

# Daytona Beach Large Hail Event

## Saturday March 6, 2021

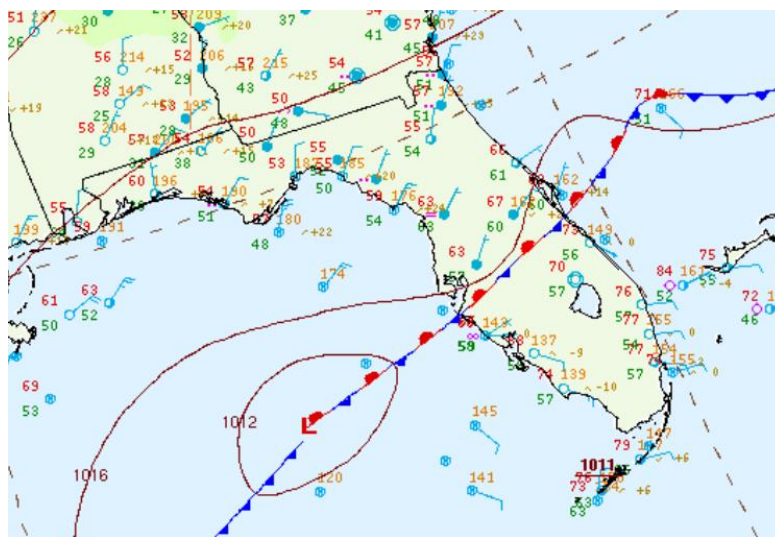
### Synopsis and Mesoanalysis

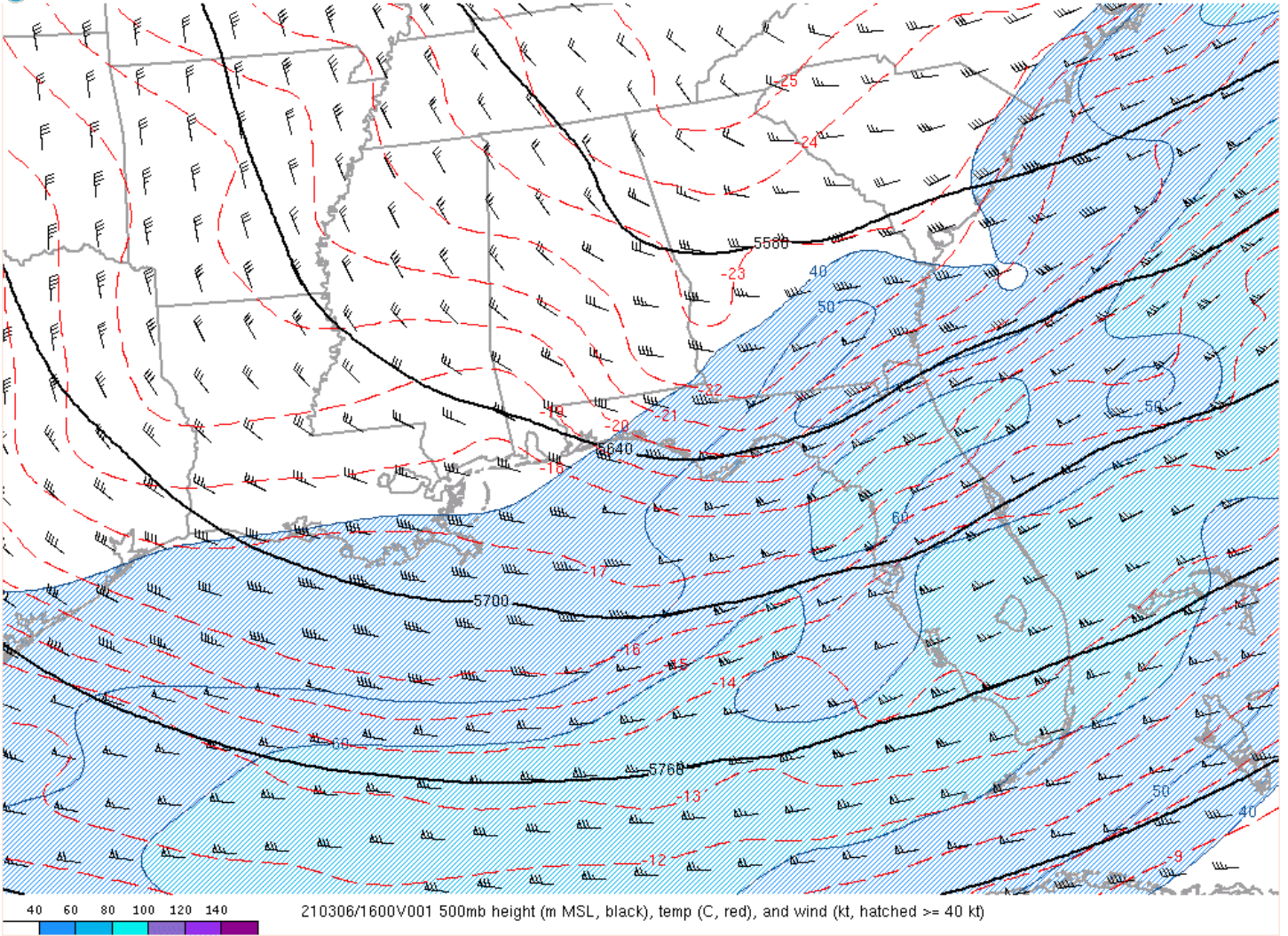
A complex meteorological setup on the morning of Saturday, March 6, 2021 supported an isolated severe thunderstorm that produced quarter-sized to ping pong ball-sized hail in northeast Volusia County. The severe storm produced hail from LPGA Boulevard west of Interstate 95, to the Daytona International Speedway, and across portions of Daytona Beach to the coast at Daytona Beach Shores.

