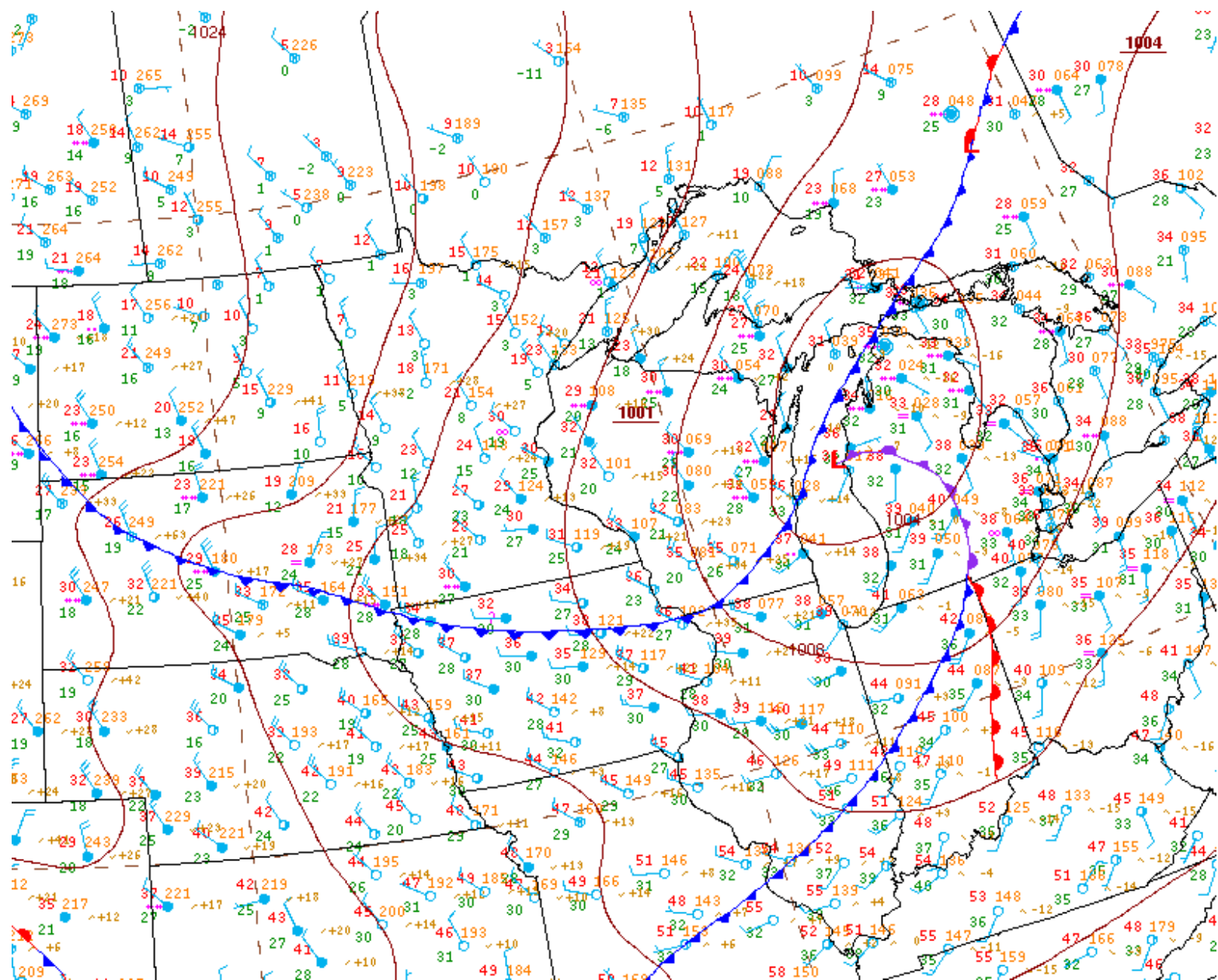
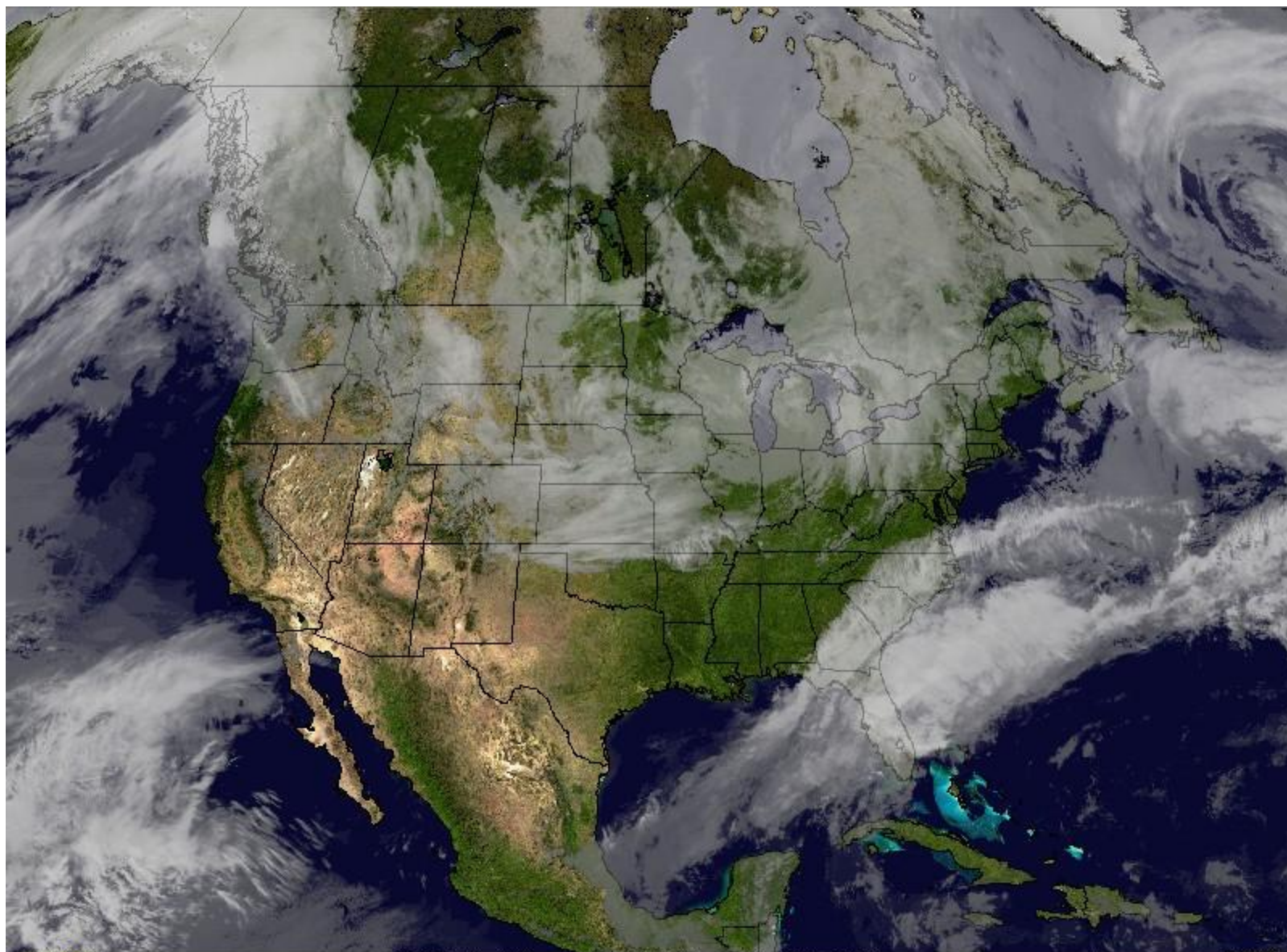


