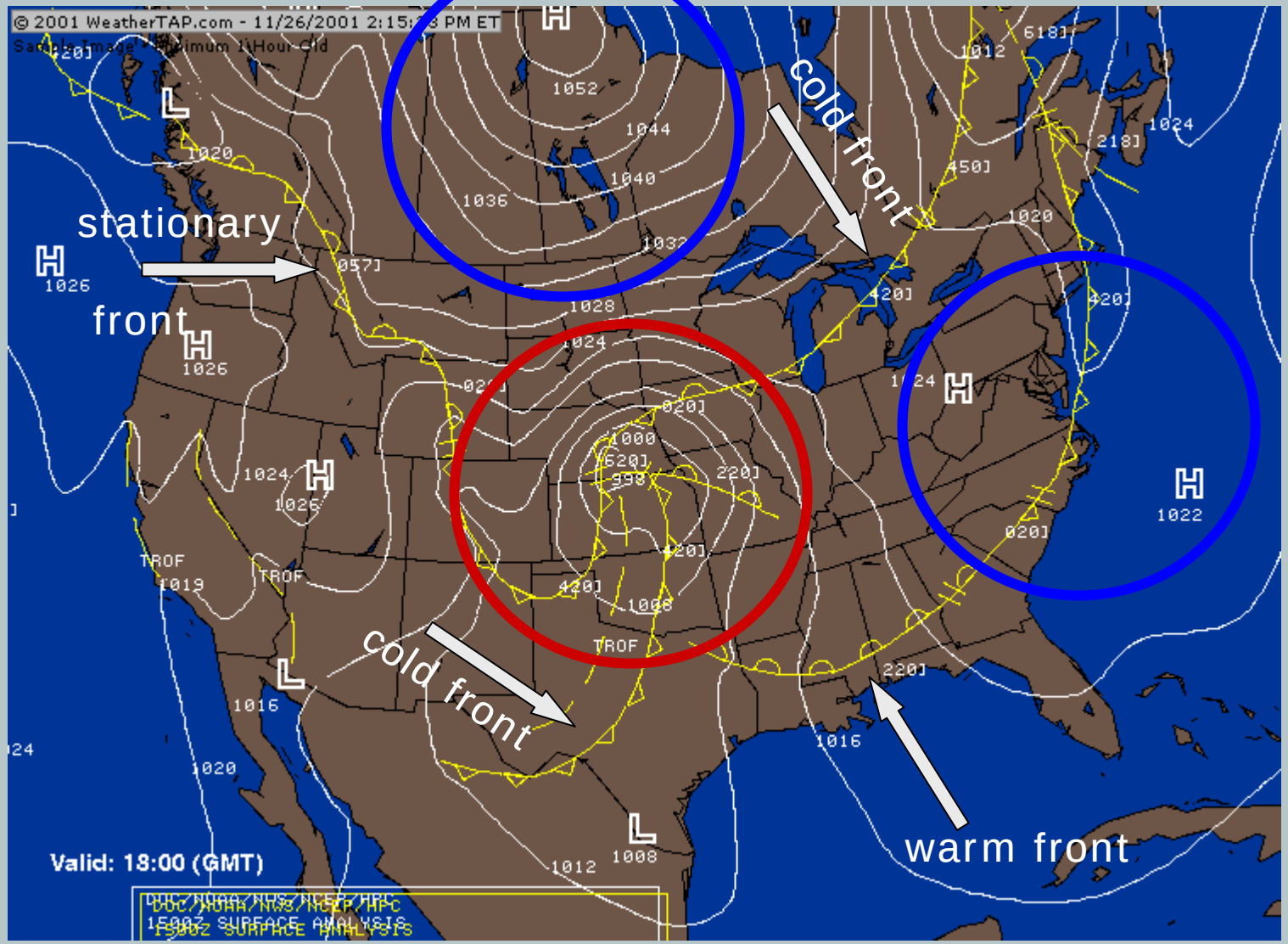
Mid-continent low pressure system



Interaction with the jet stream

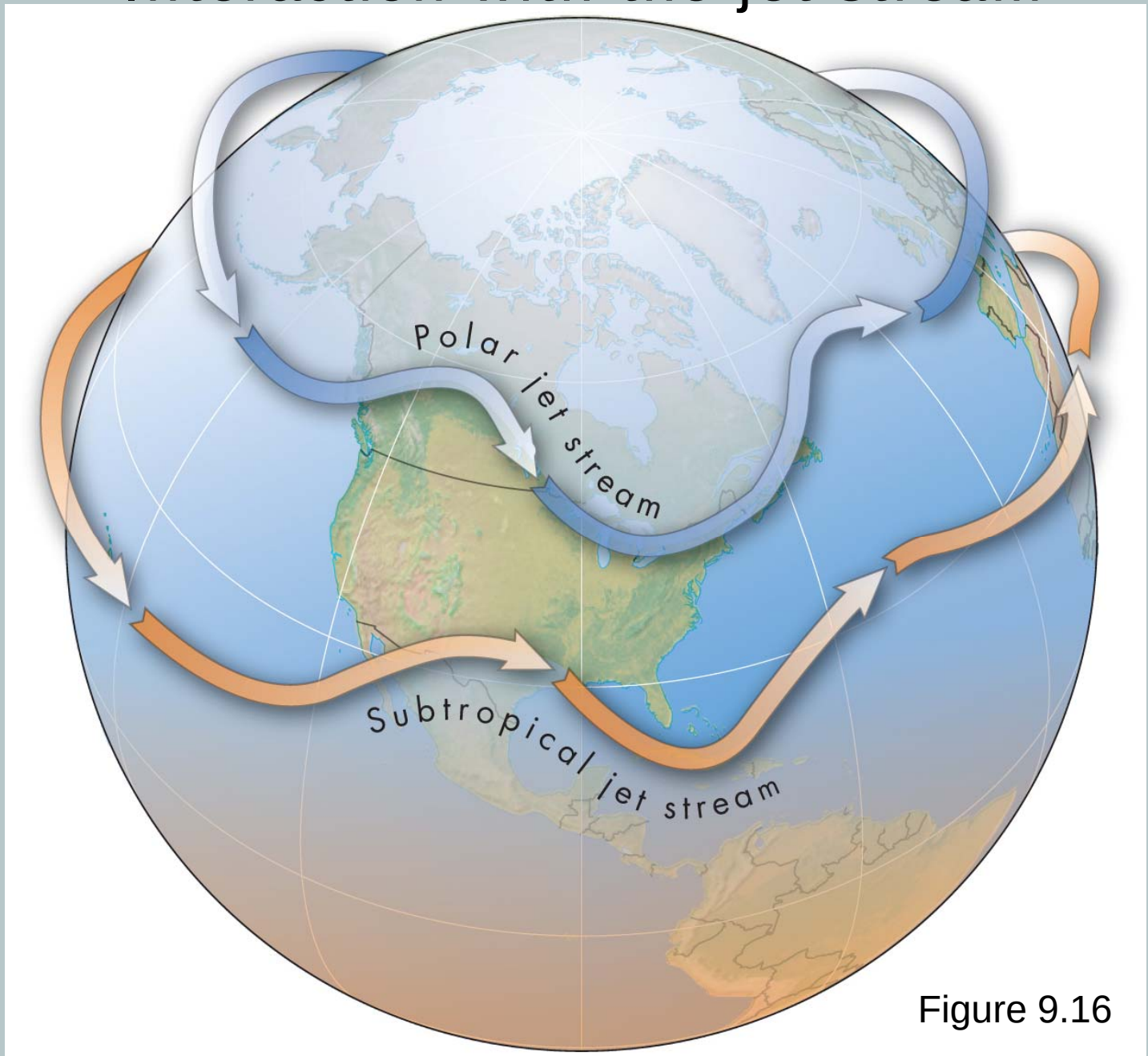
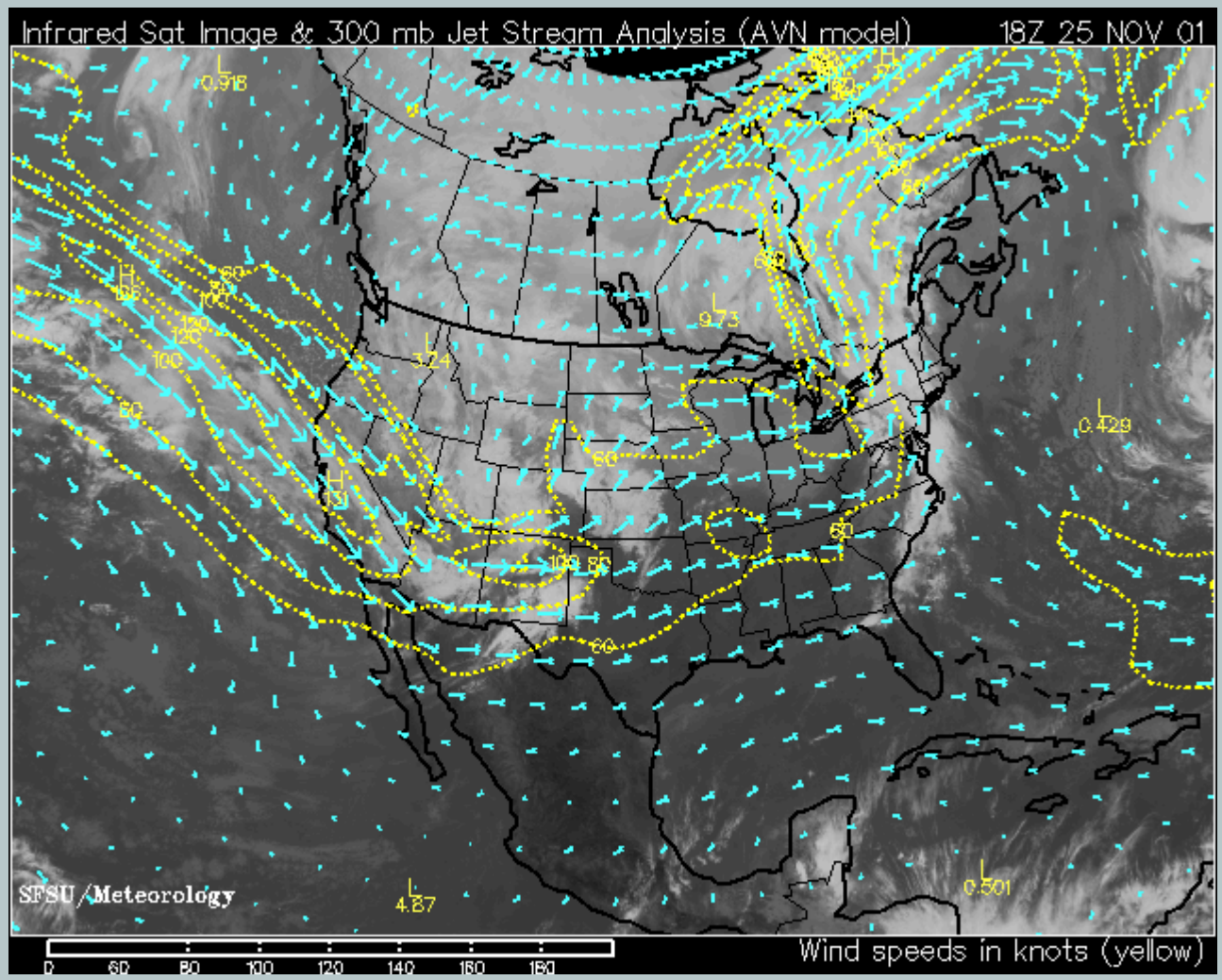
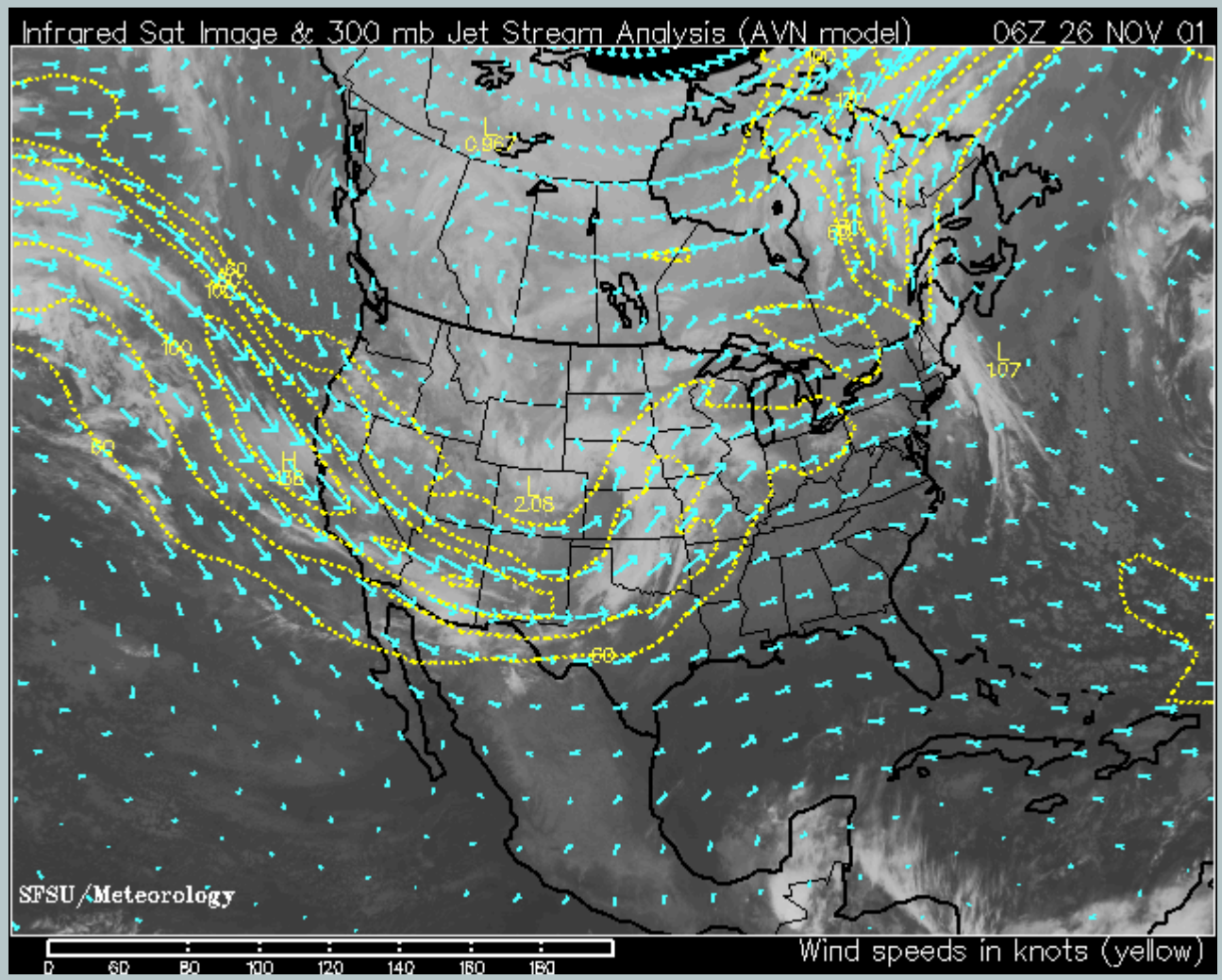


