Biographical Sketch - Michael W. Douglas

Independent Researcher and educator
(Retired NOAA research meteorologist)
douglasnoaa@gmail.com

Personal info: birthdate: April 12, 1954
Updated May 2026

Education:

Ph.D. Meteorology, Florida State University, Tallahassee, Florida, 1987. Advisor: T.N. Krishnamurti Dissertation: *Structure and dynamics of monsoon depressions*.

M.S. Atmospheric Science, University of Miami, Coral Gables, Florida, 1977. Advisor: M.A. Estoque. Thesis: *Structure and occurrence of disturbances along the ITCZ over the GATE area.*

A.B. Geophysics, University of California, Berkeley, California, 1975.

Current status: *Part-time cruise ship educator. Retired from NOAA on July 31, 2013.*

Recent post-retirement activities:

8/22-present: Currently providing natural history and science-related talks on select cruises of the Holland America Cruise line. Have provided more than 135 talks on 14 cruises from August 2022 through January 2026.

2019-present: Member of the Education Committee of the International Biogeography Society

2020-present: Developed and update webpages of *The Norman Environmental Primer*

Principal Employment Experience:

10/92-7/13: Employed at National Severe Storms Laboratory (NOAA), Norman, Oklahoma as Meteorologist. Work was principally related to explaining the warm-season circulations and rainfall patterns over the tropical Americas. Extensive international experience in field research and education. Took early retirement from NOAA at end of July 2013.

07/90-09/92: CIRES, Univ. of Colorado, Boulder, Colorado. Work was with the National Severe Storms Laboratory/NOAA and involved analysis of data from Mexico and southwestern U.S. (R. Maddox supervisor)

10/86-12/87 and 06/88-06/90: CIRES, Univ. of Colorado, Boulder, Colorado. Work with WPL/NOAA involved participation in field experiments to collect data in the vicinity of polar lows and developing oceanic cyclones and to subsequently analyze this data. (M. Shapiro supervisor)

01/88-05/88: Visiting Assistant Professor in Meteorology Department of Texas A&M University, College Station. Taught classes in 1) Instruments and Observations and 2) Mesoscale Meteorology.

09/77-08/78: Half-time employed at National Hurricane and Experimental Meteorology Laboratory, Coral Gables.

Additional experience:

8/22-present: Currently providing natural history and science-related talks on select cruises of the Holland America Cruise line. Have provided talks on 5 cruises from August 2022 through Dec 2023.

8/19-present: Member of the Education Committee of the International Biogeography Society

2020-present: Developed and update webpages of *The Norman Environmental Primer*

07/06 - 09/06 Principal Investigator for NASA-supported measurement campaign involving pilot balloons and radiosondes in four West African countries, and NASA aircraft operations as part of the NASA-AMMA.

04/97 - 05/06 Principal investigator for NOAA-supported pilot balloon observation network (PACS-SONET) involving ~20 stations in Latin America. Program made more than 50,000 observations between 1997 and 2006 at more than 60 locations.

05/04 - 10/04 Principal investigator for 4 NOAA-supported projects associated with the North American Monsoon Experiment (NAME). Projects involved NOAA P-3 aircraft (10 flights), pilot balloon network (22 sites), vegetation monitoring and atmospheric feedback, and a Mexican oceanographic ship activity.

11/02 - 02/03 Principal investigator for three separate NOAA-supported projects involving a NOAA P-3 (13 flights), raingauge networks, and a 20-station pilot balloon network during the South American Low-Level Jet Experiment (SALLJEX).

06/93 - 08/93 Helped to organize the EMVER-93 observational network (9 pilot balloon and 2 special radiosonde sites) over northwestern Mexico and establish a temporary regional analysis center in Obregon, Mexico.

06/90 - 08/90 Participated in Southwest Area Monsoon Project (SWAMP). Was responsible for organizing a network of 11 pilot balloon stations in Mexico and Arizona to describe the southwest North American monsoon circulation.

