

## 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

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## 2 Basic Types of Weather Maps

### A. Constant Height Map

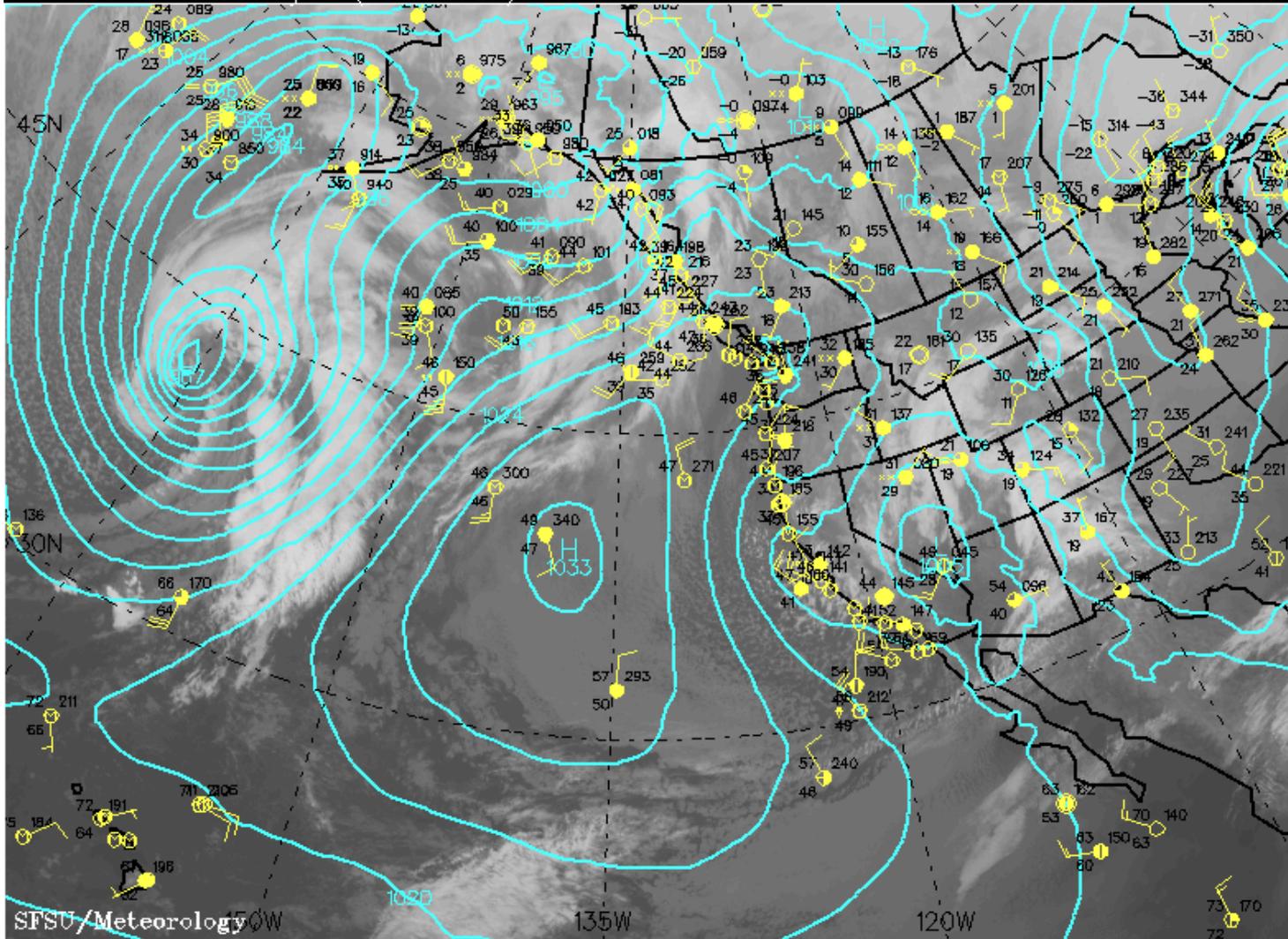
- shows atmospheric pressure at a constant height

