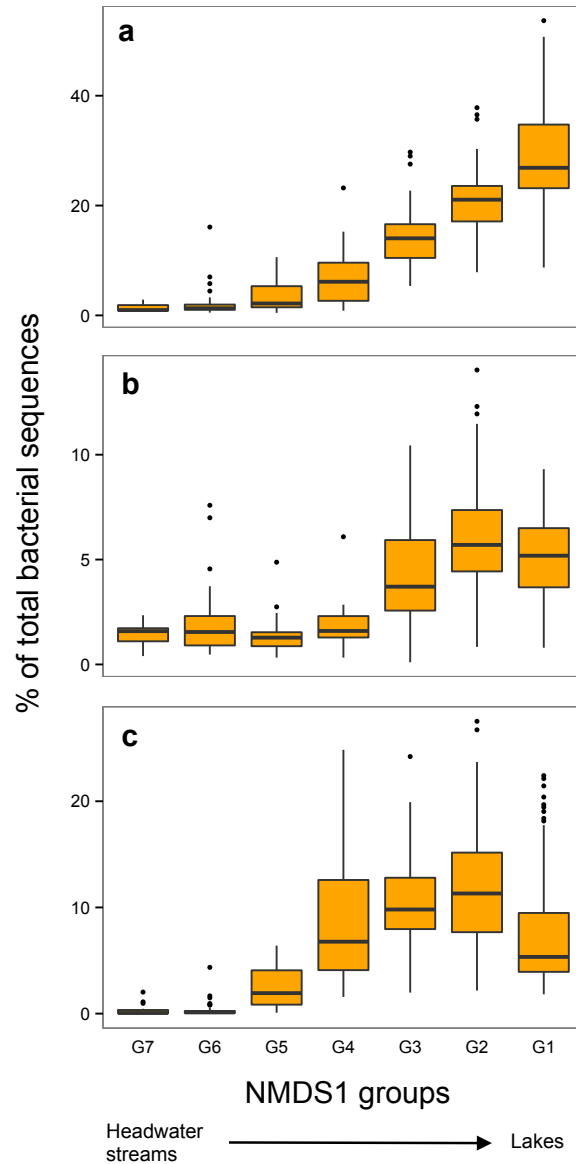**Supplementary Figure S1.** Three examples of bacterial taxonomic groups that showed pronounced increases in their relative abundances along the hydrologic continuum: a) Order Actinomycetales (Cl. Actinobacteria); b) Family Chitinophagaceae (Cl. Sphingobacteria); c) Genus *Polynucleobacter* (Cl. Betaproteobacteria). Values are calculated for the 7 groups of sites according to their position on the NMDS1 axis (G1 to G7), which mostly represents an hydrologic continuum from the smallest headwater streams (G7) to larger rivers and lakes (G1, for details see *Results*).

Suplementary Figure S2: Bacterioplankton operational taxonomic unit (OTU) richness along the pH gradient for sites with water residence times above (a) and below (b)10 days (WRT>10 and WRT<10,respectively. R-squared and probabilities of the relationship are provided for each case.