

CHICAGO (Reuters) - A powerful winter storm that buried the U.S. Plains moved on Tuesday into the southern Great Lakes region, where it snarled the evening commute in Chicago and Milwaukee, created near-whiteout conditions and forced hundreds of flight cancellations.

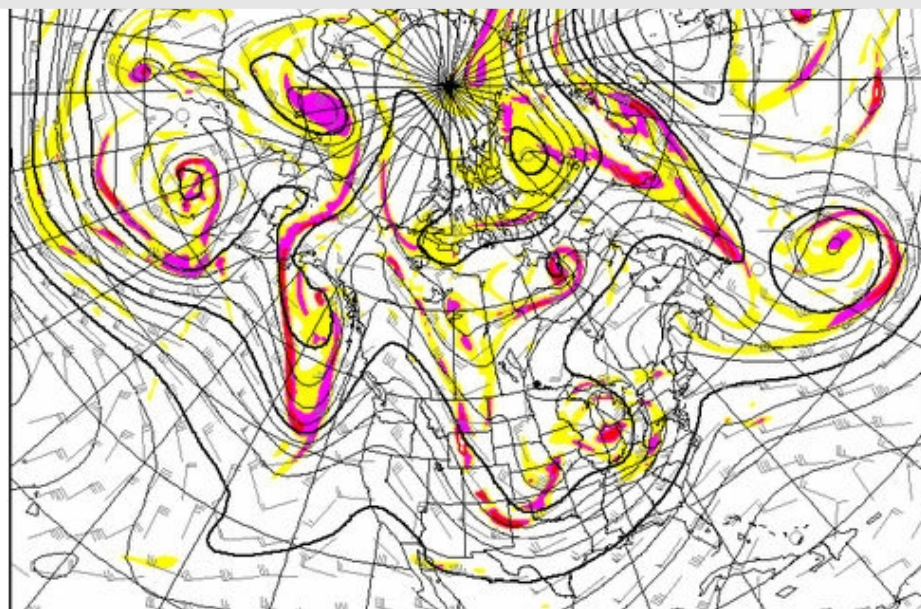


Weather Briefing

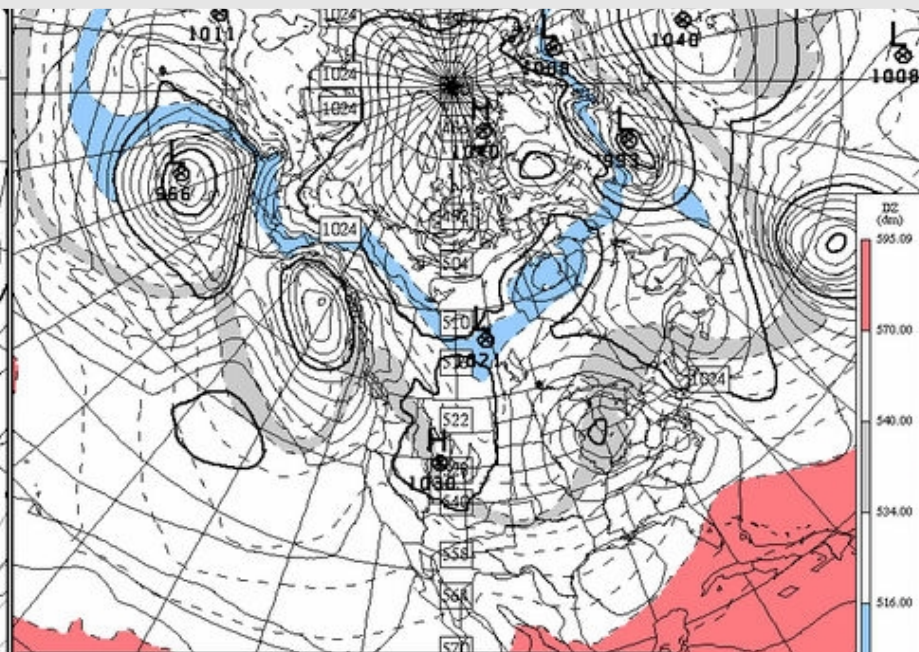
Associated Press/Orlin Wagner
- near Lawrence, Kansas, Tues.
Feb. 26, 2013.

- brief look at Tuesday's storm in eastern U.S.
- follow-up on the east coast storm(s) fcst by GFS (at 14 day range) for ~ 12 March
- present situation in western Canada
- forecast through Sunday for C. Alberta

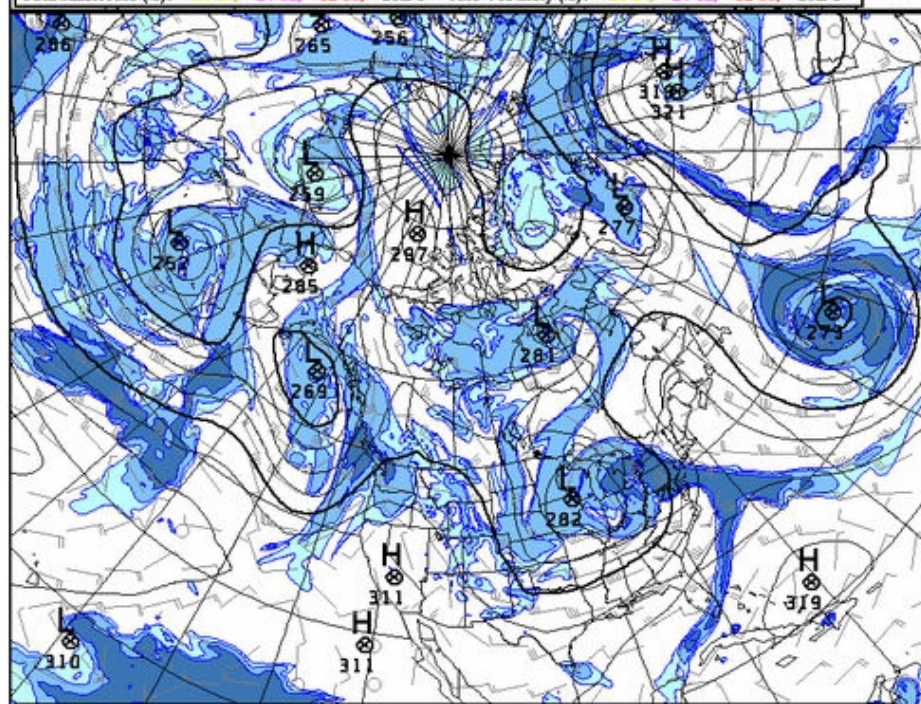
Eastern U.S. storm – GEM-glbl 144-h fcst init. 00Z Thurs 21 Feb, valid 00Z Wed 27 Feb



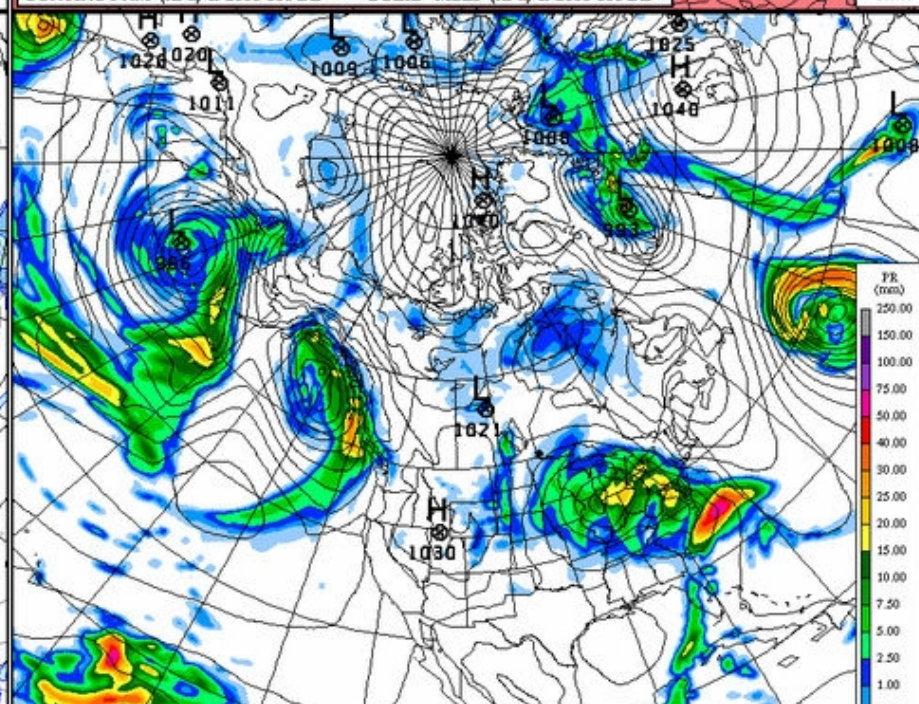
P144H Vid Mer-Wed 00Z 27 Feb-Feb 2013
 Hauteur géopotentielle à 500 hPa (dam)
 Barboles Vent à 500 hPa (nds)
 Tourbillon Abs (s): 16-24, 24-32, 32-50, 10E-5
 GEM-Global
 Geopotential height at 500 hPa (dam)
 Wind Barbs at 500 hPa (kts)
 Abs Vorticity (s): 16-24, 24-32, 32-50, 10E-5



P144H Vid Mer-Wed 00Z 27 Feb-Feb 2013
 CONTINU PNM (hPa) & 1000-500 DZ
 GEM-Global
 SOLID MSLP (hPa) & 1000-500 DZ
 DZ (dm): 595.00, 570.00, 540.00, 534.00, 516.00, 510.00

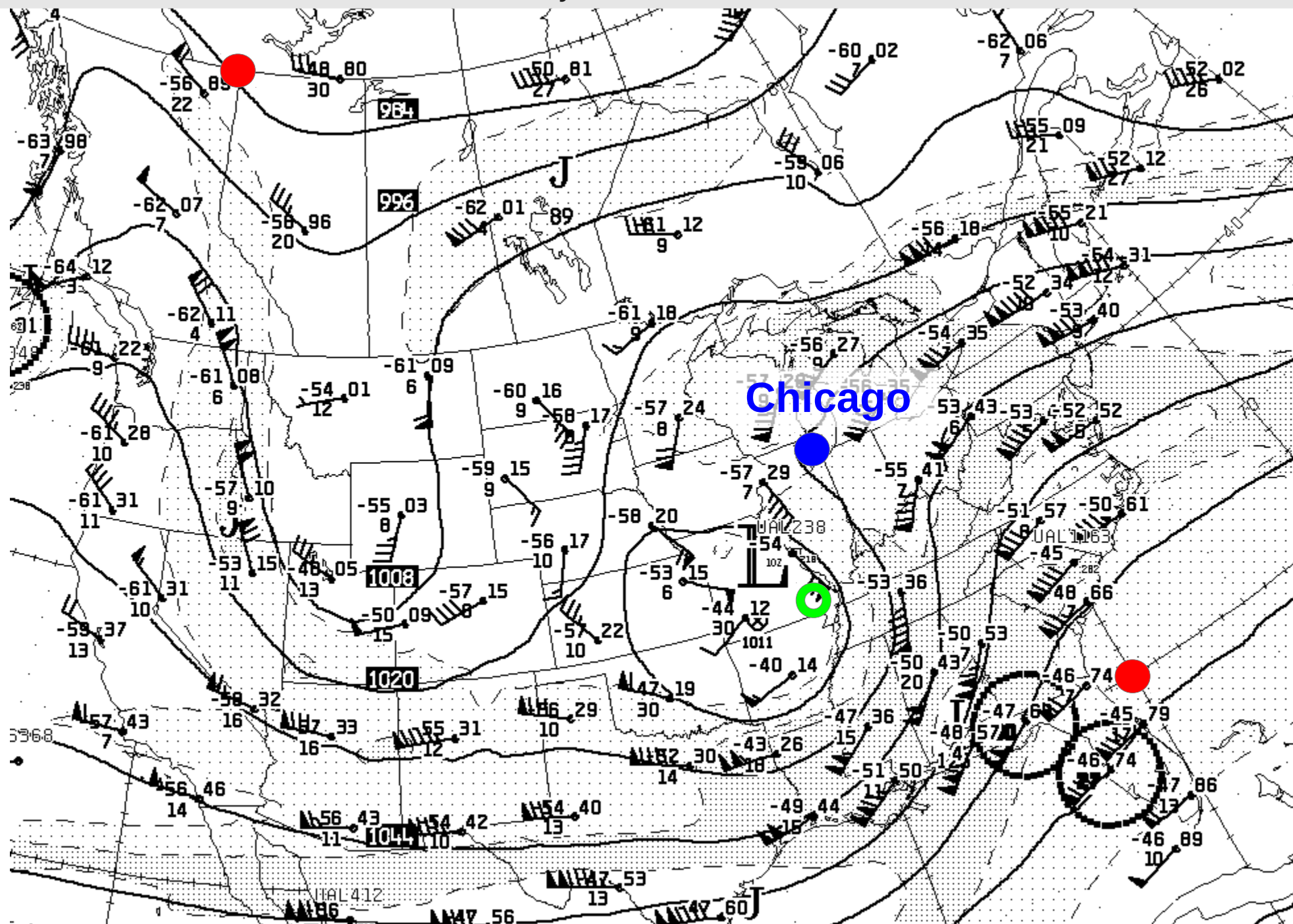


P144H Vid Mer-Wed 00Z 27 Feb-Feb 2013
 Arrière plan: Humidité relative à 700 hPa (50,70,90%)
 Hauteur géopotentielle à 700 hPa (dam)
 GEM-Global
 Background: Relative humidity at 700 hPa (50,70,90%)
 Geopotential height at 700 hPa (dam)



P144H Vid Mer-Wed 00Z 27 Feb-Feb 2013
 Précipitations cumulatives sur 12 hrs (mm)
 GEM-Global
 12 hr cumulative precipitation (mm)
 PR (mm): 250.00, 150.00, 100.00, 75.00, 50.00, 40.00, 30.00, 25.00, 20.00, 15.00, 10.00, 7.50, 5.00, 2.50, 1.00, 0.10, 0.00

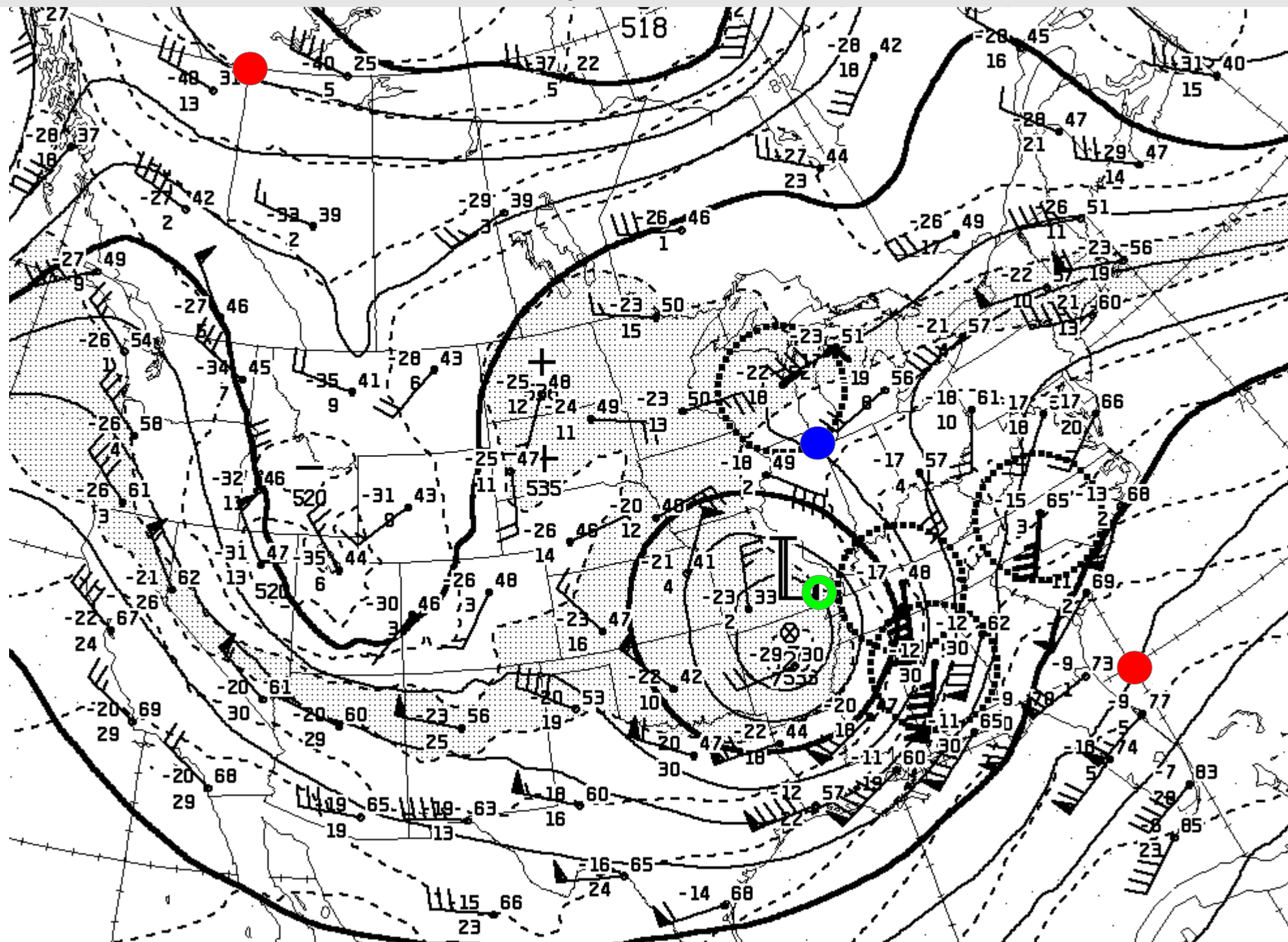
Eastern U.S. storm – CMC 250 hPa analysis 12Z Tues 26 Feb.



