Stratigraphy and geochronology of a long Quaternary coastal record, North Carolina coastal plain, USA

Recognizing aminozones: figure on left shows D/L values for two Holocene specimens, three superposed units at Stetson Pit (SP), and the Pliocene Chowan River formation. D/L values increase with superposition and known chronostratigraphic control. The Stetson aminozones are designated AZ2, AZ3, and AZ4. Figure on right shows that AZ2 can be divided into AZ2 and AZ2+ at MLD01 - this division is seen in a superposed section ~9 and ~10m below land surface, and D/L differences are statistically significant. AZ2 is calibrated with TMS coral dates at 80 ka (Wehmiller et al., 2004). Data for other cores also support this high-resolution aminostratigraphic separation.

Estimating ages using kinetic models of racemization: two popular models predict vastly different ages for older aminozones. Independent evidence supports the non-linear model ages, indicating that AZ4 is early Pleistocene.

Age mixing example:
These beach shells, all collected within ~5m of each other at Cape Point, NC, represent an extreme example of age mixing in the NC Coastal System. All except the lower lef shell are Pleistocene, based on both radiocarbon and amino acid data.

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