02/87 - 03/89 Participated in planning and execution of four aircraft field programs using NOAA P-3 aircraft. Programs were Coordinated Eastern Arctic Research Experiment (CEAREX), Experiment on Rapidly Intensifying Cyclones over the Atlantic (ERICA), Ocean Storms, and Alaska Storms Experiment.

***Additional details**:* Fluent in Spanish (have taught numerous courses, totaling approximately one year, in Latin America). International exposure: to date have carried out research work in collaboration with meteorological services and researchers in 17 countries.

Teaching experience: Taught Earth Science and Meteorology courses at Tallahassee Community College (1983-5) and an introductory Meteorology class at Florida State University (early 1980's). Taught Mesoscale Meteorology and Instruments and Observations courses at Texas A&M in Spring 1989. Taught tropical meteorology course at University of Oklahoma in mid-1990's. Taught specialized 3-month Tropical Meteorology courses at the University of Mexico, Mexico City, in 1992 and 1996. Taught 3-week full time tropical meteorology courses in Panama City, Panama (2001) and La Paz, Bolivia (2002). Taught 2-week tropical weather and climate courses in Lima, Peru (2006) and 4-week course in Mexico City (2016).

Formal publications:

Douglas, M.W., R. Beida, J.F. Mejia, and M.V. Fuentes, 2016: Developing MODIS-based cloud climatologies to aid species distribution modeling and conservation activities. *Frontiers of Biogeography*, 8(3). doi: 10.21425/F58329532. fb_29532. Retrieved from: http://escholarship.org/uc/item/0247q946

Mejia, J.F., M.W. Douglas and P.J. Lamb, 2015: Observational investigation of relationships between moisture surges and mesoscale- to large-scale convection during the North American monsoon. Int. J. Climatol. 36: 2555-2569. DOI: 10.1002/joc.4512.

Tompkins, A. M., D. J. Parker, S. Danour, L. Amekudzi, C. L. Bain, A. Dominguez, M. W. Douglas, A. H. Fink, D. I. Grimes, M. Hobby, P. Knippertz, P. Lamb, K. Nicklin, C. Yorke, 2012: The Ewiem Nimdie Summer School Series in Ghana. *Bull. Amer. Meteor. Soc*., **93**, 595-601.

Mejia, J. F., M. W. Douglas and P. J. Lamb, 2010: Aircraft Observations of the 12-15 July 2004 Moisture Surge Event during the North American Monsoon Experiment. *Mon. Wea Rev.,* 138, 3498-3513.

E. J. Zipser,... 21 total authors... M. Douglas..., and B. Anderson, 2009: The Saharan Air Layer and the Fate of African Easterly Waves - NASA's AMMA 2006 Field Study of Tropical Cyclogenesis. *Bull. Amer. Meteor. Soc.*, **90**, 1137-1156.

Douglas, M.W., J. Mejia, N. Ordinola, and D. Boustead, 2009: Synoptic variability of rainfall and cloudiness along the coasts of northern Peru and Ecuador during the 1997-8 El Niño. *Mon. Wea. Rev*., **137**, 116-136.

Douglas, M.W. and J. Murillo, 2008: The Pan American Climate Studies Sounding Network. *Bull. Amer. Meteor. Soc.*, **89,** 1709-1725.

Parker, D. J., … M. W. Douglas, … and G. A. Wilson, 2008: The AMMA Radiosonde Program and its Implications for the Future of Atmospheric Monitoring Over Africa. *Bull. Amer. Meteor. Soc.*, **89**, 1015-1027.

Killeen, T. J., M. Douglas, T. Consiglio, P. M. Jørgensen, J. Mejia, 2007: Dry spots and wet spots in the Andean hotspot. *Journal of Biogeography*, **34**, 1357-1373.

Watts, C. J., R. L. Scott, J. Garatuza-Payan, J. C. Rodríguez, J. H. Prueger, W. P. Kustas, and M. Douglas, 2007: Changes in vegetation condition and surface fluxes during NAME 2004. *J. of Climate*, **20**, 1810-1820.

