



Suncoast Weather Quarterly

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Inside This Issue...

Modeling the Middle East
Katrina/Rita: Could It Happen Here?
Hurricane Season So Far? Amazing!

Feature Article

NWS Tampa Bay Goes International!



First successful Workstation Eta run (on screen). Representatives from Saudi Presidency of Meteorology and Environment (PME) are (seated from left to right): **Tariq Eshmawi, Mohammed Siami, and Jamal Bantan.** NWS Tampa Bay Workstation Eta instructors included (standing, left to right): Senior Forecaster **Nick Petro** and Meteorologist-in-Charge (MIC) **Shawn Bennett**.



Workstation Eta students Tariq Eshmawi, Mohammed Siami, and Jamal Bantan (front), and NWS instructor Nick Petro, NWS International Activities Office representative **Jeffrey Stuart**, MIC Shawn Bennett, and Science and Operations Officer **Charlie Paxton** (back).



MIC Shawn Bennett presenting training completion certificate and NWS Tampa Bay coffee cup to Tariq Eshmawi for completion of Workstation Eta training. In the background is Nick Petro; in the foreground is Mohammed Siami and Jeffrey Stuart.

by Nick Petro

The National Weather Service (NWS) Tampa Bay Area Weather Forecast Office (WFO) located in Ruskin, Florida recently hosted three visitors from the Presidency of Meteorology and Environment (PME), Saudi Arabia's government weather agency. In an environment of open exchange of weather science and ideas among the international community, the WFO Tampa Bay Area welcomed three meteorologists from

For example, he organized and developed a similar project to help Costa Rica install and run its own Workstation Eta model. Using this experience, Shawn not only helped with the model training, but also shared his extensive knowledge of GEMPAK and NAWIPS to help the Saudis utilize their new model data. In addition to Nick and Shawn's participation, Science and Operations Officer (SOO) Charlie Paxton,

the Saudi government weather agency to learn how to install, run, and optimize the Workstation Eta high resolution mesoscale weather model for their country and region of the world.

Meteorologist in Charge (MIC) Shawn Bennett and Senior Forecaster Nick Petro conducted the training during the two week workshop.

Representatives from PME included Mohammed Siami, Jamal Bantan, and Tariq Eshmawi.

Visiting from the NWS International Activities Office in Silver Spring, MD was Jeffrey Stuart, who served as the liaison between the NWS Headquarters, WFO Tampa Bay Area, and the Saudi PME visitors.

The two week workshop included sessions on numerical weather prediction and modeling basics, how to install and run the Workstation Eta, General Meteorological Package (GEMPAK) and National Centers Advanced Weather Information Processing System (NAWIPS) software to view model output, graphics scripting, and internet availability and distribution of model data. Senior Forecaster Nick Petro shared his 5 years experience in running the Workstation Eta and focused on training the Saudis in setting up the model and fine tuning it to work properly for their part of the world. MIC Shawn Bennett also participated using his wealth of previous Workstation Eta and international training experience.

Electronic Systems Analyst George "Bud" Fislar, and Information Technology Officer Tony Harper all helped in making this workshop a success.

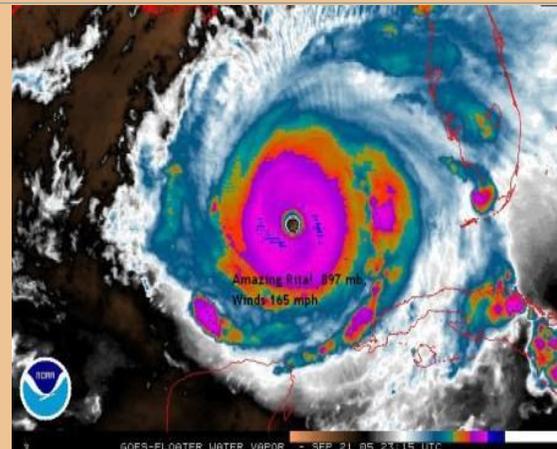
Tony and Bud made an important contribution by writing a customized File Transfer Protocol (FTP) script that will help the Saudis distribute their new model data to various workstations within the PME offices.

During their time in Ruskin, the Saudis also participated in the WFO Tampa Bay Area's daily operational briefings, shared weather stories and experiences from their country, and shared in some of the long standing traditions of the WFO - the daily staff-wide lunch break. Senior Forecaster Nick Petro said "I was glad to be part of this rewarding international project, as it was an invaluable learning experience for me as well as the Saudis".

