

## **Evaluation of Methods for Measuring Particulate Carbon in Precipitation**

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Black carbon (BC) and organic carbon (OC) affect the Earth's radiance balance and contribute to climate change. OC also contributes to the nutrient enrichment of surface water. The exact extent of these negative impacts is unknown because the life cycle of carbon aerosols and their removal process has not been studied exhaustively. Wet deposition is the major removal mechanism (~80%) of these aerosols. OC and BC are emitted from the same sources and their scavenging process could be linked. Some studies have focused on the monitoring of individual species but only one study has measured OC and BC in precipitation. The low concentration of BC in rain and the susceptibility of the OC analysis to contamination are the key challenges in developing a standard analytical method.

Different analytical techniques were tested to measure BC in precipitation, including: Thermal/Optical Analysis, Single Particle Soot Photometer (SP2), and UV/VIS Spectrophotometer. Water soluble OC was measured by Total Organic Carbon (TOC) Analysis and water insoluble OC was measured by Thermal/Optical Analysis. The evaluation was performed using laboratory standard solutions made by burning pine wood and aging with ozone, and rain samples collected by the National Atmospheric Deposition Program at Bondville (Champaign County), Illinois.

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