

It's a Monster Hurricane!

By

DAVID JUNGBLUT

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About the Author; David Jungblut

David Jungblut grew up in a neighborhood of 10 houses about half a mile from a very small town of 68 houses named Baptistown in Hunterdon County of the State of New Jersey. He grew up in this primarily farm area with many pets including a family favorite, Bobby the Crow. The formative years were in the post World War II and Korean Conflict time period and during the Vietnam Era.

Born the first day of 1953, he shared his birthday with father Art E.I. Jungblut who was born exactly thirty years earlier. Yes, they were both New Year's babies. He spent a lot of time with his maternal Grandfather Earl Bidewell who lived with the family for 11 years. His grandfather was born during the change of the century and always said he changes with the year. His birthday was January 16, 1900. There were three males, under one roof, all born under the Zodiac Sign of Capricorn. Because of this, David easily identified with the baby that became father time, which gave David a perspective of time at a young age. In college David would draw a self-portrait of himself that had two faces, one looking to the right and one looking to the left. The main interpretation of the painting is that the artist is looking both in the past and into the future.

David went to grammar school at Kingwood Elementary School, where he confused his teachers by being both the best and worst student. During math and science classes he had few errors, but in reading and writing very few answers were accepted as correct. David had a strong desire to be understood and write well. Numerous creative stories were read to the class but when returned there seemed to be more red ink pen marks than pencil marks on the paper. Later David would do a study on why writing was so difficult and spelling almost impossible for him. The results showed that using phonics skills does not work well in conjunction with spelling in the English language; however, people who used visualization skills spelled well. So teachers, when you tell students to sound out the word in order to spell it, also include that the student must see it in their mind.

David has taught Reading, Study Skills and Science at Oakcrest High School, in Mays Landing, New Jersey since 1990. He has volunteered to teach the difficult and the most challenging students, since he believes that his childhood difficulty yielded unique insight into the struggle of his students. All he asks of his students is that they try their best. He started the Chess Club at Oakcrest in 1991 and followed that up with the Bridge Club, Chess Team and Bridge Team. He is the founder the Greater South Jersey Individual Championship, a tournament that has attracted as many as 220 chess players including one player who became a national high school chess champion. He was the president of the South Jersey High School Chess League for 12 years and was the 2006 Coach of the Year in chess. David is also a board member of the New Jersey State Chess Federation, the governing body for chess in the State of New Jersey. He is a member of the American Contract Bridge League's National Goodwill Committee and is the Chairperson of a committee to introduce bridge to scholastic and collegiate students for the ACBL Unit 141, the governing body of contract bridge for South Jersey and Philadelphia, Pennsylvania. He has been hosting the Shore Bridge Sectional at Oakcrest High School since 2006.

During the summer of 2005, David Jungblut was in New Orleans as Hurricane Katrina approached and later he did a scientific investigation into the causes of the vast devastation that the hurricane inflicted. He wrote reports, all pro bono, and placed his findings on the internet where they were used by homeowners, engineers and lawyers.

Dedication

This book is dedication to my Grandmother Ruth Mary Bidewell, 1901-1958, for because through her writing I knew that I possessed the ability to write as well. The following is one of her poems that she wrote about my uncle, Lester Earl Bidewell.

“OUR SON”

Just an ordinary lad;
 Of thousands, only one
Who gave their all, their very lives,
 To win this war: “Our Son.”

Abroad, away from home and friends
 And folks who loved him well,
He went, to fill his country’s need,
 In distant lands, to dwell.

Breaking home ties he loved so well,
 He answered his country’s call;
Leaving behind his very heart,
 To fight and win, or ---fall.

So full of life just yesterday,
 Today he is no more;
Buried beneath a foreign sod.
 Away on a distant shore.

Was nobody to pause by his lonely grave?
 No one to shed a tear?
No one to pause by his lonely grave?
 No one, who loved him, near?

Yes, there were some, who mourned our loss
 Comrades, whose lives he’d shared;
Friends, who went on, to finish the task,
 Whose lives, the lord had spared.

With eyes a brim with many tears,
 We think of days gone by
When he was just a little tot
 With curly hair. So high!

Remember his first day at school?
 The fight he had, that day?
And when he brought a puppy home,
 That he had found astray?

How proud he was, of his first gun;
 And when he shot a squirrel:
His first report card; his first bike;
 And later, his first girl.
We laughed with him when he was glad;
 Unhappy days were few:
We punished him when he was bad,
 Praised him, when praise was due.

Of all the treasures of the past
 Mem'ries alone remain;
No longer can we hear his voice
 Or live those years again.

We thank the Lord we had our son,
 As long as he could stay.
Nothing, we brought into this world,
 Nothing, we'll take away.

A hero? Yes, so unafraid;
 Willing to fight this war
Till tyranny ends, and peace returns:
 That's what he was fighting for.

His sacrifice must not be in vain,
 Victory must be won;
Our country lost a Soldier true,
And we have lost – "Our Son."

--Written by Mrs. Bidewell, in memory of her son, Lester Earl Bidewell, killed in action in France, July 20, 1944, and in memory of all sons who have given their lives for their country.

OUR SON-A RETROSPECTIVE OF WORLD WAR II a video that used my grandmother's poem and my mother's, Mrs. Ruth Mary Bidewell Jungblut, photos with my voice can be viewed at <http://www.youtube.com/watch?v=aNh-PBp4-js> This video was part of Oakcrest High School Remembers and Relives World War II, May 26-28, 2004.

Preface

Sea Monsters and Monster Storms

Let's imagine we are in a sailboat during a hot clear day and the water is flat. We can see for miles; as a cold front approaches, we see the clouds darkening. The wind starts to blow, the ship turns into the wind, and we hear an "explosion" southeast of us. Looking over, we see something twisting up and down as the waves spread out. Someone yells, "Cepus is here!" As we look at the impacted area, we can see a "monster" rising up. It breaks up into many sections that fly out in different directions, with "heads" on each one of them. "No, it is Hydra," someone else yells, "See the many heads coming out of it!" One section flies at us, and we feel something hit us on the side of our boat, a rogue wave. We tilt sideways and capsize. Today, we call these phenomena downbursts and straight line winds that can cause "gustnadoes" (tornadoes that do not have an upward pull of air) and tornadoes; but in ancient times, without modern scientific knowledge, some might have said it was an explosion, a lion's roar or even flying ghosts. In reality, this is the sound of the air hitting the surface and billowing out in all directions.

Most people would agree sea monsters and dragons are mythological, but could they be scapegoats for natural occurrences? When teaching about constellations, I emphasize that the mythology behind the stories was crucial for the survival of our ancestors. Constellation Capricorn told them that they better to be able to swim and climb as well as a goat, since Constellation Aquarius, the water god, would follow with floods. The zodiac constellations led to the development of the calendar and our understanding of the seasons. The Seven Sister in the Pleiades Star Cluster told our ancestors when it was a good time to plant. When they saw Virgo, it was time to harvest wheat. These are just some examples of the important information that helped the ancients survive changing weather patterns.

The Constellation Draco the dragon is twisted between other constellations, like a tornado. Stories about dragons reminded them that dragons can shoot fire out of their mouths; today, we call this lightning.

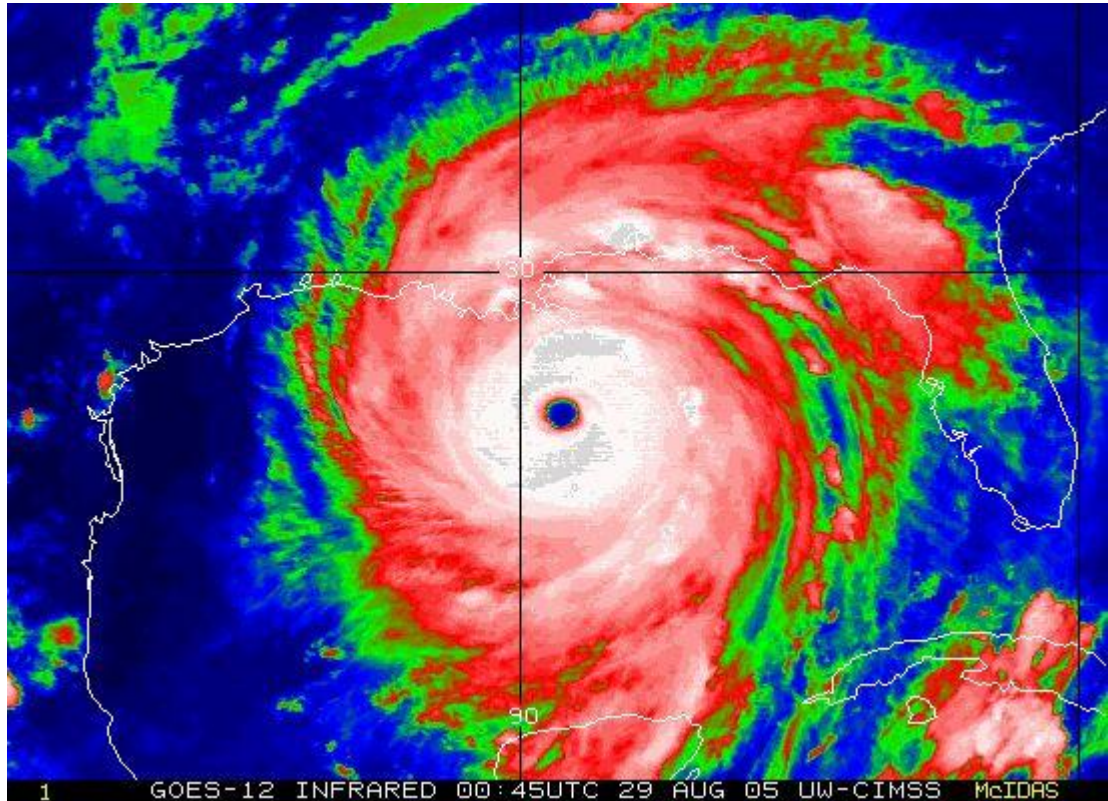
Dragons also roar ferociously; today, we call this thunder. The Constellation Cetus, the sea monster that Andromeda was saved from, is described as coming out of the ocean depths as “a noise came from the sea, and from the ocean's depths a Belua Ponti (Sea-Monster) loomed up, its breast spread wide across the waves.” (*Ovid, Metamorphoses 4.669*)

Why would Cepheus sacrifice his daughter, Andromeda, to the sea monster? King Cepheus needed to save his kingdom from the sea monster because the monster had the power to destroy his entire kingdom. Finally, the was also seen as a monster. It is the longest constellation in the sky. This monster could develop “new heads” when one of its many heads was cut off.

So what are these monsters describing? I believe they are describing monster storms. That is, storms that have the power to destroy a “kingdom,” a downburst storm. Downburst storms can happen during or before thunderstorms and might have thunder and lightning near them. So these storms might seem to have “fire shooting out of them.” Downbursts are best described as inverted tornadoes in which the air is not pulled up. It is shooting downward and hits the ground in a noisy collision that may be described as a “roar.” Some downburst storms might develop a ring of air that is best described as a horizontal vortex around the impact area. Winds shoot out in all directions from the impacted area. The winds are often confused with tornadoes, but the air is coming out of the impact area, not going to a vortex. Under the right conditions the winds can twist into weak and then into strong tornadoes. When the ring stretches, it may seem to “spread wide across the water,” eventually breaking apart into many vortex rolls or gustnadoes. These winds can be up to 150 miles per hour and can destroy everything in their path.

Part 1:

HURRICANE KATRINA A MONSTER STORM



Chapter 1

New Orleans Summer of 2005

On May 12, 2005, my daughter Melissa graduated from Cook College, Rutgers University with a Bachelor of Science Degree in Nutritional Sciences. She needed to do a year-long dietetics internship at a hospital. Melissa is a 'gourmet' cook and decided to do her internship in an area where she could expand her knowledge of food, so she chose New Orleans, Louisiana with its diverse culinary offerings. Another reason she decided on this location was that my nephew Bo lived with his bride Thais in D'Iberville, Mississippi.

We flew into New Orleans in early July 2005 to find an apartment for Melissa for the year she would be living there. Our search took a few days and we found a beautiful historic house, which was converted into apartments, built right on St. Charles Street. The historic St. Charles Streetcar travels on from Canal Street, through the Garden District, where my daughter's apartment was located, and then continues past Loyola and Tulane Universities. Then the streetcar makes a right-hand turn at a levee along the Mississippi River and continues up Carrollton Avenue. Plus, the apartment was only three blocks from her work at the hospital, named Touro Infirmary. **So the location was really ideal.**

Melissa had a meeting at the hospital as we toured Touro Infirmary with the director of nutrition science. I noticed that the building was well constructed with thick concrete walls. The building was built to last; it would be safe in a hurricane. My wife Shirley asked about safety and hurricanes. One hurricane named Dennis was active in the Gulf of Mexico at the time of our discussion. The director informed us of the procedures that the hospital follows, including a lock down process. She said that the workers are allowed to bring their families into the hospital during emergencies. She also said that she will have the interns go out to the store and buy as much peanut butter and bread as they can find. She explained that patients feel better after a traumatic experience after they've eaten, even if it was as simple as peanut butter sandwiches.

