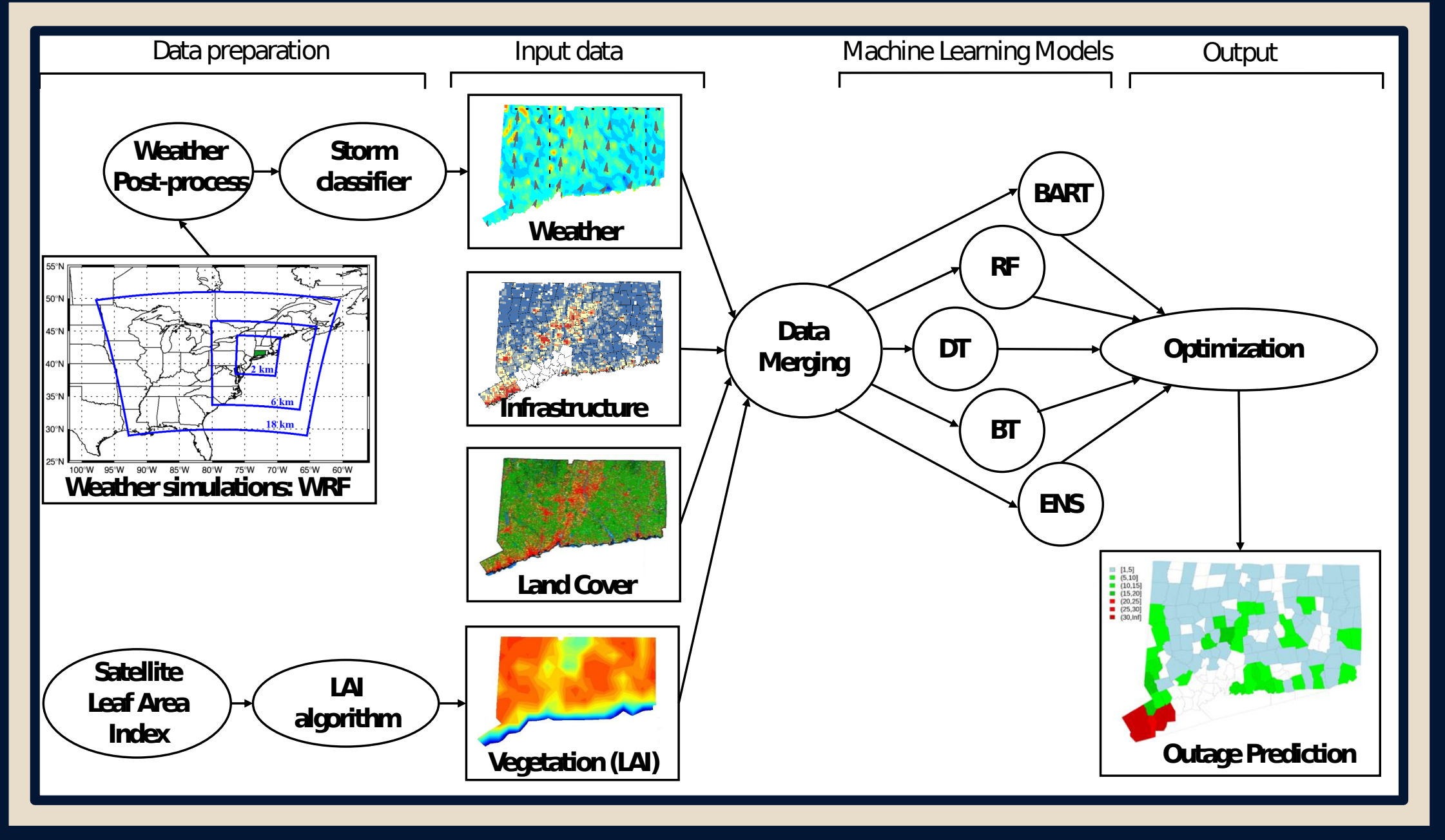# OPM Developments & Improvements

Diego Cerrai, Peter Watson, Feifei