Figure 9.16

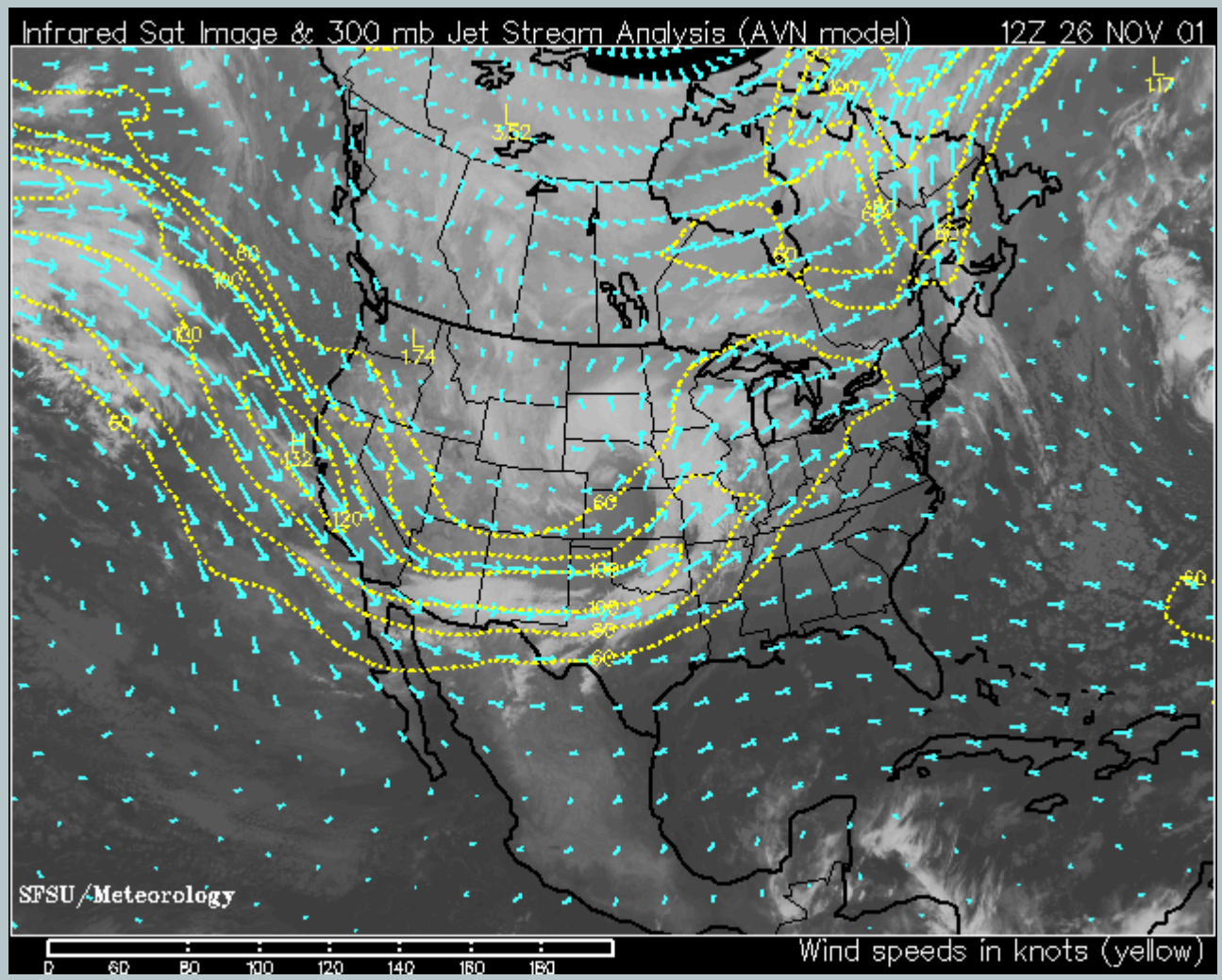
Interaction with the jet stream

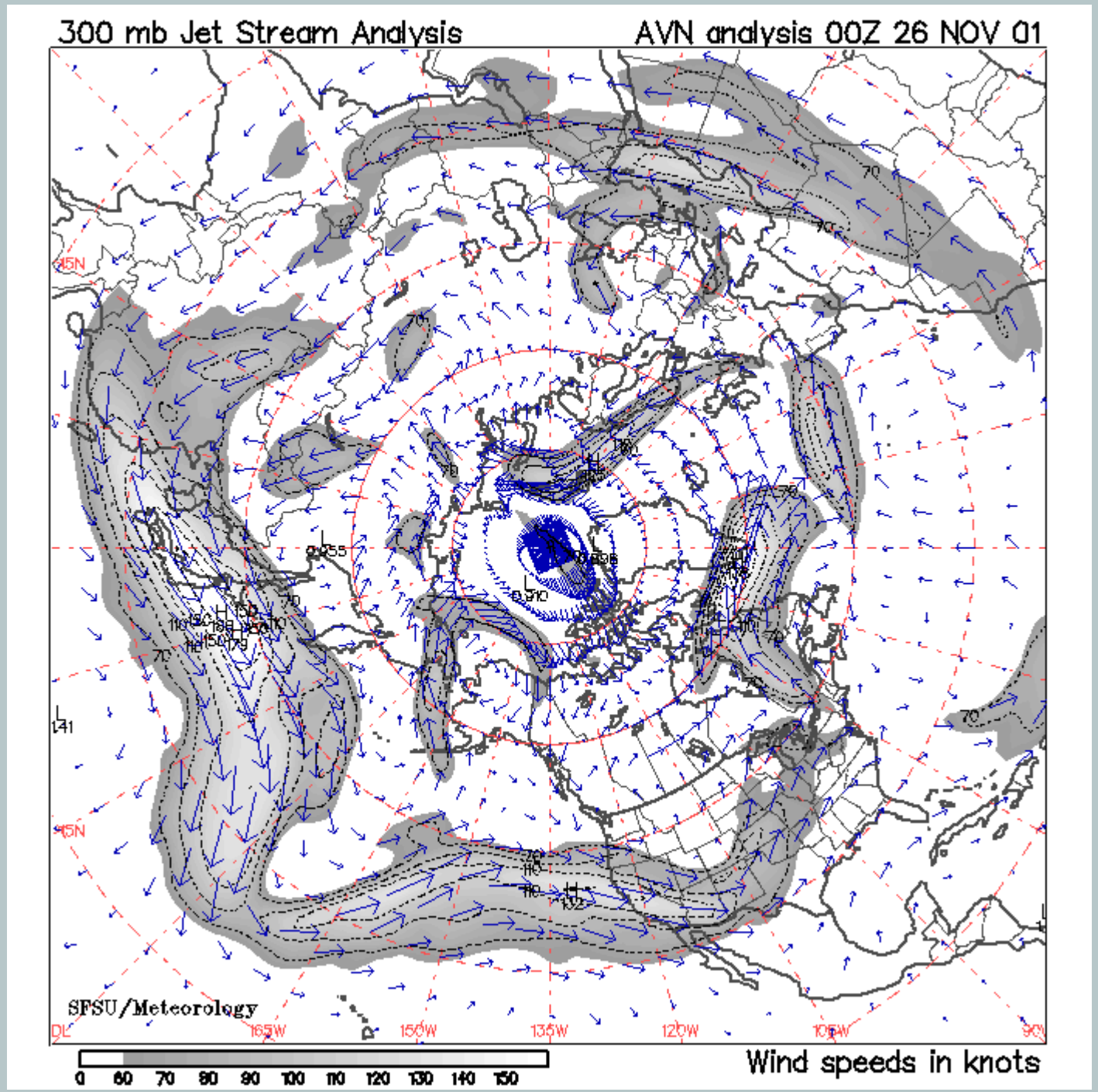


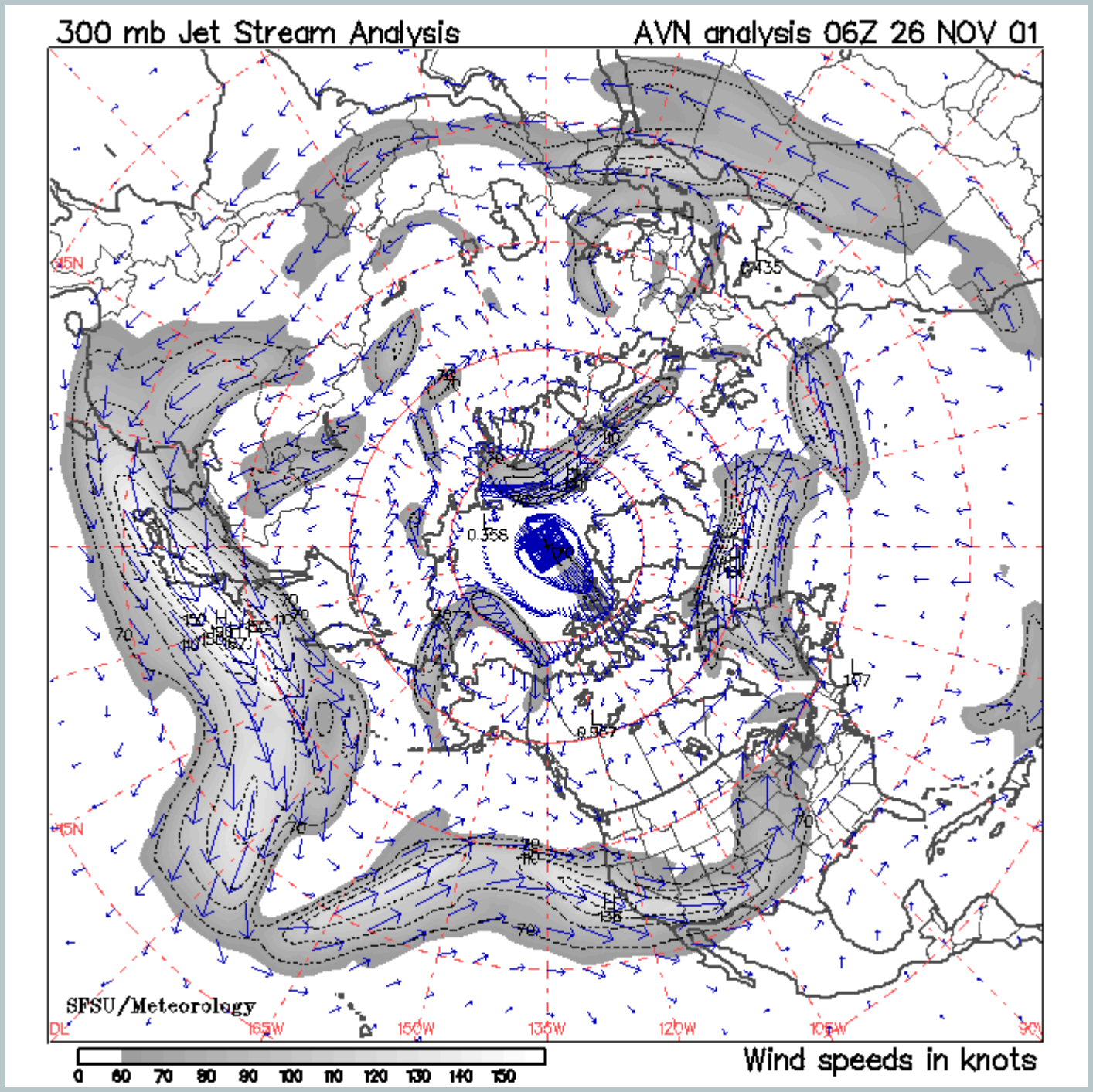
Interaction with the jet stream

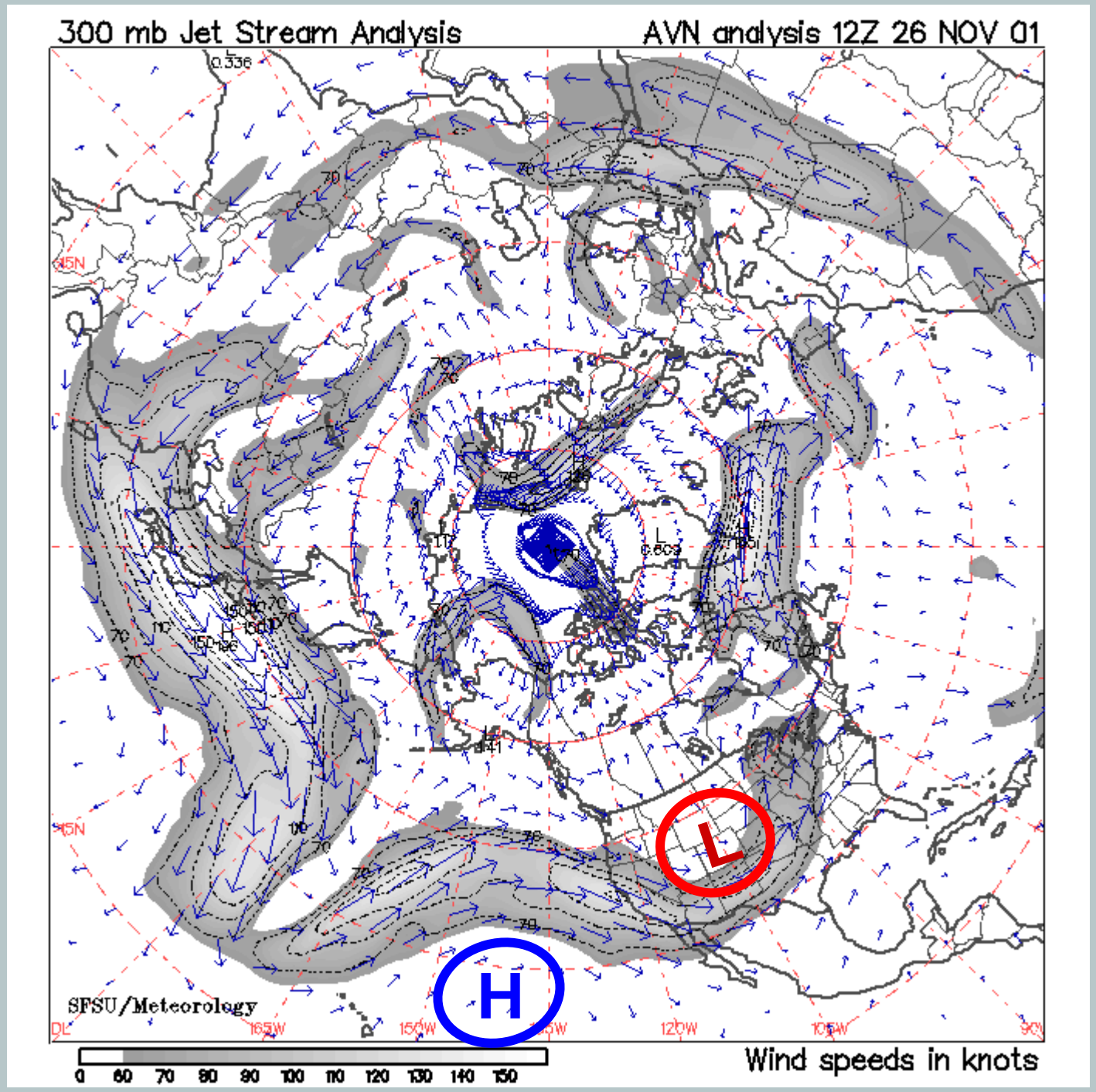


Interaction with the jet stream

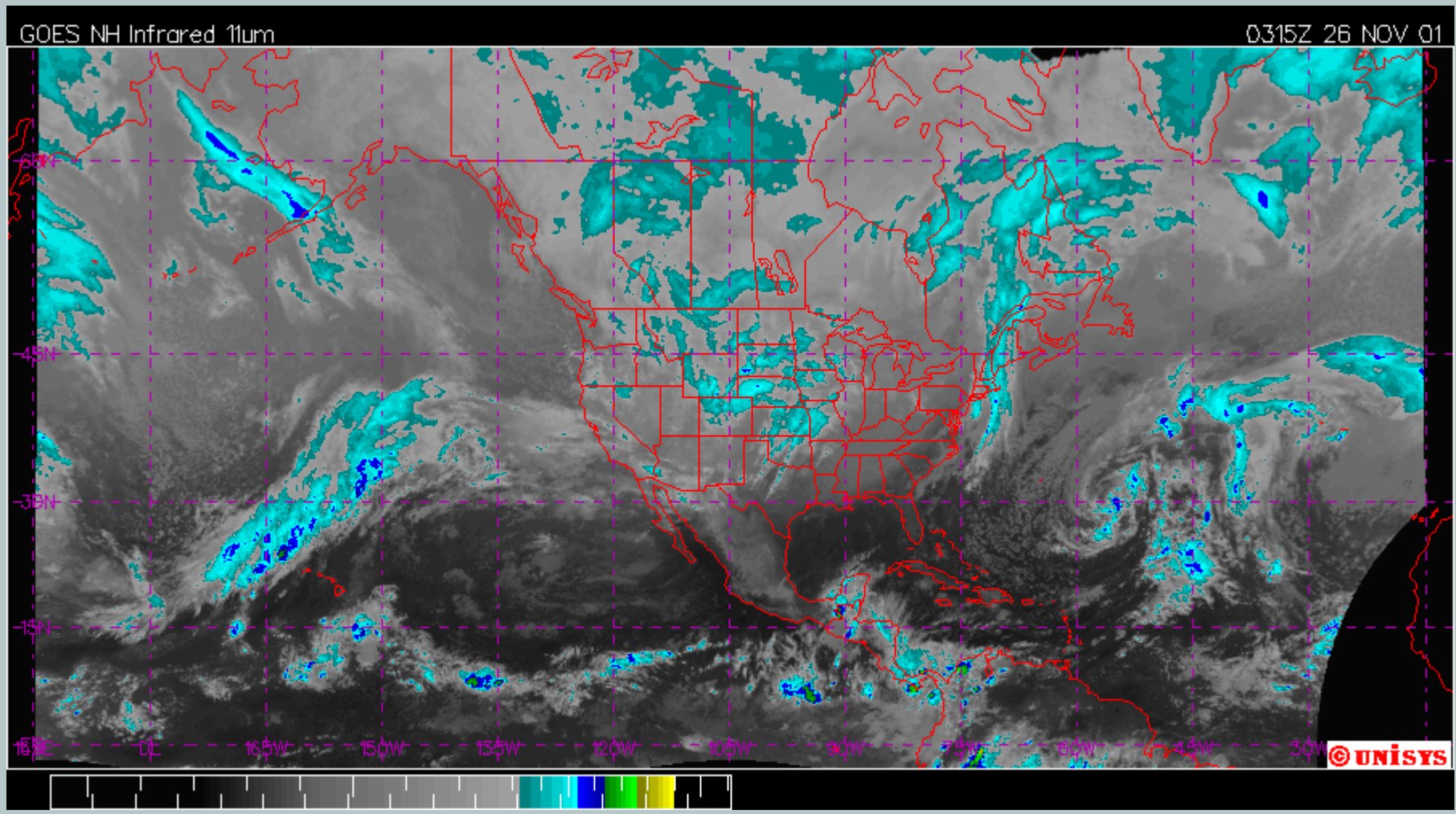



300 mb Jet Stream Analysis
AVN analysis 00Z 26 NOV 01
SFSU/Meteorology
0 60 70 80 90 100 110 120 130 140 150
Wind speeds in knots

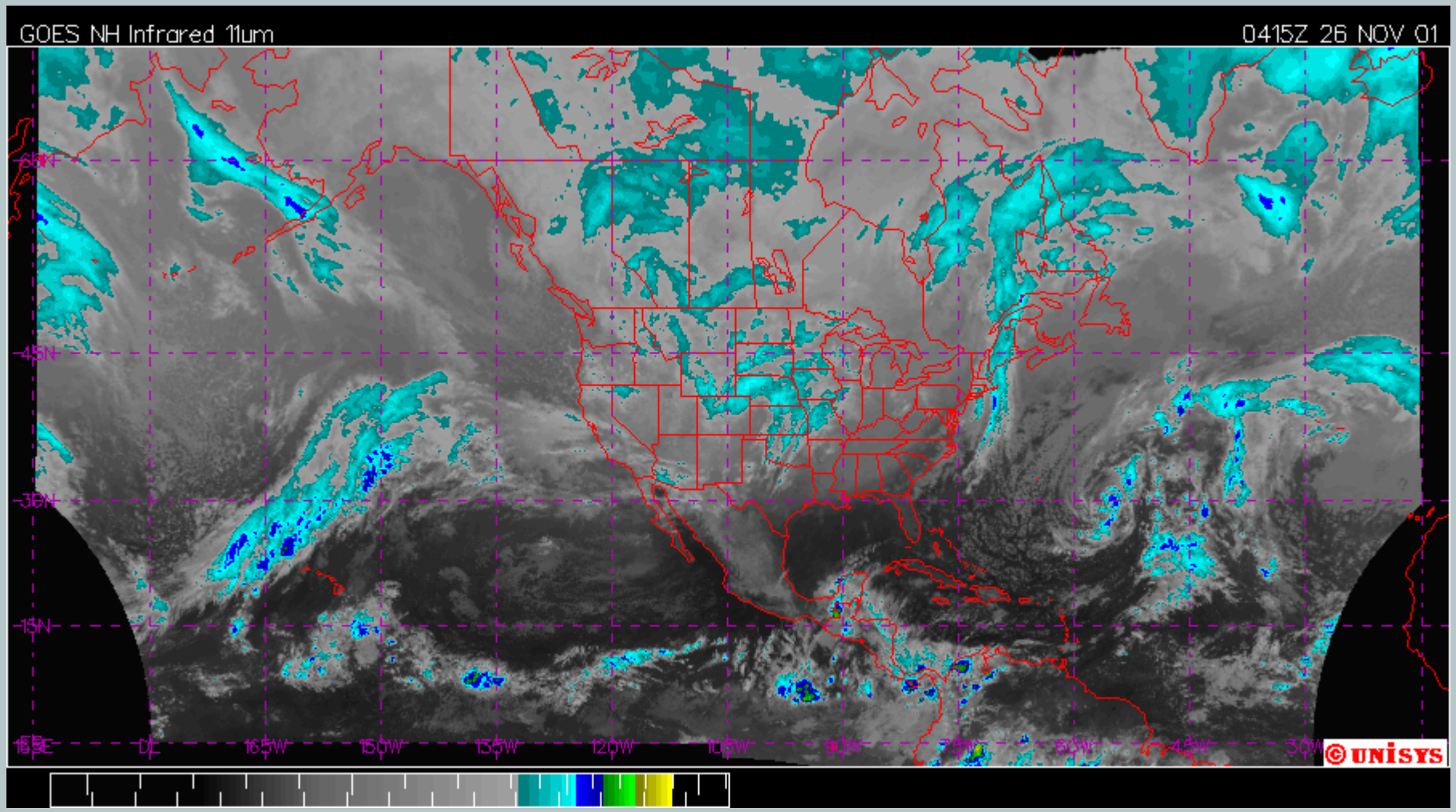

300 mb Jet Stream Analysis
AVN analysis 06Z 26 NOV 01
SFSU/Meteorology
0 60 70 80 90 100 110 120 130 140 150
Wind speeds in knots


300 mb Jet Stream Analysis
AVN analysis 12Z 26 NOV 01
L
H
SFSU/Meteorology
0 60 70 80 90 100 110 120 130 140 150
Wind speeds in knots

