

Table S1 Sampling information of Erenhot.

Sample name	Start Time (UTC+8)	End Time (UTC+8)	Air condition	Time (min)	Volume (L)
ER3_30D	2016/3/30 8:40	2016/3/30 18:05	Dust	565	169.5
ER3_30N	2016/3/30 18:15	2016/3/31 8:15	Dust	840	252
ER3_31D1	2016/3/31 8:25	2016/3/31 13:25	Dust	300	90
ER3_31D2	2016/3/31 13:30	2016/3/31 15:30	Dust	120	36
ER3_31D3	2016/3/31 15:35	2016/3/31 17:30	Dust	115	34.5
ER3_31D4	2016/3/31 17:35	2016/3/31 19:37	Dust	122	36.6
ER3_31N	2016/3/31 21:45	2016/4/1 8:25	Dust	640	192
ER4_1	2016/4/1 8:40	2016/4/2 8:15	Non-dust	1415	424.5
ER4_2D	2016/4/2 8:23	2016/4/2 18:00	Non-dust	577	173.1
ER4_2N	2016/4/2 18:07	2016/4/3 8:14	Non-dust	847	254.1
ER4_3D	2016/4/3 8:20	2016/4/3 18:05	Non-dust	585	175.5
ER4_3N	2016/4/3 18:30	2016/4/4 17:40	Non-dust	1390	417
ER4_4N	2016/4/4 17:45	2016/4/5 8:17	Non-dust	872	261.6
ER4_5D	2016/4/5 8:20	2016/4/5 18:05	Non-dust	585	175.5
ER4_6D1	2016/4/6 8:15	2016/4/6 10:35	Dust	140	42
ER4_6D2	2016/4/6 10:45	2016/4/6 13:35	Dust	170	51
ER4_6D3	2016/4/6 13:45	2016/4/6 18:15	Dust	270	81
ER4_6N	2016/4/6 18:20	2016/4/7 8:25	Non-dust	845	253.5
ER4_7	2016/4/7 8:28	2016/4/8 8:15	Non-dust	1427	428.1
ER4_8	2016/4/8 8:20	2016/4/9 8:15	Non-dust	1435	430.5
ER4_9	2016/4/9 8:20	2016/4/10 8:15	Non-dust	1435	430.5
ER4_10D	2016/4/10 8:20	2016/4/10 18:40	Dust	620	186
ER4_10N	2016/4/10 18:45	2016/4/11 8:10	Non-dust	805	241.5
ER4_11D	2016/4/11 8:15	2016/4/11 18:10	Non-dust	595	178.5
ER4_11N	2016/4/11 18:15	2016/4/12 8:10	Non-dust	835	250.5
ER4_12D	2016/4/12 15:20	2016/4/12 17:20	Dust	120	36
ER4_13	2016/4/13 8:15	2016/4/14 8:10	Dust	1435	430.5
ER4_15D1	2016/4/15 8:03	2016/4/15 12:10	Dust	247	74.1
ER4_15D2	2016/4/15 12:15	2016/4/15 15:00	Dust	165	49.5
ER4_15D3	2016/4/15 15:10	2016/4/15 18:07	Dust	177	53.1
ER4_15N1	2016/4/15 18:12	2016/4/15 21:00	Dust	168	50.4
ER4_15N2	2016/4/15 21:05	2016/4/16 8:15	Non-dust	670	201
ER4_16	2016/4/16 8:20	2016/4/17 8:03	Non-dust	1423	426.9
ER4_18D	2016/4/18 8:00	2016/4/18 18:00	Non-dust	600	180
ER4_18N	2016/4/18 19:00	2016/4/19 8:50	Non-dust	830	249
ER4_19D	2016/4/19 8:55	2016/4/19 18:05	Non-dust	550	165
ER4_19N	2016/4/19 18:10	2016/4/20 8:00	Non-dust	830	249

