Quantifying nitrogen transport from groundwater to a river in a large agricultural watershed in N.C.

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Research Topics/Questions

- Rates of groundwater seepage and groundwater-based N input to study reach
- Relative importance of NO_3^-, NH_4^+, DON
- Seasonal component and spatial variation within reach
- Age of groundwater discharging into reach, relation to N content, evidence for denitrification
- Influence of beaver dam

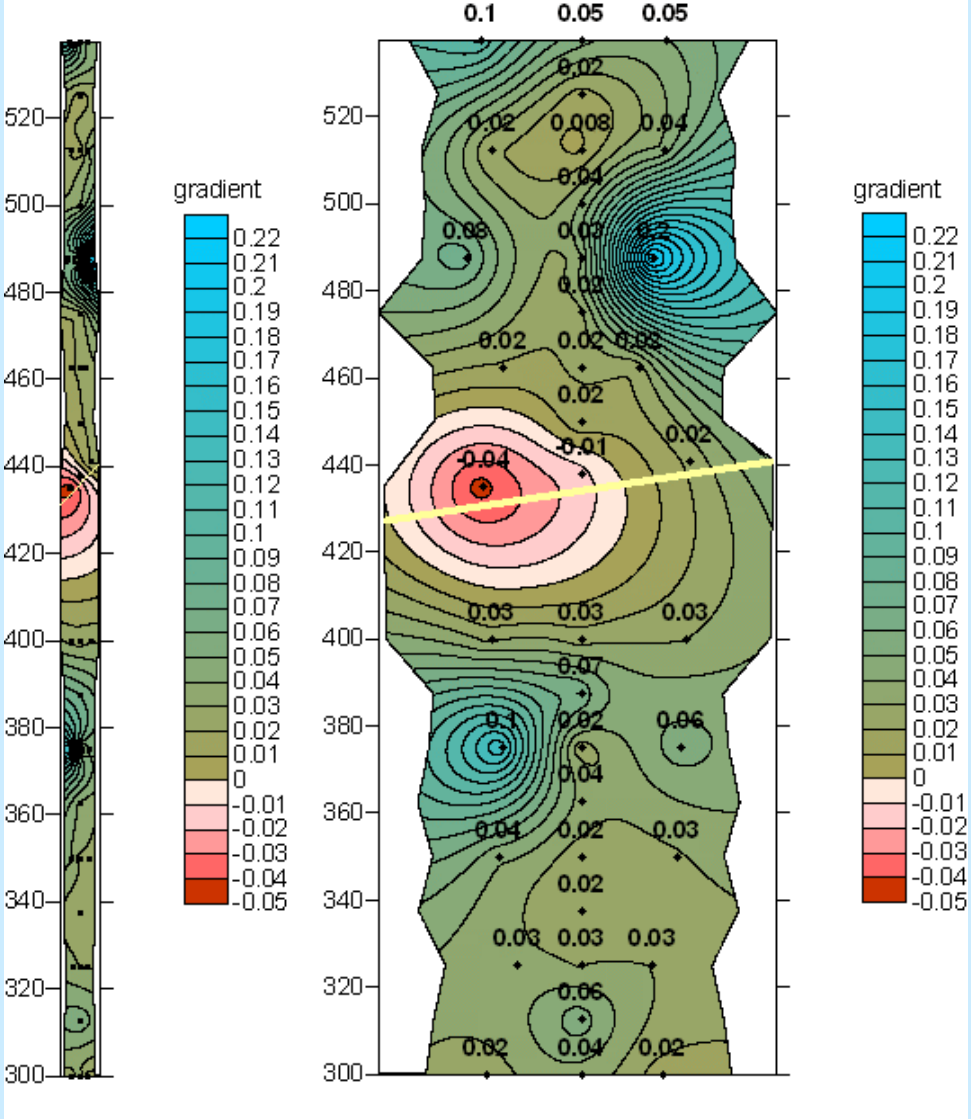
Study Site

- 250 m reach of West Bear Creek
- Coastal Plain of NC, near Goldsboro
- Surrounded by agriculture (row crops, turkeys)
- Beaver dam in middle of study reach