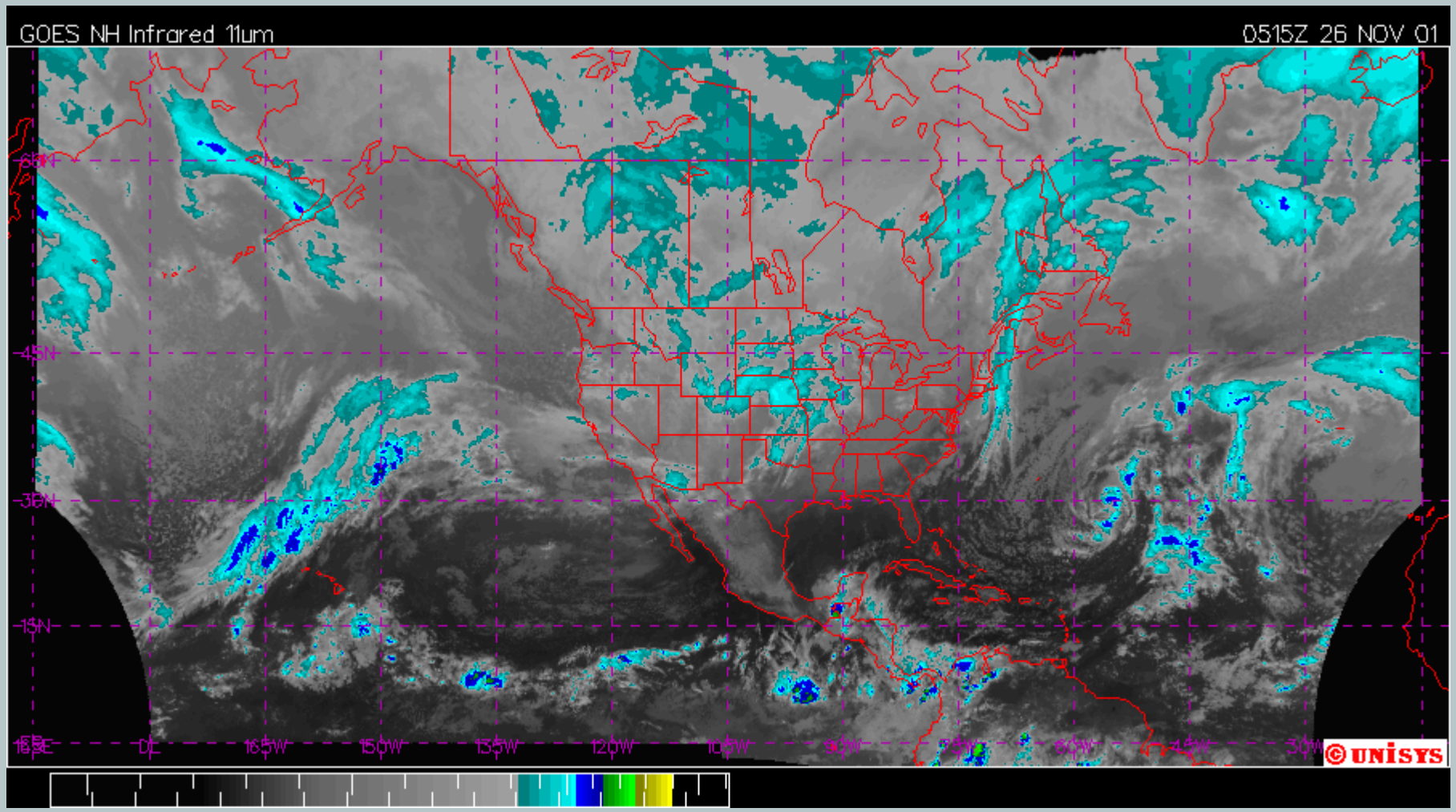
Two things to notice: source of moisture & source of spin

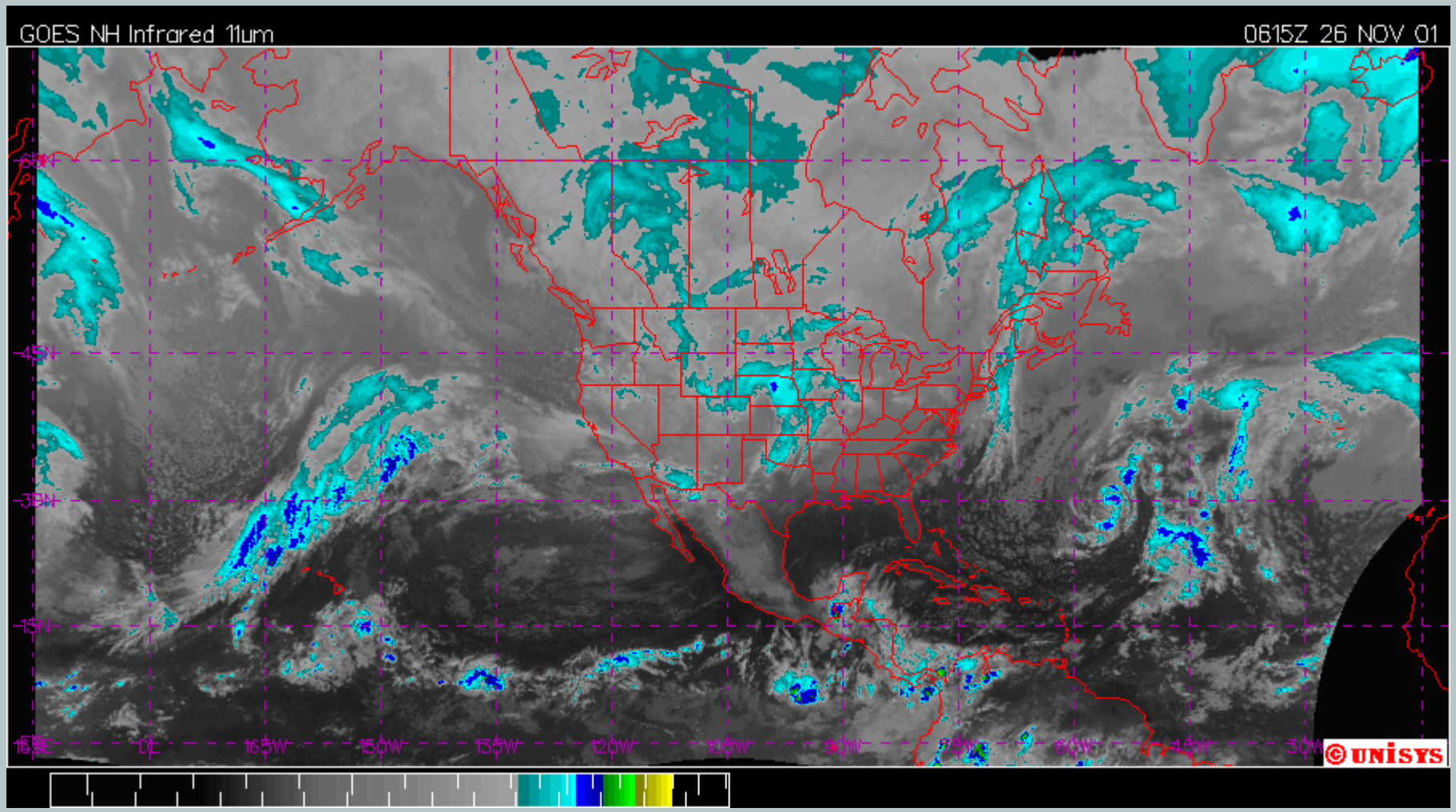


Two things to notice: source of moisture & source of spin

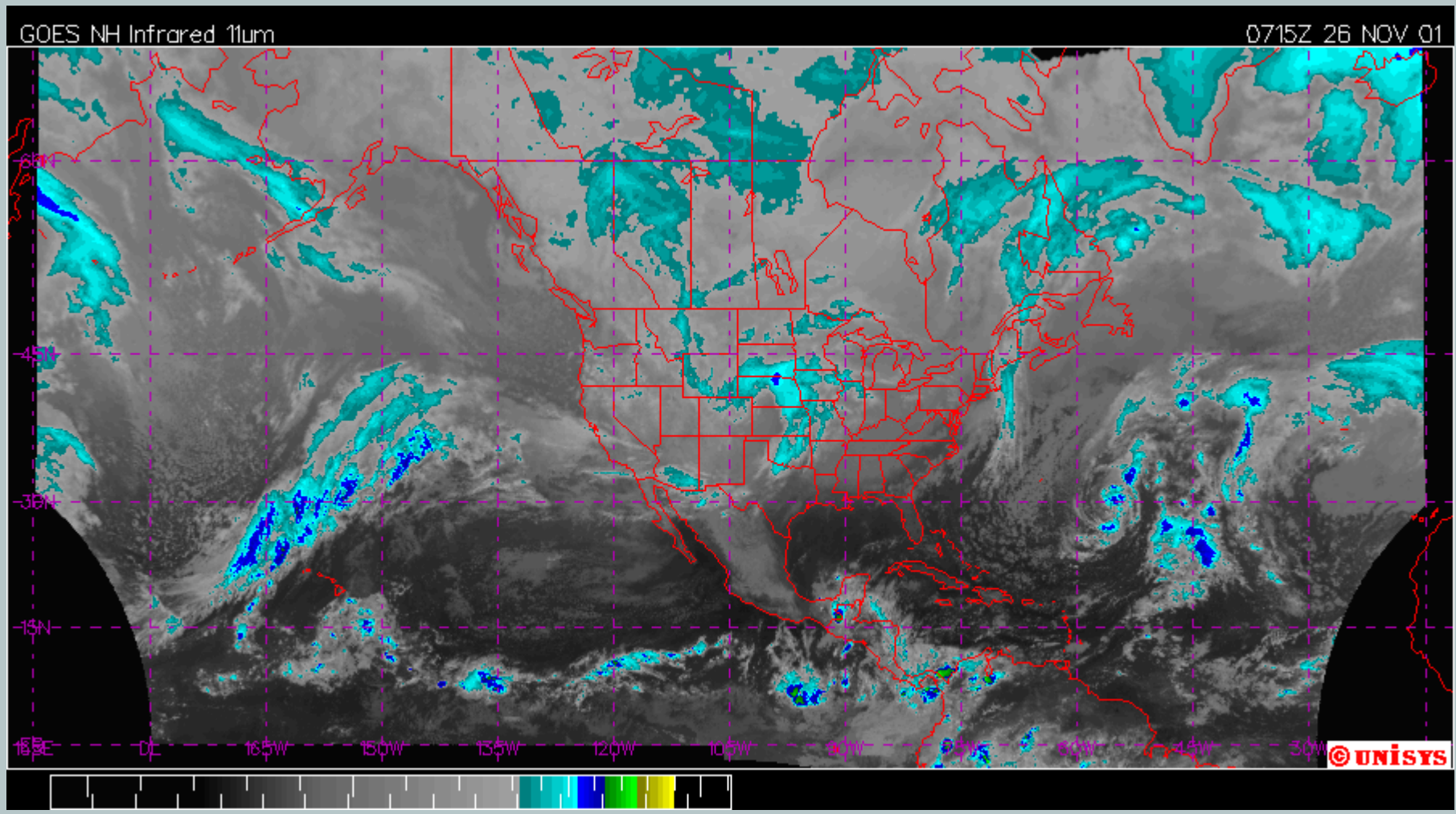


Two things to notice: source of moisture & source of spin

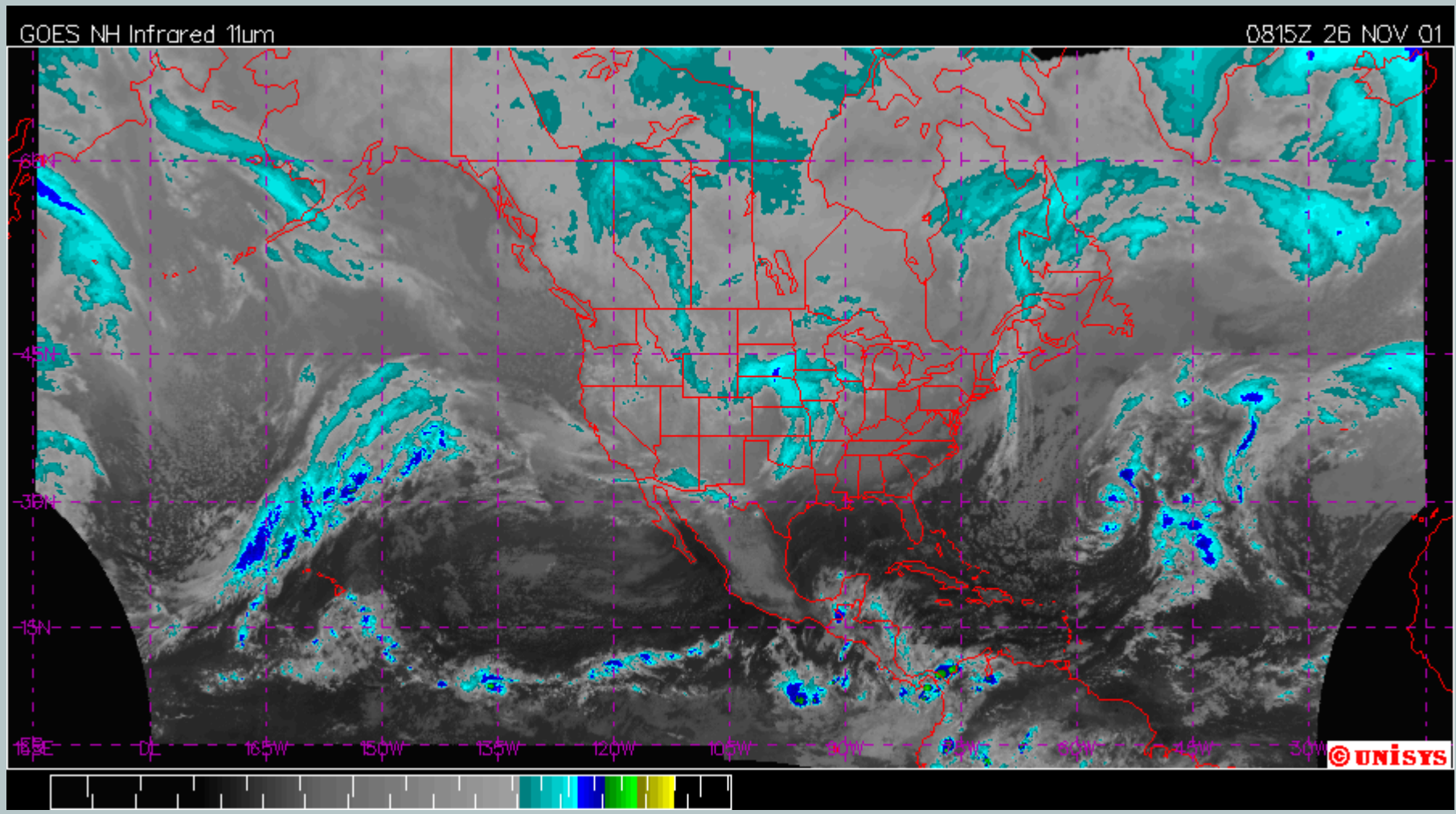



GOES NH Infrared 11um
0615Z 26 NOV 01
60N
45N
30N
15N
180E
0E
165W
150W
135W
120W
105W
90W
75W
60W
45W
30W
©UNISYS

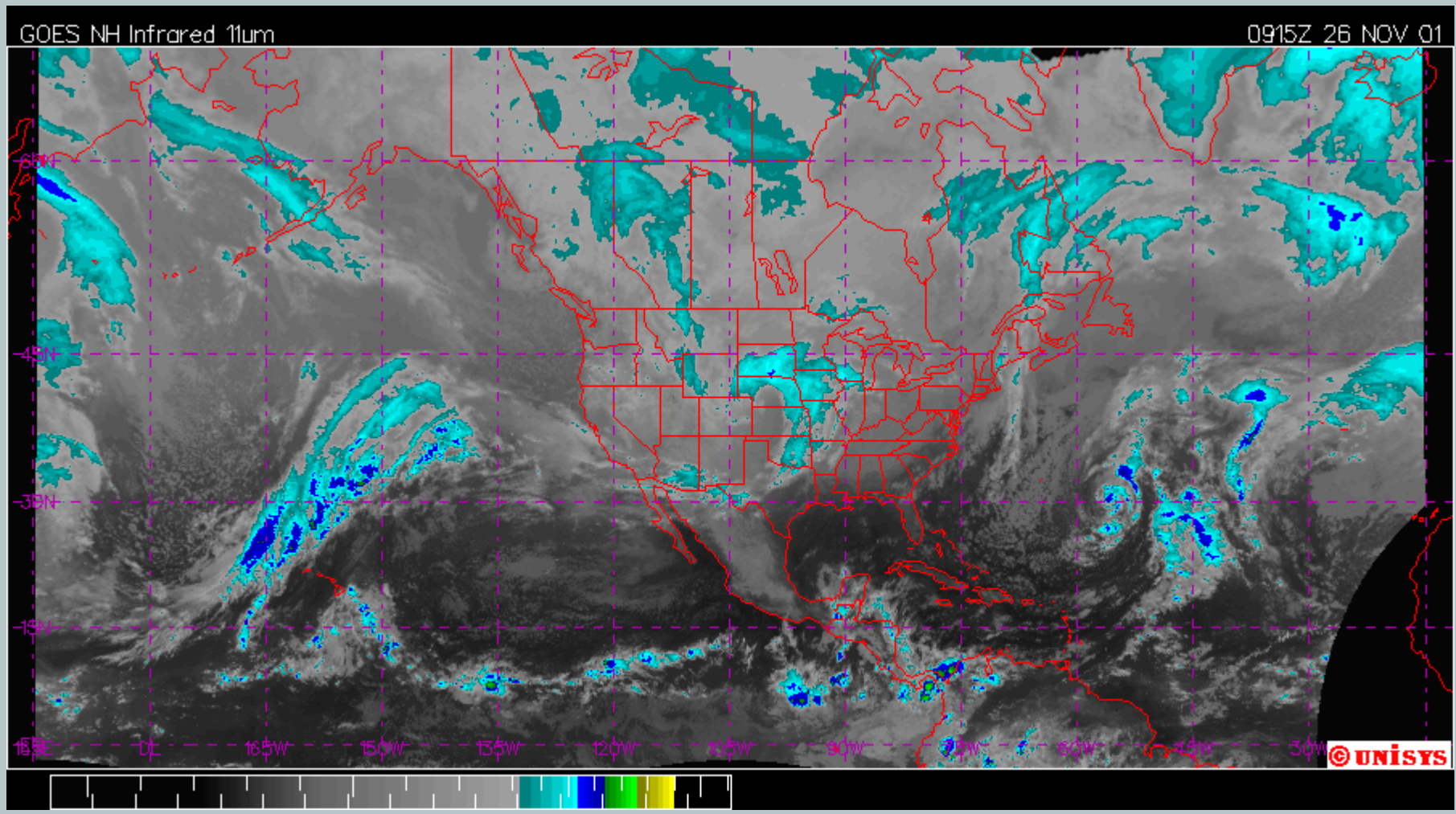
Low-pressure circulation becomes more defined