By the next day Hurricane Dennis was predicted to hit the pan handle of Florida with the outside chance of hitting New Orleans. With our job done, we called and rebooked our flight out of New Orleans.

The flight would have been uneventful if not for the cloud formation of Hurricane Dennis, it was marvelous! Looking down at it from 30,000 feet all you could see was the cloud wall and looking up another 30,000 feet, a total of 60,000 feet of cloud wall. We were close to the hurricane but still in clear skies, yet I was somewhat nervous. The atmosphere can be tricky with up and down drafts. In other words, it could be bumpy - seat belts were a must.

During the next few weeks we planned and packed. Melissa decided to drive to New Orleans with a friend. On the way they stopped in

D'Iberville, Mississippi to visit Bo and Thais' home where they went to dinner at the Beau Rivage Casino. They had a surprise for Melissa: they had just bought new furniture and gave Melissa their old furniture that had an antique look. The next day Bo and Thais took the furniture to Melissa's place and helped her settle into her apartment. The furniture looked period –wise, perfect in her apartment.

The week before Hurricane Katrina hit, my wife, Shirley and I visited Melissa in New Orleans. When Melissa was on duty as an intern, we toured New Orleans. We visited all the sights, including a tour to Lake Pontchartrain and the levee system.

As I stood on the banks of New Orleans I compared the height of the lake to the surrounding neighborhood; the neighborhood was an astounding 8 feet lower than the lake. The bus driver said, "We have more levees than the Netherlands." I thought about the pictures of the Netherlands' after the bombing of the Netherlands during World War II.

The next day on Wednesday before Hurricane Katrina hit, I went to visit my brother Art. During lunch in a bank building overlooking Gulfport Pier, Mississippi, we were discussing hurricanes and the best way to ride them out. I said that it depends on how big it is and if it is coming at you. "Look at where the High Pressure is on a weather map", I told him. "If the "H" is nearby, the hurricane can turn." The hurricane might move in front of or turn behind the High Pressure, and in both cases it could move north. Either way, if you live nearby you want to evacuate. "A building like this one could be okay to stay in," I said, "since it is elevated and you could be in a protected area inside the building, like in the kitchen or stairway and in other areas away from windows." I also added that this building was well built and nine stories tall, so the higher floors would not be affected by the storm surge. If you don't have those safeguards, you want to leave if the hurricane and the high pressure line up.

Later in the afternoon and for the second time in two trips my family and I started hearing about an existing hurricane, but this one was not reported to go into the Gulf of Mexico.

The weather reports on that same day predicted that Hurricane Katrina, a small hurricane at that time, would move up the east coast of

Florida. The reports changed, so that by the next day Hurricane Katrina was predicted to move up the west coast, then into the Panhandle, like Hurricane Dennis did. By Friday, Hurricane Katrina had moved into the Gulf Coast of Mexico, and the High Pressure had sunk into Texas, not east enough to influence the hurricane direction. Therefore, Hurricane Katrina continued to move straight along in the direction of the Tropical Easterly Convection Cell. The reports now said that Hurricane Katrina would hit Texas. On Saturday, the High Pressure must have moved, for New Orleans was now mentioned as a likely target. Was Hurricane Katrina moving upward in front of the High Pressure, or behind it? That was still a big question. But either way the hurricane was still small and was predicted to hit as a Category 2 or 3.

My wife and I had plane tickets to leave New Orleans on Monday, but my daughter did not. I wanted to take her home, but she felt an obligation to her job at the hospital. My wife said, "David, at 22, would you go away from your duty?" With that, I knew that I had to leave my daughter to do hers. So, during Saturday with our drink called a "Hurricane" in our hands, the three of us discussed our plans. As we talked, I noticed that store signs were being taken down and businesses were closing up. Therefore, we made the decision that we will go to the airport in the morning and my daughter would go to work.

That evening, weather channels continued to show nice weather "On the Eights," even though New Orleans was thinking about ordering an evacuation of the city. Hurricane Katrina was a Category 3 at this point, with an indication that it would drop down to a Category 2 overnight, as hurricanes normally do.

Sunday morning I woke up and called for a taxi to take my wife and I to the airport, and, to our surprise, it showed up just fifteen minutes later. We quickly gathered our things, said our goodbyes, and left for the airport. As we traveled in the taxi, we noticed that the driver was taking all kinds of back ways, at times; he even turned in the middle of the road to go the other way. I thought he was totally lost; my wife told me later that she had been thinking more sinister things. After about ten minutes, he called a friend and asked, "How is the road up ahead toward the airport?" He was

informed that, like many other roads, it was blocked by traffic. He followed directions to the airport from his friend and we ended up on a dead end street looking at the airport parking lot. However, we were close enough and the driver was able to find a way into the airport.

When we walked into the airport, the lines for Southwest were reaching back to the exit door because all the other airline carriers had cancelled their flights, even though the airport remained open. We were able to get standby on a flight, and as it turned out, may have been the last commercial flight to leave. While waiting for the plane, we finally sat down and looked at the TV for the first time since the night before. To our surprise, and horror, the hurricane grew to a Category 5. Hurricane Katrina had traveled over very warm water, above 90 degrees, during the night and had expanded into one of the largest hurricanes ever.

“It’s a monster!” My shouting caused everyone in the packed airport to stare at me. As I shouted, “Monster,” my thoughts went to Greek mythology and the constellations named after them. Constellations were used as a guide by all early civilizations for various reasons, including predicting storms.

Chapter 2

Evacuation from New Orleans and Mississippi or Not

Just after I yelled, my phone rang and it was my nephew, Bo. He was in Mississippi and wanted to know what we were doing. We told him that we had standby tickets and were waiting to see if we could get on a flight to somewhere, anywhere. He asked, “What you will do if you don’t get a flight,” to which I responded, “We will probably head to the Superdome.” Then he asked if I had gotten tickets for Melissa, my daughter. I said, “No she is going to stay at the hospital.” He yelled and said, “NO, we’re talking about Melissa,” and I attempted to comfort him by saying that the hospital was well built and she would be fine. To change the subject, I asked him what he was going to do. He said he had a hotel

room about a hundred miles north and that he, his wife, and his visiting mother and stepfather were going to stay there.

After discussing plans with my nephew, I called my daughter and woke her up. I told her what I had found out when I had watched the television. I told her that the hurricane turned into a monster and that she should go to the hospital and park her car on the fifth floor. I continued by telling her everyone should be on the fifth floor or above when the hurricane hit. I also mentioned to her that the winds would get bad and she should go into the stairway.

Immediately after getting off the phone with my daughter, my brother called and asked if Melissa was going to stay in New Orleans. Before I could answer, he quickly got to the point of his phone call by asking if she would like to drive to Mississippi and stay with him, his wife and my niece. A flashback came to mind. A few days earlier my brother and I had talked about safe places to go during hurricanes and I had assumed that he understood where a safe place would be located. I thought it was clear that his house on the Back Bay of Biloxi would not be a safe place at all. That would be extremely dangerous for him, his wife and my niece. I should have not assumed.

Getting off the phone with my brother, the plane arrived. We wondered if we were going to get a seat on the plane or not. The people in charge said that they had about ten extra seats and they had about thirty names on standby. They were going call the names in order as they were received. Thankfully, they called our names fifth and sixth!

As the airplane took off, I looked down at New Orleans wondering how the levees would do during the hurricane. Would they hold up in a Category 5 hurricane? Also, I wondered about our safety in the plane, since New Orleans' had seen its share of major crashes, some became infamous. Were the other airline carries correct to cancel flights, I wondered?

I was snapped back to reality when I heard a woman that was sitting next my wife start crying. Shirley talked to her and she told us that she pleaded with her mother to go with her, but her mother would not

leave her house. She said that she feels that she may never see her mother again and I'm afraid, even to this day, that she was right.

We made it home going through Jacksonville, Florida. Late Saturday evening, both of us were quite nervous thinking about our daughter in New Orleans and relatives in Mississippi. We were watching the hurricane approach on TV when my daughter called. Melissa said that she was fine and very busy moving people to higher floors and at ten o'clock all the interns were going to sleep on the sixth floor.

As the night progressed, I watched the hurricane movements on TV and saw that the movements were towards Mississippi. The High Pressure was finally pushing it northeast and the major part of the hurricane was going to miss New Orleans and hit Mississippi straight on, taking my daughter out of harm's way, but putting my brother, niece, and sister-in-law directly in the line of the hurricane since he decided to stay at his house in Biloxi.

The next morning, about nine thirty my daughter called and said that she had slept most of night and only "woke up to hard wind noises and when the emergency lights came on." During the conversation, her phone went dead. However, she called back on someone else's phone afterwards.

My nephew, Bo, called and said that he was fine but could not get through to his sister Mariette in Mississippi. I could not get through to her father, my brother, Art. Bo called back about an hour later, and said that Jessi, my other niece and my goddaughter, had talked to Mariette last. Mariette was yelling and screaming that they were all going to die. Since Jessi's conversation no one was able to contact them. All of this had my mind and body on edge and I wanted to so badly to just be able to save them all. The question was, how?

Later we learned that three levees had broken and flood water was invading New Orleans. The levees started to break about nine thirty A.M, about the same time Mississippi was being hit very hard by the hurricane. As the hurricane destroyed levees and flooded continued, we all thought of the images and the despair that people felt as New Orleans turned into chaos and worry returned about our daughter's safety as well.

My daughter continued to work at the hospital. By now emergency lights were starting to fade and elevators were not working. She and others made a human chain down the stairwell to pass food to the people in the hospital. She also helped to take people up to the very top of the hospital so that when helicopters landed they could immediately evacuate all the patients.

The next day, Tuesday, Melissa was told that she could leave because the helicopters were going to be landing soon. In her words, "The cell phones were not working in the city, I found a payphone that worked and called home." She called us and asked if we knew where the Crescent City Bridge was located, since that's the only bridge that remained open after Hurricane Katrina. I called AAA and asked them if the bridge was truly open since the TV said all bridges were closed. They confirmed it was open, and she could take Saint Charles Street from the hospital to the bridge.

After giving her directions she left on her journey to Baton Rouge, Louisiana. Melissa would later say, "After, I walked to my apartment to grab a few things, I drove and found some streets were impassible; fallen trees and house debris. So the directions to the bridge didn't work and I kept traveling around under the bridge trying to figure out how to get on the bridge."

Fifteen minutes after she left, I was talking to the airlines about a flight out of Baton Rouge. I was first told that the airport was closed but I was told that AAA said it was scheduled to open the next morning. I asked if they had a seat for tomorrow. He said all planes were sold out. I said, "You have to have something, my daughter is leaving New Orleans and was going to drive to Baton Rouge." His voice changed and said, "We got a report that another levee had just broken in an unexpected area." I thought we just sent our daughter into harm's way. I said do you have a first class seat? He said "Yes, it will cost \$850.00." I said, "I'll take it!"

The next three hours was the longest of my life, but she did call when her phone got a signal and told us she was safely out of the city. What made my heart sink was hearing that she was totally lost since the

road markers where gone and most roads were impassable. She had to make a lot of detours and she was now terribly lost. When she was able to read a road marker, we located her on MapQuest and saw that she was going towards the area that experienced the levee failures.

I yelled that she should turn around and my wife said, "David, calm down, we don't need you having a heart attack." Shirley took over the computer and Melissa gave her instructions on how to use computer maps to get driving directions to Baton Rouge. Melissa said, "The cars are moving in both directions." She kept in phone contact and would tell us what street names she saw. Shirley knew it was the right direction. Melissa saw a red sign that was not destroyed in the hurricane that took her to I-10. When she entered I-10 she was stopped and asked where she was going. The police who stopped her said that she was going in the correct direction and that was helpful to us. I wondered where all the national guard people were that the TV said was helping out New Orleans because they didn't seem to be anywhere near the only road out of New Orleans. My wife and I talked about how lucky we were to have a cell phone that worked, a computer to look up important things, and a car for my daughter to drive out of that mess.

About a half hour later I was talking to my daughter on the phone again and I said how proud I was of her and she started to cry. I said "I didn't want to make you upset," to which she responded, "she wasn't crying because she was upset, she was crying because she was happy." I found myself crying for the first time in my life out of joy. She could not find a hotel that was open; she ended up "sleeping" in the airport, although barely. Melissa safely flew home to New Jersey, leaving her car at the airport. She and my wife, Shirley would return a week later and drive home.

The happy feeling didn't last long. I still had not heard about my brother and niece and sister in law Mississippi. And to make matters worse, my nephew, Bo who had left before the storm had not been heard from in few days. We speculated that he went to find them.

Finally, the day after Melissa was safely home my brother called and he was on his and many others were on the way out of Mississippi.

The day after that, Bo called his mother and said he started to make his way to New Jersey after seeing that his townhouse was destroyed.

