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5. Data Report: Phytoliths in Drill Core Sediments from Sites 1165 and 1166, Leg 188, Prydz Bay, East Antarctica[1]

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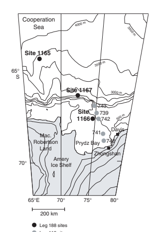
ABSTRACT

Rare phytoliths are described from Late Cretaceous to Quaternary deep-sea sediments from Sites 1165 and 1166, Prydz Bay, East Antarctica. The phytoliths are comparable to modern tree/shrub, grass, and fern forms, although some may be modern contaminants. Spherical tree/shrub phytoliths are the most common, occurring particularly in the lower middle to middle Miocene core sections at Site 1165. All phytolith forms observed (except irregular and folded sphericals) have been previously described in other Antarctic sediments. The low phytolith abundances in the cores probably result from a combination of factors including the substantial distance offshore of the drill sites, taphonomic influences (low source production, soil dissolution, and dilution of terrigenous material during transport and deposition), and silica diagenesis downhole.

INTRODUCTION

A total of 72 core samples were processed for phytoliths from Sites 1165 (38 samples) and 1166 (34 samples) (Fig. F1) (O'Brien, Cooper, Richter, et al., 2001). Site 1165 is located at 64°22.8´S, 67°13.1´E on the continental rise offshore Prydz Bay in 3537 m water depth. A combination of two holes (Holes 1165B and 1165C) yielded a 999-m-thick, relatively continuous (recovery = 69.3%) sedimentary record from early

F1. Leg 188 and 119 drill sites, p. 10.



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Miocene (~21.8 Ma) to Pleistocene. Site 1166 is located at 67°41.8´S, 74°47.2´E on the continental shelf in 475 m water depth, and because of poor recovery (18.6%) yielded 71 m of core from Hole 1166A down to 381 meters below seafloor (mbsf). The age of Hole 1166A ranges from Late Cretaceous at the base to Holocene at the seafloor, with many disconformities throughout. The aim of this study is to describe phytolith assemblages from samples throughout the cores from Sites 1165 and 1166 and provide an interpretation, in combination with the terrestrial palynomorph record (**Macphail and Truswell,** "Palynology of Site 1166, Prydz Bay, East Antarctica" and **Macphail and Truswell,** "Palynology of Neogene Slope and Rise Deposits from ODP Sites 1165 and 1167, East Antarctica," both this volume), of vegetation composition onshore throughout the period of deposition. The reconstruction of vegetation communities through time using both proxies of source vegetation can also lead to broad interpretations about regional climate change. Although phytoliths are absent to rare throughout samples studied from both Sites 1165 and 1166, the sparse record complements and supplements the terrestrial palynomorph record, particularly with evidence of grass during the Miocene (Table **T1**).

T1. Stratigraphic distribution of phytoliths, p. 11.

Phytoliths are plant microfossils of solid opal silica deposited within and between the cells of most living plants. When extracted from soils, they are commonly thought to represent a decay-in-place record of the overlying source vegetation, although it has been recognized that several factors contribute to the assemblage composition, including fire, herbivory and eolian, edaphic, and fluvial transport (Fredlund and Tieszen, 1994). Erosion of soils, either by wind or water, and subsequent transport and deposition of terrigenous material offshore yields a phytolith history in the stratigraphic record that reflects the vegetation history in the hinterland. Phytoliths have previously been recovered in low but persistent numbers from the Cape Roberts Project (CRP) cores off the southern Victoria Land coast, Antarctica (early Oligocene–early Miocene age) (Thorn, 2001), and in low numbers from Ocean Drilling Program (ODP) cores, for example, from middle Miocene–Pleistocene (Locker and Martini, 1986) and Pliocene–Quaternary sediments (Bukry, 1979). Phytoliths have also been reported from Antarctic terrestrial rocks at Mts. Feather and Crean as far back as the late Devonian (Carter, 1999).

