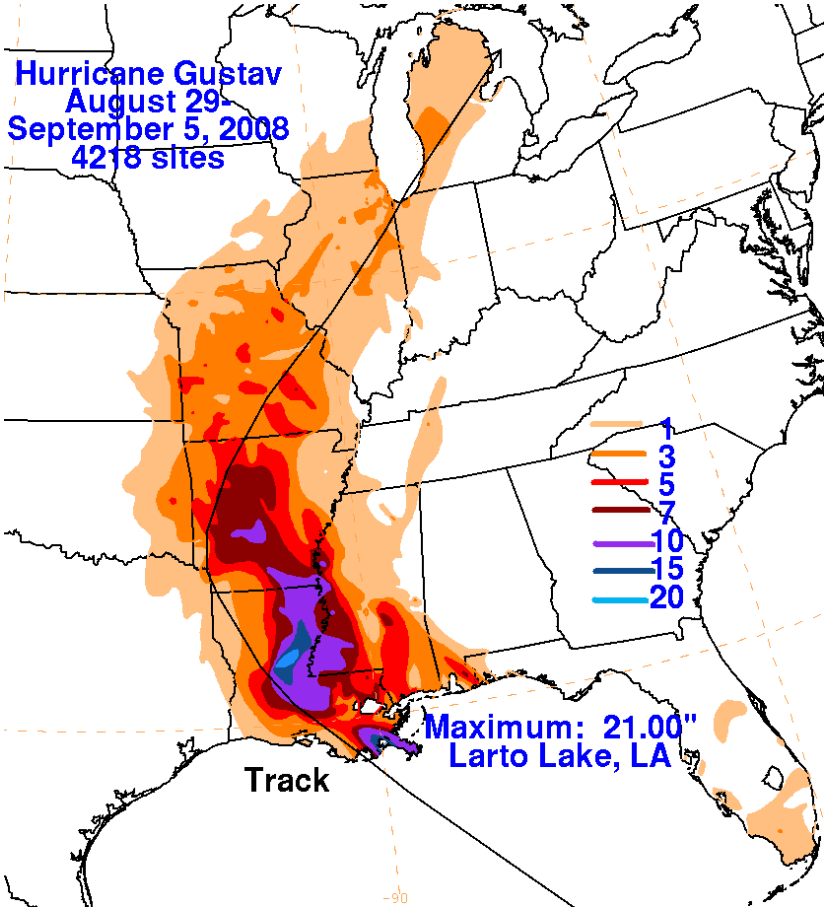
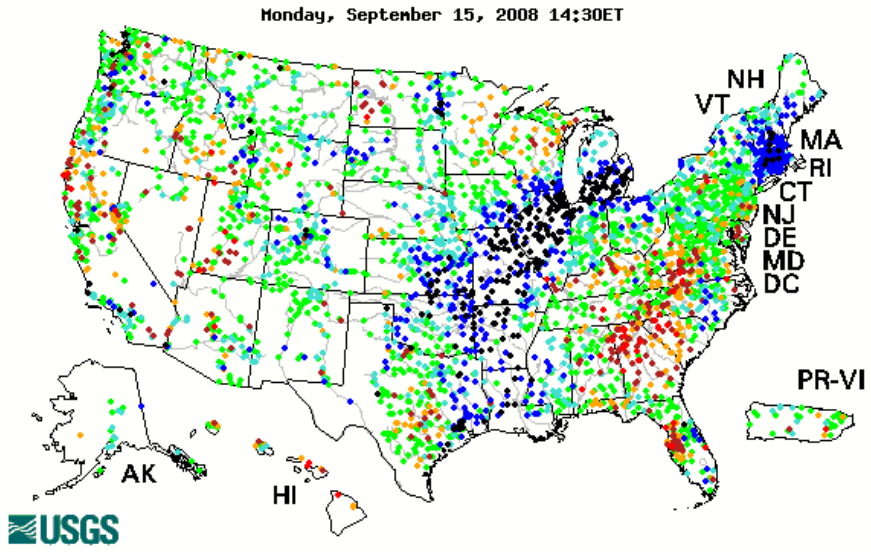
SERFC JOURNAL

September 17, 2008



September 15, 2008

Now that there is a lull in tropical activity it is interesting to see hydrologic impacts from previous inland-moving tropical systems so far this season.



