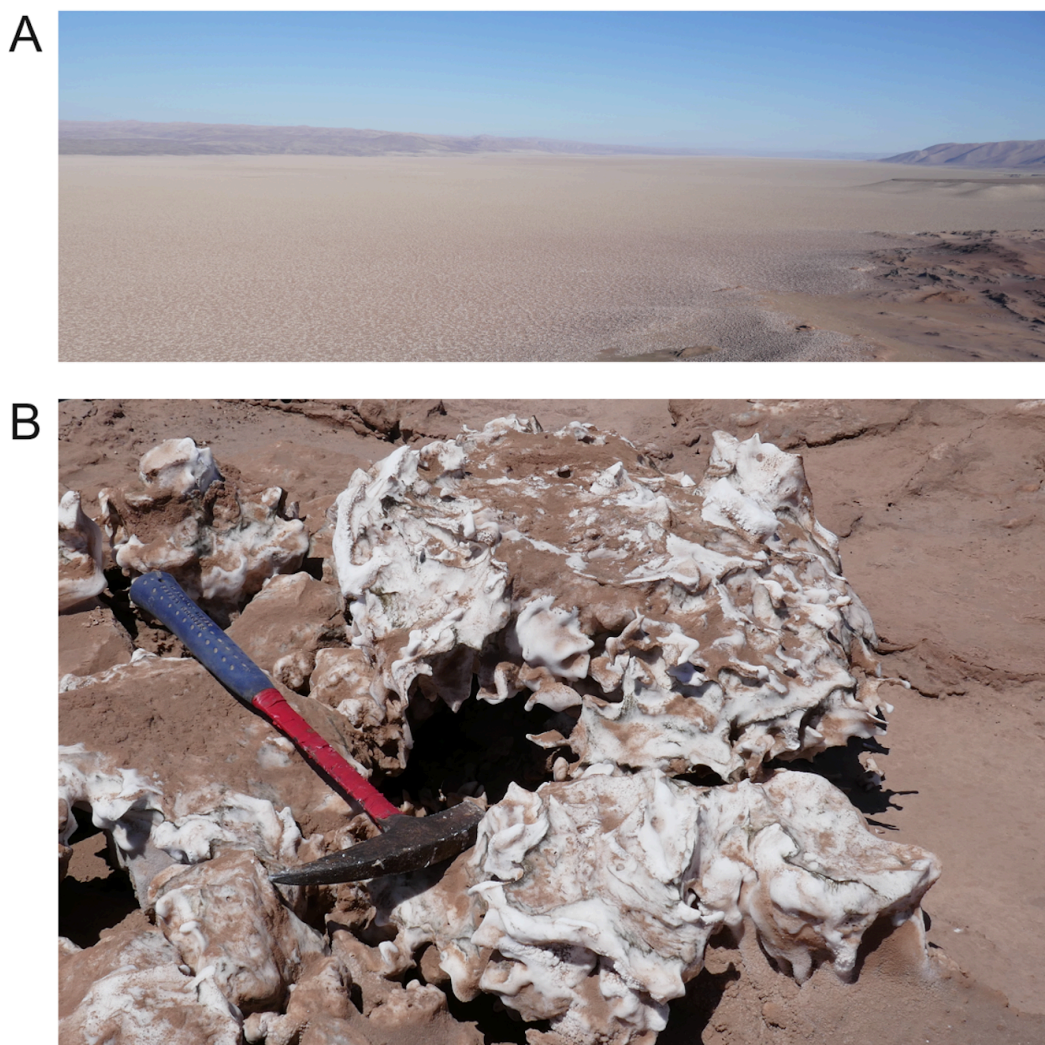


1 Supplementary Information for:

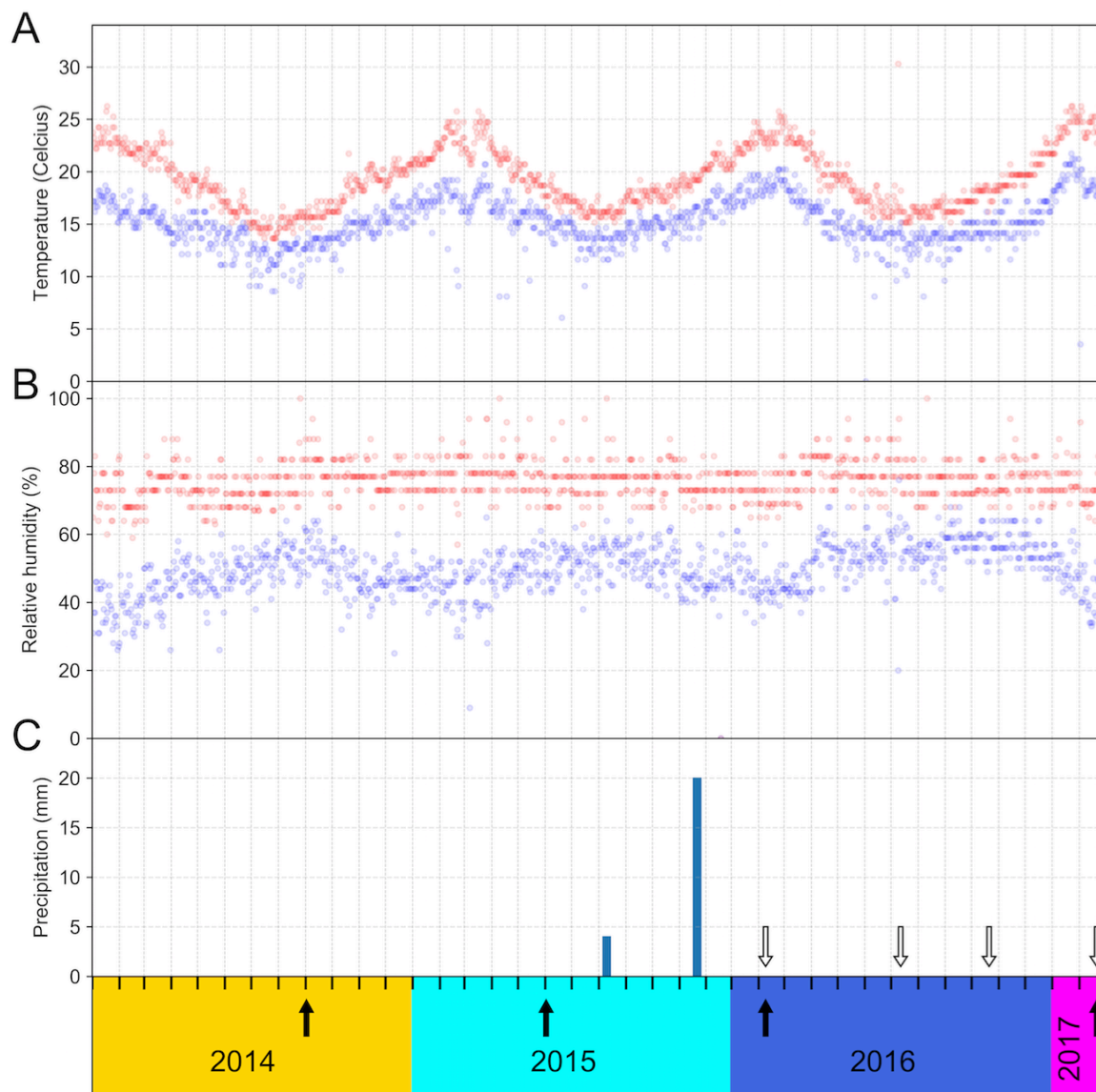
2
3 **Halophilic microbial community composition shift after a rare rainfall in the Atacama**
4 **Desert**

