

Clicker Question

Pressure changes

- (A) more rapidly in the horizontal direction than in the vertical
- (B) more rapidly in the vertical direction than in the horizontal
- (C) at the same rate in the horizontal and vertical directions

Clicker Question

Pressure changes

- (A) more rapidly in the horizontal direction than in the vertical
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2 Basic Types of Weather Maps

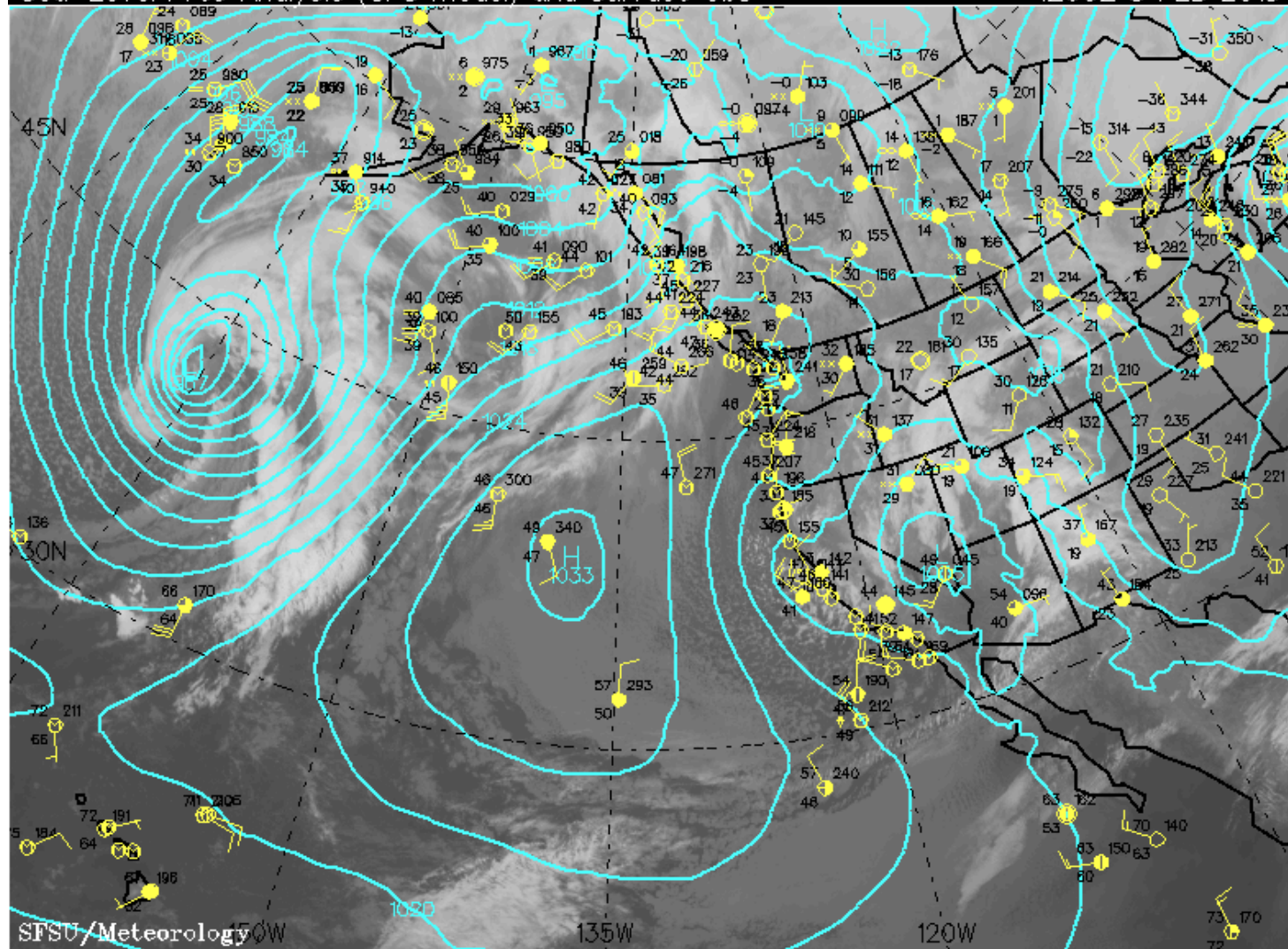
A. Constant Height Map

- shows atmospheric pressure at a constant height
- example: **sea level** pressure map

