Rainfall Dataset

date	Year	Month	day of week	Rainfall amount (millimetres)
2015-01-01	2015	Jan	Thursday	0.0
2015-01-02	2015	Jan	Friday	0.0
2015-01-03	2015	Jan	Saturday	0.0
2015-01-04	2015	Jan	Sunday	4.2
2015-01-05	2015	Jan	Monday	0.0
...	...	...	...	...
2021-02-24	2021	Feb	Wednesday	0.0
2021-02-25	2021	Feb	Thursday	0.0
2021-02-26	2021	Feb	Friday	0.4
2021-02-27	2021	Feb	Saturday	0.0
2021-02-28	2021	Feb	Sunday	0.0

2251 rows × 4 columns

- The rainfall dataset date is range from 2015-01-01 to 2021-02-28
- The rainfall amount with mean 1.51 millimetres. The rainfall amount is range from 54 to 0 (max and min)
- The median is less than mean, the dataset is skewed to the right, most of data spread on the right side.

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df.describe()
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	Year	Rainfall amount (millimetres)
count	2251.000000	2251.000000
mean	2017.592181	1.518257
std	1.776341	4.392522
min	2015.000000	0.000000
25%	2016.000000	0.000000
50%	2018.000000	0.000000
75%	2019.000000	0.800000
max	2021.000000	54.600000