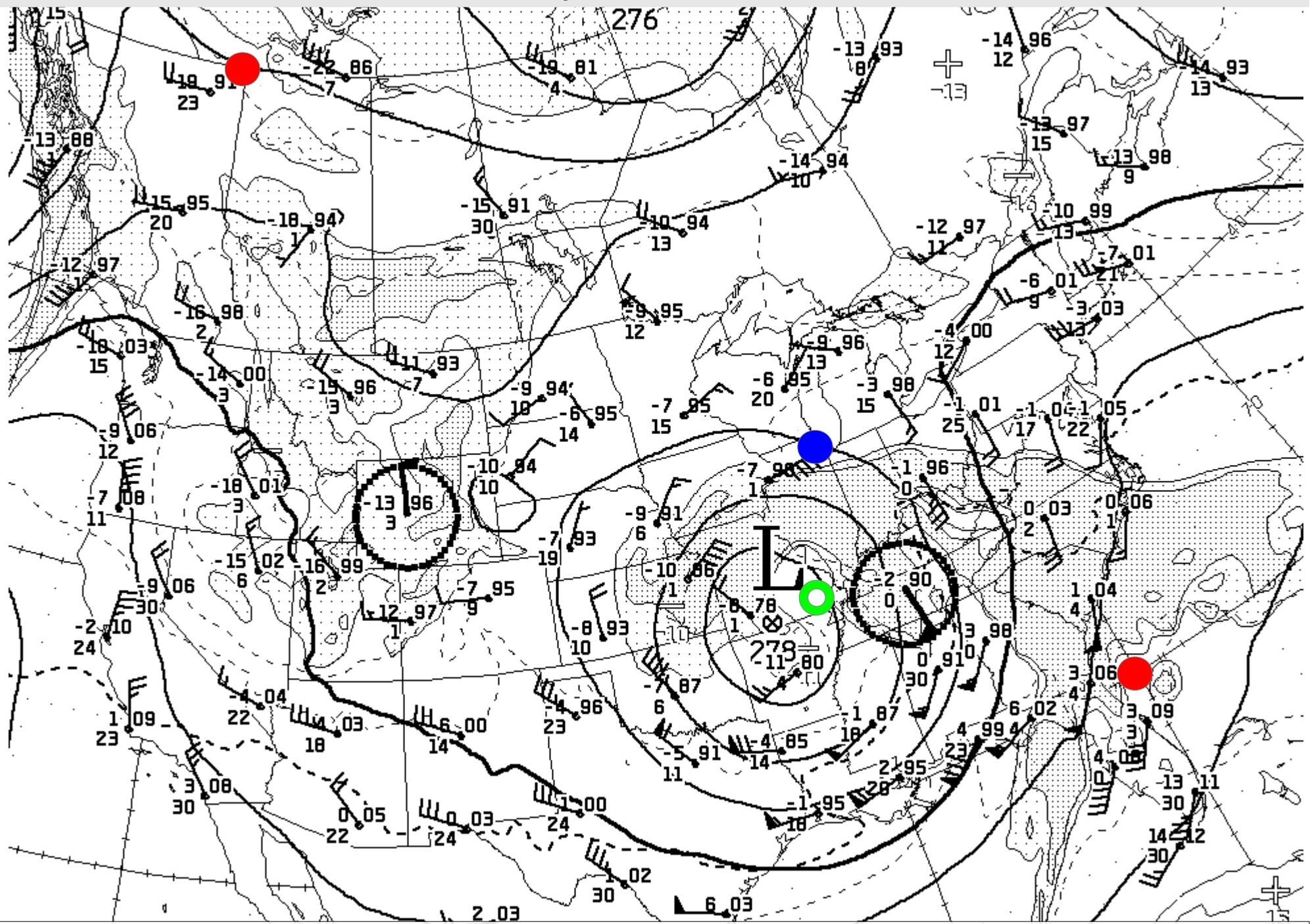
• closed (i.e. cutoff) low even at 250 hPa

○ position of surface low, 12Z 26 Feb.

Eastern U.S. storm – CMC 500 hPa analysis 12Z Tues 26 Feb.

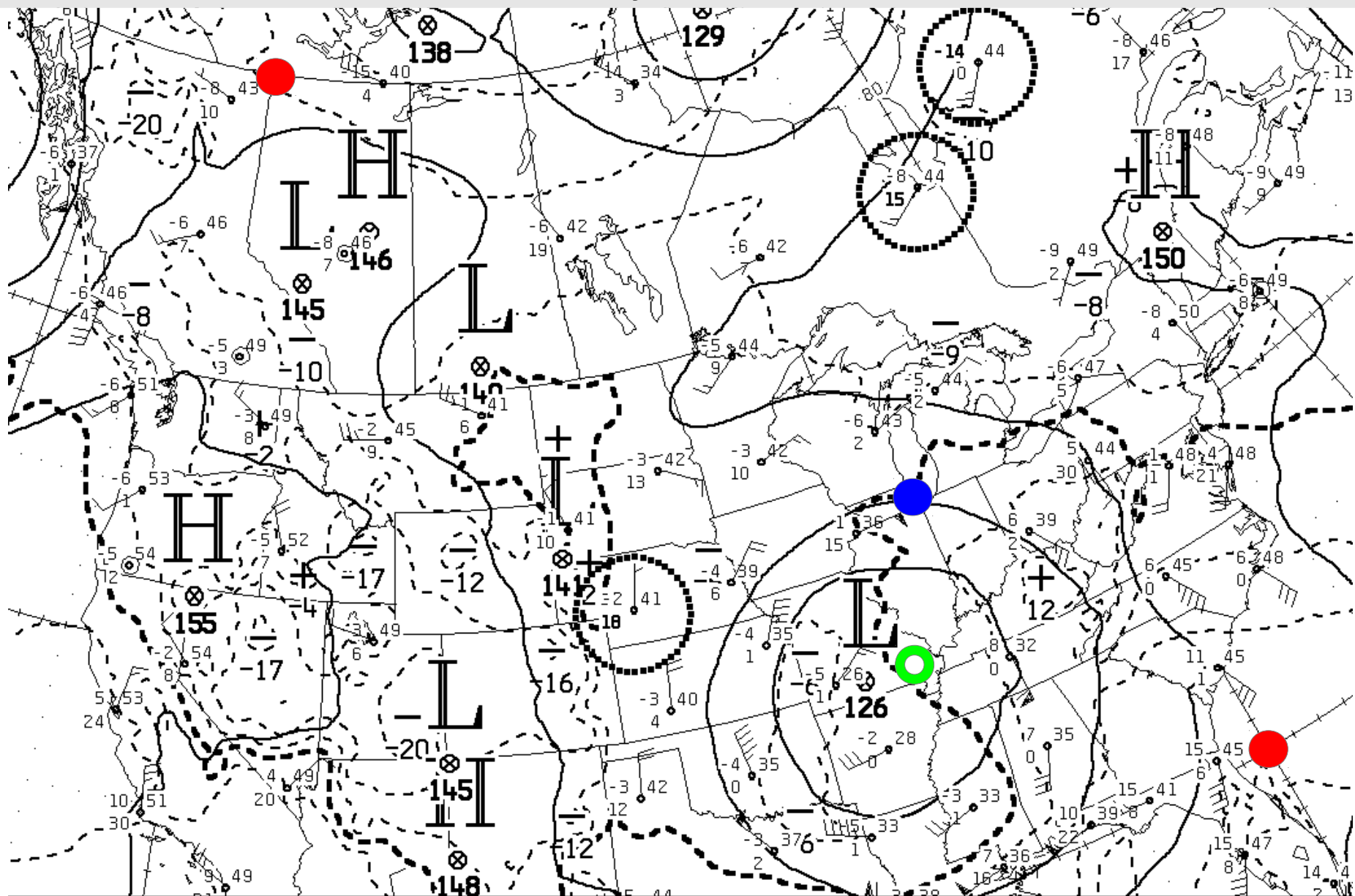


Eastern U.S. storm – CMC 700 hPa analysis 12Z Tues 26 Feb.



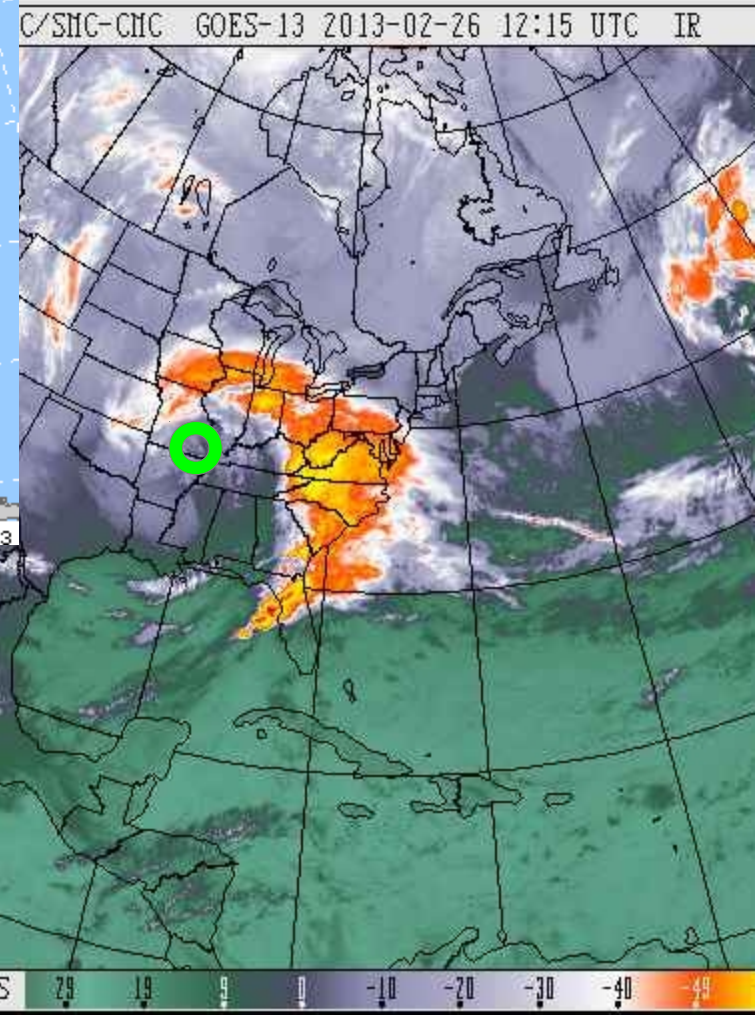
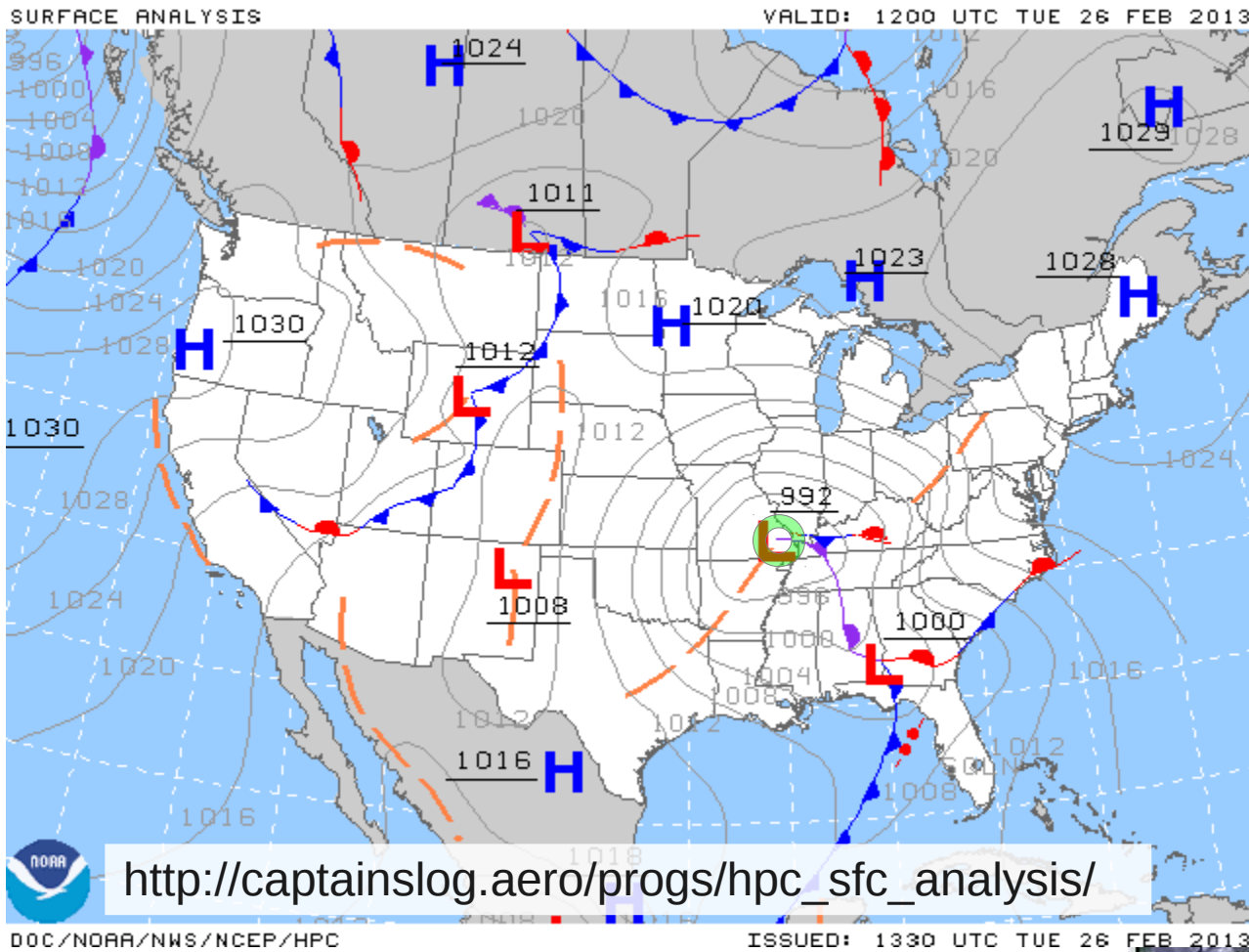
• humidity advection over Chicago

Eastern U.S. storm – CMC 850 hPa analysis 12Z Tues 26 Feb.

