In Last Chance canyon, more massive dolomitic rock units steepen channel slope by contributing larger sized colluvium which armors channels. Coarse sediment sourced from massive bedrock upstream armors bedrock downstream, dampening the effect less massive units have on local errodibility, and smoothening slope across lithologic contacts.

Develop code which will model amount of water required to pluck bedrock and move sediment? Will consider comminution from data I collect? Model armor effect from more massive units? code to explain dependance of sediment size on source rock fracturing, sediment size, distance from source rock, and slope from source rock to sediment.

We seek to understand the effect of stream discharge during discrete storm events on grain motion thresholds and on plucking different size grains.

We plan to develop a landscape evolution model to determine the discharge necessary to mobilize sediment of varying sizes during a storm.

We will use stream gauge data and precipitation measurements to reconstruct hydrographs and to model realistic storm distributions for Last Chance canyon. We use these climate reconstructions to determine the 1) discharge necessary to entrain sediment of different sizes, 2) distance sediments of different sizes are carried during hydrographs of varying shapes, and 3) the residence times of colluvium within different channel sections.

Modeling for how long these sediments armor different channel sections reducing clerity.

We expect that coarse sediment derived from more massive units will reside in stream channels for longer durations because ‘flashyier’ storm events are necessary to displace them or to break them into movable grain sizes. We will gather cosmogenic radionuclide data to quantify sediment residences times within channel sections, to validate our model predictions, and to provide temporal connectivity between erosion during a storm event and longer term geomorphic work.

2021:

1. Winter: **Decide on research questions**, field work, process data gathered in field, lock in 2nd and 3rd project.
2. Spring: Finish Joel LL component, work on my own LL component, finish first project, start writing projects 2 and 3, finish prospectus.
3. Summer: Finish my LL component (project 2)
4. Fall: Finish project 2