- example: sea level pressure map

this is the 'constant' height

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

1200Z 8 FEB 2013



SFSU/Meteorology

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**

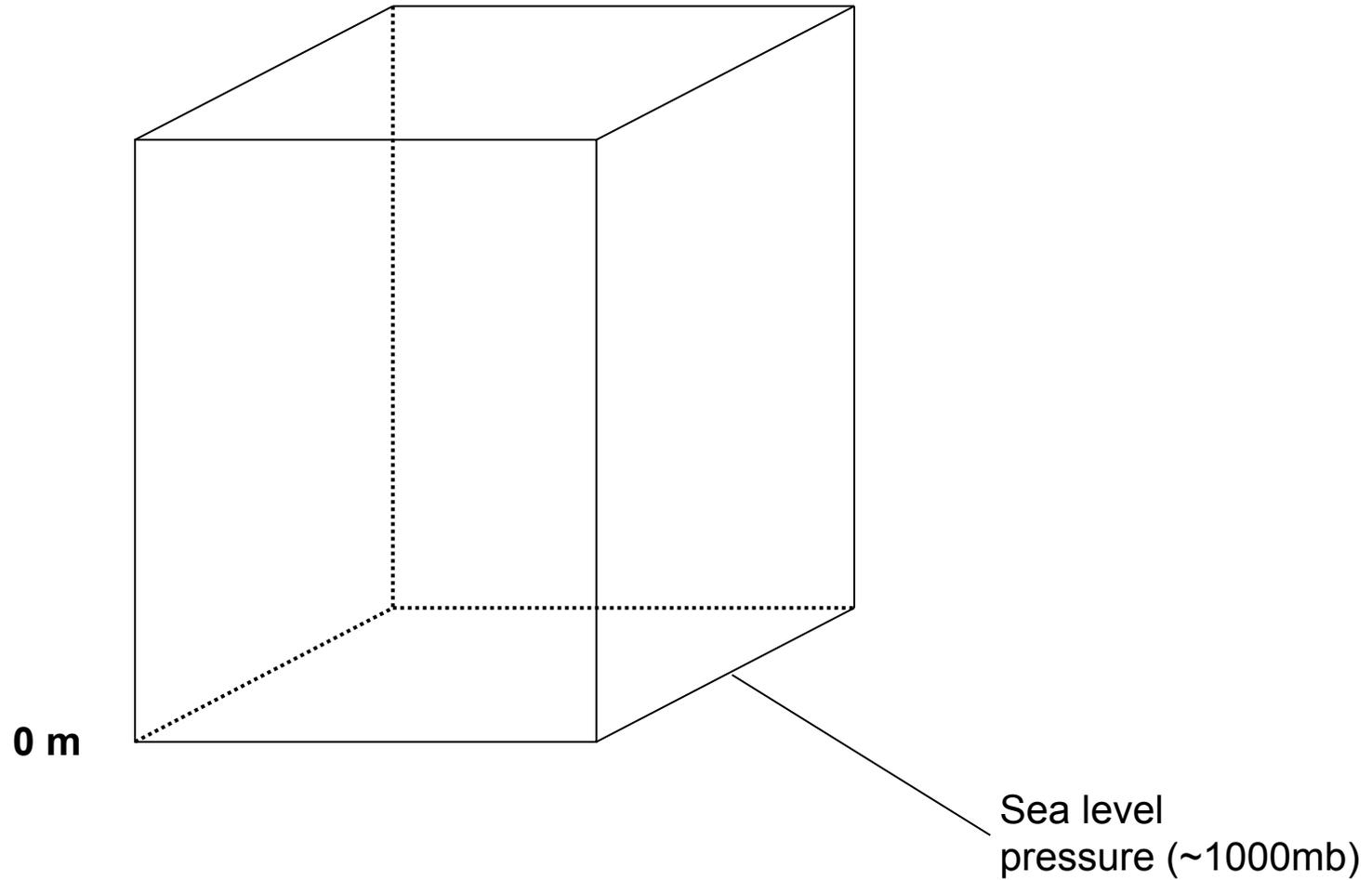
- **shows atmospheric pressure at a constant height**
- **example: sea level pressure map**

