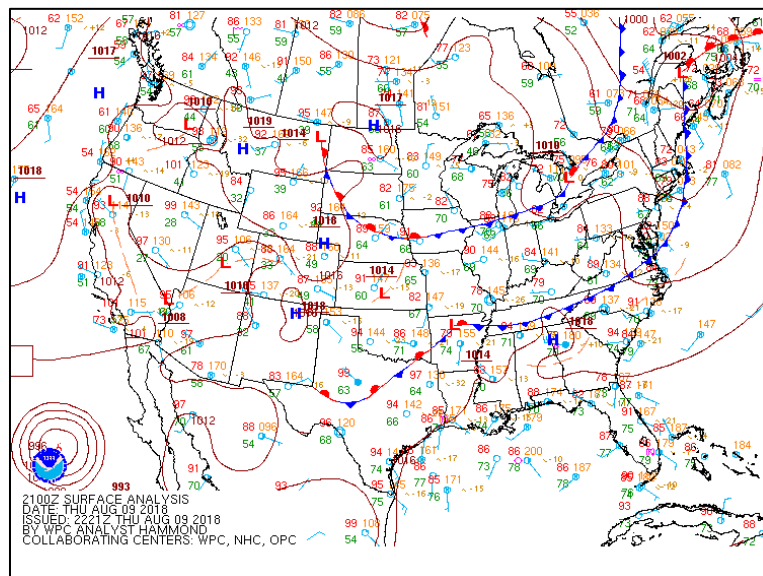


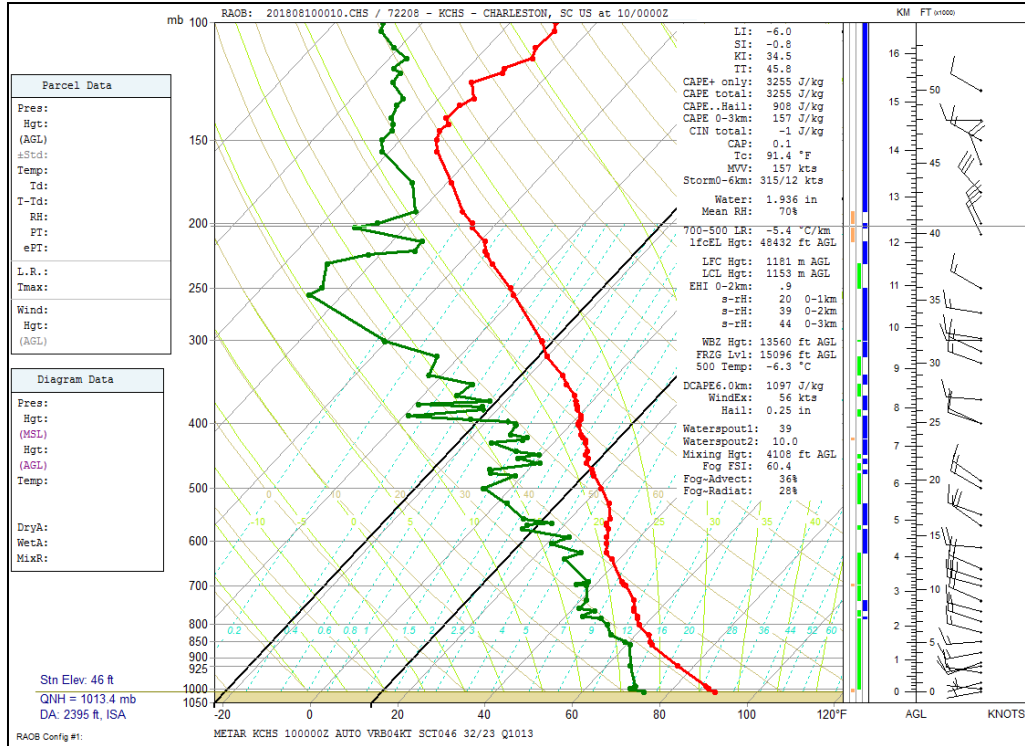
August 9, 2018 Severe Thunderstorms

Meteorological Analysis

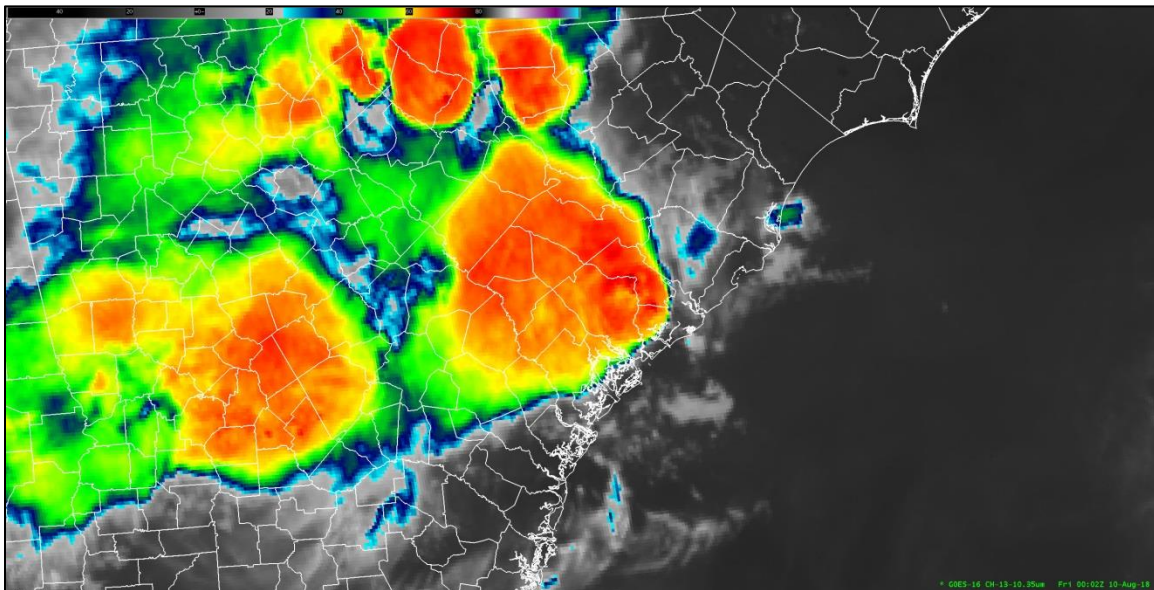
Virtually every day during our warm season, the environment is supportive of at least isolated severe thunderstorms. Meteorologists expend considerable time and effort determining which days might become most active and which days might feature little or no severe weather. The environment during the afternoon of August 9, 2018, became quite favorable for severe weather, yet doubt remained about whether developing thunderstorms would take full advantage of this environment to become severe. These doubts were erased shortly after 5 pm when the first severe thunderstorm developed over Jenkins County, Georgia. Thereafter, thunderstorms