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SMHI
Oceanographic Unit
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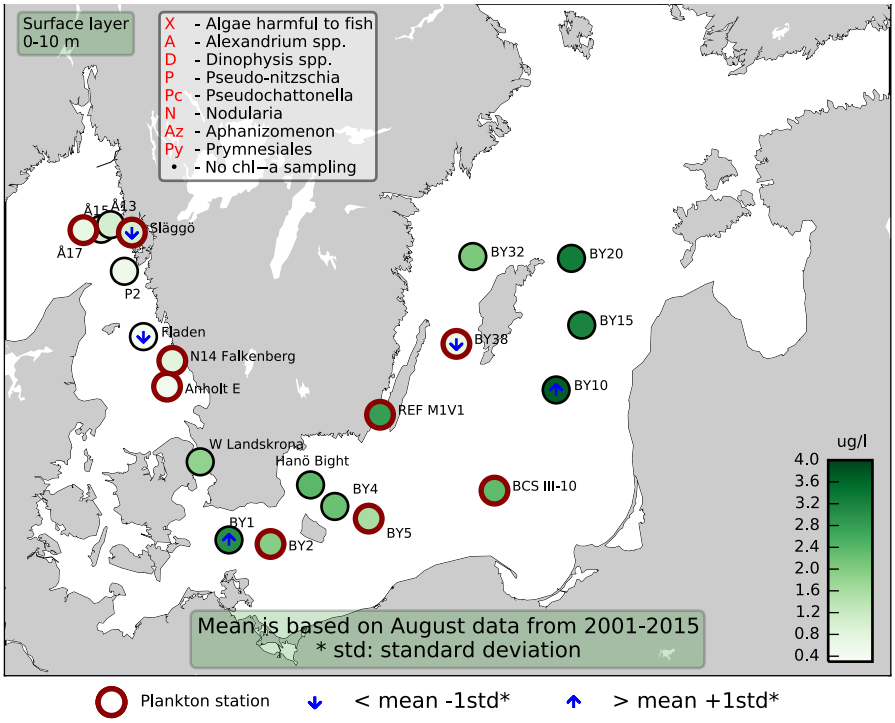
AlgAware
ALGAL SITUATION IN MARINE WATERS SURROUNDING SWEDEN

Sammanfattning

Kartan på framsidan med bland annat klorofyllhalter är uppdaterad. Det integrerade djupet är ändrat från 0-20 till 0-10 meter för att få samma djup som växtplanktonproverna är tagna från.

I Västerhavet fanns ciliater, nakna dinoflagellater och små arter som till exempel cryptomonader i förhöjda cellantal i växtplanktonproverna. I Kattegatt var även kiselalger talrika. Ett fåtal giftiga arter noterades i låga antal. Den trådlika cyanobakterien *Nodularia spumigena** hade nått N14 Falkenberg med den Baltiska ytströmmen. I Västerhavet är det dock för hög salthalt för de trådlika cyanobakterierna, så det är ingen risk för motsvarande blomningar där som vi finner i Östersjön sommartid. De integrerade klorofyllhalterna (0-20 m) var inom det normala för månaden.

Vid många stationer i Östersjön var trådlika cyanobakterier fortfarande talrika. Detta bekräftar också vad satellitövervakningen har rapporterat om, att ytansamlingar finns i södra och sydvästra Egentliga Östersjön. http://www.smhi.se/vadret/hav-och-kust/algsituationen. Det var relativt artrikt i Östersjöproverna, men det var små arter som fanns i högst cellantal och små kolonibildande cyanobakterier återkom i alla prover. De integrerade klorofyllhalterna (0-20 m) var inom det normala för månaden vid alla stationer förutom BY38 där den var under det normala.



Abstract

The map on the front page with chlorophyll concentrations etc. is updated. The integrated depth is changed from 0-20 to 0-10 meters to have the same depth as the phytoplankton samples.

Ciliates, naked dinoflagellates and small species like cryptomonads were common in the phytoplankton samples from the Skagerrak and Kattegat areas. In the Kattegat, diatoms were common. A few potentially toxic species were found in low amounts. The filamentous cyanobacterium *Nodularia spumigena** had reached N14 Falkenberg with the Baltic current. However, the high salinity in the area prevents the blooms that occur in the Baltic Sea during summer. The integrated chlorophyll concentrations were within normal for this month.

