

1 SUPPLEMENTARY MATERIAL for DATA REPOSITORY

2 Supplemental file 1: Size measurements of benthic foraminifera: mean values of the maximum
3 diameter of the five largest specimens of *Globocassidulina subglobosa* and *Nuttallides truempyi*
4 in each sample from the upper Paleocene and lower Eocene at the Alamedilla section.

5 Measurements in microns.

6 Supplemental file 2: Size measurements of planktic foraminifera: mean values of the maximum
7 diameter of the five largest specimens of *Acarinina esnaensis*, *Morozovella velascoensis*,
8 *Morozovella subbotinae* and *Subbotina eocaenica* in each sample from the upper Paleocene and
9 lower Eocene at the Alamedilla section. Measurements in microns.

10 Supplemental file 3: Groups (extinction taxa, disaster taxa, opportunistic taxa and other taxa) of
11 all the benthic foraminifera identified by Alegret et al. (2009b) across the upper Paleocene and
12 lower Eocene at Alamedilla.

13 Supplemental file 4: Ni, Co, V and Cr content of upper Paleocene and lower Eocene samples
14 from the Alamedilla section, obtained from X-ray fluorescence (XRF) analyses at the
15 geochemical laboratories of the University of Zaragoza; and calculations of redox indices (Ni/Co
16 and V/Cr).

17 Supplemental file 5: CaCO₃ content in 21 samples across the PETM at the Alamedilla section.

18 Supplemental file 6: Photographs of the outcrop at Alamedilla, showing (A) the upper Paleocene
19 sediments (right) and lower Eocene sediments (left), and (B) a detail of the Paleocene-Eocene
20 transition, showing the sampling resolution, the upper Paleocene turbidite (right), the red clays,
21 and the lower Eocene sediments (left).

Table DR1

Samples (m)	11	11.30	11.45	12	12.80	13	13.20	13.30	13.40	13.50	13.60	13.70	13.80	13.90	14	14.20	14.40	14.60	14.90	15	15.40	16	17.30
Benthic foraminiferal species																							
<i>Globocassidulina subglobosa</i>					0.16	0.18	0.14	0.15	0.13	0.12	0.118	0.16	0.17	0.16	0.12	0.14	0.16	0.15	0.1664	0.158	0.14	0.13	0.152
<i>Nuttallides truempyi</i>	0.314	0.334	0.423	0.241	0.296	0.303	0.312	0.263	0.281	0.178		0.13	0.13	0.13	0.127	0.269	0.254	0.249	0.2602	0.254	0.272	0.249	0.274

Table DR2

Samples (m)	11.15	11.3	11.45	11.75	12.05	12.35	12.65	12.95	13.1	13.3	13.45	13.5	13.7	13.95	14.25	14.55	14.7	14.8	14.9	15.05	15.35	15.7	16.05	16.4	16.65	16.9	17.25
Planktic foraminiferal species																											
<i>Morozovella velascoensis</i>	508	559	558	569	525	519	498	490	512	532	518			390	381	384	313	352	506	460	494	461	545	446	368	290	285
<i>Acarinina pseudotopilaris</i>	259	281	367	301	275	313	320	311	316	251	333			413	361	411	440	365	416	288	361	287	363	381	389	340	406
<i>Subbotina eocaenica</i>	374	459	409	385	396	381	454	489	438	446	411			313	302	320	288	303	432	458	485	398	472	467	402	453	482
<i>Morozovella subbotinae</i>	501	507	555	502	479	513	530	493	535	569	564			353	337	455	414	461	485	442	521	469	536	543	502	531	567

