

# The Texas Science Teacher

Volume 39, Number 1

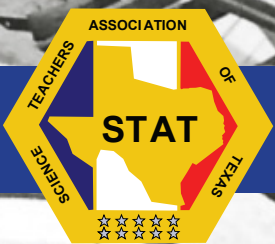
April 2010

*Gulf Coastal Studies: Paleotempestology*  
*How to Sleuth Out Prehistoric Hurricanes Using Your Powers of Observation*

*Lessons on Caring*  
*A Teacher's Discovery of Student-Based Science Curriculum*

*Descriptive, Comparative & Experimental*  
*Scientific Research Designs in the 2009 TEKS*

*The Importance of Knowing the TAKS*  
*Helping Your Students Succeed on the Big Test*



Official Publication of the Science Teachers Association of Texas

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## Cover Photo:

St. Patrick's Church in Galveston, TX, following the devastating hurricane of 1900. It is estimated that between 6,000 and 12,000 people lost their lives in the storm.

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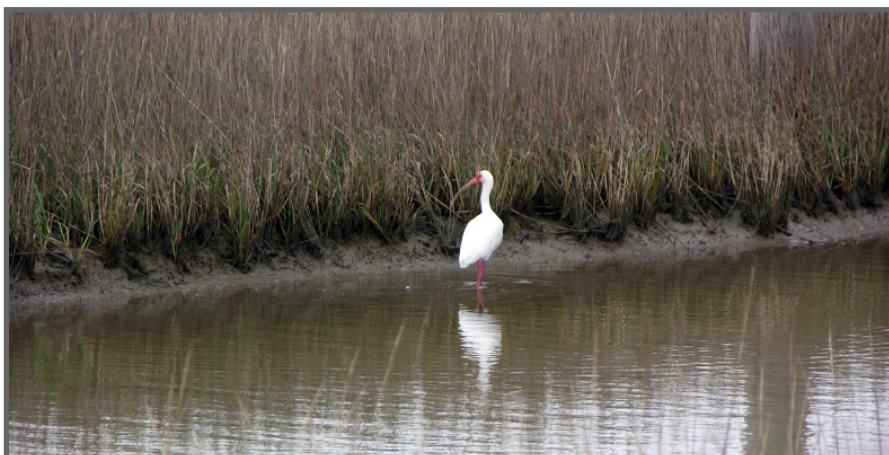
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## *Paleotempestology (cont'd.)*

marsh mud is a struggle, kind of like trying to hike through Crisco© that contains sharp shells and smells heavily of rotten eggs. Your poor skin will need tending to following such an adventure.

Above the salt marshes are salt flats or supratidal areas. Sediments in these rather barren regions are sandy silt and clay with associated gypsum and halite crusts. Salt flats can be relatively barren except for algal mats. High salinity may be prohibitive to colonization by most plants and many animals, aside from birds.

As understanding of coastal ecosystems has increased, state and federal laws have been enacted to protect these critical resources. Salt marshes are major nurseries for all sorts of fish and shellfish. They provide a great deal of filtration for runoff as harmful chemicals are naturally broken down and sediment is trapped. Marshes limit erosion and buffer the coast against storms. Finally, they are beautiful places. A kayak trip through a coastal marsh can be simply magical.



Cordgrass (*Spartina alterniflora*) marsh on West Bay, north side of Galveston Island. Photo by H. Montgomery.

As understanding of coastal ecosystems has increased, state and federal laws have been enacted to protect these critical resources. Salt marshes are major

# Paleotempestology (cont'd.)

## Tools and Equipment

Below are our present coring devices. Photos by H. Montgomery.

Tool	Description
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This coring device is homemade. We have used many of these around the Gulf of Mexico and in Puerto Rico to sample bay and lagoon muds. The device is made of PVC pipe. The penetrating end is sharpened (ground to a taper with a grinder). Within the pipe is a rubber plug attached to a chain. The plug is a fairly tight, sliding fit within the tube. The tube is shoved down into the mud by two people. The chain holds the plug at the top of the surface/water interface and maintains a vacuum. Before extraction, the chain is secured to a bolt, thus keeping the plug at the top of the core sample and maintaining a vacuum at the top of the tube. The core tube is then extracted from the mud by two or more people. The core is either extruded for study or the pipe can be cut in half with a saw preventing any further distortion of the core.

This device has worked well up to about five meters in length in unconsolidated mud although it can require a come-along rigged to an A-frame to get it out if more than about 2 m in length.

One bit of advice is to take a slender tent pole and push it deeply into a spot adjacent to where you are thinking about sampling. If the tent pole will not penetrate, chances are that the core tool will not, either.



This coring device is a stainless steel tube with a handle from Wildco. The core is captured within a rigid, clear plastic sleeve called CAB. As in the device above, a flap on the handle is closed to create a vacuum in the top of the tube. The device works well and is available in various lengths up to 2.5 meters.

The tent pole probe is to my left side.

These corers and plastic tubes are expensive.



The core will not fall out upon extraction because of the presence of a plastic core catcher at the terminal end. A locking mechanism in the stainless core tube prevents the catcher from falling out. We pop-rivet the core catcher to the PVC pipe. Catchers can be made or purchased (Wildco).

# The Publication of the Science Teachers Association of Texas Solicit Manuscripts

The Science Teachers Association of Texas (STAT) publishes two periodicals: *The STATellite* and *The Texas Science Teacher*.

- *The STATellite* is the association's newsletter with information and news from the STAT officers, as well as STAT Affiliates and Regional Directors. It contains continuing educational opportunities for science teachers, innovative science activities, and other items of interest.
- *The Texas Science Teacher* is a peer-reviewed journal that publishes papers pertinent to science education from all fields of science and science teaching. Contributions can be research articles, research notes, book reviews, and essays of general scientific interest.

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