



A forensic meteorological investigation of potential hail events near Fort Orange, FL between May 1 and May 30, 2021

Claim location: 1021 Fort Orange Market Blvd., Fort Orange, FL, 32432

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Prepared for: Sample Client

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I. Background

WeatherTiger, LLC has been contacted by Sample Client to investigate the meteorological conditions between May 1, 2020 and May 30, 2020 germane at 1021 Fort Orange Market Boulevard (hereafter, "Location"), Fort Orange, Mosquito County, Florida, or 29.262 degrees North latitude, 83.439 degrees West longitude. In accordance with best practices in forensic meteorology, the historical data and forecast products used to prepare this report originate from the National Weather Service (NWS) and National Oceanic and Atmospheric Administration (NOAA), a division of the United States Department of Commerce. This report was authored by Dr. Ryan Truchelut, President of WeatherTiger, a Tallahassee-based weather consulting, agricultural and hurricane forecasting, and forensic meteorology firm.

II. Meteorological overview and observations

In attempting to determine possible hail damage events at the Location for May 1 through May 30, 2020, three sources of potential events are reviewed. These NOAA data sources are the record of severe weather warnings issued specifically for the study location during this period, the catalogue of validated storm events maintained by the National Centers for Environmental Information¹ (NCEI), and the set of Local Storm Reports forwarded to the local NWS forecast office by storm spotters, law enforcement, and media.

The NWS local forecast office in Citrusville, FL², responsible for official forecasts for the Location, issued Severe Thunderstorm or Tornado Warnings for the study Location on two dates during this period: a Severe Thunderstorm Warning on May 6, and a Tornado Warning on May 8. There are no NCEI storm reports of hail in Mosquito County during the study period. There are, however, several Local Storm Reports of hail in central Mosquito County all associated with the Severe Thunderstorm Warning on 5/6/20. Therefore, those two severe weather warning dates will be investigated as potential hail events at the Location.

NWS Citrusville issued a Severe Thunderstorm Warning including the Location at 3:40 p.m. EDT on May 6, 2020, for the potential hazard of radar-indicated 60 mph wind gusts and quarter-sized (1" diameter) hail. The text of this warning is found in Appendix A.1. This warning was issued for a discrete cell within a larger intense storm complex, the most intense portion of which crossed the Location between 3:45 p.m. and 4:00 p.m. moving southeast at 15 mph as shown in Figure 1. NWS Citrusville high-resolution radar base reflectivity values as shown in this figure at 3:55 p.m. are approximately 65 dBz over the Location, which are usually indicative of hail of 1" or greater diameter occurring in the vicinity³. A diameter threshold of 1" is generally regarded as the minimum hailstone size capable of causing structural damage⁴. There are five Local Storm Reports associated with this Severe Thunderstorm Warning, four of which concern observations of hail⁵. Two of these observations are of 1" or greater diameter hail; the first of these observations is a report from a trained storm spotter of approximately 1" diameter hail near Green Street and North Avenue at 3:49 p.m., which is around 1.3 miles (2 km) northeast of the Location. The second of these observations

¹ <https://www.ncdc.noaa.gov/stormevents/>

² <http://www.weather.gov/ctb>

³ <https://www.weather.gov/jetstream/refl>

⁴ <https://ams.confex.com/ams/pdfpapers/45858.pdf>

⁵ <https://mesonet.agron.iastate.edu/lsr/#CTV/202005061935/202005062010/0000>

were two public reports to the NWS of 1.25" hail near Blue River Road and Northwest Basin Road^{6,7}, approximately 2 miles (3.5 km) southwest of the Location at 3:50 and 3:55 p.m. Two other observations of smaller hail were received farther from the Location during the Warning. Based on radar data and verified observational evidence of significant hail occurring both southwest and northeast of the study Location, it is very likely that hail of at least 1" and possibly up to 1.5" diameter occurred for 5-10 minutes at the Location on May 6, 2020 at approximately 3:50 p.m. EDT.

NWS Citrusville issued a Tornado Warning including the Location at 3:48 p.m. EDT on May 8, 2020, for the potential hazard of a radar-indicated tornado. Hail was not a stated hazard of this NWS warning, the text of which is found in Appendix A.2. This warning was issued for a discrete rotating cell within a larger line of thunderstorms, the most intense portion of which reached the Location around 4:05 p.m. moving northeast at 15 mph. As shown in Figure 2, NWS Citrusville high-resolution radar base reflectivity values at 4:05 p.m. are approximately 55-60 dBz over the Location, which are occasionally indicative of hail of approximately 0.5-0.75" diameter occurring in the vicinity⁸. The cell did not yield a confirmed tornado, and no Local Storm Reports of wind or hail damage were received from Mosquito County during the warning period, which expired at 4:15 p.m. Radar data coupled with a lack of on-the-ground hail reports from this Warning in Mosquito County indicate it is highly unlikely that hail occurred at the Location on May 8, 2020.

