References

Abdul-Razzak, H., and S. J. Ghan, 2000: A parameterization of aerosol activation: 2. Multiple aerosol type, *J. Geophys. Res.*, **105**, 6837–6844.

Abdul-Razzak, H., and S. J. Ghan, 2002: A parameterization of aerosol activation 3. Sectional representation. *J. Geophys. Res.*, **107 (D3)**, 4026, doi:10.1029/2001JD000483

Albrecht, B. A., 1989: Aerosols, cloud microphysics, and fractional cloudiness. *Science*, **245**, 1227–1230.

Andres, R. J. and A. D. Kasgnoc, 1998: A time-averaged inventory of subaerial volcanic sulfur emissions. *J. Geophys. Res.* **103**, 25251–25261.

Aoki, T, A. Hachikubo and M. Hori, 2003: Effects of snow physical parameters on shortwave broadband albedos. *J. Geophys. Res.*, **108 (D19)**, 4616, doi: 10.1029/2003JD003506.

Aoki, T., and Y. T. Tanaka, 2008: Influence of atmospheric aerosol deposition on snow albedo. *Tenki* (in Japanese), **55**, 538-547.

Arakawa, A., and M.-D. Cheng, 1993: The Arakawa–Schubert cumulus parameterization. The Representation of Cumulus Convection in Numerical Models, *Meteor. Monogr.*, No. 46, Amer. Meteor. Soc., 123–136.

Arakawa, A., and W. H. Schubert, 1974: Interaction of a cumulus cloud ensemble with the large-scale environment. Part I. *J. Atmos. Sci.*, **31**, 674–701.

Arking, A. A. and K. Grossman, 1972 : The influence of line shape and band structure on temperatures in planetary atmospheres. *J. Atmos. Sci.*, **29**, 937–949.

Bechtold P., E. Bazile, F. Guichard, P. Mascart, and E. Richard, 2001: A mass-flux convection scheme for regional and global models. *Quart. J. Roy. Meteor. Soc.*, **127**, 869–886.

Bigg, E.K., 1953: The supercooling of water. *Proc. Phys. Soc. London*, **B66**, 688-694.

Bony, S, and J.-L. Dufresne, 2005: Marine boundary layer clouds at the heart of tropical cloud feedback uncertainties in climate models. *Geophys. Res. Lett.*, **32**, L20806, doi:10.1029/2005GL023851.

Briegleb, B. P., 1992 : Delta-Eddington approximation for solar radiation in the NCAR Community Climate Model. *J. Geophys. Res.*, **97**, 7603-7612.

Castro S. L., G. A. Wick, and W. J. Emery, 2003: Further refinements to models for the bulk-skin sea surface temperature difference. *J. Geophys. Res.*, **108**, 3377, doi:10.1029/2002JC001641.

Cheng M.-D., and A. Arakawa, 1997: Inclusion of rainwater budget and convective downdrafts in the Arakawa–Schubert cumulus parameterization. *J. Atmos. Sci.*, **54**, 1359–1378.

Chin, M., P. Ginoux, S. Kinne, O. Torres, B. N. Holben, B. N. Duncan, R. V. Martin, J. A. Logan, A.

Higurashi, and T. Nakajima, 2002: Tropospheric aerosol optical thickness from the GOCART model and comparisons with satellite and sun photometer measurements. *J. Atmos. Sci.*, **59**, 461–483.

Chou, M. D. and L. Kouvaris, 1991 : Calculations of transmission functions in the IR CO_2 and O_3 bands. *J. Geophys. Res.*, **96**, 9003-9012.

Clough, S. A., M. J. Iacono, and J.-L. Moncet, 1992 : Line-by-line calculations of atmospheric fluxes and cooling rates: Application to water vapor. *J. Geophys. Res.*, **97**, 15761–15785.

Clough, S. A., F. X. Kneizys, and R. W. Davies, 1989 : Line shape and the water vapor continuum. *Atmos. Res.*, **23**, 229–241.

Cooke, W. F., C. Liousse, H. Cachier and J. Feichter, 1999: Construction of a 1° × 1° fossil fuel emission data set for carbonaceous aerosol and implementation and radiative impact in the ECHAM4 model. *J. Geophys. Res.*, **104**, 22137–22162.

Cox, M. D. 1987: Isopycnal diffusion in a z-coordinate ocean model. *Ocean Modelling*, **74**, 1-5.

Deushi, M., and K. Shibata, 2010: Development of an MRI Chemistry-Climate Model ver. 2 for the Study of Tropospheric and Stratospheric Chemistry. *submitted to Pap. Meteor. Geophys*.

Ebert, E. E., and J. A. Curry, 1992 : A parameterization of ice cloud optical properties for climate models, *J. Geophys. Res.*, **97**, 3831-3836.

European Centre for Medium-Range Weather Forecasts, 2004: IFS Documentation CY28r1, http://www.ecmwf.int/research/ifsdocs/CY28r1. Part IV, Chapter 6.

Farquhar, G. D., S. von Caemmerer, and J. A. Berry, 1980: A biochemical model of photosynthetic CO_2 assimilation in leaves of C_3 species. *Planta,* **149,** 78-90.

Fécan, F., B. Marticorena and G. Bergametti, 1999: Parameterization of the increase of the aeolian erosion threshold wind friction velocity due to soil moisture for arid and semi-arid areas. *Annales Geophysicae*, **17**, 149–157.