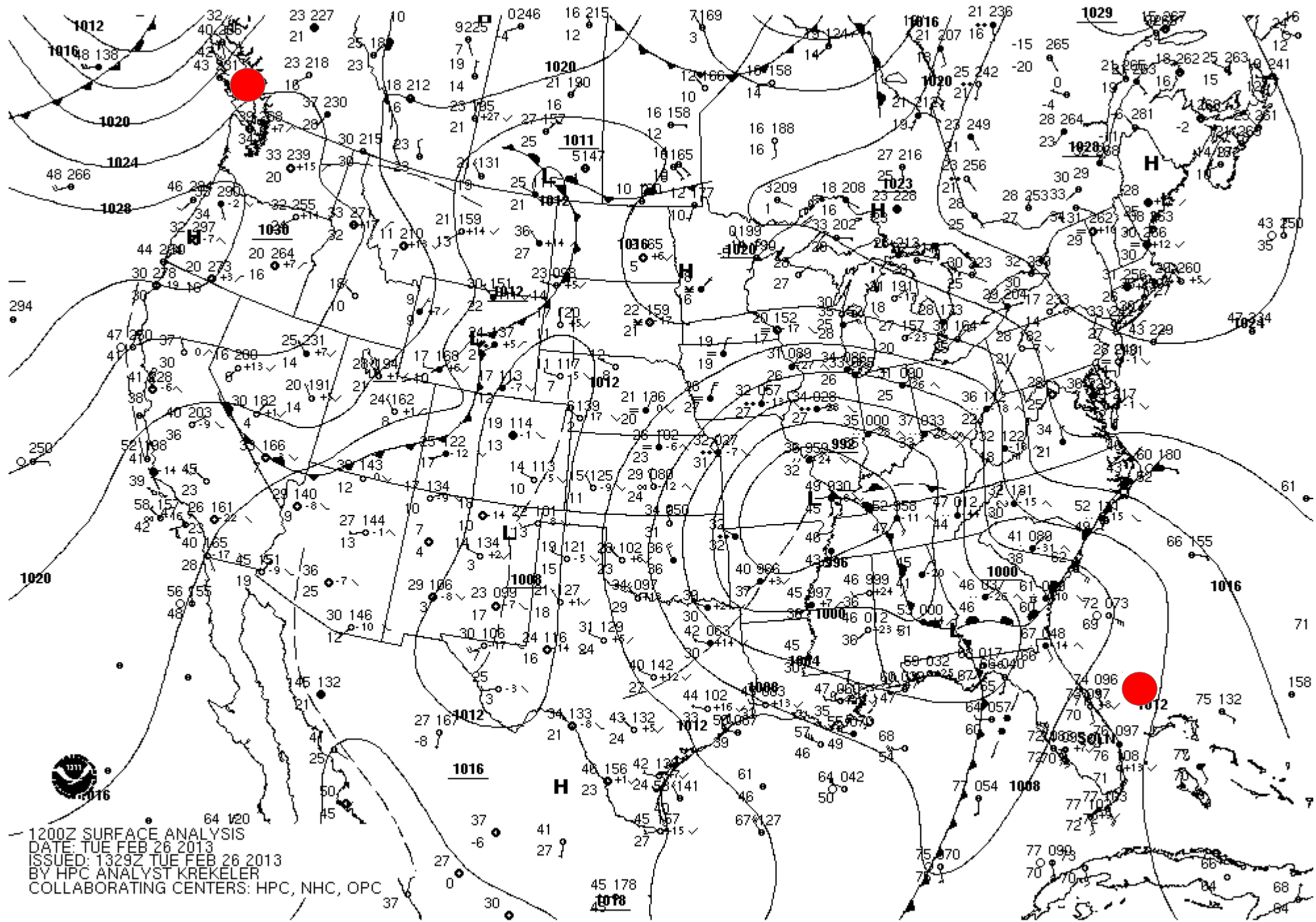


- well defined cold and warm sectors, albeit not particularly strong grad-T
- extremely strong 850 hPa winds
- warm advection over Chicago

Eastern U.S. storm – NCEP sfc analysis & GOES east IR at 12Z Tues 26 Feb. 2013



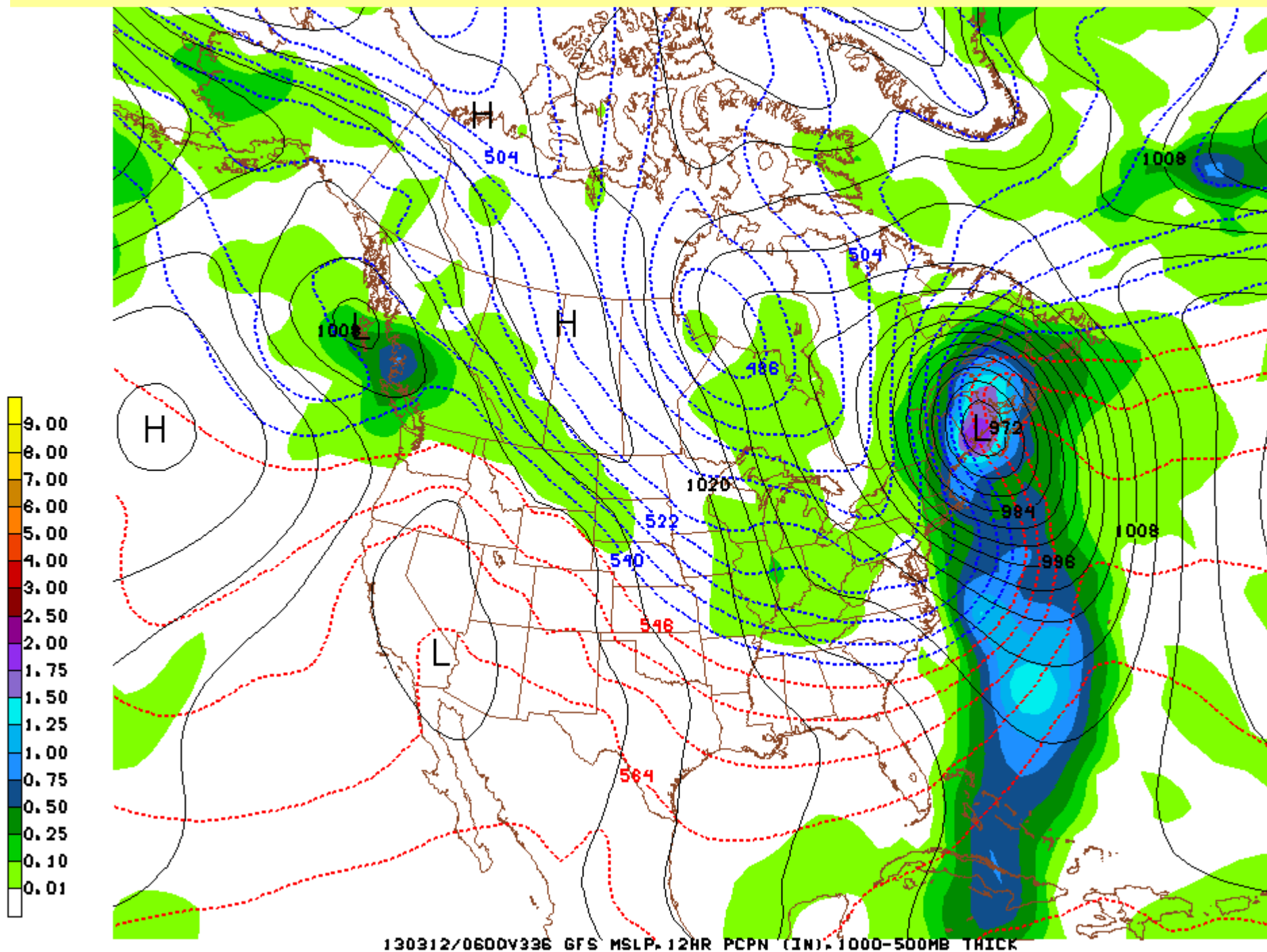
- different orientation of GOES & the charts
- clear skies in warm sector wrapping around east side of the storm (comparison with VIS images showed low cloud wrapping south on west side of storm)



NCEP sfc analysis 12Z Tues 26 Feb.

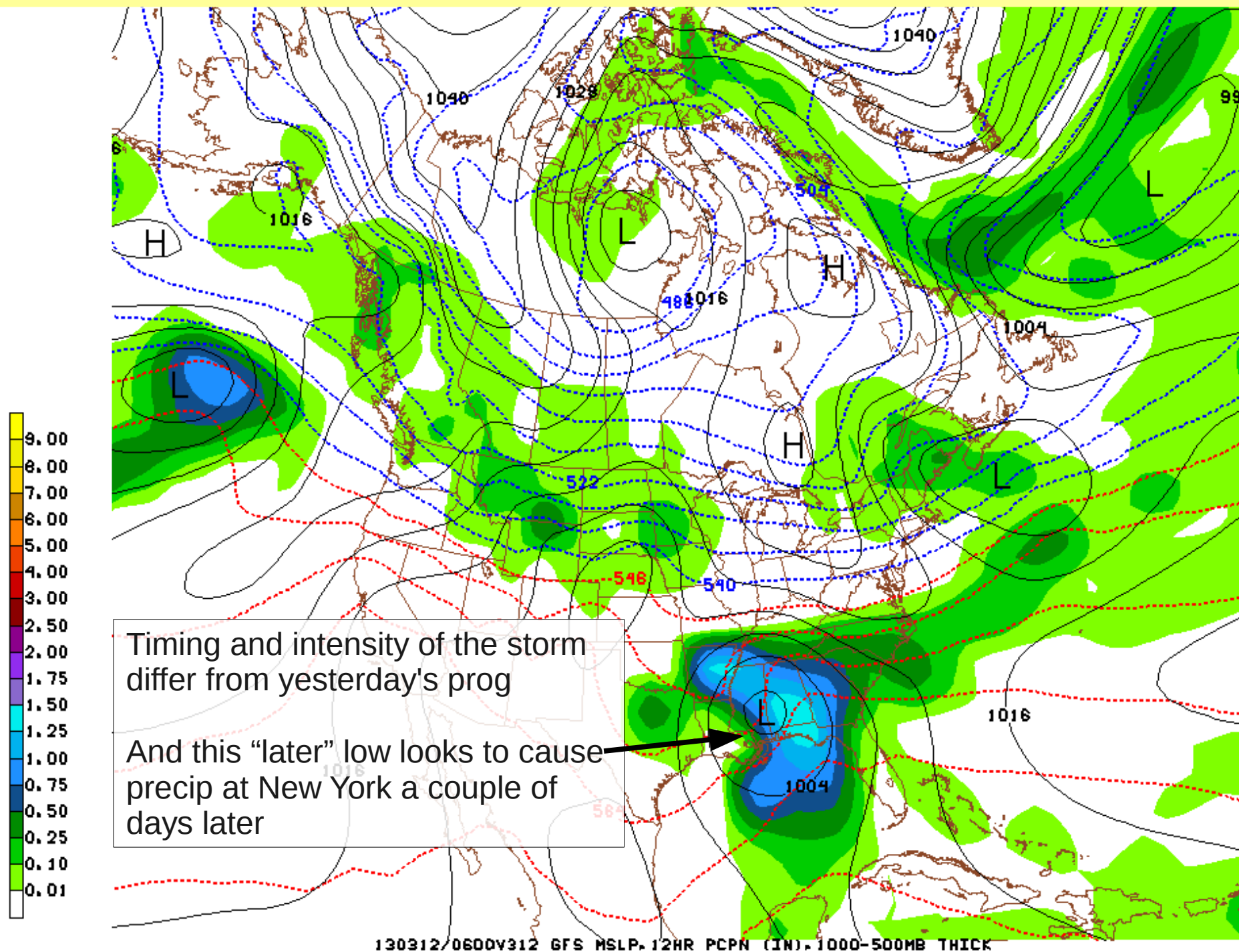
Now a follow-up regarding the east coast storms
GFS indicates at ~ two week range

