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February 2023

EDUCATION

1990 Arizona State University, Physical Geography, Ph.D.
1978 University of Arkansas, Archaeology, M.A.
1973 University of Arizona, Archaeology, B.A.

PROFESSIONAL POSITIONS

2005-present Distinguished Professor of Geosciences, University of Arkansas
1998-2005 Professor, Department of Geosciences, University of Arkansas
1992-1998 Associate Professor, Department of Geography, University of Arkansas
1989-1992 Assistant Professor, Department of Geography, University of Arkansas
1980-present Director, Tree-Ring Laboratory, University of Arkansas
2012-present Collaborating Professor, Graduate Forestry Program, Universidade Federal de Lavras, Lavras, Brazil

HONORS

2015 Elected Fellow, *American Association for the Advancement of Science*

AWARDS

2008 Outstanding Climate Science Paper Award, California Department of Water Resources: ER Cook, R Seager, M Cane, D Stahle, 2007 *Earth Science Reviews*
2011 Editors Citation for Excellence in Refereeing, *Geophysical Research Letters*
2018 Ellen Mosley-Thompson Best Publication Award in Paleoenvironmental Change, Association of American Geographers, Stahle et al 2016 *Quaternary Science Reviews*

GOOGLE SCHOLAR (Jan. 2023):

	<u>All</u>	<u>Since 2018</u>
Citations	13532	4273
h-index	57	34
i10-index	113	78

PUBLICATIONS (<https://dendro.uark.edu/publications/>)

Howard, I.M., D.W., Stahle, M.D. Dettinger, C. Poulsen, M.C.A. Torbenson, F.M. Ralph, A. Gershunov, 2023. A 440-year reconstruction of heavy precipitation from blue oak tree rings. *Journal of Hydrometeorology* (in press).

Howard, I.M., D.W. Stahle, M.C.A. Torbenson, D. Granato-Souza, C. Poulsen, 2023. The flood risk and water supply implications of seasonal tree-ring reconstructions in Northern California. *San Francisco Estuary and Watershed Science* (in press).

Stahle, D.W., 2022. Natural monuments. *Science* 6616:145.

Cook, B.I., J.E. Smerdon, E.R. Cook, A.P. Williams, K.J. Anchukaitis, J.S. Mankin, K. Allen, L. Andreu-Hayles, T.R. Ault, S. Belmecheri, S. Coats, B. Coulthard, B. Fosu, P. Grierson, D. Griffin, D.A. Herrera, M. Ionita, F. Lehner, C. Leland, K. Marvel, M.S. Morales, V. Mishra, J. Ngoma, H.T.T. Nguyen, A. O'Donnell, J. Palmer, M.P. Rao, M. Rodriguez-Caton, R. Seager, D.W. Stahle, S. Stevenson, U.K. Thapa, A.M. Varuolo-Clarke, E.K. Wise, 2022. Megadroughts in the Common Era and Anthropocene. *Nature Reviews Earth & Environment* 3:741-757.

Torbenson, M.C.A., D.W. Stahle, I.M. Howard, J. Blackstock, M.K. Cleaveland, J. Stagge, 2022. Pre-instrumental perspective on Arkansas River cross-watershed flow variability. *Journal of the American Water Resources Association*. DOI: 10.1111/1752-1688.13068.

Villanueva-Díaz, J, D.W. Stahle, H.M. Poulos, M.D. Therrell, I.M. Howard, A.F. Martínez-Sifuentes, D. Hermosillo-Rojas, J. Cerano-Paredes, J. Estrada-Ávalos, 2022. Climate and the radial growth of conifers in Borderland natural areas of Texas and Northern Mexico. *Forests*. <https://doi.org/10.3390/atmos13081326>.

Torbenson, M.C.A., D.W. Stahle, I.M. Howard, D.J. Burnette, D. Griffin, J. Villanueva-Díaz, B.I. Cook, 2021. Drought relief and reversal over North America from 1500 to 2016. *Earth Interactions*. <https://doi.org/10.1175/EI-D-20-0020.1>.

Lopez, L., R. Villalba, D.W. Stahle, 2021. High-fidelity representation of climate variations by *Amburana cearensis* tree-ring chronologies across a tropical forest transition in South America. *Dendrocronologia* 72, 125932.

