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3 **Auxiliary Material Figure S1.** The locations of 30 km geometric tangent points for 5614 ACE-FTS
4 occultations during the period February 2004 to May 2006 are illustrated with dots. The color of each
5 marker indicates the year of the observation was made (Red: 2004; Blue: 2005 and Black: 2006).

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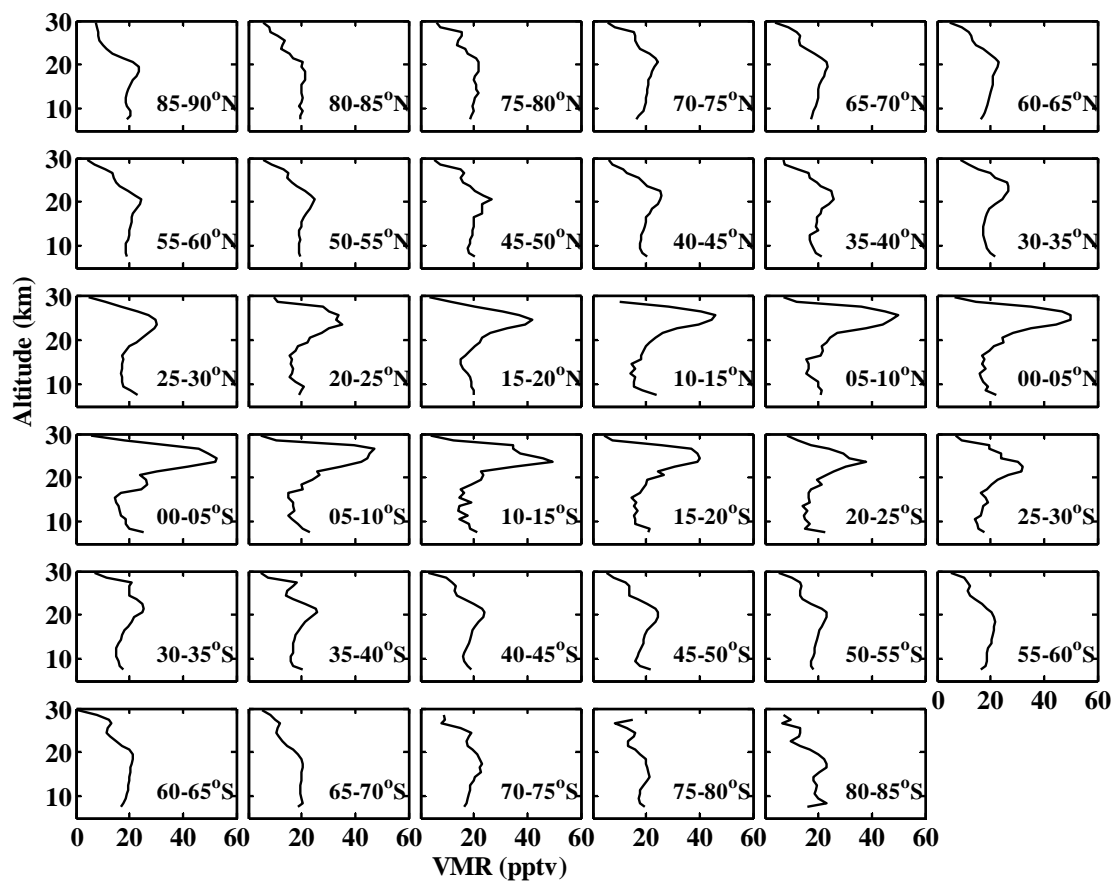
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13 **Auxiliary Material Figure S2.** The 35 averaged COCl_2 Volume Mixing Ratio (VMR) profiles for 5
 14 degree latitudinal zones spanning from 90°N to 85°S during the period February 2004 to May 2006 are
 15 presented. There were no profiles in the region 85 to 90°S .

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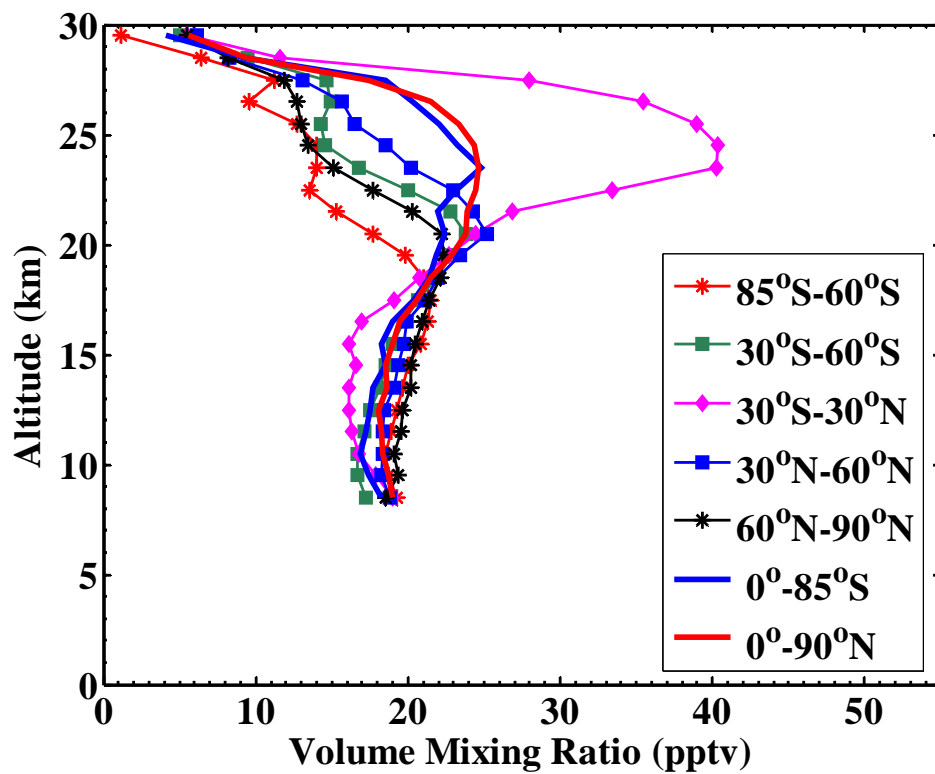
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24 **Auxiliary Material Figure S3.** The averaged COCl_2 volume mixing ratio profiles (in pptv) for 90-60°N,
 25 60-30°N, 30°S-30°N, 30-60°S and 60-85°S latitudinal zones, southern hemisphere and northern
 26 hemisphere observed by the ACE mission during the period February 2004 to May 2006 are presented.

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