

Bibliographie

Anderson, J., J. M. Russell III, S. Solomon and L. E. Deaver, Halogen Occultation Experiment confirmation of stratospheric chlorine decreases in accordance with the Montreal Protocol, *J. Geophys. Res.* 105, 4483-4490, 2000.

Barret, B., Inversion et caractérisation de profils de constituants atmosphériques à partir de mesures FTIR sol, Thèse de Doctorat, Université Libre de Bruxelles, 2003.

Bates, D. R. and M. Nicolet, Atmospheric hydrogen, *Publ. Astron. Paccific* 62, 106, 1950.

Bernath, P. F. *et al.*, Atmospheric Chemistry Experiment (ACE) : mission overview, *Geophys. Res. Lett.* 32, doi: 10.1029//2005GL022386, 2005.

Blake, D. R. and F. S. Rowland, Continuing worldwide increase in tropospheric methane, *Science* 239, 1129, 1978-1987, 1988.

Boone, C. D., R. Nassar, K. A. Walker, Y. Rochon, S. D. McLeod, C. P. Rinsland and P. F. Bernath, Retrievals for the Atmospheric Chemistry Experiment Fourier Transform Spectrometer, *Appl. Opt.*, in press, 2005.

Brasseur, G. P., J. J. Orlando and G. S. Tyndall, Atmospheric chemistry and global change, Oxford University Press, 1999.

Butler, J. H., S. A. Montzka, A. D. Clarke, J. M. Lobert and J. W. Elkins, Growth and distribution of Halons in the atmosphere, *J. Geophys. Res.* 103, 1503-1511, 1998.

Carli, B. and J. H. Park, Simultaneous measurements of minor stratospheric with emission far-spectroscopy, *J. Geophys. Res.* 93, 3851-3865, 1988.

Chamberlain, J. E., The principle of interferometric spectroscopy, edited Chantry G. W., Stone N. W. B., John Wiley & Sons, 1979.

Chapman, S., On ozone and atomic oxygen in the upper atmosphere, *Phil. Mag.* 10, 369, 1930.

Chipperfield, M. P., M. Burton, W. Bell, C. Paton Walsh, T. Blumenstock, M.T. Coffey, J. W. Hannigan, W. G. Mankin, B. Galle, J. Mellqvist, E. Mahieu, R. Zander, J. Notholt, B. Sen and G. C. Toon, On the use of HF as a reference for the comparison of stratospheric observations and models, *J. Geophys. Res.* 102, 12901-12919, 1997.

- Cicerone, R. J., Atmospheric carbon tetrafluoride : a nearly inert gas, *Science* 206, 59-61, 1979.
- Connor, B. J., D. E. Siskind, J. J. Tsou, A. Parrish and E. E. Remsberg, Ground-based microwave observations of ozone in the upper stratosphere and mesosphere, *J. Geophys. Res.* 99, 16757-16770, 1994.
- Connor, B. J., N. B. Jones, S. W. Wood, J. G. Keys, C. P. Rinsland and F. J. Mucray, Retrieval of HCl and HNO₃ profiles from ground-based FTIR data using SFIT2, paper presented at XVIII Quadriennial O₃ Symposium, Int. Ozone Comm., Univ. L'Aquila, L'Aquila, Italy, 1996.
- Considine, G. D., L. E. Daver, E. E. Remsberg and J. M. Russell III, Analysis of near-global trends and variability in Halogen Occultation Experiment HF and HCl data in the middle atmosphere, *J. Geophys. Res.* 104, 24297-24308, 1999.
- Crutzen, P. J., The influence of nitrogen oxide on the atmospheric ozone content, *Quart. J. Roy. Met. Soc.* 96, 320, 1970.
- Crutzen, P. J., Ozone production rates in an oxygen-hydrogen-nitrogen oxide atmosphere, *J. Geophys. Res.* 76, 7311, 1971.
- Davies, S. P., M. C. Abrams and J. W. Brault, Fourier Transform Spectrometry, Academic Press, San Diego, California, 2001.
- Delbouille, L. and G. Roland, Photometric atlas of the solar spectrum from λ 7498 to λ 12016, Inst. d'Astrophysique et de Géophysique, Univ. de Liège, 1963.
- Delbouille, L., L. Neven and G. Roland, Photometric atlas of the solar spectrum from λ 3000 to λ 10000, Inst. d'Astrophysique et de Géophysique, Univ. de Liège, 1973.
- Dlugokencky, E. J., L. P. Steele, P. M. Lang and K. A. Masarie, The growth rate and distribution of atmospheric methane, *J. Geophys. Res.* 99, 17021, 1994.
- Duchatelet, P., Etude de l'enrichissement atmosphérique en ozone isotopique à partir de spectres infrarouges enregistrés au Jungfraujoch, Mémoire de Licence, Université de Liège, 2000.
- Fahay, D. W., Twenty questions and answers about the ozone layer, in *Scientific assessment of ozone depletion : 2002*, World Meteorological Organization, Report No 47, Geneva, Switzerland, 2003.
- Farman, J. C., B. G. Gardiner and J. D. Shanklin, Large losses of total ozone in Antarctic reveal seasonal ClO_x/NO_x interaction, *Nature* 315, 207, 1985.
- Gunson, M. R., M. C. Abrams, L. L. Lowes, E. Mahieu, R. Zander, C. P. Rinsland, M. K. W. Ko and D. K. Weinsenstein, Increase in levels of stratospheric chlorine and fluorine loading between 1985 and 1992, *Geophys. Res. Lett.* 21, 2223-2226, 1994.
- Hanson, D. R. and A. R. Ravishankara, The loss of COF₂ on ice, NAT and sulphuric acid solutions, *Geophys. Res. Lett.* 18, 1699-1701, 1991.

