

## SCOTTY DONALD JAMES STRACHAN, Ph.D.

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### CURRENT APPOINTMENTS

2018 – Present    **Director of Cyberinfrastructure**  
Office of Information Technology  
University of Nevada, Reno

2016 – Present    **Director**  
Nevada Climate-ecohydrology Assessment Network (NevCAN)  
Nevada System of Higher Education

### CURRENT & RECENT RESEARCH PROJECTS

- NSF-OAC-Campus Cyberinfrastructure Grant #1827186 Co-PI and Primary Author: “CC\* Networking Infrastructure: Building a high-performance, flexible DMZ backbone at the University of Nevada, Reno.” \$495,255, 2018-2020.
- NevCAN (Nevada Climate-ecohydrological Assessment Network). Administration, maintenance, and long-term development of remote environmental monitoring stations in Nevada. Connectivity via high-speed long-distance radio networks, real-time data streaming and two-way control capability of power systems, data loggers, and point-tilt-zoom (PTZ) web cameras.
- DoE-ORNL contract PI: DarkNet Science & Advanced Sensor Systems. Evaluation of next-generation technologies and practices for secure sensor networks. \$95,000, 2019-2020.
- NSF EPSCoR (Experimental Program to Stimulate Competitive Research) infrastructure building grant. Multi-institution \$20M award to research solar energy production and its impacts on water and the environment in Nevada. Member of Cyberinfrastructure (C.I.) working group to build capacity as a data center and establish additional real-time streaming of environmental data and imagery. Strategic partnerships developed between project scientists and external institutions, including the Long Now

Foundation, the Nevada Seismological Laboratory, and Great Basin College. Currently funded through 2019.

- ESIP (Earth Science Information Partners) EnviroSensing Lab Pilot, Co-PI: “SensorDat: Near-realtime data quality control processes on the CHORDS streaming platform.” \$9,000, 2018-2019.
- NSF GSS (Geography and Spatial Sciences) Grant #1230329 Co-PI and Primary Author: “Refinement of Historical Variability and the Baseline For Hydroclimatic Conditions Within the Walker Basin, Nevada/California: A Multi-Elevational Dendrochronological and Ecohydrological Approach.” \$344,999, 2012-2017.

## PRIMARY RESEARCH INTERESTS

- Real-time environmental monitoring at mid to high elevations. Expansion of comparable sensor-based observatories within mountain environments. Encourage wide data distribution for stakeholders at local to international levels; validation of climate response hypotheses from the organism to watershed scales.
- Ephemeral snowpacks and precipitation processes. Discrimination of the rain/snow phase transition and monitoring snow water-equivalent (SWE) using in-situ sensory techniques at the local- to watershed-scale. Development of new sensor systems, techniques, and image-processing tools.
- Observe and evaluate annual-to-decadal shifts in seasonal climate/hydrology, and evaluate response of vegetation growth activity. Identify key months/weeks of soil/ecological drought, and forms of relief related to synoptic circulation and precipitation event characteristics.
- Expansion of cutting-edge digital data networking in field science. Application of cost-effective multi-sensor networks at the watershed scale. Development of Quality Control and Assurance tools. Leverage unmanned aircraft systems (UAS) for data acquisition and infrastructure management.
- Multi-elevational dendrohydrology in semi-arid environments. Millennial-length climatically-sensitive tree-ring records from multiple elevations in discrete watersheds evaluated for snowpack/water-supply variability over time. Development of new long chronologies, planning for permanent instrumentation, data geared towards seasonal water-balance models.
- Development of long tree-ring chronologies from unique populations of five-needle pine in the Great Basin of North America. Compare with existing networks of chronologies and evaluate long-term trends in synoptic patterns.

## EDUCATION

2011 – 2016	<b>Ph.D., Geography</b> <b>Graduate Minor in Business Administration</b> Department of Geography, University of Nevada, Reno <i>Dissertation Title:</i> "Observing Semi-Arid Ecoclimates across Mountain Gradients in the Great Basin, USA" <i>Advisors:</i> Scott Mensing (UNR Geography); Constance Millar (USFS Pacific Southwest Research Station); David Charlet (Southern Nevada College); Robin Tausch (USFS Rocky Mountain Research Station); Stephanie McAfee (UNR Geography); Farrel Lytle (EXAFS Co.); Bradley Lyles (Desert Research Institute)	
2010 – 2011	<b>M.S., Geography</b> Department of Geography, University of Nevada, Reno <i>Thesis:</i> "Dendroarchaeological Dating of Comstock-Era Charcoal Features in the Great Basin"	
1999 – 2001	<b>B.S., Geography</b> <i>Minor: Economics</i> Department of Geography, University of Nevada, Reno	3.95/4.0
1993 – 1998	<b>A.A.</b> Western Nevada Community College	3.82/4.0

## PROFESSIONAL POSITIONS

2010 - 2017	<b>Coordinator, Environmental Research</b> Administrative Faculty III, Department of Geography, University of Nevada, Reno Director, Nevada Climate-ecohydrological Assessment Network <ul style="list-style-type: none"><li>• NSF-EPSCoR Nevada climate monitoring project deployments</li><li>• Development of high-speed communications networks for remote study sites</li><li>• Establishment of cooperative partnerships for project sustainability</li><li>• Management of dendrochronological project work</li><li>• Communicates project goals, processes, science, and technology to diverse groups for outreach, educational, and collaborative purposes</li></ul>	
2007-2010	<b>Staff Research Associate IV</b> Department of Geography, University of Nevada, Reno <ul style="list-style-type: none"><li>• Managed scientific project work within the <i>DendroLab</i></li><li>• Identified, sampled, and developed many long tree-ring chronologies</li><li>• Communicated with project stakeholders to better achieve scientific goals</li><li>• Managed Geographic Information Systems for digital field data collection, processing, analysis, reporting, and archival</li><li>• Managed laboratory equipment and IT systems</li><li>• Assisted with student education, training, and scientific projects</li></ul>	