Bishop, D.A., A.P. Williams, R. Seager, E.R. Cook, D.M. Peteet, B.I. Cook, M.P. Rao, D.W. Stahle, 2021. Placing the east-west North American aridity gradient in a multi-century context. *Environmental Research Letters* 16, 114043.

Howard, I.M., D.W. Stahle, M.C.A. Torbenson, and R.D. Griffin, 2021. The summer precipitation response of latewood tree-ring chronologies in the southwestern United States. *International Journal of Climatology* 41:2913-2933. <https://doi.org/10.1002/joc.6997>

Stahle, D.W., M.C.A. Torbenson, I.M. Howard, D. Granato-Souza, A.C. Barbosa, S. Feng, J. Schongart, L. Lopez, R. Villalba, J. Villaneuva, K. Fernandes, 2020. Pan-American interactions of Amazon precipitation, streamflow, and tree growth extremes. *Environmental Research Letters* 15:104092.

Stahle, D.W., 2020. Anthropogenic megadrought. *Science* 368:238-239.

Granato-Souza, D., D.W. Stahle, M.C.A. Torbenson, I.M. Howard, Barbosa, A.C. Barbosa, S. Feng, K. Fernandes, J. Schongart, 2020. Multidecadal changes in wet season precipitation totals over the eastern Amazon. *Geophysical Research Letters*
<https://doi.org/10.1029/2020GL087478>.

Stahle, D.W., E.R. Cook, D.J. Burnette, M.C.A. Torbenson, I.M. Howard, D. Griffin, J. Villanueva, B.I. Cook, A.P. Williams, E. Watson, D. Sauchyn, N. Pederson, C.A. Woodhouse, G.T. Pederson, D.M. Meko, B. Coulthard, C.J. Crawford, 2020. Dynamics, variability, and change in seasonal precipitation reconstructions for North America. *Journal of Climate* 33:3173-3195.
DOI: 10.1175/JCLI-D-19-0270.1

Howard, I.M., and D.W. Stahle, 2020. Tree-ring reconstruction of single day precipitation totals over eastern Colorado. *Monthly Weather Review* 148:597-612.
<https://doi.org/10.1175/MWR-D-19-0114.1>.

Ljungqvist, F.C., A. Piermattei, A. Seim, P.J. Krusic, U. Büntgen, M. He, A.V. Kirilyanov, J. Luterbacher, L. Schneider, K. Seftigen, D.W. Stahle, R. Villalba, B. Yang, and J. Esper, 2020. Ranking of tree-ring based hydroclimate reconstructions of the past millennium. *Quaternary Science Reviews* 230: 106074.

Barbosa, A.C., D.W. Stahle, D.J. Burnette, M.C.A. Torbenson, E.R. Cook, M.J. Bunkers, G. Garfin, R. Villalba, 2019. Meteorological factors associated with frost rings in Rocky Mountain bristlecone pine at Mt. Goliath, Colorado. *Tree-Ring Research* 75:101-115.

Granato-Souza, D., D.W. Stahle, A.C. Barbosa, S. Feng, M.C.A. Torbenson, G. Assis Pereira, J. Schongart, J.P. Barbosa, D. Griffin, 2019. Tree rings and rainfall in the equatorial Amazon. *Climate Dynamics* <https://doi.org/10.1007/s00382-018-4227-y>

Stahle, D.W., J.R. Edmondson, I.M. Howard, C.R. Robbins, R.D. Griffin, A. Carl, C.B. Hall, D.K. Stahle, M.C.A. Torbenson, 2019. Longevity, climate sensitivity, and conservation status of wetland trees at Black River, North Carolina. *Environmental Research Communications* 1:041002.
<https://doi.org/10.1088/2515-7620/ab0c4a>

Torbenson, M.C.A., D.W. Stahle, I.M. Howard, D.J. Burnette, J. Villanueva-Díaz, E.R. Cook, D. Griffin, 2019: Multidecadal modulation of the ENSO teleconnection to precipitation and tree growth over subtropical North America. *Paleoceanography and Paleoclimatology*, 34,
<https://doi.org/10.1029/2018PA003510>.

Cook, B.I., A.P. Williams, J.E. Smerdon, J.G. Palmer, E.R. Cook, D.W. Stahle, and S. Coats, 2018: Cold Tropical Pacific Sea Surface Temperatures During the Late Sixteenth- Century North American Megadrought. *Journal of Geophysical Research: Atmospheres*, 123:11,307-11,320.