Threadlike cyanobacteria were still numerous at many of the Baltic stations. This confirms what the satellite surveillance has been reporting, that surface accumulations are present in the southern and southwestern parts of the Baltic Proper. http://www.smhi.se/en/weather/sweden-weather/1.11631. The Baltic samples were rather species rich, but small species were the most numerous ones and small colony forming cyanobacteria were found in all of the samples. The integrated chlorophyll concentrations were within normal for this month at all stations except at BY38 where the concentration was below normal.

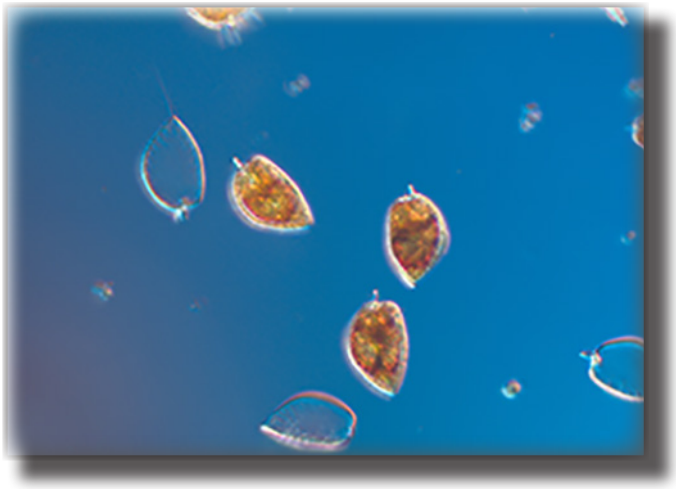
More detailed information on species composition and abundance

The Skagerrak

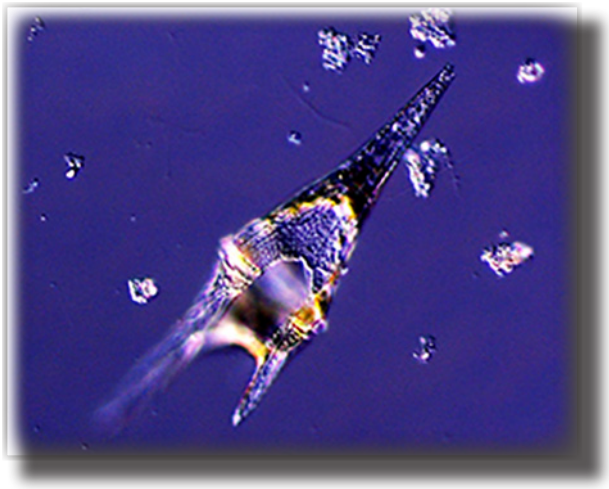
Å17 (open Skagerrak) 25th of August
The phytoplankton diversity was rather low. The potentially harmful group of flagellates, Prymnesiales, was common though. So were ciliates, cryptomonads and naked dinoflagellates.

Släggö (Skagerrak coast) 26th of August
Some small phytoplankton species were common, like the dinoflagellate *Prorocentrum micans* and cryptomonads.

The integrated chlorophyll concentrations were within normal for this month in the Skagerrak area.



The dinoflagellate *Prorocentrum micans* was numerous at Släggö in the Skagerrak.



The dinoflagellate *Ceratium furca* was rather abundant at Anholt E in the Kattegat.

The Kattegat

Anholt E 25th and 26th of August
The diatom *Ceratulina pelagica* and the dinoflagellate *Ceratium furca* were common at the first visit, but absent at the second. The diversity was low at both occasions but, nevertheless, lower the second time.

