

## Curriculum Vitae

Date of Preparation: April, 2016

Name: Dr. John M. Davis

Business Address: USDA UV-B Monitoring and Research Program  
Colorado State University  
419 Canyon Avenue, Suite 226  
Fort Collins, CO 80521-2671

Business Phone No. (970) 491-3613

### Employment History:

- 2003-Present - Senior Research Associate  
USDA UV-B Monitoring and Research Program  
Colorado State University  
419 Canyon Avenue, Suite 226  
Fort Collins, CO 80523-2671
- 2001-2003 - Research Scientist  
Cooperative Institute for Research in the Atmosphere  
Colorado State University  
Fort Collins, CO 80523-1375
- 1996-2001 - Research Scientist  
Department of Atmospheric Science  
Colorado State University  
Fort Collins, CO 80523-1371
- 1988-1996 - Research Associate  
Department of Atmospheric Science  
Colorado State University  
Fort Collins, CO 80523-1371
- 1985-1988 - Meteorologist  
Target Acquisition and Mobility Branch (SLCAS-AE-O)  
US Army Atmospheric Sciences Laboratory  
White Sands Missile Range, NM 88002-5501
- 1981-1985 - Postdoctoral Research Associate  
Department of Atmospheric Science  
Colorado State University  
Fort Collins, CO 80523-1371

### Education

Ph.D. Atmospheric Science, Colorado State University, 1981

M.S. Atmospheric Science, Colorado State University, 1977

B.S. Physics and Mathematics, Southern Colorado State College, 1970

## Publications

### Open Literature

Chen, Maosi, J.Davis, W. Gao. 2014. A new cloud screening algorithm for ground-based direct-beam solar radiation. *J. Atmos. Oceanic Technol.*, 31, 2591–2605.

Gao, W., John M. Davis, Roger Tree, James R. Slusser and Daniel Schmoldt, 2009, An ultraviolet radiation monitoring and research program for agriculture. In: Gao, W., Daniel L. Schmoldt and James R. Slusser, (editors) *UV Radiation in Global Climate Change*. TSINGHUA University Press, Beijing, and Springer Heidelberg Dordrecht, London, New York. pp. 205-243.

Johnsen, Bjorn, Berit Kjeldstad, Tommy Nakken Aalerud, Lill tove Nilsen, Josef Schreder, Mario Blumthaler, Germar Bernhard, Chrysanthi Topaloglou, Outi Meinander, Asadollah Bagheri, James R. Slusser and John Davis, Intercomparison and Harmonization of global UVI and spectral irradiance, (2008), *J. Geophys. Res.*, 113, D15206, doi:10.1029/2007JD009731

Johnsen, Bjorn, Berit Kjeldstad, Tommy Nakken Aalerud, Lill tove Nilsen, Josef Schreder, Mario Blumthaler, Germar Bernhard, Chrysanthi Topaloglou, Outi Meinander, Asadollah Bagheri, James R. Slusser and John Davis, Intercomparison and Harmonization of global UVI and spectral irradiance, (2008), World Meteorological Organization Global Atmospheric Watch, Report, WMO/TD-No. 1454.

Wang, X.L., W. Gao, J.R. Slusser, J.Davis, B. Olson, S. Janssen, G. Janson, W. Durham, R. Tree, and R. Deike, 2008, USDA UV-B monitoring system: an application of centralized architecture. *Computers and Electronics in Agriculture*, doi:10.1016/j.compag.2008.04.006

Kerr, James B. and J. M. Davis, 2007. New methodology applied to deriving total ozone and other atmospheric variables from global irradiance spectra, *J. Geophys. Res.*, 112, No. D21, D21301, 10.1029/2007JD008708.

Goering, C.D., T. S. L'Ecuyer, G. L. Stephens, J. R. Slusser, G. Scott, J. Davis, J. C. Barnard, S. Madronich, 2005. Simultaneous retrievals of column ozone and aerosol optical properties from direct and diffuse solar irradiance measurements, *J. Geophys. Res.*, 110, No. D5, D05204, 10.1029/2004JD005330.

Davis, J. M., and S. K. Cox, 1998: Spatial convergence of bi-directional reflectance models. *J. Atmos. and Oceanic Tech.*, 15, 1147-1156.

