

Metadata compilation for the B-BLOOMS2 dataset: Cyanobacterial bloom monitoring

Yannick Lara, Aaike De Wever, Gisèle Verniers, Samuel Pirlot, Laurent Viroux, Bruno Leporcq, Pieter Vanormelingen, Jeroen Van Wichelen, Katrin Van der Gucht, Anatoly Peretyatko, Samuel Tessier, Alexandre Lambion, Marianne Reilly, Diana Menzel, Aleksandra Wojnicz, Geoffrey Codd, Ludwig Triest, Wim Vyverman, Jean-Pierre Descy & Annick Wilmotte



Freshwater Metadata Journal
DOI 10.15504/fmj.2017.28
ISSN 2312-6604
Published online: 2017-12-21



Published by University of Natural Resources and Life Sciences, Institute of Hydrobiology and Aquatic Ecosystem Management, BOKU - Vienna

Metadata compilation for the B-BLOOMS2 dataset: Cyanobacterial bloom monitoring

*Yannick Lara*¹, *Aaike De Wever*², *Gisèle Verniers*³, *Samuel Pirlot*³, *Laurent Viroux*³, *Bruno Leporcq*³, *Pieter Vanormelingen*⁵, *Jeroen Van Wichelen*⁵, *Katrin Van der Gucht*⁵, *Anatoly Peretyatko*⁴, *Samuel Tessier*⁴, *Alexandre Lambion*¹, *Marianne Reilly*⁶, *Diana Menzel*⁶, *Aleksandra Wojnicz*⁶, *Geoffrey Codd*⁶, *Ludwig Triest*⁴, *Wim Vyverman*⁵, *Jean-Pierre Descy*³ & *Annick Wilmotte*¹

¹ University of Liège, Liège, Belgium; corresponding author: ylara@ulg.ac.be

² Royal Belgian Institute of Natural Sciences, Brussels, Belgium

³ University of Namur, Namur, Belgium

⁴ VUB, Brussels, Belgium

⁵ University of Gent, Gent, Belgium

⁶ University of Dundee, Dundee, Scotland

Please cite this paper as follows: Lara, Y., De Wever, A., Verniers, G., Pirlot, S., Viroux, L., Leporcq, B., Vanormelingen, P., Van Wichelen, J., Van der Gucht, K., Peretyatko, A., Tessier, S., Lambion, A., Reilly, M., Menzel, D., Wojnicz, A., Codd, G.A., Triest, L., Vyverman, W., Descy, J.-P. & Wilmotte, A., 2017. Metadata compilation for the B-BLOOMS2 dataset: Cyanobacterial bloom monitoring. *Freshwater Metadata Journal* 28: 1-8. <https://doi.org/10.15504/fmj.2017.28>

Received: 2017-07-27 / Published: 2017-12-21

Keywords

blooms, phytoplankton, cyanobacteria, microcystin

Short description of the dataset/summary

The B-BLOOMS2 dataset resulted from the monitoring of 4 Belgian reference lakes during the bloom seasons in 2007 and 2008. It is composed of 278 sample events for which 17 environmental parameters are available, as well as HPLC based pigment analysis, zooplankton counting, proportion of cyanobacterial populations (from genus to species), and MC-LR concentrations determined by ELISA. Molecular data acquired during this project are also available (<http://hdl.handle.net/2268/213145>).

These data were acquired with the financial support of BELSPO in the frame of the Science for a Sustainable Development programme funding the project B-BLOOMS2 (SD/TE/01).

The final report is available at: http://www.bblooms.be/BBLOOMS2_FinalReport.pdf

General information

dataset entry ID:	SF_13
name of the dataset:	
full name of the dataset:	B-BLOOMS2
dataset short name:	B-BLOOMS2
type of dataset:	species (taxonomic group) per site database including environmental information
data type:	point data/observation data
science keywords according to GCMD:	
topic:	Biosphere, Biological Classification, Terrestrial Hydrosphere
ISO topic category according to ISO 19115:	
	Biota, Environment, Inland Waters
own science keywords:	cyanobacteria, blooms, eutrophic lakes, genetic diversity, monitoring, cyanotoxins, modelling