Weather Discussion

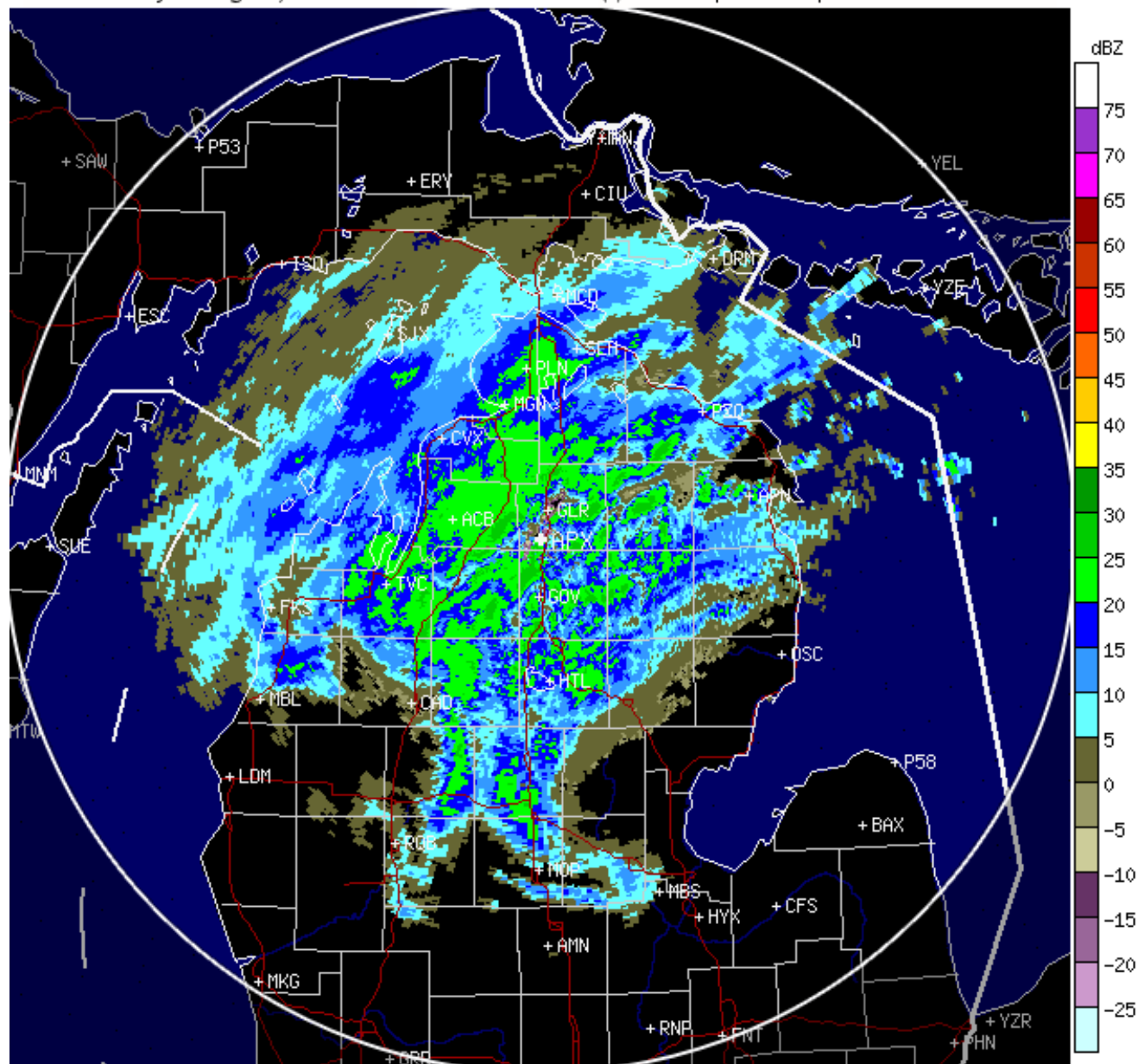
February 15, 2013





Base Reflectivity: 0.5 degrees, Clear-air Mode

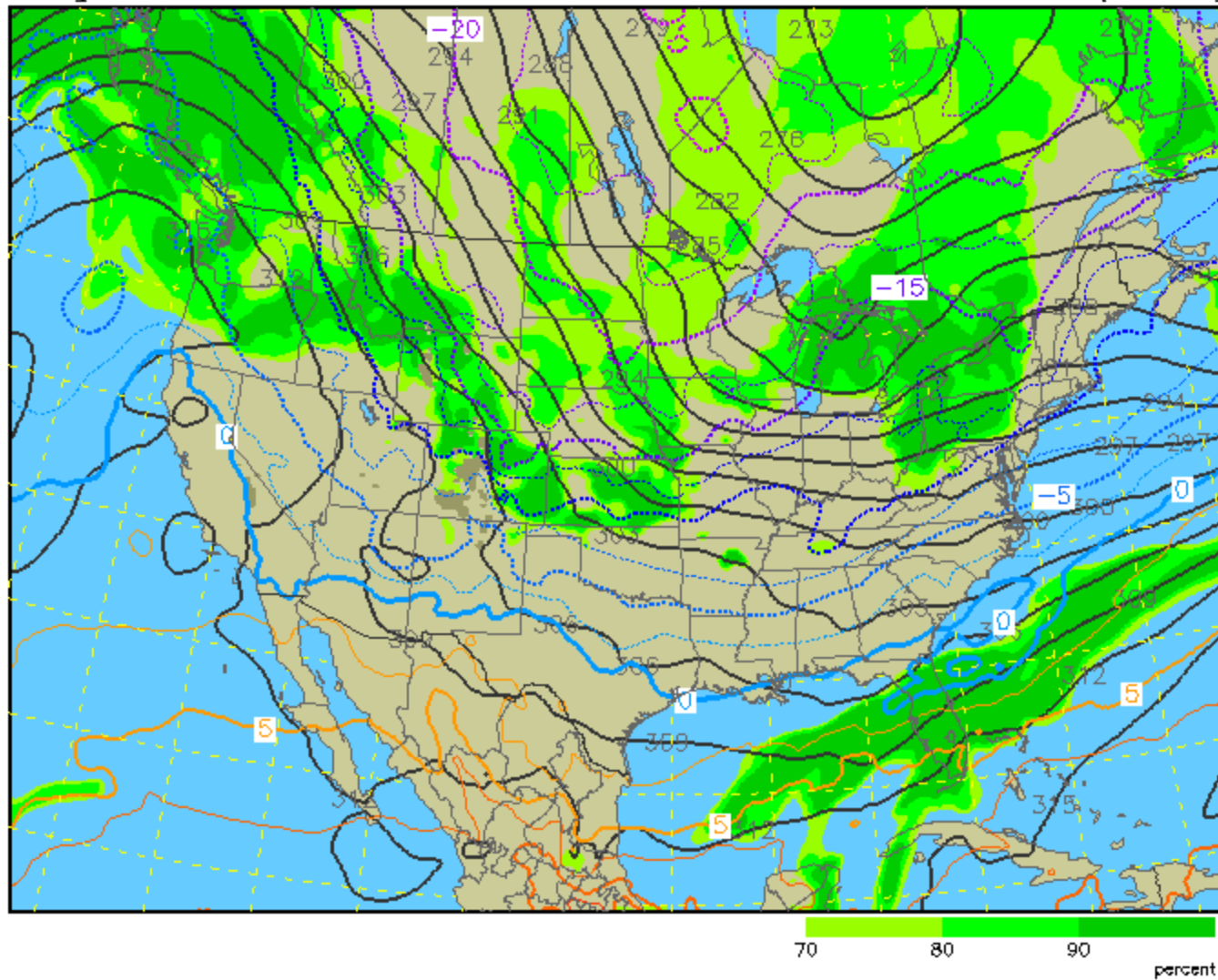
(c) UCAR <http://www.rap.ucar.edu/weather/radar/>



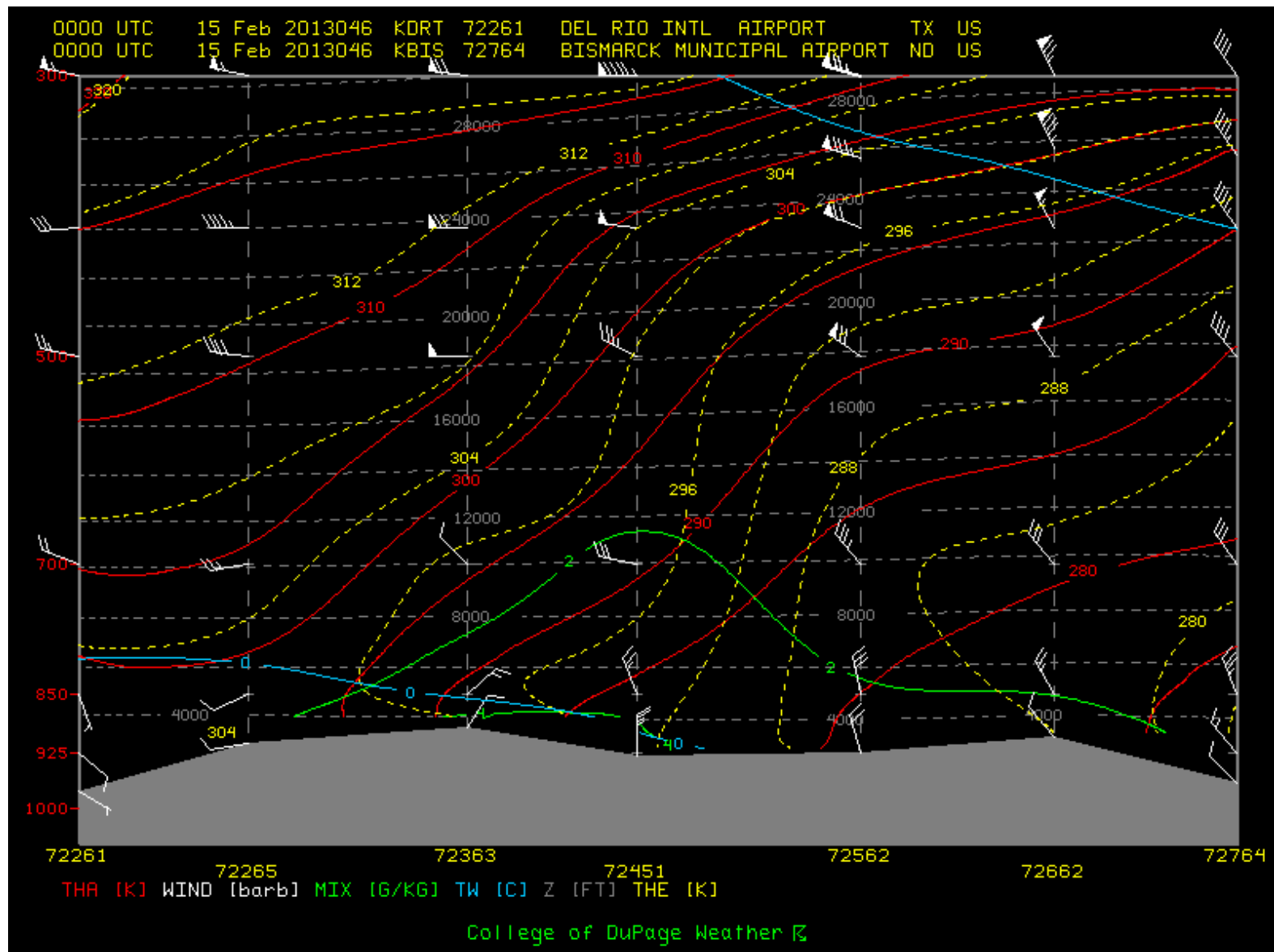
700 mb Heights (dm) / Temperature (°C) / Humidity (%)