5
6 Gherman Urtskiy, Samantha Getsin, Adam Munn, Benito Gomez-Silva, Alfonso Davila, Brian
7 Glass, James Taylor* and Jocelyne DiRuggiero*

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10 **Supplementary figures:**

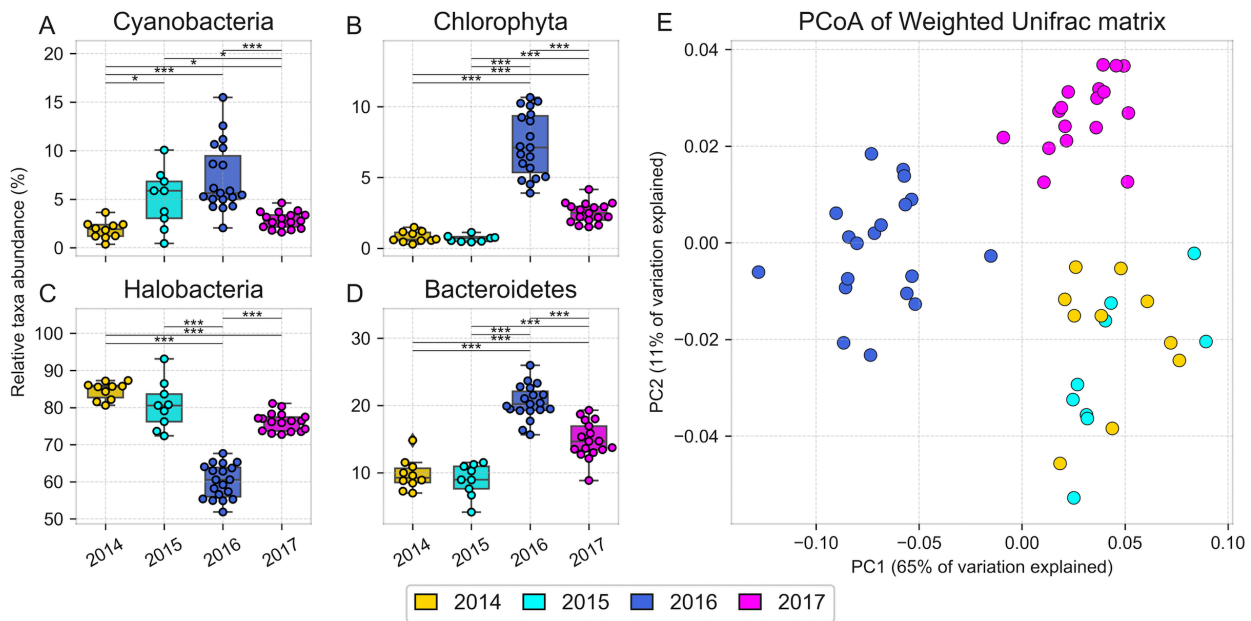


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12 **Fig. S1.** Salar Grande landscape and halite nodules. (A) Aerial view of the evaporitic basin of Salar
13 Grande, 5 km wide and 45 km long (N-S direction). (B) Halite nodules (salt rocks) 20 to 50 cm in
14 size.