GFS 336-h fcst init. 06Z Tues 26 March, valid 06Z Tues 12 March

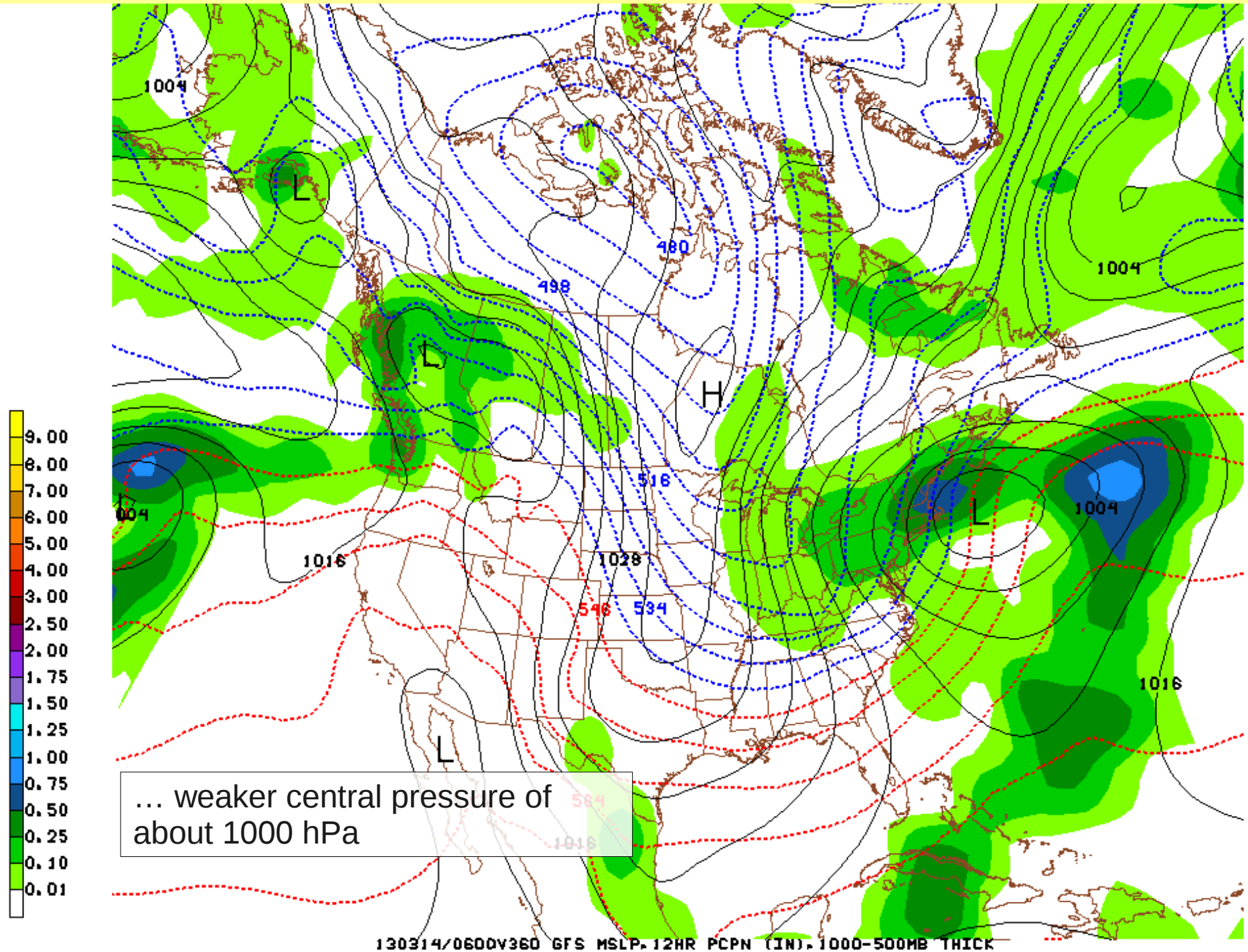


130312/0600V336 GFS MSLP, 12HR PCPN (IN), 1000-500MB THICK

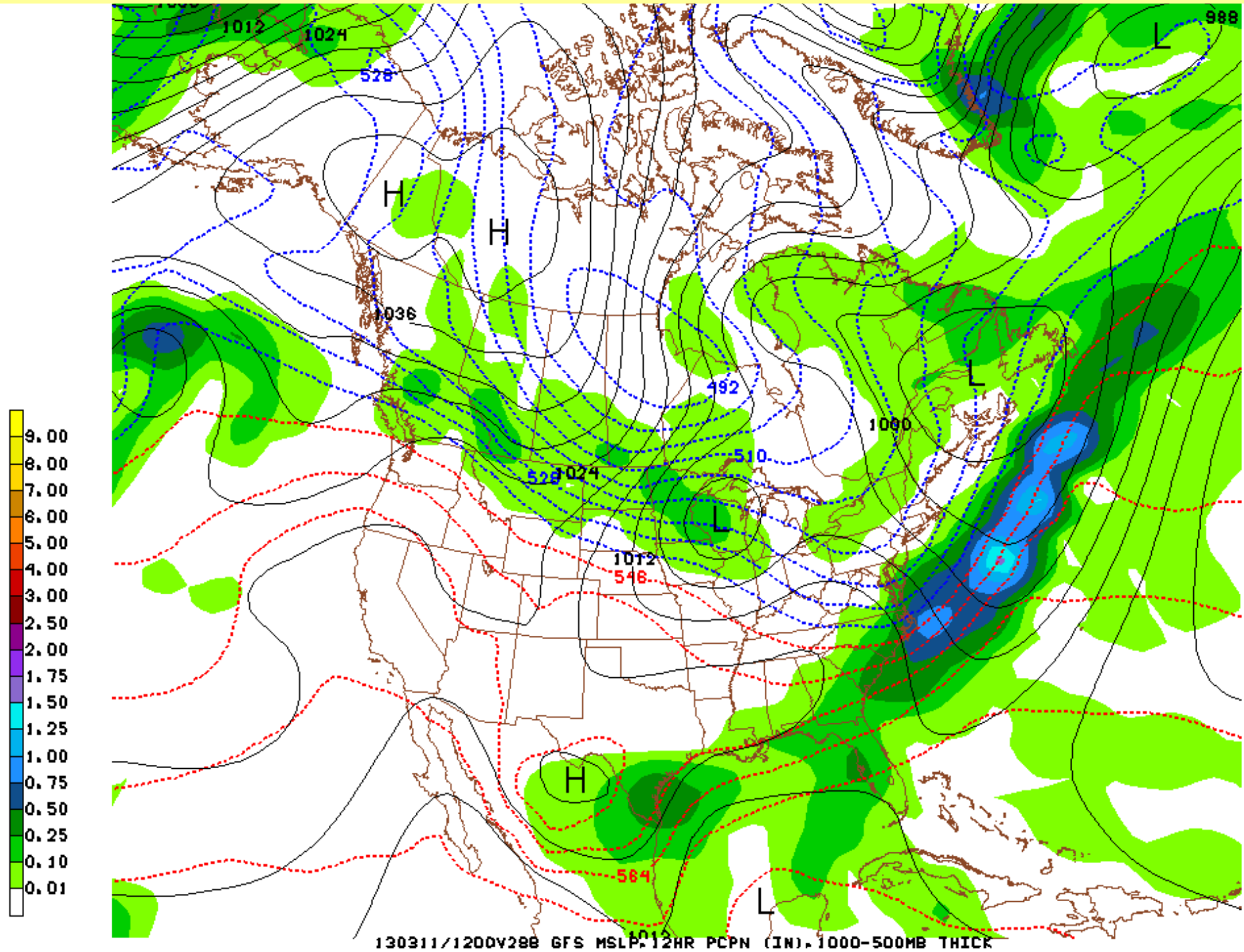
GFS 312-h fcst init. 06Z Wed 27 March, valid 06Z Tues 12 March



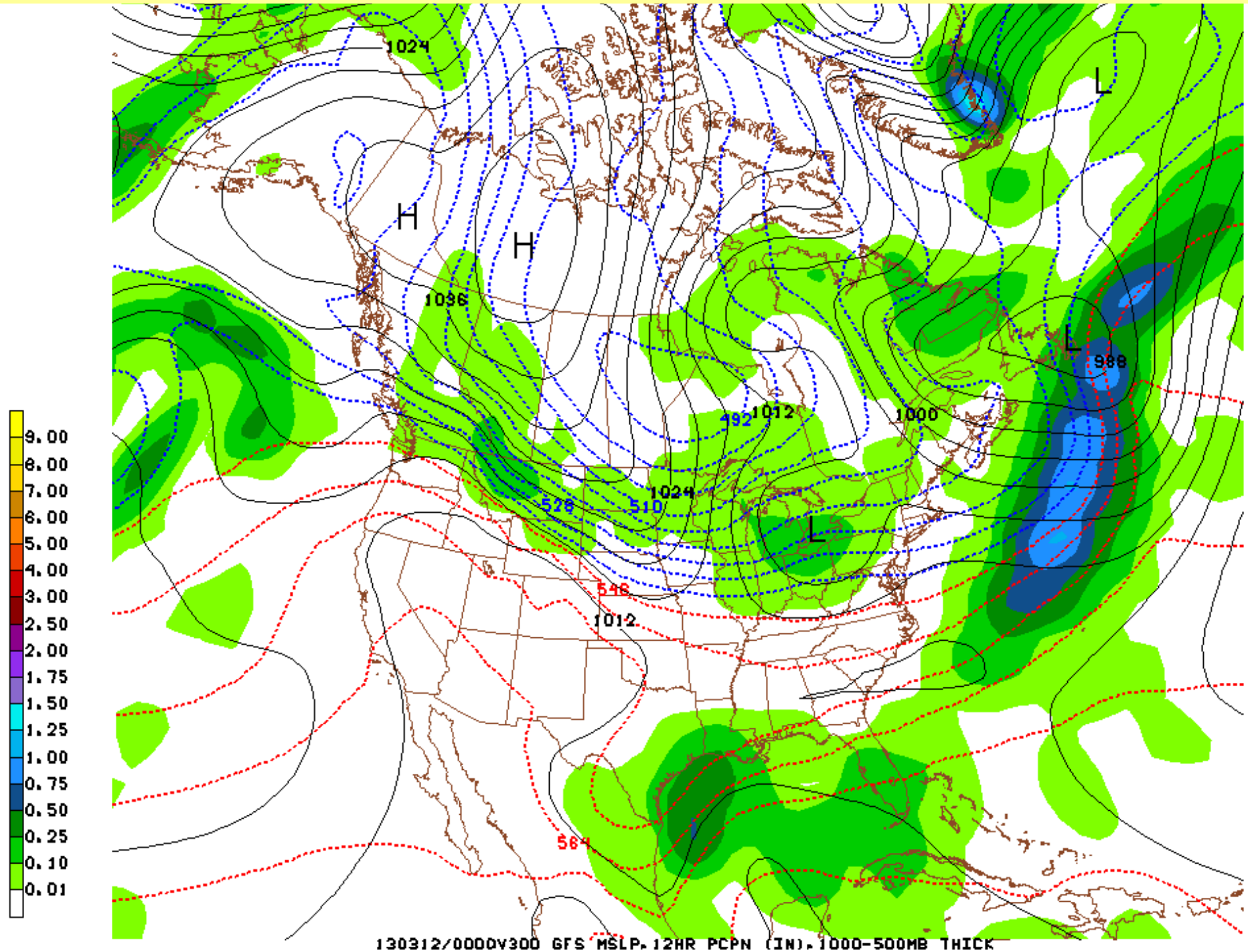
GFS 360-h fcst init. 06Z Wed 27 March, valid 06Z Thurs 14 March



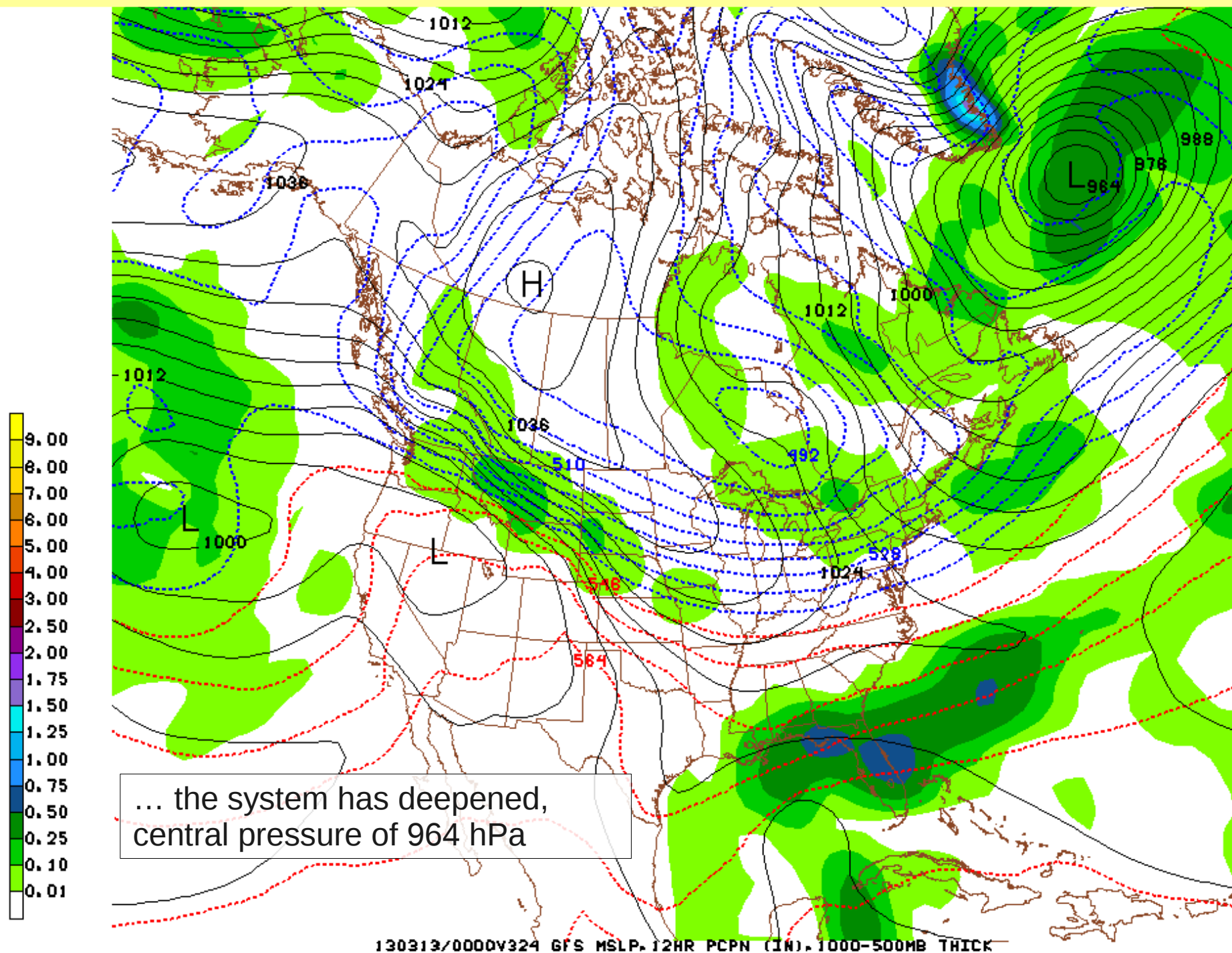
GFS 288-h fcst init. 12Z Wed 27 March, valid 12Z Mon 11 March



GFS 300-h fcst init. 12Z Wed 27 March, valid 00Z Tues 12 March



GFS 324-h fcst init. 12Z Wed 27 March, valid 00Z Wed 13 March



Now skipping to present and imminent weather in Alberta...

What are the professionals noting?

SIGNIFICANT WEATHER DISCUSSION ISSUED BY THE PRAIRIE AND ARCTIC STORM PREDICTION CENTRE OF ENVIRONMENT CANADA AT 7:00 AM CST THURSDAY FEBRUARY 28 2013...

DISCUSSION... PRAIRIES...

AREAS OF FG THIS MORNING IN ERN AB OTWZ **QUIET** IN THE PRAIRIES. TNGT STRG **LEE TROF** DVLPS ALG FTHLS PRODUCING STRG GAP WINDS. WIND GUSTS MAY APPROACH 100 KM/H AND WILL FURTHER ASSESS IF WIND WARNINGS ARE REQD THIS AFTN.

Lackmann p308 procedure: set the planetary, synoptic & mesoscale context

Characteristics of the planetary-scale pattern?

The synoptic-scale pattern?

REGIONAL

0h FORECAST - PREVISION 0h
00Z THU-JEU 28 FEB-FEV 13

500 hPa HEIGHT-HAUTEUR VORTICITY-TOURBILLON

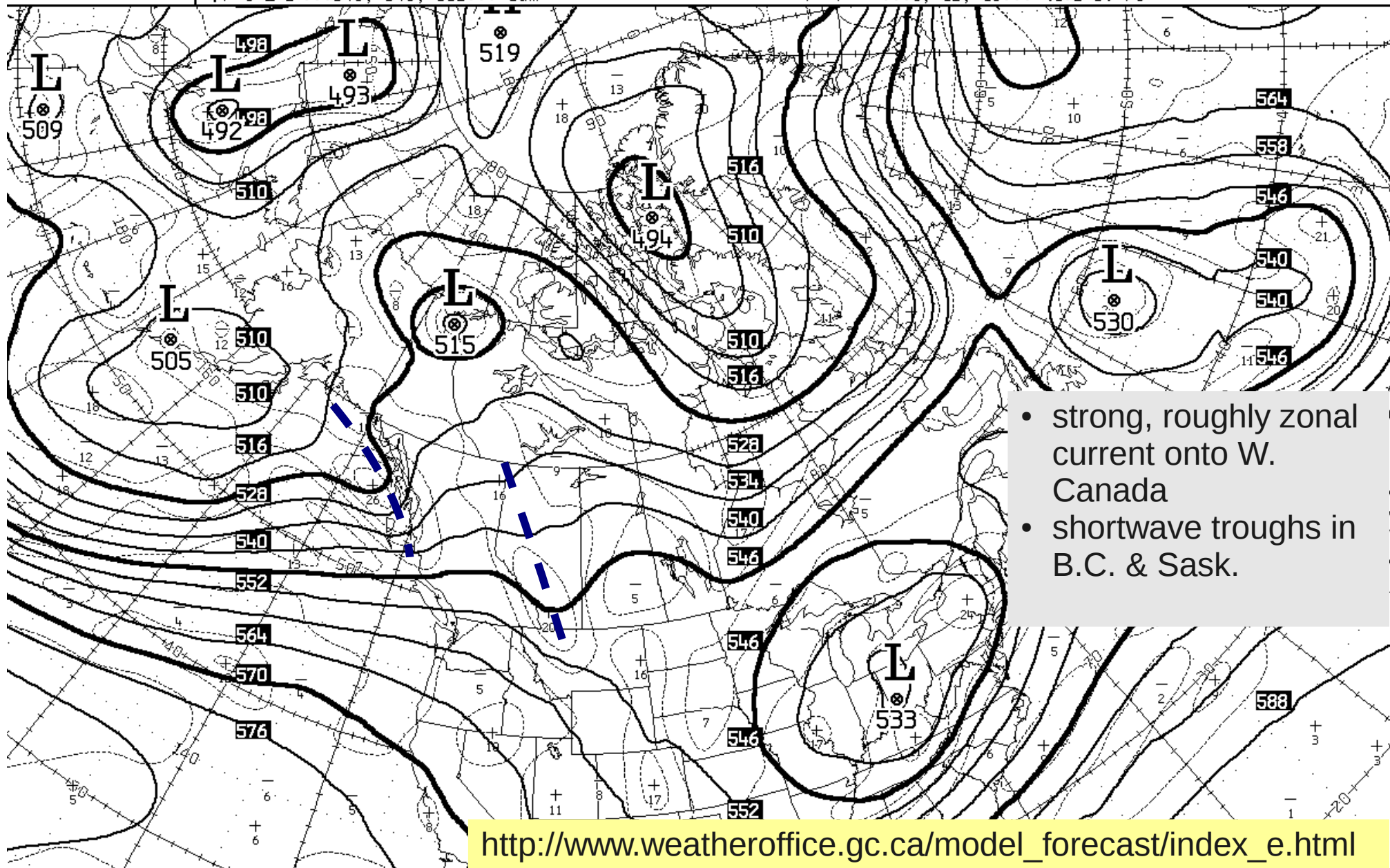
GEM

HEIGHT - HAUTEUR

⊗ H L ...540, 546, 552... dam

VORTICITY - TOURBILLON

+ - ...8, 12, 16... (1.E-5) /s



- strong, roughly zonal current onto W. Canada
- shortwave troughs in B.C. & Sask.