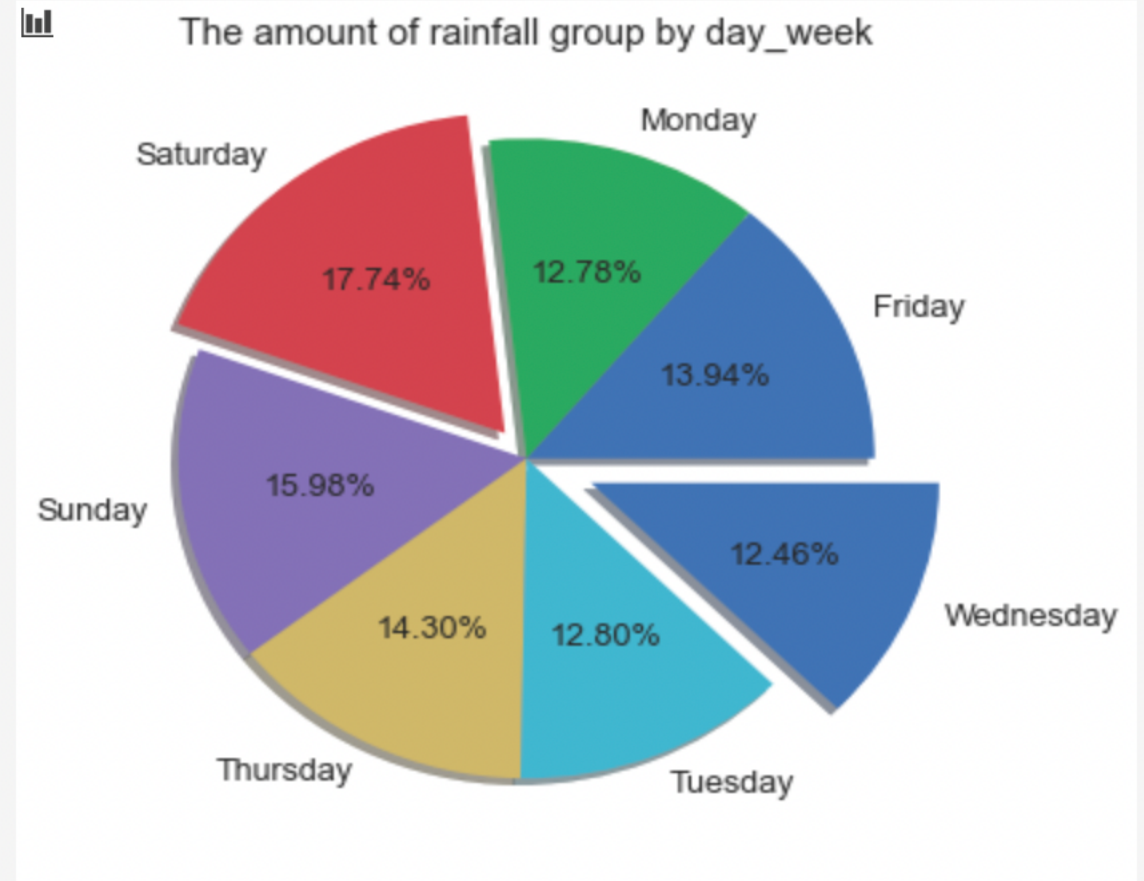
Rainfall dataset Association

Day of week

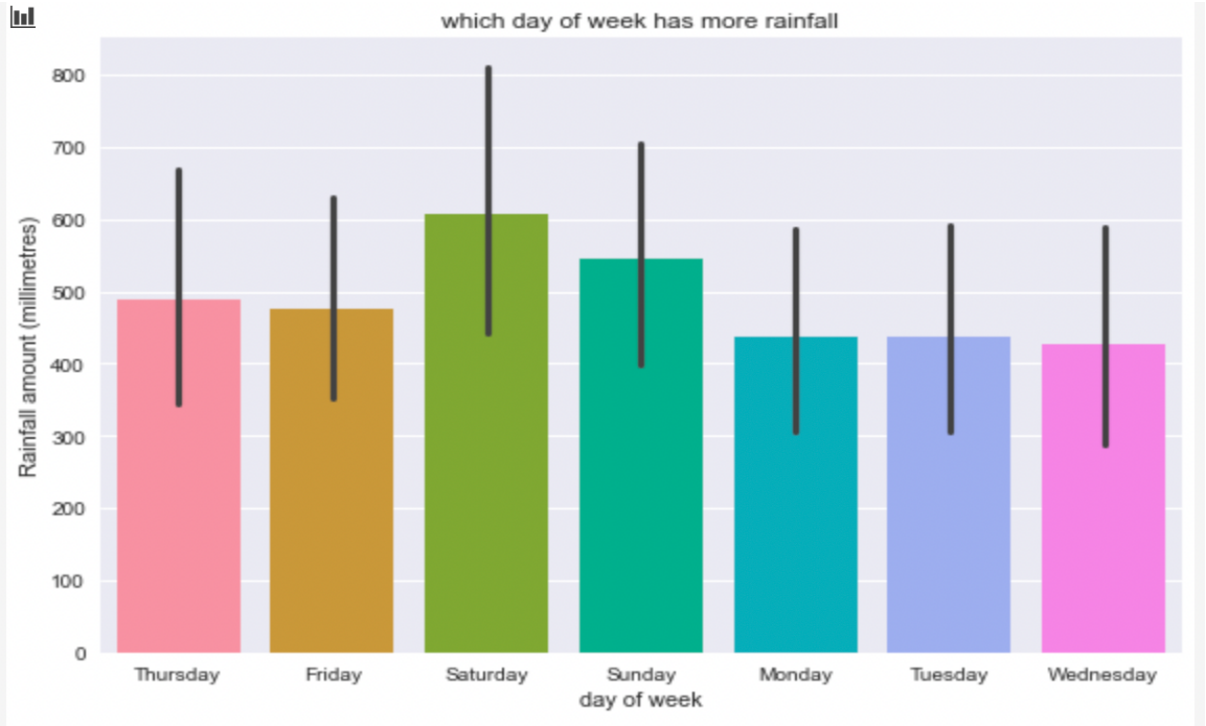
day of week	
Friday	476.400000
Monday	436.800000
Saturday	606.200000
Sunday	546.000000
Thursday	488.732207
Tuesday	437.532207
Wednesday	425.932207

Form the figure below and left we can include:

- The total of rainfall amount on Saturday is largest, while rainfall amount on Wednesday is lowest.

