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PS 87- - Effects of forests disturbances on stream nitrate concentrations and fluxes

*Friday, August 10, 2012
 Exhibit Hall DE, Oregon Convention Center*

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Background/Question/Methods

Land use practices and natural disturbances in forested headwater catchments affect stream water chemistry with the potential to influence downstream water quality. Long term data from US Forest Service Experimental Forests and Ranges offer invaluable information to measure the effects of those perturbations and provide the underlying knowledge needed to develop management practices to remediate human-induced alterations of natural conditions. In this study, we analyze data collected during 33 disturbance events, including forest harvest, insect outbreaks, fires, and hurricanes from 8 Experimental Forests across the US. Specifically, we examine:

- 1) How the magnitude and duration of stream nitrate to forest harvest and natural disturbances vary across these forested watersheds across the US,
- 2) In what ways the responses of stream nitrate vary depending of the temporal nature of the disturbance (abrupt vs. gradual event).

Results/Conclusions

In general, stream nitrate concentrations immediately increased after disturbances; however the magnitude and duration of the responses varied among sites. Elevated nitrate concentrations lasted years to decades, likely responding to vegetation species and recovery rates and to differing levels of nitrogen limitation. These findings will advance understanding about the role of disturbances on stream water quality.

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