For instance, grain-size distributions (gravel fraction (b), sorting, and size) delivered to channels and the efficiency of downstream fining due to selective transport and abrasion may vary as a function of incision rate, suggesting additional internal feedbacks [Howard, 1980; Howard et al., 1994;

Maybe the hillslope delivers, and occasionally theres a flood which erodes the smaller HS fraction of sed. Sometimes theres a big ass flood which erodes more. Show response to uplft and decrease in uplift. Hysteresis of trans lim and detach lim.

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. We seek to understand the effect of stream discharge during discrete storm events on grain motion thresholds. We plan to develop a landscape evolution model to determine the discharge necessary to mobilize colluvium 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. 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.

Timeline: Plans hinge on corona virus.

2020:

1. Summer: **Decide on research questions**, Olivia will work on gathering climate data, generate field work plans.
2. Fall: begin creation of LandLab model, do fieldwork. I can drive out from CA and do fieldwork in the fall. I am sure I could find a friend to accompany me if people from GIGL cannot make it / corona prevents people from coming. If someone else is planning on working in the Guads it would be cool if they could come (does Christian have a project?)

2021: Things get a bit blurry here.

1. Spring: Work on model, start writing…

Disclaimer: This is a very rough draft meant to help convey where I am with ideas about a second project. It is a ‘scatter shot’ at ideas and methods. I think that model + cosmo + drone field work stuff is a tall order for one project. With that in mind, I would not be sad if one of them was removed. Also, if we can name it after the TLC song “Don’t go chasing waterfalls” I think that would be a good decision. If we cannot you should name a paper after it.