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An interactive, GIS-based application to estimate continuous, unimpacted daily streamflow at ungaged locations in the Connecticut River Basin

Principal Investigator:
Stacey Archfield, Ph.D.

Research Hydrologist

Massachusetts-Rhode Island
Water Science Center

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Needs Workshop

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Albany, New York

With support from:

Northeast Association of Fish and Wildlife Agencies

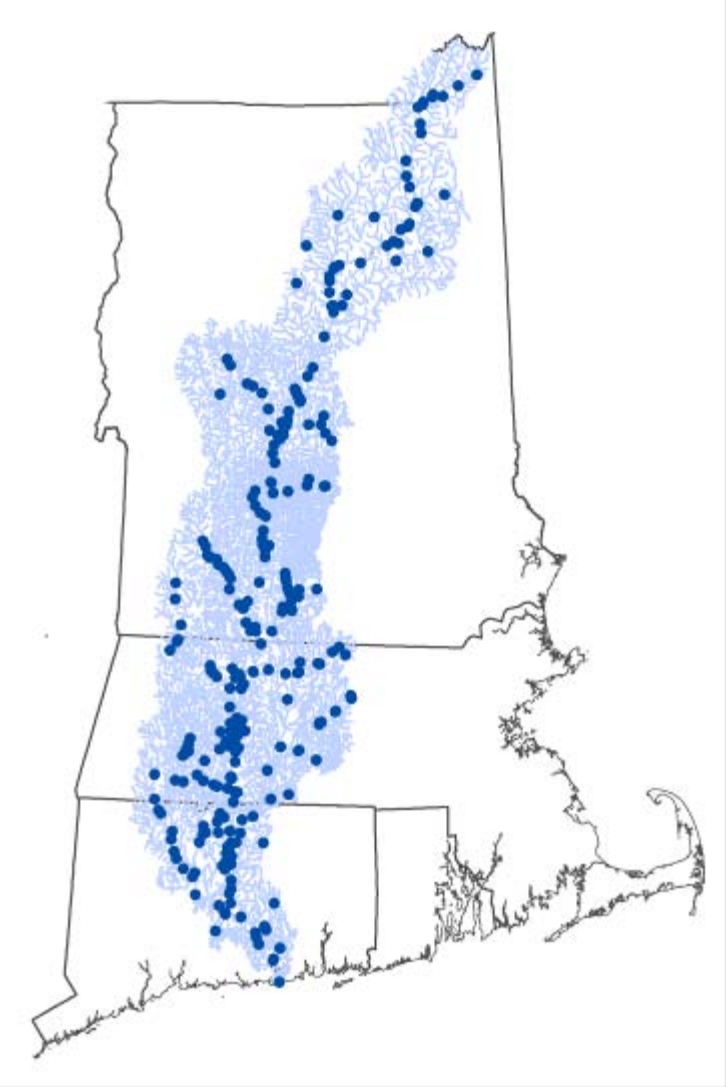
The Nature Conservancy
Protecting nature. Preserving life.

The Connecticut River looking north in the early evening, from the French King Bridge at the Erving-Gill town line in Western Massachusetts.

Source: http://en.wikipedia.org/wiki/Image:IMG_3758_view_north_from_French_King_Bridge.jpg

U.S. Department of the Interior
U.S. Geological Survey

Motivations for the study in the Connecticut River Basin



- The Connecticut River watershed contains a number of flood-control and hydropower dams; there has been increased attention on how these dams can be managed to support ecological services
- Daily unregulated streamflow has been estimated for approximately 350 stream locations (*shown at left*) to:
  - Route through reservoir simulation and optimization models that will help to determine how dam operation can modified to meet ecological services
  - Determine flow prescriptions

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Reservoir modeling and optimization being done as a separate (non-RCN) project by:

The Nature Conservancy

UMASS

US Army Corps of Engineers

Objectives

- Develop an easy-to-use, screening-level tool to estimate continuous unimpacted streamflow at ungaged locations in the Connecticut River basin (excluding the mainstem of the Connecticut River)

POINT-AND-CLICK GIS USER-INTERFACE COUPLED WITH MICROSOFT EXCEL SPREADSHEET

APPROACH REQUIRES SIMPLIFYING ASSUMPTIONS AND FEW PARAMETERS

Leveraging existing methods

- Existing tools to estimate daily, unregulated streamflow in southern New England had already been developed [*Archfield et al.*, 2010 and *Archfield and Vogel*, 2010]

- This RCN grant leveraged these existing methods and tools to provide estimates of daily, unregulated streamflow across the entire Connecticut River Basin