Yang, Marika Koukoula, Ehsan Bhuiyan, Emmanouil Anagnostou
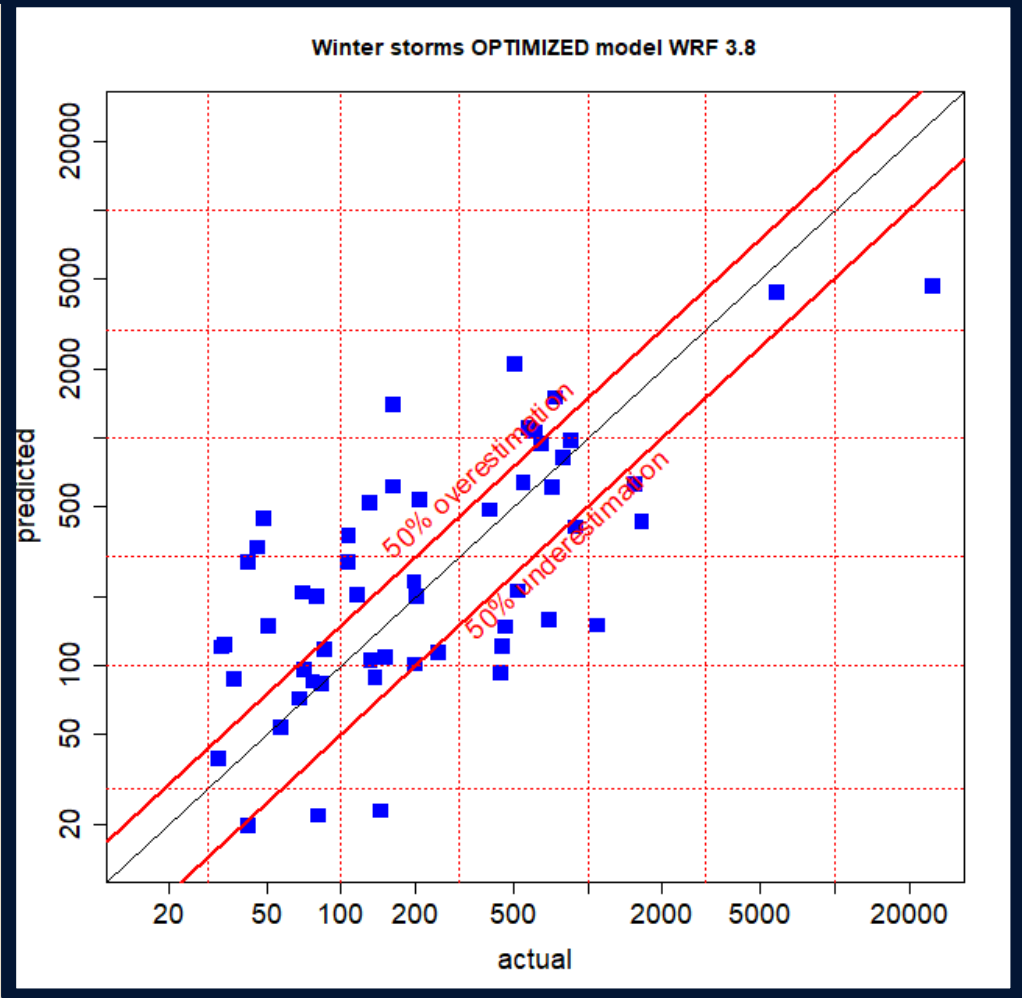