APPENDIX

References

Chapter 1

(Arrhenius 1896)
Arrhenius, S., "On the influence of carbonic acid in the air upon the temperature of the ground", **Philosophical Magazine and Journal of Science**, 41, 237, 1896

(Burrows et al. 1988a)
Burrows J.P., K.V. Chance, P.J. Crutzen, H. van Dop, J.C. Geary, T.J. Johnson, G.W. Harris, I.S.A. Isaksen, G.K. Moortgat, C. Muller, D. Perner, U. Platt, J.-P. Pommereau, H. Rodhe, E. Roeckner, W. Schneider, P. Simon, H. Sundqvist, J. Vercheval, "SCIAMACHY – A European proposal for atmospheric remote sensing from the ESA Polar Platform", published by Max-Planck-Institut für Chemie, Mainz, Germany, 1988

(Burrows et al. 1988b)
Burrows, J.P., P.J. Crutzen, K.V. Chance, J.C. Geary, F. Goutail, G.W. Harris, G.K. Moortgat, C. Muller, D. Perner, U. Platt, J.-P. Pommereau, W. Schneider, P. Simon, "SCIAmini", published by May-Planck-Institut für Chemie, Mainz, Germany, 1988

(Burrows et al. 1999)
Burrows, J.P., M. Weber, M. Buchwitz, V.V. Rozanov, A. Ladstädter-Weissenmayer, A. Richter, R. de Beek, R. Hoogen, K. Bramstedt, K.-U. Eichmann, M. Eisinger, D. Perner, "The Global Ozone Monitoring Experiment (GOME): Mission Concept and First Scientific Results", **J. Atmos. Sci.**, 56, 151-175, 1999

(Chandra et al. 1997)
Chandra, S., C.H. Jackman, E.L. Fleming, J.M. Russell III, "The Seasonal and Long-Term Changes in Mesospheric Water Vapor," **Geophys. Res. Lett.**, 24, 639-642, 1997

(Crutzen et al. 1995)
Crutzen, P.J., J.-U. Grooß, C. Brühl, R. Müller, J.M. Russell III, "A reevaluation of the ozone budget with HALOE UARS data: No evidence for the ozone deficit", **Science**, 268, 705, 1995

(Crutzen and Stoermer 2000)
Crutzen, P.J., E.F. Stoermer, "The anthropocene", **IGBP Newsletter**, 41, 17-18, 2000

(Holton et al. 1995)
Holton, J.R., P.H. Haynes, M.E. McIntyre, A.R. Douglass, R.B. Hood, L. Pfister, "Stratosphere-troposphere exchange", **Rev. Geophys.**, 33, 403-439, 1995

(IPCC 2001)
IPCC, "Climate change 2001 – The scientific basis", IPCC, Cambridge University Press, Cambridge, UK, 2001

(Lovelock, 1979)
Lovelock, J.E., "Gaia: A new look at life on earth", Oxford University Press, Oxford, 1979

(Munro et al. 1998)
Munro, R., R. Siddans, W.J. Reburn, B.J. Kerridge, "Direct measurement of tropospheric ozone distributions from space", **Nature**, 392, 168-171, 1998

(Shindell et al. 1998)
Shindell, D.T., D. Rind, P. Logan, "Increased polar stratospheric ozone losses and delayed eventual recovery owing to increasing greenhouse-gas concentrations", **Nature**, 392, 589-592, 1998

(Summers et al. 1997)
Summers, M.E., R.R. Conway, D.E. Siskind, M.H. Stevens, D. Offermann, M. Riese, P. Preusse, D.F. Strobel, J.M. Russell III, "Implications of satellite OH observations for middle atmospheric H_2O and ozone", **Science**, 277, 1967-1970, 1997

(Wayne 1992)
Wayne, R.P., "Chemistry of Atmospheres", Oxford University Press, Clarendon Press, Oxford, 1992

(Wild et al. 2005)
Wild, M., H. Gilgen, A. Roesch, A. Ohmura, C.N. Long, E.G. Dutton, B. Forgan, A. Kallis, V. Russak, A. Tsvetkov, "From Dimming to Brightening: Decadal Changes in Solar Radiation at Earth's Surface", **Science**, 308, 847-850, 2005

(WMO 1995)
WMO 1995, "Scientific Assessment of Ozone Depletion 1994", Global Ozone Research and Monitoring Project Report No. 37, 1995

(WMO 2003)
WMO 2003, "Scientific Assessment of Ozone Depletion: 2002", Global Ozone Research and Monitoring Project Report No. 47, Geneva, 2003

(WMO-IGACO 2004)
WMO, "The Changing Atmosphere – An Integrated Global Atmospheric Chemistry Observation, Theme for the IGOS Partnership, Report of the Integrated Global Atmospheric Chemistry Observation, Theme Team", WMO Report GAW No. 159, WMO TD No. 1235, 2004

Chapter 2

(ESA 1998)
"ENVISAT-1 Mission & System Summary", **ESA Brochure**, 1998

(ESA 2000)
"Envisat – MIPAS, An Instrument for Atmospheric Chemistry and Climate Research", **ESA Special Publication**, ESA SP-1229, 2000

(ESA 2001a)
"ENVISAT Special Issue", **ESA Bulletin**, 106, 2001

(ESA 2001b)
"Envisat – GOMOS, An Instrument for Global Atmospheric Ozone Monitoring", **ESA Special Publication**, ESA SP-1244, 2001

Chapter 3

(Bovensmann et al. 1999)
Bovensmann, H., J.P. Burrows, M. Buchwitz, J. Frerick, S. Noël, V.V. Rozanov, K.V. Chance, A.P.H. Goede, "SCIAMACHY: Mission Objectives and Measurement Modes", **J. Atmos. Sci.**, 56, 127-150, 1999

(Burrows and Chance 1991)
Burrows, J.P., K.V. Chance, "Scanning imaging absorption spectrometer for atmospheric chartography", **Proceedings of SPIE,** 1490, 146-155, 1991

(DARA 1998)
DARA, "SCIAMACHY Instrument Requirements Document", PO-RS-DAR-EP-0001, **Technical Document**, 1998

(EADS Astrium 2004)
EADS Astrium GmbH, SCIAMACHY Team, "SCIAMACHY Phase C/D Final Report", RP-SCIA-0000DO/07, **Technical Document**, 2004

(Goede et al. 1991)
Goede, A.P.H., H.J.M. Aarts, C. van Baren, J.P. Burrows, K.V. Chance, R. Hoekstra, E. Hölzle, W. Pitz, W. Schneider, C. Smorenburg, H. Visser, J. de Vries "SCIAMACHY Instrument Design", **Adv. Space Res.**, 11, 243-246, 1991

(Hoogeveen et al. 2001)
Hoogeveen, R.W.M., R. van der A, A.P.H. Goede, "Extended wavelength InGaAs infrared (1.0-2.4 µm) detector arrays on SCIAMACHY for space-based spectrometry of the earth atmosphere", **Infrar. Phys. Techn.**, 42, 1-16, 2001

(SSAG 1998)
SCIAMACHY Science Advisory Group, "SCIAMACHY Scientific Requirements Document", **Technical Document**, 1998

(SJT 1996)
SCIAMACHY Joint Team, FS-TPD-SRON, "Optical and Radiant Cooler Assemblies Design Description", RP-SCIA-1000FO/025, **Technical Document**, 1996

Chapter 4

(EADS Astrium 2003)
EADS Astrium GmbH, SCIAMACHY Team, "Instrument Operation Manual (IOM)", MA-SCIA-0000DO/01, 2003

(SOST 1996)
SOST-DLR, "SCIAMACHY Orbit Analysis", PO-TN-DLR-SH-0002, **Technical Document**, DLR, 1996
available at http://atmos.caf.dlr.de/projects/scops/

(SOST 2001a)
SOST-DLR, "SCIAMACHY Operations Concept I. Mission Scenarios", PO-TN-DLR-SH-0001/1, **Technical Document**, DLR, 2001
available at http://atmos.caf.dlr.de/projects/scops/

(SOST 2001b)
SOST-DLR, "SCIAMACHY Operations Concept II. Timelines: Generation, Planning & Execution Rules and Reference Timelines", PO-TN-DLR-SH-0001/2, **Technical Document**, DLR, 2001
available at http://atmos.caf.dlr.de/projects/scops/

(SOST 2003)
SOST-DLR, "SCIAMACHY Operations Concept III. Instrument States and Onboard Tables (PFM)", PO-TN-DLR-SH-0001/3, **Technical Document**, DLR, 2003
available at http://atmos.caf.dlr.de/projects/scops/

Chapter 5

(Azzam and Bashara 1977)
Azzam, R.M.A., N.M. Bashara, "Ellipsometry and Polarized Light", Elsevier Science Publishers, Amsterdam, 1977

(Balzer et al. 1996)
Balzer, W., B. Aberle, D. Loyola, R. Spurr "GOME Level 0 to 1b Algorithm Description", ER-TN-DLR-GO-0022, **Technical Document**, DLR, 1996
available at http://atmos.caf.dlr.de/

(Coulson 1988)
Coulson, K.L., "Polarisation and intensity of light in the atmosphere", A. Deepak, Hampton, Va. USA, 1988

