astroBayes!

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1 Introduction

Developing precise and accurate models that relate stratigraphic position to absolute age (e.g., age-depth models) is a crucial step in interpreting the rate and tempo of geologic and climatological processes (Blaauw and Heegaard, 2012; Parnell et al., 2011). Constructing these chronologies relies on a variety of geochronologic information. Various radioisotopic techniques (e.g., $^{40}Ar/^{39}Ar$, U-Pb) allow the age of discrete stratigraphic points to be determined.

2 Statistical Methods

$$P(parameters\,|data) = \frac{P(data\,|parameters)}{P(data)} \times P(parameters)$$

In our case, our data takes two forms. First, our cyclostratigraphic proxy record, which consists measurements $[d_1, d_2, ...d_i]$ where i is the stratigraphic position of each measurement. We assume that cyclic signals in d is derived from orbital forcing and the record can therefore be tuned.

References

Blaauw, M., Heegaard, E., 2012. Estimation Of Age-Depth Relationships, in: Tracking Environmental Change Using Lake Sediments. Springer, pp. 379–413.

Parnell, A.C., Buck, C.E., Doan, T.K., 2011. A Review Of Statistical Chronology Models For High-Resolution, Proxy-Based Holocene Palaeoenvironmental Reconstruction. Quaternary Science Reviews 30, 2948–2960. https://doi.org/doi:10.1016/j.quascirev.2011.07.024