This graphic indicates real-time stream flow compared to historical stream flow for the day of the year. Nearly all locating reporting unusually high stream flow had been impacted by tropical systems or tropical moisture.

T.S. Fay – Central and southern Florida.
Hurricane Gustav – Louisiana, Mississippi, Arkansas
T.S. Hanna – Virginia, North and South Carolina, New England
Hurricane Ike – Texas and Louisiana northward into the Midwest
T.S. Lowell – Yes, T.S. Lowell was a Pacific storm. Moisture from Lowell was transported into the Midwest and interacted with a frontal system resulting in flooding in Missouri, Illinois, and Michigan.

In fact, across the nation there are currently about 141 locations in flood, almost all due to tropical rainfall.

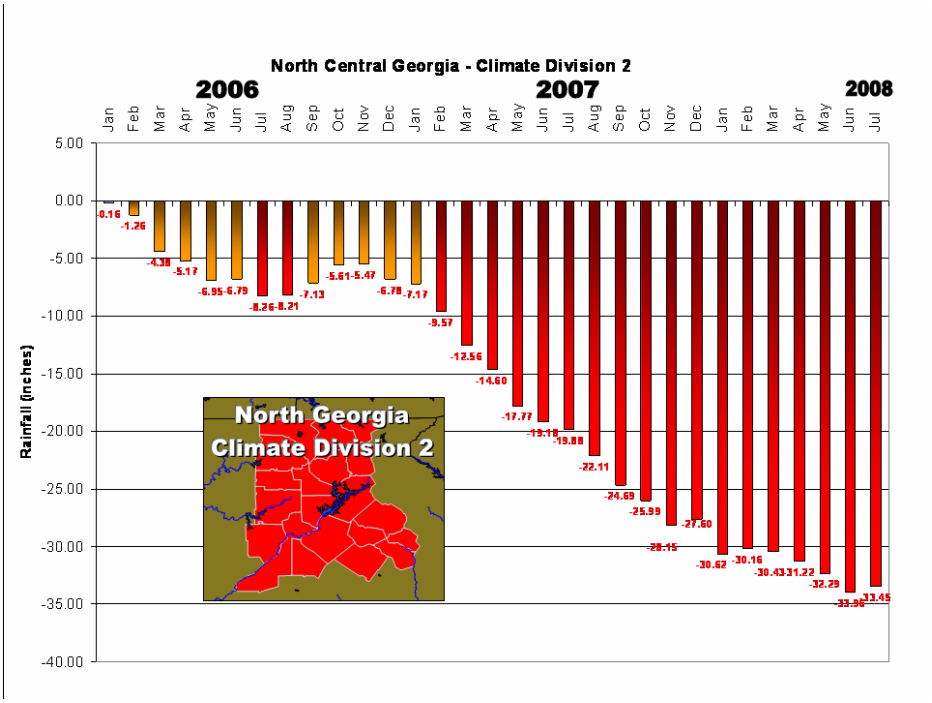
Tropical rainfall this season has had both a positive impact in the replenishment of water resources as well as a negative impact due to flooding.

