



# ATOC COLLOQUIUM

## Welcome!

Please join us for the next ATOC Colloquium on **Friday, Mar. 6** from **11:00 AM–12:00 PM**, which will be held in **SEEC S228** and simulcast over Zoom. This week's colloquium features **Dr. Ryan Harp (UMN Climate Adaptation Partnership)**. Please join us for conversation beginning at 10:45 AM and stay for lunch afterwards.

## Building Toward a Climate-Informed West Nile Virus Forecast

West Nile virus (WNV) infection has caused over 30,000 human cases of the severe, neuroinvasive form of the disease (West Nile virus Neuroinvasive Disease; WNND) and nearly 3,000 deaths in the U.S. Despite known links to observable climate factors, no effective nationwide WNV or WNND forecast exists. We aimed to produce a skillful, nationwide WNND forecast built upon regionally varying relationships between climate factors and WNND. After examining the relationships between climate conditions and annual WNND caseload for 11 regions in the U.S., we incorporated the most salient climate factors—most commonly drought and temperature—into a regionally determined nationwide WNND statistical forecast model using a Bayesian regression framework. We retrospectively generated forecasts from 2005–2022 and compared forecast skill against various benchmarks, including a simple, historical case-driven model. Our regional, climate-informed WNND retrospective forecasts outperformed a benchmark model only informed by historical WNND case data across all regions, as well as in a nationally aggregated score (univariable: 18.8% , bivariable: 21.8% improvement). Importantly, our approach to WNND forecast development aggregated county-level data to broader regions to boost statistical signal and capture the regionally varying influences of climate conditions on annual WNND caseload. The advances here represent a potential path toward actionable broad-scale WNV forecasts.



**Zoom:** <https://cuboulder.zoom.us/j/4713174822>

**Passcode:** ATOC

## About the ATOC Colloquium

The Department of Atmospheric and Oceanic Sciences (ATOC) Colloquium is typically held **every other Friday** from **11:00 AM–Noon**. Colloquia alternate between the following formats: (A) Full-length talk by a faculty member or invited speaker, (B) Three conference-length talks by graduate students. If you would like to nominate a speaker (including self), please email the ATOC Colloquium Committee Chair, Prof. Jianghanyang (Ben) Li ([Jianghanyang.li@colorado.edu](mailto:Jianghanyang.li@colorado.edu)). Please visit [www.colorado.edu/atoc/colloquium](http://www.colorado.edu/atoc/colloquium) for further details.