This will be kind of a brain dump. I did a really big push on this project and then I went into a really big writing push on fellowship apps and am therefore kind of wrung out and trying to get the lay of the land here.

"Resims" is just the weird name I assigned to this notion of creating a kind of abundance-only null model for testing for decoupling of abundance and biomass/energy over time.

In August I was doing this by calculating the raw ratio of the mean value (i.e. total energy end / total energy start), which has no estimate of uncertainty due to *anything* and cannot be tested statistically at all. I was looking at these histograms like a bad X-ray trying to get a picture of something. I also had the numerator and denominator swapped for a while, and the use of the log ratio can be a little bit misleading because it squishes things above and below 1 visually. From squinting at histograms and 1-1 plots derived from time period means I was ending up with this assessment of “not a lot of decoupling, when it is it’s a decrease in size (that was the numerator/denominator thing – it’s definitely *an increase*, see published stuff – schipper – but also just…..if you aren’t stupid with your code)” and proceeding with a null model from there. But that was WRONG.

So then, I guess in September when ysuft came out I was trying to quantify the frequency and magnitude of “decoupling”. I did this using numerous route-level linear models of the general form value ~ timeperiod \* currency. But to do this you really have to perform some kind of scaling to put the different currencies in even remotely the same ballpark. And that makes this approach break down, because any rescaling you do is going to destroy the *relative variability* between the different currencies. For example, canonical rescalign would be rangescale or scale(sqrt). But those both mess up the relative range of variability between the two currencies.

It took me a really long time to come around to this. I’m not hugely comfortable with linear models in general – I prefer generalized things where you can tailor more directly to your data, instead of having to transform the data to meet unknown assumptions. But I couldn’t figure out a better way so I was going with what has been done previously in this general space (i.e. following the Dornelas/Gotelli approaches when in doubt). Importantly, I don’t think this approach is unreasonable in the context in which *they* were using it; however, it breaks down completely for this use case. (They weren’t trying to compare the *magnitude* of things on vastly different scales that needed to remain linked to each other). So I coded up all those functions and wrote tests for them and now it’s time to scrap all of that. Which, fine, I figured out another approach, but honestly has me feeling a little bit shaken in myself. I feel like on this project I’m running flat out but I keep messing up, so trying to be more careful.

I only noticed this because I was writing up some dummy data to test my intuition about something else, I don’t even remember what anymore. But I noticed that something I thought was “flat, no change” – like a runif(10, 15), which I would think of as flat compared to say (0, 0, 0, 0, 100, 100, 100, 100, 100) would often come out as not flat, because what if you get (10, 12, 10, 14, 15, 13)? That’s a tiny absolute change but not flat, and when you rescale it it pops as a trend. But it means your slopes *and therefore the interaction* from rescaled values for different currencies are not meaningful.

So I’ve come up with yet another scheme but I don’t feel like I trust it anymore because I don’t trust any of my intuition around this project. I completely hate things I can’t see the inner workings of, which, this is not. This is, I went back to my usual ways which is to drill down until it’s null models all the way down. Mostly. I mean I made this from scratch so in principle I understand how it works better than trying to play by the rules of idealized off-the-shelf tests that may or may not be suitable.

I have done this before. This is how the SADs paper works. All the little pieces are made of raw logical reasoning that either I figured out myself or Hao did. It’s epic and long and I may have gone overboard on the methods there but it does run and I do feel good about everything in there.

So now I have to do it again, except I currently am not all that enthusiastic about this project. I’m so much more excited about maxent/emergent properties/learning something new/getting an actual job than finishing this, which I suspect is not uncommon for your 5th year. And part of it is, it doesn’t really matter to me professionally whether this goes out in January (lol) or March or May. The part of me that needs to run ahead of whatever curve I see coming wants it out early TM, but that’s….not necessarily what actually matters. It’s so much more important that I find a postdoc.

But I still do need to do this and I do need to keep it moving and it’s mid-october and at this point I don’t necessarily feel like I’m getting “close”, whatever the hell that means. The analyses are circling around the same story, but I haven’t had the chance to do the level of digging into the results yet that I would want to. Unless you tell just a high-level story, which I suppose is an option but rubs all of my creepy feelings the wrong way.

Honestly I want to delete it all, recode the resims analysis in rwar, and proceed from there. I’m agnostic about whether the null models even still fit in. I suspect they do, but I also suspect you want to calculate the mean body size/mean bmr. And I have the sneaky sense you will want to rerun the brms on the null model sims? Which is going to be a LOT of compute, it’s 1000+ 8000iteration brms *per sim*. And you need at least 100 sims.