

# Joseph Nicholas (Fall 2016)

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Dr. Nicholas would like to develop some software that can help me analyze temperature data that I've been collecting in the La Sal Mountains of Utah for the past 12 years. I have placed temperature data loggers throughout this small mountain range at a variety of elevations and topographic positions. On average, there have been about 15 loggers over the course of the study, each collecting the air temperature for their respective sites every 10 minutes. That amounts to around 9,000,000 temperatures so far. I have two students who will be involved in aspects of the study this coming spring semester, and one of those students will be using GIS to create some maps. I see a lot of potential in combining my temperature database with GIS, but right now I'm limited by not being able to easily manipulate and query the data. For example, it would be very helpful to be able to determine things like monthly high and low temperatures, average monthly temperatures, seasonal temperatures, and the like.

Kris's group did a nice job with one aspect in particular: editing sensors (serial numbers and locations). Their software has some problems, however:

- uploading files. It calls for comma-delimited, but .csv output from Excel still needs to be modified before it uploads correctly.

- There is no way to aggregate data by time period (month, day, hour).
- A number of debug messages appear when I perform a query.

Jon's group had a system that was more useful, because it allowed data aggregation, but it had some problems and places for improvement:

- Null values should not be exported as zeros in .csv output.
- How do I remove or rename a site? How do I change a serial number associated with a site?
- Export format of date&time appears to be text, and does not sort correctly in Excel.
- Export .csv file does not match pre-export data display in some cases, but not all.
- It would be useful if statistics also included number of observations, N.
- I have some questions about the regression algorithm used.
- It would be useful for regression statistics to include P-value for r-square and a slope value.
- Export dialog should default to the last folder used.
- Output should use a 3-letter abbreviation rather than the full site name.