SPATIAL AND SEASONAL PATTERNS AND TEMPORAL VARIABILITY OF HAZE AND ITS CONSTITUENTS IN THE UNITED STATES

REPORT III

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DISCLAIMER

The assumptions, findings, conclusions, judgements, and views presented herein are those of the authors and should not be interpreted as necessarily representing official National Park Service policies.
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<td>3 SPATIAL DISTRIBUTIONS OF RECONSTRUCTED LIGHT EXTINCTION AND LIGHT-EXTINCTION BUDGETS</td>
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<td>3.1 Parameters of the best-fit equation relating the relative humidity light extinction correction factors ( (F_T) ) to seasonal and annual average site relative humidity ( (F = b_0 + b_1(1/(1-RH)) + b_2(1/(1-RH))^2) ).</td>
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<td>3.2 Seasonal and annual averages of reconstructed total light-extinction coefficient (including Rayleigh) for the 21 regions in the IMPROVE Network. Also shown are light scatterings resulting from fine and coarse aerosols, light absorption for carbonaceous aerosol, percentage of total extinction resulting from aerosol extinction, and the average regional relative humidity.</td>
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<td>3.3 Seasonal and annual averages of reconstructed aerosol light-extinction coefficient for the 21 regions in the IMPROVE Network. Also shown are light extinctions resulting from sulfate, nitrate, organic carbon, light-absorbing carbon, and soil and coarse particles.</td>
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<td>3.4 Seasonal and annual averages of percentage contributions to the reconstructed aerosol light-extinction coefficient (light-extinction budget) for the 21 regions in the IMPROVE Network for sulfate, nitrate, organic carbon, light-absorbing carbon, and soil and coarse particles.</td>
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5 TRENDS ANALYSIS
5.1 The Theil slope estimates for a five-year rolling average of fine mass and deciview for the 90, 50, and 10 percentile groups. Each slope is paired with the probability for rejection.

6 SPECIAL STUDIES
6.1 Statistical summary of aerosol species concentrations and the fraction of reconstructed fine mass attributed to certain species.
6.2 Statistical summary of DRUM data.
6.3 Statistical summary of measured scattering $<b_{\text{scat}}>$, reconstructions of $b_{\text{scat}}$ assuming different mixing rules and specific scattering and the scattering associated with each aerosol species.
6.4 Summary of ordinary least square regressions of measured and estimated $b_{\text{scat}}(RH)/b_{\text{scat, dry}}$ as the dependent and independent variables, respectively.
6.5 A summary of the percent differences between model estimations of $b_{\text{scat}}(RH)/b_{\text{scat, dry}}$ for three ranges of relative humidities.
6.6 Statistical summary of ten-minute optical and relative humidity measurements. The scattering and extinction values include Rayleigh scattering.
6.7 Summary of OLS regression with $b_{\text{ext}}$, $b_{\text{scat}, 2.5 \mu m}$ as the dependent variable and $b_{\text{scat, open}}$, $b_{\text{scat}, 2.5 \mu m}$, and $b_{\text{abs}, 2.5 \mu m}$ as independent variables.
6.8 Statistical summary of aerosol measurements.
6.9 Summary of results of an ordinary least square (OLS) regression with coarse mass as the dependent variable and soil and organics as the independent variables.
6.10 Statistical summary of absorption measurements.
6.11 Statistical summary of measured $b_{\text{scat}, 2.5 \mu m}$, reconstructed scattering, as well as the scattering associated with each aerosol species assuming an external mixture.
6.12 Summary of an ordinary least square regression with $b_{\text{scat}, 2.5 \mu m}$, as the dependent variable and sulfate + nitrate, organic, and soil estimated scattering as the independent variables.
6.13 Statistical summary of mean $f(RH)$ values in selected relative humidity ranges for the Great Smoky data set.
6.14 Statistical summary of mean $f(RH)$ values in selected relative humidity ranges for the Grand Canyon data set.