Growing Degree Day

CMSC 6950 - Computer Based Research Tools and Applications

Project Report

Submitted by

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1 Introduction

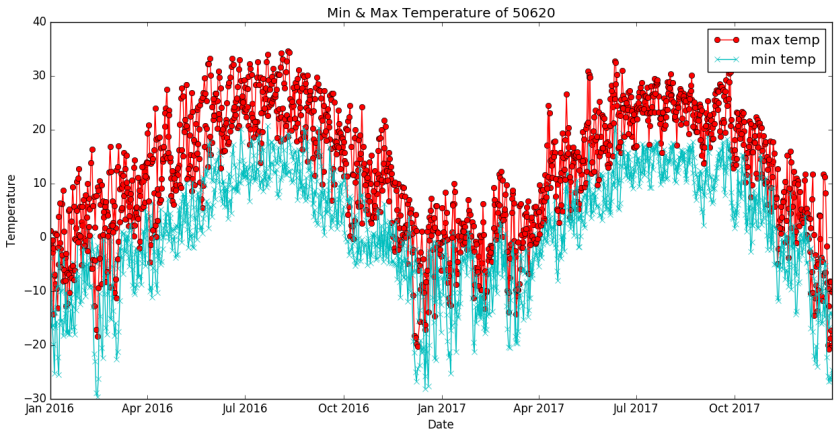
For this project, we have selected three cities from Canada, namely: Halifax, Ottawa and Calgary, for which we calculated and visually analysed the growing degree days for years 2016 and 2017.

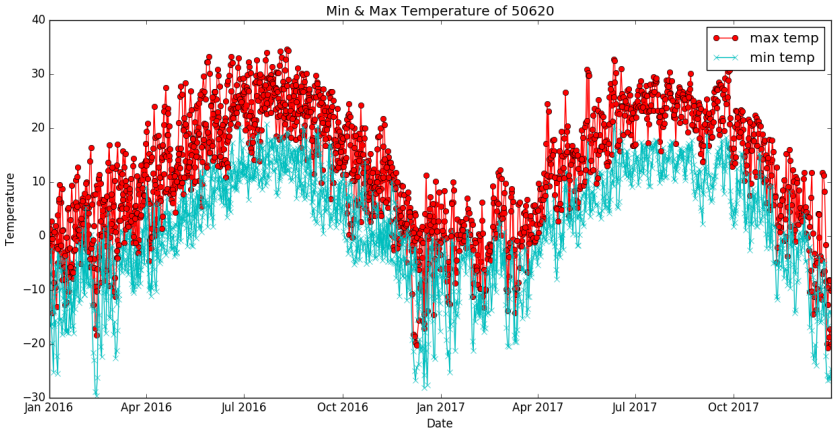
2 Core Tasks

The weather data was downloaded for the three cities and different plots were generated after calculating the GDD for those cities.