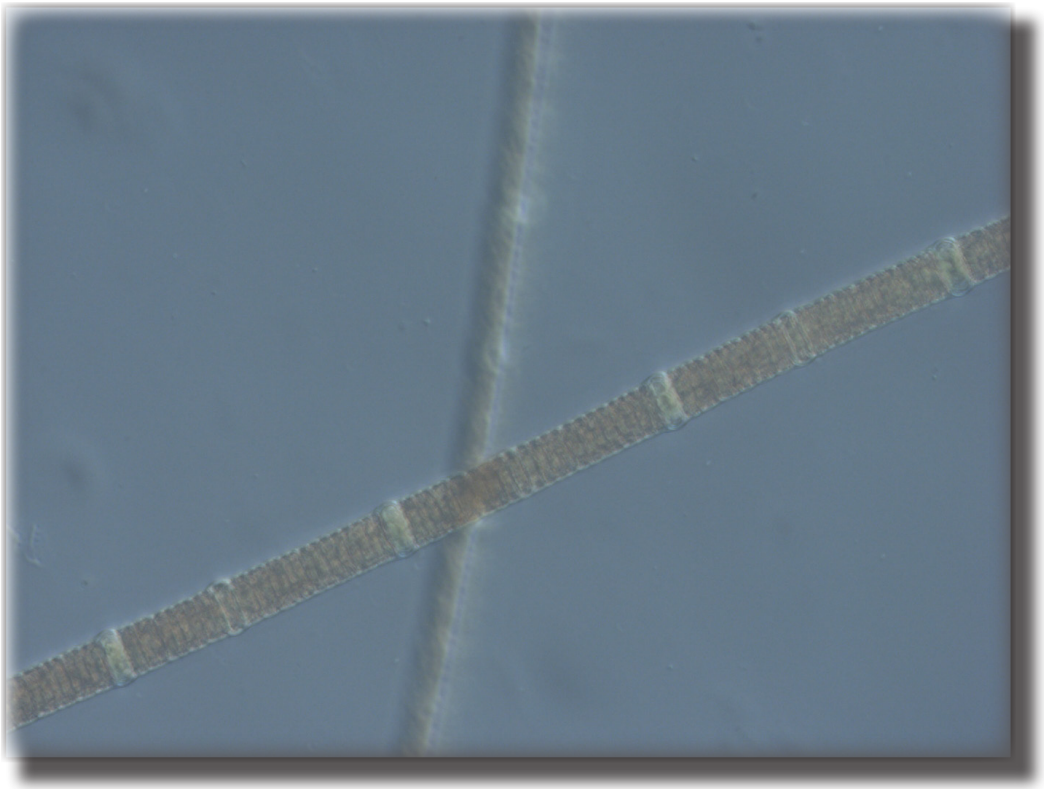
N14 Falkenberg 25th of August
The diatom *Dactyliosolen fragilissimus* and the dinoflagellate *Ceratium tripos* were rather numerous. The filamentous cyanobacterium *Nodularia spumigena** was present and brought here by the Baltic current.

The integrated chlorophyll concentrations were within normal for this month in the Kattegat area.

The Baltic Sea

Filamentous cyanobacteria were rather abundant at most of the Baltic stations. The lowest cell numbers were found at BCSIII-10 in the Eastern part of the Baltic Proper. *Nodularia spumigena** was present in all phytoplankton samples and was the most numerous at BY5, REF M1V1, BY38 and south of Öland. Furthermore, the observed specimens were vital and pigment rich.

Several pico cyanobacteria were present. Small flagellated species were present in low cell numbers.



