

**OCEAN 506B/497B – THE CHANGING ARCTIC OCEAN - 2009
WRITTEN ASSIGNMENT # 1**

Electronic (.doc) copy due by 5 pm Friday 1st May 2009 to both:
jdeming@u.washington.edu and woodgate@apl.washington.edu.

Text should be 11 pt font or greater and double spaced.

Maximum length is 5 pages (not including figures, tables and references).

This is an essay assignment, to include some literature review (reference list of at least 5 papers) and some thoughtful analysis. We encourage you to create an original graphic, flow diagram, table, etc., to help convey your analysis. Be sure to properly credit the work of others.

If, in the course of your readings, you land upon a particular focus for your essay that differs from the one(s) we've suggested, feel free to pursue it; simply tell us at the start of your essay the student-refined focus you are addressing. If you are in doubt that your topic is suitable, ask us.

ESSAY TOPIC: Interdisciplinary impacts of a seasonally ice-free Arctic.

There is wide spread agreement that the extent and thickness of Arctic sea-ice will continue to decrease into the future, with some models predicting that within decades, the Arctic may be seasonally ice-free. This new state implies (among other things):

- loss of multiyear ice;
- changes in the timing of sea-ice retreat/regrowth;
- absence of ice over the shelves and slopes during the sunlit seasons; and
- greatly increased areas of open water over slopes and basins.

In this homework, we invite you to explore an interdisciplinary aspect of the Arctic Ocean that will be impacted by the Arctic being seasonally ice-free. Your essay should consider at least two disciplines – for example, changes in the physical system forcing biological responses or nutrient supply to the system, or feedbacks between disciplinary components. Focus your essay in a direction of your choosing. For example, you may wish to discuss what you think will be the largest, most dramatic, or most influential changes, or you may address an aspect you consider important or intriguing but perhaps less mainstream. You may focus at any scale, for example on a particular organism or a whole ecosystem, on a local geographic region or the Arctic-wide scale. Where possible, try to quantify the magnitude of the various effects you discuss, even if it has to be a very rough quantification. If you cannot quantify it, discuss what information you would need to do so.