III. Analysis and conclusions

An investigation of the weather conditions in the vicinity of the Location between May 1, 2020 and May 30, 2020, reveals two potential dates reviewed for possible damaging hail events. On May 8, multiple lines of evidence suggest that no hail occurred at the Location. On May 6, 2020, radar data and Local Storm Reports suggest that a 5-10 minute period of hail of peak diameter of at least 1" and possibly as large as 1.5" occurred at the study Location at approximately 3: 30 p.m.

As a final note, there is always uncertainty associated with the fine scales of variation in weather impacts observed from summer thunderstorm activity in South Florida. This analysis uses the available lines of evidence to determine the most likely weather conditions experienced at the Location during the period of study.

I attest that the information in this report is true to the best of my knowledge, and the opinions offered represent my unbiased professional judgement with no known conflicts of interest. Affirmed:

Ryan E. Truchelut, PhD
Consulting meteorologist
WeatherTiger, LLC

Electronically signed on this day: August 30, 2020.

⁸ <https://www.weather.gov/jetstream/refl>

IV. Figures

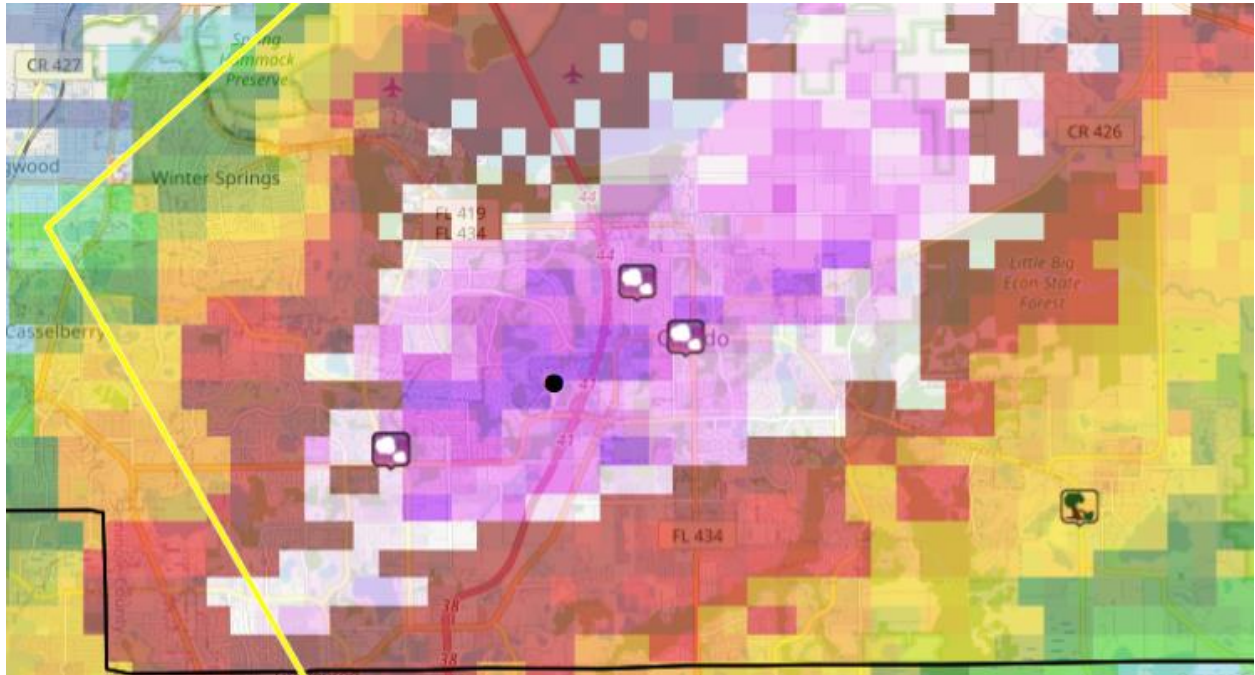


Figure 1: NWS Citrusville radar base reflectivity data for 3:55 p.m. on May 6, 2020, indicating a severe thunderstorm (warned area in yellow) occurring at the study Location (black dot). Hail reports are shown by purple icons.

