Title: Dataset associated with "A First-Order Approximation of Floodplain Soil Organic Carbon Stocks in a River Network: The South Platte River, Colorado, USA"

Abstract: We use the hydrogeomorphic floodplain tool GFPLAIN to delineate the extent of 100-year floodplains in the South Platte River watershed of Colorado, USA. We distinguish elevation bands for the steppe, montane, subalpine, and alpine zones. We also differentiate bead (floodplain width/channel width > 5) and string (floodplain width/channel width < 5) reaches within the montane and subalpine zones. Drawing on prior, field-based measurements of organic carbon stock in downed, dead wood and soil in these floodplain types, we estimate total floodplain organic carbon storage, which includes organic carbon storage in lake and reservoir sediments in the watershed. Soil constitutes the greatest reservoir of floodplain carbon. The total estimated area of floodplain is 2916 km2, which is 4.3% of the total watershed area of the South Platte River. Our preferred estimate is 42.7 Tg C storage (likely range of 39.1-42.7 Tg). This equates to 11.1% of a previously estimated overall carbon stock (above and belowground biomass and soil organic carbon) in the entire watershed of 384 Tg C. Floodplains are thus disproportionately important, relative to their surface area, in storing organic carbon in this semiarid watershed. Field measurements of floodplain soil organic carbon storage from across the globe indicate that this finding is not unique to this watershed and this has implications for prioritizing floodplain management and restoration as a means of enhancing carbon sequestration.

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Format of data files – ArcGIS Pro file geodatabase (.gdb), Shapefile, .xlsx, .csv

Location where data were collected – South Platte River basin

File Information

There are nine total data files:

1) floodplains.gdb.zip contains floodplain extent for each of the three contributing area thresholds of 50, 25, and 10 square kms in ArcGIS Pro file geodatabase format;
2) Shapefiles.zip contains floodplain extent for each of the three contributing area thresholds of 50, 25, and 10 square kms in shapefile format;
3) s_platte_10.csv is list of each pixel (representing a 30m x 30m space) in the floodplain with a 10 square km threshold, with elevation in meters, and Strahler stream order;
4) s_platte_25.csv is list of each pixel (representing a 30m x 30m space) in the floodplain with a 25 square km threshold, with elevation in meters, and Strahler stream order;
5) s_platte_50.csv is list of each pixel (representing a 30m x 30m space) in the floodplain with a 50 square km threshold, with elevation in meters, and Strahler stream order;
6) lakes_reservoirs.csv lists each lake or reservoir, it's area in square meters, and it's elevation in meters;
7) floodplain widths.xlsx is a list of floodplain widths listed by altitude band with elevation in meters and width in meters. Three tabs represent the 50, 25, and 10 square kilometer threshold each;
8) floodplain_widths_tidy.zip contains three csv files, where each csv file lists the floodplain width data

in tidy (long) format;
9) README.docx lists information about this data set.

Variable information

altitude band: describes the altitude band (Steppe, Montane, Subalpine, Alpine)
OID_: This number provides a unique identifier for each pixel
Object_number: This number provides a unique identifier for each lake or reservoir
elevation_m: elevation in meters
StreamOrder: Strahler stream order
Order: Strahler stream order
Type: "r" for reservoir and "l" for lake
width_m: width in meters