

Client Address

26 April 2023

Standard Hail/Wind Report

1. Methodology
2. Radar and Surface details
3. Regional weather conditions
4. Supporting NEXRAD data
5. Conclusions

19 JANUARY 2026

Full Spectrum Weather Services
334-313-8291

This report was requested by ***the client's legal counsel*** and written to document and evaluate meteorological conditions on 26 April 2023 that affected ***client address***. This property is located South of the East Coast Florida city of Melbourne, and is located in Brevard County FL. This specific site will be referred to as "the property" or by the physical address in this report. This report is intended to provide preliminary meteorological findings and is not intended for use in litigation.

The property is located in the Eastern Time Zone, and the event occurred during Eastern Daylight Time (EDT). All meteorological graphics are time-stamped using Universal Time Code (UTC), the global standard for these products. The conversion from UTC to EDT is minus 4 hours. For example, a time of 1200 UTC converts to 8:00am EDT.

Methodology:

This assessment was accomplished using a wide spectrum of official meteorological data. The data used in this report is considered to be official as it originated with NOAA and/or the National Weather Service. This data was evaluated using meteorological principles, analysis, and careful interpretation while following generally accepted principles outlined in Federal publications. It's best to use what's known as the "forecast funnel"; start assessing the meteorological conditions by analyzing large-scale data such as regional weather maps, forecast discussions, and other large-scale data then narrowing the focus down to finally assess site-specific weather conditions during a precise time period.

Data used for this report was obtained from the following sources:

1. Google Earth
2. National Weather Service (NWS)
3. National Climatic Data Center (NCDC)
4. Federal Meteorological Handbook, Number 11, Part D (FMH-11D)
5. Archived Data from WSR-88D (NEXRAD)
6. GR2 Analysis (Gibson Ridge)
7. Storm Prediction Center Convective Outlooks
8. Storm Prediction Center Mesoscale Discussion Archive
9. Radar Beam Calculator
10. NOAA Storm Reports
11. Various Internet websites

The information, weather data, and climatological records are all sources of documentation that is reasonable and customary to rely upon and consider in formulating opinions to evaluate meteorological conditions affecting a particular property on a particular date.

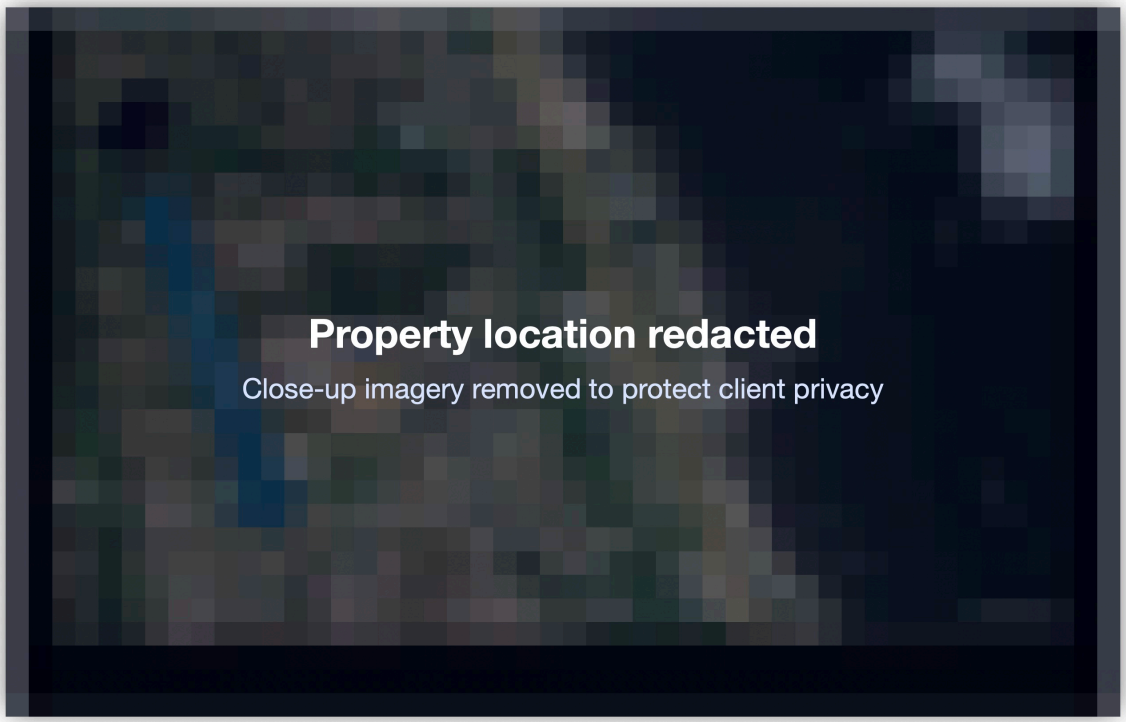


Figure 1 – Client address

Radar and Surface Observation Data

The identifier for the closest NEXRAD radar site is KMLB. This radar is 14.42 miles (12.53 nautical miles) North-Northwest of the property. At this distance, the lowest point of the radar beam is 150 feet above the ground as it passes over the property.

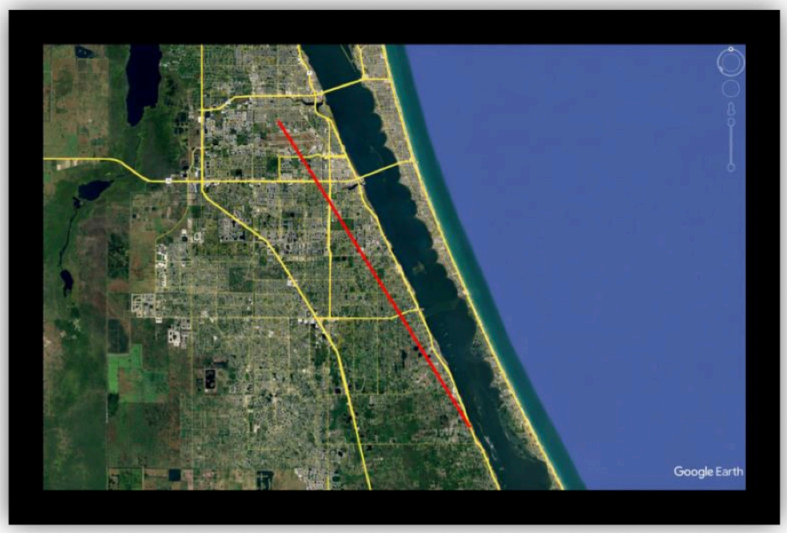


Figure 2 - Distance to KMLB – 14.42 Miles (12.53 Nautical Miles)

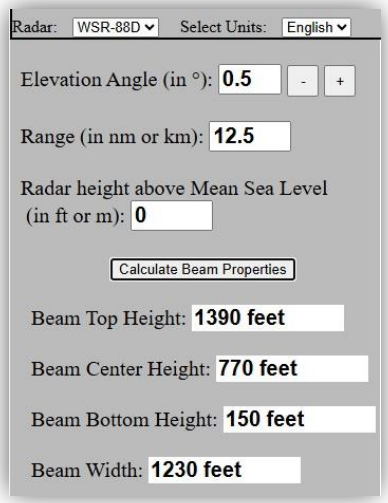


Figure 3 - KMLB Radar Beam Height

The NEXRAD networks are the official meteorological radars for the National Weather Service (NWS), the Department of Defense (DoD) and the Federal Aviation Administration (FAA).

Surface Weather Observing Stations

For surface weather observations the closest station is the Automated Surface Observing Station (ASOS) for the Sebastian Municipal Airport. The identifier for this ASOS is X26. The ASOS for X26 is 8.65 miles (7.51 nautical miles) South-Southeast of the property.

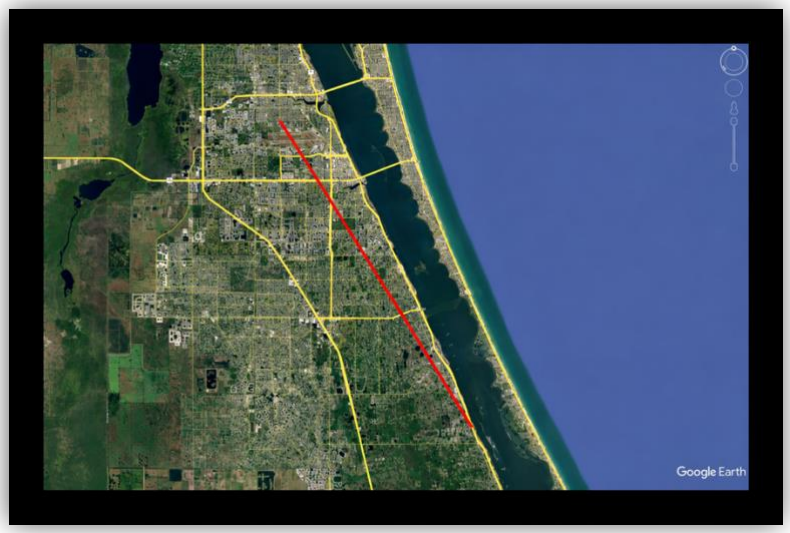


Figure 4 - Distance to X26 ASOS – 8.65 miles (7.51 Nautical Miles)

Weather Situation

Figures 5 and 6 show the NWS surface analysis and synoptic situation leading up to the time of the event at the property. On 26 April 2023, a strong high-pressure system was centered over Wisconsin. The location of this high pressure was oriented to cause wind to flow across the Southeast from the Southeast to the Northwest. This orientation of the gradient wind flow enhanced the seabreeze and gave added trigger for the thunderstorms that developed.