- 2006-2007      **Engineering and IT Support Tech**  
Rockland International, Ltd., Minden, Nevada
- Project engineering support for material transport systems
  - On-site concept dimensioning and 3-dimensional modeling
  - Presentation and communication of solution alternatives to clients
- 2006            **Field Project Logistics Manager and GIS Coordinator**  
Tonogold Resources, Inc., NYAC Project, Alaska
- 20-person basecamp and helicopter drilling program logistical management
  - Supplies coordination and flight scheduling
  - Soil survey and drill hole data management
  - Daily website updates via satellite internet for management and stakeholders
- 2002-2006      **Research Technician**  
Department of Geography, University of Nevada, Reno
- Developed 30+ tree-ring chronologies in unique Great Basin environments
  - Performed dendroarchaeological dating for cultural resource projects
  - Set up and managed Geographic Information Systems
  - Collaborated to create web interface for point-query of PRISM climate data
  - Managed laboratory equipment and IT systems

## PEER-REVIEWED PUBLICATIONS

- (*in review*) **Strachan, S.**, S. McAfee, B. Lyles, G. McCurdy, S. Landolt. Identifying precipitation phase using a gage-difference method. *Water Resources Research*.
- 2019 Kelley, S.B., B.W. Lane, B.W. Stanley, K. Kane, E. Nielsen, **S. Strachan**. Smart Transportation for All? A Typology of Recent U.S. Smart Transportation Projects in Midsized Cities. *Annals of the American Association of Geographers*. DOI: 10.1080/24694452.2019.1643702
- 2018 Devitt, D.A., B. Bird, B. Lyles, L. Fenstermaker, R. Jasoni, **S. Strachan**, J. Arnone, F. Biondi, S. Mensing, L. Saito. Assessing Near Surface Hydrologic Processes and Plant Response over a 1600 m Mountain Valley Gradient in the Great Basin, NV, USA. *Water* 10(4):420-441. DOI: 10.3390/w10040420
- 2018 Scully-Allison, C., V. Le, E. Fritzinger, **S. Strachan**, F. Harris, S. Dascalu. Near Real-time Autonomous Quality Control for Streaming Environmental Sensor Data. *Procedia Computer Science*, 126:1656-1665. DOI: 10.1016/j.procs.2018.08.139
- 2018 Scully-Allison, C., H. Muñoz, V. Le, **S. Strachan**, E. Fritzinger, F. Harris, S. Dascalu. Advancing Quality Assurance through metadata management: design and development of a mobile application for the NRDC. *International Journal of Computer Applications* 25(1).
- 2017 **Strachan, S.**, C. Daly. Testing the daily PRISM air temperature model on semiarid mountain slopes. *Journal of Geophysical Research: Atmospheres* 122(11): 5697–5715. DOI:10.1002/2016JD025920
- 2016 **Strachan, S.**, E.P. Kelsey, R.F. Brown, S. Dascalu, F. Harris, G. Kent, B. Lyles, G. McCurdy, D. Slater, K. Smith. Filling the data gaps in mountain climate observatories through advanced

- technology, refined instrument siting, and a focus on gradients. *Mountain Research and Development*, 36(4):518-527. DOI: 10.1659/MRD-JOURNAL-D-16-00028.1
- 2015 Mutiibwa, D., **S. Strachan**, T. Albright. Land surface temperature and surface air temperature in complex terrain. *IEEE Journal Of Selected Topics In Applied Earth Observations And Remote Sensing (JSTARS)* 8(10):4762-4774. DOI:10.1109/JSTARS.2015.2468594
- 2014 Dascalu, S.M., F.C. Harris Jr., M. McMahon Jr., E. Fritzinger, **S. Strachan**, R. Kelley. An Overview of the Nevada Climate Change Portal. In: Ames, D.P., Quinn, N.W.T., Rizzoli, A.E. (eds.). *Proceedings of the 7<sup>th</sup> International Congress on Environmental Modelling and Software*, San Diego, ISBN: 978-88-9035-744-2
- 2014 Biondi, F., M. Hay, **S. Strachan**. The tree-ring interpolation model (TRIM) and its application to *Pinus monophylla* chronologies in the Great Basin of North America. *Forestry* 87(4):582-597
- 2013 **Strachan, S.**, F. Biondi, S. Lindström, R. McQueen, P. Wigand. Application of dendrochronology to historic charcoal production sites in the Great Basin, USA. *Historical Archaeology* 47(4)
- 2013 Kilpatrick, M., F. Biondi, **S. Strachan**, J.S. Sibold. Fire history of mixed conifer ecosystems in the Great Basin/Mojave Deserts transition zone, Nevada, USA. *Trees* 27(6):1789-1803. DOI:10.1007/s00468-013-0924-7
- 2013 Mensing, S., **S. Strachan**, J. Arnone, L. Fenstermaker, F. Biondi, D. Devitt, B. Johnson, B. Bird, E. Fritzinger. A network for observing Great Basin climate change. *Eos, Transactions American Geophysical Union* 94(11): 105-112
- 2012 **Strachan, S.**, F. Biondi, J. Leising. A 550-year reconstruction of streamflow variability in Spring Valley, Nevada, USA. *Journal of Water Resources Planning and Management* 138(4):326-333. DOI: 10.1061/(ASCE)WR.1943-5452.0000180
- 2011 McMahon Jr., M., S.M. Dascalu, F.C. Harris Jr., **S. Strachan**, F. Biondi. Architecting Climate Change Data Infrastructure for Nevada. Pp. 354-365 in Salinesi, C. and Pastor, O. (eds.), *Advanced Information Systems Engineering Workshops CAISE-2011, Lecture Notes in Business Information Processing, LNBIP-83*, Springer, London, UK
- 2011 Biondi, F., L. Jamieson, **S. Strachan**, J. Sibold. Dendroecological testing of the pyroclimatic hypothesis in the central Great Basin, Nevada, USA. *Ecosphere* 2(1). DOI:10.1890/ES10-00068.1
- 2007 Biondi, F., **S. Strachan**, S.A. Mensing, G. Piovesan. Radiocarbon analysis confirms the annual nature of sagebrush growth rings. *Radiocarbon* 49(3): 1232-1240