http://www.weatheroffice.gc.ca/model_forecast/index_e.html

GEMreg 0h prog valid 00Z today (Thurs 28 Feb) – clipped from b/w 4-panel charts

REGIONAL

0h FORECAST - PREVISION 0h
V06Z THU-JEU 28 FEB-FEV 13

500 hPa HEIGHT-HAUTEUR VORTICITY-TOURBILLON

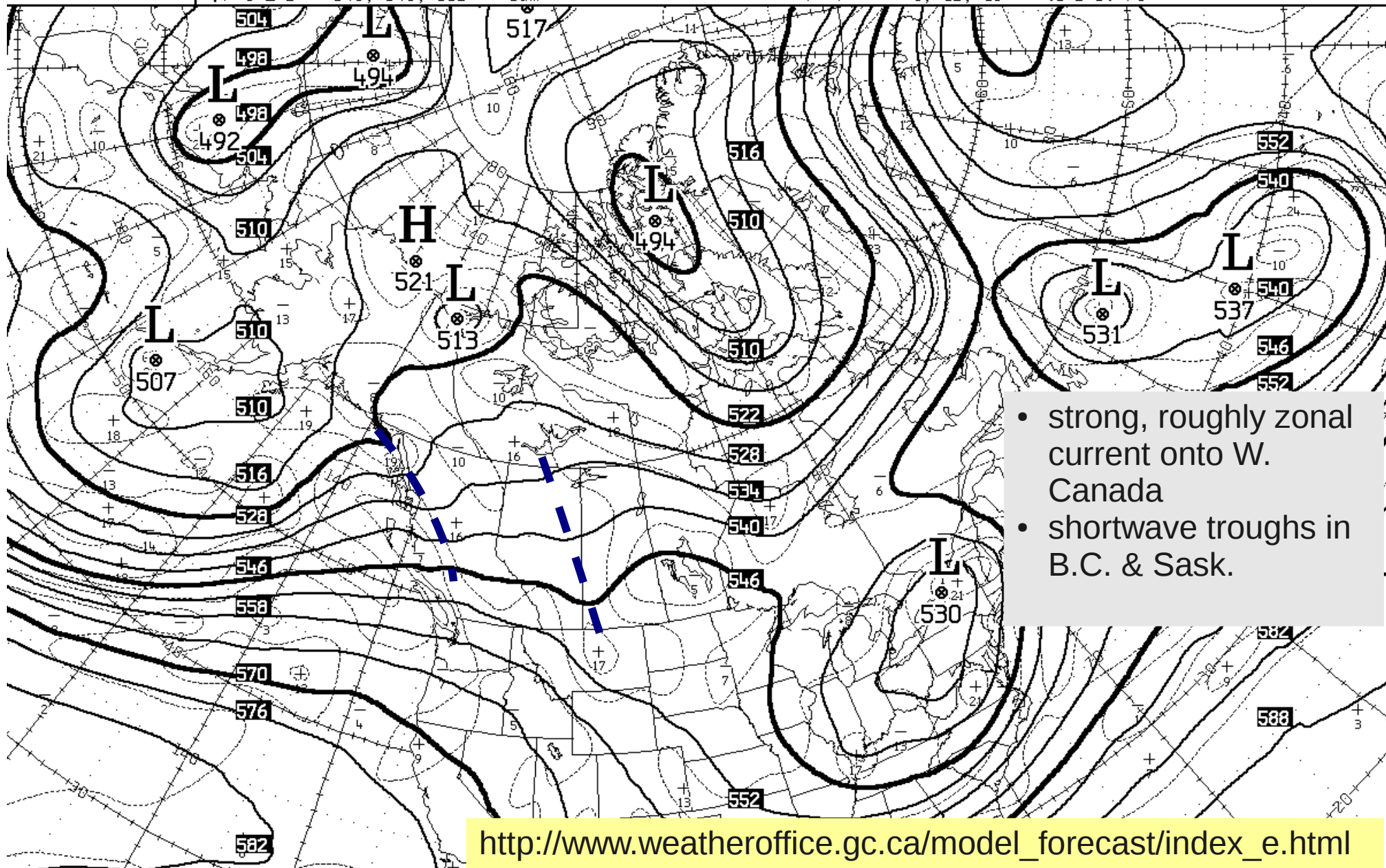
GEM

HEIGHT - HAUTEUR

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VORTICITY - TOURBILLON

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GEMreg 0h prog valid 06Z today (Thurs 28 Feb) – clipped from b/w 4-panel charts

REGIONAL

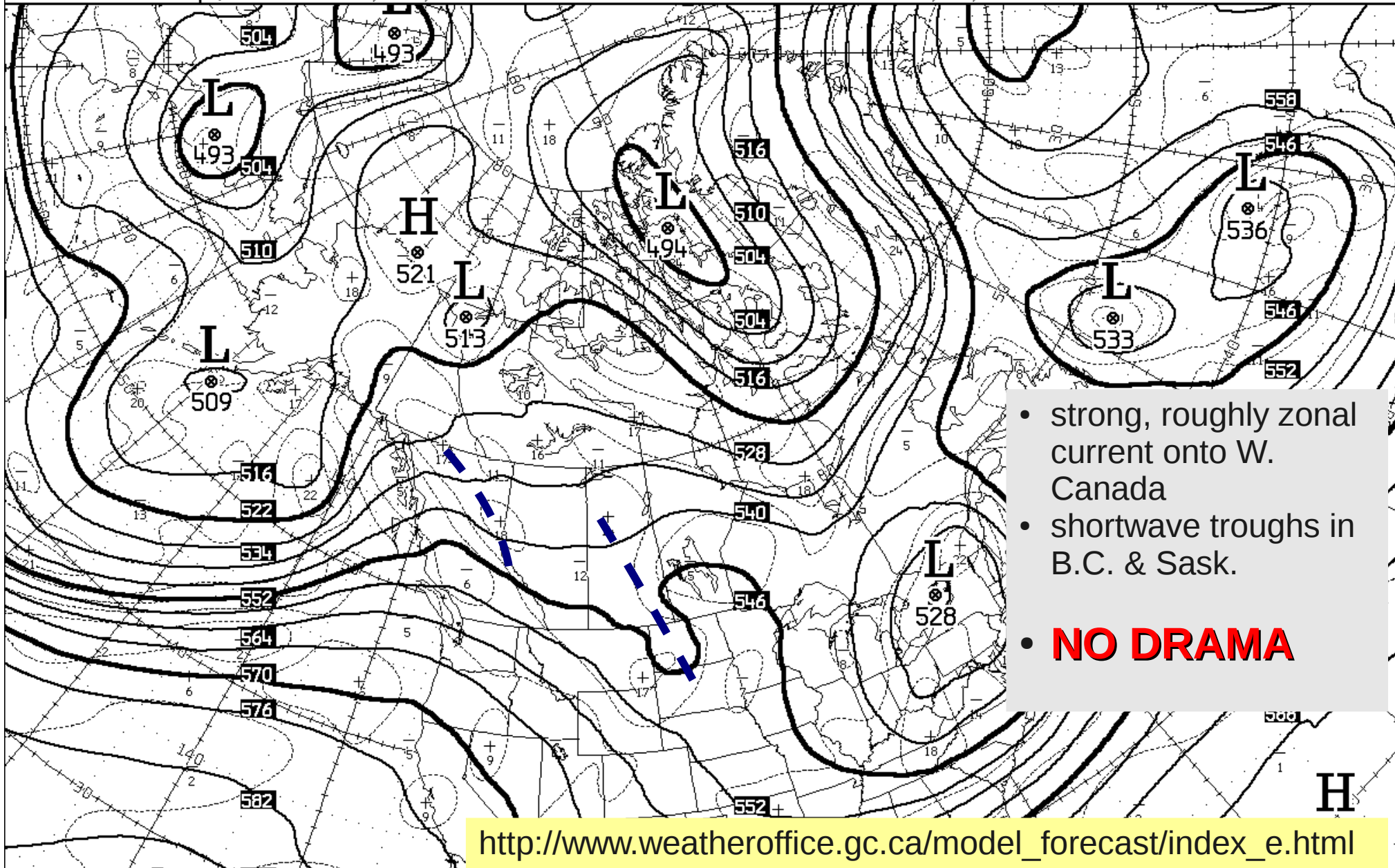
0h FORECAST - PREVISION 0h
V12Z THU-JEU 28 FEB-FEV 13

500 hPa HEIGHT-HAUTEUR VORTICITY-TOURBILLON

GEM

HEIGHT - HAUTEUR
⊗ H L ... 540, 546, 552... dam

VORTICITY - TOURBILLON
+ - ... 8, 12, 16... (1.E-5) /s

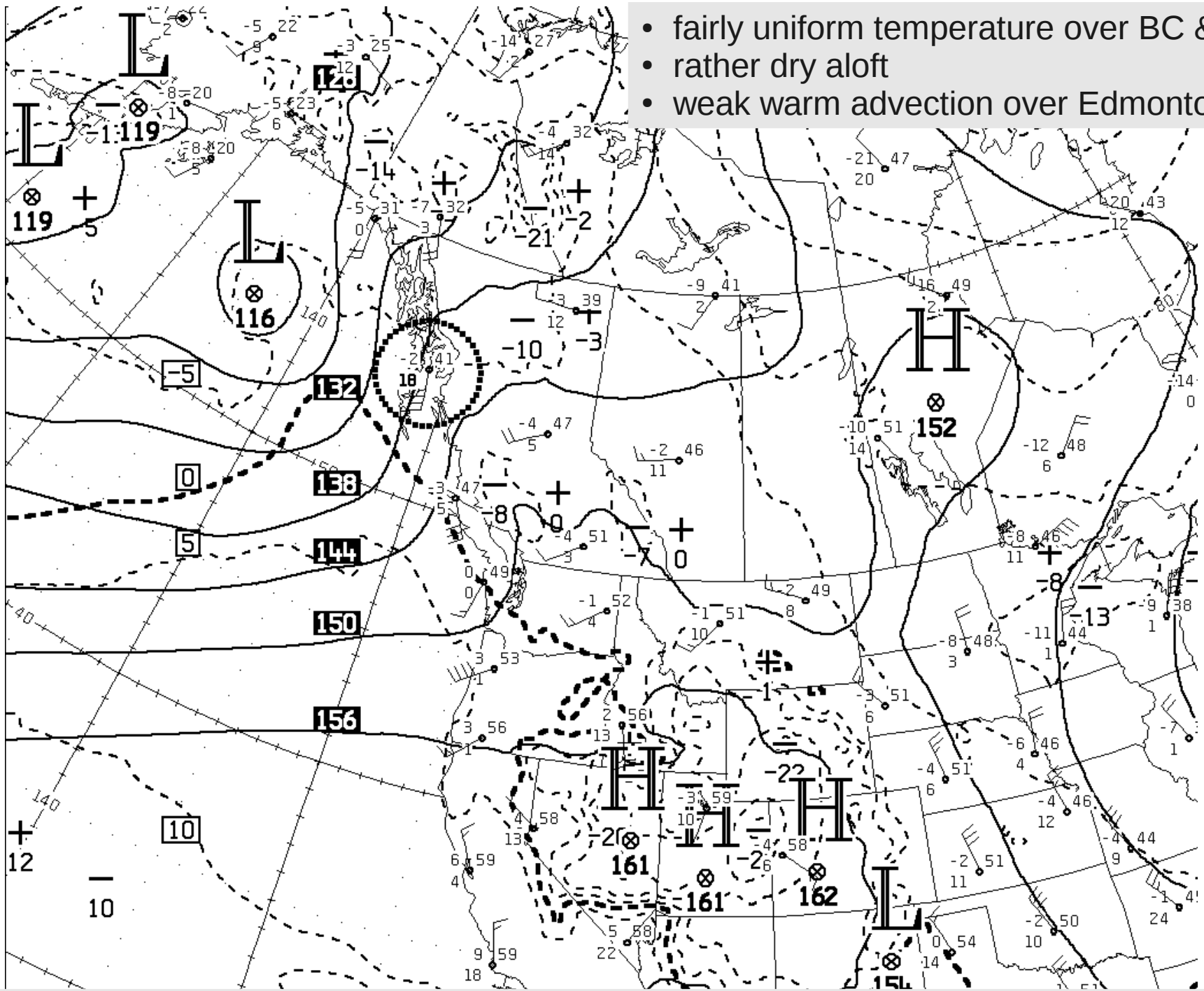


- strong, roughly zonal current onto W. Canada
- shortwave troughs in B.C. & Sask.
- **NO DRAMA**

http://www.weatheroffice.gc.ca/model_forecast/index_e.html

GEMreg 0h prog valid 12Z today (Thurs 28 Feb) – clipped from b/w 4-panel charts

- fairly uniform temperature over BC & Ab
- rather dry aloft
- weak warm advection over Edmonton?



CMC 850 hPa analysis 12Z today (Thurs 28 Feb)

130228/1200 71119

WSE

SHOW:

5

LIFT:

5

SWET:

66

VTOT:

30

CAPE:

0

EQLV:

-9999

SELV:

766

CINS:

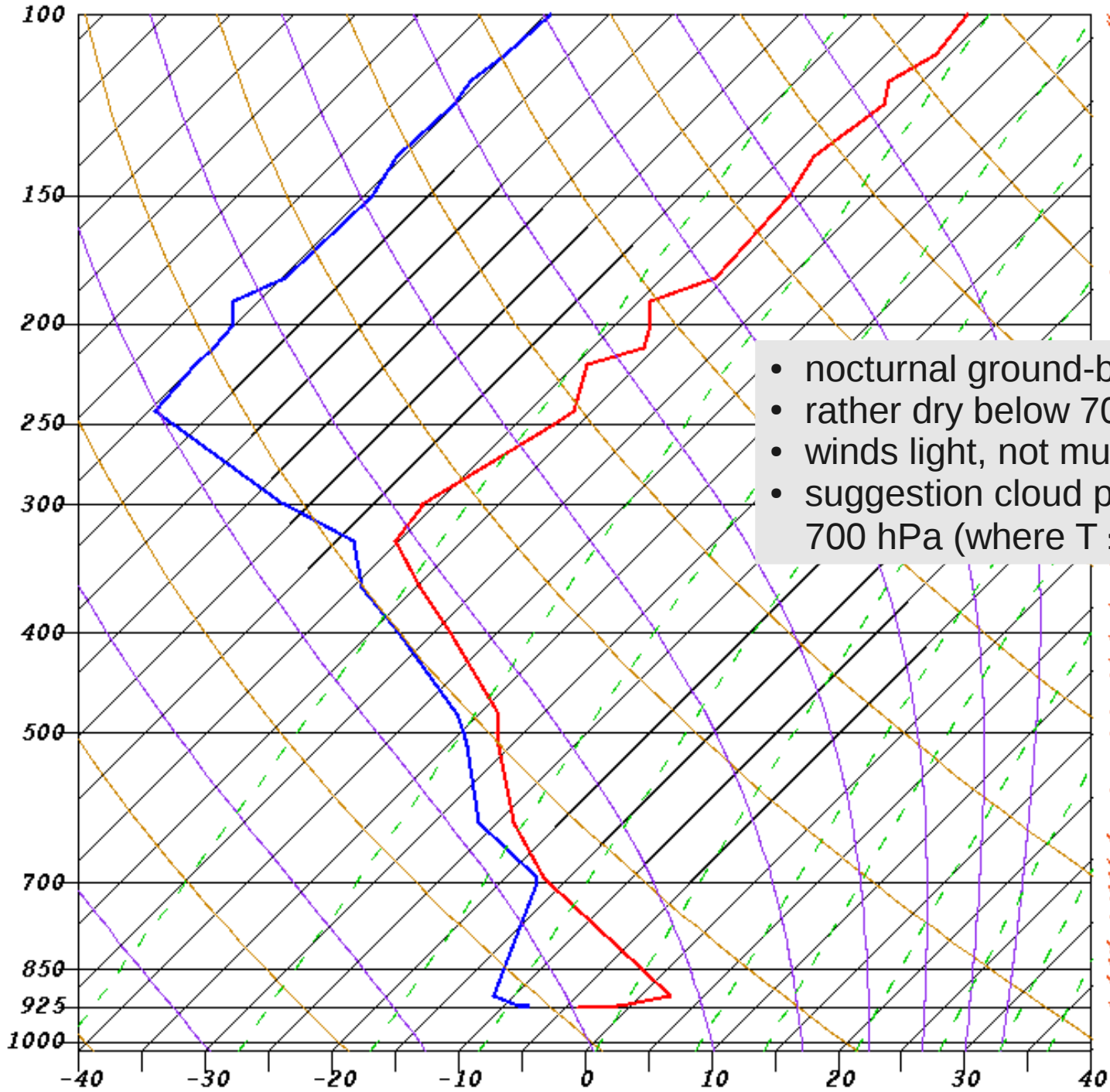
0

LCLT:

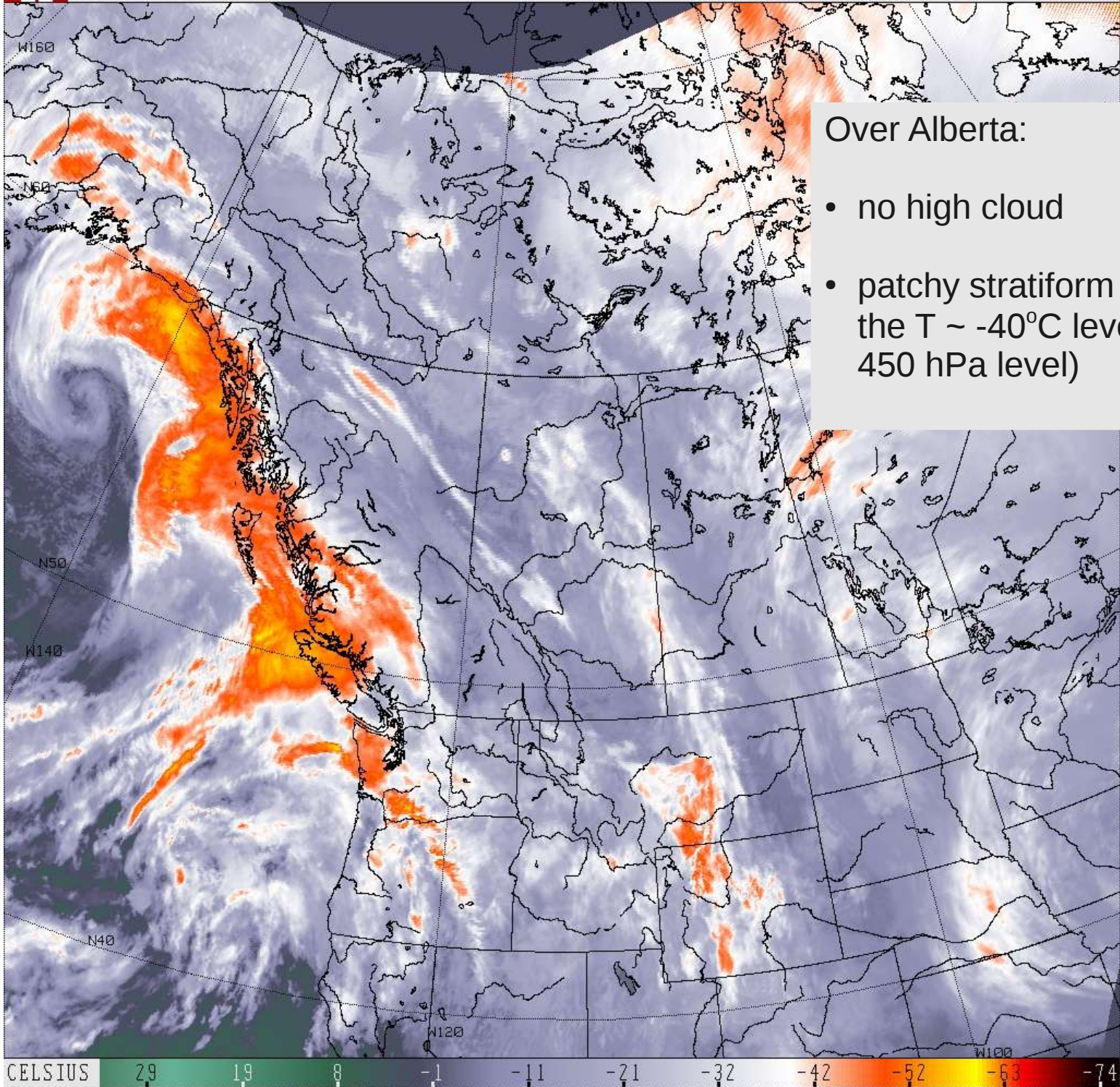
264

LCLP:

865

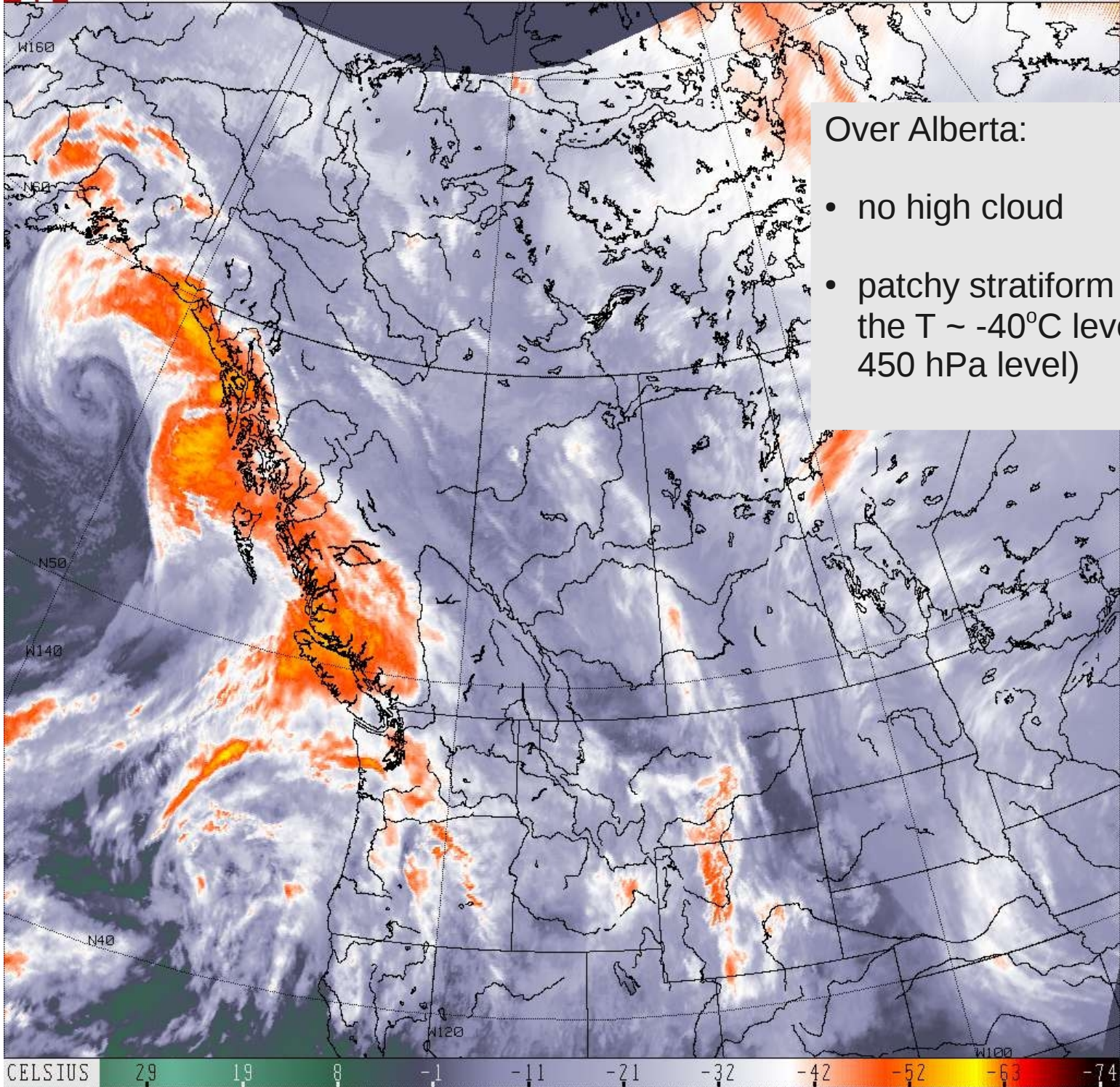


- nocturnal ground-based radiation inversion
- rather dry below 700 hPa
- winds light, not much directional shear
- suggestion cloud possible near and above 700 hPa (where $T \leq -17^{\circ}\text{C}$)



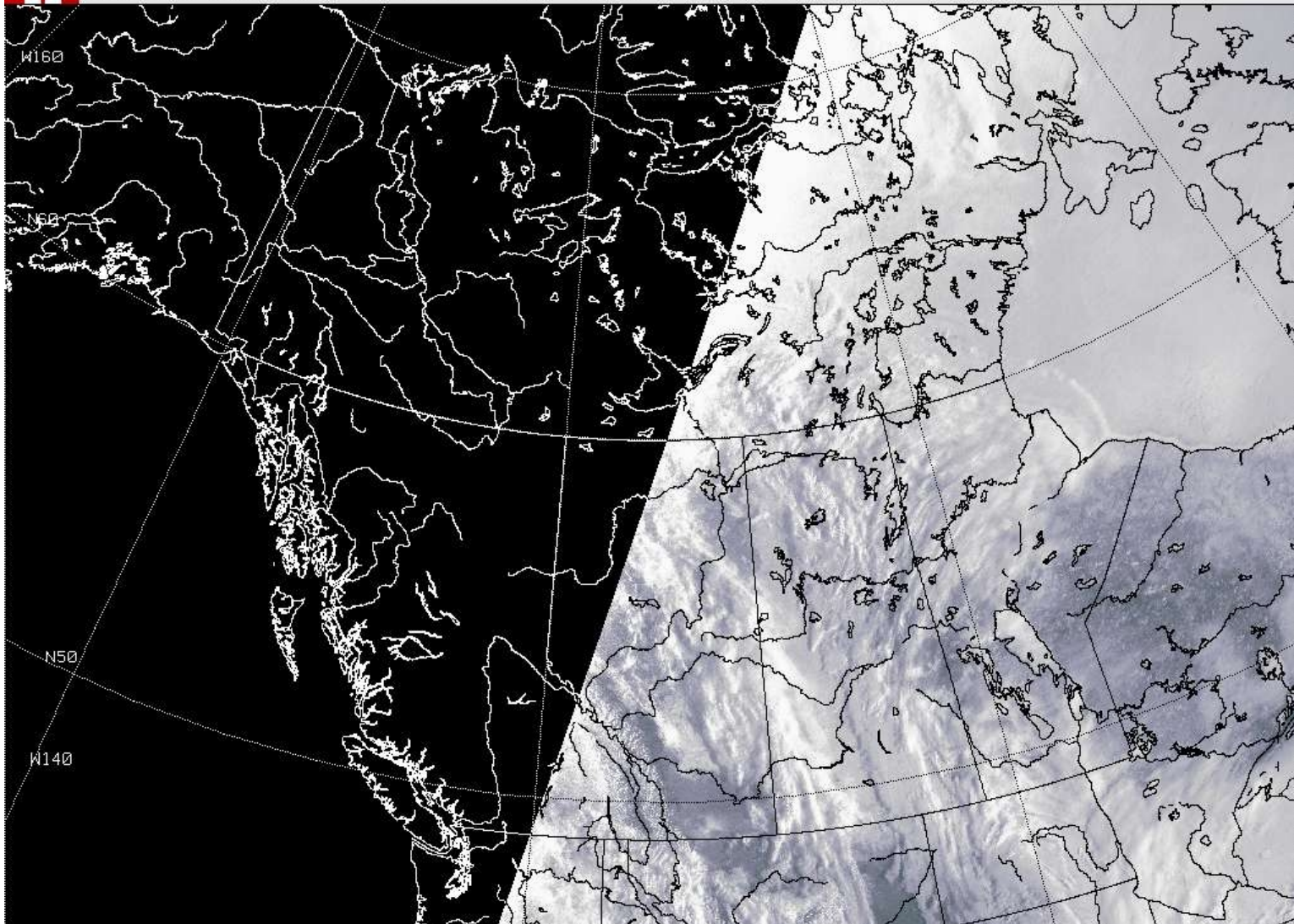
Over Alberta:

- no high cloud
- patchy stratiform cloud at the T ~ -40°C level? (~ 450 hPa level)



Over Alberta:

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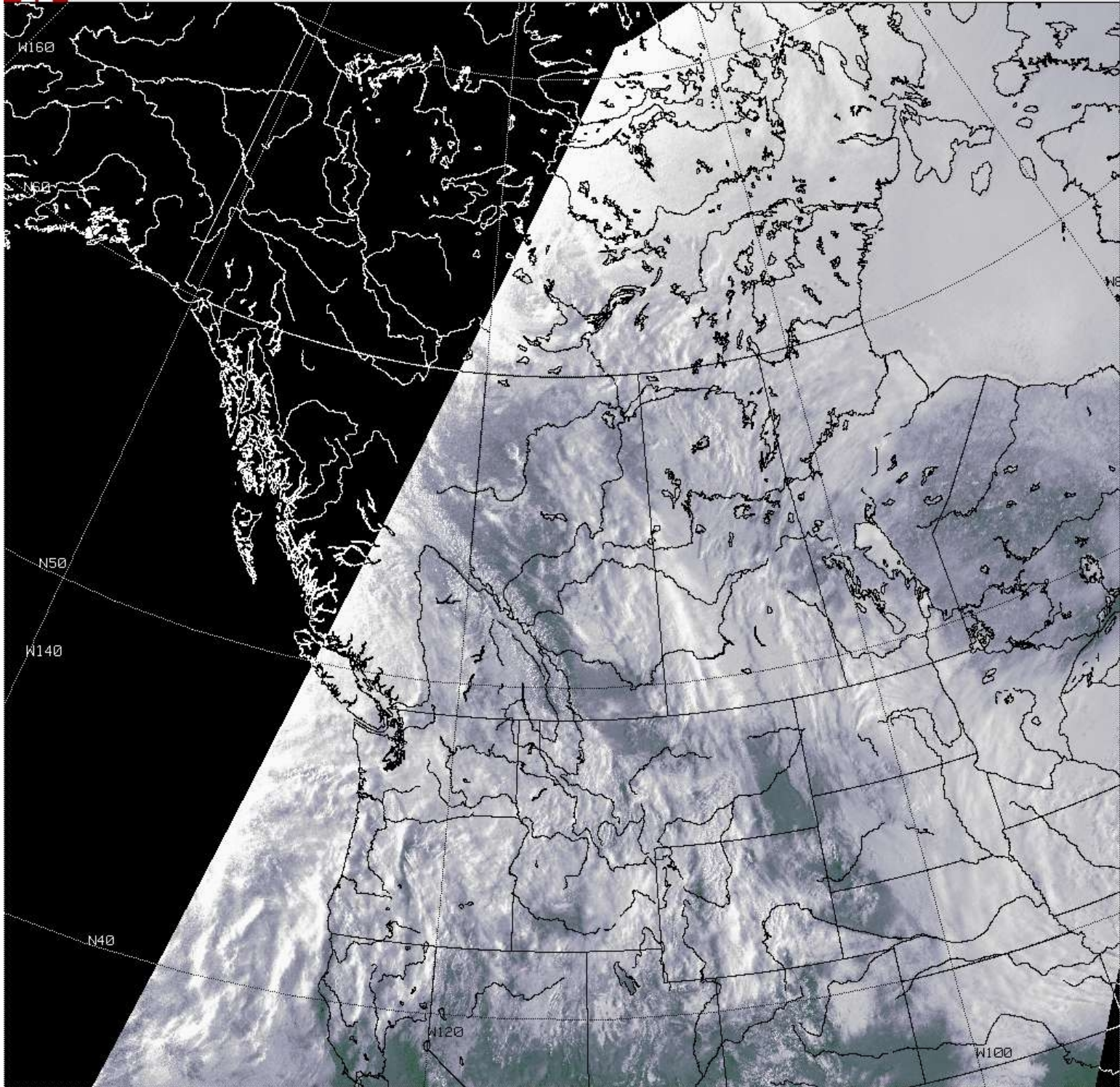


