

# Pramod Adhikari

Postdoctoral Researcher

Department of Atmospheric Science, University of Wyoming

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🌐 <https://pramodadhikari.github.io/>

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## EDUCATION

**Ph.D. (Atmospheric Science)** University of Nevada, Reno, USA 2018-2022

- Dissertation: “*Aerosol-cloud-precipitation interaction based on remote sensing and cloud-resolving modeling over the Central Himalayas*”
- Advisor: Dr. John F. Mejia, Associate Research Professor

**MS (Atmospheric Science)** University of Nevada, Reno, USA 2015-2017

- MS Thesis: “*Assessment of wind regime and sediment transport activity at Oceano Dunes, California*”

**MSc. (Physics)** Central Department of Physics, Tribhuvan University, Nepal 2011-2015

- MSc. Thesis: “*Numerical reconstruction of early monsoon weather situation over Arun valley of eastern Nepal Himalaya*”

**BSc. (Physics)** St. Xavier’s College, Tribhuvan University, Nepal 2007-2010

## KEY SKILLS

1. Modifying and running regional numerical modeling (WRF and WRF-Chem) at high resolution (temporal and spatial scale)
2. Regional and global climate data analysis
3. Large spatial and temporal gridded data analysis and visualization (observational, reanalysis, and model output)
4. Working on high-performance computing (e.g., Cheyenne and Derecho by NCAR-CISL)
5. Everyday usage of Jupyter notebook and Python
6. Scientific programming (Python, R, and FORTRAN)
7. Working within Linux environments

## PUBLICATIONS

### PUBLISHED

1. **Adhikari, P.**, Geerts, B., Rahimi-Esfarjani, S., Smith, K., Shuman, B. N., & Schneider, T. L. (2024). Evaluation of the mountain hydroclimate across the western United States in dynamically downscaled climate models. *Journal of Hydrometeorology*, 25(12), 1877-1894. <https://doi.org/10.1175/JHM-D-24-0063.1>

2. **Adhikari, P.**, Mejia, J. F. (2023). Aerosol–precipitation elevation dependence over the central Himalayas using cloud-resolving WRF-Chem numerical modeling. *Atmospheric Chemistry and Physics*, 23, 1019–1042. <https://doi.org/10.5194/acp-23-1019-2023>
3. **Adhikari, P.**, & Mejia, J. F. (2022). Impact of transported dust aerosols on precipitation over the Nepal Himalayas using convection-permitting WRF-Chem simulation. *Atmospheric Environment: X*, 100179. <https://doi.org/10.1016/j.aeaoa.2022.100179>
4. **Adhikari, P.**, Mejia, J. F. (2021). Influence of aerosols on clouds, precipitation and freezing level height over the foothills of the Himalayas during the Indian summer monsoon. *Climate Dynamics* 57, 395–413. <https://doi.org/10.1007/s00382-021-05710-2>

## **UNDER REVIEW AND IN PREPARATION**

1. **Adhikari, P.**, Geerts, B., Tessendorf S., Xue, L., and Schneider, T. L. (2025). Climatology of cold-season supercooled liquid water and glaciogenic cloud seeding potential in the western United States, according to a 4 km resolution climate reconstruction. *Journal of Applied Meteorology and Climatology* (under review)
2. Adhikari, P., Geerts, B., Rahimi-Esfarjani, S., Shuman, B. N., Smith, K., and Day, K. (2025). Global Warming Induced Changes in Extreme Precipitation in the Western United States: Projections from Dynamically Downscaled CMIP6 GCMs. *Geophysical Research Letters* (under review)
3. Chang, C., Mejia J. F., Henao J. J., and **Adhikari P.**, (2025) Impacts of Wildfire Smoke on Stratocumulus Clouds and Their Diurnal Cycle Using WRF-Chem Modeling, *Journal of Geophysical Research: Atmospheres* (under review)
4. Smith K., Geerts, B., **Adhikari, P.**, Day K., Rahimi S., Shuman B., and Schneider T. (2025) Evaluation of CONUS404 cold-season precipitation and snowpack over the mountainous western United States (in preparation)

## **PROFESSIONAL EXPERIENCE**

1. **Postdoctoral Researcher**, *Supervised by Dr. Bart Geerts*  
University of Wyoming | *January 2023- present*
  - Project: Wyoming Anticipating Climate Transitions (WyACT)
  - Utilized regional climate models to dynamically downscale global climate simulations, enhancing the predictive understanding of coupled human-environment impacts of climate change on water availability.
  - Conducted retrospective climate evaluations of dynamically downscaled GCMs (at 9km) to assess their performance and to study the applicability for regional and local studies for future climate projections for the Interior Western U.S. using state-of-the-art climate modeling techniques.
  - Collaborated with NCAR scientists to conduct finer resolution simulations (~1km resolution), manage computational workflows, and process large-scale climate datasets.
  - Assessed and projected the probability of extreme events at regional and local scales under different global warming levels (GWLs).
  - Contributed to developing a public-facing web portal for disseminating region-specific climate change data, addressing key challenges such as precipitation shifts, water

