

REFERENCES

CONVENTIONS

References encountered in the text are written e.g. [Charlson, 1991, p 156] or cited without page numbers if a general reference to the work in question is made. If the author has produced several works the same year, they will be denoted e.g. 1991A, 1991B, etc.

A

C.G. Abbot; *The Sun and the Welfare of Man*, Smithsonian Inst., Washington, D.C., 1926.

Thomas P. Ackerman, Francisco P.J. Valero; *The vertical structure of Arctic haze as determined from airborne net-flux radiometer measurements*, *Geophys. Res. Letters*, vol. 11, no. 5, pp 469-472, May 1984.

Terence Allen, *Particle Size Measurements*, Chapman and Hall, London, 1981.

L.W. Alvarez, W. Alvarez, et al.; *Extraterrestrial causes for the Cretaceous-Tertiary extinction*, *Science* 208, 1095-1108, 1980.

U. Amato, et al., *Intercomparing the Twomey method with a multimodal lognormal approach to retrieve the aerosol size distribution*, *Jour. Geophys. Res.*, 101, no. D14, pp 19,267-19,275, 27 August 1996.

S. Andersen; *Measurements of stratospheric ozone and nitrogen dioxide at Thule, Greenland, by ultraviolet-visible spectroscopy, 1990-1998*, Ph.D. thesis, 1998.

P.P. Anikine, A.A. Isakov, M.A. Sviridenkov, A.V. Tikhonov; *Multiwavelength, multifield of view solar aureole photometer*, Session Paper.

K. Arao, M. Tanaka, *Dependence of the Solar Aureole upon the Optical Properties of Aerosols and Albedo of the Ground Surface*, *Jour. of the Meteorological Society of Japan*, 64, no. 5, 743-753, October 1986.

S. Arrhenius; *On the influence of carbonic acid in the air upon the temperature of the ground*, *Philosophical Magazine* 41, 237-76, 1896.

B

Ian H. Bailey; *Airborne observations of Arctic aerosols. II: Giant Particles*, *Geophys. Res. Letters*, vol. 11, no. 5, pp 397-400, May 1984.

Leonard A. Barrie; *Arctic air pollution: An overview of current knowledge*, *Atmospheric Environment*, vol. 20, no. 4, pp 643-663, 1986.

F. Bason, *A Filter Radiometer for the Measurement of Sky Radiance*, *Proceedings, North Sun '97, Helsinki, Finland*, June 1997.

E. Becker, J. Notholt, A. Herber, *Tropospheric aerosol measurements in the Arctic by FTIR-emission and star photometer extinction spectroscopy*, *Geophys. Res. Letters*, 26, no. 12, pp 1711-1714, 15 June 1999.

William A. Beckman, John A. Duffie; **Solar Engineering of Thermal Processes**, Wiley, New York, 1991.

Walter W. Berg, et al.; *Brominated organic species in the Arctic atmosphere*, **Geophys. Res. Letters**, vol. 11, no. 5, pp 429-432, May 1984.

T. Bergeron, *Über die dreidimensionale verknupfende Wetteranalyse*, **Geofysika Publikationer (Oslo)**, vol. V, no. 6, 1-111.

Richard E. Bird; A simple, solar spectral model for direct-normal and diffuse horizontal irradiance, **Solar Energy**, vol. 32, no. 4, pp 461-471, 1984.

B.A. Bodhaine, E.G. Dutton, J.J. DeLuisi; *Surface aerosol measurement at Barrow during AGASP*, **Geophys. Res. Letters**, vol. 11, no. 5, pp 377-380, May 1984.

K.W. Böer; *The solar spectrum at typical clear weather days*, **Solar Energy**, 19, Vol. 19, pp 525-538, 1977.

G.P. Box, M.A. Box, J. Krücker; *Information content and wavelength selection for multispectral radiometers*, **Jour. Geophys. Res.**, vol. 101, no. D14, pp 19,211-19,214, 27 August 1996.

François-Marie Bréon; *Comment on Rayleigh-scattering calculations for the terrestrial atmosphere*, **Applied Optics**, vol. 37, no. 3, 20 January 1998.

D.T. Brine, M. Iqbal; *Diffuse and global solar spectral irradiance under cloudless skies*, **Solar Energy**, 30, no. 5, pp 447-453, 1983.

Anthony Bucholtz; *Rayleigh-scattering calculations for the terrestrial atmosphere*, **Applied Optics**, 34, no. 15, pp 2765-2773, 20 May 1995.

Anthony Bucholtz; *Response to comment on Rayleigh-scattering calculations for the terrestrial atmosphere*, **Applied Optics**, 37, no. 3, 20 January 1998.

