

Australian Rainfall Analysis

Group 3

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Content

- Inspiration and Motivation
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- Correlation of Factors
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Inspiration: California's Wildfire Get Worse

- As a result of climate change
- Already seeing wildfires in San Francisco around the Northern Sierra foothills

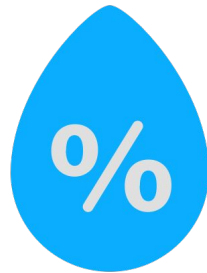
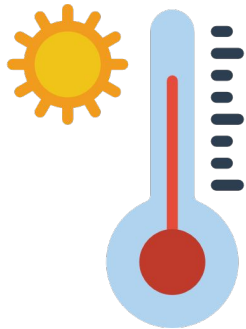


Motivation: Australia Wildfires Were Far Worse

- Fire season causes hundreds of human deaths every year
- Is the rain a big factor of wildfires?



Dataset



Rain in Australia

Predict rain tomorrow in Australia

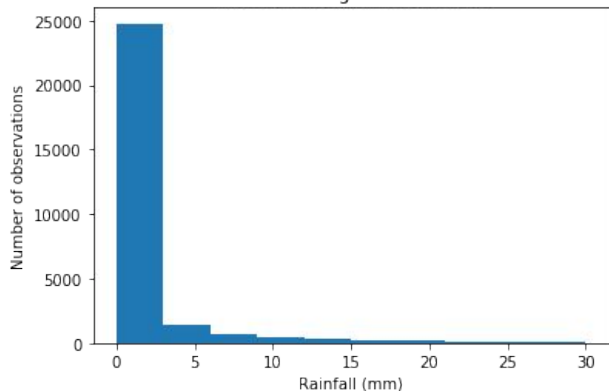
(<https://www.kaggle.com/jsphyg/weather-dataset-rattle-package>)

Daily weather observations from Australian weather stations

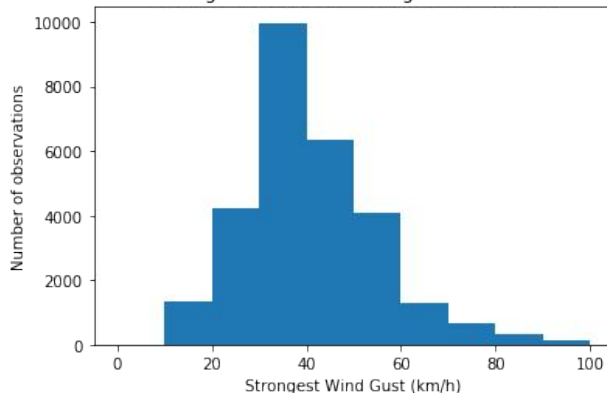


Dataset Sample of Victoria

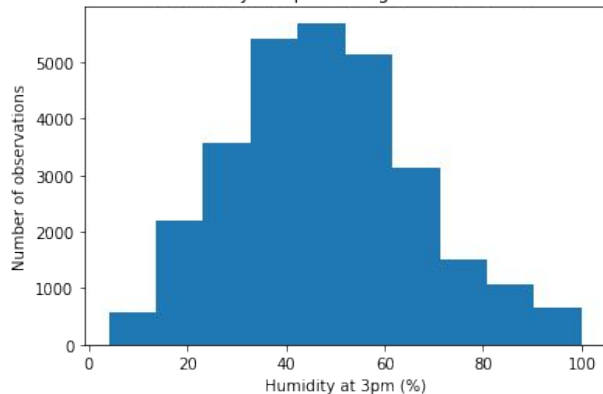
Rainfall Histogram of Victoria



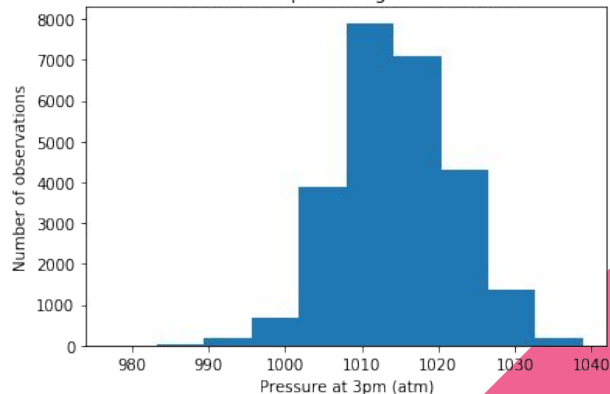
Strongest Wind Gust Histogram of Victoria