Harnisch, J. and A. Eisenhauer, Natural CF₄ and SF₆ on earth, *Geophys. Res. Lett.* 25, 2401-2404, 1998.

Hase, F., T. Blumenstock and C. Paton-Walsh, Analysis of instrumental line shape of high-resolution FTIR-spectrometers using gas cell measurements and a new retrieval software, *Appl. Opt.*, 3417-3422, 1999.

Hase, F., Inversion von Spurengas-profilen aus hochaufgelösten bodengebundenen FTIR-Messungen in absorption, Ph.D. Thesis, Institut für Meteorologie und Klimaforschung, 2000.

Johnston, H. S., Reduction of stratospheric ozone by nitrogen ozone catalysts from supersonic transport exhaust, *Science* 173, 517, 1971.

Kaye, J. A., A. R. Douglas, C. H. Jackman, R. S. Stolarski, R. Zander and G. Roland, Two-dimensional model calculation of fluorine-containing reservoirs species, *J. Geophys. Res.* 96, 12865-12881, 1991.

Kaye, J. A., S. A. Penkett and F. M. Ormond, Reports on concentrations, lifetimes and trends of CFC's, Halons and related species, *NASA Ref. Pub.* 1339, 1994.

Kinnersley, J.S., The climatology of the stratospheric THIN AIR model, *Q. J. R. Meteorol. Soc.* 122, 219-252, 1996.

Kompa, K. L. and J. Wanner, Study of some fluorine atom reactions using a chemical laser method, *Chem. Phys. Lett.* 12, 560, 1972.

Krieg, J., J. Notholt, E. Mahieu, C.P. Rinsland and R. Zander, Sulphur hexafluoride (SF₆) : comparison of FTIR-measurements at three sites and determination of its trend in the northern hemisphere, *J. Quant. Spec. and Rad. Transf.* 92, 383-392, 2005.

Luo, M., R. J. Cicerone, J. M. Russell and T. Y. W. Huang, Observations of stratospheric hydrogen fluoride by the Halogen Occultation Experiment (HALOE), *J. Geophys. Res.* 99, 16691-16705, 1994.

Mahieu, E., R. Zander, P. Demoulin, M. De Mazière, F. Mélen, C. Servais, G. Roland, L. Delbouille, J. Poels and R. Blomme, Fifteen year-trend characteristics of key stratospheric constituents measured by FTIR above the Jungfraujoch, in *Proceedings of the 5th European Symposium*, Saint Jean de Luz, France, 27 september - 1 october 1999, European Commission, Air pollution research report 73, 99-102, 2000.

Mahieu, E., L'évolution du chlore inorganique au dessus du Jungfraujoch et le Protocole de Montréal, Thèse de Doctorat, Université de Liège, 2002.