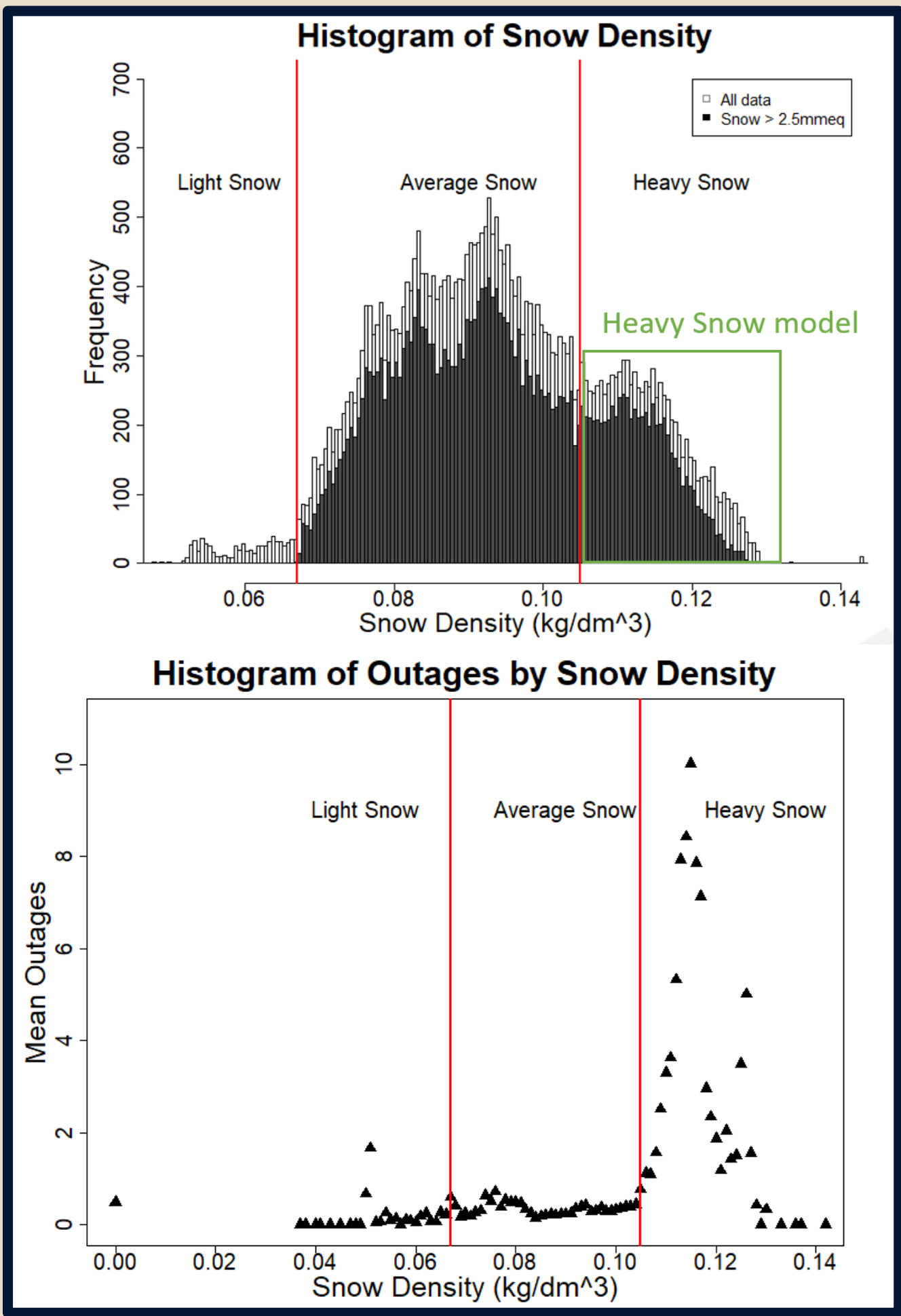Department of Civil & Environmental Engineering, University of Connecticut

