

Supplement for

Emission of nitrous acid from soil and biological soil crusts represents a dominant source of HONO in the remote atmosphere in Cyprus

Hannah Meusel¹, Alexandra Tamm¹, Uwe Kuhn¹, Dianming Wu¹, Anna Lena Leifke¹, Sabine Fiedler², Nina Ruckteschler¹, Petya Yordanova¹, Naama Lang-Yona¹, Jos Lelieveld^{3,4}, Thorsten Hoffmann⁵, Ulrich Pöschl¹, Hang Su^{1,6}, Bettina Weber¹, Yafang Cheng^{1,6}

¹Max Planck Institute for Chemistry, Multiphase Chemistry Department, Mainz, Germany

²Johannes Gutenberg University, Institute for Geography, Mainz, Germany

³Max Planck Institute for Chemistry, Atmospheric Chemistry Department, Mainz, Germany

⁴The Cyprus Institute, Nicosia, Cyprus

⁵Johannes Gutenberg University, Institute for Inorganic and Analytical Chemistry, Mainz, Germany

⁶Institute for Environmental and Climate Research, Jinan University, Guangzhou, China

Corresponding author: Yafang Cheng (yafang.cheng@mpic.de) and Bettina Weber (b.weber@mpic.de)

Table S1: Overview over soil and biocrust samples including nutrient and chlorophyll analyses and HONO and NO emission fluxes.

sample type		NO ₂ ⁻ -N	NO ₃ ⁻ -N mg kg ⁻¹	NH ₄ ⁺ -N	chl _{a-b} mg m ⁻²	chl _a	HONO _{max} ng (N) m ⁻² s ⁻¹	NO _{max}	HONO _{int} μg (N) m ⁻²	NO _{int}	HONO/NO (max)	HONO/NO (int)
Bare soil	1	0.126	0.723	2.017	17.45	8.61	89.12	53.70	465.49	341.45	1.66	1.36
Bare soil	2	0.574	2.450	1.325	18.66	6.84	263.80	120.99	1899.9	1544.8	2.18	1.23
Bare soil	3	0.501	6.478	6.509	31.71	13.93	173.32	101.83	1510.4	1621.3	1.70	0.93
Dark BSC	1	0.0	0.0	1.906	40.80	27.48	1.29	1.73	9.45	17.1	0.74	0.55
Dark BSC	2	0.0	0.0	1.873	32.13	18.61	3.08	2.90	16.42	25.49	1.06	0.64
Dark BSC	3	0.004	0.050	1.365	30.42	15.52	4.69	6.64	36.28	63.53	0.71	0.57
Dark BSC	4	0.265	3.549	3.159	95.66	66.01	43.15	35.86	337.45	359.56	1.20	0.94
Dark BSC	5	0.113	0.582	2.061	21.65	11.26	83.43	85.1	443.86	712.1	0.98	0.62
Light BSC	1	0.0	0.0	0.626	12.71	6.05	1.28	1.74	8.61	14.84	0.73	0.58
Light BSC	2	0.004	0.0	0.587	16.34	7.72	12.35	11.44	61.48	66.07	1.08	0.93
Light BSC	3	0.267	4.015	22.209	24.60	11.00	96.53	95.22	540.77	592.28	1.01	0.91
Light BSC	4	0.119	0.819	1.478	18.09	8.31	83.89	67.5	475.72	481.0	1.24	0.99
Chlorolichen BSC I	1	0.0	0.0	0.085	61.39	37.48	0.63	0.83	3.73	6.03	0.76	0.62
Chlorolichen BSC I	2	0.0	0.0	0.0	84.12	58.64	2.45	2.62	12.02	15.73	0.93	0.76
Chlorolichen BSC I	3	0.0	0.0	0.829	107.59	74.85	1.24	2.03	10.50	24.54	0.61	0.43
Chlorolichen BSC II	1	0.0	0.0	0.187	24.75	14.18	1.69	1.88	15.23	15.32	0.90	0.99
Chlorolichen BSC II	2	0.011	0.116	2.460	10.58	10.58	7.98	8.40	54.53	63.25	0.95	0.86
Chlorolichen BSC II	3	0.074	0.916	0.982	21.73	12.29	9.65	9.88	94.72	103.62	0.98	0.91
Chlorolichen BSC II	4	0.017	0.128	2.062	17.97	9.50	19.97	15.83	110.68	95.15	1.26	1.16
Chlorolichen BSC II	5	0.007	0.513	3.894	37.46	22.65	4.27	4.43	35.14	49.83	0.96	0.71
Chlorolichen BSC II	6	0.0	0.0	0.585	17.43	9.71	1.52	1.54	7.87	11.60	0.98	0.68
Moss BSC	1	0.071	0.0	2.048	48.93	27.82	12.68	13.44	104.08	148.62	0.94	0.70
Moss BSC	2	0.0	0.0	0.306	83.63	54.53	4.34	5.79	40.07	57.66	0.75	0.69
Moss BSC	3	0.030	0.0	0.763	211.31	144.21	6.78	8.87	62.54	89.10	0.77	0.70
Moss BSC	4	0.005	0.029	5.164	169.64	123.26	3.49	3.65	16.61	19.58	0.96	0.85