Maiss, M. and A. M. Brenninkmeijer, Atmospheric SF₆ : trends, sources and prospects, *Environ. Sci. Technol.* 32, 3077-3086, 1998.

Mankin, W. G. and M. T. Coffey, Latitudinal distributions and temporal changes of stratospheric HCl and HF, *J. Geophys. Res.* 88, 10776-10784, 1983.

Mankin, W. G. *et al.*, Intercomparison of measurements of stratospheric hydrogen fluoride, *J. Atmos. Chem.* 10, 219-236, 1990.

McHugh, M., B. McGill, K. A. Walker, C. D. Boone, P. F. Bernath and J. M. Russell III, Comparison of atmospheric retrievals from ACE and HALOE, *Geophys. Res. Lett.* 32, doi: 10.1029/2005GL022396, 2005.

Mélen, F., E. Mahieu, R. Zander, C. P. Rinsland, P. Demoulin, G. Roland, L. Delbouille and C. Servais, Vertical column abundances of COF₂ above the Jungfraujoch Station, derived from ground-based infrared solar observations, *J. Atmos. Chem.* 29, 119-134, 1998.

Mélen, F., E. Mahieu, P. Demoulin, C. Servais and R. Zander, Vertical column abundances of COF₂ above the Jungfraujoch Station : update and consolidation of the database with measurements in the ν₄ band region, in *Proceedings of Atmospheric Spectroscopy Applications 1999*, Reims, France, September 1-3 1999, 1999.

Mellqvist, J., B. Galle, T. Blumenstock, F. Hase, D. Yashcov, J. Notholt, B. Sen, J.-F. Blavier, G. C. Toon and M. P. Chipperfield, Ground-based FTIR observations of chlorine activation and ozone depletion inside the Arctic vortex during the winter of 1999/2000, *J. Geophys. Res.* 107, 2002.

Migeotte, M. and L. Neven, Détection du monoxyde de carbone dans l'atmosphère terrestre à 3580 mètres d'altitude, *Physica* 16, 423-424, 1950.

Montzka, S. A., J. H. Butler, J. W. Elkins, T. M. Thompson, A. D. Clarke and L. T. Lock, Present and future trends in the atmospheric burden of ozone-depleting halogens, *Nature* 398, 690-694, 1999.

Montzka, S. A., C. M. Spivakovsky, J. H. Butler, J. W. Elkins, L. T. Lock and D. J. Mondeel, New observational constraints for atmospheric hydroxyl on global and hemispheric scales, *Science* 288, 500-503, 2000.

Nielsen, A. H. and M. Migeotte, Abundance and vertical distribution of telluric methane from measurements at 3580 meters elevation, *Ann. Astrophys.* 15, 134-141, 1952.

Notholt, J., A. Meier and S. Peil, Total column densities of tropospheric and stratospheric trace gases in the undisturbed arctic summer atmosphere, *J. Atmos. Chem.* 20, 311-332, 1995.

Park, J. H., D. J. W. Kendall and H. L. Buys, Stratospheric HF mixing ratio profiles in the northern and southern hemisphere, *J. Geophys. Res.* 89, 11645-11653, 1984.

Picone, J. M., A. E. Hedin, D. P. Drob and A. C. Aikin, NRLMSISE-00 empirical model of the atmosphere : statistical comparisons and scientific issues, *J. Geophys. Res.* 107, 1468-1483, 2002.

Pougatchev, N. S. and C. P. Rinsland, Spectroscopic study of the seasonal variation of carbon monoxide distribution above Kitt Peak, *J. Geophys. Res.* 100, 1409-1416, 1995.

Pougatchev, N. S., B. J. Connor and C. P. Rinsland, Infrared measurements of the ozone vertical distribution above Kitt Peak, *J. Geophys. Res.* 100, 16689-16697, 1995.

Pougatchev, N. S., B. J. Connor, N. B. Jones and C. P. Rinsland, Validation of ozone profile retrievals from infrared ground-based solar spectra, *Geophys. Res. Lett.* 23, 1637-1640, 1996.

Prinn, R. G., R. F. Weiss, B. R. Miller, J. Huang, F. N. Alyea and D. M. Cunnold, The ALE/GAGE/AGAGE database, *DOE-CDIAC World Data Center, Dataset DB-1001*, Dep. of Energy-Carbon Dioxide Inf. Anal. Cent., Oak Ridge, Tenn., 1998.

