**Unit 4: Atmosphere and Climate**

**Topics**

* **Biomes**

Climatograms; locations; characteristics of major terrestrial biomes

* **The Atmosphere**

Composition; structure; weather and climate; atmospheric circulation and the Coriolis Effect; atmosphere–ocean interactions; EÑSO

* **Air pollution**

Sources—primary and secondary; major air pollutants; measurement units; smog; acid deposition—causes and effects; heat islands and temperature inversions; indoor air pollution; remediation and reduction

strategies; Clean Air Act and other relevant laws

* **Stratospheric Ozone**

Formation of stratospheric ozone; ultraviolet radiation; causes of ozone depletion; effects of ozone depletion; strategies for reducing ozone depletion; relevant laws and treaties

* **Global Warming**

Greenhouse gases and the greenhouse effect; impacts and consequences of global warming; reducing climate change; relevant laws and treaties

**Reading**

* Habitable Planet: Unit 2: Atmosphere
* Habitable Planet: Unit 11: Atmospheric Pollution
* Habitable Planet: Unit 12: Earth’s Changing Climate
* Enviroliteracy: Air & Climate: Air, Climate and Weather / Air Quality / Biogeochemical Cycles / Climate / Weather
* Hippocampus: Unit 1/Chapter 4/Lessons 18-24, Unit 4/Chapter 16/Lesson 77, Unit 5/Chapter 19/Lesson 89

**Notes**

* The Atmosphere
* Air Pollution
* Stratospheric Ozone
* Global Warming
* Indoor Air Pollution Chart

**Activities**

* Climatograms
* ES1504 (Global Temperature)
* ES1706 (Variations in Temperature)
* ESU601 (El Niño/Wild Weather)
* Six Common Air Pollutants Chart/Game
* ES2101 (What is Climate?)
* ES2105 (Ice Cores and Climate Data)
* ES1708 (Ozone Layer Changes Over Time)
* ES1807 (Acid Rain)
* Climate Change Data
* Cars, CO2, and You
* Teacher’s Domain Videos (Global Warming)

**Labs**

* Solar Insolation
* Coriolis Effect and Atmospheric Circulation
* Air Pollution Investigation
* Specific Heat and Climate
* Greenhouse Gas Investigation
* Acid Rain

**Quizzes/Test**

* Reading Quizzes (5 total)
* Biomes/Climatograms Quiz
* Atmosphere Quiz – composition/structure
* EÑSO Quiz
* Air Pollution Quiz – major air pollutants
* Ozone Quiz – causes/effects of ozone depletion
* Global Warming Quiz – impacts/consequences
* Air/Atmosphere/Climate Test

**Review**

* Air Pollution and Global Climate Change Outline
* Air Pollution and Global Climate Change Glossary
* Study Packet
* Online Practice Test <http://www.waverly-shellrock.k12.ia.us/srhigh/Departments/Science/APES/studyguide20_files/studyguide20.htm>