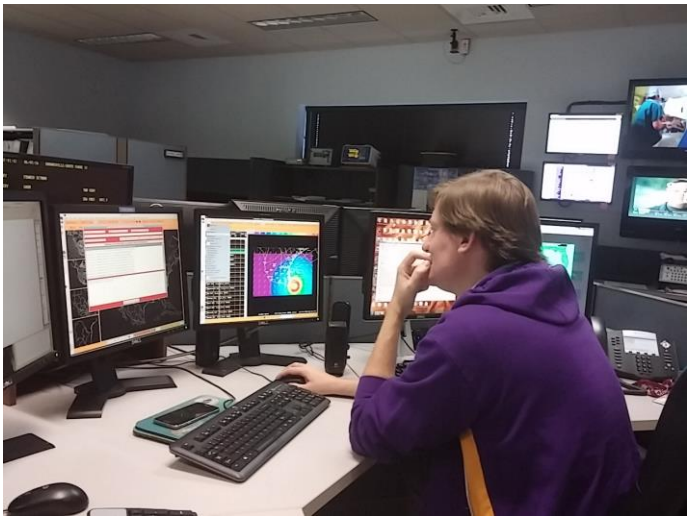
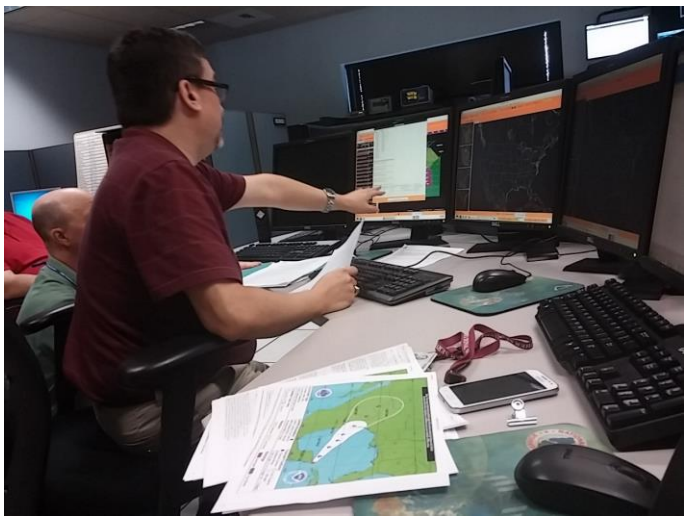



Above: ***Left*** – NWS Brownsville/Rio Grande Valley Forecaster *Jason Straub* Analyzes digital forecast data for fictional Hurricane "Tejas" (middle screen) to ensure new National Weather Service Tropical Forecast Information can be tested. ***Right*** – Senior Forecasters *Mike Castillo* and *Geoff Bogorad* evaluate output from the new local Hurricane Watch text information generated from the digital forecast.

Practice to Play!

NWS, From Brownsville to Fort Worth and Miami, Supports Massive Hurricane Evacuation Exercise in Texas

Rio Grande Valley Aircraft Evacuation Simulation Brings Local, State, and Federal Partners Together, June 2-9, 2016

In the Emergency Management community, there are several methods used to simulate a real-world situation: A ***Table Top Exercise*** assigns roles and responsibilities for key personnel and discussions are held among them to assess plans, policies, and procedures. A ***Functional Exercise*** examines coordination, command, and control between various multi-agency coordination centers[1] and may be designed as an Incident Command Structure (ICS) or other format (e.g., based on Emergency Support Functions, or ESF). Real actions are not conducted, but communications by phone, radio, wireless (web, etc.) may be simulated. A ***Full Scale Exercise*** is a multi-agency, multi-jurisdictional, multi-discipline event involving functional coordination and actual performed activities that simulate a real event.[1]

In early June 2016, the State of Texas conducted a ***Full Scale Exercise*** to simulate aircraft evacuation (AirEvac) of medical needs residents and general population out of the Rio Grande Valley in advance of a potentially catastrophic Category 5 Hurricane. The exercise storm, known as "Tejas", was based on the *actual* Category 4/5 Hurricane Allen (1980), which threatened the Lower Rio Grande Valley up to the final hours with 150+ mph wind and a devastating storm surge. On June 8th, the primary day of action, several hundred people were taken to a ground port of embarkation at San Benito High School, where they were screened and processed as medical or general population evacuees. From the high school, they were taken by motor coach to Valley International Airport in Harlingen, where they boarded five aircraft for departure through the afternoon: Two Lockheed C-130 Hercules aircraft for medical evacuees; one MD-80 and two B-737 commercial (charter) aircraft for general population evacuees.

