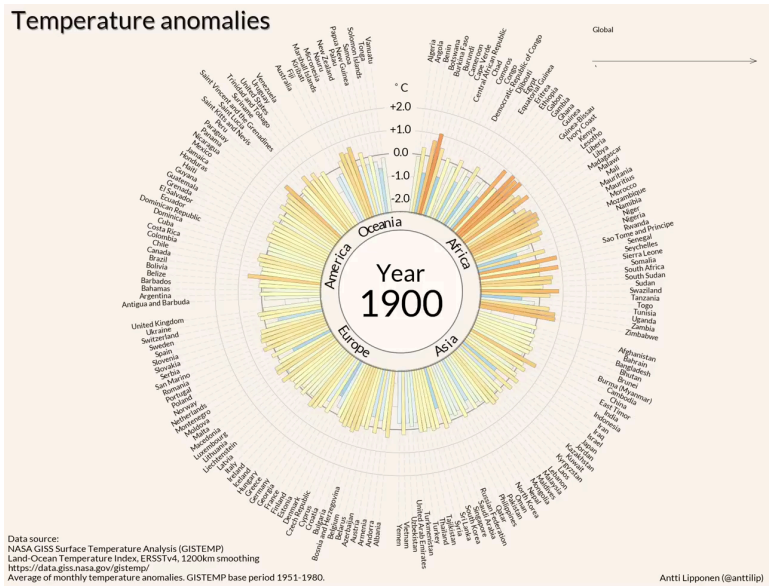
Optimal body mass, temperature, and energy budget



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19 January 2018

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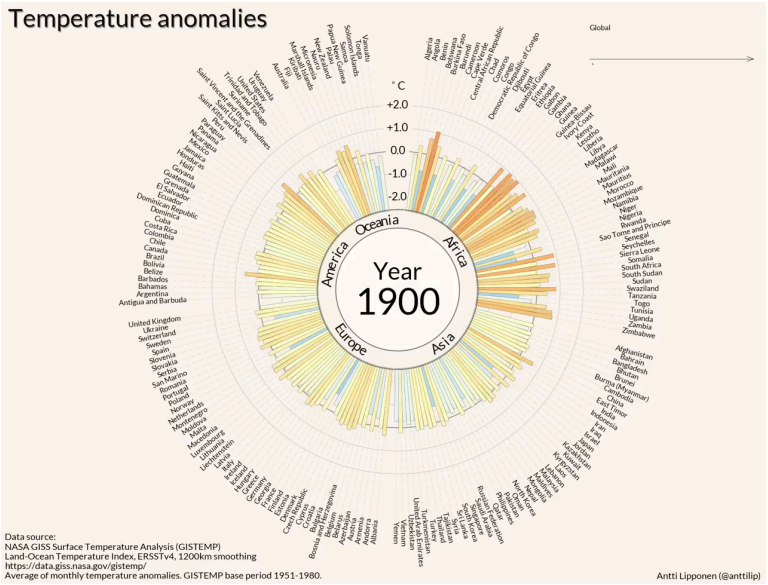