C

Thomas A. Cahill, Robert A. Eldred; *Elemental composition of Arctic particulate matter*, **Geophys. Res. Letters**, vol. 11, no. 5, pp 413-416, May, 1984.

R.J. Charlson, et al.; *Perturbation of the northern hemisphere radiative balance by backscattering from anthropogenic sulfate aerosols*, **Tellus 43AB**, 152-163, 1991.

A.D. Clarke, R.J. Charlson, L.F. Radke; *Airborne observations of Arctic aerosol, IV: Optical properties of Arctic haze*, **Geophys. Res. Letters**, vol. 11, no. 5, pp 405-408, May 1984.

T.J. Crowley, G.R. North; *Abrupt Climate Change and Extinction Events in Earth History*, **Science 249**, 996-1002, 1988.

D

Guiseppe Dalu, Ruizhong Rao, et al., *Aerosol optical properties retrieved from solar aureole measurements over southern Sardinia*, **Jour. of Geophys. Res.**, vol. 100, no. D12, pp 26135-26140, 20 Dec. 1995.

John A. Davies; *Parameterization for Rayleigh Scattering*, **Solar Energy**, 39, no. 1, pp 31-322, 1987.

Robert Decker, Barbara Decker; **Volcanoes - Academic Version**, Freeman, New York, 1998

C. Devaux, A. Vermeulen, et al.; *Retrieval of aerosol single-scattering albedo from ground-based measurements: Application to observational data*, Jour. Geophys. Res., 103, no. D8, pp 8753-8761, 27 April 1998.

Ellsworth G. Dutton, John J. DeLuisi, Barry A. Bodhaine; *Features of aerosol optical depth observed at Barrow, March 10-20, 1983*, Geophys. Res. Letters, vol. 11, no. 5, pp 385-388, May 1984.

Ellsworth G. Dutton, Patrick Reddy, Steve Ryan, John J. DeLuisi, *Features and effects of aerosol optical depth observed at Mauna Loa, Hawaii: 1982-1992*, Jour. Geophys. Res., Vol. 99, no. D4, pp 8295-8306, 20 April 1994.

F

R.W. Fenn, E.P. Shettle, et al.; *Atmospheric Optical Properties and Meteorological Conditions*, Atmospheric Environment vol. 15, no. 10/11, pp 1911-1918, 1981.

John W. Firor; **Global Warming, Selected Reprints**; AAPT, College Park, MD, USA, 1995.

Bruce W. Forgan; *General method for calibrating Sun photometers*, Applied Optics vol. 33, no. 21, pp 4841-4850,

John-Baptiste Joseph Fourier; *Mémoire sur les températures du globe terrestre et des espaces planétaires*, Memoire de l'Academie Royale des Sciences de l'Institut de France 7, 569-604, 1827.

A.L. Fymat, K.D. Mease; *Reconstructing the size distribution of spherical particles from angular forward scattering data*, Remote Sensing of the Atmosphere: Inversion Methods and Applications, Elsevier Scientific, Amsterdam, pp 195-231, 1978.

G

Richard Goody, **Principles of Atmospheric Physics and Chemistry**. Oxford University Press, Oxford, 1995.

Thomas E. Graedel, Paul J. Crutzen; **Atmosphere Climate and Change**; Freeman, New York, 1995.

H

A.D.A. Hansen, H. Rosen; *Vertical distributions of particulate carbon, sulfur and bromine in the Arctic haze and comparison with ground-level measurements at Barrow, Alaska*, Geophys. Res. Letters, vol. 11, no. 5, pp 381-384, May 1984.

J.M. Harris; *Trajectories during AGASP*, Geophys. Res. Letters, vol. 11, no. 5, pp 453-456, May 1984.

M.H. Harwood, R.L. Jones, *Temperature dependent ultraviolet-visible absorption cross sections of NO₂ and N₂O₄: Low temperature measurements of the equilibrium constant for 2 NO₂ ⇌ N₂O₄*, Jour. Geophys. Res., 99, no. D11, pp 22,955-22,964, 20 November 1994.

O.S. Heavens, R.W. Ditchburn, **Insight into Optics**, Wiley, 1991.

N.Z. Heidam; *The components of the Arctic aerosol*, Atmospheric Environment, vol. 18, no. 2, pp 329-343, 1984.

Jost Heintzenberg; *Particle size distribution and optical properties of Arctic haze*, Tellus 32, pp 251-260, 1980.

Jost Heintzenberg; *Arctic haze: Air pollution in polar regions*, AMBIO, vol. 18, no. 1, pp 50-55, 1989.

J.R. Hickey, et al.; *Extraterrestrial Solar Irradiance Variability: Two and one-half years of measurements from Nimbus 7*, Solar Energy, 28, p 443, 1982.

