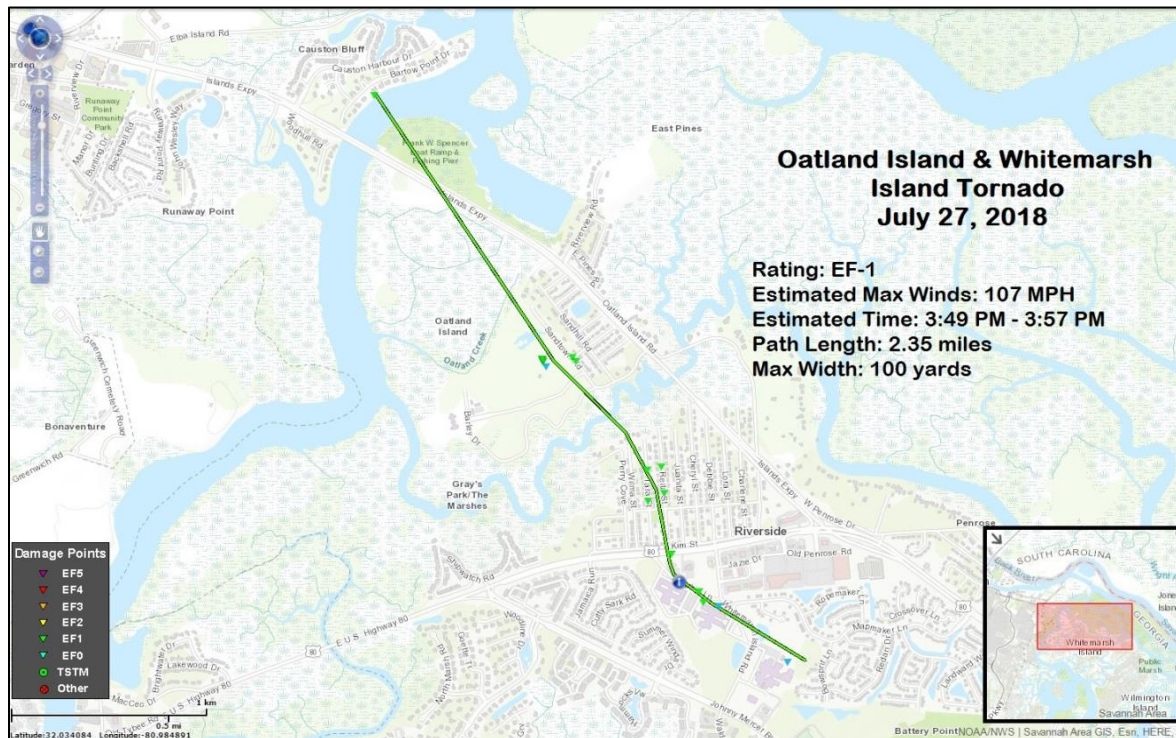


July 27, 2018 Chatham County, GA EF-1 Tornado



Overview

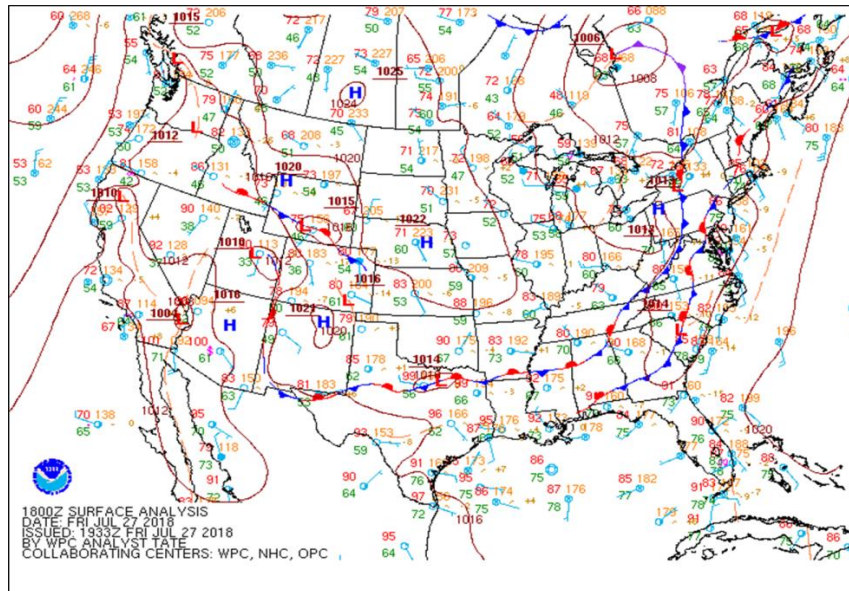
During the afternoon of Friday, July 27, 2018, an EF-1 tornado occurred in Chatham County, GA. The tornado developed rapidly near Causton Bluff and traveled southeast for a little more than 2 miles along a path up to 100 yards wide across parts of Oatland and Whitemarsh Islands. During the 8 minute path, this tornado produced significant damage to trees and buildings, including a few schools. Fortunately, there were no injuries or fatalities. Refer to the Public Information Statement below for more details.