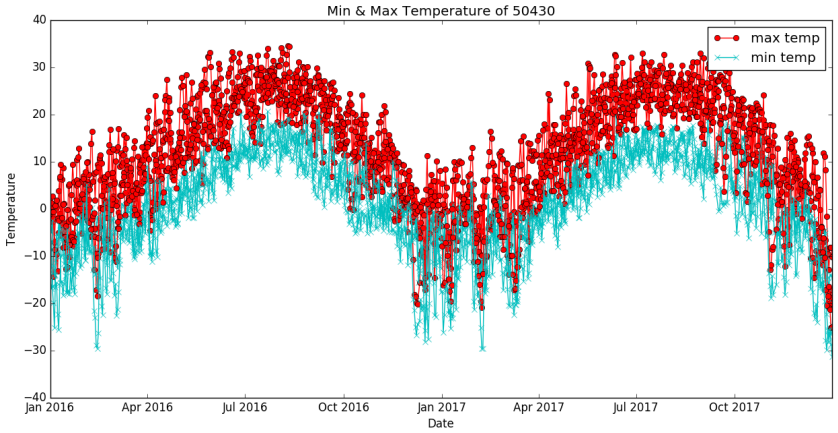
2.1 Min/Max Plots

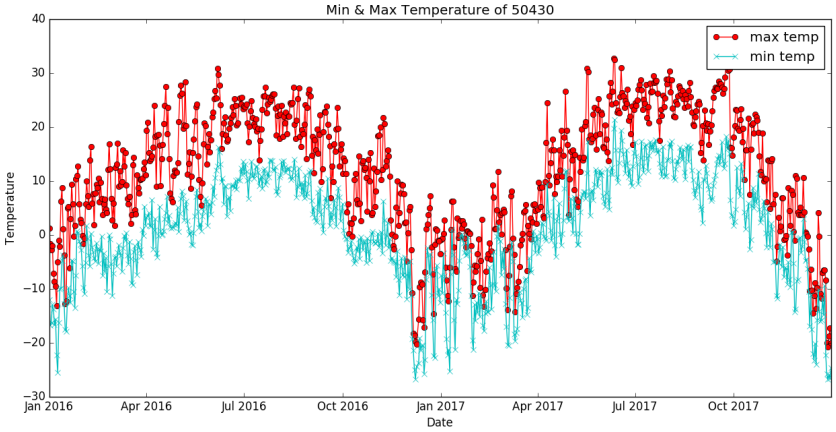
2.1.1 HALIFAX



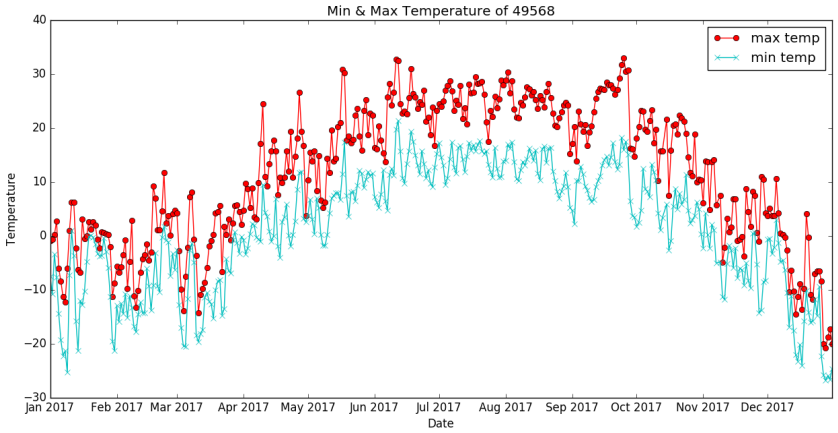

Min & Max Temperature of 50620
max temp
min temp
Temperature
Date
40
30
20
10
0
−10
−20
−30
Jan 2016
Apr 2016
Jul 2016
Oct 2016
Jan 2017
Apr 2017
Jul 2017
Oct 2017

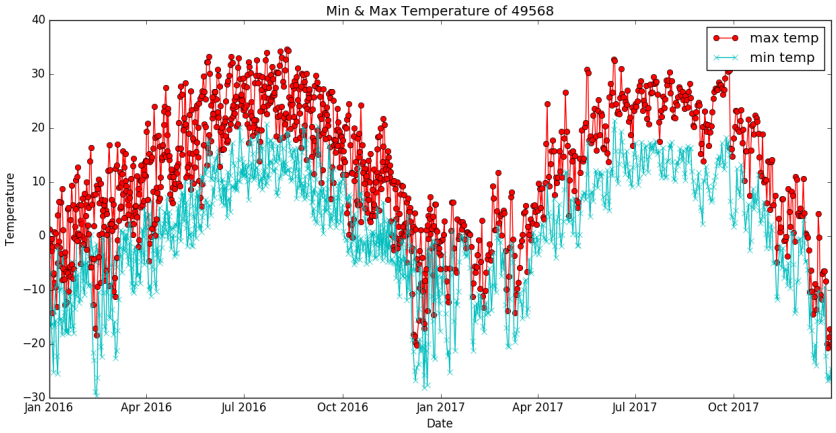
2.1.2 CALGARY


Min & Max Temperature of 50430
max temp
min temp
Temperature
Date
40
30
20
10
0
−10
−20
−30
−40
Jan 2016
Apr 2016
Jul 2016
Oct 2016
Jan 2017
Apr 2017
Jul 2017
Oct 2017

