

Northeastern Section (39th Annual) and Southeastern Section (53rd Annual) Joint Meeting (March 25–27, 2004)

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Presentation Time: 8:00 AM-12:00 PM

FLUVIAL GEOCHEMISTRY OF THE LITTLE RIVER WATERSHED, SOUTH CAROLINA

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Little River, a 600 km² fifth-order watershed in the piedmont of South Carolina, drains various types of igneous and metamorphic rocks. Granites and biotite schists are the predominant rock types in the basin, but gabbros and amphibolites are also present. Weathering of bedrock is the primary source of solutes, although acid rain, agricultural runoff, and wastewater treatment plant effluent modify the chemical composition. In order to better understand the relationship between rock weathering and fluvial geochemistry, the chemical composition of river water was determined at 33 sample locations throughout the wet summer season of 2003. Similar to the Enoree River Basin studied in 1999 and 2000, silicate-weathering diagrams show that kaolinite is the main weathering product, but gibbsite and smectites may be present as well. This corresponds well with the mineral composition of the ultisols and minor alfisols found in the watershed. Typical of rivers in the piedmont, all samples were oversaturated with respect to quartz. Most sample localities exhibited the chemical signature of felsic rocks, but two localities show a higher Ca+Mg ratio, which may reflect the weathering of a gabbro. The Little River and Enoree River basins drain similar rock types and exhibit similar weathering products. Although located in a different climatic zone, these two basins show similar chemical compositions to those in the Orinoco River basin, which drains the Guyana Shield in South America. In the upper reaches of the main channel, the discharge of effluent from a wastewater treatment plant significantly modifies the chemical weathering signature. Downstream dilution reduces this effect.

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Session No. 44--Booth# 58

[From the Mountains to the Sea: Fluvial Processes in the Eastern United States \(Posters\)](#)

Hilton McLean Tysons Corner: Ballrooms A and B

8:00 AM-12:00 PM, Friday, March 26, 2004

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