

Mae Sexauer Gustin

Professor, UNR Foundation Professor, Nevada Board of Regents Researcher
Department of Natural Resources and Environmental Science (MS 186)
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Education

- 1988 University of Arizona, Tucson
Ph.D. Geosciences – Geochemistry- Economic Geology
- 1983 University of North Carolina, Chapel Hill
M.S. Geosciences - Igneous and Metamorphic Petrology
- 1979 Guilford College, Greensboro, North Carolina
B.S. Geology major, Math minor

Professional Experience

- July 2009 Professor and UNR Foundation Professor, University of Nevada
- July 2003 Associate Professor, University of Nevada, Reno
- July 1999 Assistant Professor, University of Nevada, Reno
- 1994- 1999 Assistant Research Professor, University of Nevada, Reno
- 1993-1994 Research Associate, Desert Research Institute, Reno, NV
Assistant Professor, Sierra Nevada College, Incline Village, NV
- 1991-1993 Adjunct Professor, Sierra Nevada College, Incline Village, NV
Adjunct Professor, Truckee Meadows Community College, Reno, NV
- 1987-1989 Assistant Professor of Geology, Indiana University-Purdue University at Indianapolis, IN
- 1982-1987 Teaching Assistant and Head Teaching Assistant, The University of Arizona, Tucson, AZ
- 1979-1982 Teaching Assistant, The University of North Carolina at Chapel Hill

Professional Interests

My primary research interests are the study of the fate and transport and biogeochemical cycles of inorganic contaminants in the environment. My recent work focuses primarily on understanding the chemistry and environmental fate of atmospheric mercury in the environment, the sources of ozone and other air pollutants to the Western United States, the biochemistry of Hg movement in plants, and the use of tree rings as archives of atmospheric Hg concentrations. I am especially interested in regional and long range transport, and how air pollution moves in complex terrains. Specific research topics in the past included investigation of natural sources of atmospheric mercury, the role of plants in the biogeochemical cycling of mercury, mercury pollution and methyl mercury production in watersheds impacted by legacy mining, and arsenic. I also have done a significant amount of work investigating the potential use of coal combustion by-products as agricultural amendments; and on Hg release from areas of legacy and industrial scale mining. I have worked with the mining industry to develop best-management practices for reducing Hg releases from non-point sources. I have also done research on the fate of trifluoroacetic acids and organophosphate pesticides during interaction with vegetation and soils.

I am especially interested in the role that the atmosphere, and vegetation, play as sources, sinks and pathways for cycling of environmental contaminants.

Awards and Honors

University of Nevada-Reno Lab Safety Award (2021/22)
Nevada System of Higher Education Board of Regents Researcher (2018)
University of Nevada-Reno Researcher of the Year (2016)
Researcher of the Year (2015) College of Agriculture Biotechnology and Natural Resources, University of Nevada-Reno
Excellent Reviewer Award for Environmental Science and Technology 2013
Nevada Women's Fund Women of Achievement Award UNR 2010
University of Nevada Cooperative Extension UNR Faculty Award of Excellence 2009
University of Nevada Foundation Professor (2009)
Researcher of the Year (2001) College of Agriculture Biotechnology and Natural Resources, University of Nevada-Reno

Professional organizations:

Geological Society of America (36 yrs-ended 2015), Geological Society of Nevada (22 yrs), American Chemical Society (27 yrs), Association for Women Geoscientists (27 years-ended 2015), Geochemical Society (15 yrs), Air and Waste Management Association (14 years- ended 2020), American Geophysical Union (27 yrs), Member Phi Beta Kappa (since 1979)

Regional, National and International committee work

Regional

- Advisory Board Truckee Meadows Parks Foundation Rosewood Lakes Project Advisory Board
- Advisor Daybreak Project Reno Nevada Mercury in Steamboat Creek
- Chair project review team for Cal-Fed project Development of best management practices to reduce methylmercury exports and concentrations from seasonal wetlands in the Yolo Wildlife Area 2010-2013
- Science Review Panel NOAA Atmospheric Research Laboratory 2011
- Hosted and helped organize Western States Air Resources Council (WESTAR) workshop on Western Ozone Transport October 10-12, 2012
- EPA Region IX-Carson River Superfund Site Scientific Advisory Board 2000
- Committee for development of protocol for fish consumption advisories for mercury, State of Nevada, Nevada State Health Division
- Fish and Wildlife Service-Stillwater National Wildlife Refuge Scientific Advisory Board 2000

National

- Reviewer National Science Foundation Graduate Fellowship Proposals 2020/2021
- Participant in National Science Foundation Atmospheric Chemistry Workshop May 2018
- Organized and spoke for Air and Waste Management Association Webinar Ozone 101 10-2105
- Organized WESTAR Ozone conference 2012

- National Atmospheric Deposition Network Scientific Advisory Board (2010- present)
- Western North America Mercury Synthesis Group-participant (2012-present)
- National Mercury Deposition Network Total Deposition Science Committee 2011-present)
- National EPA Mercury Monitoring Network Workshop Participant-2008
- Review team for NOAA Atmospheric Research Laboratory 2011
- Organized NSF funded workshop on Uncertainties in Measurement of Atmospheric Mercury 2008
- National Mercury Monitoring Network Workshop Participant – 2007
- Working group North American Implementation Task Force on Mercury 2001

International

- Invited presentation Practical demonstration of oxidized mercury measurements: sampling artifacts and calibration Webinar for Minamata Convention on Mercury stakeholders 2022
- Invited Talk SETAC International Meeting Rome Italy
- Invited Talk European Merc-Ox Meeting Ljubljana Slovenia
- Technical Advisor for Heavy Metals Conference held in Ghent, Belgium September 2016
- Gave invited talk at 2015 International Conference on Mercury Pollution Prevention and control in Beijing China
- Participated in International SETAC and UNEP Hg workshop-Brussels Belgium 10-2015 (gave invited talk)
- International Mercury Dry Deposition Workshop-U Mich participant Aug 2008
- National Academy of Science Committee Member (2008-2010)-Report on International Transport of Air Pollutants
- Special issue journal editor for Applied Geochemistry volume for 8th International Conference on Mercury as a Global Pollutant
- Technical Advisor for 6th (2001) and 7th (2004) International Conferences on Mercury as a Global Pollutant
- Session organizer for 8th (2008) and 10th (2011) International Conference on Mercury as a Global Pollutant
- Technical Advisor for World of Coal Ash meeting 2007
- Session organizer for fall meeting AGU 2008, 2014

Professional Service

- Associate Editor *Science of the Total Environment* (2012- present)
- Guest Editor *Atmospheric Environment* Invited papers on Atmospheric Hg from the International conference on Mercury as a Global Pollutant (2019-2020)
- Editor Special Issue Recent Advances in Mercury Research (2020) *Science of the Total Environment*
- Managing Editor Western North America Mercury Synthesis (2016) *Science of the Total Environment*
- Editor *Aerosol and Air Quality Research* (2016- 2021)
- Editorial Board *Heliyon* (2016-2019)

- Managing Editor for Jerry Keeler Special Issue of *Science of the Total Environment*
- Editorial Board *Science of the Total Environment* (2003-2011)
- U. S. Dept of Agriculture National Research Initiative Review Panel 2004
- National Science Foundation Proposal Review Panel member or Reviewer 2009, 2010, 2012, 2015, 2016, 2019, 2021
- EPA Graduate Fellowship Review panel 2007, 2020
- Regular reviewer for Environmental Science and Technology, Environmental Technology Letters, Applied Geochemistry, Biogeochemistry, Chemosphere, Environmental Pollution, Atmospheric Environment, Journal of Geophysical Research, Atmosphere, Atmospheric Chemistry and Physics

Teaching Activities

Course responsibilities while at University of Nevada: Undergraduate classes NRES 212, Environmental Ethics (sophomore level), NRES 210 Environmental Pollution (sophomore level), NRES 433/633 (senior/graduate) Fate and Transport of Environmental Chemicals (senior/graduate), NRES 467/667 Regional and Global Issues in Environmental Science (senior capstone/graduate); Graduate classes NRES 765 Biogeochemical cycles, NRES 720 Survivor Skills for Graduate Students, and NRES 790 Atmospheric/Environmental Science Seminar

Students and Post-doctoral Scholars Advised

Graduate Advisor

MS: Natalie Allen, Jennifer Arnold, Christian Briggs, Morgan Bryne, Raj Chavan, Jody Ericksen, Mark Demuth, Laura Fay, Toby Frescholtz, Tony Gigliani, Addie Luippold, Melissa Markee, Allison Millhollen, Matthieu Miller, David Nacht, Angela Paul, Matthew Peckham, Christianna Peterson, Beth Thomas, Josh Vernaz, Genine Wright

PhD: Mark Engle, Rebekka Fine, Livia Lown, Seth Lyman, Matthieu Miller, Ashley Pierce, Jelena Stamenkovic (Hartman), Mei Xin

Other major graduate students - Mitch Blum, Scott Brown, Peter Fischer, Jordin Jacobs, Adam Jew, Todd Kuiken, Todd Leonard, Jennifer Quashnik, Scott Reineman

Undergraduate students- typically 5 a year.

Post Doctoral Researchers – Sarrah Dunham-Cheatham, Christopher Eckley, Jan Gacnik, Jioayan Huang, Daniel Obrist, Ann Rhea, Allan Vette

Peer-reviewed Publications (~185 total, Underlined names are graduate or undergraduate students; NAES number is Nevada Agriculture Experiment Station reference)

Mae Sexauer Gustin, Natalie Allen, Sarrah M. Dunham Cheatham, Nicole Choma, Seth Lyman, William Johnson, Sam Lopez, Armistead Russell, Eric Mei, Olivier Magand, Aurelien Dommergue Observations of the chemistry and concentrations of reactive Hg at locations with different ambient air chemistry

Mae Sexauer Gustin*, Sarrah M. Dunham-Cheatham, Nicole Choma

Determining sources of reactive mercury compounds in Reno, Nevada, USA

Natalie Allen, Sarrah Dunham-Cheatham, Mae Gustin Tests of alternate membranes and alternate configurations for the Reactive Mercury Active System

185. Evidence Against Rapid Mercury Oxidation in Photochemical Smog

Author(s): Lyman, Seth; Elgiar, Tyler; Gustin, Mae; Dunham-Cheatham, Sarrah; David, Liji; Zhang, Lei Environmental Science and Technology, 2022, 56, 16, 11225–11235.
<https://doi.org/10.1021/acs.est.2c02224>

184. Sarrah M. Dunham-Cheatham, Seth Lyman, Mae Sexauer Gustin 2022

Comparison and Calibration of Methods for Ambient Reactive Mercury Quantification, Science of the Total Environment <https://doi.org/10.1016/j.scitotenv.2022.159219>

183. Mae Sexauer Gustin, Sarrah M. Dunham-Cheatham, Jeffrey F. Harper, Won-Gyu Choi, Joel D. Blum, Marcus W. Johnson 2022 Investigation of the biochemical controls on mercury uptake and mobility in trees Science of the Total Environment, *Science of the Total Environment* 851 (2022) 158101.

182. Mae Sexauer Gustin, Benjamin Ingle, Sarrah M. Dunham-Cheatham 2022

Further investigations into the use of tree rings as archives of atmospheric mercury concentrations, Biogeochemistry, DOI 10.1007/s10533-022-00892-1

181. Mae Sexauer Gustin, Sarrah Dunham-Cheatham, Jiaoyan Huang, Steve Lindberg, Seth Lyman Development of an understanding of reactive mercury: A review, Invited paper Atmosphere Special Issue Atmospheric Mercury Monitoring, Analysis, and Chemistry: New Insights and Progress toward Minamata Convention Goals Atmosphere 2021, 12, 73. <https://doi.org/10.3390/atmos12010073>

180. Osterwalder, S., Dunham-Cheatham, S.M., Ferreira Araujo, B., Magand, O., Thomas, J.L., Baladima, F., Pfaffhuber, K.A., Berg, T., Zhang, L., Huang, J., Dommergue, A., Sonke, J.E., Gustin, M.S., 2021. Fate of Springtime Atmospheric Reactive Mercury: Concentrations and Deposition at Zeppelin, Svalbard. ACS Earth Space Chem. Volume 6 Issue 1 Page 249-249 DOI10.1021/acsearthspacechem.1c00429

179. Sarrah M. Dunham-Cheatham, Kelly B. Klingler, Margarita Vargas Estrada, Mae Sexauer Gustin Using a next-generation sequencing approach to DNA metabarcoding for identification of adulteration and potential sources of mercury in commercial cat and dog foods Science of the Total Environment, 778, 146102, DOI: 10.1016/j.scitotenv.2021.146102

178. Mae Sexauer Gustin, Deyi Hou, Filip Tack The term “heavy metal(s)”: History, current debate, and future use. Science of the Total Environment, 789 (2021) 147951 <https://doi.org/10.1016/j.scitotenv.2021.147951> 0048-9697

177. Mae Sexauer Gustin, Sarrah M. Dunham-Cheatham, Lei Zhang, Seth Lyman, Nicole Choma, Mark Castro Use of membranes and detailed HYSPLIT analyses to understand atmospheric particulate, gaseous oxidized, and reactive mercury chemistry, Environmental Science and Technology, 2021, 55,893-901 <https://dx.doi.org/10.1021/acs.est.0c07876>.

