**Lab Report**

Title: Lab 1- API Deconstruction

Notice: Dr. Bryan Runck

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**Project Repository:** <https://github.com/taryn-reitsma/GIS5571/tree/main/Lab1>

**Google Drive Link:** *<if applicable with data, notebooks, etc.>*

**Time Spent:** 15.5

**Abstract**

*<Delete this text in light grey throughout>*

*250 words max. Clearly summarize the following major sections. Each gets one or two sentences.*

**Problem Statement**

APIs can look very different among different web servers. It is important to understand how APIs work, and how to extract open-source data etc

Table 1.Target Data for Analysis

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **#** | **Requirement** | **Defined As** | **(Spatial) Data** | **Attribute Data** | **Dataset** | **Preparation** |
| 1 | GeoJSON from ArcGIS REST API | Raw input data from ArcGIS REST API (mn.gov) | County geometry | County name and location | [MN Counties](https://www.arcgis.com/home/webmap/viewer.html?url=https%3A%2F%2Fwebgis.dot.state.mn.us%2F65agsf1%2Frest%2Fservices%2Fsdw_govnt%2FCOUNTY%2FFeatureServer%2F0&source=sd) | Extract from API, reproject, isolate geometry |
| 2 | CSV from NDAWN | Raw Ada County yearly weather station data from NDAWN | Point geometry of weather station location (lat/long) | Station name, lat/long, year, average temp, g | [NDAWN Data](https://ndawn.ndsu.nodak.edu/get-table.html?station=78&variable=ydmxt&ttype=yearly) | Extract from API, isolate geometry |
| 3 | Shapefile from Minnesota Geospatial Commons | Roadway weather Information Sites data from Minnesota Geospatial Commons | Point Geometry of Weather info sites | Site location (lat/long), temperature, pressure, etc. | [Minnesota Geospatial Commons](https://gisdata.mn.gov/dataset/struc-roadway-weather-sites) | Extract from API, isolate geometry |

**Input Data**

*Describe the data in two paragraphs max. Fill out the table.*

Table 2. Datasets Used in Analysis

|  |  |  |  |
| --- | --- | --- | --- |
| **#** | **Title** | **Purpose in Analysis** | **Link to Source** |
| 1 | County | This layer will be extracted from an ArcGIS REST API, then spatially joined to the NDAWN csv file | [MN Counties](https://www.arcgis.com/home/webmap/viewer.html?url=https%3A%2F%2Fwebgis.dot.state.mn.us%2F65agsf1%2Frest%2Fservices%2Fsdw_govnt%2FCOUNTY%2FFeatureServer%2F0&source=sd) |
| 2 | NDAWN Ada County Weather Station table | This table will be extracted from the NDAWN API, then spatially joined to the County GeoJSON extracted from an ArcGIS REST API | [NDAWN Data](https://ndawn.ndsu.nodak.edu/get-table.html?station=78&variable=ydmxt&ttype=yearly) |
| 3 | Roadway Weather Sites, Minnesota | This layer will be extracted from the Minnesota Geospatial Commons API CKAN | [Minnesota Geospatial Commons](https://gisdata.mn.gov/dataset/struc-roadway-weather-sites) |

**Methods**

*Include a data flow diagram or screenshot from model builder. Do references in line (Rammankutty, 2033). Document any and all steps that you did to the input data in the data flow diagram. Provide natural language description of the most important steps, giving a narrative arc and provide well formatting screenshots with a boarder and centered throughout.*

*Resources on Data Flow Diagrams:*

* [*https://www.visual-paradigm.com/tutorials/data-flow-diagram-dfd.jsp*](https://www.visual-paradigm.com/tutorials/data-flow-diagram-dfd.jsp)
* [*https://www.lucidchart.com/pages/data-flow-diagram/how-to-make-a-dfd*](https://www.lucidchart.com/pages/data-flow-diagram/how-to-make-a-dfd)

*Figure 1. Data flow diagram.*

*If appropriate, add in pseudo-code describing model algorithms and/or objects. If using mathematical equations, create a clear mapping between the reference equation, pseudo-code, and actual implementation in a programming language.*

**Results**

*Show the results in figures and maps. Describe how they address the problem statement.*

*Follow best practice for map design, coloring, etc.*

**Results Verification**

*How do you know your results are correct? This can be a qualitative or quantitative verification.*

**Discussion and Conclusion**

*What did you learn? How does it relate to the main problem?*

**References**

*Use a common format*

**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 |  |
| **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 |  |
| **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 |  |
| **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 |  |
|  |  | 100 |  |