Ravishankara, A. R., S. Solomon, A. A. Turnispeed and R. F. Warren, Atmospheric lifetimes of long-lived halogenated species, *Science* 259, 194-199, 1993.

Reber, C. A., C. E. Trevathan, R. J. McNeal and M. R. Luther, The Upper Atmosphere Research Satellite (UARS) mission, *J. Geophys. Res.* 98, 1993.

Reisinger, A. R., N. B. Jones, W. A. Matthews and C. P. Rinsland, Southern hemisphere ground based measurements of carbonyl fluoride (COF_2) and hydrogen fluoride (HF) : partitioning between fluoride reservoir species, *Geophys. Res. Lett.* 21, 797-800, 1994.

Rinsland, C. P., R. Zander, L. R. Brown, C. B. Farmer, J. H. Park, R. H. Norton, J. M. Russell III and O. F. Raper, Detection of carbonyl fluoride in the stratosphere, *Geophys. Res. Lett.* 13, 769-772, 1986.

Rinsland, C. P., L. R. Brown and C. B. Farmer, Infrared spectroscopy detection of sulfur hexafluoride (SF_6) in the lower stratosphere and upper troposphere, *J. Geophys. Res.* 95, 5577-5585, 1990.

Rinsland, C. P., J. S. Levine, A. Goldman, N. D. Sze, M. K. W. Ko and D. W. Johnson, Infrared measurements of HF and HCl total column abundances above Kitt Peak, 1997-1990 : seasonal cycles, long-term increases and comparisons with model calculations, *J. Geophys. Res.* 96, 15523-15540, 1991.

Rinsland, C. P., M. R. Gunson, M. C. Abrams, L. L. Lowes, R. Zander and E. Mahieu, ATMOS/ATLAS-1 measurements of sulfur hexafluoride (SF_6) in the lower stratosphere and upper troposphere, *J. Geophys. Res.* 98, 20491-20494, 1993.

Rinsland, C. P., R. Zander, E. Mahieu, L. S. Chiou, A. Goldman and N. B. Jones, Stratospheric HF column abundances above Kitt Peak (31.9°N latitude) : trends from 1977 to 2001 and correlations with stratospheric HCl columns, *J. Quant. Spec. and Rad. Transf.* 74, 205-216, 2002.

Rodgers, C. D., Retrieval of atmospheric temperature and composition from remote measurements of thermal radiation, *Review of Geophysics and Space Physics* 14, 609-624, 1976.

Rodgers, C. D., Characterisation and error analysis of profiles retrieved from remote sounding measurements, *J. Geophys. Res.* 95, 5587-5595, 1990.

Rodgers, C. D. and B. J. Connor, Intercomparison of remote sounding instruments, *J. Geophys. Res.* 108, doi : 10.1029/2002JD002299, 2003.

Romand, J., Absorption ultraviolette dans la région de Schuman étude de : ClH, BrH et IH gazeux, *Ann. Phys.* 4, 35, 1949.

Russell, J. M. III, L. L. Gordley, J. H. Parks, S. R. Drayson, W.D. Hesketh, R. J. Cicerone, A. F. Tuck, J. E. Frederick, J. E. Harries and P. J. Crutzen, The halogen occultation experiment, *J. Geophys. Res.* 98, 1993.

Russell, J. M. III, L. E. Deaver, M. Luo, R. J. Cicerone, J. H. Park, L. L. Gordley, G. C. Toon, M. R. Gunson, W. A. Traub, D. G. Johnson, K. W. Jucks, R. Zander and I. G. Nolt, Validation of hydrogen fluoride measurements made by the Halogen Occultation Experiment from the UARS platform, *J. Geophys. Res.* 101, 10163-10174, 1996a.

Russell, J. M. III, M. Luo, R. J. Cicerone and L. E. Deaver, Satellite confirmation of the dominance of chlorofluorocarbons in the global stratospheric chlorine budget, *Nature* 379, 526-529, 1996b.

Schmidt, U. and A. Khedim, In situ measurements of carbon dioxide in the winter Arctic vortex and at midlatitudes : an indicator of the «age» of stratospheric air, *Geophys. Res. Lett.* 18, 763-766, 1991.