this is the 'constant' height

Sea-Level Pres Analysis (GFS model) and Surface Obs

1200Z 8 FEB 2013



GOES-West Infrared Image at 1200Z 8 FEB 2013

LO: 944.6 HI: 1044.1

2 Basic Types of Weather Maps

A. Constant Height Map

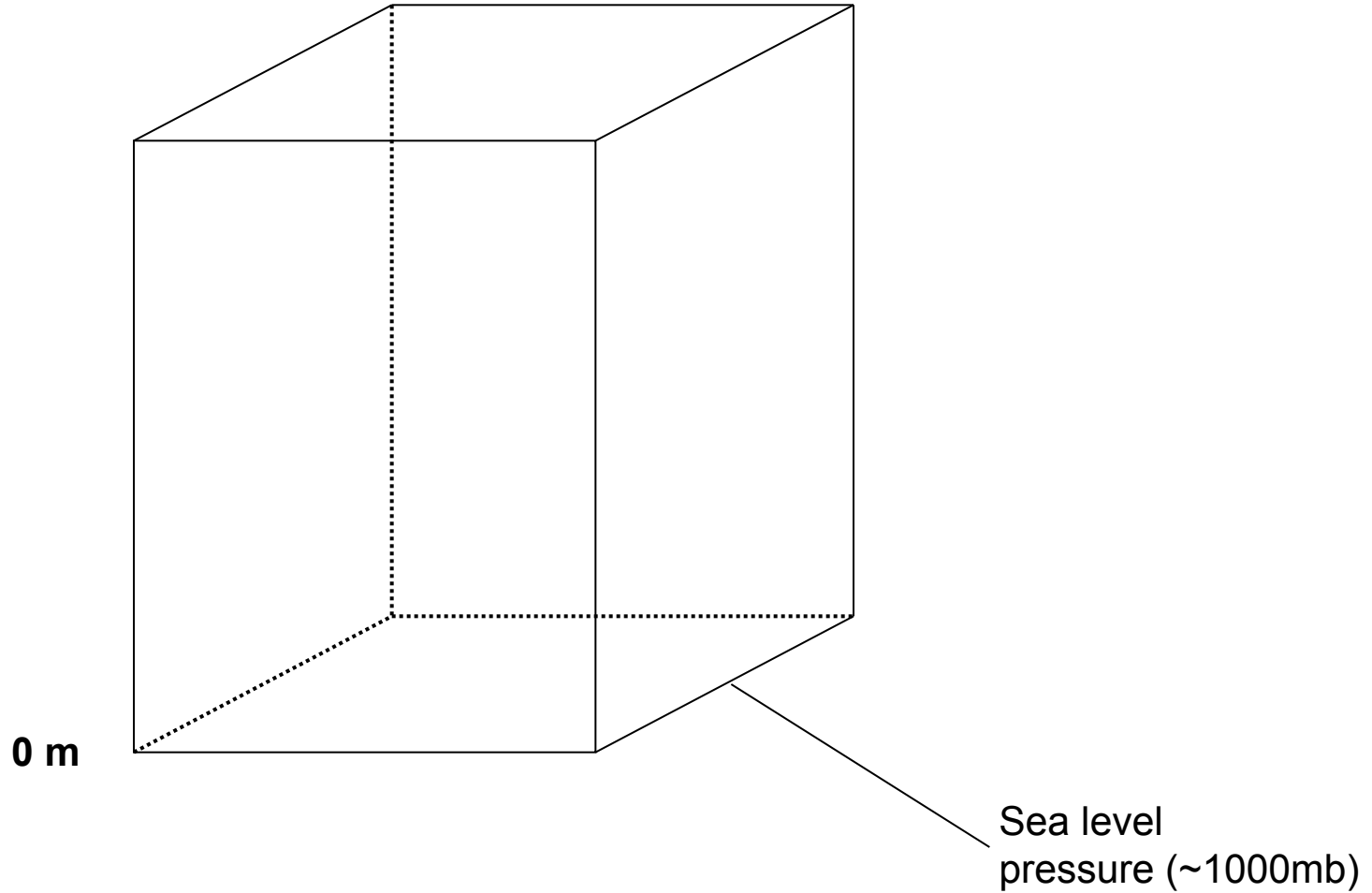
- **shows atmospheric pressure at a constant height**
- **example: sea level pressure map**

B. Constant Pressure Map

- **shows heights at a constant pressure**
- **here, the height is the distance from sea level to the pressure level**
- **example: 500 mb height map**