Phytolith processing laboratory methods followed those of Piperno (1988) and Hart (1988), as refined by Carter (1998a, 1998b). Lithologies processed were no coarser than fine sand. Other siliceous microfossils present in the sample in addition to phytoliths were extracted simultaneously. Biogenic opal residues were permanently mounted on glass microscope slides in Canada balsam and viewed under a transmitted light stereomicroscope using oil immersion. One slide was prepared per sample and scanned at 400× magnification, with photographs taken by digital camera at 1000×.

The low phytolith abundances observed could be due to many factors. The presence of a sparse but persistent flora in the CRP cores occurs within 16 km of the current shoreline but probably only a few kilometers from the paleoshoreline (Barrett, 2001). In the Prydz Bay cores, ~200–400 km from the current shoreline, phytoliths are rare to absent, suggesting that phytoliths may not travel very far offshore. Additional taphonomic factors may include low phytolith production by the source vegetation, dissolution of phytoliths in highly alkaline soils, low quantities of terrigenous material reaching the paleoshoreline, and substantial dilution of terrigenous material during offshore transport and deposition. Phytoliths and other siliceous microfossils can also be subject to silica diagenesis within the marine sedimentary record, as has occurred below ~600 mbsf at Site 1165. A similar loss of most siliceous microfossils has affected all except three samples (1.29, 142.32, and 148.11 mbsf) at Site 1166 (Table T1).

PHYTOLITH CLASSIFICATION AND DESCRIPTION

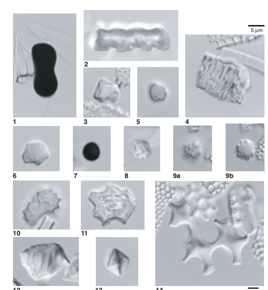
Phytoliths are classified by morphological type based on the classification schemes of Piperno (1988) and Kondo et al. (1994). Numbers of distinctive phytoliths observed at each sampling level are presented in Table T1. The presence of "plate" and "block" phytoliths with irregular and highly variable morphologies and other siliceous microfossils is noted by an asterisk symbol. The observed phytoliths have been compared to those previously described from other Cenozoic Antarctic samples: CRP cores (Carter, 1998b; Thorn, 2001), CIROS cores (70 km south of Cape Roberts) (Kondo et al., 1994), an undescribed Ross Sea core (J. Carter, pers. comm., 2002), Sirius Group cores from Mt. Feather (Carter, 1998a), and McMurdo Sound erratics (V.C. Thorn, unpubl. data). Comparisons have also been sought from the wider literature, including a Web-based database (Pearsall et al., 1998) on modern phytolith production.

Phytoliths Characteristic of Grasses

Bulliform

Three phytoliths originating from grass bulliform (motor) cells are present at Site 1165 (329.13 mbsf: one fan shaped and one rectangular and 392.88 mbsf: one fan shaped) (Plate P1, fig. 3). The rectangular specimen has high relief, a rectangular outline with the long edges bevelled, a smooth surface, and is 12 µm long. The fan-shaped forms have a curved outline around half of the circumference, and the remainder tapers to a point (Fig. F1). The surface of the illustrated specimen is smooth (8 µm in diameter), and the second is rugulose (9 µm).

P1. Phytoliths from Sites 1165 and 1166, p. 12.



Fan-shaped and rectangular bulliform cells have also been observed in core CRP-2/2A (Thorn, 2001) and fan-shaped phytoliths from the CIROS-1 core and extant *Rytidosperma* (reed grass) in New Zealand (Kondo et al., 1994).

Panicoid

A single panicoid phytolith is present at 96.08 mbsf at Site 1165 (Plate P1, fig. 1). It has a smooth, dumbbell-shaped outline, is opaque, and is 16 µm long. Dark-colored or opaque phytoliths are related to high quantities of organic carbon occluded either within or coating the surface. Carbon coatings are also commonly produced when a plant is burned and can be an indication of vegetation fires (Piperno, 1988).

