Measuring Water Resources Unit 4: Report to Policy Makers

Bruce Douglas (Indiana University) & Eric Small (University of Colorado Boulder)

One of the critical final steps necessary for a scientist working on any problem is the preparation of a report that summarizes the findings of the research project. In working through the Unit 4 student exercise you have done almost all of the steps typically found within a research endeavor. This document is to help you convert the common lab response format of individual tasks and short responses to directed questions into a typical report format. Below is an outline for how the report can be structured with specific comments and suggestions for how to incorporate the work you have done completing the laboratory exercises into a report. There are a number of materials available on the web that provide detailed discussions and examples of both good and bad text for various portions of a scientific report.

Write your report for an educated audience but not well-versed in the geosciences. A grading rubric is included. You should draw the sections of your report from the elements listed in the Content section rubric.

Report Components

I. Title
   a. Title for the report
   b. Authors
   c. Date of preparation
   d. Audience the report is intended/targeted to (in this case identify relevant policy makers in California)

II. Executive Summary
   a. The summary should contain a statement of the question(s) being investigated, the methods and data that will be used, a description of the qualitative and quantitative results or trends, a discussion /interpretation of the main findings, and resulting recommendations. (Similar to abstracts written for scientific papers but less technical.)

III. Introduction
   a. Significance of the study and justification of the methods used.

IV. Data Sources – list each of the data sets that are included in the report. In this case it should include all the data sets, graphs, and key calculations from Unit 4 student exercise.
   a. Societal Water Use
   b. Precipitation
   c. Snow
   d. GRACE

V. Data Analysis and Discussion
   a. Precipitation
      i. How do your precipitation calculations compare to calculated water usage?

ii. What other considerations need to be considered when considering the water budgets and the water balance equation?

b. Snow data
   i. What trends do you see for each site?
   ii. Is there any connection between trends and locations of each of the sites? Make use of appropriate maps and summary tables.
   iii. Would you expect to see connections between groundwater flux trends and locations of GPS sites? Why/ why not?

c. GRACE data
   i. Use of GRACE data for quantifying changes
   ii. Advantages/disadvantages of GRACE data

d. Synthesis
   i. Generalizations for overall trends in water availability and use
   ii. Implications for those making policies for water use/allocation
   iii. Include a table that summarizes the data sources/monitoring systems, pros, cons, and uncertainties. Be sure to refer to this table in the final synthesis and discussion.

VI. Conclusions
   a. What have the data sets you used in this unit shown you about the groundwater fluxes in California?
   b. Which of the various data sets provide critical information and what is the accuracy/reliability of this data?
   c. What trends do you see (long term, short term)?
   d. How does this affect the people of California?

VII. References

Resources on report writing

http://abacus.bates.edu/~ganderso/biology/resources/writing/HTWtoc.html

http://www.instruction.greenriver.edu/mcvay/b100/general_format_for_writing_a_sci.htm

http://writing.colostate.edu/guides/guide.cfm?guideid=83