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<https://doi.org/10.1007/s00382-018-4485-8>

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doi:10.1002/2017GL073363.

Stahle, D.W., E.R. Cook, D.J. Burnette, J. Villanueva, J. Cerano, J.N. Burns, R.D. Griffin, B.I. Cook, R. Acuna, MCA Torbenson, and P. Szejner, 2016. The Mexican Drought Atlas: Tree-ring reconstructions of the soil moisture balance during the late Pre-Hispanic, Colonial, and Modern Eras. *Quaternary Science Reviews* 149:34-60.

Torbenson, M.C.A., D.W. Stahle, J. Villanueva, E.R. Cook, and D.R. Griffin, 2016. The relationship between earlywood and latewood tree-growth across North America. *Tree-Ring Research* 72:53-66.

Black, B.A., D. Griffin, P. van der Sleen, A.D. Wanamaker Jr., J.H., Speer, D.C. Frank, D.W. Stahle, N. Pederson, C.A. Copenheaver, V. Trouet, S. Griffin, and B.M. Gillanders, 2016. The value of crossdating to retain high-frequency variability, climate signals, and extreme events in environmental proxies. *Global Change Biology* 22:2582-2595.

Cerny, K.C., D.W. Stahle, and D.C. Bragg, 2016. A frontier shortleaf pine stand in the old-growth Cross Timbers of Oklahoma. *Journal of the Torrey Botanical Society* 143:224- 238.

Cook, B.I., E.R. Cook, J.E. Smerdon, R. Seager, A.P. Williams, S. Coats, D.W. Stahle, and J. Villanueva, 2016. North American megadroughts in the common era: reconstructions and simulations. *WIREs Climate Change* 7(3):411-432.

Amoroso. M.M., J.H. Speer, L.D. Daniels, R. Villalba, E.Cook, D. Stahle, A. Sur, et al., 2018. South American Dendroecological Fieldweek 2016: Exploring dendrochronological research in northern Patagonia. *Tree-Ring Research* 74:120-131.

Stahle, D.W., J.R. Edmondson, J.N. Burns, D.K. Stahle, D.J. Burnette, E. Kvamme, C. LeQuerne, and M.D. Therrell, 2015. Bridging the gap with subfossil Douglas-fir at Mesa Verde, Colorado. *Tree-Ring Research* 71:53-66.

Belmecheri, S., F Babst, E.R. Wahl, D.W. Stahle, and V. Trouet, 2015. Multi-century evaluation of Sierra Nevada snowpack. *Nature Climate Change* (published online Sept. 14, 2015).

LeBlanc, D.C., and D.W. Stahle, 2015. Radial growth response of four oak species to climate in eastern and central North America. *Canadian Journal of Forest Research* 45:1-12.

Villanueva Díaz, J., J. Cerano Paredes, N.C. Olivares Bañuelos, M. Valle Pérez, D.W. Stahle, R. Cervantes Martínez, 2015. La respuesta climática del ciprés (*Hesperocyparis guadalupensis* Var. *Guadalupensis*) en Isla Guadalupe, Baja California, México. *Ciencias Forestales*.

Black, B.A., W.J., Sydeman, D. Frank, R.D. Griffin, D.W. Stahle, M. Garcia-Reyes, R. Rykaczewski, S. Bograd, and W.T. Peterson, 2014. Six centuries of variability and extremes in a coupled marine-terrestrial ecosystem. *Science* 345:1498-1502.

Burns, J.N., R. Acuna-Soto, and D.W. Stahle, 2014. Drought and epidemic typhus, central Mexico, 1655-1918. *Emerging Infectious Diseases* 20:442-447.

Kanner, L., N. Buening, L. Stott, D.W. Stahle, 2013. Climatologic and hydrologic influences on the oxygen isotope ratio of tree cellulose in coastal southern California during the late 20th century. *Geochemistry, Geophysics, Geosystems* 14:4488-4503.

Griffin, R.D. C.A. Woodhouse, D.M. Meko, D.W. Stahle, H.L. Faulstich, C. Carrillo, R. Touchan, C.L. Castro, and S.W. Leavitt, 2013. North American monsoon precipitation reconstructed from tree rings. *Geophysical Research Letters* 40, doi:10.1002/grl.50184.