Higgins, W., …, M. Douglas, … and C. Zhang, 2006: The NAME 2004 Field Campaign And Modeling Strategy, *Bull. Amer. Meteor. Soc.*, **87**, 79–94.

Vera, C., Baez, J., Douglas, M., …and E. Zipser, 2006: The South American Low-Level Jet Experiment, *Bull. Amer. Meteor. Soc.*, **87**, 63-77.

Douglas, M.W., and J.C. Leal, 2003: Summertime surges over the Gulf of California: Aspects of their climatology, mean structure , and evolution from radiosonde, NCEP reanalysis, and rainfall data. *Wea. and Forecasting*, **18**, 55-74.

Peña, M., and M.W. Douglas, 2002: Characteristics of wet and dry spells over the Pacific side of Central America during the rainy season. *Mon. Wea. Rev*., **130**, pp 3054-3073.

Marengo, J. A., M.W. Douglas, and P.L. Silva Dias, 2002: The South American low-level jet east of the Andes during the 1999 LBA-TRMM and LBA-WET AMC campaign. *J. Geophys. Res*., **107** (D18), 10.1029/2001JD001188.

Douglas, M.W., M. Nicolini, and A. Celeste Saulo, 1999: Observational evidences of a Low-level jet east of the Andes during January-March 1998. *Meteorologica*, **23**, pp 63-72.

Douglas, M.W., A. Valdez, and R. Garcia, 1998: Diurnal Variation and horizontal extent of the Low Level Jet over the northern Gulf of California. *Mon. Wea. Rev*., **126**, pp 2017-2025.

Douglas, M.W., and W. Fernandez, 1997: Strengthening the meteorological sounding network over the tropical eastern Pacific Ocean and the Intertropical Americas. *WMO Bulletin*, vol **46 (4)**, pp 348-351.

Douglas, M.W., and S. Li, 1996: Diurnal Variation of the Lower-tropospheric flow over the Arizona Low Desert from SWAMP-1993 observations. *Mon. Wea. Rev.,* **124**, 1211-1224.

Douglas, M.W. and D.S. Stensrud, 1996: Upgrading the North American Upper-Air Observing Network: What are the possibilities. *Bull. Amer. Met. Soc.,* **77**, 907-924.

Douglas, M.W., 1995: The summertime low-level jet over the Gulf of California. *Mon. Wea. Rev.*, **123**, 2334-2347.

Douglas, M.W., M.A. Shapiro, L.S. Fedor and L. Saukkonen, 1994: Research aircraft observations of a polar low at the East-Greenland ice edge. *Mon. Wea. Rev.,* **122**, 5-12.

Reyes, S., M.W. Douglas and R.A. Maddox, 1994: El monzón del suroeste de Norteamérica (TRAVASON/SWAMP). *Atmósfera, 7***,** 117-137.

Douglas, M.W., R.A. Maddox, K. Howard and S. Reyes, 1993: The Mexican Monsoon. *J. of Climate,* **6**, 1665-1677.

Douglas, M.W., 1992: Structure and dynamics of two monsoon depressions. Part I: Observed structure. *Mon. Wea. Rev.*, **120,** 1524-1547.

Douglas, M.W., 1992: Structure and dynamics of two monsoon depressions. Part II: Vorticity and heat budgets. *Mon. Wea. Rev.*, **120**, 1548-1564.

Douglas, M.W., L.S. Fedor and M A. Shapiro, 1991: Polar Low Structure over the Northern Gulf of Alaska Based on Research Aircraft Observations. *Mon.Wea. Rev*., **119**, 32-54.

Douglas M.W., 1990: The Selection and Use of Dropwindsonde-Equipped Aircraft for Operational Forecasting Applications. *Bull. Amer. Meteor. Soc*., **71**, 1746-1756.

Douglas, M.W. and M.A. Shapiro, 1989: A comparison of the structure of two polar lows observed by research aircraft. In *Polar and Arctic lows*, pp 291-312, Eds. Twitchell, P.F., E.A. Rasmussen and K.L. Davidson. A. Deepak Pub., Hampton, Virginia, 1989.

