

Phytoplankton and other monitoring data from Lake Vansjø

Sigrid Haande, S. Jannicke Moe & Raoul-Marie Couture



Freshwater Metadata Journal
DOI 10.15504/fmj.2016.15
ISSN 2312-6604
Published online: 2016-04-21



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

Phytoplankton and other monitoring data from Lake Vansjø

Sigrid Haande¹, S. Jannicke Moe¹ & Raoul-Marie Couture¹

¹ Norwegian Institute for Water Research, Oslo, Norway; corresponding author: sha@niva.no

Please cite this paper as follows: Haande S., Moe S. J. & Couture R. M., 2016. Phytoplankton and other monitoring data from Lake Vansjø. *Freshwater Metadata Journal* 15: 1-8.
<http://dx.doi.org/10.15504/fmj.2016.15>

Received: 2016-03-17 / Published: 2016-04-21

Keywords

eutrophication, lake, phytoplankton

Short description of the dataset/summary

This paper gives an overview of biological and other environmental monitoring data from Lake Vansjø in the Morsa river basin district, South-East Norway. The lake is impacted by eutrophication and has been subject to several nutrient abatement measures. The dataset comprises phytoplankton data at species level from 2005-2015, and water chemistry data from the period 1980-2015.

The dataset is available online from NIVA's web portal AquaMonitor and will be updated regularly with new monitoring data.

General information

dataset entry ID:	MARS_06
name of the dataset:	
full name of the dataset:	Phytoplankton and other monitoring data from Lake Vansjø
dataset short name:	Vansjø
type of dataset:	species (taxonomic group) per site database including environmental information
data type:	point data/observation data
science keywords according to GCMD:	
topic:	Agriculture, Biosphere, Biological Classification, Terrestrial Hydrosphere
keywords:	eutrophication, lake, phytoplankton
ISO topic category according to ISO 19115:	
	Farming, Biota, Environment, Geoscientific Information, Inland Waters

Technical and administrative specifications

data format:	Oracle
others/details:	Data are stored in Oracle, can be downloaded to Access and Excel via web interface (in Norwegian)
operating system:	all Windows systems
data language:	English
current access level:	web (public)
web address (URL):	www.aquamonitor.no/ostfold
others/details:	in Norwegian only
currently available through GBIF :	no
exchange planned:	no
data in data repository:	no
comments:	More data from Lake Vansjø and River Hobøl are available online by the Norwegian Environment Agency (http://vanmiljo.miljodirektoratet.no/). However the website is in Norwegian only and finding the right data may require some knowledge.
update level:	update planned
others/details:	Dataset is updated yearly.
documentation:	
type:	internal description
language:	others/specify
specify:	Norwegian
others/details:	Aggregated data are published in reports by NIBIO (Skarbøvik et al. 2016).
Do you plan to publish the data on the Freshwater Biodiversity Data Portal:	no
contact details:	
metadata contact person:	
first, last name:	Sigrid Haande
email:	sha@niva.no
institution:	NIVA
address:	Gaustadalleen 21
postal code, city:	0349 Oslo
country:	Norway
web address:	www.niva.no
technical contact person:	
first, last name:	Jannicke Moe
email:	jmo@niva.no
scientific contact person:	
first, last name:	Raoul Couture
email:	rnc@niva.no

Intellectual property rights and citation

dataset publisher:	NIVA
dataset creator (data compiler):	
contact name:	Sigrid Haande
contact email:	sha@niva.no
contact institution:	NIVA

data contributors to/owners of this dataset:

criteria for using this dataset: single
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.

other/additional criteria: The data can be downloaded and used, but the contact persons will appreciate an invitation to collaboration on use of the data.

citation of this dataset:

author(s): NIVA
title: Data from Lake Vansjø. Accessed at www.aquamonitor.no/ostfold
year: 2015

citation of the metadata:

author(s): Haande S., Moe S. J. & Couture R. M.
title and journal (name, number, pages): Phytoplankton and other monitoring data from Lake Vansjø. Freshwater Metadata Journal 15: 1-8
year: 2016
doi: <http://dx.doi.org/10.15504/fmj.2016.15>

dataset related references:

reference 1:

author(s): Skarbøvik, E., Haande, S., Bechmann, M. & Skjelbred, B.
title: Overvåking Vansjø/Morsa 2014-2015. Resultater fra overvåking av innsjøer, elver og bekker i perioden 1. november 2014 - 31. oktober 2015. NIBIO rapport 2; 42 2016. 98 pp. ISBN: 978-82-17-01608-3.
<http://hdl.handle.net/11250/2385272>
year: 2016

reference 2:

author(s): Couture, R.M., Tominaga, K., Starrfelt, J., Moe, S.J., Kaste, O. & Wright, R.F.
title: Modelling phosphorus loading and algal blooms in a Nordic agricultural catchment-lake system under changing land-use and climate. Environmental science. Processes & impacts 16, 1588-1599.
year: 2014
doi: <http://dx.doi.org/10.1039/c3em00630a>

