



# Launch Mission Execution Forecast

**Mission:** Falcon 9 NASA CRS-24

**Issued:** 20 Dec 2021 / 0830L (1330Z)

**Valid:** 21 Dec 2021 / 0501 – 0511L (1001 – 1011Z)



**Forecast Discussion:** Yesterday's frontal boundary is currently stalled out just to the south of the state this morning as the anticipated Gulf Low is taking shape over the western Gulf of Mexico. As the low tracks east today, it will bring the frontal boundary northwards towards the Spaceport by this evening. Through the remainder of the day, expect onshore moving showers, increasing in coverage along with better chances for storms later today as the boundary lifts north. Gusty showers and storms will accompany the warm front overnight, along with extensive mid and upper level cloudiness across the area ahead of the main low. Less than favorable conditions are expected for the primary launch window early Tuesday morning, with the main concerns associated with this weather being the Cumulus Cloud Rule, Thick Cloud Layer Rule, and Surface Electric Field Rule.

The Gulf Low is expected to move across Central Florida on Tuesday accompanied by a few strong storms before moving into the Atlantic late in the day. Breezy west-northwest winds will wrap chilly and dry air around the low into the area as the low moves east, allowing for improvement in conditions into the backup launch window early Wednesday morning. The main concerns will be the Cumulus Cloud Rule as cumulus and stratocumulus wrap around the backside of the low.

		Probability of Violating Weather Constraints				
<b>Launch Day</b>	<b>70%</b>	<b>Primary Concerns:</b> Cumulus Cloud Rule, Thick Cloud Layer Rule, Surface Electric Field Rule				
	Weather Conditions			Additional Risk Criteria		
	<b>Weather/Visibility:</b> Showers / 7 mi.			Clouds		<b>Upper-Level Wind Shear:</b> Low
	<b>Temp/Humidity:</b> 70°F / 90%	Type	Coverage	Base (ft)	Tops (ft)	<b>Booster Recovery Weather:</b> Moderate
<b>Liftoff Winds (200'):</b> 150° 10 - 15 mph	Cumulus	Broken	3,000	8,000	<b>Solar Activity:</b> Low	
	Altostratus	Overcast	10,000	16,000		
		Probability of Violating Weather Constraints				
<b>24-Hour Delay</b>	<b>30%</b>	<b>Primary Concerns:</b> Cumulus Cloud Rule				
	Weather Conditions			Additional Risk Criteria		
	<b>Weather/Visibility:</b> None / 7 mi.			Clouds		<b>Upper-Level Wind Shear:</b> Moderate
	<b>Temp/Humidity:</b> 56°F / 80%	Type	Coverage	Base (ft)	Tops (ft)	<b>Booster Recovery Weather:</b> High
<b>Liftoff Winds (200'):</b> 290° 17 - 22 mph	Cumulus	Scattered	2,500	6,000	<b>Solar Activity:</b> Low	
<p><b>Note:</b> The Probability of Violation (POV) is the chance that a Lightning Launch Commit Criteria (LLCC) or certain user constraints (surface winds, precipitation, and temperatures, etc.) will be violated during the launch window. It does not take into account upper-level wind shear, booster recovery weather, and solar activity.</p>						
<b>Next Forecast Will Be Issued</b>		As Needed				