Humidity at 3pm Histogram of Victoria



Pressure at 3pm Histogram of Victoria

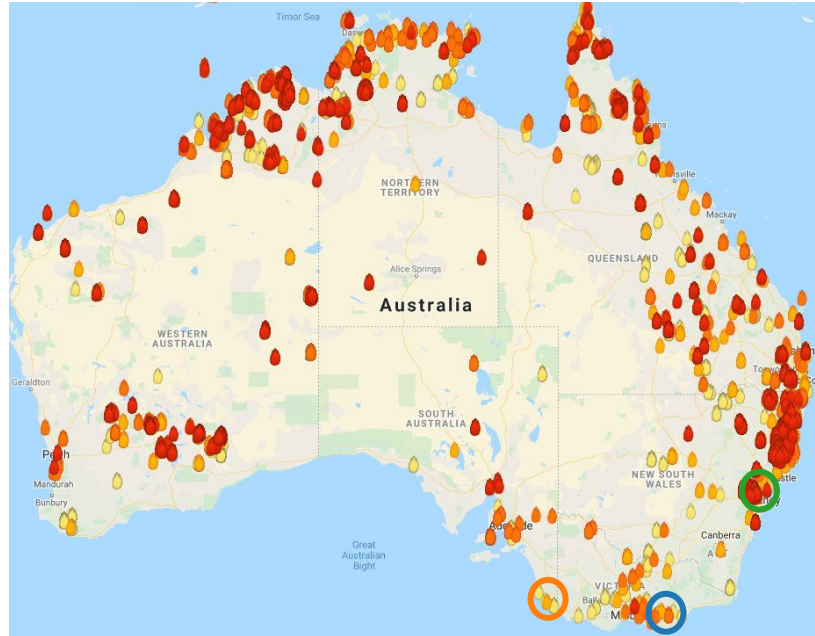


Two ways to use dataset...

- Forecasting wildfires: trends and patterns of Australian weather
- Relieving wildfires: predicting rain probabilities



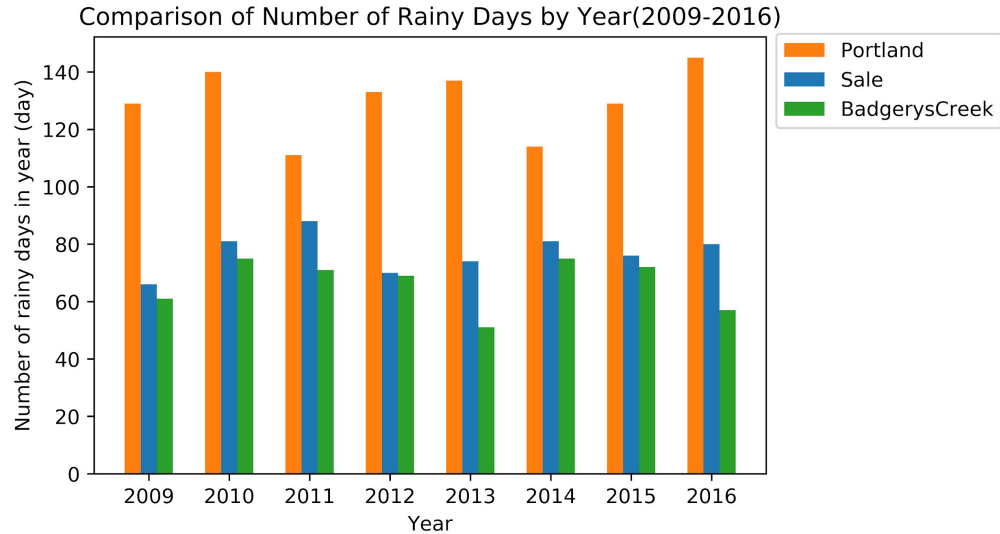
The dataset contains many regions and can cause clutter.
We select three representative cities with varying levels of wildfire.