Freidenreich, S. M. and V. Ramaswamy, 1999: A new multiple-band solar Radiative parameterization for general circulation models. *J. Geophys. Res.*, **104**, 31389–31409.

Friedlingstein, P., and coauthors, 2006: Climate-carbon cycle feedback analysis: results from the C4MIP model intercomparison. *J. Climate*, **19**, 3337-3353.

Geleyn, J.-F. and A. Hollingsworth, 1979 : An economical analytical method for the computation of the interaction between scattering and line absorption of radiation. *Beitr. Phys. Atmos.*, **52**, 1–16.

Gent P. R., and J. C. McWilliams, 1990: Isopycnal mixing in ocean circulation models. *J. Phys. Oceanogr.*, **20**, 150-155.

Gentemann, C., C. J. Donlon, A. Stuart-Menteth, and F. J. Wentz, 2003: Diurnal signals in satellite sea surface temperature measurements, *Geophys. Res. Lett.*, **30(3)**, 1140, doi:10.1029/2002GL016291.

Giorgi, F. and W. L. Chameides, 1986: Rainout lifetimes of highly soluble aerosols and gases as inferred from simulations with a general circulation model. *J. Geophys. Res.*, **91**, 14367–14376.

Gong, S. L., 2003: A parameterization of sea-salt aerosol source function for sub- and super-micron particles. *Global Biogeochem. Cycles,* **17**, 1097, doi:10.1029/2003GB002079.

Gong, S. L., L. A. Barrie and J.-P. Blanchet, 1997: Modeling sea-salt aerosols in the atmosphere 1. model development. *J. Geophys. Res.*, **102**, 3805–3818.

Gravel, S. and A. Staniforth, 1994: A mass-conserving semi-Lagrangian scheme for the shallow-water equations, *Mon. Wea. Rev.*, **122**, 243-248.

Gregory, D., Kershaw, R., and Inness, P. M., 1997: Parametrization of momentum transport by convection. II: Tests in single-column and general circulation models. *Quart. J. Roy. Meteor. Soc.*, **123**, 1153-1183.

Greve, R., 1997: A continuum-mechanical formulation for shallow polythermal ice sheets. *Philosophical Transactions of the Royal Society London A* , **355 (1726)**, 921-974.

Guenther, A., C. N. Hewitt, D. Erickson, R. Fall, C. Geron, T. Graedel, P. Harley, L. Klinger, M. Lerdau, W. A. Mckay, T. Pierce, B. Scholes, R. Steinbrecher, R. Tallamraju, J. Taylor, and P. Zimmerman, 1995: A global model of natural volatile organic compound emissions. *J. Geophys. Res.*, **100(D5)**, 8873–8892, doi:10.1029/94JD02950.

Hansen, J. and L. Nazarenko, 2004: Soot climate forcing via snow and ice albedos. *Proc. Natl. Acad. Sci. USA,* **101**, 423–428, doi:10.1073/pnas.2237157100.

Hansen, J., M. Sato, and R. Ruedy, 1997: Radiative forcing and climate response, *J. Geophys. Res.*, **102 (D6)**, 6831–6864.

Hara, T., 2007a: Update of the operational JMA mesoscale model and implementation of improved Mellor-Yamada level 3 scheme. *Extended Abstracts, 22nd Conf. on Weather Analysis and Forecasting/18th Conf. on Numerical Weather Prediction*, Utah, USA, J3.5

Hara, T., 2007b: Implementation of improved Mellor-Yamada Level 3 scheme and partial condensation scheme to JMANHM and their performance. *CAS/JSC WGNE Res. Act. in Atmos. and Ocea. Modelling*, **37**, 0407-0408.

Hasumi, H, 2006: CCSR Ocean Component Model (COCO) Version 4.0. Center for Climate System Research, *CCSR report*, No. 25.

Haxeltine, A., and I. C. Prentice, 1996: BIOME3: An equilibrium terrestrial biosphere model based on ecophysiological constraints, resource availability, and competition among plant functional types. *Global Biogeochem. Cycles*, **10,** 693-709.

Hess, M., P. Koepke, and I. Schult, 1998 : Optical properties of aerosols and clouds: The software package OPAC. *Amer. Meteor. Soc.*, **79**, 831-843.

Hibler, W. D., III, 1979: A dynamic thermodynamic sea ice model. *J. Phys. Oceanogr.*, **9**, 815-846.

Hines, C. O., 1997: Doppler-spread parameterization of gravity-wave momentum deposition in the middle atmosphere. Part 1: Basic formulation. *J. Atmos. Solar-Terr. Phys.*, **59**, 371-386

Hirai, M., T. Sakashita, H. Kitagawa, T. Tsuyuki, M. Hosaka and M. Oh'izumi, 2007: Development and validation of a new land surface model for JMA's operational global model using the CEOP observation dataset. *J. Meteor. Soc. Japan*, **85A**, 1-24.

Hofmann, M., and M. A. M. Maqueda, 2006: Performance of a second-order moments advection scheme in an Ocean General Circulation Model. *J. Geophys. Res.*, **111**, C05006.

Holtslag, A., and B. Boville, 1993: Local Versus Nonlocal Boundary-Layer Diffusion in a Global Climate Model. *J. Climate*, **6**, 1825-1842.

Hortal, M., 2002: The development and testing of a new two-time-level semi-Lagrangian scheme (SETTLS) in the ECMWF forecast model. *Quart. J. Roy. Meteor. Soc.*, **128**, 1671-1687.