(Falk 1984)
Falk, W.R., "Data Reduction from Experimental Histograms", **Nuclear Instruments and Methods in Physics Research**, 220, 473-478, 1984

(Kleipool 2003)
Kleipool, Q., "SCIAMACHY: Recalculation of OPTEC 5 Non-Linearity", SRON-SCIA-PhE-RP-013, **Technical Document**, SRON, 2003
available at http://www.sron.nl/sciamachy/calibration/

(Lichtenberg 2003)
Lichtenberg, G., "SCIAMACHY channel 1-5 Memory Effect I: Key data implementation and in-flight measurements", SRON-PhE-RP-11, **Technical Document**, SRON, 2003
available at http://www.sron.nl/sciamachy/calibration/

(Lichtenberg et al. 2005)
Lichtenberg, G., Q. Kleipool, J.M. Krijger, G. van Soest, R. van Hees, L. G. Tilstra, J.R. Acarreta, I. Aben, B. Ahlers, H. Bovensmann, K. Chance, A.M.S. Gloudemans, R.W.M. Hoogeveen, R. Jongma, S. Noël, A. Piters, H. Schrijver, C. Schrijvers, C.E. Sioris, J. Skupin, S. Slijkhuis, P. Stammes, M. Wuttke , "SCIAMACHY Level1 data: Calibration concept and in-flight calibration", **Atmos. Chem. Phys. Discuss.**, 5, 8925-8977, 2005

(Mc Linden et al. 2002)
McLinden, C.A., J.C. McConnell, E. Griffioen, C.T. McElroy, "A vector radiative-transfer model for the Odin/OSIRIS project", **Can. J. Phys.**, 80, 375-393, 2002

(Noël et al. 2003)
Noël, S., H. Bovensmann, J. Skupin, M.W. Wuttke, J.P. Burrows, M. Gottwald, E. Krieg, "The SCIAMACHY calibration/monitoring concept and first results", **Adv. Space Res.**, 32, 2123–2128, 2003

(Schutgens and Stammes 2002)
Schutgens, N.A.J., P. Stammes, "Parametrisation of Earth's polarisation spectrum from 290 to 330 nm", **J. Quant. Spectr. Rad. Transfer**, 75, 239-255, 2002

(Schutgens et al. 2004)
Schutgens, N.A.J., L.G. Tilstra, P. Stammes, F.-M. Bréon, "On the relationship between Stokes parameters Q and U of atmospheric ultraviolet/visible/near-infrared radiation", **J. Geophys. Res.**, 109, D09205, doi:10.1029/2003JD004081, 2004

(Slijkhuis 2000a)
Slijkhuis, S., "ENVISAT-1 SCIAMACHY Level 0 to 1c Processing: Algorithm Theoretical Basis Document", ENV-ATB-DLR-SCIA0041, **Technical Document**, DLR, 2000
available at http://atmos.caf.dlr.de/

(Slijkhuis 2000b)
Slijkhuis, S., "Calculation of Polarisation from Rayleigh Single Scattering", ENV-TN-DLR-SCIA-0043, **Technical Document**, DLR, 2000

(Tanzi 1999)
Tanzi, C.P., "Considerations on Stokes parameters derived from memo *The seventh point polarisation algorithm* by P.Stammes", **Internal Report**, SRON, 1999

(Tilstra et al. 2003)
Tilstra, L.G., N.A.J. Schutgens, P. Stammes, "Analytical calculation of Stokes parameters Q and U of atmospheric radiation", WR-2003-01, **Scientific Report**, KNMI, 2003

Chapter 6

(Kaiser et al. 2004)
Kaiser, J.W., C. von Savigny, K.-U. Eichmann, S. Noël, H. Bovensmann, J.P. Burrows, "Satellite Pointing Retrieval from Atmospheric Limb Scattering of Solar UV-B Radiation", **Can. J. Phys.**, 82, 1041-1052, 2004

(van Soest 2005)
van Soest, G., "Investigation of SCIAMACHY Limb Stray Light", SRON-EOS-RP-05-006, **Technical Document**, SRON, 2005 available at http://www.sron.nl/sciamachy/calibration/

(von Savigny et al. 2005)
von Savigny, C., J.W. Kaiser, H. Bovensmann, J.P. Burrows, I.S. McDermid, T. Leblanc, "Spatial and temporal characterization of SCIAMACHY limb pointing errors during the first three years of the mission", **Atmos. Chem. Phys.**, 5, 2593-2602, 2005

Chapter 7

(Acarreta et al. 2004a)
Acarreta, J.R, J.F. de Haan, P. Stammes, "Cloud pressure retrieval using O_2 – O_2 absorption band at 477 nm", **J. Geophys. Res.**, 109, D05204, doi:10.1029/2003JD003915, 2004

(Acarreta et al. 2004b)
Acarreta, J.R., P. Stammes, W.H. Knap, "First retrieval of cloud phase from SCIAMACHY spectra around 1.6 micron", **Atmos. Res.**, 72, 89-105, 2004

(Amekudzi et al. 2005a)
Amekudzi L.K., A. Bracher, J. Meyer, A. Rozanov, H. Bovensmann, J.P. Burrows, "Lunar occultation with SCIAMACHY: First retrieval results", **Adv. Space Res.**, 36, 906-914, 2005

(Amekudzi et al. 2005b)
Amekudzi, L.K., B.-M. Sinnhuber, N.V. Sheode, J. Meyer, A. Rozanov, L. Lamsal, H. Bovensmann, J.P. Burrows, "Retrieval of stratospheric NO_3 vertical profiles from SCIAMACHY lunar occultation measurement over the Antarctic", **J. Geophys. Res.**, 110, D20304, doi:10.1029/2004JD005748, 2005

(Asano et al. 1995)
Asano, S., M. Shiobara, A. Uchiyama, "Estimation of cloud physical parameters from airborne solar spectral reflectance measurements for stratocumulus clouds", **J. Atmos. Sci.**, 52, 3556-3576, 1995

(Boersma et al., 2004)
Boersma, K.F., H.J. Eskes and E.J. Brinksma, "Error analysis for tropospheric NO_2 retrieval from space", **J. Geophys. Res.**, 109, D04311, doi:10.1029/2003JD003962, 2004

(Borell et al. 2003)
Borrell, P., J.P. Burrows, U. Platt, A. Richter, T. Wagner, "New Directions: New Developments in Satellite Capabilities for Probing the Chemistry of the Troposphere", **Atmos. Environ.**, 37, 2567-2570, 2003

(Bracher et al., 2005)
Bracher, A., M. Sinnhuber, A. Rozanov, J. P. Burrows, "NO_2 Modelling used for the comparison of NO_2 Satellite Measurements at different Solar Zenigh Angles", **Atmos. Chem. Phys.**, 4, 5515-5548, 2005

(Buchwitz et al. 2000)
Buchwitz, M., V.V. Rozanov, J.P. Burrows, "A near-infrared optimized DOAS method for the fast global retrieval of atmospheric CH_4, CO, CO_2, H_2O, and N_2O total column amounts from SCIAMACHY Envisat-1 nadir radiances", **J. Geophys. Res.**, 105, 15231-15245, 2000

(Burrows et al. 1999)
Burrows, J.P., M. Weber, M. Buchwitz, V. Rozanov, A. Ladstätter-Weißenmayer, A. Richter, R. DeBeek, R. Hoogen, K. Bramstedt, K.-U. Eichmann, M. Eisinger, D. Perner, "The Global Ozone Monitoring Experiment (GOME): Mission Concept and First Scientific Results", **J. Atmos. Sci.**, 56, 151-175, 1999

(de Beek et al. 2001)
de Beek, R., M. Vountas, V.V. Rozanov, A. Richter, J.P. Burrows, "The Ring effect in the cloudy atmosphere", **Geophys. Res. Lett.**, 28, 721-724, 2001

(de Beek et al. 2006)
de Beek, R., M. Buchwitz, S. Noël, J.P. Burrows, H. Bovensmann, M. Bruns, H. Bremer, P. Bergamaschi, S. Körner, M. Heimann, "Atmospheric carbon gases retrieved from SCIAMACHY by WFM-DOAS: improved global CO and CH_4 and initial verification of CO_2 over Park Falls (46° N, 90° W)", **Atmos. Chem. Phys. Discuss.**, 6, 363-399, 2006

(de Graaf et al. 2005)
de Graaf, M., P. Stammes, R.B.A. Koelemeijer, O. Torres, "Absorbing Aerosol Index: sensitivity analysis, application to GOME and comparison with TOMS", **J. Geophys. Res.**, 110, D01201, doi:10.1029/2004JD005178, 2005

(de Graaf and Stammes 2005)
de Graaf, M., P. Stammes, "SCIAMACHY Absorbing Aerosol Index – calibration issues and global results from 2002-2004", **Atmos. Chem. Phys.**, 5, 2385-2394, 2005

(de Laat et al. 2006)
de Laat, A.T.J., A.M.S. Gloudemans, H. Schrijver, M.M.P. van den Broek, J.F. Meirink, I. Aben, M. Krol, "Quantitative analysis of SCIAMACHY carbon monoxide total column measurements", **Geophys. Res. Lett.**, 33, L07807, doi: 10.1029/2005GL025530, 2006

