



Project:
Morphodynamics of the North Fork Toutle River Near Mount St. Helens, WA

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In this project we are working with USGS scientists to investigate sediment transport in the headwaters of the North Fork Toutle River (NFTR), near Mount St. Helens, WA. This area was severely disturbed by the 1980 eruption of Mount St. Helens, and the NFTR continues to carry the highest sediment loads of any river of comparable size in the United States. The principal objectives of this project are to (1) quantify the geomorphic response of the NFTR to floods of varying size, and (2) to model downstream changes in the bed-load transport capacity of the river system.

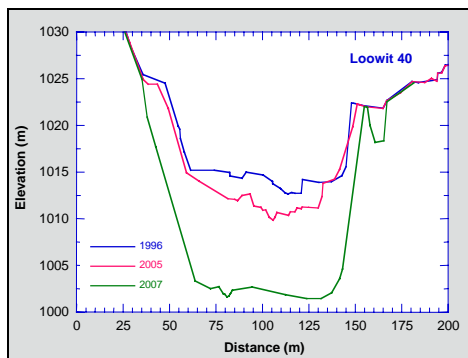


Figure 1

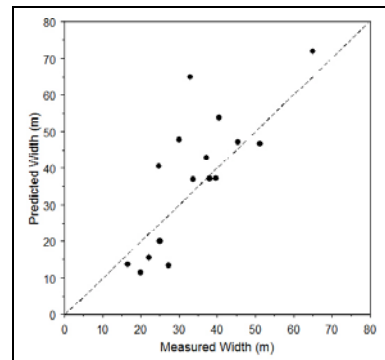


Figure 2

The results of this work, shown above, indicate that the NFTR responds dynamically to large and small floods. The channel continually adjusts its hydraulic geometry, becoming wider or narrower depending on the size of the most recent flood. We find, however, that adjustments in channel width and depth can be predicted quite well using contemporary theories for hydraulic geometry (Fig. 1). In the future, we hope to expand on these results and develop a quantitative model that can be used to predict long-term sediment yields and impacts to communities downstream.