**Sedimentation Fractionation**

8 years’ worth of carbon and nitrogen data were acquired and analyzed from sediment traps pulled from the south Elkhorn Creek inlet and outlet stems in Lexington, Kentucky to set a baseline, indirectly representing atmospheric carbon and nitrogen. Because gases in the air are sequestered terrestrially through biological and terrestrial processes, these values can be used as a baseline for comparison to nitrogen/carbon studies in the future. Also, the fractionation process was analyzed over the 8-year duration to support earlier, shorter-term studies on the effects that organic processes have in leaving isotopic residuals. Fractionation occurs because lighter particles are preferred in biological processes since they are easier to digest and incorporate. This leads to an accumulation of heavier isotopic residuals in inorganic sediment.

The 2006-2013 average % value of total carbon is 3.39g / 100 grams of sediment. This value can be used as a starting point comparison as average temperature fluctuates over time. The comparison of the winter months November -February vs. summer growing season March-October shows that the average % carbon 13 ratio was less during winter. This is hypothesized as a result that as less carbon 12 is used for plant growth during winter, increased carbon 12 amounts remaining in the stream would lower the carbon 13 percent ratio.

Reference:

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