

## Leora Nanus, Ph.D.

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### EDUCATION

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#### **Doctor of Philosophy (Ph.D.), Geography, 2008**

Department of Geography, University of Colorado Boulder, Boulder, Colorado.

Dissertation: *Regional Assessment of the Sources and Effects of Acidic Deposition on Lake Chemistry in Alpine and Subalpine Watersheds of National Parks in the Rocky Mountains.*

#### **Master of Science (M.S.), Geology, 2000**

Department of Geology, Western Washington University, Bellingham, Washington.

Thesis: *Spatial and Temporal Variability of Nitrate Contamination in the Abbotsford-Sumas Aquifer, Washington.*

#### **Bachelor of Science (B.S.), Earth Sciences, 1995**

Department of Earth Sciences, University of California Santa Cruz, Santa Cruz, California.

1991-1993: Colgate University, New York.

### ACADEMIC APPOINTMENTS and PROFESSIONAL EXPERIENCE

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2014 to present **Assistant Professor**, Geography & Environment, San Francisco State University, California

2017 **Academic Visiting Researcher**, Eawag, Swiss Federal Institute of Aquatic Science and Technology, ETH Domain, SIAM, Dübendorf, Switzerland (01/2017 – 06/2017).

2010 to present **Associated Faculty**, Environmental Studies, San Francisco State University, California.

2009 to 2014 **Adjunct Assistant Professor and Research Scientist**, Earth & Climate Sciences, San Francisco State University, California.

2013 to 2014 **Assistant Researcher**, Principal Investigator, Institute of Marine Sciences, University of California Santa Cruz, California.

2011 to 2012 **Assistant Project Scientist**, Institute of Marine Sciences, University of California Santa Cruz, and NOAA Fisheries Service, Southwest Fisheries Science Center, California.

2010 **Lecturer**, Earth & Climate Sciences, San Francisco State University, California.

1999 to 2009 **Hydrologist**, U.S. Geological Survey, Colorado Water Science Center, Colorado.

2005 **Instructor**, Department of Geography, University of Colorado Boulder, Colorado.

2004 to 2006 **Graduate Research Assistant**, Institute of Arctic and Alpine Research, University of Colorado Boulder, Boulder, Colorado, Ph.D. advisor: Dr. Mark Williams.

1997 to 1998 **Graduate Research Assistant**, Geology, Western Washington University, Bellingham, Washington, M.S. advisor: Dr. Scott Babcock.

**PEER-REVIEWED PUBLICATIONS**

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**Peer-Reviewed Journal Articles (14)**

(\*SFSU student author)

**Nanus, L.**, Campbell, D.H., Lehmann, C.M.B., Mast, M.A., 2018. Spatial and Temporal Variation in Sources of Atmospheric Nitrogen Deposition in the Rocky Mountains using Nitrogen Isotopes, *Atmospheric Environment* 176, 110-119, doi: 10.1016/j.atmosenv.2017.12.023.

**Nanus, L.**, McMurray, J.A., Clow, D.W., Saros, J.E., Blett, T., Gurdak, J.J., 2017. Spatial Variation of Atmospheric Nitrogen Deposition and Critical Loads for Aquatic Ecosystems in the Greater Yellowstone Area, *Environmental Pollution* 223, 644-656, doi:10.1016/j.envpol.2017.01.077.

Gurdak, J.J., \*Geyer, G.E., **Nanus, L.**, Taniguchi, M., \*Corona, C.R., 2017. Scale Dependence of Controls on Groundwater Vulnerability in the Water-Energy-Food Nexus, California Coastal Basin Aquifer System, *Journal of Hydrology: Regional Studies* 11, 126-138, doi:10.1016/j.erjh.2016.01.002.

Clow, D.W., Roop, H.A., **Nanus, L.**, Fenn, M.E, Sexstone, G.A., 2015. Spatial Patterns of Atmospheric Deposition of Nitrogen and Sulfur using Ion-exchange Resin Collectors in Rocky Mountain National Park, USA, *Atmospheric Environment* 101, 149-157.

\*Newcomer, M.E., Gurdak, J.J., Sklar, L.S., **Nanus, L.**, 2014. Urban Recharge beneath Low Impact Development and Effects of Climate Variability and Change, *Water Resources Research* doi:10.1002/2013WR014282.

**Nanus, L.**, Clow, D.W., Saros, J.E., Stephens, V.C., Campbell, D.H., 2012. Mapping Critical Loads of Nitrogen Deposition for Aquatic Ecosystems in the Rocky Mountains, USA, *Environmental Pollution* 166, 125-135.

Clow, D.W., **Nanus, L.**, Verdin, K.L., Schmidt, J., 2012. Evaluation of SNODAS snow depth and snow water equivalent estimates for the Colorado Rocky Mountains, *Hydrological Processes* 26, 17, 2583-2591.

Clow, D.W., **Nanus, L.**, Huggett, B., 2010. Use of Regression-Based Models to Map Sensitivity of Aquatic Resources to Atmospheric Deposition in Yosemite National Park, *Water Resources Research* 46, doi:10.1029/2009WR008316.

**Nanus, L.**, Williams, M.W., Campbell, D.H., Tonnessen, K.A., Blett, T., Clow, D.W., 2009. Assessment of Lake Sensitivity to Acidic Deposition in National Parks of the Rocky Mountains, *Ecological Applications* 19, 4, 961-973.

**Nanus, L.**, Williams, M.W., Campbell, D.H., Elliott, E.M., Kendall, C., 2008. Evaluating Regional Patterns in Nitrate Sources to Watersheds in National Parks of the Rocky Mountains using Nitrate Isotopes, *Environmental Science and Technology* 42: 6487-6493.