Meteorological Analysis

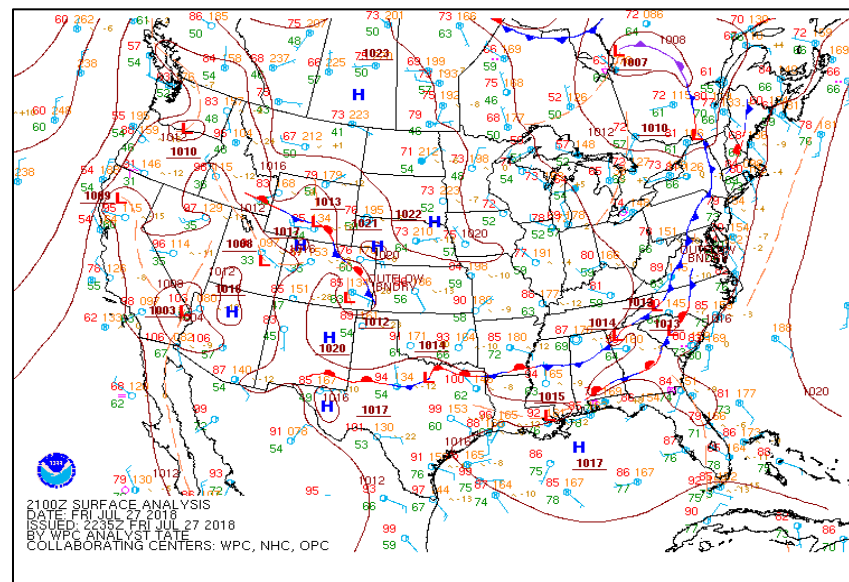
This tornado highlighted how conditions can change quickly in the vicinity of individual thunderstorms. During the afternoon of July 27, the overall environment supported numerous thunderstorms, and attention focused on the potential for gusty winds, dangerous lightning and locally heavy rainfall – but the larger scale environment was not supportive of supercells and tornadoes. However, as thunderstorm outflow collided with the sea breeze, the local environment changed quickly – to an environment suddenly supportive of thunderstorm rotation which immediately differed greatly from conditions elsewhere across southeast Georgia. A thunderstorm developed, travelled southeast into this new environment created by the colliding boundaries and began to spin. According to radar data, only about 5 minutes elapsed from the beginning of this rotation to the time of

tornado touchdown. A loop of Charleston Doppler radar 0.5 degree reflectivity imagery can be found [here](#).

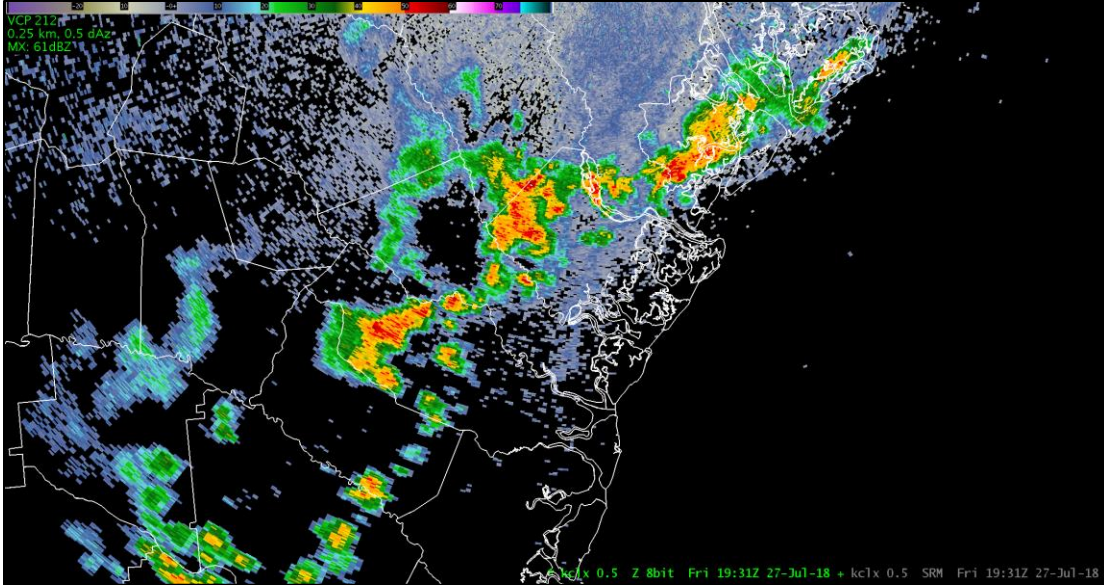
Because of the small-scale nature and rapid evolution of this altered environment, most information available to meteorologists was unable to accurately depict the fine details which can provide critical clues to the changing situation. However, the following images offer some insight into the unique environment which abruptly but briefly developed during the afternoon of July 27, 2018.