Synoptically, a large mid-to-upper-level trough extended across much of the eastern United States, southward to the eastern Gulf of Mexico. Embedded within this trough was a strong mid-level wave (previously associated with a cut-off low over the Southern Plains) that quickly moved from the Deep South towards the northern Florida peninsula. RAP model analysis on the morning of March 6 indicated strong forcing for ascent overspreading the northern Florida peninsula in response to mid-level height falls associated with the passing 500mb wave.

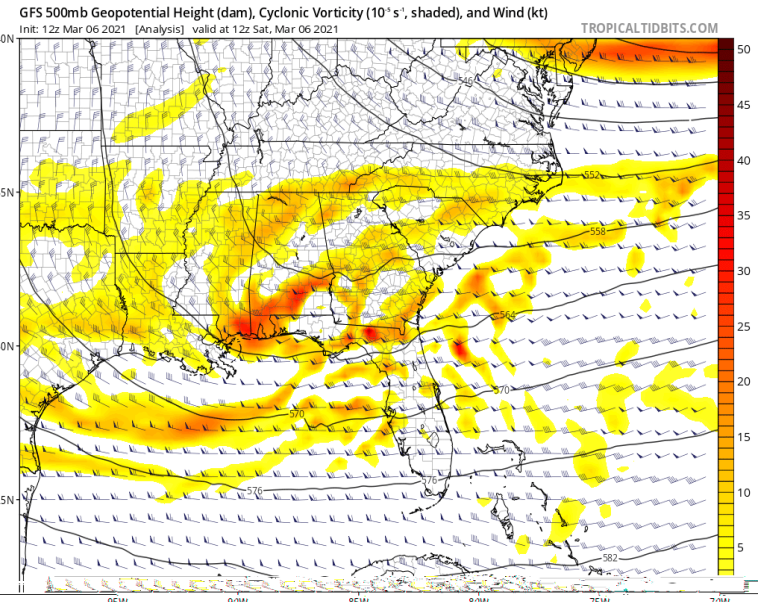
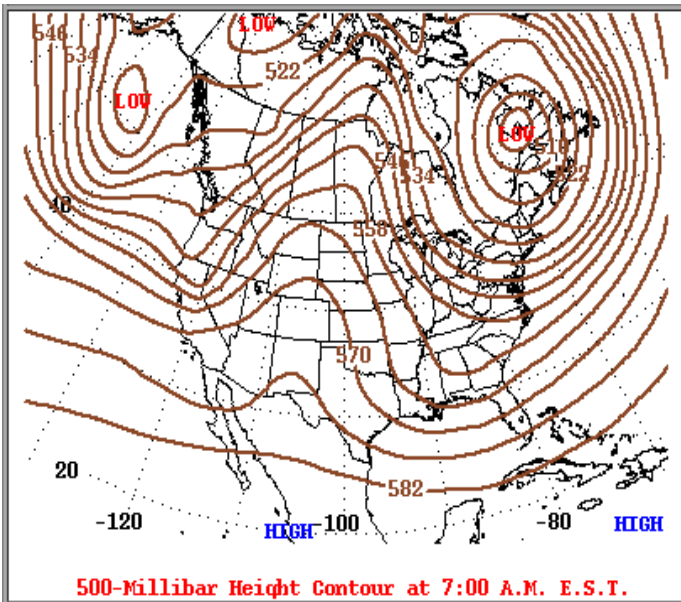
Late Friday night (March 5, 2021) a weak front was analyzed from just north of Cape Canaveral to the Nature Coast. This boundary remained nearly stationary into early Saturday morning (March 6, 2021), then pushed south of Daytona Beach by mid-morning. At the surface a weak wave/open trough developed from the eastern Gulf of Mexico, extending to the frontal boundary across the central peninsula. Low-level convergence along the stationary front increased after sunrise Saturday, and this was verified by the RAP analysis which indicated weak frontogenesis around 925mb (~2600 feet above ground level). Visible satellite imagery showed cloud cover diminished over Volusia County for a couple of hours after sunrise, likely allowing some surface destabilization to occur. RAP analysis indicated 0-3km lapse rates increased to 6.5-7 C/km by 900 AM across Volusia County. However, instability remained low, with only around 500 J/kg of SBCAPE and MUCAPE developing by late morning across northeast Volusia County, according to RAP analyses.