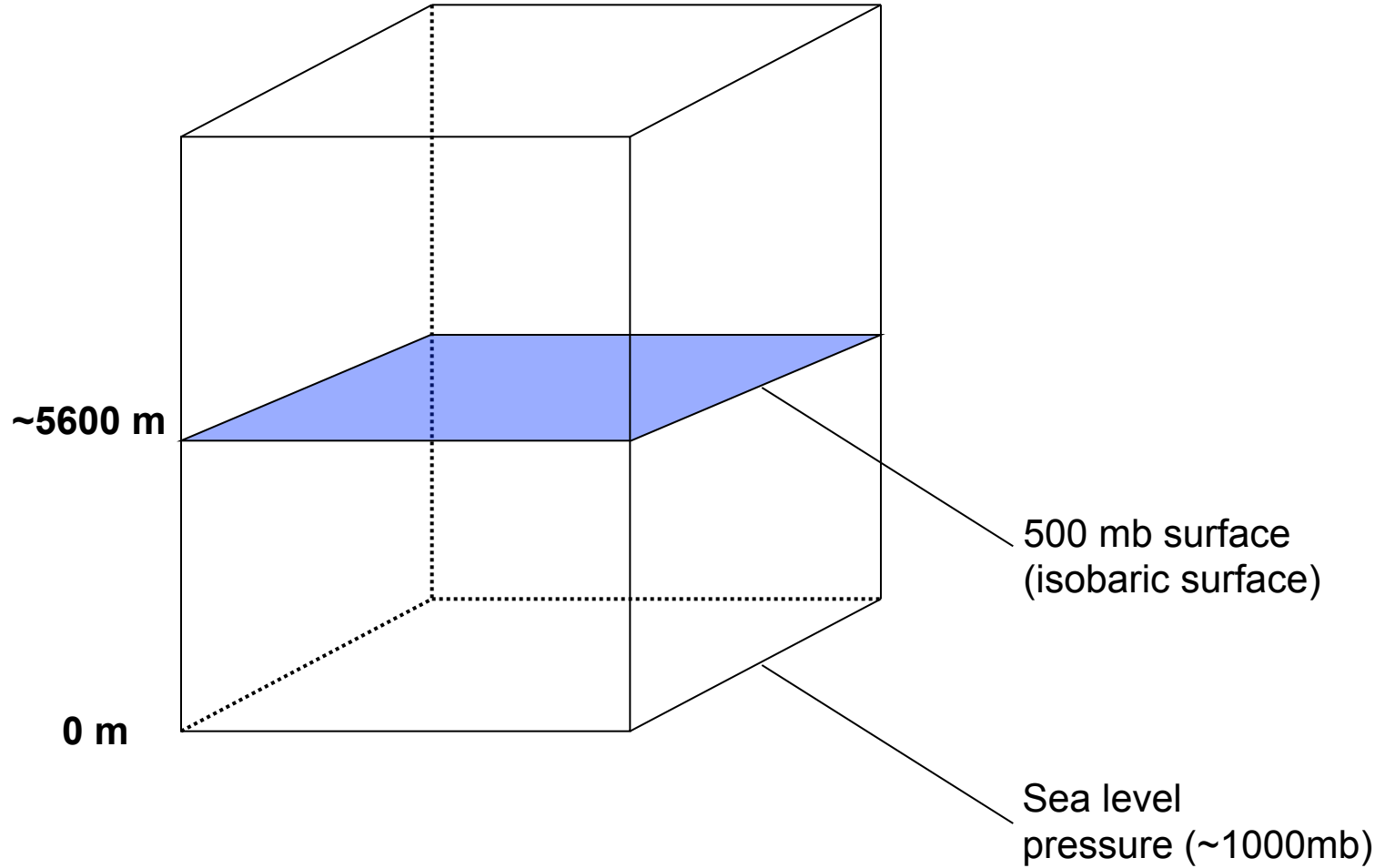
Atmospheric Column

Assume temperature is constant



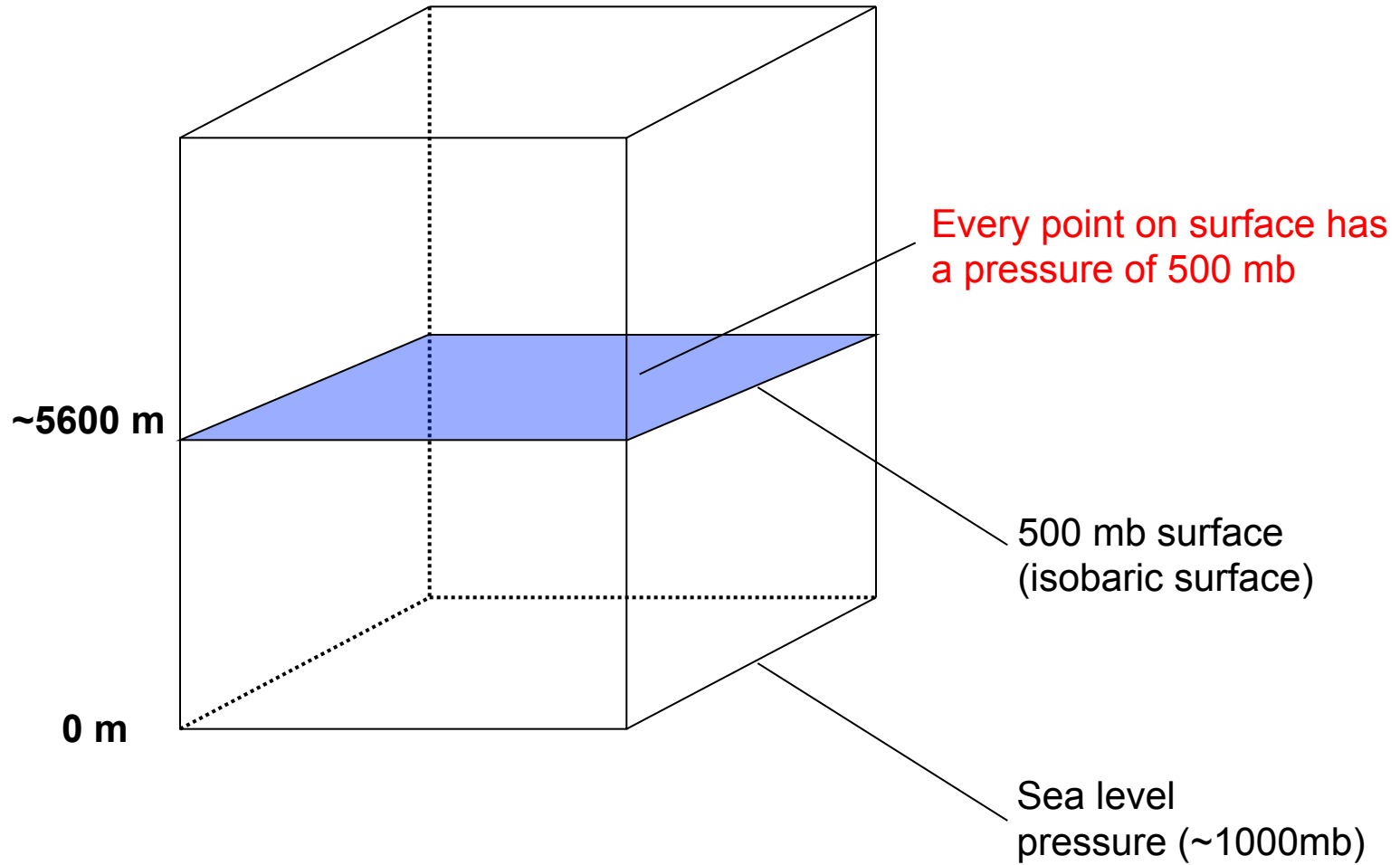
Atmospheric Column

Assume temperature is constant