September 11, 2008

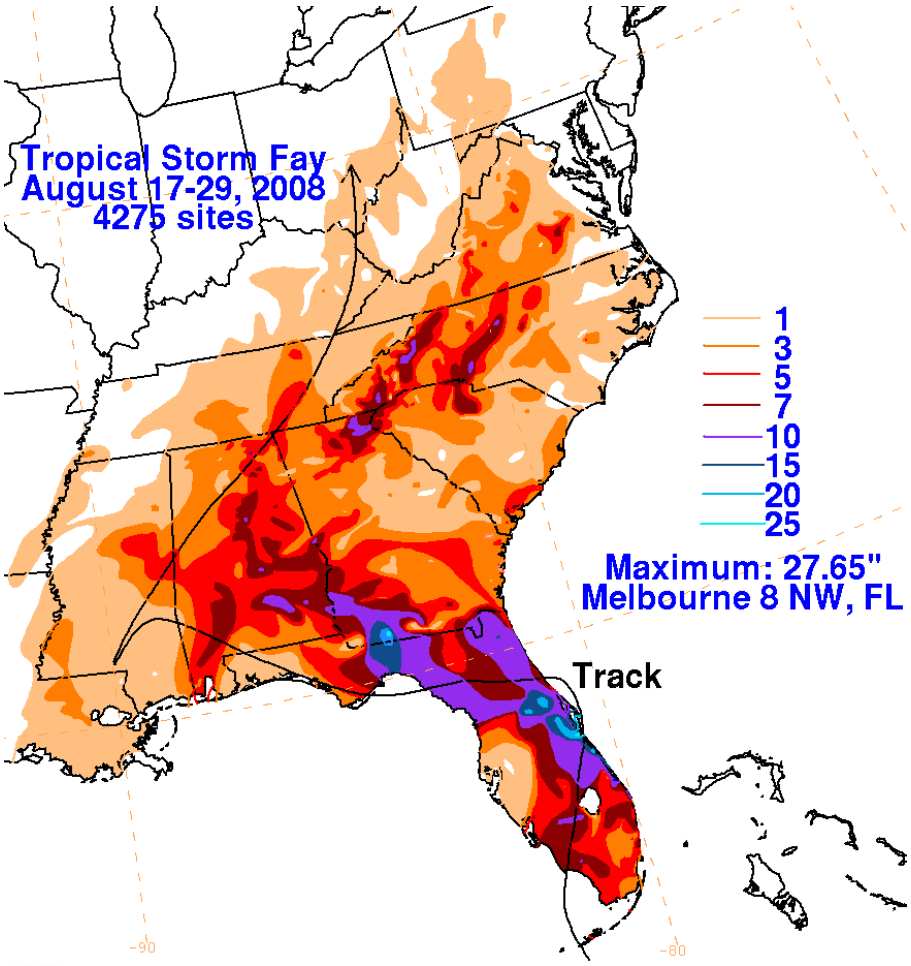
SERFC Senior Hydrologist Jeff Dobur has been keeping track of accumulated rainfall for selected areas across the Southeast U.S. Referring to the following graph, you can see that out of the past 21 months (for North Central Georgia) there have only been 3 months where rainfall deficits decreased (or improved). Rainfall deficits increased the

vast majority of the time, 18 months, clearly showing the continuing and deepening drought.

Jeff points out that the most recent month (July) indicated a slight improvement. Will this be a start of an improvement trend or just an exception?