Technical and administrative specifications

data format:	MySQL
operating system:	all operating systems
data language:	English
current access level:	web (public)
web address:	http://www.bblooms.be/protected/data.htm
currently available through GBIF :	no
exchange planned:	yes
data in data repository:	no

Do you plan to publish the data on the Freshwater Biodiversity Data Portal:

already published through the Freshwater Biodiversity Data Portal

update level:	update planned
documentation:	
type:	scientific paper
language:	English

contact details:

metadata contact person:	
first, last name:	Yannick Lara
phone:	003243665260
email:	ylara@uliege.be
institution:	University of Liège
address:	Bât. B18 Quartier Agora, Allée du six aout 14
postal code, city:	4000 Liège
country:	Belgium
technical contact person:	
first, last name:	Yannick Lara
phone:	003243665260
email:	ylara@uliege.be
scientific contact person:	
first, last name:	Annick Wilmotte
phone:	003243663387
email:	awilmotte@uliege.be

Intellectual property rights and citation

dataset creator (data compiler):

contact name: Jean Pierre Descy
 contact email: jpdescy@gmail.com

data contributors to/owners of this dataset:

multiple
 number: 4

data contributor/owner 1:

contact name: Annick Wilmotte
 contact email: awilmotte@uliege.be
 contact institute: University of Liège
 criteria for using this part of the dataset:

The dataset is publicly available (data portal, data archive) and can be used without restrictions, but dataset creator/data contributors must be informed prior to publication. Data must be acknowledged and cited correctly.

data contributor/owner 2:

contact name: Jean Pierre Descy
 contact email: jpdescy@gmail.com
 contact institute: --
 criteria for using this part of the dataset:

The dataset is publicly available (data portal, data archive) and can be used without restrictions, but dataset creator/data contributors must be informed prior to publication. Data must be acknowledged and cited correctly.

data contributor/owner 3:

contact name: Ludwig Triest
 contact email: ltriest@vub.ac.be
 contact institute: VUB
 criteria for using this part of the dataset:

The dataset is publicly available (data portal, data archive) and can be used without restrictions, but dataset creator/data contributors must be informed prior to publication. Data must be acknowledged and cited correctly.

data contributor/owner 4:

contact name: Wim Vyverman
 contact email: Wim.Vyverman@UGent.be
 contact institute: University of Gent
 criteria for using this part of the dataset:

The dataset is publicly available (data portal, data archive) and can be used without restrictions, but dataset creator/data contributors must be informed prior to publication. Data must be acknowledged and cited correctly.

citation of this dataset:

author(s): Verniers, G., Pirlot, S., Viroux, L., Leporcq, B., Vanormelingen, P., Van Wichelen, J., Van der Gucht, K., Peretyatko, A., Teissier, S., Lara, Y., Lambion, A., Reilly, M., Menzel, D., Wojnicz, A., Everbecq, E., Codd, G.A., Triest, L., Vyverman, W., Wilmotte, A. & Descy, J.P.
 title and journal (name, number, pages): Cyanobacterial blooms: toxicity, diversity, modelling and management "B-BLOOMS2"
 year: 2017
 doi: <https://doi.org/10.15468/e3zw1e>

citation of the metadata:

author(s): Lara Y., De Wever A., Verniers G., Pirlot S., Viroux L., Leporcq B., Vanormelingen P., Van Wichelen J., Van der Gucht K., Peretyatko A., Tessier S., Lambion A., Reilly M., Menzel D., Wojnicz A., Codd G.A., Triest L., Vyverman W., Descy J.-P. & Wilmotte A.

title and journal (name, number, pages): Metadata compilation for the B-BLOOMS2 dataset: Cyanobacterial bloom monitoring, *Freshwater Metadata Journal* 28: 1-8

year: 2017

doi: <https://doi.org/10.15504/fmj.2017.28>

dataset related references:

reference 1:

author(s): Descy, J., Leprieur, F., Pirlot, S., Leporcq, B., Van Wichelen, J., Peretyatko, A., Teissier, S., Codd, G.A., Triest, L., Vyverman, W. & Wilmotte, A.