Analysis valid 2300 UTC Thu 14 Feb 2013

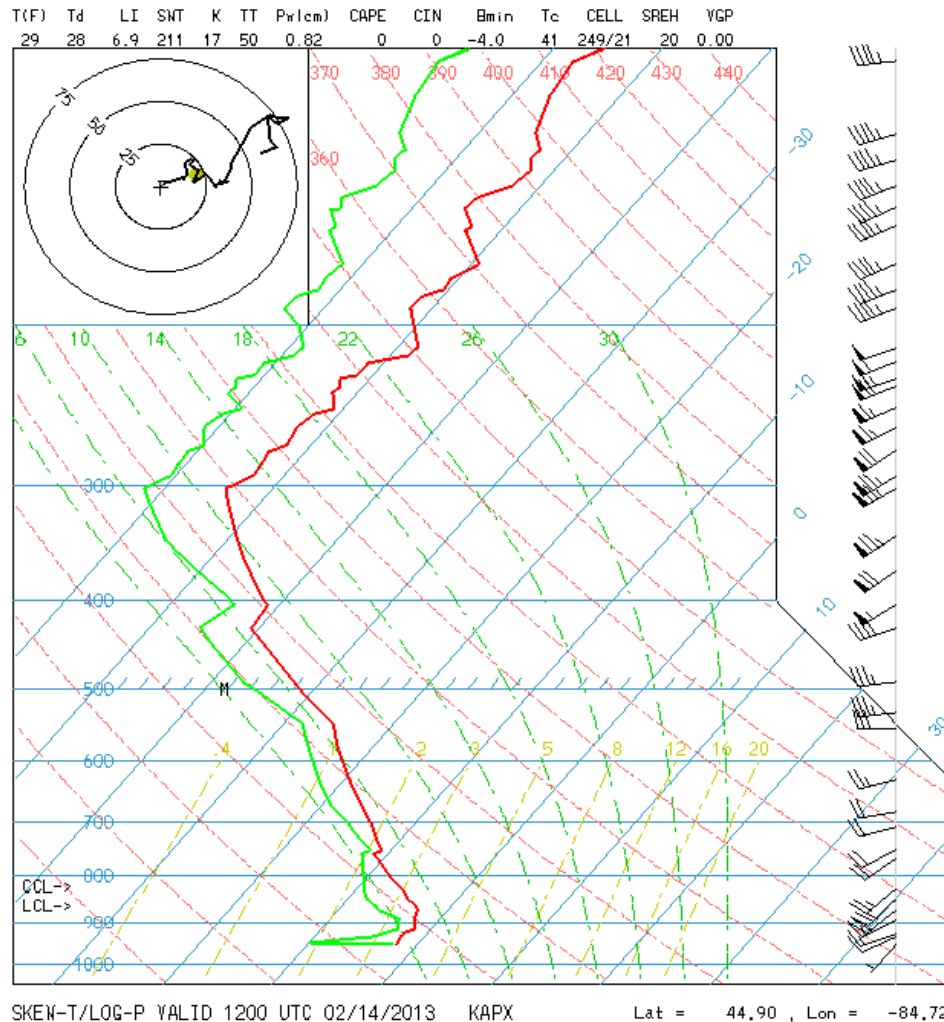
RAP (23z 14 Feb)



Cross-Section Analysis

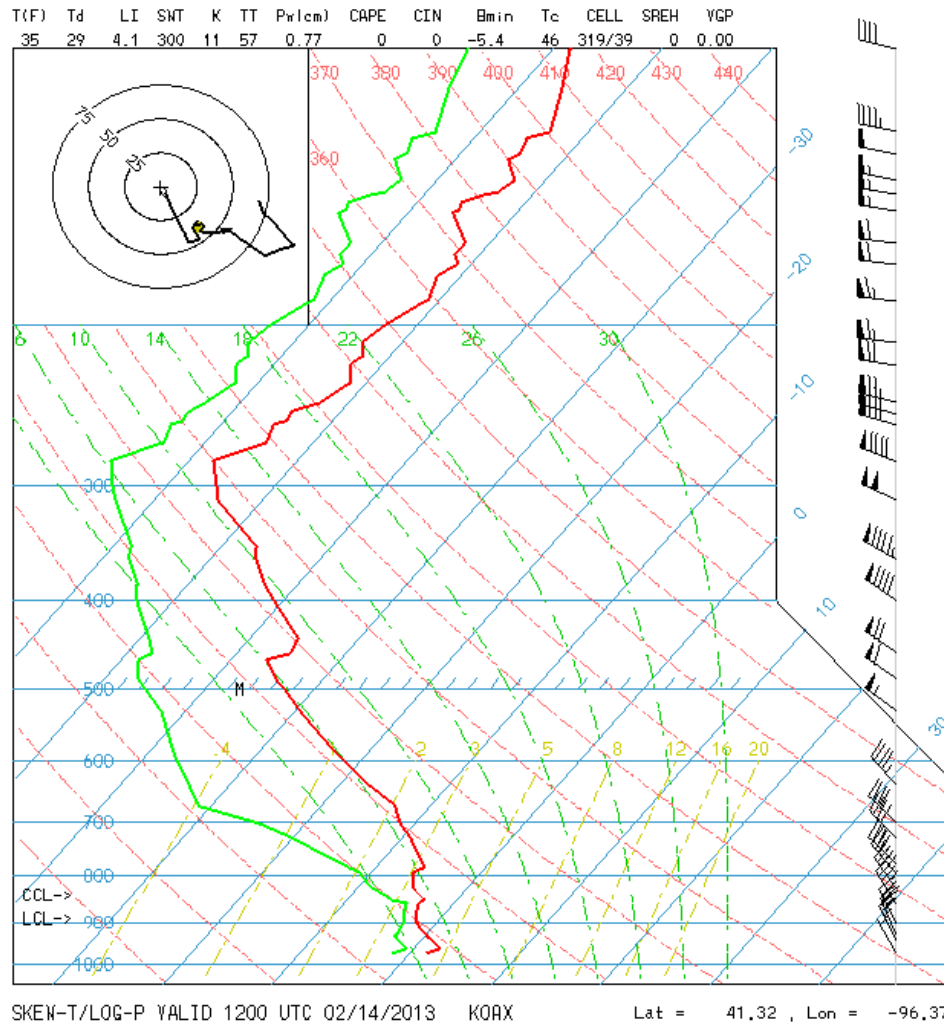


Sounding at Alpena, Michigan



Cold, but fairly saturated and moist adiabatic from the surface to about 400-mb

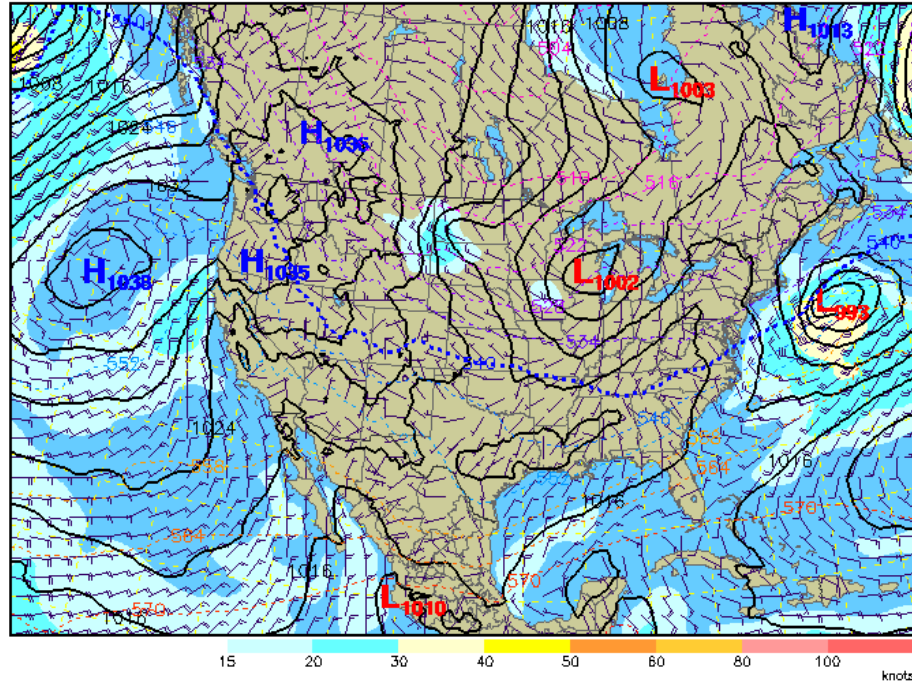
Sounding at Omaha, Nebraska



Surface (10m) Wind Speed (knots) / MSLP (mb)