(Doicu et al. 2002)
Doicu A., F. Schreier, M. Hess, "Iteratively regularized Gauss-Newton method for atmospheric remote sensing", **Comp. Phys. Comm.**, 148, 214-226, 2002

(Doicu 2005)
Doicu A., "SCIAMACHY Level 1b to 2 OFL Processing Algorithm Change Description Document Limb Profile Retrieval Algorithm", ENV-TN-DLR-SCIA-0062 Issue 1, **Technical Document**, DLR, 2005

(Dorf et al. 2005)
Dorf, M., H. Bösch, A. Butz, C. Camy-Peyret, M.P. Chipperfield, A. Engel, F. Goutail, K. Grunow, F. Hendrick, S. Hrechanyy, B. Naujokat, J.-P. Pommereau, M. Van Roozendael, C. Sioris, F. Stroh, F. Weidner, K. Pfeilsticker, "Balloon-borne stratospheric BrO measurements: comparison with Envisat/SCIAMACHY BrO limb profiles", **Atmos. Chem. Phys. Discuss.**, 5, 13011-13052, 2005

(Eskes et al. 2002)
Eskes, H.J., P.F.J. van Velthoven, H.M. Kelder, "Global ozone forecasting based on ERS-2 GOME observations", **Atmos. Chem. Phys**., 2, 271-278, 2002

(Eskes et al. 2003)
Eskes, H. J., P.F.J. van Velthoven, P.J.M. Valks, H.M. Kelder, "Assimilation of GOME total ozone satellite observations in a three-dimensional tracer transport model", **Quart. J. Roy. Meteorol. Soc.**, 129, 1663-1681, 2003

(Eskes et al. 2005)
Eskes, H.J., R.J. van der A, E.J. Brinksma, J.P. Veefkind, J.F. de Haan, P.J.M. Valks, "Retrieval and validation of ozone columns derived from measurements of SCIAMACHY on Envisat", **Atmos. Chem. Phys. Discuss**., 5, 4429-4475, 2005

(Flittner et al. 2000)
Flittner, D. E., P. K. Bhartia, B. M. Herman, "O_3 profiles retrieved from limb scatter measurements: Theory", **Geophys. Res. Lett.**, 27, 2061-2064, 2000

(Fournier et al., 2006)
Fournier, N., P. Stammes, M. de Graaf, R. van der A, A. Piters, M. Grzegorski, A. Kokhanovsky, "Improving cloud information over deserts from SCIAMACHY Oxygen A-band measurements", **Atmos. Chem. Phys.**, 6, 163-172, 2006

(Frankenberg et al. 2005a)
Frankenberg, C., U. Platt, T. Wagner, "Iterative maximum a posteriori (IMAP)-DOAS for retrieval of strongly absorbing trace gases: Model studies for CH_4 and CO_2 retrieval from near infrared spectra of SCIAMACHY onboard ENVISAT", **Atmos. Chem. Phys.**, 5, 9–22, 2005

(Frankenberg et al. 2005b)
Frankenberg, C., U. Platt, T. Wagner, "Retrieval of CO from SCIAMACHY onboard ENVISAT: detection of strongly polluted areas and seasonal patterns in global CO abundances", **Atmos. Chem. Phys.**, 5, 1639–1644, 2005

(Gloudemans et al. 2005)
Gloudemans, A.M.S., H. Schrijver, Q. Kleipool, M.M.P. van den Broek, A.G. Straume, G. Lichtenberg, R.M. van Hees, I. Aben J.F. Meirink, "The impact of SCIAMACHY instrument calibration on CH_4 and CO total columns", **Atmos. Chem. Phys.**, 5, 2369-2383, 2005

(Grzegorski et al. 2004).
Grzegorski, M., C. Frankenberg, U. Platt, M. Wenig, N. Fournier, P. Stammes, T. Wagner, "Determination of cloud parameters from SCIAMACHY data for the correction of tropospheric trace gases", **Proceedings of the ENVISAT & ERS Symposium**, Salzburg, Austria, ESA publication SP-572, 2004

(Herman et al. 1997)
Herman, J.R., P.K. Bhartia, O. Torres, C. Hsu, C. Seftor, E.A. Celarier, "Global distributions of UV-absorbing aerosols from NIMBUS 7/TOMS data", **J. Geophys. Res.**, 102, 16911-16922, 1997

(Holzer-Popp et al. 2002a)
Holzer-Popp, T., M. Schroedter, G. Gesell, "Retrieving aerosol optical depth and type in the boundary layer over land and ocean from simultaneous GOME spectrometer and ATSR-2 radiometer measurements, 1, Method description", **J. Geophys. Res.**, 107, doi:10.1029/2001JD002013, 2002

(Holzer-Popp et al. 2002b)
Holzer-Popp, T., M. Schroedter, G. Gesell, "Retrieving aerosol optical depth and type in the boundary layer over land and ocean from simultaneous GOME spectrometer and ATSR-2 radiometer measurements, 2, Case study application and validation", **J. Geophys. Res.**, 107, doi:10.1029/2002JD002777, 2002

(Hoogen et al. 1999)
Hoogen, R., V.V. Rozanov, J.P. Burrows, "Ozone profiles from GOME satellite data: algorithm description and first validation", **J. Geophys. Res.**, 104, 8263–8280, 1999

(Houweling et al. 2005)
Houweling, S., W. Hartmann, I. Aben, H. Schrijver, J. Skidmore, G.-J. Roelofs, F.-M. Breon, "Evidence of systematic errors in SCIAMACHY-observed CO_2 due to aerosols", **Atmos. Chem. Phys.**, 5, 3003-3013, 2005

(Joiner et al. 1995)
Joiner, J., P.K. Bhartia, R.P. Cebula, E. Hilsenrath, R.D. McPeters, H. Park, "Rotational Raman scattering (ring effect) in satellite backscatter ultraviolet measurements", **Appl. Opt.**, 34, 4513–4525, 1995

(Kaiser and Burrows 2003)
Kaiser, J.W., J.P. Burrows, "Fast weighting functions for retrievals from limb scattering measurements", **J. Quant. Spectr. Rad. Transfer**, 77, 273-283, 2003

(Knap et al. 2002)
Knap, W.H, P. Stammes, R.B.A. Koelemeijer, "Cloud thermodynamic phase determination from near-infrared spectra of reflected sunlight", **J. Atmos. Sci.**, 59, 83-96, 2002

(Koelemeijer et al. 2001)
Koelemeijer, R.B.A., P. Stammes, J.W. Hovenier, J.F. de Haan, "A fast method for retrieval of cloud parameters using oxygen A band measurements from the Global Ozone Monitoring Experiment", **J. Geophys. Res.**, 106, 3475-3490, 2001

(Kokhanovsky and Rozanov 2005)
Kokhanovsky, A.A., V.V. Rozanov, "Cloud bottom altitude determination from a satellite", **IEEE Transactions on Geoscience and Remote Sensing Letters**, 2, 280-283, 2005

(Kokhanovsky et al. 2005)
Kokhanovsky, A.A., V.V. Rozanov, T. Nauss, C. Reudenbach, J.S. Daniel, H.L. Miller, J.P. Burrows, 2005, "The semianalytical cloud retrieval algorithm for SCIAMACHY: I. Validation", **Atmos. Chem. Phys. Discuss.**, 5, 1995-2015, 2005

(Kokhanovsky et al. 2006)
Kokhanovsky, A.A., W. von Hoyningen-Huene, V.V. Rozanov, S. Noël, K. Gerilowski, H. Bovensmann, K. Bramstedt, M. Buchwitz, J.P. Burrows, "The semianalytical cloud retrieval algorithm for SCIAMACHY II. The application to MERIS and SCIAMACHY data", **Atmos. Chem. Phys. Discuss.**, 6, 1813–1840, 2006

(Krijger et al. 2005)
Krijger, J.M., I. Aben, H. Schrijver, "Distinction between clouds and ice/snow covered surfaces in the identification of cloud-free observations using SCIAMACHY PMDs", **Atmos. Chem. Phys.,** 5, 2729-2738, 2005

(Lenoble 1985)
Lenoble, J., "Radiative Transfer in Scattering and Absorbing Atmospheres", pp. 34-82, A. DEEPAK Publishing, Hampton, Virginia, 1985

(Liou 2002)
Liou, K.N., "An Introduction to Atmospheric Radiation", Academic Press, **International Geophysical Series**, Vol. 84, 2002

(Loyola 1998)
Loyola, D., "A New Cloud Recognition Algorithm for Optical Sensors", **IEEE International Geoscience and Remote Sensing Symposium, IGARSS'98 Digest**, Volume II, 572–574, 1998

(Martin et al. 2002)
Martin, R.V., K. Chance, D.J. Jacob, T.P. Kurosu, R.J.D. Spurr, E. Bucsela, J.F. Gleason, P.I. Palmer, I. Bey, A.M. Fiore, Q. Li, R.M. Yantosca, R.B.A. Koelemeijer, "An improved retrieval of tropospheric nitrogen dioxide from GOME", **J. Geophys. Res.**, 107, 4437-4456, doi:10.1029/2001JD001027, 2002