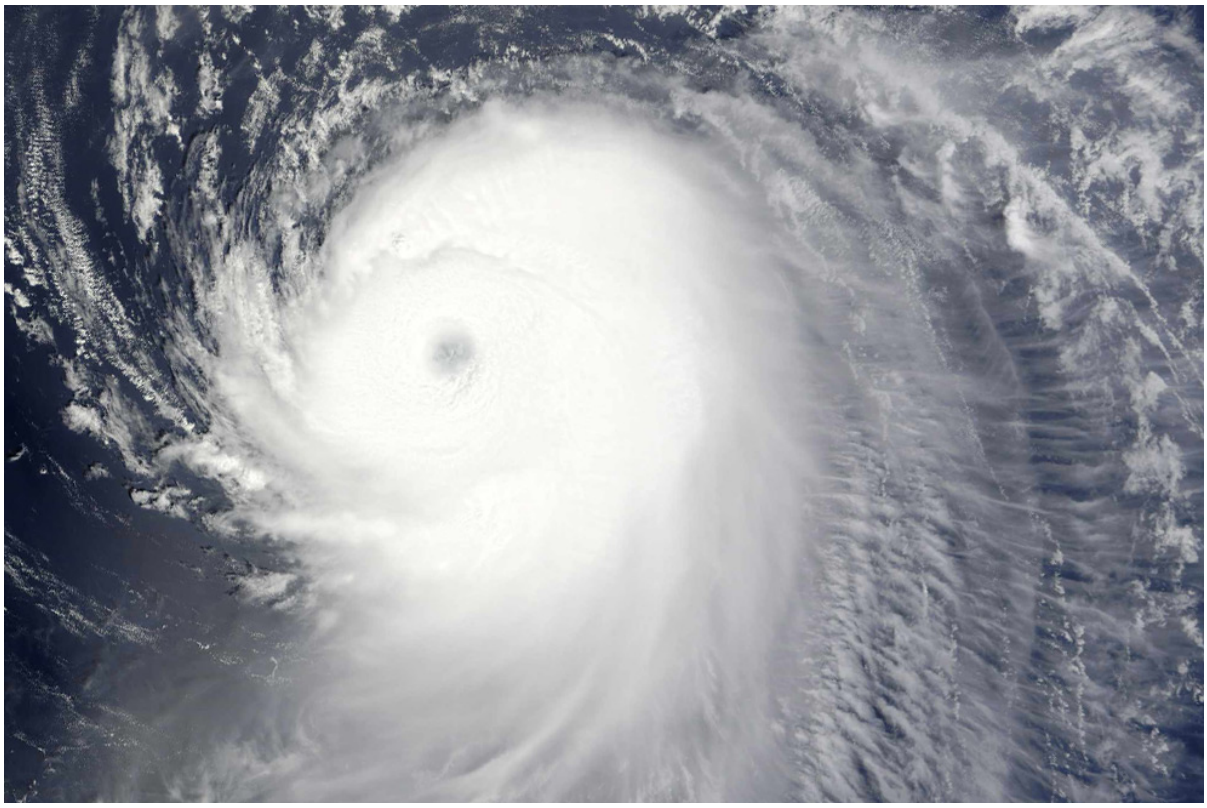


Here is a summary of rainfall from T.S. Fay, as provided by David Roth of HPC. As of this morning, the SERFC had 10 locations in or forecast to reach flood stage. Of these 10 points, 5 were due to Fay and 5 from Hanna.



September 9, 2008

Hurricanes…As Seem from Orbit. Hurricane Ike was still a Category 4 storm on the morning of Sept. 4 when this photo was taken from the International Space Station's vantage point of 220 miles above the Earth. The season's seventh named storm was churning west-northwestward through the mid-Atlantic Ocean sporting winds of 120 nautical miles per hour with gusts to 145. (photo courtesy NASA and the crew of the International Space Station)



August 29, 2008

Tropical Storm Fay not only produced floods across out area but also had an impact on the Southeast U.S. Drought.

According to Geoff Shaughnessy of the South Florida Water Management District, Fay resulted in the largest weekly lake elevation increase since January 1931.

Date	7day rise (ft) & volume inflow (acre-feet)
26-Aug-08	2.29 (11.34' to 13.63') = 884,560 af
6-Oct-51	1.72 (13.81' to 15.53') = 766,300 af
1-Oct-04	1.53 (15.81' to 17.34') = 688,500 af
28-Sep-48	1.40 (14.49' to 15.89') = 625,060 af

August 26, 2008

Growth brings stormier summers to metro Atlanta

By ANDRIA SIMMONS

Friday, August 22, 2008

Atlanta Journal Constitution

Call it “the revenge of sprawl.” University researchers studying urban effects on climate say Atlanta’s “urban heat island” effect has invigorated thunderstorms, increased rainfall and stimulated more lightning in Gwinnett County and parts of DeKalb County.

Wind tends to blow over Atlanta from the west during summer, making eastern areas downwind particularly susceptible to the city’s influence.

Data from the National Lightning Detection Network from 1992 to 2003 showed “the northeast side of Atlanta is the hot spot for urban-enhanced lightning,” said Tony Stallins, associate professor of geography at Florida State University.