Analysis valid 1200 UTC Thu 14 Feb 2013

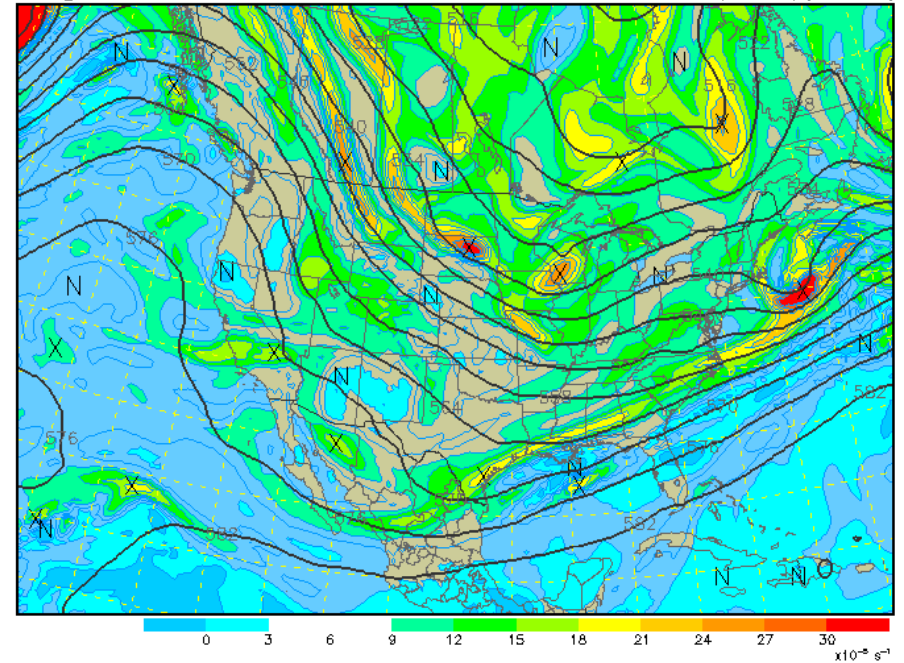
NAM (WRF-NMM) (12z 14 Feb)



500 mb Heights (dm) / Abs. Vorticity ($\times 10^{-5} \text{ s}^{-1}$)

Analysis valid 1200 UTC Thu 14 Feb 2013

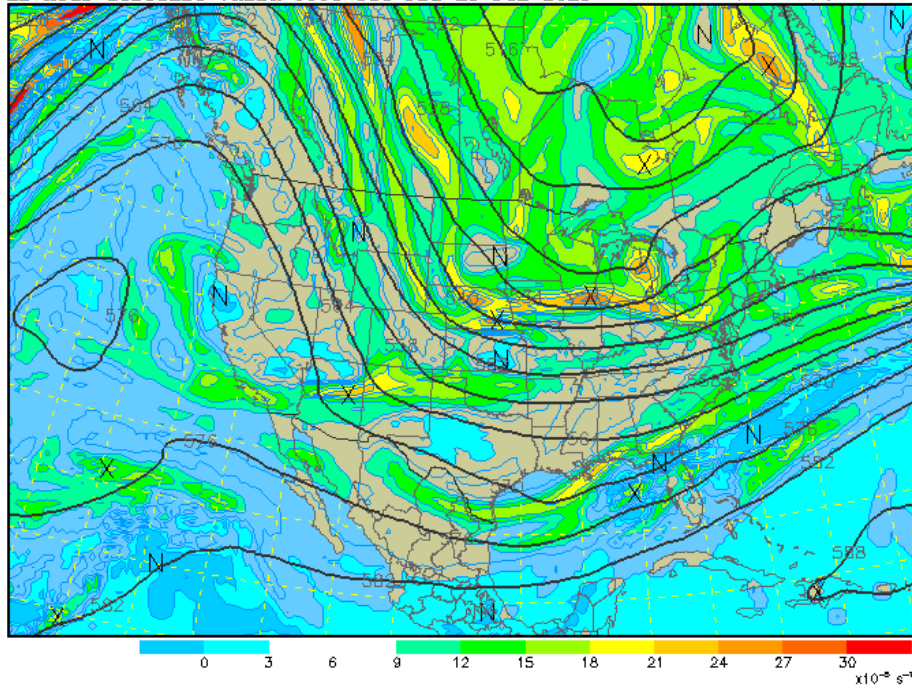
NAM (WRF-NMM) (12z 14 Feb)



500 mb Heights (dm) / Abs. Vorticity ($\times 10^{-5} \text{ s}^{-1}$)

12-hour forecast valid 0000 UTC Fri 15 Feb 2013

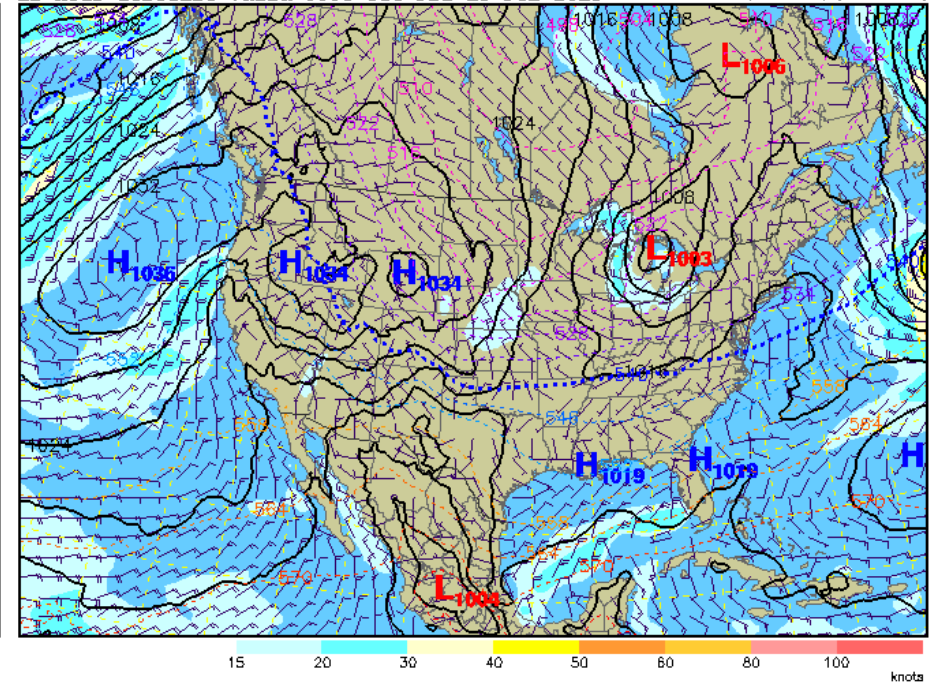
NAM (WRF-NMM) (12z 14 Feb)



Surface (10m) Wind Speed (knots) / MSLP (mb)

12-hour forecast valid 0000 UTC Fri 15 Feb 2013

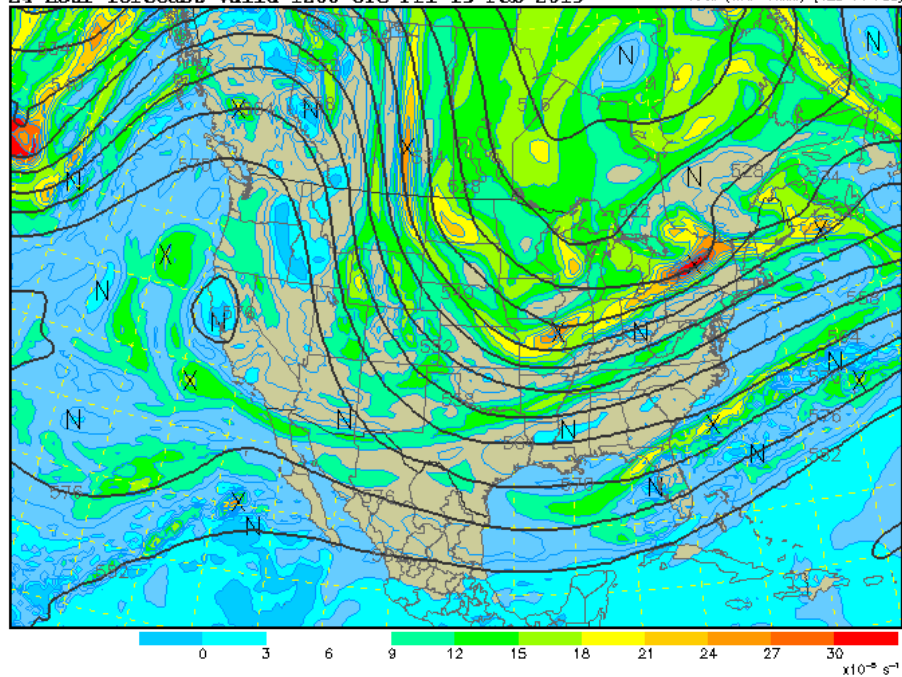
NAM (WRF-NMM) (12z 14 Feb)



