

DAILY FORECAST

Saturday

05

JULY

Alberta Hail Suppression Project 2025

WEATHER MODIFICATION
INTERNATIONAL

Forecaster: Ben Schaefer

Today's
CDC*

+1

Synopsis:

An upper-level shortwave trough is making landfall on the west coast of British Columbia. This trough will move east today over southwestern Canada. By this evening, central Alberta will sit under the left exit region of the trough's associated jet streak. Meanwhile, mid-level PVA and low-level Theta-E advection will occur in response to the approaching system. Upper-level flow will be very weak downstream of this trough, which will lessen storm chances in project during the afternoon. However, the onset of synoptic forcing as well as supportive thermodynamics will spark thunderstorms chances this evening through the early overnight hours.

Forecast:

A surface low pressure is currently located over southeastern British Columbia. This low will move east today and generate southerly surface winds across project area in the afternoon. This southerly warm air advection along with a few breaks in the cloud cover will help to destabilize the atmosphere. 500+ J/kg of MLCAPE is likely across the northwestern project area. The northwestern project area will be our main focus for thunderstorms today, due to better instability and the proximity to evening synoptic forcing. Thunderstorms will likely initiate in the western buffer between 19-22Z where southeasterly upslope flow can be realized. These storms will pose a small hail threat. However, due to slow storm motions under 10 kts, these storms will struggle to enter project. Later this evening, particularly after 00Z, a stray storm or two may enter project. Storm motions will increase slightly, and lingering instability will support a small hail threat through 05Z. Mostly cloudy skies and lingering showers will occur overnight.

Outlook:

The upper-level shortwave trough will pass over central Alberta tomorrow. The overhead upper-level low will create steep mid-level lapse rates and ample instability. With plenty of synoptic forcing, thunderstorms chances will begin in project in the early afternoon. At least small hail is possible in the strongest storms.

Day 2 Outlook CDC: +2

Model Sounding

YQF 00Z

Freezing Level:	11.4 kft
- 5°C Level:	14.2 kft
- 10°C Level:	16.8 kft
Equilibrium Level:	27.2 kft
Tropopause:	37.2 kft
Cloud Base Height:	7.8 kft
Cloud Base Temp:	6.9 °C
Cell Motion: 290 @	11 kts
Storm Motion: 269 @	7 kts
Temp Max:	20.9 °C
Dew Point:	10.4 °C
Convective Temp:	20.9 °C
CAPE:	203 J/Kg
CIN:	0 J/Kg
Lifted Index:	-1.0
Total Totals:	51.7
Precipitable Water:	0.88 inches
WINDEX:	45.0 mph
BRN:	6.0
BRN Shear:	32.9 m ² /s ²

Hailcast Model Output

CALGARY: (00Z Sounding); Min: 0.0 cm | Average: 0.1 cm | Max: 1.6 cm

RED DEER: (00Z Sounding); Min: 0.0 cm | Average: 0.4 cm | Max: 2.6 cm

- | | |
|--|---|
| <input type="checkbox"/> Jet PVA | <input type="checkbox"/> Morning Fog |
| <input checked="" type="checkbox"/> Midlevel PVA | <input type="checkbox"/> Gusty SFC Winds |
| <input type="checkbox"/> Lee Cyclogenesis | <input type="checkbox"/> Loaded Gun |
| <input checked="" type="checkbox"/> Directional Wind Shear | <input checked="" type="checkbox"/> Theta E Ridge |
| <input type="checkbox"/> Speed Shear | <input type="checkbox"/> Chinook |
| <input type="checkbox"/> Lee Trough | <input type="checkbox"/> Fast Moving Storms |
| <input checked="" type="checkbox"/> AM ACC or Cloud Streets | <input checked="" type="checkbox"/> Surface Heating |
| <input checked="" type="checkbox"/> NE/SE Moisture Advection | <input type="checkbox"/> Embedded Storms |
| <input type="checkbox"/> Cooling at 500mb | <input type="checkbox"/> Frontal Lift |
| <input type="checkbox"/> Warming at 500mb | <input checked="" type="checkbox"/> Upslope Flow |
| <input type="checkbox"/> Dry Line or Dry Slot | <input type="checkbox"/> Low Ceilings |
| <input type="checkbox"/> Smoke/Haze | <input type="checkbox"/> Flood Potential |

Verification

Observed CDC:
Max TITAN cell top: km
Max reflectivity: dBz
Max VIL: kg/m²
YYC:
YQF:
EA3:
Hail Reports:

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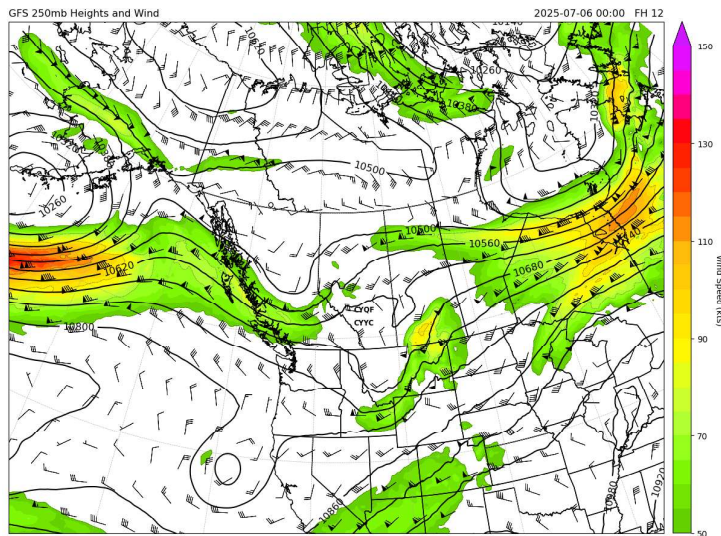
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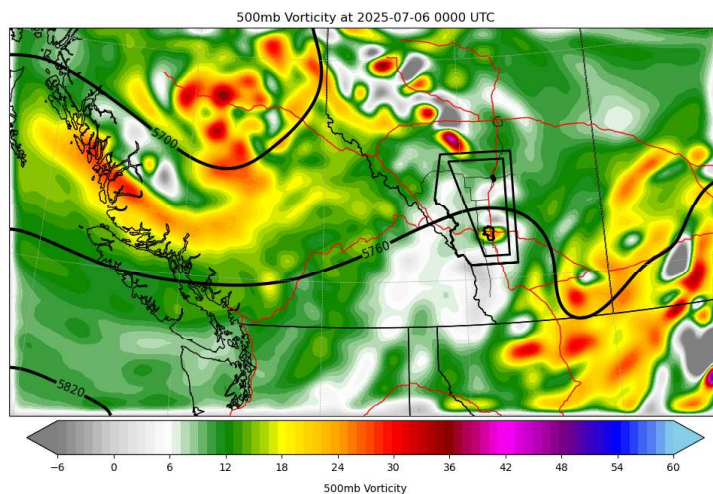
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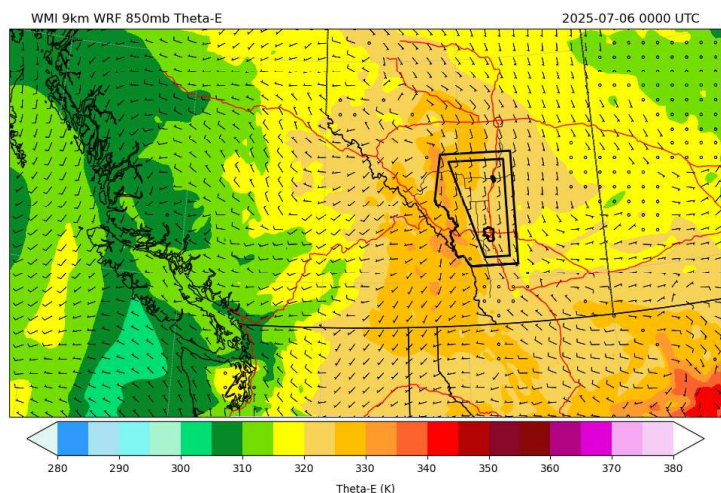
250 mb Jet Level Winds



