

# *Fresh and Salt*

## *Appendix A*

*Sources for Fresh and Salt Activities*



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and  
Salt*

# Appendix A

## Sources for Fresh and Salt Activities

### ES-EAGLS: Earth Systems Education Activities for Great Lakes Schools

This five-volume series of books from the Ohio State University contains 67 activities relating directly to important Great Lakes issues. Activities tie in to a variety of subject areas, including science, math and social studies. Each volume centers around an important Great Lakes topic; *Life in the Great Lakes*, *Great Lakes Climate & Water Movement*, *Great Lakes Environmental Issues*, *Great Lakes Shipping*, and *Land & Water Interactions in the Great Lakes*. Instructions for ordering can be found at: [www.ag.ohiostate.edu/~earthsys/order\\_2.html](http://www.ag.ohiostate.edu/~earthsys/order_2.html).

### Great Lakes in My World

This collection of 80 activities for grades K-8 gives students a meaningful way to learn science, history, and culture through study of the Great Lakes. These interdisciplinary, inquiry-based activities attempt to provide a sense of place, and build from the students' own experiential frames of references. Understanding and appreciating their own Great Lake helps develop an ongoing ethic of care and responsible decision making. *Great Lakes in My World* encourages service learning with a positive focus and a problem-solving approach. For more information, visit the Alliance for the Great Lakes at [www.greatlakes.org](http://www.greatlakes.org).

### NASA Aquarius Education and Public Outreach

A goal of NASA Aquarius is demonstrating how improved understanding of salinity-driven circulation – and its influence on climate and the

water cycle—can benefit student learning. Sea surface salinity is key to learning about the water cycle because 86 percent of global evaporation and 78 per cent of global precipitation occur over the oceans. Our *Salinity Patterns & the Water Cycle* resources are aligned with the National Science Education Standards for Physical Science (grades K-12). For more information, visit NASA Aquarius Education at [www.Aquarius.nasa.gov](http://www.Aquarius.nasa.gov).

### Office of Education and Outreach at the University Corporation for Atmospheric Research:

This teacher's guide was produced by the National Center for Atmospheric Research as a companion to the Climate Discovery exhibit at our Boulder, Colorado laboratory. Each unit contains lessons appropriate for grades 5-9 on a variety of earth system science topics that facilitate student learning about our planet's climate system. For more information, visit UCAR at [www.eo.ucar.edu/](http://www.eo.ucar.edu/).

### The Bridge

The Bridge is a growing collection of the best marine education resources available on line. It provides educators with a convenient source of accurate and useful information on global, national, and regional marine science topics, and gives researchers a contact point for educational outreach.

The Bridge is supported by the National Sea Grant Office, the National Oceanographic Partnership Program, and the National Marine Educators Association. For more information visit the Bridge at <http://web.vims.edu/bridge/?svr=www>.

## **Will Steger Foundation**

As eyewitness to the reality of global warming, and as an explorer taking on daunting challenges, the Will Steger Foundation inspires people to embrace the transition to a low-carbon economy: exploring the path forward and leading the way through exciting education, citizen engagement and international cooperation. Supported by robust educational and public policy initiatives, we are making a tangible impact on public awareness concerning the threat of global climate change. To advance state and federal policy that address solutions to global warming, we are mobilizing the public and elected officials through the compelling narrative and credibility of the eyewitness account. For more information visit the Will Steger Foundation at [Globalwarming101.com](http://Globalwarming101.com).

## **NOAA Ocean Exploration Program**

The NOAA Ocean Exploration program strives to engage broad audiences to enhance America's environmental literacy through the excitement of ocean discovery. Increasing this literacy requires high-quality, effective collaborations between ocean explorers and America's teachers. NOAA regularly forms such collaborations to reach out in new ways to the public to improve the literacy of learners with respect to ocean issues. For more information visit the NOAA Ocean Exploration Program at [www.Oceanexplorer.noaa.gov](http://www.Oceanexplorer.noaa.gov).

## **Monterey Bay Aquarium Research Institute**

Recognizing the need to educate the public about the value of research and help them understand scientific methodology, this Monterey Bay Aquarium Research Institute (MBARI) and Monterey Bay Aquarium (MBA) collaboration allows us to test new ideas for public outreach and education. One of MBARI's joint projects with MBA, Education and Research: Testing Hypotheses (EARTH), lays new groundwork, providing teachers with means for integrating real-

time data with existing educational standards and tested curriculum in an interactive and engaging way. EARTH uses near-real-time data from ocean observatories to design and test outreach with the internet as an interface to scientists, teachers, students, and the public. Several workshops were held at MBARI in 2002-2005 bringing educators, scientists, and engineers together to develop effective educational practices for access and use of near-real-time data in preparation for the future deployment of benthic observatories. For more information visit MBARI at [www.mbari.org/earth](http://www.mbari.org/earth).

## **Smithsonian Education for Education and Museum Studies**

The mission of the Smithsonian Center for Education and Museum Studies is to increase the Smithsonian Institution's impact as a national educational organization. The center has created a long-term alliance with state education officials that has become the basis for several collaborative teacher training and resource development projects in a wide range of subjects. The center also manages pan-institutional functions such as internships, heritage month celebrations, school tour programming, and the collection and analysis of data on Smithsonian education programs. For more information visit Smithsonian Education at [www.smithsonianeducation.org](http://www.smithsonianeducation.org).

# *Fresh and Salt*

## *Appendix B*

*Alignment to State and National Standards*



# *Appendix B*

## **Alignment to State and National Standards**

### **Alignment to National Science Standards**

#### **Ocean and Great Lakes Literacy Principle 1**

##### **Density: Sea Water Mixing and Sinking**

###### **Grades 5-8**

5-8.1: Students should develop abilities necessary to understand and do scientific inquiry

5-8.2: Students should develop an understanding of properties, motions and forces, and the transfer of energy

###### **Grades 9-12**

9-12.1: Students should develop abilities necessary to understand and do scientific inquiry

9-12.2: Students should develop an understanding of the structure of atoms, properties of matters, chemical reactions, motions and forces, and conservation of energy

##### **Going with the Flow**

###### **Grades 5-8**

5-8.1: Students should develop abilities necessary to understand and do scientific inquiry

5-8.2: Students should develop an understanding of properties, motions and forces, and the transfer of energy

5-8.4: Students should develop an understanding of the earth system, its history, and earth in the solar system

#### **Ocean and Great Lakes Literacy Principle 2**

##### **Diatom Ooze**

###### **Grades 9-12**

9-12.1: Students should develop abilities necessary to understand and do scientific inquiry

9-12.2: Students should develop an understanding of the structure of atoms, properties of matters, chemical reactions, motions and forces, and conservation of energy

9-12.3: Students should develop an understanding of the cell, biological evolution, interdependence and behavior of organisms, and the molecular basis of heredity

##### **What Causes the Shoreline to Erode?**

###### **Grades 5-8**

5-8.1: Students should develop abilities necessary to understand and do scientific inquiry

5-8.2: Students should develop an understanding of properties, motions and forces, and the transfer of energy

