DISCUSSION

Introductory

* We found that functional diversity, as described by functional dispersion, exhibits strong relationships with local patterns of hydrology.
* Disturbance retards competitive exclusion + reworks landscape
* Variable conditions ensure that no one ecological strategy becomes dominant

Flooding disturbance

* Intense flood events and variability in the character, magnitude and frequency of high flows associated with higher functional diversity
* AS20YrARI – wholesale geomorphic reworking, provides new substrate and promotes geomorphic heterogeneity. Competitive exclusion is retarded where communities are not able to reach ‘climax’.
* CVAnnHSPeak - in years when HSPeak is high, lots of the riparian zone gets flooded. In years where it is low, not much gets flooded. Combine this with geomorphic heterogeneity and you get variation in which patches get disturbed in a given year. Remember flooding also distributes seeds / other propagules and reworks the seedbank.
* CVAnnHSNum - Different times between last inundation favours different ecological strategies.
* CVAnnMRateRise/Fall – some years have flashy flows and some don’t. so there you have variability in the amount of debris that gets entrained and dumped on the banks. Debris in flood flows might increase mechanical disturbance, but then perhaps promotes diversity in fungal or animal communities which interact with the vegetation.
* Put these all together and you get a geomorphically diverse environment (so lots of species in the immediate vicinity, despite the fact that we only sampled geomorphically homogenous plots), with associated patches of vegetation which are of different ages and experience different microhydrologies

Temporal variability

* So there’s Colwell’s metrics and then the CVMDFs
  + Interannual variability and spiked, inconsistent temporal distributions of flows at one extreme and weak but stable seasonality at the other end.
* Ecological strategies can’t get too comfortable? But actually see later…
* Could talk about resource acquisitive / opportunistic resource use strategies vs. conservative
* All sorts of life history strategies might get a chance to get established
* Flowering time as an important trait to be able to capture responses to variable conditions
* CVMDFSummer: Grime’s resource availability hypothesis explains quadratic distribution – don’t want to have too much variability in summer as this will cause stress.
* MDFMDFSummer – same thing, perhaps?

Outlier points

* Actually there is some competitive exclusion of strategies at two sites which were right at the ‘variable’ end of the spectrum. Perhaps there are ‘variability’ specialist strategies which are favoured. It appears to be a matter of dominance by one or two species (Acmena smithii at Mammy J’s and Ripogonum album at Jilliby), as when FDis is calculated using presence-absence data for these species the effect is mitigated.