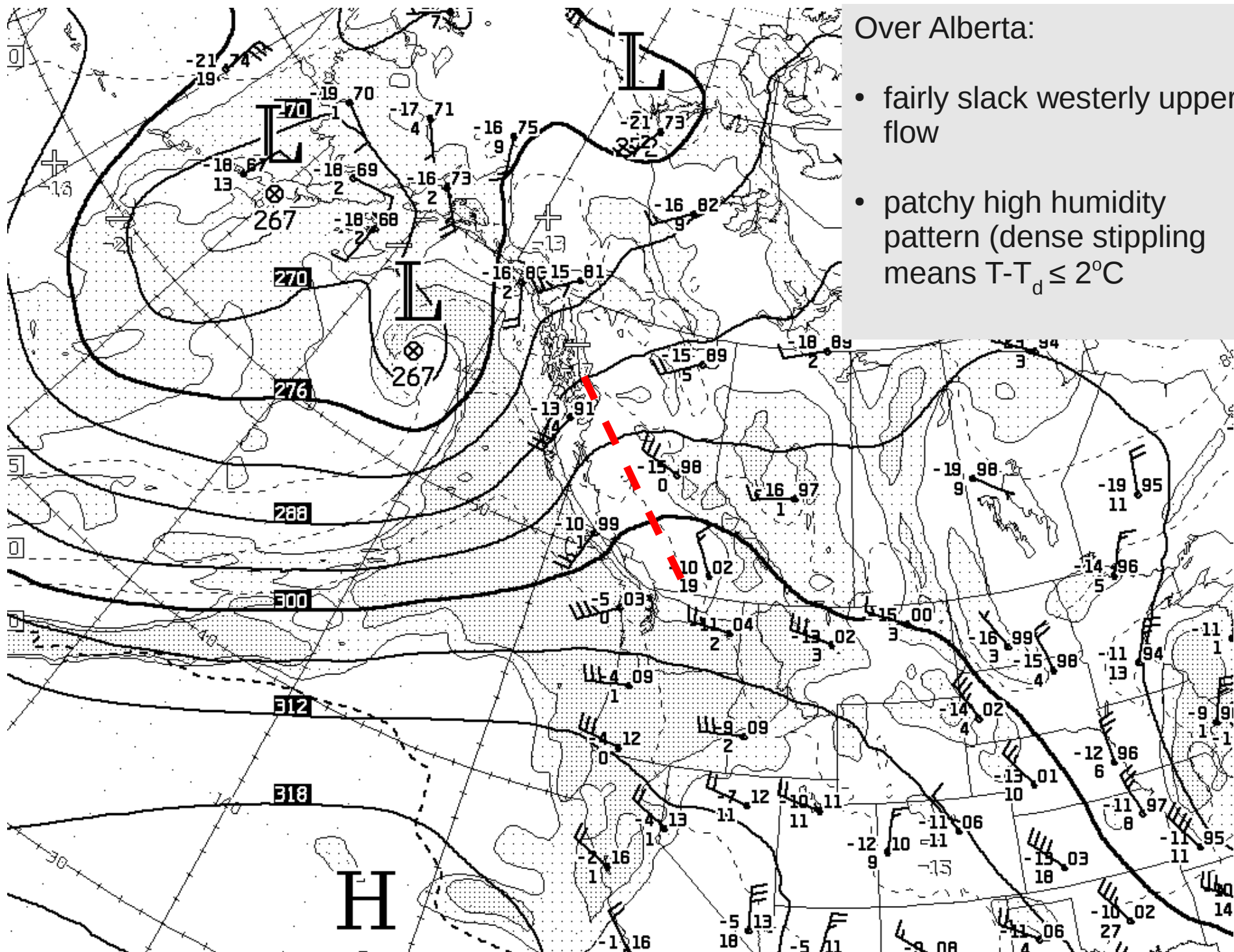
EDMONTON/EDMONTON INTL/AB

METAR CYEG 281500Z 15003KT 15SM FEW077 SCT082 SCT170 BKN250 M10/M13
A3005 RMK AC1AC2AC1CI1 SLP228=

METAR CYEG 281400Z 16006KT 15SM FEW055 BKN077 BKN084 M06/M10 A3004
RMK SC1AC4AS2 VIRGA SLP222=

METAR CYEG 281300Z 17005KT 15SM FEW053 OVC083 M07/M09 A3004 RMK
SC1AS7 VIRGA SLP221=



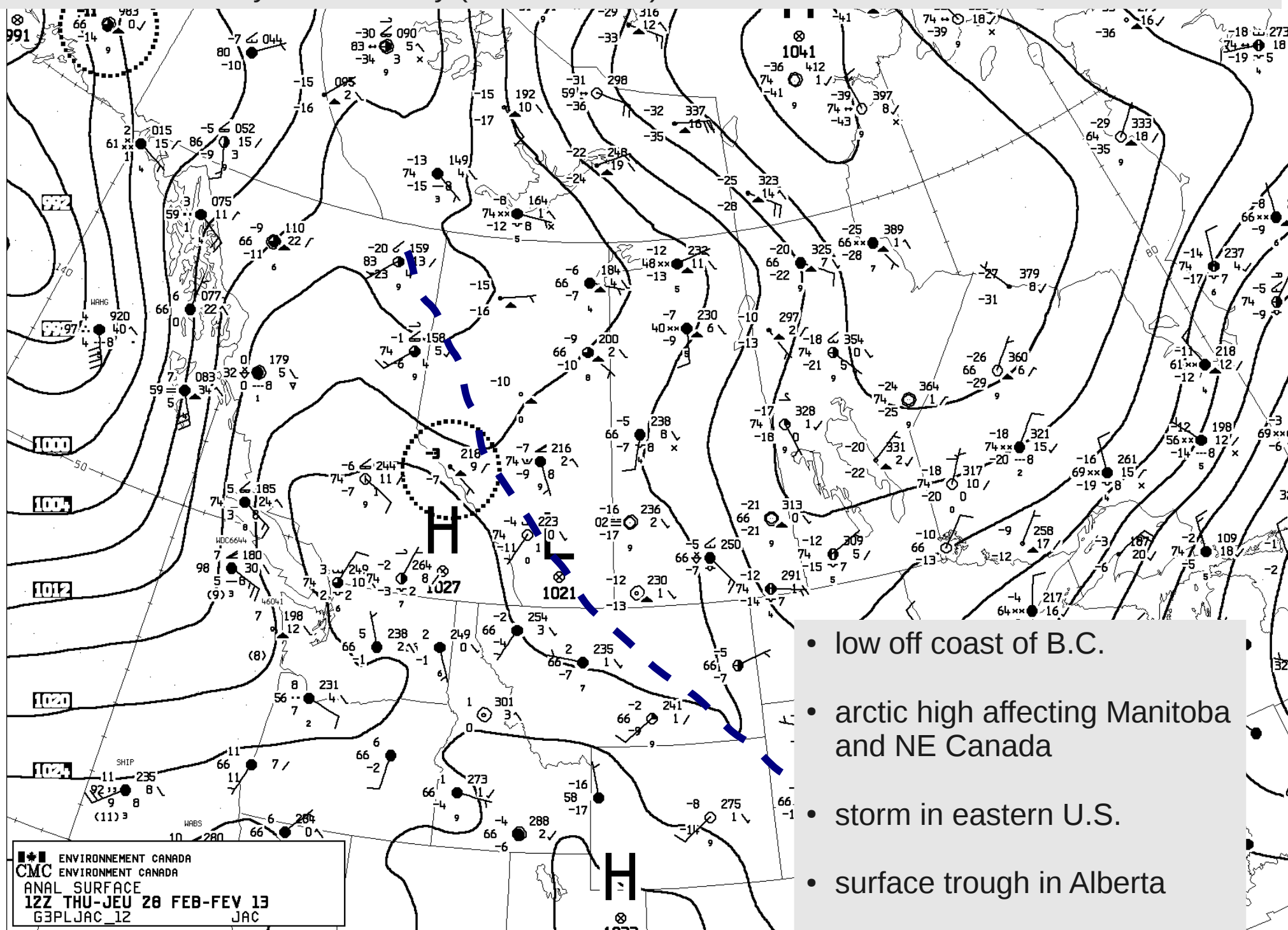


Over Alberta:

- fairly slack westerly upper flow
- patchy high humidity pattern (dense stippling means $T - T_d \leq 2^\circ\text{C}$)

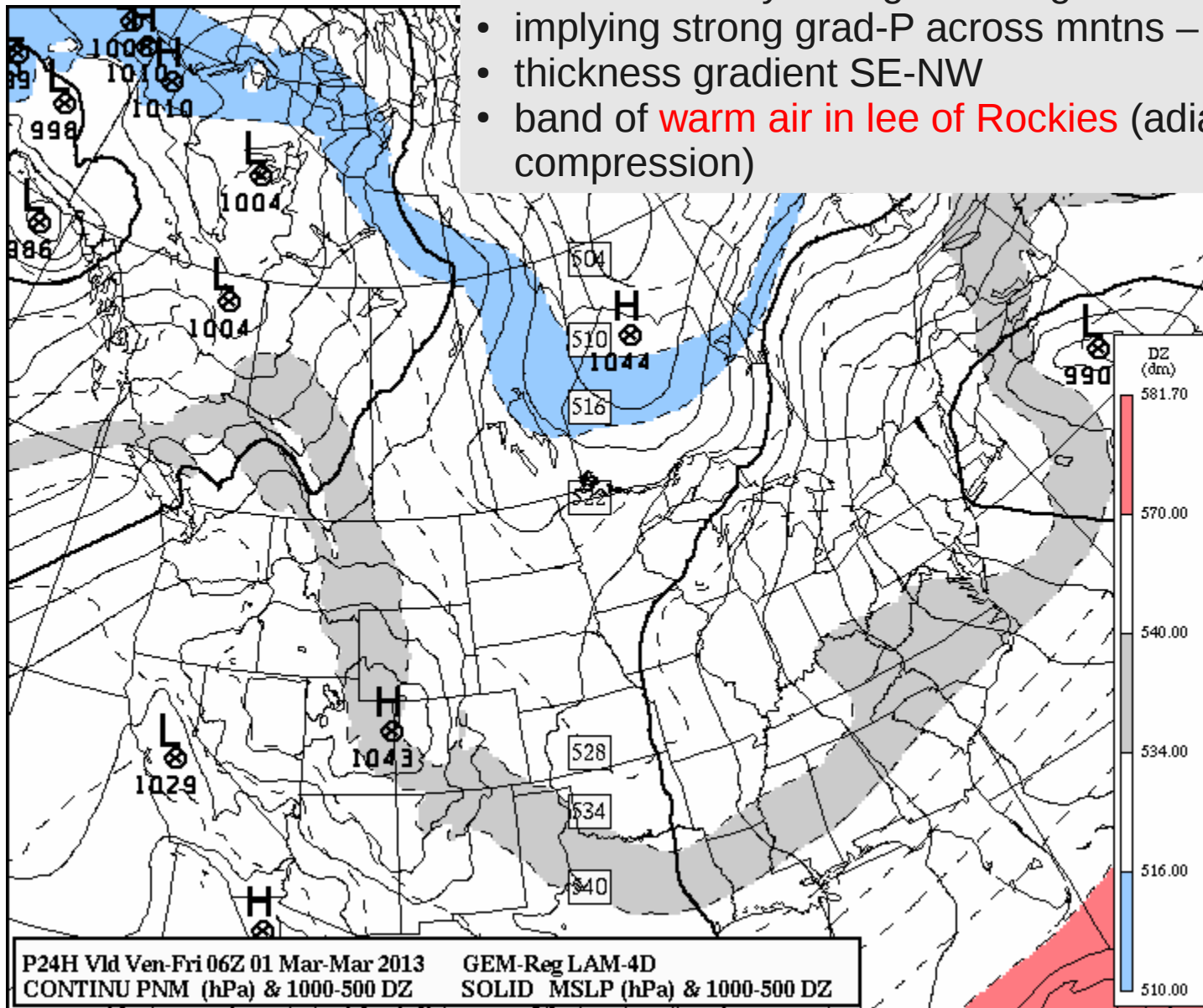
CMC 700 hPa analysis 12Z today (Thurs 28 Feb)

CMC surface analysis 12Z today (Thurs 28 Feb)



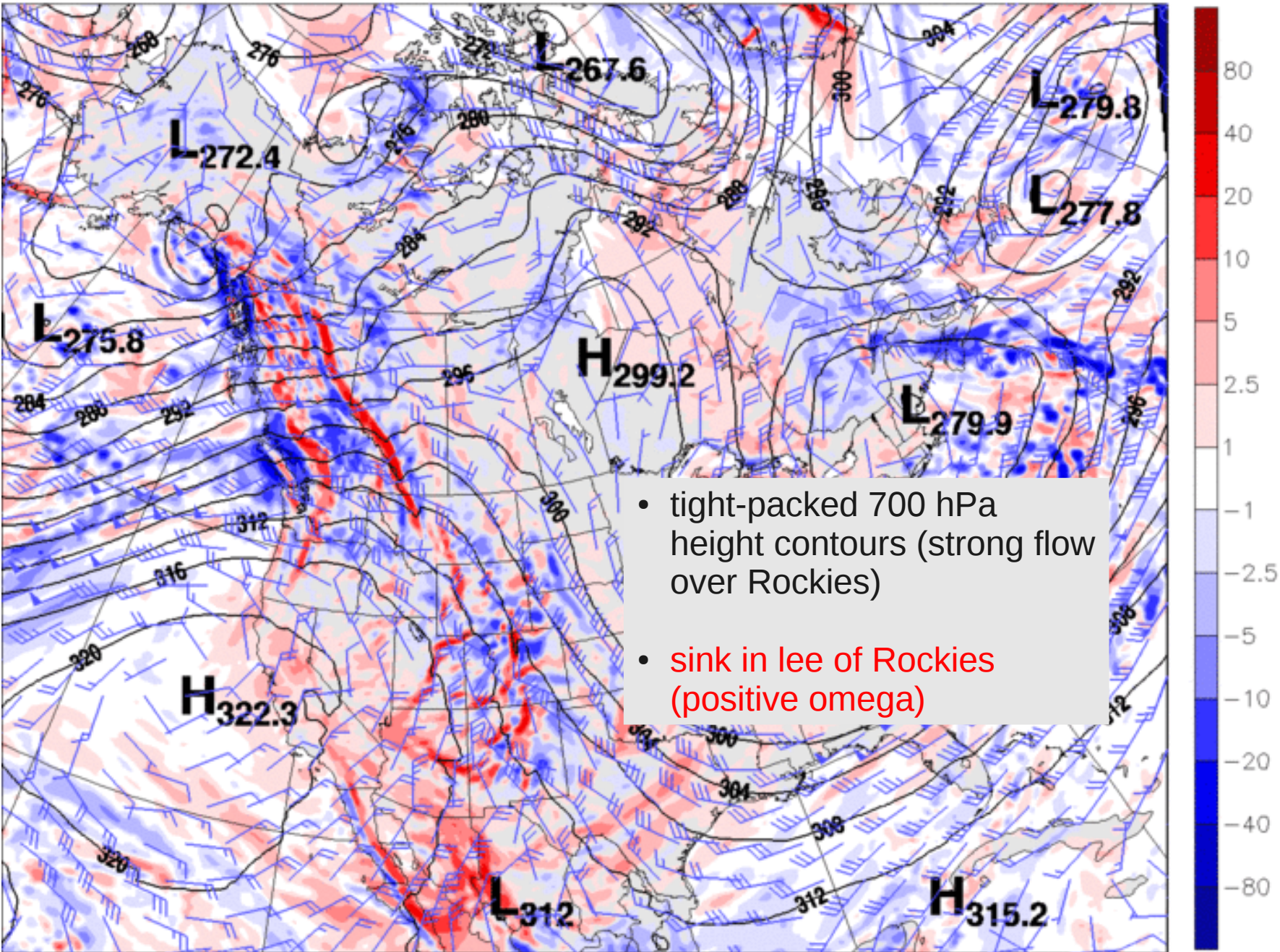
Now concerning lee trough & winds anticipated by MSC forecasters...