5-8.4: Students should develop an understanding of the earth system, its history, and earth in the solar system

5-8.6: Students should develop an understanding of personal health, natural hazards, risks and benefits, technology in society, and populations

***What Causes the Shoreline to Erode?***

***Grades 9-12***

9-12.1: Students should develop abilities necessary to understand and do scientific inquiry

9-12.2: Students should develop an understanding of the structure of atoms, properties of matters, chemical reactions, motions and forces, and conservation of energy

9-12.4: Students should develop an understanding of energy in the earth system, geochemical cycles, and the origin and evolution of the universe

9-12.6: Students should develop an understanding of personal and community health, population growth, natural resources, natural and human induced hazards, and technology

***Ocean and Great Lakes Literacy Principle 3***

***Implications of Warming in the Arctic***

***Grades 5-8***

5-8.1: Students should develop abilities necessary to understand and do scientific inquiry

5-8.2: Students should develop an understanding of properties, motions and forces, and the transfer of energy

5-8.4: Students should develop an understanding of the earth system, its history, and earth in the solar system

5-8.6: Students should develop an understanding of personal health, natural hazards, risks and benefits, technology in society, and populations

5-8.7: Students should develop an understanding of the history and nature of science

***Grades 9-12***

9-12.1: Students should develop abilities necessary to understand and do scientific inquiry

9-12.2: Students should develop an understanding of the structure of atoms, properties of matters, chemical reactions, motions and forces, and conservation of energy

9-12.4: Students should develop an understanding of energy in the earth system, geochemical cycles, and the origin and evolution of the universe

9-12.6: Students should develop an understanding of personal and community health, population growth, natural resources, natural and human induced hazards, and technology

***How is Coastal Temperature Influenced by the Great Lakes and the Ocean?***

***Grades 5-8***

5-8.1: Students should develop abilities necessary to understand and do scientific inquiry

5-8.2: Students should develop an understanding of properties, motions and forces, and the transfer of energy

5-8.4: Students should develop an understanding of the earth system, its history, and earth in the solar system

5-8.6: Students should develop an understanding of personal health, natural hazards, risks and benefits, technology in society, and populations

***Ocean and Great Lakes Literacy Principle 4***

***BATS and Hot Dogs***

***Grades 5-8***

5-8.1: Students should develop abilities necessary to understand and do scientific inquiry

5-8.2: Students should develop an understanding of properties, motions and forces, and the transfer of energy

5-8.3: Students should develop understanding of reproduction and heredity, regulation and behavior, ecosystems, diversity and adaptations of organisms, and the structure of living systems

5-8.4: Students should develop an understanding of the earth system, its history, and earth in the solar system

5-8.5: Students should develop understandings about science and technology

***Grades 9-12***

9-12.1: Students should develop abilities necessary to understand and do scientific inquiry

9-12.2: Students should develop an understanding of the structure of atoms, properties of matters, chemical reactions, motions and forces, and conservation of energy

9-12.3: Students should develop an understanding of the cell, biological evolution, interdependence and behavior of organisms, and the molecular basis of heredity

9-12.4: Students should develop an understanding of energy in the earth system, geochemical cycles, and the origin and evolution of the universe

***Being Productive in the Arctic Ocean***

***Grades 9-12***

9-12.1: Students should develop abilities necessary to understand and do scientific inquiry

9-12.2: Students should develop an understanding of the structure of atoms, properties of matters, chemical reactions, motions and forces, and conservation of energy

9-12.3: Students should develop an understanding of the cell, biological evolution, interdependence and behavior of organisms, and the molecular basis of heredity

9-12.4: Students should develop an understanding of energy in the earth system, geochemical cycles, and the origin and evolution of the universe

***Ocean and Great Lakes Literacy Principle 5***

***Tangled Web***

***Grades 5-8***

5-8.1: Students should develop abilities necessary to understand and do scientific inquiry

5-8.3: Students should develop understanding of reproduction and heredity, regulation and behavior, ecosystems, diversity and adaptations of organisms, and the structure of living systems

***Sea Connections***

***Grades 5-8***

5-8.1: Students should develop abilities necessary to understand and do scientific inquiry

5-8.3: Students should develop understanding of reproduction and heredity, regulation and behavior, ecosystems, diversity and adaptations of organisms, and the structure of living systems

5-8.4: Students should develop an understanding of the earth system, its history, and earth in the solar system

5-8.6: Students should develop an understanding of personal health, natural hazards, risks and benefits, technology in society, and populations

***Ocean and Great Lakes Literacy Principle 6***

***Pollution Solution***

***Grades 5-8***

5-8.1: Students should develop abilities necessary to understand and do scientific inquiry

5-8.2: Students should develop an understanding of properties, motions and forces, and the transfer of energy

5-8.3: Students should develop understanding of reproduction and heredity, regulation and behavior, ecosystems, diversity and adaptations of organisms, and the structure of living systems

5-8.6: Students should develop an understanding of personal health, natural hazards, risks and benefits, technology in society, and populations

### ***Downeaster Alexa: A Fishery Story***

#### ***Grades 5-8***

5-8.1: Students should develop abilities necessary to understand and do scientific inquiry

5-8.3: Students should develop understanding of reproduction and heredity, regulation and behavior, ecosystems, diversity and adaptations of organisms, and the structure of living systems

5-8.4: Students should develop an understanding of the earth system, its history, and earth in the solar system

5-8.6: Students should develop an understanding of personal health, natural hazards, risks and benefits, technology in society, and populations

#### ***Grades 9-12***

9-12.1: Students should develop abilities necessary to understand and do scientific inquiry

9-12.3: Students should develop an understanding of the cell, biological evolution, interdependence and behavior of organisms, and the molecular basis of heredity

9-12.4: Students should develop an understanding of energy in the earth system, geochemical cycles, and the origin and evolution of the universe

9-12.6: Students should develop an understanding of personal and community health, population growth, natural resources, natural and human induced hazards, and technology

### ***Ocean and Great Lakes Literacy Principle 7***

#### ***I, Robot, Can Do That!***

#### ***Grades 5-8***

5-8.1: Students should develop abilities necessary to understand and do scientific inquiry

5-8.5: Students should develop understandings about science and technology

5-8.6: Students should develop an understanding of personal health, natural hazards, risks and benefits, technology in society, and populations

5-8.7: Students should develop understanding of the history and nature of science

### ***Ocean Exploration***

#### ***Grades 5-8***

5-8.4: Students should develop an understanding of the earth system, its history, and earth in the solar system

5-8.7: Students should develop understanding of the history and nature of science

#### ***Grades 9-12***

9-12.4: Students should develop an understanding of energy in the earth system, geochemical cycles, and the origin and evolution of the universe

9-12.7: Students should develop understanding of the history and nature of science

## **Alignment to National Geography Standards**

### **Ocean and Great Lakes Literacy Principle 1**

#### **Density: Sea Water Mixing and Sinking**

##### **Grades 5-8**

7A. Use physical processes to explain patterns in the physical environment.

7B. Analyze physical patterns in terms of the processes that created them.

##### **Grades 9-12**

4B. Describe and interpret physical processes that shape places.