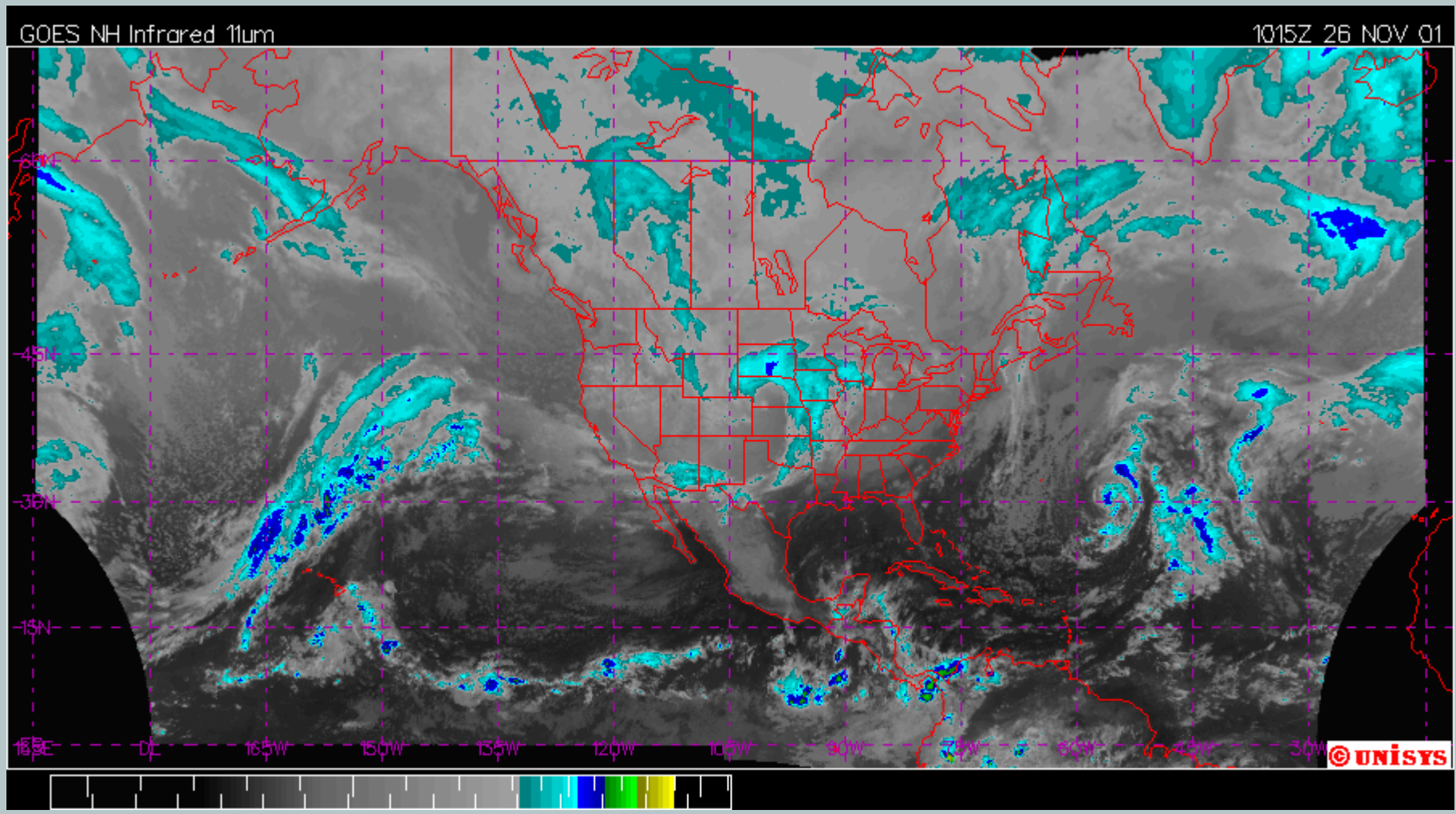
Low-pressure circulation becomes more defined



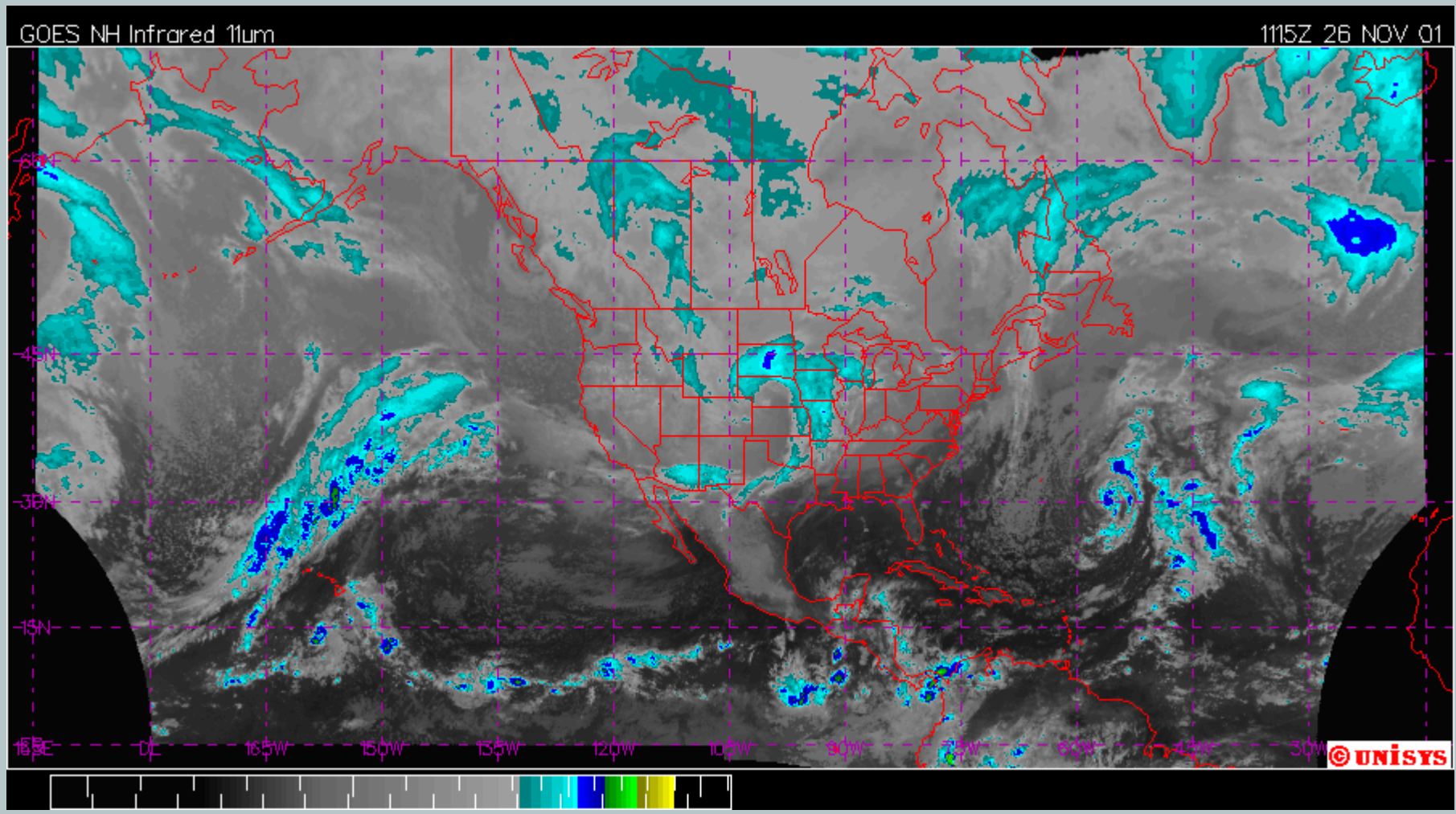
Low-pressure circulation becomes more defined



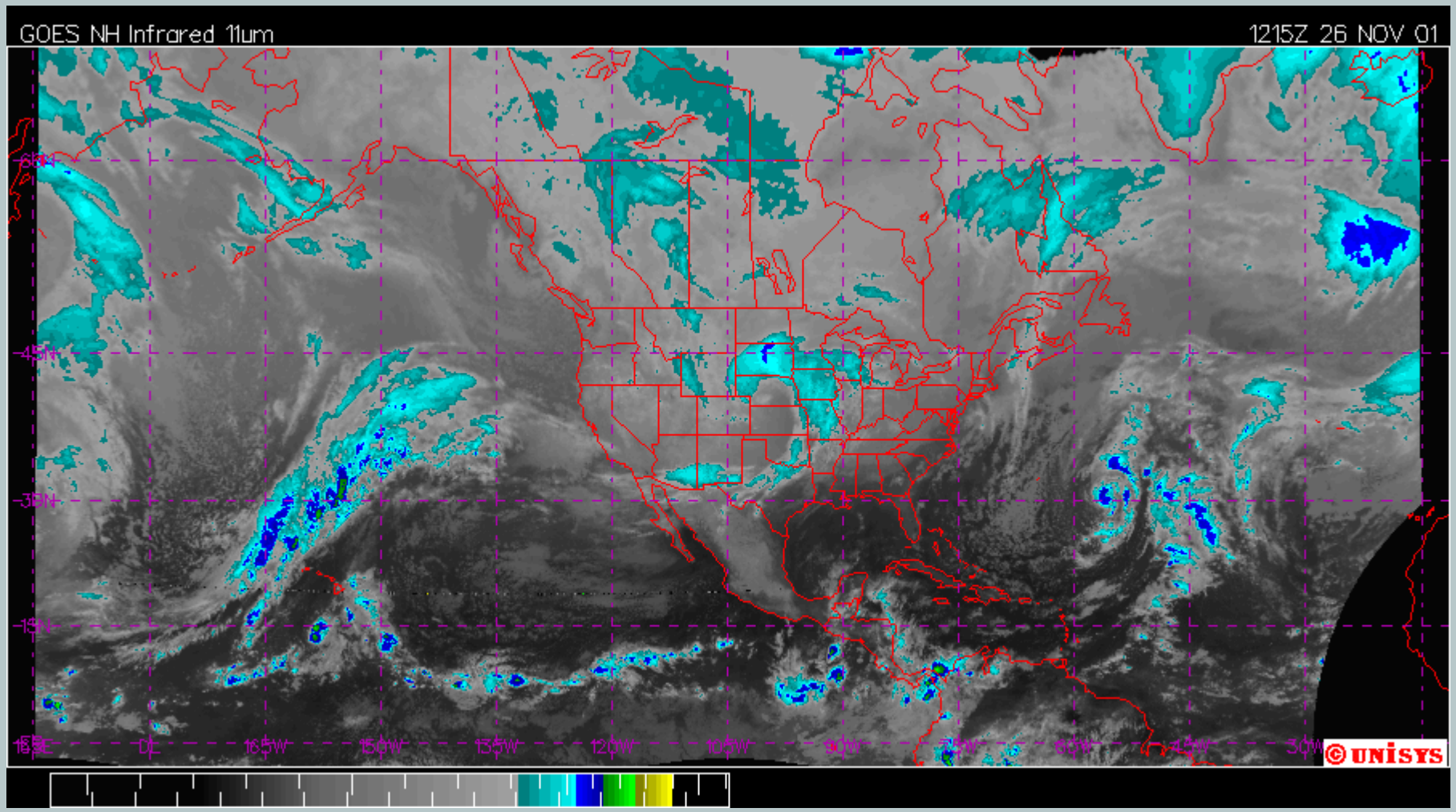
Low-pressure circulation becomes more defined

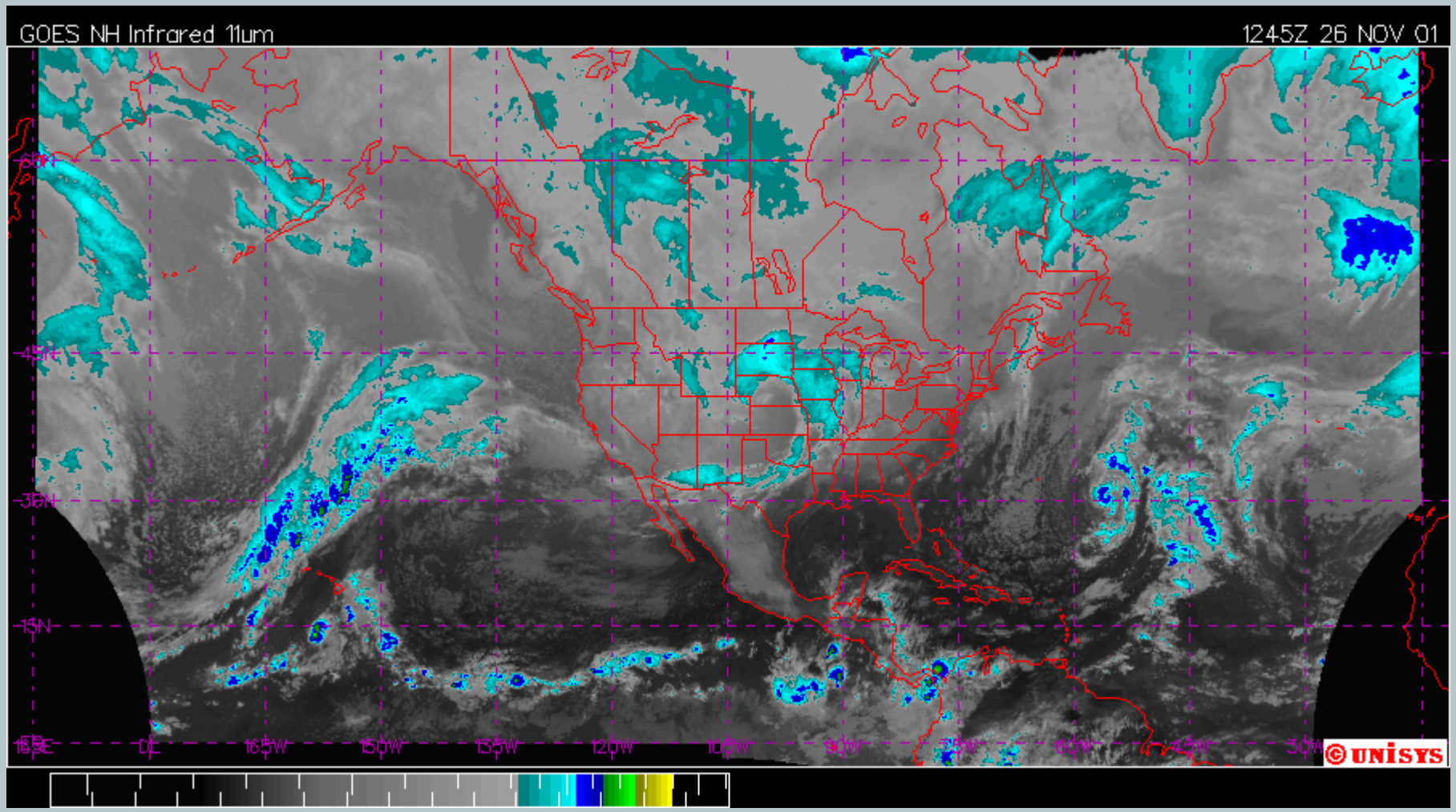


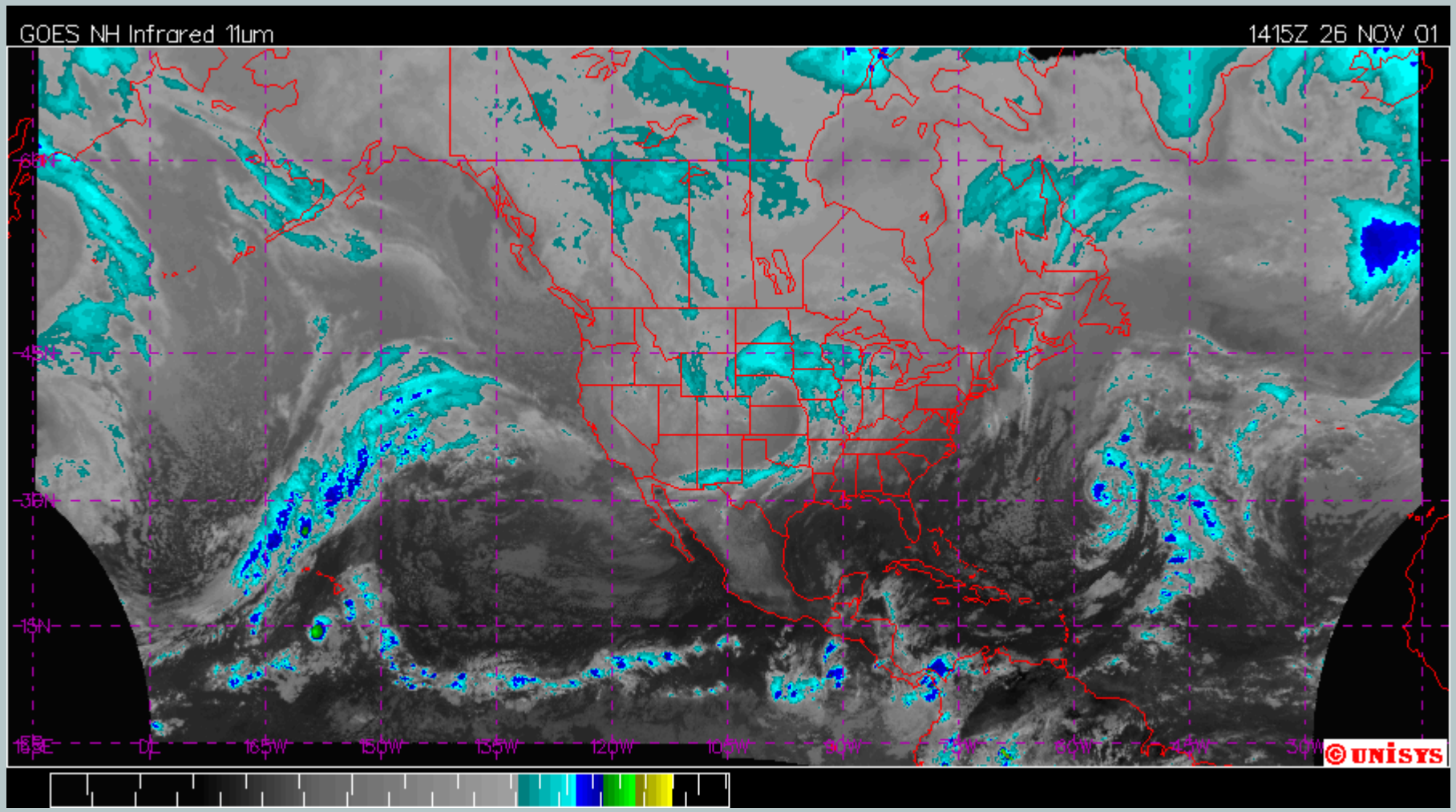
Low-pressure circulation becomes more defined



Low-pressure circulation becomes more defined




GOES NH Infrared 11um
1245Z 26 NOV 01
60N
45N
30N
15N
180E
165W
150W
135W
120W
105W
90W
75W
60W
45W
30W
©UNISYS


GOES NH Infrared 11um
1415Z 26 NOV 01
60N
45N
30N
15N
180E
165W
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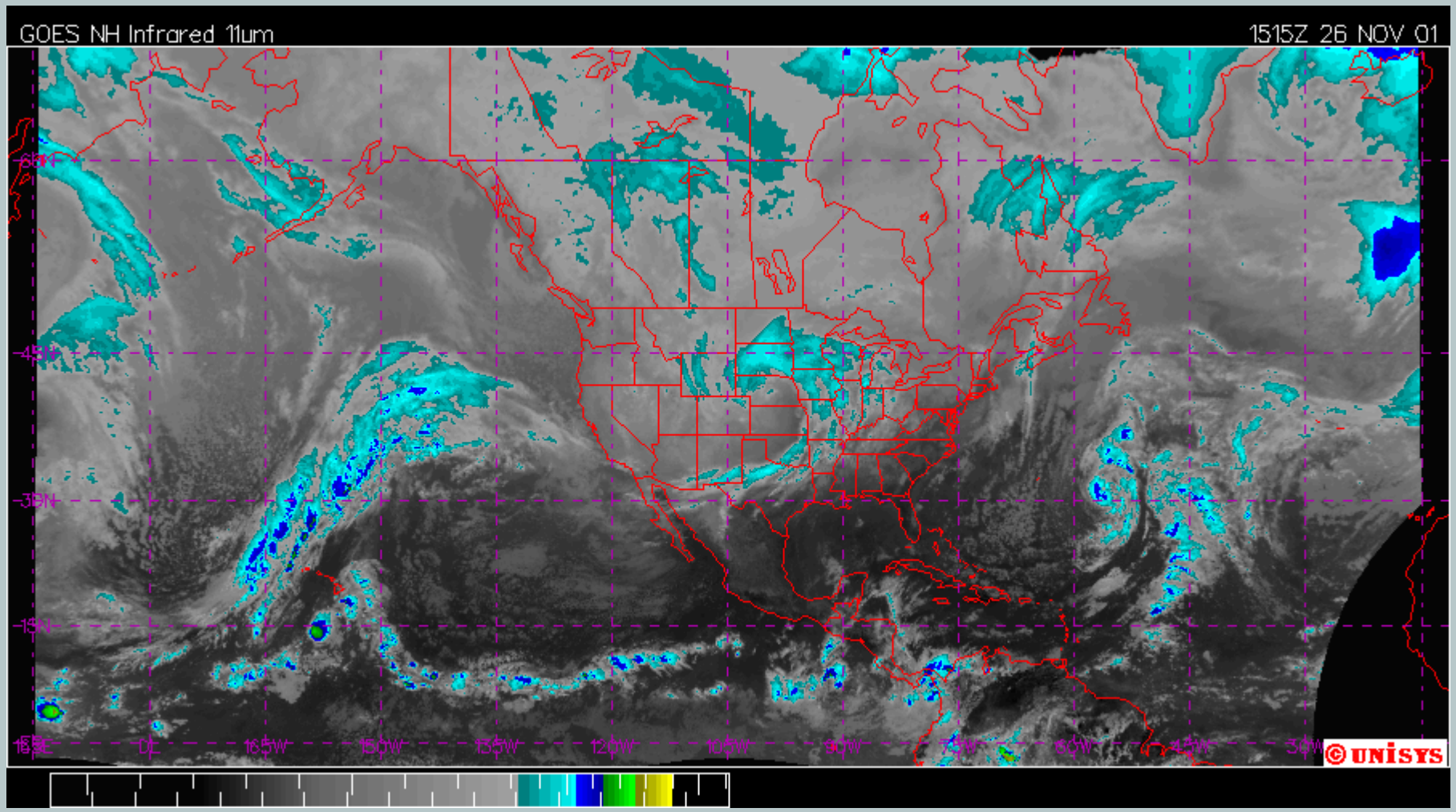
135W
120W
105W
90W
75W
60W
45W
30W
©UNISYS