176. Seth Lyman, Lynne Gratz, Sarrah M. Dunham-Cheatham, Mae Sexauer Gustin, and Adriel

- Luippold 2020 Improvements to the accuracy of atmospheric oxidized mercury measurements *Environmental Science and Technology* 54(21) 13379-13388. DOI: 10.1021/acs.est.0c02747.
175. Sarrah Dunham-Cheatham, Seth Lyman, Mae S Gustin
Evaluation of sorption surface materials for reactive mercury compounds *Atmospheric Environment*, doi.org/10.1016/j.atmosenv.2020.117836.
174. Luippold, A., Gustin, M. Sexauer, Dunham-Cheatham, S., Castro, M., Luke, W., Lyman, S., Zhang, L. 2020 Use of multiple lines of evidence to understand reactive mercury concentrations and chemistry in Hawaii, Nevada, Maryland, and Utah, USA. *Environmental Science and Technology*, 54(13) 7922-7931. DOI: 10.1021/acs.est.0c02747
173. Matthieu B. Miller, Dean A. Howard, Ashley M. Pierce, Kellie Cook, Melita Keywood, Mae S. Gustin, Grant C. Edwards Reactive mercury concentrations in Australia and the Southern Hemisphere, *Science of the Total Environment*, 2021; 751, 41681. DOI: 10.1016/j.scitotenv.2020.141681
172. Mae Sexauer Gustin, Michael S. Bank, Kevin Bishop, Katlin Bowman, Brian Branfireun, John Chételat, Chris S. Eckley, Chad R. Hammerschmidt, Carl Lamborg, Seth Lyman, Antonio Martínez-Cortizas, Jonas Sommar, Martin Tsz-Ki Tsui, Tong Zhang, 2020. Mercury Biogeochemical Cycling: A Synthesis of Recent Scientific Advances, *Science of the Total Environment*, DOI [10.1016/j.scitotenv.2020.139619](https://doi.org/10.1016/j.scitotenv.2020.139619)
171. Nathan Chellman, Adam Csank, Joseph R. McConnell, Mae Sexauer Gustin, Monica Arienzo, and Margarita Vargas Estrada 2020 Comparison of co-located ice-core and tree-ring mercury records indicates radial translocation of mercury in whitebark pine submitted to *Science of the Total Environment*, 743, 140695.
170. Adriel Luippold, Mae Sexauer Gustin, Sarrah M. Dunham-Cheatham, Lei Zhang 2020 Improvement of Quantification and Identification of Atmospheric Reactive Mercury *Atmospheric Environment*, 224, 117307 DOI 10.1016/j.atmosenv.2020.117307.
169. Mae Sexauer Gustin, Sarrah M. Dunham-Cheatham, Lei Zhang 2019 Comparison of 4 Methods for Measurement of Reactive Gaseous Oxidized, and Particulate Bound Mercury *Environmental Science and Technology*, 53, 24, 14489-14495 DOI 10.1021/acs.est.9b04648
168. Shorridge, A., Hatchett, B., Gustin, M. S. 2019, Rise in coincidence of extreme heat in Nevada's largest urban areas. *Journal of the Nevada Water Resources Association*, Winter 2019, p. 5-28. DOI: 10.22542/jnwra/2019/1/1. Copyright 2019 Nevada Water Resources Association
167. Colin A. Cooke, Antonio Martinez-Cortizas, Richard Bindler, Mae Sexauer Gustin Environmental archives of atmospheric Hg deposition – A review, *Science of the Total Environment* doi.org/10.1016/j.scitotenv.2019.134800
166. Sarrah M. Dunham-Cheatham, Kelly Klingler, Mary Peacock, Michael B. Teglas, Mae Sexauer Gustin 2019 What is in commercial cat and dog food? The case for mercury and ingredient testing. *Science of the Total Environment* 684 (2019) 276–280
165. Benjamin J. Burger, Margarita Vargas Estrada, Mae Sexauer Gustin 2019 What caused Earth's largest mass extinction event? New evidence from the Permian-Triassic boundary in northeastern Utah *Global and Planetary Change*, 117, 81-100 <https://doi.org/10.1016/j.gloplacha.2019.03.013>

164. Matthieu B. Miller, Mae S. Gustin, Sarrah M. Dunham-Cheatham, and Grant C. Edwards
Evaluation of cation exchange membrane performance under exposure to high Hg⁰ and HgBr₂ concentrations, *Atmos. Meas. Tech.*, 12, 1207-1217, <https://doi.org/10.5194/amt-12-1207-2019>, 2019.
163. Matthieu B. Miller, Mae S. Gustin, and Grant C. Edwards 2018
Reactive mercury flux measurements using cation exchange membranes
Atmos. Meas. Tech. Discuss., <https://doi.org/10.5194/amt-2018-360>, 2018
162. Ashley Pierce, S. Marcela Loris-Salazar; Heather A Holmes; Mae S Gustin (2019)
Investigating horizontal and vertical pollution gradients in the atmosphere associated with an urban location in complex terrain, Reno, Nevada, USA, *USA Atmospheric Environment*, 196: 103-117.
161. Matthew A. Peckham, Mae Sexauer Gustin, Peter J. Weisberg 2019 Assessment of the Suitability of Tree Rings as Archives of Global and Regional Atmospheric Mercury Pollution *Environmental Science and Technology* 10.1021/acs.est.8b06786.
160. Peckham, M.A., Gustin, M.S., Weisberg, P.J., Weiss-Penzias, P. Results of a controlled field experiment to assess the use of tree tissue concentrations as bioindicators of air Hg. *Biogeochemistry* **2018**, 142(2), 265-279. 10.1007/s10533-018-0533z
159. Ashley Pierce, S. Marcela Loria-Salazar, W. Patrick Arnott, Grant Edwards, Matthieu Miller, and Mae Gustin Superaggregates or instrument artifact? *Atmospheric Measurement Techniques*: 11, 2225-2237, <https://doi.org/10.5194/amt-11-2225-2018>
158. Arnold, Jennifer, Gustin, M.S., Weisberg, P 2018 Evidence for nonstomatal uptake of Hg by and translocation of Hg from foliage to tree ring in Austrian pine *Environmental Science and Technology*, 52 (3), 1174-1182 DOI: 10.1021/acs.est.7b04468
157. Zhang, L., Lyman, S., Mao, H., Lin, C, Gay, D., Wang, S., Gustin, M.S., Feng, X., Wania, F. 2017 A summary of research needs for improving the understanding of atmospheric mercury cycling, *Atmospheric Chemistry and Physics*, 17, 9133-9144, <https://doi.org/10.5194/acp-17-9133-2017>, 2017
156. Damien McCarthy Grant C. Edwards^b, Mae S. Gustin^c, Andrew Care^a, Matthieu B. Miller^b
Anwar Sunna. 2017 An innovative approach to bioremediation of mercury contaminated soils from industrial mining operations *Chemosphere*, 194, 694-699. DOI: 10.1016/j.chemosphere.2017.06.051
155. Pierce, A. M., Gustin, M. S., Christensen, J. N. Marcela Loria 2018 2017 Using multiple tools including lead isotopes to decipher source of ozone and reactive mercury to urban and rural locations in Nevada, USA *Science of the Total Environment*, Volume: 615 Pages: 1411-1427 Published: FEB 15 2018 10.1016/j.scitotenv.2017.08.284
154. Pierce, A. M., Gustin, M. S. 2017. Development of a particulate mass measurement system for tracing pollution sources using atmospheric mercury concentrations, *Environmental Science and Technology*, 51: 436-445 DOI: 10.1021/acs.est.6b04707
153. Jiaoyan Huang, Matthieu B. Miller, Eric Edgerton, Mae Sexauer Gustin , 2017 Deciphering Potential Chemical Compounds of Gaseous Oxidized Mercury in Florida, USA *Atmospheric Chemistry and Physics* 17: 1689-1698. <https://doi.org/10.5194/acpd-15-12069-2015>, 2015
152. Adriel Luippold, Mae Sexauer Gustin, 2016 Mercury concentrations in Wet and Dry Cat and Dog Food Concentrations of Concern, *Short Communication in Animal Feed Science and Technology*, 222:190-193. DOI: 10.1016/j.anifeedsci.2016.10.021
151. A.O. Langford, R.J. Alvarez II, R. Fine, M. Gustin, J.S. Holloway, M. Lin, R.D.

- Marchbanks, R.B. Pierce, S.P. Sandberg, C.J. Senff, A.M. Weickmann, E.J. Williams (2016) Entrainment of stratospheric air and Asian pollution by the convective boundary layer in the Southwestern U.S. Accepted Journal of Geophysical Research- Atmosphere J. Geophys. Res. Atmos., 122, doi:10.1002/2016JD025987
150. Lyman, Seth; Jones, Colleen; O'Neil, Trevor; Allen, Tanner; Miller, Matthieu; Gustin, Mae; Pierce, Ashley; Luke, Winston; Ren, Xinrong; Kelley, Paul (2016) Automated Calibration of Atmospheric Oxidized Mercury Measurements Environmental Science and Technology 50 12921-12927 DOI: 10.1021/acs.est.6b04211
149. Gustin, Mae Sexauer, Pierce, Ashley M., Huang, Jiaoyan, Miller, Matthieu B., Holmes, Heather, S., Loria-Salazar, S. Marcela (2016) Evidence for different reactive Hg sources and chemical compounds at adjacent valley and high elevation locations, Environmental Science and Technology, 50: 12225-12231. DOI: 10.1021/acs.est.6b03339
148. Mae Sexauer Gustin, David C. Evers, Michael S. Bank, Chad R. Hammerschmidt, Ashley Pierce, Niladri Basu, Joel Blum, Paco Bustamante, Celia Chen, Charlie T. Driscoll, Milena Horvat, Dan Jaffe, Jozef Pacyna, Nicola Pirrone, Noelle Selin 2016 Viewpoint: Importance of integration and implementation of emerging and future mercury research into the Minamata Convention Environmental Science and Technology 50 (6): 2767-2730 DOI: 10.1021/acs.est.6b00573
147. Mark D. Cohen, Roland R. Draxler, Richard S. Artz, Mae Sexauer Gustin, Young-Ji Han, Thomas M. Holsen, Daniel A. Jaffe, Paul Kelley, Hang Lei, Christopher P. Loughner, Winston T. Luke, Seth N. Lyman, David Niemi, Jozef M. Pacyna, Martin Pilote, Laurier Poissant, Dominique Ratte, Xinrong Ren, Frits Steenhuisen, Rob Tordon, Simon J. Wilson 2016 Modeling the global atmospheric transport and deposition of mercury to the Great Lakes Elementa: Science of the Anthropocene DOI: 10.12952/journal.elementa.000118
146. Peacock M.M., Gustin M.S., Kirchoff V., Robinson M.L., Pizarro-Barraza C., and Loux T. 2016 Native non-game fishes in the Truckee River: Are barriers and patterns of population genetic structure related? SCIENCE OF THE TOTAL ENVIRONMENT Volume: 563 Pages: 221-236 DOI: 10.1016/j.scitotenv.2016.04.056
145. Pao M. Baylon, Dan A. Jaffe, R. Bradley Pierce, Mae S. Gustin, 2016, Interannual variability in background ozone and its relationship to surface ozone in the Western U.S. Environmental Science and Technology, 50 Issue: 6 Pages: 2994-3001. DOI: 10.1021/acs.est.6b00219
144. Weiss-Penzias, P. R., Gay, D.A., Brigham, M.E., Parsons, M.T, Gustin, M.S ter Schure, A. (2016) Trends in Mercury Wet Deposition and Mercury Air Concentrations across the U.S. and Canada, Special Issue of Science of the Total Environment: Western North America Mercury Synthesis, 568:546-556. DOI: 10.1016/j.scitotenv.2016.01.061
143. Chris S. Eckley, Mike T. Tate, Che-Jen Lin, Mae Gustin, Stephen Dent, Collin Eagles-Smith, Michelle Lutz, Kimberly P. Wickland, Bronwen Wang, John E. Gray, Grant C. Edwards, Dave P. Krabbenhoft, David B. Smith, 2016, Surface-air mercury fluxes across Western North America: a synthesis of spatial trends and controlling variables. Special Issue of Science of the Total Environment: Western North America Mercury Synthesis, 568: 651-665.
142. Gustin, M.S., Peterson, C., Fine, R., Lyman, T., Alishahi, M., and Miller, M.B., 2015,