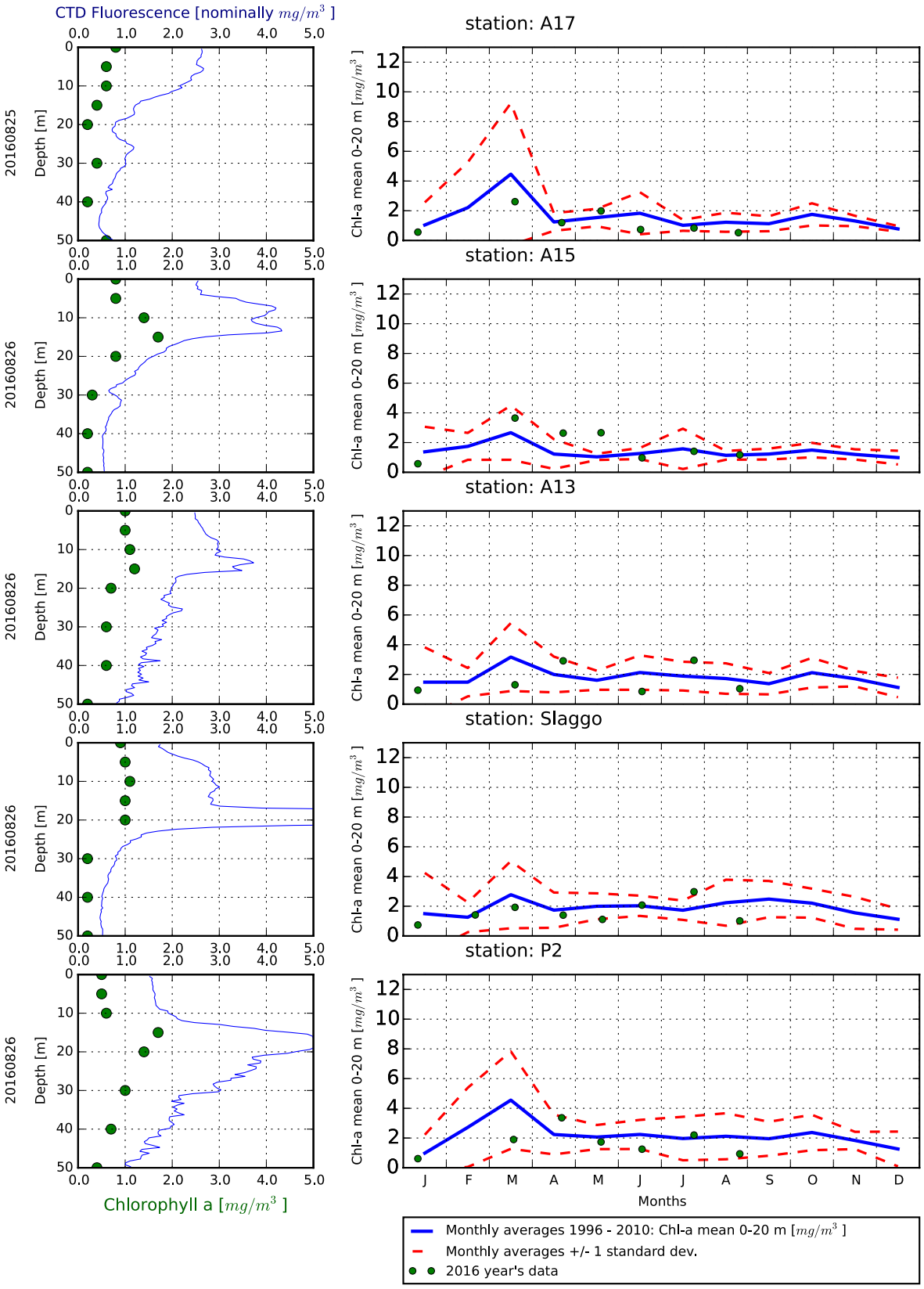
The cyanobacterium *Nodularia spumigena** was present at all of the Baltic stations. The filaments were vital and have the capacity to keep on blooming.