Anikin, P. P., J. M. Davis, S. K. Cox, and M. A. E. V. Romashova, 1998: Zvenigorod – 94 Experiment: Measurements and calculations of integral infrared radiation fluxes incident on the earth's surface. *Isvestiya -Atm. Oceanic Phys.*, 34, p. 106.

Beck, G. H., J. M. Davis, and S. K. Cox, 1996: Radiative properties of cirrus clouds derived from interferometric measurements. *J. Appl. Meteor.*, 35, 1240-1248.

Stephens, G.L., S.K. Cox, P.W. Stackhouse Jr., J. Davis, and the AT622 Class, 1993: FIRE in the classroom: *Bulletin of the Amer. Meteor. Society*, 74, 2375-2383.

Segal, M., and J.M. Davis, 1992: The impact of deep cumulus reflection on the ground-level global irradiance. *J. Appl. Meteor.* 31, 217-222.

Davis, J.M., 1988: Evaluation of the Delta-Eddington contrast transmission model, *J. Atmos. Environ.* 25A, pp 1679-1687.

Weissbluth, M.J., J.M. Davis, and S.K. Cox, 1986: A modeling study of visibility in the Grand Canyon, *J. Atmos. Environ.* 21, 703-713.

Davis, J.M., and S.K. Cox, 1986: Additional confirmation of the validity of laboratory simulation of cloud radiances, Note in *J. Climate and Appl. Meteor.*, 25, 398-400.

Davis, J. M., T. B. McKee, and S. K. Cox, 1984: Application of the Monte Carlo method to problems in visibility using a local estimate: An investigation, 1985: *J. Applied Optics*, 24, 3193-3205.

Davis, J.M., S.K. Cox and T.B. McKee, 1983: Design and verification of a cloud field optical simulator. *J. Climate and Appl. Meteor.*, 22, 948-958.

Davis, J.M., and S.K. Cox, 1982: Reflected solar radiances from regional scale scenes. *J. Appl. Meteor.*, 21, 1698-1712.

Davis, J.M., C. Vogel, and S.K. Cox, 1982: A multidirectional photodiode array for the measurement of solar radiances. *Rev. of Sci. Instrum.*, 53, 667-673.

Welch, R.M., J.M. Davis, and S.K. Cox, 1982: Transmission of microwave beamed power from an orbiting space station to the ground. *Space Solar Power Rev.*, 3, 99-119.

Welch, R.M., S.K. Cox, and J.M. Davis, 1980: *Solar Radiation and Clouds. Meteorological Monographs, Vol. 17, American Meteorological Society, 93 pp.*

Davis, J.M., S.K. Cox, and T.B. Mckee, 1979: Total shortwave radiative characteristics of absorbing finite clouds. *J. Atmos. Sci.*, 36, 508-518.

Davis, J.M., S.K. Cox, and T.B. McKee, 1979: Vertical and horizontal distributions of solar absorption in finite clouds. *J. Atmos. Sci.*, 36, 1976-1984.

#### Other Publications

Cox, S. K., J. M. Davis, S. Gilles, A. Huffman, J. Kleist, D. Wood, N. Wood, and T. Vonder Haar, 1996: Description of the Cloud Layer Experiment (CLEX), field phase, surface data archive. Dept. of Atmospheric Science Report No. 626, Colorado State University, Fort Collins, CO, 80523-1371, 31 pp.

Davis, J. M., 1994: Methods of treating radiant energy exchange in radiation fog models. U.S. Army Research Laboratory Technical Report No. ARL-Cr-103, U.S. Army Research Laboratory, Battlefield Effects Division, White Sands Missile Range, White Sands, NM. 97 pp.

Cox, S. K., C. Cornwall, W. Cotton, J. Davis, J. Kleist, T. McKee, Q. Shao, D. Randall, W. Schubert, D. Wood, S. Frisch, M. Hardesty, R. Krophly, J. Snider, P. Anikin, 1993: CSU/NOAA-WPL FIRE II - ASTEX Field experiment description of field deployment phase. *Atmospheric Science Paper # 523*, Colorado State University 100 pp.