7A. Describe how physical processes affect different regions of the U.S. and the world.

7B. Explain Earth's physical processes, patterns, and cycles using concepts of physical geography.

7D. Describe the ways in which Earth's physical processes are dynamic and interactive.

#### **Going with the Flow**

##### **Grades 5-8**

7A. Use physical processes to explain patterns in the physical environment.

7B. Analyze physical patterns in terms of the processes that created them.

### **Ocean and Great Lakes Literacy Principle 2**

#### **Ooze Clues**

##### **Grades 9-12**

1C. Evaluate the applications of geographic tools and supporting technologies to serve a particular purpose

4B. Describe and interpret physical processes that shape places.

7A. Describe how physical processes affect different regions of the U.S. and the world.

7B. Explain Earth's physical processes, patterns, and cycles using concepts of physical geography.

7D. Describe the ways in which Earth's physical processes are dynamic and interactive.

#### **What Causes the Shoreline to Erode?**

##### **Grades 5-8**

1D. Use geographic tools and technologies to pose and answer questions about spatial patterns on Earth, over time.

2A. Identify the locations of certain physical features and events on maps and answer related geographic questions.

3A. Analyze and explain distributions of physical and human phenomena with respect to spatial patterns.

4A. Analyze the physical characteristics of places (using maps, graphs, tables, and other tools)

7A. Use physical processes to explain patterns in the physical environment.

7B. Analyze physical patterns in terms of the processes that created them.

***What Causes the Shoreline to Erode?***

***Grades 9-12***

1C. Evaluate the applications of geographic tools and supporting technologies to serve a particular purpose

4B. Describe and interpret physical processes that shape places.

7A. Describe how physical processes affect different regions of the U.S. and the world.

7B. Explain Earth’s physical processes, patterns, and cycles using concepts of physical geography.

7D. Describe the ways in which Earth’s physical processes are dynamic and interactive.

15A. Analyze examples of changes in the physical environment that have reduced the capacity of the environment to support human activity.

***Ocean and Great Lakes Literacy Principle 3***

***Implications of Warming in the Arctic***

***Grades 5-8***

1D. Use geographic tools and technologies to pose and answer questions about spatial patterns on Earth, over time.

2A. Identify the locations of certain physical features and events on maps and answer related geographic questions.

3A. Analyze and explain distributions of physical and human phenomena with respect to spatial patterns.

4A. Analyze the physical characteristics of places (using maps, graphs, tables, and other tools)

7A. Use physical processes to explain patterns in the physical environment.

7B. Analyze physical patterns in terms of the processes that created them.

***Grades 9-12***

1C. Evaluate the applications of geographic tools and supporting technologies to serve a particular purpose.

4B. Describe and interpret physical processes that shape places.

7A. Describe how physical processes affect different regions of the U.S. and the world.

7B. Explain Earth’s physical processes, patterns, and cycles using concepts of physical geography.

7D. Describe the ways in which Earth’s physical processes are dynamic and interactive.

15A. Analyze examples of changes in the physical environment that have reduced the capacity of the environment to support human activity.

***How is Coastal Temperature Influenced by the Great Lakes and the Ocean?*** (Two Activities)

***What Happens to Heat Energy Reaching Water and Land?***

***How Do the Ocean and the Great Lakes Affect Temperature?***

***Grades 5-8***

1D. Use geographic tools and technologies to pose and answer questions about spatial patterns on Earth, over time.

2A. Identify the locations of certain physical features and events on maps and answer related geographic questions.

3A. Analyze and explain distributions of physical and human phenomena with respect to spatial patterns.

**Sea Connections**

4A. Analyze the physical characteristics of places (using maps, graphs, tables, and other tools)

7A. Use physical processes to explain patterns in the physical environment.

7B. Analyze physical patterns in terms of the processes that created them.

**Ocean and Great Lakes Literacy Principle 4**

**Bats and Hot Dogs**

**Grades 5-8**

3A. Analyze and explain distributions of physical and human phenomena with respect to spatial patterns.

4A. Analyze the physical characteristics of places (using maps, graphs, tables, and other tools)

7A. Use physical processes to explain patterns in the physical environment.

7B. Analyze physical patterns in terms of the processes that created them.

**Grades 9-12**

4B. Describe and interpret physical processes that shape places.

7A. Describe how physical processes affect different regions of the U.S. and the world.

7B. Explain Earth's physical processes, patterns, and cycles using concepts of physical geography.

7D. Describe the ways in which Earth's physical processes are dynamic and interactive.

14B. Explain the global impacts of human changes in the physical environment.

15A. Analyze examples of changes in the physical environment that have reduced the capacity of the environment to support human activity.

**Being Productive in the Arctic Ocean**

**Grades 9-12**

7D. Describe the ways in which Earth's physical processes (systems) are dynamic and interactive.

8D. Evaluate ecosystems in terms of their biodiversity and productivity.

**Ocean and Great Lakes Literacy Principle 5**

**Tangled Web**

**Grades 5-8**

8B. Explain the functions and dynamics of ecosystems.

8C. Explain how physical processes influence ecosystems.

8D. Explain how human processes contribute to changes in ecosystems.

14A. Analyze the environmental consequences of humans changing the atmosphere, biosphere, lithosphere, and hydrosphere.

14B. Identify and explain the ways in which human-induced changes in the environment in one place can cause changes in other places.

**Sea Connections**

**Grades 5-8**

8C. Explain how physical processes influence ecosystems.

8D. Explain how human processes contribute to changes in ecosystems.

14A. Analyze the environmental consequences of humans changing the atmosphere, biosphere, lithosphere, and hydrosphere.

14B. Identify and explain the ways in which human-induced changes in the environment in one place can cause changes in other places.

**Sea Connections**

16B. Describe the consequences of the use of resources in the contemporary world.

16C. Evaluate different viewpoints regarding resource use.

18A. Analyze the interaction between physical and human systems to understand possible causes and effects of current conditions on Earth and to speculate on future conditions.

18B. Integrate multiple points of view to analyze and evaluate contemporary geographic issues.

**Ocean and Great Lakes Literacy Principle 6**  
**Pollution Solution**

**Grades 5-8**

8C. Explain how physical processes influence ecosystems, including how specific populations within ecosystems respond to environmental stress.

8D. Explain how human processes contribute to changes in ecosystems.

14A. Analyze the environmental consequences of humans changing the atmosphere, biosphere, lithosphere, and hydrosphere.

14B. Identify and explain the ways in which human-induced changes in the environment in one place can cause changes in other places.

16B. Describe the consequences of the use of resources in the contemporary world.

16C. Evaluate different viewpoints regarding resource use.

18A. Analyze the interaction between physical and human systems to understand possible causes and effects of current conditions on Earth and to speculate on future conditions.

18B. Integrate multiple points of view to analyze and evaluate contemporary geographic issues.

18 C. Demonstrate an understanding of the spatial organization of human activities and physical systems and be able to make informed decisions.

***Downeaster Alexa: A Fishery Story***

**Grades 5-8**

1D. Use geographic tools and technologies to pose and answer questions about spatial distributions and patterns on Earth.