increased in coverage and intensified as numerous mesoscale boundaries collided over this area. The resulting cluster of severe thunderstorms pushed east-southeast and produced wind damage in Screven County, Georgia and across parts of the South Carolina counties of Allendale, Colleton, Dorchester and Charleston through the evening before pushing into the Atlantic just before 9 pm. During that Thursday evening, we received 32 reports of severe weather. This was the most active severe weather event since September 11, 2017 (Tropical Storm Irma) and the most active extra-tropical severe weather episode since July 2, 2015.



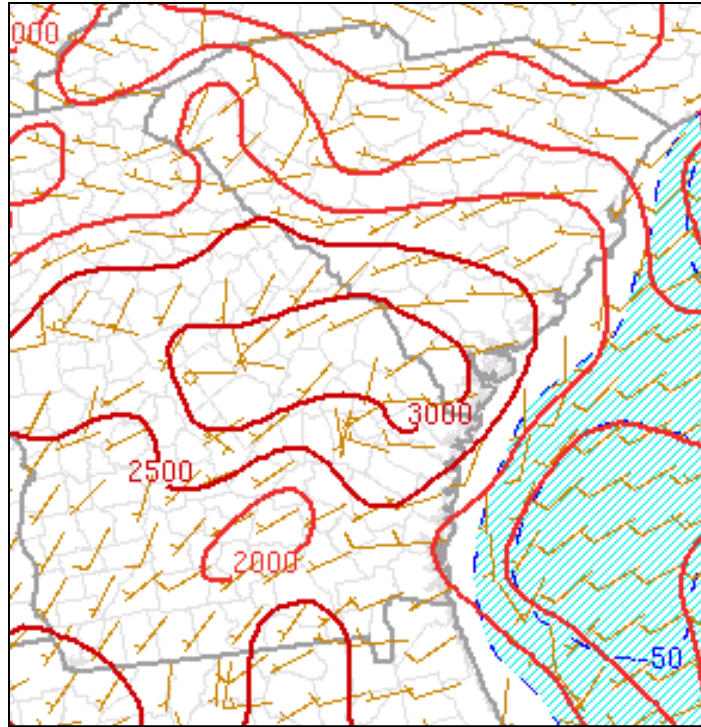
The WPC surface analysis at 21Z (5 PM EDT) depicting a typical mid-summer scenario: a hot and humid air mass over the region and a cold front far to the north.



