**WICSCC AWS challenge 2025 Team Matador**

In this challenge, team Matador of Texas Tech university took on the challenge of optimizing the Conus 12km weather simulation model with WRF. Despite various challenges, our team was able to produce results that improved the price-performance of the simulation and reduced runtime.

**Infrastructure as Code**

Included this the YAML file that was used to build our cluster for our best price-performance run.

To build a cluster using this configuration file, one must navigate to the Parallel Cluster UI provided by AWS. Here, click “Build Cluster” then “create from template”. When the File Explorer pops up, select the given YAML file and continue. Every window should already have the right configurations. On the first page, you will need to make a selection from the VCP dropdown menu, in which there is only one option. Also, on the “step 2” page, ensure to choose the “az2” option from the subnet ID dropdown.

When at the last page, click “dry run” to test the setup, then build the node.

**Setting Up Cluster**Once node is done building, open up the node shell. Change to the ec2-user and navigate to the home directory.

sudo su ec2-user

cd ~

Given are the cluster-setup.sh and wrf-setup.sh files, which configure the cluster and configure, WRF, and the conus 12 km model to run. Copy these into your home directory and run them using the source command:

source cluster-setup.sh

cd ~

source wrf-setup.sh

This step also creates your best-run.sh file, which can now be used to simulate the conus 12k model.

cd /fsx/conus\_12km

sbatch best-run.sh