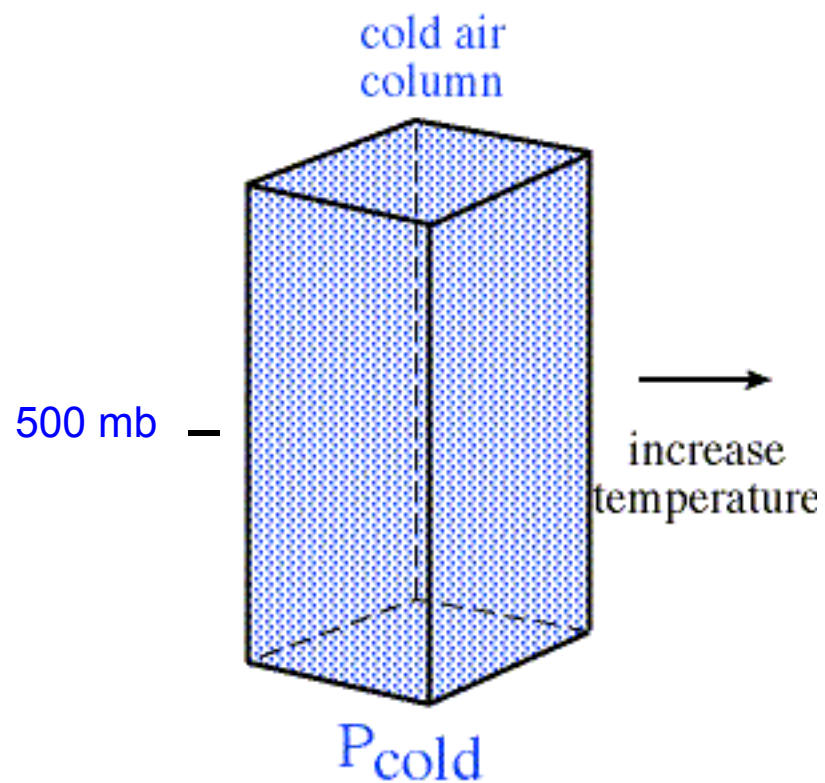


Atmospheric Column

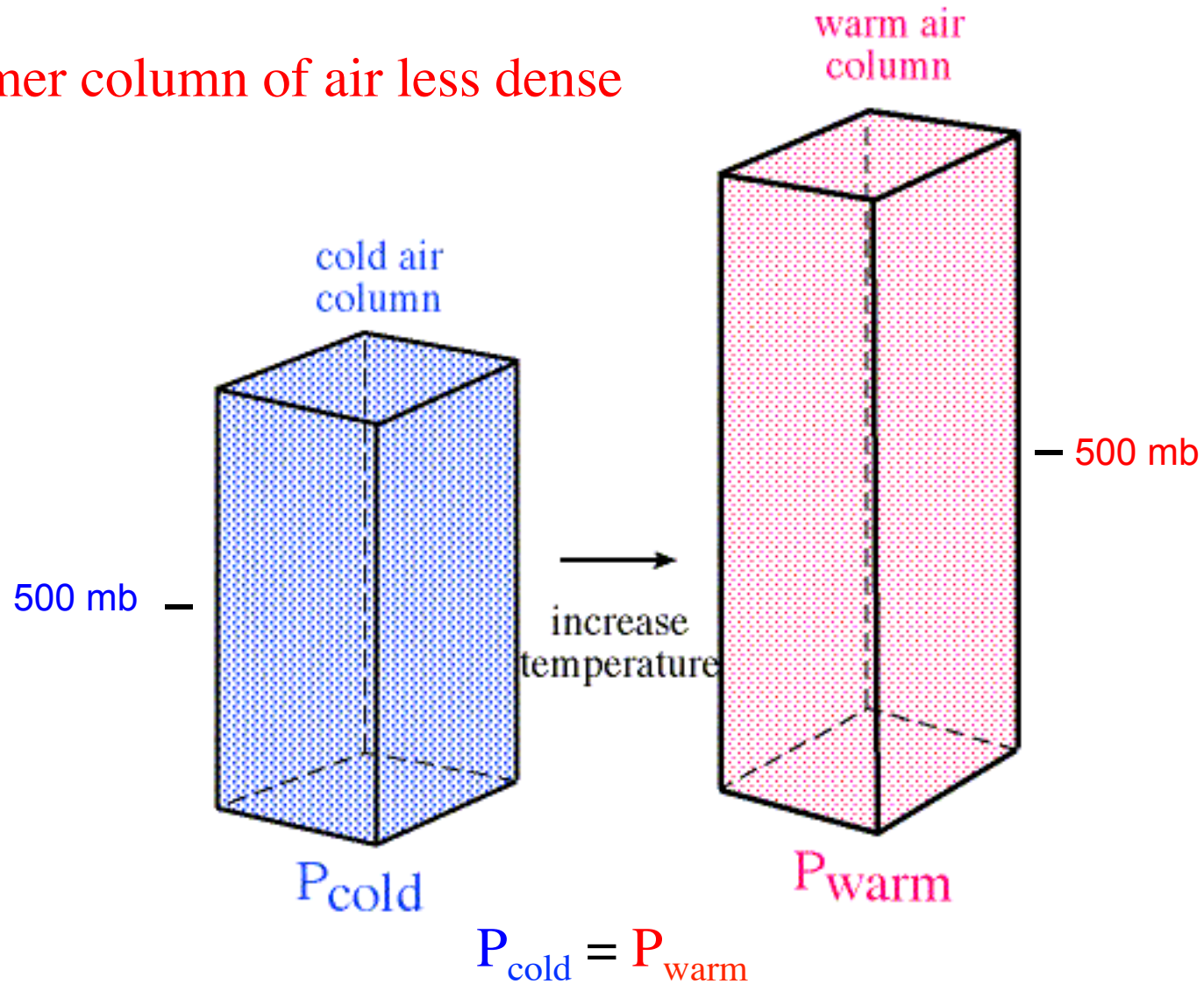
Assume temperature is constant



Increase temperature of an air column