A transparent panicoid specimen with a narrow, wavy margin has been described from core CRP-3 (Thorn, 2001). Bukry (1979) notes the presence of panicoid phytoliths (and illustrates an opaque form) in the Pliocene sediments of deep-sea cores off the northwest coast of Africa (Deep Sea Drilling Project [DSDP] Site 397). He compares these forms to those found in the extant prairie grass *Zea mays*. Locker and Martini

(1986) also illustrate both transparent and dark-colored panicoid phytoliths from the middle Miocene to Pleistocene sediments of DSDP Site 591 in the southwest Pacific. Here, they attribute the presence of grass phytoliths to distribution by westerly winds from Australia, where large open grasslands developed during the late Neogene in the north and central regions (Kemp, 1978). Bowdery (1999) has also described the modern eolian transport of panicoid phytoliths with reference to historical Mid-Atlantic shipboard samples sourced from the African dust plume. Panicoid phytoliths are known from the epidermal cells of Panicoideae, some Arundinoideae, some Eragrostoideae (Kondo et al., 1994), and a small number of Cyperaceae (sedge) species (Metcalfe, 1971). In general terms they are considered characteristic of "warm" climate grasses (Twiss, 1992).

Phytoliths Characteristic of Ferns

Striated Plate

A single striated plate comparable to those produced in modern fern tissue (Kondo et al., 1994) is present at 329.13 mbsf at Site 1165 (Plate **P1,** fig. 4). This specimen is 16 µm long, has a rectangular outline, medium relief, and deep, parallel striations across the upper surface. Kondo et al. (1994) noted similar striated plate forms within samples from the CIROS-1 core.

Phytoliths Characteristic of Trees/Shrubs

Anticlinal Epidermal

A jigsaw piece–shaped phytolith is present at 329.13 mbsf at Site 1165 (Plate **P1,** fig. 14). It is transparent, of medium relief, and has a smooth surface with well-defined edges and deep embayments. It is 42 µm long, which is within the size range of anticlinal phytoliths typically formed in the epidermal leaves of dicotyledonous trees and shrubs (12–85 µm) (Kondo et al., 1994). Another anticlinal specimen is present at 1.29 mbsf at Site 1166, which has broader embayments, is 16 µm wide, and is partially dissolved on the surface. Anticlinal epidermal forms have been described from ferns, but the latter are generally larger (70–200 µm) and longer in outline (Kondo et al., 1994).

Anticlinal epidermal phytoliths have also been observed in the CRP cores (Carter, 1998b; Thorn, 2001), Sirius Group (Carter, 1998a), and Permian Weller Coal Measures (Carter, 1999) at Mt. Feather, Antarctica.

Spherical

Spherical phytoliths are the most common forms observed in the Prydz Bay samples. These forms are deposited within leaf epidermal and wood ray and parenchyma cells. Six different morphological subgroups are identified. Only spherical "pellet" forms are observed at Site 1166.

Folded

Seven specimens of this distinctive form are present between 291.28 and 392.88 mbsf at Site 1165 (Plate **P1,** fig. 10). The specimens are oval to kidney-shaped in outline with a high relief and a folded surface texture with sharp-edged ridges. The forms are dark in color and are commonly 6–8 µm long (two specimens are 4 and 12 µm long). No comparative phytoliths have been previously described, and the natural affinity of these forms is currently unknown.

Irregular

Three irregular spherical phytoliths are present at Site 1165, one each at 329.13, 392.88, and 482.98 mbsf (Plate **P1**, fig. 6). These specimens are dark in color, have irregular but still approximately circular outlines, and medium relief. The surface textures include smooth or low widely spaced nodules, ranging in size from 7 to 8 µm in diameter. Irregular spherical phytoliths have not been described from other localities and are currently of unknown natural affinity.

Pellet

This subgroup of spherical phytoliths is the most common form observed throughout samples from both Sites 1165 and 1166 (39 specimens) (Plate **P1**, fig. 5). The specimens are generally small (4–7 µm in diameter), dark in color, and of medium–high relief. The outlines are commonly irregular but remain approximately circular. The surface textures are varied and include smooth, low-relief rugulose, striated, and medium-relief folded.