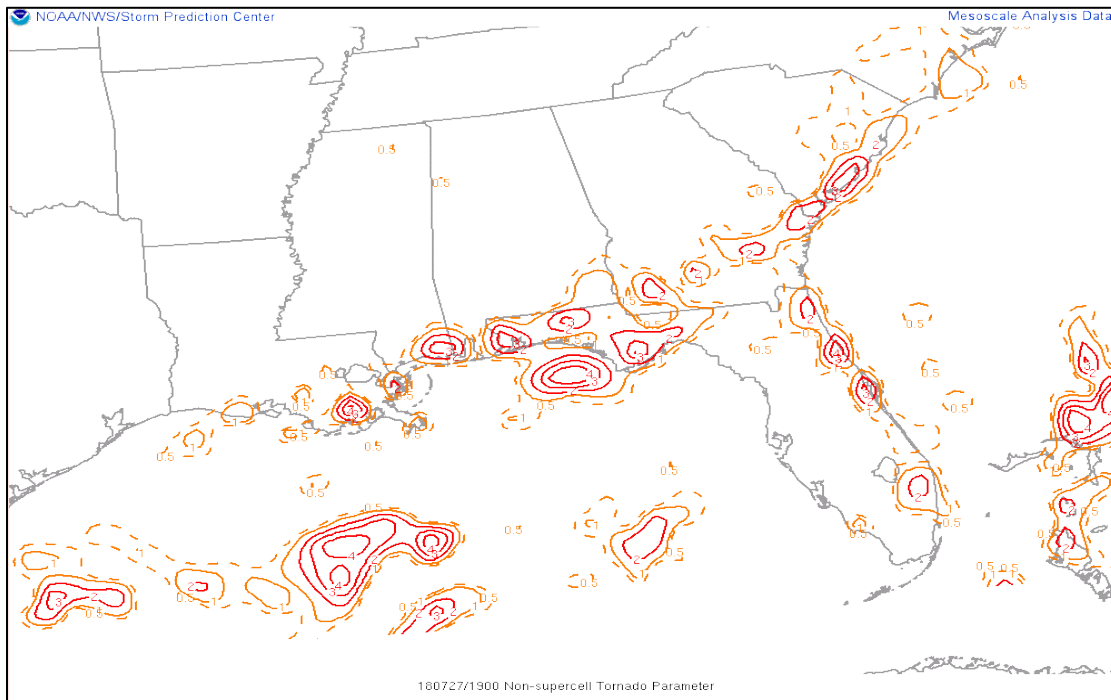
The Weather Prediction Center's (WPC) surface analysis at 18Z (2 PM EDT) depicting a cold front across central SC/GA. Moisture focused ahead of this front supported an unusually active regime featuring numerous thunderstorms across our area.



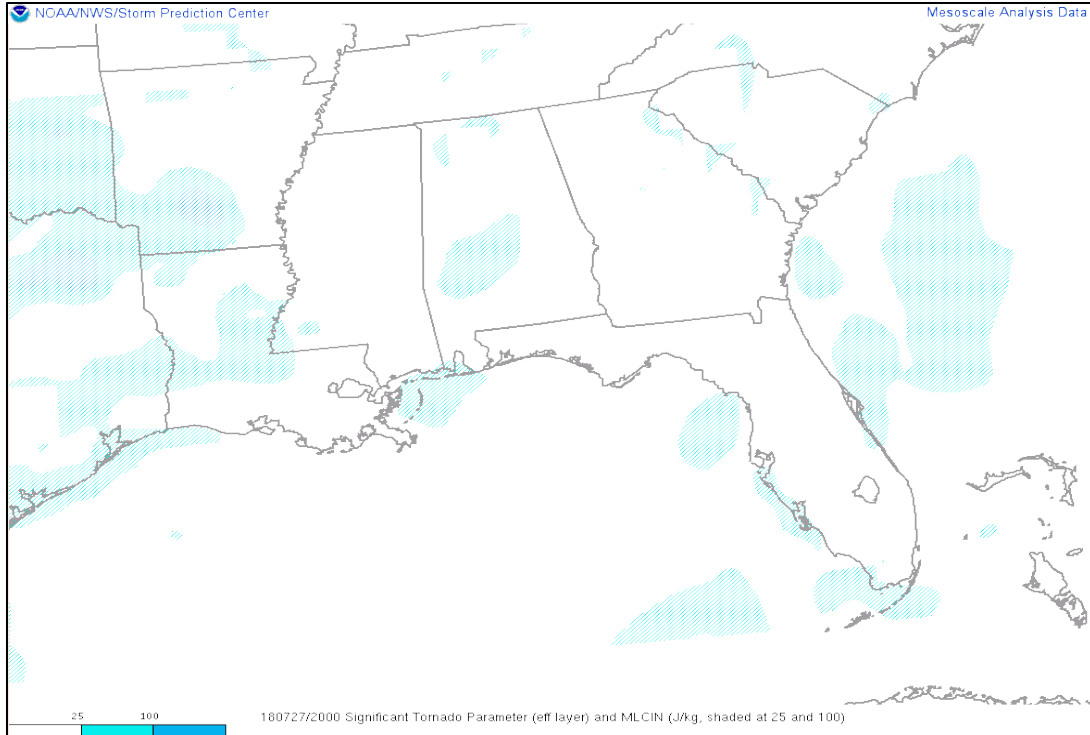
The WPC surface analysis at 21Z (5 PM EDT) depicting a stationary front across central SC/GA. Overall conditions had not changed across our region since 2 pm.