### **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**

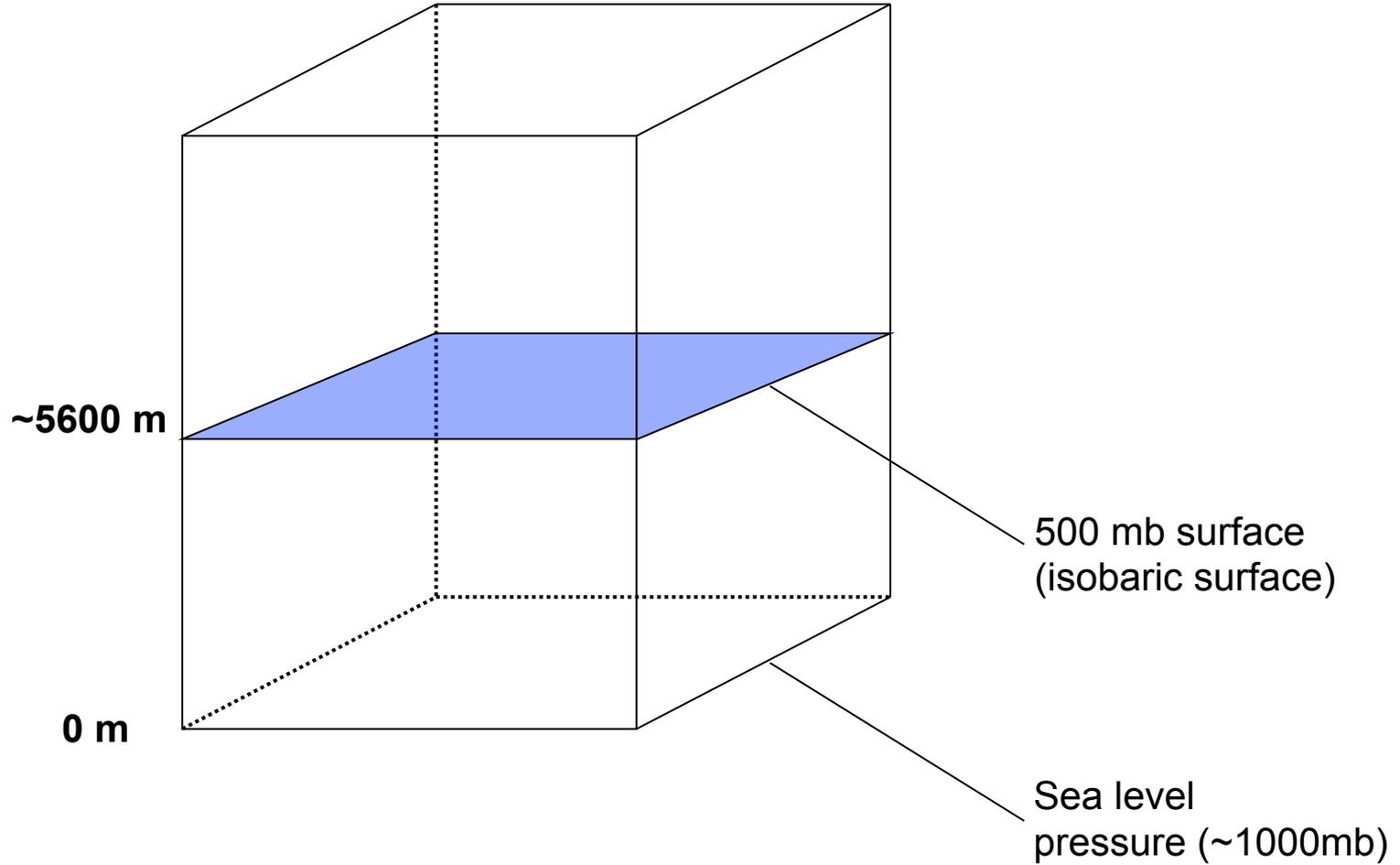
Atmospheric Column

