

Posting type	Update
Subject	Correction of chloride concentrations for filter blank levels
Module/Species	B/Cl ⁻
Sites	All
Period	2007-2011
Recommendation	Suspect an increasingly negative bias in reported chloride concentration from 2007 to February 2011
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Supporting information

This data advisory serves as an update on a [2009 data advisory](#). Elevated chloride mass loadings on nylon filter field blanks were observed between mid-2007 and early 2011 (Figure 1, bottom). During this period, chloride blank values started climbing within the consumption of a single manufacturing lot, the reason for which was later found to be adsorption by unsampled nylon filters from their packaging. The problem was eliminated by new storage procedures for the next manufacturing lot, introduced with the February 2011 samples. To account for the elevated and varying chloride blank values, monthly blank correction was implemented in 2009 and applied retroactively to the post-2005 ion data.

Later analyses, reported in a [2017 data advisory](#), suggest that unknown and variable portions of the contaminant (blank) chloride initially present in affected filters may have been lost during the subsequent active sampling. The blank corrections made to sample values may thus have been excessive; consistent with this hypothesis, recent analysis of chloride long-term trends by CIRA revealed a small step increase in network-median ambient chloride concentrations when the improved storage procedures eliminated most of the contamination (Figure 1, top). Thus, it is advisable to use the chloride ion data between mid-2007 and early 2011 with caution.

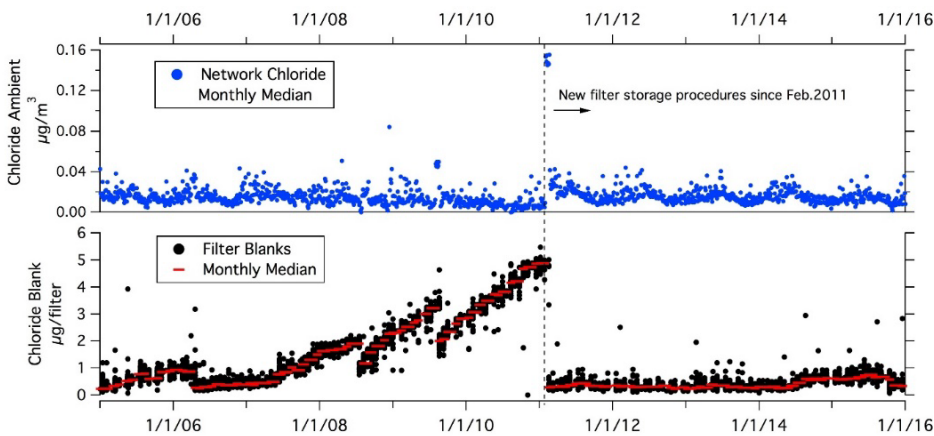


Figure 1. Time-series of the IMPROVE network monthly median chloride concentrations ($\mu\text{g}/\text{m}^3$) (Top) and chloride mass loadings ($\mu\text{g}/\text{filter}$) on blank filters (Bottom) from 2005/1/1 to 2016/1/1. In the bottom panel, the black dots represent individual blank

filters and the red lines represent the monthly median of the chloride blank mass loadings. The vertical dashed blank line indicates when the new Nylon filter storage procedures were implemented.