Temperatures aloft were anomalously cold. RAP analysis indicated 500mb temperatures between -16C and -17C across Volusia County. This was verified by the 12Z Cape Canaveral (XMR) and Jacksonville (JAX) soundings, which had 500mb temperatures of -14.3C and -16.8C, respectively. Although instability was low, very cold temperatures aloft and strong forcing for ascent associated with the passing mid-level wave (in the presence of strong, deep layer shear, surface to 6 km environmental shear of 64 kt on the 12Z XMR sounding), suggested that any persistent updrafts that formed would have the ability to become severe, with large hail being the main threat. This situation represents a (very) low probability, but potentially high impact event.

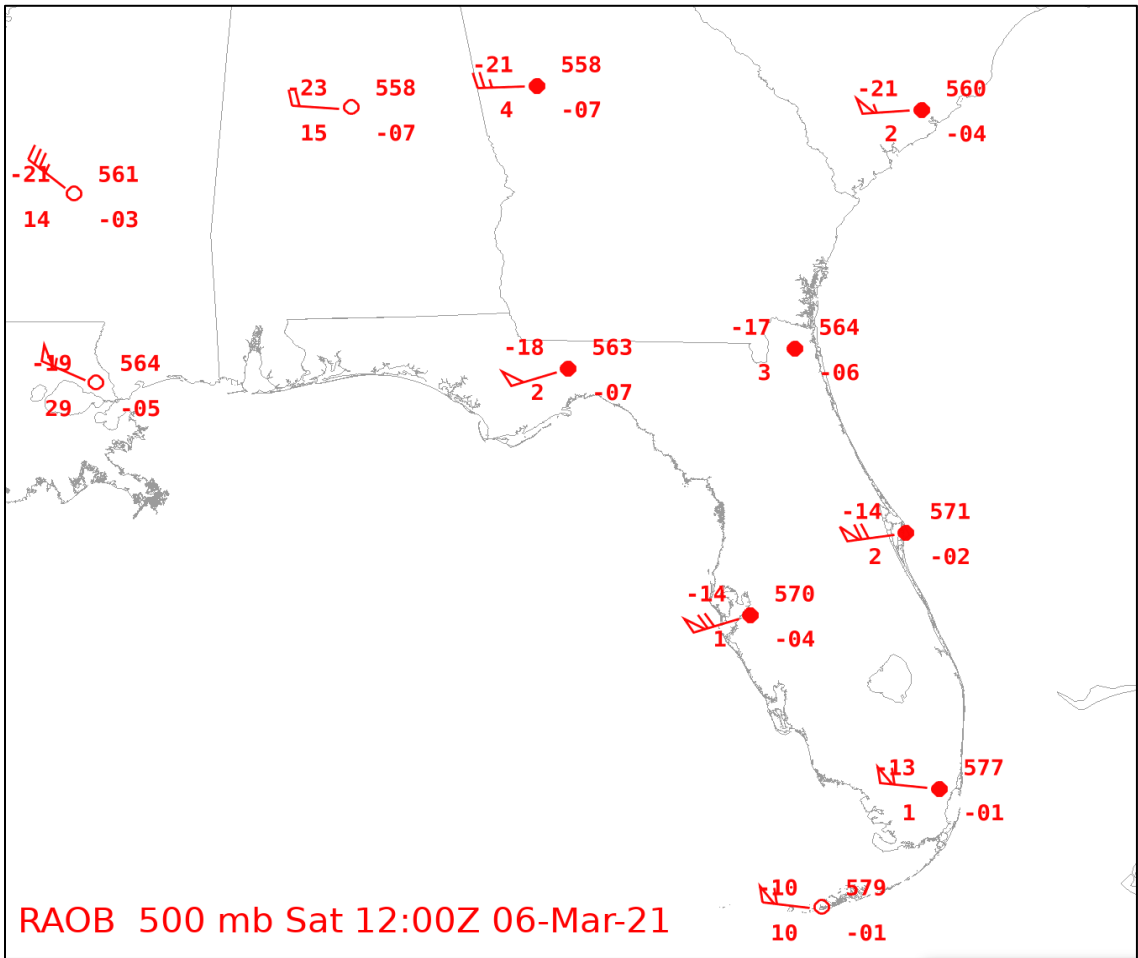




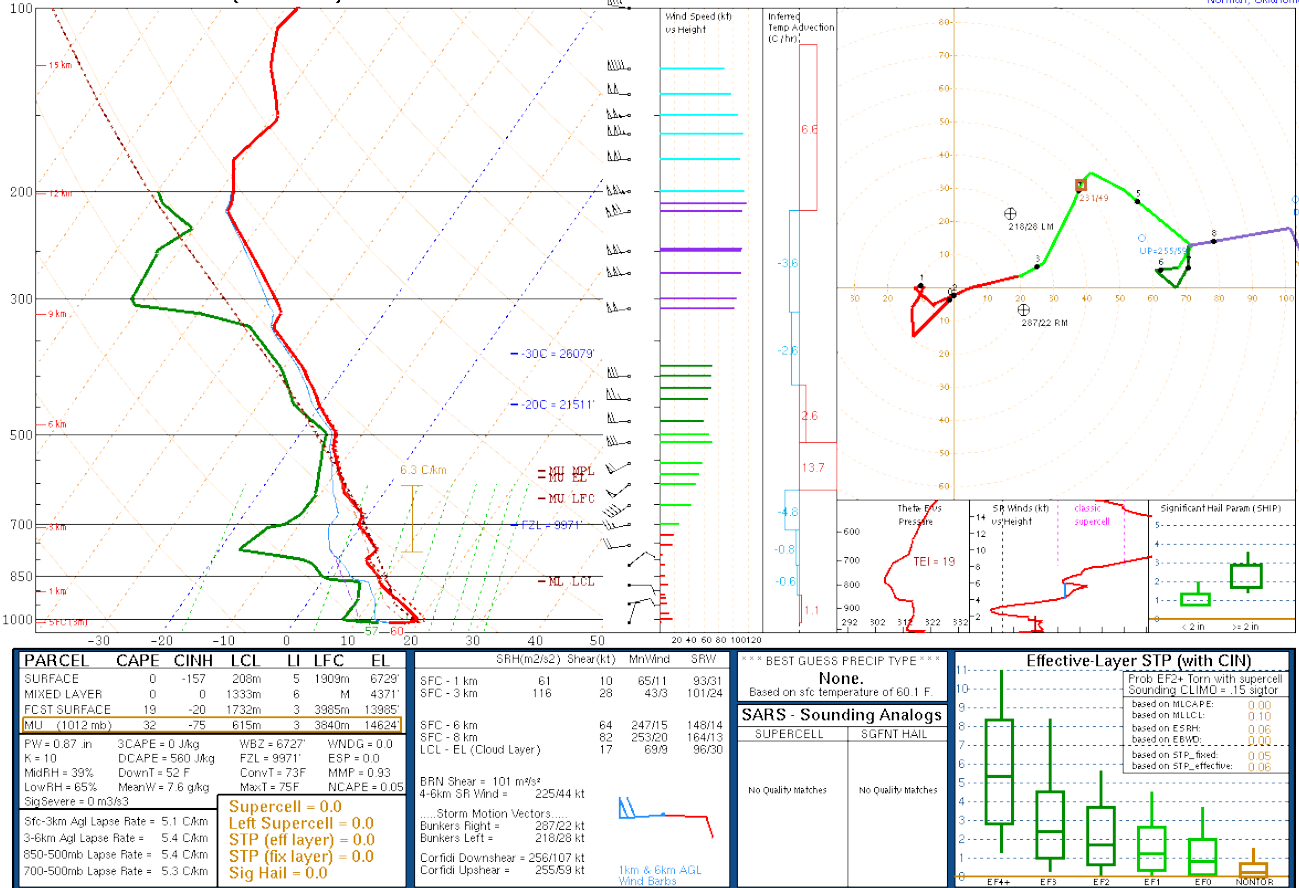
500mb RAP temperature, wind speeds, and heights at 16 UTC (11 am EST) on March 6th.