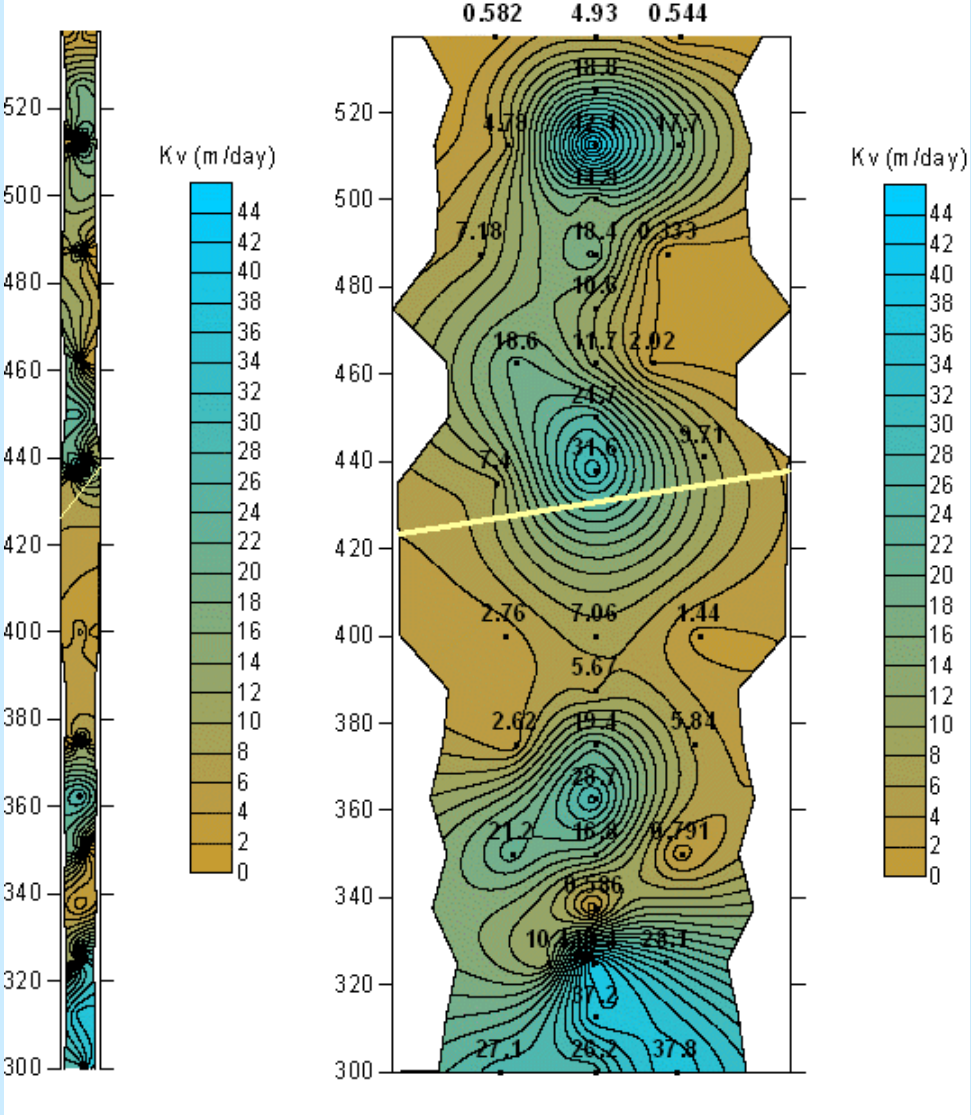
Field Approach: GW-Based N Input

- measure J: probe with oil:water manometer, 46 spots in study reach
- measure K: standpipe tests (Hvorslev 1951), same 46 spots
- measure N: gw samples from beneath streambed, same 46 spots, NO_3^-, NH_4^+, DON
- gw-based N input = KJC, C is conc. of N species
- contour results, integrate over streambed, answer research questions