Cornwall, C. R., C. L. Combs, J. M. Davis, G. L. Stephens, and S. K. Cox, 1993: CSU Radiation Budget Pilot Study for TOGA COARE. *Atmospheric Science Paper # 532*, Colorado State University 23 pp.

Cox, S. K., G. Beck, C. Cornwall, J. M. Davis, P. Hein, C. Lappen, R. Song, J. Withrow, D. Wood, J. Alvarez, and P. Anikin, 1992: CSU FIRE II Cirrus Field Experiment: Description of field deployment phase. *Atmospheric Science Paper # 506*, Colorado State University 54 pp.

P. F. Hein, J. M. Davis, and S. K. Cox, 1993: Improved MFOV performance at Mauna Loa. *Climate Monitoring and Diagnostics Laboratory Summary 1992 Report No. 20*, U.S. Department of Commerce, National Oceanic and Atmospheric Laboratories, Environmental Research Laboratories. 97-99.

P. F. Hein, J. M. Davis, and S. K. Cox, 1992: Multiple scattering effects on multiple field of view sun photometry. *Climate Monitoring and Diagnostics Laboratory Summary 1991 Report No. 20*, U.S. Department of Commerce, National Oceanic and Atmospheric Laboratories, Environmental Research Laboratories. 97-99.

P. F. Hein, J. M. Davis, and S. K. Cox, 1990: A new look at optical depth retrieval with the multiple field of view sunphotometer. *Climate Monitoring and Diagnostics Laboratory Summary 1989 Report No. 18.*, U.S. Department of Commerce, National Oceanic and Atmospheric Laboratories, Environmental Research Laboratories. 105-106.

Mason, J. B., R. G. Steinhoff, and J. M. Davis, 1988: EOSAEL 87 User's Guide, in publication processing, U.S. Army Atmospheric Sciences Laboratory, White Sands, NM.

Davis, J. M., 1988: The delta-Eddington Visible Contrast Model, final report to the U.S. Army Atmospheric Sciences Laboratory, White Sands, NM.

Tsay, Si-Chee, J. M. Davis, G. L. Stephens, S. K. Cox, and T. B. McKee, 1987: Backward Monte Carlo computations of radiation propagating in horizontally inhomogeneous media. Part I: Description of Codes. CIRA Final Report 15 September 1987. CIRA, Colorado State University, Fort Collins, CO 80523.

Davis, J. M., 1987: Target Acquisition Model TARGAC, U.S. Army Technical Report, TR-0221-29. U.S. Army Atmospheric Sciences Laboratory, White Sands Missile Range, NM.

Davis, J. M., and S. K. Cox, 1982: Determination of an optimum sampling rate for the collection of solar radiation data. Atmospheric Science Paper #354, Colorado State University, 16 pp.

Davis, J. M., 1981: Regionally applicable angular reflectance models. Earth Radiation Science Seminars, NASA Conference Publications 2239, 45-51.

Davis, J. M., and S. K. Cox, 1981: Regional properties of angular reflectance models. Atmospheric Science Paper # 338, Colorado State University, 126 pp.

Davis, J. M., C. Vogel, and S. K. Cox, 1980: A multidirectional photodiode array for the measurement of solar radiances. Atmospheric Science Paper #322, Colorado State University, 42 pp.

Davis, J. M., S. K. Cox, and T. B. McKee, 1978: Solar absorption in clouds of finite horizontal extent. Atmospheric Science Paper #282, Colorado State University, 92 pp.

Silva Dias, M., J.M. Davis, and S.K. Cox, 1976: Comparison of a thermopile broadband detector and a photon detector for the measurement of solar radiation. Atmospheric Science Paper # 250, Colorado State University, Fort Collins, Co. 80523 45 pp.

#### Conference Papers and Presentations

Wei Gao, George Janson, John Davis. 2013 Ground-based monitoring of UV radiation. SPIE Newsroom. DOI: 10.1117/2.1201310.005134

Maosi Chen, John Davis, Hongzhao Tang, Zhiqiang Gao, Wei Gao. 2013. A Multi-Channel Calibration Method for Multi-Filter Rotating Shadow-band Radiometer. *Remote Sensing and Modeling of Ecosystems for Sustainability IX*, edited by Wei Gao, Thomas J. Jackson and Jinnian Wang, Ni-Bin Chang, Proc. of SPIE, Vol. 8513, 851305, doi: 10.1117/12.929454

Wei Gao, John M. Davis, Xin-Zhong Liang, and Daniel Schmoldt (2008), U.S. Department of Agriculture UV-B Monitoring and Research Program and Integrated Crop Modeling Activity,

Eos Trans. AGU, 89(53), Fall Meet. Suppl., Abstract A13A-0227.