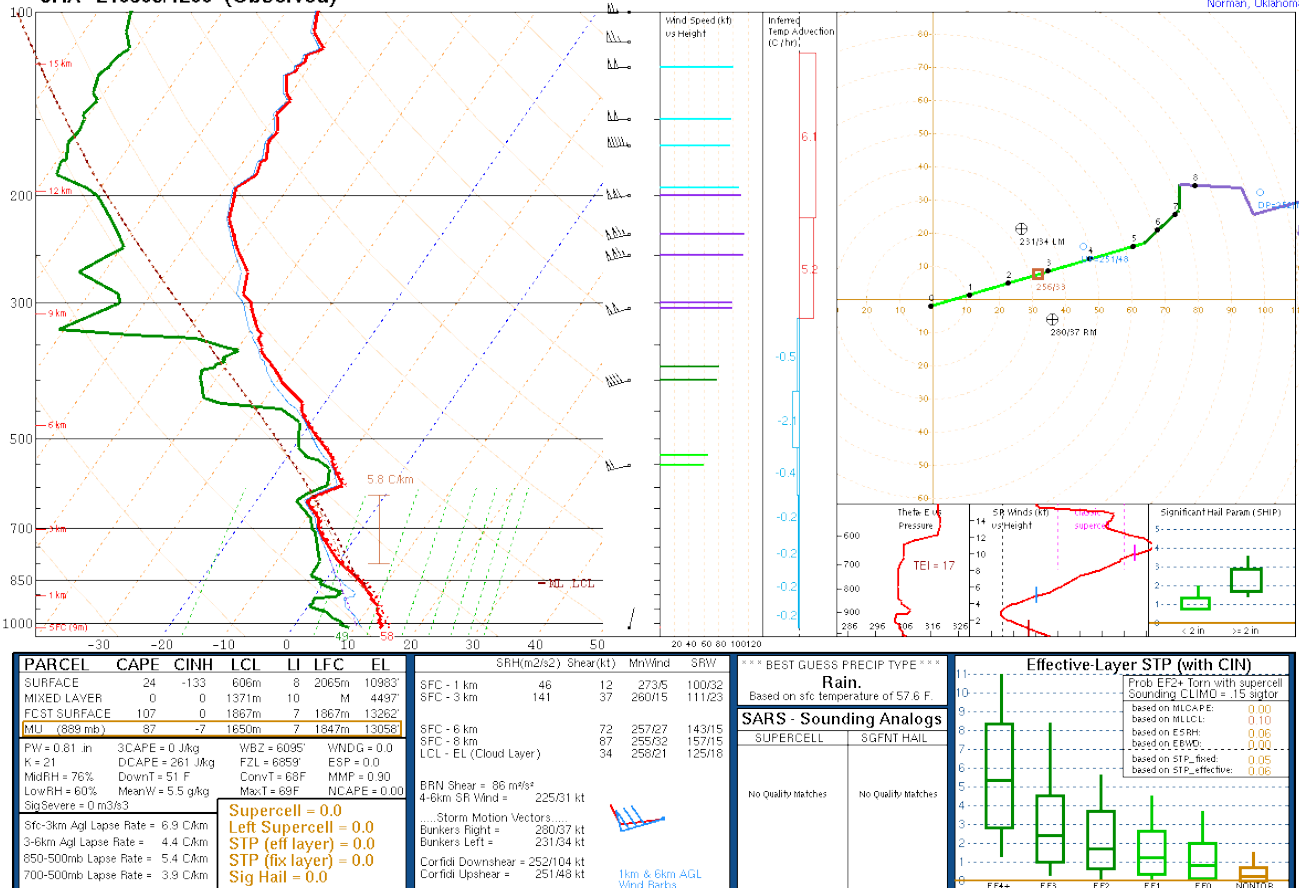
GFS model 500mb vorticity and height contours at 7 AM