500 mb Heights (dm) / Abs. Vorticity ($\times 10^{-5} \text{ s}^{-1}$)

24-hour forecast valid 1200 UTC Fri 15 Feb 2013

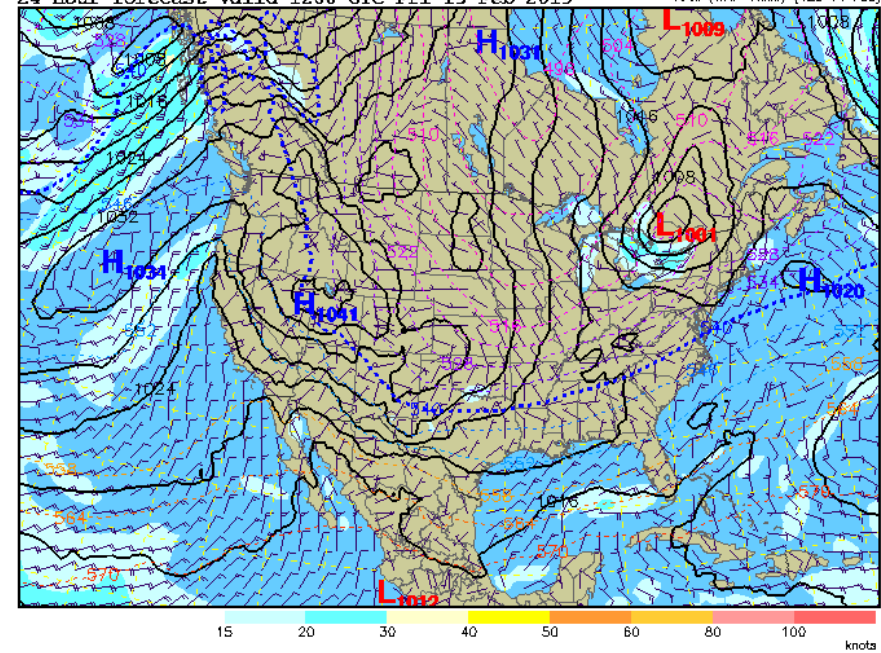
NAM (WRF-NMM) (12z 14 Feb)



Surface (10m) Wind Speed (knots) / MSLP (mb)

24-hour forecast valid 1200 UTC Fri 15 Feb 2013

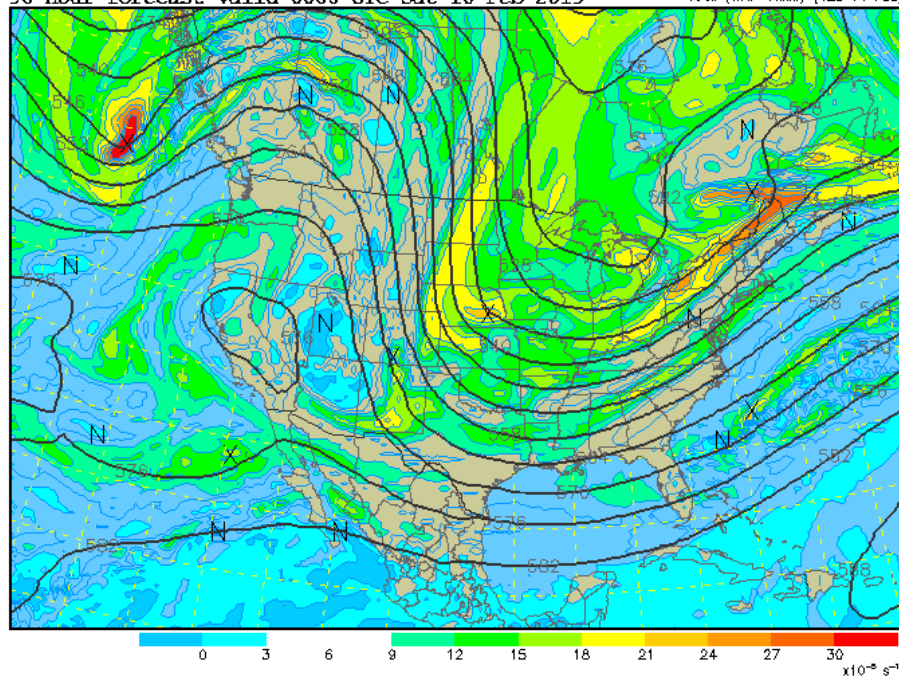
NAM (WRF-NMM) (12z 14 Feb)



500 mb Heights (dm) / Abs. Vorticity ($\times 10^{-5} \text{ s}^{-1}$)

36-hour forecast valid 0000 UTC Sat 16 Feb 2013

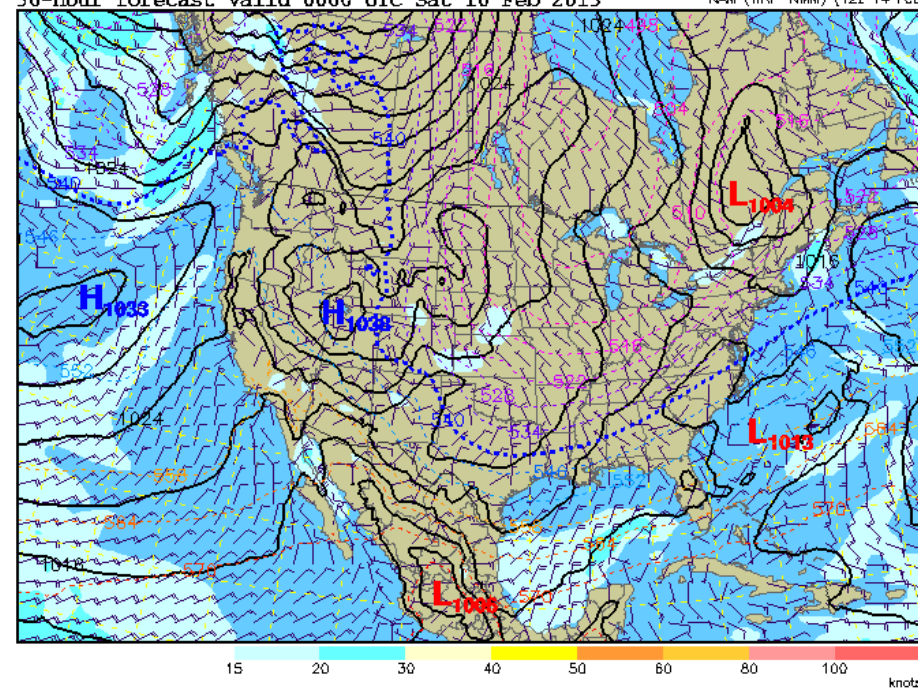
NAM (WRF-NMM) (12z 14 Feb)



Surface (10m) Wind Speed (knots) / MSLP (mb)

36-hour forecast valid 0000 UTC Sat 16 Feb 2013

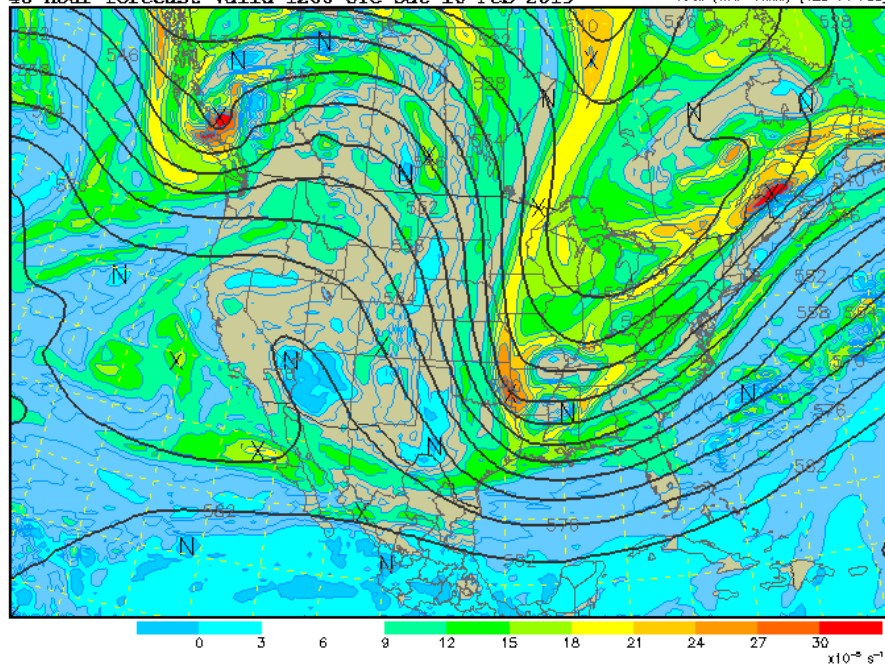
NAM (WRF-NMM) (12z 14 Feb)



500 mb Heights (dm) / Abs. Vorticity ($\times 10^{-5} \text{ s}^{-1}$)

