

It's about time: A revised Cenozoic tropical planktonic foraminiferal biochronology

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The recent enhancements in deep sea drilling recovery, multiple coring and high resolution sampling both offshore and onshore, has improved planktonic foraminiferal calibrations to magnetostratigraphy, cyclostratigraphy and/or modified species ranges. This accumulated new information has allowed many of the planktonic foraminiferal bioevents of the Cenozoic to be revised and a reassessment of the planktonic foraminiferal calibrations. Here we present an amended low-latitude (tropical and subtropical) Cenozoic planktonic foraminiferal zonation. We compile 187 revised calibrations of planktonic foraminiferal bioevents from multiple sources for the Cenozoic. We review and synthesize these calibrations to both the geomagnetic polarity time scale (GPTS) of the Cenozoic and astronomical time scale (ATS) of the Neogene and late Paleogene. On the whole, these recalibrations are consistent with previous work; however, in some cases, they have led to major adjustments to the duration of biochrons. Recalibrations of the early middle Eocene first appearance datums of *Globigerinatheka kugleri*, *Hantkenina singanoae*, *Guembelitrioides nuttalli* and *Turborotalia frontosa* have resulted in large changes in the durations of Biochrons E7, E8 and E9. We have introduced (upper Oligocene) Zone O7 utilizing the biostratigraphic utility of '*Paragloborotalia*' *pseudokugleri*. The revised and recalibrated datums provide a major advance in biochronologic resolution and a template for future progress to the Cenozoic time scale.

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