The Saudi government weather agency has a similar mission to that of the NWS. They take their weather very seriously and strive to provide their citizens and residents with timely, accurate, and life saving forecast and warning information. MIC Shawn Bennett said "we shouldn't forget about all the US citizens who currently live and work in Saudi Arabia. This new forecast tool will not only serve the Saudi citizens, but our citizens as well who are living and working there". Overall the workshop was a huge success, and the Saudis were completely satisfied with their new forecasting tools.

Hurricanes 2005

Katrina/Rita: Could it Happen Here?



Visible image of Hurricane **Katrina** in the north central Gulf at 315 PM CDT (415 PM EDT), Sunday, August 28 while at maximum intensity, 902 mb and 175 mph winds. Katrina would lose only a little of her punch as she made initial landfall in extreme southeast Louisiana 13 hours later.

Water Vapor image of Hurricane **Rita** in the central Gulf at 615 PM CDT (715 PM EDT), Wednesday, September 21 while near maximum intensity, 897 mb and at least 165 mph winds. Rita would eventually lose some strength before making landfall in extreme Southwest Louisiana more than two days later.

An Overview of the Threat to Tampa Bay

The devastating aftermath from Hurricanes Katrina (southeast Louisiana, Mississippi, and Alabama) and Rita (extreme southwest Louisiana and northeast Texas), combined with the relatively minor damage sustained in 2004 in Tampa Bay, has prompted the questions once again: Can it happen here? The following should provide some answers.

- **Yes, but remember Charley?**

In Tampa Bay, the chances are roughly one Category 4 storm in fifty years. However, like the proverbial snowflake, each hurricane is different. The Saffir-Simpson scale only defines wind speed. For example, had Charley knifed through the Tampa Bay area rather than Punta Gorda, substantial damage would have also been primarily from the wind, in a 10 mile wide swath. Due to a much larger population, the amount of damage would have been at least five times greater. However, because the Tampa Bay area stretches generally 40 miles both east-west and north-south, some Bay area locations would have seen little or no damage while areas just 15 or 20 miles away would have been devastated.

- **Ivan's Example**

Though Charley bore right in the nick of time to spare Tampa Bay, Ivan provided a much scarier threat four to five days in advance. Residents who emptied the shelves of protective supplies, and service stations of fuel, had good reason. Ivan's official forecast track (white squares) at the time had the already large, Category 5 storm moving through the flatlands of western Cuba, then continuing northward just offshore of the Suncoast. Such a track would have ensured substantial, extensive damage from wind, tidal flood, and freshwater flood, especially in the

- **Storm Surge.** Ivan was able to generate incredibly large seas, in excess of 50 feet, to the north of its track. Had the pancake-shaped ridge developed as described above, seas of 30 to 50 feet would have headed toward the Suncoast. A storm moving at 15 to 18 mph, similar to Ivan or Katrina, into northern Pinellas or southern Pasco County would have brought those seas with it. Even with some decay of the sea height over the shelf waters, surge values would range from 15 to as high as 25 feet in a few locations. In Pinellas County, this would not only swamp the barrier island beaches and the less populated eastern shoreline along Tampa Bay, but could also cause substantial flooding in some lower and middle income neighborhoods along Lake Seminole. In Hillsborough County, channeled flow into Tampa Bay would swamp much of South Tampa, as well as Downtown. Needless to say, the surge would render many areas uninhabitable.

- **Wind.** Densely populated Pinellas County is home to thousands of mobile and manufactured homes, most of which were likely built prior to the more stringent standards required after Hurricane Andrew crushed south Miami-Dade County in 1992. Sustained winds of 90 to 110 mph with gusts of 130 mph or more would cause massive destruction (i.e., no longer inhabitable) and extensive demolition of these residences. Single family wood frame houses would sustain moderate to major damage; those without window protection would obviously fare worse, with some being demolished. While New Orleans lost at least one hundred thousand residences to damage from flood waters, mold, and the like, the residences there were generally more structurally sound than those in urban Tampa Bay. Therefore, the number of uninhabitable residences after

most concentrated areas of Pinellas County, southwest Pasco County, and western Hillsborough County, including the largest cities of Tampa, Clearwater, and St. Petersburg.