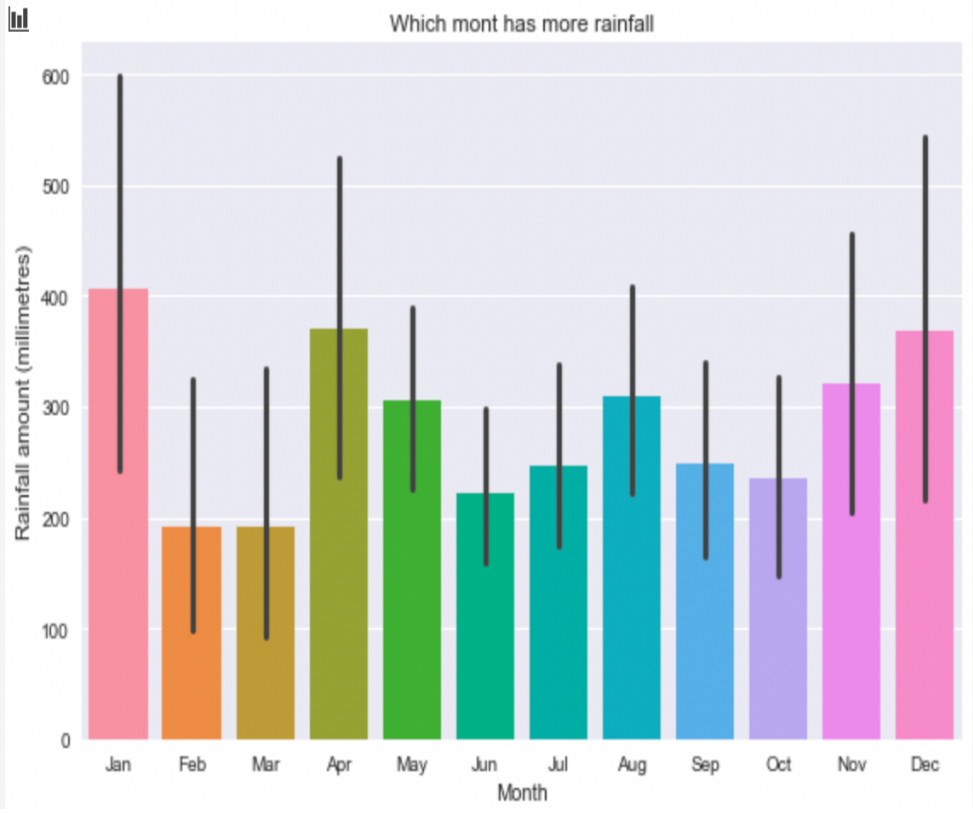


Error bar:



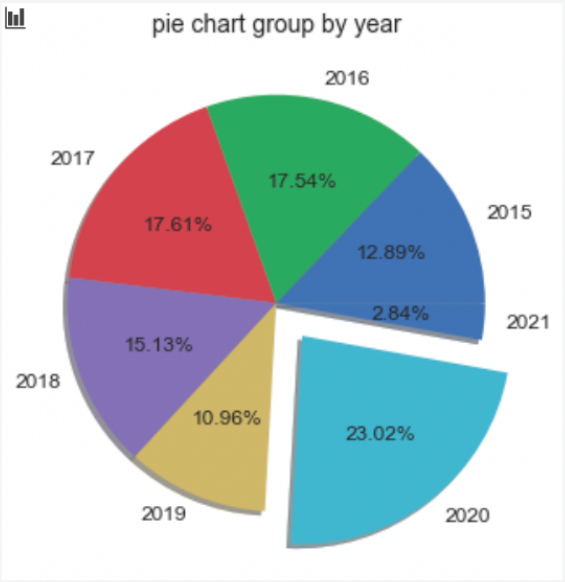
- If check the error, the difference between Saturday and other day of week is significant.
- The days of week (except Saturday) are not significant.

Month index



The Feb and Mar are significant from rest of month.