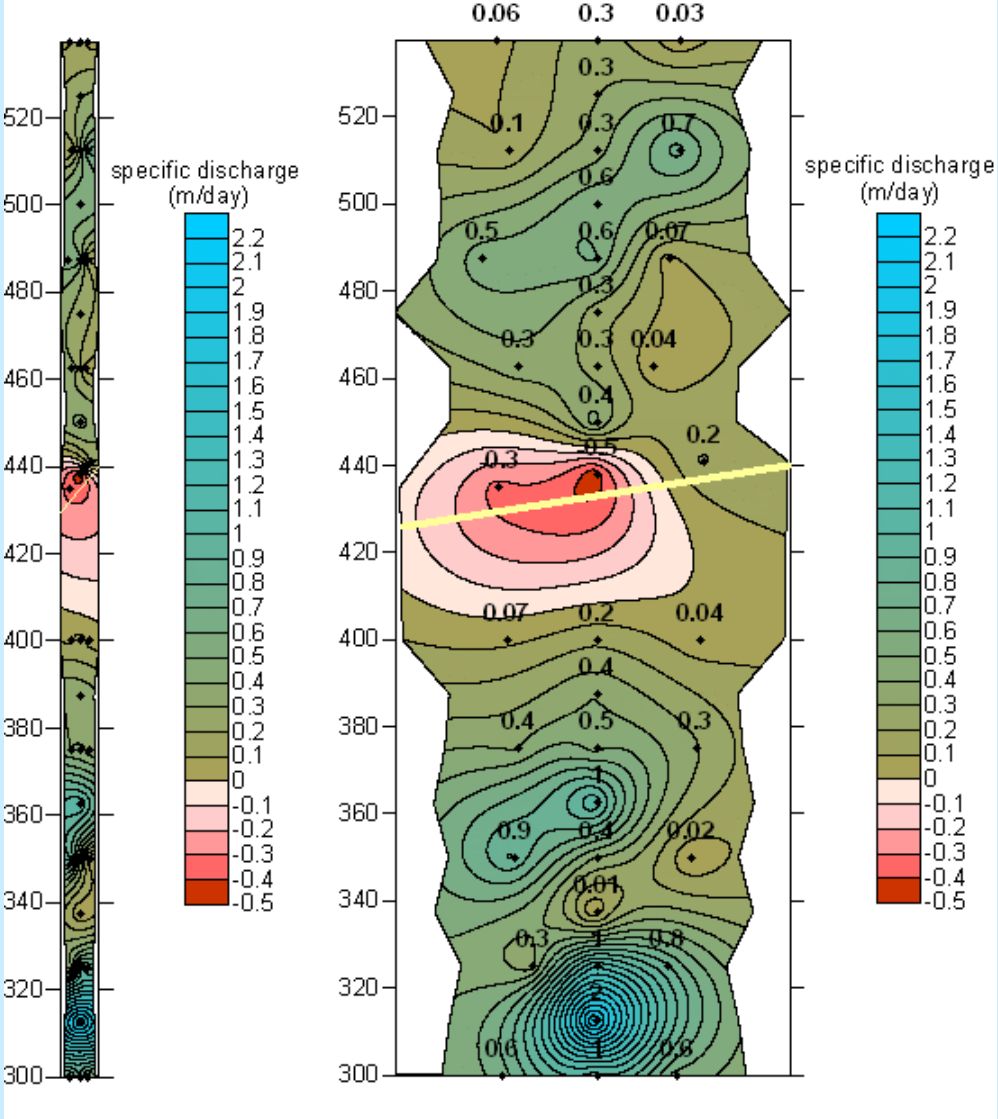
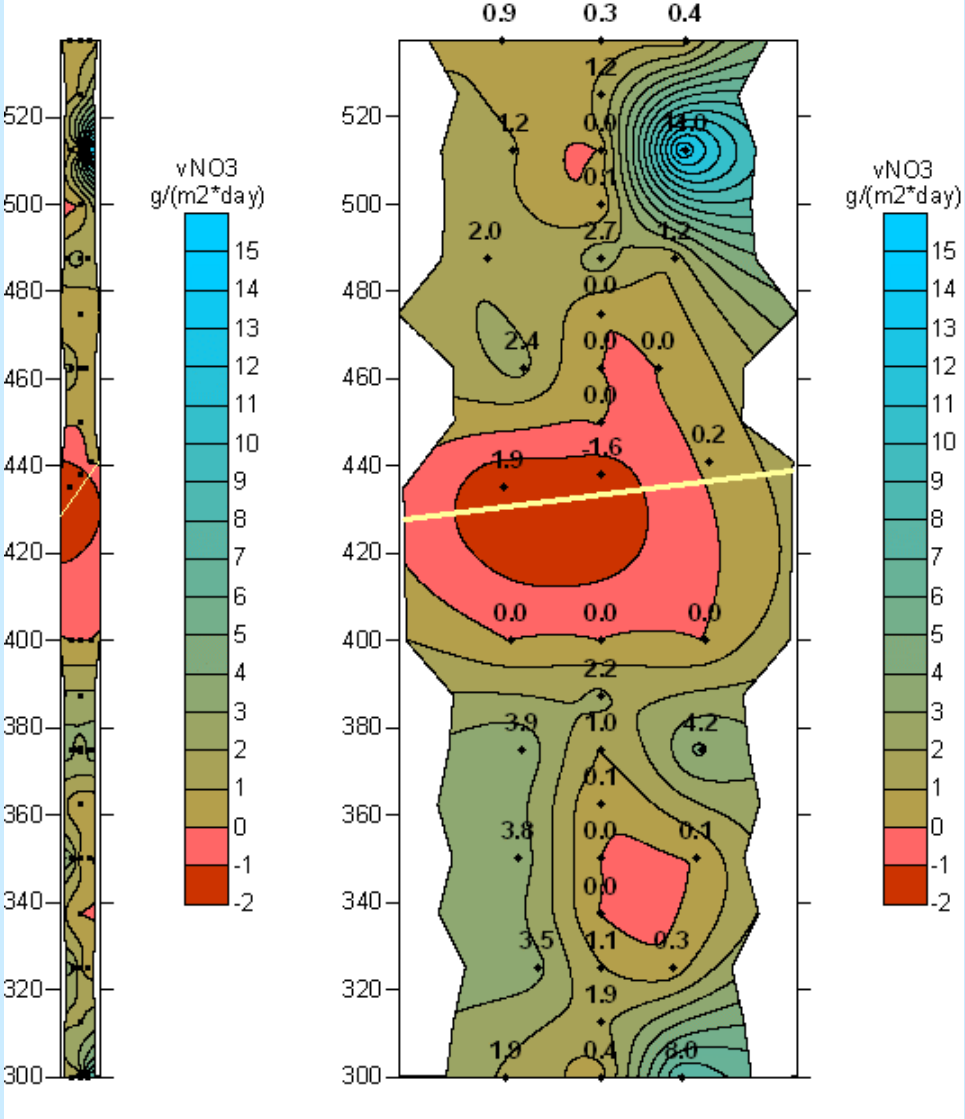
Head Gradient, 12/20/05



Streambed K, 12/20/05



Groundwater Input, 12/20/05



Nitrate Input, 12/20/05