NWS forecasters stated;

> *"…it appears likely that multiple supercells capable of producing both very large hail and strong/damaging winds will develop this afternoon over the northern/central FL Peninsula".*

This event was predicted to bring strong severe thunderstorms into the area around the property.

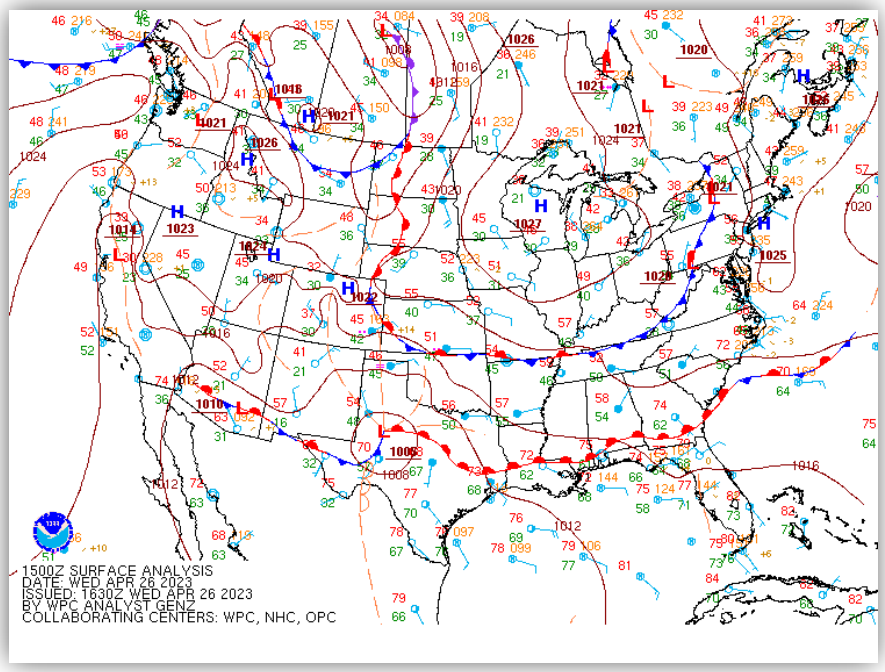


Figure 5 - Surface Analysis, 11:00am EDT 26 April 2023 (1500 UTC)

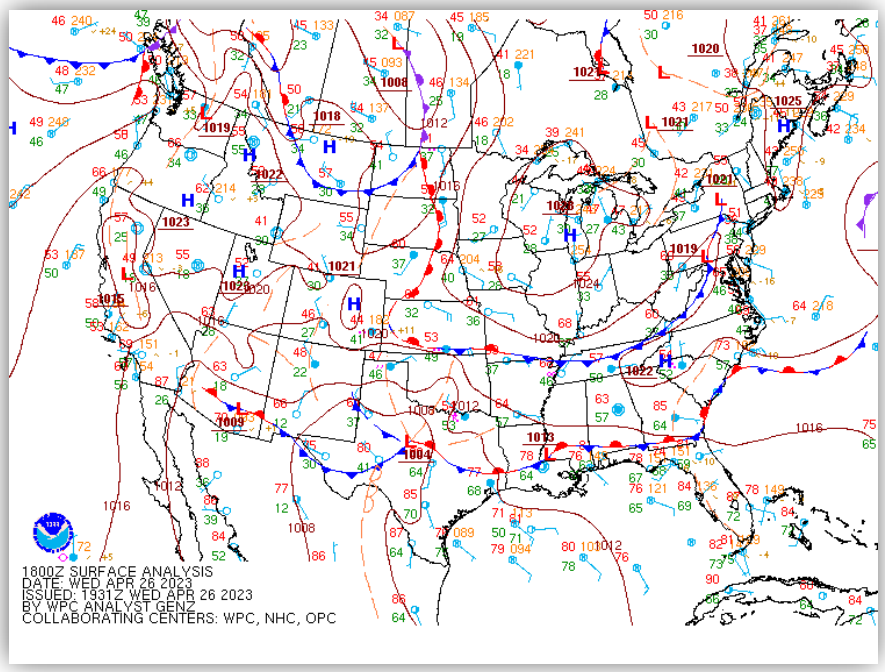


Figure 6 - Surface Analysis, 2:00pm EDT 26 April 2023 (1800 UTC)

On 26 April 2023, Meteorological experts at the NOAA Storm Prediction Center (SPC) forecasted a severe thunderstorm threat for regions across Southern portions of the United States, specifically including a large portion of Florida and the areas surrounding the property. As part of their process, the SPC issued convective outlooks affecting the general area surrounding the property. These outlooks are designed to communicate to the public the existence of threats of severe weather to a specified region or area.

SPC AC 261625

Day 1 Convective Outlook
NWS Storm Prediction Center Norman OK
1125 AM CDT Wed Apr 26 2023

Valid 261630Z - 271200Z

...THERE IS AN ENHANCED RISK OF SEVERE THUNDERSTORMS ACROSS PARTS OF NORTH TEXAS AND THE FLORIDA PENINSULA...

...SUMMARY...
A few tornadoes (possibly some strong), very large/destructive hail, and severe thunderstorm gusts are expected over parts of north Texas this afternoon and evening. Very large hail and damaging winds also are expected over parts of Florida this afternoon and early evening.

...Florida...
Based on recent visible satellite imagery, mostly clear/sunny conditions are present over the FL Peninsula. The eastern extent of

a remnant EML, shown in the fairly steep 700-500 mb lapse rates on the 12Z TBW/15Z XMR soundings, has overspread much of the FL Peninsula. Robust diurnal heating of a rich low-level airmass will contribute to a moderately to strongly unstable airmass, with MLCAPE generally around 2000-2500+ J/kg. Even with low-level winds expected to remain fairly weak, enhanced mid/upper-level flow will foster 40-50 kt of effective bulk shear and updraft organization. Compared to the past two days, it appears likely that multiple supercells capable of producing both very large hail and strong/damaging winds will develop this afternoon over the northern/central FL Peninsula along both sea breezes and residual outflow boundaries, and subsequently spread southward through the early evening.

..Gleason/Wendt.. 04/26/2023

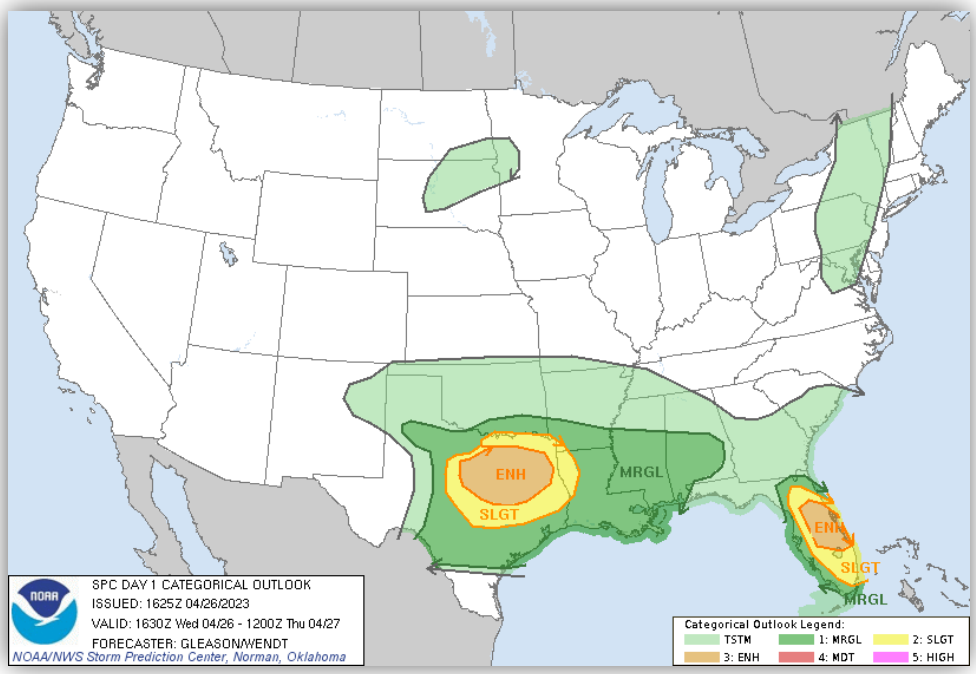


Figure 7 – SPC Day 1 Outlook, 12:30pm EDT 26 April 2023 (1630 UTC)