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Benson, L.V., D.K. Ramsey, D.W. Stahle, K.L. Petersen, 2013. Some thoughts on the factors that controlled prehistoric maize production in the American Southwest with application to southwestern Colorado. *Journal of Archaeological Science* 40:2869-2880.

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Burnette, D.J. and D.W. Stahle, 2013. Historical perspective on the dust bowl drought in the central United States. *Climatic Change* 116:479-494

Woodhouse, C.A., D.W. Stahle, J. Villanueva Diaz, 2012. Rio Grande and Rio Conchos water supply variability over the past 500 years. *Climate Research* 51:125-136.

Stahle, D. W., D.J. Burnette, J. Villanueva Diaz, F.K. Fye, R.D. Griffin, M.K. Cleaveland, D.K. Stahle, J.R. Edmondson, K. Wolff, 2012. Tree-ring analysis of ancient baldcypress trees and subfossil wood. *Quaternary Science Reviews* 34:1-15.

Therrell, M.D. and D.W. Stahle, 2012. Tree-ring dating of an Arkansas antebellum plantation house. *Tree-Ring Research* 68:59-68.

Bragg, D.C., D.W. Stahle, and K.C. Cerny, 2012. Structural attributes of two old-growth Cross Timbers stands in western Arkansas. *American Midland Naturalist* 167:40-55.

DeSantis, R.D., S.W. Hallgren, and D.W. Stahle, 2011. Drought and fire suppression lead to rapid forest composition change in a forest-prairie ecotone. *Forest Ecology and Management* 261:1833-1840.

Villanueva Díaz, J., J. Cerano P., D.W. Stahle, B.H. Luckman, M.D. Therrell, M.K. Cleaveland, P.Z. Fulé. 2011. La dendrocronología y reconstrucciones paleoclimáticas en el nortecentro de México. In: M. Caballero, B. Ortega G. (Compiladoras), *Escenarios de cambio climático: Registros del Cuaternario en América Latina I*. UNAM, Instituto de Geofísica, Dirección General de Publicaciones y Fomento Editorial. México DF, 47-72.

Stahle, D.W., D.J. Burnette, J. Villanueva Diaz, R.R. Heim, Jr., F.K. Fye, J. Cerano Paredes, R. R. Acuna-Soto, M.K. Cleaveland, 2011. Atlantic and Pacific influences on Mesoamerican climate over the past millennium. *Climate Dynamics* DOI 10.1007/s00382-011-1205-z.

Haavik, L.J., D.W. Stahle, F.M. Stephen, 2011. Temporal aspects of *Quercus rubra* decline and relationships to climate in the Ozark and Ouachita Mountains, Arkansas. *Canadian Journal of Forest Research* 41:773-781.

Stahle, D.W., R.D. Griffin, M.K. Cleaveland, J.R. Edmondson, F.K. Fye, D.J. Burnette, J.T. Abatzoglou, K.T. Redmond, D.M. Meko, M.D. Dettinger, D.R. Cayan, M.D. Therrell, 2011. A tree-ring reconstruction of the salinity gradient in the northern estuary of San Francisco Bay. *San Francisco Estuary & Watershed Science* 9-1 (Internet, Available from <http://www.escholarship.org/uc/item/5cz3q8v4>).

Stahle, D.W., J. Villanueva Diaz, D.J. Burnette, J. Cerano Paredes, R.R. Heim, Jr., F.K. Fye, R. Acuna Soto, M.D. Therrell, M.K. Cleaveland, and D.K. Stahle, 2011. Major Mesoamerican droughts of the past millennium, *Geophysical Research Letters* , 38, L05703, doi:10.1029/2010GL046472.