Assume temperature is constant



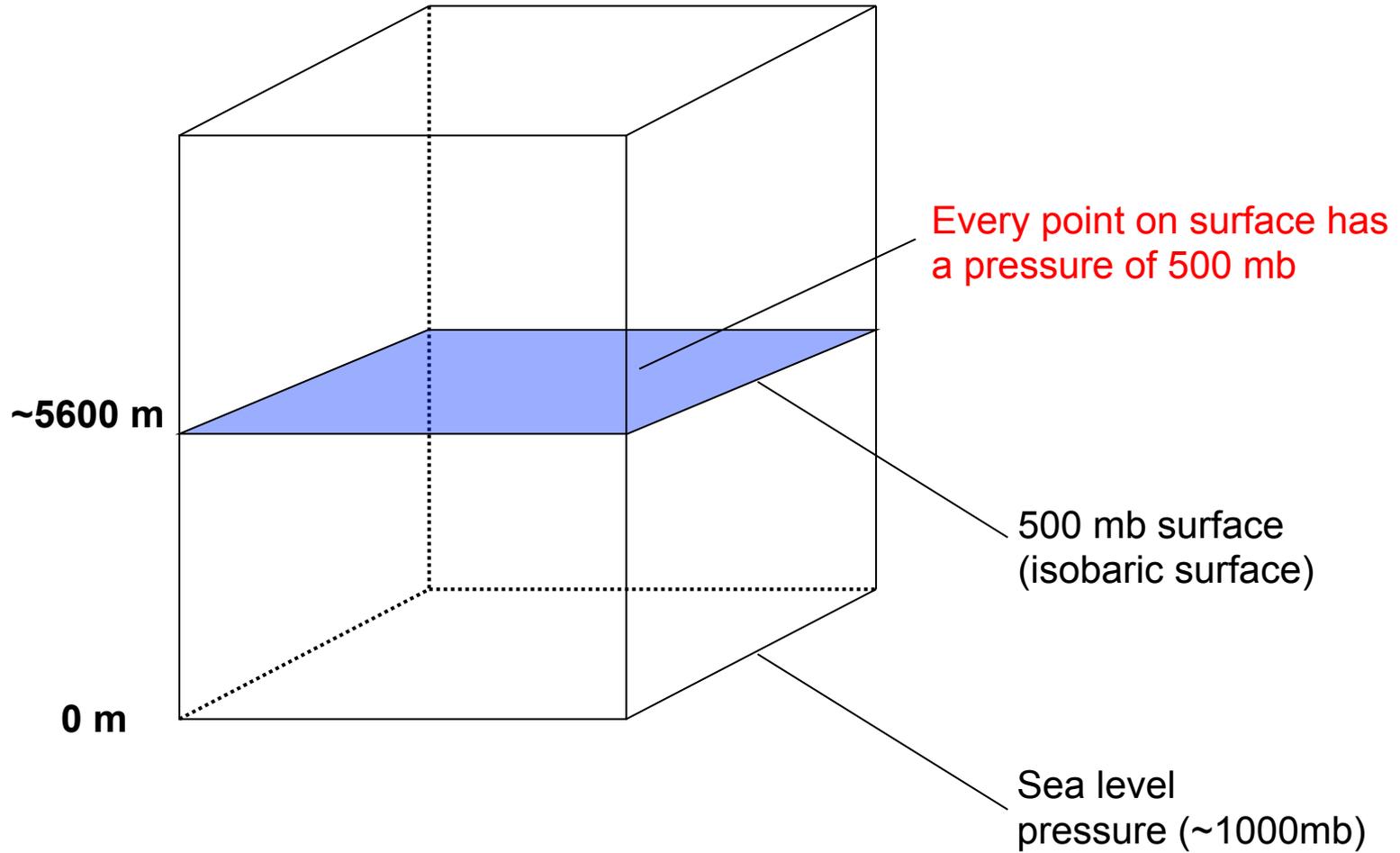
# Atmospheric Column

Assume temperature is constant

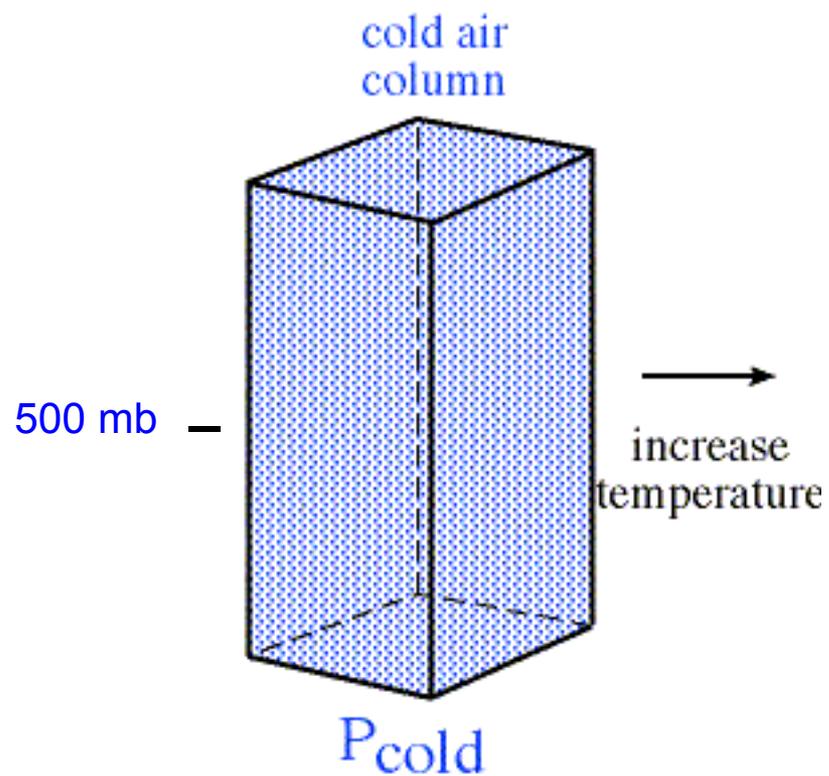


