Temporal and Spatial Precipitation Chemistry of Puerto Rico and US Virgin Islands

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Abstract

Precipitation chemistry has been studied in northeastern Puerto Rico for decades (McClintock, 2019); however, few studies have addressed precipitation trends across the island. With the addition of the new precipitation monitoring programs at three NEON sites in central and southwestern Puerto Rico, it is now possible to examine trends in precipitation chemistry temporally and spatially across Puerto Rico. We examine trends in Ca, K, Na,Mg, Cl, NH_4^+, NO_3^-, SO_4^{2-}, and PO_4^{3-} six sites in Puerto Rico: the Guanica Forest, Rio Cupeyes, and Rio Yahuecas NEON sites, the National Atmospheric Deposition Program's (NADP) El Verde site, the Luquillo Long Term Ecological Research's at El Verde site, and a monitoring site adjacent to the urban Rio Piedras in the San Juan metro area. We also compare these to an additional NADP U.S. Virgin Islands monitoring site in Virgin Islands National Park. Samples from all the sites were collected using wet-only disposition collectors, which consist of an automated climate-controlled assembly that begins collecting once precipitation is detected and closes when precipitation ceases, thereby eliminating input due to dry deposition between precipitation events. Sampling dates range from 2018 to present.

Bibliography

McClintock, M. A.-R. (2019). African dust deposition in Puerto Rico: Analysis of a 20-year rainfall chemistry record and comparison with models. *Atmospheric Environment*, 216, 116907.