Badgery's Creek, New South Wales

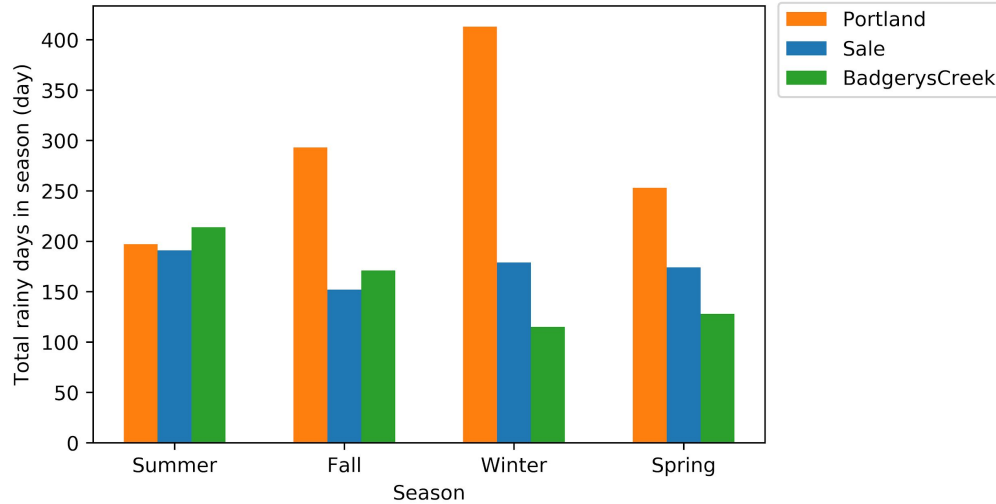
Portland,
South Australia

Sale, Victoria

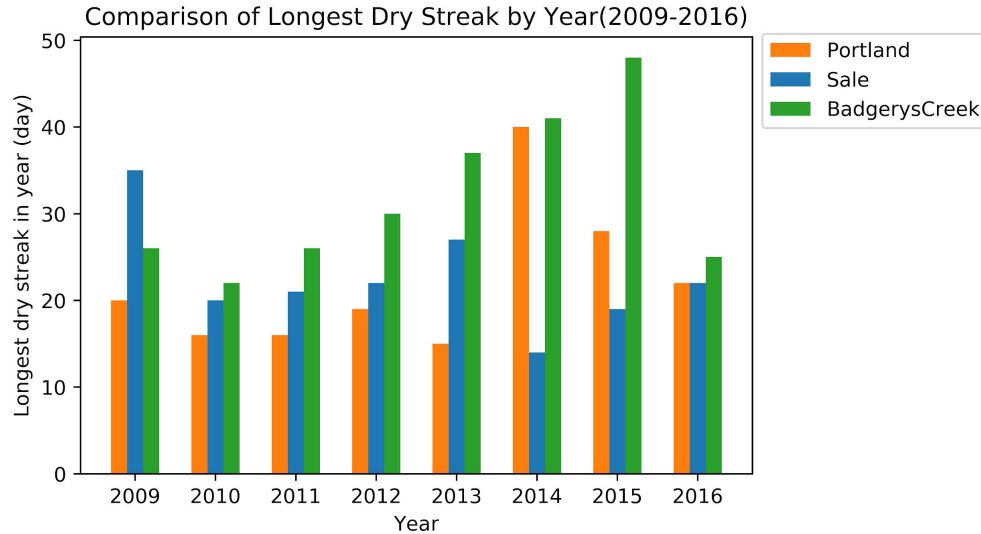


- Big **regional difference**
- Relative stability with occasional outliers
- Lows loosely matches bad wildfires (e.g. Badgerys Creek, New South Wales 2013)