# Atmospheric Column

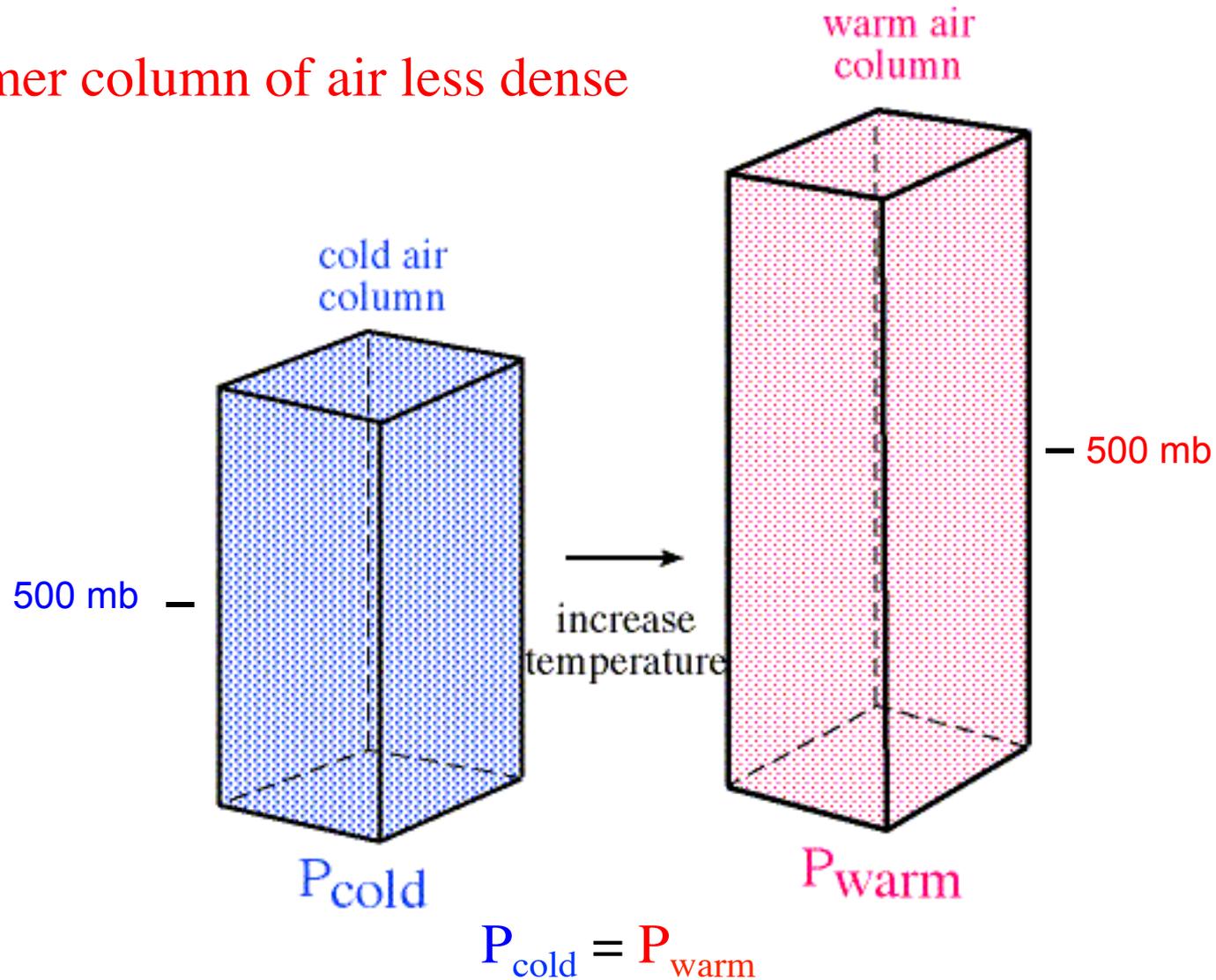
Assume temperature is constant



# Increase temperature