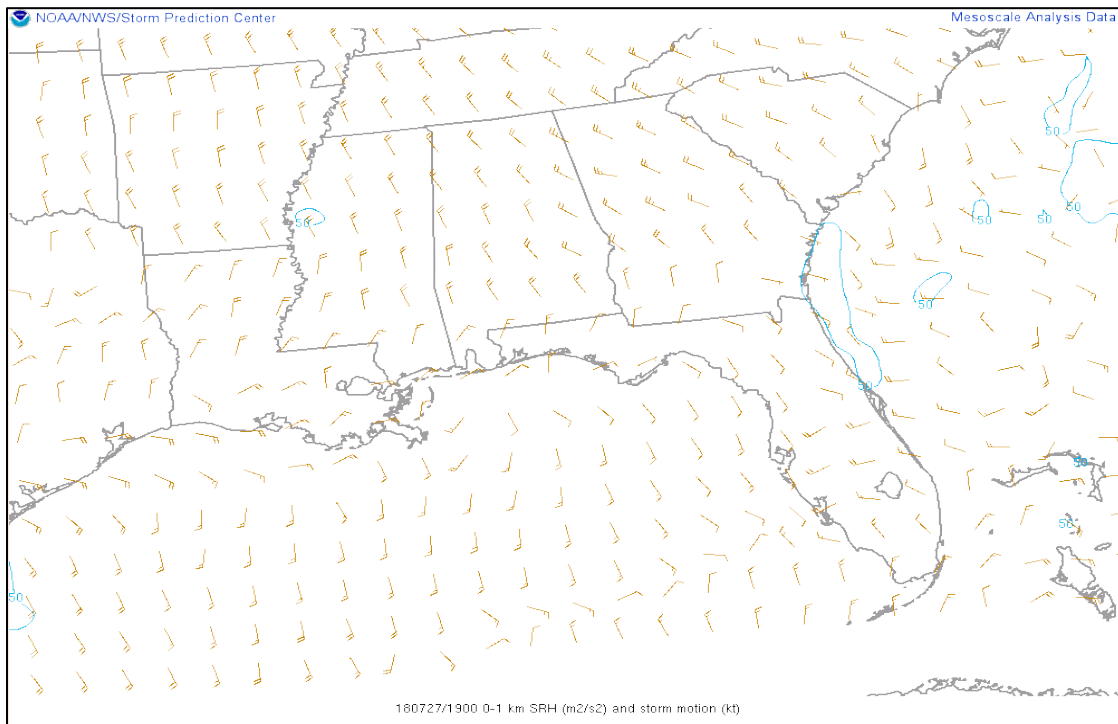
Charleston, SC Doppler radar 0.5 degree reflectivity image at 231 PM EDT depicting numerous thunderstorms across southeast Georgia and adjacent areas of southeast South Carolina. Primary concerns with these thunderstorms included dangerous lightning, locally heavy rain and gusty winds. The overall environment did not support supercells or tornadoes.



