

References

- Bauer, S., C. Fulda and W. Schafer, A multi-tracer study in a shallow aquifer using age dating tracers ^3H , ^{85}Kr , CFC-113 and SF₆ – Indication for retarded transport of CFC-113. *J. Hydrol.*, **248**, 14-34 (2001)
- Bullister, J. L., D. P. Wisegarver and F. A. Menzia, The solubility of sulfur hexafluoride in water and seawater. *Deep-Sea Res.*, **49**, 175-187 (2002)
- Dillon, K. S., D. R. Corbett, J. P. Chanton, W. C. Burnett and D. J. Furbish, The use of sulfur hexafluoride (SF₆) as a tracer of septic tank effluent in the Florida Keys. *J. Hydrol.*, **220**, 129-140 (1999)
- Elias, L., M. McCooeye and G. Gardner, On-site measurement of atmospheric tracer gases. *Geophys. Res. Lett.*, **3**, 17-20 (1976)
- Elkins, J. W., D. W. Fahey, J. M. Gilligan, G. S. Dutton, T. J. baring, C. M. Volk, R. E. Dunn, R. C. Myers, S. A. Montzka, P. R. Wamsley, A. H. Hayden, J. H. Butler, T. M. Thompson, T. H. Swanson, E. J. Dlugokencky, P. C. Novelli, D. F. Hurst, J. M. Lobert, S. J. Ciciora, R. J. McLaughlin, T. L. Thompson, R. H. Winkler, P. J. Fraser, L. P. Steele and M. P. Lucarelli, Airborne gas chromatograph for in situ measurements of long-lived species in the upper troposphere and lower stratosphere. *Geophys. Res. Lett.*, **23**, 347-350 (1996)
- Geller, L. S., J. W. Elkins, J. M. Lobert, A. D. Clarke, D. F. Hurst, J. H. Butler and R. C. Myers, Tropospheric SF₆: observed latitudinal distribution and trends, derived emissions and interhemispheric exchange time. *Geophys. Res. Lett.*, **24**, 675-678 (1997)
- Harnisch, J. and A. Eisenhauer, Natural CF₄ and SF₆ on Earth. *Geophys. Res. Lett.*, **25**, 2401-2404 (1998)
- Hirota, M. and H. Muramatsu, Gas-chromatographic measurements of atmospheric sulfur hexafluoride. *Bull. Chem. Soc. Jpn.*, **59**, 329-331 (1986)
- Kjellström, E., J. Feichter and G. Hoffman, Transport of SF₆ and CO₂ in the atmospheric general circulation model ECHAM4. *Tellus*, **52B**, 1-18 (2000)
- Ko, M. K. W., N. D. Sze, W.-C. Wang, G. Shia, A. Goldman, F. J. Murcay, D. G. Murcay and C. P. Rinsland, Atmospheric sulfur hexafluoride: sources, sinks and greenhouse warming. *J. Geophys. Res.*, **98**, 10499-10507 (1993)
- Krey, P. W., R. J. Lagomarsino and L. E. Toonkel, Gaseous halogens in the atmosphere in 1975. *J. Geophys. Res.*, **82**, 1753-1766 (1977)
- Law, C. S. and A. J. Watson, Determination of Persian Gulf Water transport and oxygen utilization rates using SF₆ as a novel transient tracer. *Geophys. Res. Lett.*, **28**, 815-818 (2001)
- Law, C. S., A. J. Watson and M. I. Liddicoat, Automated vacuum analysis of sulphur hexafluoride in seawater: derivation of the atmospheric trend (1970-1993) and potential as a transient tracer. *Mar. Chem.*, **48**, 57-69 (1994)
- Law, C. S., A. J. Watson, M. I. Liddicoat and T. Stanton, Sulphur hexafluoride as a tracer of biogeochemical and physical processes in an open-ocean iron fertilization experiment. *Deep-Sea Res.*, **45**, 977-994 (1998)
- Ledwell, J. R. and A. J. Watson, The Santa Monica Basin Tracer Experiment: a study of diapycnal and isopycnal mixing. *J. Geophys. Res.*, **96**, 8695-8718 (1991)
- Levin, I., and V. Hessheimer, Refining of atmospheric transport model entries by the globally observed

