

World Conference on

Climate Change

October 24-26, 2016 Valencia, Spain

Effect of climate warming on neutral carbohydrates in sediment cores of subtropical reservoirs, South China

Yong Ran¹, Dandan Duan^{1,2}, Youda Huang^{1,2} and Dainan Zhang^{1,2}¹Chinese Academy of Sciences, China²University of Chinese Academy of Sciences, China

The relationships of neutral carbohydrates with algal organic matter (AOM) and climate change were investigated in three sediment cores of various trophic reservoirs. Neutral monosaccharides and AOM were determined respectively by high-performance anion-exchange chromatography with pulsed amperometric detection (HPAC-PAD) and by Rock-Eval analysis. Neutral sugar concentrations are strongly correlated with AOM in the mesotrophic reservoir cores, where glucose, mannose and galactose are the most abundant monosaccharides. Monosaccharide compositions and diagnostic parameters indicate a predominant contribution of phytoplankton in the mesotrophic reservoirs. The deposited neutral carbohydrates in sediment cores are largely structural polysaccharides derived from algal detritus, and are resistant to degradation. The increasing mean air temperature during the past 40 years has significant influences on the neutral carbohydrates and algal productivity at both meso-eutrophic reservoirs and oligotrophic reservoirs. The hydrogen index (HI) is observed to be a good indicator for monitoring historical changes of primary productivity in aquatic environments. The above evidence shows that even at low latitude regions, the primary productivity in subtropical reservoirs has been significantly elevated by climate warming.

Biography

Yong Ran is a Principal Investigator or co-investigator for 18 research grants totaling 9 million Yuan (RMB) from the National Natural Science Foundation of China, Chinese Academy of Sciences and State Science and Technology Ministry of China. His recent research (1998-2015) has involved in distribution, source, sorption, bioaccumulation and bioavailability of organic contaminants in terrestrial and aquatic systems. His research was awarded with one national prize and one provincial prize. He has been the author of over 70 referred international and national publications.

yran@gig.ac.cn

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