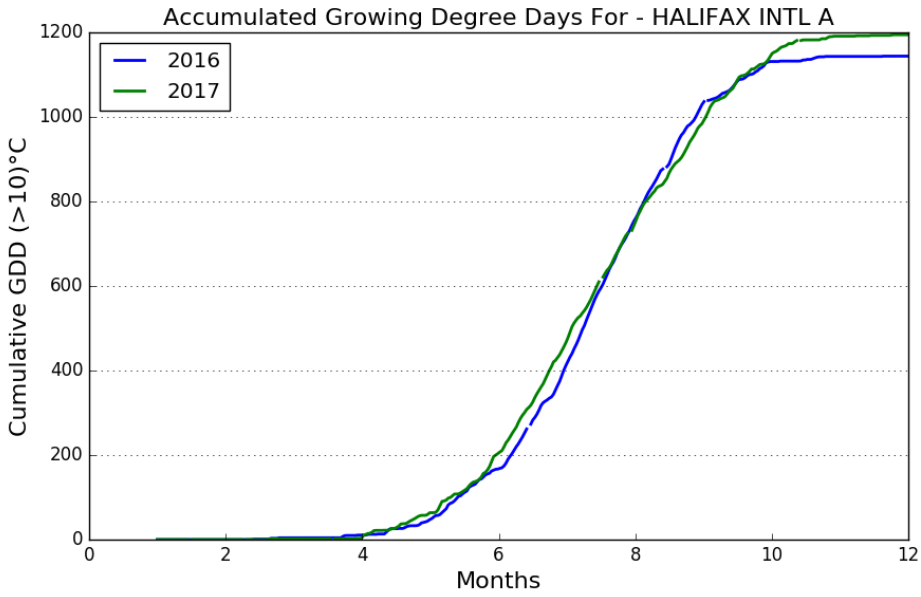

Min & Max Temperature of 50430
max temp
min temp
Temperature
Date
Jan 2016
Apr 2016
Jul 2016
Oct 2016
Jan 2017
Apr 2017
Jul 2017
Oct 2017

