

Efficient Measurements of River Mixing



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Models of river mixing and contaminant transport often require a dispersion coefficient K , which determines the spreading rate of a contaminant cloud and the rate of decrease of the peak concentration. The dispersion coefficient is usually estimated either with costly field tracer experiments or empirical formulas that predict K within an order of magnitude. An alternative approach will be described that uses a result from shear dispersion theory along with velocity measurements with an acoustic Doppler current profiler (ADCP). Because the U.S. Geological Survey uses ADCPs to verify discharge measurements at its gaging stations, the ADCP method provides an efficient way to obtain widespread estimates of the dispersion coefficient. Comparisons using data from several rivers show that the ADCP method is more accurate than empirical formulas. Uncertainty from velocity measurements, estimates of transverse mixing, and an inability to sample the entire cross-section of a river will be discussed.

**Friday April 1st, 2005
12-1.30pm
202 Hammond Building**