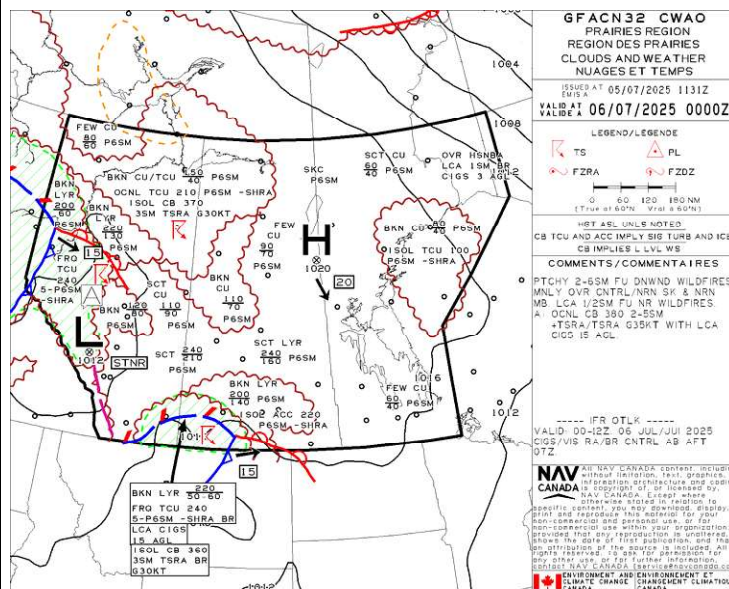
500mb Heights & Vorticity



850mb Theta E / Winds



Surface Analysis



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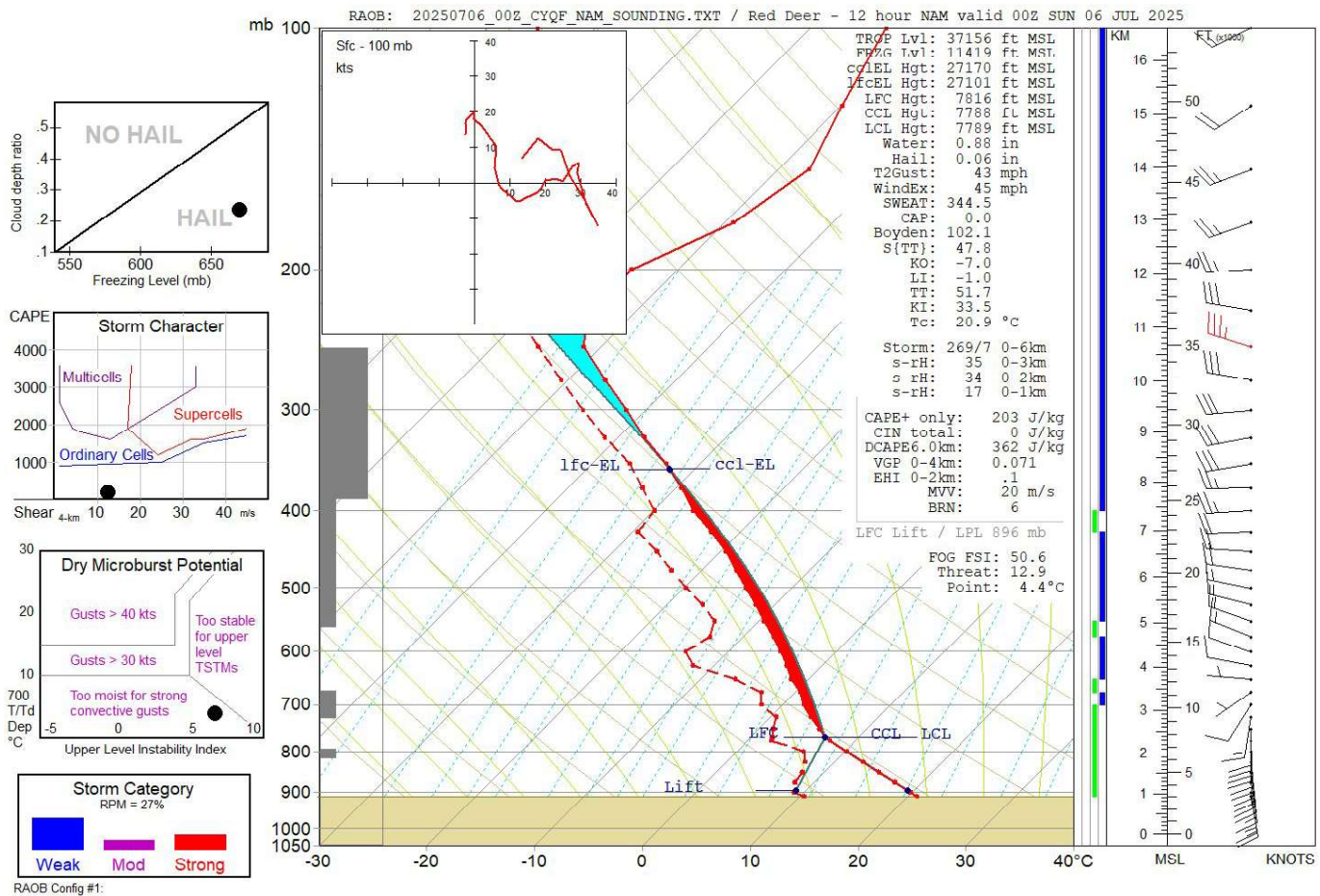
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WRF Model Sounding



Convective Day Category (CDC)

-3	No Seeding	Clear skies, fair weather cumulus, or stratus without rain, no deep convection
-2	No Seeding	Nimbostratus or weak embedded convection. No TITAN cells.
-1	No Seeding	Discrete convective cells with TCU. May or may not reach TITAN cell criteria. No lightning. No threat of hail.
0	Patrol/Seeding	Thunderstorms (at least one) but no hail. VIL < 20 kg/m2 within the project area or buffer zones
+1	Seeding	Thunderstorms with pea or shot size hail (0.5 to 1.2 cm diameter). 20 kg/m2 < VIL < 30 kg/m2
+2	Seeding	Thunderstorms with grape size hail (1.3 to 2.0 cm diameter). 30 kg/m2 < VIL < 70 kg/m2
+3	Seeding	Thunderstorms with walnut size hail (2.1 to 3.2 cm diameter). 70 kg/m2 < VIL < 100 kg/m2
+4	Seeding	Thunderstorms with golf ball size hail (3.3 to 5.2 cm diameter). VIL > 100 kg/m2
+5	Seeding	Thunderstorms with greater than golf ball size hail (>5.2 cm diameter).

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