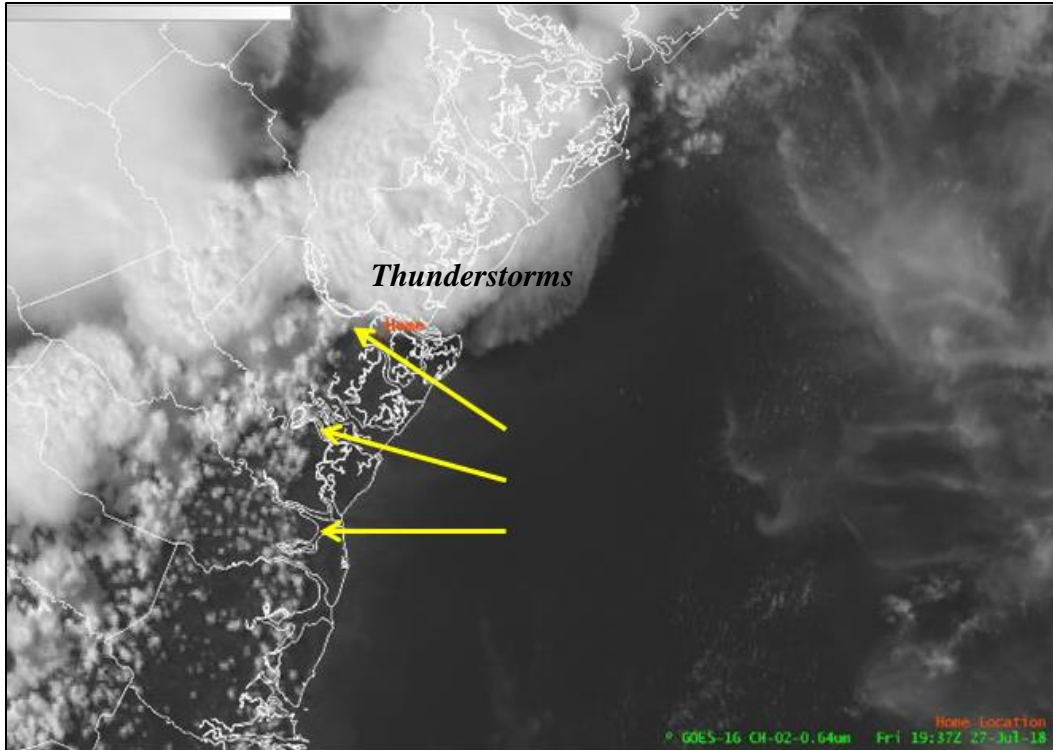
The Storm Prediction Center's (SPC) meso-analysis at 19Z (3 PM EDT) depicting the Non-Supercell Tornado Parameter along the sea breeze near coastal SC/GA. This is a common daily feature in our area. In this case, a thunderstorm moved southeast into this environment, setting in motion events which led to a tornado.



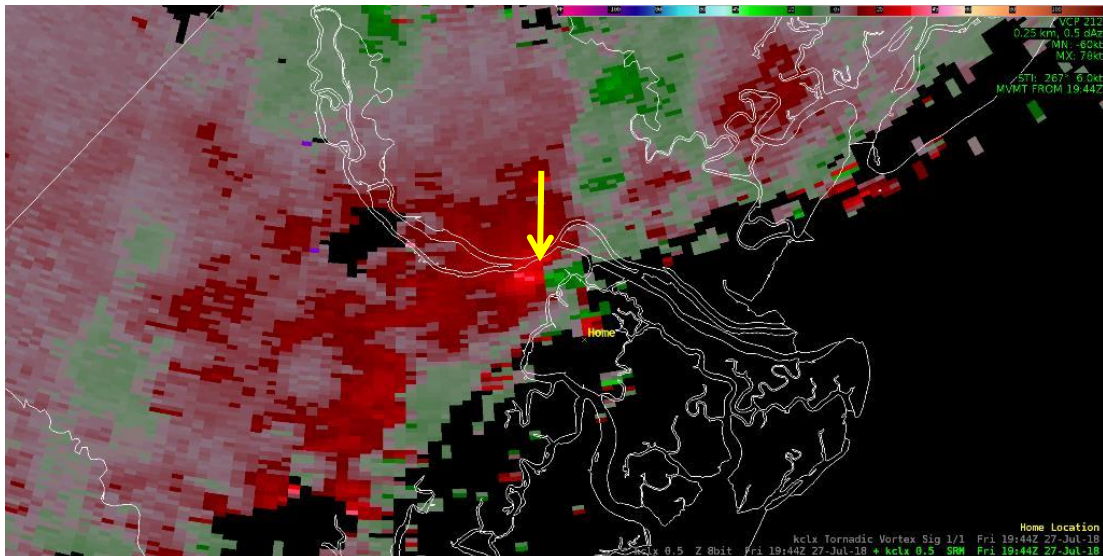
The SPC's meso-analysis at 20Z (4 PM EDT) depicting no Significant Tornado Parameter across coastal SC/GA. Meteorologists often use this parameter to anticipate rotating thunderstorms and associated tornadoes.