The medical evacuees were taken to San Antonio's Kelly Field and sheltered overnight in San Antonio before returning to the Rio Grande Valley. The general population evacuees were flown to Austin (Bergstrom Field), Dallas/Love Field, and Dallas/Fort Worth International Airport and sheltered overnight in each city. All role

[1] California Hospital Association, via U.S. Department of Homeland Security Exercise and Evaluation Program

players were given Meals Ready-to-Eat and a cot to sleep on; they then returned to Valley International Airport by bus (from Austin and San Antonio) and aircraft (from Dallas) on June 9th.

The scope of the exercise was as large as any in recent memory in Texas. Planning began in earnest in late 2015, and continued with meetings and Table Top Exercises at all locations from January through May 2016.

A partial list of the federal, state, and local participants included the following:

- Federal (Departments of Commerce, Defense, Homeland Security):
  - NOAA/National Weather Service
  - U.S. Army National Guard (Texas)/U.S. Air Force
  - Transportation Security Administration
  - U.S. Customs and Border Protection
- State of Texas
  - Texas Department of Public Safety/Division of Emergency Management
  - Texas State Health Services
  - Texas Military Forces
  - Texas Task Force One
- Local/Regional
  - Cameron County Emergency Management
  - Cameron County Health Department
  - Various City First Responders (Brownsville, San Benito, Harlingen, etc.)
  - Lower Rio Grande Valley Development Council/Homeland Security Advisory Committee
- Non-Governmental Organizations (NGO)
  - American Red Cross
  - Food Bank of the Rio Grande Valley
  - Salvation Army of the Rio Grande Valley

Clockwise, from upper left: C-130 transport awaits medical needs "evacuees"; volunteer medical evacuees await movement to the C-130 for transport to San Antonio; Texas Military Forces assist screening of evacuees at the San Benito High School drop-off point. Photos courtesy of the City of Harlingen. All related photos are available from the Valley Morning Star newspaper.

National Weather Service Role

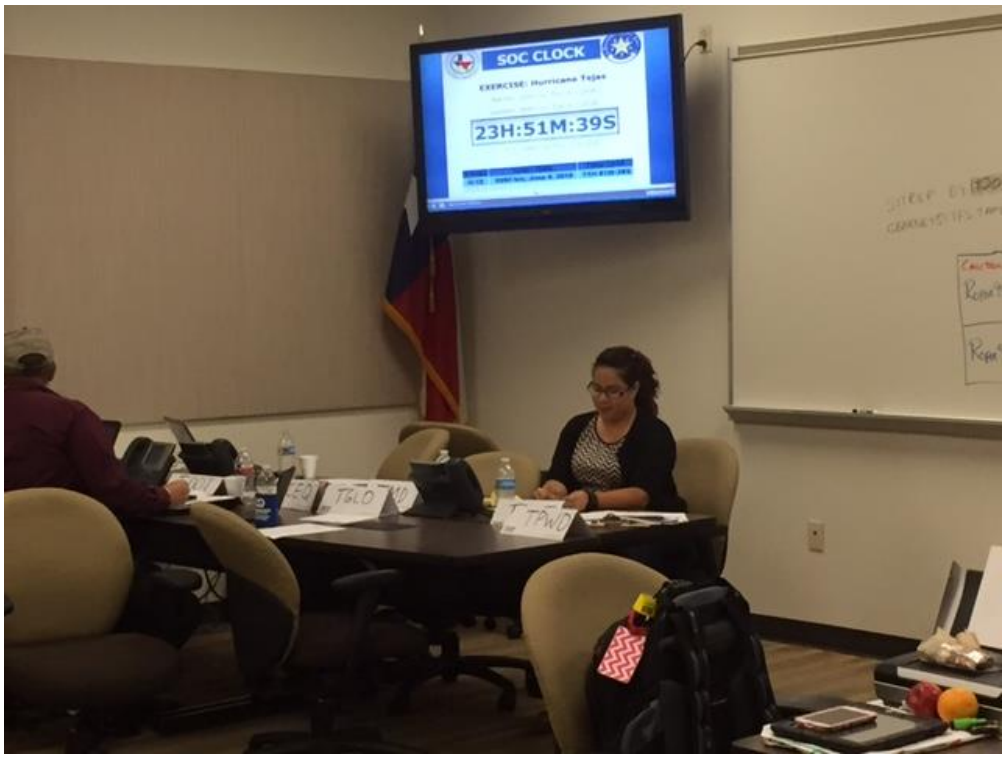
Weather Decision Support Services were critical to the success of the exercise, and a team effort ended in success! NWS Brownsville/Rio Grande Valley Warning Coordination Meteorologist *Barry Goldsmith* worked with the National Hurricane Center (NHC) and the Southern Region Regional Operations Center (SR-ROC) to ensure the critical forecast and warning data were available for use in state and local briefings through the exercise timeline, and helped to set up the local office "playbook" that allowed many of the staff to test a number of features, from text and graphical information streams to media interviews, that would be part of the operational reality in case of the next Hurricane Allen or Hurricane Beulah (1967) in the Rio Grande Valley.

