QUANTIFYING EXTERNAL NUTRIENT LOADS TO SAN FRANCISCO BAY

EMILY NIOVICK & DAVID SENN
San Francisco Estuary Institute, Richmond, CA
emilyn@sfei.org
davidsen@sfei.org

Data from nearby long-term monitoring stations (DWR, USGS) were used to estimate monthly time-series of NH4, NO3, and PO4 loads to Suisun Bay from the Delta, following an approach similar to that developed by Jassby and Cloern (2012). That study characterized the temporal evolution of nutrient loads into SFB and SFB tributaries. Subembayment boundaries were then defined to facilitate the identification of coastal watersheds that contribute load to each embayment. For simplicity, only fields with non-zero load estimates were included in the maps. Land use in watersheds that contribute load to SF Bay, by subembayment, is shown in Figure 1.

We developed monthly time-series of NH4, NO3, and PO4 loads to SFB and SFB tributaries. Subembayment boundaries were then defined to facilitate the identification of coastal watersheds that contribute load to each embayment. For simplicity, only fields with non-zero load estimates were included in the maps. Land use in watersheds that contribute load to SF Bay, by subembayment, is shown in Figure 1.

The major goals of this project were to:

1. Quantify external nutrient loads (NH3, NO3, DIN, PO4) to San Francisco Bay for the period 2006-2011;
2. Explore how current loads vary spatially at the subembayment scale and seasonally;
3. Develop Hydrodynamic and Water Quality Models for each subembayment to evaluate the potential impact of reduced nutrient loads;
4. Change in loading patterns in Lower South Bay are due mainly to changes in POTW and Delta load estimates were available for the last 3-4 decades, allowing comparison of loading patterns at the subembayment scale.

Results of this project will be used to estimate the uncertainty in load estimates and the potential impact of reduced nutrient loads. Additionally, the project will provide a comprehensive dataset of nutrient loads to SF Bay for use in modeling nutrient cycling and ecosystem processes.

For additional information, please visit the project website: http://www.sfei.org/projects/quantifying-external-nutrient-load-to-san-francisco-bay