Hu, Y. X., and K. Stamnes. 1993 : An accurate parameterization of the radiative properties of water clouds suitable for use in climate models. *J. Climate*, **6**, 728-742.

Hunke, E. C., and J. K. Dukowicz, 2002: The elastic-viscous-plastic sea ice dynamics model in general orthogonal curvilinear coordinates on a sphere-incorporation of metric terms. *Mon. Wea. Rev.,* **130**, 1848-1865.

Hunke, E. C., and W. H. Lipscomb, 2001: CICE: The Los Alamos Sea Ice Model documentation and software, version 3. *Los Alamos National Laboratory Tech. Rep.* LA-CC-98-16 v. 3, Los Alamos, NM, 52 pp.

Hunke, E. C, and W. H. Lipscomb, 2006: CICE: the Los Alamos Sea Ice Model Documentation and Software User's Manual, 59pp.
(Available at http://climate.lanl.gov/source/projects/climate/Models/CICE/index.shtml.)

IPCC, 1996: Climate Change 1995: The Science of Climate Change, Contribution of Working Group I to the Second Assessment Report of the Intergovernmental Panel on Climate Change, (Eds. Houghton, J.T., L.G. Meira Filho, B.A. Callander, N. Harris, A. Kattenberg, and K. Maskell), Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 572pp.

IPCC, 2001: Climate Change 2001: The Scientific Basis. Intergovernmental Panel on Climate Change, Contribution of Working Group I to the Third Assessment Report of the Intergovernmental Panel on Climate Change, (Eds. Houghton, J.T., Y. Ding, D.J. Griggs, M. Noguer, P.J. van der Linden, X. Dai, K. Maskell, and C.A. Johnson), Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 881pp.

IPCC, 2007: Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change. (Eds. Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M. Tignor and H.L. Miller), Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 996pp.

Ishizaki, H., and T. Motoi, 1999: Reevaluation of the Takano-Onishi scheme for momentum advection on bottom relief in ocean models. *J. Atmos. Oceanic. Technol.*, **16**, 1994-2010.

Iwasaki, T., S. Yamada, and K. Tada, 1989: A parameterization scheme of orographic gravity wave drag with the different vertical partitioning, part 1: Impact on medium range forecast. *J. Meteor. Soc. Japan*, **67**, 11-41.

Jakob, C., 2000: The representation of cloud cover in Atmospheric General Circulation Models, *A thesis submitted to the Fakultat fur Physik der Ludwig-Maximilians-Universitat*, ECMWF.

JMA, 2002: Outline of the operational numerical weather prediction at the Japan Meteorological Agency (Appendix to WMO numerical weather prediction progress report). Japan Meteorological Agency, 157pp.

Joseph, J. H., W. J. Wiscombe, and J. A. Weinman, 1976 : The Delta-Eddington approximation for radiative flux transfer. *J. Atmos. Sci.*, **33**, 2452-2459.

Kain, J. S., 2004: The Kain–Fritsch convective parameterization: An update. *J. Appl. Meteor.*, **43**, 170–181.

Kain, J. S., and J. M. Fritsch, 1990: A one-dimensional entraining/detraining plume model and its application in convective parameterization. *J. Atmos. Sci.*, **47**, 2784-2802.

Kain, J. S., and J. M. Fritsch, 1993: Convective parameterization for mesoscale models: The Kain–Fritsch scheme. The Representation of Cumulus Convection in Numerical Models, *Meteor. Monogr.*, No. 46, Amer. Meteor. Soc., 165–170.

Kärcher, B., J. Hendricks, U. Lohmann, 2006: Physically based parameterization of cirrus cloud formation for use in global atmospheric models. *J. Geophys. Res.*, **111**, D01205, doi: 10.1029/2005JD006219.

Kawai, Y., and A. Wada, 2007: Diurnal Sea Surface Temperature Variation and Its Impact on the Atmosphere and Ocean: A Review. *J. Oceanogr.*, **63**, 721-744.

Kessler, E., 1969: On the distribution and continuity of water substance in atmospheric circulation. *Meteor. Monogr.*, Amer. Meteor. Soc., **32**, 84 pp.

Kettle, A. J., M. O. Andreae, D. Amouroux, T. W. Andreae, T. S. Bates, H. Berresheim, H. Bingemer, R. Boniforti, M. A. J. Curran, G. R. DiTullio, G. Helas, G. B. Jones, M. D. Keller, R. P. Kiene, C. Leck, M. Levasseur, G. Malin, M. Maspero, P. Matrai, A. R. McTaggart, N. Mihalopoulos, B. C. Nguyen, A. Novo, J. P. Putaud, S. Rapsomanikis, G. Roberts, G. Schebeske, S. Sharma, R. Sim, R. Staubes, S. Turner and G. Uher, 1999: A global database of sea surface dimethylsulfide (DMS) measurements and a procedure to predict sea surface DMS as a function of latitude, longitude and month. *Global Biogeochem. Cycles* **13**, 399–444.

Kiehl, J. T. and C. S. Zender, 1995 : A Prognostic Ice Water Scheme for Anvil Clouds. World Climate Programme Research, WCRP-90, WMO/TD-No. 713, 167-188.