(Meyer et al. 2005)
Meyer J., A. Bracher, A. Rozanov, A.C. Schlesier, H. Bovensmann, J.P. Burrows, "Solar occultation with SCIAMACHY: algorithm description and first validation", **Atmos. Chem. Phys.**, 5, 1589-1604, 2005

(Munro et al. 1998)
Munro, R., R. Siddans, W.J. Reburn, B. Kerridge, "Direct measurement of tropospheric ozone from space", **Nature**, 392, 168-171, 1998

(Nakajima and King 1990)
Nakajima, T., M.D. King, "Determination of the optical thickness and effective particle radius of clouds from reflected solar radiation measurements. Part I: Theory", **J. Atmos. Sci**., 47, 1878-1893, 1990

(Noël et al. 2004)
Noël, S., M. Buchwitz, H. Bovensmann, J.P. Burrows, "First retrieval of global water vapour column amounts from SCIAMACHY measurements", **Atmos. Chem. Phys.**, 4, 111-125, 2004

(Platnick et al. 2003)
Platnick, S., M.D. King, S.A. Ackerman, W.P. Menzel, B.A. Baum, J.C. Rièdi, R.A. Frey, "The MODIS cloud products: Algorithms and examples from Terra", **IEEE Transactions on Geoscience and Remote Sensing**, 41, 459-473, 2003

(Platt 1994)
Platt, U., "Differential optical absorption spectroscopy (DOAS), in Air Monitoring by Spectroscopic Techniques", **Chem. Anal. Ser.**, 127, edited by M. W. Sigrist, John Wiley, New York, 1994

(Pöschl 2005)
Pöschl, U., "Atmospheric Aerosols: Composition, Transformation, Climate and Health Effects", **Angew. Chem. Int. Ed.**, 44, 7520-7540, 2005

(Richter and Burrows 2002)
Richter, A., J.P. Burrows, "Retrieval of Tropospheric NO_2 from GOME Measurements", **Adv. Space Res.**, 29,1673-1683, 2002

(Richter et al. 2005)
Richter, A., J.P. Burrows, H. Nüß, C. Granier, U. Niemeier, "Increase in nitrogen dioxide over China observed from space", **Nature**, 437, 129-132, 2005

(Rodgers 2000)
Rodgers, C.D., "Inverse Methods for Atmospheric Sounding: Theory and Practice", 1st ed., World Sci., River Edge, N.J., 2000

(Rohen et al. 2006)
Rohen, G., C. von Savigny, K.-U. Eichmann, E. J. Llewellyn, A. Bracher, J.P. Burrows, "Retrieval of mesospheric ozone profiles from SCIAMACHY limb scattering observations: Theory, first validation results and ozone depletion during the Oct./Nov. 2003 solar proton event", **Adv. Space Res**., in press, 2006

(Rozanov et al. 1998)
Rozanov, V.V., T. Kurosu, J.P. Burrows, "Retrieval of atmospheric constituents in the UV-visible: A new quasi-analytical approach for the calculation of weighting functions", **J. Quant. Spectr. Rad. Transfer**, 60, 277-299, 1998

(Rozanov et al. 2001)
Rozanov, A., V. Rozanov, J.P. Burrows, "A numerical radiative transfer model for a spherical planetary atmosphere: Combined differential-integral approach involving the Picard iterative approximation", **J. Quant. Spectr. Rad. Transfer**, 69, 491-512, 2001

(Rozanov and Kokhanovsky 2004)
Rozanov, V.V., A.A. Kokhanovsky, "Semi-analytical cloud retrieval algorithm as applied to the cloud top altitude and the cloud geometrical thickness determination from top-of-atmosphere reflectance measurements in the oxygen A-band", **J. Geophys. Res.**, 109, D05202, 10.1029/2003JD004104, 2004

(Rozanov et al. 2005a)
Rozanov, A., V. Rozanov, M. Buchwitz, A. Kokhanovsky, J.P. Burrows, "SCIATRAN 2.0 – A new radiative transfer model for geophysical applications in the 175 – 2400 nm spectral region", **Adv. Space Res.**, 36, 1015–1019, 2005

(Rozanov et al. 2005b)
Rozanov, A., H. Bovensmann, A. Bracher, S. Hrechany, V. Rozanov, M. Sinnhuber, F. Stroh, J.P. Burrows, "NO_2 and BrO vertical profile retrieval from SCIAMACHY limb measurements: sensitivity studies", **Adv. Space Res.**, 36, 846–854, 2005

(Sierk et al. 2006)
Sierk, B., A. Richter, A. Rozanov, C. von Savigny, A.M. Schmoltner, M. Buchwitz, H. Bovensmann, J.P. Burrows, "Retrieval and Monitoring of atmospheric trace gas concentrations in nadir and limb geometry using the space-borne SCIAMACHY instrument", **Environ. Mon. Assess.**, in press, 2006

(Sioris et al. 2004)
Sioris, C.E., T.P. Kurosu, R.V. Martin, K. Chance, "Stratospheric and tropospheric NO_2 observed by SCIAMACHY: First results", **Adv. Space Res.**, 34, 780-785, 2004

(Solomon et al. 1987)
Solomon, S., A.L. Schmeltekopf, R.W. Sanders, "On the interpretation of zenith sky absorption measurements", **J. Geophys. Res.**, 92, 8311–8319, 1987

(Spurr 2000)
Spurr, R.J.D., "ENVISAT-1 SCIAMACHY level 1c to 2 Processing, Algorithm Technical Basis Document", ENV-ATB-SAO-SCIA-2200-0003, **Technical Document**, DLR, 2000
available at http://atmos.caf.dlr.de/

(Spurr et al. 2001)
Spurr, R.J.D., T.P. Kurosu, K.V. Chance, "A linearized discrete ordinate radiative transfer model for atmospheric remote-sensing retrieval," **J. Quant. Spect. Rad. Transfer**, 68, 689-735, 2001

(Stammes 2001)
Stammes, P., "Spectral radiance modelling in the UV-Visible range, in: *IRS 2000: Current problems in Atmospheric Radiation*", Eds. W.L. Smith and Y.M. Timofeyev, A. Deepak Publ., Hampton, VA, pp. 385-388, 2001

(Van Roozendael et al. 2006)
van Roozendael, M., R.S.P. Spurr, C. Lerot, D. Loyola, T. Schröder, A. von Bargen, "SCIAMACHY Level 1b-2 Off-line Data Processing: Algorithm Theoretical Baseline Document for Trace Gas from UV/VIS Nadir Spectra", ENV-ATB-BIR-SCIA-0074, **Technical Document**, 2006

(Velders et al. 2001)
Velders, G.J.M., C. Granier, R.W. Portmann, K. Pfeilsticker, M. Wenig, T. Wagner, U. Platt, A. Richter, J.P. Burrows, "Global tropospheric NO2 column distributions: Comparing 3-D model calculations with GOME measurements", **J. Geophys. Res.**, 106, 12643-12660, 2001

(von Hoyningen-Huene et al. 2003)
von Hoyningen-Huene, W., M. Freitag, J.P. Burrows, "Retrieval of aerosol optical thickness over land surfaces from top-of-atmosphere radiance", **J. Geophys. Res.**, 108, doi:10.1029/2001JD002018, 2003

(von Hoyningen-Huene et al. 2006)
von Hoyningen-Huene, W., A.A. Kokhanovsky, M. Wuttke, M. Buchwitz, S. Noël, K. Gerilowski, J.P. Burrows, B. Latter, R. Siddans, B.J. Kerridge, "Validation of SCIAMACHY top-of-atmosphere reflectance for aerosol remote sensing using MERIS L1 data", **Atmos. Chem. Phys. Discuss.**, 6, 673-699, 2006

(von Savigny et al. 2004a)
von Savigny, C., A. Kokhanovsky, H. Bovensmann, K.-U. Eichmann, J.W. Kaiser, S. Noël, A.V. Rozanov, J. Skupin, J.P. Burrows, "NLC Detection and Particle Size Determination: First Results from SCIAMACHY on ENVISAT", **Adv. Space Res.**, 34, 851-856, 2004

(von Savigny et al. 2004b)
von Savigny, C., K.-U. Eichmann, E.J. Llewellyn, H. Bovensmann, J.P. Burrows, M. Bittner, K. Höppner, D. Offermann, W. Steinbrecht, P. Winkler, M.J. Taylor, Y. Cheng, "First near-global retrieval of OH rotational temperatures from satellite-based Meinel band emission measurements", **Geophys. Res. Lett**., 31, L15111, doi:10.1029/2004GL, 2004

(von Savigny et al. 2005a)
von Savigny, C., A. Rozanov, H. Bovensmann, K.-U. Eichmann, S. Noël, V.V. Rozanov, B.-M. Sinnhuber, M. Weber, J.P. Burrows, "The ozone hole break-up in September 2002 as seen by SCIAMACHY on ENVISAT", **J. Atmos.. Sci**., 62, 721 – 734, 2005

(von Savigny et al. 2005b)
von Savigny, C., E.P. Ulasi, K.-U. Eichmann, H. Bovensmann, J.P. Burrows, "Detection and Mapping of Polar Stratospheric Clouds using Limb Scattering Observations", **Atmos. Chem. Phys.**, 5, 3071-3079, 2005