A.R. Hildebrand, et al.; *Chicxulub crater: a possible Cretaceous/Tertiary boundary impact crater on the Yucatan Peninsula, Mexico*, Geology, 19, 867-871, 1991.

Peter V. Hobbs, M. Patrick McCormick; **Aerosols and Climate**, Deepak Publishing, Hampton, Virginia, USA, 1988.

R.M. Hoff, N.B.A. Trivett; *Ground-based measurements of Arctic haze made at Alert, N.W.T., Canada, during the Arctic gas and aerosol sampling project (AGASP)*, Geophys. Res. Letters, vol. 11, no. 5, pp 389-392, May 1984.

David J. Hofmann, ed., et al.; **Climate Monitoring and Diagnostics Laboratory Summary Report no. 23, 1994-1995**, NOAA, Boulder, Colorado, September, 1996.

David J. Hofmann, ed., et al.; **Climate Monitoring and Diagnostics Laboratory Summary Report no. 24, 1996-1997**, NOAA, Boulder, Colorado, December, 1998.

K.G.T. Hollands; *An improved model for diffuse radiation: Correction for atmospheric backscattering*; Solar Energy, 38, no. 4, pp 233-236, 1987.

Ø. Hov, et al.; *Organic gasses in the Norwegian Arctic*, Geophys. Res. Letters, vol. 11, no. 5, pp 425-428, May 1984.

Van de Hulst, H.C., **Light Scattering by Small Particles**, Wiley, New York, 1957.

I

Tomoyuki Ito, Kunimoto Iwai; *On the sudden increase in the concentration of Aitken particles in the Antarctic atmosphere*, Jour. Met. Soc. Japan, vol. 59, no. 2, 1981.

Tomoyuki Ito; *Antarctic submicron aerosols and long-range transport of pollutants*, AMBIO, vol. 18, no 1, pp 34-41, 1989.

Trond Iversen; *On the atmospheric transport of pollution to the Arctic*, Geophys. Res. Letters, vol. 11, no. 5, pp 457-460, May 1984.

J

E. Joranger, B. Ottar; *Air Pollution Studies in the Norwegian Arctic*, Geophys. Res. Letters vol 11, no. 5, pp 365-368, May 1984.

Anne Mette Jørgensen (ed.); **Intergovernmental Panel on Climate Change, Second Assessment Report**, Danish edition, Danmarks Meteorologiske Institut, 1996.

K

G.W.C. Kaye, T.H. Laby, **Tables of Physical and Chemical Constants**, 14th edition, Longman, London, 1975.

Y.J. Kaufman, m.fl., *Size distribution and scattering phase function of aerosol particles retrieved from sky brightness measurements*, Jour. Geophys. Res., 99, no. D5, pp 10,341-10,356, 20 May 1994.

Y.J. Kaufman, D. Tanré, et al.; *Passive remote sensing of tropospheric aerosol and atmospheric correction for the aerosol effect*, Jour. Geophys. Res., vol. 102, no. D14, pp 16,815-16,830, 27 July 1997.

Fritz Kasten, *A new table and approximate formula for relative optical air mass*, Arch. Meteorol. Bioklimatol. Ser. B, 14, 206-223, 1966.

Fritz Kasten, Andrew T. Young; *Revised optical air mass tables and approximation formula*, Applied Optics, 28, no. 22, pp 4735-4738, 15 November 1989.

M.A.K. Khalil, R.A. Rasmussen; *Statistical analysis of trace gasses in Arctic haze*, Geophys. Res. Letters, vol. 11, no. 5, pp 437-440, May 1984.

F.X. Kneizys, et al.; *Atmospheric Transmittance/Radiance: Computer Code LOWTRAN 5*, Air Force Geophysics Laboratory, Optical Physics Division, Hanscom AFB, Massachusetts, USA, 1980.

W.D. Komhyr, R.D. Grass, R.K. Leonard; *Dobson Spectrophotometer 83: A Standard for Total Ozone Measurements, 1962-1987*, Jour. Geophys. Res., vol. 94, no. D7, pp 9847-9861, 20 July 1989.

L

S.P. Langley; *Researches on solar heat*, Professional papers of the signal service, no. 15, 123, 1884.

S.P. Langley; *Observations on invisible heat-spectra and the recognition of hitherto unmeasured wave-lengths, made at the Allegheny Observatory*; Philosophical Magazine 31, 394-409, 1886.

Allan L. Lazrus, Ronald J. Ferek; *Acidic sulfate particles in the winter Arctic atmosphere*, Geophys. Res. Letters, vol. 11, no. 5, pp 417-419, 1984.