Estoque, M.A. and M. Douglas, 1978: Structure of the Intertropical Convergence Zone over the GATE area. *Tellus,* Volume 30, No. 1, 1978.

Conference Preprints *(talks without preprints are not included):*

Douglas, M.W., J. F. Mejia and D. B. Enfield, 2010. Developing an enhanced climate monitoring network for the Inter-American seas region. 14th Symposium on Integrated Observing and Assimilation Systems for the Atmosphere, Oceans, and Land Surface (IOAS-AOLS), 6A.6, January 18-21, 2010, Atlanta, Georgia.

Douglas, M.W., and J. F. Mejia, 2010. The recent availability of low-cost radiosonde systems and their implications for adaptive sounding arrays. 15th Symposium on Meteorological Observation and Instrumentation, 9.5, January 18-21, 2010, Atlanta, Georgia.

Beida, R., M. W. Douglas and A. Dominguez, 2010. Developing high spatial resolution daytime cloud climatologies for Africa. 29th Conference on Hurricanes and Tropical Meteorology, P2.23, May 10-14, 2010, Tucson, Arizona.

Douglas, M.W., 2010. Adaptive sounding arrays for tropical regions, 29th Conference on Hurricanes and Tropical Meteorology, 12B.7, May 10-14, 2010 Tucson, Arizona.

Douglas, Michael W., 2008: Progress towards development of the glidersonde: A recoverable radiosonde system. Preprints, WMO Technical Conference on Meteorological and Environmental Instruments and Methods of Observation (TECO). St. Petersburg, Russian Federation. (http://www.knmi.nl/samenw/geoss/wmo/TECO2008/IOM-96-TECO2008/_PROGRAMME.HTML)

Douglas, M.W., J.F. Mejia, R.K. Orozco, and J. Murillo, 2008: Suggestions for upgrading the pilot balloon network in West Africa and elsewhere in the tropics. Preprints, WMO Technical Conference on Meteorological and Environmental Instruments and Methods of Observation (TECO). St. Petersburg, Russian Federation. (http://www.knmi.nl/samenw/geoss/wmo/TECO2008/IOM-96-TECO2008/_PROGRAMME.HTML)

Douglas, M. W., R. Orozco, J. F. Mejia, 2008: Mapping the spatial extent of the Central American mid-summer drought with MODIS and GOES imagery. Preprints, *28th Conference on Hurricanes and Tropical Meteorology*, Orlando, FL, USA, American Meteorological Society, P1C.10.

Douglas, M. W., J. F. Mejia, 2008: Aircraft measurements of temperature anomalies associated with tropical waves during NAMMA. Preprints, *28th Conference on Hurricanes and Tropical Meteorology*, Orlando, FL, USA, American Meteorological Society, P1E.4.

Douglas, M. W., J. F. Mejia, R. Orozco, S. Henry, 2008: Quantifying the extent and degree of cloud-affected tropical environments with MODIS imagery. Two extreme environments: Lomas and cloud forests. Preprints, *28th Conference on Hurricanes and Tropical Meteorology*, Orlando, FL, USA, American Meteorological Society, 10.1.

Douglas, M. W., J. F. Mejia, J. F. Galvez, J. Murillo, R. Orozco, 2008: West African pilot balloon network during the NAMMA-2006 and implications for the future of the African pilot balloon sounding network.. Preprints, *The 88th Annual Meeting (20-24 January 2008) (New Orleans, LA)*, New Orleans, LA, USA, American Meteorological Society, 15B.5.

Douglas, M. W., J. M. Murillo, R. K. Orozco, J. F. Mejia, 2008: Underutilized observations for studying tropical climate variations: the historical pilot balloon database. Preprints, *The 88th Annual Meeting (20-24 January 2008) (New Orleans, LA)*, New Orleans, LA, USA, American Meteorological Organization, 3B.6.

Douglas, M. W., J. Murillo, J. F. Mejia, 2008: Two courses missing from meteorology programs at US universities.. Preprints, *The 88th Annual Meeting (20-24 January 2008) (New Orleans, LA)*, New Orleans, LA, USA, American Meteorological Society, P1.35.