- Investigation of methylmercury concentrations in irrigation drains and impacts on receiving waters, Nevada, USA. *Journal of the Nevada Water Resources Association*, Winter 2015, p. 38 – 60.
141. Jiaoyan Huang, Matthieu B. Miller, Eric Edgerton, Mae Sexauer Gustin, 2015 Use of Criteria Pollutants, Active and Passive Mercury Sampling, and Receptor Modeling to Understand the Chemical Forms of Mercury in Florida, Special Issue of Atmospheric Chemistry and Physics on Atmospheric Hg. *Atmospheric Chemistry and Physics Discussions*, 15, 12069-12015. Doi: 10.5194/acpd-1512069-2015.
140. Huang, J. and Gustin, M.S. 2015 Effect of relative humidity on KCl denuders and membranes used to collect gaseous oxidized mercury, *Environmental Science and Technology* 49: 6102-6108. DOI: 10.1021/acs.est.5b00098.
139. Gustin, M. S., Amos, H. A., Huang, J., Miller, M.B., Heidecorn. 2015 Measuring and modeling mercury in the atmosphere: A critical review, Invited paper- Special Issue of Atmospheric Chemistry and Physics. *Atmospheric Physics and Chemistry*, 15: 5697-2015. doi: 10.5194/acp-15-5697-2015.
138. Gustin, M. S., Amos, H. A., Huang, J., Miller, M.B., Heidecorn. 2015 Successes and challenges of measuring and modeling atmospheric mercury at the part per quadrillion level, Invited paper- Special Issue of Atmospheric Chemistry and Physics. *Atmospheric Physics and Chemistry Discussions*, 15: 1-45.
137. Miller, M.B., Gustin, M.S. 2015 Gas-exchange chamber analysis of elemental mercury deposition/emission, *Chemosphere*, 131: 209-216. DOI: 10.1016/j.chemosphere.2015.03.014
136. Fine, R., Miller, M.B., Gustin, M.S. Development of a statistical model to identify spatial and meteorological drivers of elevated O₃ in rural Nevada and its application to other rural mountainous regions, *Science of the Total Environment*, 530-531: 526-533 doi: 10.1016/j.scitotenv.2015.03.148.
135. Miller M.B., Gustin M.S., Fine R., Pierce A. Tracking sources of ozone to three rural locations in Nevada, USA, using ancillary pollutants and mercury. *Science of the Total Environment*, 530-531: 483-492 doi: 10.1016/j.scitotenv.2015.03.346.
134. VanCuren R, Gustin MS. Identification of sources contributing to PM_{2.5} and ozone at elevated sites in the western US by receptor analysis: Lassen Volcanic National Park, California, and Great Basin National Park, Nevada. *Science of the Total Environment* 2015; 530: 505-518. doi: 10.1016/j.scitotenv.2015.03.091
133. Christensen, J.N., Weiss-Penzias, P., Fine, R., McDade, C.E., Trzepla, K, Brown, S.T., Gustin, M. S. Unraveling the Sources of Ground Level Ozone in the Intermountain Western United States, *Science of the Total Environment* 530-531: 519-525 doi: 10.1016/j.scitotenv.2015.04.054
132. Fine R., Miller M.B., Yates E.L., Gustin M.S. Investigating the influence of long-range transport on surface O₃ in Nevada, USA using observations from multiple measurement platforms. *Science of the Total Environment* 530-531: 493-504 doi: 10.1016/j.scitotenv.2015.03.125.
131. Reinemann S.A., Porinchu D.F., Gustin M.S., Greenwood B. 2014 Historical trends of mercury

- and spheroidal carbonaceous particle deposition in subalpine lakes in the Great Basin, United States. *Journal of Paleolimnology*, 52(4): 405-418 DOI 10.1007/s10933-014-9801-7
130. Weiss-Penzias P.S., Amos H.M., Selin N.E., Gustin M.S., Jaffe D.A., Obrist D., Sheu G.-R., Giang A. 2015 Use of a global model to understand speciated atmospheric mercury observations at five high-elevation sites. *Atmospheric Chemistry and Physics* 15,1161-1173. DOI: 10.5194/acp-15-2225-2015
129. Huang J., Gustin M.S. 2015 Use of passive sampling methods and models to understand sources of mercury deposition to high elevation sites in the Western United States. *Environmental Science and Technology*, 49 (432-441) DOI 10.1021/es502836w
128. Fine R., Miller M.B., Burley J., Jaffe D.A., Pierce R.B., Gustin M.S. MDA8 O₃ values at rural surface sites in Nevada, USA: Results from two years of the Nevada Rural Ozone Initiative (NVROI) 2015. *Science of the Total Environment* 530-531: 455-470 DOI: <http://dx.doi.org/10.1016/j.scitotenv.2014.12.027>
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126. Jaffe D.A., Lyman S.N., Amos H.M., Gustin M.S., Huang J., Selin N.E., Levin L., ter Schure A., Mason R.P., Talbot R., Rutter A., Finley B., Jaeglé L., Shah V., McClure C., Ambrose J., Gratz L., Lindberg S., Weiss-Penzias P., Sheu G.-R., Feddersen D., Horvat M., Dastoor A., Hynes A.J., Mao H., Sonke J.E., Slemr F., Fisher J.A., Ebinghaus R., Zhang Y., Edwards G. 2014 Viewpoint: Progress on understanding atmospheric mercury hampered by uncertain measurements. *Envir. Sci Tech.* 48; 7204-7206 DOI: 10.1021/es5026432
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4. Taylor, G.E., Jr., Schaller, K.B., Geddes, J.D. Gustin, M.S., Larsen, G.B and Miller, G.C. 1996 Ecology, toxicology, and chemical fate of methyl isothiocyanate in riparian soils from the Upper Sacramento River, *Environmental Toxicology and Chem.*, 15: 1695-1701.
3. Gustin, M.S., Taylor, G.E., Jr. and Leonard, T.L. 1995 Atmospheric mercury concentrations above contaminated mill tailings, Carson River Drainage Basin, Nevada, *Water Air and Soil Pollution*, 80: 217-220.
2. Gustin, M.S., Taylor, G.E., Jr. and Leonard, T.L. 1994 High levels of mercury contamination in multiple media of the Carson River Drainage Basin of Nevada: Implications for risk assessment, *Environmental Health Perspective*, 102: 772-778.
1. Gustin, M.S. 1990 Stratigraphy and Alteration of the Host Rocks, United Verde Massive Sulfide Deposits, Jerome, Arizona, *Economic Geology*, 85: 29-49.

Grant and Contracts

Summary of current funding: Competitive Grants as PI:	\$ 6,487,697
Competitive Grants as Co-PI:	\$ 3,009,811
Noncompetitive as PI:	\$ 2,032,902
Noncompetitive as Co-PI:	\$ 339,419

CURRENT PROJECTS

Adam Czank (Principal), Mae Gustin (Co-PI), Peter Weisberg (Co-PI) Collaborative Research: Investigating tree rings as archives for atmospheric Hg concentrations using Hg, carbon isotopes, and comparisons to other proxies National Science Foundation \$ 757,272 07/22 to 6/26

Gustin, Mae S (Principal), Seth, Lyman (Utah State University Co-Principal), Armstead Russell (Georgia Tech Co-Principal), William Johnson (University of Utah Co-Principle) Collaborative Research: Development of an understanding of ambient RM chemistry, reactions forming, and methods for measurement National Science Foundation \$1,402,353 (UNR \$925541 UTS \$402627 GAT \$30000 UUT \$44185) 01/2021-12/24

Perry Williams (Principle-UNR), Mae Gustin, Chris Nicoli Examining the Impact of Methylmercury on Waterfowl Population Dynamics with Implications for Human Health and Water Management in Arid Environments USDA HATCH \$150000 07/2020-06/2024

Sage Hiibel, Mae S. Gustin Algae from Waste Waters as a Sustainable Protein Source: Fate of Heavy Metals, National Institute of Food and Agriculture's (NIFA's) FY 2018 Agriculture and Food Research Initiative (AFRI) Sustainable Agroecosystems: Functions, Processes and Management Program Area Priority. \$319,778: 05/19 – 05/23

Won-Gyu Choi, Mae Sexauer Gustin, Jeff Harper, Joel Blum Study Of The Biochemical Mechanisms By Which Mercury Is Sequestered In Plants USDA HATCH grant. \$180,000: 07/19-06/22

Mae Gustin, Analyses of mercury concentrations in feathers and tissues at Stillwater National Wildlife Refuge, US Fish and Wildlife Service \$9,700

Mae Gustin, Measurement of atmospheric reactive mercury concentrations, chemistry, and dry deposition at Guadalupe Mountains National Park, US Enviromental Protection Agency, \$5,200.

PAST PROJECTS

Gustin, Mae S (Principal), Seth, Lyman (Utah State University Co-Principal). Collaborative Research: Refining and Testing Methods for Identifying Gaseous Oxidized Mercury in air. National Science Foundation \$564,965 to UNR total \$864,110 7/1/17-12/31/20 Competitive

Mae S. Gustin, Sarrah M. Dunham-Cheatham, Michael B. Teglas, Mary M. Peacock Pet Food Mercury & Genetics Experiment at University of Nevada, Reno Private donor, public donations \$26,200 07/01/2018-12/31/2019

Gustin, Mae S, Weisberg, Peter J, Nowak, Robert S. "Geography of Air Pollution", Sponsored by National Science Foundation, Federal, \$199,185. July 7, 2015-Date: December 31, 2018 Competitive

Gustin, Mae S. "Analyses of archived aerosol samples to identify sources of ozone and mercury to the State of Nevada", Sponsored by HATCH-USDA, Federal, \$174,000. July 1, 2015-June 2018

Gustin, Mae S (Principal), Seth, Lyman (Utah State University Co-Principal). Collaborative Research: Refining and Testing Methods for Identifying Gaseous Oxidized Mercury in air. National Science Foundation \$559,049 total \$304,442 to UNR 8/15/13-7/31/17 Competitive

Mae Gustin. Pacific –Great Basin Mercury Transect. EPRI (cooperation with National Park Service). \$168,079. 7/15/10-5/31/15 Competitive

Gustin, Mae (PI) Understanding sources of Hg deposited to Florida Atmospheric Research and Analysis, Inc. \$38,788 1/15/14-12/31/14 Noncompetitive

Mae Gustin (Principal) Amendment to the Nevada Rural Ozone Research Initiative. Nevada Division of Environmental Protection. \$557,252 9/1/10-12/31/17

Mae Gustin (Principal), Jaffe, Daniel (collaborator) Nevada Rural Ozone Research Initiative. Nevada Division of Environmental Protection. \$ 927,892. 9/1/10-12/31/17 Noncompetitive

Dan Jaffe (University of Washington), Mae Gustin, Bob Talbot (University of Houston), Tony Hynes (University of Miami, Daniel Obrist (Desert Research Institute). Collaborative Research: The Reno Atmospheric Mercury Inter-comparison Experiment (RAMIX). National Science Foundation. \$157,637 (UNR amount) \$700,000 Total 5/1/11-4/30/2012 Competitive

Mae Gustin. Phase two –Fugitive Hg Emission Project Investigating Hg Releases to the Air Associated with Nevada Gold Mines. Nevada Division of Environmental Protection and NV mining companies. \$148,586. 10/1/11-5/30/2012. Noncompetitive

John Cushman (UNR), Eric Marchand (UNR), Mae Gustin. Nevada Renewable Energy Consortium: Municipal Wastewater for Microalgae Biofuel Feedstock Production. Department of Energy. \$250,000 (\$53,092 for Gustin). 10/1/10-9/30/2011. Competitive

Mae Gustin, Sue Donaldson (UNR-Cooperative Extension). Investigation of Potential for Methyl Mercury Production and Inputs From Irrigation Drains in Nevada. United States Department of Agriculture-HATCH Grant. \$107,845. 7/1/10-6/30/2012. Competitive

Mae Gustin. Measurement of Hg dry deposition and air concentrations at 4 national parks. National Park Service and EPRI. \$205,291. 6/14/10-12/31/2012. Competitive

Mae Gustin. Integrating Multiple Methods to Understand the Atmospheric Chemistry of Mercury and Mercury Dry Deposition from the Pacific to the Basin and Range. National Science Foundation. \$250,582. 10/1/09-10/30/2012. Competitive

Mae Gustin, Dan Jaffe (University of Washington). Workshop on reducing uncertainty in the measurement of atmospheric Hg. National Science Foundation. \$32,400. 10/1/08-12/30/09. Competitive

Mae Gustin. Measurement of Hg dry deposition. Electric Power Research Institute. \$158,028. 6/1/07-12/30/09. Competitive

Mae Gustin. Development of broadly deployable methods for quantifying atmospheric Hg speciation in urban and rural settings in Nevada. Sponsored by U. S. EPA Air Toxics program through NDEP. \$413,890. 10/1/06-12/31/09. Competitive

Mae Gustin. Measurement of Hg dry deposition and air concentrations using surrogate surfaces and passive samplers to aid development of a TMDL for Hg for the State of Florida. EPRI-Electric Power Research Institute. \$179,181. 6/1/09-3/30/2012. Competitive

Mae Gustin-PI, Frank Marsik (University of Michigan)-Co PI. Characterization of fugitive emissions from naturally Hg enriched mining disturbed and undisturbed substances. Nevada Division of Environmental Protection and NV mining companies. \$339,943. 4/1/07-6/30/2012. Competitive

Mary Peacock (UNR), Mae Gustin. Population dynamics of the native fishes in the mainstem Truckee River. United States Fish and Wildlife Service. \$313,419. 6/1/07-6/30/11. Noncompetitive

Mae Gustin. Measurement of Hg release from FGD amended soils. EPRI-Electric Power Research Institute. \$284,911. 6/1/09-12/31/11. Noncompetitive

Mae Gustin-PI, Dale Johnson (UNR), Jay Arnone (Desert Research Institute), Alan Gertler (Desert Research Institute). Interactions of atmospheric elemental mercury with vegetation and soils: Quantifying the role of natural ecosystems as sources and sinks. National Science Foundation. \$464,676. 8/15/02-8/14/05. Competitive

Mae Gustin-PI, Dale Johnson, Richard Zehner Collaborators: Steve Lindberg (Oak Ridge National Laboratory), Hong Zhang (Tenn. Tech). Assessment of natural source mercury emissions: Speciation, mechanisms and significance. U. S. Environmental Protection Agency STAR Grant. \$891,545. Competitive

Mark Walker (UNR)-PI, Douglass Shaw, Mae Gustin, Jay Davidson. Arsenic in Churchill County, Nevada domestic water supplies. U. S. Department of Agriculture. \$372,500. Competitive

Keith Dennet (UNR)-PI, Mae Gustin, Eric Marchand (UNR). Should constructed wetlands be incorporated into proposed flood control projects for the Truckee River? U.S. Environmental Protection Agency Wetlands Protection Development Grant. \$114,532. 7/02-12/04. Competitive

Mae Gustin. Scaling up natural source mercury emissions at local and regional scales. Electric Power Research Institute (EPRI). \$215,566. 02/00 to 01/03. Competitive