GOES NH Infrared 11um
1515Z 26 NOV 01
60N
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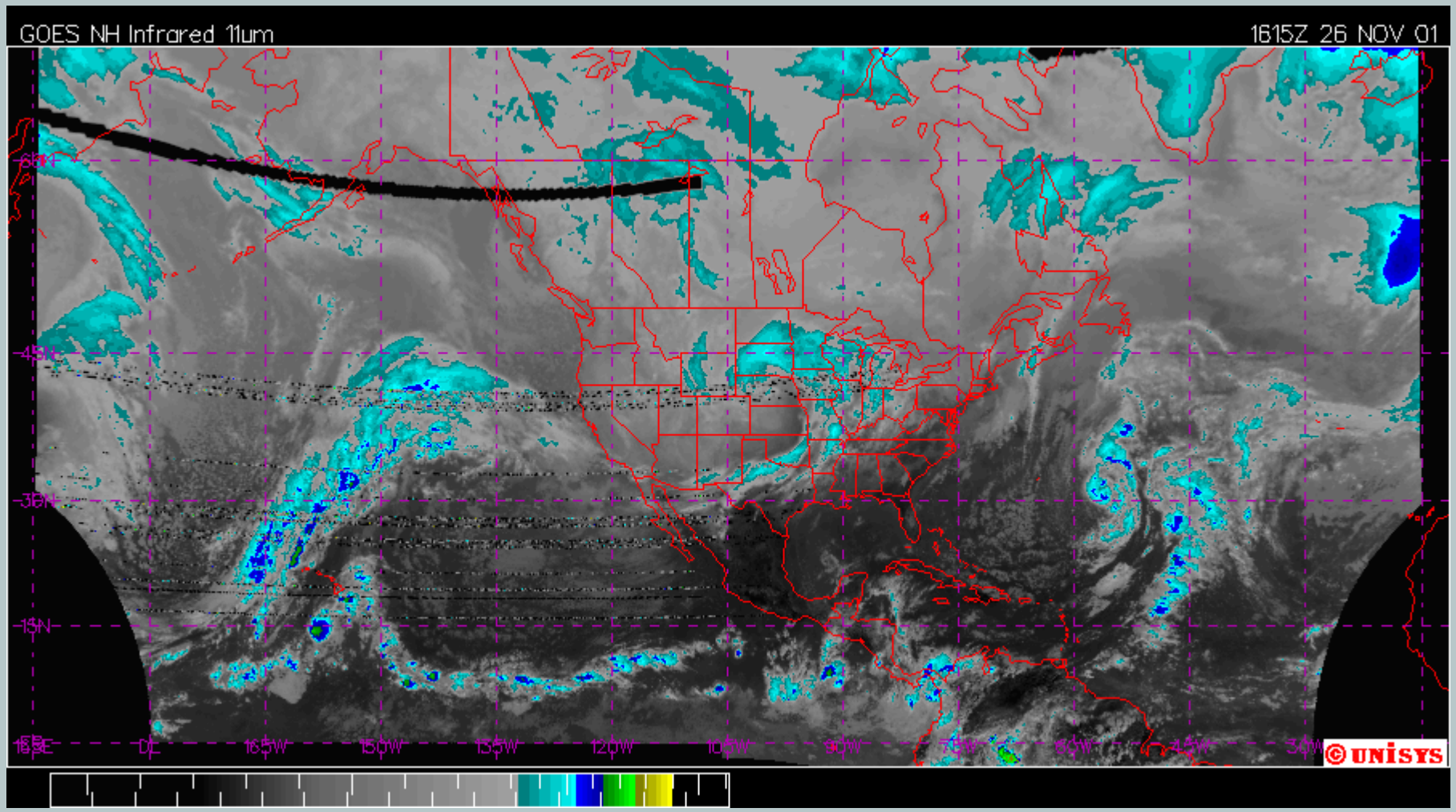
105W
90W
75W
60W
45W
30W
©UNISYS


GOES NH Infrared 11um
1615Z 26 NOV 01
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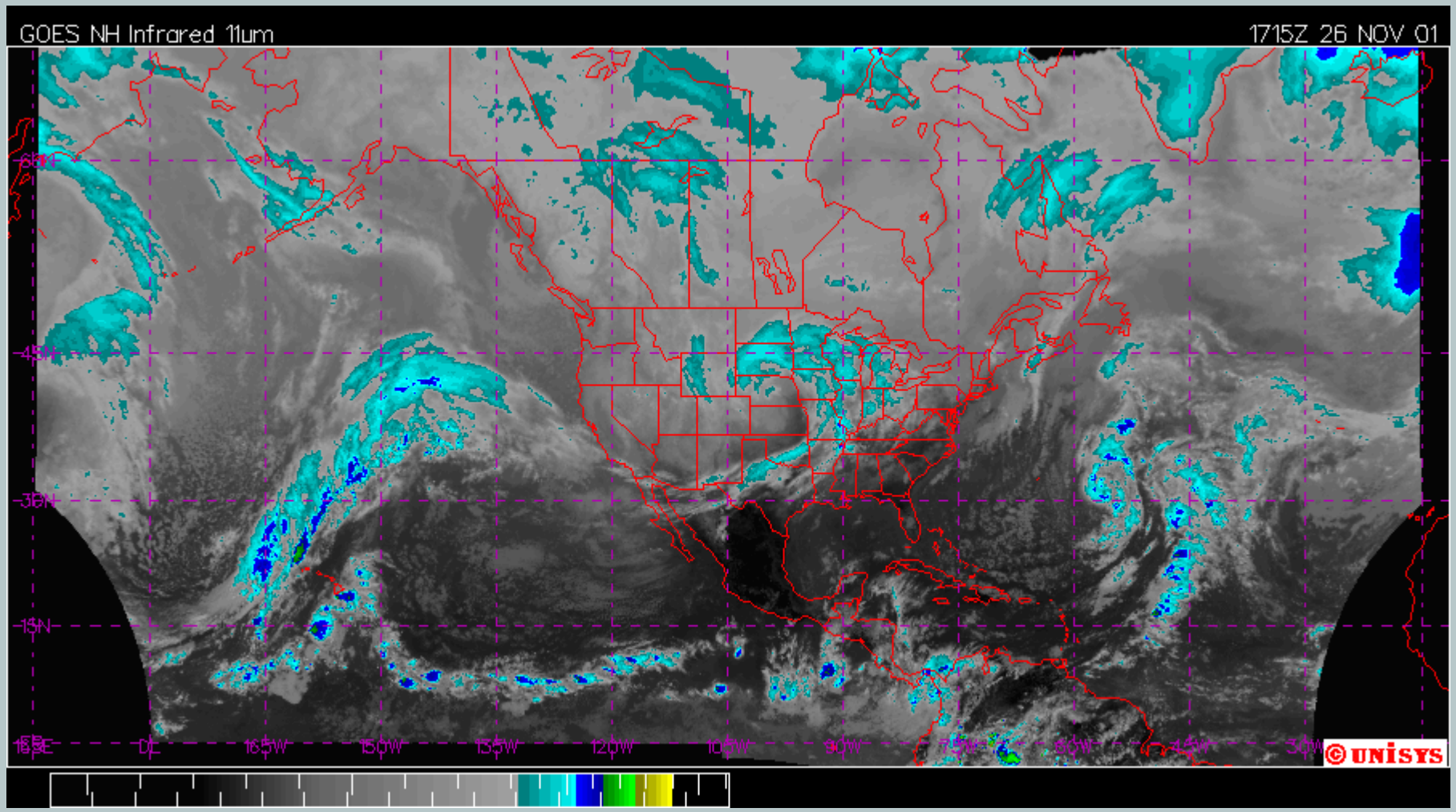
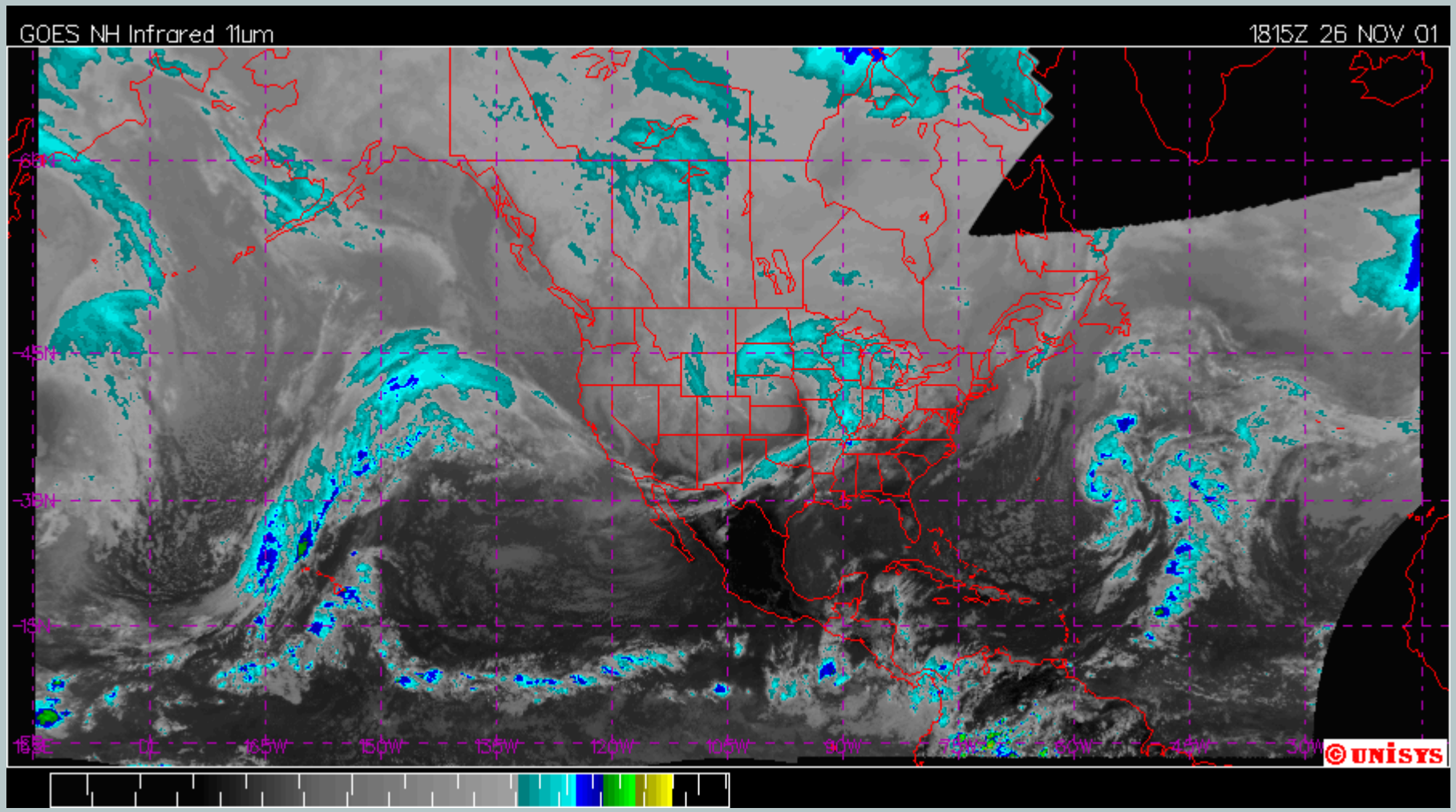
45N
30N
15N
180E
165W
150W
135W
120W
105W
90W
75W
60W
45W
30W
©UNISYS

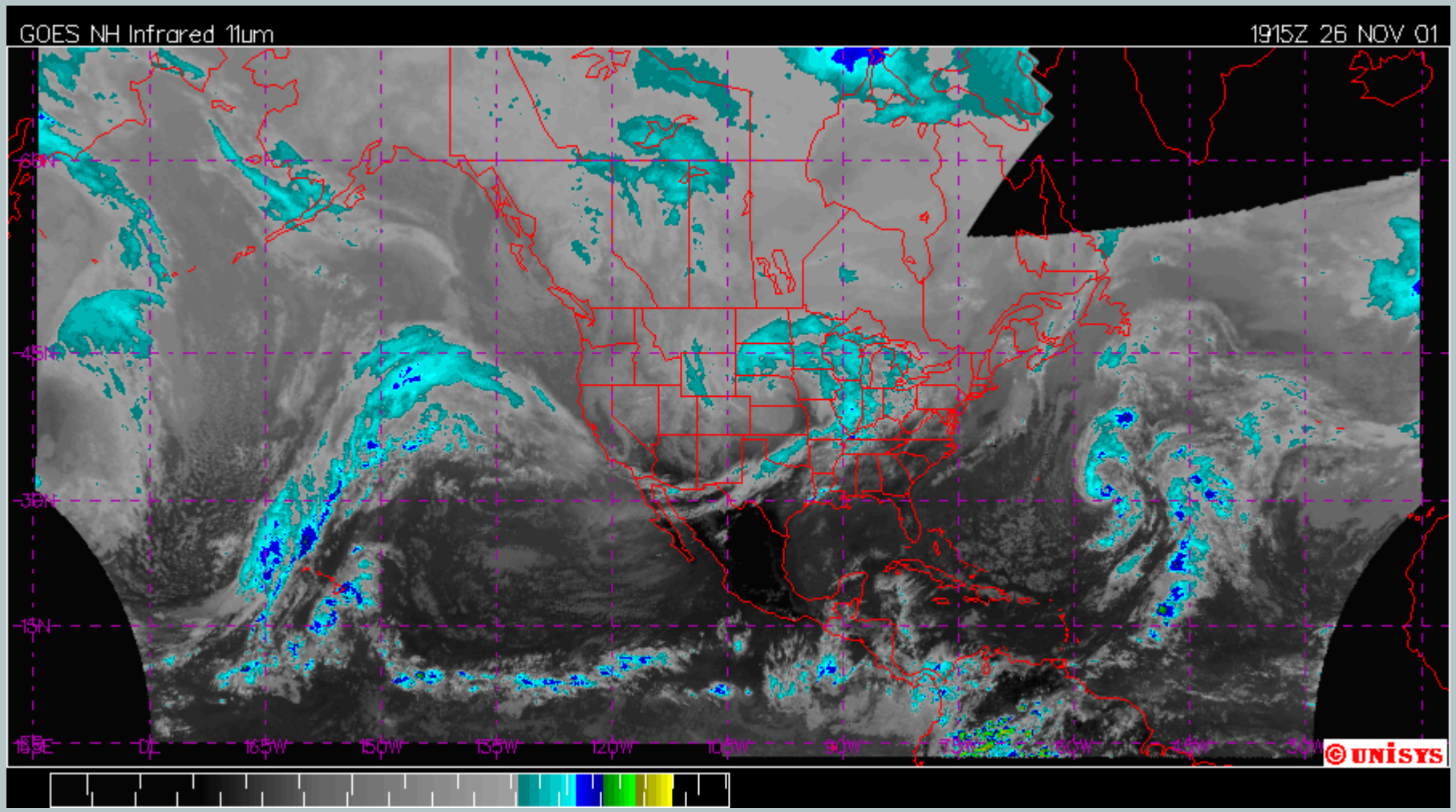
Note the difference in moisture of the air masses



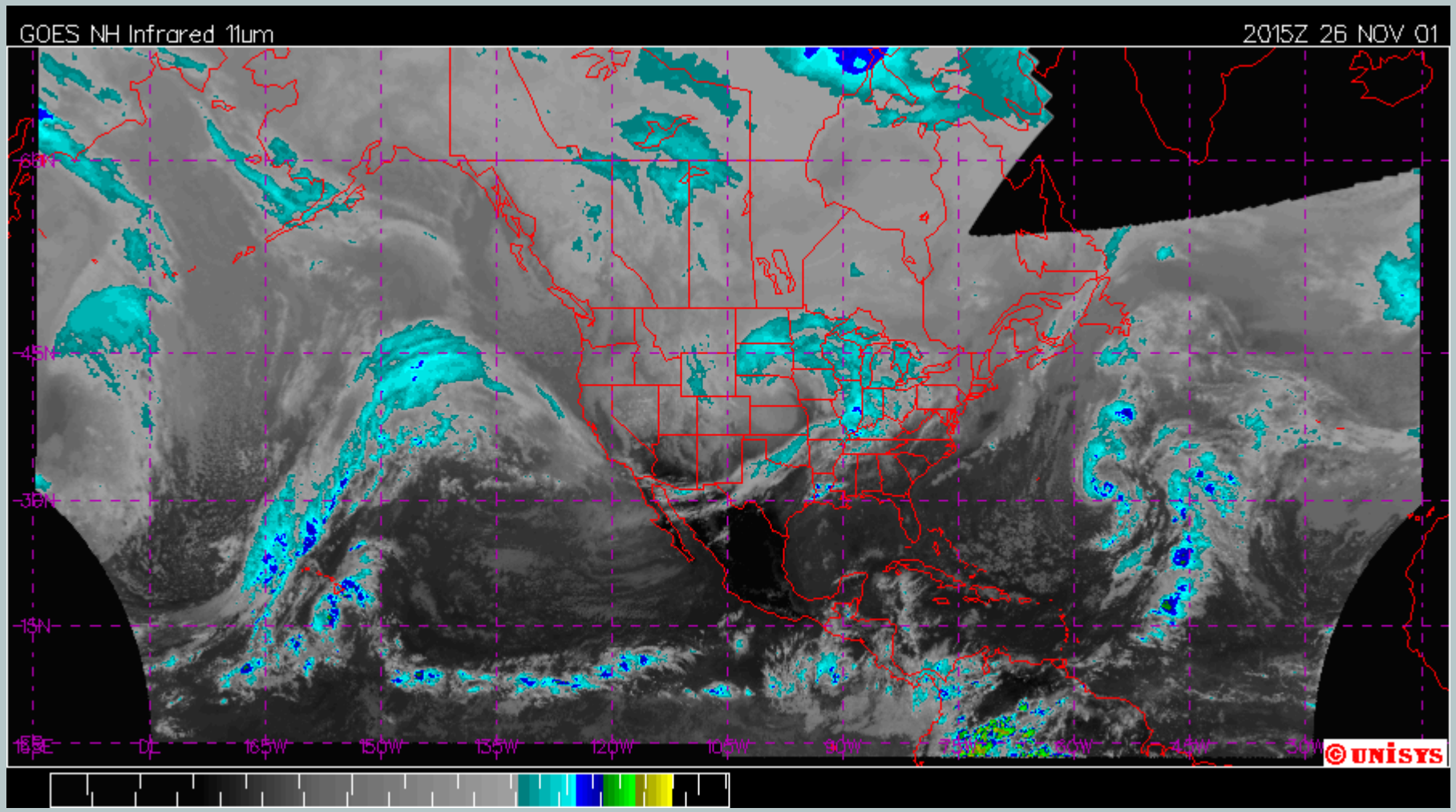
Note the difference in moisture of the air masses