**XMR 210306/1200 (Observed)**

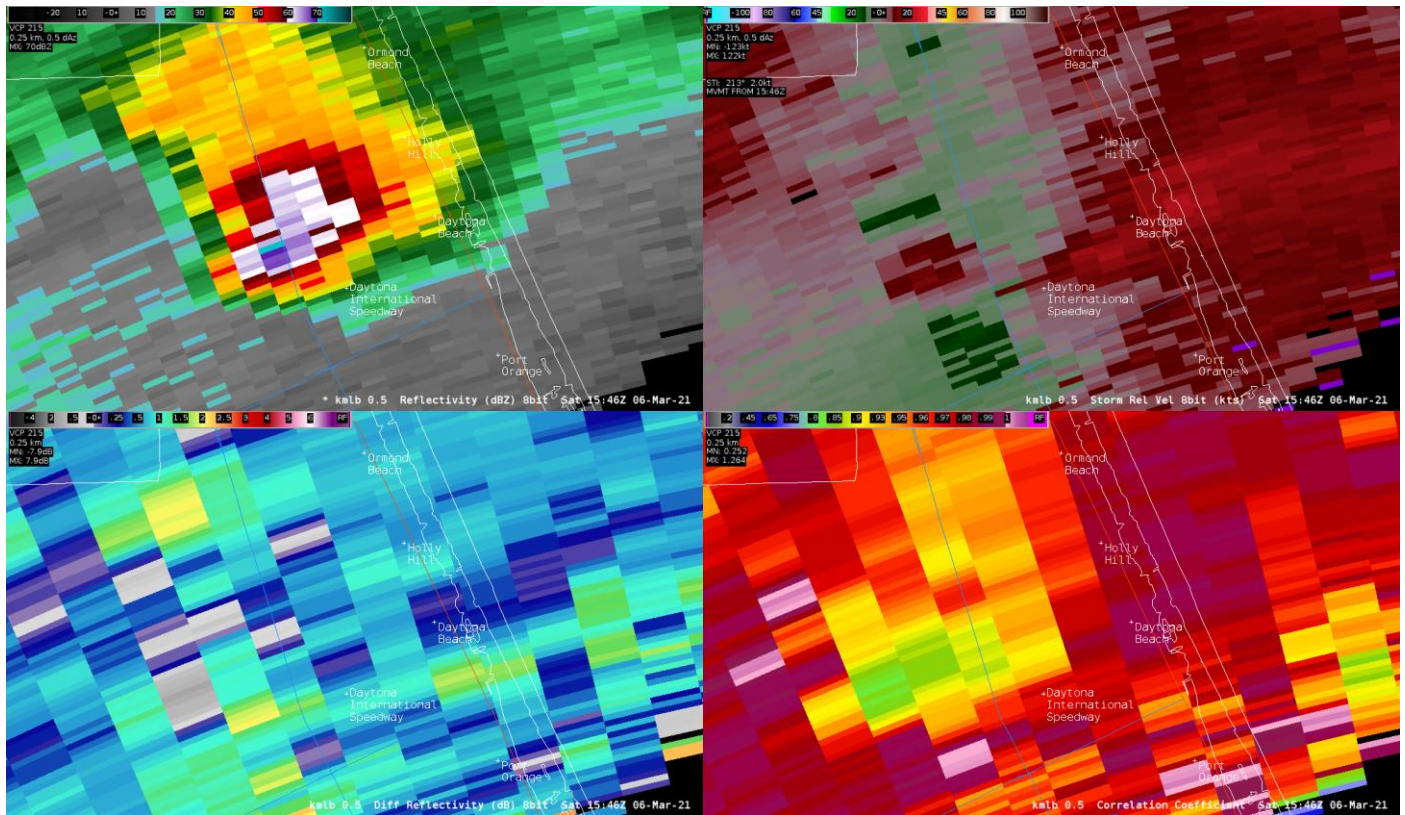


**JAX 210306/1200 (Observed)**