U. Leiterer, et al.; *A new star photometer developed for spectral aerosol optical thickness measurements in Linderberg*, Beiträge zur Physik der Atmosphäre, vol. 68, pp 133-141, 1995.

M

Earl J. McCartney, *Optics of the Atmosphere - Scattering by Molecules and Particles*, Wiley, New York, 1976

Peter W. Milonni, Joseph H. Eberly, *Lasers*, Wiley, New York, 1988.

M. Minnaert, *The nature of Light and Color in the open air*, Dover Publications, New York, 1954.

M. Mitchell; *Visual range in the polar regions with particular reference to the Alaskan Arctic*, J. Atmos. Terr. Phys., Special Supplement, pp 195-211, 1956.

B. Molineaux, P. Ineichen; *On the broad band transmittance of direct irradiance in a cloudless sky and its application to the parameterization of atmospheric turbidity*, Solar Energy, 56, no. 6, 553-563, 1996.

K. Krishna Moorthy, et al.; *Investigations of marine aerosols over the tropical Indian Ocean*, Jour. Geophys. Res., 102, no. D15, pp 18,827-18,842, 20 August 1997.

K. Krishna Moorthy, et al.; *Characteristics of spectral optical depths and size distributions of aerosols over tropical oceanic regions*, Jour Atm. and Solar-Terrestr. Physics, **60**, pp 981-992, 1998.

N

T. Nakajima, T. Takamura, M. Yamano, M. Shiobara, T. Yamauchi, R. Goto, K. Murai, *Consistency of Aerosol Size Distributions inferred from Measurements of Solar Radiation and Aerosols*, Jour. of the Meteorological Society of Japan, **64**, no. 5, 765-776, October 1986.

T. Nakajima, M. Tanaka, T. Yamauchi, *Retrieval of the optical properties of aerosols from aureole and extinction data*, Applied Optics, **22**, no. 19, pp 2951-2959, 1 October 1983.

O

Hanno Ohvrii, et al.; *The Atmospheric Integral Transparency Coefficient and the Forbes Effect*; Solar Energy, vol. **66**, no. 4, 305-317, 1999.

Brynjulf Ottar, Jozef M. Pacyna; *Sources of Ni, Pb and Zn during the Arctic episode in March 1983*, Geophys. Res. Letters, vol. **11**, no. 5, pp 441-444, May 1984.

Brynjulf Ottar; *Arctic air pollution: A Norwegian perspective*, Atmospheric Environment, vol. **23**, no. 11, pp 2349-2356, 1989.

P

G.W. Paltridge, C.M.R. Platt; Radiative Processes in Meteorology and Climatology, Elsevier, New York, 1976.

Thomas Peter; *Airborne Particle Analysis for Climate Studies*, Science, **273**, pp 1352-1353, 6 September 1996.

Peter Pilewskie, Alexander F.H. Goetz, David A. Beal, Robert W. Bergstrom, Peter Mariani; *Observations of the spectral distribution of solar irradiance at the ground during SUCCESS*, Geophys. Res. Letters, **25**, pp 1141-1144, 15 April 1998.

J.P. Pommereau, F. Goutail; *O₃ and NO₂ ground-based measurements by visible spectrometry during arctic winter and spring 1988*, GRL, 891 (1988).

William H. Press, et al.; *Numerical Recipes: The Art of Scientific Computing*, Cambridge Univ. Press, New York, 1988.

Q

H. Quenzel, *Determination of size distribution of atmospheric aerosol particles from spectral solar radiation measurements*, Jour. Geophys. Res., vol. **75**, no. 15, pp 2915-2921, 20 May 1970.

R

Wolfgang E. Raatz, R.C. Schnell; *Aerosol distributions and an Arctic aerosol from during AGASP: Norwegian Arctic*, Geophys. Res. Letters, vol. **11**, no. 5, pp 373-376, May 1984.

Wolfgang E. Raatz; *Tropospheric circulation patterns during the Arctic gas and aerosol sampling program (AGASP)*, March/April 1983, Geophys. Res. Letters, vol. **11**, no. 5, pp 449-452, May 1984.

Lawrence F. Radke, et al.; *Airborne observations of Arctic aerosols. I: Characteristics of Arctic haze*, **Geophys. Res. Letters**, vol. 11, no. 5, pp 393-396, May 1984 (A).

Lawrence F. Radke, Peter V. Hobbs; *Airborne observations of Arctic aerosols. III: Origins and effects of air masses*, **Geophys. Res. Letters**, vol. 11, no. 5, pp 401-404, May 1984 (B).

Kenneth A. Rahn; *Relative importance of North American and Eurasia as sources of Arctic aerosol*, **Atmospheric Environment**, vol. 15, no. 8, pp 1447-1455, 1981.