Year index

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<Figure size 576x396 with 0 Axes>
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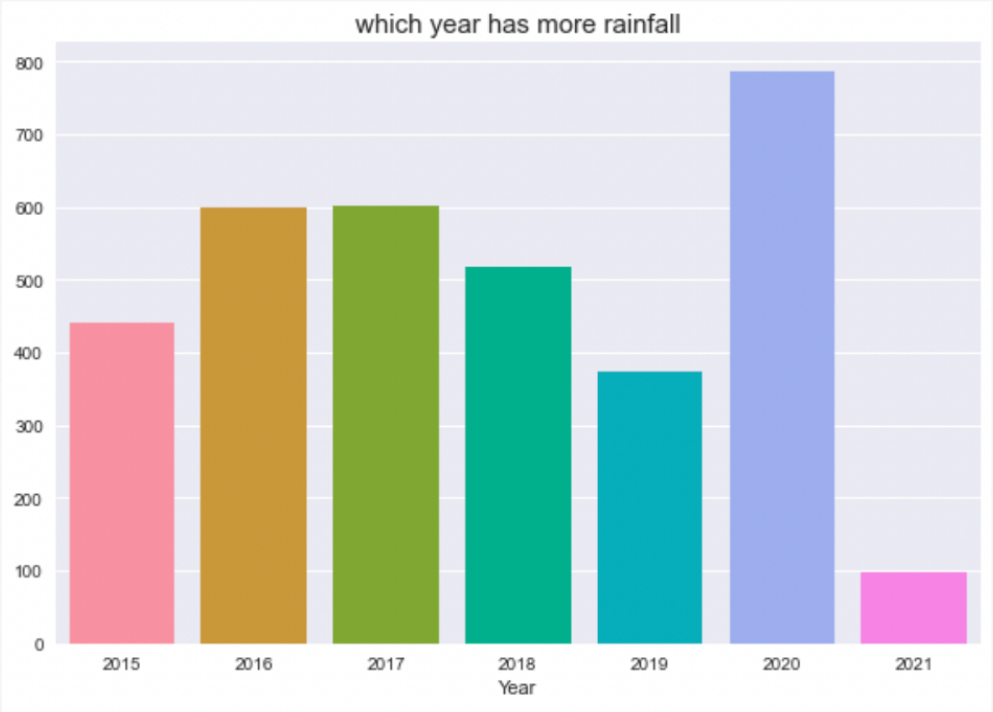
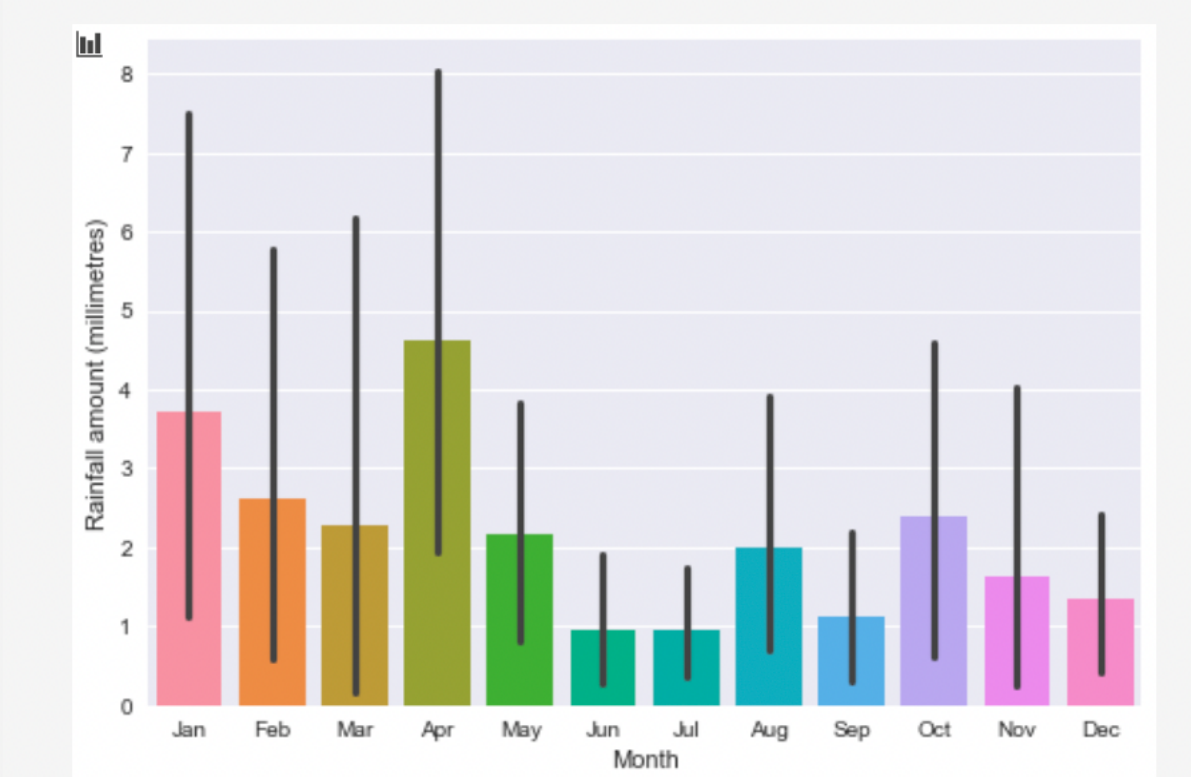


- Rainfall in 2020 was above average across Greater Melbourne.
- To be specific, check each month in 2020