## BOOK CHAPTERS

- 2016 **Strachan, S.** Precipitation and Conifer Response in Semi-Arid Mountains: a case from the 2012-2015 drought in the Great Basin, USA. Chapter 5 in J. Schroder and G. Greenwood (editors), *Mountain Ice and Water*, Elsevier.
- 2014 **Strachan, S.**, A. Kennedy. Sensor Site and Platform Selection. Chapter 1 in Gries, C., and Henshaw, D. (editors), *Sensor Networks and Data Management Best Practices*. Federation of Earth Science Information Partners, EnviroSensing Cluster.  
[http://wiki.esipfed.org/index.php/Sensor\\_Site\\_and\\_Platform\\_Selection](http://wiki.esipfed.org/index.php/Sensor_Site_and_Platform_Selection)

2012 Biondi, F., **S. Strachan**. Dendrohydrology in 2050: Challenges and Opportunities. Pp. 355-362 in W.M. Grayman, D.P. Loucks, and L. Saito (editors), *Toward a Sustainable Water Future: Visions for 2050*, American Society of Civil Engineers (ASCE), Reston, Virginia

## OTHER PUBLICATIONS

- 2018 (invited) **Strachan, S.** *Opinion: Mountain observatories and a return to environmental Long Science*. Mountain Views, Consortium for Integrated Climate Research in Western Mountains Vol.12, No.2.
- 2017 **Strachan, S.**, and C. Daly. *Modeling Air Temperature on Mountain Slopes: A Conversation on Key Sources of Bias at the Watershed Scale*. Mountain Views, Consortium for Integrated Climate Research in Western Mountains Vol.11, No.2, pp 27-35.
- 2016 **Strachan, S.** *Field Notes: Llamas and Lytles: Unexpected Mountain Meetings*. Mountain Views, Consortium for Integrated Climate Research in Western Mountains Vol.10, No.2, pp 80-83.
- 2014 **Strachan, S.**, and F. Biondi. *Report on Dendrochronological Analysis of Wood Samples Associated with Archaeological Features near Mt. Hope, Eureka County, Nevada*. Final Report. *DendroLab*, Department of Geography, University of Nevada, Reno.
- 2014 **Strachan, S.**, and F. Biondi. *Report on Dendrochronological Analysis of Wood Samples Associated with Archaeological Features in the Pancake Range, White Pine County, Nevada*. Final Report. *DendroLab*, Department of Geography, University of Nevada, Reno.
- 2012 **Strachan, S.**, and F. Biondi. *Report on Dendrochronological Analysis of Charred Wood Samples Associated with Archaeological Features in the Silver King Pass, Lincoln County, Nevada*. Final Report. *DendroLab*, Department of Geography, University of Nevada, Reno.
- 2011 Biondi, F., and **S. Strachan**. *The Nevada NSF-EPSCoR Instrumented Transects: A Tool for Mountain-to-Valley Ecohydrology*. Mountain Views, Consortium for Integrated Climate Research in Western Mountains Vol.5, No.1.
- 2011 **Strachan, S.**, and F. Biondi. *Report on Dendrochronological Analysis of Surface and Subsurface Wood Samples Associated with Charcoal Oven and Other Historic Activities in the Cortez Mining District, Lander County, Nevada*. Final Report. *DendroLab*, Department of Geography, University of Nevada, Reno.
- 2008 **Strachan, S.**, and F. Biondi. *Report on Dendrochronological Analysis of Surface Wood Samples Associated with Charcoal Oven Features in the Cortez Mining District, Lander County, Nevada*. Final Report. *DendroLab*, Department of Geography, University of Nevada, Reno.
- 2004 **Strachan, S.**, and F. Biondi. *Tree-Ring Dating of Mt. Hope, Nevada Charcoal Ovens*. Final Report. *DendroLab*, Department of Geography, University of Nevada, Reno.
- 2003 **Strachan, S.**, and F. Biondi. *Report on Dendrochronological Analysis of Archaeological Features in the Heavenly Master Plan Area*. *DendroLab*, Department of Geography, University of Nevada, Reno.
- 2003 Biondi, F. and **S. Strachan**. *Tree-Ring Dating of Truckee Charcoal Ovens*. Final Report. *DendroLab*, Department of Geography, University of Nevada, Reno.

## INVITED PROFESSIONAL & WORKSHOP PRESENTATIONS

- 2019 (invited) **Strachan, S.** *CC\* Networking Infrastructure: Building a High-Performance, Flexible DMZ Backbone at the University of Nevada, Reno.* NSF Campus Cyberinfrastructure PI Workshop, Sept 23-25, Minneapolis.
- 2019 (invited) **Strachan, S.** *Best Practices for Sensor Networks and Key Issues in Sensor Data Management.* Session keynote, Frontiers of Environmental Sensor Innovation, May 15-17, Flathead Lake Biological Field Station, Montana.
- 2018 (invited) **Strachan, S.** *Cyberinfrastructure and the Critical Role of Engineering Partnerships for Science Discovery.* Keynote address, ISCA 27th International Conference on Software Engineering and Data Engineering (SEDE 2018) October 8-10, New Orleans, LA.
- 2018 (invited) **Strachan, S.** *Cart before the horse: system QA & data QC issues for environmental sensor networks.* Invited guest presentation, November 1, 2018 Australian Research Data Commons (ARDC) global virtual meeting, online.
- 2017 (invited) **Strachan, S.** *Eco-hydrologic observations across a mountain gradient in the Great Basin, USA.* Public Lecture (4 May 2017), Oeschger Centre for Climate Change Research, Geographisches Institut, University of Bern, Switzerland.
- 2016 (invited) **Strachan, S.,** G. McCurdy, B. Lyles, B. Johnson. *Precipitation characteristics, soil moisture deficit, and conifer response during the 2012-2015 drought as observed across instrumented mountain life zones in the Great Basin, USA.* Early Career Session, MtnClim 2016, Leavenworth, WA.
- 2016 (invited) **Strachan, S.** *Field Science Meets Cyberinfrastructure: Connectivity for Remote Monitoring Stations.* UNR Technology Summit Lightning Round Plenary, University of Nevada, Reno.
- 2015 (invited) **Strachan, S.** *North America's Great Basin: a Climate and Water Conundrum.* Environmental Science Colloquium (October 28<sup>th</sup>), Plymouth State University, New Hampshire.
- 2015 (invited) **Strachan, S.,** D. Slater. *Cyberinfrastructure Meets Environmental Science: Connectivity for Remote Monitoring Stations.* NSF-EPSCoR Cyberinfrastructure Workshop, University of Nevada, Las Vegas.
- 2015 (invited) **Strachan, S.** *The Great Basin in the Anthropocene.* The Long Now Foundation salon talk (January 6<sup>th</sup>), San Francisco.
- 2014 (invited) **Strachan, S.** *Keynote, Climate Change Committee Panel: Dendrochronology and Climatic Influences on Forests.* Plenary session, Western International Forest Disease Work Conference, Cedar City.
- 2013 (invited) **Strachan, S.,** F. Biondi. *Real-Time Monitoring of Mountain Conifer Growth Response to Seasonal Climate and the Summer Monsoon in the Great Basin of North America.* Session GC32B: Environment and Eco-system Changes in the Third Pole and Other Mountain Regions II, American Geophysical Union, San Francisco.