R.A. Rasmussen, M.A.K. Khalil; *Gaseous bromine in the Arctic and Arctic haze*, **Geophys. Res. Letters**, vol. 11, no. 5, pp 433-436, May 1984.

Lorraine A. Remer, et al.; *Urban/industrial aerosol: Ground-based sun/sky radiometer and airborne in situ measurements*, **Jour. Geophys. Res.**, 102, no. D14, pp 16,849-16,859, 27 July 1997.

H. Rosen, A.D.A. Hansen; *Role of combustion-generated carbon particles in the absorption of solar radiation in the Arctic haze*, **Geophys. Res. Letters**, vol. 11, no. 5, pp 461-464, May 1984.

Philip B. Russell, Glenn E. Shaw; *Comments on "The Precision and Accuracy of Volz Sunphotometry"*, **Jour. Appl. Meteorology**, 14, 1206-1208, 1974.

Phillip B. Russell, et al.; *Pinatubo and pre-Pinatubo optical depth spectra: Mauna Loa measurements, comparisons, inferred particle size distributions, radiative effects and relationship to lidar data*, **Jour. Geophys. Res.** 98, D12, pp 22,969-22,985, 20 December 1993.

S

R. Santer, M. Herman, D. Tanré, J. Lenoble, *Characterization of Stratospheric Aerosol from Polarization Measurements*, **Jour. Geophys. Res.**, vol. 93, no. D11, pp 14,209-14,221, 20 November 1988.

Beat Schmid, Christoph Wehrli; *Comparision of Sun photometer calibration by use of the Langley technique and the standard lamp*, **Applied Optics**, vol. 34, no. 21, pp 4500-4512, 20 July 1995.

Russel C. Schnell; *Arctic Haze and the Arctic Gas and Aerosol Sampling Program (AGASP)*, **Geophys. Res. Letters** vol. 11, no. 5, pp 361-364, May 1984.

Russell C. Schnell; *Vertical and horizontal characteristics of Arctic haze during AGASP: Alaskan Arctic*, **Geophys. Res. Letters**, vol. 11, no. 5, pp 369-372, May 1984.

M.A. Shapiro, et al.; *El Chichon volcanic debris in an Arctic tropopause fold*, **Geophys. Res. Letters**, vol. 11, no. 5, pp 421-424, May 1984.

Glenn E. Shaw, John A. Reagan, Benjamin M. Herman; *Investigations of atmospheric extinction using direct solar radiation measurements made with a multiple wavelength radiometer*, **Jour. Appl. Met.** vol. 12, 374-380, 1973.

Glenn E. Shaw; *Atmospheric Turbidity in the Polar Regions*, **Jour. Appl. Met.** vol 21, 1080-1088, August 1982.

Glenn E. Shaw; *Microparticle size spectrum of Arctic haze*, **Geophys. Res. Letters**, vol. 11, no. 5, pp 409-412, May, 1984.

Glenn E. Shaw; *Aerosol measurements in Central Alaska, 1982-1984*, **Atmospheric Environment**, vol. 19, no. 12, pp 2025-2031, 1985.

Glenn E. Shaw; *On physical properties of aerosol at Ross island, Antarctica*, J. Aerosol Sci., vol. 17, no. 6, pp 937-945, 1986.

Emilio Segrè, **Nuclei and Particles**, W.A. Benjamin, New York, 1964.

John H. Seinfeld, Spyros N. Pandis; **Atmospheric Chemistry and Physics**, Wiley, New York, 1998.

A. Semb, R. Brækkan, E. Joranger; *Major Ions in Spitsbergen Snow Samples*; Geophys. Res. Letters vol. 11, no. 5, pp 445-448, May 1984.

Kusiel S. Shifrin, Ilja G. Zolotov, *Spectral attenuation and aerosol particle size distribution*, Applied Optics, 35, no. 12, 20 April 1996.

Masataka Shiobara, T. Hayasaka, T. Makajima, M. Tanaka; *Aerosol monitoring using a scanning spectral radiometer in Sendai, Japan*, Jour. Met. Society Japan, 69, no. 1, pp 57-69, January 1991.

Masataka Shiobara m.fl., *Aerosol Monitoring Using a Scanning Spectral Radiometer in Sendai, Japan*, Jour. of the Meteorological Society of Japan, 69, no. 1, 57-69, Jan. 1991.

C.C. Swisher, et al.; *Coeval Ar-Ar ages of 65 million years ago from Chixculub crater melt-rock and Cretaceous-Tertiary boundary tektites*, Science, 257, 954-958, 1992.