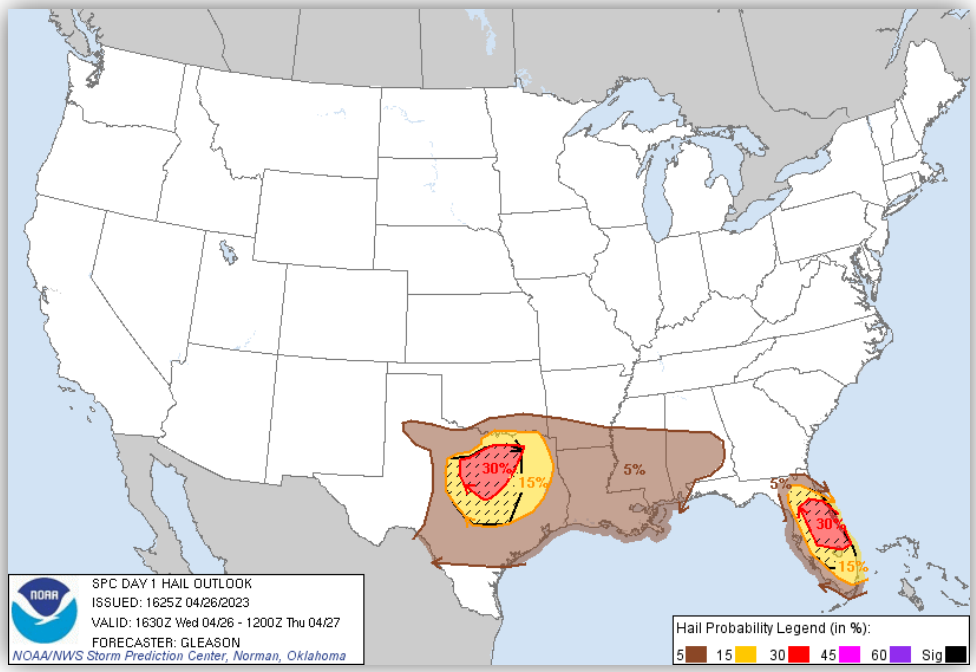


Figure 8 - SPC Day 1 Hail Outlook, 12:30pm EDT 26 April 2023 (1630 UTC)

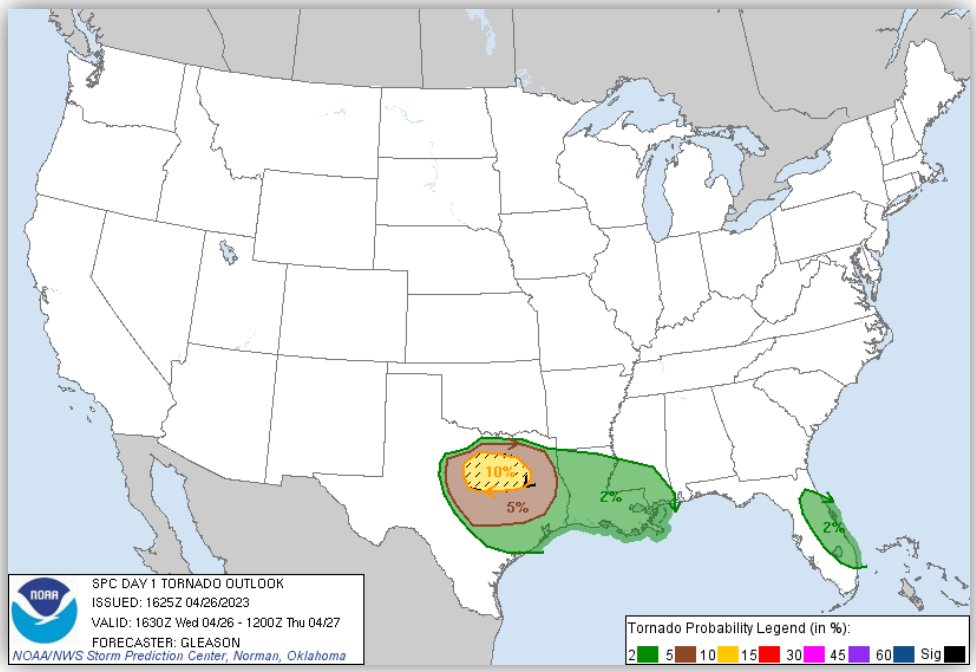


Figure 9 - SPC Day 1 Tornado Outlook, 12:30pm EDT 26 April 2023 (1630 UTC)

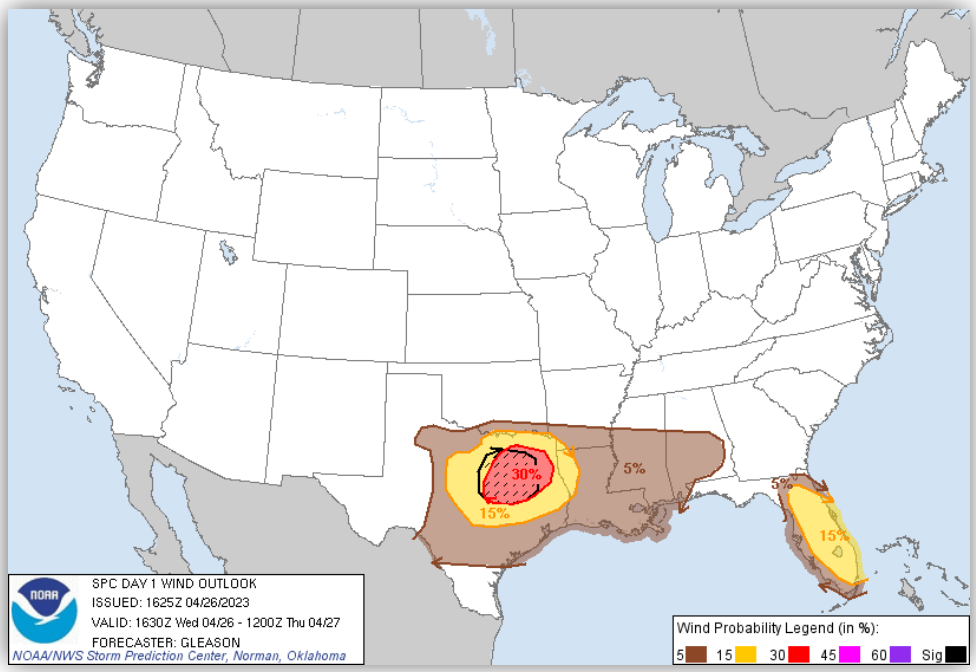


Figure 10 - SPC Day 1 Wind Outlook, 12:30pm EDT 26 April 2023 (1630 UTC)

As part of their process, the SPC also issued Mesoscale Convective Discussions (MCDs) affecting Central Florida and the area surrounding the property. Like the outlooks, these discussions are designed to communicate to the public the existence of threats of severe weather to a specified region or area. MCD 624 outlined the potential for severe weather on 26 April 2023, to include thunderstorms likely to produce large hail and strong winds. This MCD is shown in Figure 11.

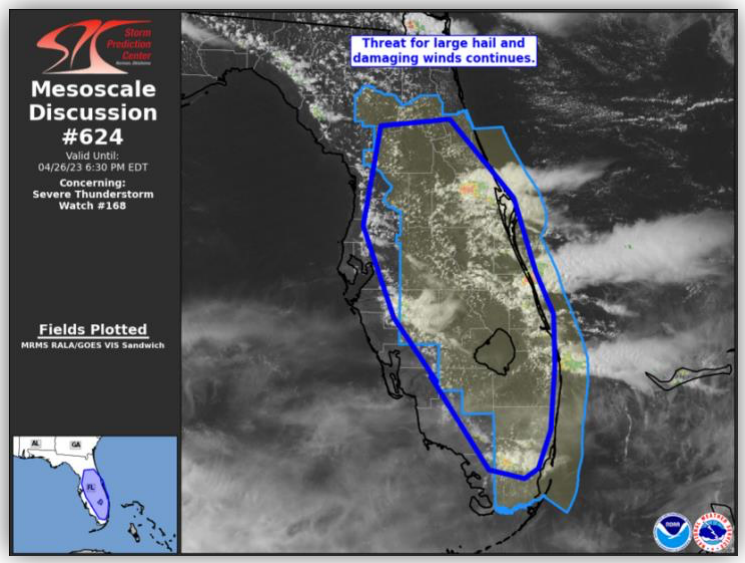


Figure 11 - NOAA SPC Mesoscale Convective Discussion 624

Mesoscale Discussion 0624
NWS Storm Prediction Center Norman OK
0333 PM CDT Wed Apr 26 2023

Areas affected...Florida Peninsula

Concerning...Severe Thunderstorm Watch 168...

Valid 262033Z - 262230Z

The severe weather threat for Severe Thunderstorm Watch 168 continues.

SUMMARY...A threat for large/very-large hail remains across the Florida Peninsula. Additional storms may develop in western/central Florida through the remainder of the afternoon.