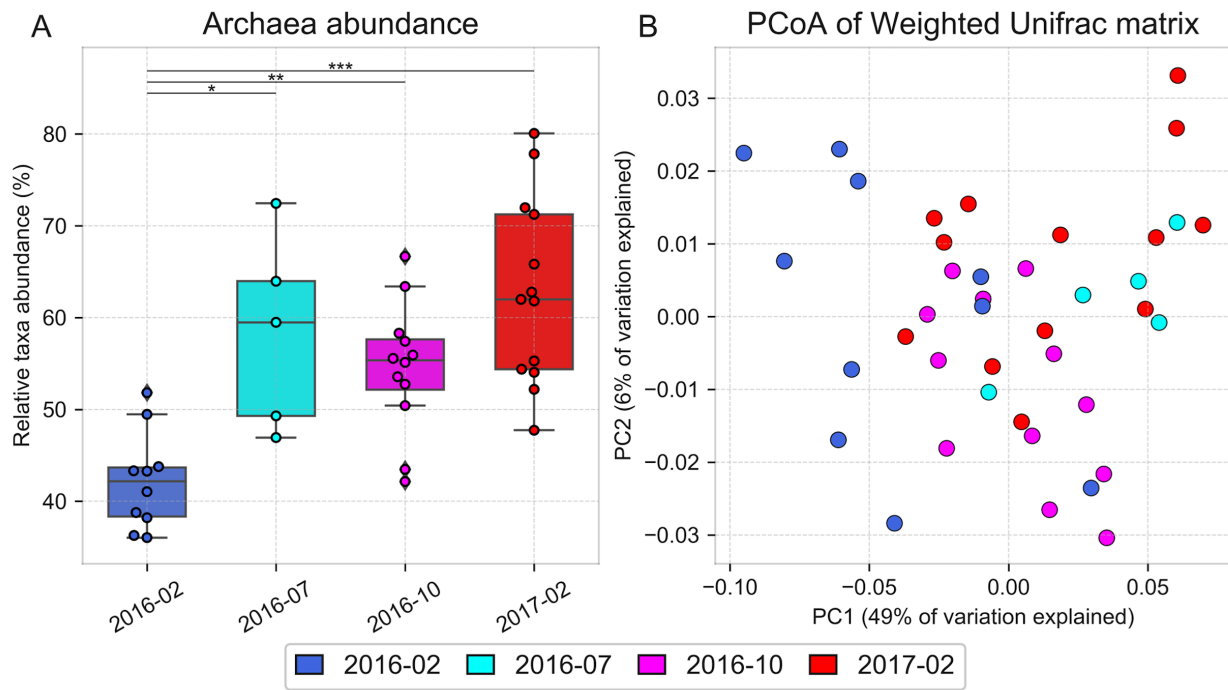
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Fig. S2. Regional climate data from the Diego Aracena International Airport weather station, 40km North-West of Salar Grande. The maximum (red) and minimum (blue) temperature (A) and relative humidity (B) values, and total daily precipitation (C), are plotted for each date along the x-axis. Colors denote the year (2014-2017), x-ticks denote months, black arrows show the main sampling dates at Site 1, and white arrows show the sampling dates at Site 2.



