Andrew Joros

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Education and Training

University of Nevada, Reno, NV 2009 – 2011
M.S. in Atmospheric Science (Thesis: Extratropical Control of Monsoonal Surges in the Great Basin)

San Jose State University, San Jose, CA 2006 – 2009
B.S. in Meteorology

Research and Professional Experience

Research Computing Engineer (Software Development / Data Science) 2024 – Current
Division of Atmospheric Science / Division of Hydrologic Sciences, Desert Research Institute *Reno, NV*

- Apply machine learning (Self-Organizing Maps) to classify western U.S. spring heatwave circulation patterns using reanalysis datasets, supporting climate attribution research
- Develop data-engineering pipelines converting OpenFOAM CFD simulations into optimized formats for machine learning models predicting snow transport and drift dynamics
- Design and implement automated Python workflows for real-time snowpack monitoring, integrating SNOTEL and CDEC data for hydrologic situational awareness
- Lead groundwater-use analysis automation across 262 Nevada hydrographic basins, producing standardized reports for community water-resource planning
- Contribute to Nevada PMP Explorer development using ArcGIS Experience Builder, integrating raster visualization and watershed delineation tools

Research Computing Engineer (Cloud Computing / Data Science) 2019 – 2023
Center for Genomic Medicine & Climate Ecosystem Fire Applications, DRI *Reno, NV*

- Provided cloud computing infrastructure and data engineering support for genomics research projects utilizing AWS services
- Designed and deployed AWS-based statistical smoke dispersion models supporting California wildfire management and air quality monitoring
- Developed dynamic web applications using AWS to visualize statistical modeling outputs for Interagency Wildland Fire Air Quality stakeholders
- Led AWS training and onboarding initiatives, enhancing team capabilities in cloud-based data analysis

Staff Research Scientist (Software Development / Data Science) 2016 – 2019
Applied Innovation Center, Desert Research Institute *Reno, NV*

- Developed geophysical surveying software for groundwater assessment using vertical electrical sounding techniques
- Constructed meteorological and air pollutant data pipelines for environmental health research (Healthy Nevada Project)
- Implemented AWS EC2-based probabilistic models for agricultural pest and disease management
- Designed automated sensor alert systems on AWS ensuring data integrity and reliability

Assistant Research Scientist (High Performance Computing) 2015 – 2016
Applied Innovation Center, Desert Research Institute *Reno, NV*

- Architected backend data infrastructure for WINDS platform, improving weather data processing and decision support systems
- Developed web portals for NDOT enabling traffic data analysis for transportation planning
- Led NevCAN climate and ecological data visualization project, presenting real-time monitoring data

Staff Scientist Programmer, Hydrometeorologist 2013 – 2015
Desert Research Institute *Reno, NV*

- Utilized Google Earth Engine JavaScript API for large-scale geospatial analysis in hydrometeorology
- Contributed to Climate and Integrated Earth Monitoring Engine dashboard development
- Processed Landsat and weather data via cloud computing for Nevada ecosystem conservation analysis

Research Assistant 2009 – 2013
Desert Research Institute *Reno, NV*

- Investigated monsoonal surge dynamics in the Northern Great Basin using statistical and numerical modeling approaches
- Developed web frameworks for NOAA-funded drought monitoring and El Niño climate risk assessment

Collaborators and Affiliations (Past 48 Months)

Desert Research Institute: Benjamin Hatchett, Timothy Bardsley, Adrian Harpold, Justin Huntington, David McEvoy, Anne Heggli, John Mejia, Kabir Rasouli, Vic Etyemezian, Eden Furtak-Cole
University of Nevada, Reno: Joseph Grzymski, Karen Schlauch, William Metcalf
University of Idaho: John Abatzoglou
University of California, Riverside: Daniel Swain
Federal Agencies: National Weather Service (Reno), Bureau of Reclamation, NOAA
State Agencies: Nevada Division of Water Resources, California Air Resources Board

Publications and Synergistic Activities

Synergistic Activities:

- Contributor to open-source climate and hydrological data tools supporting drought monitoring across the western U.S.
- Technical advisor for Nevada water resource planning initiatives, translating complex hydrologic data into actionable insights for community stakeholders
- Collaborator with federal and state agencies (NOAA, Bureau of Reclamation, Nevada Division of Water Resources) on climate adaptation and water resource management projects
- Developer of public-facing web applications for environmental monitoring, enhancing accessibility of scientific data for decision-makers

Publications in Refereed Journals (Past 4 Years)

1. Luo, S., Jiang, R., Grzymski, J.J., Lee, W., & Joros, A. (2021). Comprehensive allele genotyping in critical pharmacogenes reduces residual clinical risk in diverse populations. *Clinical Pharmacology & Therapeutics*, 110(4), 899–911.