Phytoplankton analysis and text by:
Ann-Turi Skjevik

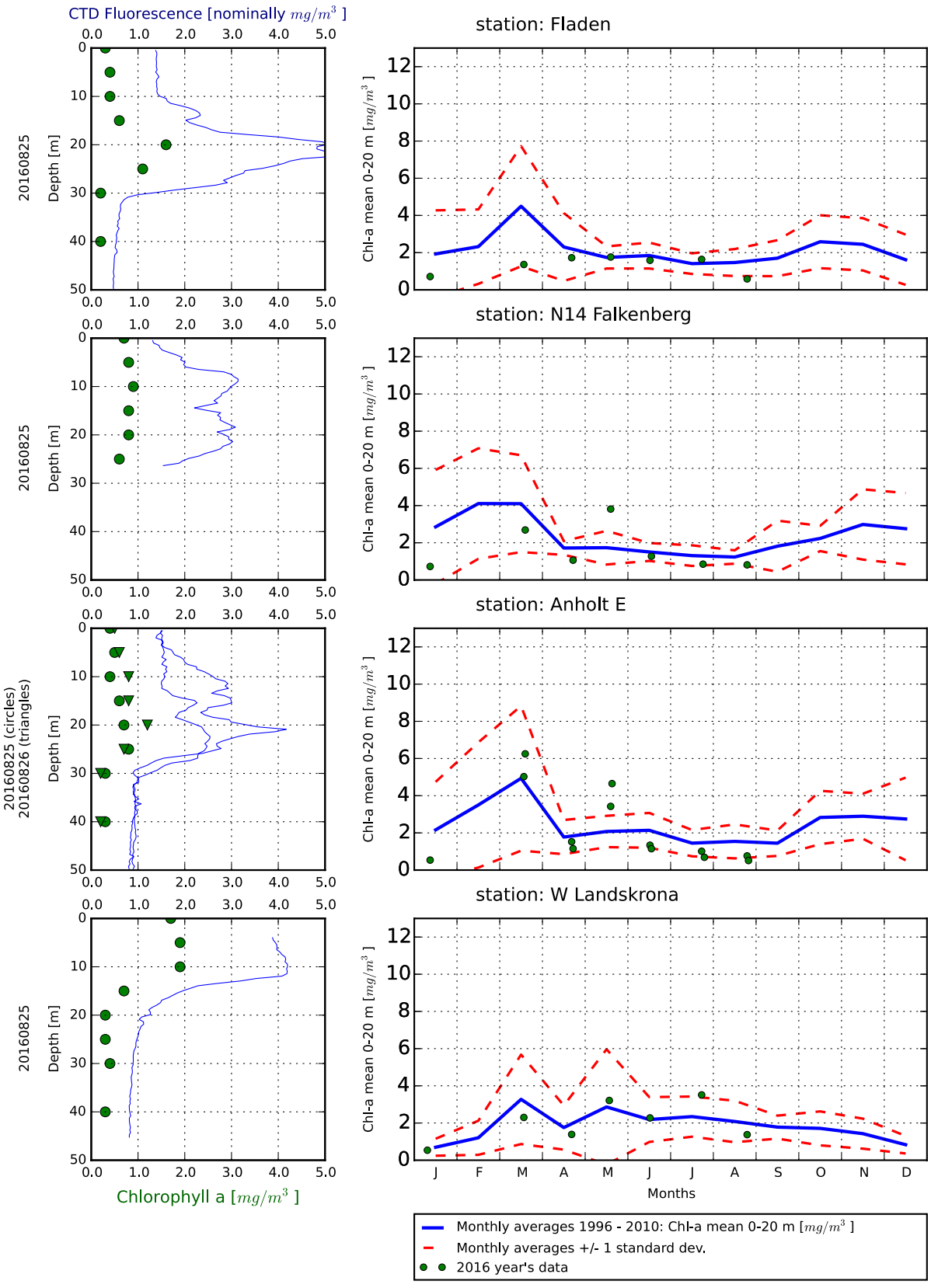
Selection of observed species	Å17	Släggö	N14	Anholt E	Anholt E
Red=potentially toxic species	25/8	26/8	25/8	25/8	26/8
Hose 0-10 m	presence	presence	presence	presence	presence
Cerataulina pelagica			present	common	
Chaetoceros curvisetus				present	
Cylindrotheca closterium	present		present		
Dactyliosolen fragilissimus			common	present	
Guinardia delicatula			present		
Leptocylindrus danicus	present	present			
Leptocylindrus minimus	present		present		
Nitzschia longissima	present	present			
Proboscia alata				present	
Pseudo-nitzschia spp	present		present	present	
Pseudosolenia calcar-avis	present		present		
Rhizosolenia hebetata		present			
Rhizosolenia pungens		present			
Azadinium spp			present		
Ceratium furca			present	common	
Ceratium fusus			present	common	present
Ceratium lineatum				present	
Ceratium macroceros				present	
Ceratium tripos	present		common		present
Dinophysis acuminata		present			
Dinophysis norvegica				present	
Gymnodiniales	common	common			present
Gymnodinium verruculosum		present			
Gyrodinium flagellare	present				
Heterocapsa spp	present	present	present	present	present
Heterocapsa rotundata	present	present			
Katodinium glaucum			present		
Lingulodinium polyedrum		present			
Oxytoxum gracile	present				
Peridiniella danica		present			
Phalacroma rotundatum					present
Prorocentrum micans	present	common	present	present	present
Prorocentrum minimum			present	present	
Proterythropsis vigilans		present			
Protoperidinium spp			present	present	
Protoperidinium divergens		present			
Protoperidinium pallidum		present		present	
Protoperidinium pellucidum			present		
Protoperidinium steinii					present
Torodinium robustum	present	present			
Cryptomonadales	common	common	common	common	present
Leucocryptos marina	present				
Acanthoica quattrospina		present			
Emiliania huxleyi		present	present	present	present
Prymnesiales	common	present	present	present	
Heterosigma akashiwo	present	present			
Pseudopedinella spp			present	present	
Nodularia spumigena			present		
Chlorodendrales	present				
Cymbomonas tetramitiformis		present			
Pyramimonas spp	present			present	present
Commation spp	present				
Ebria tripartita		present			
Telonema subtile	present				
Ciliophora	common	common	present	common	common
Mesodinium rubrum			present		
Strombidium spp	present	present	present	present	