T

I.N. Tang, A.C. Tridico, K.H. Fung; *Thermodynamic and optical properties of sea salt aerosols*, Jour. Geophys. Res., 102, no. D19, pp 23,269-23,275, 20 October 1997.

D. Tanré, C. Devaux, M. Herman, R. Santer, J.Y. Gac, *Radiative Properties of Desert Aerosols by Optical Ground-Based Measurements at Solar Wavelengths*, J. Geophys. Res., vol. 93, no. D11, pp 14,223-14,231, 20 Nov. 88.

Leonard S. Taylor, E. Norman Hernandez; *Forward Scattering in the Born Approximation*, Jour. Op. Soc. Am., 60, no. 3, pp 314-319, March 1970.

Phillippe M. Teillet; *Rayleigh optical depth comparisons from various sources*, Applied Optics, 29, no. 13, pp 1897-1900, 1 May 1990.

M.P. Thekaekara; *Solar energy outside the Earth's atmosphere*, Solar Energy, 14, pp 109-127, 1973.

M.P. Thekaekara; *Solar Radiation Measurement: Techniques and Instrumentation*, Solar Energy, 18, pp 309-325, 1976.

G. Tonna, T. Nakajima, R. Rao, *Aerosol features retrieved from solar aureole data: a simulation study concerning a turbid atmosphere*, Applied Optics, 34, no. 21, 20 July 1995.

L.W. Thomason, B.M. Herman, J.A. Reagan; *The effect of atmospheric attenuators with structured vertical distributions on air mass determinations and Langley plot analyses*, Jour. Atm. Physics, Vol. 40, pp 1851-1854, July 1983.

Claudio Tomasi, Stefano Marani, Vito Vitale; *Multiwavelength sun-photometer calibration corrected on the basis of the spectral features characterizing particulate extinction and nitrogen dioxide absorption*, Applied Optics, 24, no. 18, 15 September 1985.

Tromsø Satellite Station, N-9005 Tromsø, Norway, tel. +47-77 60 02 74, fax: +47-77 60 02 99, <http://www.tss.no>

S. Twomey; *On the numerical solution of Fredholm integral equations of the first kind by the inversion of the linear system produced by quadrature*, US Weather Bureau, Washington, D.C., pp 97-101, September 1962.

S. Twomey; **Introduction to the Mathematics of Inversion in Remote Sensing and Indirect Measurements**; Elsevier, New York, 1977.

John Tyndall; *On the absorption and radiation of heat by gases and vapours, and on the physical connexion of radiation, absorption and conduction*, Philosophical Magazine 22, 169-94, 273-85, 1861.

V

Francisco P.J. Valero, et al.; *Radiative effects of the Arctic haze*, Geophys. Res. Letters, vol. 10, no. 12, pp 1184-1187, Dec 1983.

Francisco P.J. Valero, et al.; *The absorption of solar radiation by the Arctic atmosphere during the haze season and its effects on the radiation balance*, Geophys. Res. Letters, vol. 11, no. 5, pp 465-468, May 1984.

Francisco P.J. Valero, et al.; *Radiation studies in the Arctic*, Proceedings..., p 271, Deepak Publishing, 1987.

Oleg B. Vasilyev, m.fl., *Spectroradiometer with wedge interference filters (SWIF): measurements of the spectral optical depths at Mauna Loa Observatory*, Applied Optics, 34, no. 21, 20 Jul. 1995.

E. Vigroux; *Contribution à l'étude expérimentale de l'absorption de l'oxone*, Annales de Phys., 8, p 709, 1953.

W

David C. Woods, Raymond L. Chuan; *Characteristics of aerosols in the lower stratosphere*, Proceedings, Deepak Publishing, p 277, 1987.

Y

Haoyu Yang, Howard R. Gordon; *Retrieval of the columnar aerosol phase function and single-scattering albedo from sky radiance over land: simulations*, Applied Optics, 37, no. 6, 20 February 1998.

John I. Yellott; *Solar Radiation Measurement, Applications of Solar Energy for the Heating and Cooling of Buildings*, ASHRAE, New York, 1977.

Andrew T. Young; *Air mass and refraction*, Applied Optics, 33, no. 6, pp 1108-1110, 20 February 1994.

Å

Anders Ångström; *On the Atmospheric Transmission of Sun Radiation II*, Geografiska Annaler 12, 130-159, 1929.

Anders Ångström; *On the Atmospheric Transmission of Sun Radiation and on Dust in the Air*, Geografiska Annaler 11b, 1929.

Anders Ångström; *On the Transmission of Dust from Low to High Latitudes through the Circulation of the Atmosphere*, 1930.

Anders Ångström; *Techniques of Determining the Turbidity of the Atmosphere*, Tellus, vol. 13, pp 214-223, 1961.

