Several of our classroom discussions will be devoted to the analysis of papers from the literature. These will be structured so that each person at a large table will have one primary and two secondary tasks, and these tasks will rotate from paper to paper (and will be assigned by seat). Note that while being assigned a task makes it your *responsibility* to do something, everyone is likely to be able to contribute to analysis tasks, and the goal is *discussion*, not just a series of 4 minute presentations... Those with primary responsibility will take the lead on their task, **and will be responsible for the preparation of a short written summary of their remarks**, to be turned in for grading. The written summary should be concise, printed, scientific prose; one or two paragraphs are likely to be sufficient for most tasks. Grading will be focused primarily on clear, scientific writing, but some attention will be paid to content and accuracy/depth of analysis.

Those with secondary responsibility for a task will be prepared to contribute to the discussion in detail as needed (and to take primary responsibility in the event of an absence), but no written summary will need to be turned in to me.

In our 50 minutes of class time, we will devote 30 minutes to table discussion (accomplishing all tasks listed below), 10 minutes to *my* take on the paper(s), and 10 minutes to more general discussion, questions, etc.

Task 1: Moderate your group's time and ensure involvement of full table. In addition, describe as completely as possible: What are the *specific goals* of the researchers in this paper? (That is, what do they hope to prove, assess, demonstrate, etc.) How do the specific goals relate to any obvious longer-range, big-picture goals (the latter may have nothing to do with computation per se)? Put differently, why might a funding agency have paid for this? Who will care?

Task 2: Describe as completely as possible: If this is an application paper, how do the authors hope to make use of theory? Specifically, what *questions* are they trying to answer? If this is a development paper, what inadequacies are identified in existing theory and targeted for improvement?

Task 3: Describe as completely as possible: What are the *explicit* and *implicit* assumptions present in the employed theoretical model? Are there any specific impacts that may be expected from the assumptions?

Task 4: Describe as completely as possible: What are the apparent *successes* of theory in this paper? What experimental results are *explained* or *confirmed* or *rationalized* through computation? How has this paper advanced its scientific

field? Note that an assessment of "success" or "failure" depends on what one considers an acceptable error bar...

Task 5: Describe as completely as possible: What are the failures (or inabilities) of theory in this paper? Where does the theory fail to agree with, or perhaps address at all, experiment? Note that an assessment of "failure" or "success" depends on what one considers an acceptable error bar...

Task 6: Describe as completely as possible: How, if at all, could the theory be improved within the context of this paper? Would such an improvement be practical? Would it be broadly valuable? What's the *next* paper that this or a competing group might want to write?

Task 7: Use Science Citation Index (URL http://www.lib.umn.edu/indexes/s/) to find a paper that has cited the discussion paper at some point in the last two years (or, as recently as possible if outside the 2 year window). Read the citing paper sufficiently closely to summarize *why* it chose to cite the discussion paper. What made the cited work worth referencing in the citing work? Print out the title page of the citing paper and provide it together with your written summary.

Some hints to think about when reading a paper in order best to address your responsibilities:

1) Task 1 should involve consideration primarily of the introduction, and to some extent the conclusions. Answering the "big picture" question may require you to search a few keywords if it's not obvious to you why the focus of the paper might be important.

2) Task 2 is likely to involve more close reading of the introduction and conclusions, and perhaps also the beginning of the results section.

3) The methods section is one of the best places to look for the information requested in Task 3, but other observations may be made throughout the paper.

4) Hunting up answers to Tasks 4 and 5 almost certainly involves paying careful attention to *figures* and *tables*. That's where the most important things are usually put (if they aren't important, why waste time making a figure or table?)

5) Task 6 is possibly the hardest of all, but do your best. Perusing a few subsequent papers citing the work under discussion in order to see what they did *differently* (if the content is sufficiently similar) may give you better insight.

6) It will be much more interesting if when doing Task 7 you look for a paper that does not cite the discussion paper as one of 40 general background references. Do your best to find something that clearly builds upon the earlier work, if at all possible.