Gwinnett County and northern DeKalb experience 50 percent to 70 percent more cloud-to-ground lightning strikes than surrounding rural areas in summer months, Stallins said.

When they aren’t ducking for cover, residents also are reaching for their umbrellas more often in summertime because of increased rain, according to Marshall Shepherd, an atmospheric scientist and professor at the University of Georgia.

Shepherd studied data from NASA’s spaceborne precipitation radar, a first of its kind, that showed about 20 percent more rain fell in the downwind region northeast of Atlanta during the 10-year period between 1998 and 2008, Shepherd said.

One particular area of increased heavy rainfall has been named the “Norcross anomaly” by Jeremy Diem, an associate professor of geography at Georgia State University. Diem looked at summertime precipitation in metro Atlanta back to 1949.

He said that urban effects caused a 20 percent increase in the number of heavy rainfall days in Norcross, compared to before Atlanta’s rapid growth began in the 1980s. This year, the practical effect of the climate change has been felt by many in a summer characterized by an unusually high amount of lightning damage.

A spate of lightning-sparked fires and power outages caused by isolated thunderstorms prompted the Gwinnett County Fire Department to activate its emergency operations plan five times between April and late July, putting extra equipment into service and seeking help from fire departments in adjacent counties.

After one particularly violent thunderstorm on July 29, Gwinnett fire spokesman Capt. Tommy Rutledge remarked, “To me it seems like the storms, especially the lightning, have been more damaging this summer than I can remember in the recent past.”

Atlanta does not create the storms, but it does give them “a little kick,” Stallins said.

“I call it the revenge of sprawl,” Stallins said. “It’s kind of the bite-back from all that land use change.”

It happens because cities are typically warmer than surrounding areas, with more paved surfaces to absorb heat. When Atlanta heats up relative to the surrounding area, the city creates its own urban breeze, according to Shepherd.

The rising heat creates vertical motions that can fuel thunderstorms rumbling over the city.

The pollutants in the air also are absorbed into passing weather systems. Stallins' research has shown those pollutants contribute to the static energy in clouds, which enhances lightning.

Increased lightning and rainfall have been documented downwind of other cities across the country and around the world. But researchers are drawn to studying Atlanta for several reasons.

The city's location makes for a good laboratory because it's "almost as good as being in a vacuum," Diem said.

"You need a big city, inland, without mountains next to it," Diem said.

Atlanta also has undergone remarkable transformation in the past three decades, with much of its rural forest being swallowed up by buildings and asphalt. Researchers say that makes the city a great place to study how land surface changes have modified weather over time.

NASA is funding Shepherd's research, and so is the Department of Defense. The agencies hope to gain understanding of how cities affect the climate and circulation of air. Local governments also could use the data to plan construction of reservoirs in areas likely to benefit from the most rain, Shepherd said.

 August 7, 2008

In the August update to the Atlantic hurricane season outlook, the NOAA National Weather Service (NWS) Climate Prediction Center in Camp Springs Maryland has increased the likelihood of an above-normal hurricane season and has raised the total number of named storms and hurricanes that may form. Forecasters attribute this adjustment to atmospheric and oceanic conditions across the Atlantic Basin that favor storm development - combined with the strong early season activity.