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Hulme, H. Iskenderian, O.M. Johannessen, D. Kaiser, D. Karoly, D. Kley, R. Knight, K.R. Kumar, K. Kunkel, M. Lal, C. Landsea, J. Lawrimore, J. Lean, C. Leovy, H. Lins, R. Livezey, K.M. Lugina, I. Macadam, J.A. Majorowicz, B. Manighetti, J. Marengo, E. Mekis, M.W. Miles, A. Moberg, I. Mokhov, V. Morgan, L. Mysak, M. New, J. Norris, L. Ogallo, J. Overpeck, T. Owen, D. Paillard, T. Palmer, C. Parkinson, C.R. Pfister, N. Plummer, H. Pollack, C. Prentice, R. Quayle, E.Y. Rankova, N. Rayner, V.N. Razuvaev, G. Ren, J. Renwick, R. Reynolds, D. Rind, A. Robock, R. Rosen, S. Rösner, R. Ross, D. Rothrock, J.M. Russell, M. Serreze, W.R. Skinner, J. Slack, D.M. Smith, D. Stahle, M. Stendel, A. Sterin, T. Stocker, B. Sun, V. Swail, V. Thapliyal, L. Thompson, W.J. Thompson, A. Timmermann, R. Toumi, K. Trenberth, H. Tuomenvirta, T. van Ommen, D. Vaughan, K.Y. Vinnikov, U. von Grafenstein, H. von Storch, M. Vuille, P. Wadhams, J.M. Wallace, S. Warren, W. White, P. Xie, P. Zhai, 2001. Observed climate variability and change. Chapter 2 in: *Climate Change 2001: The Scientific Basis. Contributions of Working Group I to the Third Assessment Report of the Intergovernmental Panel on Climate Change* (J.T. Houghton et al. editors). Cambridge University Press, Cambridge, UK, 881 pp.

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BOOK

Stahle, D.W., n.d.. *The Ancient Cross Timbers* (a natural history of the old-growth woodlands that border the Southern Plains). Third draft completed, winter 2022.

GRANTS FOR RESEARCH & CONSERVATION PROJECTS **(Total = \$16,154,991)**

As Principal Investigator (\$5,500,889):

- 2022-2025 National Science Foundation, Paleoclimate Perspectives on Climate Change, “RUI: Collaborative Research: Medieval to modern climate variability and climate change in the Great Plains” \$198,130.
- 2021-2022 California Department of Water Resources & Scripps Institution of Oceanography, UC San Diego, “Tree-Ring Reconstruction of Seasonal to Storm-Level Precipitation in California” \$99,132.
- 2020-2023 National Science Foundation, Paleoclimate Perspectives on Climate Change, “Pan-American Precipitation Extremes and Multi-Decadal Regimes Reconstructed with Tree-Ring Chronologies from the Amazon” \$399,747.
- 2020-2022 California Department of Water Resources & Scripps Institution of Oceanography, UC San Diego, “Tree-Ring Reconstruction of Seasonal to Storm-Level Precipitation in California” \$139,670.
- 2015-2020 National Science Foundation, Paleoclimate Perspectives on Climate Change, “Amazonia Tree-Ring Chronologies for Climate and Streamflow Reconstruction” \$418,656.
- 2014-2018 National Science Foundation, Paleoclimate Perspectives on Climate Change, “Collaborative Research: Cool and Warm Season Moisture Reconstruction and Modeling over North America” \$219,650.
- 2013-2014 National Science Foundation, CNIC, “Tropical Climate Reconstruction with Tree-Ring Chronologies from the Central Amazon and Eastern Highlands of Brazil” \$64,980.
- 2011-2012 US Department of the Interior, National Center for Preservation Technology, “Dendrogeomorphological Investigation of Earthwork Stability at Poverty Point State Historic Site, Louisiana” \$18,995.

