Lab 11: ML Downscaling Implementation

Neural networks for bias correction, supervised learning approaches, practical ML implementation

CEVE 543 Fall 2025

2025-11-14

1 Objectives

1. Implement neural network approaches to bias correction
2. Apply supervised learning to weather model downscaling
3. Compare ML methods to traditional quantile mapping
4. Understand practical limitations and computational requirements

2 Before

> **!** Instructions
>
> Do this before the lab date so that lab itself can go more smoothly.

3 Background and Reading

4 Tasks

Modify the code section below to address the following tasks.

1. Implement neural network approaches for climate model bias correction
2. Apply supervised learning methods to weather model downscaling problems
3. Compare ML approaches with traditional quantile mapping methods
4. Assess practical limitations, computational requirements, and performance trade-offs

5 Code

Bibliography