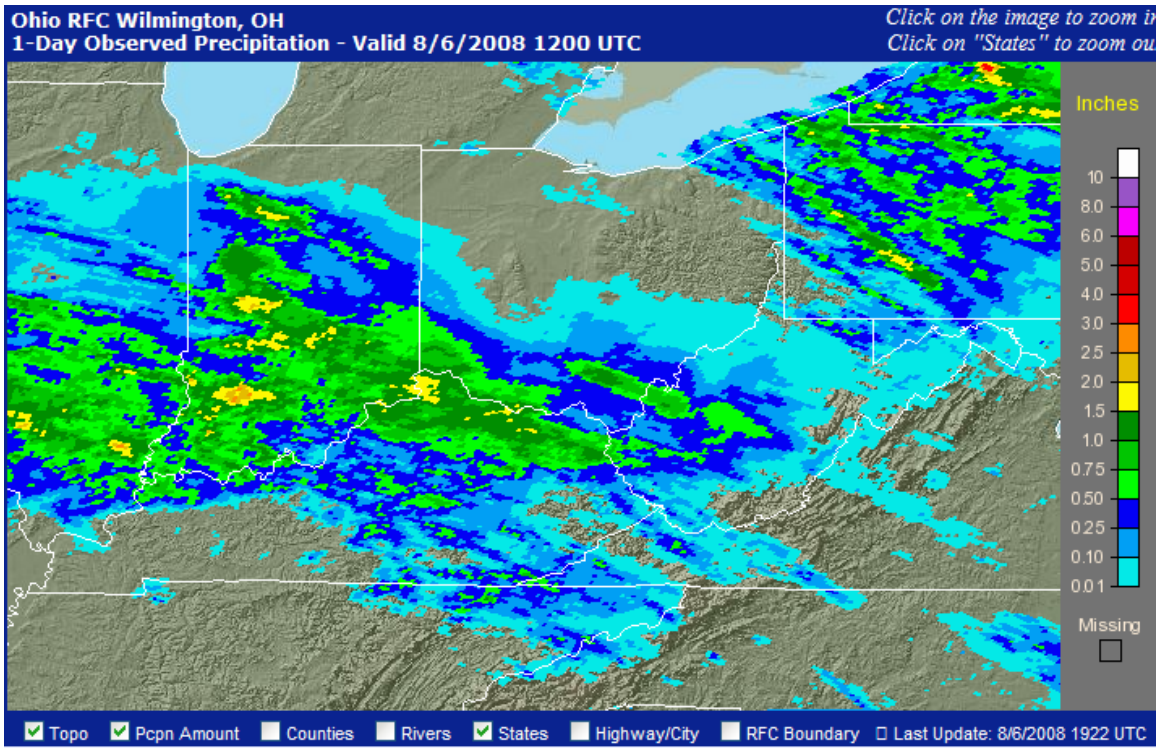
NOAA now projects an 85 percent probability of an above-normal season - up from 65 percent in May. The updated outlook includes a 67 percent chance of 14 to 18 named storms, of which seven to 10 are expected to become hurricanes, including three to six major hurricanes of Category 3 strength or higher on the Saffir-Simpson Scale. These ranges encompass the entire season, which ends November 30, and include the five storms that have formed thus far. A comparison with the original May 2008 outlook and a normal Atlantic Hurricane season is shown below.

	August 2008 Outlook	May 2008 Outlook	Normal
Named Hurricanes	14 to 18	12 to 16	11
Hurricanes	7 to 10	6 to 9	6
Major Hurricanes	3 to 6	2 to 5	2

August 6, 2008

MCC's and MCS's are not all that usual for summertime rainfall over the Southeast U.S., at least compared to the upper plains. I clearly remember my Des Moines and St. Louis days with a MCC would develop in the evening in Nebraska and move southeast. During a midnight shift in St. Louis a MCC moved south right along the Mississippi River with nearly 100 mph winds.

We were expecting one to come close to our HSA last night before dissipating. HSA Forecaster Josh Palmer expected it to nearly dissipate along our northern boundary, and it did.



Note the streak of rainfall from Indiana east/southeast. It fell apart as it moved into the headwaters of our area.

July 16, 2008

Some impressive statistics on Hurricane Bertha…

* Bertha easily broke the record for farthest east named storm formation in the tropics prior to 1 August since 1950.

* Courtesy of Bertha, 2008 has accumulated 5.75 NSD (Named Storm Days) prior to August 1 east of 75.0 W and south of 23.5 N, which are typically the classical Cape Verde-type storms, or the tropical-only hurricane in the classification nomenclature of Dr. James Elsner (Florida State University). This is comparable to 2005 (9.75 NSD), 1996 (5.75 NSD), 1966 (5.25 NSD), 1969 (4.50 NSD), and 1954 (4.50 NSD), all quite active hurricane seasons.