INDEX

A/S Søren Frederiksen	v	Ash, volcanic	27
Aarhus University	v	Asian deserts	29
Absorption	6	Atmospheric aerosols	15
Accidents, aircraft	31	Atmospheric composition	15
Aerosol and visibility	31	Atmospheric limb observations	28
Aerosol, anthropogenic	29,88	Atmospheric temperature, mean	21
Aerosol burden	17		
Aerosol, climate	18,19	Babinet's principle	12
Aerosol emission rate	17	Backscatter, UV	27
Aerosol equilibrium	17	Backscattering	9
Aerosol events	23	Barrow, Alaska	31,83,A1
Aerosol, maritime	27	Binomial size distribution	85
Aerosol optical depth	56,78	Biomass combustion	17
Aerosol particle size	57	Blackbody radiation	13
Aerosol, rural	17,27	Bouguer gravity anomaly	25
Aerosol, settling	16	Boundary layer	27
Aerosol sources	15	Brownian motion	16
Aerosol, spatial distribution	27		
Aerosol, spherical shape	17	Calibration lamp	46
Aerosol, stratospheric	28,30	Calibration, spectral irradiance	45
Aerosol, sulfuric acid	23	Cape Grim	30
Aerosol, urban	17,27	CCD spectrometer	1,44
Aerosols, definition	15	Chemical effluents	27
Aerosols, sulfate	25	Chicxulub crater	24
AGASP	83,88,90	CIE	48
Air mass	13	Climate shield	40
Air mass corrections	54,77	CMDL	v,24,19,23,31,88,A1
Air mass, NO ₂	77	CMDL photometer	52
Air mass, ozone	77	CO ₂	22
Aircraft accidents	31,33	Coagulation	16
Aitken nuclei	9	Collimator geometry	40
Aitken particles	30,86	Color temperature measurement	48
Alaska	31,83	Column ozone data	74
Alaskan Arctic	29	Cometary dust	28
Albedo, planetary	20,25	Commission International d'Eclairage	48
Albedo, single scattering	6,88	Compton scattering	4
Amplifier	42	Contrast, definition	32
Andover Corporation	43	Cross section, NO ₂	76
Anomalous dispersion	10	Cross section, ozone	76
Antarctica	29,30	Cross section, scattering	88
Arctic haze	v,28,90	CVI Spectral	44
Arrhenius, August	18		

Deserts, asian	29
Detector, silicon	42
Dexter Laboratory	39
Diffuse light	52
Direct beam irradiance	55
DMI	v,67,87
Droplets, scattering from	10
Dundas Mountain	A1
Dust, cometary	28
Dust, meteoric	28
Dust, volcanic	31
El Chichón	31
El Chichón eruption	23
Energistyrelsen	v
Energy balance, Earth	22
England	37
Eppley Laboratory	38
Ericsson, John	37
Eruptions	23
Eurasia	29
Europe	29
Extinction	6
Extinction, atmospheric	6,53
Extinction coefficient	32,53
Extinction efficiency	57
Extraterrestrial solar irradiance	12
Fairbanks, Alaska	83
Ferroperm Optics	42
Field of view	38,52,90
Filter	40
FO cable	45
Forcing, anthropogenic	25
Forcing, radiative	25
Forward scattering	9
Fourier, Jean-Baptiste Joseph	18
FOV	38
France	37,75
Fredholm integral equation	59
Fredholm integral inversion	48
Fringing effects	46
Gas-to-particle conversion	31
GCM	1,17,21
General Circulation Model	1,17
Glass cover	40
Global Climate Model	1
Global implications	87
Global warming	1
GMCC	30
Goddard Space Flight Center	13
GPS	31
Gravity anomaly, Bouguer	25
Greenhouse effect	18,20
Greenhouse gasses	26
Greenland	28
Hagner Lux-meter	48
Halogen lamp calibration	47
Hamamatsu	40,42
Hawaii	19,24
Haze, arctic	28
Herschel, Sir William	37
Hewlett-Packard data logger	67
Högblom, Arvid	18
InGaAs	40
Instrument function	47
Interference fringing	46
International Solar Energy Society	v
Inversion algorithm	60
Inversion layer	28
IPCC	1,88
IPCC Working Group 1995	1,25
ISES	v
Island	18
Junge, C.E.	87
Junge power law	84
Junge size distribution	84
Kennedy, John F.	31
Kipp-Zonen	38
Köngsöya	83
Krakatau eruption	18
KT layer	24
Kuwait oil fires	16
Laboratory	v
Laki volcano	18
Lambert-Beer's law	6,33,53
Langley plot	51,69
Langley, Samuel P.	18,37
LIDAR observations	28