Comparison of Number of Rainy Days by Season (2009-2016)



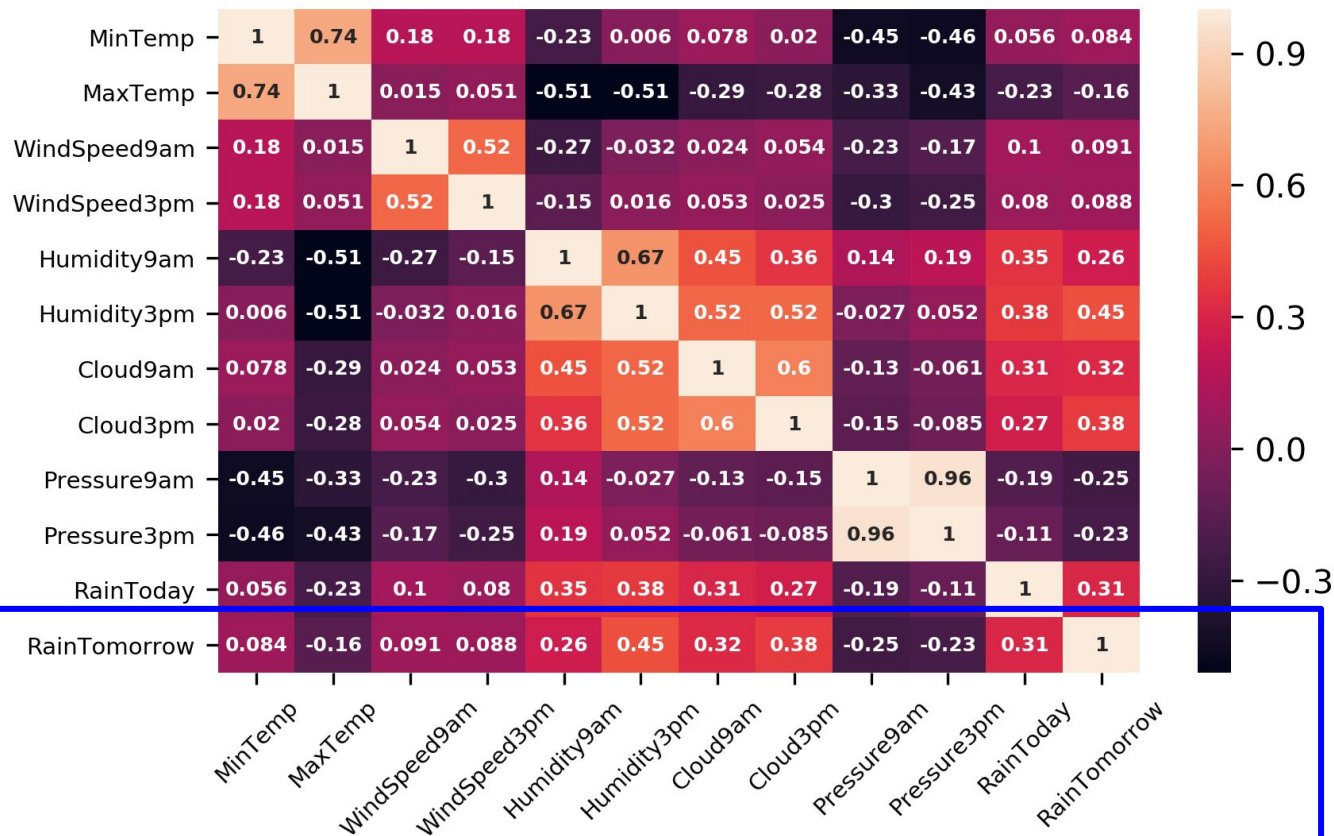
- **Seasonal difference** is substantial
- Variance depends on region
- Different regions have **different dry seasons**



