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## ABSTRACT

## DEPTHS, PALEODEPTHS AND THE PERCENTAGE OF THE FORAMINIFERAL ASSEMBLAGE COMPRISING PLANKTONIC FORAMINIFERA OFF TRINIDAD

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One aim of foraminiferal micropalaeontology is to determine the palaeodepths at which sedimentary rocks were deposited, thereby producing palaeodepth curves that test sequence stratigraphic models derived by other means. The percentage of the foraminiferal thanatacoenosis comprising planktonic foraminifera (%P) is a powerful tool for determining palaeobathymetric trends; %P is generally positively correlated with water depth D (in metres).

The shelf sea around Trinidad, West Indies, has since the late Miocene been influenced by freshwater outflow from the Amazon, Essequibo and Orinoco rivers, which lowers marine salinities around the island but induces high rates of phytoplankton productivity. A review of %P:D relationships elsewhere indicates that the impact of freshwater outflow from South America precludes the use in Trinidad of %P:D relationships noted in areas of normal marine salinity or lower primary productivity when. Here I use a suite of 27 modern (2003-2005) sediment samples from the continental shelf off SE Trinidad to derive a relationship between %P and D for the SE Caribbean area.

Samples were taken between the shoreline and 102 m depth. While the benthonic foraminiferal assemblage at the shoreline was dominated by Ammonia sarmientoi, that in the remaining samples (38 m -102 m) comprised an admixture of Hanzawaia concentrica, Pseudononion atlanticum and Uvigerina subperegrina. Thus, the composition of benthonic assemblages resolves depth only comparatively crudely. Regarding %P and depth D, nonlinear regression, which fits the data well (r = 0.937, p < .0001), gives for the middle and inner neritic (<100 m) around Trinidad

 $D = \exp(-3.507 + [0.12\% P])/(\% P + 1)^{-0.371}$ 

+ exp(1.996+[-0.031%P])/(%P + 1)^-0.856.

In contrast, linear regression, which does not fit the data quite as well (r = 0.854, p < .0001), and is included for the sake of the statistically faint-hearted but is still significantly significant, indicates that

D = 19.7 + 1.34%P.

Differences between depths estimated by the formulae are for the neritic environment not great. The expression D = 19.7 + 1.34%P is used show that the upper Miocene to lower Pliocene San José Calcareous Silt at the Forres Park Landfill, Central Trinidad, was deposited at palaeodepths <50 m.