Wang, X.L., W. Gao, J.R. Slusser, J.Davis, B. Olson, S. Janssen, G. Janson, W. Durham, R. Tree, and R. Deike, 2008, USDA UV-B monitoring system: an application of centralized architecture. *Computers and Electronics in Agriculture*, doi:10.1016/j.compag.2008.04.006

Wang, X.L., W. Gao, B. Olson, J.M. Davis, and J.R. Slusser, 2007, Dependence of erythemally weighted UV radiation on geographical parameters in the United States. In *Remote Sensing and Modeling of Ecosystems for Sustainability IV*, 667903, Published by SPIE, Bellingham, WA, USA.

Xinli Wang, Wei Gao, James Slusser, John Davis, Becky Olson, Bill Durham, Roger Tree, George Janson, Scott Janssen, and Rita Deike, Gwen Scott, 2006. USDA UV-B monitoring system: An application of centralized architecture, In: *Proceedings of the 2006 International Conference on Parallel & Distributed Processing Techniques and Applications & Conference on Real-Time Computing Systems & Applications, PDPTA 2006*, edited by Hamid R. Arabnia, CSREA Press, pp. 279-285, 2006.

Wang, X.L., W. Gao, J. Slusser, J. Davis, G. Scott, B. Olson, N. Krotkov, M. Xu, and X-Z. liang 2006, Spectral distribution of UV-B irradiance derived by synthetic model compared with simulation results of TUV and ground measurements. In *Remote Sensing and Modeling of Ecosystems for Sustainability III*, 62980L-1—62980L-9, Published by SPIE, Bellingham, WA, USA

Davis, J. and J.R. Slusser. 2005. New USDA UV-B synthetic spectra algorithm. *Ultraviolet Ground- and Space-based Measurements, Models, and Effects V, Proc. SPIE 5886*, 58860B-1 – 58860B-7. Published by SPIE, Bellingham, WA, USA.

Taylor, T.E., T. L'Ecuyer, J.R. Slusser, G. Stephens, N. Krotkov, J. Davis and C. Goering. 2005. Characterization and error analysis of an operational retrieval algorithm for estimating column ozone and aerosol properties from ground based ultra-violet irradiance measurements. *Ultraviolet Ground- and Space-based Measurements, Models, and Effects V, Proc. SPIE 5886* 58860Y-1 – 58860Y-12.

Seaman , C.J., J.A. Kankiewicz, J.M. Davis, and K.E. Eis, 2005: Simulated transmissivity of mid-level, mixed-phase clouds. On web site, Battlespace Atmospheric and Cloud Impacts on Military Operations Conference (BACIMO) 2005, October 11-15, Monterey, CA.

Davis, J.M. and J.R. Slusser. 2004. Impact of clouds with limited horizontal extent on UV radiation measurements. *Proc. SPIE*, 5545, 36-42

Belcher, L.R., L.D. Carey, J.M. Davis, J.A. Kankiewicz, and T.H. Vonder Haar, 2003: MM-wave radar structure and microphysical characteristics of mixed phase altocumulus clouds. Preprints, 31st Radar Conference, American Meteorological Society, Seattle, WA, August 6-12.

Kankiewicz, J.A., L.D. Carey, J.M. Davis, J.M. Forsythe, D.L. Reinke, and T.H. Vonder Haar, 2002: Morphology of two mixed-phase clouds. Preprints, Eleventh Conference on Cloud Physics, June 3-7, Ogden, UT (AMS).

Miller, S.D., and J.M. Davis, 2001: Radiative properties of the CLEX-7, March 10, middle level cloud case. Proceedings CD, Battlespace Atmospheric and Cloud Impacts on Military Operations (BACIMO) 2001 Conference, July 10-12, Fort Collins, CO (ARL).