Glenn Miller (UNR)-PI, Mae Gustin Collaborators: Bob Hall (U.S. EPA), Dave Jones (U.S. EPA) and Joel Pedersen (U.S. EPA). Mercury Emissions from Hard Rock Mining. U.S. Environmental Protection Agency Region 9. \$160,500. 8/02-7/05. Noncompetitive

M. Walker (UNR)-PI, Douglas Shaw, M. Gustin. Risk analysis and management for Churchill County, Nevada private water supplies. U. S. Department of Agriculture Cooperative State Research Extension and Education Office. \$140,000. 6/02-6/04. Competitive

Mae Gustin-PI, Mark Walker (UNR), Sue Donaldson (UNR-Cooperative Extension). An investigation of nonpoint source mercury pollution in Steamboat Creek and the Truckee River, NV. Nevada Department of Environmental Protection. \$29,555. 9/01-6/02. Competitive

Mae Gustin. Mercury emissions from coal combustion fly ash. Electric Power Research Institute. \$39,115. 9/01-3/03. Noncompetitive

Gordon Brown of Stanford University-PI Mae Gustin. Processes controlling the chemical/isotopic speciation and distribution of mercury from contaminated mine wastes. U.S. Environmental Protection Agency STAR Grant. \$700,000. 12/99-12/03. Competitive

Mae Gustin-PI, Dale Johnson, Jim Coleman collaborator: Steve Lindberg ORNL. Determining the role of plants and soils in the biogeochemical cycling of mercury on an ecosystem level. EPA-EPSCoR. \$508,000. 9/99-7/03. Competitive

Mae Gustin. Mercury emissions from mine waste. United States Geological Survey. \$13,000. 10/99-12/03. Noncompetitive

M. Walker-PI, J. Davidson, M. Gustin. Arsenic in Churchill County, Nevada, Private Water Supplies. Nevada Agriculture Experiment Station-UNCE. \$10,000. 7/01-6/02. Competitive

Mae Gustin-PI, Jerry Qualls. Mercury sources and methyl mercury production in Nevada streams and rivers. National Science Foundation EPSCoR Seed Grant. \$25,000. 8/99-7/02. Competitive

Mae Gustin. Atmospheric Hg speciation at Sulfur Bank Superfund Site, California. U. S. Environmental Protection Agency Region 9. \$30,406. 5/01-8/01. Noncompetitive

Mae Gustin. Mercury emissions from Lahontan Reservoir. CH2M Hill and EPA Region 9. \$2,500. 6/01-8/01. Noncompetitive

Mae Gustin. An assessment of mobility and bioavailability of arsenic in surface water, pore water and sediments of the lower Humboldt River System. Bureau of Reclamation. \$15,000. 9/99-4/30/02. Noncompetitive

Mae Gustin. Characterization of mercury concentrations in biota, waters and sediments of Steamboat Creek. Nevada Division of Environmental Protection. \$6,900. 6/00-6/01. Competitive

Mae Gustin. Assessment of water quality conditions and mercury on macroinvertebrate communities Stillwater National Wildlife Refuge, Nevada. U. S. Fish and Wildlife Service. \$16,000. 6/98-6/01. Noncompetitive

Sue Donaldson, Sherman Swanson, Mae Gustin. Assessment of the sources and forms of mercury in Steamboat Creek and the potential effects of stream restoration on mercury bioavailability. U.S. Department of Agriculture. \$10,000. 4/1/99-3/31/01. Competitive

Mae Gustin. Light enhanced mercury volatilization from substrate. U. S. Environmental Protection Agency STAR Grant. \$302,000. 12/97-12/00. Competitive

James Seiber-PI, Mae Gustin. Study of deposition of trifluoroacetic acid and evaporation and exposure to plants in seasonal wetlands. National Science Foundation. \$400,000. 6/97-12/99. Competitive

Mae Gustin. International field intercomparison of measurement of mercury emissions from naturally enriched substrate- Nevada STORMS Project. Electric Power Research Institute. \$98,000. 4/98-12/00. Noncompetitive

Mae Gustin. Development of a budget for mercury in waters of the Upper Carson River Watershed. Department of the Interior-Geological Survey NIWR Grant. \$14,085. 3/01/99-2/28/00. Competitive

Projects with all work done at UNR prior to tenure track appointment

Jim Seiber-PI, Glenn Miller, George Taylor, Mae Gustin. Atmospheric transport and deposition of organophosphate and other pesticides as input to Sierra Nevada Surface waters. U.S. Department of Agriculture. \$310,000. 1996- 1999. Competitive

Mae Gustin. Mercury speciation in substrate- Field method demonstration plan. Environmental Protection Agency. \$35,000. 6/97-05/98. Noncompetitive

Presentations

2022

Convened a workshop with 2 other scientist as part of the ***International Conference on Mercury as a Global Pollutant*** "Introduction to new methods for measuring reactive, particulate, and gaseous oxidized atmospheric mercury chemistry and concentrations

Workshop category: Emerging technologies Name of workshop lead presenter: Mae Sexauer Gustin Name of co-presenters: Seth Lyman and Sarrah M. Dunham-Cheatham

Presentations

New methods for measuring reactive, particulate-bound, and gaseous oxidized mercury

Sarrah M. Dunham-Cheatham, Mae Sexauer Gustin, Seth Lyman *National Ambient Air Monitoring Conference* Pittsburg, PA,USA August 2022 Oral presentation Pittsburg, PA,USA August 22 to 25 2022

Evidence Against Rapid Mercury Oxidation in Photochemical Smog

Seth Lyman, Tyler Elgiar, Mae Sexauer Gustin, Sarrah M. Dunham-Cheatham, Liji M. David, and Lei Zhang *International Conference on Mercury as a Global Pollutant* Oral presentation Virtual workshop Cape Town South Africa 25th to 29th of July 2022

Fate of mercury, cadmium, selenium, and arsenic in a simulated industrial aquaculture setting

Livia Lown, Joshua Vernaz, Sarrah M. Dunham-Cheatham, Sage Hiibel, Mae Sexauer Gustin *International Conference on Mercury as a Global Pollutant* Poster presentation Virtual workshop Cape Town South Africa 25th to 29th of July 2022

Observations of the chemistry and concentrations of reactive Hg at locations with different ambient air chemistry Mae Sexauer Gustin, Sarrah M. Dunham Cheatham, Natalie Allen¹, Seth Lyman, William Johnson, Sam Lopez, Armistead Russell, Katie Evans *International Conference on Mercury as a Global Pollutant* Oral presentation Virtual workshop Cape Town South Africa 25th to 29th of July 2022

Comparison and Calibration of Methods for Ambient Reactive Mercury Quantification

Sarra M. Dunham Cheatham, Seth Lyman, Mae Sexauer Gustin *International Conference on Mercury as a Global Pollutant* Poster presentation Virtual workshop Cape Town South Africa 25th to 29th of July 2022

Improvements to the Reactive Mercury Active System (RMAS) used to measure and identify concentrations and chemistry of reactive mercury

Natalie R. Allen, Livia Lown, Sarrah M. Dunham-Cheatham, Mae Sexauer Gustin *International Conference on Mercury as a Global Pollutant* Poster presentation Virtual workshop Cape Town South Africa 25th to 29th of July 2022

Mae Sexauer Gustin, Seth Lyman, Sarrah M. Dunham-Cheatham, Milena Horvat Practical demonstration of oxidized mercury measurements: sampling artifacts and calibration Webinar for stakeholders associated with the Minamata Convention on Mercury March 1, 2022

Morgan Byrne, Mae Gustin; Chris Nicolai; and Perry Williams **Investigating the Distribution of Mercury in the Lower Carson River, NV and Availability to the Wood Duck Population**, Poster presentation Nevada Water Resources Association Feb 2022

2021

Seth Lyman, Tyler Elgiar, Trevor O'Neil, Mae S. Gustin, Sarrah Dunham-Cheatham, Lynne Gratz **Accurate Measurements Show High Atmospheric Oxidized Mercury in the Western United States** Oral presentation Goldschmidt Virtual Conference July 2021

Mae Gustin, Sarrah Dunham-Cheatham, Seth Lyman **Comparison of Methods for the Measurement of Gaseous Oxidized Mercury** Oral presentation American Geophysical Union meeting New Orleans LA, Dec 16, 2021

Mae Gustin, Sarrah Dunham-Cheatham, Seth Lyman **Discussion of UNR and USU methods for measurement of reactive gaseous mercury measurement** National Atmospheric Deposition MELD meeting January 2021 *invited*

Morgan Byrne, Mae Gustin; Chris Nicolai; and Perry Williams, **Investigating the relationship between mercury in feathers and mercury in breast tissue in wood ducks from the Carson River, NV** Western Wildlife Society Meeting Reno NV 2021

2020

Mae Sexauer Gustin, Sarrah Dunham-Cheatham, Seth Lyman, Stefan Osterwalder, Jiaoyan (Joey) Huang, Lei Zhang **Active and passive systems for measurement of gaseous oxidized mercury, particulate bound, and reactive mercury** Invited presentation National Atmospheric Deposition Network Fall Meeting Oct 2020

Mae Sexauer Gustin, Sarrah Dunham-Cheatham, Seth Lyman **A first glance at what four measurement systems tell us about atmospheric Hg downwind of large fires** Invited presentation National Atmospheric Deposition Network Fall Meeting Oct 2020

Benjamin Ingle, Sarrah M. Dunham-Cheatham, Mae Sexauer Gustin Assessment of the variation in tree ring mercury concentrations between co-located tree species Society of Environmental Toxicology and Chemistry Meeting November 2020

Sarrah M. Dunham-Cheatham, Seth Lyman, Mae Sexauer Gustin Comparison of Reactive Mercury Measurements from Multiple Co-Located Active Systems Society of Environmental Toxicology and Chemistry Meeting November 2020

Mae Sexauer Gustin Recent developments in understanding reactive mercury concentrations and chemistry, Invited presentation Physical Sciences Department University of Washington-Bothell February 2020

Mae Sexauer Gustin Recent developments in understanding reactive mercury concentrations and chemistry, Invited presentation Chemistry Department Utah State University September 2020

2019

Mae Sexauer Gustin **New insights into the variability of atmospheric mercury concentrations and chemistry across multiple locations** Invited presentation American Geophysical Union meeting December 2019

Sarrah M. Dunham-Cheatham¹, Stefan Osterwalder², Olivier Magand², Aurélien Dommergue², Jeroen Sonke³, Mae Sexauer Gustin¹ **Applying New Technologies to Arctic Mercury Monitoring**, National Atmospheric Deposition Program, Spring meeting October 2019, Boulder Colorado, oral presentation

Adriel Luippold, Mae Sexauer Gustin, Sarrah M. Dunham-Cheatham **Measurement and understanding GOM concentrations and chemistry from sites in Utah, Hawaii, Maryland, and Nevada, USA.** International Conference on Mercury as a Global Pollutant Krakow Poland September 2019 oral

Adriel Luippold, Mae Sexauer Gustin, Sarrah M. Dunham-Cheatham **Introducing UNRRMAS_2.0: Improvements for Quantification and Identification of Atmospheric Reactive Mercury** International Conference on Mercury as a Global Pollutant Krakow Poland September 2019 poster

Stefan Osterwalder, Sarrah M. Dunham-Cheatham, Beatrice Ferrera, Olivier Magnan, Jennie Thomas, Jeroen Sonke, Aurélien Dommergue, Mae Sexauer Gustin **Reactive mercury speciation and dry deposition during AMDEs in the Arctic** International Conference on Mercury as a Global Pollutant Krakow Poland September 2019 oral

Sarrah M. Dunham-Cheatham, Mae Sexauer Gustin **Testing Methods for Quantification**

and Identification of Reactive Mercury Compounds International Conference on Mercury as a Global Pollutant Krakow Poland September 2019 oral

Mae Sexauer Gustin, Sarrah M. Dunham-Cheatham **Development of an automated method for measurement of gaseous oxidized mercury** International Conference on Mercury as a Global Pollutant Krakow Poland September 2019 oral

Seth Lyman, Tyler Elgiar, Trevor O'Neil, Mae S. Gustin, Addie Luippold, Sarrah Dunham-Cheatham **An Integrated System for Accurate, Independently Verified Measurements of Oxidized Mercury** International Conference on Mercury as a Global Pollutant Krakow Poland September 2019 oral

Peter Nelson, Anthony Morrison, Grant Edwards, Dean Howard, Jennifer Powell, Melita Keyword, Erin Dunne, Mae Gustin. **Variation in ambient mercury levels in the vicinity of coal seam gas extraction and power generation facilities in rural Australia: seasonal and meteorological controls** International Conference on Mercury as a Global Pollutant Krakow Poland September 2019 poster

Sarrah M. Dunham-Cheatham, Margarita Vargas Estrada, Adriel Luippold, Mae Sexauer Gustin **Mercury is a global contaminant in commercial cat and dog foods** International Conference on Mercury as a Global Pollutant Krakow Poland September 2019 poster

Using soils and biota to evaluate the effectiveness of the Minamata Convention on Mercury International Conference on Mercury as a Global Pollutant Krakow Poland September 2019 poster

Tyler Elgiar, Seth Lyman, Trevor O'Neil, Mae Gustin, Addie Luippold, Sarrah Dunham-Cheatham

Elemental and oxidized mercury in an area with elevated wintertime ozone International Conference on Mercury as a Global Pollutant Krakow Poland September 2019 poster

Michael S. Bank, David Amouroux, Xinbin Feng, Mae Gustin, Milena Horvat, Daniel Obrist, Heidi Pethybridge, Jörg Rinklebe, Sylvia Sander, Jeroen E. Sonke, and Peter Swarzenski Mae Sexauer Gustin. Invited key note for a workshop on Air Pollution, Climate Change, and Human Health in Nanjing China at Nanjing University Deciphering sources of trace metal pollution and greenhouse gases to the Western United States July 16, 2019

Mae Sexauer Gustin Gave an invited research seminar for faculty and students in the School of the Environment Nanjing University Understanding atmospheric Hg chemistry July 12, 2019

Mae Sexauer Gustin The Nevada Rural Ozone Initiative: How the Gustin Research Group brought Nevada into the global ozone science community invited talk UNR Honors program Feb 20, 2019

Mae Sexauer Gustin With every breath you take you inhale mercury-let's learn a little about this global atmospheric pollutant Invited speaker Environmental Literacy Mini-symposium organized by the Chemistry Department UNR February 20, 2019

Mae Sexauer Gustin The Nevada Rural Ozone Initiative Invited seminar Statistics Graduate students UNR

Mae Sexauer Gustin Manuscript Accepted! Invited Keynote speaker for Workshop for Graduate students and faculty put on by the UNR Libraries. February 12, 2019

2018

Gustin, M. S. Rethinking Atmospheric Mercury, 2018 SETAC-Rome Meeting, Invited Plenary Speaker, Society of Environmental Toxicology and Chemistry. (May 13, 2018).