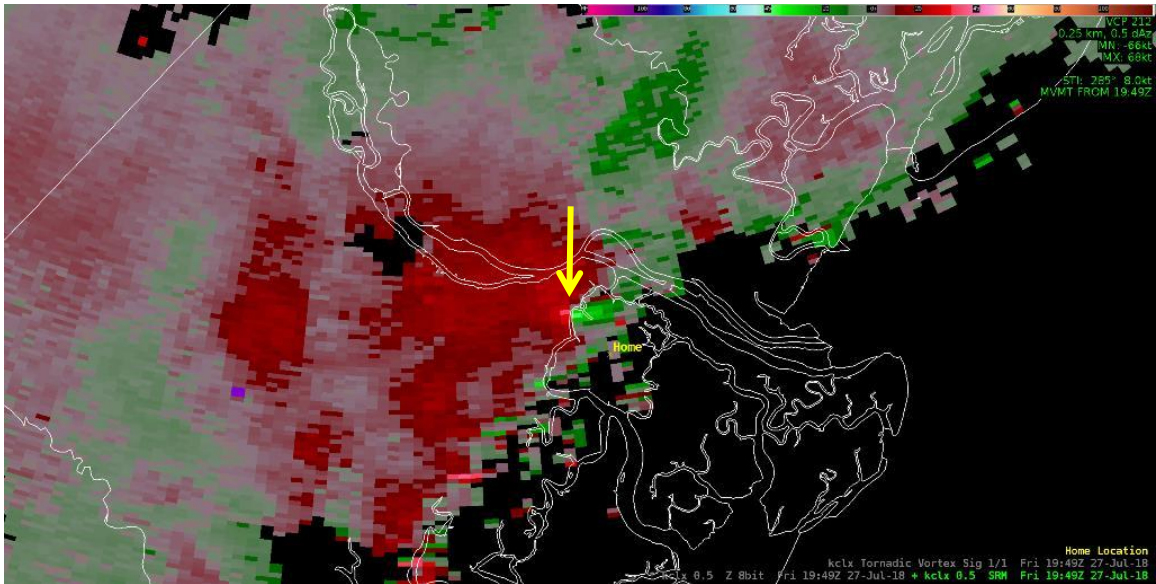
The SPC's meso-analysis at 19Z (3 PM EDT) depicting low but non-zero values of 0-1 km Storm Relative Helicity (SRH – the potential for thunderstorm rotation) across coastal GA.



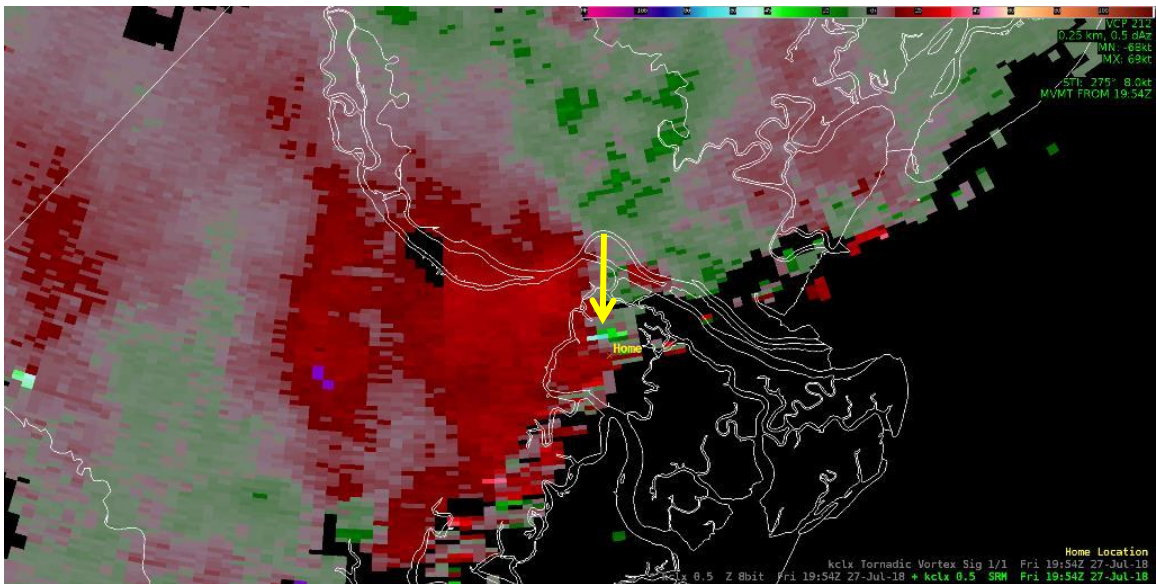
GOES-East Visible (Band 2) image of a mesoscale boundary marked by a line of cumulus clouds over coastal southeast Georgia. At this time (337 PM EDT), thunderstorm outflow from the west/northwest was colliding with the sea breeze. A rapidly developing thunderstorm moved southeast into the altered environment created by this collision over Chatham County, began to spin and produced a tornado beginning at 349 PM EDT.