Chapter 3

Flying into Gulfport, Mississippi

About a month after the hurricane I flew into Biloxi-Gulfport Airport. Everyone I talked to had a story to tell. One woman told me that her house flooded at 35 feet above mean sea level; she lived in Waveland, Mississippi. A man told me he saw concrete that was once flat on the ground tilted toward the sky. We also talked about the levees in New Orleans and the prevailing “theories about its failures.”

As we approached the destroyed land, everyone in the airplane grew very quiet as they were looking down at the destruction below. The shore looked desolate, unpopulated and wiped clean in a geological way. In Geology we learn to read rock strata like a book. Sedimentary types of rocks often have remains of life in it, which is often covered over with mud rock that shows little life in it. The mud rock represents a major fast hitting storm event, a landslide or a seasonal change. Sediment that was scoured from one area is deposited in another. The area below me looked scoured and lifeless.

As we landed, I could see numerous buildings that were severely damaged. The Gulfport-Biloxi Airport terminal was a mess. There were holes in the walls, missing sections of the roof and we were not even very close to the shore line and the flooding that hit along the coast. The power of Hurricane Karina’s wind was very impressive in this area and I wondered how long and how much it would take to fix this place.

I rented a van and drove I-10 up toward to my nephews place in D’Iberville, Mississippi. I noticed severe tree damage in one area and nothing or no tree damage in other areas. I then turned off the interstate and my heart dropped at what I saw.

Chapter 4

Bo and Thais' Townhouse

Driving into Bo and Thais townhouse complex in D' Iberville, Mississippi was a very humbling experience. An area with hundreds of people now was deserted. I took some pictures and I remember thinking how quiet everything was, deadly quiet. I walked around the complex and looked through one building and could see out the other side. Other buildings were totally gone. When I got to my nephews property, I heard some noise and I turned around and saw my nephew and his wife walking toward me. My nephew Bo said "mi casa es su casa," as he walked into what was once his first floor living room. I was relieved to see that he was still himself after all that had happened. The rest of the day we worked pulling off dry wall and wet insulation to allow the wood underneath to dry. At one point he called for pizza and remarked; "I wonder if he (the pizza delivery guy) would be able to find us." And somehow he did and, an hour later, we were enjoying a picnic in the middle of the destroyed housing complex. During dinner the conversation turned to insurance and how he was doing with his claim. He said that they were doing well, since he had flood insurance but other nearby property owners was not doing well. He explained that the owners had Hurricane Wind Insurance for 15 feet above mean sea level and they were receiving rejection notices of their claims due to being flooded and not hit by wind.

This is the point that my Scientific Investigation began. "There is evidence of wind damage right there, as I pointed to two nearby trees that had fallen in the same direction. They show wind damage, and I continued to say, I guess I will have to do a documentary about this. All three laughed when Bo moved his hand in a circle around to all the damage and said, "What is there to write about?"

The next month I wrote a letter to the editor about the insurance problems and sent my local paper, ***the Atlantic City Press***, the following letter. It is interesting to note that the federal government still cannot

decide on what do about the insurance issue so they have done nothing at all.

The Great Insurance Debate

By David Jungblut, Geologist

The Associated Press article on “Catastrophic losses threaten future of insurance industry coverage” that ran in the Atlantic City Press on Sunday November 20, 2005 only tells part of the story. The estimated “insured” losses of 34.4 billion dollars do not give the actual losses by the people in the Gulf Coast area that were **insured**.

This past summer I spent a lot of time in New Orleans, Louisiana; Gulf Port and Biloxi, Mississippi. As Hurricane Katrina approached, I was on one of the last flights out. Six weeks later, I returned for a week and found the area in an insurance nightmare. “The Great Insurance Debate,” as I call it, has not received much press outside of the hurricane damaged areas, but everybody needs to understand this is a big problem to all of us.

In my opinion the insurance problem resulted from a common practice of banks giving homeowners stipulations on what we need to do and have for closing on a house. All of us are accustomed to hearing that your house is so many feet from a river, gulf, or ocean and we are below 12 feet and need flood insurance. We understand that flood insurance is a federal program because insurance companies do not want to cover major events like hurricanes. Homeowners feel safe with our investment because the banks feel safe giving us all that money in a mortgage to close and own a great place to live. Banks in the Gulf Coast region also required that people purchase insurance called Hurricane Wind Insurance above flood prone areas.

This Hurricane Wind Insurance coverage was a surprise to me since I always thought a homeowner’s policy would cover wind damage. In the Gulf Coast area the homeowner’s insurance only include hurricane wind, so they need a second policy. The people in Gulf Coast had

homeowners insurance for fire and liability, flood or hurricane wind from hurricane damage, so they felt **insured**.

So much for being **insured** when the flooding went to 20 ft and in some areas over 30 feet above the mean sea level. Most of the people even 200 yards from the Gulf of Mexico were above 15 feet and therefore had to have homeowners and hurricane wind damage policies. I have heard so many people say something like this, "I have insurance but the insurance company said my house was damage by a flood and I'm not covered." The insurance agencies should have done something to help. Money for clean up at the very least, instead of letting the houses mold over. Oh, by the way, the insurance companies have removed mold from the new policies and have limited coverage on older policies. I cannot believe the insurance companies feel no obligation to help these people.

Oakcrest High School is trying to help. Students are raising money to help this affected area. Oakcrest High School Habit For Humanity Club and a number of teachers are planning to go down to the Gulf Coast Area this summer to help rebuild.

Have the insurance companies done their part or just covered the **insured** with despair and a plea from the area for help? I have received numerous e-mails from people in the area like Julianne Bocek, who writes, "Our neighborhood was completely leveled. Out of 67 homes not one is left standing, they are all slabs. The outlying area looks similar for a 1-2 mile radius....We, like our neighbors...in outlying areas are receiving the run around from insurance. They are saying this is only flood damage." The people have to prove they had wind damage before the flood to have a claim. Insurance companies have told thousands of **insured** policy holders that they have **uninsured lose**.

I personally think that the insurance industry must determine which direction they want to follow: Write policies that actually cover people in their homes when those moments of need hit, or inform homeowners that they need to look for other investment places. If the insurance companies do not wish to be involved then the only thing that makes sense to me is all homeowners' policies in the entire United States be given over to the National Flood Insurance Agency. All policies written will cover fire,

liability, hurricane wind and flood. A comprehensive policy that truly covers people in need, not two, three or four that have clauses written in them so the insurance company can get out of the contract. This will give the agency money to deal with all true emergencies. People not living near a coast line might not be interested in flood insurance but the truth is any house can flood when it happens to rain thirteen inches in any given day. Let's cover everyone, everywhere the right way. We need insurance but we need to be covered correctly so we do not lose everything because of the fine print of an insurance contract.

Chapter 5

Returning to New Orleans

That evening we made our plans to go to New Orleans and remove my daughter's items from her apartment. The plan was to box up Melissa's personal items and give to Bo and Thais the things we could not mail back to her, including the furniture that Bo and Thais had given to Melissa a few weeks before the hurricane hit. Now that their new furniture no longer existed they needed those items back. We did not discuss the possibility that Melissa's apartment was still untouched. We all heard the reporting about break-ins, vandalism and fires in that area of New Orleans.

At five o'clock in the morning, we were on our way in two vans. I led because I had directions that were given to me by AAA. I knew it would be time consuming since we had to use the few bridges that were open at that time.

As we traveled down the interstate, we passed many areas that had significant wind-driven destruction. I saw many areas where trees were toppled over from significant wind damage, followed by areas that seemed to have no wind damage at all, and other areas still that had dying trees that were most likely exposed to sea water for a long time. I found myself looking at the telephone poles, made out of metal, which had fallen down in one direction and after we passed the Waveland Exit, I

noticed that the telephone poles fell in the another direction. I wondered if this was due to the eye hitting nearby. Later I learned that the eye did hit in this general area.

We had to exit I-10 and drove to longest bridge in the world that crossed Lake Pontchartrain; it had just reopened. I noticed that the bridge looked good and I saw little damage.

As we entered the Greater New Orleans Area of Metairie, some buildings showed signs of wind damage to them while, others did not. We had to find a way to another bridge, The Huey Long Bridge, which we needed to go in a semi-circular route around to connect into Crescent City Bridge. A normal few minutes' drive would take us over another hour.

We arrived around nine o'clock behind about twenty-five army National Guard vehicles to a desolate city that was New Orleans. No one seemed to be anywhere around as we drove right into the downtown French Quarter, pass Robert E. Lee Circle and into the Garden District to Melissa's apartment.

Bo said to me as we approached the door to that I should write for my documentary that her apartment wasn't destroyed as we looked at the outside of the building that looked just like it did a few weeks ago. I said in a loud voice, "No, people will not believe it was fine and untouched." I enjoyed the discussion because a little talking before you enter a building, that could be hiding people, is a good thing. Talking is an indirect warning, so if someone is there illegally, they will have time to leave out the back door and keeping us all safe. I slowly opened the door to the front. We walked up to the second floor and unlocked the door and opened up the apartment to dead still air. For the first time in 6 weeks fresh air circulated in the large room. Not one window was broken or a thing missing. What a relief I felt as I called Melissa to give her the good news.

The historic areas of New Orleans Area showed some wind damage but not that much. The French Quarter and the Garden's District were spared the damaging winds of Hurricane Katrina.

After packing up Mellissa's belongings and putting everything into the two vans, we drove back to Bo and Thais' townhouse. We took what

they needed included that furniture they had just given to Melissa just six weeks before and put it into the one room that was not in ruins, their upstairs bedroom.

Part 2:

HURRICANE KATRINA INVESTIGATION



Chapter 1

Seeing a Lot in Mississippi

That night, I was talking to my brother Art at his house on the back bay of Biloxi that was partly destroyed during the hurricane. He was talking about a house that he had built in Gulfport, Mississippi. He described the area near the pier and bank where we had lunch a few days before Katrina had hit. “All the houses are gone, and tractor trailer boxes from the pier were all around. I just received a rejection notice that stated my hurricane wind policy did not cover floods. The area never flooded before not even when Hurricane Andrew had hit the same area.”

After pondering the problem of a few minutes, I said, "Do you have a copy of the policy?" Art read the policy out loud. We found out that the policy would cover wind events only during hurricanes, not even wind driven waves. I said, "How about vehicular insurance?" Art said, "What do you mean?" I replied, "The tracker trailer box had to be insured and they had moved from the pier. If your house was hit by a moving vehicle then you may have a claim against the tracker trailer box's insurance company!" We decided to investigate that possibility the next day. The Scientific Method teaches us how to go about doing a scientific investigation and I was determined to do just that at Gulfport, Mississippi. I stated the problems that I faced which were numerous. Hurricane Katrina's wind and flooding resulted in a chaotic mess; the effects on the houses in the Gulf Coast Region were devastating. Did water do all this damage? Did wind damage the houses before the water flooded them? Can we determine exactly what happened to the houses in this area by using logical approaches? I knew that I had to be professional in my approach and leave personal feeling behind. To make clear observations without prejudices and preconceived ideas would tell me what exactly happened during the hurricane. I had to look very carefully and see what the evidence was telling me, which is not always the easiest thing to do.

My approach was to find answers for the simple problems first and work up to more complex ones later. I needed a hypothesis to help guide me to determine the order of events. I planned to use sound geological principles and direct observations in order to find physical evidence that would help me to order the events that happened during Hurricane Katrina, which included Geological Principles of Relative Dating that I found very useful. I was also naturally interested in the force of hurricanes but I was also interested to see if the famous meteorologist, Dr. Ted Fujita, was correct in saying that a lot of damage from a hurricane is caused by tornados from the eye of the hurricanes. I was looking forward to using my lifelong skills to help me in my investigation, and along with my brother and nephew and a lot of other people, I was involved in a full scientific investigation.

The next day we went down to the coast and it was unbelievable sight. Thousand of tractor trailer boxes were everywhere along with debris of houses. I could see immediately the impact the water had on the area but I could also see the effects that wind had on the area as well. One trailer that I determined had gone through my brother's house had a number of events associated with it. See the pictures and description on page 27.

Note: A more detailed step up step analysis and teaching activities can be found in the Part 3: Teaching Activities.



This picture was taken looking north from The Gulf of Mexico.

1. Parts of a house are under the tractor trailer box.
2. Parts of a house are under the tractor trailer box, where deposited from the southeast direction.
3. Two pieces of plywood were attached to tractor trailer box and the box was from almost due south.
4. The tractor trailer box leans to the right held up by two trees.
5. More debris can be seen on the left side than on the right side of the tractor trailer box was from the southwest direction.

Looking at this debris field as vectors, on that day, give me insight into the forces Hurricane Katrina inflicted. It was very satisfying personal experience, as I position my brother, Art, next to the tree and the tractor trailer box to his left and the larger debris on the other side. Art in the pictures also gives the picture a frame of reference that I wanted to show direction and size of the vector forces involved. Here, the lower debris was deposited first in southeast direction. The tractor trailer box was deposited sometime after with parts of the house almost due south, lastly the high debris on the west (left) side of the tractor trailer box was deposited last from the southwest direction. Not only is the sediment higher but also the depositing forces that pushed the tractor trailer box to the right into the trees. It would have fallen over if it was not for the trees. Finally, the difference in height of the debris from the right side to the left side, shows that the tractor trailer box, was already in place before the flow of sediment came for the west side from the flood surge and it went through my brother's house since some of the debris from the roof became entangled with the truck. My brother had a claim after all and so did all the other people in Gulfport area, where thousands of "boxes" were deposited after being removed from the Gulfport Pier during the storm.