Relevant Technical Reports and Non-Refereed Publications

1. Caldwell, T.G., Huntington, J.L., Scanlon, B., Joros, A.N., Howard, T. (2017). Improving Irrigation Water Use Estimates with Remote Sensing Technologies: An Initial Feasibility Study for Texas. University of Texas, Bureau of Economic Geology Report (137 pp.) prepared for Texas Water Development Board.

2. Huntington, J.L., Gangopadhyay, S., Spears, M., Allen, R., King, D.L., Morton, C.G., Harrison, A., McEvoy, D.J., Joros, A.N. (2015). West-Wide Climate Risk Assessments: Irrigation Demand and Reservoir Evaporation Projections. U.S. Bureau of Reclamation Technical Memorandum No. 68-68210-2014-01 (218 pp., 754 appx.).

3. Brown, T., Larkin, N.K., Rorig, M., & Joros, A. (2013). Improving Meteorological Data and Forecasts for Prescribed Fire Burn Day Decisions for the Lake Tahoe Basin. CEFA Final Report (SNPLMA).

All Other Publications

1. Kiser, D., Metcalf, W.J., Elhanan, G., Schnieder, B., Schlauch, K., Joros, A., Petersen, C., & Grzymski, J. (2020). Particulate matter and emergency visits for asthma: a time-series study of their association in the presence and absence of wildfire smoke in Reno, Nevada, 2013–2018. *Environmental Health*, 19(1), 1–12.

2. Nauslar, N.J., Hatchett, B.J., Brown, T.J., & Joros, A. (2019). Impact of the North American monsoon on wildfire activity in the southwest United States. *International Journal of Climatology*, 39(4), 1861–1879.

3. Abatzoglou, J.T., McEvoy, D.J., Joros, A., et al. (2017). The West Wide Drought Tracker: Drought Monitoring at Fine Spatial Scales. *Bulletin of the American Meteorological Society*, 98(9), 1815–1820.

4. Joros, A., Abatzoglou, J., Nauslar, N., Hatchett, B., & Kaplan, M. (2017). Extratropical Control of Monsoonal Surges in the Great Basin. *Monthly Weather Review* (In Progress).

5. Morton, C.G., Huntington, J.L., Allen, R.G., Kilic, A., Joros, A.N. (2015). More Landsat Satellites Equates to More Reliable Monitoring of Water Consumption. *Remote Sensing* (Submitted).

6. Joros, A., Kaplan, M., & Abatzoglou, J. (2011). Extratropical Control of Monsoonal Surges in the Great Basin. (Master's Thesis, University of Nevada, Reno).

Selected Conference Presentations (Past 4 Years)

1. Hatchett, B., Abatzoglou, J., & Joros, A. (2019). Monsoon-driven variability in fire-climate linkages. Presented at Western Governors' Association Fire & Climate Science meeting.

2. Rowan, C., Metcalf, W.J., Elhanan, G., Joros, A.N., & Grzymski, J.J. (2018). Short-Term Sentinel Air Events in Relation to Health Care Utilization for Specific Health Conditions in Reno, Nevada. In *B24. AN UPDATE ON INDOOR AND OUTDOOR AIR POLLUTION* (pp. A2815-A2815). American Thoracic Society.

3. Rosenquist, N.A., Metcalf, J., Elhanan, G., Grzymski, J., Joros, A.N., Field-Ridley, A., & Darrow, L.A. (2018, August). Acute Associations between PM2.5 and Allergic and Nonallergic Asthma Exacerbations in Children and Adults. In *ISEE Conference Abstracts* (Vol. 2018, No. 1).