- isobars identify strong lee trough in Alberta
- implying strong grad-P across mntns – gap winds
- thickness gradient SE-NW
- band of **warm air in lee of Rockies** (adiabatic compression)



GEM reg 24-h prog initialized 06Z today (Thurs 28 Feb) and valid 06Z Friday (11 pm today)

— 700-hPa Wind Barbs (knots)
— 700-hPa Heights (dam)
— 700-hPa Vertical Motion ($1E-1$ Pa/s)




GEM reg 24-h prog initialized 06Z today (Thurs 28 Feb) and valid 06Z Friday (11 pm today)

Edmonton








Current Conditions

[More info](#)

 -5 °C	Observed at: Edmonton City Centre Airport		
	Date: 8:00 AM MST Thursday 28 February 2013		
	Condition: Mostly Cloudy	Temperature: -5.5°C	
	Pressure: 102.1 kPa	Dewpoint: -9.2°C	
	Tendency: rising	Humidity: 75 %	
	Visibility: 10 km	Wind: SSW 6 km/h	
	Air Quality 5	Wind Chill : -8	
	Health Index :		

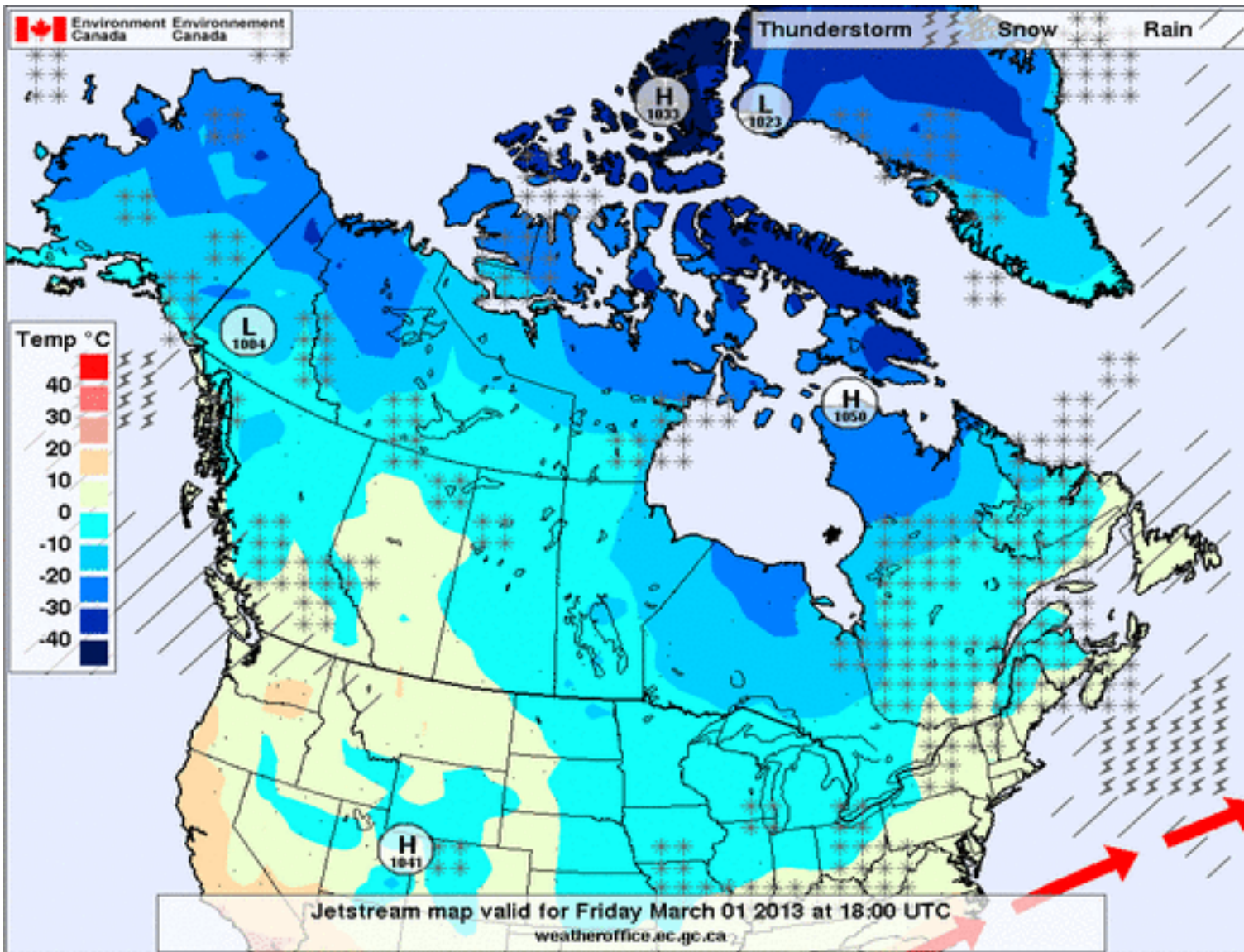
Forecast

[More info](#)

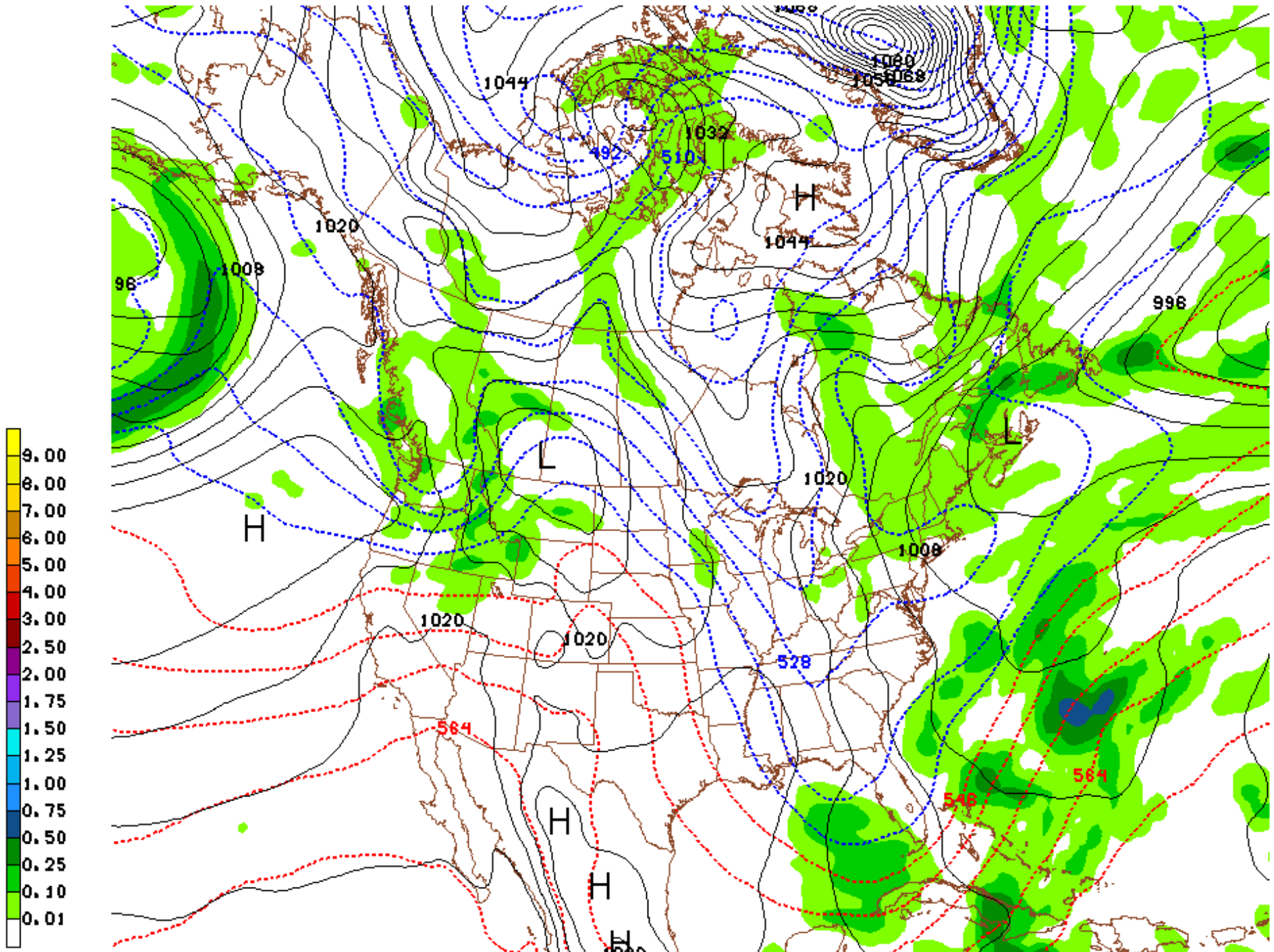
Today	Fri	Sat	Sun	Mon	Tue	Wed
						
2°C	7°C -3°C	3°C -3°C	-2°C -2°C 60%	-6°C -12°C	-3°C -13°C	-3°C -12°C

Issued : 5:00 AM MST Thursday 28 February 2013

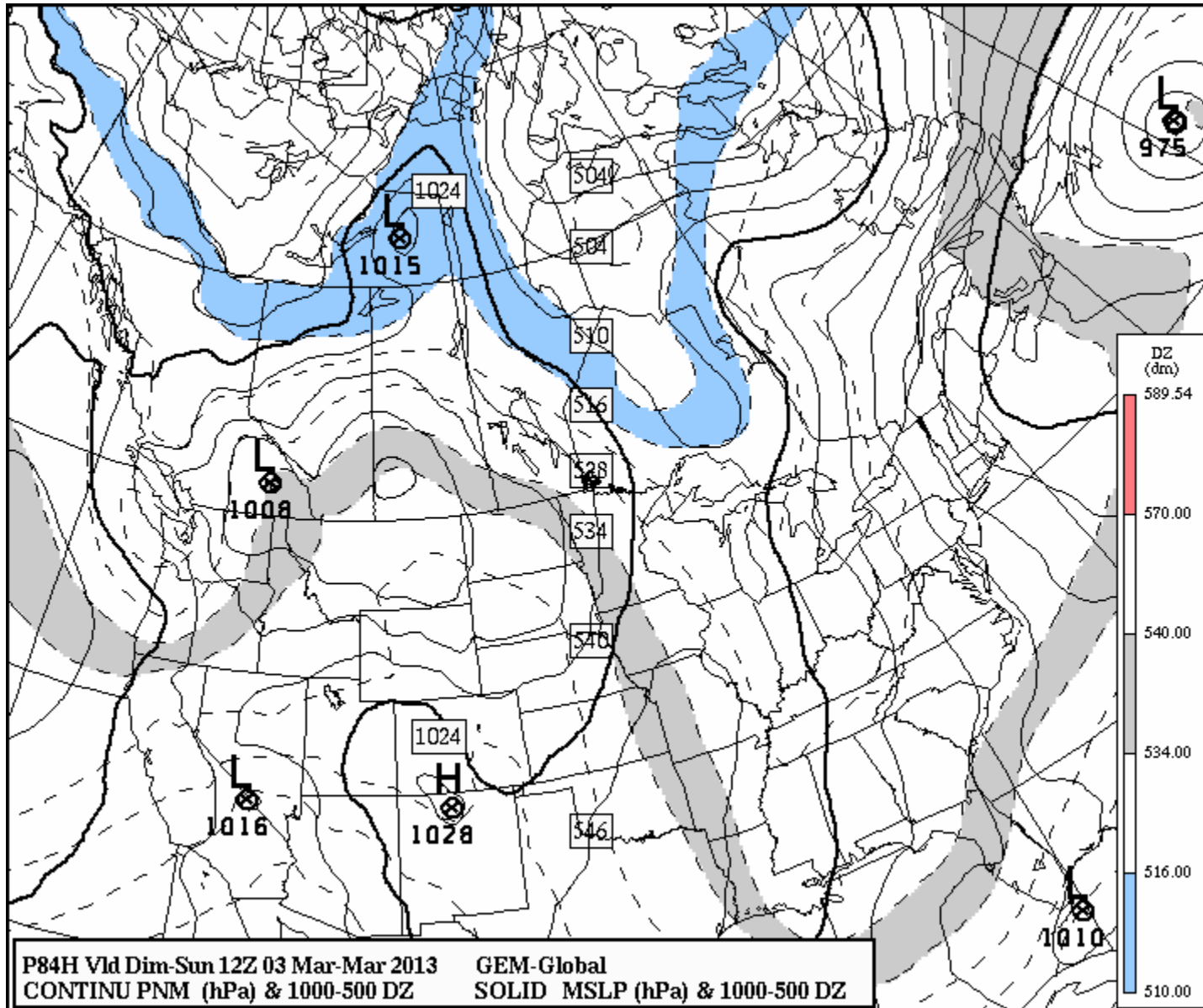
Today	Mainly cloudy. Clearing near noon. High plus 2.
Tonight	Increasing cloudiness this evening. Low minus 3.
Friday	Cloudy. Becoming a mix of sun and cloud late in the afternoon. High 7.
Saturday	Cloudy. Low minus 3. High plus 3.
Sunday	Cloudy with 60 percent chance of flurries. Low minus 2. High minus 2.
Monday	Sunny. Low minus 12. High minus 6.



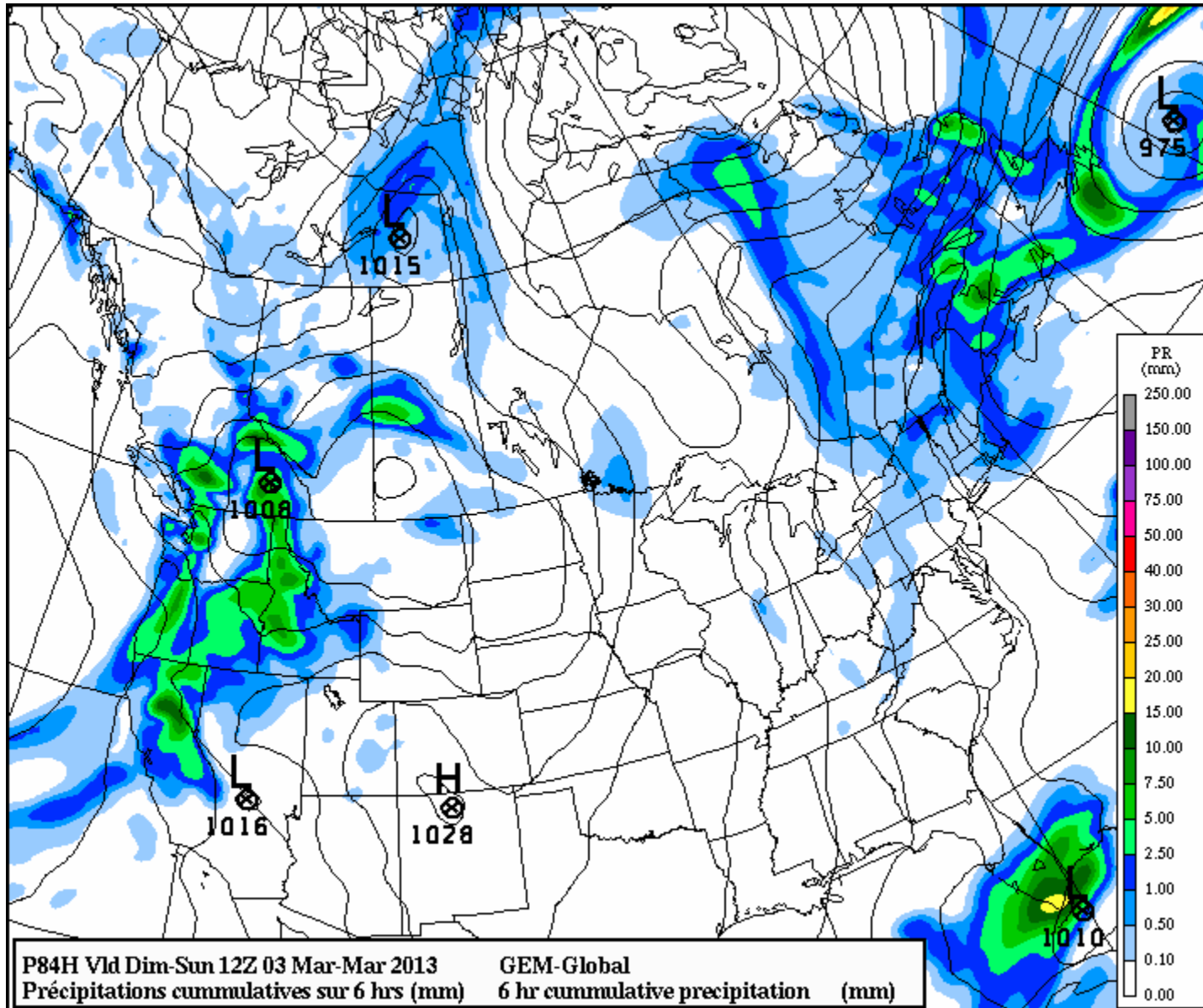
02/28/13 12UTC 072HR FCST VALID SUN 03/03/13 12UTC NCEP/NWS/NOAA



NAM 72-h prog initialized 12Z today valid 12Z Sunday



GEM glbl 84-h prog initialized 00Z today valid 12Z Sunday



GEM glbl 84-h prog initialized 00Z today valid 12Z Sunday