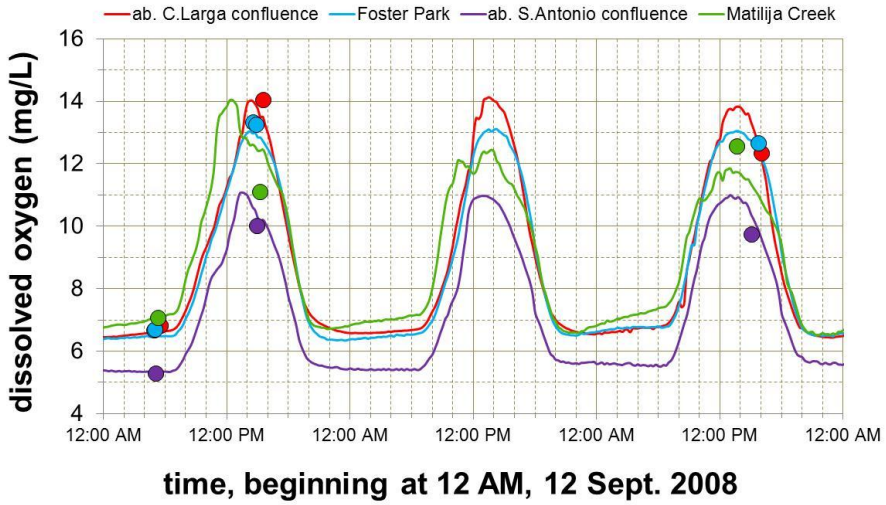
Sonde measurements of dissolved oxygen recorded at 15 minute intervals at four Ventura watershed locations (data provided by Diana Engle of LWA) during September 11-16, 2008. The circles (color coded to match the 15 minute data from each location) indicate point measurements made by SBCK volunteers during the same time period. The photos (also from the same time) show the 4 sites: (top left) looking upstream from the Canada Larga confluence; (top right) looking upstream from the bridge at Foster Park; (bottom left) just above the San Antonio confluence; and (bottom right) Matilija Creek above the dam.

The Channelkeeper data pretty accurately match the values recorded by sonde at the same locations and times. The major exception being an afternoon measurement on Sept. 12 made on Matilija Creek.



Aside from that one measurement, and given that SBCK measurements are expected to only be reasonable estimates of maximum and minimum concentrations, they got pretty close. The typical error in maximum DO was about 1 mg/L, roughly 7-10 % (the largest difference was 1.5 mg/L above the San Antonio confluence on the 14th). The estimate of minimum DO was even better: the *worst* result (on Matilija Creek) was off by only 0.5 mg/L, the others were almost spot on. The time of minimum DO was, however, surprisingly early: roughly 9 PM at 3 of the sites.

An early minimum on the Matilija – and an early maximum (around noon) – is easily explained by lower flows and shallower depths; add in clearer skies and greater temperature extremes. These factors lend themselves to a rapid loss of whatever excessive oxygen remained in the stream after sunset – and an early minimum. It's less easy to explain why nighttime oxygen concentrations should have behaved so similarly around the time of minimum DO at two other, very different, locations.

Also notable is that the entire "above the S. Antonio confluence" DO cycle appears to be displaced downwards by about 1.5 mg/L. One possible explanation might be lower oxygen levels in the surfacing groundwater that supplies upstream flow to this location. The full text discusses this point and many more (unfortunately, many, many more).