Ingersoll, G.P., Mast, M.A., Campbell, D.H., Clow, D.W., **Nanus, L.**, Turk, J.T., 2008. Trends in snowpack chemistry and comparison to National Atmospheric Deposition Program results for the Rocky Mountains US, 1993- 2004, *Atmospheric Environment* 42, 6098-6113.

**Nanus, L.**, Campbell, D.H., Ingersoll, G.P., Clow, D.W., Mast, A.M., 2003. Atmospheric Deposition Maps for the Rocky Mountains, *Atmospheric Environment* 37, 4881-4892.

Mitchell, R.J., Babcock, R.S., Gelinas, S., **Nanus, L.**, Stasney, D., 2003. Nitrate Distributions and Source Identification in the Abbotsford-Sumas Aquifer, Northwestern Washington, *Journal of Environmental Quality* 32, 3, 789-800.

Clow, D.W., Striegl, R.G., **Nanus, L.**, Mast, M.A., Campbell, D.H., Krabbenhoft, D.P., 2002. Chemistry of Selected High-Elevation Lakes in Seven National Parks in the Western United States, *Water, Air, and Soil Pollution, Focus 2*: 139-164.

### **Peer-Reviewed Reports (9)**

**Nanus, L.**, McMurray, J., 2015. Mapping Atmospheric Deposition of Nitrogen and Sulfur in the Greater Yellowstone Area, *USDA Forest Service Technical Report*.

Bytnerowicz, A. Fenn, M., Gertler, A., Preisler, H., Zielinska, B., Ahuja, S., Cisneros, R., Shaw, G., Schweizer, D., Procter, T., Burley, J., Schilling, S., **Nanus, L.**, McDaniel, M., Theiss, S., Sickman, J., Bell, M., Rorig, M. 2013. Distribution of ozone, ozone precursors and gaseous components of atmospheric nitrogen deposition in the Lake Tahoe Basin. *Final Technical Report for SNPLMA Project P063*. Albany, CA, USDA Forest Service, Pacific Southwest Research Station. 86 p.

Simonich, S., **Nanus, L.**, 2012. Sierra Nevada-Southern Cascades Region Air Contaminants Research and Monitoring Strategy, *National Park Service Technical Report*.

Ingersoll, G.P., Mast, M.A., Campbell, D.H., Clow, D.W., **Nanus, L.**, and Turk, J.T., 2009. Rocky Mountain snowpack physical and chemical data for selected sites, 1993–2008. *U.S. Geological Survey Data Series 369*.

Ingersoll, G.P., Mast, M.A., **Nanus, L.**, Handran, H.M., Manthorne, D.J., and Hulstrand, D.M., 2007. Rocky Mountain Snowpack Chemistry at Selected Sites, 2004. *U.S. Geological Survey, Open-File Report 2007-1045*.

**Nanus, L.**, Campbell, D.H., Williams, M.W., 2005. Sensitivity of Alpine and Subalpine Lakes to Acidification from Atmospheric Deposition in Grand Teton National Park and Yellowstone National Park, Wyoming. *U.S. Geological Survey, Scientific Investigations Report 2005-5023*.

Ingersoll, G.P., Mast, M.A., **Nanus, L.**, Manthorne, D.J., Handran, H.M., Hulstrand, D.M., Winterringer, J.A., 2005. Rocky Mountain Snowpack Chemistry at Selected Sites, 2003. *U.S. Geological Survey, Open-File Report 2005-1332*.

Ingersoll, G.P., Mast, M.A., **Nanus, L.**, Manthorne, D.J., Clow, D.W., Handran, H.M., Winterringer, J.A., Campbell, D.H., 2004. Rocky Mountain Snowpack Chemistry Synoptic at Selected Sites 2002. *U.S. Geological Survey, Open-File Report 2004-1027*.

Ingersoll, G.P., Mast, M.A., Clow, D.W., **Nanus, L.**, Campbell, C., Handran, H.M., 2003. Rocky Mountain Snowpack Chemistry Synoptic at Selected Sites for 2001. *U.S. Geological Survey, Open-File Report, 2003-48*.

**Other Publications**

Ingersoll, G.P., Campbell, D.H., Mast, M.A., Clow, D.W., **Nanus, L.**, Frakes, B., 2009. Snowpack Chemistry Monitoring Protocol for the Rocky Mountain Network; Narrative and Standard Operating Procedures. *U.S. Geological Survey, Administrative Report.*

**Nanus, L.**, 2008. Regional Assessment of the Sources and Effects of Acidic Deposition on Lake Chemistry in Alpine and Subalpine Watersheds of National Parks in the Rocky Mountains, United States. *Ph.D. Dissertation., University of Colorado, Boulder, CO.*

**Nanus, L.**, and Clow, D.W., 2004. Sensitivity of Lakes in Wilderness Areas in Oregon and Washington to Atmospheric Deposition, *U.S. Department of Agriculture Forest Service, Region 6, Administrative Report.*

**Nanus, L.**, 2000. Spatial and Temporal Variability of Nitrate Contamination in the Abbotsford-Sumas Aquifer. Whatcom County, Washington. *M.S. Thesis, Western Washington University, Washington.*

Mitchell, R.J., Babcock, R.S., Stasney, D., **Nanus, L.**, Boesser, S., Matthews, R., and Vandersypen, J., 2000. *Abbotsford-Sumas Aquifer Monitoring Project, Final Report.*

**FUNDED RESEARCH GRANTS and CONTRACTS (24)**

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*GHG benefits and co-benefits of mountain meadow restoration in the context of global change*, Oliphant, A. (PI), Baguskas, S. (Co-PI), Davis, J. (Co-PI), Simonin, K. (Co-PI), **Nanus, L.** (Co-PI), Blesius, L. (Co-PI), Studwell, A. (Co-PI), 2019-2024, Wetlands Restoration for Greenhouse Gas Reduction Program, California, Lead Agency: The Sierra Fund.