48-hour forecast valid 1200 UTC Sat 16 Feb 2013

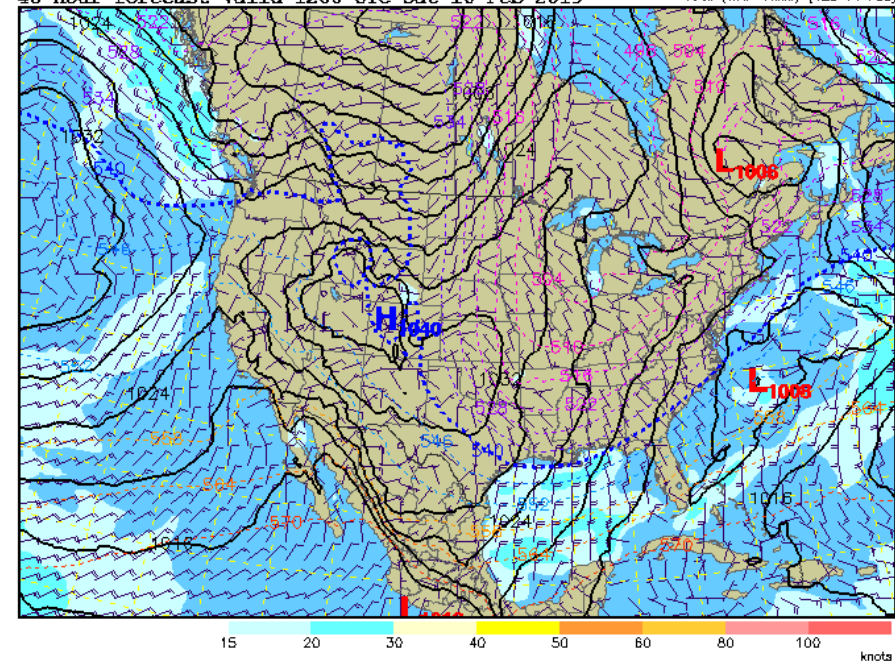
NAM (WRF-NMM) (12z 14 Feb)



Surface (10m) Wind Speed (knots) / MSLP (mb)

48-hour forecast valid 1200 UTC Sat 16 Feb 2013

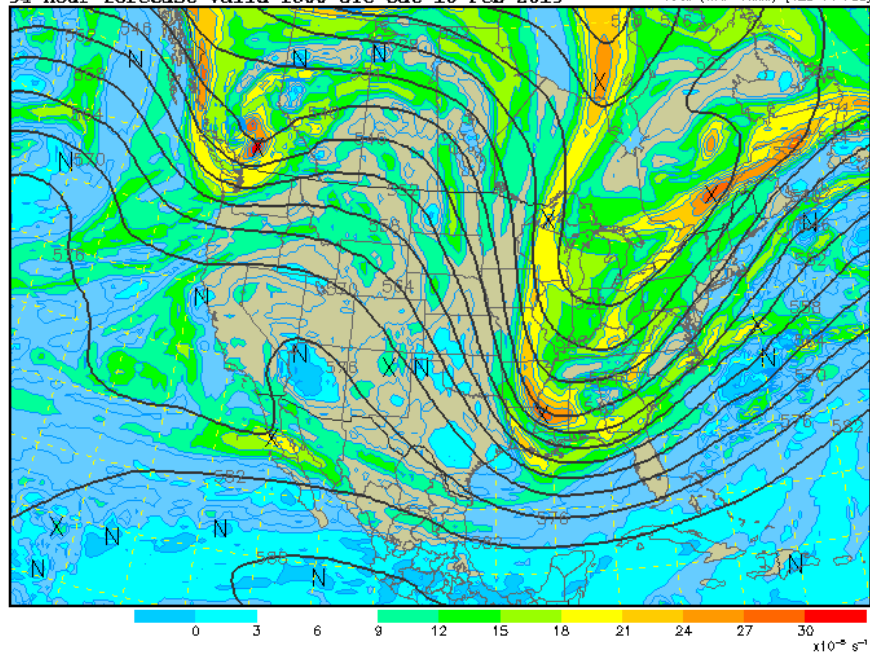
NAM (WRF-NMM) (12z 14 Feb)



500 mb Heights (dm) / Abs. Vorticity ($\times 10^5 \text{ s}^{-1}$)

54-hour forecast valid 1800 UTC Sat 16 Feb 2013

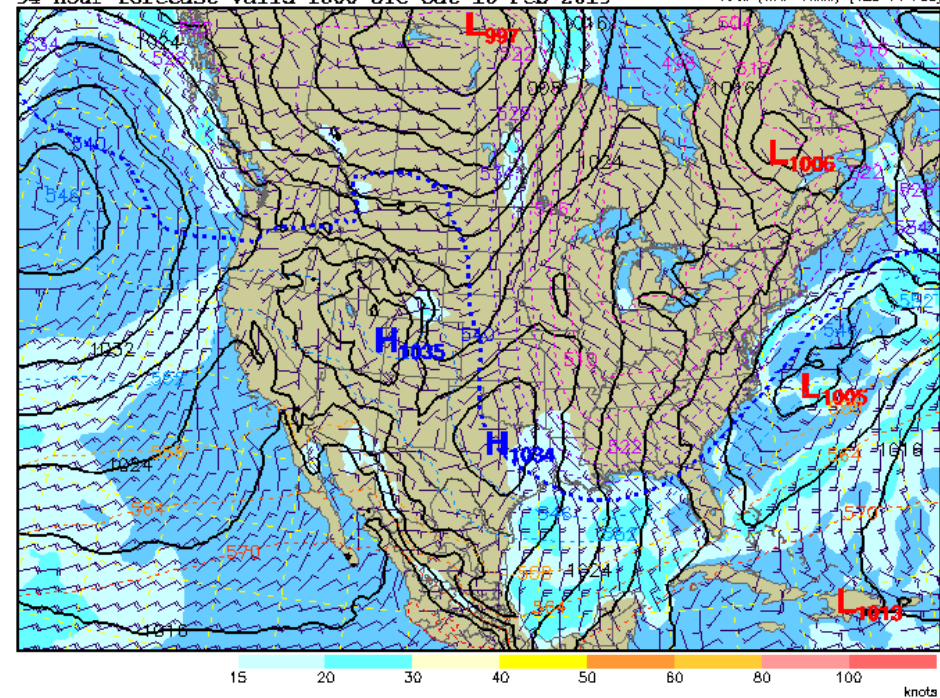
NAM (WRF-NMM) (12z 14 Feb)



Surface (10m) Wind Speed (knots) / MSLP (mb)

54-hour forecast valid 1800 UTC Sat 16 Feb 2013

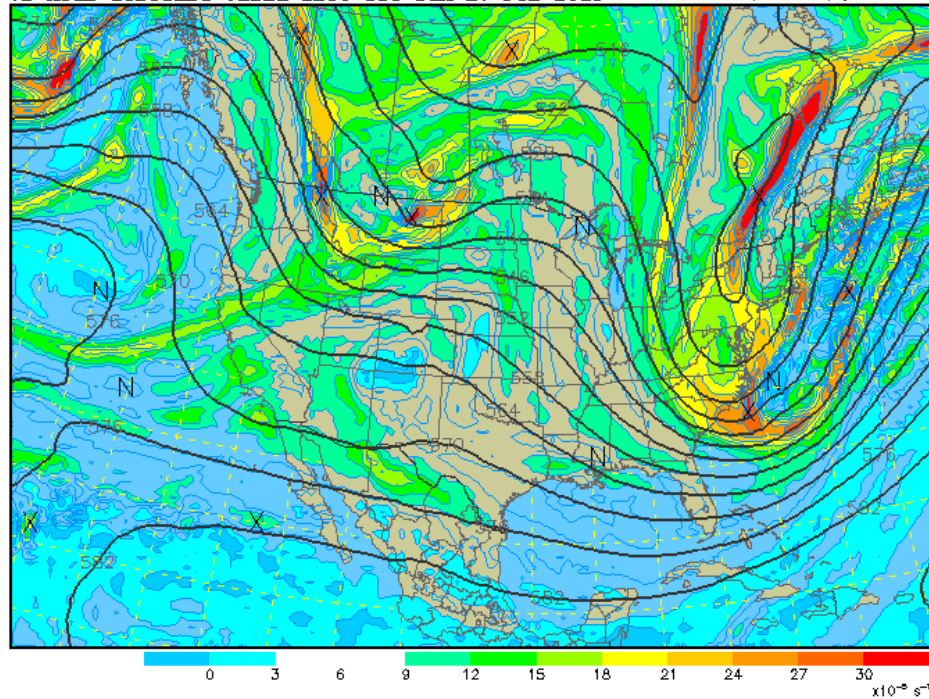
NAM (WRF-NMM) (12z 14 Feb)



500 mb Heights (dm) / Abs. Vorticity ($\times 10^{-5} \text{ s}^{-1}$)