OPM Structure

Rain/Wind

Earlier this year, we updated the Rain/Wind OPM for all Eversource territories. This updated system is faster and more accurate than the previous version, and we are currently working on further improvements.

Snow/Ice

Predicting outages caused by winter weather is difficult because complexity of the different precipitation types like ice, dry snow, wet snow, and freezing rain. To help manage this complexity, we created a model that classifies winter weather at the grid cell level, by precipitation:

Heavy Snow Model: 15% of data

Ice Storm Model: 23% of data

Light Snow, Wind and Rain: 62% of data

Histogram of Snow Density

Histogram of Outages by Snow Density

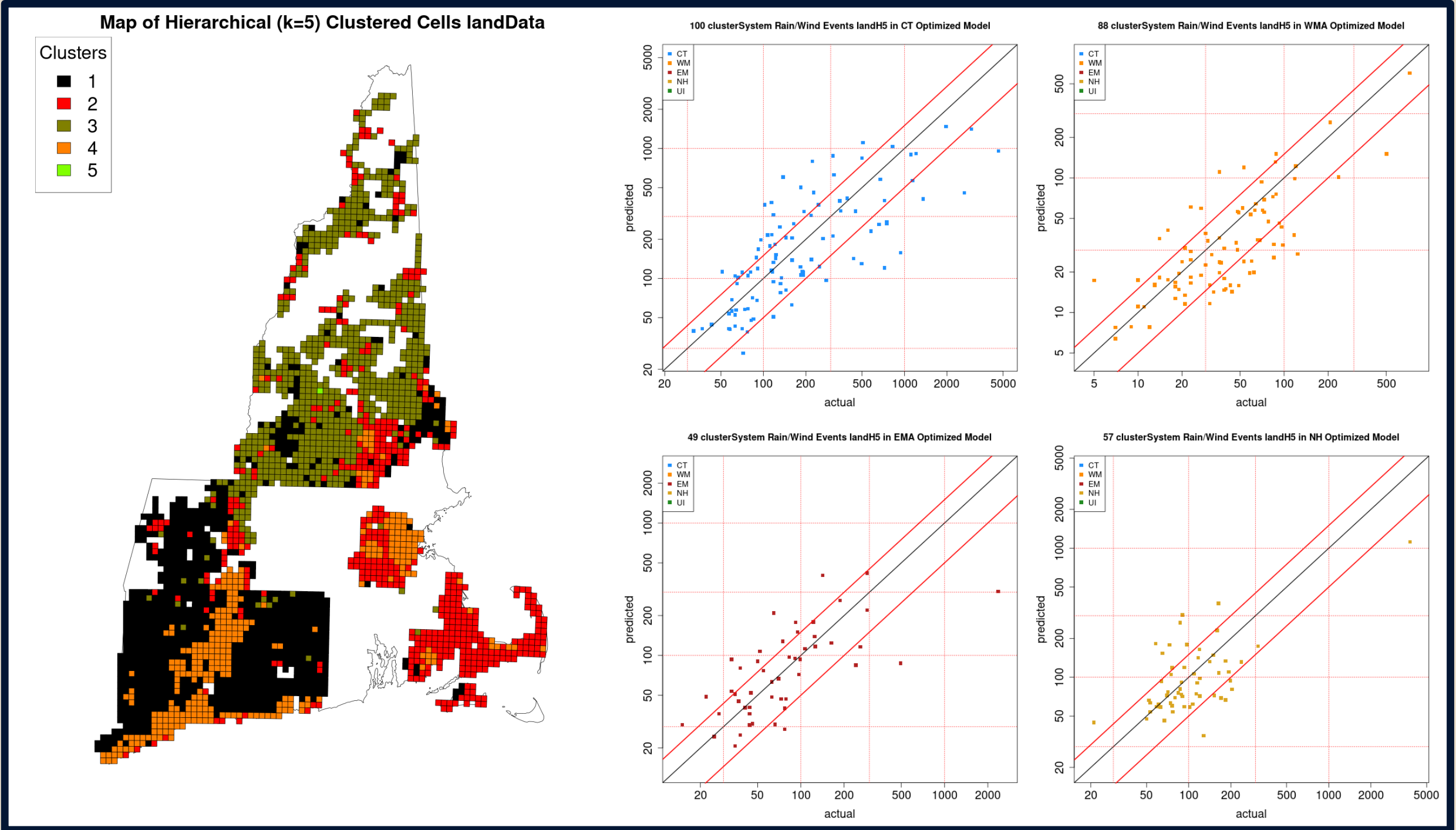Winter storms OPTIMIZED model WRF 3.8

The Regional OPM

The OPM domain has gotten large, and to make modeling more managable we have been in the practice of separating the domain into smaller isolated regions. We justified this practice with the assumption that each region had operational differences unaccounted for in the OPM, and therefore should be isolated. Recently, we conducted a study investigating this assumption by experimenting with different methods of drawing these regions.