*Assessment of High-Elevation Lakes Exceeding Critical Loads of Nitrogen Deposition Across the Greater Yellowstone Area*; USDA Water Resources Internship, USDA NIFA Award No. 2015-38422-24058, Award Title: Water Resources Experiential Learning for USDA Careers, Lead Agency: Cal State Univ. San Bernardino, funded by CSU Water Resources & Policy Initiatives (WRPI) 2018-2019, **Nanus, L.** (PI).

*Fog and Fish: Stream temperature reduction due to coastal fog in central California's anadromous salmonid habitat*, Baguskas, S. (PI), Torregrosa, A. (Co-PI), **Nanus, L.** (Co-PI), 2019-2020, California Sea Grant College Program.

*Current Air Quality Issues in the Greater Yellowstone Area (GYA)*, **Nanus, L.** (PI), McMurray, J.A. (Co-I), Blett, T.A. (Collaborator) (2018-2020) FY18-WO-Air Priority Allocation Funding Proposals, Bridger-Teton National Forest, U.S. Forest Service.

*Paleolimnological Assessment of High-Elevation Lakes Exceeding Critical Loads of Nitrogen Deposition Across the Greater Yellowstone Area*, **Nanus, L.** (PI), Saros, J. (Co-I), McMurray, J.A. (Collaborator), 2018-2020. Greater Yellowstone Coordinating Committee, U.S. Forest Service.

*Water-Energy-Food Nexus in Coastal California – Evaluating Freshwater Vulnerability to Anthropogenic Stressors under Climate Change*, **Nanus, L.** (PI), 2014-2015. California State University, Water Resources and Policy Initiatives, Faculty Research Incentive Award.

*Demarcation of Environmental Management for Human Environmental Security in Asia-Pacific region – Nexus of Thermal Energy, Water, Coastal Fishery, Japanese Ministry of Education; Vulnerability of the*

*Water-Energy-Food Nexus in Coastal California*, Gurdak, J. (PI), **Nanus, L.** (Co-I), 2013-2018. Research Institute for Humanity and Nature, Kyoto, Japan.

*Atmospheric Deposition in the Greater Yellowstone Ecosystem*, **Nanus, L.** (PI), 2013-2015, U.S. Forest Service, Bridger-Teton National Forest.

*Non-Point Contaminants in Alaskan National Park Ecosystems*, **Nanus, L.** (PI), Simonich, S. (Co-I), 2011-2014, National Park Service.

*Toxic Air Contaminants Research and Monitoring Strategy for Sierra Nevada Southern Cascades*, Simonich, S. (PI) and **Nanus, L.** (Co-I), 2010-2011, National Park Service.

*Preparing the San Francisco State University Community to Understand Climate Change Effects on Groundwater Resources in San Francisco*, Gurdak, J. (PI) and **Nanus, L.** (Co-I), 2010-2011, SFSU Office of Research and Sponsored Programs, FOA 2010-01 Facilitating Research at SFSU.

*Critical Loads of Atmospheric Nitrogen in the Rocky Mountains, USA*, **Nanus, L.** (PI), 2012, U.S. Geological Survey.

*Mapping Critical Loads of Atmospheric Nitrogen Deposition in the Rocky Mountains, USA*, Clow, D. (PI), Campbell, D.(PI), Saros, J.(Co-I), **Nanus, L.** (Co-I), Sickman, J. (Co-I), Fenn, M. (Co-I), Baron, J., Williams, M.(Co-I), 2007-2010, Multiple Agency: U.S. Environmental Protection Agency, National Park Service, U.S.D.A. Forest Service, U.S. Geological Survey.

*Determination of Source Areas and Source Types of Nitrogen Deposition in Colorado, Wyoming, Montana, and Utah using Nitrogen Isotopes*, **Nanus, L.** (PI), Campbell, D. (Co-I), Ingersoll, G., Harlin, K., 2007-2009, U.S. Environmental Protection Agency Funding Program: EPA-R8-2007-01 Regional Geographic Initiatives, Air Quality.

*Evaluation of Spatial and Temporal Variability in Source Types of Nitrogen Deposition in the Rocky Mountains using Nitrogen Isotopes*, **Nanus, L.** (PI), Campbell, D. (Co-I), Ingersoll, G., 2007-2009 USGS, National Atmospheric Deposition and Hydrologic Benchmark Programs.

*Evaluation of Sampling Strategies for Capturing the Spatial Variability in Atmospheric Deposition in the Rocky Mountains*, **Nanus, L.** (PI), Ingersoll, G.(Co-I), Clow, D., Campbell, D., 2006-2007, National Park Service, Rocky Mountain Inventory and Monitoring Network.

*Snow-Sampling Protocol and Network Evaluation: Monitoring Atmospheric Deposition to Annual Snowpacks in the Rocky Mountain Region, USA*, Ingersoll, G. (PI), **Nanus, L.** (Co-I), Clow, D., Campbell, D., 2005-2007 National Park Service, Rocky Mountain Inventory and Monitoring Network.

*Determination of Sources of Atmospherically Deposited Nitrogen in Rocky Mountain National Park Using Multiple Techniques*, Clow, D. (PI), **Nanus, L.** (Co-I), 2006, National Park Service, Rocky Mountain National Park.

*Evaluating Nitrogen Sources in Alpine Lakes of the Rocky Mountains using Nitrate Isotopes*, **Nanus, L.** (PI), Campbell, D.H. (Co-I), Kendall, C., Williams, M., 2005-2006, U.S. Geological Survey, National Atmospheric Deposition Program and Hydrologic Benchmark Program.

*Developing Screening Procedures and Sampling Protocols for Assessment of Deposition-Sensitive Surface Waters in the Rocky Mountains*, **Nanus, L.** (PI), Williams, M.(Co-I), Campbell, D., Clow, D., 2003-2008, National Park Service, Air Resources Division.