reference 3:

author(s): Haande, S., Solheim, A., Moe, J., Bränden, R.
title: Klassifisering av økologisk tilstand i elver og innsjøer i Vannområde Morsa iht. Vanddirektivet. (Classification of ecological status in rivers and lakes in river basin Morsa according to the Water Framework Directive). NIVA report no. 6166-2011. <http://hdl.handle.net/11250/215455>
year: 2011

reference 4:

author(s): Moe, S. Jannicke, S. Haande & Couture, R.M.
title: Climate change, cyanobacteria blooms and ecological status of lakes: a Bayesian network approach. Ecological Modelling (accepted).
year: 2016

General data specifications

regional coverage of the dataset:

scale of the dataset: catchment

spatial extent (bounding coordinates):

southernmost latitude [°]: 59.344259

northernmost latitude [°]: 59.858634

westernmost longitude [°]: 10.660904

easternmost longitude [°]: 11.130339

minimum altitude: 59 metres

maximum altitude: 136 metres

countries: Europe: Norway

world climatic regions according to [Köppen](#):

Group C: temperate/mesothermal climates

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

Europe: Northern Baltic Drainages

European ecoregions according to [Illies \(WFD\)](#):

Fenno-Scandian Shield (ER22)

ecosystem type: lakes/ponds

covered timeframe: 1980 - 2015

comments: Data from rivers (River Hobøl) are not included in this dataset, but can be made available upon request.

Site specifications

coordinate system/grid data: latitude/longitude, format: DMS

datum (e.g. WGS84): WGS84

grid data available: no

site coding:

site coding available: yes, alphanumerical

number of digits: 4

example: VAN1

number of sites: <100

exact number of sites: 2

comments: 2 lake sites: Basin Storefjorden (VAN1) and Basin Vanemfjorden (VAN2). In addition, several river sites are monitored (data can be made available upon request).

Climate and environmental data

climate related data:

others: Data can be downloaded from eklima.met.no, station Rygge (station 17150)

available parameters per site:

mean annual temperature January, July

data source: www.met.no

mean annual temperature for each month

data source: www.met.no

minimal, maximal and mean winter and summer temperatures

data source: www.met.no

daily air temperatures

data source: www.met.no
 mean annual precipitation
 data source: www.met.no
 winter and summer precipitation
 data source: www.met.no
 mean discharge
 data source: www.nve.no

environmental data:

available parameters per catchment:

catchment size
 catchment geology
 catchment land cover/land use
 population density
 presence of barriers/dams/reservoirs (fragmentation)
 hydrological regime/flow regime

available parameters per site:

catchment land use upstream of sampling site
 catchment land use along a buffer strip (100m width on both sides) upstream
 (10km) of the sampling site
 river length
 altitude
 hydrological regime/flow regime
 discharge
 maximum depth
 mean depth

comments:

Most environmental data are available from this source:
 Skarbøvik, E. & Bechmann, M. 2010. Some characteristics of the Vansjø-Hobøl
 (Morsa) Catchment. Bioforsk report. 5 128. 44 pp. ISBN: 978-82-17-00689-3.
http://www.bioforsk.no/ikbViewer/Content/100558/Bioforsk_Report_128_2010_Morsa_Catchment.pdf
 More information (in Norwegian): Skarbøvik, E., Haande, S., Bechmann, M. &
 Skjelbred, B. 2016. Overvåking Vansjø/Morsa 2014-2015. Resultater fra
 overvåking av innsjøer, elver og bekker i perioden 1. november 2014 - 31.
 oktober 2015. NIBIO rapport 2; 42 2016. 98 pp. ISBN: 978-82-17-01608-3.
<http://hdl.handle.net/11250/2385272>

physico-chemistry data:

total P, ortho P, total dissolved P, nitrate, total N, ammonium, sulphate, labile
 aluminium, calcium, alkalinity, TOC (total organic carbon), oxygen content,
 water temperature, pH, chlorophyll, colour, Secci disc depth, thermocline depth,
 suspended solids

other physico-chemical parameters:

Water temperature, SiO₂.

availability of physico-chemical data, if there is more than one sample per site:

per sample

stressors influencing the sites:

reference sites available: no

stressor	restored sites available	data before/after restoration available	stressor gradient available	comments
eutrophication	yes	yes	yes	
hydromorphological degradation	no	no	no	
organic pollution				
toxic stress	no	no	no	
general degradation	no	no	no	
thermal stress	no	no	no	

Biological data

biological data origin:	from sampling
specify project:	Surveillance monitoring by NIVA
organism group addressed:	phytoplankton
comments:	Data on macrophytes and fish are available only for a few years and have not been yet included in the dataset, but can be made available.