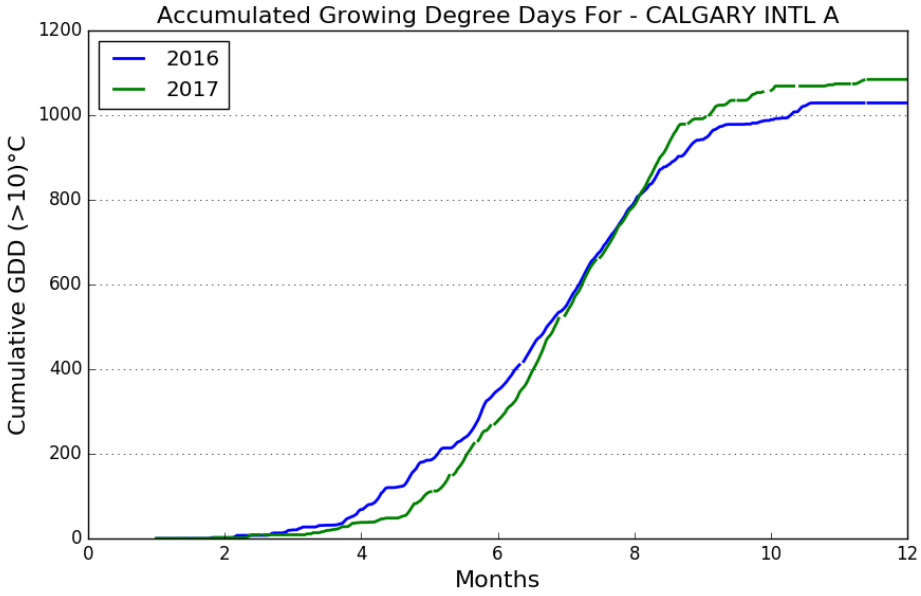
2.1.3 OTTAWA

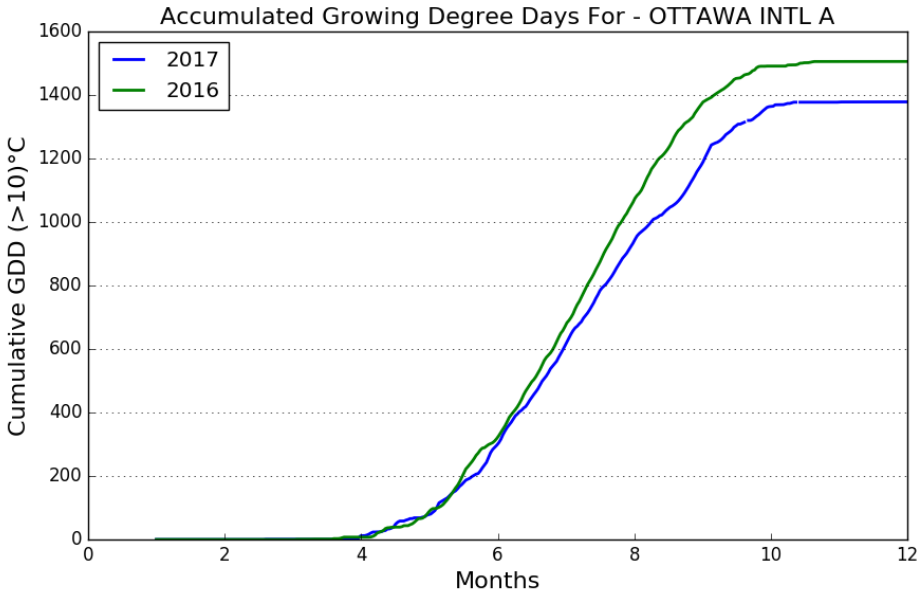

Min & Max Temperature of 49568
max temp
min temp
Temperature
Date
Jan 2017
Feb 2017
Mar 2017
Apr 2017
May 2017
Jun 2017
Jul 2017
Aug 2017
Sep 2017
Oct 2017
Nov 2017
Dec 2017



