

Overprinting riverine DOM with non-point sources

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The evolution of thinking on rivers from pipe flow to bioreactors has opened up many fruitful areas of research into sources and processing of river DOM. One research area that has been largely overlooked is the issue of non-point sources of DOM to streams and rivers, in some cases simply because the DOM loading of a river appears to reach a threshold beyond which small or non-point sources no longer have any influence over river chemistry. But we know from nutrient studies that non-point sources can dominate river chemistry. This presentation looks at DOM inputs from non-point sources in much the same way, with examples from different studies of what we call “overprinting” of mainstem DOM with local landscape DOM that can come from either direct surface runoff or groundwater inputs. The studies include lignin overprinting on an 8th order river in northern California by an oak woodland landscape, lignin and DOM overprinting within the Sacramento/San Joaquin River Delta from wetlands and agricultural islands, DOC overprinting in an agricultural (~65%) catchment, also in northern California, and initial data on overprinting within the Yukon River delta in Alaska. We compute overprinting distances in the agricultural landscape to estimate the chemical pressure of the local landscape and propose that these distances are a property of river systems that can and should be modeled.