Pellet sphericals are common throughout core CRP-2/2A and the upper portion of core CRP-3 (Thorn, 2001). These forms have not been described elsewhere, and their natural affinity remains unknown.

Smooth

A single smooth spherical specimen is present at 2.29 mbsf at Site 1165 (Plate **P1**, fig. 7). It is opaque, 5 µm in diameter, and, like the opaque panicoid specimen described above, could reflect source vegetation burning.

Slightly larger smooth spherical phytoliths have been described from the Cape Roberts cores (8–10 µm in diameter) and are compared to those produced by the New Zealand mountain beech (*Nothofagus solandri* var. *cliffortioides*) (Thorn, 2001). Significant numbers ranging in size between 1 and 50 µm in diameter are also produced by deciduous angiosperms (Piperno, 1988).

Spinulose

One spinulose spherical specimen (5 µm in diameter) is present at 139.08 mbsf at Site 1165 (Plate **P1**, fig. 8). Spinulose sphericals commonly originate from a stegmata leaf cell with unevenly thickened walls. This specimen is approximately circular in outline and is covered with widely spaced narrow spinules with rounded apices.

This form has also been described from the CRP cores (Thorn, 2001). Spinulose spherical phytoliths are commonly found in modern Palmae (6–25 µm in diameter); however, the Bromeliaceae (monocotyledon herbs) also produce small forms (<2–8 µm in diameter). Phytoliths from the two families can generally be distinguished on the basis of size (Piperno, 1988), although this distinction requires further investigation.

Verrucose

Two spherical phytoliths with a distinctive verrucose surface texture are present at 64.58 (5 µm in diameter) and 973.40 mbsf (8 µm), respectively, at Site 1165 (Plate **P1**, figs. 9a, 9b). Both specimens have approximately circular outlines with verrucae projections of varying lengths (up to ~1 µm in diameter).

Verrucose sphericals have been previously described from core CRP-3 (Thorn, 2001) and a variety of extant plants including *Nothofagus* spp.

(Kondo et al., 1994). Verrucose spherical phytoliths described from the CIROS-1 core are tentatively attributed to *Nothofagus* (Kondo et al., 1994); however, the CRP-3 core forms are more closely compared to those produced by the New Zealand honeysuckle (Proteaceae) (Thorn, 2001).

Phytoliths of Unknown Origin

Cubic

Three distinctive phytoliths of cubic form are present in the uppermost sample from Site 1166 (1.29 mbsf) (Plate P1, fig. 13). The specimens have smooth surfaces, well-defined edges, and sharp corners and are 7, 7, and 9 µm in diameter, respectively.

Carter (1998a) noted the presence of irregular cubic forms of slightly larger size (8–16 µm) in samples from the Sirius Group from Mt. Feather, which were also extracted from a diamicton at the same locality by Bleakley (1996). The natural affinity of these forms is currently unknown. The cubic phytoliths observed are superficially similar in appearance to starch grains comprising the powder supplied with disposable laboratory gloves. The glove starch grains are, however, generally larger (8–17 µm in diameter observed) and have a circular outline with conical relief.

Plates and Blocks

This highly variable category contains irregular plate and block specimens of biogenic silica. Outline shapes include irregular, rectangular, embayed, and polygonal with commonly etched or smooth surface textures. These forms are present within samples from both Sites 1165 and 1166, but are observed predominantly between 291.28 and 855.78 mbsf at Site 1165 (Plate P1, figs. 11, 12).

Carter (1999) notes the occurrence of similar “etched polyhedral” phytoliths from the Devonian Aztec Siltstone at Mt. Crean and also within samples from an undescribed Ross Sea core (J. Carter, pers. comm., 2002). Similar forms are also described from the Cape Roberts cores (Carter, 1998b; Thorn, 2001) and the Sirius Group from Mt. Feather (Bleakley, 1996; Carter, 1998a) and Table Mountain (Bleakley, 1996). The natural affinity of these forms is currently unknown.

