Annual Water Quality Health Indicator and Data Science Symposium

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Water Boards' Surface Water Ambient Monitoring Program (SWAMP)

(SWAMP) http://www.waterboards.ca.gov/resources/data_databases/wq_science_symposium.shtml

Title. **High-Frequency Nutrient and Biogeochemical Monitoring: Connecting the Dots between Drivers and Effects of Constituent Concentrations**

Authors. Tamara E.C. Kraus, Brian Bergamaschi, Bryan Downing

Abstract. Advances in sensor technology are allowing us to collect high resolution water quality data across both time and space. These sensors (e.g., chlorophyll-a, blue green algae, nitrate, dissolved oxygen) are becoming increasingly important tools for long-term water quality monitoring, for rapid detection of water quality impairment, and for understanding links between drivers, constituent concentrations, and ecosystem effects. These rich data sets provide scientists, managers and policy-makers information to make sound water resource management decisions. The use of in situ nutrient sensors (nitrate, ammonium, phosphate) capable of collecting high frequency data are of particular interest because of the well-known adverse effects of nutrient enrichment on harmful algal blooms, hypoxia, and human health. In the Sacramento-San Joaquin Delta, the USGS has developed a network of high frequency water quality stations that include sensors for chlorophyll, blue green algae, and nitrate. We have also been testing sensors for phosphate and ammonium. Deployment of these sensors in tandem with a suite of other tools on boats allows us to rapidly map water quality across diverse habitats. This presentation will relate several examples of how these tools can provide information not previously achievable with discrete sampling approaches, and discuss some of the advantages, opportunities and challenges associated with high-frequency data collection programs.

Links

https://waterdata.usgs.gov/nwis
http://pubs.acs.org/doi/abs/10.1021/acs.est.6b05745
http://onlinelibrary.wiley.com/doi/10.1002/lno.10497/full