That evening we took a quiet evening dinner and made plans for the next day, I was staying at a friend's house up the street from my brother's. Walking up the street with only few light from house that had a generator, the night time was like traveling back in time 100 years. Very little traffic and noise so bed time was early after a long day's work for everyone. I took time to looking up at into the heavens. I was looking to find Andromeda riding Pegasus after Poseidon sent storms to ravage the coast of her father's kingdom as punishment for his wife's Cassiopeia vanity. Andromeda was saved from above like so many people that were saved by helicopters after our own Poseidon storm.

Chapter 2

All we have is hope.

The next morning I was off investing again. This time I spent my time looking around my Thais' sister apartment complex in Biloxi. Since the area was flooded but not hit as badly as the shore line, I thought I could follow the winds lines outside the major wave action and hopefully back into the severely flooded areas. Can I identify tornado paths and follow them back into the shore line? Was my new scientific method question and the test would be my ability to track things a skill from my hunting days and observation skills. In Biloxi I found what I was looking for very quickly a tornado type of lines. See the pictures and descriptions on page 29.



The picture was taken looking northeast on a dirt road off Lorraine Ave. Biloxi Mississippi

1. The trees were broken at an angle that was in the southeast-northeast direction, the same direction that I noticed at Gulfport which I thought was caused by the wind.
2. The tops of the trees are pointing northwest, so the wind was coming from the southeast.

On the next street, I found a similar tornado type of line but the line was off. It was not the same line. Then I found an area that had two lines crossing each other one from the east and one from the southeast. I followed the new direction to an apartment house that had tornado like damage. See picture on page 30.



The picture was taken looking northeast from an apartment complex off of Taylor Avenue that had experienced both wind and flooding damage.

1. Both building have roof top damage and the water level was about 4 to 5 feet and could not have damage the roof line.
2. The winds that caused this damage would be classified a severe damage in the 158-206 mile per hour range.
3. The damage was in the east to west direction.

The winds in some places were in the above 150 mile per hour range but were lower in other areas, even a few inches away from the strong wind lines no visible damage were evident. The winds that inflicted the heave damage in relatively small, straight lines of force were moving toward center of the hurricane's eye. If the tornado paths that Dr. Ted Fujita described and which caused the server damage in Hurricane Andrew came from the eye, then this damage was caused by a different kind of wind event. This wind even was not a tornado from the eye, since that damage should have been from the southwest, not from the east and southeast. Something else was at work during Hurricane Katrina. Did I find something new about hurricanes, I wondered?

Now I had connected events in two areas: one area with extreme flooding and other with minor flooding. More significantly, the strong wind paths were inflicted before the storm surge event. The fact that wind damage to some properties did occur before the storm surge hit was very important in showing the timeline of events that happened.

The next morning, things did not go well when my brother and I talked to his lawyer. We explained what we had found and that the tractor trailer box had taken down my brother's house. The lawyer said; "That will not matter. You cannot sue because the pier is owned by the State of Mississippi and the state is exempt from lawsuits." "If the tracker trailer boxes were moving, you could sue the owners of the boxes!" I said. "No, the state took possession of the boxes and the owner's insurance is not responsible for damages after they went onto the pier." the lawyer said and I responded with, "So the owners' insurance company would not want them coming off the pier when a hurricane approaches." "The states operators said there was not enough time to remove the boxes so they left them," the lawyer said. "So they left thousands of tractor trailers to the force of nature," I said. "Yes," the layer responded.

I sat there for the rest of the meeting saying, see, thousands of tracker trailer boxes were destroying house after house and no one was responsive enough to even take them off the pier. "Well, I guess I have to look for tornado evidence in the flood zone, I said to myself.

Later, I drove around to expand my investigation around the entire area of Gulfport. I was now looking for more information on the force that hit into the house on the east wall and to see if I could find that same direction in other locations. I started to look at the trees to see if I could find a wind lines like the ones that I had described in Biloxi. Evidence was everywhere of winds in the 150 mile per hour range (even though NOAA was only reporting wind the 50 mile per hour range at that time. NOAA increased the wind did hit Gulfport in the 150 mile her in the fall of 2006. About 4 months after a sent out my report about wind speed to a number of people).

The flood zones a house caught my eye, how was it possible that a house looks so untouched but is in the line of debris left from the hurricane. Then I saw a tracker trailer box that was on its side, in the debris line. This area become was a very interesting area to study.



This picture was taken looking northeast from the Gulf of Mexico.

1. The tractor trailer box on the left is flat to the ground with a dam-like line of rubble left by Hurricane Katrina. The tractor trailer box might have been pushed to make space for the road to be opened but it is flat to the ground. It had to be the first object to arrive.

2. House in the center looks untouched, except for some roof damage.
3. House on the left lost most of its roof.
4. Two trees are leaning toward the right, or in a northwest direction shows the wind was from the southeast direction.

I knew that since the tractor trailer box was flat and it was at the bottom of the debris field it was the first “sediment” to arrive at this location. The box first had traveled two miles from the Gulfport Pier. Trees leaning uphill indication wind damage to the trees and the lack of damage to the house showed the wind event was relatively small. Something was different here and similar to Biloxi wind event. I was determined to find out what it was this wind event was. I tracked the down trees in the line that led to next area of study. See picture and description on page 33.



This picture was taken in Gulfport, Mississippi up the hill from the Gulf of Mexico.

1. The fence was hit hard in the middle.
2. The angle the fence sections are laying shows fence was hit from the center and pushed outward.
3. The water line on the bottom of the fence showed the level of the water and the height of the flooding in this area was only a few feet high.

Near the top of the hill with only a few feet of water reaching this level I found a fence that looking like a mythological “giant” wanted a new gate. The wind had pushed the fence “open” no evidence of another force than the wind was present at this location. I had followed a wind line out of the flooded area, and that force that took down this fence was caused by the wind and not water. I also realized that this was a small in size. Was it a small tornado that did not come from the eye of the hurricane? I continued to investigate the area, others trees were down in this same line that was totally out of the flooded area. One homeowner was busy cutting up the tree that was down on his property.

I talked a number of home owners in this area and they were amazed at the local damage since they did not hear the winds but were awoken by the water invading their homes. I told the owners that they need to strip the sheetrock and remove the insulation and to dry out the house. This community was so lucky to have houses where so many were gone but they had no idea on how to save their house from mold.

Afterwards I walked back down hill and now I was drawn to the opposite direction, the direction the wind had came from. As I followed the wind path, I passed a number of tractor trailer boxes that was “early” to arrive. Soon, I broke out into the clearing onto Route 90 and the path angle pointed directly toward the Gulf Port Pier. I spotted some tracker trailer boxes in the same direction but they had sunk in the gulf waters. Buoyancy of the tractor trailer boxes based and the weight seemed important.

Later in the afternoon I went back to my nephew’s house. This area became the third area of study. It was a location just south of Route 10 between D’Iberville and Ocean Springs in Harrison County, Mississippi, called Southwinds Golf Course. The area of study was a golf course that

had large open areas and was surrounded by housing. So I could see over a long distance and have fewer structures and trees but each was meaningful. It was also the area that my nephew said the people need help with their insurance companies. I found that the trees were down in a two distinct directions and the water damage in another. See the pictures and description on pages 35.



This picture was taken looking west on Southwinds Golf Course.

Two lines of force can be seen:

1. The tree fell from the east to west direction.
2. Southwest to northeast direction line of flooding is indicated by the net and wood.

The tree fell happened first, the net covers it. Event one the wind blows the tree down from the east. Event two, flooding covered it with the wood and the netting from the southeast to northeast direction. I identified nine straight wind paths on the golf course at Southwind Road Development that day. Most of the lines were southeast to northwest direction. Two straight-line paths were almost due east to due west. One house had tornado-like damage to the roof and written in front of the house was, "It was a Tornado." I felt that I had indeed followed a tornado path but something still was not right. The straight-line that the trees fell in yelled yelled to me that I was looking at straight-line wind damage; but straight-line winds happened during a thunderstorm but not during a hurricane.

My week was done, I had a flight the next morning but I was torn. Staying and helping or going home to New Jersey was a decision that I needed to make. I felt that I should stay but I also felt an obligation to teach my students as much as I could in the 180 days that they were with me. So to stay an extra day, week or, month had to be carefully thought about, plus my knee could give out at anytime and my back was already hurting, and I did not want to be an added burden on my family. They had enough to deal with. It was time to go. I decided that I would dedicate myself and Oakcrest High School in helping the gulf coast that was hit so hard from Hurricane Katrina.

Another factor in my deciding to leave was that I had to find support of my discoveries in literature. Category 5 hurricanes are a relatively rare event, and the possibility existed that I may have been on to some unknown natural phenomena about large hurricanes that might not have been known yet. As a scientist this is what you hope to discover; something new and important that increases our understanding of nature. I hoped that researching and connecting the evidence that I had would form a complete picture of what happened along the Gulf of Mississippi Coast. I planned to research my finding that microbursts were imbedded in Hurricane Katrina and resulted in wind path currents called straight-line winds, versus eye wall tornados.

Lastly, I realized that a lot of people were just out of luck that the vast majority of houses were destroyed by the wave action and would not be able to collect on their hurricane wind insurance policies. As much as I would have loved to help the homeowners, I was and always will be interested in the truth of what actually happened so in case this natural process occurs again, we at least will better understand the power of nature and the protection that houses. So helping people understand what happened would be of benefit long term and not just short term. Once true understanding is achieved then we as a country can proceed correctly. Even though some many people were hurting from every walk of life as one local doctor said to me is; "All we have is hope."

Chapter 3

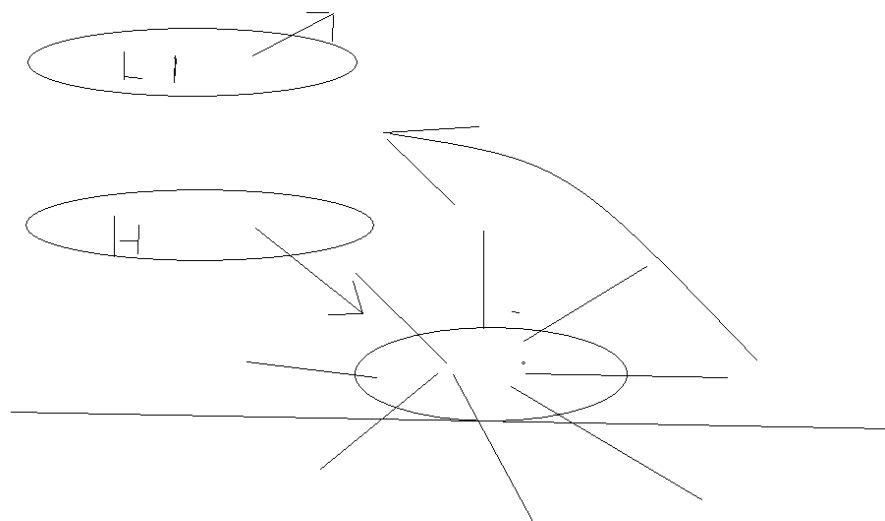
Researching the Findings

When I returned to New Jersey, the first thing I did was to work with the media department at my school, Oakcrest High School and we ended up doing a short video about what I saw. It was shown on Oakcrest High School's Falcon TV. My students asked me if I was crying in the video after it aired. It can still be seen on Youtube.com ; <http://www.youtube.com/watch?v=tpLfXn2bPTY> and at my website: <http://www.hurricanekatrinastudy.com>. I also wrote lessons that I titled, "Real Science Lessons from Hurricane Katrina, " some of which I discussed in the previous chapter and used in the teaching activity called Hurricane Forensics Curriculum found in Part 3 of this book. Other lessons were more basic, because if you want to explain something complicated it is important to have a good foundation. Other lessons, dealt with the complexities of tornadoes, microburst activity and straight-line winds.

Dr. Ted Fujita, a meteorologist, described downdrafts as an outburst that can produce damaging winds at, or near, the ground. In his book, **The Downburst Microburst and Macrobust**, (University of Chicago 1985), he describes many types of downbursts and the accompanying hazards to airplanes, boats and property. Downdraft winds at touchdown, contact with ground level, develops damaging straight-line

winds. Straight-line winds often inflict as much damage as a tornado. They differ from tornadoes because they do not have the rotating winds of a tornado. Straight-line winds look to be in parallel lines, where as tornadoes scatter debris in all directions. Homeowners often think the damage was caused by tornadoes but was in reality caused by straight-line winds.

I started to think more and more about what happened in the hurricane to cause a microburst and the resulting straight-line winds to happen or did the damage just look like a microburst caused by horizontal winds hitting the ground due to the changing environment and elevation difference. Two cause of microburst activity came to me on night was it: warm dry air flowing into the cloud cause the cloud to dividing, the warm air to move upward and the more dense air fall downward, see drawing; or did lightly cause the separation?