DISCUSSION...The strongest storms this afternoon have been near the Atlantic coast. Supercell storms in that area have remained east of the sea breeze boundary. Large hail and damaging winds have been reported with this activity over the last 2 hours. Convection along the Gulf breeze boundary continues to build. Storms have recently initiated east of Sarasota. Additional storms are possible through the afternoon, particularly if the sea breezes interact with one another. Shear and mid-level lapse rates will remain sufficient to support a large to very-large (2+ in.) hail threat along with isolated damaging winds.

..Wendt.. 04/26/2023

NEXRAD Data

To identify severe weather using NEXRAD data, the best method is to analyze the Reflectivity products. Base Reflectivity captures radar data from a single sweep at a specific elevation angle, whereas Composite Reflectivity combines data from multiple elevation scans into a single image. GR2 Analyst allows for a 3-Dimensional rendering of reflectivity products to allow a better analysis of the storm structure.

NEXRAD Reflectivity products indicate storm intensity through decibel (dBZ) measurements, visually represented on a standardized color scale. Higher dBZ values correspond to stronger storms, allowing meteorologists to effectively evaluate storm severity.

According to the Federal Meteorological Handbook, Number 11, Part D (FMH-11D), section 4.8.1,

> ***"Historically, one of the first techniques used to identify storms producing hail was to identify storms that possessed high reflectivity > ~ 55 dBZ."***

The first NEXRAD product reviewed was the 3-D Reflectivity image. This image shows the top-down view indicating overall strength of the storm column. The strength level is measured in decibels (dBZ).

Figures 12-15 show the 3-D Reflectivity product from the KMLB radar showing the strong storm moving rapidly from the North-Northwest to the South-Southeast toward and directly over the property. In each frame, a strong thunderstorm with a large and extensive >60dBZ reflectivity core is shown as it moves on a trajectory to carry it directly over the property. These high reflectivity values are used to help identify hail cores associated with a storm.

The location of the property is indicated with a white dashed circle and the color map highlighting reflectivity values of 55dBZ and greater is shown on the bottom right.

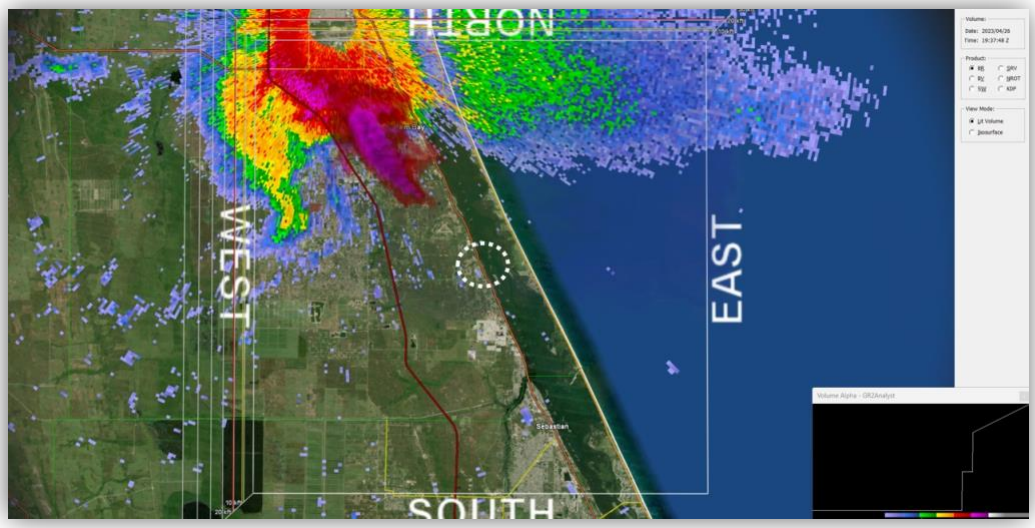


Figure 12 – KMLB 3-D Reflectivity, 3:37pm EDT 26 April 2023 (1937 UTC)

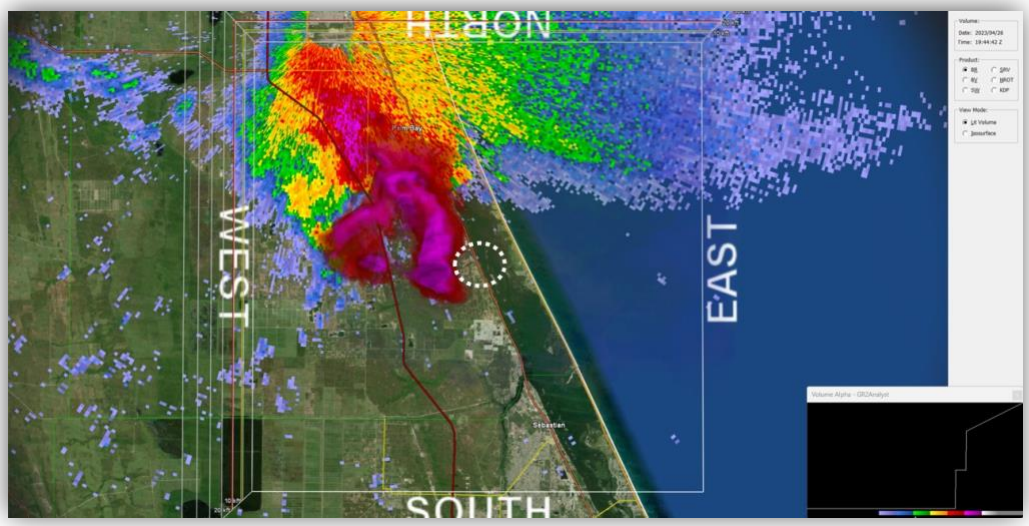


Figure 13 – KMLB 3-D Reflectivity, 3:44pm EDT 26 April 2023 (1944 UTC)

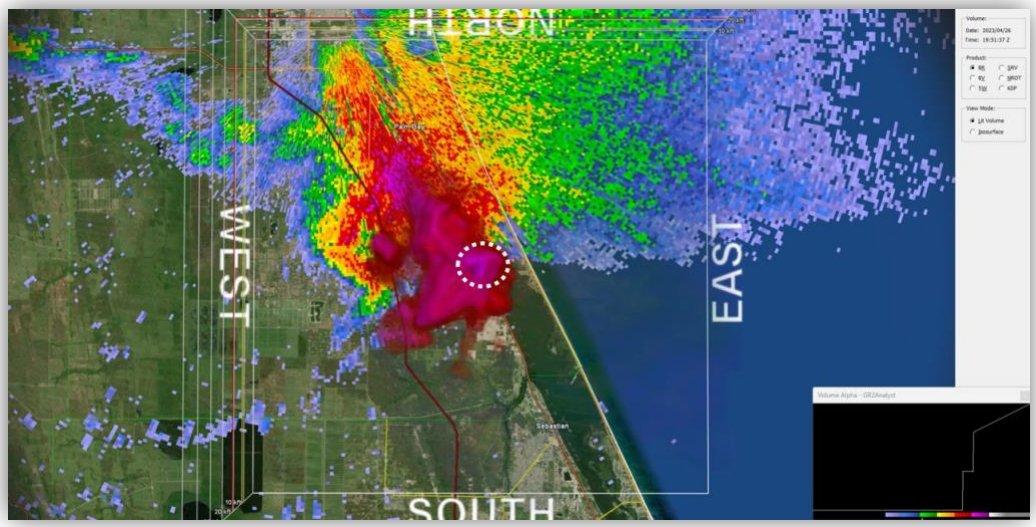


Figure 14 - KMLB 3-D Reflectivity, 3:51pm EDT 26 April 2023 (1951 UTC)

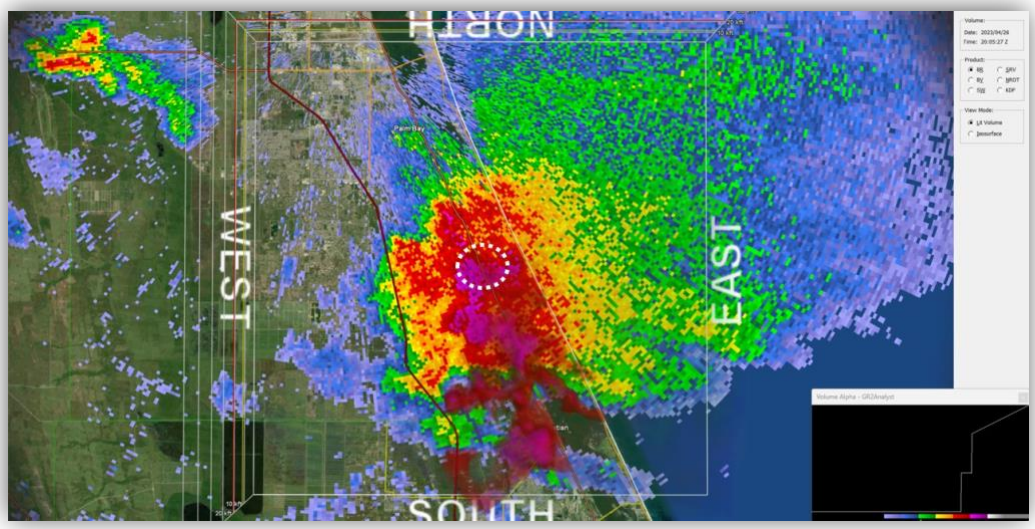


Figure 15 - KMLB 3-D Reflectivity, 4:05pm EDT 26 April 2023 (2005 UTC)

Figures 16-20 show the Gibson Ridge 4-panel view for the KMLB Radar. In each frame, the Base Reflectivity (BR) is shown on the top left, the Base Velocity (BV) on the top right, the Maximum Expected Hail Size (MEHS or MESH) on the bottom right and the Probability of Severe Hail (POSH) on the bottom left. The property is indicated with a red square surrounding a smaller filled red square in the center of the image.