Killworth, P. D., D. Stainforth, D.J. Webb, and S.M. Paterson, 1991: The development of a free-surface

Bryan-Cox-Semtner ocean model. *J. Phys. Oceanogr.*, **21**, 1333-1348.

Kitoh, A., A. Noda, Y. Nikaidou, T. Ose, and T. Tokioka, 1995: AMIP simulations of the MRI GCM. *Pap. Meteor. Geophys.*, **45**, 121-148.

Koster, R. D. and M. J. Suarez, et al., 1996: The influence of land surface moisture retention on precipitation statistics. *J. Climate*, **5**, 1379-1390.

Kusunoki, S., J. Yoshimura, H. Yoshimura, A. Noda, K. Oouchi and R. Mizuta, 2006: Change of Baiu rain band in global warming projection by an atmospheric general circulation model with a 20-km grid size. *J. Meteor. Soc. Japan*, **84**, 581-611.

Lacis, A. A., and J. E. Hansen, 1974 : A parameterization for the absorption of solar radiation in the earth's atmosphere. *J. Atmos. Sci.*, **31**, 118-133.

Liss, P. S. and L. Merlivat, 1986: Air-sea exchange rates : Introduction and synthesis. P. Buat-Ménard (Ed.), *The Role of Air-Sea Exchange in Geochemical Cycling*, Vol. C 185 of NATO ASI Series, D. Reidel Publishing Company, 113–127.

Liu, Y., P. H. Daum, and S. S. Yum, 2006 : Analytical expression for the relative dispersion of the cloud droplet size distribution, *Geophys. Res. Lett.*, **33**, L02810, doi:10.1029/2005GL024052.

Logan, J. A., 1999: An analysis of ozonesonde data for the troposphere: Recommendations for testing 3-D models and development of a gridded climatology for tropospheric ozone. *J. Geophys. Res.*, **104**, 16,115-16,149,

Lohmann, U., 2002 : Possible aerosol effects on ice clouds via contact nucleation. *J. Atmos. Sci.*, **59**, 647–656.

Lohmann, U., and K. Diehl, 2006: Sensitivity studies of the importance of dust ice nuclei for the indirect aerosol effect on stratiform mixed-phase clouds. *J. Atmos. Sci.*, **63**, 968–982.

Lohmann, U., P. Stier, C. Hoose, S. Ferrachat, S. Kloster, E. Roeckner, and J. Zhang, 2007: Cloud microphysics and aerosol indirect effects in the global climate model ECHAM5-HAM, *Atmos. Chem. Phys.*, **7**, 3425–3446.

Louis, J.-F., 1979: A parametric model of vertical eddy fluxes in the atmosphere. *Boundary Layer Meteor.*, **17**, 187-202.

Louis, J. F., M. Tiedtke and J.F. Geleyn, 1982: A short history of the operational PBL-parameterization at ECMWF. *Workshop on Planetary boundary layer parameterization*, ECMWF, Reading, U.K., 25-27 November 1981, 59-80.

Mellor, L. G., and L. Kantha, 1989: An ice-ocean coupled model. *J. Geophys. Res.*, **94**, 10937-10954.

Mellor, G.L., and T. Yamada, 1974: A hierarchy of turbulence closure models for planetary boundary layers. *J. Atmos. Sci.*, **31**, 1791-1806.

Mellor, G.L. and T. Yamada, 1982: Development of a turbulence closure model for geophysical fluid problems. *Rev. Geophys. Space Phys.*, **20**, 851-875.

Miller, M., A. Beljaars, and T. Palmer, 1992: The sensitivity of the ECMWF model to the parameterization of evaporation from the tropical oceans. *J. Climate*, **5**, 418-434.

Mizuta, R., K. Oouchi, H. Yoshimura, A. Noda, K. Katayama, S. Yukimoto, M. Hosaka, S. Kusunoki, H. Kawai and M. Nakagawa, 2006: 20-km-mesh global climate simulations using JMA-GSM model — mean climate states —. *J. Meteor. Soc. Japan*, **84**, 165-185.

Monahan, E. C., D. E. Spiel and K. L. Davidson, 1986: A model of marine aerosol generation via whitecaps and wave disruption. E. C. Monahan and G. M. Niocaill, Eds., *Oceanic Whitecaps*, D. Reidel, 167–174.

Moorthi, S., and M. J. Suarez, 1992: Relaxed Arakawa-Schubert: A parameterization of moist convection for general circulation models. *Mon. Wea. Rev.*, **120**, 978–1002.

Murakami, M., 1990: Numerical modeling of dynamical and microphysical evolution of an isolated convective cloud - the 19 July 1981 CCOPE cloud. *J. Meteor. Soc. Japan*, **68**, 107-128.

Nagai, T., T. Tokioka, M. Endoh, Y. Kitamura, 1992: El Nino-Southern Oscillation simulated in an MRI atmosphere-ocean coupled general circulation model. *J. Climate*, **5**, 1202-1233.

Nakanishi, M., 2001: Improvement of the Mellor-Yamada turbulence closure model based on large-eddy simulation data. *Boundary -Layer Meteorol.*, **25**, 63-88.

Nakanishi, M. and Niino, H., 2004: An improved Mellor-Yamada level-3 model with condensation physics: Its design and verification. *Boundary -Layer Meteorol.*, **112**, 1-31.

Nakanishi, M. and Niino, H., 2006: An improved Mellor-Yamada level-3 model: Its numerical stability and application to a regional prediction of advection fog. *Boundary -Layer Meteorol.*, **119**, 397-407.