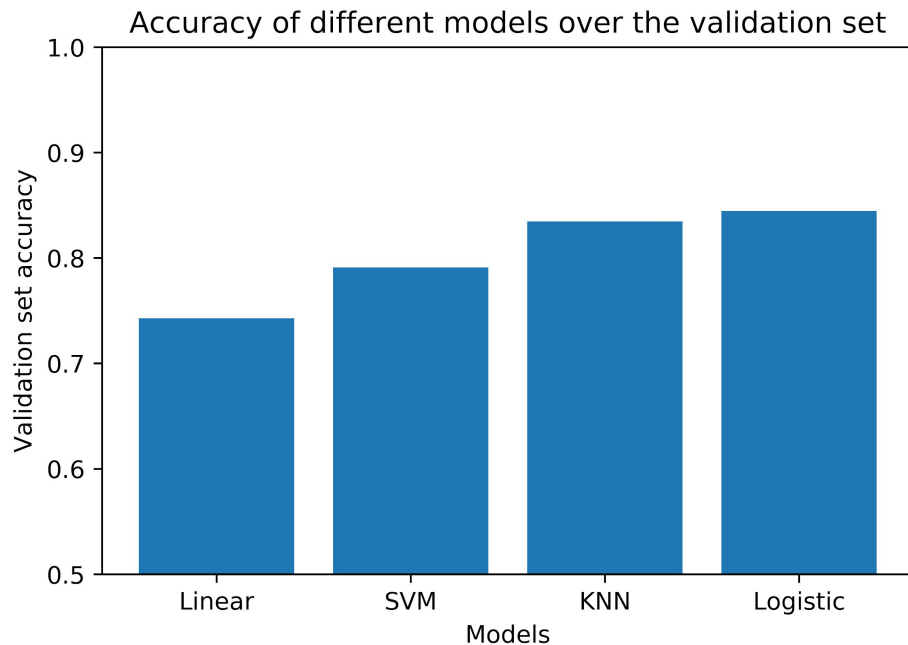
- **Bigger variation** than previous categories
- Potential **strong correlation** with wildfire risk (e.g. Sale, Victoria 2009)
- Needs deeper case-by-case inspection

How do different features correlate with each other?