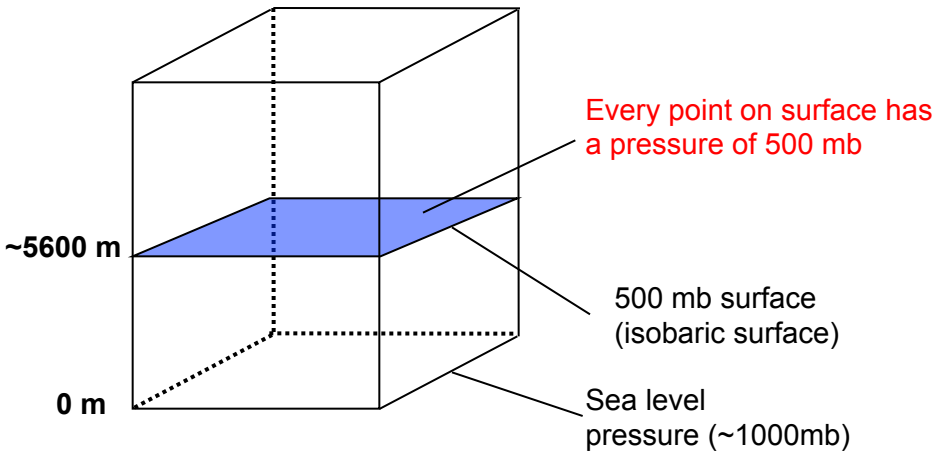


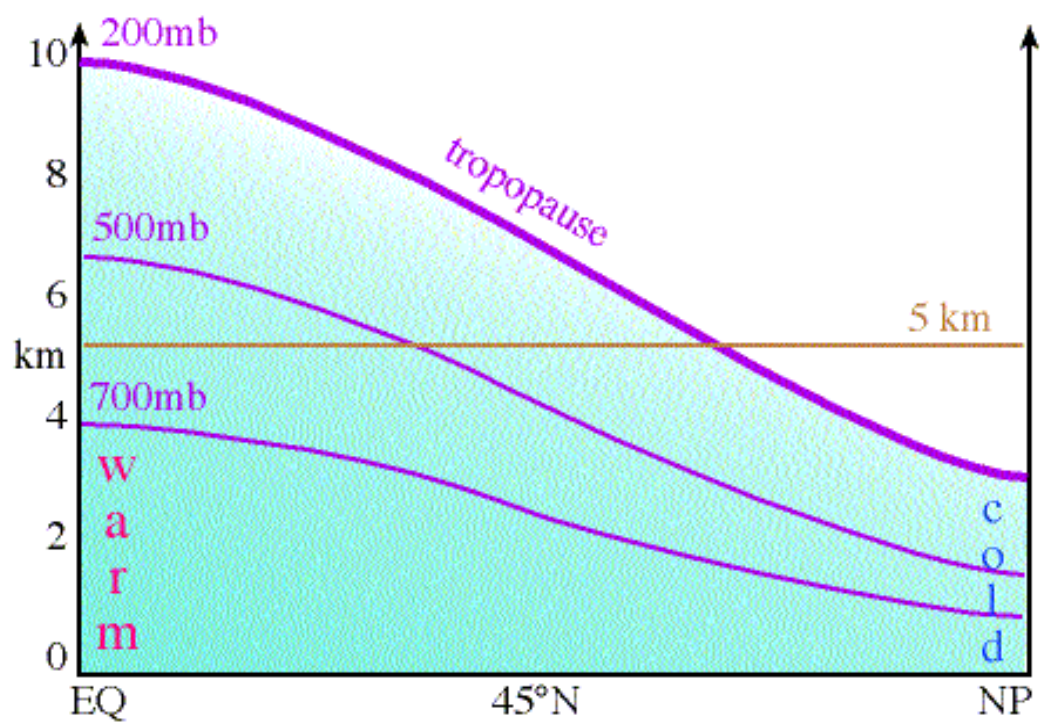
Warmer column of air less dense

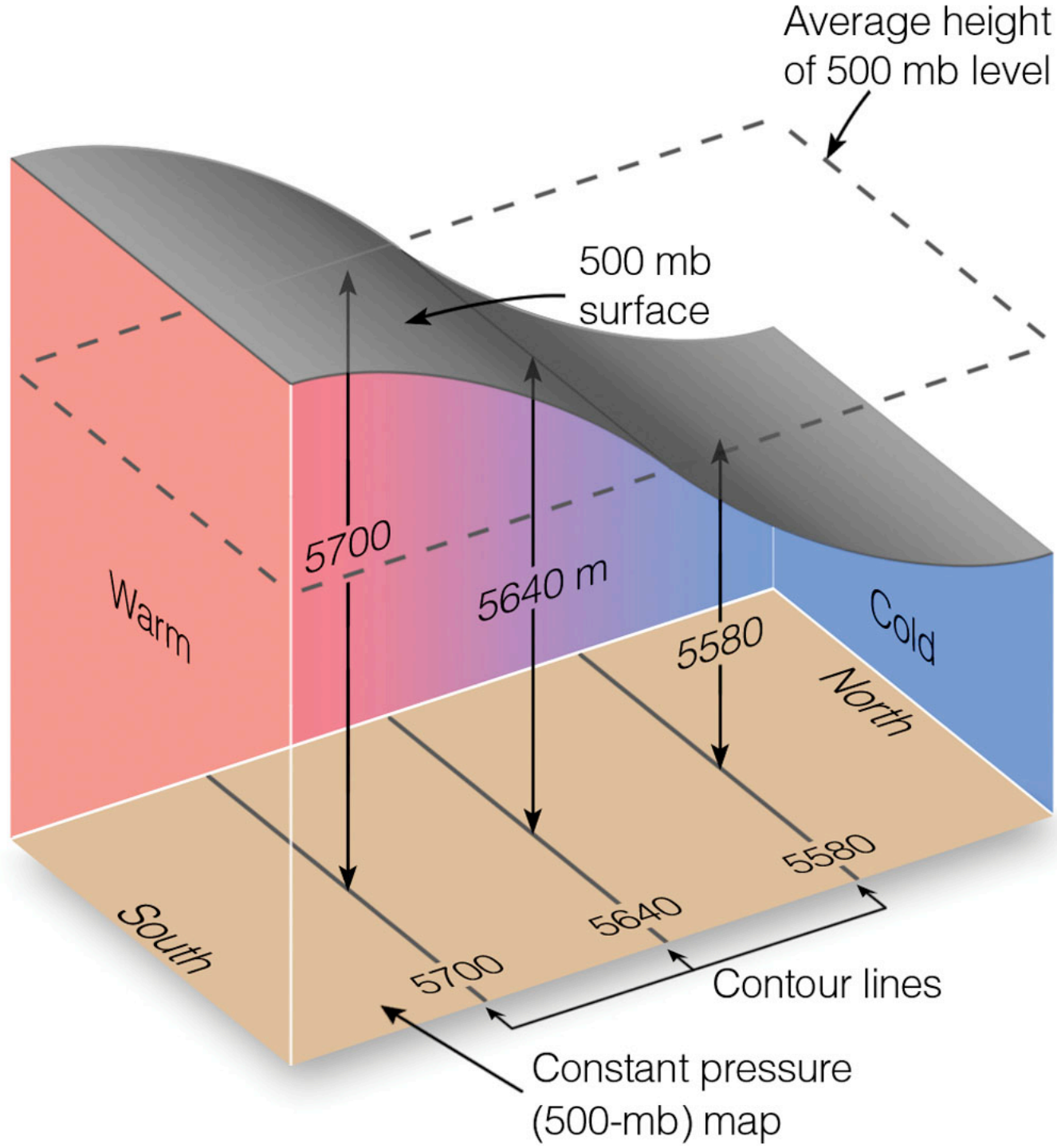