Carey, L.D., T.H. Vonder Haar, J.A. Kankiewicz, J.M. Davis, R.P. Fleishauer, and V.E. Larson, 2001: An overview of the next complex layered cloud experiment (CLEX-9). Proceedings CD, Battlespace Atmospheric and Cloud Impacts on Military Operations (BACIMO) 2001 Conference, July 10-12, Fort Collins, CO (ARL).

Miller, S. D., and J. M. Davis: Radiative properties of the March 10, CLEX7 cloud case. Conference poster presentation, BACIMO 2001, July 10-12, Fort Collins, CO

Partain, P., J. M. Davis, P. Gabriel, and G. Stephens: Evaluation of version 1.0 of the CSU two stream model and a peek at some preliminary results of version 2.0. Conference poster presentation, Atmospheric Radiation Measurement Conference, March 20-22, 2001, Atlanta, GA

Reinke, D.L., R.P. Fleishauer, V.E. Larson, J.A. Kankiewicz, J.M. Davis, J.M. Forsythe, T.H. Vonder Haar, and S.K. Cox, 2000: An overview of the Complex Layered Cloud Experiment (CLEX-5) field campaign during the period Nov-Dec 1999. Proceedings CD, Battlespace Atmospheric and Cloud Impacts on Military Operations (BACIMO) 2000 Conference (also on web site), April 24-27, Fort Collins, CO (ARL).

Volz, K.P., S.J. Cooper, J.M. Davis, and S.K. Cox, 2000: Inference of cloud optical properties with the 2FOV radiometer. Proceedings CD, Battlespace Atmospheric and Cloud Impacts on Military Operations (BACIMO) 2000 Conference (also on web site), April 24-27, Fort Collins, CO (ARL).

Volz, K.P., S.J. Cooper, J. M. Davis, and S. K. Cox: Inference of cloud optical properties with the 2FOV radiometer. Conference poster presentation, BACIMO 2000, April 2000, Colorado State University, Fort Collins, CO.

Cooper, S.J., K. P. Volz, J. M. Davis, and S. K. Cox: The next generation MFOV radiometer. Conference poster presentation, CMDL, April 2000, National Oceanic and Atmospheric Administration, Climate Monitoring and Diagnostics Laboratory, Boulder CO

Cox, S.K., and J.M. Davis, 1999: The next generation multiple field of view radiometer. Preprints, Tenth Conference on Atmospheric Radiation, June 28-July 2, Madison, WI, p. 251-254 (AMS).

Vonder Haar, T. H., S. K. Cox, G. L. Stephens, J. M. Davis, T. L. Schneider, W. A. Petersen, A. C. Huffman, K. E. Eis, D. L. Reinke, J. M. Forsythe, Li, F. K., and G. A. Sasow: Overview and objectives of the DoD Center for Geosciences sponsored "Complex Layered Cloud Experiment"

(CLEX). Conference presentation, Battlespace Atmospheric Conference, 2-4 December 1997, SSC-SD, San Diego, CA

Vonder Haar, T. H., S. K. Cox, G. L. Stephens, J. M. Davis, T. L. Schneider, W. A. Petersen, A. C. Huffman, K. E. Eis, D. L. Reinke, J. M. Forsythe, Li, F. K., and G. A. Sasow: Overview and objectives of the DoD Center for Geosciences sponsored "Complex Layered Cloud Experiment" (CLEX). Conference presentation at CIDOS-97, 23-25 September, 1997, Hanscom AFB, MA,

Anikin, P. P., M. A. Sviridenkov, S. K. Cox, and, J. M. Davis: Determination of optical and microphysical properties of semi-transparent clouds from spectral measurements of solar radiation transmission. IUGG XXI General Assembly, Boulder Colorado, July 2-14, 1995.

Anikin, P. P., S. K. Cox, and J. M. Davis, Determination of optical properties of semi-transparent clouds from spectral measurements of transmitted radiation. 8th Conference on Atmospheric Radiation, Jan 22-28, 1994, Nashville, TN.

