Prospectus

Title: Growing Degree Day
Notice: Dr. Bryan Runck
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Project Repository: https://github.com/Samikshya036/GIS5571/tree/main/Final%20Project
Time Spent: Around 6 hours

Abstract

Farmers in Minnesota lack a model to forecast when their harvest will be fully grown. This study's goals is to calculate the number of accumulated growth degree days (AGDD) that crops would require (corn and wheat). The Growing Degree Day tool is a web-based tool that integrates current conditions, historical climate data, and projections of GDD through the end of the growing season based on various weather stations computer model forecasts and climatology to provide decision support on a variety of issues throughout the crop growth

Problem Statement

1. To compare Calculated Growing Degree Day for Corn and Wheat for 4 different cities in Minnesota in years 2018, 2019, 2020 and 2021
2. To build an ETL in ArcPro Jupyter Notebooks that downloads the daily temperature data .csv files for min/max temperature from NDAWN, use data into Growing Degree day calculation.

Table 1. Data requirement for GDD calculation

#	Requirement	Defined As	Attribute Data	Dataset	Preparation
1	Daily Temperature (Max/Min)	.CSV files from NDAWN	Temperature on Degrees/Fahrenheit	NDAWN Daily	Input predicted first planting date and ending date
3	Base temperature for wheat	Constant base temp	degrees	constant	No
4	Base Temperature for corn	Constant Base temp	degrees	constant	No

Input Data

ADA, Becker, Campbell and Clarissa Growing degree day will be calculated and compared in 2018, 2019, 2020 and 2021.

Table 2: Table showing purpose of analysis of the data

#	Title	Purpose in Analysis	Link to Source
1	Annual Accumulated Growing Degree Day in North Dakota (2018-2021)	Spatial interpolation of annual Growing degree day of Corn and Wheat in North Dakota	NDAWN Daily

Methods:

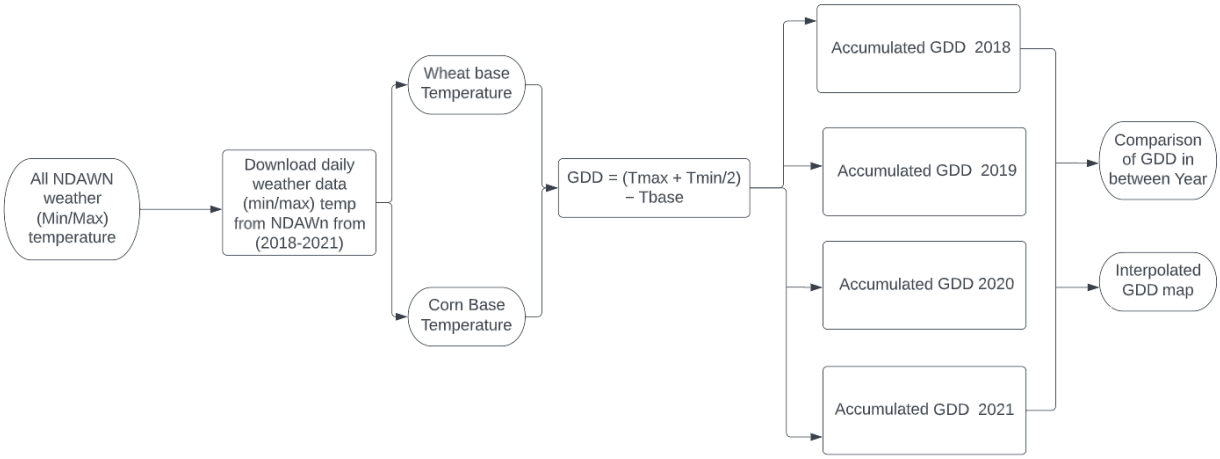

Figure 1: Figure showing workflow diagram for calculation of Accumulated Growing Degree Days.

Results

My result will have comparison of accumulated GDD within different years and also within different locations.

Results Verification

Knowing accuracy in comparing crop-evapotranspiration in 2 different data input using same model.

Discussion and Conclusion

From this prospectus of my final project I learned to make a proposal before starting any work. I also learned to organize and gather information for the data analysis process.

Self-score

Fill out this rubric for yourself and include it in your lab report. The same rubric will be used to generate a grade in proportion to the points assigned in the syllabus to the assignment.

Category	Description	Points Possible	Score
Structural Elements	All elements of a lab report are included **(2 points each)**: Title, Notice: Dr. Bryan Runck, Author, Project Repository, Date, Abstract, Problem Statement, Input Data w/ tables, Methods w/ Data, Flow Diagrams, Results, Results Verification, Discussion and Conclusion, References in common format, Self-score	28	28
Clarity of Content	Each element above is executed at a professional level so that someone can understand the goal, data, methods, results, and their validity and implications in a 5 minute reading at a cursory-level, and in a 30 minute meeting at a deep level **(12 points)**. There is a clear connection from data to results to discussion and conclusion **(12 points)**.	24	24
Reproducibility	Results are completely reproducible by someone with basic GIS training. There is no ambiguity in data flow or rationale for data operations. Every step is documented and justified.	28	20
Verification	Results are correct in that they have been verified in comparison to some standard. The standard is clearly stated **(10 points)**, the method of comparison is clearly stated **(5 points)**, and the result of verification is clearly stated **(5 points)**.	20	20
		100	92