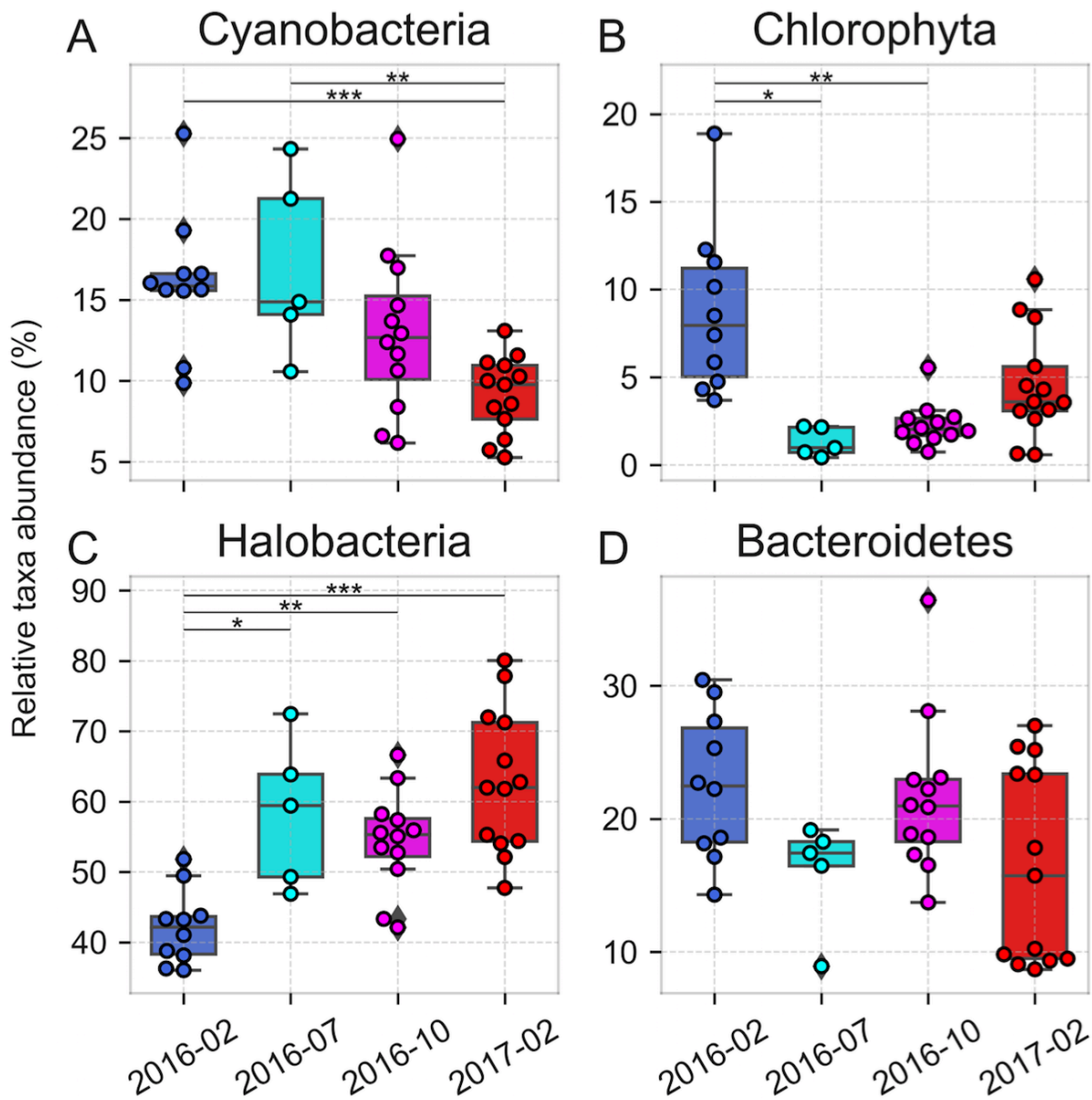
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Fig. S3. Taxonomic composition of halite nodules from Site 1 over time inferred from 16S rRNA gene sequences clustered into OTUs at 97% identity and visualized through (A-D) relative abundance of the dominant phyla (Chloroplast was used as a proxy for Chlorophyta and Halobacteria was the only class of Euyarchaeota) whose abundance significantly shifted after the rain and a (E) PCoA plot of a Weighted Unifrac dissimilarity matrix comparing taxonomic composition. Error bars represent standard deviation; significance bars represent group significance based on a two tail t-test, and stars denote the p-value thresholds (*=0.01, **=0.001, ***=0.0001).