Nakanishi, M. and H. Nino, 2009: Development of an Improved Turbulence Closure Model for the Atmospheric Boundary Layer. *J. Meteor. Soc. Japan*, **87**, 895-912.

Nakano, H., and N. Suginohara, 2002: Effects of bottom boundary layer parameterization on reproducing deep and bottom waters in the world ocean model. *J. Phys. Oceanogr.*, **32**, 1209-1227.

Noh, Y., and H.-J. Kim, 1999: Simulation of temperature and turbulence structure of the oceanic boundary layer with the improved near-surface process. *J. Geophys. Res.*, **104**, 15621-15634.

Noh, Y., Y.-J. Kang, T. Matsuura, and S. Iizuka, 2005: Effect of the Prandtl number in the parameterization of vertical mixing in an OGCM of the tropical Pacific. *Geophys. Res. Lett.*, **32**, L23609, doi:10.1029/2005GL024540.

Noda, A., S. Yukimoto, S. Maeda, T. Uchiyama, K. Shibata, and S. Yamaki, 2001: A New Meteorological Research Institute Coupled GCM (MRI-CGCM2) —Transient Response to Greenhouse Gas and Aerosol Scenarios—. *CGER'S SUPERCOMPUTER MONOGRAPH REPORT* Vol.7, National

Institute for Environmental Studies.

Nordeng, T. E., 1994: Extended versions of the convective parametrization scheme at ECMWF and their impact upon the mean and transient activity of the model in the tropics. *Research Department Technical Memorandum* No. 206, ECMWF.

Numerical Prediction Division / Japan Meteorological Agency, 2007: Outline of the operational numerical weather prediction at the Japan Meteorological Agency. 194pp. [Available from JMA, 1-3-4 Otemachi, Chiyoda-ku, Tokyo 100-8122, Japan.]

Obata, A., 2007: Climate-carbon cycle model response to freshwater discharge into the North Atlantic. *J. Climate*, **20,** 5962-5976.

Obata, A., and Y. Kitamura, 2003: Interannual variability of the sea-air exchange of CO2 from 1961 to 1998 simulated with a global ocean circulation-biogeochemistry model, *J. Geophys. Res.*, **108**, 3337, doi:10.1029/2001JC001088.

Ogura, Y., and H.R. Cho, 1973: Diagnostic Determination of Cumulus Cloud Populations from Observed Large-Scale Variables. *J. Atmos. Sci.*, **30**, 1276–1286.

Oki, T. and Y. C. Sud, 1998: Design of total runoff integrating pathways (TRIP) - a global river channel network., *Earth Interactions*, **2**, 1-37.

Oouchi, K., J. Yoshimura, H. Yoshimura, R. Mizuta, S. Kusunoki and A. Noda, 2006: Tropical cyclone climatology in a global-warming climate as simulated in a 20km-mesh global atmospheric model: Frequency and wind intensity analyses. *J. Meteor. Soc. Japan*, **84**, 259-276.

Orr, J., R. Najjar, C. Sabine, and F. Joos, 1999, *Abiotic-HOWTO internal OCMIP report*, LSCE/CEA Saclay 25 pp, Gif-sur-Yvette, France

Oschlies, A., (2001), Model-derived estimates of new production: New results point toward lower values, *Deep-Sea Res. II*, **48**, 2173–2197.

Owen, P. R., 1964: Saltation of uniform grains in air. *J. Fluid. Mech.*, **20**, 225–242.

Pan, D.-M., and D. Randall, 1993: Implementation of the Arakawa-Schubert cumulus parameterization with a prognostic closure. *Meteor. Monogr.*, No.46, Amer.Meteor.Soc., 137-144.

Pan, D.-M., and D. A. Randall, 1998: A cumulus parameterization with a prognostic closure. *Quart. J. Roy. Meteor. Soc.*, **124**, 949–981.

Peng, Y., and U. Lohmann, 2003 : Sensitivity study of the spectral dispersion of the cloud droplet size distribution on the indirect aerosol effect. *Geophys. Res. Lett.*, **30**, 1507, doi:10.1029/2003GL017192.

Penner, J. E., M. Andreae, H. Annegarn, L. Barrie, J. Feichter, D. Hegg, A. Jayaraman, R. Leaitch, D. Murphy, J. Nganga and G. Pitari, 2001: Aerosols: Their direct and indirect effects. J. T. Houghton, Y. Ding, D. Griggs, M. Noguer, P. J. van der Linden, X. Dai, K. Maskell and C. A. Johnson, Eds., Climate Change 2001: The Scientific Basis, Contribution of Working Group I to the Third

Assessment Report of the Intergovernmental Panel on Climate Change, Cambridge Univ. Press., New York, chapter 5, 289–348.

Prather, M. J., 1986: Numerical advection by conservation of second order moments. *J. Geophys. Res.*, **91**, 6671-6681.

Prentice, I. C., and Coauthors, 2001: The carbon cycle and atmospheric carbon dioxide. *Climate Change 2001: The Scientific Basis*, J. T. Houghton et al., Eds., Cambridge University Press, 183-237.

Priestley, A. 1993: A quasi-conservative version of the semi-Lagrangian advection scheme. *Mon. Wea. Rev.*, **121**, 621-629.

Räisänen, P., 1998 : Effective longwave cloud fraction and maximum-random overlap of clouds: A problem and a solution. *Mon. Wea. Rev.*, **126**, 3336–3340.