Douglas, M. W., J. Murillo, R.K. Orozco, J.F. Mejia, and J.M. Galvez, 2006: Accuracy of the Aviation Model (AVN) final analyses over Central South America based upon upper air

observations collected during the SALLJEX. Preprints, 8th International Conference on Southern Hemisphere Meteorology and Oceanography (ICSHMO), Foz do Iguazu, Brazil.

Galvez, J. M., and M.W. Douglas, 2006: Observed diurnal circulations and rainfall over the altiplano during the SALLJEX. Preprints, 8th International Conference on Southern Hemisphere Meteorology and Oceanography (ICSHMO), Foz do Iguazu, Brazil.

Galvez, J. M., and M.W. Douglas, 2006: Modulation of rainfall by Lake Titicaca using the WRF Model. Preprints, 8th International Conference on Southern Hemisphere Meteorology and Oceanography (ICSHMO), Foz do Iguazu, Brazil.

Galvez, J. M., and M.W. Douglas, 2006: Northward-propagating surges east of the Andes during the SALLJEX. Preprints, 8th International Conference on Southern Hemisphere Meteorology and Oceanography (ICSHMO), Foz do Iguazu, Brazil.

Mejia, J. F. and M.W. Douglas, 2006: Flow around the Andean elbow from WRF simulations and P-3 aircraft measurements during SALLJEX. Preprints, 8th International Conference on Southern Hemisphere Meteorology and Oceanography (ICSHMO), Foz do Iguazu, Brazil.

Orozco, R. K., J.F. Mejia, J.M. Galvez, and M.W. Douglas, 2006: Plausible effects of Paleolake Tauca on the altiplano circulations and rainfall from WRF model simulations. Preprints, 8th International Conference on Southern Hemisphere Meteorology and Oceanography (ICSHMO), Foz do Iguazu, Brazil.

Murillo, J., M.W. Douglas, and J. Regalado, 2006: Atmospheric soundings across an oceanic front between the Galapagos Islands and the coast of South America from the INOCAR cruise of October 2005. Preprints, 8th International Conference on Southern Hemisphere Meteorology and Oceanography (ICSHMO), Foz do Iguazu, Brazil.

Murillo, J., M.W. Douglas, N. Ordinola, and L. Flores, 2006: Variability of the meridional flow near the Equator from 8 years of pilot balloon observations at Piura, Peru. Preprints, 8th International Conference on Southern Hemisphere Meteorology and Oceanography (ICSHMO), Foz do Iguazu, Brazil.

Douglas, M. W., J. F. Mejia, J. M. Galvez, R. Orozco, and J. Murillo, 2006: The seasonal evolution of the diurnal variation of the low-level winds around the Gulf of California. Is there a link to vegetation green-up during the wet season? Preprints, 86th American Meteorological Annual Meeting (18th Conference on Climate Variability and Change), Atlanta, GA.

Galvez, J.M., R. K. Orozco and M. W. Douglas, 2006: Diurnal variability of the cloud field over the VOCALS domain from GOES imagery. Preprints, 86th American Meteorological Annual Meeting (14th Conference on Interaction of the Sea and Atmosphere), Atlanta, GA.

Douglas, M.W., J. F. Mejia and T. Killeen, 2006: Use of MODIS and GOES imagery to help delineate the distribution of cloud forests along the eastern Andean slopes. Preprints, 86th American Meteorological Annual Meeting (14th Conference on Satellite Meteorology and

Oceanography), Atlanta, GA.

Douglas M.W., J. M. Galvez, J. F. Mejia, C. Brown, R. Orozco, and C. Watts, 2005: Seasonal evolution of the sea-land breeze circulation and its role in the precipitation climatology of northwestern Mexico. Preprints, Sixth Conference on Coastal Atmospheric and Oceanic Prediction and Processes (6COASTAL), San Diego, CA, Amer. Meteor. Soc., CD-ROM, 3.7.