title: Identifying the factors determining blooms of cyanobacteria in a set of shallow lakes. *Ecological Informatics* 34: 129-138.

year: 2016

doi: <https://doi.org/10.1016/j.ecoinf.2016.05.003>

reference 2:

author(s): Van Wichelen, J., Gremberghe, I., Vanormelingen, P., Codd, G.A., Descy, J.P. & Vyverman, W.

title: Strong effects of amoebae grazing on the biomass and genetic structure of a *Microcystis* bloom (Cyanobacteria). *Environmental Microbiology* 12: 2797-2813.

year: 2010

doi: <https://doi.org/doi:10.1111/j.1462-2920.2010.02249.x>

General data specifications

regional coverage of the dataset:

spatial extent of the dataset: national

continents: Europe

spatial extent (bounding coordinates):

southernmost latitude [°]: 51.42

northernmost latitude [°]: 49.68

westernmost longitude [°]: 2.84

easternmost longitude [°]: 5.95

countries: Europe: Belgium

world climatic regions according to Köppen:

Group C: temperate/mesothermal climates

freshwater ecoregions of the world (FEOW) according to WWF:

Europe: Central & Western Europe

European ecoregions according to Illies (WFD):

Western Plains (ER13)

ecosystem type:

lakes/ponds, general freshwater

covered timeframe:

2007 - 2008

Site specifications

coordinate system/grid data:	latitude/longitude, format: DD projected, local
datum (e.g. WGS84):	WGS84
grid data available:	no
site coding:	
site coding available:	yes, alphanumerical
number of digits:	8
example:	IXP1; FAL; Donkmeer
number of sites:	<100
exact number of sites:	5

Climate and environmental data

climate related data:	no climate data available
environmental data:	no environmental data per catchment available
available parameters per site:	wind speed
physico-chemical data:	total P, total dissolved P, nitrate, nitrite, total N, ammonium, water temperature, pH, conductivity, chlorophyll, Secchi disc depth, euphotic depth
stressors influencing the sites:	no stressor data available
reference sites available:	no

Biological data

biological data origin:	
organism group addressed:	zooplankton (Cladocera), phytoplankton, other group(s): Cyanobacteria

Sample specifications/sample resolution

zooplankton:	
sample information:	
covered timeframe:	2007 - 2008
historical data:	no
palaeo data:	no
season:	spring
temporal resolution/frequency of sampling:	per week
time series data:	yes
taxonomic resolution:	
level:	order
other taxonomic levels:	suborder
comments:	calanoids, cyclopoids, nauplii, cladocerans (large and small), rotifers
taxonomic coding:	
coding system:	no coding available

sample specifications:

type:	quantitative (abundance data)
replicate samples:	no
number of samples:	278
specification of method(s) used for sampling and sorting:	Zooplankton was collected from each lake, using buckets or a Schindler-Patalas plankton trap. Enumeration was performed using a dissecting microscope for larger taxa (cladocerans, copepodites and adult copepods) and using a microscope for small 'forms' (nauplii, rotifers).
	Cladocerans were identified as large or small cladocerans, whereas copepods were identified as calanoids, cyclopoids, and nauplii.

phytoplankton:**sample information:**

covered timeframe:	2007 - 2008
historical data:	no
season:	spring
temporal resolution/frequency of sampling:	per week
time series data:	yes

taxonomic resolution:

level:	genus
other taxonomic levels:	class, phylum
comments:	chlorophytes, chrysophytes, cryptophytes, cyanobacteria, diatoms, dinoflagellates, euglenophytes

taxonomic coding:

coding system:	no coding available
----------------	---------------------

sample specifications:

type:	semi-quantitative
replicate samples:	yes
number of samples:	278
specification of method(s) used for sampling and sorting:	Phytoplankton abundance has been assessed by observation and HPLC using CHEMTAX as described by Descy et al. 2000.
reference(s):	Descy, J.-P., Higgins, K., Mackey, D.J., Hurley, J.P. & Frost, T.M. (2000). Pigment ratios and phytoplankton assessments in north Wisconsin lakes. <i>Journal of Phycology</i> , 36: 274-286

other group(s):**sample information:**

covered timeframe:	2007 - 2008
historical data:	no
season:	spring
temporal resolution/frequency of sampling:	per week
time series data:	yes
comments:	cyanobacteria

taxonomic resolution:

level:	genus, species
--------	----------------

percentage of species level data: 15

comments: taxalist:

Anabaena spp., Anabaenopsis spp., Aphanocapsa spp., Aphanizomenon flos aquae, Aphanizomenon issathschenkoi, Aphanothece spp., Chroococcus spp., Coelosphaerium spp., Cyanogranis liberia, Gomphosphaeria spp., Limnothrix spp., Merismopedia spp., Microcystis spp., Woronichinia spp., Oscillatoria spp., Pseudanabaena spp., Planktothrix spp., Pannus spp., Snowella spp.

taxonomic coding:

taxalist according to:

Komárek & Anagnostidis (1998), Komárek & Anagnostidis (2005)

reference(s):

Komárek, J. & Anagnostidis, K. (1998): Cyanoprokaryota 1. Teil: Chroococcales. - In: Ettl, H., Gärtner, G., Heynig, H. & Mollenhauer, D.(eds): Süßwasserflora von Mitteleuropa 19/1, Gustav Fischer, Jena-Stuttgart-Lübeck-Ulm, 548 pp.

Komárek, J. & Anagnostidis, K. (2005): Cyanoprokaryota 2. Teil/ 2nd Part: Oscillatoriales. - In: Büdel, B., Krienitz, L., Gärtner, G. & Schagerl, M. (eds): Süßwasserflora von Mitteleuropa 19/2, Elsevier/Spektrum, Heidelberg, 759 pp.

sample specifications:

type: semi-quantitative

replicate samples: no

number of samples: 278

specification of method(s) used for sampling and sorting:

For microscopy counting, 250 mL of sample were immediately fixed with lug and concentrated by settling for 24h. Then concentrate samples were preserved by addition of neutral formaldehyde (2-4% final concentration).

Other specifications

GIS layers, shape files related to the dataset:

no data available

availability of photos: no

availability of maps: no

quality control procedures:

Were any quality control procedures applied to your dataset?

no

related information: Molecular dataset available at: <http://hdl.handle.net/2268/213145>

Acknowledgements

B-BLOOMS2 was funded by BELSPO in the frame of the Science for a Sustainable Development programme (SD/TE/01).

References

Descy, J., Leprieur, F., Pirlot, S., Leporcq, B., Van Wichelen, J., Peretyatko, A., Teissier, S., Codd, G. A., Triest, L., Vyverman, W., Wilmotte, A., 2016. Identifying the factors determining blooms of cyanobacteria in a set of shallow lakes. Ecological Informatics 34: 129-138. <https://doi.org/10.1016/j.ecoinf.2016.05.003>

Descy, J.-P, Higgins, K., Mackey, D.J., Hurley, J.P. & Frost, T.M., 2000. Pigment ratios and phytoplankton assessments in north Wisconsin lakes. Journal of Phycology, 36: 274-286

- Komárek, J. & Anagnostidis, K., 2005. Cyanoprokaryota 2. Teil/ 2nd Part: Oscillatoriales. - In: Büdel, B., Krienitz, L., Gärtner, G. & Schagerl, M. (eds): Süßwasserflora von Mitteleuropa 19/2, Elsevier/Spektrum, Heidelberg, 759 pp.
- Komárek, J. & Anagnostidis, K., 1998. Cyanoprokaryota 1. Teil: Chroococcales. - In: Ettl, H., Gärtner, G., Heynig, H. & Mollenhauer, D.(eds): Süßwasserflora von Mitteleuropa 19/1, Gustav Fischer, Jena-Stuttgart-Lübeck-Ulm, 548 pp.
- Van Wichelen, J., Gremberghe, I., Vanormelingen, P., Codd, G.A., Descy, J.P., Vyverman, W., 2010. Strong effects of amoebae grazing on the biomass and genetic structure of a Microcystis bloom (Cyanobacteria). Environmental Microbiology 12: 2797-2813. <https://doi.org/10.1111/j.1462-2920.2010.02249.x>