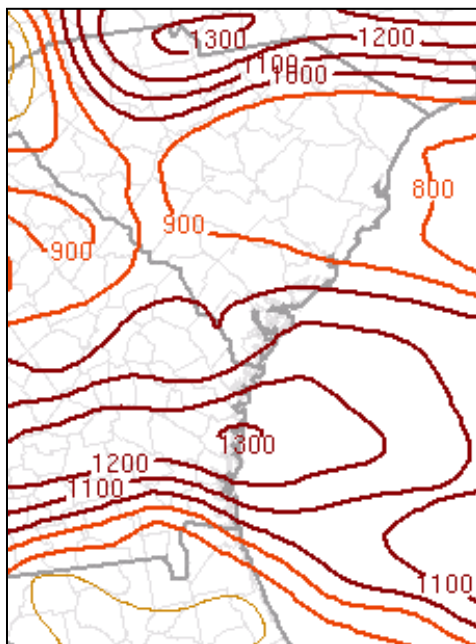
The 7 pm EDT Charleston, SC sounding sampled an environment supportive of severe weather, featuring CAPE values exceeding 3000 J/kg and downdraft CAPE values exceeding 1000 J/kg. Also of note, the sounding revealed westerly winds through the troposphere – often an indication of thunderstorm organization which can enhance the potential for strong winds. Sometimes these environments yield little or no severe weather; however, the August 9 thunderstorms took advantage of this impressive instability to organize, intensify and produce damaging wind gusts for almost 4 hours.



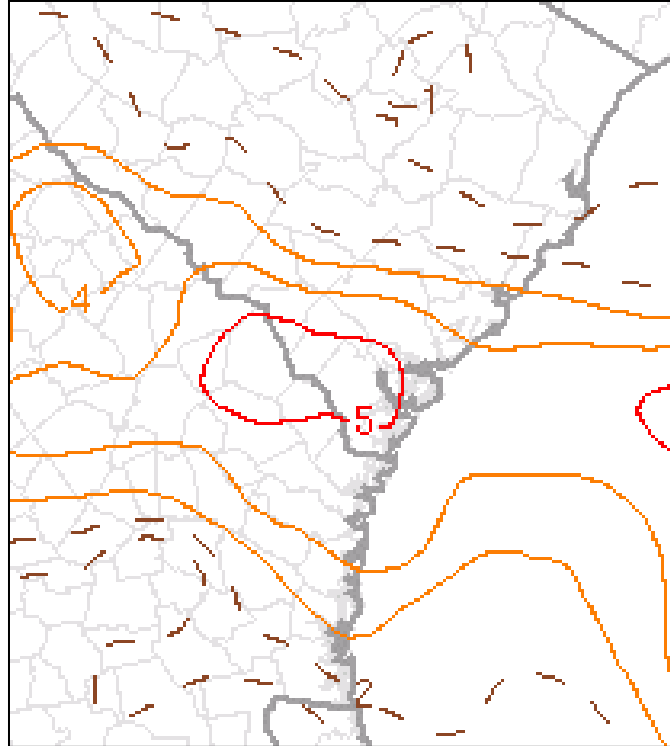
GOES-East infrared satellite imagery around 8 pm EDT depicting the coldest cloud tops produced by severe thunderstorms approaching the Charleston, SC area.