Dr. Ted Fujita, classified microbursts as wet and dry, stationary and traveling, radial and twisting, midair and surface, outflow and rotor. An outflow microburst can develop an encircled vortex ring. When a vortex ring is stretched it can break into pieces called runaway vortex rolls of high winds that last two to three minutes and causing great damage in the path.

As read about microburst activity, I did not see documentation that they have been in hurricanes. Dr. Ted Fujita wrote that microburst seem to happen in winds of less than 35 miles per hour. Category 1 hurricanes have winds of 60 miles per hour and I was dealing with a one-time Category 5. New questions were filling my head. Was the hurricane transforming into a smaller or larger hurricane? Was my basic research telling me something that I was missing? This is what drove me day after day to work 3 to 5 hours every day on research and writing. I came home after 7 most nights and then spent the evening reading before I fell asleep.

Were some houses lost and/or destroyed because they were fighting two forces; water from one direction and horizontal wind at another? The two forces placed a torque on the building that spun the houses like numerous trees that had missing tops.

One morning, in May, 2006, I woke up and I yelled eureka. I had connected the evidence; I had a complete picture of what happened during Hurricane Katrina. I was ready to test my hypotheses that microburst activity formed straight-line winds during Hurricane Katrina, Mississippi. The scientific method teaches us to make hypothesis that are answerable with testable experiments but first I need to share my information with other scientists. I sent all my work to Dr. Steve Lyons, a meteorologist from the "The Weather Channel," who I met at his lecture on hurricanes.

Chapter 4

Finding a Microburst

Many people say the difference between a tornado and straight-line winds is that straight-line winds do not have a vortex that extends upward into the atmosphere. Dr. Ted Fujita in his books points out that descending air is a vortex downward. The touchdown area he called a microburst is very damaging as well as the straight-line winds coming out at all directions from the touchdown area.

My daughter Melissa and I walked Southwinds Golf Course Area near Ocean Springs, Mississippi on June 16, 2006. I was waiting for this day for a long time; I found the straight-line paths that I studied previously on Southwinds Golf Course. We walked east, when the straight-line wind pattern moved slightly more south than even due south, just as I predicted it would. We changed directions and walked between two homes that were damaged during Hurricane Katrina. As we walked down Barbaretta Drive, the damage to the houses increased. We turning right on Dismuke at the corner of Crescent Shore Drive and the two houses near the corner were both very damaged. A tree was down between the houses, showing the wind came from the south. Turned down Crescent Shore Drive, we found two trees on the left side lot had been splintered. The rest of the lot was being cleaned up, the house was gone, but a tree on the west side of the lot was down, showing the wind came from the west. Across the street and down one lot, we found another tree that was splintered. Starting at these three points, eight of ten houses were gone; only one was in the process of being rebuilt. The trees surrounding this area were going in all different directions, in a classic starburst pattern. Four houses that were built on concrete pillars were gone but the pillars now were pointing in different directions. The houses must have crashed straight downward as the air dropped down, blowing the foundation pillars into a starburst pattern, i.e., going in different directions. I had found the touchdown area. This was a very strong microburst area. I hoped no one was in these houses when the downburst hit because that would have crashed into them. See the picture and description on page 41.



This Picture was taken looking south at the foundation and structural pillars of a destroyed house.

1. The structural pillars have a typical microburst starburst wind pattern.
2. The wind that destroyed this and other houses come from the above.
3. The descending air 'flooded' the area with air, then the push in all direction outward.

I found evidence of other downburst in the immediate area. Just a few hundred feet down the road. A microburst hit the wooded area surrounding the microburst starburst wind patterns is easy to see. That is the trees feel in different directions were going in different directions. See the picture on page 42.



The picture was taken looking west into a wooded area near Ascot Point.

1. The trees feel in different directions.
2. Two trees on the left center look to have been pushed toward the west then south.
3. This is a typical microburst starburst pattern; the air from above pushes downward, then pushes outward in different directions.

The straight-line tree pattern led me to this place and I felt I was in a graveyard. Later, I found two additional touchdown areas that affected this area with the possibility that tighter they generated not only straight-line winds but mini-swirls or gustnadoes and a vortex ring. Vortex rings develop around a microburst. Dr. Ted Fujita wrote can stretch until it breaks into pieces called runaway vortex rolls of high winds that last two to three minutes destroying everything in its path.

As I stood next to my daughter, Melissa, I thought about the Plains States and other high tornado areas, people believe that they were hit by a tornado but in reality they were hit with straight-line winds or a microburst touchdown area. If the victims stated that the tornado was

noisy like a train or sounded like a lion, they most likely were hit by straight-line winds traveling out of a microburst. The wind would be pushing things over as it is traveling along at a high speed at, or near the ground level. If the victims stated the tornado came straight down, it is most likely that there was downward flow of air the microburst. The touchdown areas just missed the person telling the story because if they received a direct hit they would not be alive to tell about it, like the people who had died in the area. Our ancestors hearing this sound and looking up to the dominate summer stars must have thought Leo, the Lion was close by.

Microburst downburst activity during hurricanes are not suppose to happen during hurricane because winds would push the air enough horizontally to give that air a 'soft landing' as the air above is descending downward. During hurricanes, most people would say that the rain was flying sideways. This horizontal wind would give the falling atmospheric air a soft landing. Dr. Ted Fujitas studies indicated that a microburst diminished and stopped when a horizontal wind speed reaches about 35 meters per second. This would lead one to believe that all downbursts would not leave a major impact on the impacted area. But consider this: most anemometers recorded top winds speed at about 50 mile per hour before they stopped functioning. Hurricane Katrina's unstable cloud structure reached over 6 miles into the atmosphere. When the vortex descended downward, if the horizontal wind speed was low at that location, the touchdown area would have a hard landing. It would flatten the trees and houses at the area I was standing called, Ascot Point. Then send straight-line winds, mini-swirls or gustnadoes and a cut of vortex ring into the Southwinds Golf Course. The straight-line winds coming out of the touchdown area would travel in all directions and could be traveling at 120 to 160 miles per hour.

Later in the week, I flew over the area and found two microburst that hit in the trees and sent straight line winds outward into the on the

surround areas. One was very close to a development. See the pictures and descriptions on page 44.



This picture was taken from an airplane, while looking down at a microburst behind a housing development near Ocean Springs.

1. The trees feel in different directions.
2. This is a typical microburst starburst patterns the air from above push downward them, push outward in different directions.

We flew over Southwinds Golf Course area with the surround buildings. The straight-line winds paths were clear to me I could see the microburst and the straight-line wind damage. Later I painted in the lines to represents straight-line winds and an ellipse show the microburst activity area. See picture and description on page 45.



This picture was taken from an airplane over looking Southwinds Golf Course.

1. Some of the surrounding buildings have experienced straight-line wind damage.
2. The large microburst activity area that was centered at Crescent Shore Drive and Hummingbird Drive near Ascot Point.
3. Small microbursts were found northeast, north and northwest Ascot Point.

The straight-line winds can be described a small jet-like wind that could be traveling at speeds of over 150 mile per hour. At Southwinds Townhouses, Wildon Olier took a picture of the flooding, to his surprised a strange image appeared on one of his pictures. The picture shows a twisting cloud like image with a head that looks to be cut off could be nothing but it direction from Ascot Point, the large microburst area is consistent for a midair outflow vortex ring stretching then breaking away from the touchdown area at Ascot Point. See picture and description on page 46.



(Credit: Wildon Olier, D'Iverville, MI (BiloxiWill12.jpg). The picture was taken looking south from Southwinds Townhouses.

1. The image in this photograph could be midair outflow vortex ring that broke off from the microburst area.
2. This jet like fast moving air current could damage an area for a long distance and be described as a small microburst or straight line winds depending on the angle it impacts the ground.

My field work gave me the insight to identifying straight line winds and determining where a microburst hit during Hurricane Katrina that I ended up using aerial and satellite pictures to predict where the activity occurred and then confirming the location on the ground.

Chapter 6

Reporting the Findings; Mississippi

Self publishing allow me to reach homeowners, engineers and lawyers quickly, so they would have a better understand what happened

during Hurricane Katrina and decide if they had wind damage or not. I placed a lot of information at www.hurricanekatrinastudy.com.

I wrote two reports, called Hurricane Katrina Wind Study Conclusions and the second report is called Homeowners Guide to Dealing with Hurricane Damage can be found on pages 53 and 58. I also made two videos. The first video was about the interactive website and how to use it from an aerial picture to on the ground picture with description of what one can see at various locations. One is called, Hurricane Katrina Study. Microburst, Downburst, Wind Water Study, Website, http://www.youtube.com/watch?v=RwmeXzltmmo&feature=mfu_in_order&list=UL

The other video explained why Hurricane Katrina was so distractive and how imbedded had inflicted damage to so many properties in Mississippi, it was called Downbursts and Microbursts During Hurricane Katrina

http://www.youtube.com/watch?v=KrYkdRpP-wk&feature=mfu_in_order&list=UL.

Hurricane Katrina Wind Study

As the hurricane approached landfall, it cut off the normal flow of water. Flooding of low-lying areas resulted, eventually causing a backward flow of water upstream. The direction of this type of flooding would be determined by the topography of the land. As Hurricane Katrina moved closer, the normal hurricane wind circulation or “horizontal winds” started. In this area of Mississippi, the horizontal winds hit from the south-easterly direction.

As the horizontal winds blew over the Gulf of Mexico’s surface, wind-driven waves resulted, hitting this section area of Mississippi, from the same direction as the horizontal wind was blowing, i.e., from the southeast. Since Hurricane Katrina’s eye hit west of this area, the storm surge flooding resulted from the south-westerly direction.

Multipliable directional winds also struck during Hurricane Katrina from numerous downbursts. Downbursts can develop into tornadoes or, over water, into waterspouts and, to a lesser degree, mini-swirls and gustnadoes. Straight-line winds are the normal result of the downburst winds as they radiate outward from the touchdown area. Downbursts are wind events that happen when the atmosphere is unstable and the air literally falls from the sky. Numerous microbursts happened from Gulfport to Ocean Springs. Microbursts are downbursts that are less than four-kilometer winds. Macrobursts are larger.

The evidence can be summarized in outline form:

- I. ‘Impact’ Evidence
 - A. Causes of southeasterly direction winds.
 - 1. Horizontal winds
 - 2. Wind-driven waves damage
 - B. Marks from the southwest direction most likely caused by storm surge.
 - C. Downburst can cause multi-directional winds
 - 1. at touchdown area

2. cause straight-line wind
3. cause tornado
4. mini-swirls
5. gustnadoes
6. vortex ring

- II. Debris Lines or 'Sediment Deposits' may show the direction of moving water and flooding.
 - A. Southeasterly direction resulted from horizontal wind or wind driven waves.
 - B. Southwesterly direction resulted from storm surge.
 - C. Causes of other wind-driven directional debris:
 1. Low lying area flooding reversed normal flow
 2. Tornado deposits
 3. Microburst deposits
 - D. Receding deposits

Homeowners Guide to Dealing with Hurricane Damage

By Geologist David Jungblut and Environmental Joseph Hockreiter,

I have studied the effects of Hurricane Katrina for the past year (including considerable on-the-ground field research) and have developed a number of techniques to help to determine what happened to dwellings during Hurricane Katrina. These and other techniques helped me to follow the destructive paths of Hurricane Katrina's powerful wind and water. My findings indicate that many houses were destroyed by water while others were destroyed by wind. However, vast numbers of dwellings were destroyed by both wind and water. Determining the direction that the wind hit your property versus the direction that the water hit, is very important to demonstrate that wind damaged your property during Hurricane Katrina. The initial major flooding direction was a wind-driven event that hit the shore line from the Southeast, and the initial damage could have been from the wind or wind-driven water. This type of wind event is due to the normal circulation pattern of hurricanes. It is necessary to follow the wind

damage out of the flooding area to see if your property may have been damaged by the wind before the flooding hit. See the tracking techniques below on how to do this. The other major direction of impact flooding was from the Southwest due to storm surge, with water flow being hindered by the land. Damage from other directions, other than the Southeast and the Southwest, may indicate that property may have been hit with a downburst. Determining the time of this event as it relates to the flooding is very important. See that geological techniques may help in the determining of the event order.

Tracking Techniques

How do you determine if your house was affected by wind, wind and water, or just water? The following tracking techniques can be invaluable to your understanding of what happened to your property. You would start by drawing a map of your property and your neighborhoods with a properly oriented North arrow. Use a good compass or obtain a US Geological Survey 7.5-minute topographic map that shows the direction of North relative to your house/street: www.topozone.com. Select a scale (for example, 1 inch equals 100 feet) and place the scale on your map so that it will be readable for your area of study. Do measurements with a tape rule if possible, to keep the map consistent with the scale you've selected. Also, take photos of all observations to document your findings in the field.

