



FAME (v1.0): a simple proxy model to simulate the effect of planktonic foraminifer species-specific habitat on their oxygen isotopic content

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The oxygen-18 signal recorded in fossil planktonic foraminifer shells has been used for over 50 years in many geoscience applications. However, different planktonic foraminifer species generally yield distinct oxygen-18 signals, as a consequence of their specific living habitats in the water column and along the year. This complexity is usually not taken into account in data-model integration studies. To overcome this shortcoming, we developed the FAME (Foraminifers As Modeled Entities) module. The module predicts the presence or absence of commonly used planktonic foraminifer species, and their oxygen-18 values. It is only forced by hydrographic data and uses a very limited number of parameters, almost all derived from culture experiments. FAME performance is evaluated using MARGO Late Holocene planktonic foraminifer calcite oxygen-18 and abundances data sets. The application of FAME to a simple cooling scenario demonstrates its utility to predict changes in planktonic foraminifer oxygen-18 in response to changing climatic conditions.