Table 1: Measurements of Stratospheric Composition on Jupiter

| Species | Mole Fraction | Pressure† (mbar) | Technique/ Instrument‡ | Assumed Temperature | Reference |
|---|---|---|---|---|---|
| $H_2$ | 0.87 | >100 | GCMS | - | Niemann et al. 1996 |
| He | 0.13 | >100 | GCMS | - | Niemann et al. 1996 |
| $CH_4$ | 1-2 $\times 10^{-4}$ | 1-4 $\times 10^{-4}$ | UVS | - | Yelle et al. 1996 |
| | 1.9 $\times 10^{-3}$ | >100 | GCMS | - | Niemann et al. 1996 |
| $C_2H_2$ | 1 $\times 10^{-7}$ | | IUE | - | Clarke et al. 1982 |
| | 9-11 $\times 10^{-8}$ | 5-15 (10) | IUE | - | Gladstone & Yung 1983 |
| | 2-4 $\times 10^{-8}$ | 5-15 (10) | IUE | - | Wagener et al. 1985 |
| | 7-13 $\times 10^{-8}$ | 0.1-4 (1.5) | IR/FP | 150-170 K | Noll et al. 1986 |
| | 3.6 $\times 10^{-8}$ | 5-15 (10) | IUE | - | McGrath et al. 1990 |
| | 3.6-4.3 $\times 10^{-8}$ | 5-15 (10) | HUT(1) | - | Morrissey et al. 1995 |
| | 2.6-3.1 $\times 10^{-8}$ | 5-15 (10) | HUT(2) | - | |
| | 1.8-2.8 $\times 10^{-8}$ | 8 | CELESTE | 140 K | Sada et al. 1998 |
| | 1-3 $\times 10^{-8}$ | 20-60 | FOS | - | Bétremieux & Yelle 2000 |
| | 2-5 $\times 10^{-8}$ | 10 | FOS | - | |
| | 8.3-10 $\times 10^{-7}$ | 0.3 | ISO | 165 K | Fouchet et al. 2000 |
| | 1.0-1.3 $\times 10^{-7}$ | 4 | | 165 K | |
| | 1.1-4.3 $\times 10^{-6}$ | 0.01¶ | Irshell | 160 K | This work |
| $C_2H_6$ | 4-7 $\times 10^{-6}$ | 0.1-4 (1.5) | IR/FP | 150-170 K | Noll et al. 1986 |
| | 2.2-3.4 $\times 10^{-6}$ | 0.7-30 (5) | IR/Heterodyne | 150-170 K | Kostiuk et al. 1987 |
| | 1-12 $\times 10^{-6}$ | 1-20 (4) | IUE | - | Gladstone & Yung 1983 |
| | 1-4 $\times 10^{-6}$ | 1-20 (4) | IUE | - | Wagener et al. 1985 |
| | 1.7 $\times 10^{-6}$ | 1-20 (4) | IUE | - | McGrath et al. 1990 |
| | 2.1-3.9 $\times 10^{-6}$ | 1-20 (4) | HUT(1) | - | Morrissey et al. 1995 |
| | 2.4-3.8 $\times 10^{-6}$ | 1-20 (4) | HUT(2) | - | |
| | 2.6-5.8 $\times 10^{-6}$ | 5 | CELESTE | 145 K | Sada et al. 1998 |
| | 0.8-1.2 $\times 10^{-5}$ | 1 | ISO | 165 K | Fouchet et al. 2000 |
| | 2.0-3.1 $\times 10^{-6}$ | 10 | | 152 K | |
| | 2.8-6.5 $\times 10^{-6}$ | 0.4-10(5) | Irshell | 160 K | This work |

† The range of pressures indicates the width of the contribution function; the value in parentheses, the location of the peak. Mole fractions are reported at the peak contribution function pressure. The mole fractions of $H_2$, He, and $CH_4$ are expected to be constant at pressures greater than $\sim 10\,\mu$bar.

‡GCMS, Galileo Probe Gas Chromatograph and Mass Spectrometer experiment; UVS, Voyager Ultraviolet Spectrometer occultation experiment; IUE, The International Ultraviolet Explorer; IR/FP Ground-based IR observations with a Fabry-Perot Spectrometer with resolving power of 7100; HUT, the Hopkins Ultraviolet Telescope (1) and (2) refer to the first and second flight; FOS, the Faint Object Spectrograph on HST; ISO, the Infrared Spectroscopy Observer; Irshell, The University of Texas mid-IR spectrometer; IR/Heterodyne, IR observations with a Heterodyne Spectrometer at a resolving power of $10^6$.

¶ Derivation of this value assumes $C_2H_2$ mole fractions of 8.3-10 $\times 10^{-7}$ and 2-4 $\times 10^{-8}$ at 0.3 and 10 mbar.