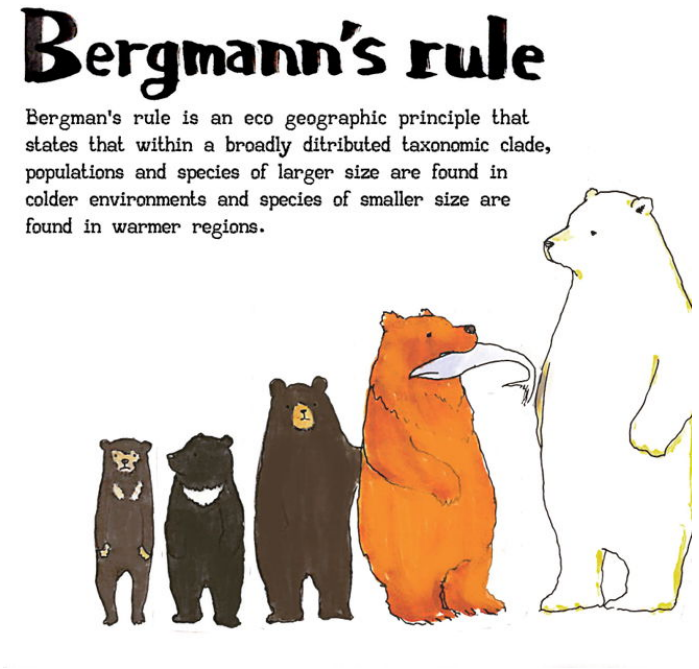

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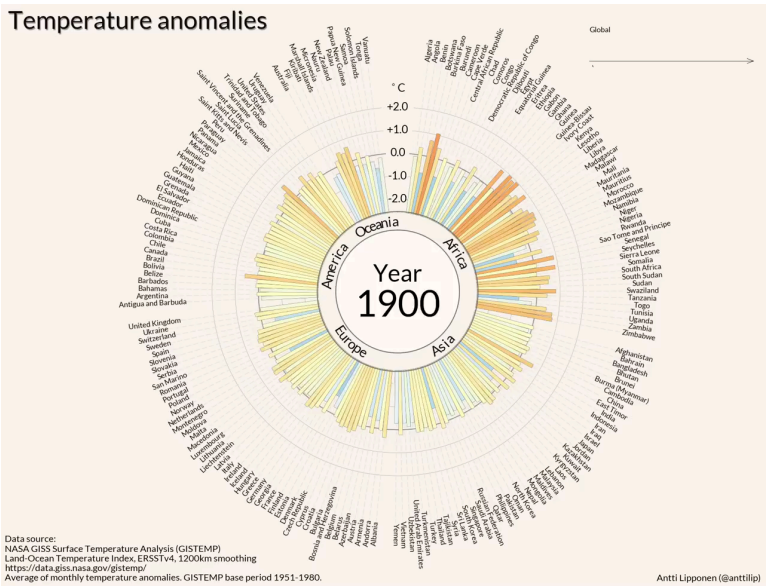

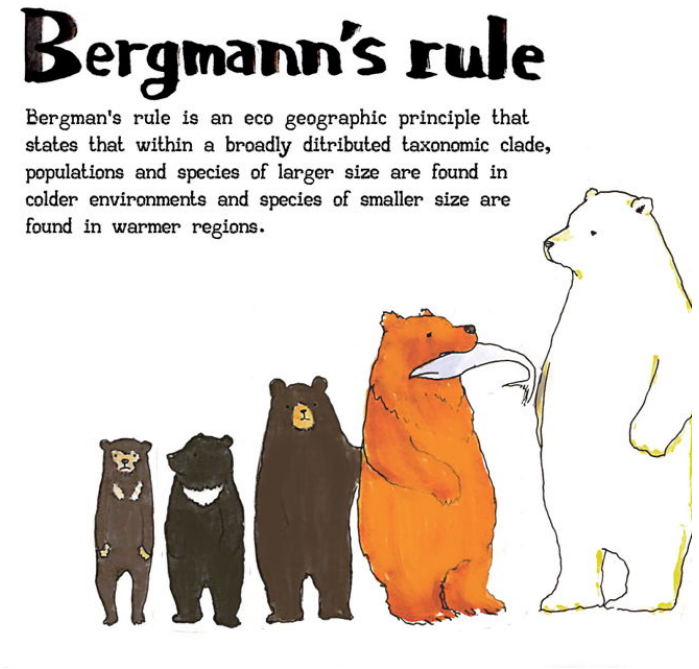

Q1: Why does net energy gain changes with body mass?

Q2: Does the body mass of dung beetles increase with decreasing temperature in Madagascar?

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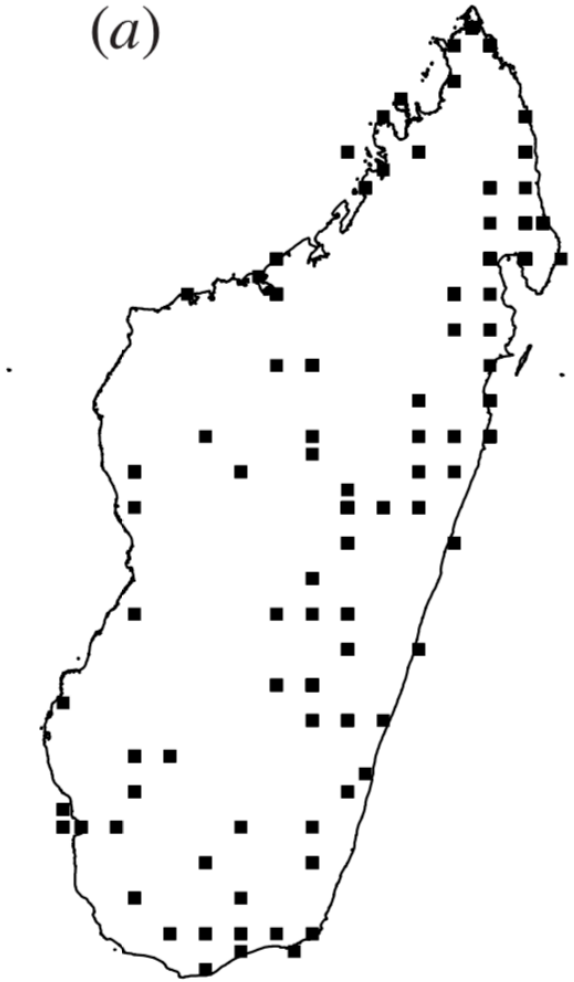
Does the body mass of dung beetles increase with decreasing temperature in Madagascar?