Start at your foundation or foundation wall. On your map, mark the direction that the vertical reinforcing re-bars are bent, if they are exposed. Draw and orient each scratch mark observed on the foundation floor or walls of the building. Notate the number of scratch marks and calculate the orientation of the majority. The next step is to take an inventory of trees around your property. Did they fall or not? If they did not fall, place a small circle on your map. For trees that fell, draw a small line on your map showing the direction that the trees fell. Now place a circle where impact scars are observed on larger trees; leave alone if no impact scars are observed. Look down the 'fall line from the downed trees. Do you see

other trees that fell in the same or similar direction? If so, mark the lines on the map.

The next step is to look at neighboring properties. Follow the lines of force that you observed on your property and compare those lines to what you see in the neighborhood. Do you see similar lines of force in the same orientation (to within maybe 20 degrees)? If so, mark the location and orientation of these forces on your map. Continue to look at the trees and the damage to other properties and document your observations as you move along. Do you now see a reinforcing pattern of force lines in the immediate area or do you see force lines that are predominantly oriented in different directions? Mark your observations on your map. Use additional sheets of paper to make your map in order to keep the scale readable. Continue the map survey as long as you are on safe ground. Safety is paramount! Do not trespass and watch for hazards wherever you are walking. If possible, you may decide to drive around your neighborhood and look to see if your observation of force vectors can be reinforced at a larger, more regional, scale.

Geological Principles

The Geological Principle of Relative Dating can be used to determine relative age or order of events that took place during Hurricane Katrina, by showing that different layers were deposited at different times. Try to keep in mind the direction of flooding in your area; compare the flooding direction to sedimentary deposits. It is best to think of the debris as sedimentary deposits even though you are dealing with parts of houses, cloth from clothes, along with normal mud, sand and tree sediment. If you see two or more different directions, document by taking pictures and have a professional investigate because it is possible to determine a relative time line of the events that happened at your property from the debris and sediment deposits.

How might you interpret all of this data once it is collected?

Professional help could be invaluable, but you can make an initial assessment yourself. If the re-bars are bent by forces coming from the Southwest (or, conversely, they are pointing towards the Northeast), they were most likely the result of a storm surge hit from the Southwest. If the re-bars are bent by forces coming from the Southeast (pointing toward the Northwest) the resulting force could have been from wind, wind driven waves, or just rising water damage. If you have scratch marks on the foundation floor, the marks may indicate that something was pushed over by wind. However, if the observed force direction was from the Southwest, it most likely resulted from the storm surge and quickly rising water. If the force direction is predominantly from the Southeast, it could be wind or water related and you should have a professional look at it. If you have observed multiple force vectors that appear to be almost radial in direction, or oriented in a direction that differs from the vectors discussed herein, this may indicate you were hit either directly by a downburst or one of the straight-line winds that develop from it. Evidence of multiple force directions in a single area may indicate changing wind patterns over the evolution and movement of the storm.

Some other things to look for, and this is where you may need the help of an engineering professional, include determining if the hurricane straps that hold the roof onto the house have been bent. Such damage might indicate that the roof experienced damage due to high winds. If the roof experienced high winds, the roof would have had an uplift during which the roof was held on by the hurricane straps. Yet the roof may have been damaged or have a gap between the studs the roof line check both the leeward and windward. If this is the case than your house experienced hurricane-level damaging winds. Holes in the roof also may indicate an upward lift. If your house experienced upward lift, it is very likely that the entire house was under wind stress.

If you have computer access, go to:

<http://ngs.woc.noaa.gov/katrina/> and look at the NOAA Hurricane Katrina

Air Photos. When you get to your property location, click on the picture (see button on the right side bottom of the screen) for a close up of your area. Find your property and look for confirmation of the lines that you just drew on your map. Do the force directions observed on the photo and your map match? Look at the larger region using the photos. Do you find reinforcement of the downdrafts, straight-line winds, or predominant storm-force winds observed on your property? If you find that your observations on the ground and the observations 'in the air suggest that wind force may have significantly impacted your home, have your results evaluated by an independent (not-related to your insurance company) professional.

You should also ask for the engineers' complete report, because wind speeds vary greatly and the top winds speeds record are different from the estimated winds speeds for your area. Good luck in your quest.

Chapter 7

Reporting the Findings; New Orleans, Louisiana

I sent a lot of information down to the Gulf Coast over the years including the report on page 53; **'Why Did the New Orleans Levees Fail?'**

Over the years have thanked me of my work one lawyer, Lawrence D. Wiedemann, Esq. stated the following in a letter to support my nomination for AGU Science Education Award, he wrote the following:

American Geophysical Union
2000 Florida Avenue, N.W.
Washington, D.C. 20009-1277

Gentlemen:

I am the senior partner in Wiedemann Law Firm, 110 Veterans Boulevard, Suite 444, Metairie, LA 70005.

I graduated from Tulane Law School, with honors, in 1955, and have

practice law in the New Orleans area since my graduation with a Juris Doctor degree.

I am a member of the Louisiana Bar, The United States Supreme Court Bar, and many Federal District Court and State Court Bars.

I am a member of the Plaintiff committee for the thousands of New Orleanians who were flooded in Orleans, and St. Bernard, Parishes, as a consequence of breeches in the East side flood wall of the Industrial Canal by an Ingram Barge under the control of Lafarge North America, Inc.

David Jungblut graciously offered his scientific expertise to our committee and was a guiding light in pointing us in the right scientific direction in developing the scientific theory of our case. We, and the thousands that we represent, are eternally indebted to him.

I unhesitatingly, recommend him for the prestigious award of your organization for which he has been justly nominated.

He is, indeed a man of science with enviable scientific knowledge and a heart to go with his knowledge.

Respectfully Yours,
Lawrence D. Wiedemann

Lawrence D. Wiedemann, Esq.
Wiedemann Law Firm
110 Veterans Boulevard
Suite 444
Metairie, Louisiana 70005

Why Did the New Orleans Levees Fail?

The thesis advanced in this article will show recently-uncovered evidence indicating that downburst energy, in the form of microbursts, generated straight-line winds and could have been part of the mechanisms resulting in the failure of the New Orleans levees during Hurricane Katrina.

Why did the New Orleans-area levees fail? This is one question left unanswered, even after an extensive review by the federal government was published in “**Technical Note 1476: Performance of**

Physical Structures in Hurricane Katrina and Hurricane Rita: A Reconnaissance Report”, by the **National Institute of Standards and Technology (NIST)**. The NIST report stated: “The mechanisms should be fully investigated using rigorous models and experimental analysis before firm conclusions can be drawn.” I suggest that the models will be inconclusive unless microburst and straight-line energy are taken into account in the models with the equivalent level amount of energy level that my study indicates. Microburst (a downburst that is smaller than 4 Km in size) and straight-line energy were part of Hurricane Katrina’s assault on Mississippi, and the following evidence will show that microburst and straight-line energy were part of the storm that hit New Orleans and surrounding areas, as well, and a possible factor in the destruction of the levees.

The following map shows the location of a series of photographs that depict storm damage in the New Orleans-area.



The following series of photographs that depict storm damage in the New Orleans-area, with annotations presented following each photograph:



Photograph 1: View of the breach at the 17th Street Outfall Canal (Credit: Page 83, *NIST TN 1476, Reconnaissance Report - Hurricanes Katrina and Rita*)

The 17th Street Outfall Canal carries discharged water from Jefferson Parish and New Orleans Parish to Lake Pontchartrain. The concrete levee system was breached at N30 00.972 latitude W90 07.239 longitude; this breach caused extensive flooding of New Orleans Parish. The flood protection wall in this photograph looks to be unaffected and shows no signs of stress due to the hurricane, but the next section is missing.

Can water alone place stress on one section of levee and the adjoining section unaffected? Water alone cannot do that, however, wind can cause just this effect in the form of straight-line winds from microbursts. The jet-like currents of air can impact a discrete area and leave nearby areas unaffected. Searching National Oceanic and Atmospheric Administration's (NOAA) Hurricane Katrina images at <http://ngs.woc.noaa.gov/katrina/>, one can locate evidence that

microbursts and associated straight-line winds were active during Hurricane Katrina as shown in the next photograph near the breach at Jourdan Road.



Photograph 2: View of a microburst area on Jourdan Road between Morrison and Dwyer Road near the Inner Harbor Navigation Canal (Credits: NOAA Image 24425508 and analysis by David Jungblut)

The large red circle painted on the NOAA image, shows a microburst (a downburst that is smaller than 4km). The red lines show the star-burst pattern in which the trees fell; this indicates that multiple wind directions were present during Hurricane Katrina. The small circle lines indicated damage to the surrounding buildings, along with possible ground damage to the road embankment on Jourdan Road. A close up of the area shows the trees falling in multiple

directions.



Photograph 3: A close up of the microburst area on Jourdan Road between Morrison and Dwyer Road near the Inner Harbor Navigation Canal (Credits: Google-Imagery and U.S. Geological Survey, map data)

The next photographs (#4 to #6) were taken between the breach that occurred at 17th Street Outfall Canal (See Photograph 1) and Lake Pontchartrain.



Photograph 4: 17th Street Outfall Canal close to Lake Pontchartrain
(Credits: NOAA Image)

The area took a heavy beating during Hurricane Katrina with debris hitting the walls of the levees and the bridge as shown in Photograph 3. The bridge and levees in this area acted as a dam that blocked the inward flow of debris, but both the bridge and levee walls in this area held up well and were not breached.

Closer inspection reveals that some buildings in the area did suffer damage from strong winds, as seen the Photograph 5.



Photograph 5 (Credits: NOAA Image and analysis by David Jungblut)

The circled buildings show evidence of strong wind damage: the tin roofs of the buildings in the lower right were peeled back; the roof of the one middle building was also peeled back and the other middle building shows multiple-direction wind damage; and the building in the upper left looks to have taken a direct hit from a small microburst causing three fourths of the building to be “blown” apart with debris scattered on three sides.

The next photograph shows that the breach at 17th Street Outfall Canal and the surrounding neighborhood experienced wind damage.



Photograph 6 (Credits: NOAA Image and analysis by David Jungblut)

Photograph 6 shows the heavy flooding flowing into New Orleans Parish at the breach. Some of the buildings just north of the breach show roof damage that can be attributed to strong winds.

Further south near one of the two breaches at London Avenue, two other buildings were “blown apart” with debris scattered in three directions, as if a small microburst hit them. See Photographs 6 and 7.



Photograph 7 and 8 (Credits:

NOAA Image and analysis by David Jungblut)

In photograph 7, the large circle shows the breach at London Avenue and the upper right circle shows the house that experienced a microburst. Photograph 8 shows another house that was hit by microburst energy, demonstrating that high winds were active in the area during Hurricane Katrina. Applying the Fujita Tornado Damage Scale (with the appointed damage as a guide), we can estimate the wind speed at 207 to 260 miles per hour. The Fujita Tornado Damage Scale is provided at the end of this document.

It is legitimate to query: If these houses experienced downburst winds could these same winds have impacted the levee system? The following warning was indeed issued on the day Hurricane Katrina approached.

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BULLETIN - EAS ACTIVATION REQUESTED

TORNADO WARNING

NATIONAL WEATHER SERVICE NEW ORLEANS LA

836 AM CDT MON AUG 29 2005

THE NATIONAL WEATHER SERVICE IN NEW ORLEANS HAS ISSUED A

*** TORNADO WARNING FOR CATASTROPHIC WINDS FOR...**

JEFFERSON PARISH IN SOUTHEAST LOUISIANA

THIS INCLUDES THE CITIES

OF...TIMBERLANE...METAIRIE...MARRERO...

KENNER...HARVEY...AVONDALE

LAFORCHE PARISH IN SOUTHEAST LOUISIANA

THIS INCLUDES THE CITY OF CUT OFF

ORLEANS PARISH IN SOUTHEAST LOUISIANA

THIS INCLUDES THE CITY OF NEW ORLEANS

PLAQUEMINES PARISH IN SOUTHEAST LOUISIANA

THIS INCLUDES THE CITIES OF...PORT SULPHUR...BELLE CHASSE

ST. BERNARD PARISH IN SOUTHEAST LOUISIANA

THIS INCLUDES THE CITY OF CHALMETTE

ST. CHARLES PARISH IN SOUTHEAST LOUISIANA

*** UNTIL 900 AM CDT**

*** AT 832 AM CDT...MANY REPORTS ARE COMING IN STATING
TOTAL**

STRUCTURAL FAILURE IN THE NEW ORLEANS METRO AREA.

SEEK SUBSTANTIAL COVER NOW!!! THIS IS A LIFE-THREATENING
SITUATION.

A TORNADO WATCH REMAINS IN EFFECT UNTIL NOON CDT MONDAY FOR
SOUTHEAST

LOUISIANA AND SOUTHERN MISSISSIPPI.

LAT...LON 2945 9036 2948 8953 3008 8922 3004 9040

(emphasis added)

Coinciding with these catastrophic wind warnings, three of the nine levees failed at about 9am. The others followed within the next 24 hours. The words in the warning seem to indicate the winds could have caused "STRUCTURAL FAILURE IN THE NEW ORLEANS METRO

AREA” affecting all the levees during the “8:32 AM CDT” reporting window or immediately after.