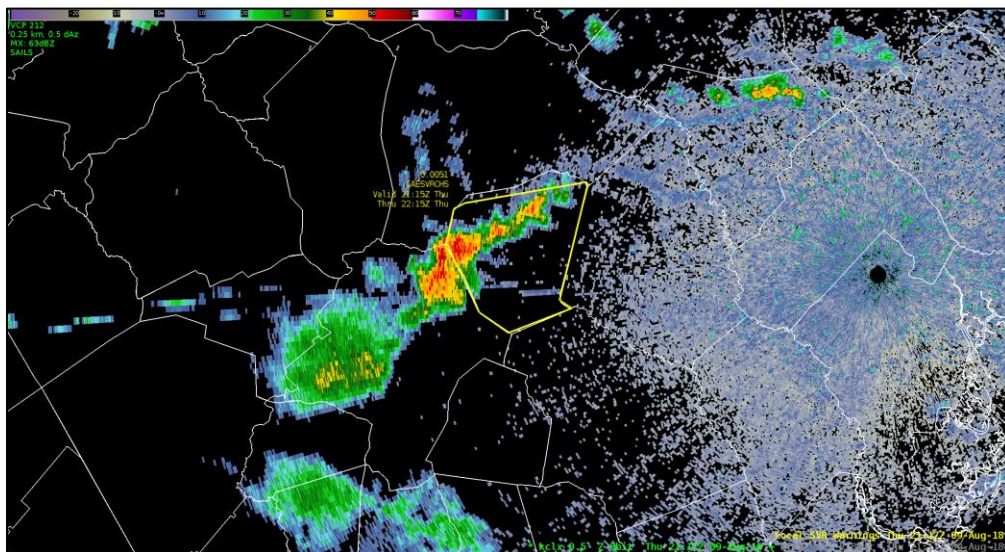
The Storm Prediction Center 4 pm EDT analysis depicting mixed layer CAPE values of 2000-3000 J/kg draped across southeast South Carolina and southeast Georgia. This degree of instability was quite favorable for severe weather.



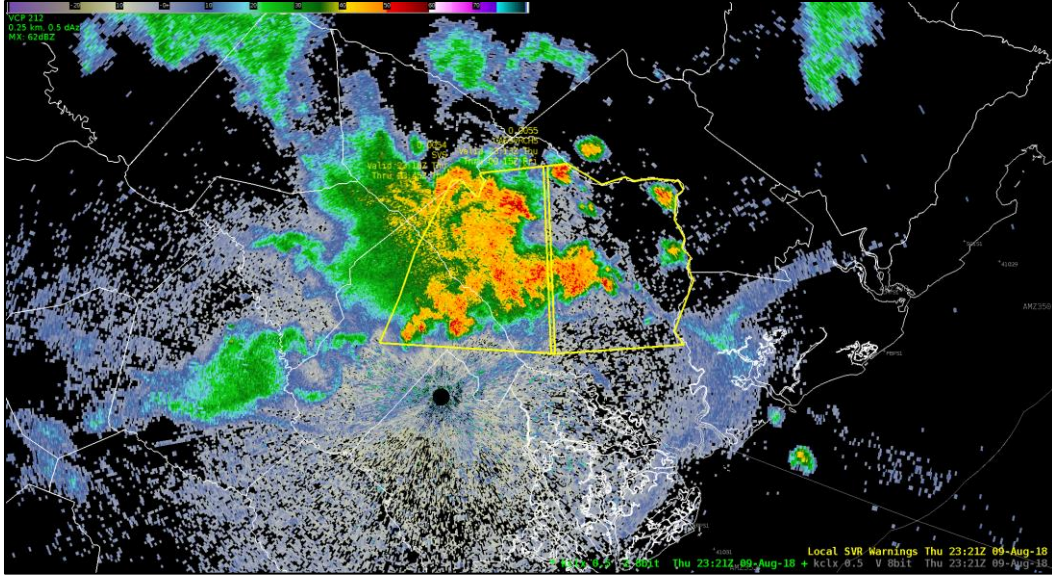
The Storm Prediction Center 4 pm EDT analysis depicting downdraft CAPE values of around 1000 J/kg, indicating a potential for damaging wind gusts.



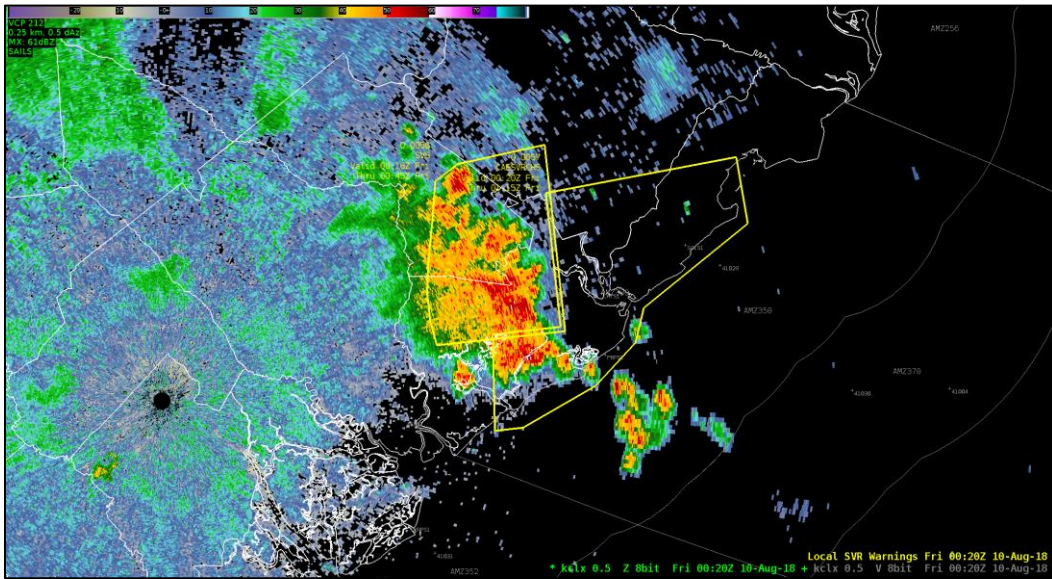
The Storm Prediction Center 4 pm EDT Microburst Composite, with the most significant values in red and orange. This parameter combines values from multiple sources, including the downdraft CAPE, to offer more details regarding the potential for damaging thunderstorm winds. Higher values were focused along the path of developing thunderstorms.