## PROFESSIONAL CONFERENCE PRESENTATIONS & POSTERS

- 2019 **Strachan, S.** *Observing the extremes: successes and challenges in applying sensor technology to weather, climate, and ecohydrological processes.* 29<sup>th</sup> Pacific Climate Workshop (PACCLIM), Asilomar, California.
- 2018 Jirasessakul, P., Z. Waller, P. Marquis, V. Le, C. Scully-Allison, **S. Strachan,** F. C. Harris, Jr., S. M. Dasalu. *Generalized Software Interface for CHORDS.* Proceedings of the ISCA 27th International

- Conference on Software Engineering and Data Engineering (SEDE 2018) October 8-10, New Orleans.
- 2018 **Strachan, S.** *Hidden in plain sight: Nevada's pinyon-juniper history waits to be found in Comstock-era charcoal ovens.* Nevada Archaeological Association 47<sup>th</sup> Annual Meeting, Reno NV.
- 2017 **Strachan, S.**, D. Slater, E. Fritzingler, B. Lyles, G. Kent, K. Smith, S. Dascalu, F. Harris. *Cyberinfrastructure for remote environmental observatories: a model homogeneous sensor network in the Great Basin, USA.* Abstract EGU2017-263, Session: Environmental sensor networks posters, European Geophysical Union, Vienna.
- 2017 **Strachan, S.**, G. McCurdy, B. Lyles, B. Johnson. *Precipitation in mountains: fine-scale events with long-term consequences.* 28<sup>th</sup> Pacific Climate Workshop (PACCLIM), Asilomar, California.
- 2016 **Strachan, S.**, S. Mensing, D. Devitt, L. Fenstermaker, B. Lyles, G. McCurdy. *Observing hydroclimatic variability during the 2012-2015 drought using a Great Basin mountain transect: elevation matters!* Abstract GC13E-1240, Session: Natural and Anthropogenic Drivers of Hydroclimatic Change in Western North America II Posters, American Geophysical Union, San Francisco.
- 2016 Devitt, D., B. Bird, B. Lyles, L. Fenstermaker, R. Jasoni, **S. Strachan**, J. Arnone, F. Biondi, S. Mensing, L. Saito. *Mountain Valley Eco-Hydrologic Connectivity in the Great Basin, NV* Abstract GC13E-1236, Session: Natural and Anthropogenic Drivers of Hydroclimatic Change in Western North America II Posters, American Geophysical Union, San Francisco.
- 2016 **Strachan, S.** *Cyberinfrastructure: Enabling environmental science in the "big data" revolution.* UNR Technology Summit Breakout Sessions, University of Nevada, Reno.
- 2016 **Strachan, S.**, D. Slater. *Field Science Meets Cyberinfrastructure: Connectivity for Remote Monitoring Stations.* NSF-EPSCoR Cyberinfrastructure Workshop, University of Nevada, Reno.
- 2016 **Strachan, S.** *The NevCAN Observatory: Long-term baseline monitoring across primary Great Basin life zones.* Earth, Air, and Water Workshop, University of Nevada, Reno.
- 2015 **Strachan, S.**, C. Daly, C. Millar. *Testing the PRISM temperature model in complex terrain: implications for mountain ecohydrology.* Abstract GC11C-1056, Session: Climate Refugia in a Changing World: Climatic and Hydrologic Processes Informing Ecological Responses I Posters, American Geophysical Union, San Francisco.
- 2015 **Strachan, S.**, J. Jusayan, V. Le, R. Stewart, E. Fritzingler. *FieldQA: A Quality Assurance tablet application for field science deployments.* 24<sup>th</sup> National NSF EPSCoR Conference, Portsmouth, New Hampshire.
- 2015 **Strachan, S.**, E. Kelsey, R. Brown, B. Lyles, S. Dascalu, F. Biondi, G. Kent. *Monitoring across the entire gradient: technology and practices for modern climate/near-surface process mountain observatories.* Session: Advances in observatories of mountain social-ecological systems 1, Perth III: Mountains of Our Future Earth Congress, Perth, Scotland.
- 2015 **Strachan, S.**, C. Millar. *Monitoring temperature and snow presence across topographic aspects in semi-arid woodlands: implications for tree growth response at the upper and lower treelines.* Session: Mountain treeline ecotones; threshold dynamics and climatic relationships, Perth III: Mountains of Our Future Earth Congress, Perth, Scotland.
- 2015 **Strachan, S.**, L. Fenstermaker, J. Arnone, F. Biondi, D. Devitt, R. Jasoni, S. Mensing, L. Saito, G. McCurdy, B. Lyles, B. Bird, S. Dascalu, F. Harris, E. Fritzingler, G. Kent, K. Smith, D. Slater. *NevCAN: A Great Basin Observatory.* Global Network of Mountain Observatories (GNOMO) Planning Workshop, Gothic, Colorado.