In conclusion, the science of microburst and straight-line winds are a relatively new field of inquiry and not known to exist until Dr. T. Theodore Fujita described microburst and straight-line winds in the 1970’s. The models that explain why the levees failed will be inconclusive unless microburst and straight-line energy is incorporated at the correct levels of energy within to the models. The evidence indicates that microburst and straight-line winds speeds of 207 to 260 could have caused the walls of levees to fail.

Fujita Tornado Damage Scale

Developed in 1971 by T. Theodore Fujita of the University of Chicago

SCALE	WIND ESTIMATE *** (MPH)	TYPICAL DAMAGE
F0	< 73	<u>Light damage.</u> Some damage to chimneys; branches broken off trees; shallow-rooted trees pushed over; sign boards damaged.
F1	73-112	<u>Moderate damage.</u> Peels surface off roofs; mobile homes pushed off foundations or overturned; moving autos blown off roads.
F2	113-157	<u>Considerable damage.</u> Roofs torn off frame houses; mobile homes demolished; boxcars overturned; large trees snapped or uprooted; light-object missiles generated; cars lifted off ground.

F3	158-206	<u>Severe damage</u> . Roofs and some walls torn off well-constructed houses; trains overturned; most trees in forest uprooted; heavy cars lifted off the ground and thrown.
F4	207-260	<u>Devastating damage.</u> Well-constructed houses leveled; structures with weak foundations blown away some distance; cars thrown and large missiles generated.
F5	261-318	<u>Incredible damage.</u> Strong frame houses leveled off foundations and swept away; automobile-sized missiles fly through the air in excess of 100 meters (109 yds); trees debarked; incredible phenomena will occur.

Peer review was done by Joe Hochreiter, senior environmental scientist from Yardley, Pennsylvania.

Chapter 10

A New Future

While I was working on the problems of the Gulf Coast, I have thought about how to solve the problems that people and communities faced. Insurance need to be comprehensive so one policy covers homeowners' completely from flood, earthquake, fire, wind, liability and other problems that homeowner's experience. Another problem was how to rebuild areas like the New Orleans' Ninth Ward the solution that I can up with follows, I sent this report to President Obama before he took office and placed on my website.

Reinventing Local American Corporations

People out of work or in low level dead end jobs; local banks that served the community are for the most part gone; businesses leaving an area after they contaminated the local environment forcing taxpayers to pay for it; the Wall Street mess and global corporations no longer

benefiting the American working class. Towns, townships, cities, counties, states and the country left to find solutions without money from the people who put us in this mess. Local money only a few decades ago would stay in a community and be used many times by local governments and businesses from employers to employees. Now money can enter a local bank that maybe owned by National or International Corporation and local area's economy may not have an opportunity to use that money again. How do we fix the problems? We reinvent The Local American Corporation.

What I am proposing is that we make new Local American Corporations work on solution to local problems. This new corporations could be set up as semiprivate corporation that can have all local taxpayers owning 50% of the stock, and county, state and national government owning the rest of the stock. The corporations can become totally private and after ten to twenty years buying out the government stock. Another model that can be used and one that may be easier to establish, would be a new public authority that can be converted to public corporate ownership later. Public corporations are used throughout the country to build housing or do special projects. Why not include the local taxpayers in the corporation with stock ownership to promote communities businesses or tackle community problems.

Either model could be used by New Orleans' where all taxpayers (not just land owners) would receive 50% of the stock equally in a new American Corporation. For example; the New Orleans' Ninth Ward American Corporation could be formed to tackle the problem of rebuilding that area. This corporation would receive houses and other properties that have been taken over by the government and money from the oil industry for say ten years. A second Ninth Ward company can be started with oil income available for them to tackle another problem after the first goes hundred percent independent.

Why should the oil companies contribute to this new local company? According to a governmental study [1], up to 45 states have

experienced subsidence for varying reasons and one of the stated reasons for the subsidence in the Greater *New Orleans Area* was the removal of petroleum by the oil industry. The report concluded in 1991 that the New Orleans area is *now more acceptable to further subsidence* and flooding. One could argue that this conclusion was confirmed during the flooding of New Orleans in 2005 when Hurricane Katrina hit. Though all nationally significant energy decisions would remain with the national government some money should be received for local benefit.

Is rebuilding the Ninth Ward in New Orleans a good idea or should we go another direction? Let the people decide. The semiprivate company would be made of taxpayers from this area who would work on the best solutions for this area as a whole. The stock holders would therefore have financial reasons to see that they can work toward for the common good and not just individual benefit. The people would determine the best direction for the Ninth Ward and make recommendations to the local and state governments as to the best direction for the people, city and state as a whole.

Other areas of the country like the inner cities can decide the direction that is best for the location and the people. Where would money come from if the area was not affected by oil removal subsidence? Some communities will be deciding to allow oil companies to drill for oil or not, to place wind or solar on public property and public buildings or not; communities are making decisions that will affect how they live. Why not allocate some percentage to go to local corporations that are semiprivate to be used for the benefit of a local community? The corporation of local people and government would be in a good position to determine future problems that can come up and have solution and money available. Problems from oil include spills to land settlement issues. Solar is safe in my opinion but a lot of solar panels can have an effect on the climate, maybe for the better if we want to lower the total energy that the world must deal with. Wind power is not without problems since it deals with secondary power from the sun and takes out energy from a stream of air

after the energy already heated the ground and water before it was removed for commercial use. A few windmills are a novelty but millions are an eyesore on land and ocean. Windmills may have undesirable side effects that are not fully understood at the present time. So there is some risk with any venture and the general population should receive some direct benefit since public property is used.

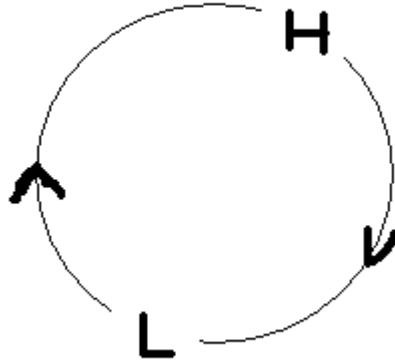
Other governmental property and assets can be used, like schools. Schools have professional people that can give vast amounts of knowledge to local corporations and understand the personally needs of the area. They can help to educate the unemployed and develop a local work force that can be trained for local jobs in the local corporation as needed. Other newly owned governmental assets can be used for the benefit of local corporations. For example, government buyout corporations like AIG could be used for insurance needs and can supply technical helps of the young and new Local American Corporations at reduced rates, since we are all part owners in the bailout corporations.

The people are paying; the government is planning to give away public land for corporation use. Why not local corporations? When we needed water, sewer and electric it was local corporations and local banking that did the job. Now that we need to rebuild a city or decide the direction of the town, it should be local corporations that "we the people" can control and work with for the better United States.

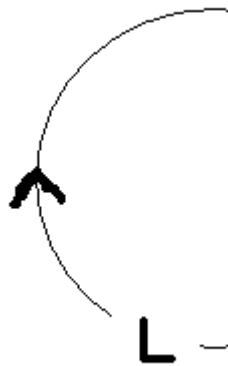
Part 3:

HURRICANE KATRINA TEACHING ACTIVITIES

Storm Energy and Convection Cells



The Earth's ground and upper ocean waters are heated by the sun via a process called radiation. As the ground and the ocean water heats up the air that is in contact with the ground or ocean water heats up, this process is called conduction.



Low pressure air that heated up absorbed energy and thermal expansion causes the air to expand and becomes less dense. The air moves upward and heats up other air and in the process called convection and loses energy the air contracts becoming denser. Cold, high pressure air will sink toward the ground to replace hotter, lower pressure air.



When the original air returns a convection cycle is formed. The movement of high pressure air to the ground is called wind. This air now in contact with the surface becomes less dense and expands becoming lower pressure air. The lower pressure air will rise as the higher pressure air pushes it up. As the temperature of this air drops, the air becomes denser and sinks back down, starting the cycle over again.

Small storms, water currents, as well as massive hurricanes, have convection cell processes associated with them and the entire atmosphere and the entire world's ocean have convection cycles as the main driving force of the world's climate. All storms moves air in the same up and down way. It is generally considered that high pressure air mass will sink toward the ground, pushing the up less dense air into the atmosphere. The warm air mass, since it is less dense, can carry evaporated water with it, if water is available to the air mass. The faster the air moves upward, the faster the air reaches the dew point. Cloud formation forms from the condensation of water droplets. The original warm, low pressure air mass is now denser; therefore, it is higher pressure air mass and will start to sink. The descending air complete, the convention cell, also called an "updraft-downdraft couplet."

Single Cell Thunderstorms have one convection cell, also called an updraft-downdraft couplet. A small thunderstorm may develop when electrical changes separate in the cloud.

Multi Cell Thunderstorms have multipliable convection cells, with each one having an updraft-downdraft couplet. The leading edge of Multi Cell Thunderstorms can develop different types of winds: squall lines, gust fronts, wind shear, hail, gustnadoes, straight-line winds and weak tornadoes.

Super Cell Thunderstorms have deep rotating updraft that can produce large hail, weak-to-violent tornadoes, and almost always occur near the updraft-downdraft couplet interface. The Super Cell Thunderstorms rotates with different updraft cells merging into an exploding vertically updraft. Cloud walls develop as larger volumes of air are uplifted from the surrounding area.

Student to draw the following: Single Cell Thunderstorms, Multi Cell Thunderstorms, and Super Cell Thunderstorms microburst and straight line winds.

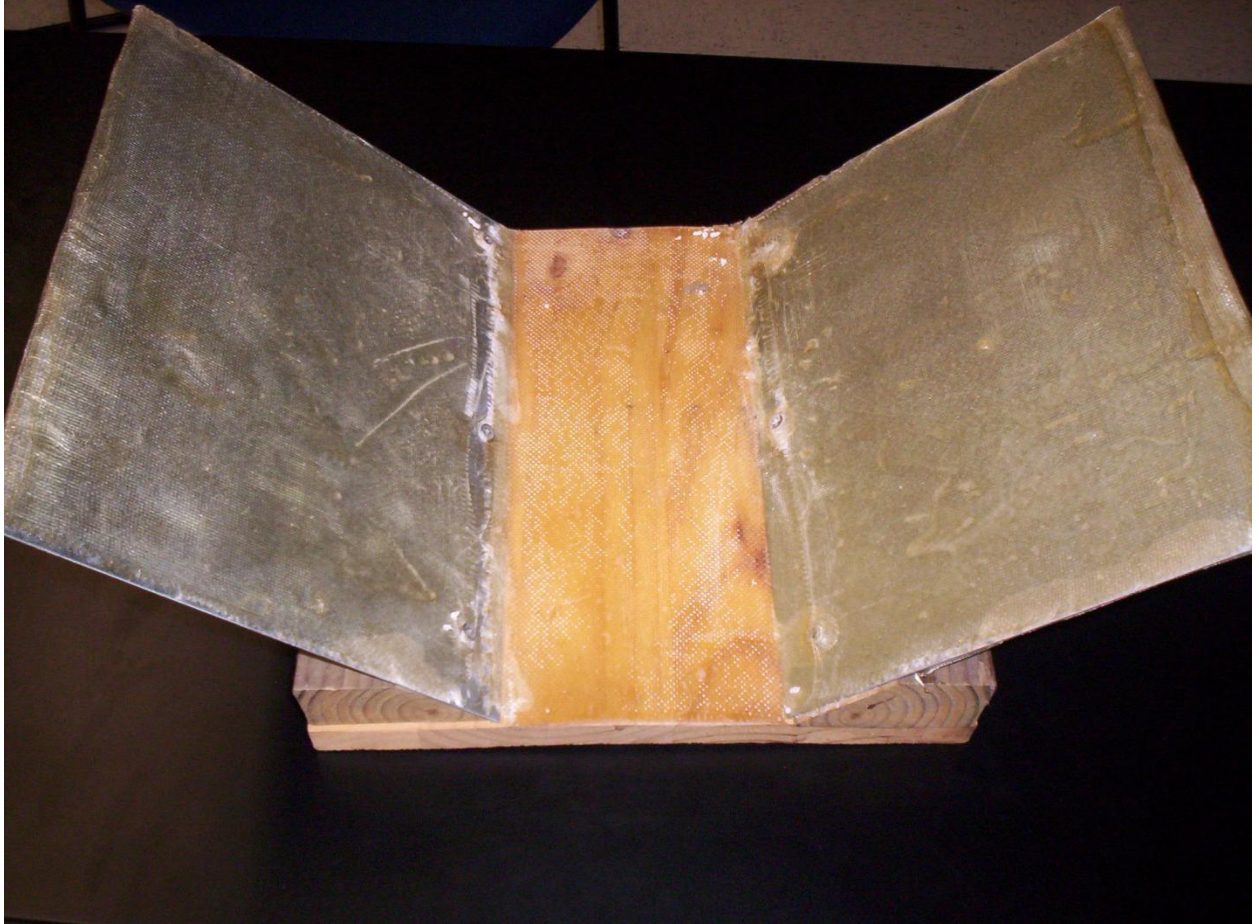
Student activity: Hurricanes are giving category numbers from one to five based on the wind speed. Do you think this is a good system? Can you come up with a different solution? How much energy is required to change 1 kilogram of water one degree? Can a category system be based on the amount of energy a system has?