2017

Gustin, Mae Sexauer 2017 (Invited talk) Challenges and new methods for measurement of gaseous oxidized mercury European Union Meeting on Oxidized Mercury Jožef Stefan Institute, Department of Environmental Sciences, Reactor Center, Ljubljana, Slovenia 9 - 11 October, 2017

Jennifer Arnold, Peter Weisberg, Mae Gustin 2017 Impact of Root Spikes and Air Hg Exposures on Foliage, Bark, and Tree Rings of Austrian Pines Poster 13th International Conference on Mercury as Global Pollutant, Providence Rhode Island July 16-21.

Matthew A. Peckham, Peter J. Weisberg, Peter S. Weiss-Penzias, Mae S. Gustin 2017 Testing the effect of air Hg exposures on foliage and tree ring concentrations at 3 locations Oral presentation 13th International Conference on Mercury as Global Pollutant, Providence Rhode Island July 16-21.

Mae Sexauer Gustin 2017 Why understanding the chemical composition of gaseous oxidized Hg is important for global air pollution policy Oral presentation 13th International Conference on Mercury as Global Pollutant, Providence Rhode Island July 16-21.

Ashley M. Pierce, Mae Sexauer Gustin, John Christensen 2017 Use of a particulate mass measurement system for tracing mercury pollution sources using lead isotopes Poster 13th International Conference on Mercury as Global Pollutant, Providence Rhode Island July 16-21.

Matthieu Miller, Mae Gustin, Grant Edwards 2017 Direct measurements of reactive mercury and gaseous elemental mercury from background and contaminated soils Oral presentation 13th International Conference on Mercury as Global Pollutant, Providence Rhode Island July 16-21.

Kellie Cook, Mae Gustin, Matthieu Miller, Dan Sawyer, Grant Edwards

A Comparative Analysis of GOM Measurement Using Two Methodologies and Environmental Correlates in an Urban Setting in Australia Poster 13th International Conference on Mercury as Global Pollutant, Providence Rhode Island July 16-21.

Ashley M. Pierce, Mae Sexauer Gustin, John Christensen 2017 Use of a particulate mass measurement system for tracing ozone and reactive mercury sources using lead isotopes Poster WESTAR (Western States Air Resources Council) Ozone meeting, March 28-29, 2017, Denver Colorado

Mae Sexauer Gustin 2017 Summary of results of the Nevada Rural Ozone Initiative Oral presentation WESTAR Ozone meeting, March 28-29, 2017, Denver Colorado

2016

M. B. Miller, G. C. Edwards, M. S. Gustin and D. Sawyer First year of atmospheric reactive mercury measurements at Cape Grim and Macquarie University
Atmospheric Composition & Chemistry Observations & Modelling Conference
Cape Grim Annual Science Meeting November 2016

Gustin, Mae 2016 (Invited talk) Mercury emissions from nonpoint sources at Nevada Gold Mines-Do they matter and how to reduce them, Geological Society of Nevada, February 2016

Gustin, Mae 2016 (Invited talk) Determining sources of atmospheric ozone to the State of Nevada, Eastern Sierra Chapter of the Air and Waste Management Association, March 2016

Gustin, Mae 2016 (Invited talk) Development of New Measurements for Atmospheric Reactive Mercury and Their Application University of Basil Switzerland May 9, 2016

Luippold, A., Gustin, M. S. Mercury in Pet Food, Poster Presentation of Undergraduate Research at UNR, May 2016.

2015

Edwards G.C., Keywood M.D., Howard D., Miller M., Gustin M., Powell J.C., Mercury in the Southern Hemisphere and the Cape Grim mercury measurement program, in Atmospheric Composition & Chemistry Observations & Modelling Conference incorporating the Cape Grim Annual Science Meeting 2015, 11-13 November 2015, Murrumbidgee, NSW, N. Derek and P. B. Krummel (eds.), Bureau of Meteorology and CSIRO Oceans and Atmosphere, Melbourne, Australia, page 54, 2015.

Miller M., Gustin M., Edwards G.C., Keywood M.D., New developments in measuring reactive mercury in the atmosphere, in Atmospheric Composition & Chemistry Observations & Modelling Conference incorporating the Cape Grim Annual Science Meeting 2015, 11-13 November 2015, Murrumbidgee, NSW, N. Derek and P. B. Krummel (eds.), Bureau of Meteorology and CSIRO Oceans and Atmosphere, Melbourne, Australia, page 56, 2015.

Mae Gustin UNR's research regarding understanding chemistry and concentration of GOM- Strengths and Weaknesses Tekran Users Group Meeting September 22-24, 2015 NOAA Center for Weather and Climate Prediction (NCWCP)
College Park, MD M Gustin Mercury meeting NOAA and NADP

Matthieu Miller, Grant Edwards, Mae Gustin Gaseous Oxidized Mercury Flux from Substrates Associated with Industrial Scale Gold Mining in Nevada, USA AGU Fall Meeting, December 14 2015

Pierce, A., Gustin, M., Christensen, J. Development of a particulate mass measurement system for tracing pollution sources using atmospheric concentrations and lead isotopes
AGU Monday dec 14 2015 Invited

Jaffe, D., Moore, T., Gustin, M. Oct 27 Air and Waste Management Association Webinar
Ozone 101: Understanding the sources, formation, and health and ecosystem effects.
Advances in our understanding of the chemical forms and concentrations of GOM in the atmosphere

Mae Gustin 2015 Advances in our understanding of the chemical forms and concentrations of gaseous oxidized mercury in the atmosphere International conference on mercury pollution prevention and control in China. Chinese Society for Environmental Science, Tsinghua University, Institute of Geochemistry, Chinese Academy of Sciences, Foreign Economic cooperation Office, Ministry of Environmental Protection China, State Environmental Protection Engineering Center for Mercury Pollution Prevention and Control Beijing China Dec 8 and 9th

Mae Gustin, 2015, Advances in our understanding of the chemical forms and concentrations of gaseous oxidized mercury in the atmosphere 11th SETAC Europe Special Science Symposium Global Environmental Change and Mercury Pollution: Environmental Governance, Research, and Management of Converging Issues Brussels Belgium October 20 -21 2015 Invited talk
Invited to attend UNEP and GEF/STAP Mercury knowledge platform held in Brussels Belgium Marivaux, Congress and Seminar Center

Jiaoyan Huang, Keith Heidcorn, Mae Sexauer Gustin Humidity Influences on Measurement of Atmospheric Oxidized Mercury Measurements Using Membranes and KCl-coated Denuders
International Conference on Mercury as a Global Pollutant, Jeju, South Korea, June 14-19, 2015

Jiaoyan Huang, Mae Sexauer Gustin, Use of passive sampling methods and models to understand gaseous oxidized mercury at high elevation sites in the Western United States
International Conference on Mercury as a Global Pollutant, Jeju, South Korea, June 14-19, 2015

Keith Heidcorn, Jiaoyan Huang, Mae Sexauer Gustin, Refining and Testing Methods for Understanding the Chemical Composition and Concentration of Reactive Mercury (RM) in the Air from Three Sites in Nevada, USA Invited talk International Conference on Mercury as a Global Pollutant, Jeju, South Korea, June 14-19, 2015

Ashley Pierce, Mae Gustin, Jiaoyan Huang, Keith Heidecorn, Comparison of mercury measurements from three active methods including two filter methods and a Tekran speciation unit, using auxiliary data to determine differences in measurements. International Conference on Mercury as a Global Pollutant, Jeju, South Korea, June 14-19, 2015

Matthieu Miller, Grant Edwards, Mae Gustin Gaseous elemental and oxidized mercury flux from background and naturally enriched substrates associated with open pit gold mines in Nevada, USA International Conference on Mercury as a Global Pollutant, Jeju, South Korea, June 14-19, 2015

Jiaoyan Huang, Heather Holmes, Mae Sexauer Gustin Estimation of mercury dry deposition in the Western United States: Results from Community Multi-scale Air Quality (CMAQ) model and surrogate surface measurements June 14-19, 2015 International Conference on Mercury as a Global Pollutant, Jeju, South Korea, June 14-19, 2015

Chris Eckley, Mike Tate, Mae Gustin, Jerry Lin, Steve Dent, Bronwen Wang, John Gray, Brandon Kowalski, Dave Krabbenhoft, Collin Eagles-Smith
Surface-air mercury fluxes across Western North America: a synthesis of spatial trends and controlling variables, SETAC International Conference-Salt Lake City Utah September 2015

2014

Jiaoyan Huang, Mae Sexauer Gustin Use of passive sampling methods to understand sources of mercury and other pollutants to high elevation sites in the Western United States, Poster Fall Meeting American Geophysical Union.

A.O. Langford, C.J. Senff, R.J. Alvarez II, J. Brioude, O. R. Cooper, J.S. Holloway, M.-Y. Lin, R. D. Marchbanks, R. B. Pierce, P. J. Reddy, S.P. Sandberg, A.M. Weickmann, E.J. Williams, Mae Gustin, Thierry LeBlanc, Emma Yates Stratospheric contribution to surface ozone in the desert Southwest during the 2013 Las Vegas Ozone Study; Invited presentation American Geophysical Union.

Keith Heidecorn, Jiaoyan Huang, Mae Sexauer Gustin Comparison of the chemical composition of gaseous oxidized Hg in the atmosphere at 3 different locations in Nevada Poster Fall Meeting American Geophysical Union.

Rebekka Fine, Matthieu B. Miller, Joel Burley, Daniel A. Jaffe, R. Bradley Pierce, Meiyun Lin, Mae Sexauer Gustin IMDA8 O₃ values at rural surface sites in Nevada, USA: Results from two years of the Nevada Rural Ozone Initiative (NVROI) Poster Fall Meeting American Geophysical Union.

Rebekka Fine, Matthieu B. Miller, Mae Sexauer Gustin Development of a statistical model to identify spatial and meteorological drivers of elevated O₃ in rural Nevada and its application to other rural, mountainous regions Oral presentation American Geophysical Union

Ashley Pierce, Mae Gustin, Jiaoyan Huang, Keith Heidecorn Comparison of mercury measurement methods using two active filter measurement methods and a Tekran speciation unit. Poster Fall Meeting American Geophysical Union.

Mae S. Gustin, Jiaoyan Huang, Seth Lyman, Dan Jaffe Uncertainties of gaseous oxidized mercury measurements: How to move forward? Invited Presentation Fall Meeting American Geophysical Union.

Jiaoyan Huang, Seth Lyman, and Mae S. Gustin Uncertainties of gaseous oxidized mercury measurements: Ambient air concentration and dry deposition Poster National Atmospheric Deposition Program Fall Meeting.

E.L. Yates, L.T. Iraci1, R.B. Pierce, M. Gustin, R. Fine, M. Roby, D. Austerberry, T. Tanaka, W. Gore The Alpha Jet Atmospheric eXperiment (AJAX): Three years of airborne ozone and greenhouse gas measurements over California and Nevada 2014 NOAA ESRL GLOBAL MONITORING ANNUAL CONFERENCE May 2014

Mae Sexauer Gustin, Jiaoyan Huang Overview of Atmospheric Mercury Measurement Uncertainties Atmospheric Mercury Workshop, San Francisco.

Jiaoyan Huang, Mae Sexauer Gustin Use of passive sampling methods to understand sources of mercury and other pollutants to high elevation sites in the Western United States, Atmospheric Mercury Workshop , San Francisco,

2013

Morris, K., Wright, G., Gustin, M. S., Mast, A., Schmeltz, D., Gay, D., Steffan, A., Zhang, L., Blancard, P., Weiss-Penzias, P., Jaffe, D., Webster, J., 11th International Conference on Mercury as a Global Pollutant, "Spatial and temporal patterns of wet and dry deposition of mercury in Western North America".

Gustin, M. S. (Author Only), Fine, R. (Presenter & Author), Miller, M. (Author Only), Peterson, C. (Author Only), Burley, J. (Author Only), Jaffe, D. (Author Only), American Geophysical Union, Academic, Conference, "Investigating ozone in rural Nevada, USA: Results from the first year of the Nevada Rural Ozone Initiative (NVROI)".

Gustin, M. S. (Author Only), Fine, R. (Presenter & Author), Miller, M. (Author Only), Yates, E. (Author Only), Roby, M. (Author Only), Huang, J. (Author Only), Burley, J. (Author Only), Kuse, A. (Author Only), Ohyama, H. (Author Only), Gustin, M. S. (Author Only), American Geophysical Union, Academic, Conference, "Investigation the utility of multiple measurement platforms to understand surface ozone in rural Nevada, USA".