- passive tracer distributions of $^{85}\text{krypton}$ and sulfur hexafluoride (SF_6). *J. Geophys. Res.*, **101**, 16745-16755 (1996)
- Lovelock, J. E., Atmospheric fluorine compounds as indicators of air movements. *Nature*, **230**, 379 (1971)
- 間木道政、下島公紀、 SF_6 を用いた大気・海洋間の CO_2 気体交換過程の推定、電力中央研究所報告、U01029、16pp., 平成14年 (Magi, M. and K. Shitashima, Estimation of the CO_2 exchange process at the Air-Sea interface using SF_6 . *Denryokutuuoukennkyuusyo-houkoku*, U01029, 16pp., (2002))
- Maiss, M. and C. A. M. Breninkmeijer, Atmospheric SF_6 : trends, sources, prospects. *Environ. Sci. Tech.*, **32**, 3077-3086 (1998)
- Maiss, M. and I. Levin, Global increase of SF_6 observed in the atmosphere. *Geophys. Res. Lett.*, **21**, 569-572 (1994)
- Maiss, M., L. P. Steele, R. J. Francey, P. J. Fraser, R. L. Langenfelds, N. B. A. Trivett and I. Levin, Sulfur hexafluoride - A powerful new atmospheric tracer. *Atmos. Environ.*, **30**, 1621-1629 (1996)
- Singh, H. B., L. J. Salas and L. A. Cavanagh, Distribution, sources and sinks of atmospheric halogenated compounds. *J. Air Pollut. Control Assoc.*, **27**, 333-336 (1977)
- Strunk, M., A. Engel, U. Schmidt, C. M. Volk, T. Wetter, I. Levin and H. Glatzel-Mattheier, CO_2 and SF_6 as stratospheric age tracers: consistency and the effect of mesospheric SF_6 -loss. *Geophys. Res. Lett.*, **27**, 341-344 (2000)
- Tanhua, T., K. A. Olsson and E. Fogelqvist, A first study of SF_6 as a transient tracer in the Southern Ocean. *Deep-Sea Res.*, **51**, 2683-2699 (2004)
- Upstill-Goddard, R. C., A. J. Watson, P. S. Liss and M. I. Liddicoat, Gas transfer velocities in lakes measured with SF_6 . *Tellus*, **42B**, 364-377 (1990)
- Upstill-Goddard, R. C., A. J. Watson, J. Wood and M. I. Liddicoat, Sulphur hexafluoride and helium-3 as sea-water tracers: deployment techniques and continuous underway analysis for sulphur hexafluoride. *Anal. Chim. Acta*, **249**, 555-562 (1991)
- Walker, S. J., R. F. Weiss and P. K. Salameh, Reconstructed histories of the annual mean atmospheric mole fractions for the halocarbons CFC-11, CFC-12, CFC-113, and carbon tetrachloride. *J. Geophys. Res.*, **105**, 14285-14296 (2000)
- Wanninkhof, R., J. Ledwell and W. S. Broecker, Gas exchange-wind speed relation measured with sulfur hexafluoride on a lake. *Science*, **227**, 1224-1226 (1985)
- Wanninkhof, R., J. R. Ledwell and A. J. Watson, Analysis of sulfur hexafluoride in seawater. *J. Geophys. Res.*, **96**, 8733-8740 (1991)
- Watanabe, Y. W., A. Shimamoto and T. Ono, Comparison of time-dependent tracer ages in the western North Pacific: oceanic background levels of SF_6 , CFC-11, CFC-12 and CFC-113. *J. Oceanogr.*, **59**, 719-729 (2003)
- Watson, A. J. and M. I. Liddicoat, Recent history of atmospheric trace gas concentrations deduced from measurements in the deep sea: application to sulphur hexafluoride and carbon tetrachloride. *Atmos. Environ.*, **19**, 1477-1484 (1985)
- Watson, A. J., R. C. Upstill-Goddard and P. S. Liss, Air-sea gas exchange in rough and stormy seas measured by a dual-tracer technique. *Nature*, **349**, 145-147 (1991b)

Watson, A. J., J. R. Ledwell and S. C. Sutherland, The Santa Monica Basin Tracer Experiment: comparison of release methods and performance of perfluorodecalin and sulfur hexafluoride. *J. Geophys. Res.*, **96**, 8719-8725 (1991)