Douglas, M.W., J. Murillo, J. F. Mejia, and J. Galvez, 2004: New directions in the Pan American Climate Studies Sounding Network for Latin America, Extended Abstract, Eighth Symposium on Integrated Observing and Assimilation Systems for Atmosphere, Oceans, and Land Surface. The 84th AMS Annual Meeting (Seattle, WA), CD-ROM, 4.4.

Mejia J.F. and M. Douglas, 2005: Mean structure and variability of the low-level jet across the central Gulf of California from NOAA WP-3D flight level observations during the North American Monsoon Experiment. Preprints, Sixth Conference on Coastal Atmospheric and Oceanic Prediction and Processes (6COASTAL), San Diego, CA , Amer. Meteor. Soc., CD-ROM, 5.8.

Douglas, M.W. and J. F. Mejia: Intensive "porpoising" with a research aircraft to determine atmospheric structure during the SALLJEX and NAME programs, General Poster Session I, 13th Symposium on Meteorological Observations and Instrumentation, Savannah, GA, June 20-24, 2005. JP1.31.

Douglas, M/W., J. Murillo and J. F. Mejia: Conducting short duration field programs to evaluate sounding site representativeness and potential climate monitoring biases-Examining the Low-Level Jet Over the Venezuelan Llanos During the 2005 Dry Season, General Poster Session I, 13th Symposium on Meteorological Observations and Instrumentation, Savannah, GA, June 20-24, 2005. JP1.32.

Douglas, M.W., J. F. Mejia and N. Ordinola, 2005: Rainfall variations along the coast of Peru and Ecuador during the 1997-8 El Niño and implications for a real-time forecasting system over the region, Ninth Symposium on Integrated Observing and Assimilation Systems for the Atmosphere, Oceans, and Land Surface (IOAS-AOLS), 85th AMS Annual Meeting, San Diego, CA , J 5.2.

Douglas, M.W., A. G. Ulke and J. F. Mejía, 2004: Simulating a Low-Level Jet Observed during the SALLJEX with RAMS. CLIVAR Meeting 2004. The first International CLIVAR 2004 Science Conference, June 21-25, 2004 in Baltimore, Maryland, USA.

Douglas M.W., and J. Murillo, 2004: Short field programs as a vital part of courses in mesoscale meteorology in support of the PACS-SONET in Latin America. 13th Symposium on Education, Seattle, WA, Amer. Meteor. Soc., 3.6.

Galvez, J.M., R. Orozco and M. W. Douglas: Measuring and monitoring the mesoclimate of tropical locations. Field observations from the South American altiplano during the SALLJEX, 13th Symposium on Meteorological Observations and Instrumentation, Savannah, GA, June 20-

24, 2005. 6.2.

Murillo, J., M. W. Douglas, J. M. Galvez, J. F. Mejia, R. Orozco, and C. Brown: Quality control of pilot balloon data for climate monitoring, General Poster Session I, 13th Symposium on Meteorological Observations and Instrumentation, Savannah, GA, June 20-24, 2005. JP 1.30.

Penalba O., C. Vera, Matilde Nicolini, M. Gonzalez, B. Cerne, C. Campetella, M. Douglas, J. Baez, A. Diaz, B. Liebmann, D. Allured: Daily Precipitation Monitoring Over South America: Experience During SALLJEX, 1st International CLIVAR Science Conference, June 21-25, 2004. Baltimore, Maryland, USA.

Douglas, M.W., 2001: Some environmental, ethical and economic questions related to artificial rainfall enhancement: an outsiders perspective. 15th Conference on Planned and Inadvertent Weather Modification, 15-18 January, 2001, Albuquerque, NM.

Douglas, M.W., M. Peña, N. Ordinola, L. Flores, J. Boustead, and J.L. Santos, 2000: Synoptic and Spatial Variability of the rainfall along the northeastern Peruvian coast during the 1997-8 El Niño Event. Sixth International Conference on Southern Hemisphere Meteorology and Oceanography, Santiago, Chile, April 3-7, 2000. pp 104-105.

