Big goal: Conduct a meta-analysis on some subsection of the ecological literature with respect to environmental variation across different levels of organizations

Potential paths:

1. Look exclusively at temperature manipulations across all levels of organization
   1. Driving question: how does the magnitude of temperature response connect across different levels of organization when exposed to different types of temperature variation (diurnal, stochastic, autocorrelated etc.)
   2. Potential response variables:
      1. Individual: metabolic rate, TPC
      2. Population: population growth rate, population density, carrying capacity
      3. Community: biomass?, NPP? Other rate based metrics?
   3. Potential outcomes: a more nuanced understanding how the type of variation manipulation can influence differential responses across different levels of organization
2. Look exclusively at diurnal fluctuations of 3 different environmental variables (temp, pH, salinity) across all levels of organization
   1. Driving question
      1. Is there a differential response at different levels of organization to variation in each of these variables
      2. How do non-linear and linear response variables respond to stochastic vs. predictable variation?
         1. *look at a couple different environmental variables and how different manipulations of those variables coincides with either linear or non-linear response variables*
   2. Potential response variables:
      1. Individual: metabolic rate, growth rate, respiration rate (MMR)?
      2. Population: population growth rate, population density, carrying capacity
      3. Community: biomass?, NPP? Other rate based metrics?
   3. Potential outcomes: a better understanding of these metrics that covary may not necessarily covary in their responses to variation across different levels of organization?
3. Looking at the trade-off between spatial and temporal variation in temperature in marine and aquatic systems

What is it that I’d like to accomplish in a meta-analysis?

Finding experiments across all levels or organization that manipulate the same environmental variable, ideally temperature, in a predictable way?

How should the conclusions from these studies compare to larger organization schemes and more complex ecosystems?

Is it even relevant to ask how an ecosystem deals with diurnal fluxes since they may not even have enough of an effect to impact?

Perhaps a meta-analysis of diurnal, circadian rhythms across all levels of biological organization?

I really like the flow of Kroeker et al 2020, though it is a review, I really like how the different aspects of the marine field focus on the importance of different drivers at different timescales

-Makes me wonder whether all of those drivers are looked at on the same time scale?

-Also wondering about the trade-offs between temporal and spatial variability and how variation period could alter that

-Orland and Lawler 2004 were thinking about this I believe?

Has it been done that diurnal models and conclusions from temperature variation are fed into a stochastic model to look at whether or not the trends are the same?

Is the world predicted to become more variable or more autocorrelated? And if the answer is both, how do they interact? Is it that while the world will become more like its surrounding conditions, those conditions will increase in amplitude?

TS=(“temporal variation” OR “spatial variation” AND temperature AND rates) OR SO=(JOURNAL OF ANIMAL ECOLOGY OR JOURNAL OF ANIMAL ECOLOGY OR THE JOURNAL OF ANIMAL ECOLOGY OR THE JOURNAL OF ANIMAL ECOLOGY) OR SO=(FRESHWATER ECOLOGY) OR SO=(ECOLOGY LETTERS OR ECOLOGY LETTERS) AND PY=(1970-2020)

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*Databases= WOS, BCI, KJD, RSCI, SCIELO, ZOOREC Timespan=1970-2018*

*Search language=Auto*

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TS=( "environmental variation" AND temperature AND rates AND diurnal OR circadian\*) OR SO=(JOURNAL OF ANIMAL ECOLOGY OR JOURNAL OF ANIMAL ECOLOGY OR THE JOURNAL OF ANIMAL ECOLOGY OR THE JOURNAL OF ANIMAL ECOLOGY) OR SO=(FRESHWATER ECOLOGY) OR SO=(ECOLOGY LETTERS OR ECOLOGY LETTERS) AND PY=(1970-2020) OR AK=("variable environments")

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