Sample specifications/sample resolution

phytoplankton:

sample information:

covered timeframe:	2005 - 2015
historical data:	yes
season:	spring, summer, autumn
temporal resolution/frequency of sampling:	bi-weekly
time series data:	yes

taxonomic resolution:

level:	species
percentage of species level data:	100
comments:	Phytoplankton data grouped by class are available online on www.aquamonitor.no/ostfold . Original data on species level can be obtained upon request. Data on total phytoplankton biomass and selected groups are available from earlier years, but not online.

taxonomic coding:

reference(s):	The database uses the taxonomic code RUBIN, which is not international. All taxonomic information can be obtained upon request.
coding system:	RUBIN code
example:	APHA FLO

sample specifications:

type:	quantitative (abundance data)
replicate samples:	no
number of samples:	200
specification of method(s) used for sampling and sorting:	Sampling: Norwegian Standard (NS-9459)

reference(s):	Analyse: Norwegian Standard (NS-EN 15204) NS-9459:2004: Water quality - Guidance on sampling of phytoplankton from lakes and reservoirs NS-EN 15204:2006: Water quality - Guidance standard on the enumeration of phytoplankton using inverted microscopy (Utermöhl technique)
sample type (e.g. habitat specific samples, composite samples etc.):	Integrated sample from the profundal, representing the euphotic zone of the lake.
specific sample location (e.g. littoral, profundal, transect, shoreline, hyporheic zone, etc.):	Profundal, integrated sample from 0-4 meters.

Other specifications

GIS layers, shapes related to the dataset:

others (specify):	catchments, river-sub-basins More GIS layers are probably available, but not included in this dataset.
availability of photos:	yes
availability of maps:	yes
quality control procedures:	Were any quality control procedures applied to your dataset? yes
quality control protocols and comments:	Sampling and biological and chemical analyses followed standard procedures and Norwegian Standards.
reference:	Direktoratsgruppa (2013). Klassifisering av miljøtilstand i vann. Økologisk og kjemisk klassifiseringssystem for kystvann, grunnvann, innsjøer og elver. Veileder 02: 2013. Utgitt av Direktoratgruppen for gjennomføring av Vanddirektivet. 263 pp. (In Norwegian)

Acknowledgements

This work was funded by the MARS project (Managing Aquatic ecosystems and water resources under multiple stress), funded by the European Union under the 7th Framework Programme, contract no. 603378.

References

- Couture, R.M., Tominaga, K., Starrfelt, J., Moe, S.J., Kaste, O. & Wright, R.F., 2014. Modelling phosphorus loading and algal blooms in a Nordic agricultural catchment-lake system under changing land-use and climate. *Environmental science. Processes & impacts* 16, 1588-1599. <http://dx.doi.org/10.1039/c3em00630a>
- Direktoratsgruppa, 2013. Klassifisering av miljøtilstand i vann. Økologisk og kjemisk klassifiseringssystem for kystvann, grunnvann, innsjøer og elver. Veileder 02: 2013. Utgitt av Direktoratgruppen for gjennomføring av Vanddirektivet. 263 pp. (In Norwegian)
- Haande, S., Solheim, A., Moe, J., Bränden, R., Lyche Solheim, A., Moe, J. & Bränden, R., 2011. Klassifisering av økologisk tilstand i elver og innsjøer i Vannområde Morsa iht. Vanddirektivet. (Classification of ecological status in rivers and lakes in river basin Morsa according to the Water Framework Directive). NIVA report no. 6166. <http://hdl.handle.net/11250/215455>
- Moe, S. Jannicke, S. Haande & Couture, R.M., 2016. Climate change, cyanobacteria blooms and ecological status of lakes: a Bayesian network approach. *Ecological Modelling* (accepted).

Norwegian Standard, 2004. NS-9459: Water quality - Guidance on sampling of phytoplankton from lakes and reservoirs

Norwegian Standard, 2006. NS-EN 15204: Water quality - Guidance standard on the enumeration of phytoplankton using inverted microscopy (Utermöhl technique)

Skarbøvik, E. & Bechmann, M., 2010. Some characteristics of the Vansjø-Hobøl (Morsa) Catchment. Bioforsk report. 5 128. 44 pp. ISBN: 978-82-17-00689-3.

http://www.bioforsk.no/ikbViewer/Content/100558/Bioforsk_Report_128_2010_Morsa_Catchment.pdf

Skarbøvik, E., Haande, S., Beckmann, M. & Skjelbred, B., 2016. Overvåking Vansjø/Morsa 2014-2015. Resultater fra overvåking av innsjøer, elver og bekker i perioden 1. november 2014 - 31. oktober 2015. NIBIO rapport 2; 42 2016. 98 pp. (In Norwegian). <http://hdl.handle.net/11250/2385271>