Davis, J. M., G. H. Beck, and S. K. Cox, A comparison of the infrared emissivities and equivalent sphere particle radius of cirrus clouds at Parsons KS and Porto Santo Madeira. 8th Conference on Atmospheric Radiation, Jan 22-28, 1994, Nashville TN

Hein, P. F., J. M. Davis, and S. K. Cox, Spectral variation of scattering and absorption by cirrus. FIRE Cirrus Science Meeting, June 14-17, 1993 Breckenridge, CO

Beck, G. H., J. M. Davis and S. K. Cox, Spectral emissivity of cirrus clouds. FIRE Cirrus Science Meeting, June 14-17, 1993 Breckenridge, CO

Cox, S. K., J. M. Davis, S. Gillies, and A. Heidinger, Broadband and narrowband infrared emittance derived from ASTEX measurements. 1993 Spring Meeting of the American Geophysical Union, May 24-28, Baltimore MD

Davis, J. M., G. H. Beck and S. K. Cox, Spectral values of droplet absorption coefficients in marine stratocumulus clouds: Measurements versus theory. 1993 Spring Meeting of the American Geophysical Union, May 24-28, Baltimore MD

Wood, D., P. Hein, J. Davis, and S. K. Cox, The application of RASS to study the marine stratocumulus boundary layer. 1993 Spring Meeting of the American Geophysical Union, May 24-28, Baltimore MD

Davis, J. M., TARGAC - a target acquisition model for EOSAEL, Eighth Annual EOSAEL/TWI Conference, New Mexico State University, Las Cruces, N.M., 88005, Dec., 1987  
Crain, J. N., M. A. Seagraves, and J. M. Davis, Recent Modifications to the Target Acquisition Module (TACQ), Eighth Annual EOSAEL/TWI Conference, New Mexico State University, Las Cruces, N.M., 88005, Dec., 1987

Davis, J.M. Visibility concepts and modeling efforts, Seminar at the Dept. of Electrical Engineering, University of Texas at El Paso, El Paso, Texas,



1987

Davis, J. M., Transmission in the atmosphere, Seminar presented at the University of California Los Angeles Extension Center, Los Angeles, CA, 1986

Davis, J. M., The role of surface reflectance functions in visible contrast calculations. The Seventh Annual EOSAEL/TWI Conference, New Mexico State University, Las Cruces N.M. 88005, Dec., 1986

Davis, J. M., Experiments with a cloud field optical simulator, Seminar at NASA Ames Research, Moffet Field, California 94035, Nov., 1986

Davis, J. M., M. J. Weissbluth, T.B. McKee, and S.K. Cox, Application of the Monte Carlo Method to Problems in Visibility, Air Pollution Control Association International Specialty Conference, Grand Teton National Park, Wyoming, September, 1986

Davis, J. M., Azimuthal Variability of the sky to ground ratio, The sixth annual EOSAEL/TWI conference, New Mexico State University, Las Cruces, NM 88005, Dec. 1985

Davis, J. M., The role of finite cloud geometry on forward scattering surface reflectance functions, Seminar at NASA Langley Research Center, Hampton, Virginia, 1984

Davis, J. M., Regionally applicable surface reflectance functions, Seminar at NASA Langley Research Center, Hampton, Virginia, 1981

Davis, J. M., T. B. McKee, and S. K. Cox, The role of finite clouds on scenes characterized by forward scattering bi-directional reflectances. International Radiation Symposium, Perugia, Italy, August 1984

Davis, J. M., T. B. McKee, and S. K. Cox, An investigation of the application of the Monte Carlo method to problems in visibility using a local estimate, International Radiation Symposium, Perugia, Italy, August, 1984

Davis, J. M., and S. K. Cox, Optimum Angular and Spatial Sampling of Reflected Radiance Fields, Fourth Conference on Atmospheric Radiation, Toronto, Ontario, Canada, 1981

Davis, J. M., and S. K. Cox, Radiance Patterns over Extended Regions, International Radiation Symposium, Fort Collins, Colorado, 1980

Davis, J. M., S. K. Cox, and T. B. McKee, Solar absorption in clouds of finite horizontal extent, Third Conference on Atmospheric Radiation, Davis, California, 1978

Davis, J. M., S. K. Cox, and T. B. McKee, The inclusion of finite cloud radiative properties in space and time averaged radiative budgets, Third Conference on Atmospheric Radiation,

Davis, California, 1978