*Lake Sensitivity to Atmospheric Deposition in Grand Teton and Yellowstone National Parks*, **Nanus, L.** (PI), Campbell, D. (Co-I), Williams, M., 2003-2004, National Park Service, Greater Yellowstone Inventory and Monitoring.

*Atmospheric Deposition of Pollutants in Yellowstone and Grand Teton National Parks and Bighorn Canyon National Recreation Area*, **Nanus, L.**, (PI) and Campbell, D. (Co-I), 2003-2004, National Park Service, Greater Yellowstone Inventory and Monitoring.

*Sensitivity of Lakes in Oregon and Washington Wilderness Areas to Deposition*, **Nanus, L.** (PI) and Clow, D. (Co-I), 2001-2003, U.S.D.A. Forest Service.

*Atmospheric Deposition Maps for the Rocky Mountains*, **Nanus, L.** (PI), Campbell, D. (Co-I), Ingersoll, G., Clow, D., Mast, M., 1999-2002, U.S. Geological Survey, National Atmospheric Deposition Program.

#### **OTHER GRANTS and CONTRACTS**

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(Collaborator) US Forest Service (2010-2012)

*Distribution of Ozone, Ozone Precursors and Gaseous Components of Atmospheric Nitrogen Deposition in the Lake Tahoe Basin*, Bytnerowicz, A. (PI), Fenn, M. (PI), Gertler, A. (PI), Preisler, H., (PI), Zielinska, B. (PI), Ahuja, S. (Collaborator), Shaw, G. (Collaborator), Schweizer, D. (Collaborator), Proctor, T. (Collaborator), Burley, J. (Collaborator), **Nanus, L.** (Collaborator).

(Collaborator) Research Institute for Humanity and Nature, Kyoto, Japan (2013-2018)

Demarcation of Environmental Governance for Human Environmental Security in Asia-Pacific Region-Nexus of Thermal Energy, Water, and Coastal Fisheries

(Collaborator) U.S. Geological Survey, Water Resources Discipline (1999-2009)

Water, Energy, Biogeochemical Budgets in Alpine/Subalpine Watersheds

(Collaborator) U.S. Geological Survey, National Park Service, U.S. Forest Service (1999-2009)

Rocky Mountain Snowpack Chemistry Synoptic: High-Elevation Sites

(Collaborator) U.S. Forest Service (1999-2009)

Long Term Lakes Monitoring in U.S. Forest Service Wilderness Areas, Colorado

#### **TEACHING**

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##### **Courses**

San Francisco State University

GEOG 751, Environmental Management Graduate Seminar (2018, 2017, 2016, 2015, 2014)

GEOG 644, Water Quality (2019, 2018, 2016, 2015)

GEOG 642/ERTH 642, Watershed Assessment and Restoration (2017, 2015)

GEOG 342/ERTH 442, Surface Water Hydrology (2016, 2010)

GEOG 688, Geographic Internship (2019, 2018)

GEOG 101, Our Physical Environment (2018, 2014)

University of Colorado Boulder

GEOG 1011, Environmental Systems 2-Landscapes and Water (2005)

U.S. Geological Survey (USGS), Water Resources Discipline

Statistical Modeling for Hydrologists, Co-taught

## HONORS and AWARDS

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- SFSU Presidential Award for Professional Development (Spr. 2017) 2015
- Cal State Univ., Water Resources and Policy Initiatives, Faculty Research Incentive Award 2014
- National Park Service, Greater Yellowstone Area Honorarium 2011
- U.S. Geological Survey Superior Performance Award 2007
- National Park Service, Air Resources Division, Research Assistantship Grant 2004, 2005
- U.S. Geological Survey STAR Award 1999, 2002, 2003
- Washington State Department of Ecology, Research Assistantship Grant 1997, 1998
- Western Washington University, Geology Department, Graduate Research Funds Award 1998
- Western Washington University, Graduate School, Graduate Research Grant 1998
- Sigma-XI Grants-in-Aid of Research 1998
- Western Washington University, Elias Austin Bond Graduate Fellowship in Geology 1997

## CONFERENCE ABSTRACTS and PROCEEDING PAPERS (51)

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(\*SFSU student author)

- Culpepper, J., Baron, J., Sadro, S., Olesky, I., Vinebrooke, R., Hampton, S., Smits, A., Moser, K., Brahney, J., Strecker, A., Chandra, S., Williams, J., Fradkin, S., **Nanus, L.**, Rosen, M., Noble, P., 2018. A Conceptual Model for Understanding the Role of Mountain Gradients on Lakes, Special Session: Understanding mountain lakes in a changing world, *Proceedings of the Association for the Sciences of Limnology and Oceanography Summer Meeting*, Victoria, B.C., Canada.
- \*Weeks, D., **Nanus, L.**, Gurdak, J.J., Davis, J., 2018. Mercury in the Cache Creek Watershed – Spatial Analysis, Ecosystem Services Impacts and SES Framework Implementation, *SFSU College of Science & Engineering 20<sup>th</sup> Annual Student Project Showcase*, San Francisco, California.
- \*Weeks, D., **Nanus, L.**, Gurdak, J.J., 2018. Mercury in the Cache Creek Watershed – Trends, Hot Spots and Ecosystem Services Analysis, California, *Proceedings of the American Association of Geographers Annual Meeting*, New Orleans, LA.
- Nanus, L.**, Lehmann, C.M.B., Mast, M.A., 2017. Evaluating Variation in Sources of Atmospheric Nitrogen Deposition in the Rocky Mountains using  $\delta^{15}\text{N-NO}_3^-$  and  $\delta^{15}\text{N-NH}_4^+$ . *Proceedings of the National Atmospheric Deposition Program Technical Meeting*, San Diego, CA.
- Nanus, L.**, Clow, D.W., Saros, J., McMurray, J.A., Blett, T.A., Sickman, J.O., 2017. Multiscale Framework for Assessing Critical Loads of Atmospheric Nitrogen Deposition for Aquatic Ecosystems in Wilderness Areas of the Western United States. *European Geosciences Union General Assembly, EGU2017-10537*, Vienna, Austria.
- Nanus, L.**, Clow, D.W., Sickman, J.O., 2016. Critical Loads of Atmospheric Nitrogen Deposition for Aquatic Ecosystems in Yosemite and Sequoia & Kings Canyon National Parks. *Eos Trans. AGU, Fall Meet. Suppl.* B13F-0711.
- \*Stein, S., **Nanus, L.**, Wilkinson, N., 2016. Water Quality in Estuarine Wetland Restoration: An Examination of Dissolved Oxygen and Nutrients in the South Bay Salt Pond Restoration Project, *Eos Trans. AGU, Fall Meet. Suppl.* H43I-1587.
- Gurdak, J.J., \*Geyer, G.E., **Nanus, L.**, Taniguchi, M., \*Corona, C.R., 2016. Scale Dependence of Controls on Groundwater Vulnerability to Nonpoint-source Nitrate Contamination, California Coastal Basin Aquifer System, *Toward Sustainable Groundwater in Agriculture*, CA.
- \*Stein, S., **Nanus, L.**, Wilkinson, N., 2016. An examination of Water Quality in the South Bay Salt Pond Restoration Project, *Proceedings of the American Association of Geographers Annual Meeting*, San Francisco, CA.