2.2 Cummulative GDD



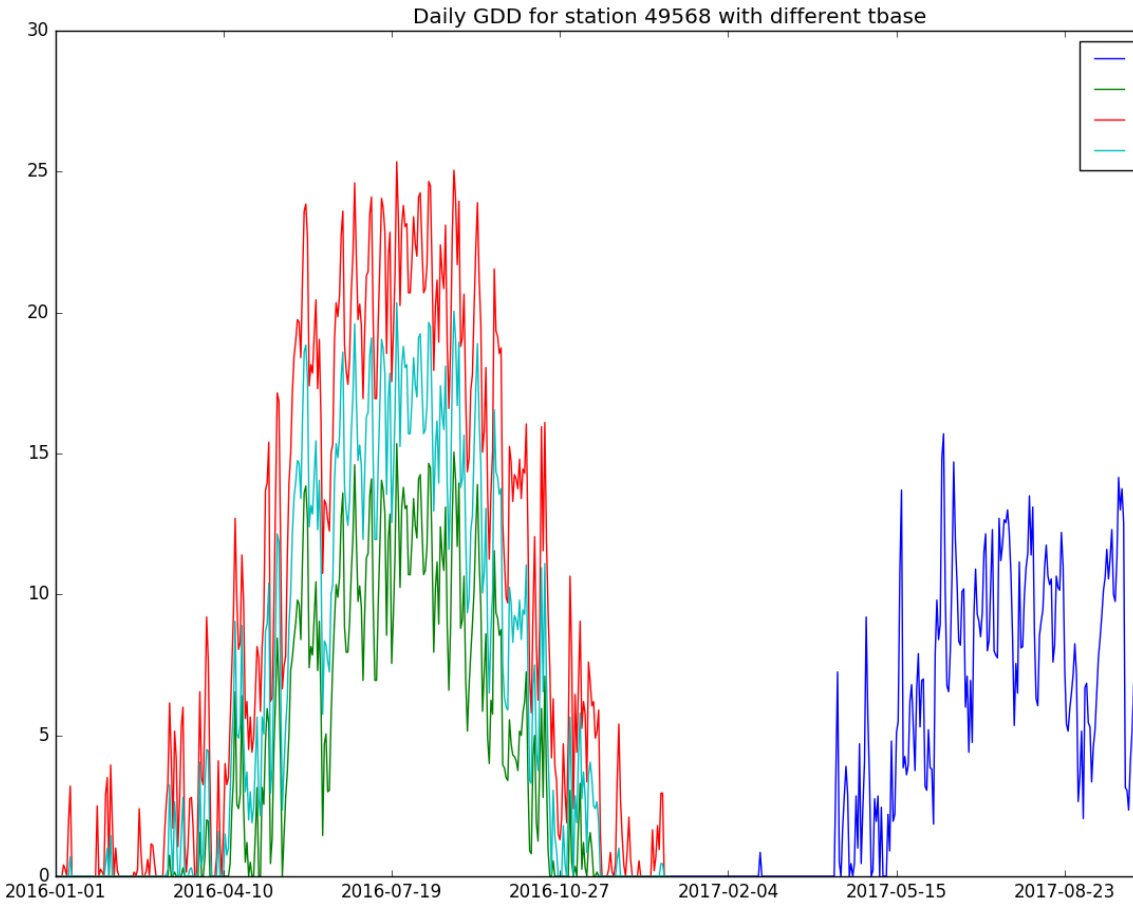

Accumulated Growing Degree Days For - CALGARY INTL A
2016
2017
Cumulative GDD (>10)°C
Months
0
200
400
600
800
1000
1200
0
2
4
6
8
10
12


Accumulated Growing Degree Days For - OTTAWA INTL A
2017
2016
Cumulative GDD (>10)°C
Months
0
200
400
600
800
1000
1200
1400
1600
0
2
4
6
8
10
12

