Global Trends and Interannual Variability of Atmospheric CH_3Br and CH_3Cl

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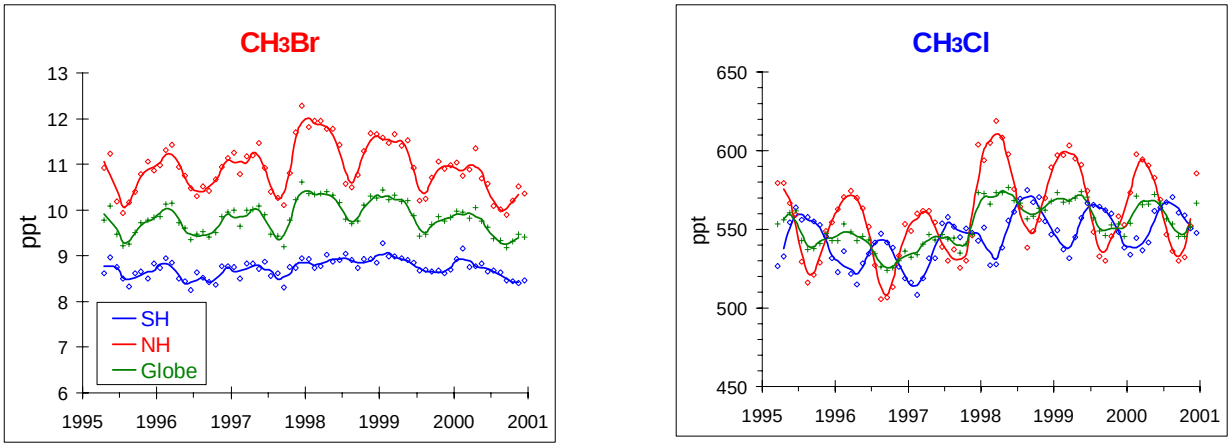
Methyl chloride and methyl bromide account for between one-fourth and one-third of the total equivalent chlorine (Cl + 45*Br) that reaches the stratosphere. These gases are unique among ozone-depleting halocarbons, however, in that known sources are predominantly nonindustrial. As a result, interannual variations in nonindustrial and nonregulated sources of these gases could significantly affect the total atmospheric burden of ozone-depleting halogen. Significant interannual variations in hemispheric and global surface mixing ratios of these methyl halides have been observed from the CMDL/HATS flask-sampling network. Mixing ratios of both CH_3Cl and CH_3Br were about 5% higher in 1998 than in 1997, for example. These increases can be explained, in part, by increased biomass burning in 1998 compared to 1997. In the years since 1998, tropospheric CH_3Br has declined somewhat more than CH_3Cl. This recent trend may reflect diminished industrial production of CH_3Br in response to the amended Montreal Protocol; annual production in developed nations, which was fairly constant from 1991 to 1998, was slated for a 25% reduction in 1999.



Hemispheric and global mixing ratios of CH_3Cl and CH_3Br from the NOAA/CMDL global flask sampling network.