- availability, and extreme weather events across the western U.S., using dynamically downscaled CMIP6 outputs.
  - Collaborated with a local-level climate assessment team to analyze and project potential future climate scenarios at the local level and project the extreme events under such scenarios (Part of the climate assessment report).
  - Mentored undergraduate and graduate students, helping them develop skills in climate data analysis and research methodologies.
2. **Graduate Research Assistant (PhD)**, Desert Research Institute, Reno | 2018- 2022
    - Handle and analyze long-term and large gridded datasets from satellite and reanalysis product
    - Lead the project and apply for the funding and computational resources
    - Design model experiments and run cloud-resolving WRF-Chem simulations in a high-performance computing environment
    - Prepared various anthropogenic, biogenic, fire emission, and initial/boundary condition datasets to be used for WRF-Chem
    - Analyze data from the simulation, compile results and prepare a manuscript for publications
  3. **Graduate Teaching Assistant**, University of Nevada, Reno | 2018-2022
    - Teach physics laboratory and recitations for undergraduate students majoring in physical sciences, engineers, and non-physical sciences
    - Design syllabus, deliver lectures, conduct a discussion on physics problems, and run lab assignments
    - Ensure a positive learning environment as reflected in course evaluation
  4. **Graduate Research Assistant (M.S.)**, Desert Research Institute, Reno | 2015-2017
    - Compiled, validated, and analyzed multi-year datasets to identify the sand transport events over the Oceano Dunes, California
    - Analyzed long-term wind speed data to infer the sand transport potential

## **CONFERENCE PROCEEDINGS**

1. **Adhikari, P.**, et al., (2025) Predicting weather extremes and water resources in the climate transition: a focus on the Western United States American Meteorological Society Annual Meeting, 2025.
2. **Adhikari, P.**, et al., (2024) Changes in wet and dry extremes in a dynamically downscaled datasets, American Geophysical Union Fall Meeting, 2024.
3. **Adhikari, P.**, et al., (2023) Elevation-dependence evaluation of historical bias-corrected dynamically downscaled GCMs across the western U.S., American Geophysical Union Fall Meeting, 2023.
4. **Adhikari, P.**, Mejia, J. F. (2022). Impact of dust aerosols on the convective system using cloud-resolving WRF-Chem simulation over the Nepal Himalayas, American Meteorological Society Annual Meeting, 2022.

5. **Adhikari, P.**, Mejia, J. F. (2020). Impact of transported dust aerosols on precipitation over the central Himalayas using convection permitting WRF-Chem Simulation, American Geophysical Union Fall Meeting.
6. **Adhikari, P.**, Mejia, J. F. (2019). Influence of aerosols on precipitation and vertical temperature distribution over the foothills of Himalayas during the Indian summer monsoon, AGU Fall Meeting: San Francisco, CA, December 9-13, 2019.

## **MEDIA COVERAGE**

1. The Kathmandu Post, **Kathmandu, Nepal**, May 10<sup>th</sup>, 2021: Air pollution not only impacts health, but can also trigger floods and landslides, study finds ( <https://kathmandupost.com/climate-environment/2021/05/09/air-pollution-not-only-impacts-health-but-can-also-trigger-floods-and-landslides-study-finds> )
2. Air Quality News, **United Kingdom**, May 10<sup>th</sup>, 2021: Air pollution could trigger flooding, study suggests ( <https://airqualitynews.com/2021/05/10/air-pollution-could-trigger-flooding-study-suggests/> )

## **HONORS AND AWARDS**

1. *Graduate Student Association travel award*, University of Nevada, Reno 2022
2. *Colin Warden Memorial Endowment, Outstanding graduate student researcher*, Desert Research Institute, Reno, Nevada 2021
3. *Graduate Student Association travel award*, University of Nevada, Reno 2019
4. *Graduate Student Association travel award*, University of Nevada, Reno 2018
5. *Charles Francis Cutts scholarship award*, University of Nevada, Reno 2017-2018
6. *International graduate student scholarship award*, University of Nevada, Reno 2016-2017
7. *M.Sc. Fellowship*, Central Department of Physics, Tribhuvan University, Nepal 2011-2013

## **JOURNAL REVIEWER**

- Urban Science- MDPI, Atmospheric Research – Science Direct (Elsevier)

## **FUNDING**

- Computational allocation in NCAR-Wyoming Supercomputing Center (Derecho and Cheyenne)
- Institute Project Assignment fund by Desert Research Institute

## **TRAINING AND WORKSHOPS**

- Introduction to the Community WRF-Hydro Modeling System: Interactive Hands-on Tutorial (February 2022)
- Teaching with Technology Course (January-May 2019)
- NCAR Command Language (NCL) and Visualization and Analysis Platform (VAPOR)

workshop, (July 2018)

- NASA ARSET applied remote sensing webinar training on “Overview of the Global Disaster Alert and Coordination System” (February 2017)

### **Field Measurement**

- Measurement of threshold shear stress and transport conditions at White Sand Dunes, New Mexico (March 6-11, 2017)
- Wind energy assessment around Kathmandu Valley, Nepal, using SODAR (April to June 2014)

### **PROFESSIONAL ASSOCIATIONS**

- Member, American Geophysical Union
- Member, American Meteorological Society