(Weber et al. 2005)
Weber, M., L.N. Lamsal, M. Coldewey-Egbers, K. Bramstedt, J.P. Burrows, "Pole-to-pole validation of GOME WFDOAS total ozone with groundbased data", **Atmos. Chem. Phys.**, 5, 1341-1355, 2005

(Yamamoto and Wark 1961)
Yamamoto, G,A. D.Q. Wark, "Discussion of the letter by R.A. Hanel: *Determination of cloud altitude from satellite*", **J. Geophys. Res.**, 66, 3596, 1961

(Yan 2005)
Yan, X., "A fast SCIAMACHY PMD Cloud Algorithm (SPCA)", **Master Thesis**, University of Bremen, 2005
available at http://www.iup.uni-bremen.de/doas/paper/yang_thesis_spca_0509.pdf

Chapter 8

(Doicu et al. 2002)
Doicu A., F. Schreier, M. Hess, "Iteratively regularized Gauss-Newton method for atmospheric remote sensing", **Comp. Phys. Comm.**, 148, 214-226, 2002

(Doicu 2005)
Doicu A., "SCIAMACHY level 1b to 2 OFL Processing Algorithm Change Description Document Limb Profile Retrieval Algorithm", ENV-TN-DLR-SCIA-0062, **Technical Document**, DLR, 2005

(Loyola 1998)
Loyola, D., "A New Cloud Recognition Algorithm for Optical Sensors", **IEEE International Geoscience and Remote Sensing Symposium, IGARSS'98 Digest**, Volume II, 572–574, 1998

(Rodgers 2000)
Rodgers C.D., "Inverse Methods for Atmospheric Sounding: Theory and Practice", World Scientific, Singapore, 2000

(Rozanov and Kokhanovsky 2004)
Rozanov V.V. and A.A. Kokhanovsky, "The semi-analytical cloud retrieval algorithm as applied to the cloud top altitude and the cloud geometrical thickness determination from the top of atmosphere reflectance measurements in the oxygen absorption bands", **J. Geophys. Res.**, 109, D05202, 10.1029/2003JD004104, 2004

(Slijkhuis 2004)
Slijkhuis, S., "ENVISAT-1 SCIAMACHY Level 0 to 1c Processing, Algorithm Technical Basis Document", ENV-ATB-DLR-SCIA-0041, **Technical Document**, DLR, 2004
available at http://atmos.caf.dlr.de/

(Spurr 2000)
Spurr, R.J.D., "ENVISAT-1 SCIAMACHY Level 1c to 2 Processing, Algorithm Technical Basis Document", ENV-ATB-SAO-SCIA-2200-0003, **Technical Document**, DLR, 2000
available at http://atmos.caf.dlr.de/

(Spurr et al. 2004)
Spurr, R.J.D, M. Van Roozendael, D.G. Loyola, "Algorithm Theoretical Basis Document for GOME Total Column Densities of Ozone and Nitrogen Dioxide", ERSE-DTEX-EOPG-TN-04-0007, **Technical Document**, 2004

(Thomas and Spurr 1999)
Thomas, W., R.J.D. Spurr, "GOME Level 1 to 2 Algorithms Description", ER-TN-DLR-GO-0025, **Technical Document**, DLR, 1999
available at http://atmos.caf.dlr.de/

Chapter 9

(Brinksma et al. 2006)
Brinksma, E.J., A. Bracher, D.E. Lolkema, A.J. Segers, I.S. Boyd, K. Bramstedt, H. Claude, S. Godin-Beekmann, G. Hansen, G. Kopp, T. Leblanc, I.S. McDermid, Y.J. Meijer, H. Nakane, A. Parrish, C. von Savigny, K. Stebel, D.P.J. Swart, G. Taha, A.J.M. Piters, "Geophysical Validation of SCIAMACHY Limb Ozone Profiles", **Atmos. Chem. Phys.**, 6, 197-209, 2006

(Eskes et al. 2005)
Eskes, H.J., R.J. van der A, E.J. Brinksma, J.P. Veefkind, J.F. de Haan, P.J.M. Valks, "Retrieval and validation of ozone columns derived from measurements of SCIAMACHY on Envisat", **Atmos. Chem. Phys. Discuss.**, 5, 4429-4475, 2005

(Fioletov et al. 1999)
Fioletov, E., J.B. Kerr, E.W. Hare, G.J. Labow, R.D. McPeters, "An assessment of the world ground-based total ozone network performance from the comparison with satellite data", **J. Geophys. Res.**, 104, 1, 1737-1747, 1999

(Fix et al. 2005)
Fix, A., G. Ehret, H. Flentje, G. Poberaj, M. Gottwald, H. Finkenzeller, H. Bremer, M. Bruns, J.P. Burrows, A. Kleinböhl, H. Küllmann, J. Kuttippurath, A. Richter, P. Wang, K.-P. Heue, U. Platt, I. Pundt, T. Wagner, "SCIAMACHY validation by aircraft remote measurements: design, execution, and first results of the SCIA-VALUE mission", **Atmos. Chem. Phys.**, 5, 1273-1289, 2005

(Heland et al. 2003)
Heland, J., H. Schlager, C. Schiller, N. Sitnikov, A. Ulanovsky, F. Ravegnani, C.M. Volk, A. Werner, A. Petritoli, I. Kostadinov, G. Giovanelli, D. Bortoli, F. Stroh, M. von Hobe, and the Geophysika Team, "Validation of MIPAS on Envisat by in situ instruments on the M55-Geophysica", **Proceedings of the Envisat Validation Workshop**, Frascati, Italy, ESA SP-531, 2003

(Heue et al. 2005)
Heue, K.-P., A. Richter, M. Bruns, J.P. Burrows, C. v. Friedeburg, U. Platt, I. Pundt, P. Wang, T. Wagner, "Validation of SCIAMACHY tropospheric NO2-columns with AMAXDOAS measurements", **Atmos. Chem. Phys.**, 5, 1039-1051, 2005

(Kostadinov et al. 2003)
Kostadinov, I., G. Giovanelli, A. Petritoli, D. Bartoli, F. Ravegnani, G. Radaelli, A. Ulanovsky, V. Yuzhkov, "Combined insitu and quasi insitu measurements aboard the M55 Geophysika stratospheric aircraft dedicated for ENVISAT satellite data validation", **Proceedings of ENVISAT Validation Workshop**, Frascati, Italy, ESA SP-531, 2003

(Lambert et al. 1999)
Lambert, J.-C., M. Van Roozendael, M. De Mazière, P.C. Simon, J.-P. Pommereau, F. Goutail, A. Sarkissian, J.F. Gleason, "Investigation of pole-to-pole performances of spaceborne atmospheric chemistry sensors with the NDSC", **J. Atmos. Sci.**, 56, 176-193, 1999

(Lambert et al. 2004)
Lambert, J.-C., M. Allaart, S.B. Andersen, T. Blumenstock, G. Bodeker, E. Brinksma, C. Cambridge, M. De Mazière, P. Demoulin, P. Gerard, M. Gil, F. Goutail, J. Granville, D.V. Ionov, E. Kyrö, M. Navarro-Comas, A. Piters, J.-P. Pommereau, A. Richter, H.K. Roscoe, H. Schets, J.D. Shanklin, T. Suortti, R. Sussmann, M. Van Roozendael, C. Varotsos, T. Wagner, S. Wood, M. Yela, "First ground-based validation of SCIAMACHY V5.01 ozone column", **Proceedings of the Second Workshop on the Atmospheric Validation of Envisat (ACVE-2)**, Frascati, Italy, ESA SP-562, 2004

(Marenco et al. 1998)
Marenco, A., V. Thouret, P. Nédélec, H. Smit, M. Helten, D. Kley, F. Karcher, P. Simon, K. Law, J. Pyle, G. Poschmann, R. von Wrede, C. Hume, T. Cook, "Measurement of ozone and water vapor by Airbus in-service aircraft: The MOZAIC airborne program, An overview", **J. Geophys. Res.**, 103, 25631-25642, 1998

(Noël et al. 2005)
Noël, S., M. Buchwitz, H. Bovensmann, J.P. Burrows, "Validation of SCIAMACHY AMC-DOAS water vapour columns", **Atmos. Chem. Phys.**, 5, 1835-1841, 2005

(Piters et al. 2006)
Piters, A.J.M., K. Bramstedt, J.-C. Lambert, B. Kirchhoff, "Overview of SCIAMACHY validation: 2002-2004", **Atmos. Chem. Phys.**, 6, 127-148, 2006

(Van Roozendael et al. 2004)
van Roozendael, M., I. De Smedt, C. Fayt, F. Wittrock, A. Richter, O. Afe, "First validation of SCIAMACHY BrO columns", **Proceedings of the Second Workshop on the Atmospheric Validation of Envisat (ACVE-2)**, Frascati, Italy, ESA SP-562, 2004

(SCIAVALIG 1998)
SCIAVALIG, "SCIAMACHY Validation Requirements", SVDS-01, KNMI and NIVR, **Technical Document**, 1998
available at http://www.sciamachy.org/validation