* Since 1950, only five years have had a hurricane form east of 75.0W and south of

23.5N prior to 1 August--1954, 1960, 1961, 1996 and 2005. The year 2008 represents the sixth season with a formation in this area.

* Bertha has been a named storm for 10 days, the longest-lived July storm since 1950. The longest lived named storm to have formed in July using the entire Atlantic best track database back to 1851 is Storm 2 of 1916, which lasted 12.25 days. Bertha should eclipse this record as well.

* Bertha has currently accumulated 6 days as a hurricane. This is the second longest-lived hurricane on record to have formed in July since 1950, surpassing Bertha (1996) - 5.5 hurricane days and trailing Emily (2005) - 7 hurricane days. Emily is tied with Storm 2 of 1867 and Storm 2 of 1916 as the longest-lived hurricanes on record (since 1851) to have formed in July.

* Bertha has accumulated 18.9850 ACE (Accumulated Cyclone Energy) units so far. This surpasses Bertha (1996) - 17.4 ACE units and Dennis (2005) - 18.8 ACE units, and trails Emily (2005) - 32.9 ACE units for the most ACE units accrued by a storm forming in July since 1950. Emily (2005) has the record for most ACE units accrued by any storm forming in the Atlantic best track in July (since 1851).

* In terms of monthly activity, July 2008 currently stands in fourth place for ACE accumulated in the month (since 1950). It trails 1966 (19.0 ACE units), 1996 (21.4 ACE units) and 2005 (60.4 ACE units) for July activity. The year 2005 has the overall record for most ACE accumulated during the month of July since 1851.

* The year 2008 has already accrued more ACE than did the entire seasons of 1855, 1907, 1914, 1925, and 1983.

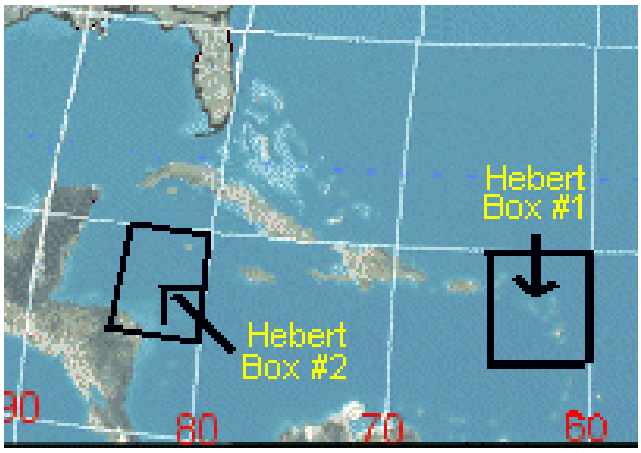
Source: Bill Goodman (NOAA) via the tropical storm mailing list. Statistics valid as of July 13.

 July 15, 2008

(Source: Hurricanecity) The Hebert Box

The Hebert Box was "discovered" in the late 1970s by Paul Hebert. This former NWS and NHC forecaster found that many major hurricanes that hit South Florida had to first pass through these boxes. The first box is located east of Puerto Rico and the second box is located over the Cayman Islands. Every major hurricane that passed through Box 2 late in the year hit the Florida Peninsula. Hebert says that a Hurricane does not have to pass through these boxes to hit, but if they do "you better pay attention". The 1935 Labor Day Hurricane that devastated the Florida Keys developed west of this box and Hurricane Andrew passed northeast of this box, so there are exceptions to the rule.

The following image shows the two Hebert boxes. Nearly every major Hurricane that hit South Florida since 1900 passed through these boxes. When major hurricanes miss these boxes, they virtually always miss South Florida. These boxes are about 335 miles x 335 miles and include the Virgin Islands but not Puerto Rico. The pattern has proven accurate for 9 out of 10 storms that developed & hit Dade, Broward & Palm Beach Counties.


Hebert
Box #1
Hebert
Box #2
80
70
60