Huang, J., Miller, M., Gustin, M. S., American Geophysical Union, Academic, Conference, "Measurement of gasous oxidized mercury at a SEARCH newtork site in Florida, USA".

Weiss-Penzias, P. (Presenter & Author), Gustin, M. S. (Author Only), et al. (Author Only), American Geophysical Union, Academic, Conference, "Spatial and temporal trends of speciated air mercury concentrations in Western North America".

Briggs, C. (Author Only), Gustin, M. S. (Author Only), Ladwig, K. (Presenter & Author), Crop Science Society/Soil Science Society of America/American Society of Agronomy, Academic, Conference, "Investigation of Hg release from agricultural based soils amended with flue gas desulfurization soilids", **Invited**

Gustin, M. S., Jaffe, D., Huang, J., Weiss-Penzias, P., Peterson, C., Ambrose, J., 11th International Conference on Mercury as a Global Pollutant, Academic, Conference, "Addressing measurement uncertainties for gaseous oxidized mercury".

Eagle-Smith, C. (Presenter & Author), Gustin, M. S., et al., 11th International Conference on Mercury as a Global Pollutant, Academic, Conference, "Mercury cycling, bioaccumulation, and risk across Western North America: a landscape scale synthesis".

Christensen, J. (Presenter & Author), Weiss-Penzias, P., Brown, S., McDade, C., Jaffe, D., Gustin, M. S., International Goldschmidt Conference, Florence, Italy, Academic, Conference, "Unraveling sources of ground level ozone in the intermountain western U. S. through Pb isotopes".

2012

Huang, J. (Presenter & Author), Gustin, M. S. (Author Only), Miller, M. (Author Only), Weiss-Penzias, P. (Author Only), American Geophysical Union, Academic, Conference, "Comparison of Reactive Mercury Concentrations Measured Simultaneously Using KCl-coated Denuders, Nylon Membranes, and Cation Exchange Membranes".

Gustin, M. S., American Geophysical Union, Academic, Conference, "Sources of Mercury Measured in Wet and Dry Deposition in the Western United States", **Invited**.

Wright, G. (Presenter & Author), Gustin, M. S. (Author Only), Weiss-Penzias, P. (Author Only), American Geophysical Union, Academic, Conference, "Use of passive samplers and surrogate surfaces to investigate sources of mercury deposited to the western United States".

Fine, R. (Presenter & Author), Gustin, M. S. (Author Only), WESTAR (Western States Air Resources Council)-Conference on Western Ozone Transport, Non-Academic, Workshop, "Rural ozone transport in Nevada", WESTAR and University of Nevada-Reno.

Gustin, M. S., Huang, J., Miller, M., Peterson, C., Jaffe, D., Ambrose, J., Finley, B., Lyman, S., Call, K., Hynes, A., Bauer, D., Everhart, S., Remeika, J., Talbot, R., Fedderson, D., Mao, H., Obrist, D., Pierce, A., Lindberg, S., National Atmospheric Deposition Network Annual Meeting, Non-Academic, Conference, "Overview of the Results of the Reno Atmospheric Mercury eXperiment (RAMIX)".

Gustin, M. S., Peterson, C., Weiss-Penzias, P., National Atmospheric Deposition Network Annual Meeting, Non-Academic, Conference, "Use of passive samplers and surrogate surfaces for measurement of atmospheric Hg at three sites in Florida".

Gustin, M. S., EPRI-Southern CO workshop on mercury research SE US, Non-Academic, Workshop, "Passive sampler and surrogate surface measurements at Florida TMDL sites to assess mercury dry deposition and atmospheric concentrations", EPRI.

Gustin, M. S., Total Deposition Science Committee Meeting, Non-Academic, Roundtable, "Progress on Investigating the Use of Surrogate Surfaces and Passive Samplers for Measuring Atmospheric Mercury", Invited, National Atmospheric Deposition Network.

2011

- Gustin, M. S. (Author Only), Weiss-Penzias, P. (Presenter & Author), Fine, R. (Author Only), Jaffe, D. (Author Only), Gao, W. (Author Only), American Geophysical Union, Academic, "Back trajectory analyses of high ozone days for a 15 year record of measurements at Great Basin National Park".
- Fine, R. (Presenter & Author), Gustin, M. S., Peterson, C. (Author Only), Weiss-Penzias, P. (Author Only), Jaffe, D. (Author Only), American Geophysical Union, Academic, "The Nevada Rural Ozone Initiative:Field measurements of surface ozone in rural settings".
- Gustin, M. S. (Presenter & Author), Briggs, C. (Author Only), Fine, R. (Author Only), World of Coal Ash, Non-Academic, "Mercury Release from Soils Amended with Flue Gas Desulfurization Solids", **Invited**.
- Gustin, M. S., Local Chapter of American Chemical Society, Academic, "Atmospheric Mercury: Why Nevada Matters", **Invited**.
- Gustin, M. S. (Presenter & Author), Miller, M. (Presenter & Author), Huang, J. (Presenter & Author), Nevada Mining Association and Nevada Division of Environmental Protection Meeting, Non-Academic, "Update on work investigating fugitive mercury emissions from Nevada gold mines", **Invited**.
- Gustin, M. S., National Atmospheric Deposition Network Annual Meeting, Non-Academic, "Surrogate surfaces and passive samplers for measuring GOM dry deposition and GOM concentrations", National Atmospheric Deposition Program. **Invited**.
- Gustin, M. S. (Presenter & Author), Pizzarro-Barrara, C. (Author Only), Peacock, M. M. (Author Only), Nevada Water Resources Association Truckee River Conference, Non-Academic, "Mercury in Abiotic and Biotic Components of the Truckee River".
- Peterson, C. (Presenter & Author), Gustin, M. S. (Author Only), International Conference on Mercury as a Global Pollutant, Academic, "Algal mercury and trace metal accumulation during biofuel production".
- Peterson, C. (Presenter & Author), Weiss-Penzias, P. (Author Only), Gustin, M. S. (Author Only), International Conference on Mercury as a Global Pollutant, Academic, "Estimation of mercury dry deposition at three TMDL supersites across Florida, USA".
- Huang, J. (Presenter & Author), Miller, M. (Author Only), Gustin, M. S. (Author Only), International Conference on Mercury as a Global Pollutant, Academic, "Integrating multiple methods to better understand the atmospheric chemistry of mercury and mercury dry deposition in the semi arid Basin and Range".
- Wright, G. (Presenter & Author), Gustin, M. S. (Author Only), Weiss-Penzias, P. (Author Only), International Conference on Mercury as a Global Pollutant, Academic, "Investigation of mercury deposition and sources of mercury input to the Western United States".
- Weiss-Penzias, P. (Presenter & Author), Gustin, M. S. (Author Only), International Conference on Mercury as a Global Pollutant, Academic, "Sources of gaseous oxidized mercury and mercury dry deposition at two southeastern US sites".
- Jaffe, D. (Presenter & Author), Gustin, M. S. (Author Only), International Conference on Mercury as a Global Pollutant, Academic, "Measurement and understanding of atmospheric

mercury processes".

Miller, M., Gustin, M. S., International Conference on Mercury as a Global Pollutant, Academic, "Effects of reclamation and other control measures on reducing non-point source mercury emissions from industrial scale gold mines", (July 26, 2011).

Briggs, C. (Presenter & Author), Gustin, M. S. (Author Only), International Conference on Mercury as a Global Pollutant, Academic, "Influence of moisture on controlling release of Hg from soils", (July 26, 2011).

Briggs, C. (Presenter & Author), Gustin, M. S. (Author Only), International Conference on Mercury as a Global Pollutant, Academic, "Investigation of mercury release from soils amended with flue gas desulfurization solids".

Gustin, M. S. (Presenter & Author), Pizzaro Barraza, C. (Author Only), Peacock, M. M., International Conference on Mercury as a Global Pollutant, Academic, "Hg bioaccumulation in a contaminated flowing water system-sediment, macroinvertebrate and fish interactions".

Gustin, M. S., CAMNet: Real Time Air Pollution and Monitoring Meeting, Non-Academic, "Investigation of mercury deposition and sources of mercury input to four western national parks and one California State Park", **Invited**.

Weiss-Penzias, P. (Presenter & Author), Gustin, M. S. (Author Only), Peterson, C. (Author Only), EPRI Southeastern US Research Meeting, Non-Academic, "Sources of mercury in dry deposition to the southeastern United States", **Invited**.

Peterson, C. (Presenter & Author), Gustin, M. S. (Author Only), EPRI Southeastern US Research Meeting, Non-Academic, "Use of passive samplers and surrogate surfaces for measurement of atmospheric Hg at 3 Air Monitoring Super Sites established for developing statewide TMDL for Florida", **Invited**.

Gustin, M. S. (Presenter & Author), Weiss-Penzias, P. (Presenter & Author), Fine, R. (Presenter & Author), Nevada Rural Ozone Stakeholder Meeting, Non-Academic, "Update on Progress NVROI project", **Invited**.

2010

Gustin, M. S., Honors Program Great Lecture Series, Academic, "Why do we care about atmospheric Hg?", UNR **Invited**,

Gustin, M. S. (Author Only), Woodward, C. (Presenter& Author), Research Experience for Undergraduates, Academic, "Mercury in tree rings at three sites in Nevada", NSF, UNR.

Briggs, C., Gustin, M. S. (Author Only), American Geophysical Union, Academic, "Effect of vegetation on mercury volatilization from soils", San Francisco, CA..

Gustin, M. S. (Author Only), Pizzaro, C. (Presenter& Author), Peacock, M. M. (Author Only), American Geophysical Union Annual meeting, Academic, "Hg bioaccumulation in a contaminated flowing water system-sediment, macroinvertebrates and fish interactions", San Francisco, CA..

Gustin, M. S. (Author Only), Eckley, C. (Presenter& Author), Miller, M. (Author Only), Society of Ecological Toxicology and Chemistry, Academic, "Fugitive Hg emissions from two Nevada Gold mines", Portland OR..

Wright, G., Gustin, M. S. (Author Only), National Atmospheric Hg Deposition Network Annual Meeting, "Mercury deposition to 6 locations from the Pacific Coast to the Basin and Range", NADP, Truckee CA.

Gustin, M. S., San Francisco Bay Estuary Institute, Non-Academic, "Potential sources of Hg deposition to California", Berkeley, CA. **Invited.**

Pizzaro, C., Gustin, M. S. (Author Only), Peacock, M. M. (Author Only), Truckee River Water Conference, Non-Academic, "Mercury in abiotic and biotic components of the Truckee River", DRI.

2009

Gustin, M. S. (Presenter & Author), Lyman, S., Weiss-Penzias, P., American Geophysical Union, Academic, "Air mercury concentrations in Reno Nevada USA: Evidence for a free tropospheric source of reactive gaseous mercury", San Francisco, California.

Jew, A. (Presenter & Author), Luong, P., Kim, C., Gustin, M. S., Rytuba, J., Brown, G., American Geophysical Union, Academic, "Evidence for multiple export pathways of mercury from the inoperative New Idria Hg Mine", San Francisco, California.

Marsik, F. (Author Only), Brooks, S., Gustin, M. S., Holsen, T., Landis, M., Prestbo, E., Poissant, L., American Geophysical Union, Academic, "Preliminary Results from a mercury dry deposition measurement methods intercomparison", San Francisco, California.

Gustin, M. S. (Presenter & Author), Eckley, C., Northwestern Mining Association, Non-Academic, "Fugitive Hg emissions from two Nevada Gold Mines", Reno, NV, **Invited.**

Eckley, C. (Presenter & Author), Gustin, M. S., NDEP Report on Fugitive Hg emissions, Non-Academic, "Fugitive mercury emissions from Nevada, USA gold mines", NV Division of Environmental Protection, Reno, NV.

Gustin, M. S. (Presenter & Author), Agricultural and Industrial uses of FGD, Non-Academic, "Mercury release from FGD materials", EPRI/EPA/USDA, Indianapolis Indiana, **Invited.**

Pizarro, C. (Presenter & Author), Gustin, M. S. (Author Only), Peacock, M. M. (Author Only), Truckee River Symposium, Non-Academic, "Mercury concentrations in abiotic and biotic components of the Truckee River", Reno, NV.

Gustin, M. S. (Presenter & Author), Eckley, C. (Author Only), Geological Society of America, Academic, "Nonpoint source mercury releases to the air from two Nevada Gold Mines", Portland, Oregon.

Gustin, M. S., EPRI Stakeholders Meeting, Non-Academic, "Mercury release from FGD materials", Beltsville MD, **Invited.**

Gustin, M. S. (Author Only), Eckley, C. (Presenter Only), Hartman, J. S. (Author Only), 9th International Conference on Mercury as a Global Pollutant, Academic, "Evolution of thought on terrestrial ecosystems as a net source or sink for atmospheric Hg", Guizhou, China, **Invited.**

Gustin, M. S. (Author Only), Eckley, C. (Presenter & Author), 9th International Conference on Mercury as a Global Pollutant, Academic, "Fugitive emissions from Nevada Gold Mines", Guizhou, China.

Gustin, M. S. (Author Only), Eckley, C. (Presenter & Author), 9th International Conference on Mercury as a Global Pollutant, Academic, "Testing and application of a dynamic flux chamber", **Invited**, Guizhou, China.

Lyman, S. (Presenter Only), Gustin, M. S. (Author Only), 9th International Conference on Mercury as a Global Pollutant, Academic, "Using surrogate surfaces and models to track gaseous oxidized mercury dry deposition at several sites in the United States", Guizhou, China. **Invited**.