Mr. James Kelley (formerly of Texas Department of Public Safety) worked closely with Goldsmith to create Hurricane "Tejas", based on Allen, during the spring of 2016. *Mike Brennan, Dan Brown, Mark DeMaria,* and others at NHC used the "Tejas" model to create wind speed probability graphics and text, cone-and-track graphics that were used in briefing slides at the state and local (Rio Grande Valley) level; wind speed radii were available for use in Hurrevac and at the Brownsville/Rio Grande Valley office in the Graphical Forecast Editor, from where Hurricane Threats and Impacts graphics and text were created.

The NWS role in the exercise began on June 2nd, which was defined as "H-120" – where H-hour is the expected arrival of tropical storm force winds on the affected coast for Texas planning purposes. State briefings were provided by *Brian Hoeth* and *Mark Wiley* of the SR-ROC*,* with planning assistance from *Jen McNatt,* at noon each day prior to the mock "landfall". Wiley was deployed to the State Operations Center (SOC) in Austin from June 6 to 9 as physical resources were moved into place. Goldsmith provided locally-tailored briefings from Rio Grande Valley decision-making participants, by webinar on June 2, 3, and 6, and live at the Disaster (21) District Committee (DDC-21) base in Weslaco, Texas, on June 7 and 8. Briefing audiences included the DDC-21 participants and related Emergency Management staff, and the Healthcare Preparedness Coalition of the Rio Grande Valley.

While Goldsmith was deployed to DDC-21 on the 7th and 8th, NWS Brownsville/Rio Grande Valley staff practiced creating the text and graphical hurricane information in English and Spanish based on the mock advisories at 9 AM and 3 PM each day; took media interviews to explain the importance of practicing to play, and simulated graphics that would be sent via web and social media in a real event.

Staging room at Texas DPS Region 3 Headquarters in Weslaco during the Hurricane "Tejas" Full Scale Exercise. In a real event, the NWS Brownsville/Rio Grande Valley Decision Support Team would collaborate with the office in Brownsville, the ROC, and others to create briefing packages for the DDC several times per day. The staging room would be open for Emergency Management officials, first responders, and others to come in and ask questions about the evolving tropical situation. Special thanks to the Electronics and Information Technology Team of **Pablo Gonzalez, Everett Briggs, and Paul Schaafsma** for the successful setup!



Activity at the Disaster District Committee briefing room in Weslaco, TX. The "SOC Clock" shown is the time to the expected arrival of tropical storm force winds, "H-Hour", from which many decision triggers are made.

"The Hurricane 'Tejas' Exercise, combined with the number of changes to NWS local tropical forecast and warning operations since the last significant event in the Rio Grande Valley in 2010, provided the 'perfect storm' for us to test our operational capabilities inside and outside of the office," said Goldsmith. "The results were very gratifying. Many of the operational and decision support tools worked as expected, but just as important, we discovered a few points of failure that we'll be able to fix prior to the heart of the 2016 Atlantic Hurricane season. These fixes, and the experience staff received from two full days of practice, will allow us to stand ready to serve confidently should this be the year of the next Beulah, Allen, or Bret (1999)."

Other Exercise Outcomes

For the State of Texas and Rio Grande Valley participants, the initial report on the exercise was positive. Decisions that led to human and physical resource movement based on the potential for a catastrophic hurricane strike in the Rio Grande Valley worked out smoothly. On exercise "action" day (June 8), all buses and aircraft eventually reached their destinations. Ironically, the *actual* weather played a minor role in some delays. Two separate, small lightning storms on the Valley International Airport field delayed the loading of passengers, and a brief downpour caused one of the transport buses to become temporarily stuck in mud. Real-world decision support was provided on each minor disruption to participants at DDC-21. In fact, organizers were glad to have some inclement weather, as a real evacuation one day prior to the arrival of sustained tropical storm force winds might well include outer-band thunderstorms that could force brief delays.

The great teamwork among the NWS with other federal, state, and local partners was the true winner of the 2016 Texas/Rio Grande Valley AirEvac Exercise. The event showcased how trusted relationships between the NWS and critical core partners can be used to make the most important decisions when the atmosphere threatens to bring tropical fury to any region. The NWS thanks all the partners involved for their fantastic support!