Selection of observed species	BY2	BY5	BCS III-10	BY15	REF M1V1	BY38
Red=potentially toxic species	24/8	24/8	24/8	23/8	27/8	28/8
Hose 0-10 m	presence	presence	presence	presence	presence	presence
Cerataulina pelagica	present					
Chaetoceros danicus			present			
Chaetoceros impressus	present	present	present		present	present
Cylindrotheca closterium		present			present	
Nitzschia longissima		present			present	present
Amphidinium crassum		present	present	present		present
Ceratium tripos	present	present				
Dinophysis acuminata					present	
Dinophysis norvegica						present
Gymnodiniales		common		common	present	common
Gymnodinium verruculosum		present		present		present
Heterocapsa spp		present	present		present	
Heterocapsa rotundata				present		present
Heterocapsa triquetra		present	present		present	
Katodinium glaucum			present			
Phalacroma rotundatum				present		
Prorocentrum minimum	common	common	present		present	
Prymnesiales			present			
Cryptomonadales	common	common	common	common	common	common
Leucocryptos marina						present
Dinobryon faculiferum	present		present			
Aphanizomenon flos-aquae	present	very common		common	common	present
Aphanothece paralleliformis			present	common		
Aphanothece spp	present	present	common	common	common	present
Cyanodictyon spp				common		
Cyanonephron spp				present		
Dolichospermum spp	present			present	very common	present
Nodularia spumigena	present	common	present	present	common	common
Snowella spp			common	present		present
Planctonema lauterbornii	present		present	present	present	present
Pseudopedinella spp			present			
Pterosperma spp	present	present	present		present	present
Pyramimonas spp	present	common	present	present	present	present
Eutreptiella spp		present		present	present	present
Monoraphidium spp						present
Ebria tripartita	common	present	present	present	present	present
Ciliophora	common	common	common	common	common	common
Helicostomella subulata		present		present		
Mesodinium rubrum			present	present	present	present
Strombidium spp	common		present	present	present	present