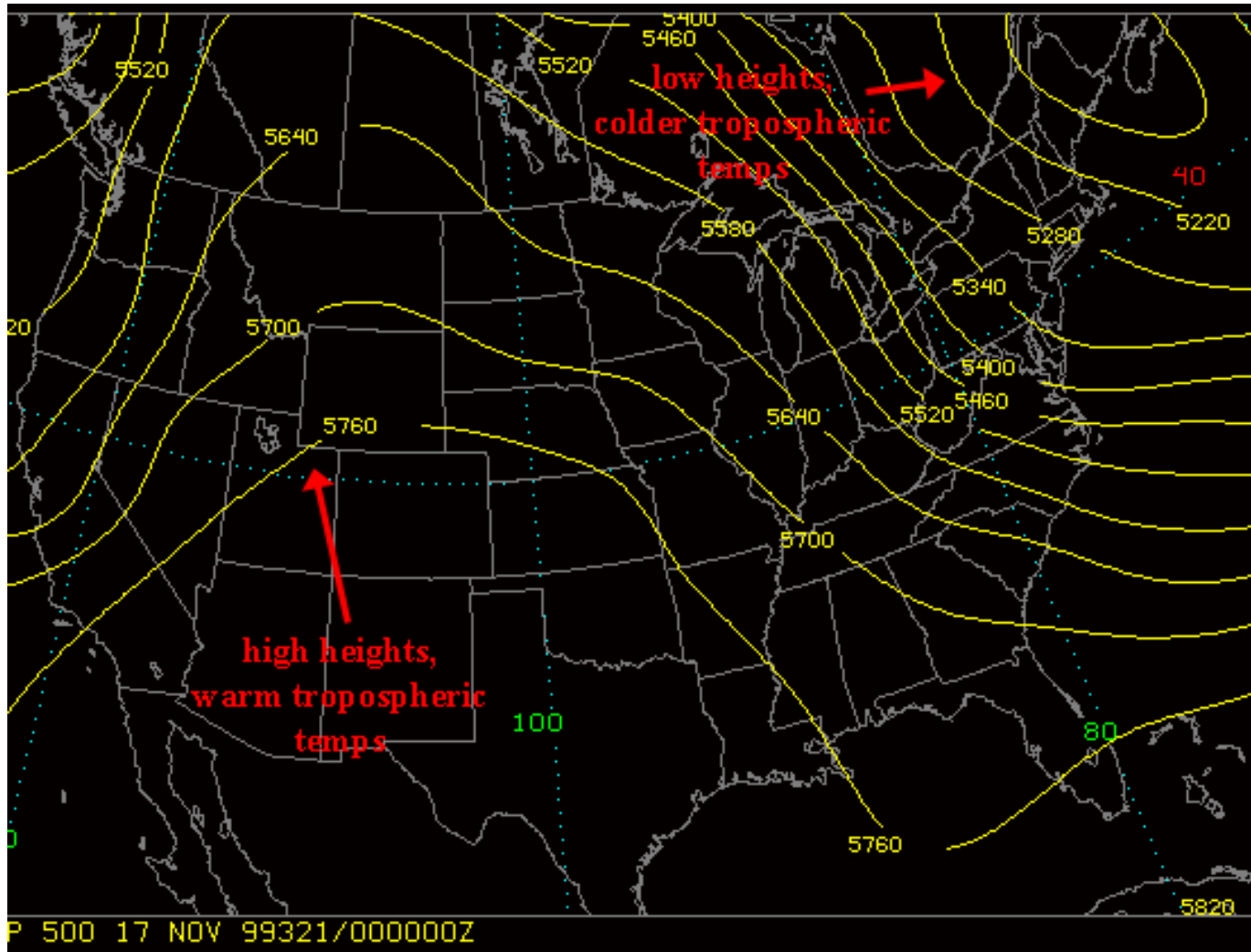
- Surface pressure stays the same, but midpoint of column rises as air column warms
- 500 mb height: 50% of atmospheric mass above and 50% below

