

PaleoDigitization Working Group: Linking Ancillary Data to Specimen Records in Paleo Databases

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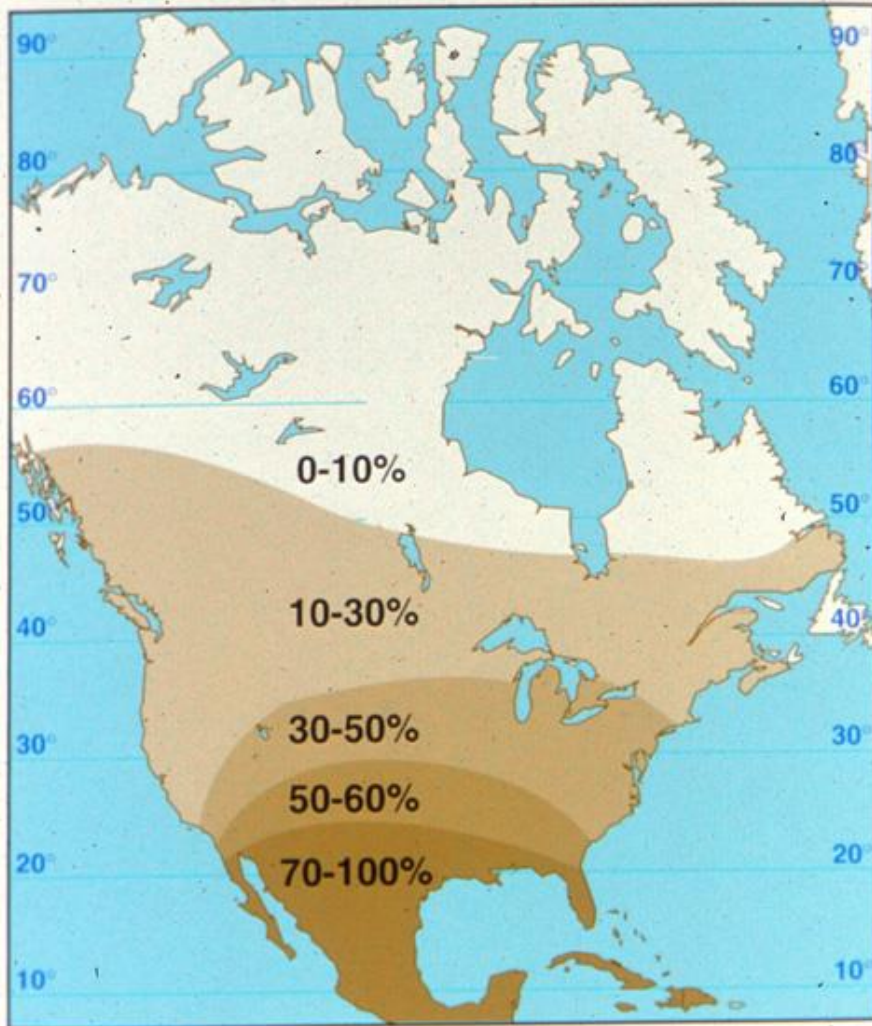
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Why do we have e-catalogs?

- Retrieval
- Access, etc.
- Research—with existing fields
 - Georeferenced specimens
 - Relative abundances
 - Media and images
 - If we added other research data, the research value of our collections databases would increase

Stable isotopes

- Many museum fossils have been sampled for stable isotope data, e.g., $\delta^{13}\text{C}$, $\delta^{18}\text{O}$
- Add value to specimens for research
 - Paleodiets, paleoecology
 - Paleoclimates
- These are not linked directly to specimens in most databases (how about yours?)



Modern-day C₄ Grasses

Lower $\delta^{13}\text{C}$, $\delta^{18}\text{O}$



Latitudinal
Gradient



Higher $\delta^{13}\text{C}$, $\delta^{18}\text{O}$

Pleistocene grazers (horses, bison) tooth enamel isotopes (MacFadden et al. 1999)—all based on values taken from catalogued museum collections

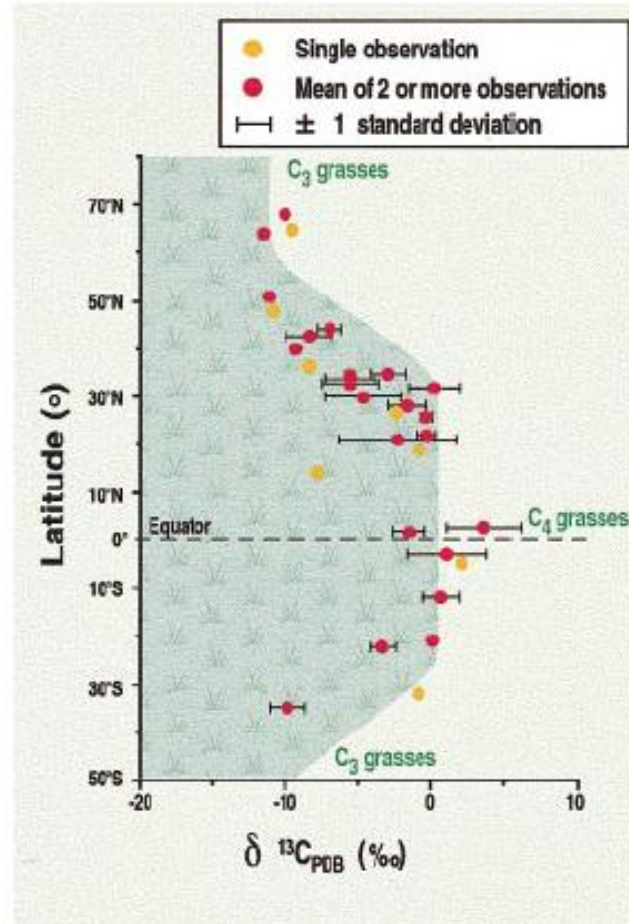


Fig. 6. Bivariate plot of stable carbon isotopes ($\delta^{13}\text{C}$) v. latitude for the tooth enamel carbonate samples used in this study (Table 1).

The problem, or opportunity

- Literally tens of thousands of stable isotope data ($\delta^{13}\text{C}$, $\delta^{18}\text{O}$) have been taken on fossil collections over the past several decades.
- These isotope data are in isolated databases without integration or access (Dark Data).
- There is no unified attempt to integrate.

Challenge with ancillary data

- Wouldn't it be nice to develop dedicated fields for data like stable isotopes to be attached directly to specimen records?
- Standard data fields would need to be developed.
- Legacy data from decades of research plus new measurements.

How would this happen?

- Research and collections community
(?requirement of sampling permission)
- Database program developers, e.g., Specify

So, is this important, and what would it take?

And not just for stable isotopes, but ^{14}C dating, other geochemical analyses, etc.

So, if you are all quiet right now!

- Do your collections allow destructive sampling, e.g., for stable isotopes?
- What happens to the data that are produced from these specimens?
- Do you have requirements of the researcher?
- (Unlikely) Do you attach these kinds of data to your specimen records?