ER4_20D	2016/4/20 8:05	2016/4/20 18:05	Dust	600	180
ER4_20N	2016/4/20 18:10	2016/4/21 12:00	Dust	1070	321
ER4_21D1	2016/4/21 12:10	2016/4/21 15:20	Dust	190	57
ER4_21D2	2016/4/21 16:00	2016/4/21 19:00	Dust	180	54
ER4_21N	2016/4/21 19:10	2016/4/22 9:00	Dust	830	249
ER4_22D	2016/4/22 9:05	2016/4/22 19:00	Non-dust	595	178.5
ER4_25N	2016/4/25 18:16	2016/4/26 7:35	Non-dust	799	239.7
ER4_26D	2016/4/26 8:05	2016/4/26 18:10	Non-dust	605	181.5
ER4_26N	2016/4/26 19:24	2016/4/27 7:12	Non-dust	708	212.4
ER4_30D1	2016/4/30 8:25	2016/4/30 12:01	Non-dust	216	64.8
ER4_30D2	2016/4/30 12:50	2016/4/30 15:54	Dust	184	55.2
ER4_30D3	2016/4/30 17:00	2016/4/30 20:11	Non-dust	191	57.3

Table S2 Sampling information of Zhangbei.

Sample name	Start Time (UTC+8)	End Time (UTC+8)	Air condition	Time (min)	Volume (L)
ZB3_29D	2016/3/29 6:58	2016/3/29 18:00	Non-dust	662	198.6
ZB3_29N	2016/3/29 18:36	2016/3/30 7:00	Non-dust	744	223.2
ZB3_30D	2016/3/30 7:27	2016/3/30 18:13	Non-dust	646	193.8
ZB3_30N	2016/3/30 19:00	2016/3/31 6:38	Non-dust	698	209.4
ZB3_31D	2016/3/31 7:15	2016/3/31 18:30	Non-dust	675	202.5
ZB3_31N	2016/3/31 18:40	2016/3/31 21:28	Dust	168	50.4
ZB4_1D	2016/4/1 7:02	2016/4/1 18:31	Non-dust	689	206.7
ZB4_1N	2016/4/1 18:38	2016/4/2 6:36	Non-dust	718	215.4
ZB4_2D	2016/4/2 6:45	2016/4/2 18:15	Non-dust	690	207
ZB4_2N	2016/4/2 18:21	2016/4/3 6:40	Non-dust	739	221.7
ZB4_3D	2016/4/3 6:49	2016/4/3 18:12	Non-dust	683	204.9
ZB4_3N	2016/4/3 18:26	2016/4/4 6:34	Non-dust	728	218.4
ZB4_4D	2016/4/4 6:41	2016/4/4 18:22	Non-dust	701	210.3
ZB4_4N	2016/4/4 18:28	2016/4/5 6:42	Non-dust	734	220.2
ZB4_5D	2016/4/5 6:50	2016/4/5 18:22	Non-dust	692	207.6
ZB4_5N	2016/4/5 18:31	2016/4/6 6:40	Non-dust	729	218.7
ZB4_6D	2016/4/6 6:50	2016/4/6 15:33	Dust	523	156.9
ZB4_6N	2016/4/6 15:41	2016/4/7 6:51	Dust	910	273
ZB4_7D	2016/4/7 6:57	2016/4/7 18:30	Non-dust	693	207.9
ZB4_7N	2016/4/7 18:36	2016/4/8 6:44	Non-dust	728	218.4
ZB4_8D	2016/4/8 6:50	2016/4/8 18:43	Non-dust	713	213.9
ZB4_9N	2016/4/9 18:24	2016/4/10 6:43	Non-dust	739	221.7
ZB4_10D	2016/4/10 6:50	2016/4/10 18:05	Non-dust	675	202.5
ZB4_10N	2016/4/10 18:11	2016/4/11 6:31	Non-dust	740	222