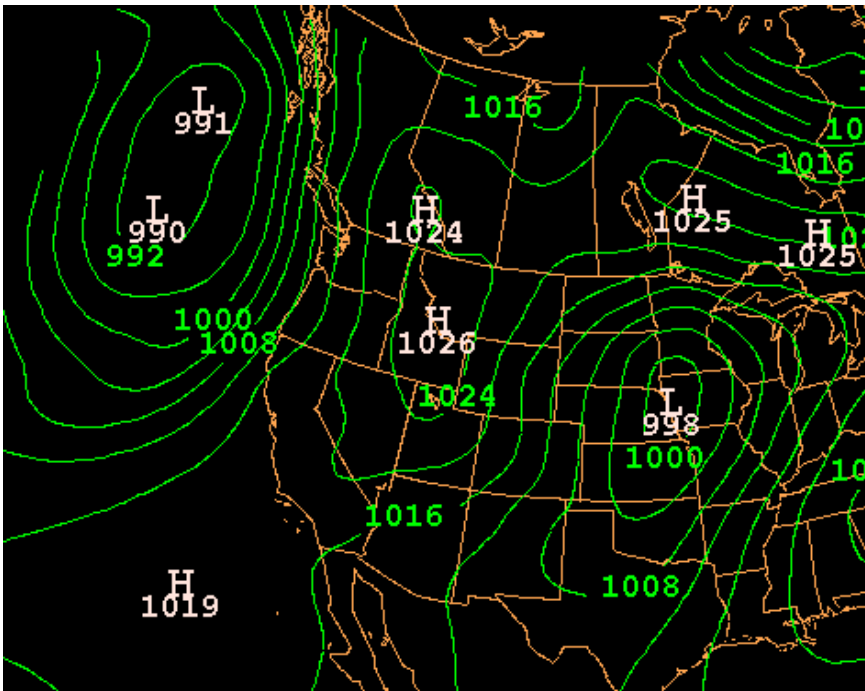
Assume temperature is constant



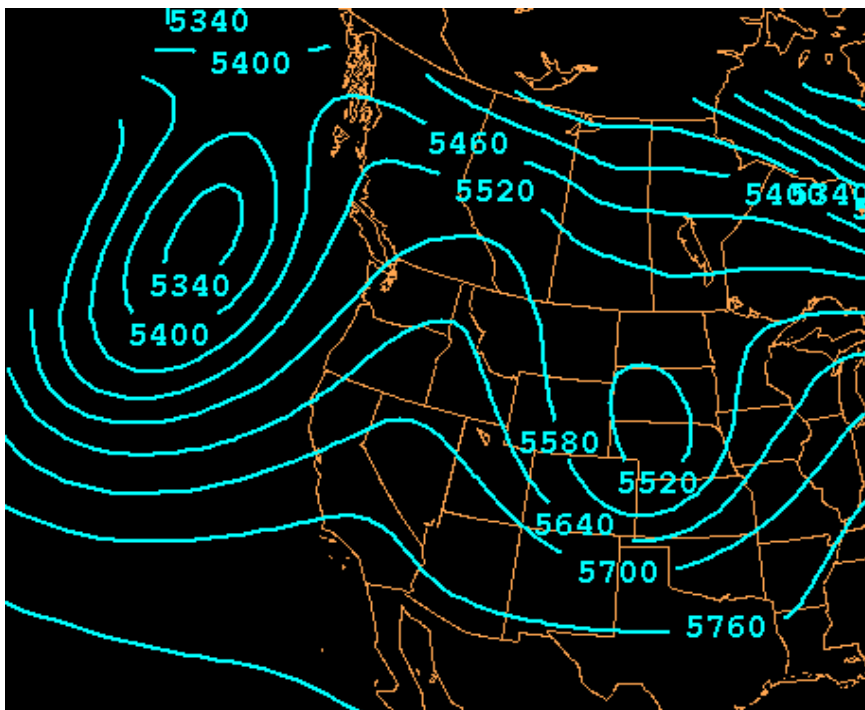




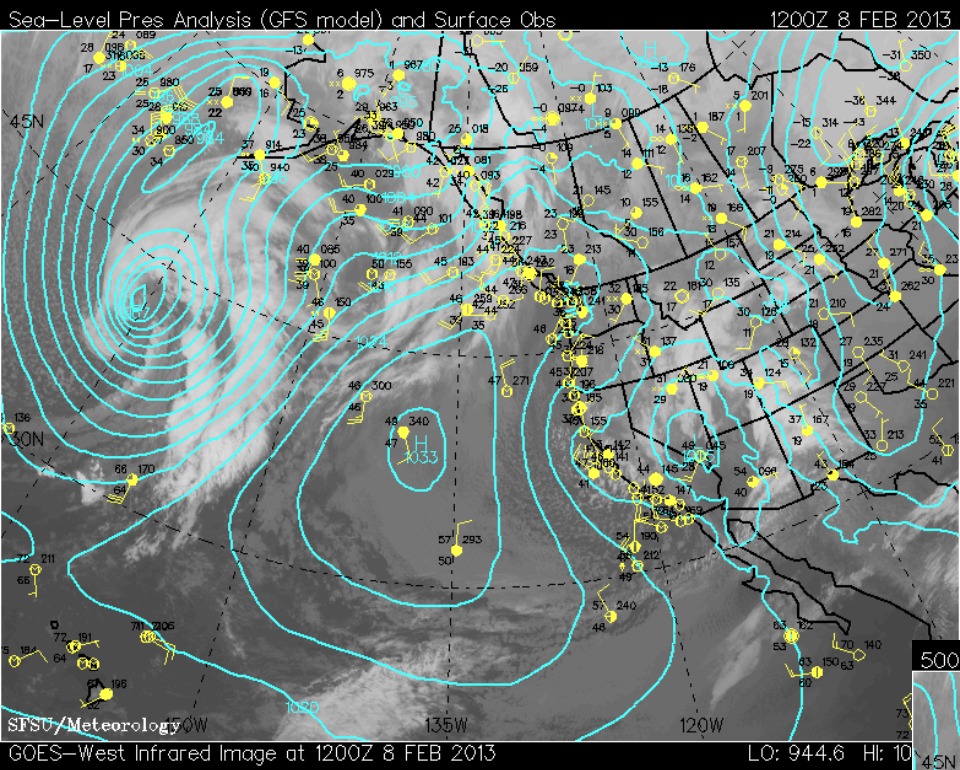




Surface Pressure Map



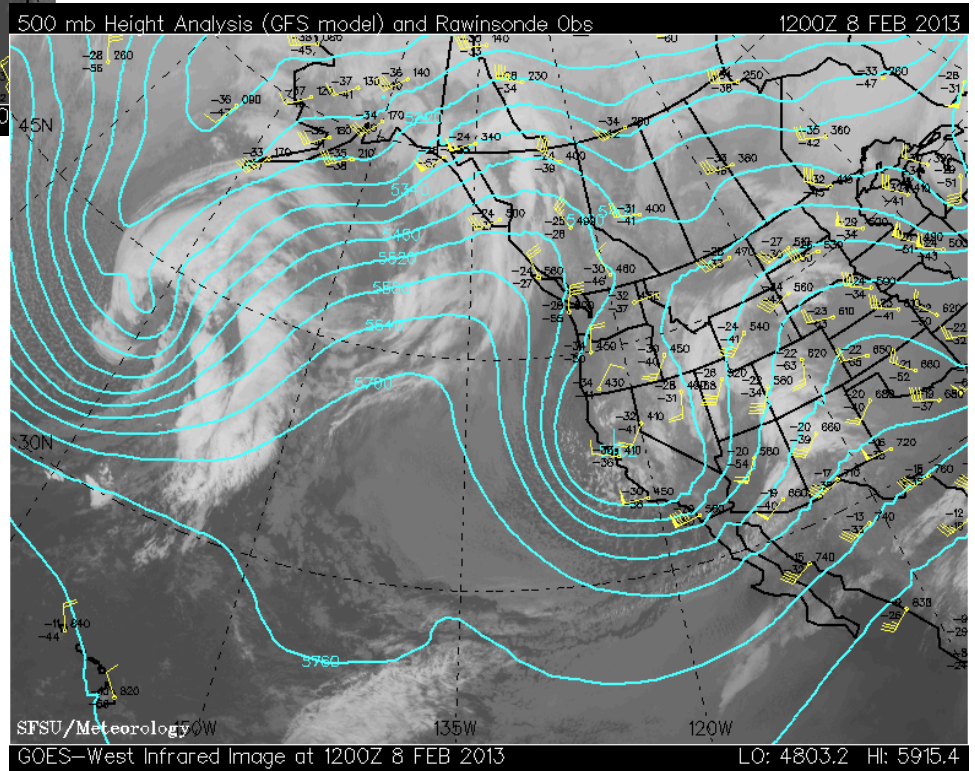
500-mb Chart



SURFACE PRESSURE MAP

←===

shows the pressure at a given height (here sea level)