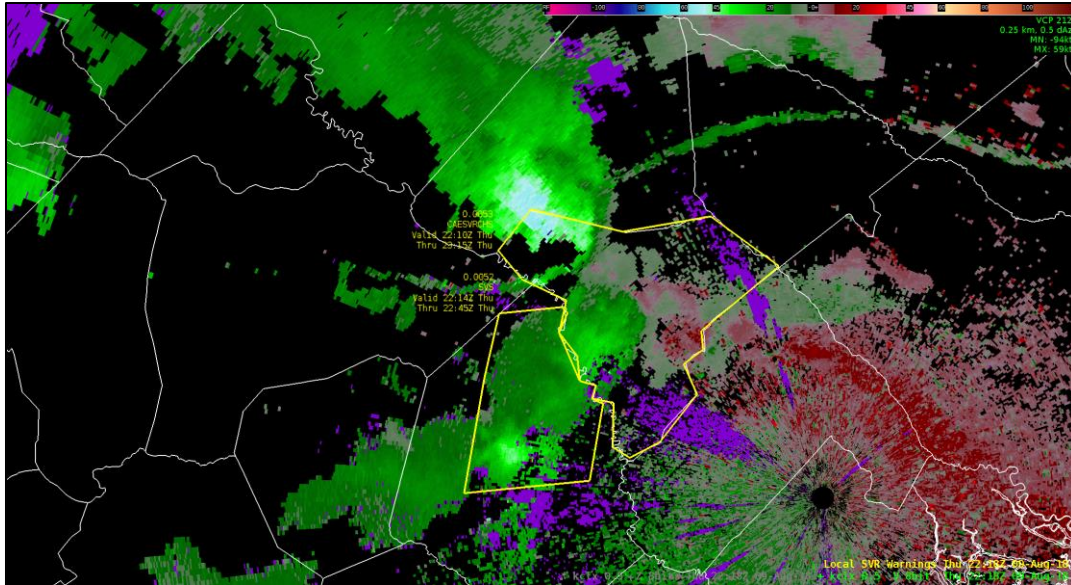
Doppler radar 0.5 degree reflectivity image when NWS Charleston issued the first Severe Thunderstorm Warning (yellow polygon) at 515 pm EDT.



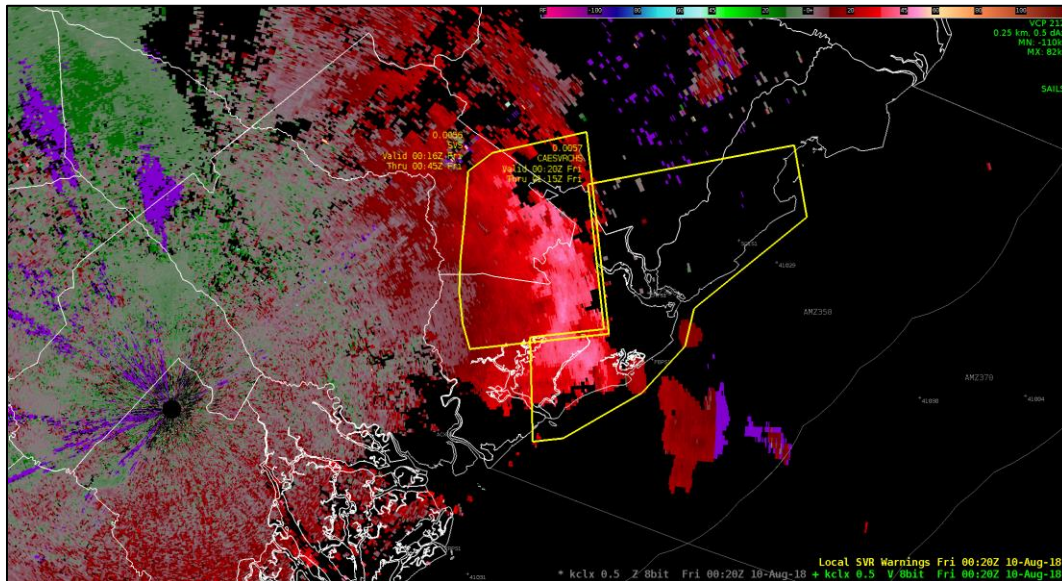
Charleston, SC Doppler radar 0.5 degree reflectivity and Severe Thunderstorm Warnings (yellow polygons) at 7:21 pm EDT. Thunderstorms had intensified and were expanding toward the east-southeast.