Randall, D. A., and D.-M. Pan, 1993a: Implementation of the Arakawa-Schubert cumulus parameterization with a prognostic closure. *Bull. Amer. Meteor. Soc.*, **74**, 137–144.

Randall, D. A., and D.-M. Pan, 1993b: Implementation of the Arakawa-Schubert cumulus parameterization with a prognostic closure. *Meteorological Monograph/The representation of cumulus convection in numerical models*, **46**, 145-150.

Redi, M. H., 1982: Oceanic isopycnal mixing by coordinate rotation. *J. Phys. Oceanogr.*, **12**, 1154-1158.

Ritchie, H., C. Temperton, A. Simmons, M. Hortal, T. Davies, D. Dent, and M. Hamrud, 1995: Implementation of the semi-Lagrangian method in a high-resolution version of the ECMWF forecast model. *Mon. Wea. Rev.*, **123**, 489-514.

Rothman, L. S., A. Barbe, D. C. Benner, L. R. Brown, C. Camy-Peyret, M. R. Carleer, K. Chance, C. Clerbaux, V. Dana, V. M. Devi, A. Fayt, J.-M. Flaud, R. R. Gamache, A. Goldman, D. Jacquemart, K. W. Jucks, W. J. Lafferty, J.-Y. Mandin, S. T. Massie, V. Nemtchinov, D. A. Newnham, A. Perrin, C. P. Rinsland, J. Schroeder, K. M. Smith, M. A. H. Smith, K. Tang, R. A. Toth, J. Vander Auwera, P. Varanasi, and K. Yoshino, 2003 : The HITRAN molecular spectroscopic database: edition of 2000 including updates through 2001. *J. Quant. Spectrosc. Radiat. Transfer*, **82**, 5–44.

Rotstayn, L.D., 2000: On the "tuning" of autoconversion parameterization. *J. Geophys. Res.*, **105** (**D12**) ,15495-15507.

Rutledge, S. A. and P. V. Hobbs, 1983: The mesoscale and microscale structure and organization of clouds and precipitation in midlatitude cyclones. VIII: A model for the "seeder-feeder" process in warmfrontal rainbands. *J. Atmos. Sci.*, **40**, 1185-1206.

Saito, K., T. Kato, H. Eito and C. Muroi, 2001: Documentation of the Meteorological Research Institute/Numerical Prediction Division unified nonhydrostatic model. *Tech. Rep. MRI*, **42**, 133 pp.

Saito, K., T. Fujita, Y. Yamada, J. Ishida, Y. Kumagai, K. Aranami, S. Ohmori, R. Nagasawa, S. Kumagai, C. Muroi, T. Kato, H. Eito and Y. Yamazaki, 2006: The operational JMA nonhydrostatic model. *Mon. Wea. Rev.*, **134**, 1266-1298.

Saito, K., J. Ishida, K. Aranami, T. Hara, T. Segawa, M. Narita, and Y. Honda, 2007: Nonhydrostatic atmospheric models and operational development at JMA. *J. Meteor. Soc. Japan*, **85B**, 271-304.

Saltzman, E. S., D. B. King, K. Holmen and C. Leck, 1993: Experimental determination of the diffusion coefficient of dimethylsulfide in water. *J. Geophys. Res.* **98**, 16481–16486.

Sasaki, H., K. Kurihara, I. Takayabu, K. Murazaki, Y. Sato, and H. Tsujino, 2006: Preliminary Results from the Coupled Atmosphere-Ocean Regional Climate Model at the Meteorological Research Institute. *J. Meteor. Soc. Japan*, **84**, 389-403.

Sato, N., P. J. Sellers, D. A. Randall, E. K. Schneider, J. Shukla, J. L. Kinter III, Y.-T. Hou, and E. Albertazzi, 1989: Effects of implementing the simple biosphere model (SiB) in a general circulation model. *J. Atmos. Sci.*, **46**, 2657-2782.

Schmittner, A., A. Oschlies, H. Matthews, and E. Galbraith, (2008), Future changes in climate, ocean circulation, ecosystems, and biogeochemical cycling simulated for a business-as-usual CO_2 emission scenario until year 4000 AD. *Global Biogeochem. Cycles*, **22**, GB1013, doi:10.1029/2007GB002953.

Schmittner, A., A. Oschlies, H. Matthews, and E. Galbraith, (2009), Correction to "Future changes in climate, ocean circulation, ecosystems, and biogeochemical cycling simulated for a business-as-usual CO_2 emission scenario until year 4000 AD". *Global Biogeochem. Cycles*, **23**, GB3005, doi:10.1029/2009GB003577.

Seinfeld, J. H. and S. N. Pandis, 1997: Atmospheric chemistry and physics: From air pollution to climate change. A Wiley-Interscience publication, New York, NY, 1326pp.

Sellers, P. J., and coauthors, 1996: A revised land surface parameterization (SiB2) for atmospheric GCMs. Part I: Model Formulation. *J. Climate,* **9,** 676-705.

Sellers, P.J., Y. Mintz, Y.C. Sud, and A. Dalcher, 1986: A simple biosphere model (SiB) for use within general circulation models, *J. Atmos. Sci.*, **43**, 505-531.

Shao, Y. and H. Lu, 2000: A simple expression for wind erosion threshold friction velocity. *J. Geophys. Res.*, **105**, 22437–22443.