2A. Identify the locations of certain physical features and events on maps and answer related geographic questions.

3A. analyze and explain distributions of physical phenomena with respect to spatial patterns, arrangements, and associations.

3C. Explain the different ways in which places are connected and how these connections demonstrate interdependence and accessibility.

4B. Analyze the physical characteristics of places using maps, graphs, and tables to make inferences about causes and effects of changes over time.

8C. Explain how physical processes influence ecosystems, including how specific populations within ecosystems respond to environmental stress.

8D. Explain how human processes contribute to changes in ecosystems.

14A. Analyze the environmental consequences of humans changing the atmosphere, biosphere, lithosphere, and hydrosphere.

16B. Describe the consequences of the use of resources in the contemporary world.

16C. Evaluate different viewpoints regarding resource use.

18A. Analyze the interaction between physical and human systems to understand possible causes and effects of current conditions on Earth and to speculate on future conditions.

18B. Integrate multiple points of view to analyze and evaluate contemporary geographic issues.

18 C. Demonstrate an understanding of the spatial organization of human activities and physical systems and be able to make informed decisions.

***Grades 9-12***

1C. Evaluate the applications of geographic tools and supporting technologies to serve a particular purpose.

3A. Apply concepts of spatial interaction to account for patterns of movement in space.

4B. Describe and interpret physical processes that shape places.

4C. Explain how social, cultural, and economic processes shape the features of places.

5C. Identify human and physical changes in regions and explain the factors that contribute to those changes.

5F. Use regions to analyze geographic issues and answer geographic questions.

6C. Analyze the ways in which people's changing views of places and regions reflect cultural change.

7B. Explain Earth's physical processes, patterns, and cycles using concepts of physical geography.

7D. Describe the ways in which Earth's physical processes are dynamic and interactive.

14A. Evaluate the ways in which technology has expanded the human capability to modify the physical environment.

14B. Explain the global impacts of human changes in the physical environment.

14C. Develop possible solutions to scenarios of environmental change induced by human modification of the physical environment.

15A. Analyze examples of changes in the physical environment that have reduced the capacity of the environment to support human activity.

16E. Evaluate policies and programs related to the use of resources on different spatial scales.

18A. Develop policies that are designed to guide the use and management of Earth's resources and that reflect multiple points of view.

18C. Analyze a variety of contemporary issues in terms of Earth's physical and human systems.

***Ocean and Great Lakes Literacy Principle 7***

***I, Robot, Can Do That***

***Grades 9-12***

1C. Evaluate the applications of geographic tools and supporting technologies to serve a particular purpose.

4B. Describe and interpret physical processes that shape places.

4C. Explain how social, cultural, and economic processes shape the features of places.

7B. Explain Earth's physical processes, patterns, and cycles using concepts of physical geography.

7D. Describe the ways in which Earth's physical processes are dynamic and interactive.

10C. Explain how cultural features often define regions.

15A. Analyze examples of changes in the physical environment that have reduced the capacity of the environment to support human activity.

16B. Explain the relationship between resources and the exploration of different regions of the world.

18D. Use geography knowledge and skills to analyze problems and make decisions within a spatial context.

### ***Calling All Explorers***

#### ***Grades 5-8***

2D. Analyze ways in which people's mental maps reflect an individual's attitudes toward places.

3C. Explain the different ways in which places are connected and how these connections demonstrate interdependence and accessibility.

5D. Explain how regions are connected.

6A. Evaluate the characteristics of places and regions from a variety of points of view.

6B. Explain how technology affects the ways in which cultural groups perceive and use places and regions. Explain how technology affects the ways in which cultural groups perceive and use places and regions.

8D. Explain how human processes contribute to changes in ecosystems.

14A. Analyze the environmental consequences of humans changing the atmosphere, biosphere, lithosphere, and hydrosphere.

16C. Evaluate different viewpoints regarding resource use.

18B. Integrate multiple points of view to analyze and evaluate contemporary geographic issues.

#### ***Grades 9-12***

1C. Evaluate the applications of geographic tools and supporting technologies to serve a particular purpose.

2B. Identify the ways in which mental maps influence human decisions about location and public policy.

2C. Compare mental maps of individuals to identify common factors that affect the development of spatial understanding and preferences.

6A. Explain why places and regions are important to individual human identity, as exemplified by how point of view influences a person's perception of a place.

8C. Apply the concept of ecosystems to understand and solve problems regarding environmental issues.

16B. Explain the relationship between resources and the exploration of different regions of the world.

18D. Use geography knowledge and skills to analyze problems and make decisions within a spatial context.

Template for Links to State Standards

<b>Name of State: Illinois</b>		<b>Instructional Mode</b>	<b>Grade Level</b>	<b>Standards</b>
<b>Principle 1: The Earth has one big ocean with many features.</b>				
Density: Sea Water Mixing and Sinking	Experiment	6-9	State Goal 11 A. 3a, 3b, 3c, 3f, 3g	
Going with the Flow	Experiment/Data	5	State Goal 11 A. 2a, 2b, 2c, 2e	
<b>Principle 2: The ocean and life in the ocean shape the features of the Earth.</b>				
Ooze Clues--Diatom Ooze	Data Interpretation	9	State Goal 11 A. 4a, 4d, 4f State Goal 13A. 4c	
What Causes the Shoreline to Erode	Investigation	6-12	State Goal 11 A. 4a, 4b, 4c, 4d, 11 B. 4b, 4e State Goal 13 B. 4d	
<b>Principle 3: The ocean is a major influence on weather climate.</b>				
How is Coastal Temperature Influenced by the GI and the Ocean?	Lab/Graphing	6-8	State Goal 11 A. 4a, 4d, 4f State Goal 12 E. 3b	
Implications of Warming in the Arctic	Cooperative learning groups	6-12	State Goal 11 A. 4a, 4b, 4c, 4d, 4e, 4f, 4g	
<b>Principle 4: The ocean makes Earth habitable.</b>				
Bats and Hot Dogs	Real-time Data Interpretation	6-9	State Goal 11 B. 3a State Goal 12 F. 3a, 3b	
Being Productive in the Arctic Ocean	Experiment	9-12	State Goal 11 A. 4a, 4c, 4d State Goal 12 B. 4a	
<b>Principle 5: The ocean supports a great diversity of life and ecosystems.</b>				
Tangled Web	Simulation	5-8	State Goal (gr 4-5) 11 A. 2c, 12 B. 2a, 13 B 2f (gr 6-8) 11 A. 3c, 12 B. 3a, 13 B. 3f	
Sea Connections	Food Web Card Game	6-8	State Goal 11 A. 3f State Goal 12 B. 3a State Goal 12 B. 3b	
<b>Principle 6: The ocean and humans are inextricably interconnected.</b>				
Pollution Solution	Experiment/Role-play	6-8	State Goal 11 A. 3a, 3b, 3c, 3f, 3g 11 B. 3b, 3d SG 12 B. 3a, SG 13 B. 3a, 3d	
Downeaster Alexa: A fishery story	Data Interpretation	6-9	State Goal 11 A. 3a, 3f, 3g State Goal 13 B. 3a, 3d	
<b>Principle 7: The ocean is largely unexplored.</b>				
I, Robot, Can Do That!	Technology Investigation/ Decision-Making	7-8	State Goal 11 A. 3a B. 3a, 3b State Goal 13 B. 3a, 3c	
Calling All Explorers	Web-quest NOAA	5-9	State Goal 11 A. 3a, 3g State Goal 13 B. 3c, 3d	