2008

Lyman, S., Gustin, M., Prestbo, E. Kilner, P. Development of surrogate surfaces for measurement of mercury dry deposition Invited presentation National Atmospheric Deposition Network Annual meeting Madison, WI.

Gustin, M. Mercury release from Coal Combustion products and product amended soils, Invited workshop speaker Electric Utility Consultants Conference Salt Lake City.

Markee, M., Gustin, M.S., Donaldson, S. Investigation of Causal Factors for Elevated Hg Concentrations in fish of Nevada's Reservoirs and Statewide Education on Fish Consumption Advisories for Hg NAES Priority Grants Progress Meetings, Reno, NV,

Gustin, M. , Measurement of methyl mercury released from constructed wetlands and comparison with data collected in natural stream reaches USDA-CSREES National Water Conference, Reno, NV

Gustin, M. S. Mercury Air Concentration Monitoring in Nevada and Utah, Great Basin Hg working group meeting Reno, NV.

Lyman, S. Gustin, M. S. Characterizing Air Hg Concentrations Using Passive Samplers and Dry Deposition with Surrogate Surfaces, Great Basin Hg working group meeting Reno, NV

Eckley, C., Gustin, M.S., Miller, M., Marsik, F., Fugitive Hg Emissions from Nevada Gold Mines Overview and Update, Great Basin Hg working group meeting Reno, NV

Donalson, J., Gustin, M. S. Mercury and Carbon and Nitrogen Stable Isotopes in Truckee River Fish NSF EPSCoR Undergraduate Research Symposium, Reno, NV.

Eckley, C., Gustin, M.S., Miller, M., Marsik, F., Progress Report on the Measurement of Hg emissions from two Nevada Gold Mines, NDEP Grant Steering Committee Meeting

2007

Gustin, M. S., Atmospheric Mercury Speciation and Deposition at the Great Salt Lake, Great Salt Lake Technical Advisory Team, Invited, Salt Lake City.

Peterson, C., Gustin, M. S., Atmospheric Hg Speciation and Deposition at the Great Salt Lake Utah", Truckee River Symposium, NV Water Resources Association, Poster, Reno, NV.

Lyman, S., Gustin, M. S., Development of samplers for passive measurement of Atmospheric Hg speciation and dry deposition, Air Quality VI , Arlington VA. **Invited**.

Gustin, M. S., Ericksen, J., Xin, M., Ladwig, K. Investigation of Hg release from FGD materials and coal combustion product amended soils, Air Quality VI , Arlington VA.

Gustin, M. S., Stamenkovic, J., Lyman, S., Weisberg, P. J. , Rytuba, J. , Engle, M., Lindberg, S., Kuiken, T., Zhang, H., Update on our understanding of 1) natural geologic source Hg emissions and 2) the role of natural background soils as sources and sinks for atmospheric Hg. Air Quality VI , Arlington VA. **Invited.**

Gustin, M. S., Lyman, S. , Prestbo, E. , Kilner, P. , Development of surrogate surfaces for assessing dry deposition of atmospheric Hg, National Atmospheric Deposition Program Technical Committee Meeting Boulder CO.

Gustin, M. S., 2007 "The mercury biogeochemical cycle", Stack testing/test characterization for particulate matter and Hg Workshop presentation, State of Nevada, Carson City, NV. **Invited.**

Ellis, T., Gustin, M. S., Laboratory Testing and Analyses of Passive Atmospheric Mercury (Hg) Samplers, NSF EPSCoR Summer Scholar Poster Presentation Reno, NV.

Gustin, M. S., Xin, M., Ladwig, K., Investigation of Hg release associated with FGD materials, World of Coal Ash, Cincinnati Ohio, **Invited.**

Gustin, M. S. Ericksen, J. Xin, M., Mercury releases to the atmosphere from ash amended soils, World of Coal Ash, Cincinnati Ohio, **Invited.**

Gustin, M. S., Natural sources and sinks of atmospheric Hg and consideration of the significance of dry deposition, EPRI Environmental Area Sector Council Meetings San Francisco, CA.

Gustin, M. S., Mercury in coal where does it come from where does it go. EPRI Environment Area Sector Council Meetings, San Francisco.

Lyman, S., Gustin, M. S., Prestbo, E., Kilner, P. Development of Samplers for Passive Measurement of Atmospheric Mercury Speciation and Dry Deposition, Symposium on Air Quality Measurement Methods and Technology Air and Waste Management Association, San Francisco.

Lyman, S., Gustin, M. S. Atmospheric mercury speciation and deposition in northern Nevada Nevada Division of Environmental Protection, Carson City. **Invited.**

2006

Seigneur, C., Lohman, K, Gustin, M., Lindberg, S. Sensitivity of the Global Atmospheric Cycling of Mercury to Emissions, 8th International Conference on Mercury as a Global Pollutant, Madison WI

Fay, L., Gustin, M. Mercury accumulation in wetland plants: Is it from the atmosphere, water and/or sediments, Poster, 8th International Conference on Mercury as a Global Pollutant, Madison WI

Gustin, M., Xin, M., Ladwig, K Mercury exchange between air, water and coal combustion byproducts, 8th International Conference on Mercury as a Global Pollutant, Poster, Madison WI.

Ericksen, J., Gustin, M Mercury flux from soils amended with ash materials, Poster, 8th International Conference on Mercury as a Global Pollutant, Madison WI.

Ericksen, J., Gustin, M., Lindberg, S., Krabbenhoft, D., Olund, S., Assessing the potential for re-emission of mercury deposited in precipitation from arid soil using a stable isotope, Poster, 8th International Conference on Mercury as a Global Pollutant, Madison WI.

Stamenkovic, J., Gustin, M., Obrist, D., Arnone, J., Verburg, P., Johnson, D., Environmental controls on mercury flux from ecosystem components at different temporal scales 8th International Conference on Mercury as a Global Pollutant, Madison WI.

Gustin, M. S., Marsik, F., Obrist, D Air-surface exchange of mercury in terrestrial ecosystems 8th International Conference on Mercury as a Global Pollutant, Madison WI.

Stamenkovic, J., Gustin, M. S. Application of EcoCELL technology for quantifying gaseous elemental mercury fluxes over background vegetated terrestrial monoliths American Chemical Society 61st Northwestern Section meeting **Invited**.

Lyman, S., Gustin, M., Prestbo, E., Use of polysulfone membranes to measure atmospheric deposition of reactive mercury species American Chemical Society 61st Northwestern Section meeting **Invited**.

Engle M. , Gustin, M., Johnson, D. Ecosystem-level distribution of mercury in vegetation, litter, and soil: potential sources of atmospheric mercury flux from fires, Poster, 8th International Conference on Mercury as a Global Pollutant, Madison WI.

Engle, M., Gustin, M. Estimating Mercury Emissions from Geothermal Systems and Volcanoes for the Conterminous United States, Poster, 8th International Conference on Mercury as a Global Pollutant, Madison WI.

Todd Kuiken, Zhang, H. Gustin, M., Lindberg, S. Natural background levels of mercury exchange from an eastern deciduous forest floor: A year long study within Standing Stone State Forest in Overton county Tennessee 8th International Conference on Mercury as a Global Pollutant, Madison WI.

Todd Kuiken, Sedinger, B. Zhang, H. Gustin, M., Lindberg, S. Air-forest floor mercury exchange along the eastern Seaboard and New England, Poster, 8th International Conference on Mercury as a Global Pollutant, Madison WI.

Brown, S., Saito, L., Gustin, M. Modeling mercury in a tributary to the Truckee River, Poster, Nevada Water Resources Association February Mesquite NV.

2005

Brown, S., Saito, L., Gustin, M A Mercury model for Steamboat Creek, Nevada Water Resources Association 2005 Truckee River Symposium DRI Reno, NV.

Gustin, M.S. Steamboat Creek Restoration Research Delta Tributaries Mercury Council Sacramento CA **Invited**.

Gustin, M.S., Engle, M., Ericksen, J., Fay, L., Millhollen, A., Stamenkovic, J. Mercury in Coal: Where does it come from? National Geological Society of America Meeting, Salt Lake City, **Invited**.

Gustin, M.S., Johnson, D., Weisberg, P, Rytuba, J., Lindberg, S., Zhang, H., Ericksen, J., Engle, M., Fay, L., Gigliani, T., Kuiken, T., Lyman, S., Xin, Mei Progress summary: Assessment of

natural source (geologic and vegetation) mercury emissions: Speciation, Mechanisms and Significance, Air Quality V, Arlington, VA.

Gustin, M., Xin, M., Ladwig, K, Pflughoeft, D., Ericksen, J., Swain, E., Coal combustion by products: Do we need to worry about Hg releases, Air Quality V, Arlington, VA.

Brown, S.L., Saito, L., Gustin, M. A mercury model for Steamboat Creek, Nevada Water Environmental Association: 2005 Truckee River Symposium, Reno Nevada.

Chavan, P.V., Dennett, K.E., Marchand, E.A., Spurkland, L., Stamenkovic, J., Gustin, M.S. Assessment of Water Quality Parameters and Mercury in Constructed Wetlands The 8th International In Situ and On-Site Bioremediation, Baltimore, Maryland

Millhollen, A.G., Gustin, M.S. Quantifying foliar mercury accumulation and exchange using varying atmospheric and soil concentrations Geological Society of America, Cordilleran Section meeting, San Jose, CA **Invited**.

Chavan, R. V., Gustin, M.S., Dennett, K. E. Assessment of mercury transformation in constructed wetlands, Geological Society of America, Cordilleran Section meeting, San Jose, CA, **Invited**.

Ericksen, J.A., Gustin, M.S., Lindberg, S.E., Olund, S. D., Krabbenhoft, D.P. Assessing the potential for re-emission of mercury deposited in precipitation from arid soils using a stable isotope, Geological Society of America, Cordilleran Section meeting, San Jose, CA **Invited**.

Gustin, M., Engle, M., Ericksen, J, Xin, M., Krabbenhoft, Lindberg, S., Olund, S., Rytuba, J. New insights into mercury exchange between air and substrate. International Goldschmidt Conf. Moscow Idaho **Invited**.

Gustin, M., Chavan, R., Stamenkovic, J., Ericksen, J., Brown, S., Saito, L., Dennett, K., Marchand, E., Donaldson, S. The potential for methyl mercury production in constructed wetlands and a riparian setting International Goldschmidt Conference Moscow Idaho **Invited**

Gustin, M., Johnson, D., Weisberg, P., Rytuba, J., Lindberg, S., Zhang, H. Ericksen, J., Engle, M., Fay, L., Gigliani, T., Kuiken, T., Lyman, S., Xin, M., Assessment of natural source (geologic and vegetation) mercury emissions: Speciation, mechanisms and significance, International Air Quality V meeting, Arlington VA **Invited**

Xin, M., Gustin, M., Ladwig, K. Mercury release from coal combustion products International World of Coal Ash meeting Lexington KY.

Xin, M., Gustin, M., Ladwig, K. Mercury Release from coal combustion by-products. Electric Utilities Environmental Conference Tucson AZ.

Gustin, M., Lindberg, S. Why do we care about terrestrial sources and sinks of atmospheric Hg? Electric Utilities Environmental Conference Tucson AZ.

Gustin, M., Chavan R., Dennett, K., Marchand, E. Saito, L., Donaldson, S. Use of constructed wetlands to aid decision making on restoration methods for a mercury contaminated watershed USDA-CSREES National Water Quality Conference San Diego CA

2004

Kuiken, T., Zhang, H., Lindberg, S., Crocker, C., Gustin, M. Natural mercury emissions from southeast background forest soils: An on-going study within the Standing Stone Forest of Tennessee 56th Southeast Regional Meeting American Chemical Society.

Stamenkovic J., Obrist D, Arnone JA, Schorran DE, Verburg PSJ, Johnson DW, Gustin MS. Mercury emissions from tallgrass prairie ecosystems. 89th Annual Meeting of the Ecological Society of America, Portland, Oregon (USA).

Gustin, MS, Zehner, R. Stamenkovic, J. Experimental examination of the effect of precipitation and moisture content on mercury emission from soils, 7th International Conference on Mercury as a Global Pollutant, Ljubljana, Slovenia.

Gustin, MS, Ladwig, K, Xin, M., Zehner, R. Assessment of the significance of mercury release from coal fly ash, Poster, 7th International Conference on Mercury as a Global Pollutant, Ljubljana, Slovenia.

Engle, MA, Gustin, MS, Goff, F, Janik, CJ, Counce, DA, Rytuba, J. Atmospheric mercury emission from substrate and fumaroles associated with three hydrothermal systems in the western United States, Poster, 7th International Conference on Mercury as a Global Pollutant, Ljubljana, Slovenia.

Engle, MA, Gustin, MS, Lindberg, SE, Gertler, A. Effects of atmospheric oxidants on Hg release from substrate, Poster, 7th International Conference on Mercury as a Global Pollutant, Ljubljana, Slovenia.

Obrist, D, Gustin, MS, Arnone, JA, Johnson, DW, Schorran, DE, Verburg PSJ. Large annual Hg emissions over tallgrass prairie grasslands indicate vegetated terrestrial ecosystems to be sources of Hg to the atmosphere, 7th International Conference on Mercury as a Global Pollutant, Ljubljana, Slovenia.

Gustin, MS, Lindberg, SE. Terrestrial Hg fluxes is the net exchange up or down Invited presentation International workshop on Harmonization of Mercury Measurement Methods and Models to Assess Source Receptor Impact on Air Quality and Human Health Maratea Italy.