Douglas, M.W., M. Peña, and W.R. Villarpando C., 2000: Special observations of the low-level flow over eastern Bolivia during the 1999 Atmospheric Mesoscale Campaign Sixth International Conference on Southern Hemisphere Meteorology and Oceanography, Santiago, Chile, April 3-7, 2000. pp 157-158.

Douglas, M.W., and M. Peña, 2000: The Pan American Climate Studies Sounding Network (PACS-SONET) Recent history and planned improvements. Sixth International Conference on Southern Hemisphere Meteorology and Oceanography, Santiago, Chile, April 3-7, 2000. pp 258-259

Douglas, M.W., M. Nicolini and C. Saulo, 1999: The low-level jet at Santa Cruz, Bolivia during January-March 1998. Pilot balloon observations and model comparisons. Tenth Symposium on Global Change, Dallas, Texas, January 10-15, 1999. pp 223-226.

Douglas, M.W., W. Fernandez and M. Peña, 1999: Design and evolution of the PACS-SONET observing system in Latin America. Third Symposium on Integrated Observing Systems, Dallas, Texas, January 10-15, 1999. pp 131-134.

Douglas, M.W., M. Peña, W. Fernandez, J. L. Santos, N. Ordinola, and L. Flores, 1999. El Nino 1997-1998 as seen from PACS-SONET Observations. Second Hayes Symposium on Seasonal to Interannual Variability. Dallas, Texas, January 10-15, 1999. pp 43-46.

Peña, M. and M.W. Douglas, 1999: Characteristics of Central American wet and dry spells. Twenty Third conference on Hurricanes and Tropical Meteorology. Dallas, Texas, January 10-15, 1999.

Peña, M., and M. Douglas, 1998: Meteorological Education in Latin America. Seventh Symposium on Education, Phoenix, Arizona, 11-16 January, 1998.

Gourley, J.J., K.W. Howard, and M.W. Douglas, 1998: An examination of the variability of deep convective cloudiness over Mexico during the warm season. Ninth Conference on Interaction of the Sea and Atmosphere, Phoenix, Arizona, 11-16 January, 1998.

Howard, K.W., M.Douglas, S. Fredrickson, I.Winger, D. Egle, D. Smith, and N. Renno, 1998: The development of a recoverable radiosonde: The glidersonde project. Tenth Symposium on Meteorological Observations and Instrumentation. Phoenix, Arizona, 11-16 January, 1998.

Douglas, M.W., 1993: *The Mexican Monsoon.* Proceedings of the Sixth National Conference on Meteorology and the Second Iberoamerican Congress on Atmospheric Environment, Mexico City, Mexico, October 27-29, 1993. pp 85-90.

Douglas, M.W., 1993: *Use of tethered balloon sounding instrumentation during EMVER-93*. Proceedings of the Sixth National Conference on Meteorology and the Second Iberoamerican Congress on Atmospheric Environment, Mexico City, Mexico, October 27-29, 1993. pp 168-171.

Douglas, M.W., 1993: *The Summertime Low-level Jet over the Gulf of California: Mean structure and synoptic variation*. Preprints, 20th Conference on Hurricanes and Tropical Meteorology, San Antonio, Texas, 10-14 May, 1993.

Li, S., and M.W. Douglas, 1993: *Monsoon onset over south-western North America*. Preprints, 20th Conference on Hurricanes and Tropical Meteorology, San Antonio, Texas, 10-14 May, 1993.

Douglas, M.W., 1992: Structure and Fluctuations of the *Summertime Low-Level Jet over the Gulf of California and Environs*. Preprints, Conference on Mesoscale Processes, Atlanta, Georgia, January 5-10, 1992.

Douglas, M.W., C. Watts and S. Reyes, 1992: *Gulf of California "Surges" and Associated Rainfall during the Southwest North American Monsoon*. Preprint Volume for Symposium on Weather Forecasting, Atlanta, Georgia, January 5-10, 1992.

Douglas, M.W., R.A. Maddox and K.W. Howard, 1991: *The Summer Monsoon over Northwestern Mexico: Results from the Southwest area Monsoon Project*. In preprint Volume for 5th Congreso Nacional de Meteorologia, pp.676-71, Ciudad Juarez, Chihuahua, October 2-4, 1991.

