Secrets of San Lorenzo Valley's Atmosphere, Part Three: The Dangers of Particulate Matter 2.5 and SLV Inversion Analysis

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For the past three years, we have been studying atmospheric inversions in the San Lorenzo Valley (SLV). In our first year, we established that strong inversions occurred frequently—as we had hypothesized. Furthermore, we confirmed that these inversions influenced high particulate matter 2.5 (PM 2.5) concentrations in SLV. In our second year, we determined that vapor pressure fluctuations were not an influential variable in our previous year's analysis. This year, we are studying the effect of high PM 2.5 concentrations on rates of respiratory illness and analyzing the trends that we have seen in terms of inversions that we've recorded for the past three years. We hypothesize that days with high concentrations of PM 2.5 will see increased hospital/clinic visits for respiratory issues. We expect to see similar trends as we had in the past two years upon analyzing our inversions. We launched weather balloons from late December 2014 to late January 2015 during expected atmospheric stagnation periods. We found no significant correlation between days with increased PM 2.5 concentrations and clinic/hospital visits. We found that atmospheric inversions had occurred frequently in the San Lorenzo Valley, and on days with atmospheric inversions we saw significant increases in PM 2.5.

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