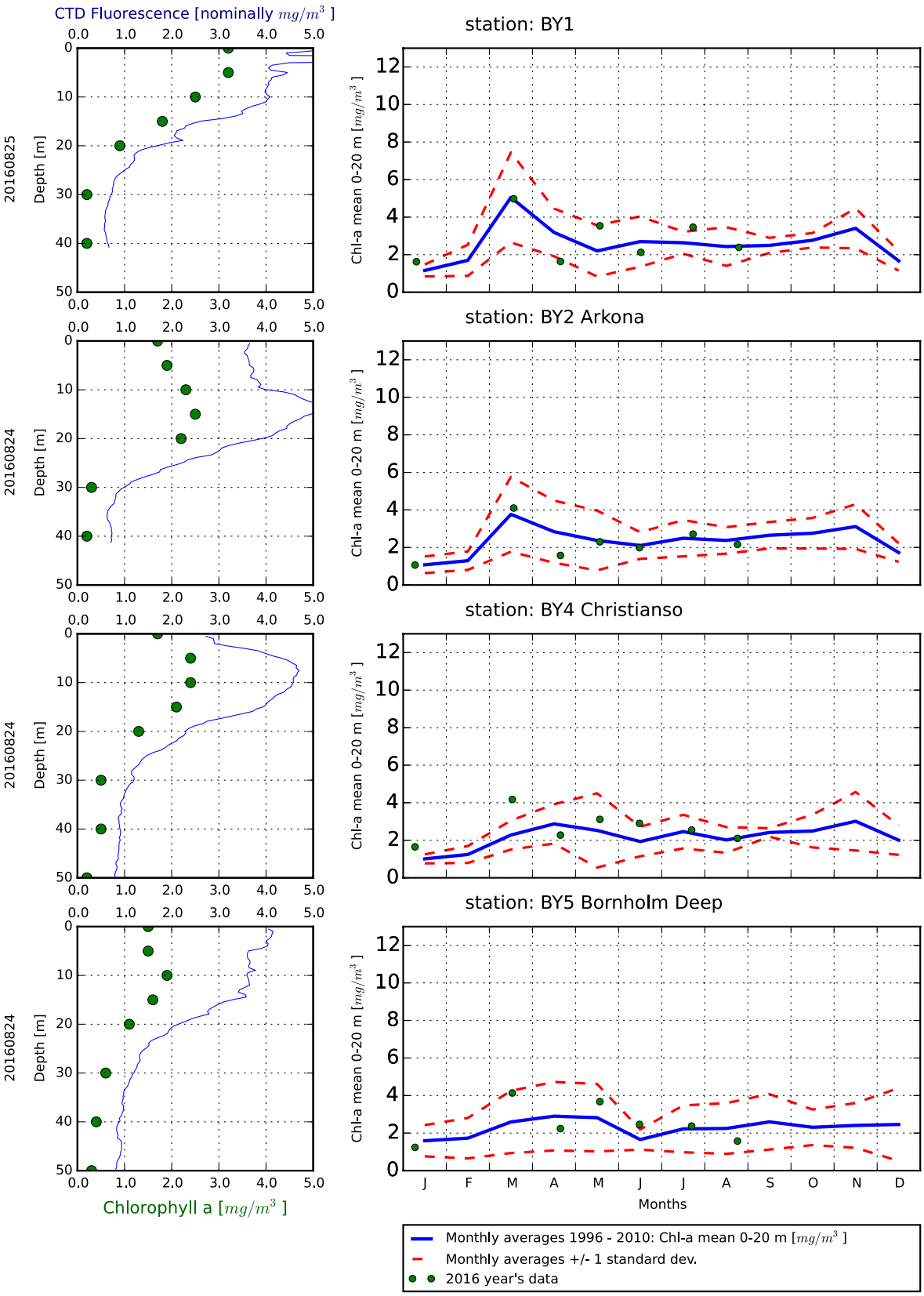
The Skagerrak



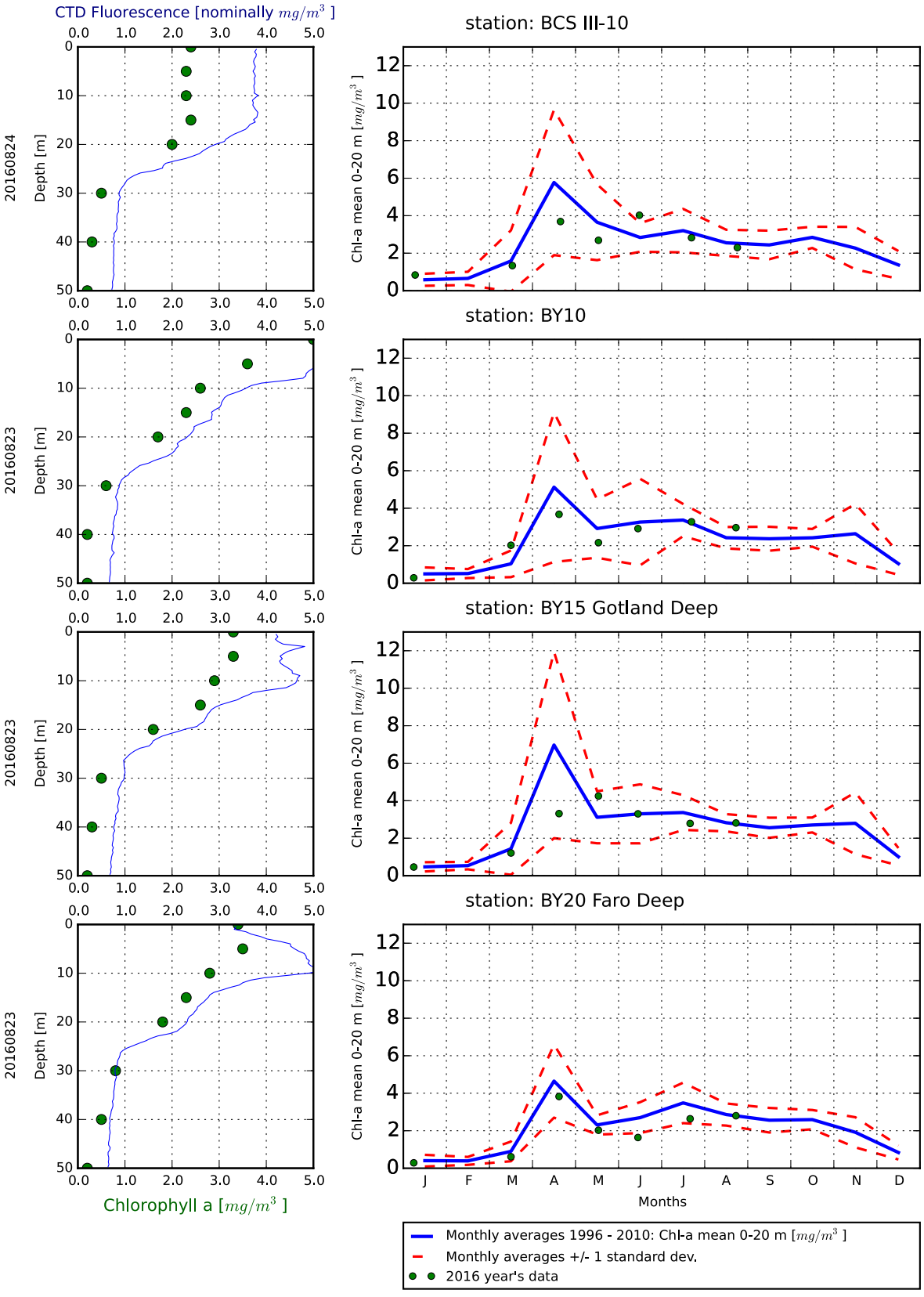
The Kattegat and The Sound

