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**Pliocene planktic foraminifer census data from
Deep Sea Drilling Project Hole 445**

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INTRODUCTION

The U.S. Geological Survey is conducting a long-term study of the climatic and oceanographic conditions of the Pliocene. One of the major elements of the study involves the use of quantitative composition of planktic foraminifer assemblages in conjunction with stable isotope analysis of planktic and benthic foraminifers to estimate sea-surface temperatures and identify major oceanographic boundaries and water masses in the North Pacific region. We anticipate analyzing many samples during the project

which will result in a large volume of raw census data. In addition, it is likely that all or some of the census data from individual cores will be incorporated into analyses for more than one report over the course of the project. Therefore we have decided to make the raw census data available in a series of open-file reports that will provide basic data for future work. In this report we present counting categories and raw census data for planktic foraminifer assemblages in 13 samples from DSDP Hole 445 in the Philippine Sea (Fig. 1).

FIGURE 1. Location of Site 445.

A variety of statistical techniques are being developed to transform census data of foraminifers in Pliocene deep-sea cores into quantitative estimates of Pliocene sea-surface temperatures. Details of statistical techniques, details of taxonomic groupings, and oceanographic interpretations are presented in more formal publications (Dowsett and Poore, 1990, 1991; Dowsett, 1991).

Latitude, longitude, and water depth for each locality are in Table 1. Counts of variables tabulated in each sample are given in Table 2.

TABLE 1. Localities discussed in text

Site	Lat.	Lon.	Depth
445	25.52N	133.20E	3377.0 m

METHODS

The samples used in this study were washed using low temperature (isotope) procedures. Sediment samples were dried in an oven at $\leq 50^{\circ}\text{C}$. The dried bulk sample was disaggregated in a beaker with warm tap water and about 2 ml of dilute calgon solution (5 gm calgon to 1 liter water). The beaker was agitated on a shaker/hot plate without heating. Samples were then washed through a 63 μm sieve using a fine spray hose and dried in an oven at $\leq 50^{\circ}\text{C}$. Many samples required an additional treatment with about 10 ml of 10% H_2O_2 added to the wash in order to obtain clean specimens.

A split of 300-350 planktic foraminifer specimens was obtained from the $\geq 149\ \mu\text{m}$ size fraction using a Carpc sample splitter. Specimens were identified, sorted, and glued to a standard 60 square micropaleontological slide.

COUNTING CATEGORIES

The taxonomic names used in Table 2 as well as taxon codes used in other publications are summarized in a comprehensive list below. In general, our

taxonomic concepts follow Parker (1962; 1967) and Blow (1969). Exceptions to their practices are noted below.

Code Taxon (taxa) comments

Cande *Candeina*

bulls *Globigerina bulloides* (d'Orbigny) and *G. praebulloides* Blow

falco *Globigerina falconensis* Blow

pseud *Globigerina pseudobesa* (Salvatorini)

incis *Globigerina incisa* (Bronnimann and Resig)

praed *Globigerina praedigitata* Parker

woodi *Globigerina woodi* Jenkins and *G. apertura* Cushman

decor *Globigerina decoraperta* Takayanagi and Saito

nepen *Globigerina nepenthes* Todd

sp. 1 *Globigerina* sp. 1. Taxon resembles *G. falconensis* but has reticulate surface texture similar to *G. woodi* group.

aequi *Globigerinella aequilateralis* (Brady)

gluti *Globigerinita glutinata* (Egger) s.l.

congl *Globigerinoides conglobatus* (Brady)

obliq *Globigerinoides obliquus* Bolli and *G. extremus* Bolli and Bermudez

ruber *Globigerinoides ruber* (d'Orbigny)

saccu *Globigerinoides sacculifer* (Brady), *G. quadrilobatus* (d'Orbigny) and *G. trilobus* (Reuss)

Gnoid *Globigerinoides* spp. Representatives of *Globigerinoides* (usually small) that could not be confidently assigned to *G. ruber*, *G. obliquus* (s.l.) or *G. conglobatus*.

altis *Globoquadrina altispira* (Cushman and Jarvis)

venez *Globoquadrina venezuelana* (Hedberg)

cibao *Globorotalia cibaoensis* Bermudez

conom *Globorotalia conomiozea* Kennett

crass *Globorotalia crassaformis* (Galloway and Wissler). This category includes *G. ronda* Blow and *G. oceanica* Cushman and Bermudez. Specimens with a distinct keel on the entire ultimate whorl are tabulated separately under "kcras".

kcras This category includes *G. crassaformis* with fully keeled ultimate whorl.

viola *Globorotalia viola* Blow. Both encrusted (*G. crassula* of Blow, 1969) and non-encrusted specimens are included.