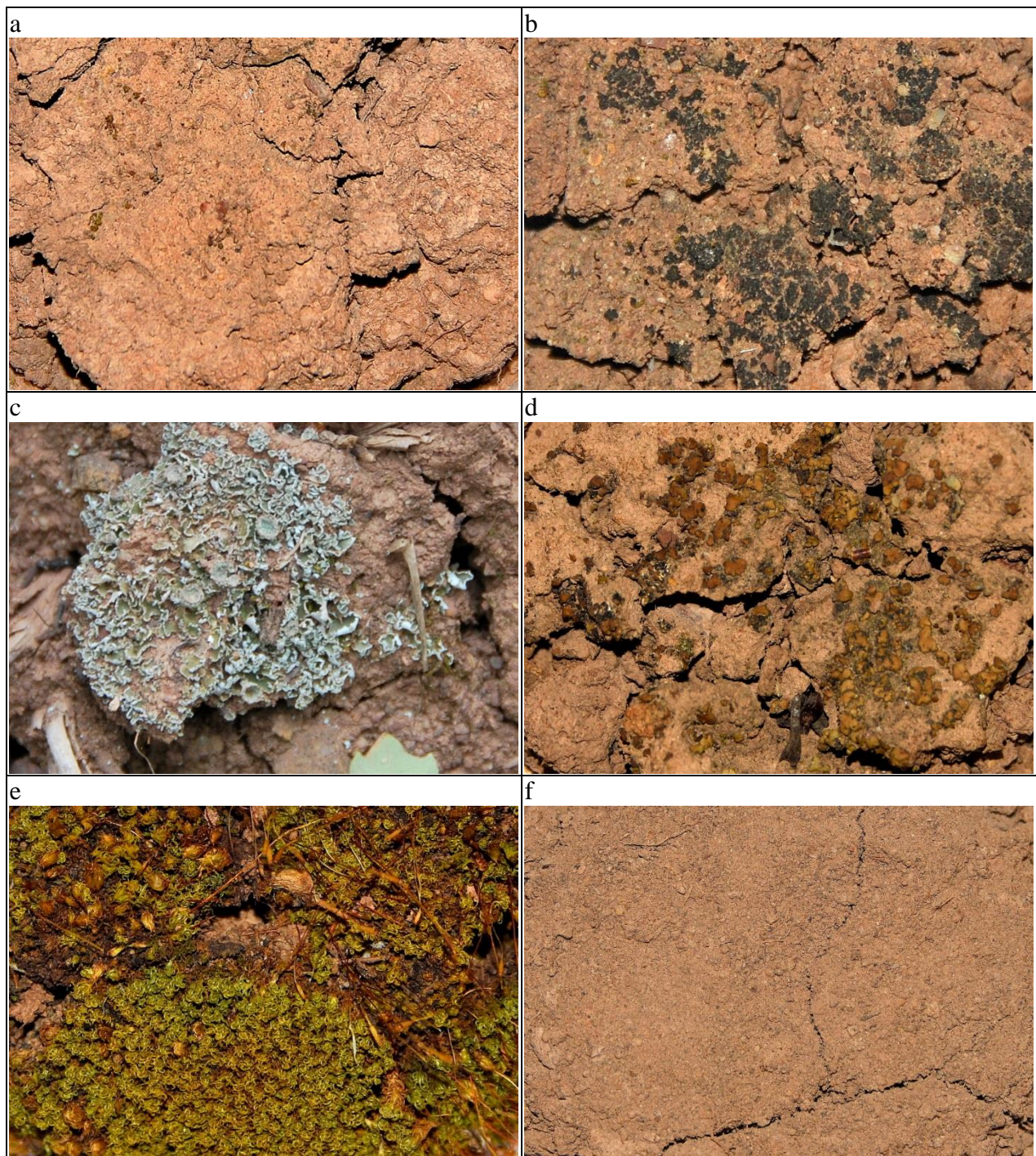


Fig. S1: Pictures of local biocrusts: a) light cyanobacteria-dominated biocrust, b) dark cyanobacteria-dominated biocrust with *Collema* sp. as dominating cyanolichen species, c) chlorolichen-dominated biocrust with *Cladonia* sp. as dominating lichen species, type I, d) chlorolichen-dominated biocrust with *Placidium* sp. as dominating lichen species, type II, e) moss-dominated biocrust with *Trichostomum crispulum* as dominating moss species, f) bare soil.