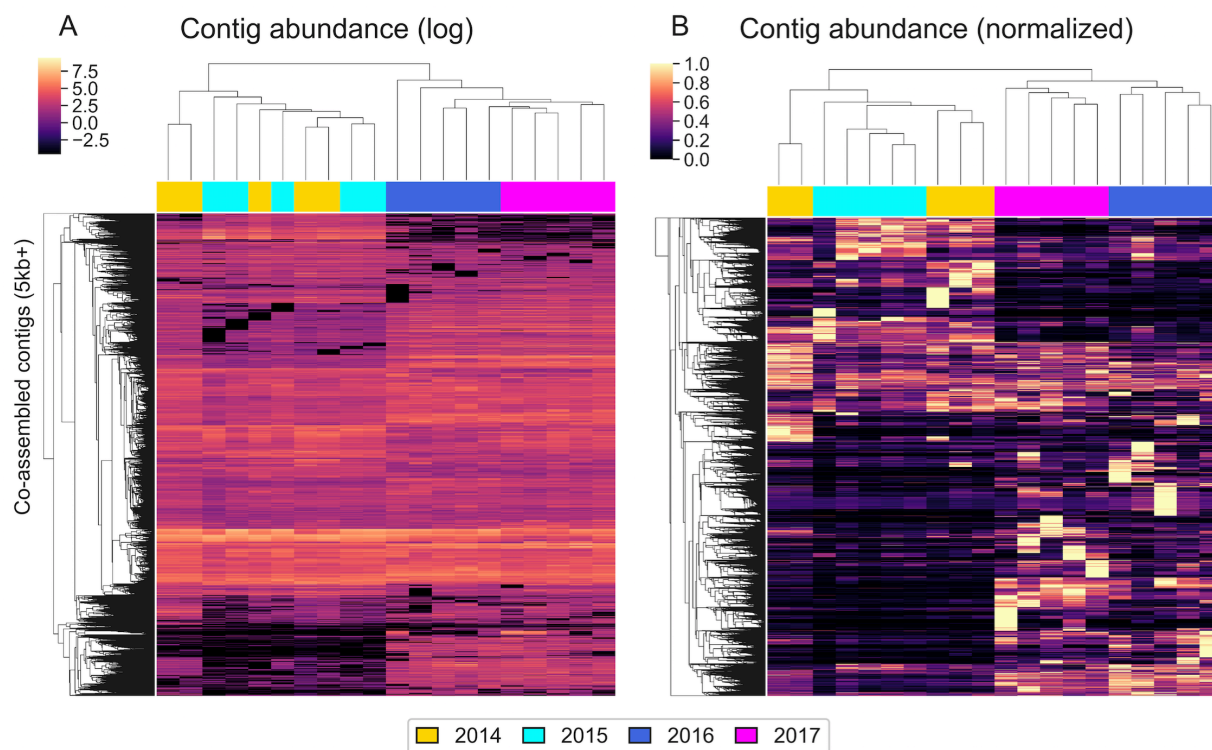
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33 **Fig. S4.** Taxonomic composition of halite nodules harvested post-rain from Site 2 over time, inferred
 34 from 16S rRNA gene sequences clustered into OTUs at 97% identity and visualized through (A)
 35 relative abundance of Archaea, and (B) PCoA projection of the Weighted Unifrac dissimilarity
 36 matrix. Error bars represent standard deviation; significance bars represent group significance based
 37 on a two tail t-test, and stars denote the p-value thresholds (*=0.01, **=0.001, ***=0.0001).