Possible Contaminants

Festucoid

One festucoid phytolith is present at 106.34 mbsf at Site 1166 (Plate P1, fig. 2). It has crenulate margins, higher relief in the center compared to the edges, and is 24 µm long. This well-preserved specimen is considered to be a contaminant because of its presence in an otherwise barren sample.

The only other possible festucoid phytolith that has been reported from Antarctic sediments was reported from core CRP-3 (Thorn, 2001). Festucoid phytoliths form in the epidermal cells of extant Pooideae and some Arundinoideae.

Verrucose Spherical

The verrucose spherical specimen observed at 923.28 mbsf at Site 1165 is assumed to be a contaminant because of its presence in the otherwise barren zone at and below 692.48 mbsf. Further, it is considered that the verrucose surface texture is unlikely to have survived the diagenetic opal-A to opal-CT transition at ~600 mbsf.

SUMMARY OF RESULTS

Site 1165

Phytoliths are absent to rare in all samples, with a maximum of 12 specimens observed at 329.13 mbsf (Table T1). Spherical phytoliths are the most common, composing 89% of the overall assemblage. Phytoliths are most common between 291.28 and 601.48 mbsf (lower–middle Miocene). Overall, discounting the probable contaminants, 91% (47 specimens) are comparable to forms produced in modern trees/shrubs, 7% (4 specimens) grass, and 2% (1 specimen) fern. The low abundances and lack of specific current knowledge of phytolith production in modern plants does not allow any significant interpretation of source vegetation composition. At and below 692.48 mbsf, only irregular blocks and plates of biogenic silica of unknown natural origin are present in the residues, with the exception of a single verrucose spherical specimen considered a contaminant. Other siliceous microfossils including diatoms (*Chaetoceros*? spores and frustules), chrysophycean cysts, Parmales, radiolarians, silicified terrestrial palynomorphs, silicoflagellates, sponge spicules, and possible testate amoeba plates are present throughout but become rare, fragmented, and poorly preserved at and below 692.48 mbsf. In the lowermost, virtually barren samples at and below this level, flakes of low-relief, highly variable in outline, isotropic silica dominate the residues and appear to have replaced the structured biogenic silica. These observations are consistent with a diagenetic transition from amorphous opal-A to opal-CT, identified by downhole temperature measurements to theoretically occur at ~600 mbsf (O'Brien, Cooper, Richter, et al., 2001).

Direct comparison with the terrestrial palynomorph record from Site 1165 is not possible because of the low phytolith abundances and lack of knowledge about production of comparable phytolith forms in modern plants. The terrestrial palynomorph assemblage does contain *Nothofagidites* spp. pollen (**Macphail and Truswell**, "Palynology of Neogene Slope and Rise Deposits from ODP Sites 1165 and 1167, East Antarctica," this volume), however, which is consistent with one possible natural origin of the smooth and verrucose spherical phytoliths. **Macphail and Truswell** ("Palynology of Neogene Slope and Rise Deposits from ODP Sites 1165 and 1167, East Antarctica," this volume) also note that the occurrence of Poaceae pollen in the terrestrial palynology preparations could be due to modern contamination during drilling operations.

Site 1166

Phytoliths are absent to rare in all samples with a maximum of just six specimens in the uppermost sample (Table T1). Spherical phytoliths are again most common, composing five of the ten specimens observed. Overall, six specimens are comparable to forms produced by modern trees/shrubs, three cubic forms of unknown origin, and one probable grass contaminant. At and below 38.61 mbsf, the samples are predominantly barren with a total of four phytoliths observed (one considered a contaminant), and rare, poorly preserved fragments of the other siliceous microfossil groups are noted. These virtually barren samples are dominated by silica flakes similar to those observed in the lower part of the hole at Site 1165. Siliceous microfossils reappear in two samples at 142.32 and 148.11 mbsf, but no phytoliths are observed.