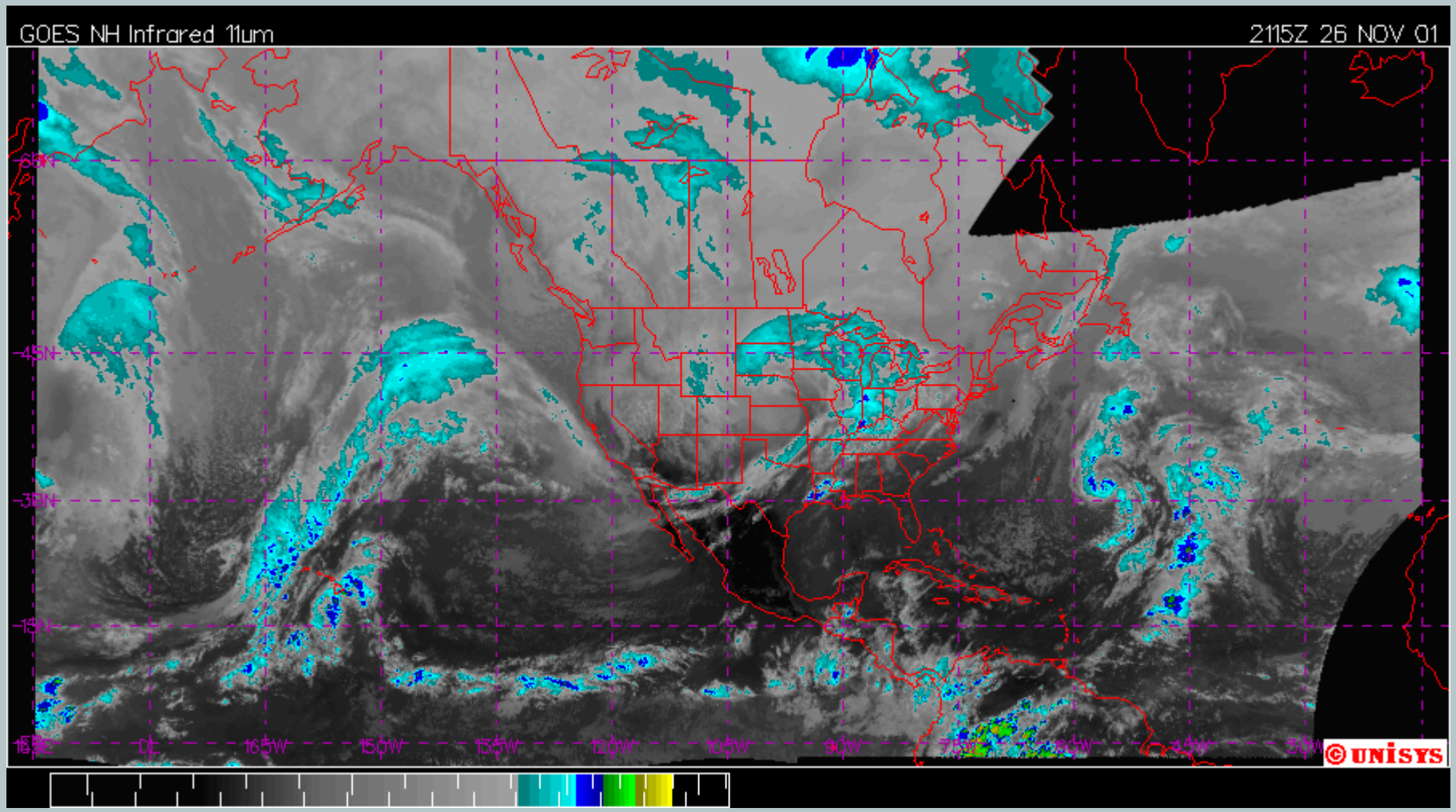


Note the difference in moisture of the air masses

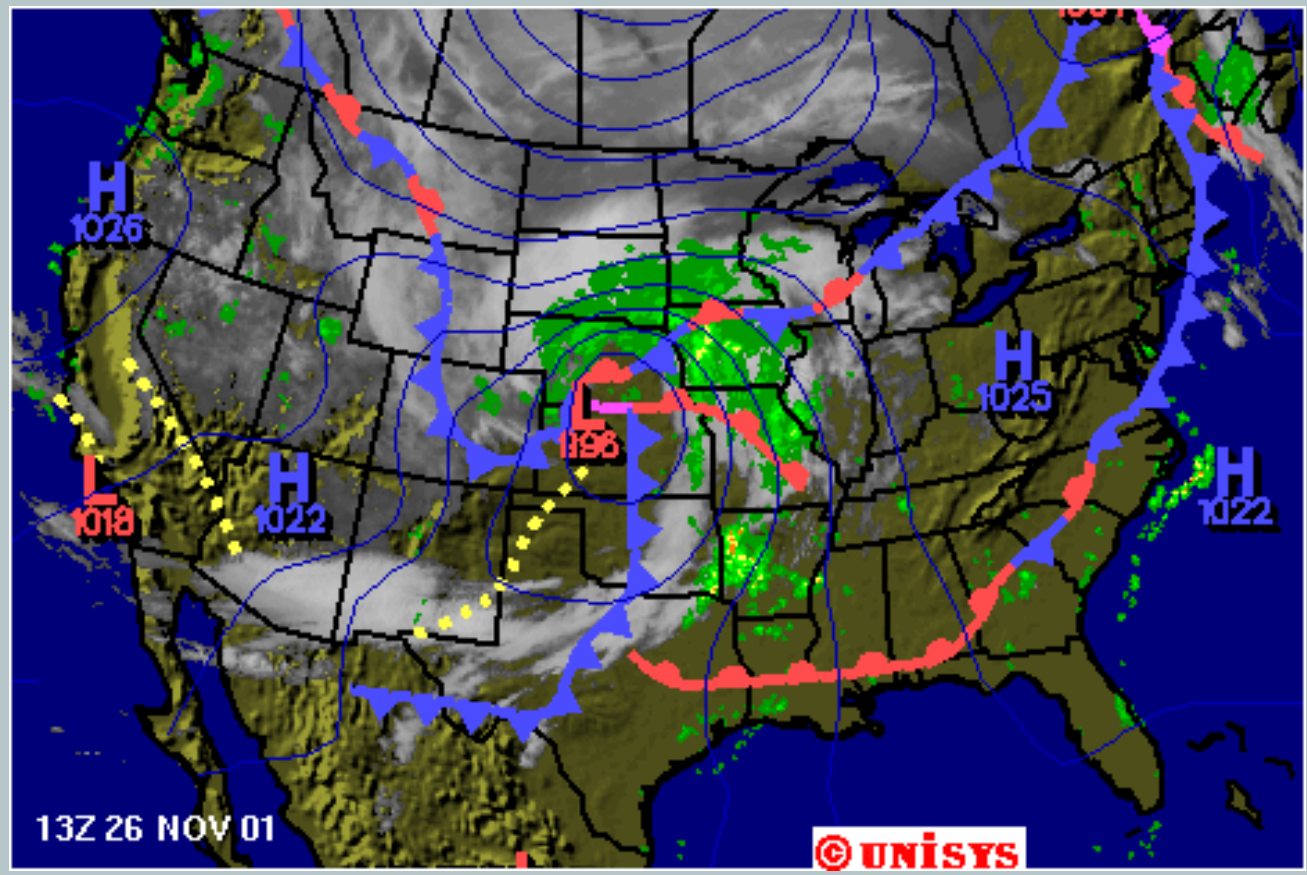


Note the difference in moisture of the air masses




GOES NH Infrared 11um
2115Z 26 NOV 01
60N
45N
30N
15N
180E
165W
150W
135W
120W
105W
90W
75W
60W
45W
30W
©UNISYS

Fully developed low-pressure system



Mid-continent low-pressure system

Important points:

Our local weather is connected to and produced by interactions between:
large high- and low-pressure systems
different air masses
the polar and subtropical jet streams

High pressure – clockwise spin

Low pressure – counter-clockwise spin

Warm and cold fronts produced by circulation around the high- and low-pressure cells

The “Pineapple Express”

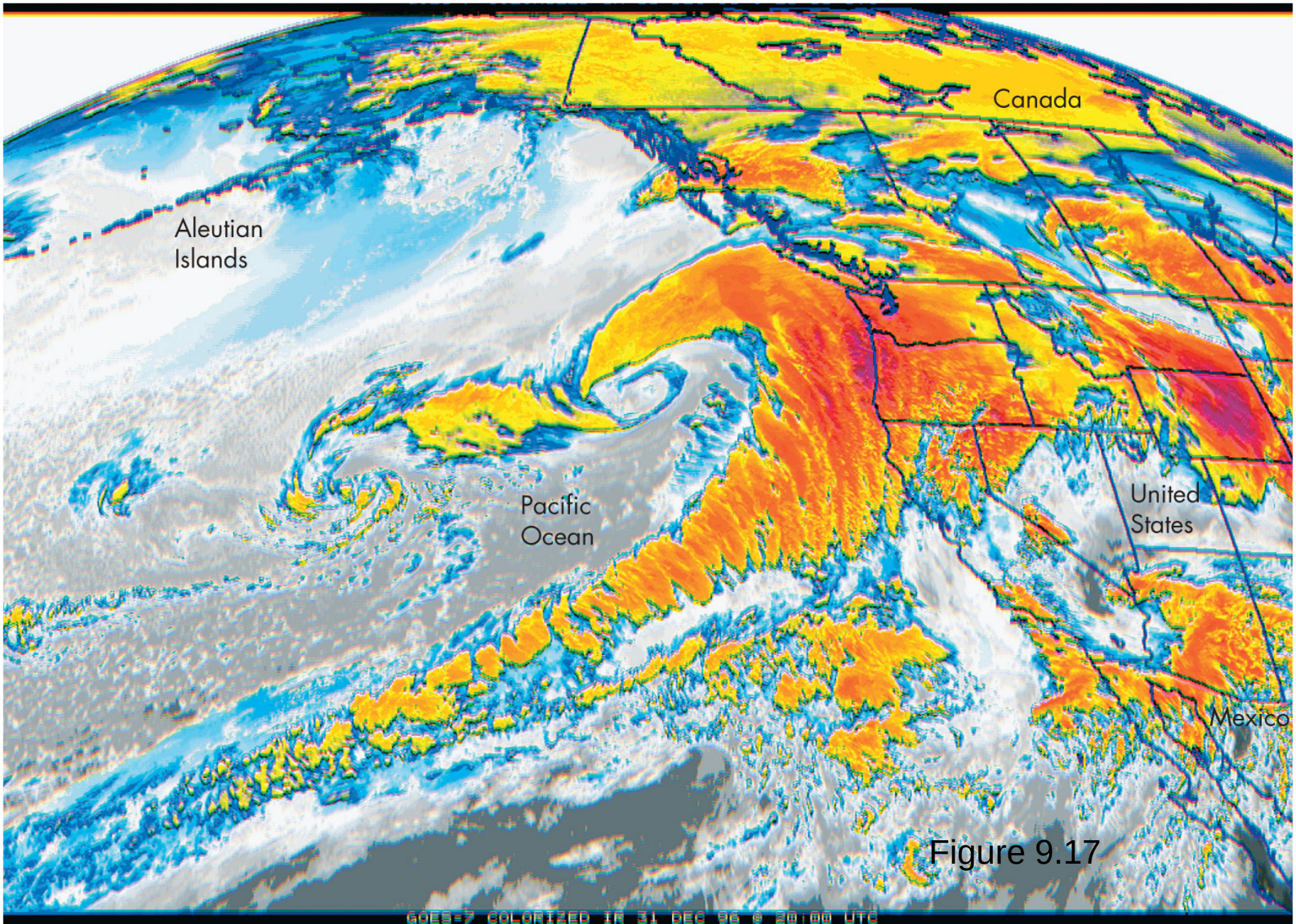
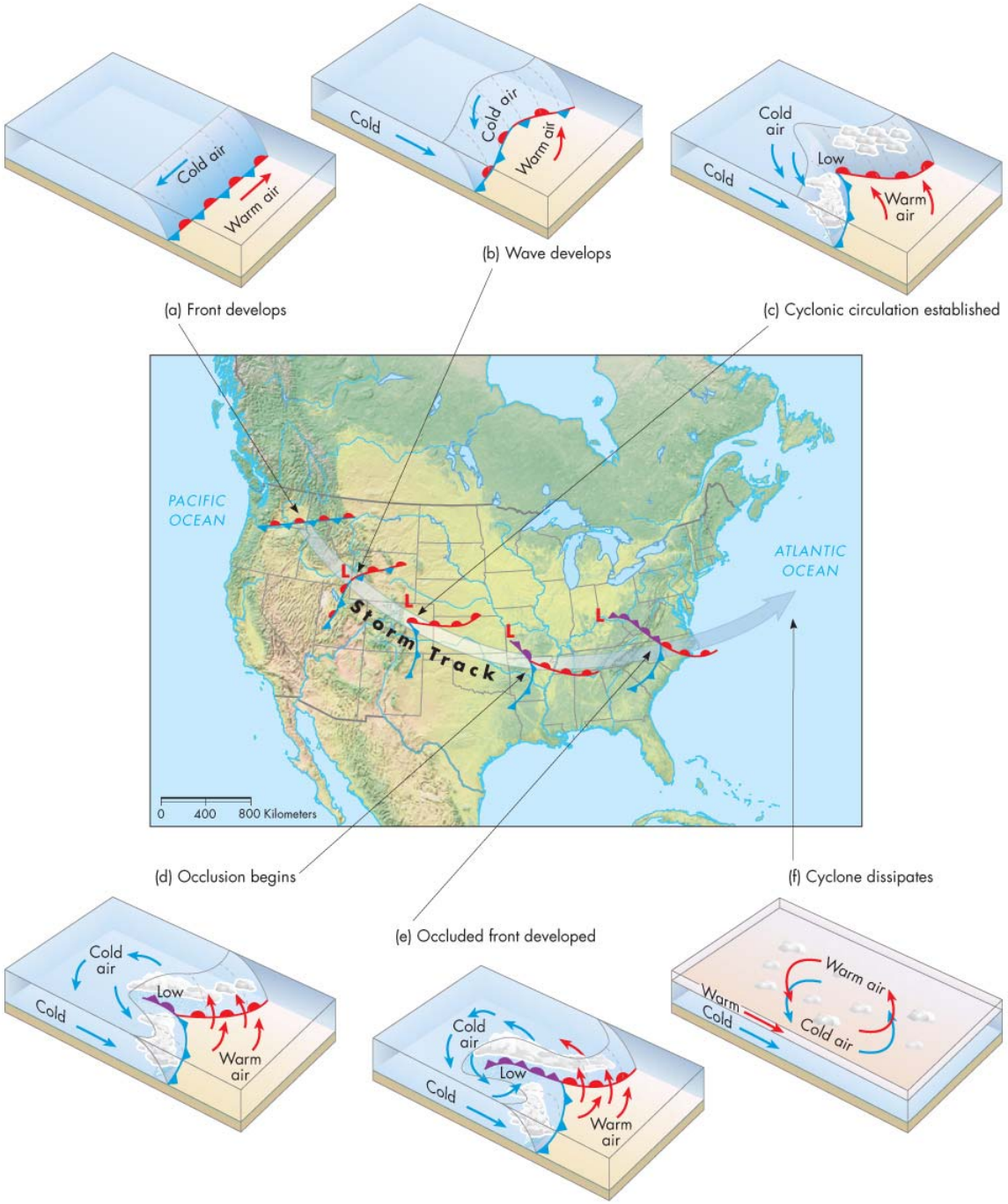
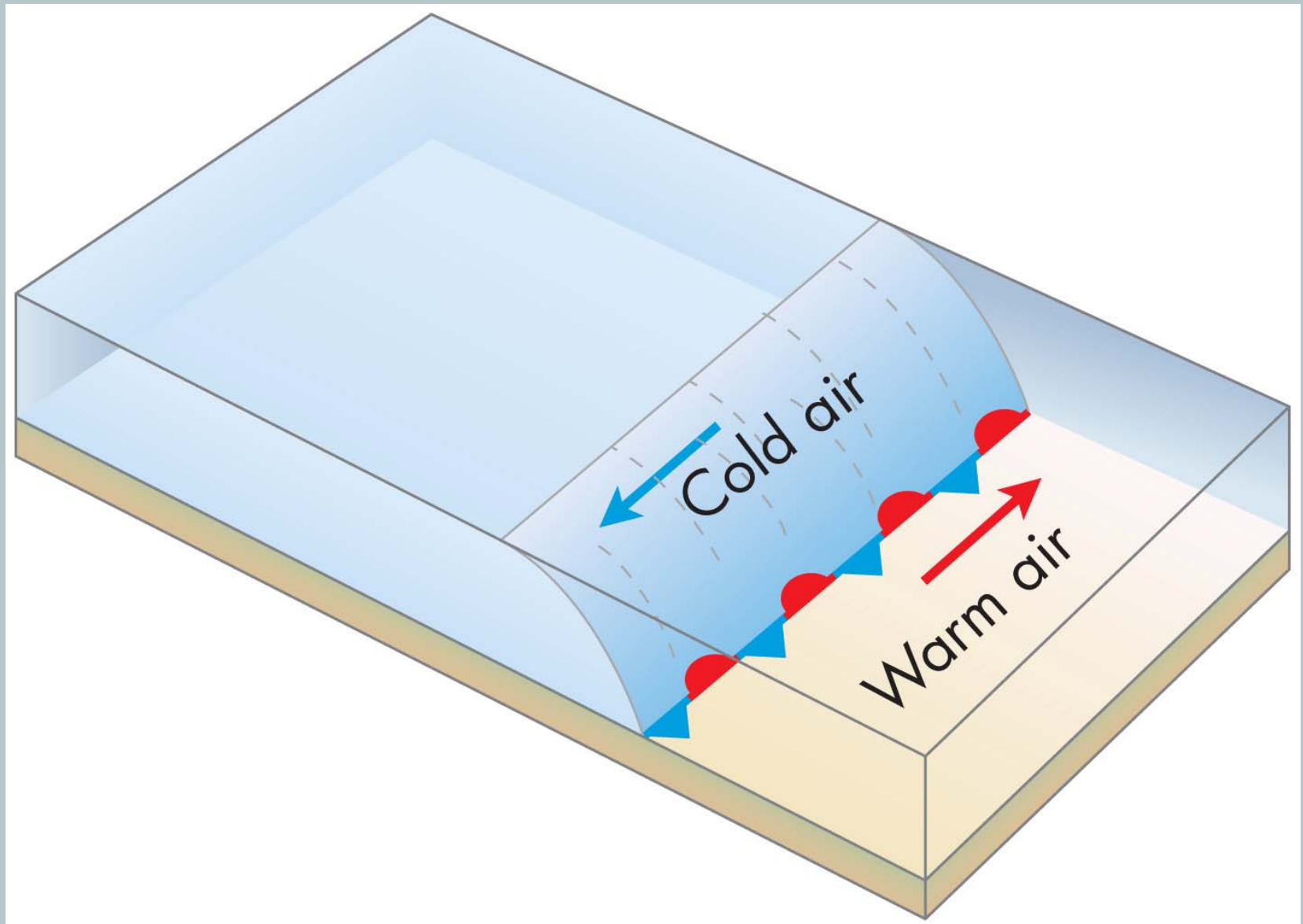
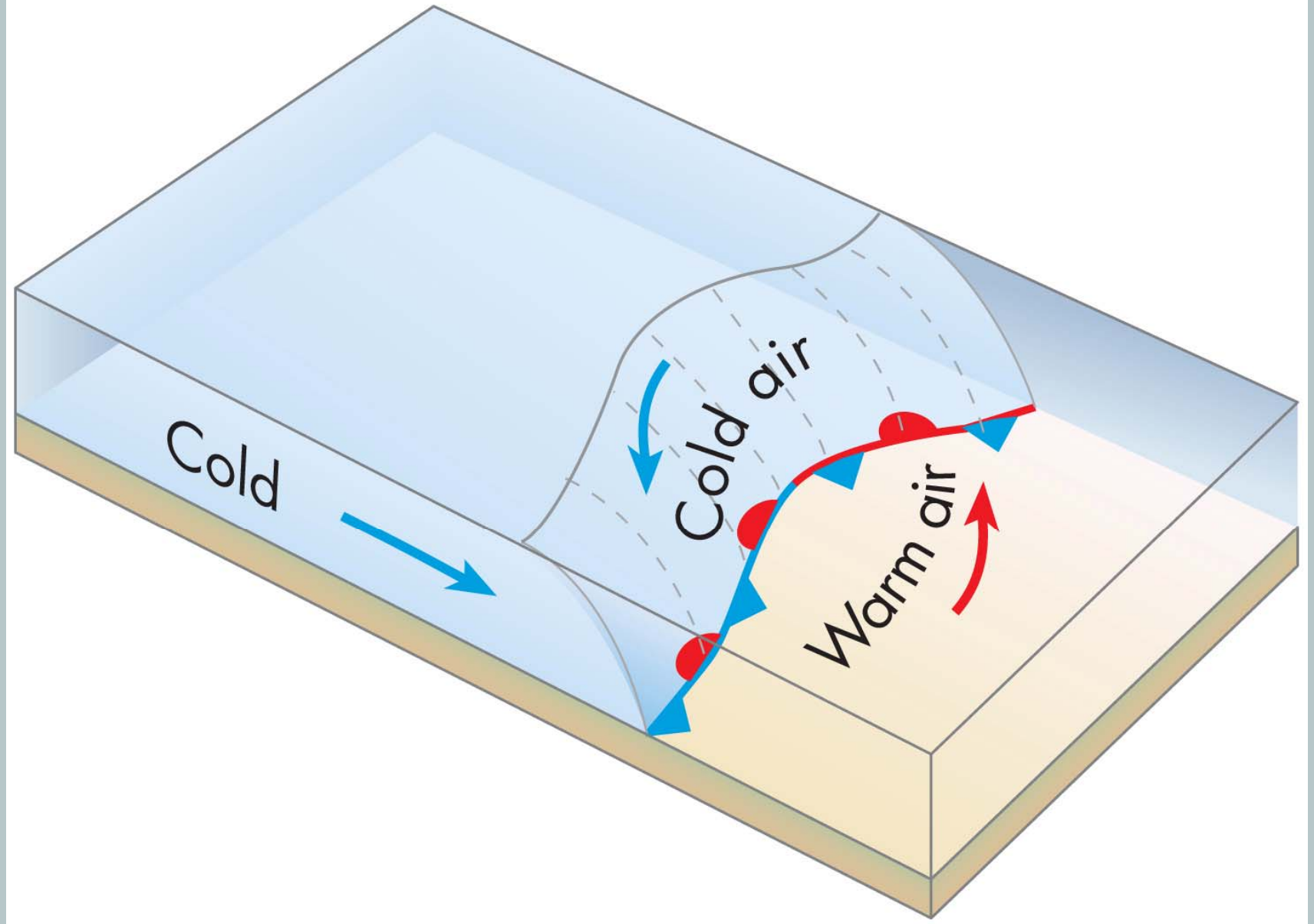


