GLOBAL PHOSGENE OBSERVATIONS FROM THE ATMOSPHERIC CHEMISTRY EXPERIMENT (ACE) MISSION

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The first study of the global distribution of atmospheric phosgene ($COCl_2$) has been performed using solar occultation measurements from the Atmospheric Chemistry Experiment (ACE) satellite mission. A total of 5614 measured profiles spanning the period February 2004 through May 2006 were used in the study. The phosgene concentrations display a symmetric pattern with the maximum concentration located approximately over the equator at about 25 km in altitude and concentration decreases towards the poles. A layer of enhanced phosgene spans the lower stratosphere over all latitudes, with volume mixing ratios of 20-60 pptv. The ACE observations show lower phosgene concentrations than were obtained from previous observations in the 1980s and 1990s. This has been attributed to a significant decrease in its source species since the introduction of restrictions required by the Montreal Protocol and its amendments.