Template for Links to State Standards

Name of State: Indiana	Instructional Mode	Grade Level	Standards																	
<b>Principle 1: The Earth has one big ocean with many features.</b>																				
		5	6	7	8	B	ES	CP	C											
			6.2, 6.3, 6.5, 6.7	7.1, 7.2, 7.3, 7.4, 7.5, 7.7	8.1.3, 8.1.4, 8.2.2, 8.2.3, 8.2.8, 8.3.7, 8.3.10, 8.3.14, 8.4.8, 8.5.1, 8.5.2, 8.5.3, 8.5.4, 8.5.5	B.1.40, B.1.41, B.1.43, B.1.44, B.1.45	ES.1.13, ES.1.13, ES.1.15, ES.1.17, ES.1.20, ES.1.21	CP.1.4, CP.1.5, CP.1.11, CP.1.16, CP.1.17	CI.1, CI.2, CI.26, CI.35, CI.38											
Density: Sea Water Mixing and Sinking	Experiment	6-10																		
Going with the Flow	Experiment/Data	5	1.2, 3.5, 6																	
<b>Principle 2: The ocean and life in the ocean shape the features of the Earth.</b>																				
Ooze Clues--Diatom Ooze	Data Interpretation	9				1.37, 1.42, 1.43, 1.44, 1.46	1.12													
What Causes the Shoreline to Erode	Investigation	6-10	6.2, 6.3, 6.4, 6.5, 6.7	7.1, 7.2, 7.3, 7.4, 7.5, 7.7	8.1.4, 8.2.1, 8.2.2, 8.2.3, 8.2.8, 8.5.1, 8.5.2, 8.7.7	B.1.37, B.1.39, B.1.40, B.1.43, B.1.44, B.1.45		CP.1.15, CP.1.20, CP.1.24, CP.1.25, CP.1.26												
<b>Principle 3: The ocean is a major influence on weather climate.</b>																				
How is Coastal Temperature Influenced by the GI and the Ocean?	Lab/Graphing	6-8	6.3, 6.7, 7.2, 7.3, 7.4, 7.5, 7.6, 7.7	7.2, 7.3, 7.4, 7.5, 7.6, 7.7	2.1, 2.2, 2.3, 2.4, 2.7, 2.8, 3.10, 3.14, 3.15, 4.5, 7.3, 7.7															
Implications of Warming in the Arctic	Cooperative learning groups	6-10	3.7	1.4, 6.7	1.8, 2.1, 2.3, 2.7, 2.8, 3.10, 4.8	1.41, 1.43, 1.44	1.13, 1.14, 1.17, 1.20, 1.21, 1.29	1.15, 1.17, 1.18												
<b>Principle 4: The ocean makes Earth habitable.</b>																				
Bats and Hot Dogs	Real-time Data Interpretation	6-9	6.1, 6.2, 6.3, 6.7	7.1, 7.2, 7.3, 7.7	1.3, 1.4, 1.8, 2.2, 2.4, 2.5, 2.7, 2.8, 2.9, 2.10, 5.4, 5.6, 7.3	1.37, 1.39, 1.42, 1.43, 1.45	1.20, 1.21													
Being Productive in the Arctic Ocean	Experiment	9-10				1.6, 1.37, 1.39, 1.40, 1.42, 1.44, 1.45, 1.46	1.11, 1.12, 1.20	1.17	1.41, 1.44											
<b>Principle 5: The ocean supports a great diversity of life and ecosystems.</b>																				
Tangled Web	Simulation	5-8	1.2, 4, 6, 3, 4	1.3, 4, 7, 7.1, 7.3, 7.4	1.3, 2.7, 4.8, 7.1															
Sea Connections	Food Web Card Game	6-8	6.3, 6.4, 6.7	7.7	2.7, 4.4, 4.5, 4.6, 7.7															
<b>Principle 6: The ocean and humans are inextricably interconnected.</b>																				
Pollution Solution	Experiment/Role-play	6-8	6.2, 6.3, 6.4, 6.5, 6.6, 6.7	7.1, 7.2, 7.3, 7.5, 7.6, 7.7	1.6, 1.7, 1.8, 2.2, 2.3, 2.4, 2.6, 2.7, 3.3, 3.4, 3.6, 3.7, 5.1, 5.7, 5.8															
Downwater Alexa: A fishery story	Data Interpretation	6-9	3.5, 6.7	1.2, 3.5, 6.7	2.1, 2.2, 2.3, 2.4, 2.7, 2.8, 2.10, 3.7, 5.1, 5.3, 5.8, 7.4	1.16, 1.41, 1.43, 1.47														
<b>Principle 7: The ocean is largely unexplored.</b>																				
I, Robot, Can Do That!	Technology/ Investigation/ Decision-Making	7-8		1.2, 3.5, 6.7	1.1, 1.6, 1.7, 1.8, 2.3, 2.7, 3.2, 3.14, 4.6, 7.1															
Calling All Explorers	Web-quest NOAA	5-9	1.2, 4, 1.6	1.3, 6.7	1.1, 1.2, 1.4, 2.4, 2.7, 2.8, 2.9, 2.10, 7.1, 7.2, Standard 6				1.6, 1.8											