According to the National Weather Service, MEHS/MESH is an "Estimate of the maximum hail size that can be expected". Additionally, the POSH is "The probability of 0.75-inch diameter hail occurring".

This series of images shows the movement of a strong thunderstorm that moves North-Northwest to the South-Southeast toward, and overhead of, the property. At 3:44pm EDT (1944 UTC), the Maximum Expected Size of Hail (MEHS) values embedded within the approaching storm exceeded 2.5", indicating the high potential for at least 2" diameter hail in the cell.

The image at 3:51pm EDT (1951 UTC) shows areas of MEHS value of 2.79" directly above the property and other MEHS values ranging from 2.09" – 2.49" within 1/2 nautical mile of the property. POSH values are 100% indicating a certainty of hail at least 1" diameter above the property. By 3:58pm EDT (1958 UTC), MEHS and POSH values begin to decrease dramatically. These falling rates indicate the hail core has already begun to fall to the surface.

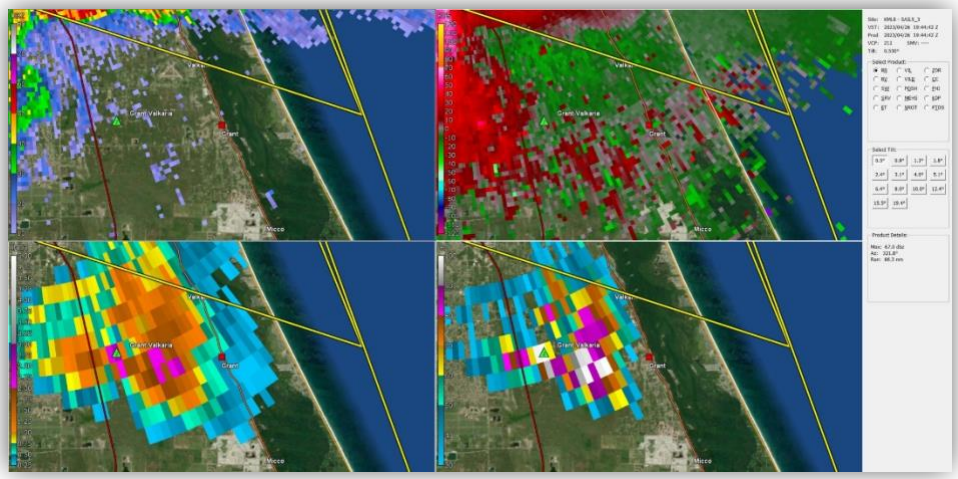


Figure 16 – KMLB 4-panel, 3:44pm EDT 26 April 2023 (1944 UTC)

As the storm moves over the property from the North-Northwest to the South-Southeast, the MESH and POSH rapidly continue moving to the South-Southeast ahead of the high surface reflectivity values.

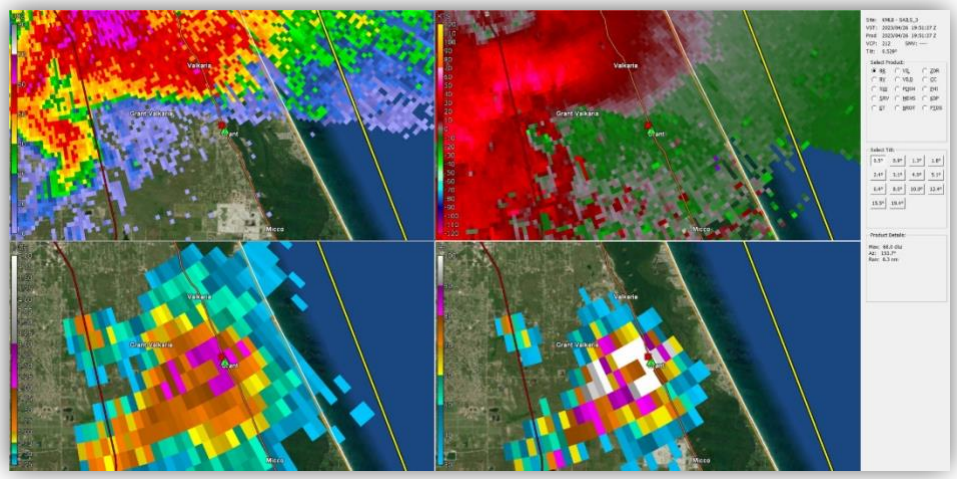


Figure 17 – KMLB 4-panel, 3:51pm EDT 26 April 2023 (1951 UTC)

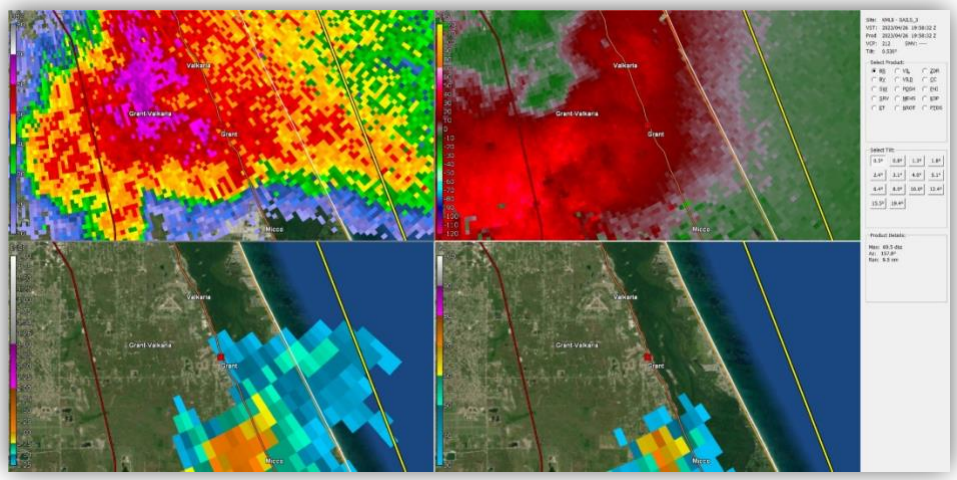


Figure 18 - KMLB 4-panel, 3:58pm EDT 26 April 2023 (1958 UTC)

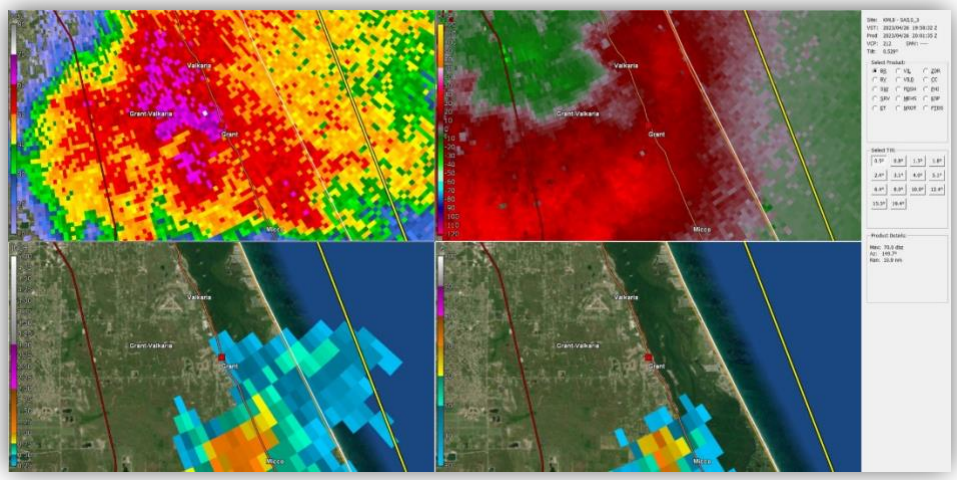


Figure 19 - KMLB 4-panel, 4:01pm EDT 26 April 2023 (2001 UTC)

Figures 19 and 20 show the 4-Panel image for 4:01pm EDT and 4:03pm EDT. These images show the Base Reflectivity values at the property are 61dBZ and 65dBZ. This meets the criteria for Base Reflectivity values exceeding 55dBZ as a signature of hail falling to the surface.