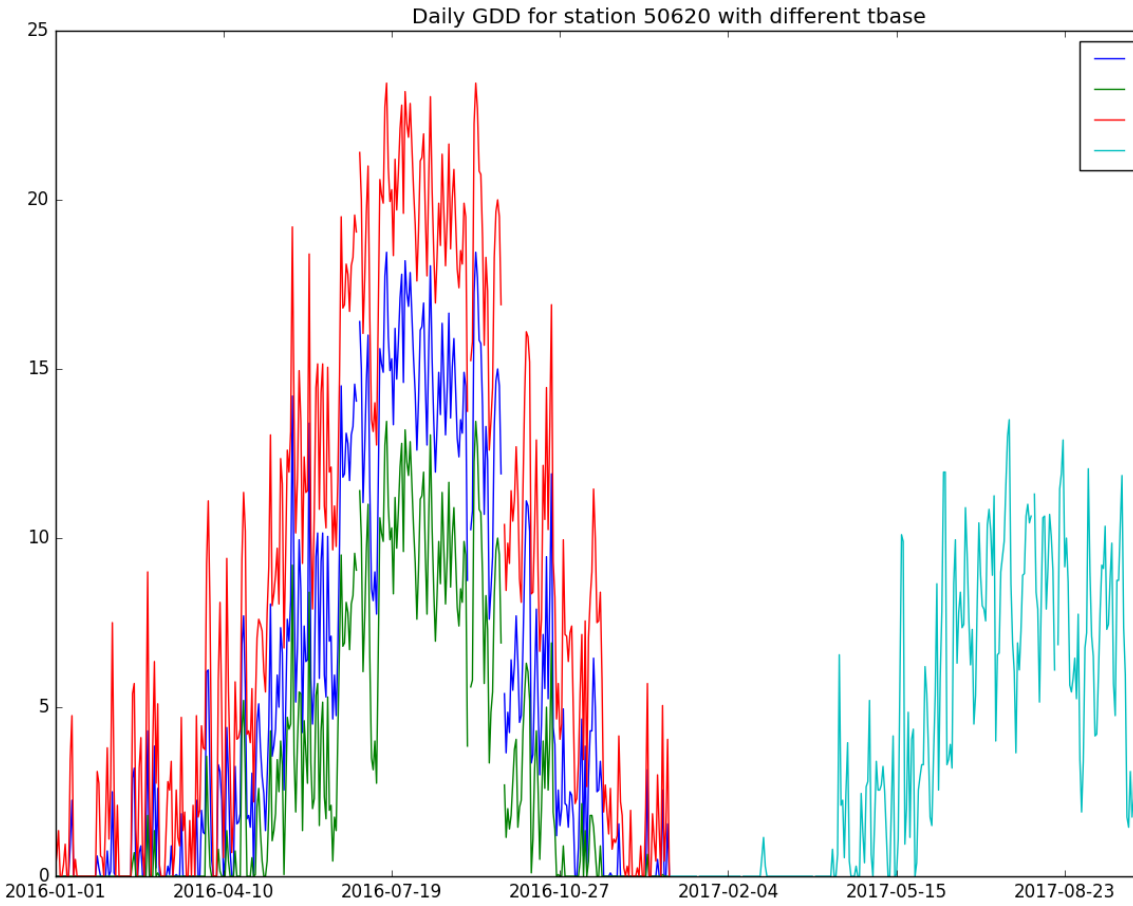
3 Core Tasks

3.1 GDD with varying Base Temperature

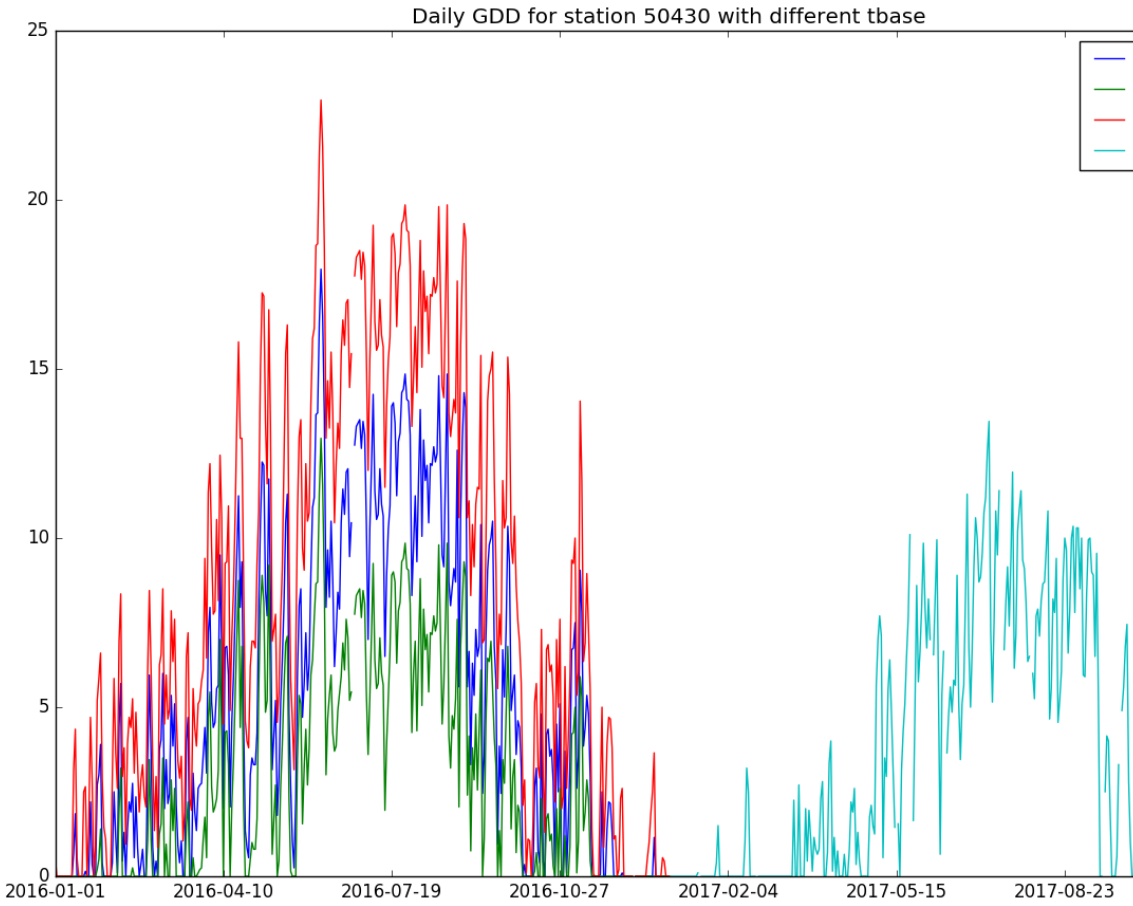
3.1.1 OTTAWA



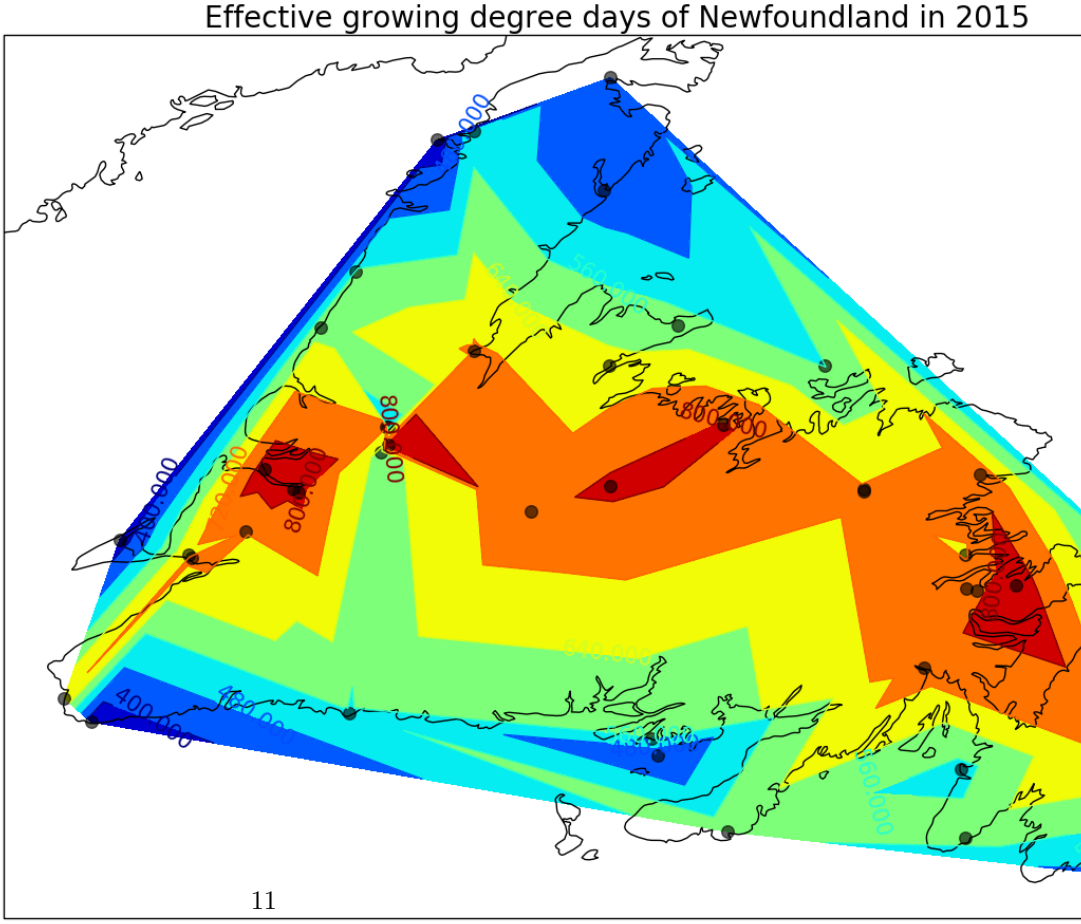
3.1.2 HALIFAX


Daily GDD for station 50620 with different tbase
25
20
15
10
5
0
2016-01-01
2016-04-10
2016-07-19
2016-10-27
2017-02-04
2017-05-15
2017-08-23