Shao, Y., M. R. Raupach and J. F. Leys, 1996: A model for predicting aeolian sand drift and dust entrainment on scales from paddock to region. Aust. *J. Soil. Res.*, **34**, 309–342.

Shibata, K. and T. Aoki, 1989: An infrared radiative scheme for the numerical models of weather and climate, *J. Geophys. Res.*, **94**, 14923-14943.

Shibata, K., M. Deushi, T. T. Sekiyama, and H. Yoshimura, 2005: Development of an MRI chemical transport model for the study of stratospheric chemistry. *Pap. Geophys. Meteorol.*, **55**, 75-119.

Shibata, K. and A. Uchiyama, 1992: Accuracy of the delta-four-stream approximation in inhomogeneous scattering atmospheres. *J. Meteor. Soc. Japan*, **70**, 1097-1109.

Simmons, A. J. and D. M. Burridge 1981: An energy and angular momentum conserving vertical finite difference scheme and hybrid vertical coordinates. *Mon. Wea. Rev.*, **109**, 758-766.

Sitch, S., and coauthors, 2003: Evaluation of ecosystem dynamics, plant geography and terrestrial carbon cycling in the LPJ dynamic global vegetation model. *Global Change Biology,* **9,** 161-185.

Slingo, A., 1989: A GCM parameterization for the shortwave radiative properties of water clouds. *J. Atmos. Sci.*, **46**, 1419-1427.

Smagorinsky, J., 1963: General circulation experiments with the primitive equations. I. The basic experiment. *Mon. Wea. Rev.*, **91**, 99-164.

Smith, L. and Y. Yamanaka, M. Pahlow, A. Oschlies, 2009: Optimal uptake kinetics: physiological acclimation explains the pattern of nitrate uptake by phytoplankton in the ocean, *Mar Ecol Prog Ser*, in press.

Smith, R. N. B., 1990: A scheme for prediction layer clouds and their water content in a general circulation model. *Quart. J. Roy. Meteor. Soc.*, **116**, 435–460.

Smith, R. D., and J. C. McWilliams, 2003: Anisotropic horizontal viscosity for ocean models. *Ocean Modelling*, **5**, 129-156.

Smolarkiewicz, P. K., 1984: A fully multidimensional positive definite advection transport algorism with small implicit diffusion. *J. Comput. Phys.*, **54**, 325-362.

Sommeria, G., and J. W. Deardorff, 1977: Subgridscale condensation in models of non-precipitating clouds. *J. Atmos. Sci.*, **34**, 345–355.

Son, S.-W., L. M. Polvani, D. W. Waugh, H. Akiyoshi, R. Garcia, D. Kinnison, S. Pawson, E. Rozanov, T. G. Shepherd, and K. Shibata, 2008: The Impact of Stratospheric Ozone Recovery on the Southern Hemisphere Westerly Jet. *Science*, **320**, 1486-1489, doi: 10.1126/science.1155939.

St. Laurent, L., H. Simmons, and S. Jayne, 2002: Estimating tidally driven energy in the deep ocean. *Geophys. Res. Lett.*, **29**, 2106-2110.

Takayabu, I., H. Kato, K. Nishizawa, Y. N. Takayabu, Y. Sato, H. Sasaki, K. Kurihara, and A. Kitoh, 2007: Future Projections in Precipitation over Asia Simulated by Two RCMs Nested into MRI-CGCM2.2. *J. Meteor. Soc. Japan*, **85**, 511-519.

Takemura, T., T. Nozawa, S. Emori, T. Y. Nakajima, and T. Nakajima, 2005: Simulation of climate response to aerosol direct and indirect effects with aerosol transport-radiation model. *J. Geophys. Res.*, **110**,D02202, doi:10.1029/2004JD005029.

Tanaka, T. Y. and Chiba, M., 2005. Global simulation of dust aerosol with a chemical transport model, MASINGAR. *J. Meteor. Soc. Japan*, **83A**, 255–278.

Tanaka, T. Y. and M. Chiba, 2006: A numerical study of the contributions of dust source regions to the global dust budget. *Global and Planetary Changes*, **52**, 88–104, doi:10.1016/j.gloplacha.2006.02.002.

Tanaka, T. Y., K. Orito, T. T. Sekiyama, K. Shibata, M. Chiba, H. Tanaka, 2003: MASINGAR, a global tropospheric aerosol chemical transport model coupled with MRI/JMA98 GCM: Model description. *Pap. Meteor. Geophys.*, **53(4)**, 119–138.

Tao, W.-K., 1989: An Ice-Water Saturation Adjustment. *Mon. Wea. Rev.*, **117**, 231–235.

Tegen, I., and I. Fung, 1995: Contribution to the atmospheric mineral aerosol load from land surface modification, *J. Geophys. Res.*, **100(D9)**, 18707–18726, doi:10.1029/95JD02051.

Temperton, C., M. Hortal, and A. Simmons, 2001: A two-time-level semi-Lagrangian global spectral model. *Quart. J. Roy. Meteor. Soc.*, 127, 111-127.

Tiedtke, M., 1989: A comprehensive mass flux scheme for cumulus parameterization in large scale models. *Mon. Wea. Rev.*, **117**, 1779-1800.

Tiedtke, M., 1993: Representation of clouds in large scale models. *Mon. Wea. Rev.*, **121**, 3040–3061.