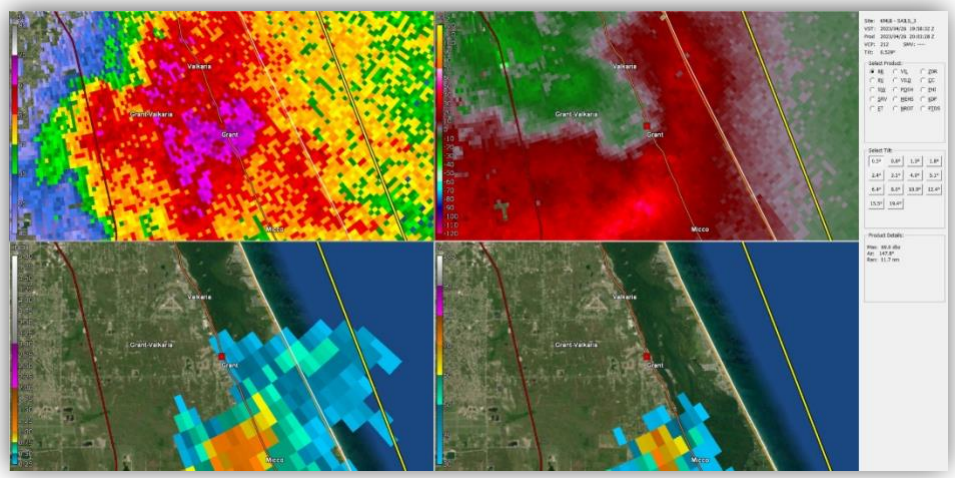


Figure 20 - KMLB 4-panel, 4:03pm EDT 26 April 2023 (2003 UTC)

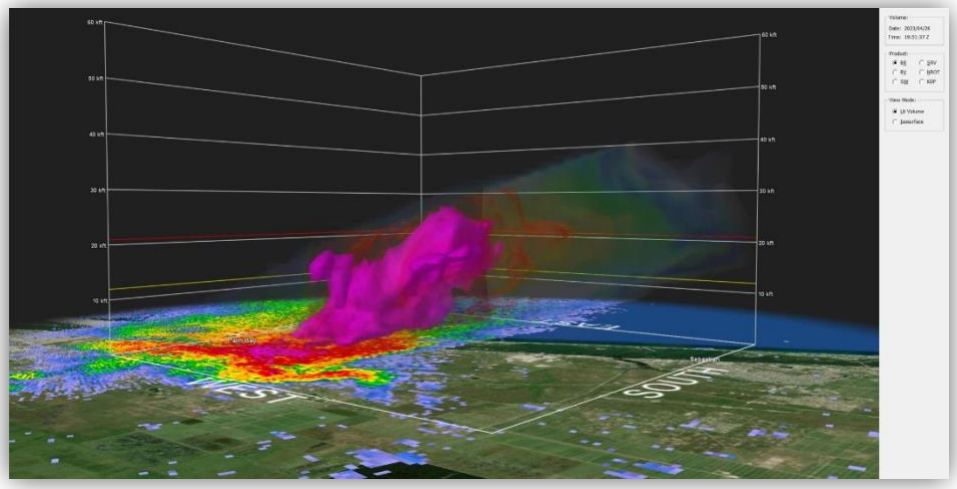


Figure 21 - KMLB Volume Scan, 3:51pm EDT 26 April 2023 (1951 UTC)

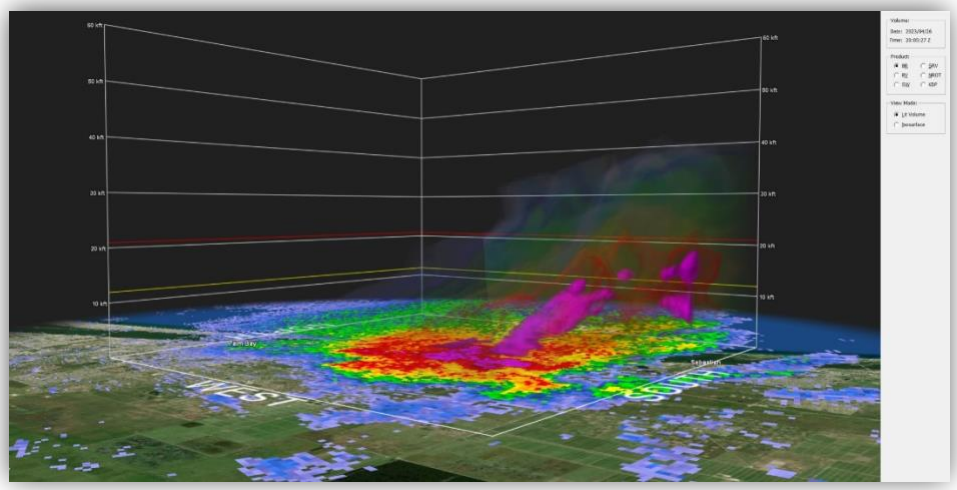


Figure 22 - KMLB Volume Scan, 4:05pm EDT 26 April 2023 (2005 UTC)

The KMLB volume scans of Figures 21-22 show the central core of the storm with 60dBZ or greater reflectivity as it begins to partially collapse at 3:51pm EDT (1951 UTC). The property is in the center of the lower plane, directly below the suspended hail core. This high reflectivity core extends well into the upper atmosphere, approaching approximately 30,000ft in height. The 60dBZ core drops to below 20,000ft in height by 4:05pm EDT, a strong indicator that the updrafts could no longer sustain the hail core aloft and therefore the core had already begun falling rapidly to the surface. It is probable that hail in excess of 1.75" diameter began falling towards the ground on a trajectory to directly affect the property.

WIND

According to the National Weather Service, the color for the Base Velocity images is based on whether the winds are heading toward or away from the radar. "By convention, **green** colors indicate winds **blowing toward** the radar and velocity values are negative. **Red** colors indicate winds **blowing away** from the radar and velocity values are positive."

As the storm moved toward the property, the suspended hail core began to descend rapidly to the surface almost directly over the property. As described by NOAA, when the collapsing air falls to the earth, the "intense concentrations of sinking air fan out upon striking the earths surface" and can create immensely powerful wind "***speeds of up to 60mph***".

Figures 23-28 show the radar detected collapse of this thunderstorm hail core in very close proximity to the property beginning at 4:01pm EDT. At 4:02pm EDT, MESONET sensor AMZ552 recorded a wind gust of 53mph (Figure 29). This observation was the only confirmation of wind speeds greater than 50mph associated with this downburst.

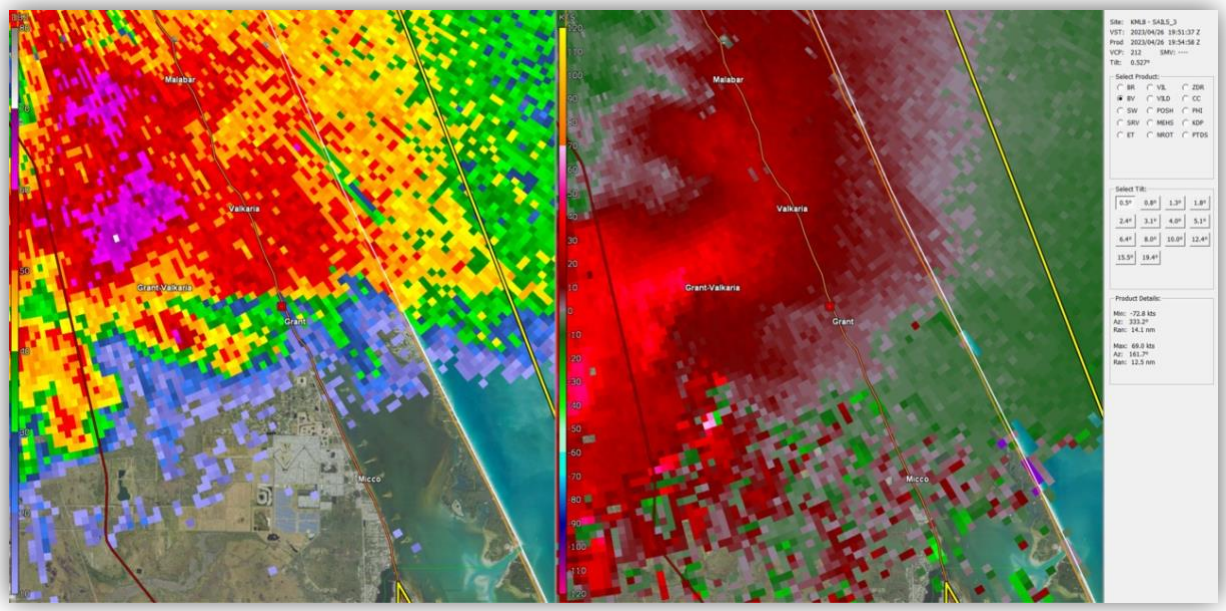


Figure 23 – KMLB Base Velocity, 3:54pm EDT 26 April 2023 (1954 UTC)