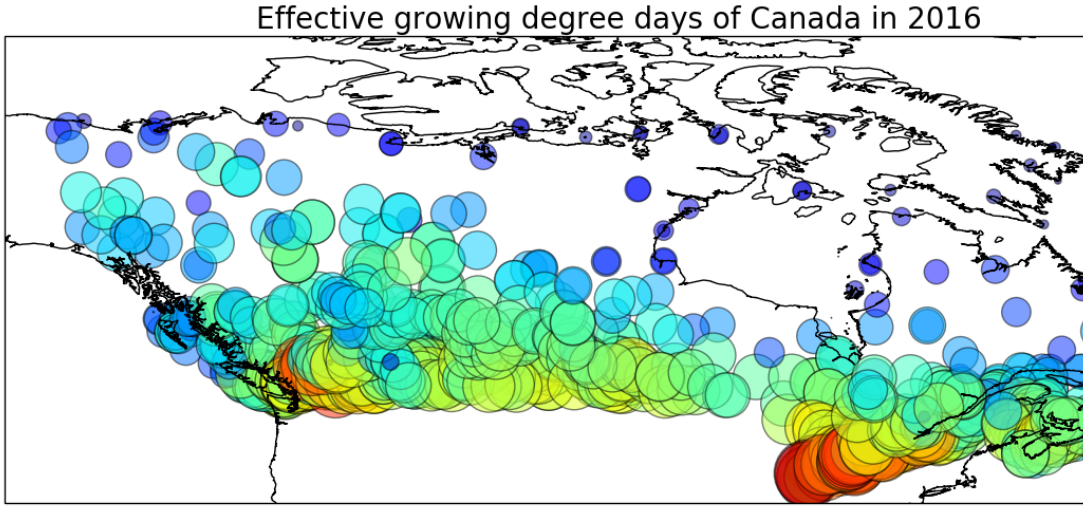
3.1.3 CALGARY

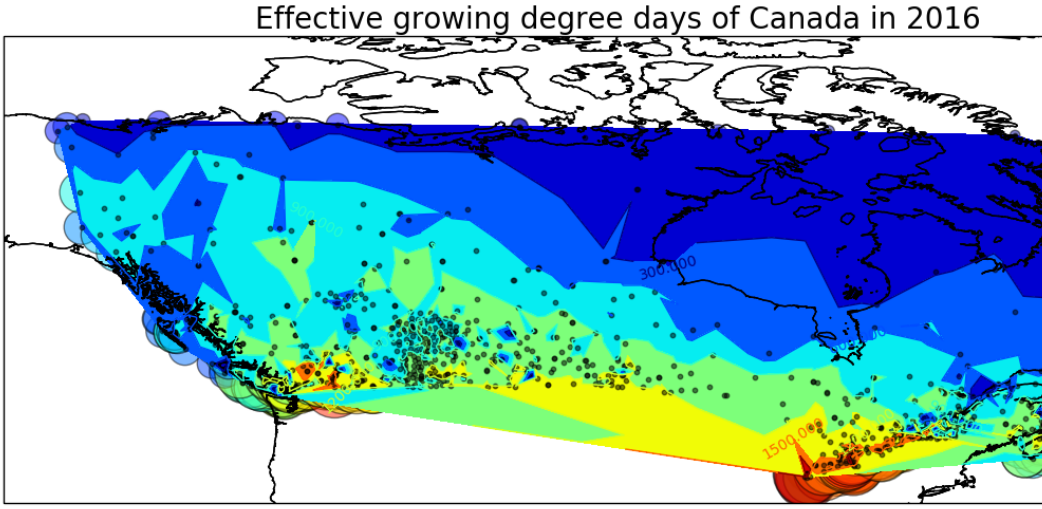

Daily GDD for station 50430 with different tbase
25
20
15
10
5
0
2016-01-01
2016-04-10
2016-07-19
2016-10-27
2017-02-04
2017-05-15
2017-08-23

3.2 Effective growing degree days of Newfoundland in 2015



3.3 Effective growing degree days of Canada in 2016




Effective growing degree days of Canada in 2016
300.100
1500.100

4 Conclusion