Table DR3

Extinct taxa	Disaster taxa	Other taxa
<i>Arenobulimina truncata</i>	<i>Glomospira</i> spp.	<i>Clavulinoides trilatera</i>
<i>Clavulinoides amorphia</i>	<i>Rephanina charoides</i>	<i>Dorothia cylindracea</i>
<i>Dorothia crassa</i>		Rhizamminids
<i>Dorothia pupa</i>		<i>Karrerulina</i> sp.
<i>Gaudryina pyramidata</i>	<i>Abyssamina quadrata</i>	<i>Pseudoclavulina trinitatensis</i>
<i>Gaudryina</i> sp. A	<i>Abyssamina</i> spp.	<i>Recurvoides</i> spp.
<i>Gaudryina</i> sp. juvenile	<i>Aragonina aragonensis</i>	<i>Reophax</i> sp.
<i>Marssonella oxycona</i>	<i>Globocassidulina subglobo</i>	<i>Spiroplectammina navarroana</i>
<i>Marssonella</i> sp. juvenile	<i>Oridorsalis umbonatus</i>	<i>Spiroplectammina spectabilis</i>
<i>Remesella varians</i>	<i>Quadrrimorphina profunda</i>	<i>Subreophax</i> sp.
<i>Angulogavelinella avnimelech</i>	<i>Reusella terquemi</i>	Trochamminids
<i>Anomalinoides rubiginosus</i>	<i>Tappanina selmensis</i>	<i>Vulvulina</i> sp.
<i>Aragonina velascoensis</i>		<i>Alabamina</i> sp.
<i>Bolivinoides delicatulus</i>		<i>Allomorphina</i> sp.
<i>Bulimina velascoensis</i>		<i>Allomorphina trochoides</i>
<i>Cibicidoides</i> cf. <i>howelli</i>		<i>Angulogerina</i> sp.
<i>Cibicidoides dayi</i>		<i>Anomalinoides affinis</i>
<i>Cibicidoides hyphalus</i>		<i>Anomalinoides ammonoides</i>
<i>Cibicidoides velascoensis</i>		<i>Anomalinoides</i> cf. <i>praeacutus</i>
<i>Coryphostoma midwayensis</i>		<i>Anomalinoides</i> cf. <i>zitteli</i>
<i>Gyroidinoides globosus</i>		<i>Astacolus</i> spp.
<i>Gyroidinoides subangulatus</i>		<i>Bolivinoides</i> sp.
<i>Neoflabbellina jarvisi</i>		<i>Brizalina</i> sp.
<i>Nuttallinella florealis</i>		<i>Bulimina alazanensis</i>
<i>Osangularia velascoensis</i>		<i>Bulimina kugleri</i>
<i>Pullenia coryeli</i>		<i>Bulimina midwayensis</i>
<i>Pullenia cretacea</i>		<i>Bulimina</i> spp.
<i>Pyramidina rudita</i>		<i>Bulimina trinitatensis</i>
<i>Stensioeina beccariiformis</i>		<i>Buliminella tuxpamensis</i>
		<i>Buliminella beaumonti</i>
		<i>Buliminella grata</i>
		<i>Cibicidoides eocaenus</i>
		<i>Cibicidoides proprius</i>
		<i>Cibicidoides pseudoperlucidus</i>
		<i>Cibicidoides</i> spp.
		<i>Cibicidoides westi</i>
		<i>Conorbina</i> sp.
		<i>Coryphostoma</i> spp.
		<i>Ellipsoglandulina</i>
		<i>Ellipsopolymorphina</i> sp.
		<i>Eouvigerina</i> sp.
		<i>Fissurina</i> sp.

<i>Furstenkoina</i> spp.
<i>Furstenkoina tegulata</i>
<i>Glandulina</i> spp.
<i>Globobulimina</i> spp.
<i>Globorotalites</i> sp.
<i>Globulina prisca</i>
<i>Globulina</i> sp.
<i>Guttulina</i> spp.
<i>Gyroidinoides beisseli</i>
<i>Gyroidinoides depressus</i>
<i>Gyroidinoides girardanus</i>
<i>Hemirobulina</i> spp.
<i>Laevidentalina</i> spp.
<i>Lagena</i> spp.
<i>Lenticulina</i> spp.
<i>Nonion havanense</i>
<i>Nonion</i> spp.
<i>Nonionella</i> cf. <i>cretacea</i>
<i>Nuttallides truempyi</i>
<i>Oridorsalis plummerae</i>
<i>Osangularia plummerae</i>
<i>Paliolatella orbygniana</i>
<i>Paralabamina hillebrandti</i>
<i>Pleurostomella</i> sp.
Polymorphinids
<i>Praebulimina</i> sp.
<i>Pseudouvigerina plummerae</i>
<i>Pullenia jarvisi</i>
<i>Pullenia quinqueloba</i>
<i>Pyrulina</i> sp.
<i>Pyrulinoides</i> spp.
<i>Quadratobuliminella pyramidalis</i>
<i>Quadrimorphina allomorphinoides</i>
<i>Quadrimorphina profunda</i>
<i>Quadrimorphina</i> sp.
<i>Saracenaria</i> spp.
<i>Siphogenerinoides brevispinosa</i>
<i>Stilostomella</i> sp.
<i>Uvigerina</i> sp.
<i>Valvalabamina lenticula</i>

Table DR4

Samples (m)	Co (mg/g)	Cr (mg/g)	Ni (mg/g)	V (mg/g)	Ni/Co	V/Cr
12	0.013	0.065	0.028	0.128	2.154	0.193
12.4	0.009	0.057	0.023	0.136	2.556	0.193
13	0.011	0.067	0.021	0.183	1.909	0.25
13.2	0.01	0.065	0.021	0.146	2.100	0.211
13.4		0.105		0.183		0.288
13.5	0.023	0.136	0.069	0.168	3.000	0.304
13.6	0.031	0.144	0.094	0.162	3.032	0.306
13.7	0.026	0.124	0.08	0.164	3.077	0.288
13.8	0.024	0.12	0.062	0.148	2.583	0.268
14	0.019	0.064	0.057	0.128	3.000	0.192
14.3	0.014	0.052	0.041	0.16	2.929	0.212
15.05	0.006	0.033	0.019	0.103	3.167	0.136
15.7	0.007	0.05	0.023		3.286	

Table DR5

Samples (m)	CaCO ₃ content (%)
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15.75	76
15.37	79
15.07	80
14.92	62
14.57	48
14.27	29
14	28
13.90	23
13.80	8
13.70	6
13.60	0
13.50	3
13.40	57
13.30	67
13.20	64
13.10	58
13	58
12.90	62
12.80	55
12.40	65
12	58

A**B**