72-hour forecast valid 1200 UTC Sun 17 Feb 2013

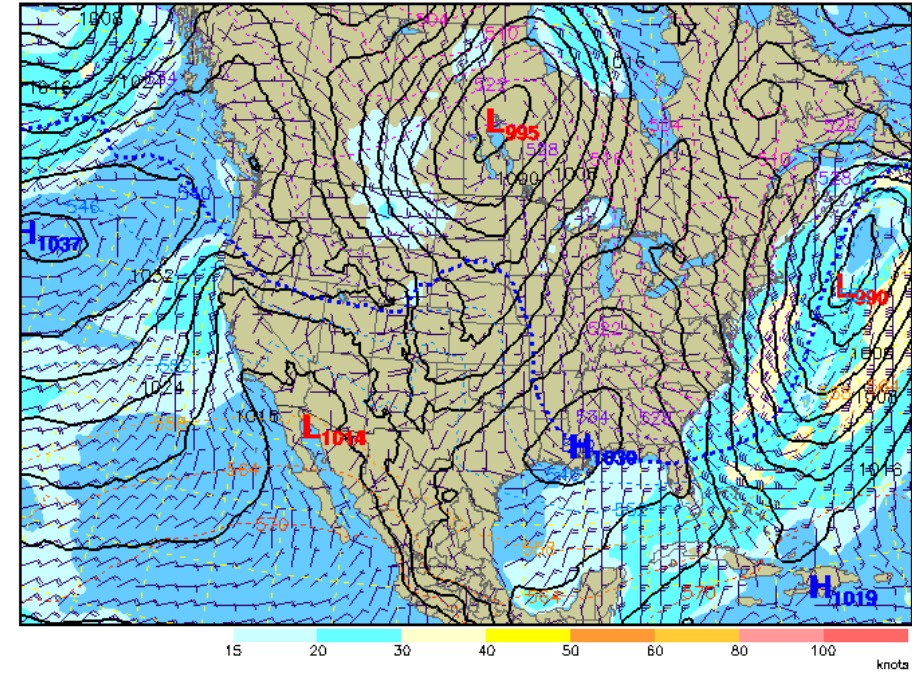
NAM (WRF-NMM) (12z 14 Feb)



Surface (10m) Wind Speed (knots) / MSLP (mb)

72-hour forecast valid 1200 UTC Sun 17 Feb 2013

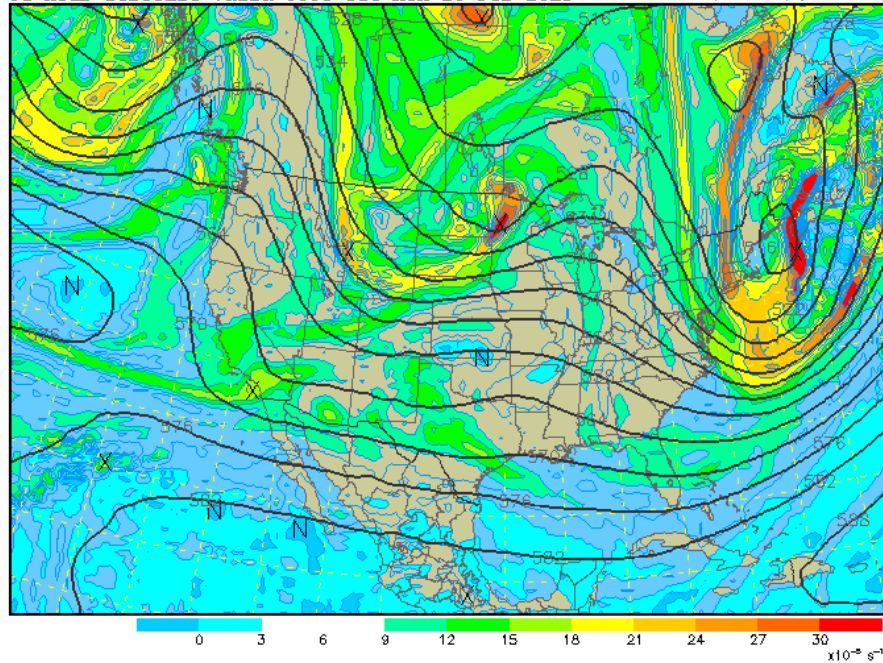
NAM (WRF-NMM) (12z 14 Feb)



500 mb Heights (dm) / Abs. Vorticity ($\times 10^{-5} \text{ s}^{-1}$)

84-hour forecast valid 0000 UTC Mon 18 Feb 2013

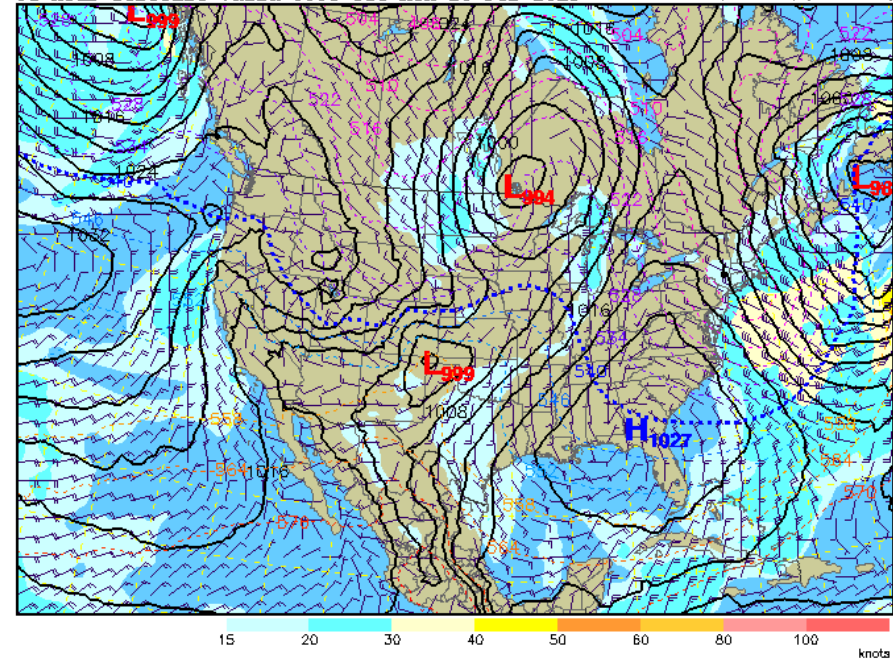
NAM (WRF-NMM) (12z 14 Feb)



Surface (10m) Wind Speed (knots) / MSLP (mb)

84-hour forecast valid 0000 UTC Mon 18 Feb 2013

NAM (WRF-NMM) (12z 14 Feb)



.SHORT TERM...(THIS EVENING THROUGH FRIDAY)

ISSUED AT 409 PM EST THU FEB 14 2013

ON THE LATEST SURFACE WEATHER [MAP](#) OF INTEREST...1002 [MB](#) LOW PRESSURE WAS CENTERED NEAR CADILLAC. APX AND SURROUNDING RADARS ALONG WITH SURFACE OBSERVATIONS INDICATED AN AREA OF LIGHT TO MODERATE SNOW STRETCHING ACROSS MUCH OF NORTHERN LOWER MICHIGAN WITH WRAP AROUND DEFORMATION DRIVEN SNOW STRETCHING FROM EASTERN WISCONSIN INTO CENTRAL LAKE MICHIGAN. THE MAIN [SHORT TERM FORECAST](#) CONCERNS REVOLVE AROUND ADDITIONAL SNOW ACCUMULATIONS FROM THE SYSTEM CURRENTLY MOVING ACROSS THE REGION AS WELL AS THE LAKE RESPONSE BEHIND IT FOR LATER TONIGHT INTO FRIDAY.

TONIGHT...SMALL BUT FAIRLY POTENT AREA OF LOW PRESSURE WILL CONTINUE TO TRACK ACROSS THE REGION THROUGH EARLY TONIGHT BRINGING ADDITIONAL LIGHT TO MODERATE SNOWFALL. IN ADDITION...WINDS WILL PICK UP THIS EVENING AND COMBINE WITH DEFORMATION DRIVEN SNOW TO LOWER VISIBILITIES. AS FAR AS ADDITIONAL SNOWFALL [GOES](#)...EXPECT ANOTHER 2 TO 3 (PERHAPS 4) INCHES ACROSS THE [WINTER WEATHER ADVISORY](#) AREAS (MUCH OF NORTHERN LOWER SAVE FAR SOUTHERN AND SOUTHEAST COUNTIES). THE ENDING TIME OF 5 AM LOOKS A LITTLE LATER THAN MAY BE REQUIRED (WOULD RATHER HAVE HAD 1 TO 2 AM) BUT WILL LET THE EVENING SHIFT DECIDE WHETHER OR NOT TO END IT EARLY BASED ON LATEST TRENDS. FINALLY...LAKE EFFECT WILL THEN DEVELOP LATER TONIGHT AS COLDER AIR ADVECTS IN FROM THE NORTHWEST WITH THE INITIAL SETUP OF THE [FLOW](#) OUT OF THE NNW. [MOISTURE](#) WANES AFTER 06Z THOUGH WITH 850-700 [MB RH](#) ONLY ABOUT 50 PERCENT OR SO AND DELTA [TS](#) ARE ONLY IN THE MIDDLE TEENS SO ADDITIONAL ACCUMULATIONS ARE NOT EXPECTED TO BE A WHOLE LOT ON THE ORDER OF AN INCH OR TWO AT BEST. LOWS TONIGHT DROPPING DOWN TO AROUND 10 NORTH TO AROUND 20 NEAR THE SOUTHERN LAKESHORES.

