



Launch Mission Execution Forecast



Mission: Falcon 9 Starlink 13-1

Issued: 20 Jan 2025 / 1045L (1545Z)

Valid: 21 Jan 2025 / 0013 – 0413L (0513- 0913Z)

Forecast Discussion: Sunday’s cold front has stalled out over the Florida Straits this morning, allowing a drier, cooler, and breezy airmass to enter the Spaceport. The forecast question for the primary launch window late tonight will be how quickly clouds and rain return to the area as the old frontal boundary lifts back to the north. There remains good model agreement that the highest rain chances hold off until after the end of the window, but still expect increasing clouds and showers to creep in from the south, especially for the back half of the window. With this setup, the main weather concern is likely to be Thick Cloud Layers, with a smaller embedded Cumulus Cloud threat as rain coverage increases late.

An unusual all-day rain event is on tap for Tuesday as area of low pressure develops somewhere along the east coast of Florida on the stalled frontal boundary. The gradient between the high to the north and the developing low will bring strong winds near gale force heading into the backup window Tuesday Night, though specific speeds at the Spaceport will depend on exactly where the low and associated boundary develop. Wet and windy conditions persist through the backup window, resulting in a very high threat for Liftoff Winds, Thick Cloud Layers, and Disturbed Weather Rule violations.

Probability of Violating Weather Constraints ¹																									
Launch Day	15%→60% Primary Concerns: Thick Cloud Layers Rule, Cumulus Cloud Rule																								
	Weather Conditions																								
	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 30%;">Weather/Visibility:</th> <th style="width: 30%;">Isold Showers / 7 mi.</th> <th colspan="4" style="text-align: center;">Clouds</th> </tr> <tr> <th></th> <th></th> <th>Type</th> <th>Coverage</th> <th>Base (ft)</th> <th>Tops (ft)</th> </tr> </thead> <tbody> <tr> <td>Temp/Humidity:</td> <td>58°F / 80%</td> <td>Cumulus</td> <td>Scattered</td> <td>3,000</td> <td>12,000</td> </tr> <tr> <td>Liftoff Winds (200'):</td> <td>340° 7 – 12 mph</td> <td>Altostratus</td> <td>Scattered</td> <td>10,000</td> <td>15,000</td> </tr> </tbody> </table>	Weather/Visibility:	Isold Showers / 7 mi.	Clouds						Type	Coverage	Base (ft)	Tops (ft)	Temp/Humidity:	58°F / 80%	Cumulus	Scattered	3,000	12,000	Liftoff Winds (200'):	340° 7 – 12 mph	Altostratus	Scattered	10,000	15,000
	Weather/Visibility:	Isold Showers / 7 mi.	Clouds																						
		Type	Coverage	Base (ft)	Tops (ft)																				
Temp/Humidity:	58°F / 80%	Cumulus	Scattered	3,000	12,000																				
Liftoff Winds (200'):	340° 7 – 12 mph	Altostratus	Scattered	10,000	15,000																				
Additional Risk Criteria ²																									
	<table border="1" style="width: 100%; border-collapse: collapse;"> <tbody> <tr> <td>Upper-Level Wind Shear:</td> <td>Low</td> </tr> <tr> <td>Booster Recovery Weather:</td> <td>Low-Mod</td> </tr> <tr> <td>Solar Activity:</td> <td>Low</td> </tr> </tbody> </table>	Upper-Level Wind Shear:	Low	Booster Recovery Weather:	Low-Mod	Solar Activity:	Low																		
Upper-Level Wind Shear:	Low																								
Booster Recovery Weather:	Low-Mod																								
Solar Activity:	Low																								
Probability of Violating Weather Constraints																									
24-Hour Delay	90% Primary Concerns: Liftoff Winds, Thick Cloud Layers Rule, Disturbed Weather Rule																								
	Weather Conditions																								
	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 30%;">Weather/Visibility:</th> <th style="width: 30%;">Rain / 3 mi.</th> <th colspan="4" style="text-align: center;">Clouds</th> </tr> <tr> <th></th> <th></th> <th>Type</th> <th>Coverage</th> <th>Base (ft)</th> <th>Tops (ft)</th> </tr> </thead> <tbody> <tr> <td>Temp/Humidity:</td> <td>58°F / 90%</td> <td>Cumulus</td> <td>Broken</td> <td>3,000</td> <td>12,000</td> </tr> <tr> <td>Liftoff Winds (200'):</td> <td>350° 30 – 35 mph</td> <td>Nimbostratus</td> <td>Overcast</td> <td>7,000</td> <td>14,000</td> </tr> </tbody> </table>	Weather/Visibility:	Rain / 3 mi.	Clouds						Type	Coverage	Base (ft)	Tops (ft)	Temp/Humidity:	58°F / 90%	Cumulus	Broken	3,000	12,000	Liftoff Winds (200'):	350° 30 – 35 mph	Nimbostratus	Overcast	7,000	14,000
	Weather/Visibility:	Rain / 3 mi.	Clouds																						
		Type	Coverage	Base (ft)	Tops (ft)																				
Temp/Humidity:	58°F / 90%	Cumulus	Broken	3,000	12,000																				
Liftoff Winds (200'):	350° 30 – 35 mph	Nimbostratus	Overcast	7,000	14,000																				
Additional Risk Criteria																									
	<table border="1" style="width: 100%; border-collapse: collapse;"> <tbody> <tr> <td>Upper-Level Wind Shear:</td> <td>Low</td> </tr> <tr> <td>Booster Recovery Weather:</td> <td>Low-Mod</td> </tr> <tr> <td>Solar Activity:</td> <td>Low</td> </tr> </tbody> </table>	Upper-Level Wind Shear:	Low	Booster Recovery Weather:	Low-Mod	Solar Activity:	Low																		
Upper-Level Wind Shear:	Low																								
Booster Recovery Weather:	Low-Mod																								
Solar Activity:	Low																								
Notes	<ol style="list-style-type: none"> The Probability of Violation (PoV) is the chance of a local safety or customer constraint violation occurring any random time during the launch window. Additional Risk Criteria, which are not included in the PoV, are mission-specific constraints that may not include all phenomena within each risk factor. 																								
	See https://www.patrick.spaceforce.mil/Portals/14/Weather/LaunchFAQ.pdf for more information																								
Next Forecast Will Be Issued	As Needed																								