ZB4_11D	2016/4/11 6:40	2016/4/11 18:08	Non-dust	688	206.4
ZB4_12D	2016/4/12 8:34	2016/4/12 18:30	Non-dust	596	178.8
ZB4_12N	2016/4/12 18:40	2016/4/13 6:50	Non-dust	730	219
ZB4_13D	2016/4/13 6:58	2016/4/13 18:16	Non-dust	678	203.4
ZB4_13N	2016/4/13 18:26	2016/4/14 6:40	Non-dust	734	220.2
ZB4_14D	2016/4/14 6:51	2016/4/14 18:15	Non-dust	684	205.2
ZB4_14N	2016/4/14 18:24	2016/4/15 6:45	Non-dust	741	222.3
ZB4_15D	2016/4/15 6:53	2016/4/15 15:07	Non-dust	494	148.2
ZB4_16D	2016/4/16 7:07	2016/4/16 18:20	Non-dust	673	201.9
ZB4_16N	2016/4/16 18:28	2016/4/17 6:42	Non-dust	734	220.2
ZB4_17D	2016/4/17 6:52	2016/4/17 18:06	Non-dust	674	202.2
ZB4_17N	2016/4/17 18:17	2016/4/18 6:56	Non-dust	759	227.7
ZB4_18D	2016/4/18 7:05	2016/4/18 18:12	Non-dust	667	200.1
ZB4_18N	2016/4/18 18:20	2016/4/19 6:41	Non-dust	741	222.3
ZB4_19D	2016/4/19 6:52	2016/4/19 17:36	Non-dust	644	193.2
ZB4_19N	2016/4/19 18:29	2016/4/20 7:00	Non-dust	751	225.3
ZB4_20D	2016/4/20 7:10	2016/4/20 18:15	Non-dust	665	199.5
ZB4_20N	2016/4/20 18:25	2016/4/21 6:50	Non-dust	745	223.5
ZB4_21D	2016/4/21 7:00	2016/4/21 18:19	Dust	679	203.7
ZB4_21N	2016/4/21 18:47	2016/4/22 6:53	Non-dust	726	217.8
ZB4_22D	2016/4/22 7:50	2016/4/22 18:02	Non-dust	612	183.6
ZB4_22N	2016/4/22 19:03	2016/4/23 6:47	Non-dust	704	211.2

Table S3 Sampling information of R-DzToUb

Sample name	Sampling time (UTC+8)	Air condition	Time (min)	Volume (L)	Location
Dz5_5R100	2016/5/5 9:25 – 10:25	Dust	60	30	0km to 100km from Daranzadgad
Dz5_5R200	2016/5/5 10:56 – 11:56	Dust	60	30	100km to 200km from Daranzadgad
Dz5_5R300	2016/5/5 12:21 – 13:21	Dust	60	30	200km to 300km from Daranzadgad
Dz5_5R500	2016/5/5 15:43 – 16:43	Non-dust	60	30	300km to 400km from Daranzadgad
Dz5_5R600	2016/5/5 17:05 – 18:05	Non-dust	60	30	500km to 600km from Daranzadgad

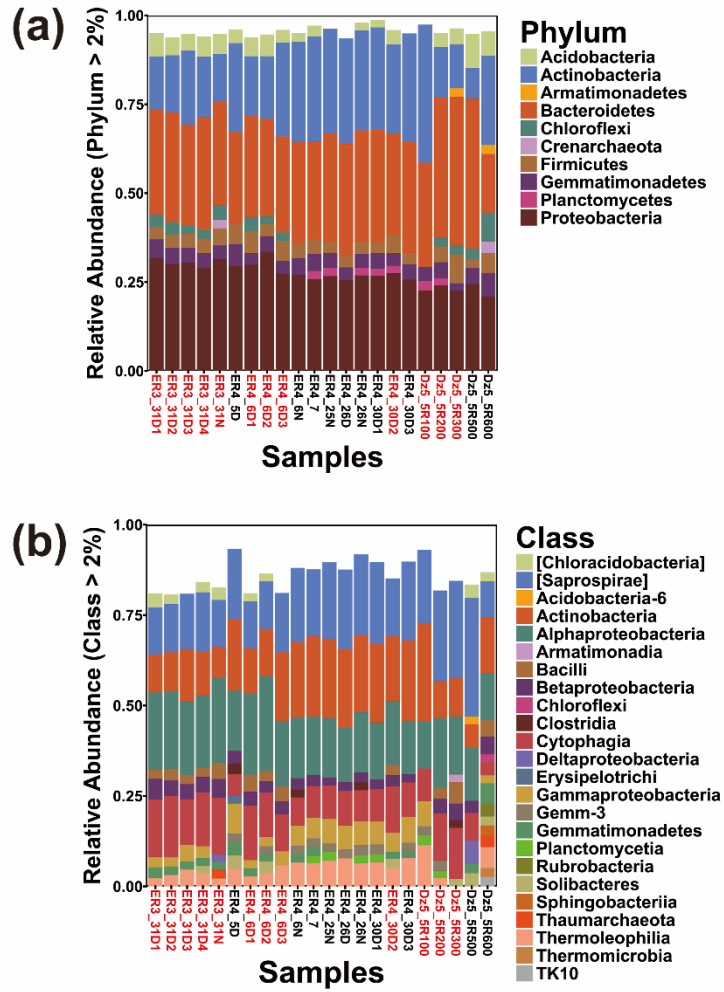


Fig. S4 Variations of the bacterial community composition at (a) the phylum level and (b) the class level in the dust (red font) and non-dust samples (black font).

