present
Ciliophora	present	common	common	common	common

Selection of observed species	BY2	BY5	REFM1V1
Red=potentially toxic species	18/3	18/3	16/3
Hose 0-10 m	presence	presence	presence
Chaetoceros danicus			present
Chaetoceros similis		present	
Chaetoceros subtilis	common	common	
Chaetoceros wighamii	present		
Cyclotella choctawhatcheeana		present	
Melosira nummuloides			present
Navicula spp			present
Nitzschia longissima			present
Rhizosolenia setigera	present		
Skeletonema marinoi	present		common
Thalassiosira spp	present		common
Thalassiosira baltica			common
Thalassiosira minima			present
Heterocapsa spp	present	present	
Peridiniella catenata			present
Aphanizomenon spp			present
Aphanocapsa spp	present	present	
Aphanothece spp		present	
Snowella spp		present	present
Woronichinia spp	present	present	
Planctonema lauterbornii	present	present	present
Cryptomonadales	present	present	
Pseudopedinella pyriformis			present
Eutreptiella spp	present		present
Pterosperma spp	present		present
Oocystis spp	present		
Ebria tripartita			present
Mesodinium rubrum	present		present
Ciliophora	common	common	common

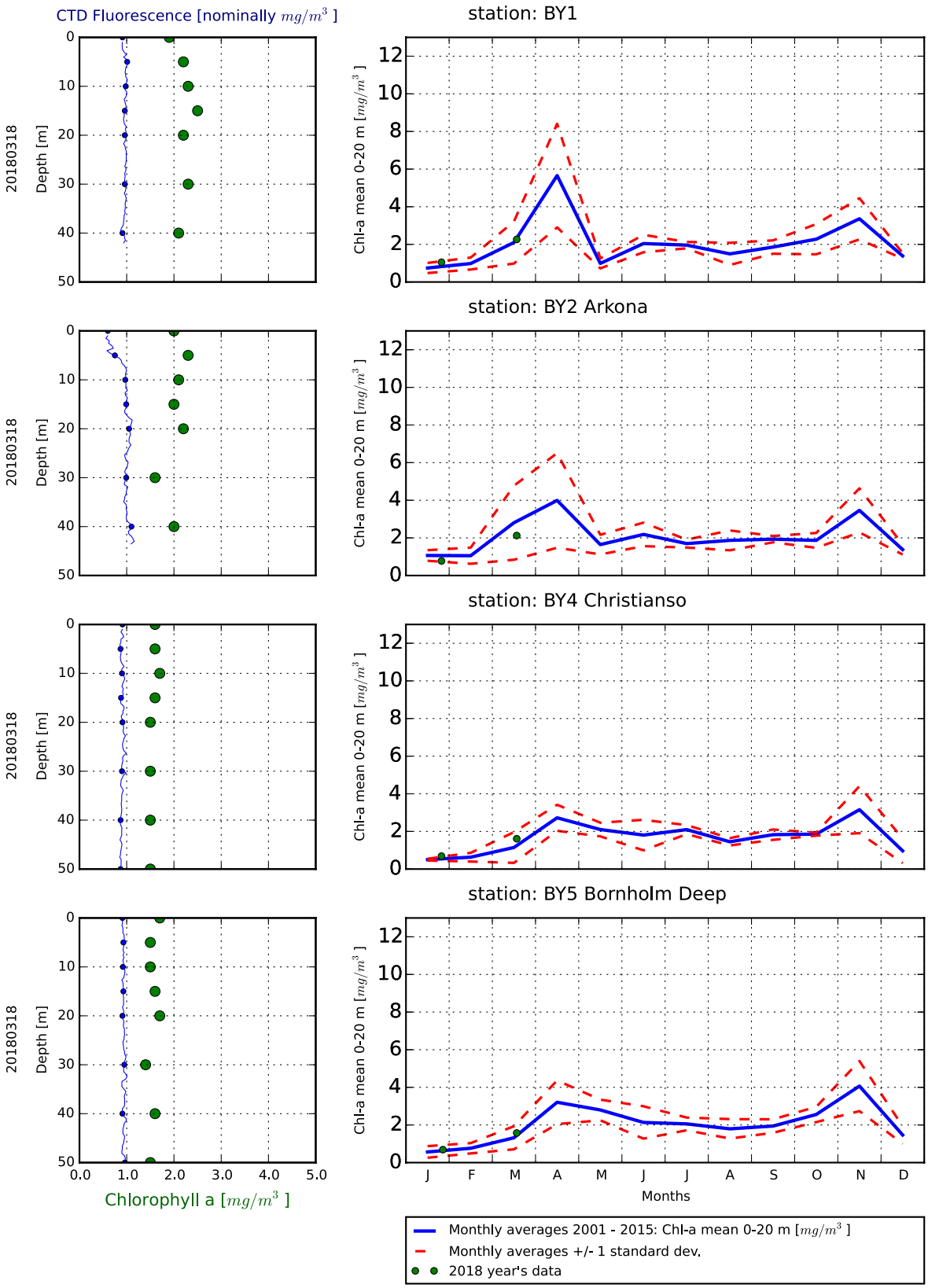
The Skagerrak

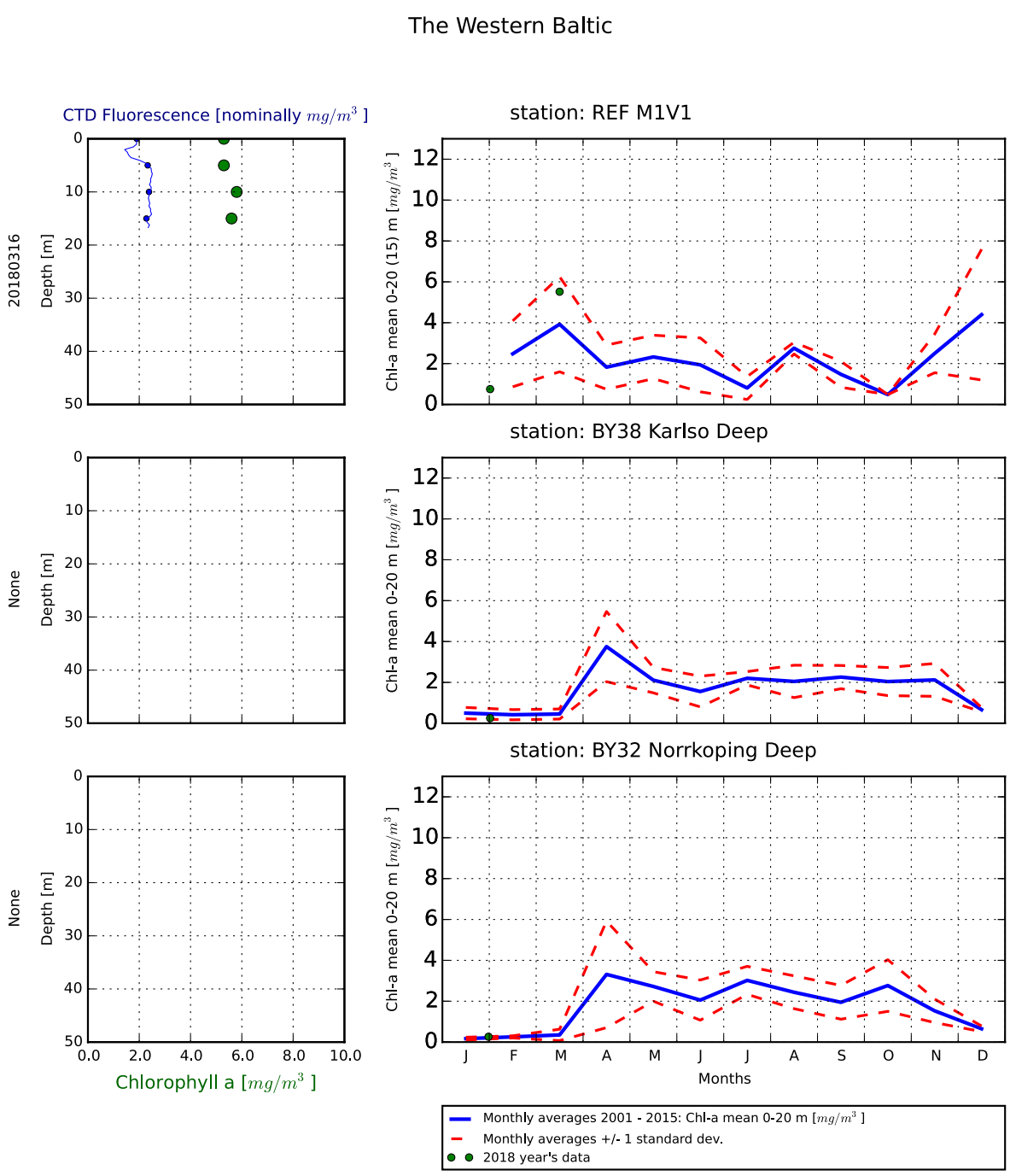


The Kattegat and The Sound



The Southern Baltic





BY38, BY32 and all of the Western Baltic stations could not be visited during the cruise due to the weather conditions.

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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