Maddox, R.A., M. Douglas and K. W. Howard, 1991: *Mesoscale Precipitation Systems over Southwestern North America: A Warm Season Overview* . In preprint Volume for International Conference on Mesoscale Meteorology and TAMEX, Taipei, Taiwan, December 3-6, 1991.

Douglas, M.W., 1991: *Cost-Effective upper wind observing networks for developing countries. The SWAMP example*. In preprint volume for Lower tropospheric profiling. Needs and technologies. Boulder, Colorado, September 10-13, 1991.

Douglas M. W., M.A. Shapiro and L.S. Fedor, 1991: *The Structure of a Cold Frontal Zone in a Rapidly Deepening Cyclone over the North Pacific Ocean*, pp 387-392 in preprint Volume for First International Winter Storms Symposium, New Orleans, Louisiana, January 14-18, 1991.

Douglas M.W., M.A. Shapiro, L.S. Fedor and Lea Saukkonen, 1990: *Research Aircraft Observations of a polar low at the Greenland Ice-edge*, pp 22-23, in preprint Volume for Fourth Conference on Mesoscale Processes, Boulder, Colorado, June 25-29, 1990.

Douglas, M.W., 1977: *The Structure of a Disturbance along the Intertropical Convergence Zone,* pp 138-145, in preprint Volume of 11th Technical Conference on Hurricanes and Tropical Meteorology, Miami, Florida, December 13-16, 1977.

Grants:

IASCLIP related

5/10 – 4/11 Developing international collaboration for IASCLIP (NOAA, 1 year, $46K)

Central American-related

5/07 – 4/10 Explaining the spatial variability of the mid-summer drought over the Inter-American Seas region (NOAA, 3 years, $280K)

NASA AMMA – related:

03/06 – 02/09 Measuring the evolution of tropical waves over West Africa into tropical storms over the eastern Atlantic (NASA, 3 years, $282K)

North American Monsoon related:

12/03 – 09/05 The role of sea surface temperature and vegetation characteristics in the seasonal evolution of summer rains over northwestern Mexico (NOAA OGP, 2 years, $172K)

12/03 – 09/04 The role of oceanic processes on the Gulf of California SST evolution during the NAME (NOAA OGP, 1 year, $244K)

12/03 – 09/06 Mesoscale circulations and moisture fluxes associated with the North American Monsoon System (NOAA OGP, 3 years, $134K)

12/03 – 09/06 A regional-scale atmospheric sounding network in support of the North American Monsoon Experiment (NOAA OGP, 3 years, $396K)

South American Low-Level Jet Experiment related:

05/2002 – 04/2005 Enhanced upper-air measurements in support of the South American low-level jet study (NOAA OGP, 3 years, $361K)

05/2002 – 04/2005 Enhancement of the daily rainfall network in support of the South American low-level jet study (NOAA OGP, 3 years, $210K)

05/2002 – 04/2005 Mesoscale structure and variability of the low-level jet and associated atmospheric circulations east of the Andes during the warm season (NOAA OGP, 3 years, $158K)

PACS-SONET related:

05/2003 – 04/2006 Extension of the Pan American Climate Studies Sounding Network (PACS-SONET) for continued monitoring of climate variability over the Americas (NOAA OGP, 3 years, ~ $950K)

(+two 3-year grants related to PACS-SONET prior to 2003, beginning in 1997, ~$300K per year)

PASA: US State Department grant for development of educational materials related to South American altiplano (~$45K)

Students supervised: Malaquias Peña (MS), John Mejia (PhD), Jose Galvez (MS), Raquel Orozco (MS not completed), Yusif Nava (MS not completed), Rahama Beida (MS). Six REU students and one Hollings Scholar supervised. A number of undergraduate students employed on research projects and supervised as senior research projects. Foreign scientists supervised during extended (1 year+) stays included Shuhua Li (China), Juan Carlos Leal (Mexico) and Marcia Fuentes (Brazil).