correlation table

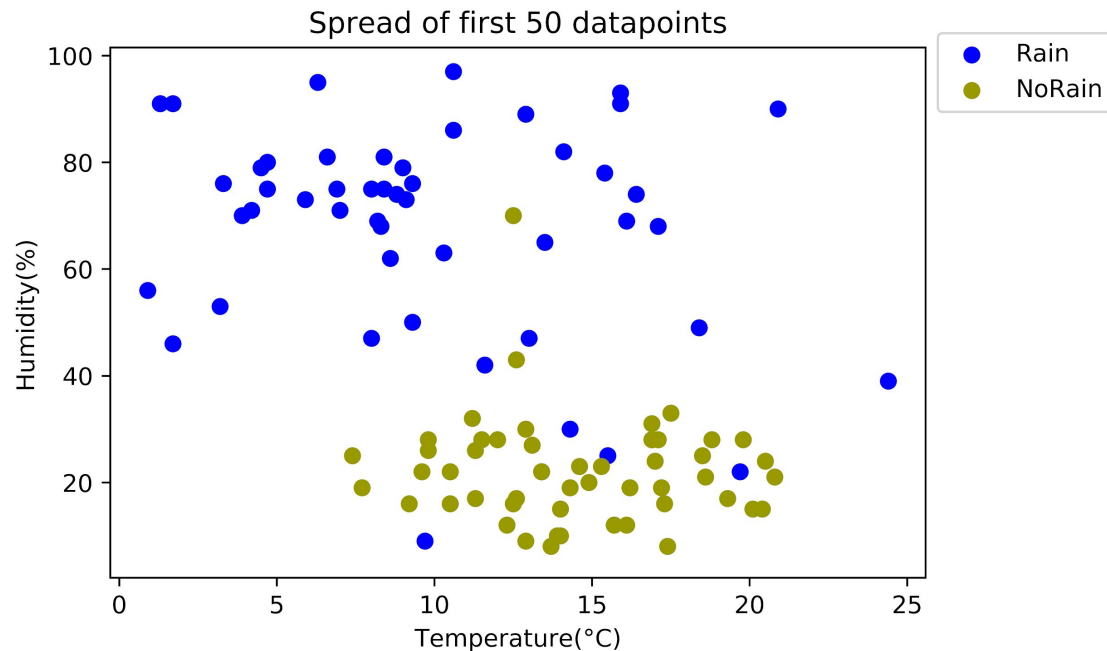


Selecting the best model

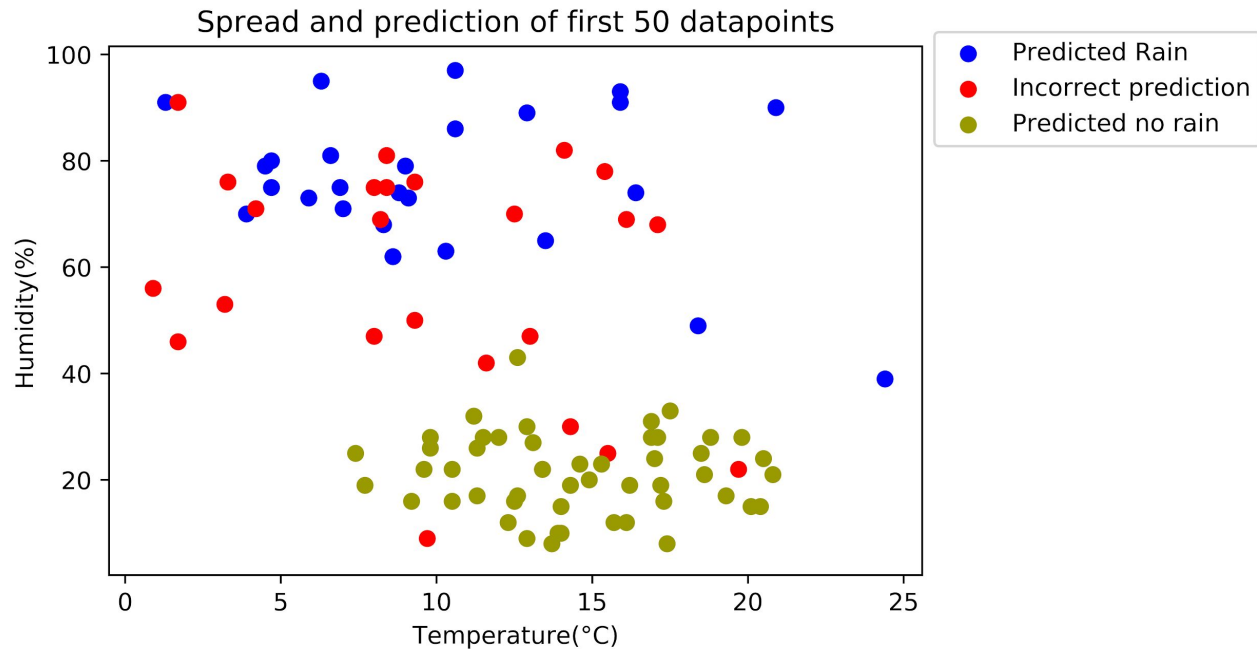


Test set accuracy of best model: 84.27%

Datapoints display clustering behavior



Current model still have room for improvement



Conclusion

- Rainfall is related to wildfires
- Useful metrics
 - Amount of rainfall
 - Prolonged dry period
- Statistical models are good at predicting rainfall





Thank You