- \*Doudna, E., **Nanus, L.**, Gurdak, J., Wilkinson, N., 2016. Using the Water-Energy-Food Nexus of fracking and irrigation wells to better inform sustainable groundwater management decisions in California, *Proceedings of the American Association of Geographers Annual Meeting*, San Francisco, CA
- Nanus, L.**, McMurray, J., Clow, D., Saros, J., Blett, T., 2015. Spatial Variation of Atmospheric Nitrogen Deposition and Estimated Critical Loads for Aquatic Ecosystems in the Greater Yellowstone Area. *Eos Trans. AGU, Fall Meet. Suppl.*, B13G-0719.
- Nanus, L.**, McMurray, J., Clow, D., Saros, J., Blett, T., 2015. Mapping Critical Loads of Atmospheric Nitrogen Deposition for Aquatic Ecosystems in the Greater Yellowstone Area, USA. *9<sup>th</sup> International Acid Rain Conference, Rochester, New York.*
- Nanus, L.**, Clow, D.W., Saros, J., Blett, T., McMurray, J., 2015. Mapping Critical Loads of Nitrogen Deposition for Aquatic Ecosystems in National Parks of the Western United States, *Science for Parks, Parks for Science: The Next Century, University of California Berkeley, National Geographic, and the National Park Service.*
- Nanus, L.**, \*Geyer, G., Gurdak, J.J., Orenco, P.M., Endo, A., Taniguchi, M., 2014. Freshwater Vulnerability to Nitrate Contamination as an Indicator of Sustainability and Resilience within the Water-Energy-Food Nexus of the California Coastal Basins, *Eos Trans. AGU, Fall Meet. Suppl.*, H23I-0995.
- Clow, D.W., Roop, H.A., **Nanus, L.**, Fenn, M.E., Sexstone, G.A., 2014. Mapping Atmospheric Deposition of Nitrogen and Sulfur in Rocky Mountain National Park, USA using Ion-exchange Resin Collectors, *Proceedings of the National Atmospheric Deposition Program Technical Meeting, Indianapolis, IN.*
- Nanus, L.**, Simonich, S.L., Rocchio, J., Flanagan, C., 2013. Evaluating the spatial distribution of toxic air contaminants in different ecosystem indicators in the Sierra Nevada-Southern Cascades, *Eos Trans. AGU, Fall Meet. Suppl.*, B13F-0585.
- Gurdak, J.J., \*Newcomer, M.E., Sklar, L.S., **Nanus, L.**, 2013. Managed aquifer recharge with low impact development under a changing climate, *Eos Trans. AGU, Fall Meet. Suppl.*, H11F-1210, INVITED.
- Simonich, S., **Nanus, L.**, 2012. Sierra Nevada-Southern Cascades Region Air Contaminants Research and Monitoring Strategy, *Sierra Nevada Southern Cascades Steering Committee Webinar.*
- Soykan, C., Beechie, T., Greene, C., Hendrix, N., Lindley, S., **Nanus, L.**, Perry, R., 2012. A Flexible, Multi-Input Life Cycle Model for Chinook Salmon in the Central Valley of California, *7<sup>th</sup> Biennial Bay-Delta Science Conference.*
- Clow, D.W., **Nanus, L.**, 2011. Evaluation of Sampling Strategies for Capturing the Spatial Variability in Atmospheric Deposition in the Rocky Mountains, *Eos Trans. AGU, Fall Meet. Suppl.*, C33D-0675.
- Nanus, L.**, Clow, D.W., Stephens, V.C., Saros, J., 2010. Mapping Critical Loads of Atmospheric Nitrogen in the Rocky Mountains, USA, *Eos Trans. AGU, Fall Meet. Suppl.*, B43C-0475.
- Clow, D.W., **Nanus, L.**, Huggett, B., 2010. Use of Regression-Based Models to Map Sensitivity of Aquatic Resources to Atmospheric Deposition in Yosemite National Park, *Eos Trans. AGU, Fall Meet. Suppl.*, Abstract B31J-08.
- Nanus, L.**, Clow, D.W., Stephens, V.C., Saros, J., 2010. Critical Loads Map of Atmospheric Nitrogen in the Rocky Mountains, USA, *Proceedings of the National Atmospheric Deposition Program Technical Meeting, Lake Tahoe, CA.*
- Bytnerowicz, A., Ahuja, S., Burley, J., Cisneros, R., Fenn, M., Gertler, A., McDaniel, M., **Nanus, L.**, Orr, K., Preisler, H., Procter, T., Ross, C., Schweizer, D., Zielinska, B., 2010. Distribution of Ozone, Ozone Precursors and Gaseous Components of Atmospheric Nitrogen Deposition in Lake Tahoe Basin, *Proceedings of the National Atmospheric Deposition Program Technical Meeting, Lake Tahoe.*
- Nanus, L.**, Campbell, D.H., Ingersoll, G.P., Lehmann, C.M.B, Kendall, C., Elliott, E.M., Bohlke, J.K., 2009. Determining Spatial and Temporal Variation in Sources of Nitrogen Deposition in the Rocky Mountains using Nitrogen Isotopes. *Eos Trans. AGU, Fall Meet. Suppl.*, Abstract H53D-0961.