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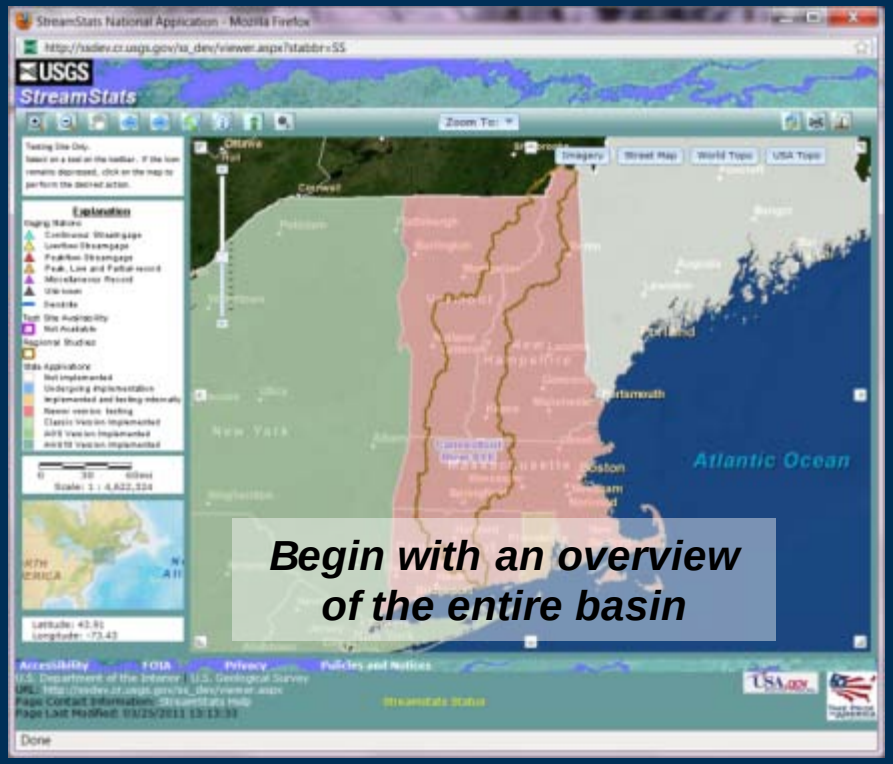
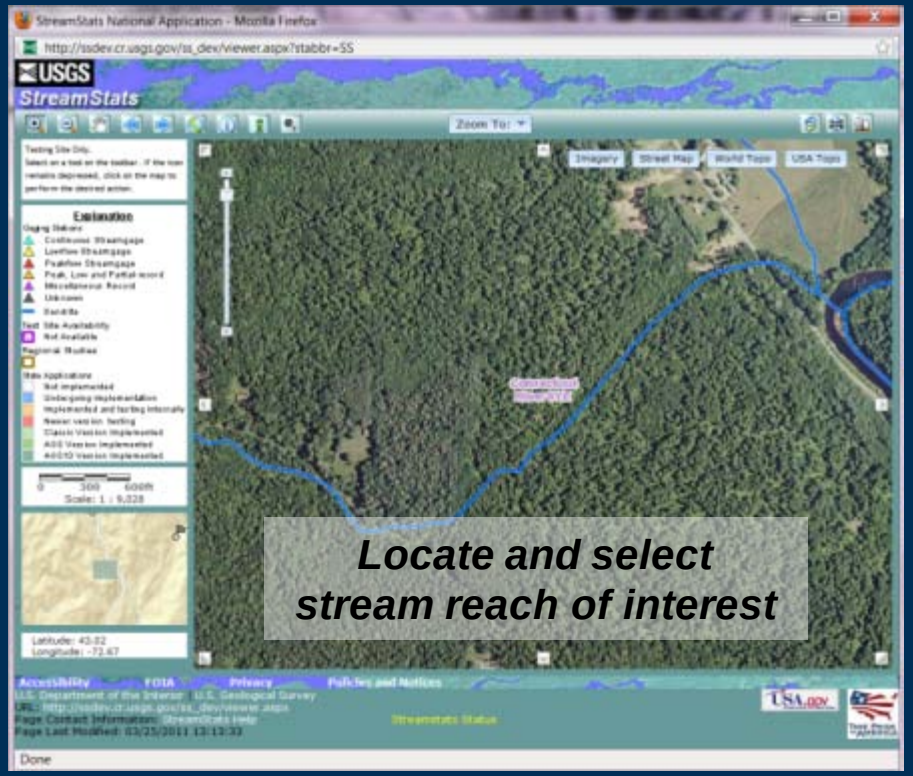
The Connecticut River Basin Unimpacted Flows Tool





