

## SCOTTY D.J. STRACHAN

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### CURRENT APPOINTMENT

2010 – Present    **Coordinator, Environmental Research**  
Administrative Faculty  
Department of Geography, University of Nevada, Reno

### CURRENT RESEARCH PROJECTS

- NSF EPSCoR (Experimental Program to Stimulate Competitive Research) infrastructure building grant. Multi-institution \$15 million award to establish climate monitoring systems in Nevada. Two instrumental transects (7 and 5 stations each) built in eastern and southern Nevada; monitoring includes atmospheric, hydrologic, pedologic, and ecological variables. Stations and project cyberinfrastructure are connected using high-speed, real-time private TCP/IP networking. Internet access, sensor communications, and remote-controlled web camera connectivity are extended to remote research locations. Strategic partnerships developed between project scientists and external institutions and agencies, including the Long Now Foundation, the Nevada Seismological Laboratory, and Great Basin College. Currently funded through 2012.
- Eastern Nevada hydroclimatic variability and reconstruction project. Development of 20+ long-lived, drought-sensitive tree-ring chronologies from the central Great Basin in order to evaluate nature of historic droughts for water planning purposes. Currently funded through 2011.
- Cortez, Nevada charcoal oven dendroarchaeology. Use of tree-ring records to accurately date excavated and surface wood features in historic Cortez mining district for Summit Envirosolutions, Inc.. Results infer historic activities of *carbonari* charcoal burners, ecological impacts to pinyon-juniper woodlands, and re-use of features.

### RESEARCH INTERESTS

- Multi-elevational dendrohydrology in the Great Basin. 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.

- Expand real-time environmental monitoring at mid to high elevations within the Great Basin within a collaborative environment, wide data distribution for stakeholders at local to international levels, use for validation of climate response hypotheses from the organism to watershed scales.
- Expansion of high-speed research-oriented wireless communications network across the Great Basin. Leverage EPSCoR cyberinfrastructure and partner with Nevada Seismological Laboratory to provide connectivity and data storage/processing/distribution services for research/monitoring activities in remote locations.
- Development of long tree-ring chronologies from unique low-elevation populations of five-needle pine in the Great Basin, and evaluate their climatic response.
- Evaluate presence of volcanic chemistry signals in tree rings – Mono Lake, California eruption. Apply EXAFS and LA-ICPMS technology to crossdated Western Juniper wood covering known Negit Island eruption timeframe.
- Evaluate harmonic signals in tree-rings and watershed streamflows. Explore large-scale climatic connections to solar output and magnetic field activities related to Galactic Cosmic Ray (GCR) flux.
- Extension of current *Pinus monophylla* tree-ring chronologies in the Great Basin using sub-fossil wood

## PROFESSIONAL MEMBERSHIPS

- American Geophysical Union
- Association of American Geographers

## EDUCATION

2010 – 2011	<b>M.S., Geography</b> <i>DendroLab</i> , Department of Geography, University of Nevada, Reno <i>Thesis</i> : "Dendroarchaeological Dating of Comstock-Era Charcoal Features in the Great Basin" <i>Committee</i> : Franco Biondi (advisor, <i>DendroLab</i> , Geography); Susan Lindström (Anthropology); Peter Wigand (Geography); Robert McQueen (archaeologist at-large)	4.0/4.0
1999 – 2001	<b>B.S., Geography</b> <i>Minor: Economics</i> Department of Geography, University of Nevada, Reno <i>Senior Project</i> : "Public Land Access Planning in Douglas County, Nevada" <i>Advisor</i> : Christopher Exline	3.95/4.0
1993 – 1998	<b>A.A.</b> Western Nevada Community College	3.82/4.0

## PROFESSIONAL POSITIONS

- 2010 - present     **Coordinator, Environmental Research**  
Administrative Faculty, Department of Geography  
University of Nevada, Reno
- Oversight of NSF-EPSCoR Climate Monitoring project deployments
  - Development of high-speed communications network for remote study sites
  - Establishment of cooperative partnerships with stakeholders for project sustainability
  - Management of dendrochronological project work within the *DendroLab*
  - Facilitates inter-group cooperation to maximize scientific deliverables
  - Communicates project goals, processes, science, and technology to diverse groups for outreach, educational, and collaborative purposes
- 2007-2010         **Staff Research Associate IV**  
*DendroLab*, Department of Geography, University of Nevada, Reno
- Managed scientific project work within the *DendroLab*
  - Identified, sampled, and developed many long tree-ring chronologies
  - Communicated with project stakeholders to better achieve scientific goals
  - Managed Geographic Information Systems for digital field data collection, processing, analysis, reporting, and archival
  - Managed laboratory equipment and IT systems
  - Assisted with student education, training, and scientific projects
- 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 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**  
*DendroLab*, 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

(accepted) Biondi, F. , and **S. Strachan**. Dendrohydrology in 2050: Challenges and Opportunities. In: W. Grayman, P. Loucks, and L. Saito (editors), *Water and Environmental Resources Vision 2050*, American Society of Civil Engineers (ASCE).