- Ingersoll, G.P., Mast, M.A., Campbell, D.H., Clow, D.W., **Nanus, L.**, 2009. Declining Snowpack Depths and Snow-Water Equivalent at Snowpack-Monitoring Sites in the Rocky Mountain Region, USA, *Proceedings of the Western Snow Conference, Alberta, Canada*.
- Nanus, L.**, Williams, M.W., Campbell, D.H., Elliott, E.M., Kendall, C., 2008. Evaluating Spatial Variability in Nitrate Deposition Sources to Watersheds in the Rocky Mountains using  $\delta^{18}\text{O}$  and  $\delta^{15}\text{N}$  in Nitrate, *Proceedings of the National Atmospheric Deposition Program Technical Meeting, Madison, WI*.
- Nanus, L.**, Williams, M.W., Campbell, D.H., Elliott, E.M., Kendall, C.K., 2008. Evaluating Regional Patterns in Nitrate Sources to Watersheds in National Parks of the Rocky Mountains using Nitrate Isotopes, *Proceedings of the Third Interagency Conference on Research in the Watersheds, Estes Park, CO*.
- Clow, D.W., Fenn, M., Campbell, D.H., **Nanus, L.**, 2008. Spatial Distribution of Nitrogen Deposition in Rocky Mountain National Park, USA. *Rocky Mountain National Park Research Conference, CO*.
- Nanus, L.**, Williams, M.W., Campbell, D.H., Elliott, E.M., Kendall, C., 2008. Evaluating Regional Patterns in Nitrate Sources to Watersheds in National Parks of the Rocky Mountains Using Nitrate Isotopes. *Hydrologic Sciences Symposium, University of Colorado, Boulder, CO*.
- Campbell, D.H., **Nanus, L.**, Bohlke, J.K., Harlin, K., Collett, J. 2007. Nitrogen saturation in the Rocky Mountains: Linking emissions, deposition, and ecosystem effects using stable isotopes of nitrogen compounds. In: *Proceedings of the Air & Waste Management Association 100th annual conference and exhibition, 26-29 June, 2007, Pittsburgh, PA. Extended Abstract 291*.
- Clow, D.W., Fenn, M., Campbell, D.H., **Nanus, L.**, 2007. Spatial Distribution of Nitrogen Deposition in Rocky Mountain National Park, USA, *Proceedings of the National Atmospheric Deposition Program Technical Meeting, Boulder, CO*.
- Campbell, D.H., **Nanus, L.**, Bohlke, J.K., Harlin, K., Collett, J., 2007. Nitrogen saturation in the Rocky Mountains: Linking emissions, deposition, and ecosystem effects using stable isotopes of nitrogen compounds, *Proceedings of the National Atmospheric Deposition Program Technical Meeting, Boulder, CO*.
- Campbell, D.H., Baron, J.S., Blett, T.F., **Nanus, L.**, Collett, J., 2006. Blazing a trail in Rocky Mountain National Park: Application of monitoring and research on nitrogen deposition to air and water quality policy. *Eos Trans. AGU, 87(52), Fall Meet. Suppl., Abstract B23F-08*.
- Nanus, L.**, Williams, M.W., Campbell, D.H., 2006. Assessment of the Relationship between Landscape Attributes and Water Quality in Rocky Mountain National Parks. *University of Colorado, Boulder, Hydrologic Sciences Symposium*.
- Nanus, L.**, Williams, M.W., Campbell, D.H., 2005. Regional Assessment of the Relationship between Landscape Attributes and Water Quality in Five National Parks of the Rocky Mountains. *Eos Trans. AGU, 86(52), Fall Meet. Suppl., Abstract H23D-1458*.
- Nanus, L.**, 2005. Predicting Lake Sensitivity to Atmospheric Deposition in Rocky Mountain National Parks Using Geographic Information System and Multivariate Logistic Regression, *Proceedings of the Association of American Geographers Annual Meeting, Denver, CO*.
- Nanus, L.**, Williams, M.W., Campbell, D.H., 2005. Screening Procedures for the Assessment of Deposition-Sensitive Lakes in Rocky Mountain National Parks, *Proceedings of the 2005 George Wright Society/National Park Service Joint Conference, Philadelphia, PA*.
- Nanus, L.**, 2005. Assessment of Alpine and Subalpine Lake Sensitivity to Atmospheric Deposition of Pollutants in Grand Teton National Park and Yellowstone National Park, Wyoming, *Proceedings of the National Atmospheric Deposition Program Technical Meeting, Jackson, WY*.
- Ingersoll, G.P., Mast, M.A., Campbell, D.H., Clow, D.W., **Nanus, L.**, Turk, J.T., 2005. Trends in snowpack chemistry during 1993--2004 in the Rocky Mountain region, USA, *Proceedings of the National Atmospheric Deposition Program Technical Meeting, Jackson, WY*.

