Lab #8
World Fisheries, Final Earth Summit Conference

Learning Objectives

- Appreciate how different stakeholders in the global geopolitical arena have different perspectives, values, and priorities on how science can be applied to the solution of global resource sharing.
- Overall understanding of the scientific perspective on solid Earth, atmosphere, ocean, and life.

Preparation checklist

- ✓ Read "Fishing Down the Food Chain" (Resource 6)
- ✓ Read "Introduction and Goals for this Lab," which describe requirements for the Earth Summit presentation
- ✓ With your group, finalize your last Earth Summit presentation

Preparation and checklist:

__ Read the relevant chapter in the class text
__ Read this write-up, especially the article entitled "Fishing Down the Food Chain"
__ Work the lab homework
__ Be ready to make your final group presentation and Earth Summit recommendations

Activities Schedule:

• Earth Summit Presentations (10 min each)	**(60 min)**
• Panel discussion of "experts"	**(20 min)**
• Discussion from the "floor"	**(15 min)**
• Final vote and recommendations	**(10 min)**
• Selection of presenters for lecture	

Introduction and Goals for this lab

During this lab section, each Earth Summit group will make a final presentation that represent your recommendations to the UN for managing the world's common resources of atmosphere and oceans. The presentations should reflect the viewpoint of your group's Earth Summit country and make the strongest presentation that represents its interests.

The Earth Summit presentation should pay particular attention to world fisheries issues, but also include final recommendations based on your understanding of how the use of common resources is of concern to your country. You need to identify the important issues and address them. It is important to use data and scientific evidence to support your arguments.

An example of a common issue is the emission of CO_2. Should your country be allowed to increase your emissions, or should they be decreased, and by how far? How should the global emissions budget be divided? What about fisheries and fishing quotas or rogue nations who ignore international treaties? Population increase is another factor. What are the fairness issues involved? Your talk should embody a balance between science and policy. Policy recommendations should be backed up by as much real data as possible.

You could adopt a strict strategy of presenting the science and arguing that there is no need for limitations on a global scale. When addressing fairness, you need to know something about the other countries. For example, if you say it is unfair to Mauritania to be required to reduce CO_2 emissions, you will need to show how industrialized countries are over-emitting. In fact, it will be difficult to present any case for regulation, unless you know a bit about other countries.

You can discuss your tactics freely in your class or section online forum. This could give you a preview of what other groups will argue and help you bolster you own positions.

Remember, this is not about winning. Your grade will depend solely on making an effective presentation.

Questions to help you prepare for the final Earth Summit presentation:

This presentation will include material from all of your work in the course. The focus will be on how the science of the atmosphere, ocean, and world fisheries can be applied to inform policy for your Earth Summit country. You should recommend specific actions that it should take, and actions you would like other nations to take, in order to insure the health of the global commons, (shared resources). Be sure that you have read the Amicus paper that is in the Resources section of this lab manual. Review the past lab section materials and your thought question answers.

You will not be able to cover everything in your presentation. Focus your presentation on the most important issues facing your

Some questions to stimulate your thought processes:

1. What are your country's most important environmental issues? How are these issues exacerbated by the behavior of other countries? How are global environmental issues exacerbated by the behavior of your country?
2. How are the subjects of the mini-studies of lab sections 4 and 5 manifested in your country? The mini-studies are tutorials on how to use data that may or may not be relevant to your country's situation. Refer to the "Earth Summit Framework" (find the link at: http://oceanography.geol.ucsb.edu/) for issues that can be answered with earth data that is available to you.
3. What are possible approaches that might solve environmental issues that challenge your country? For example, do you recommend that they invest more in renewable energy, or should they try to reduce population growth, or increase spending on education? These recommendations should be backed up by some knowledge of the country you are recommending for. Use the CIA Factbook as a starting place to learn about the country's major issues.
4. Pay significant attention to the fisheries. The Amicus article("Fishing Down the Food Chain") is a good starting point for identifying fisheries types and some of the issues.

Some questions you might pose to yourself and your Earth Summit team when reading the Amicus article. You should ask similar questions when analyzing "claims" or writings about the other issue areas too.

1. What are the key issues that must be addressed when studying the world's fisheries?
2. Who are the key "players" in the politics of this subject? Who has a "stake" in it? Which of the constituencies' viewpoints is represented by this article?
3. What is your intuition about the validity or "truth" of the viewpoint expressed in the "Amicus" article?
4. What points are made in the Amicus paper can you believe without further investigation?
5. What points or data were presented that you need to collect further information to believe?
6. What kinds of management actions might be taken to assure the health of the world fisheries?

Homework #8

Read the Amicus article "Fishing Down the Food Chain" in Resource 6.

1. What is meant by the phrase "fishing down the food chain?"

2. What was the increase (in metric tons) of squid catch between 1964 and 1994?

3. What is the evidence that intensification of North Atlantic squid fishing has had a detrimental effect on the ecosystem?

Additional homework problems related to science and society

The following problems show you how to access data from various government agencies. The countries were chosen to provide contrast between industrial and developing nations. When doing these problems, you should think about what the answers mean in terms of impact on the environment and global good citizenship.

