With continuous measurements of sediment transport and an innovative method to calculate a morphological sediment budget, what more can we infer about river processes?

Conclusions

- Net accumulation of sediment appears to be associated with vegetated island expansion and can be linked to accumulation of very fine sand in the partitioned flux-based sediment budget (Figure 6).
- Vegetated islands are predominately composed of the finest sand grain-size fractions (Figure 9).
- The channel narrowed in all river segments from 2011 to 2015 and widened from 2015 to 2017 on the Little Snake River and the Yampa River downstream of the Little Snake (Figure 10). Narrowing appears to be driven by vegetated island expansion that outpaces the rate of bank erosion.
- Channel change can be linked to processes of sediment transport when the flux-based budget is partitioned to understand where and why channel change occurs.

Future Work

- Collect repeat measurements of bed topography to characterize changes in bed elevation through time.
- Spatially characterize the grain size of geomorphic units linked to the partitioned flux-based sediment budget with the morphological sediment budget.
- Examine the influence of changes in sediment supply grain size and bed grain size to adjustments in channel form.

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