The Implications of Background O_3 Affecting the Setting and Attainment of the National Ambient Air Quality Standards (NAAQS) for Surface O_3

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Under the Clean Air Act, the U.S. Environmental Protection Agency (EPA) periodically reviews National Ambient Air Quality Standards (NAAQS) for pollutants identified as criteria pollutants. Among the criteria pollutants is surface O_3, for which the current standard is under review to determine if the level should be maintained or modified. The Clean Air Act requires that the primary NAAQS be set on the basis of protection of human health with an adequate margin of safety. The current standard is that the 3-year average of the annual 4th highest maximum daily 8-hour average O_3 (MDA8) not exceed 75 parts per billion (ppb). Recent EPA staff recommendations and deliberations by the EPA Clean Air Scientific Advisory Committee Ozone Panel suggest that the standard should be in the range 60-70 ppb. Recent work (Lefohn et al., 2014a; 2014b) has shown that during the spring and early summer U.S. background O_3 (O_3 not contributed by U.S. pollutant emissions) over the western U.S. is a large fraction of measured ambient O_3 at levels <70 ppb. In addition much of the health risk associated with surface O_3 estimated by the EPA is associated with O_3 in the 25-55 ppb range and background O_3 contributes a large percentage in this range. Because of the large contribution of background O_3 to measured O_3 at a number of locations, the ability to meet a standard with a threshold <70 ppb by controlling local or regional emissions will be severely limited.

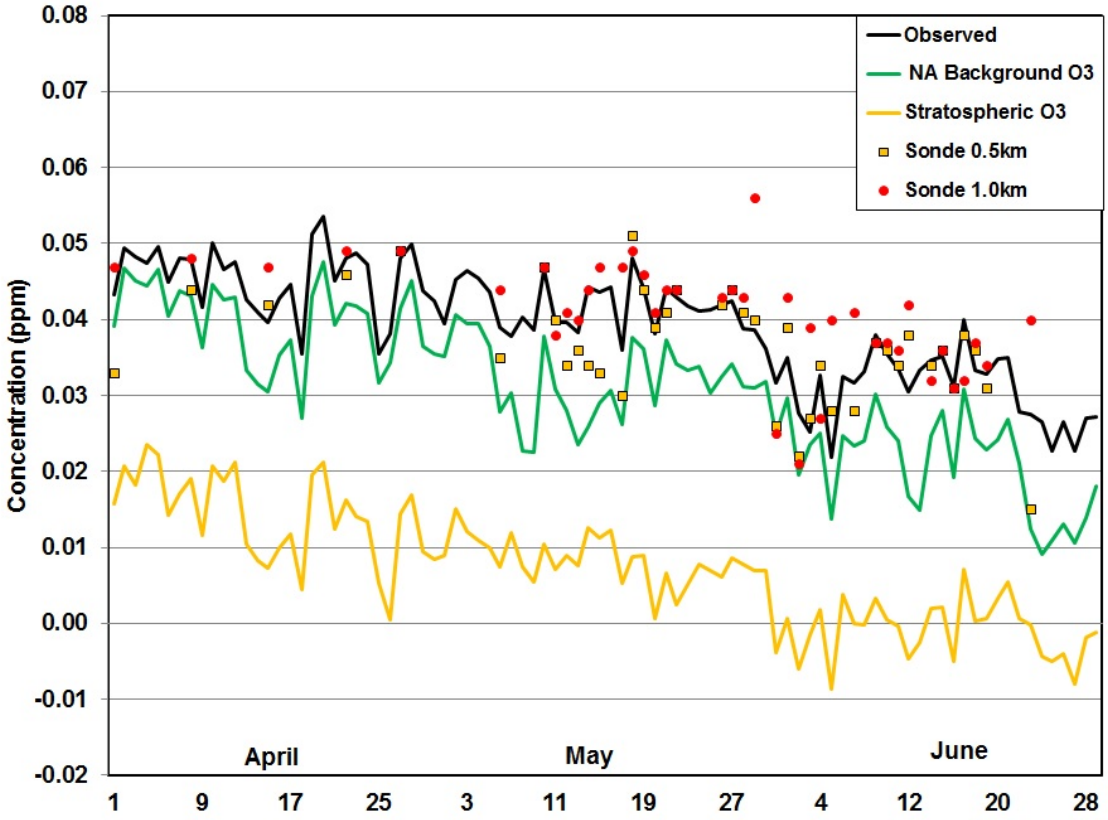

Figure 1. Model derived North American (NA) Background O_3 and stratospheric contribution compared to the observed MDA8 surface O_3 and ozonesondes at Trinidad Head, CA, in April - June 2010. (Lefohn et al., 2014b)