- 2015 Trustman, B., D. Obrist, R. Schumer, **S. Strachan**. *Characterizing spatial variability of Snow Water Equivalent using pressure sensors*. 83<sup>rd</sup> Annual Western Snow Conference, Grass Valley, California.
- 2015 **Strachan, S.**, C. Millar. *Replicating weather station air temperature measurements and monitoring snow cover across palaeorecord sites in complex terrain in the Walker Basin, California-Nevada*. 27<sup>th</sup> Pacific Climate Workshop (PACLIM), Asilomar, California.
- 2014 **Strachan, S.** *Localized detection of frozen precipitation events and the rain/snow transition*. Abstract C43C - 0406, Session: Quantifying Spatial and Temporal Variability of Snow and Snow Processes II Posters, American Geophysical Union, San Francisco.
- 2014 **Strachan, S.**, B. Lyles, D. Slater. *Robust electrical and communications design for remote monitoring stations in high-elevation environments*. Session SES-137\_2/180: Weather/Cryosphere, Mountain Observatories Global Fair and Workshop, Mountain Research Initiative, University of Nevada, Reno.
- 2013 Kamble, B., D. Mutiibwa, T. Albright, **S. Strachan**. *Dynamics of Physical Relation Between MODIS Land Surface Temperature And Air Temperature In Arid Environment And Complex Terrain*. Abstract B41D-0434, Poster Session: Multisensor Long-Term Land Surface Data Records II, American Geophysical Union, San Francisco.
- 2013 **Strachan, S.**, F. Biondi, M. McMahon, D. Slater. *Integration of Cyberinfrastructure with Field Science in Nevada: a Case Study in Dendrochronology*. 23<sup>rd</sup> National NSF EPSCoR Conference, Nashville.
- 2013 **Strachan, S.**, F. Biondi, C. Millar, D. Charlet. *Watershed-scale Topoclimatic Dendrochronology: Combining tree-ring records, in-situ instrumentation, and baseline ecology in the Walker River Basin, California-Nevada*. Ameridendro 2013, Tucson.
- 2013 Fenstermaker, L.F., **S. Strachan**, G. McCurdy, B. Bird, D. Devitt, F. Biondi, J. Arnone, L. Saito, R. Jasoni, B. Johnson, B. Lyles. *NevCAN: Monitoring Climate Variability and Change Along Two Elevation Gradients*. Great Basin Consortium Conference, Boise.
- 2012 **Strachan, S.**, F. Biondi, B. Johnson. *Instrumenting the Conifers: A Look at Daily Tree Growth and Locally Observed Environmental Conditions Across Four Mountain Sites in the Central Great Basin, USA*. Abstract B21B-0349, Poster Session: Climate Impacts on Ecosystems Quantified Using a Combination of Proxy Records and Instrumented Observatories II, American Geophysical Union, San Francisco.
- 2012 Kruse, K., L. Saito, L. Fenstermaker, D. Devitt, **S. Strachan**, C. Morris, M. Weltz. *Using Runoff Collectors to Understand Surface Runoff Characteristics in Remote Nevada Catchments*. Abstract H31G-1214, Poster Session: Using Field Measurements and Experiments to Advance Science II, American Geophysical Union, San Francisco.
- 2012 **Strachan, S.**, F. Biondi, S. Lindström, R. McQueen, P. Wigand. *Application of Dendrochronology to Historic Charcoal Production Sites in the Great Basin, USA*. General Session 7, Great Basin Anthropological Conference, Stateline.
- 2012 **Strachan, S.**, D. Slater, B. Lyles, K. Smith, M. McMahon. *Critical Infrastructure: Design of Interdisciplinary Remote Environmental Monitoring Stations*. Poster Session, MTNCLIM 2012, Estes Park.
- 2012 Mensing, S., **S. Strachan**, F. Biondi, D. Devitt, L. Fenstermaker, J. Arnone, L. Saito, B. Bird, B. Lyles, G. McCurdy, N. Lancaster, T. Piechota. *Introducing NevCAN: The Nevada Climate-ecohydrological Assessment Network of Real-Time Very High Resolution Environmental Data in the Great Basin*. Plenary session, MTNCLIM 2012, Estes Park.

- 2012 **Strachan, S.**, J. Arnone, F. Biondi, D. Devitt, L. Fenstermaker, and L. Saito. *Measuring Climate and Environmental Response in the Great Basin – the NevCAN long-term monitoring sites*. Paper Session: "Climate Change and Landscape Response," EPSCoR Tri-State Western Consortium, Sun Valley, Idaho.
- 2012 Fenstermaker, L., **S. Strachan**, G. McCurdy, B. Bird, D. Devitt, F. Biondi, J. Arnone, L. Saito, R. Jasoni, B. Johnson, B. Lyles. *NevCAN: Monitoring Climate Variability and Change along Two Elevation Gradients*. Poster Session, EPSCoR Tri-State Western Consortium, Sun Valley, Idaho.
- 2012 **Strachan S.**, B. Lyles, B. Bird, G. McCurdy, D. Slater. *Welcome to the Future: Status of the NV-EPSCoR Remote Environmental Monitoring Transect Stations, Snake and Sheep Ranges, Nevada*. Poster Session, Annual State NSF EPSCoR Climate Change Conference, Las Vegas, Nevada.
- 2011 McMahon Jr., M., F.C. Harris, Jr., S.M. Dascalu, and **S. Strachan**. *S.E.N.S.O.R. – Applying Modern Software and Data Management Practices to Climate Research*. Computer Applications in Industry and Engineering 2011 (CAINE 2011), Honolulu.
- 2011 **Strachan, S.**, B. Bird, B. Lyles, G. McCurdy, and M. McMahon. *Building Climate Monitoring Infrastructure in Nevada: Integration of field science and cyberinfrastructure along high elevational transects*. Paper Session: The Generation and Use of Climate Data Records, Annual Meeting of the Association of American Geographers, Seattle.
- 2011 Holt, D., J. Dech, K. Hrinkevich, K. Nicolussi, **S. Strachan**, and L. Winship. *Attempting to bridge the gap between the fixed and floating Methuselah Grove master chronology and building a chronology from Edmund Schulman's 1957 cores from Wyman Canyon: North American Dendro Ecological Fieldweek 2010 report*. Paper Session: Dendrochronology IV: Research from the North American Dendroecological Fieldweek, Annual Meeting of the Association of American Geographers, Seattle.
- 2011 **Strachan, S.**, B. Bird, B. Lyles, G. McCurdy, and M. McMahon. *Building Climate Monitoring Infrastructure in Nevada: Cyberinfrastructure meets field science along high elevational transects*. EPSCoR Tri-State Western Consortium, Paper Session: "Enabling Climate Change Research: Monitoring Environmental Parameters," Santa Ana Pueblo, New Mexico.
- 2011 Biondi, F., and **S. Strachan**. *Tree-ring extension of precipitation variability for eastern Nevada: Implications for drought analysis in the Great Basin Region, USA*. Oral Session on "The Past, Present, and Future of Global and Regional Droughts", Abstract H42G-08, Fall Meeting, American Geophysical Union, San Francisco.
- 2011 Biondi, F. and **S. Strachan**. *Climate Change Response of Great Basin Bristlecone Pine in the Nevada NSF-EPSCoR Project*. In: R.E. Keane, D.F. Tomback, M.P. Murray, and C.M. Smith (eds.), *The future of high-elevation, five-needle white pines in Western North America: Proceedings of the High Five Symposium*. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Proceedings RMRS-P-63, Fort Collins, CO. pp. 203-204.
- 2010 Biondi, F., **S. Strachan**, M. Bradley, J. Cheek, L. Jamieson, M. Kilpatrick, J. Sibold. *Fire and climate history of mixed conifer woodlands in the Great Basin, USA*. Abstract GC51D-0774, Poster Session: 2010 Fall Meeting, American Geophysical Union, San Francisco.
- 2010 **Strachan, S.**, F. Biondi, and J. Leising. *A 500-year reconstruction of streamflow variability in Spring Valley, Nevada, USA, and a look at the future of watershed-scale dendrohydrology*. Abstract A31D-0078, Poster Session, 2010 Fall Meeting, American Geophysical Union, San Francisco.  
[http://www.dendrolab.org/Posters/2010\\_agu\\_strachan.pdf](http://www.dendrolab.org/Posters/2010_agu_strachan.pdf)

