

Description of Additional Supplementary Files:

Supplementary Data 1: List of vOTUs and genomic information.

Supplementary Data 2: vConTACT2 summary.

Supplementary Data 3: ssDNA coverage.

Supplementary Data 4: Global dataset information.

Supplementary Data 5: Information on virus-host linkages.

Supplementary Data 6: DRAM gene annotations and AMGs.

Supplementary Data 7: Geochemistry of samples.

Supplementary Data 8: Sample preparation and sequencing information.

Supplementary Data 9: vOTU coverage.

Supplementary Data 10: ssDNA_taxonomy.