Figure 9.17

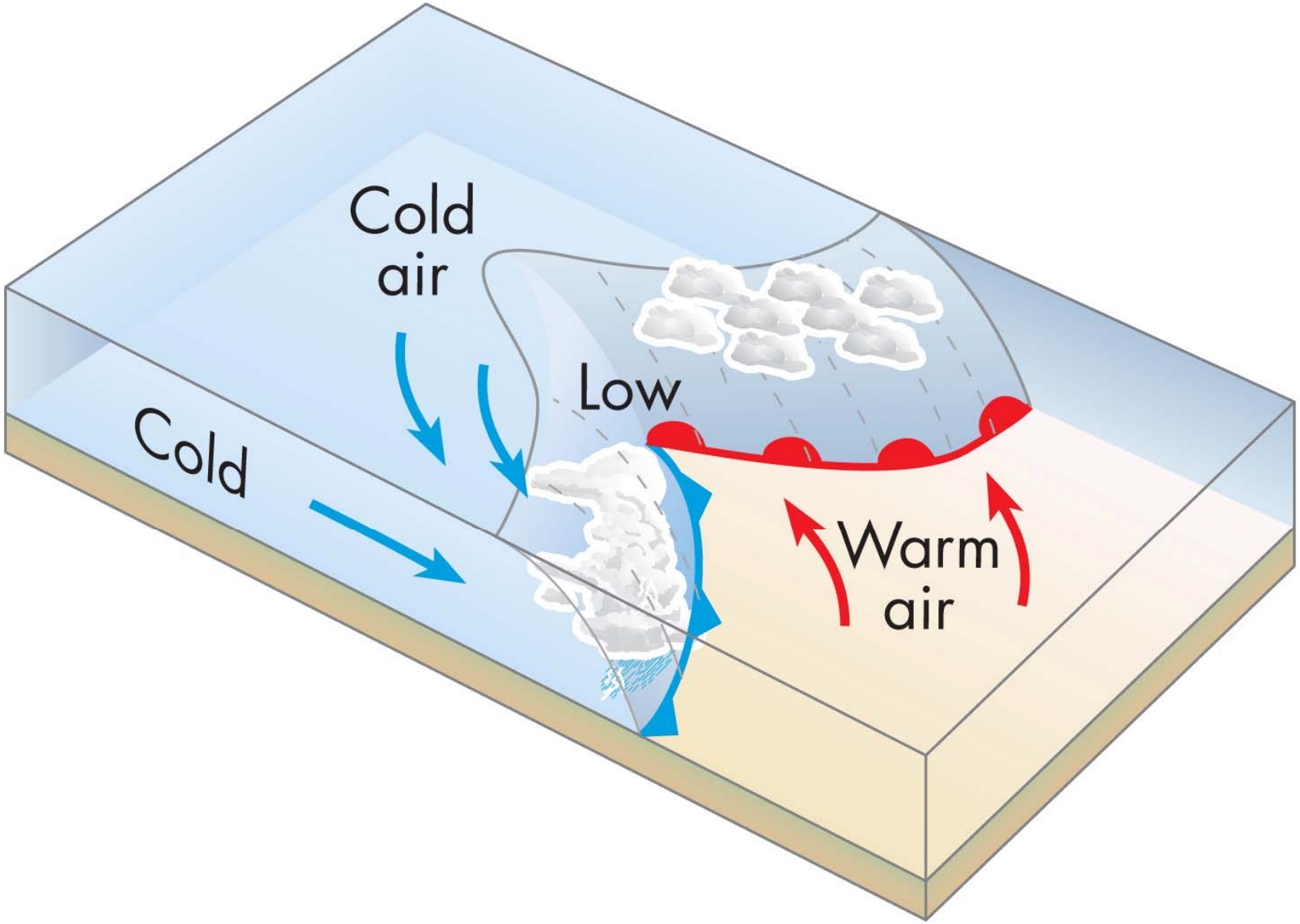

Cold air
Warm air
Cold
Cold air
Warm air
Cold air
Low
Cold
Warm air
(a) Front develops
(b) Wave develops
(c) Cyclonic circulation established
PACIFIC OCEAN
ATLANTIC OCEAN
L
L
L
L
Storm Track
0 400 800 Kilometers
(d) Occlusion begins
(e) Occluded front developed
(f) Cyclone dissipates
Cold air
Low
Cold
Warm air
Cold air
Low
Cold
Warm air
Warm air
Warm
Cold
Cold air



(a) Front develops



(b) Wave develops



(c) Cyclonic circulation established

Weather fronts

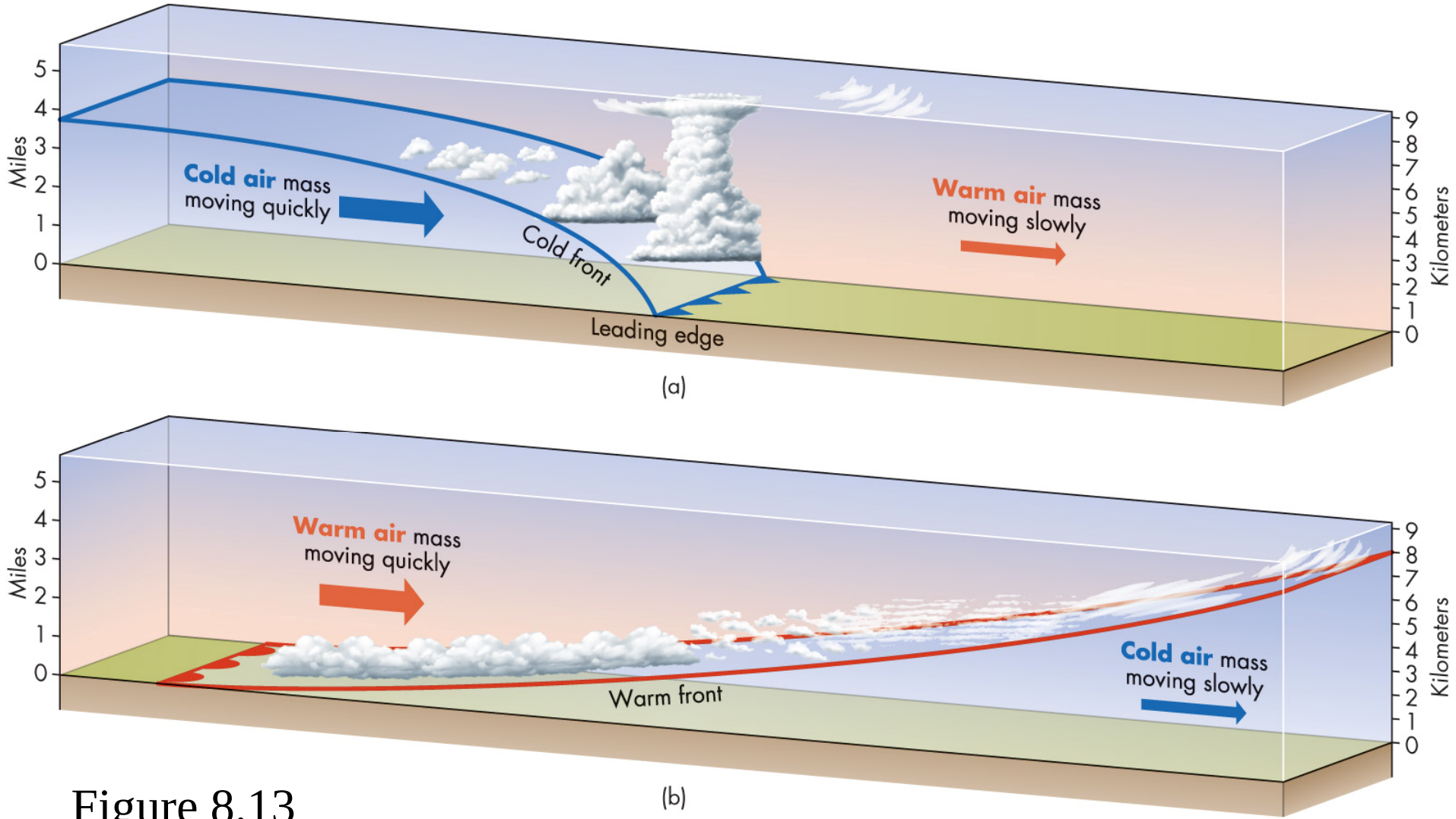
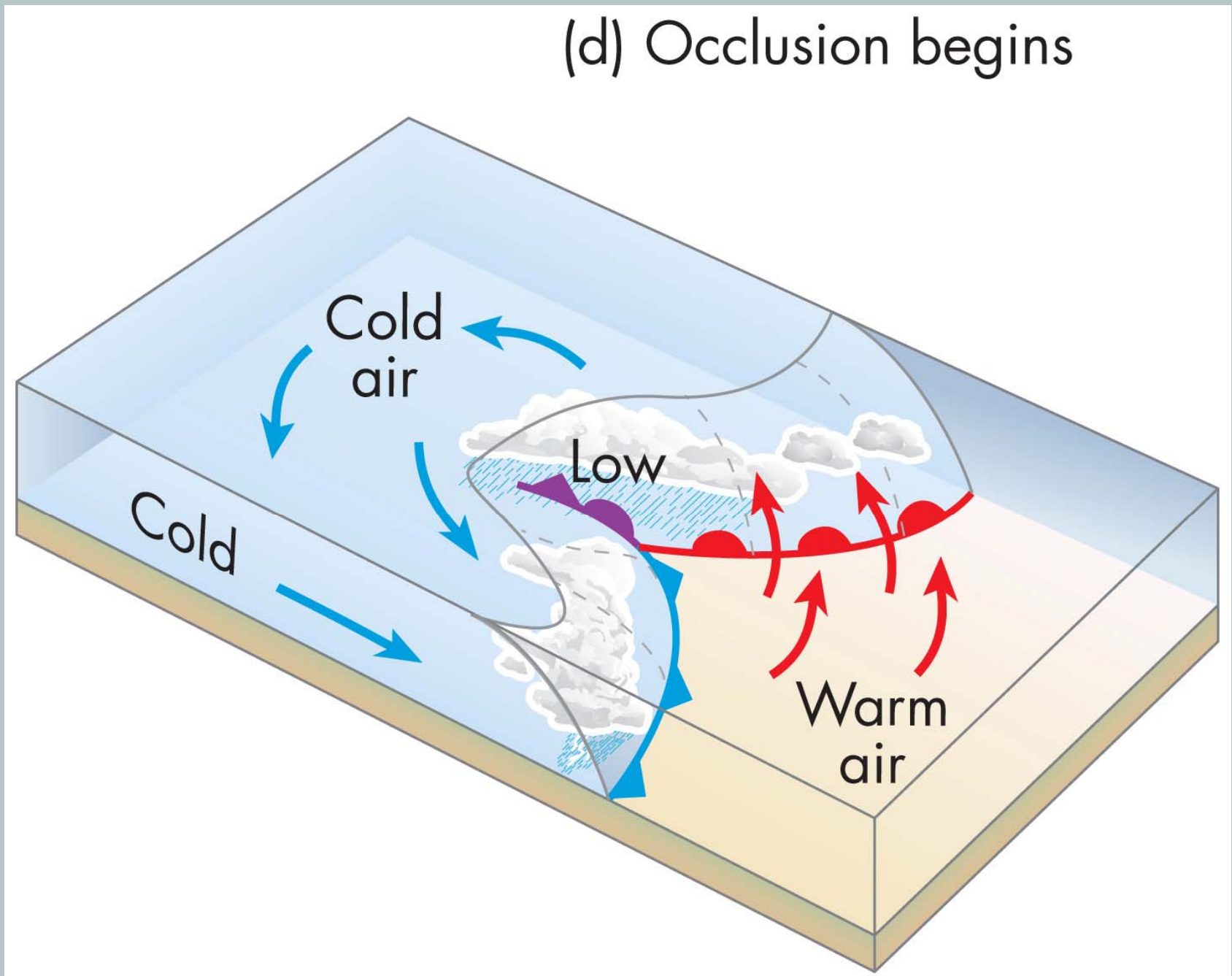
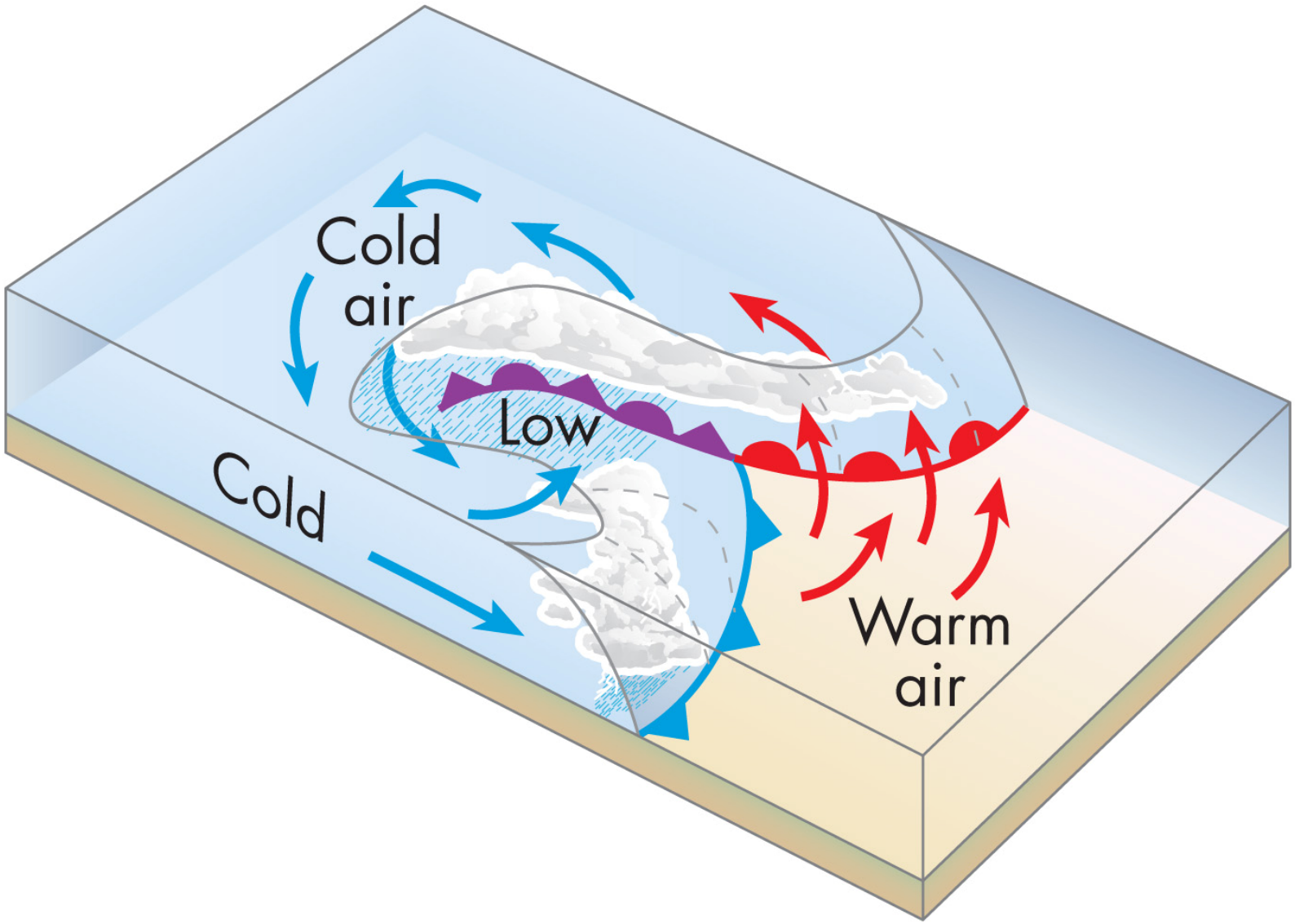
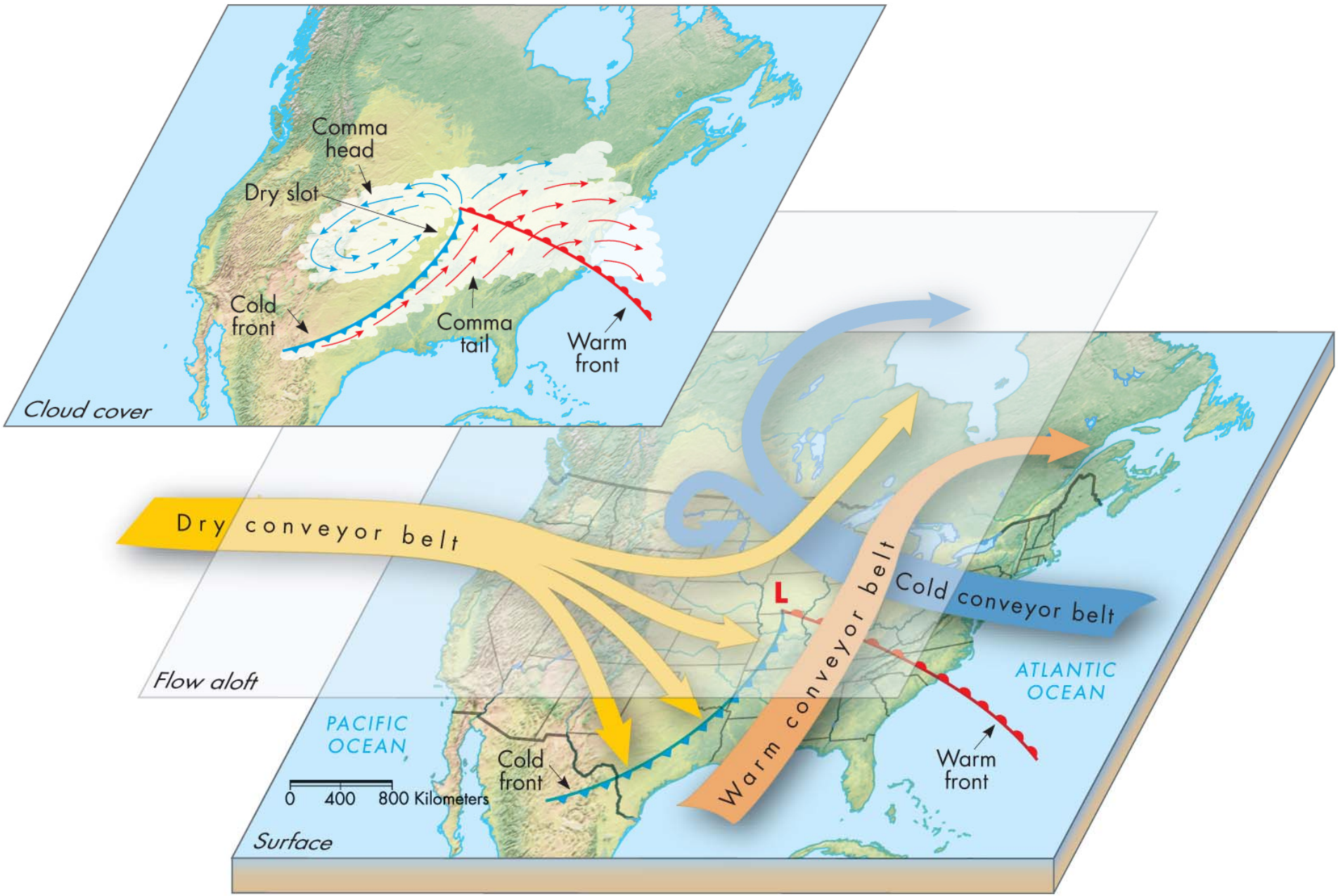