- 2010 Devitt, D., J. Arnone, F. Biondi, L. Fenstermaker, L. Saito, M. Young, B. Riddle, **S. Strachan**, B. Bird, G. McCurdy, B. Lyles. *Nevada monitoring system to assess climate variability and change*. Abstract H33C-1147, Poster Session, 2010 Fall Meeting, American Geophysical Union, San Francisco.
- 2010 Holt, D., J. Dech, K. Hrinkevich, K. Nicolussi, **S. Strachan**, and L. Winship. *Cross-dating Bristlecone Pine samples from the Methuselah Grove and Wyman Canyon*. Paper Session, Association of American Geographers, Southeast Division Conference, Birmingham.
- 2010 Holt, D., J. Dech, K. Hrinkevich, K. Nicolussi, **S. Strachan**, and L. Winship. *Cross-dating Bristlecone Pine samples from the Methuselah Grove and Wyman Canyon*. Invited 2010-2011 Convocation, College of Arts and Science. University of West Florida, Pensacola.
- 2010 Biondi, F., J.D. Salas, **S. Strachan**, and L. Saito. *A dendrohydrological reconstruction for the Walker River Watershed (eastern Sierra Nevada/western Great Basin, USA) using new modeling techniques*. Special section on "High Resolution Models: Developments, Integration, and Applications", Abstracts of The 3rd USGS Modeling Conference, Denver, Colorado.
- 2010 **Strachan, S.**, B. Bird, R. Jasoni, and D. Simeral. *NSF EPSCoR Environmental Monitoring in Nevada - Remote Station Design, Data Acquisition, and Data Transport*. EPSCoR Tri-State Western Consortium, Session A3: "Cyberinfrastructure Data Formats and Instrumentation Systems", Incline Village, Nevada.
- 2010 **Strachan, S.**, D. Simeral, B. Bird, and R. Jasoni. *Building Infrastructure: Climate Monitoring Transects in Nevada*. Annual State NSF EPSCoR Climate Change Conference, Las Vegas, Nevada.
- 2009 Biondi, F. and **S. Strachan**. *A 2300-year tree-ring chronology and its climatic implications for the eastern Sierra Nevada/western Great Basin*. Proceedings of the International Symposium on Terminus Lakes: Preserving Endangered Lakes Through Research. University of Nevada, Reno, p. 38.
- 2009 Biondi, F., **S. Strachan**, and J. Leising. *Tree-ring extension of hydrological records for selected eastern Nevada valleys: Building the dataset*. Treeflow Workshop on "Tree-ring reconstructions of streamflow and climate and their application to Colorado River Basin water management", Boulder City, Nevada.
- 2009 Saito, L.S., F. Biondi, J. Salas, and **S. Strachan**. *Combining a water balance model for streamflow simulations with long tree-ring records to improve estimation of water resources variability*. EOS Transactions of the American Geophysical Union, 90(52) Fall Meeting Supplement, San Francisco, California. Abstract H23I-05.
- 2009 Biondi, F. and **S. Strachan**. *An expanded tree-ring network for eco-hydro-climatic research in the Great Basin of North America*. Annual Meeting of the Association of American Geographers, Paper Session on "Climate, Wildfire, and Woodland Dynamics in the Great Basin of North America - II", Las Vegas, Nevada.
- 2009 **Strachan, S.** and F. Biondi. *Precise Dating of Comstock-Era Charcoal Ovens in the Great Basin: A Dendrochronological Perspective*. Annual Meeting of the Association of American Geographers, Paper Session on "Climate, Wildfire, and Woodland Dynamics in the Great Basin of North America - II", Las Vegas, Nevada.
- 2009 Kilpatrick, M., J. Sibold, **S. Strachan**, and F. Biondi. *Tree-ring based fire history of the Clover Mountains, Lincoln County, Nevada*. Annual Meeting of the Association of American Geographers, Paper Session on "Climate, Wildfire, and Woodland Dynamics in the Great Basin of North America - I", Las Vegas, Nevada.
- 2008 Biondi, F., T.J. Kozubowski, A.K. Panorska, and **S. Strachan**. *Estimating the likelihood of eco-hydro-climatic episodes from tree-ring records*. Abstracts of the 8th National Conference on Science, Policy and

