EarthKAM Images, which will be the primary focus of these investigations and lessons, are:
- The image of Charleston, South Carolina with the Shuttle's tail is STS009-0035-1516.
- The image of Savannah, Georgia is numbered STS076ESC01075607.

PURPOSE:
These lessons lead to student understanding of island formation, particularly the barrier islands of the southeastern coast of North America.

OBJECTIVES:
These objectives are prerequisites; the students should demonstrate a working knowledge of each of these in order to successfully complete each lesson. They correlate with National and State Standards. Additional objectives, which are science related, will be included within each lesson.

MAPPING OBJECTIVES -
- Interpret features of the Earth in a variety of ways.
- The student will learn to read and interpret maps, globes, models, charts and imagery.
- The student will determine location by finding the latitude and longitude of various geologic or geographic sites.

COMPUTER TECHNOLOGY OBJECTIVES -
- The student will process, store, retrieve and transmit electronic information.
- Students will use search strategies to retrieve electronic information.
- Students will use electronic encyclopedias, almanacs, indexes, and catalogs to retrieve and select relevant information.
- Students will use laser discs with a computer in an interactive mode.
- Students will use local and wide-area networks and modem-delivered services to access and retrieve information from electronic databases.
- Students will use databases to perform research.

Content areas
- Biology
- Geology
- Chemistry
- Oceanography
- Astronomy
- Computer Technology
- Physics
**Process Skills:**
- Comparing / Contrasting
- Making Inferences
- Interpreting Information
- Determining Latitude and Longitude
- Measuring Metrically
- Gathering Quantitative and Qualitative Data
- Acquiring and Processing Data
- Constructing a Graph
- Describing Relationships between Organism and Their Environment
- Describing the Effect that Water has on the Land
- Designing Investigations

**Management Tips:**
- Inform your media specialist as to the nature of the student investigations and the methodology that the students will be using.
- Teach your students how to reference materials taken from the Internet using the MLA method. Students should know how to write a bibliography and follow proper copyright procedures.

**Materials and Tools:**
- Copies of images—STS 76 01075607 (Savannah, GA) and STS 62 94035140643 (Charleston, SC) - It is suggested that these images be laminated or in plastic sleeves before using.
- Atlases – political and relief atlases, shuttle platform atlas, globes.
- Water erase markers or water base markers
- Hand lens or 10-power magnifier.
- Hydrographic globes

**Assessment:**
- Illustrate the tidal zone and sandy beach, including its inhabitants.
- Identification of the inhabitants that exist in the tidal zone, neritic zone, open sea, bathyal zone and abyssal zone.
- Comparing and contrasting adaptations that marine organisms have made to accommodate their existence in the ocean or littoral zone.
- Construct a food web for the tidal zone and sandy beach.
- If possible, explore an estuary or barrier island. Write or compare the interdependence of various species on each other in this environment.
- Explain the development of deltas, barrier islands, and spits.
- Explain the migration of a dune system
- Explain the difference between a winter beach and a summer beach.
- Compare the composition of various beaches and how the sediment on them is truly a product of erosion.
- Portfolio assessment
- Project dealing with a comparison of images taken by the camera on board the space shuttle
Extensions:

- Compare these images to images of other estuaries such as the Nile River Delta (STS57-73075), or the Mississippi River Delta (STS51-143027).
- How much salt is in seawater? How does the salt content of the ocean compare to the Great Salt Lake, and the Dead Sea?
- Utilization of a stream table to simulate wave action and the development of a delta, offshore islands, barrier islands, spits and tombolos.
- Students study either a benthic, pelagic or planktonic form and the class assembles a food web as they are identified and investigated.
- Man’s exploration of the oceans- The Glomar Challenger or submersibles of today. Alvin. How are we actually studying the abyssal zone and gathering data? What deep-sea organisms have been identified living near areas where magma is being extruded on the ocean floor? What devices are utilized to collect data at various depths? Why is this information important for us to know?
- Explain the relationship between pressure, depth and temperature. How do various organisms successfully swim from the bathyal to the open sea?
- What are the various salts that are found in seawater? Which one is the most abundant? Least abundant? How many elements are in seawater?
- Explore how man has developed ways to retain the dune system in the beach environment. Remember the Christmas trees to keep the dunes. Also the planting of sea oats.
- Explore the different types of dunes and develop a model for each type.
- Determine whether or not there is a program in place that actually measures the amount of sand that is washed away each year. How is that actually calculated and who is responsible of doing this? Who would be interested in knowing this information?

RELATED WEB SITES – These are suggested web sites that might be useful to students and teachers while they are involved with investigations.

- http://www.musc.edu/cando - CAN DO homepage
- http://www.images.jsc.nasa.gov/ - JSC Imagery Service
- http://www.nationalgeographic.com/ - National Geographic
- http://www.earthkam.ucsd.edu/ - EarthKAM
- http://www.nasm.edu/ceps/GAW/GFSintro.html - Geography From Space
- http://www.earthrise.sdsc.edu/ - Welcome to Earthrise
- http://www.earth.jsc.nasa.gov/ - Earth From Space Johnson Space Center
- http://www.cof.edu/ete/ - Explore the Environment of the World