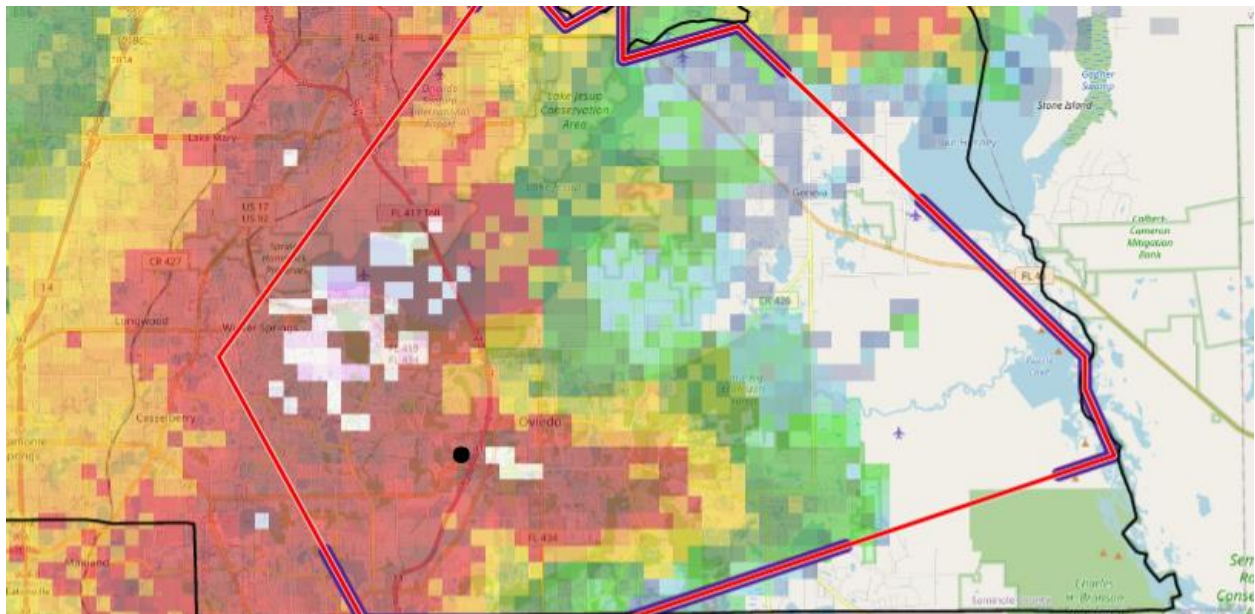


Figure 2: NWS Citrusville radar base reflectivity data for 4:05 p.m. on May 8, 2020, indicating a Tornado Warning (warned area in red) in effect for the study Location (black dot).

Appendix A: Severe Weather Warnings Issued for Location by NWS Citrusville between May 1 and May 30, 2020

Appendix A.1

Severe Thunderstorm Warning
National Weather Service Citrusville FL
340 PM EDT Mon Jun 6 2020

The National Weather Service in Citrusville has issued a

* Severe Thunderstorm Warning for...
Southeastern Mosquito County in east central Florida...

* Until 430 PM EDT.

* At 340 PM EDT, a severe thunderstorm was located over Lake Corn, moving southeast at 15 mph.

HAZARD...60 mph wind gusts and quarter size hail.

SOURCE...Radar indicated.

IMPACT...Hail damage to vehicles is expected. Expect wind damage to roofs, siding, and trees.

* Locations impacted include...
Mosquito County

PRECAUTIONARY/PREPAREDNESS ACTIONS...

For your protection move to an interior room on the lowest floor of a building.

Torrential rainfall is occurring with this storm, and may lead to flash flooding. Do not drive your vehicle through flooded roadways.

HAIL THREAT...RADAR INDICATED
MAX HAIL SIZE...1.00 IN
WIND THREAT...RADAR INDICATED
MAX WIND GUST...60 MPH

Appendix A.2

Tornado Warning
National Weather Service Citrusville FL
348 PM EDT Wed Jun 8 2020

The National Weather Service in Citrusville has issued a

* Tornado Warning for...
Southeastern Mosquito County in east central Florida...

* Until 415 PM EDT.

* At 347 PM EDT, a severe thunderstorm capable of producing a tornado was located over Bug Springs, moving northeast at 15 mph.

HAZARD...Tornado.

SOURCE...Radar indicated rotation.

IMPACT...Flying debris will be dangerous to those caught without shelter. Mobile homes will be damaged or destroyed. Damage to roofs, windows, and vehicles will occur. Tree damage is likely.

* This dangerous storm will be near...
Fort Orange and Bug Lake around 400 PM EDT.
Geneva around 410 PM EDT.

Other locations impacted by this tornadic thunderstorm include Lake Park.

PRECAUTIONARY/PREPAREDNESS ACTIONS...

TAKE COVER NOW! Move to an interior room on the lowest floor of a sturdy building. Avoid windows. If you are outdoors, in a mobile home, or in a vehicle, move to the closest substantial shelter and protect yourself from flying debris.

TORNADO...RADAR INDICATED
MAX HAIL SIZE...<.75 IN