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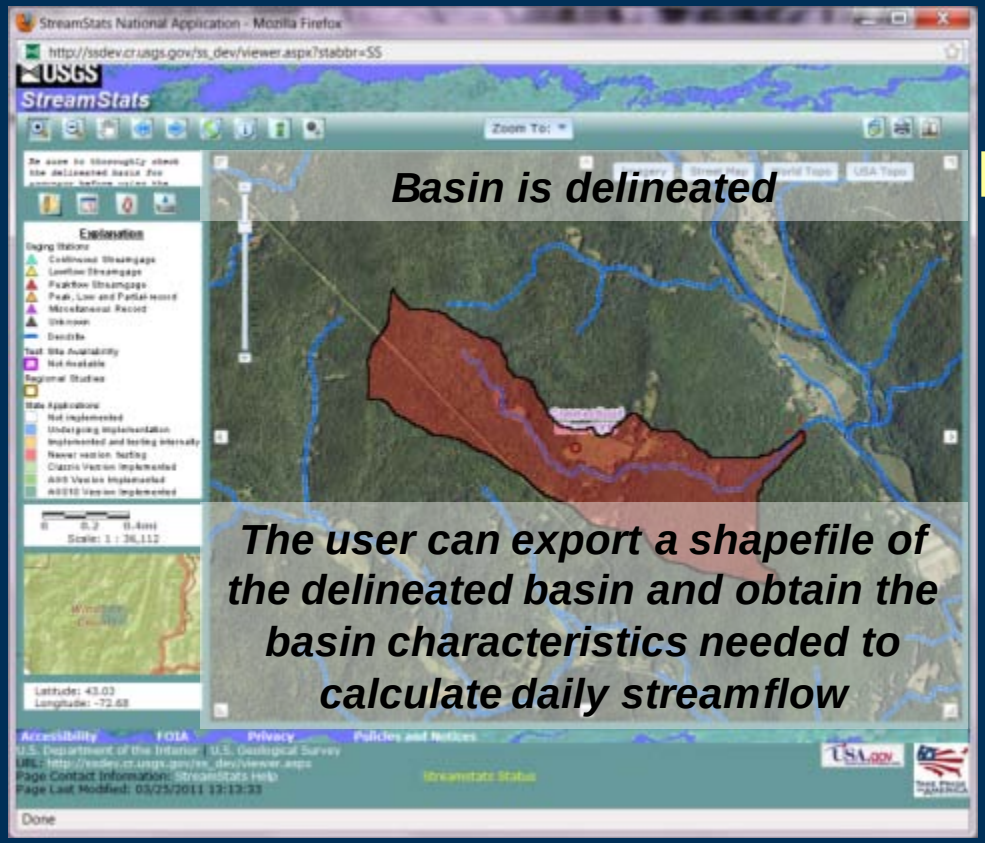

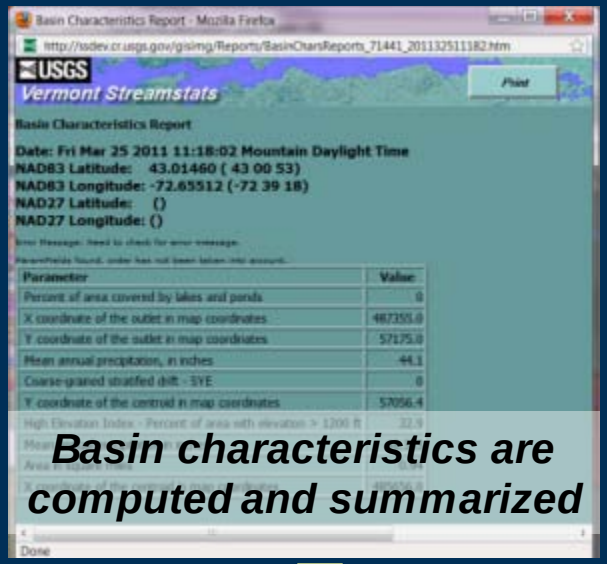

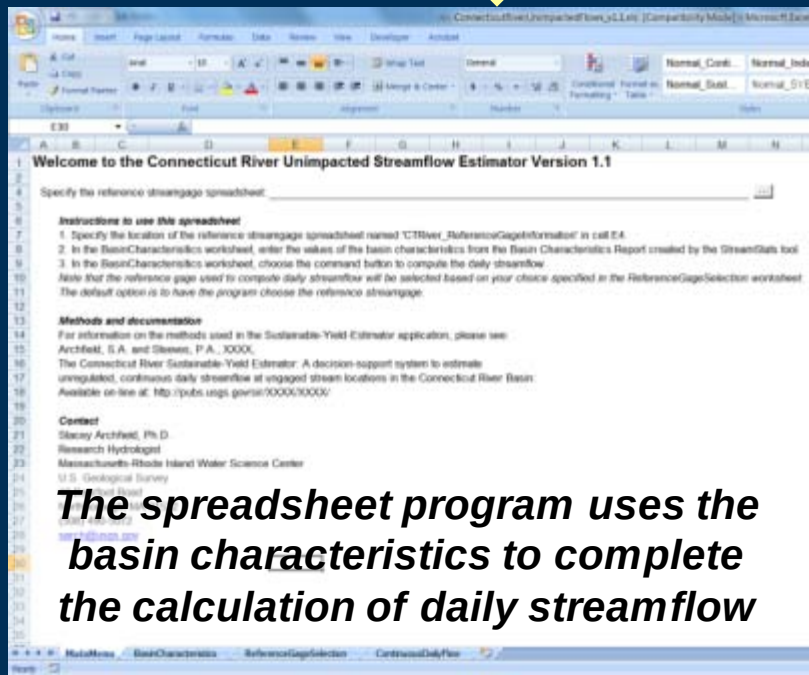

- Publication of the methods and tool is planned as a journal article
- This tool will be available through a publically-accessible webpage and is currently in beta testing