Supplement of

Controls on dissolved organic matter (DOM) degradation in a headwater stream: the influence of photochemical and hydrological conditions in determining light-limitation or substrate-limitation of photo-degradation

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Fig. S1. The dependence of water column rates of photo-mineralization as a function of $K_d$, which increases with increasing CDOM. Three situations with varying depth ($z$) of the water column are shown. In all but the shallowest water columns, the photo-mineralization rate asymptotes at relatively low $K_d$ values – the range of $K_d$ at 305 nm measured in Imnavait Creek was 39 to 63 m$^{-1}$. 

The supporting information indicates the relationship between $K_d$ and photo-mineralization rate, showing that as $K_d$ increases with CDOM, the rate of photo-mineralization asymptotes at lower values. The figure illustrates this relationship for three different depths ($z$) of the water column: 5 m, 0.5 m, and 0.1 m, with the $K_d$ values at 305 nm ranging from 39 to 63 m$^{-1}$.
Fig. S2. Average, minimum, and maximum spectra of incident UV light (daily photon flux), CDOM, and apparent quantum yield of photo-mineralization measured in Imnavait Creek.
Fig. S3. UV and climate data at Innavait Creek for 2011 (left) and 2012 (right) during the study periods. (A) Predicted and observed mean daily global solar irradiance. (B) Daily total sum of UV+ Visible photon flux reaching water surface. (C) Air temperature measured 1m above ground at Innavait Creek. (D) Precipitation.