



# Launch Mission Execution Forecast

**Mission:** Falcon 9 Starlink L-17

**Issued:** 14 Feb 2021/ 1100L (1600Z)

**Valid:** 17 Feb 2021/ 0045 – 0106L (0545 – 0606Z)



**Forecast Discussion:** A frontal boundary will stall across North Florida through the weekend and keep the Spaceport wet, stormy, and unseasonably warm today. Expect rounds of showers and thunderstorms to continue, with most of the unsettled weather diminishing by evening. On Monday, an upper level trough will dig across the Midwest and generate a strong low pressure system along the western Gulf of Mexico. The upper level trough will then eject the low pressure system quickly to the northeast, dragging a cold front behind it. On Tuesday, the low pressure system quickly slides northeast through New England and into the North Atlantic. The associated cold front will weaken significantly and pass through Central Florida and stall south of the Spaceport prior to the launch window Tuesday Night. Weather conditions will be fairly good for a launch attempt Tuesday night with light northwesterly winds and a low cloud deck. Only a small concern exists for the Cumulus Cloud Rule, should the front stall closer to the Spaceport than expected.

On Wednesday, another low pressure system generates across the western Gulf of Mexico and lifts northward into the lower Mississippi Valley. This will shift the frontal boundary stalled south of the Spaceport northward as a warm front, bringing scattered showers and thunderstorms back into the forecast, with most convective activity ending around sunset. The position of the frontal boundary should be far enough northward during the backup launch attempt late Wednesday night to keep shower chances and thunderstorm concerns low, but a tightening pressure gradient will cause wind speeds out of the south to increase to 20 to 25 miles per hour. Therefore, the primary concern for the backup window will be Liftoff Winds, with secondary concerns for the Cumulus Cloud Rule and Thick Cloud Layer Rule should the warm front be closer to the Spaceport than currently forecast.

| Probability of Violating Weather Constraints |   |                     |                     |                     |           |                           |          |                         |     |                         |          |           |           |                |            |         |        |       |       |                           |          |                       |                 |  |  |  |  |                 |     |
|--|---|---------------------|---------------------|---------------------|-----------|---------------------------|----------|-------------------------|-----|-------------------------|----------|-----------|-----------|----------------|------------|---------|--------|-------|-------|---------------------------|----------|-----------------------|-----------------|--|--|--|--|-----------------|-----|
| <b>Launch Day</b>                            | <b>20%</b> Primary Concern: Cumulus Cloud Rule  |                     |                     |                     |           |                           |          |                         |     |                         |          |           |           |                |            |         |        |       |       |                           |          |                       |                 |  |  |  |  |                 |     |
|  | Weather Conditions  |                     |                     |                     |           |                           |          |                         |     |                         |          |           |           |                |            |         |        |       |       |                           |          |                       |                 |  |  |  |  |                 |     |
|  | <table border="1"> <thead> <tr> <th rowspan="2">Weather/Visibility:</th> <th rowspan="2">Iso Showers / 7 mi.</th> <th colspan="4">Clouds</th> <th rowspan="2">Upper-Level Wind Shear:</th> <th rowspan="2">Low</th> </tr> <tr> <th>Type</th> <th>Coverage</th> <th>Base (ft)</th> <th>Tops (ft)</th> </tr> </thead> <tbody> <tr> <td>Temp/Humidity:</td> <td>64°F / 80%</td> <td>Cumulus</td> <td>Broken</td> <td>2,000</td> <td>8,000</td> <td>Booster Recovery Weather:</td> <td>Moderate</td> </tr> <tr> <td>Liftoff Winds (200'):</td> <td>340° 5 - 10 mph</td> <td></td> <td></td> <td></td> <td></td> <td>Solar Activity:</td> <td>Low</td> </tr> </tbody> </table> | Weather/Visibility: | Iso Showers / 7 mi. | Clouds              |           |                           |          | Upper-Level Wind Shear: | Low | Type                    | Coverage | Base (ft) | Tops (ft) | Temp/Humidity: | 64°F / 80% | Cumulus | Broken | 2,000 | 8,000 | Booster Recovery Weather: | Moderate | Liftoff Winds (200'): | 340° 5 - 10 mph |  |  |  |  | Solar Activity: | Low |
|  | Weather/Visibility:   |                     |                     | Iso Showers / 7 mi. | Clouds    |                           |          |                         |     | Upper-Level Wind Shear: | Low      |           |           |                |            |         |        |       |       |                           |          |                       |                 |  |  |  |  |                 |     |
| Type   |   | Coverage            | Base (ft)           |                     | Tops (ft) |                           |          |                         |     |                         |          |           |           |                |            |         |        |       |       |                           |          |                       |                 |  |  |  |  |                 |     |
| Temp/Humidity:                               | 64°F / 80%  | Cumulus             | Broken              | 2,000               | 8,000     | Booster Recovery Weather: | Moderate |                         |     |                         |          |           |           |                |            |         |        |       |       |                           |          |                       |                 |  |  |  |  |                 |     |
| Liftoff Winds (200'):                        | 340° 5 - 10 mph   |                     |                     |                     |           | Solar Activity:           | Low      |                         |     |                         |          |           |           |                |            |         |        |       |       |                           |          |                       |                 |  |  |  |  |                 |     |
| Additional Risk Criteria                     |   |                     |                     |                     |           |                           |          |                         |     |                         |          |           |           |                |            |         |        |       |       |                           |          |                       |                 |  |  |  |  |                 |     |

