

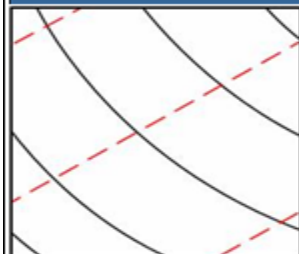
Composite Guidance – Frontal Icing

TN 98/002, AFWA QTP

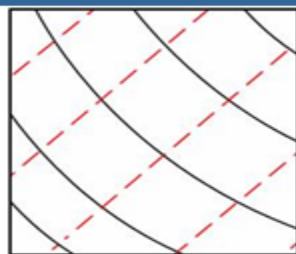
COMPOSITE ICING GUIDANCE FROM TN98-002 AND AFWA QTP'S

(GRAY SHADING INDICATES LESS COMMON SITUATION)

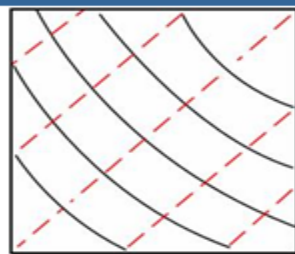
| SITUATION | TEMP RANGE(°C) | RH(%) or DPD(°C) | TEMPERATURE ADVECTION | | | CLOUD TYPE (INSTABILITY) | ICING RESULT & CODE |
|---|---|------------------|-----------------------|--------------|---------------------|--------------------------|---------------------|
| | | | WEAK | MOD | STRONG | | |
| FRONTAL AND OROGRAPHIC | | | | | | | |
| WARM FRONT | 0 TO -15 | 80% | WEAK-MOD WARM | | STRATIFORM | LIGHT RIME, 2 | |
| | | | MOD-STRONG WARM | | EMBEDDED CUMULIFORM | LIGHT MIXED, 1 | |
| | | 90% | STRONG WARM | | STRATIFORM | MOD RIME, 5 | |
| | | | EMBEDDED CUMULIFORM | MOD MIXED, 4 | | | |
| | -16 to -22 | 80% | WEAK-MOD WARM | | STRATIFORM | TRACE-LIGHT RIME, 0 OR 2 | |
| | | 90% | STRONG WARM | | STRATIFORM | LIGHT RIME, 2 | |
| | SEVERE RIME IS SOMETIMES REPORTED AT TEMPS COLDER THAN -20°C, AT ALTITUDES OF 200-300: THIS IS JET MAX INDUCED AND DIFFICULT TO FORECAST OR VERIFY. | | | | | | |
| 15OWS NOTE: MOD RIME ABOVE THE -15°C MARK HAS BEEN REPORTED IN PIREPS. ALTHOUGH THERE IS NOT ANY OFFICIAL GUIDANCE ON FORECASTING MOD RIME BETWEEN -16°C AND -22°C, CURRENT REPORTS AND PAST TRENDS WITH A STRENGTHENING OR UNCHANGING SYSTEM ARE VALID REASONS FOR ADDING IT TO YOUR FORECAST. | | | | | | | |
| COLD FRONT | 0 TO -15 | 80% | WEAK COLD | | CUMULIFORM | LIGHT MIXED, 1 | |
| | | | | | STRATIFORM | LIGHT RIME, 2 | |
| | | 90% | MOD-STRONG COLD | | CUMULIFORM | MOD MIXED, 4 | |
| | | | STRATIFORM | MOD RIME, 5 | | | |
| | -16 TO -22 | 80% | WEAK COLD | | CUMULIFORM | LIGHT RIME, 2 | |
| | | 90% | MOD-STRONG COLD | | CUMULIFORM | MOD RIME, 5 | |
| | 15OWS NOTE: CLEAR ICING ASSOCIATED WITH COLD FRONTS IS OFTEN REPORTED BY PIREPS, BUT IS DIFFICULT TO FORECAST EXCLUSIVELY SINCE RIME ICING CAN OCCUR IN THE SAME CONDITIONS. MIXED ICING IS A MORE REALISTIC FORECAST, AND A BETTER HEADS-UP OPERATIONALLY FOR THE AIRCREWS | | | | | | |
| OCCLUSIONS | USE COLD FRONT PARAMETERS FOR COLD OCCLUSIONS, AND WARM FRONT PARAMETERS FOR WARM OCCLUSIONS. | | | | | | |
| | 15OWS NOTE: IF THERE IS A WARM LAYER IN THE "WARM FRONT" PART OF THE OCCLUSION, USE WARM FRONT PARAMETERS FOR ICING ABOVE THE WARM LAYER. | | | | | | |