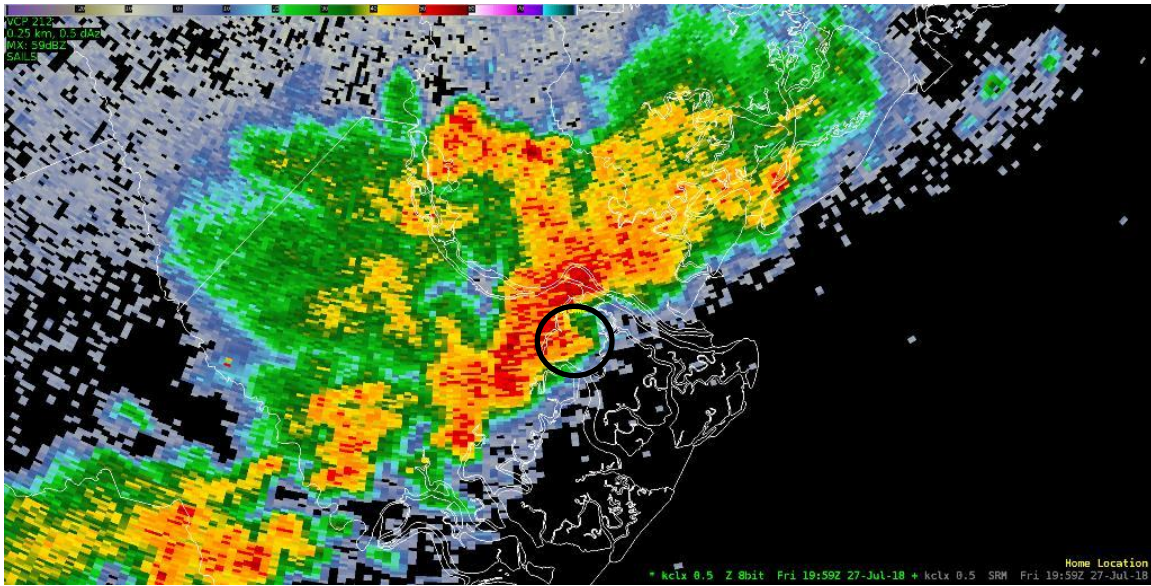
Charleston, SC Doppler radar 0.5 degree storm-relative velocity (SRM) image at 1944Z (344 PM EDT) indicating counter-clockwise rotation at around 2800 feet above the ground near Causton Bluff in GA. Click [here](#) for a loop of several SRM images.



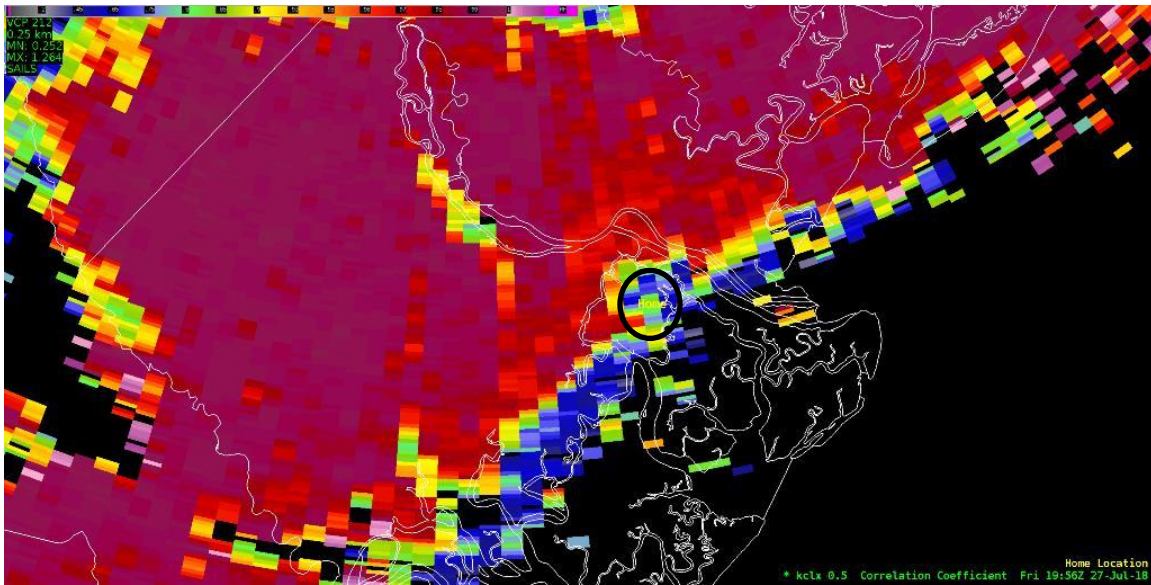
Charleston, SC Doppler radar 0.5 degree storm-relative velocity image at 1949Z (349 PM EDT) indicating counter-clockwise rotation at around 2900 feet above the ground near the Oatland Island Wildlife Center in GA. The tornado was touching down at this time. Click [here](#) for a loop of several SRM images.