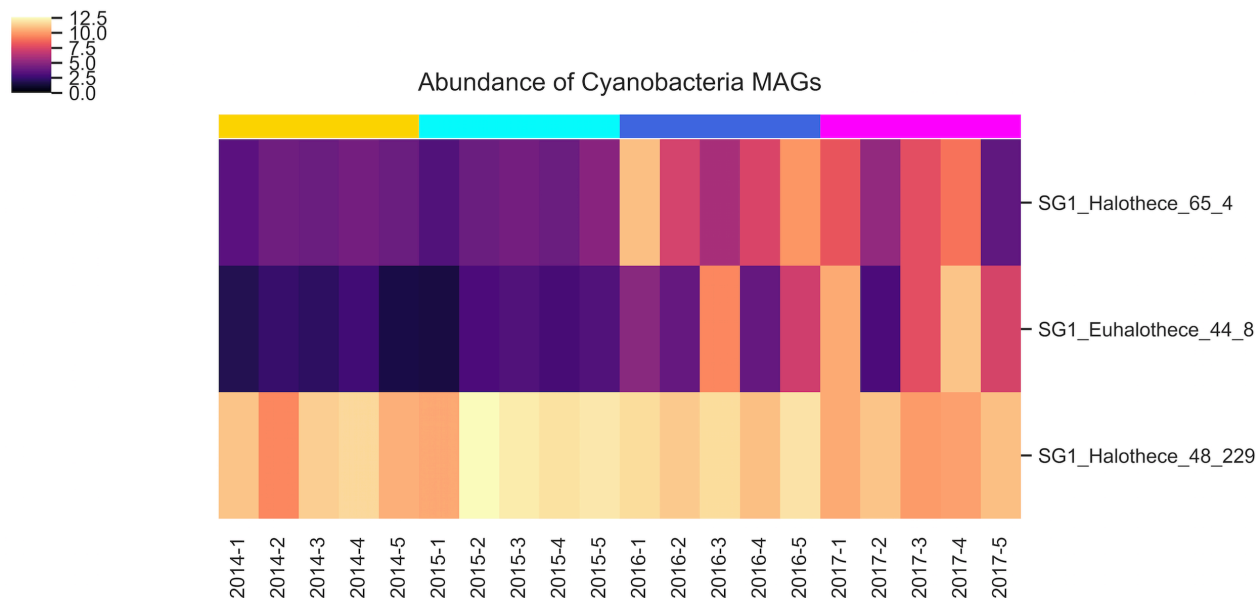
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39 **Fig. S5.** Taxonomic composition of halite nodules harvested post-rain from Site 2 over time, inferred
 40 from 16S rRNA gene sequences clustered into OTUs at 97% identity and visualized through the
 41 relative abundance of dominant phyla (Chloroplast was used as a proxy for Chlorophyta and
 42 Halobacteria was the only class of Euyarchaeota) (A-D) Error bars represent standard deviation;
 43 significance bars represent group significance based on a two tail t-test, and stars denote the p-value
 44 thresholds (*=0.01, **=0.001, ***=0.0001).



45

46 **Fig. S6.** Hierarchical clustering (Euclidean metric) of relative abundances (fragments per million) of
 47 contigs > 5kbp in the WMG co-assembly, quantified with reads from samples harvested at different
 48 dates and displayed on (A) a log scale and (B) standardized to the maximum abundance of each
 49 contig.



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51 **Fig. S7.** Hierarchical clustering (Euclidean metric) of photosynthetic MAG relative abundances
 52 (fragments per million), quantified with metaWRAP's quant_bins module, showing the emergence
 53 of two new *Cyanobacteria* MAGs after the rain.
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56 **Data S1.** Summary table of 16S rRNA gene OTUs clustered at 97% for Site 1 and Site 2,
 57 including OTU abundances across replicates, taxonomy, representative sequences, and
 58 stacked taxonomy plots visualizing community composition across the time-points and
 59 replicates.

61 **Data S2.** Summary table of reconstructed metagenome-assembled genomes (MAGs) with
 62 information about sequence statistics, binning accuracy estimated with CheckM, assembly
 63 coverage, taxonomy, and abundance across replicates in the time series.

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 66 **Tables (Supplementary):**

Site	Latitude	Longitude	Elevation (asl)	Collection dates	Amplicon sequencing replicates	Shotgun sequencing replicates	Purpose
S1	20°57' 12.006"S	70°1' 10.5996"W	680m	Sep-14	10	5	Before-after rain comparison
				Jun-15	9	5	
				8-Feb-16	19	5	
				20-Feb-17	17	5	
S2	20°57' 8.5212"S	70°1' 1.2612"W	664m	8-Feb-16	12	NA	After rain recovery process
				11-Jul-16	5	NA	
				20-Oct-16	12	NA	
				20-Feb-17	13	NA	
S3	20°55' 48.18"S	70°0' 49.32"W	676m	Misc.	NA	15	Assembly and binning improvement

67 **Table S1.** Description of sampling locations, dates, and replicate counts of biological samples
 68 collected for this study.

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