



# Launch Mission Execution Forecast

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

**Issued:** 19 Dec 2021 / 0800L (1300Z)

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



**Forecast Discussion:** A weakening cold front moving into the state this morning will cross Central Florida and the Spaceport later today, before stalling out just to the south tonight. Scattered showers and a few storms will accompany the front as it pushes through today, with quieter conditions overnight if the front can push beyond the area. A surface low will develop along the boundary in the Gulf of Mexico on Monday, which will lift it back into the Spaceport Monday night. Gusty showers and storms will accompany the warm front as it lifts north, along with extensive mid and upper level cloudiness overspreading 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 the Cumulus Cloud Rule, Thick Cloud Layer Rule, and Surface Electric Field Rule.

While there is still some model spread in the specifics, the Gulf Low is expected to move across Florida and into the Atlantic by late Tuesday accompanied by a few strong storms. Breezy west-northwest winds will wrap cooler and drier air around the low into the area as the low moves east, allowing for some improvement in conditions into the backup launch window early Wednesday morning. The main concerns will be the Cumulus Cloud Rule with any fast moving showers and the Thick Cloud Layer Rule with lingering mid-level cloudiness.

		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> Sct. 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>40%</b>	<b>Primary Concerns:</b> Cumulus Cloud Rule, Thick Cloud Layer Rule				
	Weather Conditions			Additional Risk Criteria		
	<b>Weather/Visibility:</b> Isold. Showers / 7 mi.			Clouds		<b>Upper-Level Wind Shear:</b> Moderate
	<b>Temp/Humidity:</b> 58°F / 80%	Type	Coverage	Base (ft)	Tops (ft)	<b>Booster Recovery Weather:</b> Moderate
<b>Liftoff Winds (200'):</b> 290° 17 - 22 mph	Cumulus	Scattered	2,500	6,000	<b>Solar Activity:</b> Low	
	Cirrus	Broken	20,000	25,000		
<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.						
<b>Next Forecast Will Be Issued</b>		20 Dec 2021				