Hinkson Creek CAM Science Team
Notes of the October 16, 2015 meeting

Team Members Present: Bob Angelo, Paul Blanchard, Joe Engeln, John Holmes, Robb Jacobson, Dave Michaelson, Dan Obrecht, Barry Poulton

Garth Lindner presented some results from his work in a watershed near Baltimore. This is one of the best instrumented watersheds available for study. Together with colleagues, he had looked at headwater streams and their hydrologic response to urbanization. They observed a wide range of responses that were not simple as many factors contributed to what was observed. Resolution of measurements matters critically in the responses seen as flow lengths, apparent slopes and other factor vary significantly as resolution increases.

He noted that derivation of good rating curves is challenging, particularly in flashier streams as gaps exist in the flows observed. Supplementing these data with field data (flood marks) and modeling can improve the reliability of the rating curve. His group investigated whether riparian zone restoration could influence flood wave propagation. They found that, while upland in-channel restoration had little impact, widening of the valley did reduce flood peaks by moving some of the peak flow to the recessional part of the hydrograph. They also determined that overdoing channel restoration can disconnect the stream from its floodplain.

Much of the subsequent discussion centered on what is needed to observe these impacts and the challenge of scaling from individual restoration projects to basin-wide scales as well as setting reasonable expectations for streams within a watershed with altered land use.

Lynn then reported on some of the upcoming analyses from the data Hubbart and colleagues have been collecting. The paper on the Physical Habitat Assessment methods is in review and the results paper is in preparation. They want to examine the PAH results in the context of ecoregions and the Missouri River backwater zone. The papers on the Cl- and dissolved oxygen results will follow. She is also working to catalogue and map the special features observed.

Observations at the five gauges will be continued. The need to keep-up the rating curve to make sure these data are useful was discussed. The team discussed continuing weekly observations of key parameters on a weekly basis when Lynn downloads the gauge data. We also discussed monitoring of the PAH sites, perhaps in a randomized manner, to continue to examine sediment flows. Tying these observations to suspected hot spots, gauge stations or invertebrate collection sites (in space or time) were discussed.

Dave noted that the department had committed to keeping the invertebrate observations in the spring and fall through 2017.

The discussion then turned to the use of rock baskets and/or Semi-Permeable Membrane Devices (SPDMs) to examine sediment flow and potential chemical pollutants. These could be relatively short term observations (4-6 weeks) conducted seasonally to observe at times of different flow and pollutant loading. The need for replication and to keep the 6” by 6” rock baskets off the bottom of the creek were discussed. We need to get a cost estimate and to determine whether there might be a faculty member willing to oversee such a project, perhaps as a master’s thesis.

Joe asked the team to look over the notes form the last meeting and suggest edits and to help guide the discussion of most urgent science needs at our next meeting.