**Here are 4 example files from the Gulf of Mexico model showing the set-up for assigning different sub-region models.**

**Also, this is the time-dynamic code that version for the Gulf of Mexico model that shows how these are used (see lines 1292-1478). The NCC sub-models can be input this same way.**

**I’d add the sub-models to this paper. Don’t change a thing with the full regionally aggregated model results that you show here. But we can finish up the sub-regional models (no balancing required) and run them in the physical model and show some time-series for a few selected subregions. Describe general differences cross-shelf and north-south in productivity, fish:zooplankton production ration, and pelagic:benthic fish production ration. How do these submodels compare to the cross-shelf patterns of the aggregated model? Can you answer this question? “Does the aggregated model approach the structure of the sub-models in time if it is allowed to evolve freely?”]**

**I attach the CNP sub-regions worksheet so you can double-check which cells I was referring to.**

Do I just use the original pb and qb terms read-in from the regionally-aggregated model? Why overwrite these at all?

**You're right. There's no need to overwrite these values for each sub-zone. BUT you DO need to make sure they have units in 1/d, that the p/b & q/b values for nutrients, eggs, and detritus groups are set to 1. ALSO-->> q/b (but not p/b) for fleets should be set to 1.**

MESOPELAGIC.production\_initial -- Is this coming from the "production" vector starting at cell E371 in my SubregionSubmodels... zone 1 sheet??

**No -- the value at cell E371 is actually a budget term (a proportion of consumption going to production). What you need to do:**

**1) run the full aggregated model (using the tuned detritus and nutrient settings) and take the mean production values across all days of the final few years. That will give you initial production in units of mmole N/m3/day over the entire region.**

**2) Take the region-wide mean value and multiply by the total area of the domain. That will give you initial production units of mmole N/m/day. There are some short-cuts for the regional areas that I'll describe below.**

**3) Multiply the region-wide mean by the fraction of biomass in each box (cells B11-P112 on tab 1 of your sub-domain spreadsheet). That will give you absolute biomass in each sub-region.**

**4) Divide the total biomass by the area of corresponding to get back to biomass per volume units mmole N/m3/d. And use these values as initial conditions for each sub-region.**

**SHORT-CUTS for sub-region areas: If you already have an estimate of box areas then you are ahead of the game. Did we talk about sub-regional areas some time back?**

**--Depth, don't worry about it in any of the averaging calculations. In the physical model, the depth of the surface boxes are all set to the same value.**

**--Sub-region box areas, for cross-shelf lengths use the values given in the f\_ECOTRANphysics function (box 1 = 10,000m, box 2 = 20,000m, box 4 = 20,000 m). That assumes you want to keep these at the same dimensions for all latitude zones (you are free to change this if you want, but its an extra step). For the along-shore distance, you'll have to use a tool like google earth or maybe just a google query to get distances between the N-S latitude boundaries -- Shouldn't be too hard to do. This should be a lot easier than going through any sort of ArcGIS toolbox to calculate areas.**

MESOPELAGIC.ConsumptionBudget -- I am using the ConsumptionBudget(recalculated) right? **NOT**the ConsumptionBudget(spatially integrated) near the top of the zone 1 sheet.

**Yes -- the RECALCULATED ConsumptionBudget on each tab (rows 250-256).**