Limb observations	28
Long Island Sound	32
Long wave radiation absorption . .	21
Lux-meter, Hagner	48
Maritime aerosol	27
Mauna Loa Observatory	
. v,19,23,30,52,88	
Maxwell's equations	3
McMurdo Station	30
Mean free path	6
Meteoric dust	28
Meteor impacts	16
Meteorological range	33
Mie scattering	3,8
Minco heater	41
Minnaert	34
Monoradial distribution	61
NASA	27
Net flux reductions	88
Nimbus 7 satellite	12
NIP	31
NO ₂ air mass	77
NO ₂ correction	74
NO ₂ cross section	76
NOAA	19
NOAA-15 satellite	A2
Normal Incidence Pyranometer . .	31
Normalization requirement	61
Normalized size parameter	57
North America	29
Northern Europe	29
Norway	83,A2
Norwegian arctic	90
Numerical aperture	45
Oil fires, Kuwait	16
Optical depth	30,54
Optical depth, aerosol	56,78
Ozone air mass	77
Ozone cross section	76
Ozone correction	74
Parson's black	38
Particle size distribution	61
Particle size parameter	3
Phase lag	11
Photochemistry	31
Photodiode	40
Photon, mean free path	6
Photon-particle interactions	2
Photosphere	13
Pinatubo	31
Pinatubo eruption	23
Pituffik	1,A2
Pixel number	45
Planck function	46
Planck radiation law	13
Planetary albedo	20,25
Point Barrow, Alaska	19
Polar baseline	30
Polarizability	4,5
Polarization, degree of	9
Pouillet	37
Power law size distributions	65
Poynting vector	4
Program	83
Provincetown	91
Ptarmigan weather flights	28
Pyranometer, Normal Incidence . .	31
Pyrheliometer	41
Pyrheliometer cable	42
Pyrheliometer, SolData	39
Pyrheliometer, Ångström	37
Quaanaq	A1
Queen Maud Land	30
Radiant exposure, Thule Air Base .	71
Radiation absorption, short wave .	20
Radiation and particles	3
Radiation absorption, long wave .	21
Radiation balance	19
Radiative forcing	25,26
Range, meteorological	33
Rayleigh scattering	3,4,53
Rayleigh-Gans approximation . . .	3,7
Reference days, selection	72
Refractive index	53
Relative spectral irradiance	44
Residence time	17
Risø Laboratory	91
Rural aerosol	27

Russia	29
Salt particles	28
Samoa	19,30,88
SAOZ	75
Satellite images	App A
Scale height	54
Scattering	6
Scattering efficiency	10,62
Scattering cross section	6,88
Schott Glaswerke	48
SciTec tracker	42,90
Sea spray	27
Settling time	16
Short wave radiation absorption	20
Siberia	29
Silicon, spectral response	43
Silicon, temperature coefficient	43
Silkeborg	1
Silkeborg Amtsgymnasium	v
Single scattering albedo	88
Size parameter, normalized	10
Skagen	91
Sky, blue color	5
Sky, polarization of light	5
Sky radiance	91
Slant path	33
Slope angle	38
Solar color temperature	49
Solar constant	13,37
Solar spectral irradiance	12,50
Solar zenith angle	55
Solar azimuth angle	78
SolData pyrheliometer	39,89
South Pole	30,31,88
South Mountain	A2
Spatial distribution, aerosol	27
Spectral irradiance calibration	45
Spectral irradiance, relative	44
Spectral response, silicon	42
Star photometer	83
Stefan-Boltzmann law	20
Stratospheric aerosol	28,30
Sulfate aerosols	25
Sulphur	23
Sun-filter effect	33
Sun, reddish appearance	5
Surface temperature, mean	21
Svalbard	A1
Syowa station	31
Tasmania	30
Temperature change	25
Temperature coefficient, silicon	43
Temperature, mean atmosphere	21
Temperature, mean surface	21
Temperature sensor	42
Thermopile, 2M Dexter	39
Thule	A1
Thule Air Base	v,1,88,A1
Thule Air Base, Map	App A
TO-5 housing	40
TOMS satellite	26
Total Ozone Mapping Spectrometer	27
Trace gasses	18
Tromsø Satellite Station	A2
Tungsten lamp color temperature	49
Tyndall, John	18
Urban aerosol	27
UV backscatter	27
Viscosity	16
Visibility and aerosol	31
Volcanic ash	27
Volcanic dust	31
Volcanoes	23
Wavelength calibration	44
Weather data	68
Weather maps	A2
Weather station	43
Wien displacement law	46
WMO	51
WMO BAPMoN	30
World Meteorological Organization	51
Ålesund, Norway	84
Ångström exponent	88
Ångström, K.J.	37,83