Predicting Weather Metrics Case Study

Which weather metrics can we predict the best based on historical data?

Motivation:
Have you ever been walking to class and all of a sudden it starts to rain? Maybe you even looked at the weather and it said it was not supposed to rain, so you didn't bring an umbrella with you. You, like most others, have probably been faced with this situation and it can be very frustrating to prepare for the day based on a weather forecast and then that forecast be wrong.

Objective:
Your goal is to use historical weather data to create time series models that predict the past year of different weather metrics using the nine previous years data. Pick weather metrics from the list of variables that you think are most important to your daily life. Work to create time series models of each variable, fine tuning the model with a goal of achieving the highest accuracy for each metric. Then, compare the accuracies of each metric– you might find that some are more predictable than others.

Deliverable:
The deliverable for this case study comes in the form of two items:

1. A completed script that contains the time series models of each of the variables you chose submitted in a github repo with the data used.
2. A write up explaining why you chose each variable, what their accuracies were, and any insights you gained from the models you created.

Predicting Weather Metrics Rubric

Follow this rubric to make sure you meet spec!

Formatting	● Repository – A GitHub repo (and cloud storage folder if necessary) containing all materials
	  o Submit a link to the repo
	  o Everything is contained in the repo or linked to it if appropriate.
	  o Contents
	  ▪ Data used
	  ▪ Python script containing the model with the code block outputs visible
	  ▪ PDF of your summary of findings
	● Summary of Findings
	  o Submitted in the github repo as a PDF
	  o Outlines:
	  ▪ The variables you used
	  ▪ Why you decided to use those variables
	  ▪ The accuracies of each of the variables time series models
	  ▪ What insights you gained about the model

Models	● Use at least 5 of the variables included in the data ● Include EDA for the models– this should connect back to why you decided to choose each of the variables ● There should be one model for each of the variables you decided to use ● How you calculated the accuracy should be included in this document ● Submitted as a python notebook
Summary of Findings	● Written in paragraphs as a formal report ● Talk the the shareholders– who are you trying to present your findings to ● Make sure to include accuracies and and findings your models led to