(SCIAVALIG 2002)
SCIAVALIG, "SCIAMACHY Detailed Validation Plan", SVDS-04, KNMI and NIVR, **Technical Document**, 2002
available at http://www.sciamachy.org/validation

Chapter 10

(Acarreta et al. 2004)
Acarreta, J.R., P. Stammes, W.H. Knap, "First retrieval of cloud phase from SCIAMACHY spectra around 1.6 micron", **Atmos. Res.**, 72, 89-105, 2004

(Beirle et al. 2004)
Beirle, S., U. Platt, T. Wagner, "Monitoring nitrogen oxides with satellite instruments: High resolution maps from GOME narrow swath mode and SCIAMACHY", **Proceedings of the ENVISAT & ERS Symposium**, Salzburg, Austria, ESA SP-572, 2004

(Bittner et al. 2002)
Bittner, M., D. Offermann, H.H. Graef, M. Donner, K. Hamilton, "An 18 year time series of OH rotational temperatures and middle atmosphere decadal variations", **J. Atmos. Sol.-Terr. Phys**., 64, 1147-1166, 2002

(Bracher et al. 2005)
Bracher, A., K.-U. Eichmann, C. von Savigny, B.-M. Sinnhuber, M. Weber, K. Bramstedt, J.P. Burrows, "Polar ozone distributions in the artic winter/spring 2004/05 as measured by the Envisat instruments GOMOS and SCIAMACHY", **Geophys. Res. Abstr**., 7, 08693, 2005

(Buchwitz et al. 2005)
Buchwitz, M., R. de Beek, S. Noël, J.P. Burrows, H. Bovensmann, H. Bremer, P. Bergamaschi, S. Körner, M. Heimann, "Carbon monoxide, methane and carbon dioxide columns retrieved from SCIAMACHY by WFM-DOAS: year 2003 initial data set", **Atmos. Chem. Phys.**, 5, 3313-3329, 2005

(de Beek et al. 2006)
de Beek, R., M. Buchwitz, S. Noël, J.P. Burrows, H. Bovensmann, M. Bruns, H. Bremer, P. Bergamaschi, S. Körner, M. Heimann, "Atmospheric carbon gases retrieved from SCIAMACHY by WFM-DOAS: improved global CO and CH_4 and initial verification of CO_2 over Park Falls (46° N, 90° W)", **Atmos. Chem. Phys. Discuss.**, 6, 363-399, 2006

(de Laat et al. 2006)
de Laat, A.T.J., A.M.S. Gloudemans, H. Schrijver, M.M.P. van den Broek, J.F. Meirink, I. Aben, M. Krol, "Quantitative analysis of SCIAMACHY carbon monoxide total column measurements", **Geophys. Res. Lett.**, 33, L07807, doi: 10.1029/2005GL025530, 2006

(Eskes et al. 2005)
Eskes, H., A. Segers, P.F.J. van Velthoven, "Ozone Forecasts of the Stratospheric Polar Vortex-Splitting Event in September 2002", **J. Atmos. Sci.**, 62, 812-821, 2005

(Frankenberg et al. 2005)
Frankenberg, C., J.F. Meirink, M. van Weele, U. Platt, T. Wagner, "Assessing methane emissions from global space-borne observations", **Science**, 308, 1010-1014, 2005

(Founier et al. 2006)
Fournier, N., P. Stammes, M. de Graaf, R. van der A, A. Piters, R. Koelemeijer, A. Kokhanovsky, "Improving cloud information over deserts from SCIAMACHY O_2 A-band", **Atmos. Chem. Phys.**, 6, 163-172, 2006

(Gloudemans et al. 2005)
Gloudemans, A.M.S., H. Schrijver, Q. Kleipool, M.M.P. van den Broek, A.G. Straume, G. Lichtenberg, R.M. van Hees, I. Aben, J.F. Meirink, "The impact of SCIAMACHY instrument calibration on CH_4 and CO total columns", **Atmos. Chem. Phys.**, 5, 2369-2383, 2005

(Kaleschke et al. 2004)
Kaleschke, L., A. Richter, J.P. Burrows, O. Afe, G. Heygster, J. Notholt, A.M. Rankin, H.K. Roscoe, J. Hollwedel, T. Wagner, H.-W. Jacobi, "Frost flowers on sea ice as a source of sea salt and their influence on tropospheric halogen chemistry", **Geophys. Res. Lett.**, 31, 2004

(Keppler et al. 2006)
Keppler, F., J.T.G. Hamilton, M. Bra, T. Röckmann, "Methane emissions from terrestrial plants under aerobic conditions", **Nature**, 439, 187-191, 2006

(Krijger et al. 2005)
Krijger, J.M., I. Aben, H. Schrijver, "Distinction between clouds and ice/snow covered surfaces in the identification of cloud-free observations using SCIAMACHY PMDs", **Atmos. Chem. Phys.**, 5, 2729-2738, 2005

(Kokhanovsky et al. 2005)
Kokhanovsky, A.A.,V.V. Rozanov, J.P. Burrows, K.-U. Eichmann, W. Lotz, M. Vountas, "The SCIAMACHY cloud products: algorithms and examples from ENVISAT", **Adv. Space Res.**, 36, 789-799, 2005

(Kokhanovsky et al. 2006)
Kokhanovsky, A. A., W. von Hoyningen-Huene, V.V. Rozanov, S. Noel, K. Gerilowski, H. Bovensmann, K. Bramstedt, M. Buchwitz, J.P. Burrows, "The semianalytical cloud retrieval algorithm for SCIAMACHY II. The application to MERIS and SCIAMACHY data", **Atmos. Chem. Phys Discuss.**, 6, 1813–1840, 2006

(Kühl et al. 2006)
Kühl, S., W. Wilms-Grabe, C. Frankenberg, M. Grzegorski, U. Platt, T. Wagner, "Comparison of OClO Nadir Measurements from SCIAMACHY and GOME", **Adv. Space Res.**, in press, 2006

(Noël et al. 2004)
Noël, S., M. Buchwitz, H. Bovensmann, J.P. Burrows, "First retrieval of global water vapour column amounts from SCIAMACHY measurements", **Atmos. Chem. Phys.**, 4, 111-125, 2004

(Prospero et al. 2002)
Prospero, J.M., P. Ginoux, O. Torres, S.E. Nicholson, T.E. Gill, "Environmental characterization of global sources of atmospheric soil dust identified with the Nimbus 7 Total Ozone Mapping Spectrometer (TOMS) absorbing aerosol product", **Rev. Geophys.**, 40, 1002, 2002

(Richter et al. 2004)
Richter, A., V. Eyring, J.P. Burrows, H. Bovensmann, A. Lauer, B. Sierk, P. J. Crutzen, "Satellite Measurements of NO2 from International Shipping Emissions", **Geophys. Res. Lett.**, 31, L23110, doi:10.1029/2004GL020822, 2004

(Richter et al. 2005)
Richter, A., J.P. Burrows, H. Nüß, C. Granier, U. Niemeier, "Increase in nitrogen dioxide over China observed from space", **Nature**, 437, 129-132, 2005

(Rohen et al. 2005)
Rohen G.J., C. von Savigny, M. Sinnhuber, K.-U. Eichmann, J.W. Kaiser, E.J. Llewellyn, A. Rozanov, H. Bovensmann, J.P. Burrows, "Impact of the October/November 2003 Solar Proton Events on Mesospheric Ozone: SCIAMACHY Measurement and Model Results", **J. Geophys. Res**., 110, A09S39, doi:10.1029/2004JA010984, 2005

(Rohen et al. 2006)
Rohen, G.J., C. von Savigny, K.-U. Eichmann, E.J. Llewellyn, A. Bracher, J.P. Burrows, "Retrieval of mesospheric ozone profiles from SCIAMACHY limb scattering observations: Theory, first validation results and ozone depletion during the Oct./Nov. 2003 solar proton event", **Adv. Space Res**., in press, 2006

(Sinnhuber et al. 2005)
Sinnhuber, B.-M., A. Rozanov, N. Sheode, O.T. Afe, A. Richter, M. Sinnhuber, F. Wittrock, J.P. Burrows, G.P. Stiller, T. von Clarmann, A. Linden, "Global observations of stratospheric bromine monoxide from SCIAMACHY", **Geophys. Res. Lett.**, 32, L20810, doi: 10.1029/2005GL023839, 2005

(Skupin et al. 2004)
Skupin, J., M. Weber, H. Bovensmann, J.P. Burrows, "The Mg II solar activity proxy indicator derived from GOME and SCIAMACHY", **Proceedings of the ENVISAT & ERS Symposium**, Salzburg, Austria, ESA SP-572, 2004

(Svensmark et al. 1997)
Svensmark H., E. Friis-Christensen, "Variation of cosmic flux and global cloud coverage - a missing link in solar-climate relationships", **J. Atmos. Terr. Phys.**, 59, 1225-1232, 1997

(Van Roozendael et al. 2004)
van Roozendael, M., I. De Smedt, C. Fayt, F. Wittrock, A. Richter, O. Afe, "First validation of SCIAMACHY BrO columns", **Proceedings of the Second Workshop on the Atmospheric Validation of Envisat (ACVE-2)**, Frascati, Italy, ESA SP-562, 2004