| Probability of Violating Weather Constraints |  |                     |                     |                     |           |                           |          |                         |     |                         |          |           |           |                |            |         |           |       |       |                           |          |                       |                  |             |           |       |        |                 |     |
|--|--|---------------------|---------------------|---------------------|-----------|---------------------------|----------|-------------------------|-----|-------------------------|----------|-----------|-----------|----------------|------------|---------|-----------|-------|-------|---------------------------|----------|-----------------------|------------------|-------------|-----------|-------|--------|-----------------|-----|
| <b>24-Hour Delay</b>                         | <b>40%</b> Primary Concerns: Liftoff Winds, Cumulus Cloud Rule, Thick Cloud Layer Rule   |                     |                     |                     |           |                           |          |                         |     |                         |          |           |           |                |            |         |           |       |       |                           |          |                       |                  |             |           |       |        |                 |     |
|  | Weather Conditions   |                     |                     |                     |           |                           |          |                         |     |                         |          |           |           |                |            |         |           |       |       |                           |          |                       |                  |             |           |       |        |                 |     |
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|  | Weather/Visibility:  |                     |                     | Iso Showers / 7 mi. | Clouds    |                           |          |                         |     | Upper-Level Wind Shear: | Low      |           |           |                |            |         |           |       |       |                           |          |                       |                  |             |           |       |        |                 |     |
| Type   |  | Coverage            | Base (ft)           |                     | Tops (ft) |                           |          |                         |     |                         |          |           |           |                |            |         |           |       |       |                           |          |                       |                  |             |           |       |        |                 |     |
| Temp/Humidity:                               | 68°F / 95%   | Cumulus             | Scattered           | 1,000               | 4,000     | Booster Recovery Weather: | Moderate |                         |     |                         |          |           |           |                |            |         |           |       |       |                           |          |                       |                  |             |           |       |        |                 |     |
| Liftoff Winds (200'):                        | 160° 20 - 25 mph   | Altostratus         | Scattered           | 9,000               | 13,000    | Solar Activity:           | Low      |                         |     |                         |          |           |           |                |            |         |           |       |       |                           |          |                       |                  |             |           |       |        |                 |     |
| Additional Risk Criteria                     |  |                     |                     |                     |           |                           |          |                         |     |                         |          |           |           |                |            |         |           |       |       |                           |          |                       |                  |             |           |       |        |                 |     |

*Note: 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.*

**Next Forecast Will Be Issued** 15 February 2021