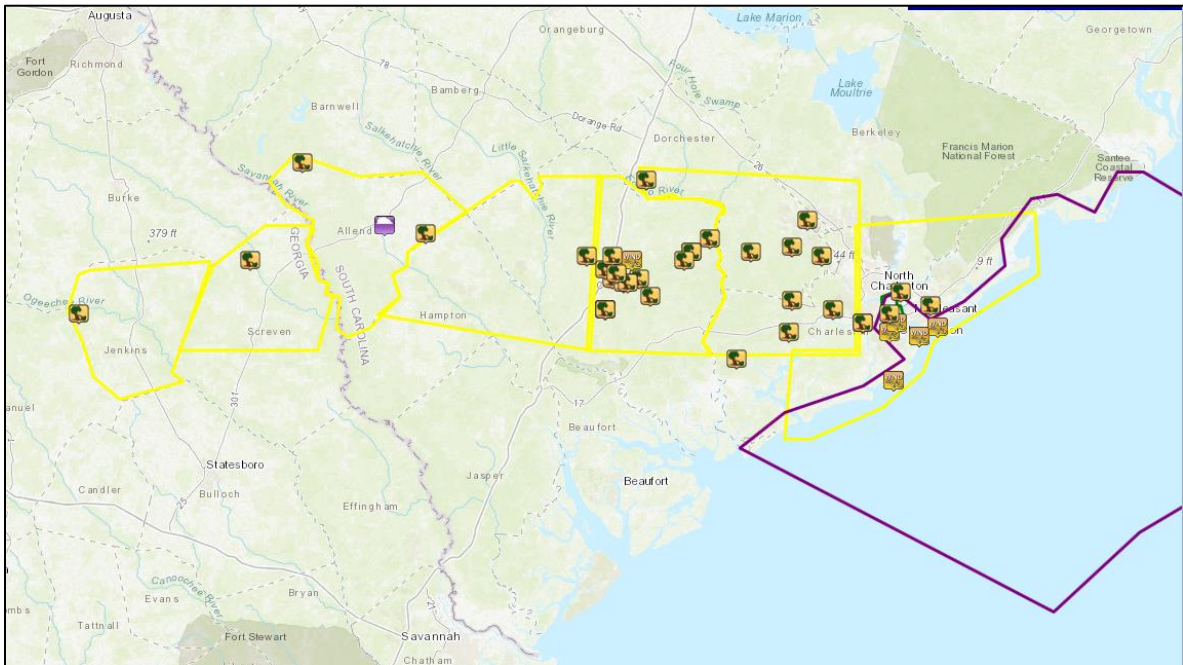
Charleston, SC Doppler radar 0.5 degree reflectivity and Severe Thunderstorm Warnings (yellow polygons) at 8:20 pm EDT as the cluster of severe thunderstorms approached Charleston, SC.



Charleston, SC Doppler radar 0.5 degree velocity showing very strong winds (in light blue – moving toward the radar) moving into Allendale County, SC at 618 pm EDT.



Charleston, SC Doppler radar 0.5 degree velocity showing very strong winds (in bright red/pink – moving away from the radar) approaching Charleston, SC at 820 pm EDT.



Summary of Severe Thunderstorm Warnings and severe weather reports for Thursday, August 9, 2018, from 5 pm to 9 pm EDT. The National Weather Service also issued a Special Marine Warning for Charleston Harbor and Atlantic Waters adjacent to Charleston County. Thunderstorms produced numerous wind gusts exceeding 40 knots over these waters around 9 pm EDT.