ESTIMATING HIGH RESOLUTION ATMOSPHERIC DEPOSITION OF CHLORIDE IN COASTAL FLORIDA. (A03-sigua131534-Poster)

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Abstract:

Hourly fluctuations in atmospheric deposition of precipitation-derived chloride from accumulated weekly rainfall are estimated. The scavenging of atmospheric chloride by rainfall is conceptualized as intense during the initial part of a rainfall event, but decreasing in intensity as the event progresses and the atmosphere becomes progressively depleted in chloride. Distinctive source areas of chloride (specifically, land and ocean) are incorporated through the use of individual removal efficiency index functions for each of the source areas. The method was applied to data collected at a site about 20 kilometers inland near Daytona Beach, Florida. Data used included hourly rainfall totals, chloride concentrations of weekly rainfall composites, and hourly values of wind speed and direction. The atmospheric scavenging model explained about 70 percent of the variation in measured weekly atmospheric deposition. Model results indicated that more than 90 percent of precipitation-deposited chloride is derived from the Atlantic Ocean. The removal efficiency index function for seaward winds indicates that the potential for removal of atmospheric chloride by rainfall decreases during a rainfall event with the sharpest decrease occurring during the first millimeter of rainfall.

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