2003

Obrist D, Gustin MS, Arnone JA, Schorran DE, Verburg PSJ, Johnson DW. Large annual Hg emissions over Tallgrass Prairie grasslands indicate higher natural loading of Hg to the atmosphere than previously estimated. Poster Presentation; first Swiss Geosciences Meeting, Basel, Switzerland.

Gustin, M. Ladwig, K Mercury releases from coal fly ash: are they significant? Coal Ash Association, Las Vegas, NV

MS Gustin K Ladwig. Release of mercury to air from coal fly ash MS Gustin K Ladwig 2003 International Ash Utilization Conference Lexington KY

Walker, M., Benson, M., Gustin, M.S. Arsenic and Arsenic (III) in tap water samples: Implications for exposure in Churchill County, Nevada, 2003 Annual Water Resources Conference, American Water Resources Association, San Diego, CA.

Gustin, M. Overview of Hg and importance of atmospheric deposition, US EPA Region IX multimedia workshop: "Air Deposition in the Pacific Southwest: Understanding the Impacts on Water Quality, San Francisco, CA, **Invited**

Gustin, M Quantifying the role of significant natural sources and sinks in the biogeochemical cycle of mercury, EPA STAR mercury fate and transport final progress review workshop, Washington, D.C. **Invited**.

Obrist, D. Gustin, M.S. Arnone, J.A., Schorran, D.E. , Verburg, P.S., Johnson, D.W. Vegetated terrestrial ecosystems are large sources of mercury to the atmosphere Eos Trans. AGU 84(46), Fall Meeting Supplement Abstract B51D-1002, San Francisco.

Engle, M.A., Gustin, M.S., Lindberg, S.E., Gertler, A.W. Exacerbation of atmospheric mercury emissions from substrate by atmospheric oxidants. Eos Trans. AGU 84(46), Fall Meeting Supplement Abstract B21D-0750, San Francisco.

Zehner, R, Gustin, M. Quantifying mercury emissions from base and precious metal deposits and oil and gas fields, Air and Waste Management Association, San Diego, CA **Invited**.

Stamenkovic, J. Gustin, M.S., Dennett, K. E. Net methylmercury production in constructed wetlands with three experimental designs at Steamboat Creek (Nevada, USA), American Society of Limnology and Oceanography, Salt Lake City, UT **Invited**

Thomas, B.A. Gustin, M.S. Identifying the sources of total and methyl mercury in the anthropogenically impacted Steamboat Creek, Nevada, USA, American Society of Limnology and Oceanography, Salt Lake City, UT **Invited**

Gigliani, A. D., Gustin, M.S. Development of a mercury mass balance for the Incline Creek Watershed, Lake Tahoe, NV, American Society of Limnology and Oceanography, Salt Lake City, UT **Invited**.

2002

Gustin, M.S., Ladwig, K., Gigliani, T., Piper, J. Measurement of the potential for mercury releases from coal fly ash, Conference proceedings for Air Quality III meeting, Arlington, VA.

Gustin, M. S., Lindberg, S.E. Unraveling the role of natural ecosystems in the biogeochemical cycle of Hg, Conference proceedings for Air Quality III meeting, Arlington, VA.

Gustin, M.S., Nacht, D., Gigliani, T., and Engle, M. Speciation of mercury in the atmosphere above naturally and anthropogenically mercury enriched substrate. Extended abstracts for American Chemical Society National Meeting, Orlando, FL, **Invited**.

Gustin, M.S., Benesch, J.A., Schorran, D.E., Johnson, D.A., Lindberg, S.E., Coleman, J. Investigation of the role of plants in the biogeochemical cycling of mercury using large mesocosms, Extended abstracts for American Chemical Society National Meeting, Orlando, FL, **Invited**.

Gustin, M.S. Quantifying the role of significant sources and sinks in the biogeochemical cycle of mercury, EPA Science Forum, Washington, DC, **Invited**

Gustin, M.S., Benesch, J., Frescholtz, T., Schorran, D., Johnson, D., Lindberg, S.E., Coleman, J. Forests as sources of new mercury to ecosystems, American Society of Limnology and Oceanography meeting, Victoria, BC.

Brown, G.E., Kim, C.S., Shaw, S., Lowry, G.V., Rytuba, J.J. Gustin, M. S., Processes controlling the chemical/isotopic speciation and distribution of mercury from contaminated mine sites, American Chemical Society National Meeting, Orlando, FL, **Invited**.

Fitzgerald, B., M.J. Walker, M. Gustin, J. Davison. Arsenic in domestic wells in Churchill County, Nevada. Nevada Water Resources Association Annual Conference, Las Vegas, NV.

Gustin, M.S. The significance of mercury emissions from natural sources, Electric Utilities Environmental Conference, Tucson, AZ.

2001

Walker, M., Gustin, M. Rank and parametric-based approaches to interpreting grab sampling data for total maximum daily load determination, Symposium volume for 7th Federal Interagency Sedimentation Conference, Albuquerque, NM.

Nacht, D., Gustin, M.S., Engle, M., Zehner, R.E., Gigliani, T., Quantifying total and reactive gaseous mercury emissions from the Sulphur Bank Mercury Mine Superfund Site, Northern CA., American Geophysical Union National Meeting, San Francisco, CA.

Frescholtz, T.F., Gustin, M.S., Schorran, D.E., The role of vegetation in mercury cycling at mercury enriched mine sites, American Geophysical Union National Meeting, San Francisco, CA.

Gustin, M. Sexauer, Coolbaugh, M., Engle, M., Fitzgerald, B., Lindberg, S.E., Nacht, D., Rytuba, J., Zehner, R. The significance of mercury emissions from geologic sources, Sixth International Conference on Hg as Global Pollutant, Minamata, Japan.

Gustin, M. Sexauer, Benesch, J. A., Schorran, D.E., Johnson, D.A., Lindberg, S.A., Coleman, J. Assessing the effect of plants on mercury emissions from substrate, Sixth International Conference on Hg as Global Pollutant, Minamata, Japan.

Benesch, J. A., Gustin, M.A., Schorran, D.E., Coleman, J., Johnson, D.A., Lindberg, S.E., Determining the role of plants in the biogeochemical cycling of mercury on an ecosystem level, Sixth International Conference on Hg as Global Pollutant, Minamata, Japan.

Johnson, D.W., Benesch, J.A., Gustin, M.S., Schorran, D.E., Coleman, J., Lindberg, S.E., Soil gaseous Hg concentrations: Evidence against diffusive control of flux, Sixth International Conference on Hg as Global Pollutant, Minamata, Japan.

Gustin, M. Sexauer, Coolbaugh, M., Engle, M., Fitzgerald, B., Lindberg, S., Nacht, D., Rytuba, J., Zehner, Putting into perspective mercury emissions from geologic sources, E.P.A. sponsored Workshop on the fate, transport and transformation of mercury in aquatic and terrestrial environments, West Palm Beach FL, **Invited**

Gustin, M.S., Benesch, J.A., Schorran, D.E., Johnson, D.A., Lindberg, S.E., Coleman, J. Assessing the role of plants in the biogeochemical cycle of mercury, E.P.A. sponsored Workshop on the fate, transport and transformation of mercury in aquatic and terrestrial environments, West Palm Beach FL, **Invited**.

2000

Lindberg, S.E., Zhang, H., Gustin, M.S., Brooks, S. Mercury emission and re-emission from diffuse area sources: the dilemma of small emissions from large surfaces, The "Inert" nature

of elemental mercury vapor, and missing sinks in the global mercury cycle, Extended Abstracts for Assessing and Managing Mercury from Historic and Current Mining Activities, San Francisco, CA.

Zehner, R.E. and Gustin, M.S. Estimation of mercury vapor flux from natural geologic sources in Nevada, Extended Abstracts for EPA Meeting on Assessing and Managing Mercury from Historic and Current Mining Activities, San Francisco, CA.

Gustin, M.S., Coolbaugh, M., Engle, M., Fitzgerald, B., Nacht, D., Zehner, R., Sladek, C., Keislar, R., Rytuba, J., Lindberg, S., Zhang, H. Atmospheric mercury emissions from mine waste, Extended Abstracts for EPA Meeting on Assessing and Managing Mercury from Historic and Current Mining Activities, San Francisco, CA.

Sladek, C., Gustin, M.S. Evaluation of methods for predicting potential mobility of mercury in waste associated with historic mercury and gold mining, Extended Abstracts for EPA Meeting on Assessing and Managing Mercury from Historic and Current Mining Activities, San Francisco, CA, Nov. 2000.

Gustin, M. S., Coolbaugh, M.F, Engle, M.A. Emission of mercury to the atmosphere from natural sources in Nevada and California, Proceedings for 10th International Conference on Heavy Metals in the Environment, Ann Arbor, MI.

Sladek, C., Gustin, M.S. Investigation of sequential extraction methods for determination of mercury species in sediments, Proceedings for 10th International Conference on Heavy Metals in the Environment, Ann Arbor, MI.

Engle, M.A., Temple, R. N. Gustin, M.S. 2000 Hydrogeochemistry of groundwaters associated with epithermal hot-spring-type Hg deposits, Proceedings for Fifth International Conference on Acid Rock Drainage, Denver, CO.

Gustin, M.S. The role of naturally mercury enriched substrate and background substrate in the global cycling of mercury, Geologic Society of America National Meeting, Reno, NV.

Sladek, C., Gustin, M.S. Evaluation of methods for predicting the potential mobility of mercury in mine waste, Geologic Society of America National Meeting, Reno, NV.

1999

Benesch, J.B., Gustin, M.S., Cahill, T., Seiber, J.N., Quashnick, J. Uptake of trifluoroacetic acid in plants via root and atmospheric pathways, Society of Environmental Toxicology and Chemistry 20th Annual meeting, Philadelphia, PA.

Gustin, M.S. Are sources other than anthropogenic point sources significant contributors to the atmospheric mercury budget, National Atmospheric Deposition Network National Technical Committee meeting, Sacramento, CA.

Prior to UNR

Cahill, T., Benesch, J., Gustin, M., Seiber, J. Simplified method for trace analysis of trifluoroacetic acid in plant, soil, and water samples using headspace gas chromatography, American Chemical Society Fall meeting, New Orleans, LA.

Gustin, M.S. Emissions of Mercury from contaminated mine waste, Geological Society of America-Cordilleran Section-Session on mercury in the environment, Berkley, CA, **Invited.**

Gustin, M.S, Lindberg, S.E. Assessing the contribution of natural resources to regional atmospheric mercury budgets, 5th International Conference on Mercury as a Global Pollutant, Rio de Janeiro, Brazil.

Gustin, M.S. Lindberg, S.E. Allan, M.A. Ebinghaus, R. Edwards, G. Majewski, M. Marsik, F. Poissant, L., Rasmussen, P., Schaedlich, F., Sommer, J., Turner, R., Vette, A., Wallschlaeger, D. Desert SToRMS: A field intercomparison of methods utilized for measurement of mercury flux from terrestrial landscapes, 5th International Conference on Mercury as a Global Pollutant, Rio de Janeiro, Brazil.

Gustin, M.S., Lindberg, S.E. Assessing the emission of mercury from naturally enriched terrestrial surfaces. Electric Utilities Environmental Conference, Tucson, AZ.

1998

Gustin, M.S., Maxey, R.A., Rasmussen, P. and Biester, H. Mechanisms influencing the volatile loss of mercury from soil, Symposium volume of the Air and Waste Management Association on the Measurement of Toxic and Related Air Pollutants, Cary, NC.

Taylor, G.E., Beck, K., Tarnay, L., Gustin, M. Dry deposition of trace pollutant gases to high elevation forests in the southern Sierra Nevada Mountains: Results from Process-Level modeling, In Proceedings of the 5th International Watershed Conference, Reno, NV, National Watershed Coalition.

Gustin, M.S. Nevada SToRMS, Summary of data, Mercury experts workshop hosted by EPRI, Canadian Geological Survey and University of Guelph, Guelph, Canada.

Gustin, M.S. Light enhancement of mercury emissions, Mercury experts workshop hosted by EPRI, Canadian Geological Survey and University of Guelph, Guelph, Canada.

Taylor, G.E., Beck, K., Tarnay, L., Gustin, M. Dry deposition of trace pollutant gases to high elevation forests in the southern Sierra Nevada Mountains: Results from Process-Level modeling, 5th International Watershed Conference, Reno, NV, National Watershed Coalition.

Engle, M., Tempel, R., Wallace, A., Gustin, M. Natural levels of mercury in groundwaters associated with opalite-hosted mercury deposits, Ivanhoe Mining district, Geological Society of America National Meeting, Toronto, Canada.

Austin, K., Gustin, M.S., Tarnay, L. Application of GIS for constraining mercury emissions from geologically enriched areas, Geological Society of America meeting, Toronto, Canada.

1997

Gustin, M.S., Lindberg, S.E. Assessing the contribution of natural sources to regional atmospheric mercury budgets, Conference on Managing Hazardous Air Pollutants, Washington, D.C.

Gustin, M.S. Natural sources of atmospheric mercury, Symposium on Mercury Elimination and Reduction: Towards a North American Partnership, Toronto, Canada, **Invited**.

1996

Gustin, M.S., Taylor, G.E., Jr. Light induced flux of mercury from substrate, Fourth International Conference on Mercury as a Global Pollutant, Hamburg, Germany.

Leonard, T.L., Gustin, M.S., Taylor, G.E., Jr. Mercury Volatilization from Riparian Vegetation, Fourth International Conference on Mercury as a Global Pollutant, Hamburg, Germany.

1995

Gustin, M.S., Taylor, G.E., Jr. Mercury evasion to the atmosphere: effects of temperature, wind velocity and substrate mercury concentration, American Chemical Society 210th National Meeting, Chicago, IL.