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Tropospheric Aerosol Chemistry via Aerosol Mass Spectrometry

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A broad overview of size resolved aerosol chemistry in urban, rural and remote regions is evolving from deployment of aerosol mass spectrometers (AMS) throughout the northern hemisphere. Using thermal vaporization and electron impact ionization as universal detector of non-refractory inorganic and organic composition, the accumulation of AMS results represent a library of mass spectral signatures of aerosol chemistry. For organics in particular, mass spectral factor analysis provides a procedure for classifying (and simplifying) complex mixtures composed of the hundreds or thousands of individual compounds. Correlations with parallel gas and aerosol measurements (e.g. GC/MS, HNMR, FTIR) supply additional chemical information needed to interpret mass spectra. The challenge is to separate primary and secondary; anthropogenic, biogenic and biomass burning sources - and subsequent - transformations of aerosol chemistry and microphysics.

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