To find the information for the following problems, access the CIA World Factbook at: http://www.odci.gov/cia/publications/factbook/
and the Carbon Dioxide Information Analysis Center at:
http://cdiac.esd.ornl.gov/trends/emis/em_cont,.htm

Note: It is not always possible to match up the dates, say for population and GDP. However, a few years difference will not make a large change in the answer, so don't worry if you can't find data for the exact date you want. Use data for the closest date where data are available.

4. You will be finding the GDP (gross domestic product) and population data for India and the United States. GDP is the value of all final goods and services produced within a nation in a given year and it can be found under the "economy" heading. These values are given in trillions of U.S. dollars. Remember that one trillion is 1×10^{12}. Population is an estimation of the number of people living in that country and it can be found under the "people" heading. Be sure to specify the units. Put gross domestic product in equivalent US dollar purchasing power (as listed in the CIA Factbook).

	Gross Domestic Product	Population
India	_____	_____
United States	_____	_____

5.. The population carbon efficiency of a country is defined as the metric tons of carbon in CO_2 emitted from all sources per person in a year. What is the carbon efficiency of the United States for the year 1998? Use the Carbon Dioxide Information Analysis Center web site to obtain these figures.

6. What is the population carbon efficiency of Germany for 1998?

7. What is the population carbon efficiency of India for 1998?

8. The economic carbon efficiency of a country is defined as the metric tons of CO_2 emissions from all sources per gross national product, in U.S. dollars. What is the economic carbon efficiency of the United States (use 2001 figures from CIA Factbook web site and use the dollar figures)?

9. What is the economic carbon efficiency of Germany (use purchasing power parity in dollars for 2000)?

10. What is the economic carbon efficiency of India?

11. Using the information you calculated in the previous questions, which country produces the most carbon dioxide per person? Which country is the most economically efficient in terms of carbon dioxide emissions?

12. In 1998, US citizens drove 1.54×10^{12} miles with an average fuel consumption of 21.4 miles per gallon (statistics available at: http://www.bts.gov/btsprod/nts/Ch4_web/4-11.htm). A barrel of crude oil will typically produce about 19.5 gallons of gasoline. In year 2000, the US imported 4.2×10^{9} barrels of oil. What percentage of these imports goes to automobile gasoline?

13. Suppose the average mileage of the US automobiles rose by 10 mpg. What percentage of our oil imports would we save under this scenario?

Lab 8 Activities

Earth Summit Presentations:

Each group will get 10-15 minutes (depending on the number of groups presenting). All group members will participate in their group's presentation. Group members who do not participate will not get credit.

Please allow a few minutes for discussion and questions after your presentation.

Panel Discussion:

After the Earth Summit presentations have been made, several students may volunteer or be selected to present summary recommendations and lead a discussion on the full range of topics that have been introduced.

Selection of presenters to whole class:

Each TA will select groups who have made particularly strong presentations (on a voluntary basis) to give their presentation to the whole oceanography class during the last week of class. This will allow the entire class see the best presentations and discuss the issues, as a class. The audience will have been very prepared by their lab experiences, so should be able to ask many penetrating and critical questions.

The presenter groups will receive extra credit for presenting in class.

Presentation Feedback Form

Group members:

Presentation topic:

Group	low – med - high	Points
1. The topic was clear.	0 – 1 – 2 – 3 - 4	
2. The data was interpreted correctly.	0 – 1 – 2 – 3 - 4	
3. Data, figures or sketches supported the interpretations.	0 – 1 – 2 – 3 - 4	
4. Alternative interpretations, if any, were also presented?	0 – 1 – 2 – 3 - 4	

1. What was the most effective part of the presentation?

2. Suggestions for improvement:

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2. Suggestions for improvement:

Blank

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4. Alternative interpretations, if any, were also presented?	0 – 1 – 2 – 3 - 4	

1. What was the most effective part of the presentation?

2. Suggestions for improvement:

Blank

TA Scoring Rubric

Member #1	low – med - high	Points
1. I could hear the presenter.	0 – 1 – 2 – 3 - 4	
2. Contribution was significant	0 – 1 – 2 – 3 - 4	
3. Presentation was logical and accurate	0 – 1 – 2 – 3 - 4	

Member #2	low – med - high	Points
1. I could hear the presenter.	0 – 1 – 2 – 3 - 4	
2. Contribution was significant	0 – 1 – 2 – 3 - 4	
3. Presentation was logical and accurate	0 – 1 – 2 – 3 - 4	

Member #3	low – med - high	Points
1. I could hear the presenter.	0 – 1 – 2 – 3 - 4	
2. Contribution was significant	0 – 1 – 2 – 3 - 4	
3. Presentation was logical and accurate	0 – 1 – 2 – 3 - 4	

Group score	low – med - high	Points
1. The topic was clear.	0 – 1 – 2 – 3 - 4	
2. The data was interpreted correctly	0 – 1 – 2 – 3 - 4	
3. Data, figures or sketches supported the interpretations.	0 – 1 – 2 – 3 - 4	
4. Alternative interpretations, if any, were also presented?	0 – 1 – 2 – 3 - 4	

Blank