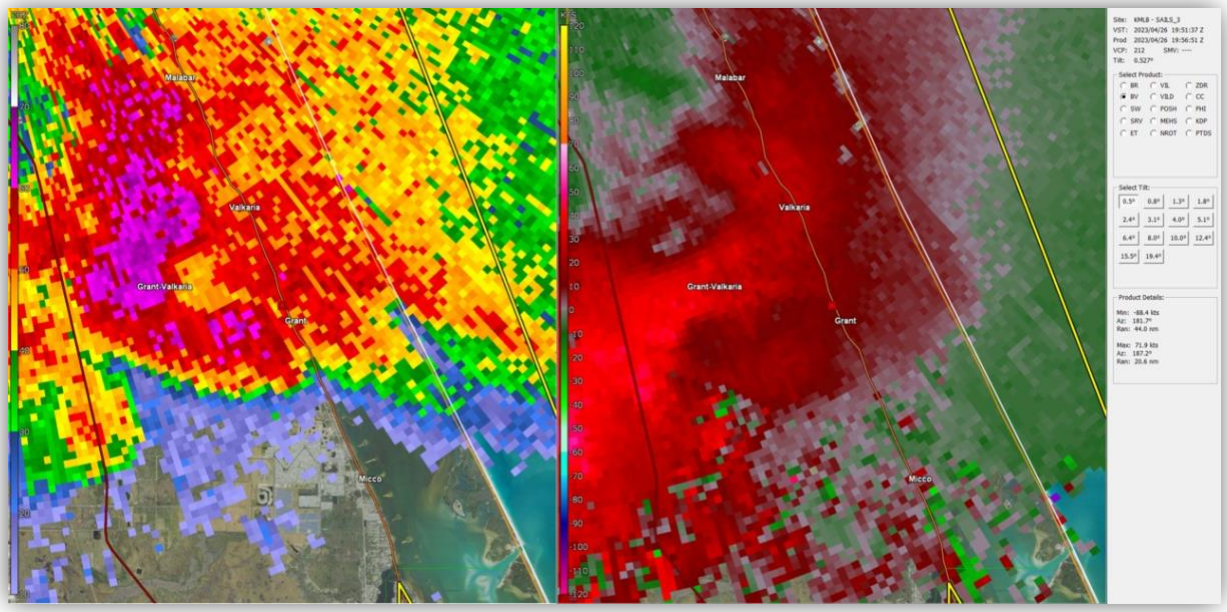


Figure 24 – KMLB Base Velocity, 3:56pm EDT 26 April 2023 (1956 UTC)

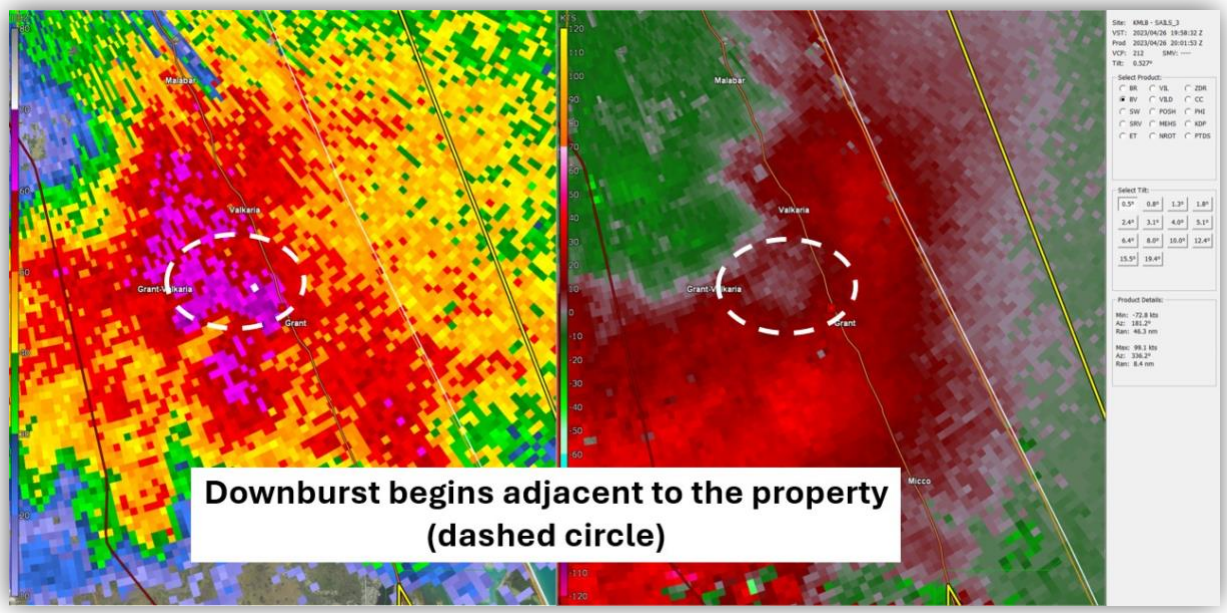


Figure 25 - KMLB Base Velocity, 4:01pm EDT 26 April 2023 (2001 UTC)

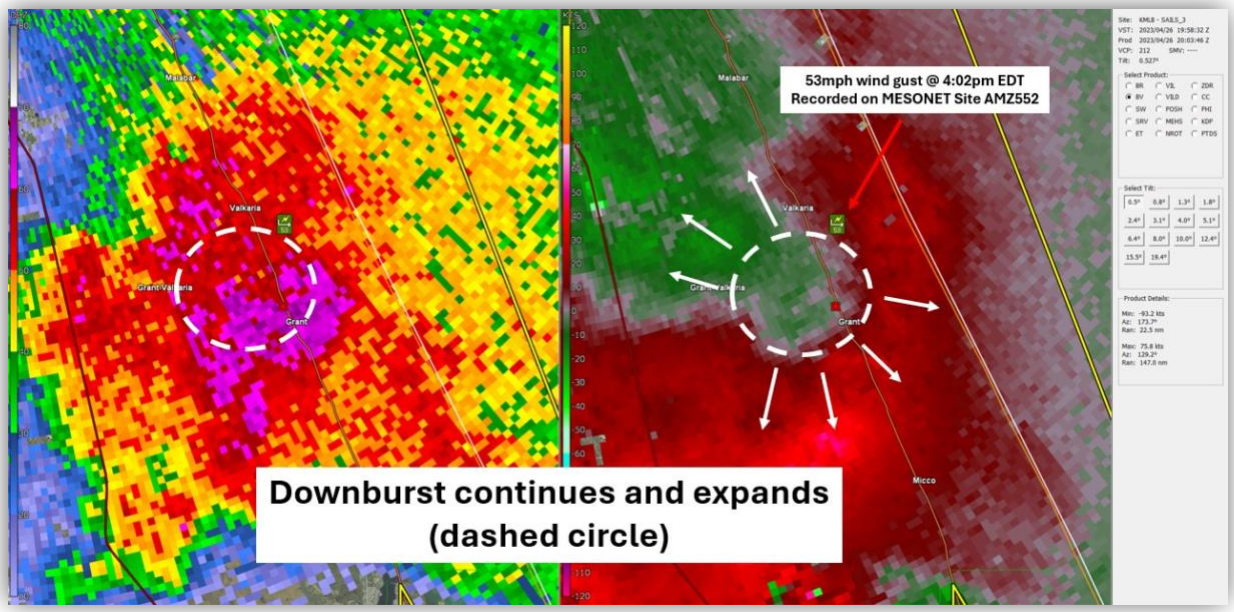


Figure 26 - KMLB Base Velocity, 4:03pm EDT 26 April 2023 (2003 UTC)

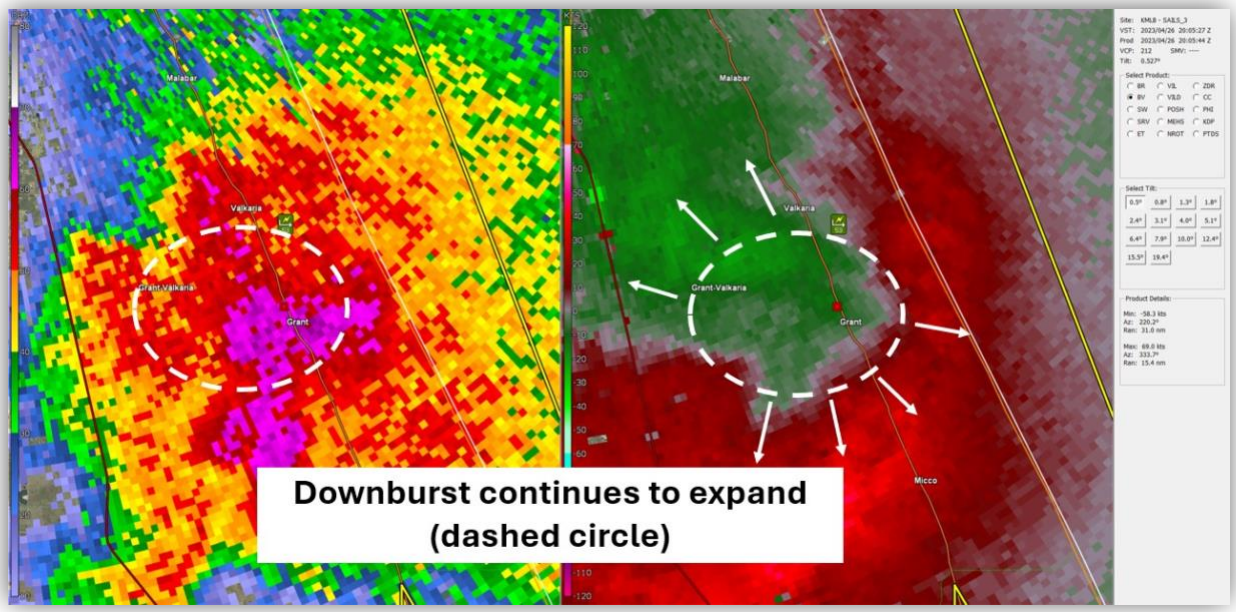


Figure 27 - KMLB Base Velocity, 4:05pm EDT 26 April 2023 (2005 UTC)