Sen, B., G. C. Toon, J. -F. Blavier, E. L. Fleming and C. H. Jackman, Balloon-borne observations of midlatitude fluorine abundance, *J. Geophys. Res.* 101, 9045-9054, 1996.

Solomon, S., Stratospheric ozone depletion : a review of concepts and history, *Reviews of Geophysics*, 37, 275-316, 1999.

Steck, T., Methods for determining regularization for atmospheric retrieval problems, *Appl. Opt.* 41, 1788-1797, 2002.

Stolarski, R. S. and R. J. Cicerone, Stratospheric chlorine : a possible sink for ozone, *Canadian Journal of Chemistry* 52, 1610, 1974.

Stolarski, R. S. and R. D. Rundel, Fluorine photochemistry in the stratosphere, *Geophys. Res. Lett.* 2, 433-434, 1975.

Strunk, M., An experimental study on the mean age of stratospheric air, Frankfurt am Main, Univ., Diss., Cuvillier Verlag, Göttingen, 1999.

Toon, G. C., C. B. Farmer, L. L. Lowes, P. W. Schaper, J.-F. Blavier and R. H. Norton, Infrared aircraft measurements of stratospheric composition over the Antarctic during September 1987, *J. Geophys. Res.* 94, 16571-16596, 1989.

Wagner, H. G. and C. Zetzsch, *Berichte der Bunsen-Gesellschafts* 76, 526, 1972.

Walker, K. A., C. E. Randall, C. R. Trepte, C. D. Boone and P. F. Bernath, Initial validation comparisons for the Atmospheric Chemistry Experiment (ACE-FTS), *Geophys. Res. Lett.* 32, doi: 10.1029/2005GL022388, 2005.

Wallace, S. and W. Livingstone, Spectroscopic observations of atmospheric trace gases over Kitt Peak : long-term trends of hydrogen chloride and hydrogen fluoride from 1978 to 1990, *J. Geophys. Res.* 96, 15513-15521, 1991.

Waple, A.M., J. H. Lawrimore, M. S. Halpert, G. D. Bell, W. Higgins, B. Lyon, M. J. Menne, K. L. Gleason, R. C. Schnell, J. R. Christy, W. Thiaw, W. J. Wright, M. J. Salinger, L. Alexander, R. S. Stone and S. J. Camargo, Climate Assessment for 2001, *Bulletin of the American Meteorological Society* 83, 2002.

Wofsy, S. C., J. H. Yatteau, R. J. Salawitch, M. B. McElroy, G. C. Toon, W. G. Mankin and M. T. Coffey, Heterogeneous conversion of COF_2 to HF in polar stratospheric clouds, *Geophys. Res. Lett.* 17, 461-464, 1990.

World Meteorological Organization, *Scientific assessment of ozone depletion : 1994*, Report No 37, Geneva, Switzerland, 1994.

World Meteorological Organization, *Scientific assessment of ozone depletion : 2002*, Report No 47, Geneva, Switzerland, 2003.

Zander, R., Présence de HF dans la stratosphère supérieure, *C. R. Acad. Sci. Paris, Sér. B* 281, 213-214, 1975.

Zander, R., Recent observations of HF and HCl in the upper stratosphere, *Geophys. Res. Lett.* 8, 413-416, 1981.

Zander, R., G. Roland, L. Delbouille, A. Sauval, C. B. Farmer and R. H. Norton, Monitoring of the integrated column of hydrogen fluoride above the Jungfraujoch Station since 1977 : the HF/HCl column ratio, *J. Atmos. Chem.* 5, 385-394, 1987.

Zander, R., M. R. Gunson, C. B. Farmer, C. P. Rinsland, F. W. Irion and E. Mahieu, The 1985 chlorine and fluorine inventories in the stratosphere based on ATMOS observations at 30 north latitude, *Journal of Atmospheric Chemistry*, 15, 171-186, 1992.

Zander, R., C. P. Rinsland, E. Mahieu, M. R. Gunson, C. B. Farmer, M. C. Abrams and M. K. W. Ko, Increase of carbonyl fluoride (COF_2) in the stratosphere and its contribution to the 1992 budget of inorganic fluorine in the upper stratosphere, *J. Geophys. Res.* 99, 16737-16743, 1994.