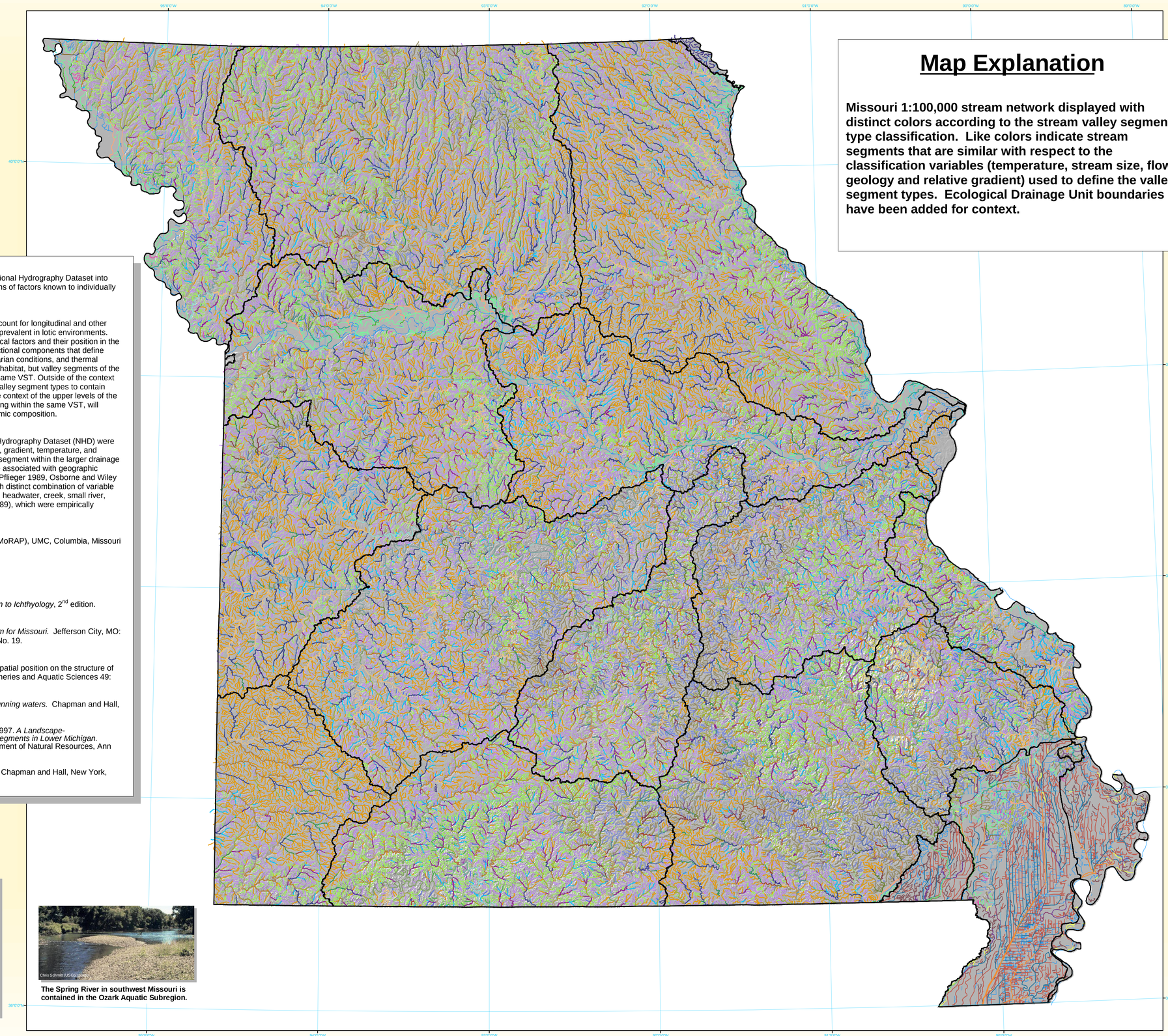
Missouri Stream Valley Segment Types

Medicine Creek within the Central Plains Aquatic Subregion.



Map Explanation

Missouri 1:100,000 stream network displayed with distinct colors according to the stream valley segment type classification. Like colors indicate stream segments that are similar with respect to the classification variables (temperature, stream size, flow, geology and relative gradient) used to define the valley segment types. Ecological Drainage Unit boundaries have been added for context.

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Meramec River in the Missouri Ozarks.

Stouts Creek in Iron County flows over Precambrian igneous rock.

Main Ditch provides a fairly typical example of what many streams in the Mississippi Alluvial Basin look like today.

Objective
Classify stream segments contained within the 1:100,000 National Hydrography Dataset into distinct valley segment types according to distinct combinations of factors known to individually and collectively influence local biophysical conditions.

General Description
Valley Segment Types (VSTs) are defined and mapped to account for longitudinal and other linear variation in ecosystem structure and function that is so prevalent in lotic environments. VSTs represent hydrogeomorphic units defined by local physical factors and their position in the stream network. They stratify stream networks into major functional components that define broad similarities in fluvial processes, sediment transport, riparian conditions, and thermal regimes. Each individual valley segment is a spatially distinct habitat, but valley segments of the same size, temperature, flow, gradient, etc. all fall under the same VST. Outside of the context of the upper levels of the classification hierarchy, we expect valley segment types to contain ecologically similar aquatic assemblages. However, within the context of the upper levels of the classification, we assume that individual valley segments, falling within the same VST, will contain aquatic assemblages that are similar in actual taxonomic composition.

General Methods
Stream segments within the 1:100,000 USGS/EPA National Hydrography Dataset (NHD) were attributed according to various categories of stream size, flow, gradient, temperature, and geology through which they flow, and also the position of the segment within the larger drainage network. These variables have been consistently shown to be associated with geographic variation in assemblage composition (Moyle and Cech 1988; Pflieger 1989, Osborne and Wiley 1992; Allan 1995; Seelbach et al. 1997; Matthews 1998). Each distinct combination of variable attributes represents a distinct VST. Stream size classes (i.e., headwater, creek, small river, large river, and great river) are based on those of Pflieger (1989), which were empirically derived with multivariate analyses and prevalence indices.

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The Spring River in southwest Missouri is contained in the Ozark Aquatic Subregion.

Miles
0 15 30 60 90 120

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Spring River photo courtesy Chris Schmitt (USGS).
Main Ditch pohot courtesy the Central Plains Center for BioAssessment (http://www.cpcb.ku.edu/datalibrary/html/photos/).

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Cartographer: Gust M. Annis