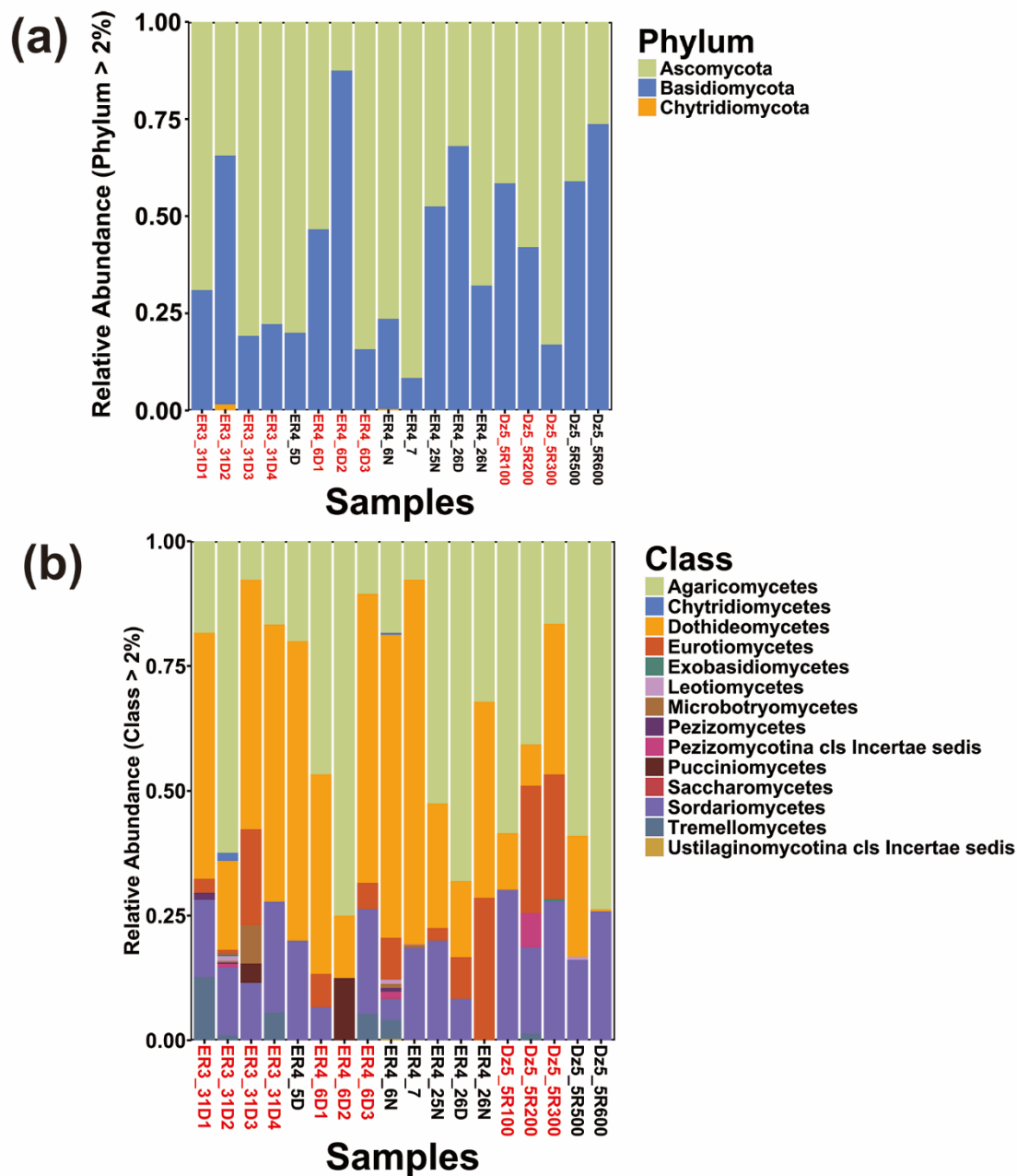


Fig. S5 Variations of the fungal community composition at (a) the phylum level and (b) the class level in the dust (red font) and non-dust samples (black font).