- the Environment on Climate Change: Science & Solutions , National Council for Science and the Environment, Washington D.C., USA.
- 2007 Biondi, F., and **S. Strachan**. *Spatial and temporal patterns identified in a Pinus monophylla tree-ring network*. Abstracts of the 103 rd Annual Meeting of the Association of American Geographers, Paper Session on "Dendrochronology II", San Francisco, California.
- 2006 Biondi, F., J. Kleppe, and **S. Strachan**. *Underwater Dendrochronology of Sierra Nevada Lakes*. Workshop on Science as a Tool in Lake Tahoe Basin Management, Incline Village, Nevada.
- 2006 Biondi, F., S. Mensing, and **S. Strachan**. *14 C Analysis Confirms the Annual Nature of Sagebrush Wood Layers*. Mountain Climate Sciences Symposium (MTNCLIM), Mt. Hood, Oregon.
- 2006 **Strachan, S.**, F. Biondi, and J. Kleppe. *Tree-Ring Dating of Submerged Trees in Fallen Leaf Lake, California*. Association of American Geographers Annual Meeting, Chicago, Illinois.
- 2005 **Strachan, S.**, F. Biondi, and J. Kleppe. *Tree-Ring Dating of Submerged Wood Samples Recovered from Fallen Leaf Lake, California*. Workshop on Coring in the Lake Tahoe Basin, Tahoe City, California.
- 2005 Biondi, F., T.J. Kozubowski, A.K. Panorska, and **S. Strachan**. *"Give Climate a Chance": Estimates from Tree Rings*. Planning Workshop to Develop Hydroclimatic Reconstructions for Decision Support in the Colorado River Basin, Tucson, Arizona.
- 2005 Biondi, F., and **S. Strachan**. *Pyroclimatic Hypothesis for Mt. Irish, Nevada, Derived from Tree-Ring Records*. Fire History and Climate Synthesis in the Western United States Workshop, Flagstaff, Arizona.
- 2005 Biondi, F., T. Kozubowski, A. Panorska and **S. Strachan**. *A Pinus monophylla tree-ring network for hydroclimatic studies in the Great Basin of North America*. Association of American Geographers Annual Meeting, Denver, Colorado.
- 2005 Biondi, F., and **S. Strachan**. *Great Basin Tree-Ring Records from Lower-Forest-Border Sites*. Mountain Climate Sciences Symposium (MTNCLIM), Chico Hot Springs, Montana.
- 2004 Biondi, F., T.J. Kozubowski, and A.K. Panorska; K.T. Redmond, and **S. Strachan**. *Drought Risk Estimation from Tree Rings*. Mountain Climate Sciences Symposium (MTNCLIM), South Lake Tahoe, California.
- 2004 Biondi, F., G.D. McCurdy, P.C. Hartsough, and **S. Strachan**. *Daily Weather and Tree Growth at the Tropical Treeline of North America*. Meeting on Tree Rings and Climate: Sharpening the Focus, Tucson, Arizona.
- 2004 Biondi, F., T. Kozubowski, A. Panorska, L. Saito and **S. Strachan**. *New approaches in dendrohydrology: theory and preliminary application to a 2300-year long record for the Walker River basin, California and Nevada, USA*. Meeting on Tree Rings and Climate: Sharpening the Focus, Tucson, Arizona.
- 2004 Biondi, F., T. Kozubowski, A. Panorska and **S. Strachan**. *A 2000-year hydroclimatic reconstruction for the Walker River basin, California and Nevada, USA*. Association of American Geographers Annual Meeting, Philadelphia, Pennsylvania.
- 2003 Biondi, F., G. McCurdy, P. Hartsough and **S. Strachan**. *Daily to annual meteorological patterns at high elevation in the North American monsoon region*. 28th Annual Climate Diagnostics and Prediction Workshop, Reno, Nevada.

## ACADEMIC SERVICE

- Co-Organizer, MtnClim, biennial conference of the Consortium for Integrated Climate Research in Western Mountains (CIRMOUNT), 2015 – present
- Co-Chair, Federation of Earth Science Information Partners (ESIP) EnviroSensing Cluster, Best Practices Working Group: 2016 – present
- External advisory panel, University of Oklahoma OURRstore NSF infrastructure grant 2018 – present
- NSF XSEDE Campus Champion: 2018 – present
- Graduate committee service:
  - Mahsa Sadeghpour (Ph.D.; UNR Geography), 2016 – present
  - Jehren Boehm (M.S.; UNR Geography), 2017 – present
  - Connor Scully-Allison (M.S.; UNR Computer Science & Engineering), 2017 – 2019
  - Jalal Al-Kiswani (Ph.D.; UNR Computer Science & Engineering), 2018 – 2019
  - Andy Garcia (M.S.; UNR Computer Science & Engineering), 2018
  - Hannah Muñoz (M.S.; UNR Computer Science & Engineering), 2016 – 2018
- Scientific Reviewer, refereed journals:
  - *Ecography*
  - *Water Resources Research*
  - *Climate Research*
  - *Journal of Hydrology*
  - *Journal of Biogeography*
  - *Journal of Applied Meteorology and Climatology*
  - *Journal of the American Water Resources Association (JAWRA)*
  - *Quaternary International*
  - *Remote Sensing in Ecology and Conservation*
  - *International Journal of Biometeorology*
  - *Water*
  - *Data Science Journal*
  - *Information Systems Frontiers*
  - *Journal of Environmental Informatics*
  - *Applications in Plant Sciences*
- Scientific Reviewer, US Geological Survey publications
- Third National Research Platform workshop program committee member, 2019
- Panel co-organizer: Edge-to-Edge Disruptive Research Workflows in Earth & Environmental Science, Smart Communities, and Technology Testbeds, Third National Research Platform 2019, Minneapolis
- NSF XSEDE EMPOWER Application Reviewer, 2019
- Workshops Committee Member: Practice & Experience in Advanced Research Computing (PEARC) Conference 2019, Chicago
- Panels Committee Member: Practice & Experience in Advanced Research Computing (PEARC) Conference 2019, Chicago