Template for Links to State Standards

Name of State: Michigan

Instructional Mode		Grade Level	Standards									
<b>Principle 1: The Earth has one big ocean with many features.</b>												
Density: Sea Water Mixing and Sinking	Experiment	6-9	S.IP.06.13	S.IP.06.14	S.IP.06.16	S.IA.06.11	S.IP.07.13	S.IP.07.14	S.IP.07.16	S.IA.07.11	PPM.07.24	
			E4.2d									
Going with the Flow	Experiment/Data	5	S.IP.05.13	S.IP.05.11	P.FM.05.21	P.F.05.22	P.FM.05.41	P.FM.05.42				
<b>Principle 2: The ocean and life in the ocean shape the features of the Earth.</b>												
Ooze Clues--Diatom Ooze	Data Interpretation	9	B1.1D	B1.1E	B1.1g							
What Causes the Shoreline to Erode	Investigation	6-12	S.IP.06.13	S.IP.06.15	S.IP.07.13	S.IP.07.15	E.SE.06.12					
<b>Principle 3: The ocean is a major influence on weather climate.</b>												
How is Coastal Temperature Influenced by the GL and the Ocean?	Lab/Graphing	6-8	S.IP.06.13	S.IP.06.15	S.IP.06.16	S.IA.06.11	S.IP.07.13	S.IP.07.15	S.IP.07.16	S.IA.07.11	E.ES.07.73	
			E1.1g	E4.2B								
Implications of Warming in the Arctic	Cooperative learning groups	6-12	E1.2D	E4.2A	E4.2B							
<b>Principle 4: The ocean makes Earth habitable.</b>												
Bats and Hot Dogs	Real-time Data Interpretation	6-9	S.IP.06.15	S.IP.06.16	S.IA.06.11	L.EC.06.41	S.IP.07.15	S.IP.07.16	S.IA.07.11			
Being Productive in the Arctic Ocean	Experiment	9-12	B1.1B	B1.1D	B1.1E	B1.1g	B3.3b	B3.5e				
<b>Principle 5: The ocean supports a great diversity of life and ecosystems.</b>												
Tangled Web	Simulation	5-8	S.RS.05.15	S.RS.06.15	S.RS.07.15	B3.3A						
Sea Connections	Food Web Card Game	6-8	L.OI.06.51	L.EC.06.11	L.EC.06.41	B3.1A	B3.3A	B3.4C				
<b>Principle 6: The ocean and humans are inextricably interconnected.</b>												
Pollution Solution	Experiment/Role-play	6-8	S.RS.06.16	S.RS.06.17	L.EC.06.41	S.RS.07.16	S.RS.07.17	E.ES.07.42	E1.2B	E2.4B		
			S.IP.06.11	S.IP.06.15	S.IP.06.16	S.IA.06.11	S.IA.06.12	S.IA.06.13	S.IA.06.15	S.RS.06.11	L.EC.06.41	
Downeaster Alexa: A fishery story	Data Interpretation	6-9	S.IP.07.16	S.IA.07.11	S.IA.07.12	S.IA.07.13	S.IA.07.15	S.RS.07.11	B.1.2C	L3.p4A	B3.4C	
<b>Principle 7: The ocean is largely unexplored.</b>												
I, Robot, Can Do That!	Technology Investigation/ Decision-Making	7-8	S.RS.07.16	P.CM.07.21	E3.3A							
Calling All Explorers	Web-question NOAA	5-9	S.RS.05.16	S.RS.06.16	S.RS.07.16	L.EV.05.12	B.1.2E					

Template for Links to State Standards

Name of State: Minnesota

	Instructional Mode	Grade Level	Standards									
<b>Principle 1: The Earth has one big ocean with many features.</b>												
Density: Sea Water Mixing and Sinking	Experiment	6-9	6.1.3.4.1	8.1.1.2.1	8.1.3.4.1	8.1.3.4.2	8.2.1.1.1	8.2.1.2.1	9.1.3.4.2	9.1.3.4.3	9.3.2.2.1	
Going with the Flow	Experiment/Data	5	5.1.1.1.3	5.1.1.2.2	6.2.3.2.1							

<b>Principle 2: The ocean and life in the ocean shape the features of the Earth.</b>												
Ooze Clues--Diatom Ooze	Data Interpretation	9	9.1.3.1.1	9.1.3.1.2								
What Causes the Shoreline to Erode	Investigation	6-12	7.1.1.2.3	8.1.1.2.1	8.1.3.4.1	8.1.3.4.2	8.3.1.2.1	9.3.4.1.1				

<b>Principle 3: The ocean is a major influence on weather climate.</b>												
How is Coastal Temperature Influenced by the GI and the Ocean?	Lab/Graphing	6-8	6.1.3.1.1	6.1.3.4.1	6.2.3.2.3	7.1.1.2.3	8.1.1.2.1	8.1.3.4.1	8.1.3.4.2	8.3.2.1.2	8.3.2.1.3	8.3.2.2.3
Implications of Warming in the Arctic	Cooperative learning groups	6-12	8.1.1.2.1	8.3.2.1.2	8.3.2.1.3	8.3.2.2.1	8.3.2.3.1	9.1.3.1.1	9.1.3.1.2	9.1.3.1.3	9.3.2.2.1	

<b>Principle 4: The ocean makes Earth habitable.</b>													
Bats and Hot Dogs	Real-time Data Interpretation	6-9	6.1.3.1.1	7.1.1.2.3	7.1.3.4.1	7.1.3.4.2	7.4.2.1.3	7.4.2.2.1	7.4.2.2.2	8.1.3.4.2	9.1.3.1.1	9.1.3.1.2	9.1.3.4.3
Being Productive in the Arctic Ocean	Experiment	9-12	9.1.1.1.2	9.1.3.1.1	9.1.3.1.2								

<b>Principle 5: The ocean supports a great diversity of life and ecosystems.</b>												
Tangled Web	Simulation	5-8	5.4.2.1.1	5.4.2.1.2	5.4.4.1.1	7.1.1.2.3	7.4.2.1.1	7.4.2.2.1	7.4.2.2.2	7.4.2.2.3	7.4.4.1.2	
Sea Connections	Food Web Card Game	6-8	7.4.2.1.1	7.4.2.1.2	7.4.2.2.1	7.4.2.2.2	7.4.2.2.3	7.4.4.1.2				

<b>Principle 6: The ocean and humans are inextricably interconnected.</b>												
Pollution Solution	Experiment/Role-play	6-8	6.1.3.4.1	6.2.1.2.1	7.1.1.2.3	7.1.1.2.4	7.4.4.1.2	8.1.1.1.1	8.1.1.2.1	8.1.3.3.1	8.2.1.1.1	8.3.4.1.2
Downeaster Alexa: A fishery story	Data Interpretation	6-9	7.1.3.4.1	7.1.3.4.2	7.4.2.1.3	7.4.4.1.2	8.1.1.2.1	8.3.4.1.2	9.1.3.1.1	9.3.4.1.2	9.4.4.1.2	

<b>Principle 7: The ocean is largely unexplored.</b>												
I, Robot, Can Do That!	Technology Investigation/ Decision-Making	7-8	7.1.1.2.3	7.1.1.2.4	8.1.1.2.1	8.1.3.3.1	8.1.3.3.2	8.3.1.2.1				
Calling All Explorers	Web-quest NOAA	5-9	8.1.3.2.1	8.1.3.3.2	8.1.3.3.3	9.1.1.1.2	9.1.1.1.6	9.4.4.1.3				