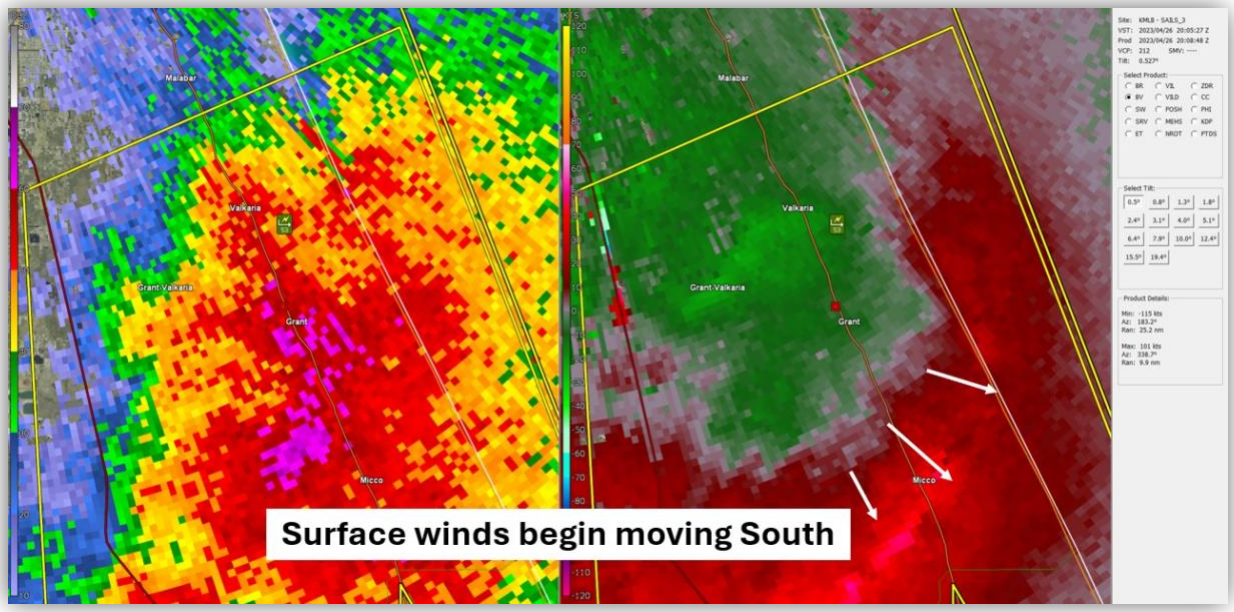


Figure 28 - KMLB Base Velocity, 4:08pm EDT 26 April 2023 (2008 UTC)

```
Event:   TSTM WND GST
Mag:     53 MPH
Time:    20:02 UTC
Place:   1 E VALKARIA
County:  AMZ552, FL
Source:  MESONET

WEATHERFLOW STATION XIND MEASURED A WIND GUST OF
46KT/53MPH FROM THE NORTHWEST.
```

Figure 29 - Thunderstorm Wind Gust Report - AMZ552, 4:02pm EDT 26 April 2023

At 4:08pm EDT (2008 UTC) on 26 April 2023, the National Weather Service office in Melbourne issued a Severe Thunderstorm Warning outlining threats for a severe thunderstorm capable of producing a "Ping pong ball size hail and 60 mph wind gusts". This issued warning included the storm that passed over the property.

972
WUUS52 KMLB 262008
SVRMLB
FLC009-061-262100-
/O.NEW.KMLB.SV.W.0032.230426T2008Z-230426T2100Z/

BULLETIN - IMMEDIATE BROADCAST REQUESTED
Severe Thunderstorm Warning
National Weather Service Melbourne FL
408 PM EDT Wed Apr 26 2023

The National Weather Service in Melbourne has issued a

** Severe Thunderstorm Warning for...*
Eastern Indian River County in east central Florida...
Southeastern Brevard County in east central Florida...
** Until 500 PM EDT.*
** At 407 PM EDT, a severe thunderstorm was located over Micco, or over Barefoot Bay, moving southeast at 25 mph.*

HAZARD...Ping pong ball size hail and 60 mph wind gusts.
SOURCE...Radar indicated.
IMPACT...People and animals outdoors will be injured. Expect hail damage to roofs, siding, windows, and vehicles. Expect wind damage to roofs, siding, and trees.

** Locations impacted include...*
Sebastian, Vero Beach, Fellsmere, Indian River Shores and Malabar.

HAIL THREAT...RADAR INDICATED
MAX HAIL SIZE...1.50 IN
WIND THREAT...RADAR INDICATED
MAX WIND GUST...60 MPH

On 26 April 2023, there were numerous storm reports documented by the National Weather Service as this storm cell passed over the densely populated areas of Brevard County FL. The area surrounding the property is far less populated. Figure 30 shows the closest storm reports to the property and approximate distances with the closest being 5.9 miles from the property. There were several reports of 1.75” diameter hail and a number for 1” diameter hail.

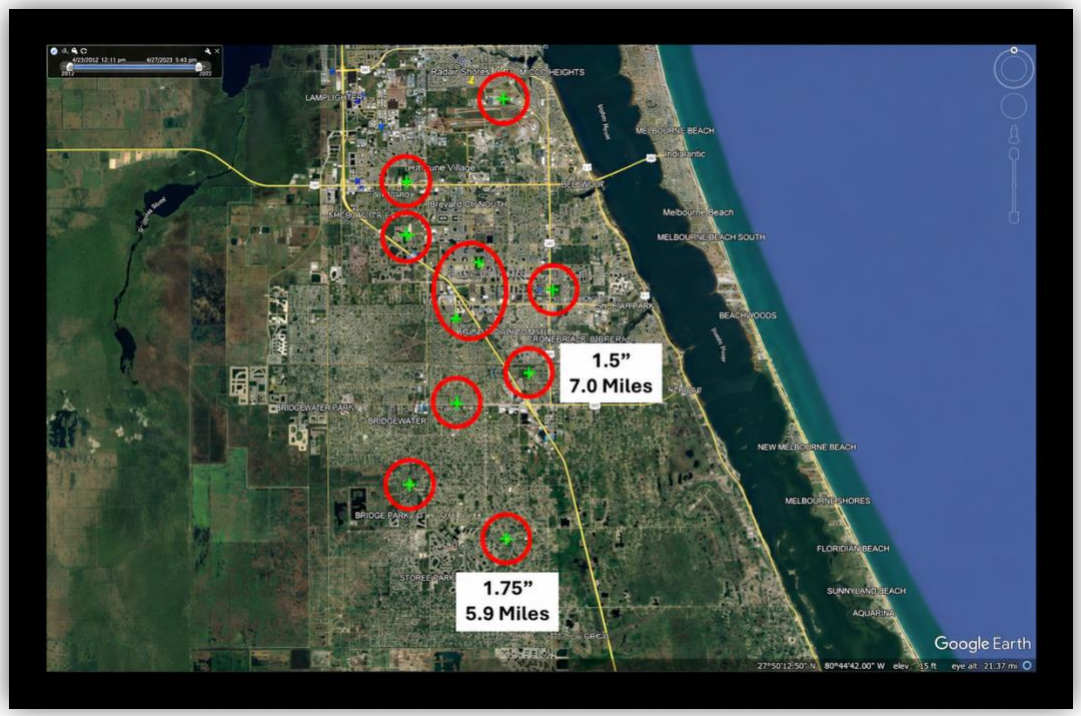


Figure 30 - NOAA Storm Reports, 26 April 2023

Conclusions

Based on the reviewed data, which is reasonable and customary to consider, and over 18 years of operational meteorological experience, it is my professional opinion to a reasonable degree of meteorological certainty that the following weather events affected the property at client address on 26 April 2023:

1. Hail at least 1.75" diameter affected the subject property. This is based on the FMH-11D, NEXRAD Base Reflectivity products, Probability of Severe Hail product, Maximum Expected Size of Hail product, and NOAA Storm Reports.
2. Maximum wind gusts of 43-48 knots (50-55mph) directly affected the subject property. This is based on the KMLB radar Base Velocity data, KMLB radar Base Reflectivity data, AMZ522 Wind Sensor Data.

[Signature on file]

Thomas Crenshaw
Full Spectrum Weather Services
19 January 2026