Current Divisions
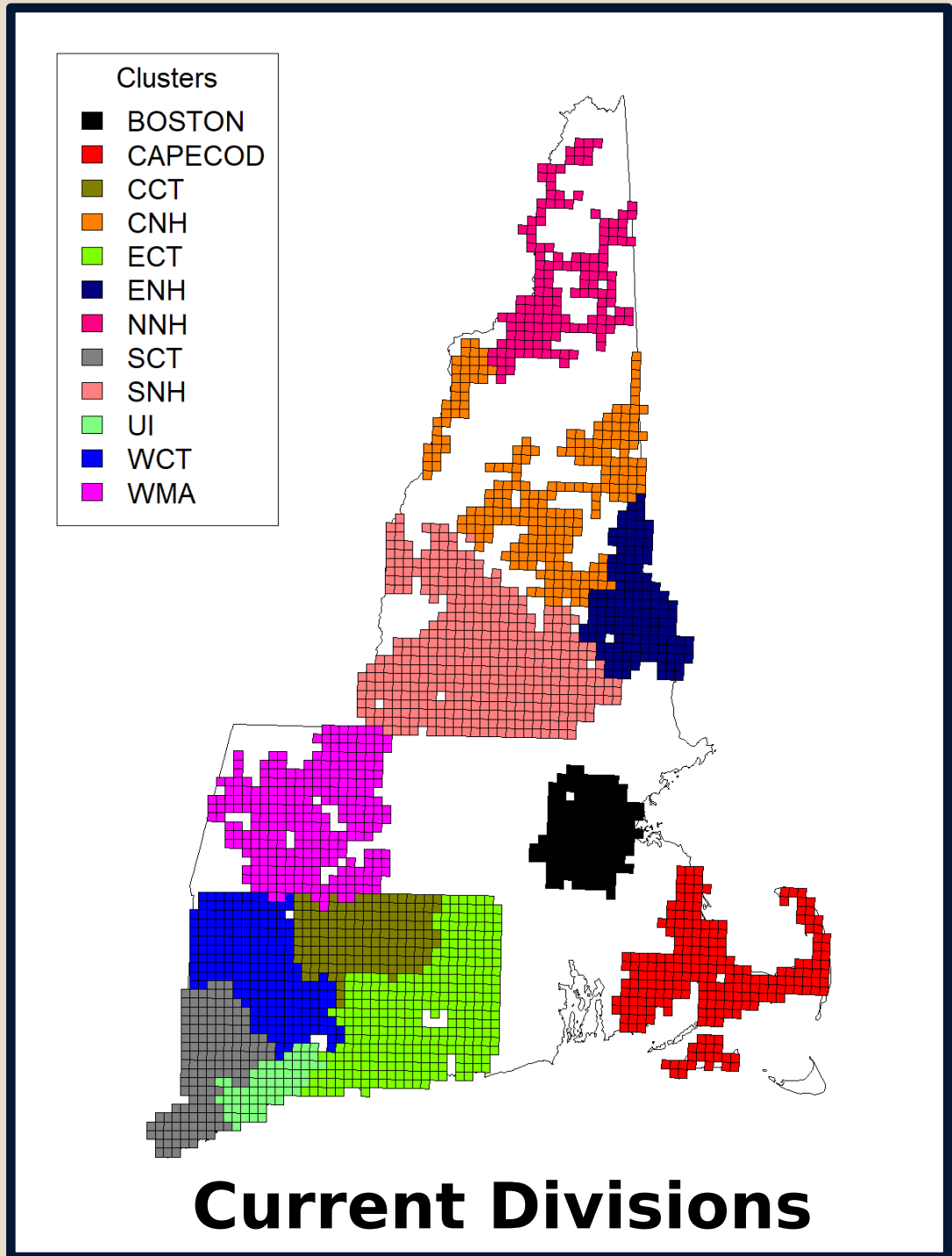
Combining the datasets, and running models trained on all available data from all territories shows improvements in NH, WMA, and EMA, especially for extreme events
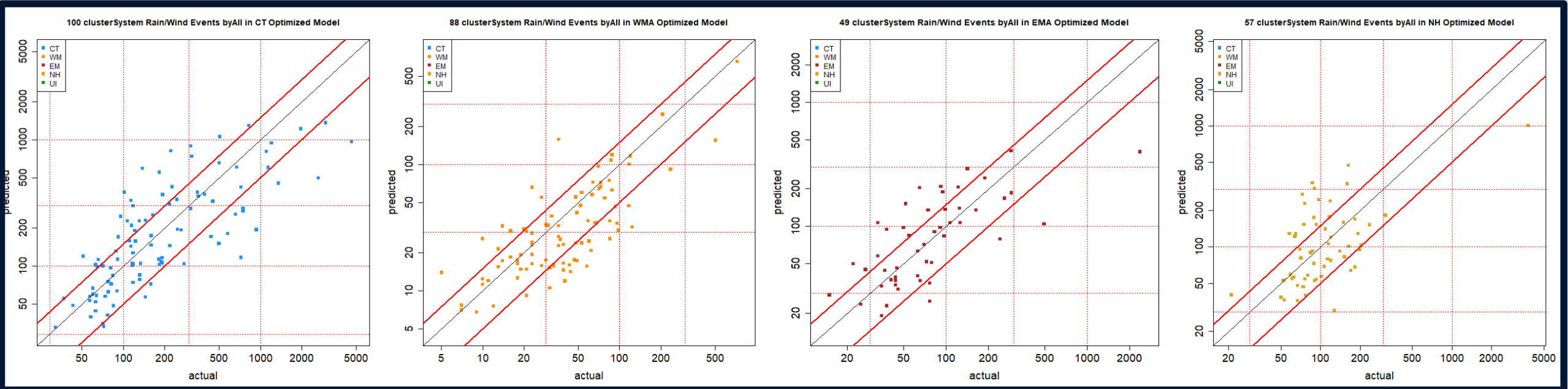
Further improvements can be made if we separate the models by land cover characteristics.

Map of Hierarchical (k=5) Clustered Cells landData