Template for Links to State Standards

Name of State: Ohio									
Activity	Instructional Mode	Grades	Earth & Space Sciences	Life Sciences	Physical Sciences	Science and Technology	Scientific Inquiry	Scientific Ways of Knowing	
<b>Principle 1: The Earth has one big ocean with many features</b>									
Density: Sea Water Mixing and Sinking	Experiment	6-9	9B-4,		6A-1, 6A-4, 9C-9		6A-2, 7A-1, 7B-7, 8B-3, 9A-3, 9A-6	9A-3	
Going With the Flow	Experiment/Data	5	5C-3, 5A-6					5B-2	
<b>Principle 2: The ocean and life in the ocean shape the features of the Earth.</b>									
Ooze Clues - Diatom Ooze	Data Interpretation	9	9B-4		6A-4, 8B-2, 6C-6, 7D-3, 8D-4, 9C-9, 9G-19, 9G-20, 12A-2, 11C-3, 12D-3	7A-2, 8A-2, 6B-5, 7B-4, 8B-3, 9A-2, 9A-3, 9B-1, 11A-1, 11A-2,	9A-3, 9A-5, 9A-6	9B-5	10A-2, 10A-3, 9C-2, D-9, 11A-1, 11A-2, 11A-3, 12A-3, 12A-4, 12A-5, 11C-9, 11C-10, 12C-9, 12C-11
What Causes the Shoreline to Erode	Investigation	6-12	7C-3, 7C-4, 6D-1, 6D-2, 8E-11, 8E-13, 9B-4, 10B-2, 10D-5, 11B-2, 11B-3, 11B-4, 11B-6, 12B-5, 11B-13	7C-6, 7D-5, 10F-17, 11B-5, 11D-12, 11F-9			7B-7, 8B-3, 9A-3, 10A-2,		
<b>Principle 3: The ocean is a major influence on weather climate.</b>									
How is Coastal Temperature Influenced by the GI and ocean?	Lab/Graphing	6-8	7C-6, 7C-7, 7C-8		6A-4		7B-7, 8B-3		
Implication of Warming in the Arctic	Cooperative Learning Groups	6-12	7C-1, 7C-2, 7C-3, 7C-8, 9B-4, 10B-1, 10B-2, 10C-4, 10D-6, 11B-3, 11B-4, 11B-5, 11B-6, 12B-5, 11C-11, 11C-13	7C-3, 7C-6, 7D-5, 10D-9, 10D-11, 10F-15, 10F-17, 10G-18, 11D-12, 11F-9,	6A-1, 6A-4, 6C-8, 9C-9, 9E-17	6A-2, 7A-1, 7A-2, 9A-2, 9B-1, 10B-1, 10B-2, 11A-1, 11A-4, 11A-5, 11A-6, 12A-4	7A-3, 7B-5, 9A-3, 9A-5, 9A-6, 10A-2, 10A-4, 10A-5	8A-1, 10A-1, 10A-3, 9B-5, 9B-6, 9B-7, 11A-1, 11A-2, 12A-1, 11C-9, 11C-10, 12C-9	
<b>Principle 4: The ocean makes the Earth habitable.</b>									
Bats and Hot Dogs	Real time data Interpretation	6-9	7C-2, 9B-4	6C-8, 7C-3, 7C-6, 7D-5, 8D-5	6A-1, 6A-4, 9C-9, 9D-21	9A-2	9A-5, 9A-6	9B-5, 9B-7, 9C-2, 9D-8	6A-2, 8A-1, 7C-3, 9A-1, 9B-5, 9B-7, 9C-2, 9D-8
Being Productive in the Arctic Ocean	Experiment	9-12		10D-9, 10D-10, 10D-11, 10F-15, 10F-16, 10F-17, 10G-18, 12A-3, 12A-4, 11D-12, 12E-9, 11F-9, 11F-11	9E-15, 9G-18,	9A-2, 10B-2, 12A-4	9A-1, 9A-3, 9A-5, 9A-6, 11A-1, 11A-2, 11A-4, 11A-5, 11A-6, 11A-7, 11C-9,		
<b>Principle 5: The ocean supports a great diversity of life and ecosystems.</b>									
Tangled Web	Simulation	5-8	5C-6,	5B-1, 5B-2, 5B-3, 5C-4, 5C-5, 5C-6, 7C-3, 7C-7, 7D-4		6A-2, 7A-2	7A-2, 8B-3	8B-2, 6C-3	
Sea Connections	Food Web Card Game	6-8	7C-1, 8E-12, 8E-13	6C-8, C-3, 7C-7		6A-2, 7A-2	6A-1, 7A-3, 8B-3		
<b>Principle 6: The ocean and humans are inextricably interconnected.</b>									
Pollution Solution	Experiment/Role Play	6-8	8A-1, 7C-2, 7C-4, 7C-6, 8E-8, 7C-3, 7C-6, 7D-5, 8D-5	6C-8, 7C-3, 7C-6, 7D-5	6A-2, 7A-1, 8B-3, 8A-2, 6B-5, 7B-4, 1, 8B-2, 8D-4,	6A-1, 6A-2, 7A-2, 7A-3, 8A-2, 6B-5, 7B-4, 8B-3, 8B-4	6A-1, 6A-2, 7A-1, 7A-4, 8A-1,	6C-3, 7C-3	
Downeaster Alexa: A fishery Story	Data Interpretation	6-9	7C-1, 7C-2, 7E-13, 9B-4,	6B-4, 7B-8, 6C-8, 7C-3, 7C-6, 8D-5	6A-1, 7A-2, 8A-2, 9A-2, 9A-3, 9B-1		7A-3, 8A-2, 7B-5, 7B-7, 8B-3, 9A-1, 9A-3, 9A-5, 9A-6	9C-2, 9D-9	
<b>Principle 7: The ocean is largely unexplored.</b>									
I, Robot, Can Do That!	Technology Investigation/ Decision-Making	7-8		7C-2, 7C-6,		7A-3, 8A-1, 8A-2, 8B-4	7A-4, 8A-1	7C-3	
Calling All Explorers	Web-quest NOAA	5-9				5A-1, 6A-1, 8A-1	5B-2, 5C-5, 6A-1	5A-1, 5B-4, 5C-5, 5D-6, 6A-2, 6C-3, 6C-5, 7C-3, 9A-1, 9B-7, 9C-2, 9D-8, 9D-9	