- **Worst Case Scenario**

Interestingly, if you take Ivan's forecast example above and slightly modify it to have the center move as Ivan actually did (through the Yucatan Channel), then bear right around the periphery of a pancake-shaped upper level ridge of high pressure, and make eventual landfall the in northern Pinellas or southern Pasco County, the worst case for Tampa Bay would be realized. Note that, with the possible exception of the 1848 storm, there is no comparison. The October 25th, 1921 storm is a benchmark, but not as scary as the following, at right:

a storm like Ivan or Katrina would likely rival that from New Orleans.

- **Freshwater Flood.** If Wind and Surge were not enough, heavy rains from a large storm would exacerbate flooding, especially in known poor drainage locations. The impact of heavy rains would also depend on precursor conditions, such as a wetter than normal rainy season. Given the storm's motion, the heavy rains would not hang around; however, the expected 5 to 10 inches would continue general flooding or high standing water well after the storm surge subsides.

Some Good News. Newer, concrete block residences constructed inland from the surge zone would likely survive, though sustain some damage to lanais, pool cages, and roofs. However, such damage will also depend on how any large trees fare on the property, and more importantly whether entry points such as windows, sliders, doors, and garages are properly sealed and protected.

Tropical Weather

Hurricanes 2005: The "Hits" Keep Coming

Wow.

Hurricane forecasters expected another busy season in 2005. But nobody expected this. As of this writing, hurricanes and their effects on life and property are the number one story in America in 2005. Katrina's modern-day tragedy and Rita's similar path and intensity level have led the way. The following is a sampling of some staggering statistics, so far:

- **17 by 18.** Seventeen named storms by September 18th broke the previous "fastest to 17" storms record by 10 days (September 28th in 1933).
- **Early, Often, and Hard.** With the exception of the "L" storm (Lee), "fastest to..." records were set for storms beginning with D, E, F, G, H, I, J, K, M, N, O, P, and R". 2005 is the only season on record to have 3 extreme

Katrina Relief from Ruskin

Office staff did their part in aiding the relief efforts after Katrina. Incident Meteorologist Rick Davis provide hazardous meteorological and other support on location in Louisiana for a two week period. An article will appear in the full Autumn newsletter about his effort. The staff also provided several car loads of relief supplies, including clothing, blankets, diapers, etc. to collectors at the St. Pete Times Forum to be distributed to displaced residents. Many donated ample cash contributions to charities and organizations supporting the relief effort, as well as to the Federal Employees Education and Assistance Fund in the name of NOAA and NWS employees who also suffered severe property damage in the Delta region.

(Category 4 or 5) storms before August 31.

- **Trouble in the Gulf.** Katrina (August 28) and Rita (September 21/22) rapidly intensified to Category 5 storms over the central Gulf of Mexico. Dennis (July 10) emerged from Cuba and rapidly intensified to briefly become a Category 4 in the eastern Gulf. Emily, a Category 4 at landfall on the Yucatan (July 18), would have likely remained strong had it veered a little to the north.
- **Under Pressure.** Rita (897 mb) ranked 3rd all time lowest pressure in the Atlantic Basin. Katrina (902 mb) ranked 5th. Katrina made U.S. landfall with the 3rd lowest pressure, at 918 mb.

Fortunately for Florida's Suncoast, the bullets have been dodged through September. Dennis provided the most punch, producing several small tornadoes in feeder bands along with sustained tropical storm force winds near the coast and occasional gusts a bit farther inland. Both Katrina and Rita produced less rain than would normally fall during the typical thunderstorm season, and tropical storm force winds were largely confined to the coastal waters off Charlotte, Lee, and southern Sarasota Counties. Each storm produced above normal tides, some overwash and beach erosion, and good to excellent summer surf.

A grand thanks to all who helped, and continue to help, this valiant cause.

What's to Come

The season is not over yet. Much will depend on the evolution of the synoptic weather pattern over the next month. Should the high pressure ridge hold across the Gulf coast through Florida to the Bahamas and Bermuda, there could be plenty more to talk about when the full Autumn newsletter is published. The Bay of Campeche and the western Caribbean, two areas which are climatologically favored for October and November cyclone development, remain very warm and have been untouched by tropical activity since July. Tropical Cyclone Alpha, anyone? Should four more named storms develop, the fifth would indeed begin the follow-up list, which is the greek alphabet (Alpha, Beta, Gamma, etc).

Our best hope is to have a strong front cross the Suncoast by mid October, followed by a prolonged period of mid level westerly flow. Such a pattern would not only dry out the deep layers of the atmosphere, but steer, and shear, any Caribbean cyclones to our east. One can hope.