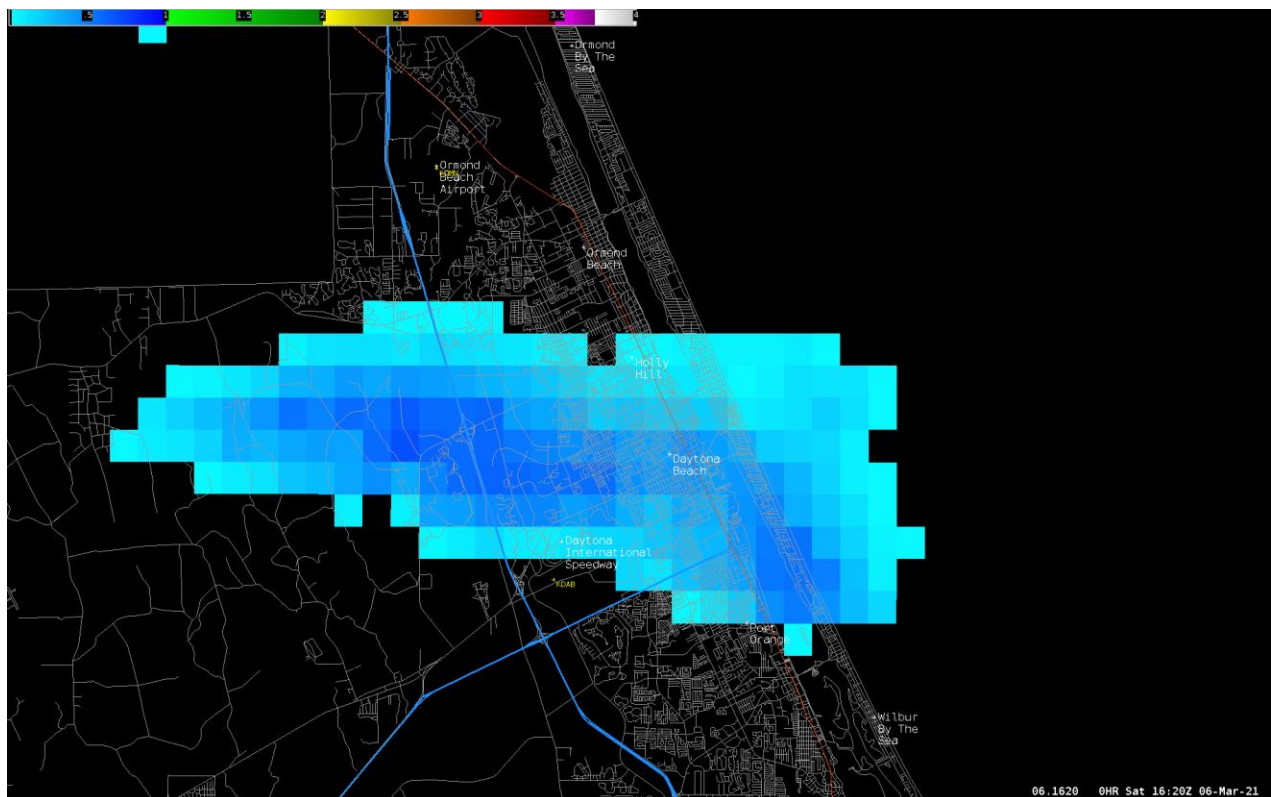


Upper Air Observations from Cape Canaveral (XMR) and Jacksonville (JAX) at 12Z (7 AM) on March 6.