(in press) **Strachan, S.**, F. Biondi, and J. Leising. A 550-year reconstruction of streamflow variability in Spring Valley, Nevada, USA. *Journal of Water Resources Planning and Management*. DOI: 10.1061/(ASCE)WR.1943-5452.0000180

2011 McMahon Jr., M., S.M. Dascalu, F.C. Harris Jr., **S. Strachan**, and 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**, and J. Sibold. Dendroecological testing of the pyroclimatic hypothesis in the central Great Basin, Nevada, USA. *Ecosphere* 2(1): art5 (20 pages). doi:10.1890/ES10-00068.1

2007 Biondi, F., **S. Strachan**, S.A. Mensing, and G. Piovesan. Radiocarbon analysis confirms the annual nature of sagebrush growth rings. *Radiocarbon* 49(3): 1232-1240

## REPORTS

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.

## PROFESSIONAL CONFERENCE & OTHER PUBLICATIONS

2011 **Strachan, S.**, B. Bird, B. Lyles, G. McCurdy, M. McMahon. *Building Climate Monitoring Infrastructure in Nevada: Integration of field science and cyberinfrastructure along high elevational transects*. 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*. 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, Session F1: "Enabling Climate Change Research: Monitoring Environmental Parameters," Santa Ana Pueblo, New Mexico.

2011 Biondi, F., and **S. Strachan**. *The Nevada NSF-EPSCoR Instrumented Transects: A Tool for Mountain-to-Valley Ecohydrology*. The Newsletter of the Consortium for Integrated Climate Research in Western Mountains (CIRMOUNT), Vol.5, No.1.

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 presented at 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 presented at 2010 Fall Meeting, American Geophysical Union, San Francisco.

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 presented at 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*. Abstracts of the 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. and **S. Strachan**. *Hypothesis-driven research on climate change impacts: the Nevada NSF-EPSCoR example*. Abstracts of the "High-Five" Symposium: The Future of High-Elevation Five-Needle White Pines in Western North America, University of Montana, Missoula.

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*. 2010 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., **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.

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.

## PREVIOUS EXPERIENCE (OR, THE DEBT-FREE PATH TO COLLEGE DEGREES)

- 2000-2002      **Delivery Driver**  
Western Nevada Supply Company, Sparks, Nevada
- Construction materials delivery
- 1998-2000      **Courier**  
DHL Worldwide Express, Sparks, Nevada
- Time-sensitive express delivery, aircraft load planning
- 1995-1998      **Box Monkey**  
Bently Nevada Corporation, Minden, Nevada
- Shipping/receiving clerk
- 1995              **Delivery Driver**  
Winans Furniture, Carson City, Nevada
- Fine furniture delivery and 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

## ACADEMIC AWARDS & SCHOLARSHIPS

- 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

## OTHER MEMBERSHIPS, SERVICE, & VOLUNTEER WORK

- Reno American Little League parent volunteer
- FCC-licensed Extra-Class amateur radio operator: K7SDS
- UNR Radio Pack Amateur Radio Club
- Match Director volunteer, Palomino Valley Gun Club 2009 - present
- Writer's Group, Western Nevada Community College, 1996 - 2000
- Civil Air Patrol, search and rescue volunteer, 1990 - 1998

## OTHER ACCOMPLISHMENTS, TRAVEL, & ADVENTURE

- **Family** with two intrepid little boys, James Ernest Douglas and Calvin Spencer Forde
- **Married** 12 years (& counting) to amazing home educator Anthea Margrete
- **Exploration** of the Sierra & Great Basin region: 1985 - present
- **Photography** used with permission in many commercial and informational settings
- **Ultimate Frisbee** 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 Northeast Ridge of Mt. Williamson, CA: 2002
- **Dayhiked** all 15 California 14,000ft peaks: spring-summer 2002
- **Long range rifle** 30+ 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 Northern Nevada Law Enforcement Association: 1990's
- **Solo Travel** in France, Spain, Portugal: 3 months, 1991
- **Additional travel** in Mexico, Alaska and throughout the United States