- It was particularly wet in April; averaged across all reporting sites in Greater Melbourne, it was the wettest April since 1974.
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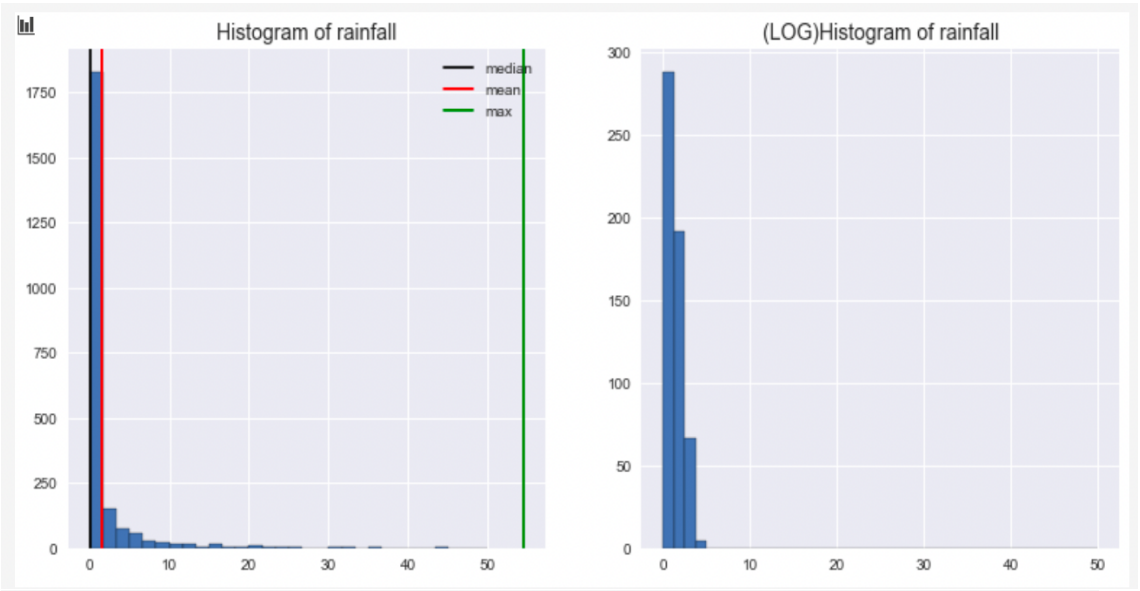
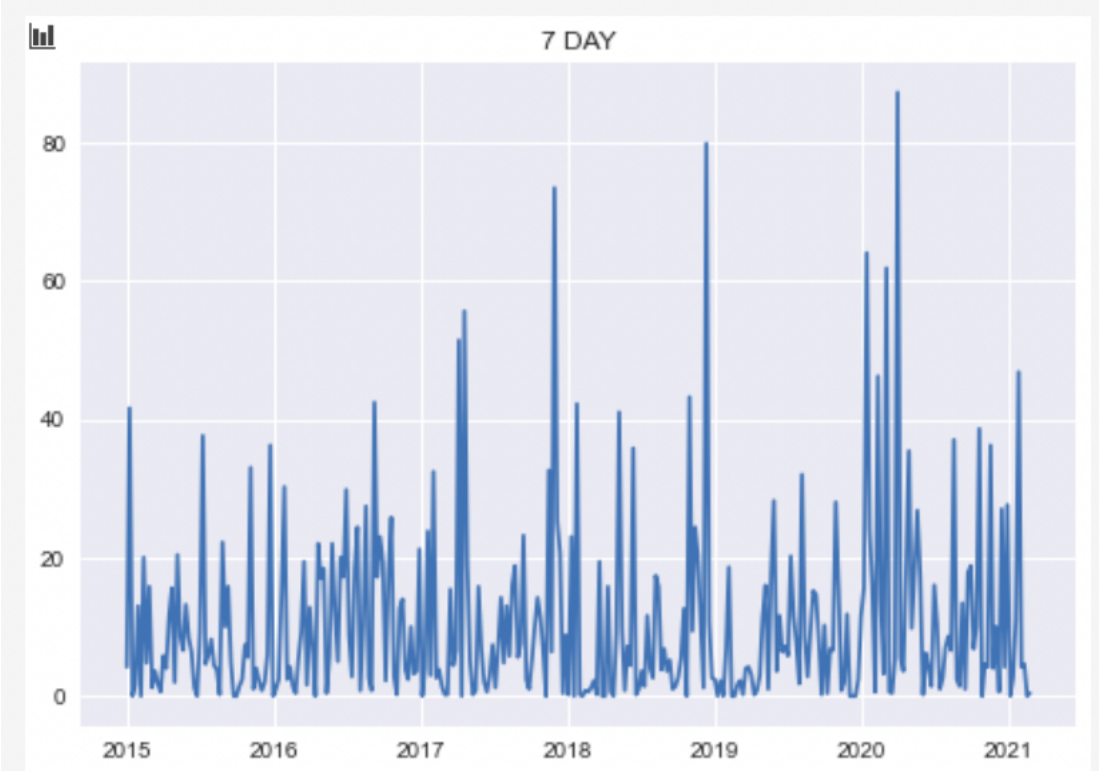
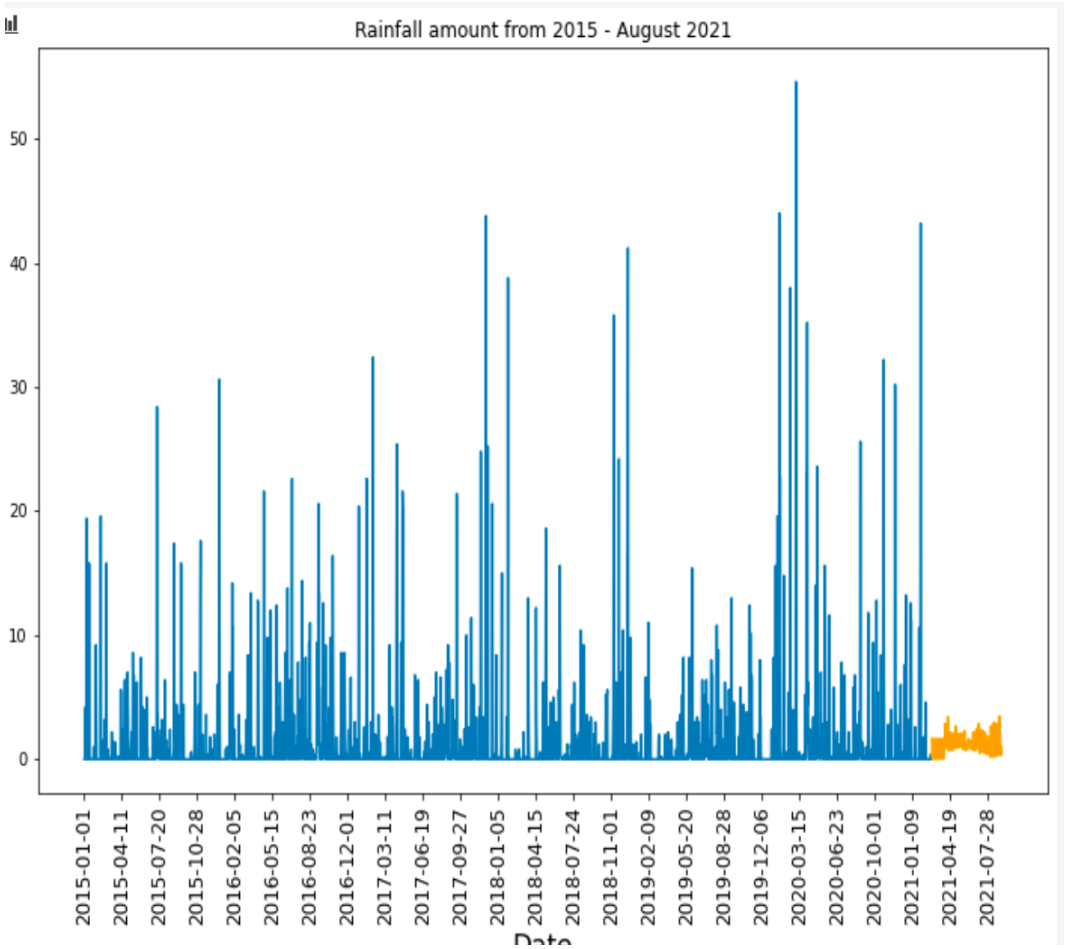
Extremes in April 2020	
Hottest day	24.8 °C at Coldstream on the 1st
Warmest days on average	19.3 °C at Melbourne (Olympic Park)
Coolest days on average	15.0 °C at Ferny Creek
Coldest day	9.7 °C at Ferny Creek on the 30th
Coldest night	0.5 °C at Coldstream on the 28th
Coolest nights on average	8.1 °C at Coldstream
Warmest nights on average	11.6 °C at Melbourne (Olympic Park)
Warmest night	16.1 °C at Cerberus on the 15th
Warmest on average overall	15.5 °C at Melbourne (Olympic Park)
Coolest on average overall	11.9 °C at Wallan (Kilmore Gap)
Wettest overall	232.8 mm at Ferny Creek
Wettest day	88.0 mm at Lancefield on the 4th
Strongest wind gust	104 km/h at South Channel Island on the 11th

Rainfall values analyse





- The data has extremely outliers



- There are a lot of outliers in rainfall dataset, resulting in missing fit the rainfall trend.
- The R square is relatively low. The KNN fit rainfall best among these five models