## Radar Images



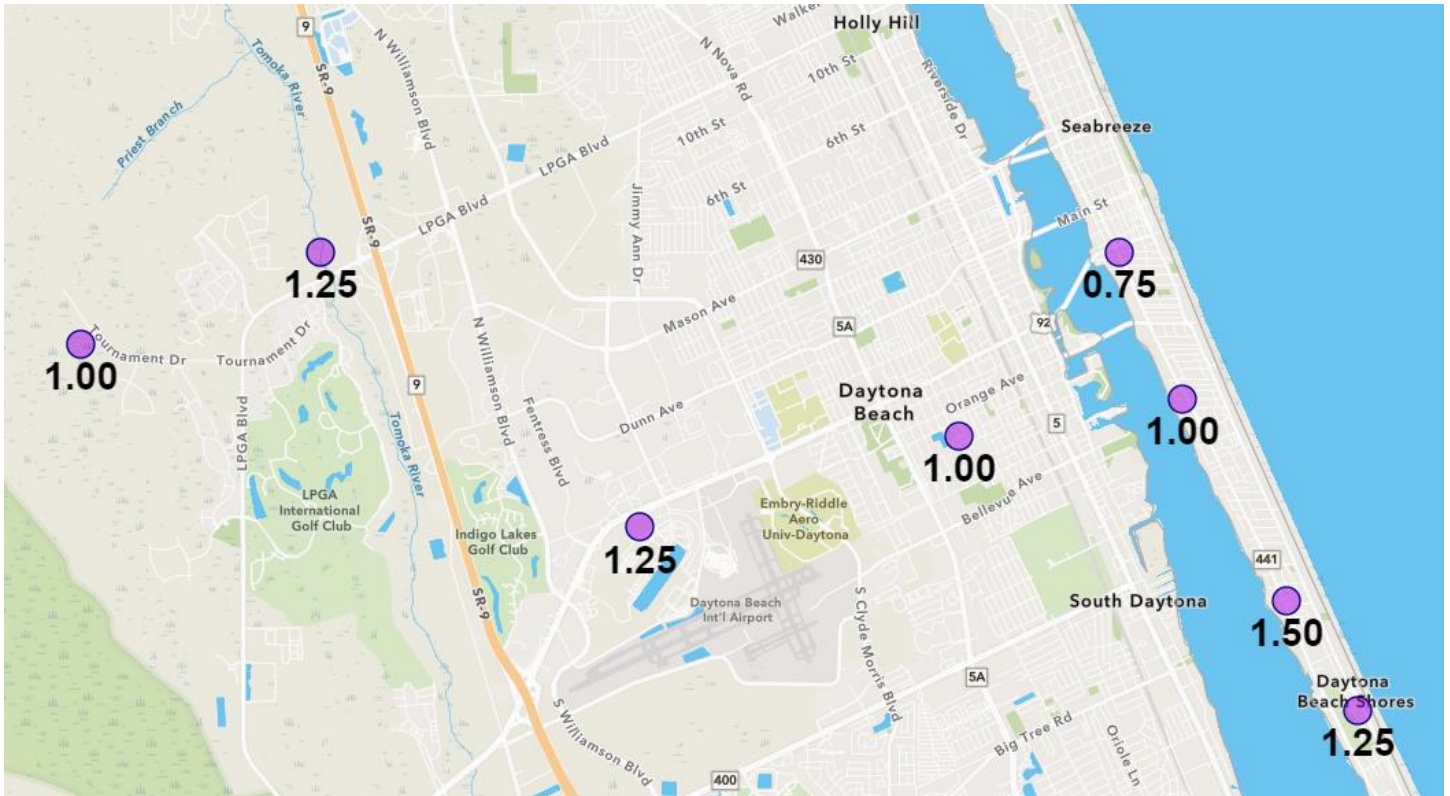
*Hail core over Interstate 95, just west of Daytona Beach at approximately 10:46 am (March 6). The hail core has a peak reflectivity value of 72 dBZ. The Correlation Coefficient (bottom right) had values below 0.90, which indicated the presence of hail.*



*Peak values from MRMS Maximum Estimate Hail Size (MESH) are only up to 1 inch, which is an underestimate of the largest measured hail of 1.50 inches (ping pong ball sized) at the Daytona Beach Shores.*

## Hail Reports

Many hail reports were received, including from Daytona International Speedway Emergency Management, storm spotters, media partners, and the public. The largest hail reports were half-dollar-sized at the Daytona International Speedway (front side of the venue, no hail observed infield), and ping pong ball sized at Daytona Beach Shores.



*The values represent the maximum hail diameter reported.*

## Hail Pictures Received

Relayed via NWS Social Media, Local Broadcast Media, Emergency Management, and Trained Spotters.



*Daytona Beach Shores - near 2900 A1A (received from Volusia County Ocean Rescue); all three photos above*

## Daytona Beach



*From Jeff Kim in Daytona Beach*



*From Jim Mahler near I-95 and LPGA Blvd.*



*Daytona Beach along South Peninsula Drive (from Claire Metz, WESH-2); both photos above*

