Nitrous oxide concentrations in small streams of the Georgia Piedmont. (S11-burke102050-Poster)

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Abstract:

We are measuring the dissolved nitrous oxide concentration in 17 headwater streams in the South Fork Broad River, Georgia watershed on a monthly basis.The selected small streams drain watersheds dominated by forest, pasture, developed, or mixed land uses. Nitrous oxide concentrations vary widely from 10 nM (atmospheric equilibrium concentration) to nearly 80 nM among the streams. Our measurements to date imply that many of the streams have nearly constant dissolved nitrous oxide concentrations regardless of season. Some of the streams have fluctuating nitrous oxide concentrations but the variations are not obviously related to temperature. Overall, the streams draining watersheds dominated by developed land use have the highest dissolved nitrous oxide concentrations although the difference is statistically significant only for comparisons with the forest and mixed land use watersheds. Also, the streams draining watershed dominated by pasture have significantly greater nitrous oxide concentrations overall than streams draining forested watersheds. These results suggest that small streams could be a significant source of nitrous oxide to the atmosphere in some watersheds. This work has been approved for presentation by the USEPA.

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