FRIDAY...LAKE EFFECT CONTINUES WITH THE [FLOW BACKING](#) FROM NNW TO NW AND LAKE-850 [MB](#) DELTA [TS](#) INCREASING TO AROUND 20. IN ADDITION...A SHORT WAVE DROPS DOWN THROUGH THE [FLOW](#) ALONG WITH A BOOST IN [MOISTURE](#) WITH 850-700 [MB RH](#) INCREASING TO BETWEEN 80 AND 90 PERCENT BY AFTERNOON WHICH HOLDS THROUGH THE DAY. MODEL SOUNDINGS LOOK IMPRESSIVE WITH [INVERSION](#) HEIGHTS BETWEEN 8000 AND 9000 FEET. SO WITH MORE FAVORABLE CONDITIONS EXPECTED TO DEVELOP COULD SEE A FEW INCHES OF SNOW IN FAVORED LOCALS WITH ADDITIONAL HEADLINES [LIKELY](#) REQUIRED....THOUGH HIGHER FEBRUARY SUN ANGLE MAY HINDER BANDS FROM SETTING UP DURING THE DAY. HIGHS RANGING FROM THE MIDDLE TEENS NORTH TO THE MIDDLE 20S SOUTHEAST.

&&

.LONG TERM...(FRIDAY NIGHT THROUGH THURSDAY)

ISSUED AT 409 PM EST THU FEB 14 2013

LARGE SCALE PATTERN/FORECAST: FOUR WAVE HEMISPHERIC PATTERN WITH MAIN ANCHOR WAVES ACROSS ASIA AND EASTERN NORTH AMERICA. NORTH AMERICAN LONG WAVE TROUGH HAS BEEN MAKING A SLOW RETROGRESSION WEST OVER THE PAST THREE WEEKS OR SO (45 DAY HOVMOLLER ANALYSIS SHOWS THIS PROCESS NICELY)...AND WITH A TRAIN OF PACIFIC SHORT WAVES IN THE PIPELINE EXPECT THIS PROCESS WILL GET KICKED INTO HIGH GEAR OVER THE NEXT WEEK WITH THE MEAN LONG WAVE TROUGH RELOADING ACROSS CENTRAL/WESTERN NORTH AMERICA AND A POTENTIALLY ACTIVE STORM TRACK. IN THE NEAR TERM...HOWEVER...LONG WAVE TROUGH AXIS WILL CUT RIGHT ACROSS THE GREAT LAKES AS COLD AIR DUMPS INTO THE REGION COMPLETE WITH A SMALL CLOSED CIRCULATION OVER THE UPPER LAKES THIS WEEKEND. AS THIS MOVES EAST AND SHORT WAVE RIDGING BUILDS IN TO START NEXT WEEK...THE CARVING OUT OF THE WESTERN TROUGH BEGINS WITH SOME POTENTIALLY INTERESTING IMPLICATIONS TOWARD THE END OF NEXT WEEK.

FRIDAY NIGHT THROUGH SUNDAY: FORECAST CONCERNS FOR THE WEEKEND WILL DEAL MOSTLY WITH ONGOING LAKE EFFECT ISSUES...AND ONSET OF WARM ADVECTION SUNDAY.

LAKE AGGREGATE TROUGHING WILL BE HANGING ACROSS ITS CLIMATOLOGICALLY FAVORED STRAITS TO WESTERN UPPER MICHIGAN AXIS AS ARCTIC AIR POOLS ACROSS NORTHERN ONTARIO. WEAKENING GRADIENT WILL ALLOW BOUNDARY LAYER FLOW TO BECOME LIGHT AND MORE DOMINATED BY LOCAL THERMAL PROCESSES...THUS COMPLICATING THE POTENTIAL ORGANIZATION OF LAKE CONVECTION. THIS WILL ESPECIALLY BE TRUE ACROSS EASTERN UPPER SINCE THIS IS A GOOD SET UP FOR COLD DRAINAGE FLOW OUT OF ONTARIO TO PRESS SOUTHWEST ACROSS THE ST. MARY'S RIVER. THINK THERE WILL BE ORGANIZED NORTHWEST FLOW BANDS AT THE OUTSET FRIDAY EVENING...OFF LAKE SUPERIOR EXPECT SNOW SHOWERS WILL TEND TO BE SUPPRESSED MORE TO THE WEST/SOUTH AS THE NIGHT WEARS ON AS BOUNDARY LAYER WINDS TAKE ON MORE OF AN EASTERLY COMPONENT. OFF LAKE MICHIGAN...THERMODYNAMIC PARAMETERS ARE NOT BAD WITH 850MB TEMPERATURES AROUND -18C AND INVERSION HEIGHTS IN THE 750-800MB LAYER. THINK THE FOCUS FOR BEST ACCUMULATIONS WILL BE AROUND AND SOUTHEAST OF THE GRAND TRAVERSE BAY REGION...AS TRAJECTORIES FARTHER NORTH WILL INITIALLY BE LIMITED BY ICE COVER WEST OF THE STRAITS...AND BOUNDARY LAYER WINDS EVENTUALLY BECOMING LIGHT AND/OR DOMINATED BY LAND BREEZE DEVELOPMENT. OVERALL SNOW TOTALS WILL DEPEND ON THE EXACT AREAS OF CONVERGENCE/ FOCUS... BUT THINK 2-5 INCHES A DECENT START CENTERED AROUND THE GRAND TRAVERSE BAY REGION AND EXTENDING INLAND INTO ANTRIM/KALKASKA COUNTIES...WITH AROUND AN INCH AROUND WHITEFISH BAY FOR THE EASTERN U.P. SNOWFALL. BY SATURDAY MORNING...MOST OF THE LAKE CONVECTION SHOULD RESIDE CLOSER TO THE LAKESHORES...BUT THERE IS A WEAK SHORT WAVE TROUGH THAT IS FORECAST TO SLIDE ACROSS EASTERN WISCONSIN...AND MAY PROVIDE AN UPTICK IN SYNOPTIC SUPPORT TO SNOWFALL INTENSITY ACROSS NORTHWEST LOWER (E.G., AN UPWARD BOOST TO INVERSION HEIGHTS). THIS WILL ALSO BE AIDED BY A BIT OF A DIURNAL COMPONENT AS WELL. AGAIN...WITH LIGHT WINDS THE QUESTION OF EXACTLY WHERE THE BEST FOCUS WILL BE IS PROBLEMATIC (HIGHLY MESOSCALE)...LAKE AGGREGATE TROUGH AXIS WILL BE A GOOD CANDIDATE...MOST LIKELY ACROSS SOME OF THE SAME AREAS THAT WILL BE IMPACTED FRIDAY NIGHT (GRAND TRAVERSE BAY SOUTHEAST AROUND BELLAIRE/KALKASKA) AND PERHAPS EXTENDING A BIT FAR SOUTHEAST TOWARD GRAYLING. WILL NOT GO OVERBOARD ON SNOW AMOUNTS AT THIS POINT...PROBABLY WON'T HAVE A REAL GOOD IDEA UNTIL WE GET TO SATURDAY ITSELF. EASTERN UPPER LOOKS TO BE IN PRETTY GOOD SHAPE FOR THE MOST PART SATURDAY...WITH MORE SUN THAN SOUTH OF THE BRIDGE THOUGH COLD WITH HIGHS IN THE LOWER-MID TEENS.

LAND BREEZE DEVELOPMENT SHOULD BE MORE ROBUST SATURDAY NIGHT AS HIGH PRESSURE BUILDS EASTWARD. ANTICIPATING THAT LINGERING SNOW SHOWERS ACROSS NORTHERN LOWER WILL BE PUSHED OFFSHORE AT SOME POINT. CLEARING SKIES AND LIGHT WINDS INLAND WILL ALLOW TEMPERATURES TO DROP WELL BELOW ZERO OVERNIGHT. LOW LEVEL RIDGING FOR SUNDAY COMBINED WITH RISING HEIGHTS ALOFT MEANS LITTLE IN THE WAY OF SYNOPTIC SCALE INTEREST FOR SUNDAY. SOME LINGERING LAKE CLOUDS/ FLURRIES OFF LAKE MICHIGAN PROBABLY THE ONLY CONCERN FOR NORTHWEST LOWER. HIGHS SUNDAY AGAIN SHOULD BE BELOW AVERAGE FOR MID FEBRUARY. EXTENDED FORECAST (MONDAY THROUGH THURSDAY): A COUPLE SYSTEMS OF INTEREST FOR NEXT WEEK...FIRST WILL BE A SHORT WAVE TROUGH AND ASSOCIATED LEE CYCLOGENESIS THAT LOOKS TO RIDE UP INTO THE GREAT LAKES IN THE MONDAY NIGHT/TUESDAY TIME FRAME. AXIS OF WARM/MOIST INFLOW AHEAD OF THE ASSOCIATED COLD FRONT WILL RAISE CONCERNS FOR PRECIPITATION TYPE. ANOTHER PUNCH OF COLD AIR THEN SWEEPS ACROSS MICHIGAN FOR MIDWEEK...SO LAKE INDUCED SNOW SHOWERS A GOOD BET ALONG WITH WELL BELOW NORMAL TEMPERATURES. NEXT SYSTEM TO WATCH WILL BE ONE EMERGING FROM THE DEVELOPING WESTERN TROUGH IN THE LATER THURSDAY/FRIDAY TIME FRAME. MORE THAN LIKELY THIS SYSTEM WILL NOT IMPACT THE REGION UNTIL BEYOND THIS FORECAST CYCLE...AND WITH SPLIT FLOW WILL HAVE TO SEE HOW THIS SYSTEM INTERACTS WITH THE NORTHERN BRANCH.