- Campbell, D.H., Mast, M.A., Clow, D.W., Ingersoll, G.P., **Nanus, L.**, 2005. Acid rain in the southern Rocky Mountains: regional trends and case studies. *7<sup>th</sup> International Conference on Acid Deposition. Prague, Czech Republic.*
- Nanus, L.**, Campbell, D.H., Williams, M.W., 2004. Sensitivity of Alpine and Subalpine Lakes to Atmospheric Deposition in Grand Teton National Park and Yellowstone National Park, Wyoming, *Eos Trans. AGU, 85(47), Fall Meet. Suppl., Abstract H33D-0491.*
- Campbell, D.H., Mast, M.A., Clow, D.W., Ingersoll, G.P., **Nanus, L.**, 2004. The Hydrologic and Biogeochemical Response of Undisturbed Mountain Ecosystems in the Western United States to Multiple Stressors: Interactions between Climate Variability and Atmospheric Deposition of Contaminants. *Eos Trans. AGU, 85 (47), Fall Meet. Suppl., Abstract U53A-0716.*
- Campbell, D.H., Clow, D.W., Mast, M.A., **Nanus, L.**, Ingersoll, G.P., Manthorne, D., Brooks, P.D., 2002. Response of Alpine Streams and Groundwater to Climatic Variability and Changes in Atmospheric Deposition of Sulfur and Nitrogen. *Eos Trans. AGU, 83 (47), Fall Meet. Suppl., Abstract H12C-0941.*
- Nanus, L.**, Campbell, D.H., Ingersoll, G.P., Clow, D.W., Mast, M.A., 2002. Atmospheric Deposition Maps for the Rocky Mountains, *Proceedings of the 70<sup>th</sup> Western Snow Conference, Granby, CO.*
- Nanus, L.** and Clow, D.W., 2002. Basin sensitivity to Pollution in Rocky Mountain National Park, *Rocky Mountain National Park Conference, Estes Park, CO.*
- Mast, M.A., Campbell, D.H., Clow, D.W., Ingersoll, G.P., **Nanus, L.**, 2001. Long-Term Water Quality Monitoring in High Elevation Areas of Colorado. *Proceedings of the American Water Resources Association-Colorado Section, CO Water Quality Monitoring Council. Golden, CO.*
- Nanus, L.**, Campbell, D.H., Ingersoll, G.P., Clow, D.W., 2000. Atmospheric Deposition Maps for the Rocky Mountains, *Eos Trans. AGU, 81 (48), Fall Meet. Suppl., Abstract H21E-01.*
- Campbell, D.H., Clow, D.M., Mast, M.A., Ingersoll, G.P., **Nanus, L.**, Striegl, R., Wickland, K., 2000. Hydrologic and Biogeochemical Research at Loch Vale, Colorado as part of the WEBB Program, *Eos Trans. AGU, 81 (48), Fall Meet. Suppl., Abstract H51B-17.*
- Campbell, D., Ingersoll, G., Mast, M.A., Clow, D.W., **Nanus, L.**, Kendall, C., and Tonnessen, K., 2000. Nitrogen saturation in the Rocky Mountains: linking emissions, deposition and effects on sensitive ecosystems. *Proceedings of the International Symposium High Mountain Lakes and Streams-Indicators of a Changing World, Innsbruck, Austria.*
- Babcock, S., Mitchell, R., Gelinias, S., **Nanus, L.**, 2000. Nitrate Variations and Sources in the Abbotsford-Sumas Aquifer in Northern Whatcom County, Washington, *Hydrogeology of Washington State.*

#### INVITED RESEARCH PRESENTATIONS

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- 2017 Eawag, Swiss Federal Institute of Aquatic Science and Technology, SIAM (February 7)
- 2016 Sonoma State University, Department of Geology (November 10)
- 2015 National Park Service, Air Resources Division, Denver, Colorado (February 6)
- 2014 San Francisco State University, Department of Geography & Environment (February 13)
- 2013 Research Institute for Humanity and Nature, Kyoto, Japan (July 16)
- 2013 Portland State University, Department of Environmental Science and Management (February 18)
- 2012 University of San Francisco, Department of Environmental Science (April 19)
- 2012 University of California Santa Cruz, Institute of Marine Sciences (January 17)
- 2011 National Park Service, Jackson, Wyoming (April 5)
- 2009 San Francisco State University, Department of Earth & Climate Sciences (November 3)
- 2006 Sonoma State University, Department of Geography and Global Studies (February 8)
- 2003 Greater Yellowstone Clean Air Partnership, West Yellowstone, Montana (November 5)

### **Invited Guest Lectures**

- 2016 Geography & Environment Forum, Physical Geography Forum, co-presenter (Nov. 2)  
 2015 GEOG 101, Field Trip to Ocean Beach, *Vegetation Survey* (April 24)  
 2014 GEOG 602/702: Field Methods in Physical Geography, *Field methods Air & Water Quality* (Nov. 13)

### **MENTORING**

Primary advisor or committee member of 14 SFSU graduate students, completed (7) and in progress (7).