- 2008-2011 National Oceanic and Atmospheric Administration, Climate Change Data and Detection Program, "Millennium-Long Reconstructions of Cool and Warm Season Precipitation Over the Southeastern and Southwestern United States." \$153,997.
- 2008-2012 National Science Foundation, Paleoclimatology Program, "Mesoamerican Dendroclimatology: Climate Dynamics and Socioeconomic Applications." \$327,271.
- 2007 Graduate School, University of Arkansas, "Radiocarbon dating for selected subfossil baldcypress logs from South Carolina," Alan Hogg's Radiocarbon Dating Laboratory, Waikato University, Hamilton, New Zealand. \$7,000.
- 2006-2007 Texas Army National Guard, "Mapping and Analysis of Rare Ancient Forests at Fort Wolters, Texas." \$24,996.
- 2006-2007 Southwest Florida Water Management District, "Tree-Ring Chronology Development and Analysis on the Withlacoochee River, Florida." \$12,000.
- 2006-2008 National Science Foundation, SBE Doctoral Dissertation Research Improvement Grant for Dorian J. Burnett, "19th Century Meteorology and Climatology in Kansas." \$7,032.
- 2005-2006 National Oceanic and Atmospheric Administration, "Chronology of Multiple Time-Scale Climatic Events in the Americas." \$6,000.
- 2005-2006 National Science Foundation, Paleoclimatology Program, "Chronology of Multiple Time-Scale Climatic Events in the Americas." \$13,750.
- 2005-2010 USDA Forest Service, Southern Research Station (SRS 05-CA-11330124-118), "The Distribution of Cross Timbers in Western Arkansas." \$11,019.
- 2004-2008 National Science Foundation, Earth System History Program, "Climate Reconstruction and Analysis Using Tree-Ring Data from Ancient Forests of Mexico and the Southern USA." \$469,930.
- 2003-2006 CALFED Ecosystem Restoration Program, "Hydroclimate Reconstruction and Ancient Blue Oak Mapping Over the Drainage Basin of San Francisco Bay." with subcontracts to D. Cayan (Scripps), M. Dettinger (USGS), D. Meko (Arizona), and K. Redmond (Desert Research Institute), \$747,741.
- 2003-2004 U.S. Army Corps of Engineers, Tulsa District, "Ancient Cross Timbers Inventory, Lake Eufaula, Oklahoma." \$10,000.
- 2003-2003 National Geographic Society, "Pre-Hispanic Dendrochronology in Mexico," National Geographic Society, \$16,830.

- 2002-2004 National Science Foundation, "Climate and History in Central Mexico," Doctoral Dissertation Research Grant for M.D. Therrell, \$8,000.
- 2001 SILO/SURF (undergraduate research), "Repeat Photography to Document Old-Growth Forests in the Cross Timbers," \$2,650.
- 2001-2003 National Science Foundation, "Analysis of Drought Reconstructions" Doctoral Dissertation Research Grant for F.K. Fye, \$7,800.
- 2000-2004 National Science Foundation, Paleoclimatology Program, "Tree-Ring Records of Regional Climate and Large-Scale Atmospheric Circulation." \$446,854.
- 1998-2001 National Oceanic and Atmospheric Administration, "Decade-to-Century Hydroclimatic Variability in Western North America." \$80,000.
- 1996-2000 National Science Foundation, Climate Dynamics Program, "Select Tree-Ring Chronologies for Large-Scale Paleoclimatic Reconstruction." \$331,131.
- 1996-1997 National Park Service, College of William and Mary, "Tree-Ring Analysis of Rainfall and Crop Yields for Southeastern Virginia and the Jamestown Colony." \$15,066.
- 1996-1998 National Science Foundation, Ecosystems Studies Program, "A Retrospective Dendroecology of American Chestnut in the Southern Appalachian Forest." \$50,000.
- 1994-1996 National Science Foundation, Climate Dynamics Program, "Dendrochronology in East Africa." \$46,848.
- 1993-1995 National Science Foundation, Climate Dynamics Program, "Tree-Ring Analysis of Regional to Large-Scale Paleoclimate." \$253,585.
- 1991-1995 National Park Service, Global Climate Change Program, Award No. CA6000-1-8013, "High Resolution Climate and Streamflow Reconstructions for the Ozark Highlands Using Long-Term Tree-Ring Data." \$268,000.
- 1990-1992 National Science Foundation, Climate Dynamics Program, Grant No. ATM-8914561, "Baldcypress Dendroclimatology in the Southeastern United States." \$192,000.
- 1986-1989 National Science Foundation, Climate Dynamics Program, Grant No. ATM-8612343, "Baldcypress Dendroclimatology in the Southeastern United States." \$175,954.
- 1984-1985 National Science Foundation, Climate Dynamics Program, Grant No. ATM-8412912, "Tree-Ring Chronology Development in the Southeastern United States." \$139,075.

- 1982–1983 National Science Foundation, Climate Dynamics Program, Grant No. ATM–8120615, "Tree–Ring Chronology Development in the Southcentral United States." \$60,900.
- 1980–1981 National Science Foundation, Climate Dynamics Program, Grant No. ATM–8006964, "The Development of Modern Tree–Ring Chronologies in the Midwest." \$56,500.