Charleston, SC Doppler radar 0.5 degree storm-relative velocity image at 1954Z (354 PM EDT) indicating counter-clockwise rotation at around 3000 feet off the ground near the Oatland Island Wildlife Center in GA. The tornado dissipated about 3 minutes later. Click [here](#) for a loop of several SRM images.



Charleston, SC Doppler radar 0.5 degree reflectivity (Z) image at 1959Z (359 PM EDT) showing a “hook” pattern near the location of the tornado over Whitemarsh Island, GA.



Charleston, SC Doppler radar 0.5 degree correlation coefficient (CC) image at 1956Z (356 PM EDT) showing lower values near the location of the tornado. Click [here](#) for a loop of several images. Lower values indicate the presence of non-spherical objects, which in this case could be tornado debris.

Conclusions

As is typical for tornadoes in this part of the country, this particular tornado was relatively short-lived and weak. Also, this tornado developed quickly as a result of a thunderstorm interacting with the collision of two mesoscale convective outflow boundaries. Such boundary collisions and thunderstorm interactions are commonplace during the warm season and *most of the time do not produce tornadoes* – especially

during late July. Furthermore, there exist inherent limitations with the Doppler radar and other tools forecasters use to assess thunderstorm severity. These limitations are magnified when the local environment abruptly and unexpectedly changes. In this case, thunderstorms had been producing heavy rain, frequent lightning and gusty winds for hours; then, a single thunderstorm suddenly begin to rotate and rapidly produced an EF-1 tornado. Meteorologists seek evidence that these sudden changes are accurate observations; in a fast-breaking situation, the time available for this critical data evaluation and warning decision process becomes exceedingly short.

Public Information Statement: Summary of Tornado Produced by Storm Survey Team

Public Information Statement
National Weather Service Charleston SC
655 PM EDT Sat Jul 28 2018

...NWS DAMAGE SURVEY FOR 07/27/2018 TORNADO EVENT...

.Oatland and Whitemarsh Island Tornado...

Start Location...2 E Lepageville in Chatham County GA
End Location...1 SSW Riverside in Chatham County GA
Date...07/27/2018
Estimated Time...03:49 PM EDT
Maximum EF-Scale Rating...EF1
Estimated Maximum Wind Speed...107 mph
Maximum Path Width...100 yards
Path Length...2.35 miles
Beginning Lat/Lon...32.0644 / -81.0287
Ending Lat/Lon...32.0379 / -81.0053
* Fatalities...0
* Injuries...0

...Summary...

The tornado began near Bartow Point Drive, just north of Island Expressway. It then crossed over the Frank W. Spencer Boat Ramp and Fishing Pier area before crossing Island Expressway. The tornado continued southeast across Oatland Island, where it was estimated to have snapped and uprooted over 100 large hardwood and softwood trees. It also removed the roof from a log cabin and partially damaged the roof to another structure in the Delk-Dawson Heritage Homestead on Oatland Island. The tornado continued southeast over Richardson Creek, entering the Grays Subdivision on Whitemarsh Island. In this neighborhood, the tornado snapped and uprooted many large trees. The most significant damage surveyed in the Grays Subdivision were large snapped and uprooted trees that had fallen onto approximately 50 homes. Several homes also had significant shingle damage.

The tornado then crossed Highway 80, moving over Islands Christian Church before taking a narrow path along Dolphin Lane, passing near Marsh Point Elementary school. The elementary school sustained moderate damage to the roof near the main entry of the facility. Finally, the tornado moved southeast across Whitemarsh Island Drive before dissipating near Islands High School, where it toppled the metal bleachers and damaged some fencing near athletic fields. The tornado lasted approximately 8 minutes, ending around 357 PM EDT.

EF Scale: The Enhanced Fujita Scale classifies tornadoes into the following categories:

EF0...Weak.....65 to 85 mph
EF1...Weak.....86 to 110 mph
EF2...Strong....111 to 135 mph
EF3...Strong....136 to 165 mph
EF4...Violent...166 to 200 mph
EF5...Violent...>200 mph

* The information in this statement is preliminary and subject to change pending final review of the event and publication in NWS Storm Data.

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RFM/DPB