

AgScores Weather Analytics

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I started Data School as an Administration Officer for Program 8 with no real experience in data management but had dabbled ever so slightly in coding. As of the first of July our program merged with Program 7. The new program is called Landscapes and Global Change and I have a new role which will ensure best practice data archiving and management systems for our program. I will also be embedded into projects to provide project, data and analytic support. :)

My Synthesis Project

This project will produce visualisations of statistical comparisons between

- weather observation data provided by the State of Queensland (SILO database)
- weather forecast data from the Bureau of Meteorology (ACCESS-S forecast model)

Only one location will be used (Birchip, Victoria, latitude=-35.99 & longitude=142.92)

AgScores will produce results to inform climate scientists of the efficacy of climate predictions, from the point of view of Agricultural productivity (wheat yield potential). This work enables climate scientists to debug their climate models when their predicted wheat yield potential does not match the predicted wheat yield potential of APSIM + SILO.

My Digital Toolbox

I have used R, Python, Anaconda, Jupyter, xarray, requests, io, pandas, datetime, numpy, Matplotlib, from `mpl_toolkits.mplot3d import Axes3D`, Seaborn, scipy.stats, regex

Favourite tool

I have a couple of favourite tools.

RegEx allows you to pull out the exact subset of data that you need.

matplotlib The second is matplotlib which allows you to make lovely visualisations from your data.

My time went ...

by manipulating data to get it into shape. And then reshaping it to get it right again. I had help with the correct commands to pull the data out of the databases and then I was responsible for doing the manipulations.

...and making plot after plot after plot. Most of these didn't really see the light of day but some are here on the poster and will help help to make the AgScores tool easier to use and interpret.

Embarrassingly, I spent a lot of time trying to work out paths to where my work was stored and working out protocols that I really should remember.



Next steps

I need to plot more metrics that are useful and will tell a story. It would be good to develop a GUI to make the tool even easier to use. R Shiny is a good tool for this but the code needs to be in python. There are a few platforms to choose from - PYQT5, Tkinter, WxPython, Kivy and PyForms. Tkinter seems to be the most popular.

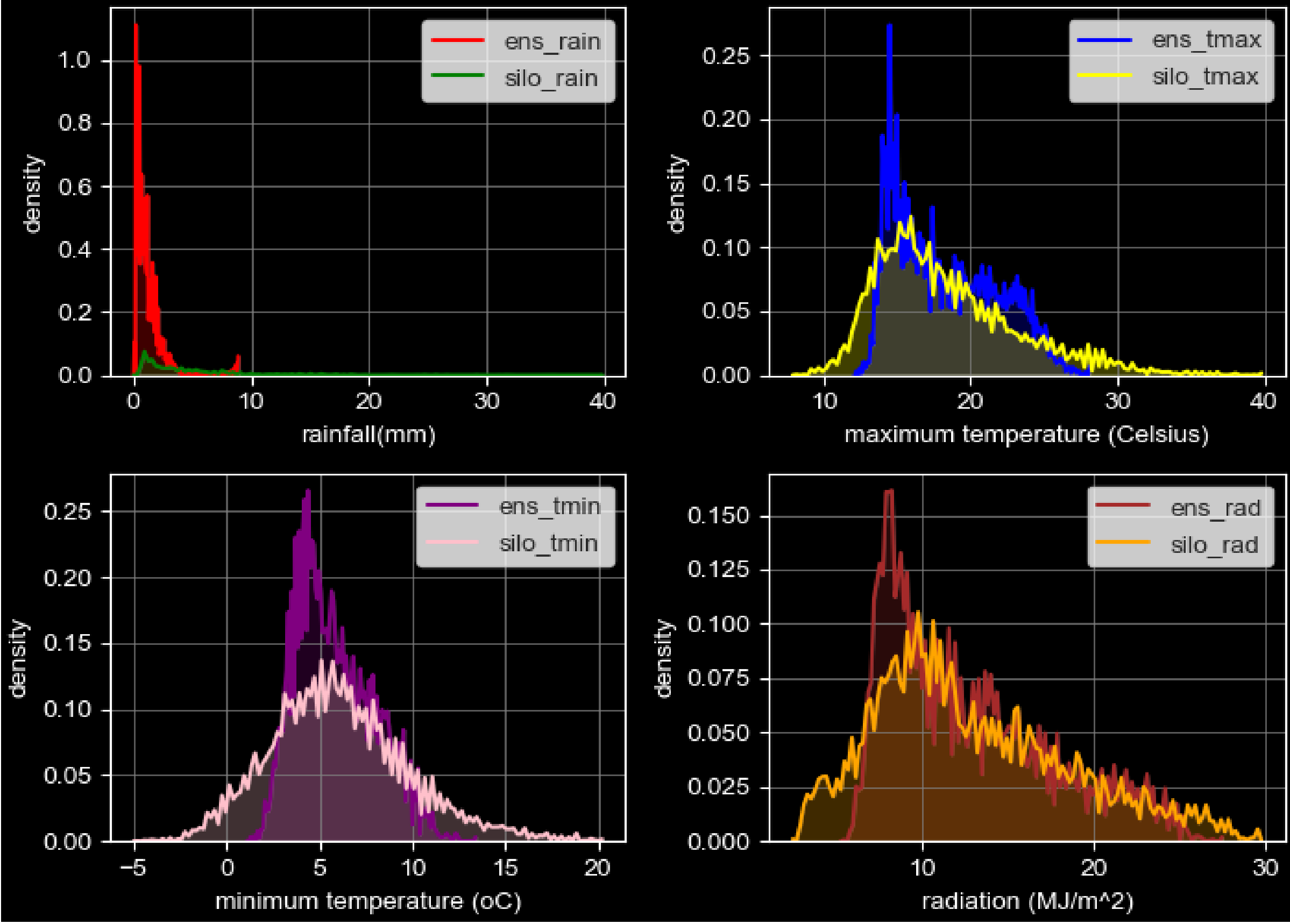
Tables

ens_rad	ens_tmax	ens_rain	ens_tmin	siLO_rad	siLO_tmax	siLO_rain	siLO_tmin
18.3	24.2	0.0	9.9	20.3	23.9	0	8.0
17.0	24.0	0.0	9.2	20.1	22.4	0	11.1
16.0	24.3	0.2	9.2	20.1	26.0	0	8.4
17.5	24.5	0.0	9.8	19.0	28.3	0	13.0
16.9	25.8	0.0	11.0	19.0	29.1	0	14.0
13.8	25.1	0.7	11.1	16.4	29.4	0	14.7

Table 1. Combined ENSEMBLE and SILO data dataframe (header only)

Plots

Figure 1. Density Graphs comparing Forecast (ensemble) data with Observed (siLO) data



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...and of course Michael Battaglia :)

MY DATA SCHOOL EXPERIENCE

I thought Data School was a fantastic experience. To have the opportunity to spend five months learning something new in a course that was run totally in-house was an unbelievable opportunity. I really enjoyed the camaraderie with the other students and the freedom to study again. The course facilitators were all very knowledgeable and very patient! I enjoyed pretty much all that we covered. (Stats was hard)

I have just started a newly created Program Data Support position for our program which will put many of my newly acquired skills to use. I will be liaising with project leaders at inception to assist them in creating Data and Software Management Plans and again at end of projects to confirm data and records archival. I have received very supportive correspondence from program members who are looking forward to working with me to achieve this.

I will also be continuing this project. I have already attended a three day "SPRINT" in Hobart where those working on the project came together to work on the project at the same time without any interruptions. (Look at me, coding, with L plates and lots of people to hold my hand)