Weak Advection



Moderate Advection



Strong Advection

Weak: ≤ 0.3 degrees C/hr

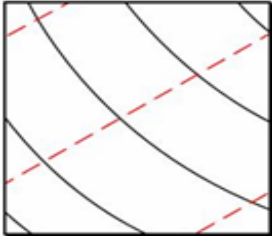
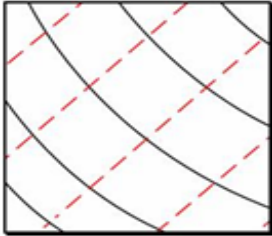
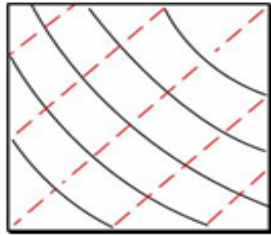
Moderate: $0.4 - 1.5$

Strong: ≥ 1.6

Composite Guidance – Orographic and Precipitation

TN 98/002, AFWA QTP

| | | | | | |
|---------------------------------|---|--|----------------------|-------------|----------------|
| OROGRAPHIC LIFT | <p>NO SPECIFIC GUIDANCE IS GIVEN FOR OROGRAPHIC LIFT. CONSIDER USING WARM OR COLD FRONTAL PARAMETERS DEPENDING ON THE TEMPERATURE ADVECTION AND THE SLOPE OF THE TERRAIN.</p> <p>15OWS NOTE: LIGHT-MOD RIME (2/5) CAN BE FOUND ALONG THE WINWARD SIDE OF THE APPALACHIANS AFTER COLD-FRONTAL PASSAGE. USE COLD FRONTAL PARAMETERS FOR STRATIFORM CLOUDS UP TO 90NM WEST OF THE RIDGE LINE.</p> | | | | |
| FREEZING DRIZZLE | <p>FREEZING PRECIPITATION</p> <p>FORECAST MOD CLEAR (6) SFC TO 1200FT AGL (USUALLY 020 MSL, 030-040 MSL IN THE WEST)</p> <p>15OWS NOTE: FOR NUCLEATION WITHOUT ICE CRYSTALS, FORECAST AT LEAST MOD CLEAR UP TO THE TOP OF THE CLOUD.(SHOULD NOT EXCEED 4000FT AGL)</p> | | | | |
| FREEZING RAIN | SVR CLEAR (9) LIGHT/MOD RIME, LIGHT/MOD MXD | FORECAST SVR CLEAR SFC TO 1200FT AGL (USUALLY 020 MSL, 030-040 MSL IN THE WEST) | | | |
| | | FORECAST ICING ALOFT AS YOU WOULD FOR THAT FRONTAL SITUATION. (INCLUDE A WARM LAYER) | | | |
| PELLETS | MOD/SVR CLEAR (6/9) | 15OWS NOTE: AT LEAST MOD CLEAR SHOULD BE CONSIDERED FOR ICE PELLETS. THE HEIGHTS SHOULD BE FROM AROUND 500FT AGL TO THE TOP OF THE COLD LAYER. DO NOT USE "SFC" AS THE BASE, AS THIS SUGGESTS FZRA. | | | |
| WIDESPREAD PRECIPITATION | 0 TO -7 | <2 | WARM TO WEAK COLD | BOTH | TRACE, 0 |
| | | | MOD-STRONG COLD | BOTH | LIGHT RIME, 2 |
| | -8 TO -15 | <3 | WARM TO WEAK COLD | BOTH | TRACE, 0 |
| | | | MOD-STRONG COLD | BOTH | LIGHT RIME, 2 |
| | -16 TO -22 | 4 TO 6 | ANY | BOTH | TRACE, 0 |
| | | | ANY | BOTH | LIGHT RIME, 2 |
| NO PRECIPITATION | 0 TO -7 | <2 | NEUTRAL TO WEAK COLD | BOTH | TRACE, 0 |
| | | | MOD-STRONG COLD | BOTH | LIGHT RIME, 2 |
| | -8 TO -15 | <3 | NEUTRAL TO WEAK COLD | VIGOROUS CU | LIGHT CLEAR, 3 |
| | | | MOD-STRONG COLD | BOTH | TRACE, 0 |
| | | | | VIGOROUS CU | LIGHT CLEAR, 3 |
| | | | NEUTRAL TO WEAK COLD | BOTH | TRACE, 0 |
| | -16 TO -22 | <4 | MOD-STRONG COLD | BOTH | LIGHT RIME, 2 |
| | | | | VIGOROUS CU | LIGHT CLEAR, 3 |

Weak: ≤ 0.3 degrees C/hr

Moderate: 0.4 – 1.5

Strong: ≥ 1.6

Weak Advection **Moderate Advection** **Strong Advection**