Fractals and Chaos - Writing Assignment One

The first draft of the semester's first paper will be due next Wednesday, September 28. You will explore the similarities and differences between atmospheric dynamics and population dynamics. Your paper should be between 3 and 5 pages - plus a couple of figures.

Note that when I write "atmospheric dynamics," I am referring specifically to the studies of Ed Lorenz and his colleagues as described in Chapter 1 of *Chaos* [1]. Similarly, "population dynamics" refers specifically to the work of Robert May, James Yorke, and others described in Chapter 3 of *Chaos* [1].

Here are a few points you should consider while drafting your paper.

- Many of you chose to enroll in an introductory colloquium on Fractals and Chaos because you were interested in being exposed to an innovative and novel topic. Perhaps you are not an outstanding mathematics student, but you're not scared of technical ideas. Furthermore, maybe you've seen pictures of fractals or been somehow exposed to the excitement in the scientific community arising from fractal ideas; you just didn't know many details.

  As you draft your paper, imagine a reader not unlike yourself - someone who's heard a very little bit about Chaos, but not enough to realize that the scientific discoveries of Chaos connect fields as disparate as meteorology and biology.

- As with any paper you write, this paper should have a strong introductory paragraph laying out the main thesis, an organized body supporting the points in your thesis, and a conclusion to summarize and draw things together. In a comparison contrast paper, your thesis is likely to be mult-part; atmospheric dynamics and population dynamics are similar in these ways, yet different some other ways.

- The reader will likely have a very loose conception of the terms "atmospheric dynamics" and "population dynamics". We, however, have thought about those concepts in some detail. We know of abstract models of each and have discussed why these models might be appropriate. These ideas should be important to your thesis and the reader will need to be introduced to them.

- Most readers are likely to feel that population dynamics and meteorology are much more different than alike; indeed, you could probably detail a great number of obvious but fairly trivial differences very easily. The similarities are probably more surprising and interesting. The *important* differences are probably not clear until one understands the abstract settings and similarities between them.

- Your paper should be prepared with LaTeX and contain a few formulae and a couple of images. There is information on using LaTeX on our class webpage.

- Please take the policies on academic honesty as detailed in the course catalog [2] seriously. It's fine with me if you refer to external sources; in fact, I expect you'll refer to our main text as I have here. I also hope that you'll get assistance from the writing center. (The hours and services of the writing center are detailed on their webpage [3].) However, the writing is to be yours and yours alone.

References

[1] James Gleick, *Chaos: Making a New Science*. Penguin Books, New York, NY 1987.

[2] The UNCA course catalog web page on academic honesty.
`http://catalog.unca.edu/content.php?catoid=2&navoid=118`

[3] The UNCA writing center web page.
`http://writingcenter.unca.edu/`