#### **Graduate Students**

*Master's Thesis Chair (Primary Advisor) (6)*

Julian LoGiudici – committee chair, M.A. Geography, Resource Management and Environmental Planning, pending. *Anthropogenic Stressors and Ecosystem Effects in the Greater Yellowstone Area.*

Kelly Krotcova – committee chair, M.A. Geography, Resource Management and Environmental Planning, pending. *Tradeoffs of Water Security and Adequate Ecological Protection during Drought, Coastal CA.*

Zoe Statman-Weil – committee chair, M.S. Geographic Information Science, completed 12/2018. *Disparities in Community Water Systems' Compliance with the Safe Drinking Water Act.*

Deseret Weeks – committee chair, M.A. Geography, Resource Management and Environmental Planning, completed 05/2018, *Mercury in the Cache Creek Watershed – Spatial Analysis, Ecosystem Services Impacts and SES Framework Implementation.*

Samuel Stein – committee chair, M.A. Geography, Resource Management and Environmental Planning, completed 12/2016, *An Examination of Water Quality in the South Bay Salt Pond Restoration Project, CA.*

Ellen Doudna – committee chair, M.A. Geography, Resource Management and Environmental Planning, completed 12/2016, *Trends in the Water-Energy-Food Nexus of California's Central Valley: Drivers of Vulnerability within the Nexus of Oil Production, Agriculture and Water Use in Kern County.*

*Master's Thesis Committee Member (Committee Member) (8)*

Jeffrey Blumenthal – second committee member, M.A. Geography, Resource Management and Environmental Planning, pending. *Environmental Covariates and Atlantic Oyster Drill Distribution in Richardson Bay, CA.*

Jasleen Pannu – second committee member, M.A. Geography, pending. *Critical Analysis of Environmental Justice, Richmond, California.*

Jeremiah Smith – committee member, M.S. Geosciences, pending. *Implications of Land Use and Climate Change Effects on Recharge and Groundwater Sustainability.*

Lawrence Fujiwara – committee member, M.S. Geosciences, pending. *Low Impact Development Effects on Recharge and Urban Groundwater Sustainability.*

Cassandra Wolf – committee member, M.S. Geosciences, pending. *Recharge Estimates in the Northern High Plains.*

Charlotte Hummer – second committee member, M.A. Geography, Resource Management and Environmental Planning, completed 05/2017, *An Examination of SF State University Students' Perceptions of Potable Reuse.*

Jessica Sloan – second committee member, M.A. Geography, Resource Management and Environmental Planning, completed 12/2016. *Evaluating Visitation at Don Edwards NWR: Encouraging Environmental Education and Urban Conservation.*

Gaby Geyer – committee member, M.S. Earth & Climate Sciences, completed 08/2014, *Vulnerability of Recently Recharged Groundwater in the California Coastal Basins to Nitrate Contamination.*

#### **Research and Scholarship Awards by Advisees at SFSU**

Julian LoGiudici (M.A. pending): 2018-2019 Water Resources Experiential Learning Intern, WRPI.

David Espinoza (B.S. pending): 2018-2019 Water Resources Experiential Learning Intern, WRPI.  
 Julian LoGiudici (M.A. pending): 2018 SFSU Geography & Environment, Pease Award.  
 Samuel Stein (M.A.): 2018-2019 California State University (CSU) Chancellor's Doctoral Incentive Program Scholar, Faculty Mentor (Nanus).  
 Deseret Weeks (M.A.): 2017-2018 California State University (CSU) California Pre-Doctoral Program, Sally Casanova Pre-Doctoral Scholar, Faculty Sponsor (Nanus).  
 Deseret Weeks (M.A.): 2018 SFSU COSE Travel (IRA); Geography & Environment, Jean Vance Award.  
 Kelly Krotcova (M.A. pending): 2017 SFSU Geography & Environment, Pease Award.  
 Deseret Weeks (M.A.): 2017 CSU COAST Graduate Student Research Award.  
 Deseret Weeks (M.A.): 2017 Assoc. Pacific Coast Geographers Women's Grant.  
 Samuel Stein (M.A.): 2016 American Association of Geographers, Water Resources Specialty Group, Research Proposal Student Award.  
 Samuel Stein (M.A.): 2016 SFSU Geography & Environment, Jean Vance Award.  
 Samuel Stein (M.A.): 2015 SFSU COSE, Maxwell Scholarship; Geography & Environment, Pease Award.

### **PROFESSIONAL and SERVICE ACTIVITIES**

Co-Coordinator, SFSU Academic Internship Program, National Park Service and Golden Gate National Parks Conservancy. Goals include broadening participation of underrepresented students and increasing diversity, engaging students in the local community, mentoring. 2016-present  
 Academic Advisor, B.S. Environmental Science; B.A. Geography, Geography & Environment 2015-present  
 Faculty Mentor, Chancellor's Doctoral Incentive; Sally Casanova Pre-Doctoral Scholar, CSU 2018-present  
 Women in Science and Engineering, SFSU Member 2014-present  
 Water Resources and Policy Initiatives, Water Faculty, CSU Member 2014-present  
 Peer Reviewer for Professional Journals  
 Environmental Science & Technology, Environmental Pollution, Biogeochemistry, Limnology and Oceanography, Science of the Total Environment, Atmospheric Environment, Water Resources Research, Journal of Hydrology, Journal of the American Water Resources Association  
 Peer Reviewer for Federal Agencies  
 National Science Foundation, U.S. Geological Survey Scientific Investigations Reports, National Park Service Technical Reports, U.S. Forest Service Technical Reports.  
 Professional Society Memberships  
 American Geophysical Union, Association of American Geographers  
 International Community Contributions

- Mountain Lakes Research Network, mountain lake ecosystems and global change (UNR; 2/2018)
- Research Institute for Humanity and Nature, International Water-Energy-Food Nexus Workshop at SFSU, contributed to hosting the workshop, 40 scientists from 5 countries attended (12/2014)

### **PROFESSIONAL DEVELOPMENT and TRAINING**

- Equitable Teaching Series and Inclusive Learning Strategies, CEETL, SFSU, CA 2018
- Environmental Systems Analysis, Eawag, Switzerland 2017
- UCAR Annual Members Meeting Participation, Early Career Invited Guest, Boulder, CO 2016
- Early Career Geoscience Faculty Workshop (SERC), College of William and Mary, VA 2015
- Wilderness First Aid Certification, CO 2000, 2006
- Water Safety Training and Certification, CO 2001
- Isotope Hydrology, CO 2000
- ArcInfo Geographic Information Systems, CO 1999, 2000
- Avalanche Safety Certification Level I and Level II, CO 1999