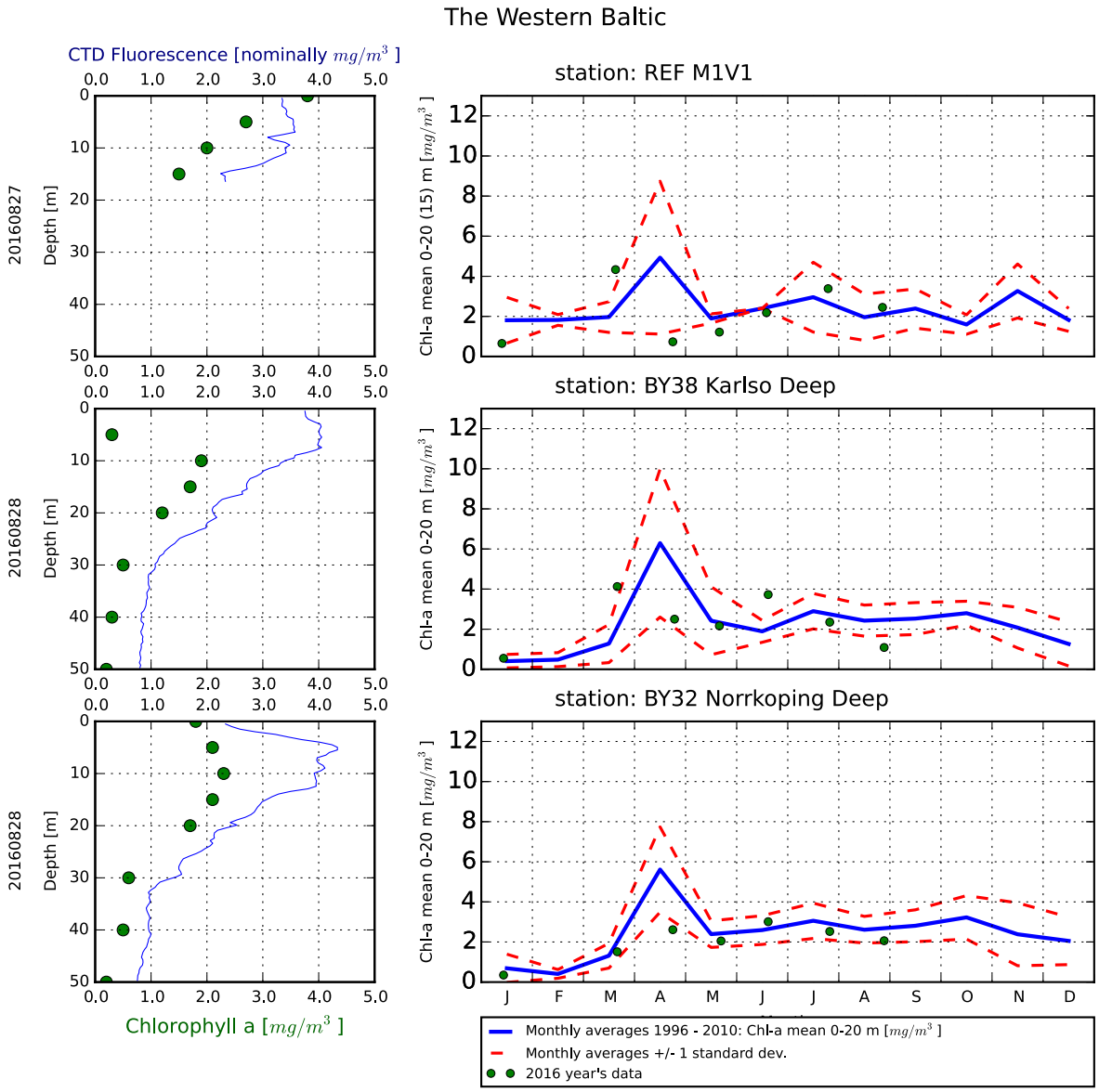


The Southern Baltic



The Eastern 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.