Template for Links to State Standards

Name of State: Pennsylvania		Instructional Mode	Grade Level	Standards
<b>Principle 1: The Earth has one big ocean with many features.</b>				
Density: Sea Water Mixing and Sinking	Experiment	6-9	3.2.7B Apply process knowledge to make and interpret observations; 3.2.7C Identify and use elements of scientific inquiry to solve problems; 3.4.7A Describe concepts about the structure and properties of matter; 3.5.7D Explain the behavior and impact of the earth's water systems;	
Going with the Flow	Experiment/Data	5	3.1.7B Describe the use of models as an application of scientific or technological concepts; 3.2.7A Explain and apply scientific and technological knowledge; 3.2.7B Apply process knowledge to make and interpret observations; 3.4.7C Identify and explain the principles of force and motion	
<b>Principle 2: The ocean and life in the ocean shape the features of the Earth.</b>				
Ooze Clues--Diatom Ooze	Data Interpretation	9		
What Causes the Shoreline to Erode	Investigation	6-12		
<b>Principle 3: The ocean is a major influence on weather climate.</b>				
How is Coastal Temperature Influenced by the GL and the Ocean?	Lab/Graphing	6-8	3.1.7B Describe the use of models as an application of scientific or technological concepts; 3.2.7B Apply process knowledge to make and interpret observations; 3.2.7C Identify and use the elements of scientific inquiry to solve problems; 3.4.7B Relate energy sources and transfers to heat and temperature; 3.5.7C Describe basic elements of meteorology;	
Implications of Warming in the Arctic	Cooperative learning groups	6-12		
<b>Principle 4: The ocean makes Earth habitable.</b>				
Bats and Hot Dogs	Real Time Data Interpretation	6-9		
Being Productive in the Arctic Ocean	Experiment	9-12		
<b>Principle 5: The ocean supports a great diversity of life and ecosystems.</b>				
Tangled Web	Simulation	5-8	4.6.7A Explain the flows of energy and matter from organism to organism within an ecosystem;	
Sea Connections	Food Web Card Game	6-8	3.3.7A Describe the similarities and differences that characterize diverse living things; 4.6.7A Explain the flows of energy and matter from organism to organism within an ecosystem; 4.6.7C Explain how ecosystems change over time; 4.7.7A Describe the diversity of plants and animals in ecosystems; 4.7.7B Explain how species of living organisms adapt to their environment; 4.7.7C Explain natural or human actions in relation to the loss of species; 4.8.7B Explain how people use natural resources; 4.8.7C Explain how human activities may affect local, regional and national environments; 4.8.7D Explain the importance of maintaining the natural resources at the local, state and national levels	
<b>Principle 6: The ocean and humans are inextricably interconnected.</b>				
Pollution Solution	Experiment/Role-play	6-8	3.1.7B Describe the use of models as an application of scientific or technological concepts; 3.2.7C Identify and use the elements of scientific inquiry to solve problems; 3.2.7D Know and use the technological design process to solve problems; 4.2.7A Know that raw materials come from natural resources; 4.3.7B Describe how human actions affect the health of the environment	
Downeaster Alexa: A fishery story	Data Interpretation	6-9	3.1.7B Describe the use of models as an application of scientific or technological concepts; 3.8.7A Explain how sciences and technologies are limited in their effects and influences on society; 3.8.7B Explain how human ingenuity and technological resources satisfy specific human needs and improve the quality of life; 3.8.7C Identify the pros and cons of applying technological and scientific solutions to address problems and the effect upon society; 4.8.7B Explain how people use natural resources; 4.8.7C Explain how human activities may affect local, regional and national environments; 4.8.7D Explain the importance of maintaining the natural resources at the local, regional and national levels; 4.9.7A Explain the role of environmental laws and regulations	
<b>Principle 7: The ocean is largely unexplored.</b>				
I, Robot, Can Do That!	Technology Investigation / Decision-Making	7-8		
Calling All Explorers	Web-quest NOAA	5-9		

Template for Links to State Standards

Name of State: Wisconsin

	Instructional Mode	Grade Level	Standards				
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**Principle 1: The Earth has one big ocean with many features.**

Density: Sea Water Mixing and Sinking	Experiment	6-9	Sci C.8.2	Sci C.8.6	Sci D.8.1	Sci E.8.1	Sci E.8.3	Mth A.8.1
			Mth D.8.3					
Going with the Flow	Experiment/Data	5	Sci A.8.6	Sci C.8.2	Sci C.8.3	Sci C.8.6	Sci D.8.5	Sci D.8.9

**Principle 2: The ocean and life in the ocean shape the features of the Earth.**

Ooze--Diatom Ooze	Data Interpretation	9	Sci A.8.6	Sci E.8.1	Sci E.12.2	Sci F.8.8	Soc A.8.1	Sci E.8.3
What Causes the Shoreline to Erode	Investigation	6-12	Sci A.8.6	Sci C.8.3	Sci C.8.6	Sci E.8.1	Sci E.8.3	

**Principle 3: The ocean is a major influence on weather climate.**

How is Coastal Temperature Influenced by the GL and the Ocean?	Lab/Graphing	6-8	Sci C.8.2	Sci C.8.3	Sci D.8.7	Sci D.8.8	Sci E.8.1	Sci E.8.3
			Soc A.8.1	Lit A.8.3				

Implications of Warming in the Arctic

	Cooperative learning groups	6-12	Sci A.8.6	Sci D.8.8	Sci E.8.1	Sci E.8.2	Sci E.8.3	Sci E.12.2
			Sci G.8.3	Lit d.12.1	Eng b.12.1			

**Principle 4: The ocean makes Earth habitable.**

Bats and Hot Dogs	Real-time Data Interpretation	6-9	Sci A.8.3	Sci A.8.6	Sci C.8.2	Sci C.8.4	Sci C.8.6	Sci C.8.8
			Sci C.12.5	Sci F.8.8	Sci F.8.9			

Being Productive in the Arctic Ocean

	Experiment	9-12	Sci F.12.8	Lit A.12.3				
			Sci C.12.5	Sci C.12.6	Sci E.12.2	Sci F.12.10	Lit D.12.1	Eng B.12.1
			Env B.12.4	Env B.12.6				

**Principle 5: The ocean supports a great diversity of life and ecosystems.**

Tangled Web	Simulation	5-8	Sci C.8.2	Sci C.8.6	Sci F.8.8	Sci F.8.9	Eng B.8.1	Env B.8.5
			Env B.8.6	Env B.8.8				

Sea Connections

	Food Web Card Game	6-8	Sci C.8.6	Sci F.8.8	Sci G.8.3	Env B.8.5	Env B.8.8	Env B.8.10
			Env B.8.15	Env B.8.16				

**Principle 6: The ocean and humans are inextricably interconnected.**

Pollution Solution	Experiment/Role-play	6-8	Sci C.8.2	Sci C.8.6	Sci C.8.10	Sci G.8.2	Eng C.8.1	Eng C.8.2
			Eng C.8.3	Env A.8.2	Env A.8.4	Env B.8.18	Env B.8.22	

Downeaster Alexa: A fishery story

	Data Interpretation	6-9	Sci A.8.3	Sci A.8.6	Sci A.12.5	Sci C.8.2	Sci C.8.6	Sci C.8.8
			Sci F.8.8	Sci F.12.8	Sci G.8.3			
			Env A.8.4	Env B.8.12	Env B.8.16	Env B.8.23	Env B.12.5	Env B.12.6
			Env B.12.12					

**Principle 7: The ocean is largely unexplored.**

I, Robot, Can Do That!	Technology Investigation and Decision-Making	7-8	Sci E.8.2	Sci G.8.2	Soc B.8.8			
Calling All Explorers	Web-quest NOAA	5-9	Sci B.8.1	Sci C.8.2	Sci G.8.1	Soc A.8.8	Eng B.8.1	Eng E.8.1

# Fresh and Salt

How are you using this curriculum?

Which activities did you most frequently use, and why?

How did the Great Lakes and Ocean Literacy Principles help you teach Great Lakes and marine concepts to your students?

*Can we add you to our educator contact list to receive further information on this and other education initiatives and professional development opportunities? If yes, please complete the information below.*

Name: \_\_\_\_\_

School or Organization: \_\_\_\_\_

Grade Level: \_\_\_\_\_ Subject(s) Taught: \_\_\_\_\_

Street Address: \_\_\_\_\_

City/State and Zip code: \_\_\_\_\_

Email Address: \_\_\_\_\_

Thank you very much for your input! For more information on other Cosee Great Lakes curricula and educator programs, please visit <http://coseegreatlakes.net/curriculum>.

**Please e-mail to:** Terri Hallesy at [thallesy@illinois.edu](mailto:thallesy@illinois.edu) or send via Fax to 217-333-8046. If you prefer to send hard copy, mail to Illinois-Indiana Sea Grant, University of Illinois, 388 NSRC, MC-635, 1101 W. Peabody Drive, Urbana, IL 61801.