

ATMS 111 Laboratory Report Format

Scientists must provide documentation for each experiment that they undertake so that successive generations can build on their findings. In order to build on past findings, it is critical that the results be reproducible. This requires that scientific papers provide a detailed description of what was done in order to achieve the observed results. Each laboratory report in this course will follow a similar outline to what is typically used in scientific papers:

(1) Background and Introduction

Each report should start with a description on how the investigated weather parameter for a given laboratory exercise impacts society (why is it important to understand and predict?). A brief description of the investigated weather parameter and its relationship to the sensible weather (air temperature, air pressure, wind speed, wind direction, humidity, precipitation, cloud cover, cloud type) is included in this section of the report, using information found in the course textbook. The “**Purpose**” of the experiment is clearly spelled out in this section of the report along with a brief description of the outline of the report.

(2) Methodology

This portion of the paper describes the details of what was done in order to test the ideas or hypotheses presented in the Introduction section. Details that should be covered include the type(s) of data collected and how the data was manipulated and analysed to produce the results. The “**Objective**” and “**Equipment**” should be listed in this section, along with any mathematical formulas used as part of the study.

(3) Results

The scientific results are communicated in this section of the report which builds the supporting evidence for the conclusions made in the next section. Most figures, tables, and photographs unique to the laboratory work will be presented in this section. Be certain to emphasize a few key results that will be revisited in the “Conclusions” section. Be sure to discuss the impact of potential measurement errors on your results. What are some potential measurement errors? What if your error resulted in measurements that were consistently too large or too small compared to the true value?

(4) Conclusions

The presentation in this section focuses on the impact of the results for weather forecasting. The discussion should indirectly address the questions, “What aspect of sensible weather does the investigated parameter impact?” and “Can you describe a ‘rule-of-thumb’ between the investigated parameter and whether that could be used by a weather forecaster?” It is in this section that you answer the “**Extension Questions**” posed at the end of the laboratory exercise hand-out.

(5) References

This section is used to document the references used in providing background information or for information needed to create the experimental data and/or the results. References could consist of journal or other printed articles, web sites, TV shows, and the course textbook. References should be listed alphabetically according to the last name of the lead author.

Laboratory reports must be type-written and double-spaced so that they can be easily read and graded. Recall that the purpose of these reports is “to learn how scientists communicate their findings with colleagues via the written word.”