- Response: insect body mass
- Explanatory: mean annual temperature

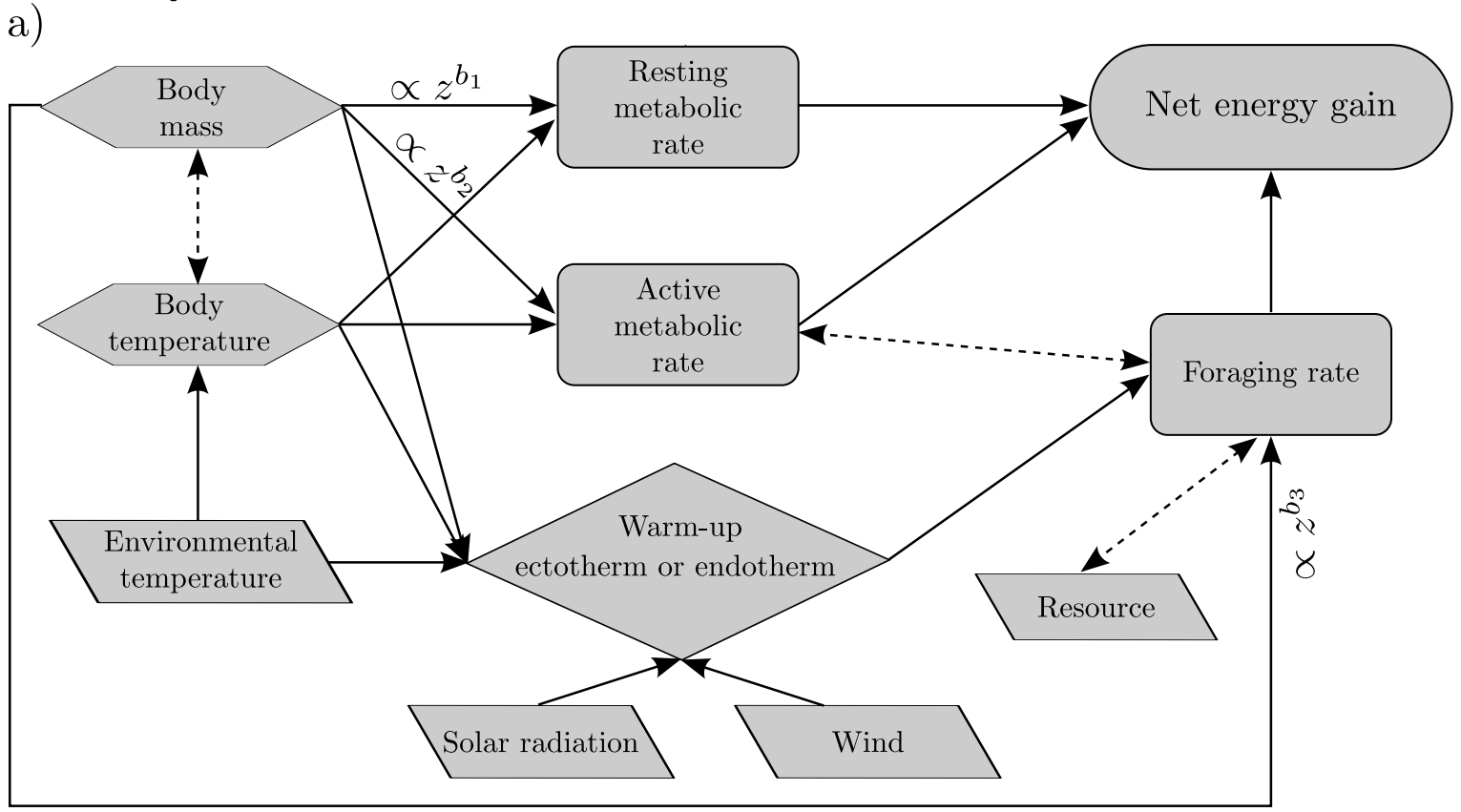
$$\text{model} - \quad \text{glmer}(\text{mass} \sim \text{temp} + (1|\text{site}), \text{family} = \text{normal})$$

- Data collection:
  - Obtain body mass measurements from database in Helsinki and the Paris National Museum of Natural History
  - Extract raster climate data for WorldClim database (Hijmans et al., 2005)



Sampling locations: year 1875-2006

How does net energy gain changes with body mass, temperature, and resource availability



Future goal

- Develop a generalized thermal performance curve