AS Co–Principal Investigator or Collaborator (\$3,239,602):

- 2018-2021 National Science Foundation, "Seasonal paleoclimate data assimilation" with S. Feng, total award \$220,000.
- 2009-2011 National Science Foundation and the University of Arizona, "An Investigation of North American Monsoon Variability using Instrumental and Tree-Ring Data." \$15,000.
- 2006-2010 Inter-American Institute for Global Change Research, "Hydrological variability in the Americas." Collaborator with PIs B. Luckman and J. Boninsegna, \$975,000.
- 1999-2004 Inter-American Institute for Global Change Research, "Assessment of present, Past, and Future Climate Variability in the Americas from Treeline Environments." Collaborator with PIs B. Luckman and J. Boninsegna, \$1,600,000.
- 1991 U.S. Geological Survey, Project No. 14–08–0001– G1997, "Origin and Age of the "Sunklands" Using Drainage Patterns, Sedimentology, Dendrochronology, Archaeology, and History," with M.J. Guccione. \$70,000.
- 1990 U.S. Nuclear Regulatory Commission, Contract No. NRC–04–90–111, "Investigations of Tree–Ring Response in Baldcypress of Reelfoot Lake, Tennessee, Due to the 1811–1812 New Madrid Earthquakes," with R. VanArsdale and M.K. Cleaveland. \$10,565.
- 1990–1991 National Oceanic and Atmospheric Administration, Award No. NA89AA–D–AC199, "Multi–Year Climate Fluctuations Analyzed with Millennium–Long Tree–Ring Data," with E.R. Cook. \$102,219.
- 1989–1991 National Science Foundation, Climate Dynamics Program, Grant No. ATM–8814675, "Long–Term Spatial and Temporal Variability of Precipitation, Evaporation, Soil Moisture and Runoff as Related to Drought Occurrence over Continental United States," Collaborator with C.W. Stockton and M.K. Hughes, \$223,318.
- 1987 U.S. Geological Survey, Project G–1409–2, "Long– Term Reconstruction and Analysis of White River Streamflow," with M.K. Cleaveland, \$22,000.

1976 University of Arkansas, and the Arkansas Archeological Survey, "Tree-Ring Research on Arkansas Log Buildings," with M.P. Hoffman. \$1,500.

CONSERVATION PROJECTS & DONATIONS (\$7,414,500):

2022 David Patton donation of 1,300 acres at Tiger Mountain, Oklahoma, to the Muscogee (Creek) Nation, for a nature preserve and for restitution of tribal lands lost in the allotment process following the Dawes Act. Appraised value \$2,250,000.

2019 Charles Robeson Foundation, "Preservation of ancient bald cypress forests at Black River, North Carolina." A \$1,000,000 donation to the Nature Conservancy (TNC) arising from the University of Arkansas, Tree-Ring Laboratory film (cypress.uark.edu) and publication in *Environmental Research Communications*, released from embargo on May 9, 2019, \$1,000,000. With federal, state, and private matching funds, total donation for land acquisition was \$3,000,000.

2019 The Erickson Foundation, "The Ancient Cross Timbers Consortium" \$10,000

2019 Merck Family Foundation, "The Ancient Bald Cypress Consortium" \$5,000.

2017 The Oak Hill Fund, "The OXBOW Project" \$20,000.

2016 John and Maggie DeCuevas, "The Ancient Bald Cypress Consortium" \$25,000.

2003-2004 LBJ National Grasslands, , "The Ancient Western Cross Timbers," With K. Clements Peppers and K. Smith, \$5,000.

2003 The Nature Conservancy, "The Ancient Western Cross Timbers," With K. Clements Peppers and K. Smith, \$3,000.

2002 The Nature Conservancy, "The Ancient Western Cross Timbers," With K. Clements Peppers and K. Smith, \$3,000.

2003 Irving Frank donation of 1,300 acres to create the Keystone Ancient Forest Preserve, Osage County, Oklahoma. Estimated value \$2,000,000. The preserve hosted 25,000 visitors in 2021.

2002-2004 The McGee Foundation, Oklahoma City, "The Disappearing Native Grasslands of Eastern Oklahoma." \$8,500.

1998-2001 The McGee Foundation, Oklahoma City, "The Ancient Cross Timbers Project." \$85,000.