Tokioka, T, A. Noda, A. Kitoh, Y. Nikaidou, S. Nakagawa, T. Motoi, S. Yukimoto, and K. Takata, 1995: A transient CO2 experiment with the MRI CGCM. *J. Meteor. Soc. Japan*, **73**, 817-826.

Tokioka, T., K. Yamazaki, A. Kitoh and T. Ose, 1988: Equatorial 30-60 day oscillation and the ArakawaSchubert penetrative cumulus parameterization. *J. Meteor. Soc. Japan*, **66**, 883-901.

Tokioka, T., K. Yamazaki, I. Yagai, and A. Kitoh, 1984: A Description of the MRI Atmospheric General Circulation Model (The MRI GCM-I). *Technical Report of the Meteorological Research Institute*, **13**, 249 pp.

Troen, I. and L. Mahrt, 1986: A simple model of the atmospheric boundary layer; sensitivity to surface evaporation. *Boundary-Layer Meteorol.*, **37**, 129-148.

Tsujino, H., H. Hasumi, and N. Suginohara, 2000: Deep pacific circulation controlled by vertical diffusivity at the lower thermocline depth. J. Phys. Oceanogr., **30**, 2853-2865.

Tsujino, H., T. Motoi, I. Ishikawa, M. Hirabara, H. Nakano, G. Yamanaka, T. Yasuda, and H. Ishizaki, 2010: Reference manual for the Meteorological Research Institute Community Ocean Model (MRI.COM) Version 3.). *Technical Report of the Meteorological Research Institute*, **59**, 241pp..

Twomey, S., 1974: Pollution and the planetary albedo. *Atmos. Environ.*, **8**, 1251–1256.

Twomey, S., 1991: Aerosols, Clouds and Radiation. *Atmos. Environ.*, **25A(11)**, 2435–2442.

Undén, P., L. Rontu, H. Järvinen, P. Lynch, J. Calvo, G. Cats, J. Cuxart, K. Eerola, C. Fortelius, J. A. Garcia-Moya, C. Jones, G. Lenderlink, A. McDonald, R. McGrath, B. Navascues, N. W. Nielsen, V. Ødegaard, E. Rodriguez, M. Rummukainen, R. Rõõm, K. Sattler, B. H. Sass, H. Savijärvi, B. W. Schreur, R. Sigg, H. The, and A. Tijm, 2002: HIRLAM-5 Scientific Documentation, 144 pp.

Webb, R. W., C. E. Rosenzweig and E. R. Levine, 2000: Global soil texture and derived water-holding capacities (Webb et al.). data set. Available on-line [http://www.daac.ornl.gov] from Oak Ridge

National Laboratory Distributed Active Archive Center, Oak Ridge, Tennessee, U.S.A.

Woodward, F. I., T. M. Smith, and W. R. Emanuel, 1995: A global land primary productivity and phytogeography model. *Global Biogeochem. Cycles,* **9,** 471-490.

World Meteorological Organization/United Nations Environment Programme (WMO/UNEP), 2007: Scientific Assessment of Ozone Depletion: 2006, *Global Ozone Research and Monitoring Project-Report* No. 50, Geneva.

Wyser, K., 1998: The effective radius in ice clouds. *J. Climate*, **11**, 1793–1802.

Xiao, F. and X. Peng, 2004: A convexity preserving scheme for conservative advection transport. *J. Comput. Phy.*, **198**, 389-402.

Yoshimura, H. and T. Matsumura, 2003: A semi-Lagrangian scheme conservative in the vertical direction. *CAS/JSC WGNE Research Activities in Atmospheric and Ocean Modeling*, **33**, 3.19-3.20.

Yoshimura, H. and T. Matsumura, 2005: A two-time-level vertically-conservative semi-Lagrangian semi-implicit double Fourier series AGCM. *CAS/JSC WGNE Research Activities in Atmospheric and Ocean Modeling*, **35**, 3.25-3.26.

Yoshimura, H. and S. Yukimoto, 2008: Development of a Simple Coupler (Scup) for Earth System Modeling. *Pap. Meteor. Geophys.*, **59**, 19-29.

Yukimoto, S., and Y. Kitamura, 2003: An investigation of the irregularity of El Niño in a coupled GCM. *J. Meteor. Soc. Japan*, **81,** 599-622.

Yukimoto, S., A. Noda, A. Kitoh, M. Sugi, Y. Kitamura, M. Hosaka, K. Shibata, S. Maeda, and T. Uchiyama, 2001: A new Meteorological Research Institute Coupled GCM (MRI-CGCM2) — Model climate and its variability —. *Pap. Meteor. Geophys.*, **51**, 47-88, doi:10. 2467/mripapers.51.47.

Yukimoto, S., A. Noda, A. Kitoh, M. Hosaka, H. Yoshimura, T. Uchiyama, K. Shibata, O. Arakawa, and S. Kusunoki, 2006: Present-day climate and climate sensitivity in the Meteorological Research Institute Coupled GCM version 2.3 (MRI-CGCM2.3). *J. Meteor. Soc. Japan*, **84**, 333-363.

Zhong, W. and J. D. Haigh, 1995 : Improved broadband emissivity parameterization for water vapor cooling rate calculations. *J. Atmos. Sci.*, **52**, 124–138.

Zobler, L., 1986: A world soil file for global climate modeling. *NASA Tech. Memo.*, 87802, NASA, 33pp.