(Viereck et al. 2001)
Viereck, R.A., L.C. Puga, D. McMullin, D. Judge, M. Weber, W.K. Tobiska, "The Mg II Index: A Proxy for Solar EUV", **Geophys. Res. Lett.**, 28, 1343-1346, 2001

(Viereck et al. 2004)
Viereck, R.A., L.E. Floyd, P.C. Crane, T.N. Woods, B.G. Knapp, G. Rottman, M. Weber, L.C. Puga, M.T. DeLand, "A composite Mg II index spanning from 1978 to 2003", **Space Weather**, 2, S10005, doi:10.1029/2004SW000084, 2004

(von Savigny et al. 2004a)
von Savigny, C., A. Kokhanovsky, H. Bovensmann, K.-U. Eichmann, J.W. Kaiser, S. Noël, A.V. Rozanov, J. Skupin, J.P. Burrows, "NLC Detection and Particle Size Determination: First Results from SCIAMACHY on ENVISAT", **Adv. Space Res.**, 34, 851-856, 2004

(von Savigny et al. 2004b)
von Savigny, C., K.-U. Eichmann, E.J. Llewellyn, H. Bovensmann, J.P. Burrows, M. Bittner, K. Höppner, D. Offermann, W. Steinbrecht, P. Winkler, M.J. Taylor, Y. Cheng, "First near-global retrieval of OH rotational temperatures from satellite-based Meinel band emission measurements", **Geophys. Res. Lett**., 31, L15111, doi:10.1029/2004GL020410, 2004

(von Savigny et al. 2005a)
von Savigny, C., A. Rozanov, H. Bovensmann, K.-U. Eichmann, S. Noel, V.V. Rozanov, B.-M. Sinnhuber, M. Weber, J.P. Burrows, "The ozone hole break-up in September 2002 as seen by SCIAMACHY on ENVISAT", **J. Atmosph. Sci**., 62, 721-734 , 2005

(von Savigny et al. 2005b)
von Savigny, C., E.P. Ulasi, K.-U. Eichmann, H. Bovensmann, J.P. Burrows, "Detection and Mapping of Polar Stratospheric Clouds using Limb Scattering Observations", **Atmos. Chem. Phys.**, 5, 3071-3079, 2005

(Weber 1999)
Weber M., "Solar activity during solar cycle 23 monitored by GOME", **Proc. European Symposium on Atmospheric Measurements from Space (ESAMS'99)**, 1999

Atmospheric Gases

BrO	Bromine oxide
CFC	Chlorofluorocarbon
CFC11	Trichlorofluoromethane
CHOCHO	Glyoxal
CH_4	Methane
CH_3CN	Acetonitrile
ClO	Chlorine monoxide
$ClONO_2$	Chlorine nitrate
CO	Carbon monoxide
CO_2	Carbon dioxide
HCHO	Formaldehyde
HCl	Hydrogen chloride
HCN	Hydrogen cyanide
HF	Hydrofluor
HFC	Hydrofluorocarbon
HNO_3	Nitric acid
H_2O	Water vapour
IO	Iodine oxide
NAT	Nitric acid trihydrate
NO	Nitric oxide
NO_2	Nitrogen dioxide
NO_3	Nitrate radical
N_2O	Nitrous oxide
OClO	Chlorine dioxide
OH	Hydroxyl radical
O_3	Ozone
O_2	Oxygen (molecular)
$O_2(^1\Delta)$	Oxygen (singlet delta)
O_4	Oxygen (dimer)
SO_2	Sulphur dioxide

Abbreviations and Acronyms

AAI	Absorbing Aerosol Index
AATSR	Advanced Along Track Scanning Radiometer
ACE	Atmosphere Climate Experiment
ACVT	Atmospheric Chemistry Validation Team
ADC	Analogue-to-Digital Converter
ADEOS	Advanced Earth Observing System
ADS	Annotation Data Set
AMAX-DOAS	Airborne MAXDOAS
AMC-DOAS	Air Mass Corrected DOAS
AMF	Airmass Factor
AMON	Absorption par les Minoritaires Ozone et NOx
ANX	Ascending Node Crossing
AO	Announcement of Opportunity
AO	Analogue Offset
AOI	Announcement of Opportunity Instrument
AOP	AO Instrument Provider
AOT	Aerosol Optical Thickness
APSM	Aperture Stop Mechanism
ARCF	Absolute Radiometric Calibration Facility
ASAR	Advanced Synthetic Aperture Radar
ASI	Agenzia Spaziale Italiana
ASM	Azimuth Scan Mechanism
ASUR	Airborne Submillimeter Radiometer
ATBD	Algorithm Technical Basis Document
ATC	Active Thermal Control
ATSR	Along-Track Scanning Radiometer
AU	Astronomical Unit
AZACM	Azimuth Aperture Cover Mechanism
BAER	Bremen Aerosol Retrieval
BCPS	Broadcast Pulse
BDM	Bad and Dead Pixel Mask
BIRA – IASB	Belgisch Instituut voor Ruimte-Aëronomie / Institut d'Aéronomie Spatiale de Belgique
BMFT	Bundesministerium für Forschung und Technologie
BOL	Begin-of-Life
BONBON	cryogenic whole air sampler for the collection of airsamples in the stratosphere
BU	Binary Unit
BUV	Backscattered Ultraviolet
CA	Corrective Action
CARIBIC	Civil Aircraft for the Regular Investigation of the Atmosphere Based on an Instrument Container
C&C	Command & Control
CCA	Communication Area
CF	Cloud Fraction
CGT	Cloud Geometrical Thickness
CLRTAP	Convention on Long-Range Transboundary Air Pollution
CNES	Centre Nationale d'Etudes Spatiales
COT	Cloud Optical Thickness
CPI	Cloud Phase Index
CTH	Cloud Top Height
CTI	Configurable Transfer Item

CTP	Cloud Top Pressure
C1	Category 1
C2	Category 2
DAK	Double-Adding code KNMI
DARA	Deutsche Agentur für Raumfahrtangelegenheiten
DBU	Digital Bus Unit
DDS	Data Dissemination System
DFD	Deutsches Fernerkundungs-Datenzentrum
DHCM	Decontamination Heater Control Module
DIAL	Differential Absorption Lidar
DLR	Deutsches Zentrum für Luft- und Raumfahrt
DLR-OP	DLR-Oberpfaffenhofen
DME	Detector Module Electronics
DNPM	Deutsch-Niederländisches Projektmanagement
DNX	Descending Node Crossing
DOAS	Differential Optical Absorption Spectroscopy
DORIS	Doppler Orbitography and Radiopositioning by Satellite
D-PAC	German PAC
DU	Dobson Unit
EA	Electronic Assembly
EADS	European Aeronautic Defense and Space Company
ECMWF	European Centre for Medium-Range Weather Forecasts
EDI	ESA Developed Instrument
EEPROM	Electrical Erasable Programmable Read Only Memory
ELACM	Elevation Aperture Cover Mechanism
ELHYSA	Etude l'Hygrométrie Stratosphérique
EMC	Electromagnetic Compatibility
ENVISAT	Environmental Satellite
ENVISOLAR	Environmental Information Services for Solar Energy Industries
EO	Earth Observation
EOL	End-of-Life
EOS	Earth Observing System
EPS	EUMETSAT Polar System
ERBS	Earth Radiation Budget Satellite
ERS	European Remote Sensing Satellite
ESA	European Space Agency
ESABC	ENVISAT Stratospheric Aircraft and Balloon Campaign
ESM	Elevation Scan Mechanism
ESOC	European Space Operation Centre
ESRIN	European Space Research Institute
EUMETSAT	European Organisation for the Exploitation of Meteorological Satellites
EURAD	European Air Pollution Dispersion
EURECA	European Retrievable Carrier
EUTELSAT	European Telecommunications Satellite
EUV	Extreme UV
EVDC	ENVISAT Validation Data Centre
FMI	Finnish Meteorological Institute
Fin CoPAC	Finnish Co-PAC
FIRS	Far-Infrared Spectrometer
FISH	Fast In Situ Stratospheric Hygrometer
FOCC	Flight Operation Control Centre
FODP	Flight Operation and Data Plan
FOS	Flight Operation Segment
FoV	Field of View