- Technical Papers Committee Member: Practice & Experience in Advanced Research Computing (PEARC) Conference 2019, Chicago
- Workshop Leader, “*Best practices in mountain sensor networks*,” MtnClim Conference, Rocky Mountain Biological Laboratory, Colorado 2018
- Session Co-Organizer, “*EnviroSensing QC*,” Earth Science Information Partners Federation (ESIP-Fed) Summer Meeting, Tucson 2018
- Session Co-Organizer, “*EnviroSensing QA*,” Earth Science Information Partners Federation (ESIP-Fed) Summer Meeting, Tucson 2018
- Session Co-Organizer, “*Every Mountain an Observatory: study designs and practices at the small project scale*,” Mountain Observatories Global Fair and Workshop, Mountain Research Initiative, Reno 2014
- Atelier Co-Organizer, “*Energy generation and management for remote observations stations*,” Mountain Observatories Global Fair and Workshop, Mountain Research Initiative, Reno 2014
- Session Co-Organizer, “*Climate Change and Landscape Response*,” NSF-EPSCoR Tri-State Annual Meeting, Santa Ana Pueblo, New Mexico 2011
- Class lectures, University of Nevada, Reno 2007 – present
  - Geography 103 Physical Geography
  - Geography 121 Climate Change and Its Environmental Impacts
  - Geography 314 Field Methods
  - Geography 321 Understanding Climate
  - Geography 325 Research Methods
  - Geography 431/631 Landforms
  - Geography 490/690 Colloquium
  - Geography 700 History and Nature of Geography
  - Geography 701G Methods in Palaeoclimate
  - Atmospheric Sciences seminar in Western Hydroclimate
- Reviewer, University of Nevada Reno Student World Water Forum 2011, 2016
- Contributor, Federation of Earth Science Information Partners (ESIP) EnviroSensing Cluster, Best Practices Working Group: 2013 – 2014

## SCIENCE IN SOCIAL MEDIA

- American Geophysical Union (AGU) EOS Field Postcard feature – Vol.99 No.11
- 2018 – Field photographs used in AGU Headquarters Renovation, Washington, D.C.
- 2017 – Field photographs used in fire science exhibit at the High Desert Museum, Bend, OR
- AGU EOS Field Postcard feature – Vol.98 No.9
- AGU EOS Field Postcard feature – Vol.97 No.21
- 2016 August – AGU Field Photography calendar
- 2016 – guest field science Instagrammer, AGU
- 2015 – AGU Field Photography calendar runner-up
- AGU EOS Field Postcard feature – Vol.96 No.12

## PREVIOUS WORK EXPERIENCE (OR, THE DEBT-FREE PATH TO HIGHER EDUCATION)

- 2000-2002      **Delivery Driver**  
Western Nevada Supply Company, Sparks, Nevada
- Construction materials delivery, fun with forklifts
- 1998-2000      **Courier**  
DHL Worldwide Express, Sparks, Nevada
- Time-sensitive express delivery, aircraft cargo Tetris
- 1995-1998      **Box Monkey**  
Bently Nevada Corporation, Minden, Nevada
- Shipping/receiving clerk, rubber band warlord
- 1995              **Delivery Driver**  
Winans Furniture, Carson City, Nevada
- Fine furniture delivery and umpteenth-floor setup
- 1993-1995      **Landscaping Supervisor**  
Draper Landscaping, Yerington, Nevada
- Custom landscaping and estate grounds maintenance
- 1992              **Ranch Hand**  
Flying M Cattle Company, Yerington, Nevada
- Cattle operations, getting out of trouble, Post-hole.Digger

## ACADEMIC AWARDS & SCHOLARSHIPS

- UNR Graduate Student Association travel award 2015
- UNR Regents Higher Education Opportunity Scholarship 2015
- UNR Graduate Student Association travel award 2014
- UNR Office of the VPRI Faculty travel grant 2014
- UNR Graduate Student Association travel award 2013
- Future Leader/Young Investigator, Washington D.C. NSF-EPSCoR NV delegation 2013
- UNR John W. James Scholarship, 2012-2013
- UNR Graduate Student Association travel award 2012
- UNR Newmont Mining Scholarship, 2010 - 2011
- Dean's List, UNR College of Arts and Science 2001
- First Place, UNR Geography Department GIS student poster competition 2001
- UNR Desert Mountain Research Scholarship 2000
- Dean's List, Western Nevada Community College 1997 - 1998

## PROFESSIONAL MEMBERSHIPS

- American Geophysical Union
- Association of American Geographers
- Nevada Archaeological Association

## OTHER MEMBERSHIPS, SERVICE, & VOLUNTEER WORK

- Media contributor, *2015 Guide to the Nevada State Legislature*
- Media contributor, *Reno Lens* book project, 2016
- Long Now Foundation, member 02013 – present
- Net Manager volunteer, Sierra Nevada Amateur Radio Society, 2013 – 2015
- Match Director volunteer, Palomino Valley Gun Club 2009 – 2016
- Club Officer (Treasurer) volunteer, Palomino Valley Gun Club 2015 – 2016
- Reno American Little League parent volunteer, 2011
- Writer's Group, Western Nevada Community College, 1996 – 2000
- Civil Air Patrol, search and rescue volunteer, 1990 – 1998
- FCC-licensed Amateur Extra Class radio operator: K7SDS
- Sierra Nevada Amateur Radio Society, member 2012 – present
- New York State Rifle and Pistol Association, 2014
- UNR Radio Pack Amateur Radio Booster Club
- NRA-Certified Range Safety Officer

## OTHER ACCOMPLISHMENTS, TRAVEL, & ADVENTURE

- **Family** with two intrepid boys, James Ernest Douglas (2005) and Calvin Spencer Forde (2008)
- **Married** 20 years (& counting) to amazing home educator Anthea Margrete Douglas
- **Exploration** of the Sierra & Great Basin region: 1985 – present
- **Photography** used with permission in many commercial and informational settings
- **Top 25 finish** Sniper's Hide Cup 2013, Douglas, Wyoming
- **Ultimate Frisbee** Reno regional tourney team: 2001 – 2004
- **18,500ft** unguided ascent of Pico de Orizaba, Mexico: 2003
- **Navigated** a Piper Cherokee Arrow in pursuit of high Mexican summits: 2003
- **1st documented dayhike** of the Grade V, Class 5, Northeast Ridge of Mt. Williamson, CA: 2002
- **Dayhiked** all 15 California 14,000 ft peaks: Summer 2002
- **Long range rifle** 40+ regional and local competition placements or wins: 2000 – present
- **Mountain bike racing** Tahoe Twilight Series: 2<sup>nd</sup> in class overall season 1999
- **Pistol competition** wins & placements, Northern Nevada Law Enforcement Association: 1992 – 95
- **Solo travel** in France, Spain, Portugal: 3 months, 1991
- **Additional travel** in Austria, Scotland, Switzerland, Mexico, Alaska, and throughout the United States

Updated Oct 2019