EXAM: Your exam will be during class on Thursday, March 6. You may bring any class materials, including the Minitab Handbook, but no other notes or books. You should also bring a calculator that can calculate exponentials and logarithms.

PAPER: Printed (not electronic) versions of your final papers are due in my office at 10 am on Thursday, March 20 (this time is a correction from what was given in the printed homework). If you elected to write about something other than the trees and now wish to switch to the trees, that is fine as long as you let me know by March 11. Further guidelines to follow.

1. Consider the global monthly temperature anomalies we discussed in class. Answer the following questions using Minitab. The data are in a Minitab worksheet that can be found on the course web page under Data. If you download the worksheet using Explorer, you should be able to open it in Minitab.

   a. Find the sample standard deviation for all of the 1728 observations, given in the column C15 entitled “Anom”. Find the sample standard deviation of the observations from 1856–1899, given in the column C17 entitled “Anom18”. Which is bigger? Considering the plot of monthly temperature anomalies from 1856–1999 given in class, explain this difference.

   b. Find the sample mean and standard deviation for the January temperature anomalies for the 44 years 1856–1899. You may find the Copy facility in Minitab useful for extracting the relevant rows of C2, which contains all 144 January anomalies. Do the same for the February anomalies.

   c. Consider the quantity given by \( \frac{1}{2} \) of (January anomaly + February anomaly) for the years 1856–1899; that is, the average anomaly over these two months for each of the 44 years. Using just your results in (b), can you find the sample mean of this quantity? If so, do so. If not, explain why not. Using just your results in (b), can you find the sample standard deviation of this quantity? If so, do so. If not, explain why not.

   d. Using Minitab, find the sample variance of the average Jan/Feb anomaly considered in part (c). Is this bigger or smaller than what you would have found if the January and February anomalies were independent? Explain. Is this difference what you would have expected? Explain.

2. Each group on our field trip should produce a document describing the sampling and measurement procedures they used and all measurements taken. This includes documentation of the photographs, including at least initial attempts to provide heights for the taller trees from the photographs. You may find it helpful to include at least some of the photos with annotations written directly on them. The presentation does not need to be written up in full sentences and paragraphs, but should be sufficiently complete so that the members of the other group could in principle write their papers without having to consult a member of your group. For those of you who missed the field trip, I suggest you attach yourselves evenly to one of the two groups and then act as an editor for that group, carefully reading what the other members of the group have written and critiquing it for clarity and completeness. Each group should turn in a draft of their document in class on Tuesday, March 4. I will go over these documents and return them on March 6 with recommendations for changes. Final versions of the document will be due in class on March 11. Either an electronic version or printed copies for all class members will be needed.