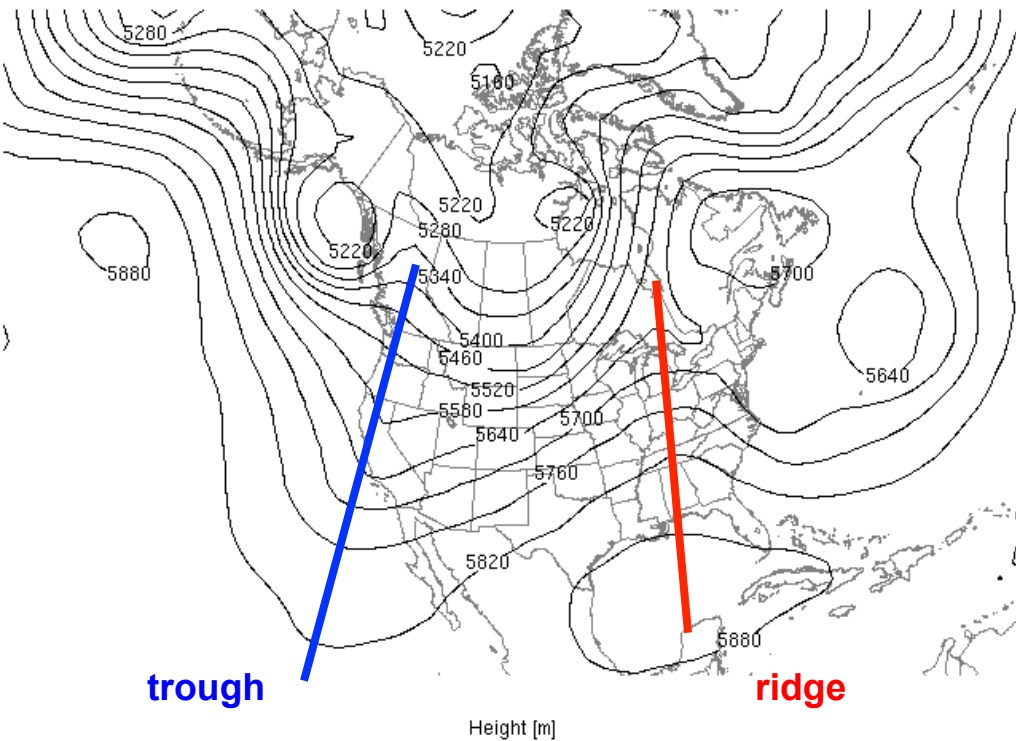
500 MB HEIGHT MAP

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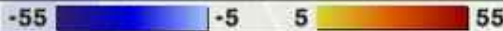
shows the height of a given pressure level (here 500 mb)

0 Hour 500 hPa Forecast Valid 00Z Mon 25 Oct 2004

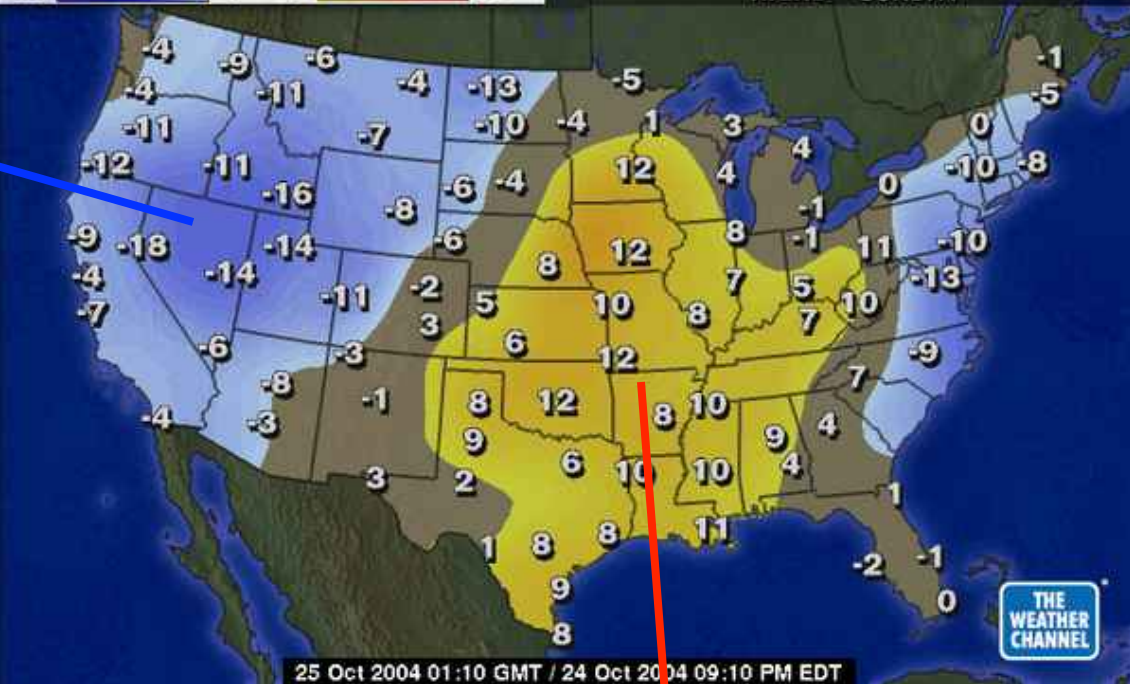
University of Wyoming



Departure from Normal (°F)



HIGHS SUNDAY



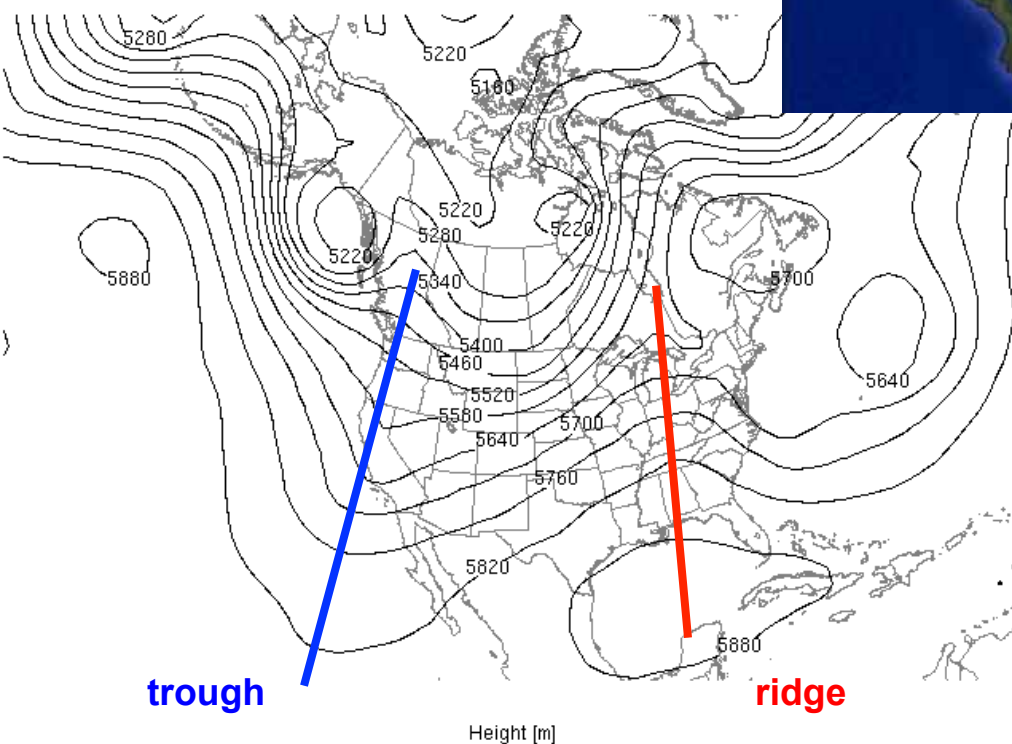
cooler than normal temps associated with trough



warmer than normal temps associated with ridge



0 Hour 500 hPa Forecast Valid 00Z Mon 25 Oct 2004



trough

ridge

Height [m]