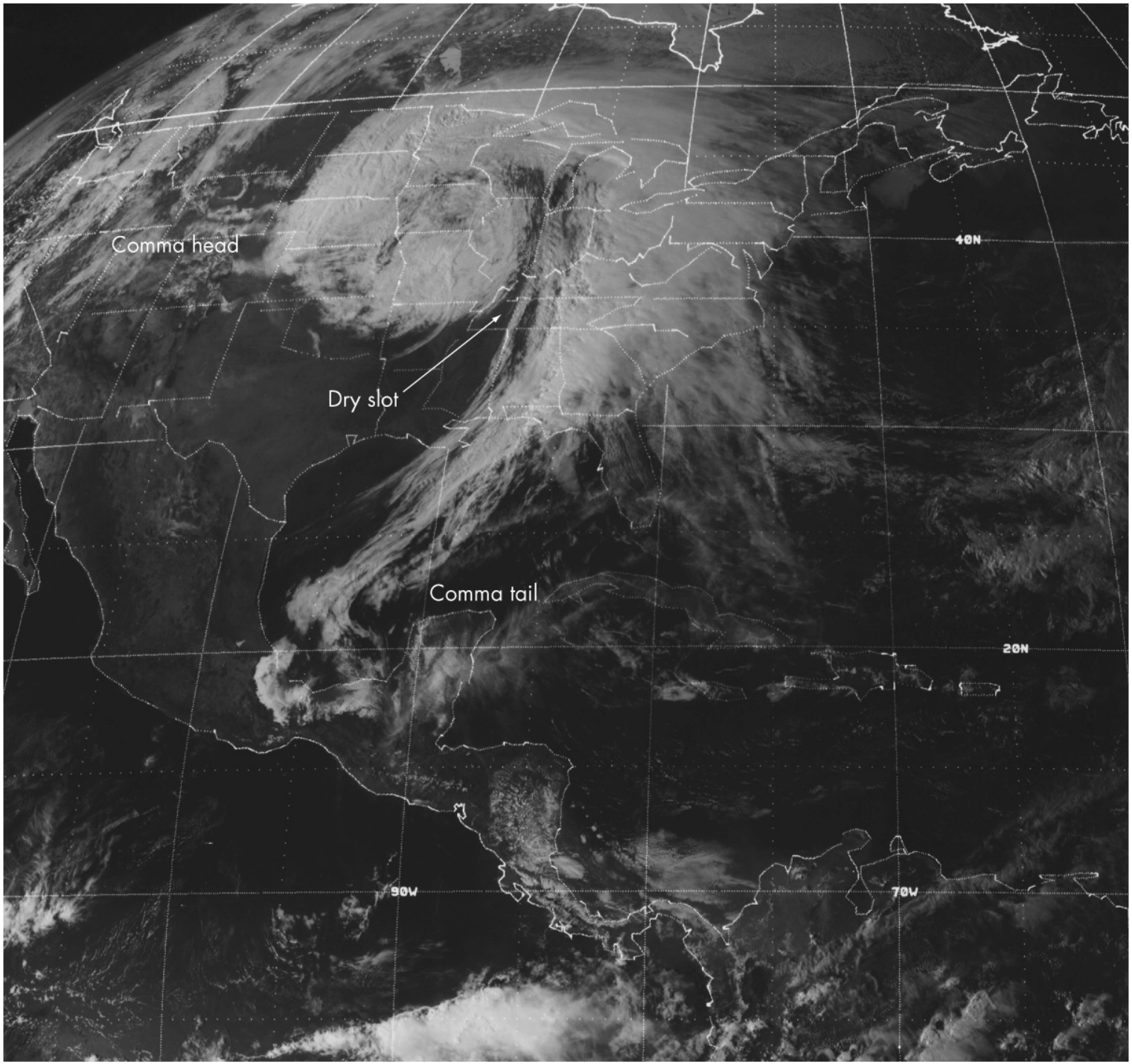
Figure 8.13


(d) Occlusion begins
Cold air
Low
Cold
Warm air

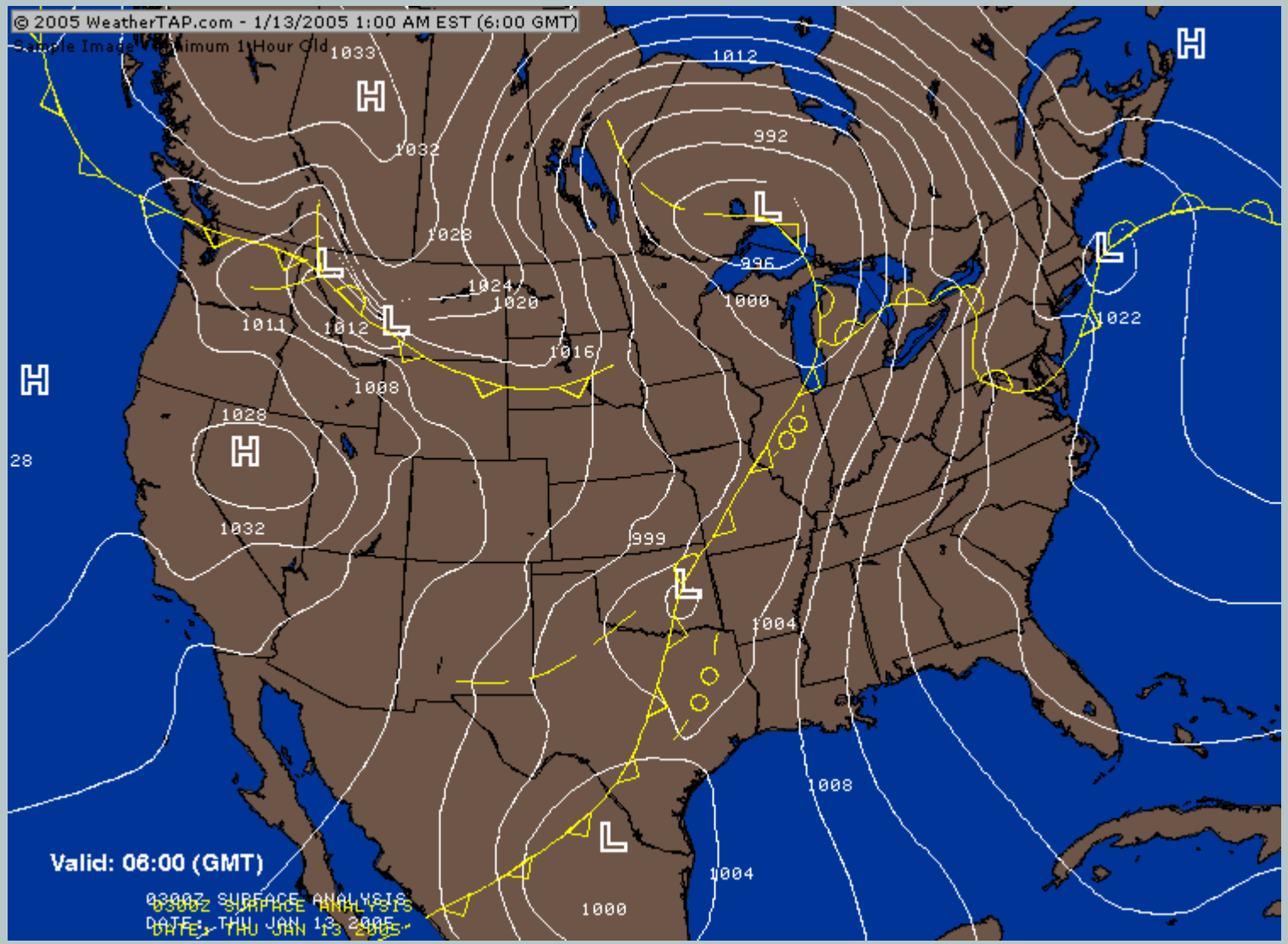
(e) Occluded front developed



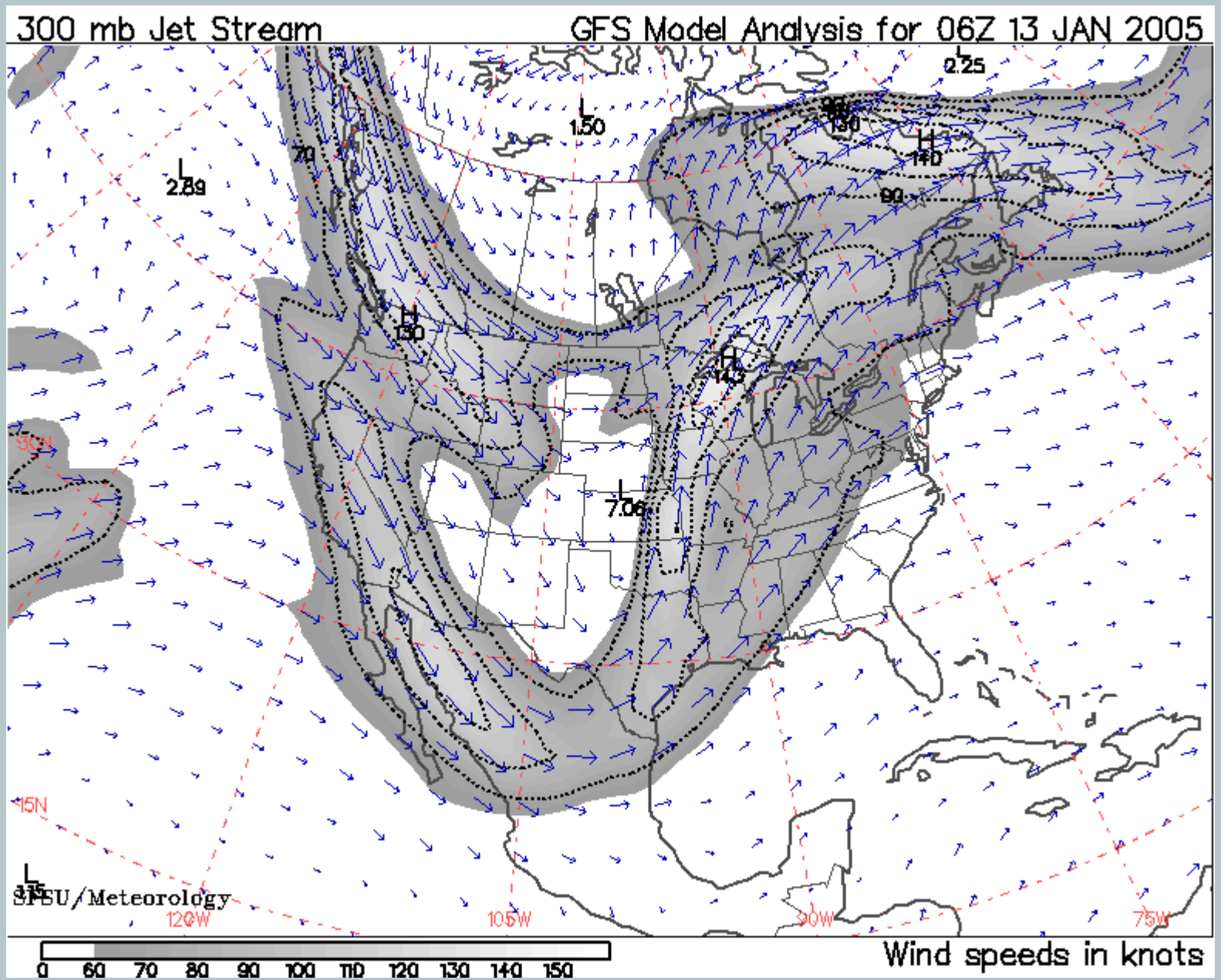

Comma head
Dry slot
Cold front
Comma tail
Warm front
Cloud cover
Dry conveyor belt
L
Cold conveyor belt
Warm conveyor belt
Flow aloft
ATLANTIC OCEAN
PACIFIC OCEAN
Cold front
Warm front
0 400 800 Kilometers
Surface


Comma head
Dry slot
Comma tail
40N
20N
90W
70W

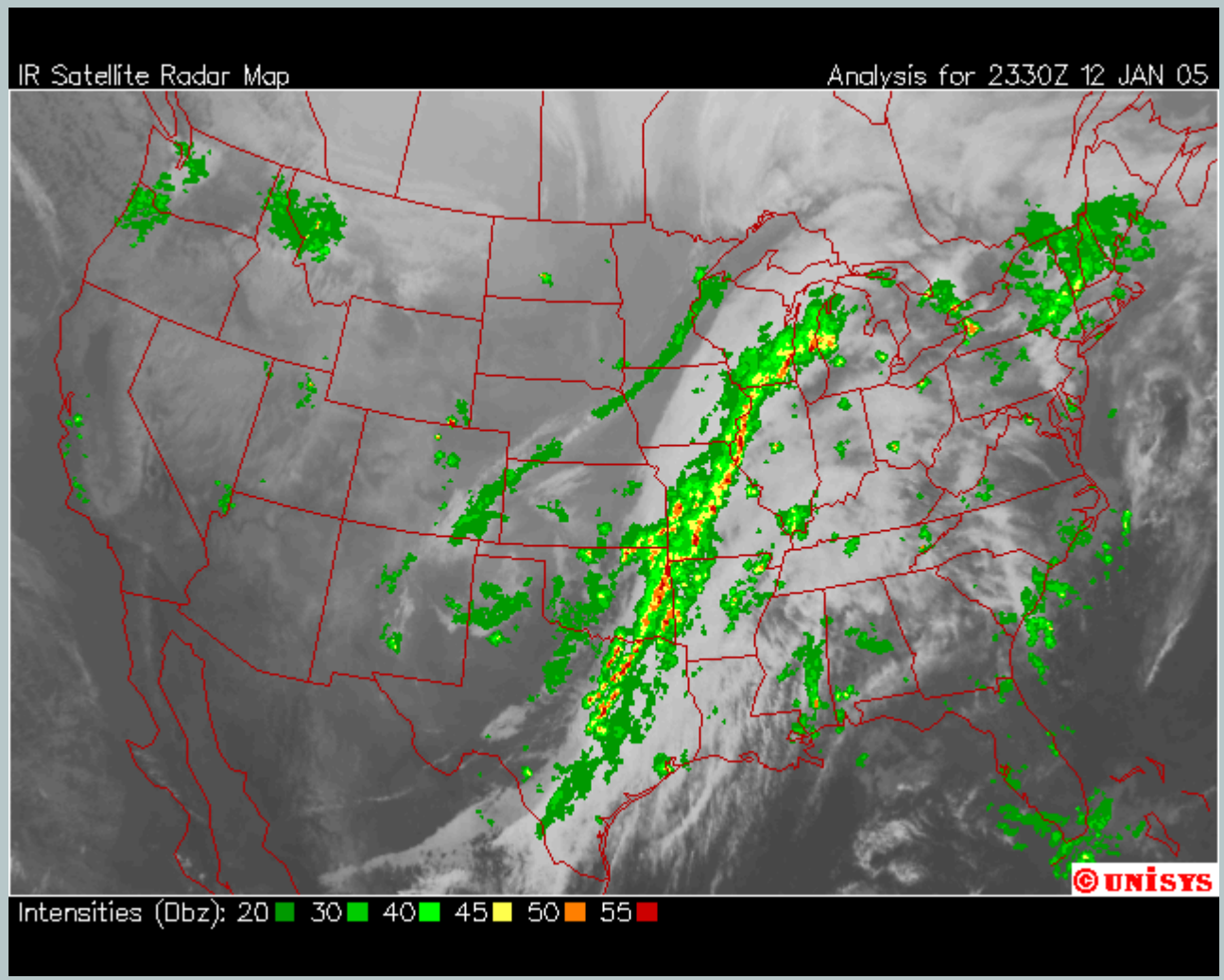
Major cold front



Jet-stream flow



The cold front



Locally in the upper Midwest