Should We Rebuild New Orleans?

‘Should We Rebuild New Orleans?’ was an across-curriculum Interdisciplinary Activities with differentiated instruction activity that 6 teachers taught at the same time at Oakcrest High School. For three days during the school year Oakcrest High School holds co-curricular days. The following is a school wide lesson plans that I wrote that was used as a bases for other teachers teaching other subjects. The lesson planning follows.

Will history repeat itself? Should we as a society provide the money necessary to rebuild on flood prone areas of New Orleans or will the cost be too great to preserve the rich history of the wetland city in a global warming era?			
Will the conservation of a levee system ever be guaranteed to be safe, no matter what the cost in lives and tax dollars?			
Math			
1. Cost of rebuilding houses			
2. Cost of a new or rebuilt levee system			
3. Cost per resident or tax payer			
4. Cost of inflation			
5. Prediction of where and when microbursts could have occurred			
6. Compass readings to determine angle of damage			
English and Social Studies			
1. River life vs. modern life			
2. Family heritage and future generation			
3. Economical loss in historical buildings and culture of the citizens			
4. Economic status' effect on how families recovered from their losses			
5. Migration of New Orleans residents throughout the U.S.			
6. Insurance question in the "new" New Orleans			
7. Culturally what has been lost			
Science			
1. Geology of the area			
2. Design of levees to withstand microbursts or hurricanes			
3. New Orleans and area wetlands			
4. Future flooding prediction in a global warming era			
Languages: present, past and future languages of New Orleans			
1. French			
2. Spanish			
3. English			
Performing Arts			
1. History of music in the Bayou			
2. On the stage			
3. Movies filmed there			
Physical Education and Health			
1. Major health issues resulting from tragedy			
2. Eating habits of the Bayou			
3. Superdome and its effect on the population before and after the storm			

One group excelled in this activity b designed and built a new type of level system. See picture on page 72.



Mike Cline and Kyle Belanger's group designed and made a model for a new levee system.

Superposition Activity

Problem Question: How do you order events in rock strata or during a major sediment process called a hurricane?

Materials: Layered sedimentary rock, straws

Brainstorm the Problem Question:

Point out the sedimentary rock has layered in it. How can use the knowledge to help us understand something important? Brainstorm the relative age of the layers, "relative age to each other." Which one would be older and which one younger? After establishing the relative age of the rocks turn to the Picture 4 and brainstorm the time that different item arrived at the site in relative time.

Activity: Give each student a number of straws and hold the straws in an upright position, then let go. Determine relative age of the straws. Hint:

Which was the last one to arrive on the pile?



Relative Dating Activity

After discussing Relative Dating have student answer the following question:

How was this rock formed?



Picture credit: George Buttrus for this example.

Answers should include:

1. The rock was formed in the horizontal layers (Original Horizontal) or flat.
2. The top layer is younger than the bottom layer.
3. The rock layer was folded at a later time.

Note: Point out that this shows at least three different time events.

After students have time to think about the three different time events ask: Does this rock have another time event? Then show the next picture.



Geological Principles of Relative Dating Demonstration

Let's take a closer look at the rock line between layers; it is also an event that was recorded in the rock. It might have been caused by a drying out period or a period of erosion that scoured or weathered the first layer down followed by another period of sedimentation. Four events were recorded in this rock history.

Hurricane Forensics

Teaching Activity: Scientific Method Questions 1

The Scientific Method Questions that I started with were. Did water do all this damage? Did wind damage the houses before the water flooded them? Can we determine exactly what happened to the houses in this area by using logical approaches?

Teaching Activity: Picture-Picture an Observation Activity 1

Teacher introduction: Today we are going to look at two pictures that were taken during Hurricane Katrina. Imagine that you are an owner of a house that was on the lot where the two pictures were taken. Your insurance company disallowed your claim because your policy reads "hurricane wind damage" but not "hurricane flood damage."

Essential Question: What effects do hurricanes have on property?

Students: Look at each picture and write down your observations about each one. .

Then discuss your answers with 3 classmates and write down additional details that you did not notice.



Students Discussion: Write down additional details that you did not notice.







Student Discussion: Discuss your answers with 3 classmates and write down additional details that you did not notice.

Teacher: Show the answer photograph with the notations that have been added to help illustrate the important observations and continue discuss until students understand the following.

Picture 1 Description:

1. Lines grooved into the concrete are in the west-southwest to east-northeast direction. One is visible in this picture; it breaks the concrete on parts of the walkway and driveway.

2. Broken concrete can be seen in a number of areas.
3. The tree, on the right side of the lot, is down from impact. Some white areas on the top of the trunk can be seen in this photo.

Picture 2 Description: The scraped lines onto the concrete can be seen on the foundation slab.

1. The more impressive lines move in the same direction as the grooved line in picture 1 in the west-southwest to east-northeast direction, marked "A";
2. The less impressive lines can be seen going at different angles to the more impressive line; the majority are almost parallel to the right side of the foundation wall, marked "B"
3. Another line is almost at a ninety degree angle to the foundation wall, marked "C." Near to this line the foundation wall is broken.

Students: Now think like a scientist. What effects do hurricanes have on property?

Students' answers might include: The same object that moved over the lot in Picture 1 made the marks in the same direction on Picture 2. Since three lines can be seen in different directions, the house must have been hit from three different directions during the storm.

More hurricane forensic pictures with description can be found at my website: www.hurricanekatrinastudy.com.

Hurricane Air and Satellite Image Lab

Procedure: Go to: <http://ngs.woc.noaa.gov/katrina/> and look at the NOAA Hurricane Katrina Air Photos' website.



1. Click on index map.
2. Click on the third box from the red line. (You are now looking at Gulfport.)
3. Click on the pier picture and count the number of tractor trailer boxes you can find on the east side (right side) of the pier. (None or a few will be found).
4. Count the number of tractor trailer boxes you can find on the north of the pier. (A few will be found).
5. Count the number of tractor trailer boxes you can find on the left side of the pier. (This will take a long time with a lot being the most common answer).
6. Find the motel building, fourth box from the left the pier. Look between the buildings. Locate the tracker trailer box. Draw a line from it to the pier. See picture on page 81.



The pier and the trailer line would go through building. This shows that the trailer move west, north and then east to its final position.

7. Discuss the satellite picture from Google Maps and the close up image with the NOAA image taken just after the hurricane. See pictures on pages 82 and 83.



Credit: Google maps. <http://maps.google.com/maps?hl=en&tab=w/>



Credit: NOAA images. <http://ngs.woc.noaa.gov/storms/katrina/24333784.jpg>

Density and Buoyancy Lab

Introduction: After students have some time working with density and determining different mass of similar shaped objects.

Procedure:

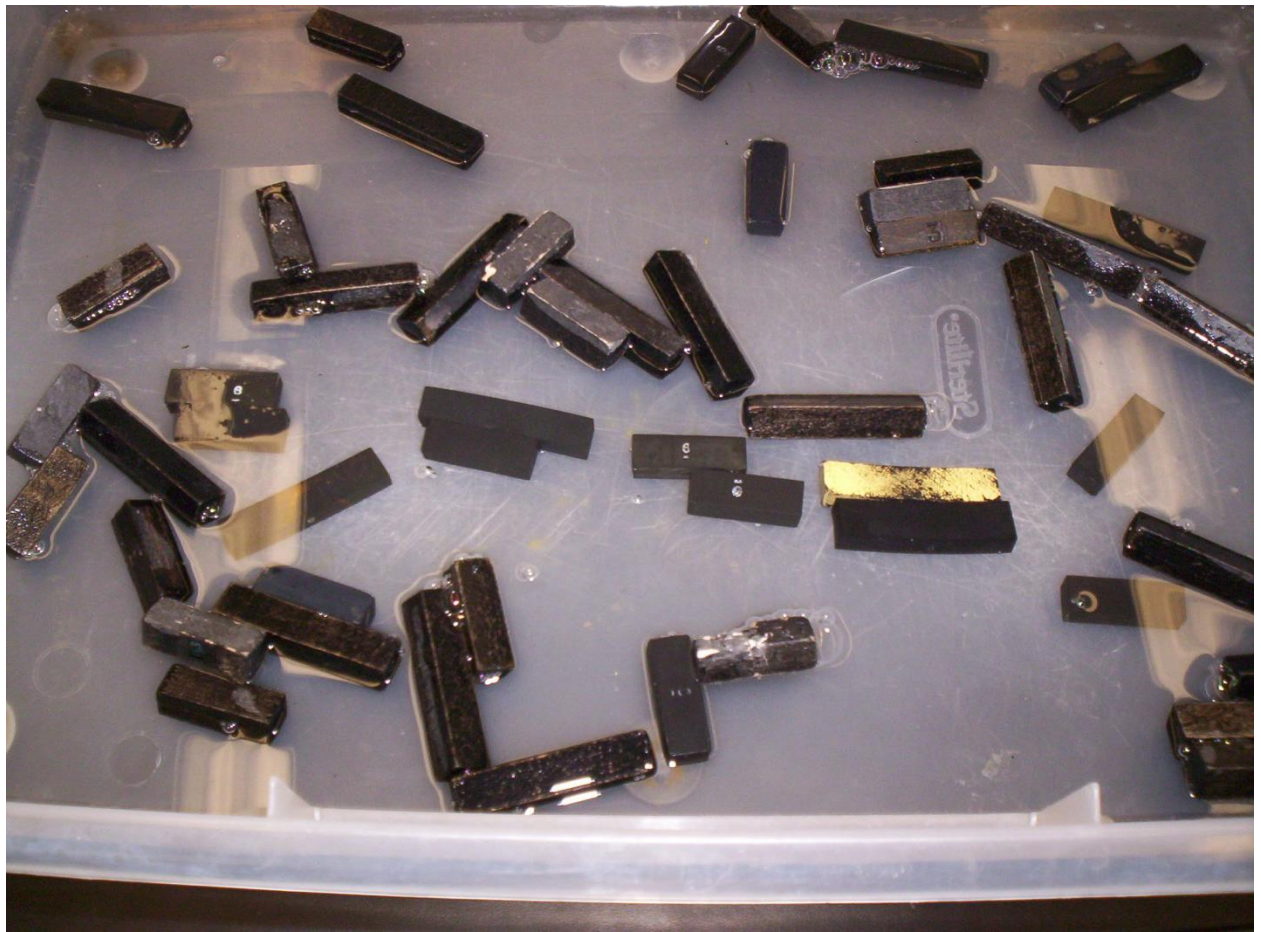
1. Place similar shape rectangular wood and metal objects in plastic container. Ask students to predict which ones will move first when water is added.
2. Add water slowly; note the movement of some and not the others.
3. Observe that some of the wood rectangles do to start to float first and others do not, I ask the students why.
4. Student will come up with different density of wood. Show the less dense wood block float higher than more dense wooden ones.
5. Relate the rectangular shape wood to the tracker trailer boxes in Gulf Port Pier as it is today on MapQuest.

Predict: What would happen to the trailer boxes if the wind came from different directions? How about the water? So what can we predict about the boxes during Hurricane Katrina?

Conclusion: The first tracker trailer boxes off would be less dense or lighter in the water. They would float higher or have better buoyancy and in water and have a potential to travel the longest distance but also could travel to a new resting place faster and travel to more quickly. They could have starting flooding off the pier early and travel to a new resting place fast or travel west and then back when the eye wall storm surge hit. The more dense ones being less likely to travel very far and possible sink faster. The medium weight boxes would have the potential somewhere between those faster to arrive and the slowest. They may have been the most traveled boxes.



I order the blocks similar to the tracker trailer boxes on Gulf Port Pier then add water.



The blocks are floating at difference heights or not floating at all.

Student activity: Compare the results with pictures from Gulfport Pier today and from Hurricanes Katina with the results from the previous lab.

Horizontal , Tornado, Microburst, Straight-line Winds and Storm Surge Flooding Lab

Object: Today we are going to look at the horizontal winds, tornado winds, straight-line winds and storm surge flooding to see if we can reproduce which type of event fits best with the evidence we examined.

Materials: Construction paper, tape, 15 Popsicle sticks for each house to be made, fan, vacuum cleaner, leaf blower, tub, clothes pins, and water.

Procedure:

1. Build a three dimensional house.
2. Place the house in a town- like setting.
3. Surround the town with clothes pins to represent trees.
4. Test the speed and velocity for a fan, vacuum cleaner and leaf blower.

5. Record your observation in Table I.
6. Direct the fan toward the town setting to represent horizontal wind.
7. Draw how the town and trees were affected.
8. Reset the town and repeat with the vacuum to represent a tornado event.
9. Reset the town and repeat with the leaf blower to represent a downburst and straight-line winds event. See picture below.
10. Place the town setting in a tub and add water to represent a storm surge event and test the different wind events. See picture below.





Activity: Compare your results with the following picture to determine which type of event(s) best represent(s) what happened in the picture.



Photo Credits: David Jungblut 2005