hirsu *Globorotalia hirsuta* (d'Orbigny)

plata *Globorotalia inflata* (d'Orbigny) and *G. puncticulata* (Deshayes)

marga *Globorotalia margaritae* Bolli and Bermudez

menar *Globorotalia menardii* (Parker, Jones, and Brady) s.l. This category includes various members of the *G. menardii* lineage such as *G. limbata* (Fornasini) and *G. miocenica* Palmer.

pumil This category includes small forms with 5-7 chambers in the ultimate whorl that are similar to *Globorotalia pumilio* Parker, *G. praepumilio* (Parker) and *G. pseudopumilio* Bronnimann and Resig.

scitu *Globorotalia scitula* (Brady) s.l. This category includes various members of the *G. scitula* group, for example *G. subscitula* Conato.

toeat *Globorotalia tosaensis* Takayanagi and Saito and *G. truncatulinoidea* (d'Orbigny)

tumid *Globorotalia tumida* (Brady) s.l. This category includes *G. plesiotumida* Blow and Banner.

hexag *Globorotaloides hexagona* (Natland)

acost *Neogloboquadrina acostaensis* (Blow) and *N. continuosa* (Blow)

satca *Neogloboquadrina atlantica* (Berggren) left-coiling. See Poore and Berggren, 1975 for discussion of this highly variable taxon.

datca *Neogloboquadrina atlantica* (Berggren) right-coiling

humor *Neogloboquadrina humerosa* (Takayanagi and Saito)

spach *Neogloboquadrina pachyderma* (Ehrenberg) left-coiling. Relatively small, compact *Neogloboquadrina* with 4-5 chambers in the ultimate whorl, kummerform ultimate chamber, and a slightly to distinct oval equatorial outline are included here. Separating small left-coiling *N. atlantica* from large left-coiling *N. pachyderma* is arbitrary in many North Atlantic high-latitude sites.

dpach *Neogloboquadrina pachyderma* (Ehrenberg) right-coiling. This category is restricted to specimens with 4 chambers in the ultimate whorl. Right-coiling specimens close to *N. pachyderma* that have more than 4 chambers in the ultimate whorl are tabulated as "dupac".

dupac This category is used for specimens of right-coiling *Neogloboquadrina* with more than four chambers in the ultimate whorl that are transitional between *N. pachyderma* and *N. acostaensis* or *N. atlantica*.

Neogl This category includes *Neogloboquadrina* that were not identified to specific level but generally does not include representatives of *N. atlantica*.

Orbul *Orbulina universa* d'Orbigny

Sphae *Sphaeroidinella* and *Sphaeroidinellopsis*

quinq *Turborotalita quinqueloba* (Natland)

OTHER This category includes unidentified specimens and taxa that are rare within assemblages from the cores.

TOTAL PLANK Total number of planktic forams in the counting split.

frags fragments of planktic foraminifers

bform benthic foraminifers

DSDP and ODP sample designations are abbreviated in Table 2 as core-section, depth within section in centimeters (eg. 10-5, 34 = core 10, section 5, 34 cm below top of section 5). The depth column lists depth of sample below sea floor in meters.

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Table 2 - DSDP 445

Sample	Depth (m)	<i>Neogloboquadrina acostaensis</i>	<i>Globigerina bulluloides</i>	<i>Globigerina falcomensis</i>	<i>Globigerina laticosta</i>	<i>Globigerina woodi/aperta</i>	<i>Globigerina decoroperta</i>	<i>Globigerinella angulata/latirostris</i>	<i>Globigerina g. bulinaria</i>	<i>Globigerinoides conglobatus</i>	<i>Globigerinoides obliquus</i>	<i>Globigerinoides ruber</i>	<i>Globigerinoides sacculifer</i>	<i>Denticulogobierina albipera</i>	<i>Globorobalia crassigobierina</i>	<i>Globorobalia margaritae</i>	<i>Globorobalia hirsuta</i>	<i>Globorobalia menardi</i>	<i>Globorobalia scintula</i>	<i>Globorobalia bairdi</i>	<i>Globorobalia unguilata</i>	<i>Neogloboquadrina denticulata</i>	<i>Neogloboquadrina pachyderma (s)</i>	<i>Neogloboquadrina pachyderma (d)</i>	<i>Neogloboquadrina "dipac"</i>	<i>Orbulina universa</i>	<i>Sphaerobulba lillopsis</i>	<i>Trochammina quinquiloba</i>	<i>Globigerina neperthes</i>	<i>Pullammina spp.</i>	<i>Neogloboquadrina atlantica (d)</i>	<i>Neogloboquadrina atlantica (s)</i>	<i>Globorobalia turgida/punctulata</i>	<i>Globorobalia losazeensis</i>	<i>Candacia nitida</i>	<i>Globigerinoides</i> spp.	<i>Neogloboquadrina</i> spp.	Other	Total	Fragments	Benthic																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
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