www.elsevier.com/locate/csr

Inter-annual and seasonal variations of phytoplankton community and its relation to water pollution in Futian Mangrove of Shenzhen, China

Yu Gao, Lin Sun, Chao Wu, Yanghang Chen, Hualin Xu, Changping Chen, Guanghui Lin

PII: S0278-4343(17)30523-X
DOI: https://doi.org/10.1016/j.csr.2018.07.010
Reference: CSR3796

To appear in: *Continental Shelf Research*

Received date: 14 September 2017
Revised date: 26 June 2018
Accepted date: 24 July 2018

Cite this article as: Yu Gao, Lin Sun, Chao Wu, Yanghang Chen, Hualin Xu, Changping Chen and Guanghui Lin, Inter-annual and seasonal variations of phytoplankton community and its relation to water pollution in Futian Mangrove of Shenzhen, China, *Continental Shelf Research,* https://doi.org/10.1016/j.csr.2018.07.010

Inter-annual and seasonal variations of phytoplankton community and its relation to water pollution in Futian Mangrove of Shenzhen, China

Yu Gao[1,2,3], Lin Sun[4], Chao Wu[1,2], Yanghang Chen[4], Hualin Xu[5], Changping Chen[4*], Guanghui Lin[1,2,3*]

[1]Ministry of Education Key Laboratory for Earth System Modeling, Department of Earth System Science, Tsinghua University, Beijing 100084, China;
[2]Joint Center for Global Change Studies, Beijing 100875, China
[3]Division of Marine Sciences and Technology, Graduate School at Shenzhen, Tsinghua University, Shenzhen, Guangdong 518055, China,
[4]School of Life Sciences and State Key Laboratory of Marine Environmental Science, Xiamen University, Xiamen 361102, China;
[5]The Administrative Bureau of Neilingding-Futian National Nature Reserve, Shenzhen 518040, China

E-mail address: cpchen1@163.com
E-mail address: lingh@tsinghua.edu.cn

*Corresponding author: Changping Chen, School of Life Sciences, Xiamen University, Xiamen 361102, China, Tel: +86 592 2181386; Fax: +86 592 2181386

*Corresponding author Guanghui Lin, Department of Earth System Science, Tsinghua University, Beijing 100084, China Tel: +86 10 62797230; Fax: +86 10 62797230

Abstract

Inter-annual and seasonal variations of a phytoplankton community over a 5-year period (2008-2012) were studied in Futian Mangrove in Shenzhen, China, in relation to the influence of water pollution. A total of 324 phytoplankton taxa belonging to 8 phyla were identified, of which 233 were Bacillariophyta, followed by 50 Chlorophyta, 18 Cyanophyta, 11 Pyrrophyta, 6 Euglenophyta, 3 Cryptophyta, 2 Xanthophyta, and 1 Chrysophyta. The abundance of phytoplankton ranged from 3.86×10^4 to 5.20×10^8 cells/L and averaged 1.94×10^7 cells/L. Phytoplankton diversity fluctuated seasonally and inter-annually, and species numbers showed a decreasing tendency from 124 species in 2008 to 89 species in 2012. Phytoplankton was numerically dominated by *Cyclotella atomus*, *Conticribra weissflogii* and *Skeletonema* spp. with relative abundance of 42%, 22.8% and 15.8%, respectively. Phytoplankton community changed with the variation of physicochemical factors. Results of canonical correspondence analysis showed that physicochemical variables, including total phosphate, temperature and salinity, were the most important factors influencing the variation of phytoplankton community structure. It is suggested that sewage flow found in the mangrove is the most plausible explanation for increased