Lithostratigraphic Unit III (156.62–267.17 mbsf) has the greatest potential for phytolith occurrence, containing organic-rich material and some wood, and is interpreted as possibly representing deposition on a preglacial alluvial plain or braided delta of a glacial outwash system (O'Brien, Cooper, Richter, et al., 2001). Samples from Unit III were not supplied by the core repository; however, it is envisaged that phytolith recovery from this interval would be poor with reference to the samples processed at and below 142.32 mbsf that are barren of phytoliths.

Comparison with the terrestrial palynomorph record for Site 1166 (**Macphail and Truswell**, "Palynology of Site 1166, Prydz Bay, East Antarctica," this volume) is not possible because of the lack of current knowledge about the natural origin of pellet sphericals, anticlinal epidermal, and cubic phytoliths.

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Figure F1. Map between 65° and 80°E showing the locality of Leg 188 and previous Leg 119 drill sites and Antarctic stations in the region of Prydz Bay and Mac. Robertson Land, East Antarctica (modified from O'Brien, Cooper, Richter, et al., 2001).

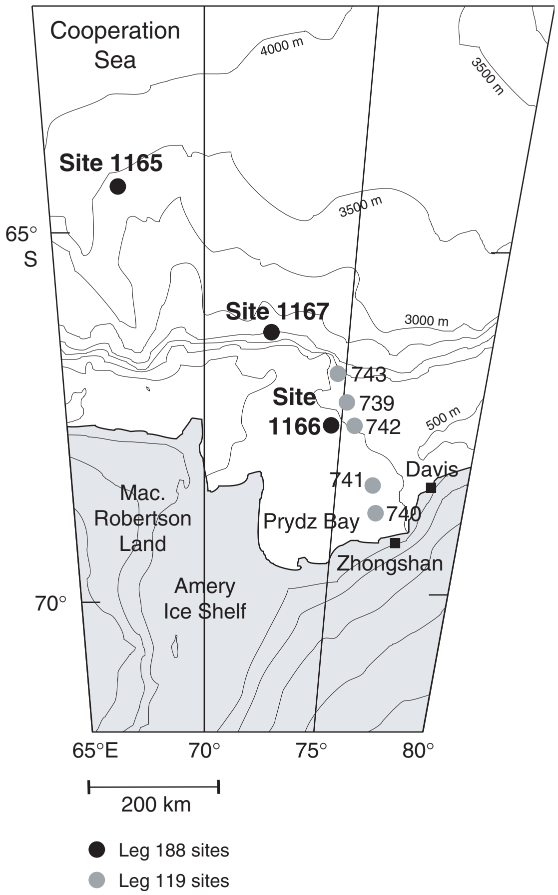

Table T1. Stratigraphic distribution of phytoliths at Sites 1165 and 1166 (continental slope).