FRESCO	Fast Retrieval Scheme for Clouds from the Oxygen A-band
FTIR	Fourier Transform Infrared
GADS	Global Annotation Data Set
GAW	Global Atmospheric Watch
GBMCD	Ground-Based Measurement and Campaign Database
GDF	General Distribution Function
GDOAS	GODFIT DOAS
GDP	GOME Data Processor
GEO	Global Earth Observation
GeoFIS	Geostationary Fourier Transform Interferometer
GEOSS	Global Earth Observation System of Systems
GeoSCIA	Geostationary Scanning Imaging Absorption Spectrometer
GeoTROPE	Geostationary Tropospheric Explorer
GMES	Global Monitoring for Environment and Security
GODFIT	GOME Direct Fitting
GOME	Global Ozone Monitoring Experiment
GOMOS	Global Ozone Monitoring by Occultation of Stars
HALOE	Halogen Occultation Experiment
HICRU	Heidelberg Iterative Cloud Retrieval Utilities
HK	Housekeeping
HSM	High Speed Multiplexer
IABG	Industrieanlagen-Betriebsgesellschaft
IASI	Infrared Atmospheric Sounding Interferometer
ICU	Instrument Control Unit
IECF	Instrument Engineering and Calibration Facility
IFoV	Instantaneous Field of View
IGACO	Integrated Global Atmospheric Chemistry Observations Theme
ILoS	Instantaneous Line of Sight
IMAP	Iterative Maximum a Posteriori
IMAU	Institute of Marine and Atmospheric Research Utrecht
IMF	Institut für Methodik der Fernerkundung
IMIA	Instrument Mission Implementation Agreement
IMLM	Iterative Maximum Likelihood Method
INTA	Instituto Nacional de Técnica Aerospacial
IOM	Instrument Operation Manual
IPCC	Intergovernmental Panel of Climate Change
IPF	Instrument Processing Facility
IR	Infrared
ISCCP	International Satellite Cloud Climatology Project
IST	Integrated System Team
IT	Integration Time
IUP	Institut für Umweltphysik (Heidelberg)
IUP-IFE	Institut für Umweltphysik / Institut für Fernerkundung (Bremen)
KNMI	Koninklijk Nederlands Meteorologisch Instituut
LC	Leakage Current
LEOP	Launch and Early Operation Phase
LIDORT	Linearized Discrete Ordinate Radiative Transfer
LLI	Life Limited Item
LoS	Line-of-Sight
LPMA	Laboratoire de Physique Moleculaire et Applications
LPMA-DOAS	Limb Profile Monitoring of the Atmosphere DOAS
LRAC	Low Rate Reference Archive Centre
LUT	Lookup Table
MANTRA	Middle Atmosphere Nitrogen Trend Assessment

MAP	Measurement of Atmospheric Pollution
MASI	Models and data Assimilation, Satellite Intercomparison
MAX-DOAS	Multi-Axis DOAS
MCMD	Macrocommand
MDS	Measurement Data Set
MERIS	Medium Resolution Imaging Spectrometer
METEOSAT	Meteorological Satellite
METOP	Meteorological Operational Satellite
MIPAS	Michelson Interferometer for Passive Atmospheric Sounding
MIPAS-B	MIPAS for Balloons
MIR	Montgolfier Infra-Red
MLI	Multilayer Insulation
MLS	Microwave Limb Sounder
MO&C	Moon Occultation & Calibration
MODIS	Moderate Resolution Imaging Spectroradiometer
MOPITT	Measurements of Pollution in the Troposphere
MOZAIC	Measurements of Ozone and water vapour by Airbus In-service aircraft
MPS	Mission Planning System
NADIR	NILU Atmospheric Database for Interactive Retrieval
NASA	National Aeronautics and Space Administration
NASDA	National Space Development Agency of Japan
NCW	Nadir Calibration Window
NCWM	Nadir Calibration Window Mechanism
NDF	Neutral Density Filter
NDFM	Neutral Density Filter Mechanism
NDSC	Network for the Detection of Stratospheric Change
NH	Northern Hemisphere
NILU	Norsk Institutt for Luftforskning
NIR	Near Infrared
NIS	New Independent States
NIVR	Nederlands Instituut voor Vliegtuigontwikkeling en Ruimtevaart
NIWA	National Institute of Water and Atmospheric research
NLC	Noctilucent Cloud
NNDEC	Non-nominal Decontamination
NOAA	National Oceanic and Atmospheric Administration
NOXAR	Measurements of Nitrogen Oxides and Ozone along Air Routes
NPP	NPOESS Preparatory Project
NPOESS	National Polar-orbiting Operational Environmental Satellite System
NRSC	National Remote Sensing Centre Ltd
NRT	Near-realtime
OA	Optical Assembly
OBM	Optical Bench Module
OBT	On-Board Time
OCO	Orbiting Carbon Observatory
OCR	Operation Change Request
OCRA	Optical Cloud Recognition Algorithm
OE	Optimal Estimation
OIP	Optique et Instruments de Précision
OL	Offline
OLEX	Ozone Lidar Experiment
OMI	Ozone Monitoring Instrument
OMPS	Ozone Monitoring and Profiling Suite
OPTEC	Optical Test Facility
OSIRIS	Optical Spectrograph and Infrared Imager System

OU	Optical Unit
PAC	Processing and Archiving Facility
PDAS	Payload Data Acquisition Station
PDCC	Payload Data Control Center
PDHS	Payload Data Handling Station
PDHS-E	Payload Data Handling Station – ESRIN
PDHS-K	Payload Data Handling Station – Kiruna
PDS	Payload Data Segment
PET	Pixel Exposure Time
PFM	Proto Flight Model
PI	Principal Investigator
PMC	Polar Mesospheric Cloud
PMC	Payload Management Computer
PMD	Polarization Measurement Device
PMTC	Power Mechanism & Thermal Control Unit
POAM	Polar Ozone and Aerosol Measurement
POEM	Polar Orbit Earth Observation Mission
PPF	Polar Platform
PPG	Pixel-to-Pixel Gain
PROMOTE	Protocol Monitoring for the GMES Service Element
PSC	Polar Stratospheric Cloud
PV	Potential Vorticity
PVU	Potential Vorticity Unit
RADIBAL	Radiomètre Balloon
RAM	Random Access Memory
RASA	Russian Aviation and Space Agency
RE	Radiated Emission
RGB	Red, Green, Blue
ROSE	Research on Ozone in the Stratosphere and its Evolution
RR	Reduced Resolution
RRU	Radiant Reflector Unit
RS	Radiated Susceptibility
RT	Random Telegraph
RTCS	Relative Time Command Sequence
SAA	South Atlantic Anomaly
SABER	Sounding of the Atmosphere using Broadband Emission Radiometry
SACURA	Semi-Analytical Cloud Retrieval Algorithm
SAGE	Stratospheric Aerosol and Gas Experiment
SALOMON	UV-VIS Spectrometer
SAM	Stratospheric Aerosol Measurement
SAOZ	Système d'Analyse par Observations Zénithale
SBUV	Solar Backscatter Ultraviolet instrument
SCCVT	SCIAMACHY Calibration and Verification Team
SCIAMACHY	Scanning Imaging Absorption Spectrometer for Atmospheric Chartography
SCIARAYS	toolbox for radiative transfer modeling and atmospheric parameter retrieval in the UV-VIS
SCIATRAN	radiative transfer model for SCIAMACHY
SCIAVALIG	SCIAMACHY Validation and Interpretation Group
SCIA-VALUE	SCIAMACHY Validation and Utilization Experiment
SCOOP	SCIAMACHY On-board Operation Plan
SDLA-LAMA	Spectromètre à Diode Laser Accordable Laser pour l'Analyse du Méthane Atmosphérique
SDPU	Science Data Processing Unit
SEM	Simplified Engineering Model

SEU	Single Event Upset
SF	Sun Follower
SFM	Spectrophotometer
SH	Southern Hemisphere
SIRD	SCIAMACHY Instrument Requirements Document
SJT	SCIAMACHY Joint Team
SLS	Spectral Line Source
SME	Solar Mesospheric Explorer
SMR	Sun Mean Reference
SO&C	Sun Occultation & Calibration
SODAP	Switch-on and Data Acquisition Phase
SOLSTICE	Solar Stellar Irradiance Comparison Experiment
SOST	SCIAMACHY Operations Support Team
SPCA	SCIAMACHY PMD Cloud Algorithm
SPE	Solar Proton Event
SPICI	SCIAMACHY PMD Identification of Clouds and Ice/snow
SPIRALE	Spectroscopie Infra-Rouge par Absorption de Laser Embarqué
SRC	SCIAMACHY Radiant Cooler
SRON	SRON Netherlands Institute for Space Research
SSAG	SCIAMACHY Science Advisory Group
SSC	Swedish Space Corporation
STM	Structural Model
SME	Solar Mesospheric Explorer
SNSB	Swedish National Space Board
SUSIM	Solar Ultraviolet Spectral Irradiance Monitor
SWIR	Short-Wave Infrared
SYNEAR	Synergetic Aerosol Retrieval
SZA	Solar Zenith Angle
TB	Thermal Balance
TC	Thermal Control
TCFoV	Total Clear Field of View
TEMIS	Tropospheric Emission Monitoring Internet Service
TES	Tropospheric Emission Spectrometer
TIMED	Thermosphere Mesosphere Ionosphere Energetics Dynamics
TOA	Top of Atmosphere
TOMS	Total Ozone Mapping Spectrometer
TOSOMI	Total Ozone retrieval algorithm for SCIAMACHY
TNO-TPD	Technisch-Naturwetenschappelijk Onderzoek – Technisch Physische Dienst
TRIPLE	Multi-instrument balloon payload
TRUE	Tangent Height Retrieval by UV-B
TV	Thermal Vacuum
UARS	Upper Atmosphere Research Satellite
UK	United Kingdom
US	United States
UTC	Coordinated Universal Time
UV	Ultraviolet
VA	Value added
VIS	Visible
VOC	Volatile Organic Compound
WFM-DOAS	Weighting Function Modified DOAS
WGS84	World Geodetic System 1984
WLS	White Light Source
WMO	World Meteorological Organization