Hole	Depth (mbsf)	Phytoliths														Other siceous microfossils									Age
		Grass			Fern	Tree/Shrub							Unknown			Diatoms									
							Spherical																		
		Bulliform	Festucoid	Panicoid—opaque	Striated plate	Anticlinal epidermal	Irregular	Folded	Verrucose	Pellet	Smooth—opaque	Spinulose	Cubic	Plates and blocks	Total phytolith specimens†	*Chaetoceros?* spores	Frustules—whole/fragments	Chrysophycean cysts	Parmales	Radiolarians	Silicified terrestrial palynomorphs	Silicoflagellates	Sponge spicules	Testate amoeba plates?	
1165B	2.29									1	1			*	2		*	*					*		latest Pleistocene to earliest Pliocene
	32.58														0		*	*				*	*		
	42.08														0		*	*				*	*	*	
	64.58								1						1		*						*		latest to middle Miocene
	96.08			1											1		*						*	*	
	139.08											1			1		*			*		*	*		
	169.58													*	0		*		*	*			*		
	195.48														0		*		*	*		R	*	*	
	230.28									1					1		*			*			*		
	239.88														0		*		*	*		*	*		
	275.38														0		*			*		*	*		
	291.28							2		4				*	6	*	*		*	*		*	*		
	297.28					1				2				*	3		*			*		*	*		
	329.13	2			1		1	3		5				*	12	*	*	*		*		*	*	*	early middle to early Miocene
	358.00							1		2				*	3		*	*				*	*		
	392.88	1					1	1		5				*	8		*	*			*	*	*	*	
	466.78									2				*	2		*	*				*	*		
	482.98						1			4				*	5		*					*	*		
	550.38									5				*	5		*	*				*	*		
	601.48									3				*	3		*	*				*	*		
1165C	692.48													*	0		R						R		
	759.88													*	0		R						R		
	807.98													*	0		R						R		
	855.78													*	0		R						R		
	923.28								1C						0		R						R		
	973.40														0								R		
	996.28														0		R						R		
1166A	1.29					1				2			3	*	6		*	*					*		Quaternary to late Pliocene
	38.61									1				*	1		R						R		
	84.65														0		R						R		
	106.34		1C												0										
	123.69									1					1										
	132.85									1					1										
	142.32														0		*		*	*			*		early Oligocene to late Eocene
	148.11														0		*		*				*		
	153.85														0										
	156.51														0		R								
	296.06													*	0									*	Late Cretaceous (Turonian)
	314.87														0										

Notes: * = present. † = total does not include plate or block phytolith morphologies. Numbers represent counts of distinctive phytoliths. C = possible contaminant, R = rare and poorly preserved fragments. Shaded = predominantly barren of most siliceous microfossils.

Plate P1. Phytoliths from Sites 1165 and 1166, Prydz Bay, Antarctica. The upper scale bar refers to figures. 1–13. Codes after phytolith description are slide number and England Finder coordinates, respectively. **1.** Opaque panicoid, grass (Sample 188-1165B-11H-3, 77–78 cm; 96.08 mbsf) (slide 2, H47/0). **2.** Festucoid, grass (possible modern contaminant) (Sample 188-1166A-12R-CC, 8–10 cm; 106.34 mbsf) (slide 1, N48/1). **3.** Bulliform, grass (Sample 188-1165B-45X-5, 77–78 cm; 392.88 mbsf) (slide 1, N41/1). **4.** Striated plate, fern (Sample 188-1165B-39X-1, 72–73 cm; 329.13 mbsf) (slide 1, M37/4). **5.** Pellet spherical, tree/shrub (Sample 188-1165B-35X-1, 77–78 cm; 291.28 mbsf) (slide 1, K37/2). **6.** Irregular spherical, tree/shrub (Sample 188-1165B-45X-5, 77–78 cm; 392.88 mbsf) (slide 1, N39/2). **7.** Opaque smooth spherical, tree/shrub (Sample 188-1165B-01H-2, 78–79 cm; 2.29 mbsf) (slide 2, M47/2). **8.** Spinulose spherical, tree/shrub (Sample 188-1165B-17H-1, 77–78 cm; 139.08 mbsf) (slide 1, T46/4/3). **9.** Verrucose spherical, tree/shrub (a) high focus, (b) middle focus (Sample 188-1165B-8H-1, 77–78 cm; 64.58 mbsf) (slide 2, N44/3). **10.** Folded spherical, tree/shrub (Sample 188-1165B-39X-1, 72–73 cm; 329.13 mbsf) (slide 1, N40/1). **11.** Etched embayed plate, origin unknown (Sample 188-1165B-45X-5, 77–78 cm; 392.88 mbsf) (slide 1, N36/2). **12.** Rectangular striated block, origin unknown (Sample 188-1165B-1H-2, 78–79 cm; 2.29 mbsf) (slide 2, M46/1). **13.** Cubic, origin unknown (Sample 188-1166A-1R-1, 127–129 cm; 1.29 mbsf) (slide 1, G48/0). **14.** Anticlinal epidermal, tree/shrub (Sample 188-1165B-35X-5, 77–78 cm; 291.28 mbsf) (slide 1, L45/2).