of an air column

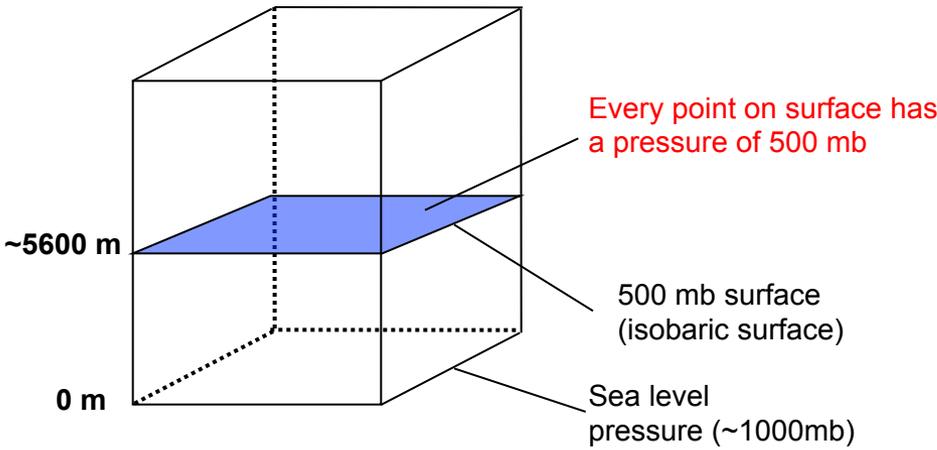


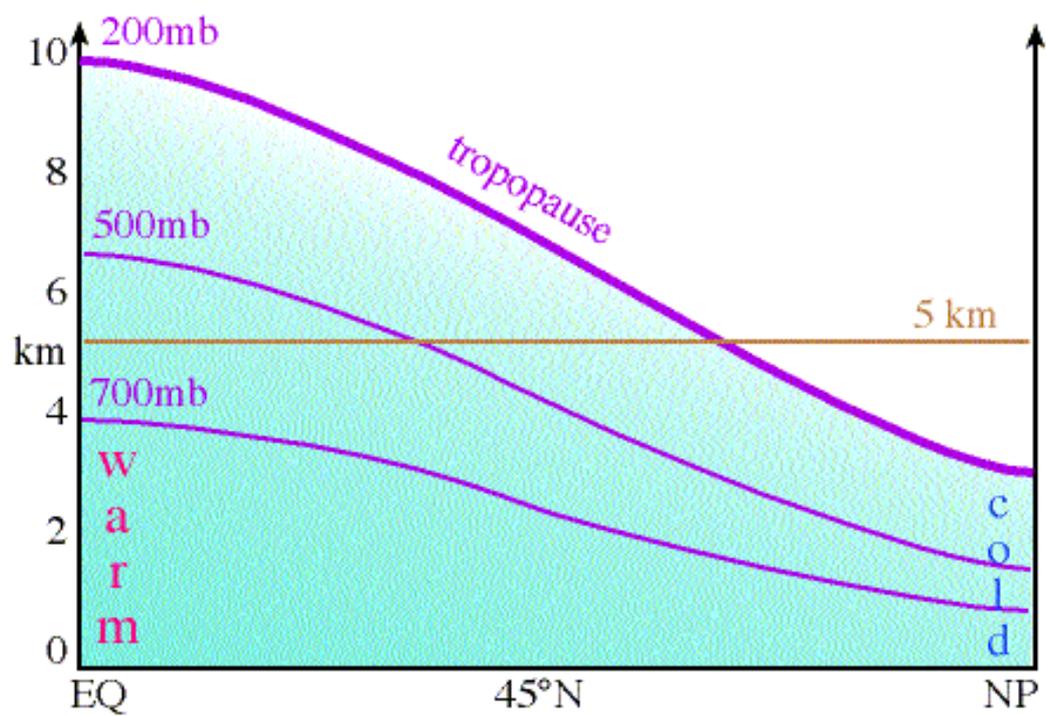
# Warmer column of air less dense

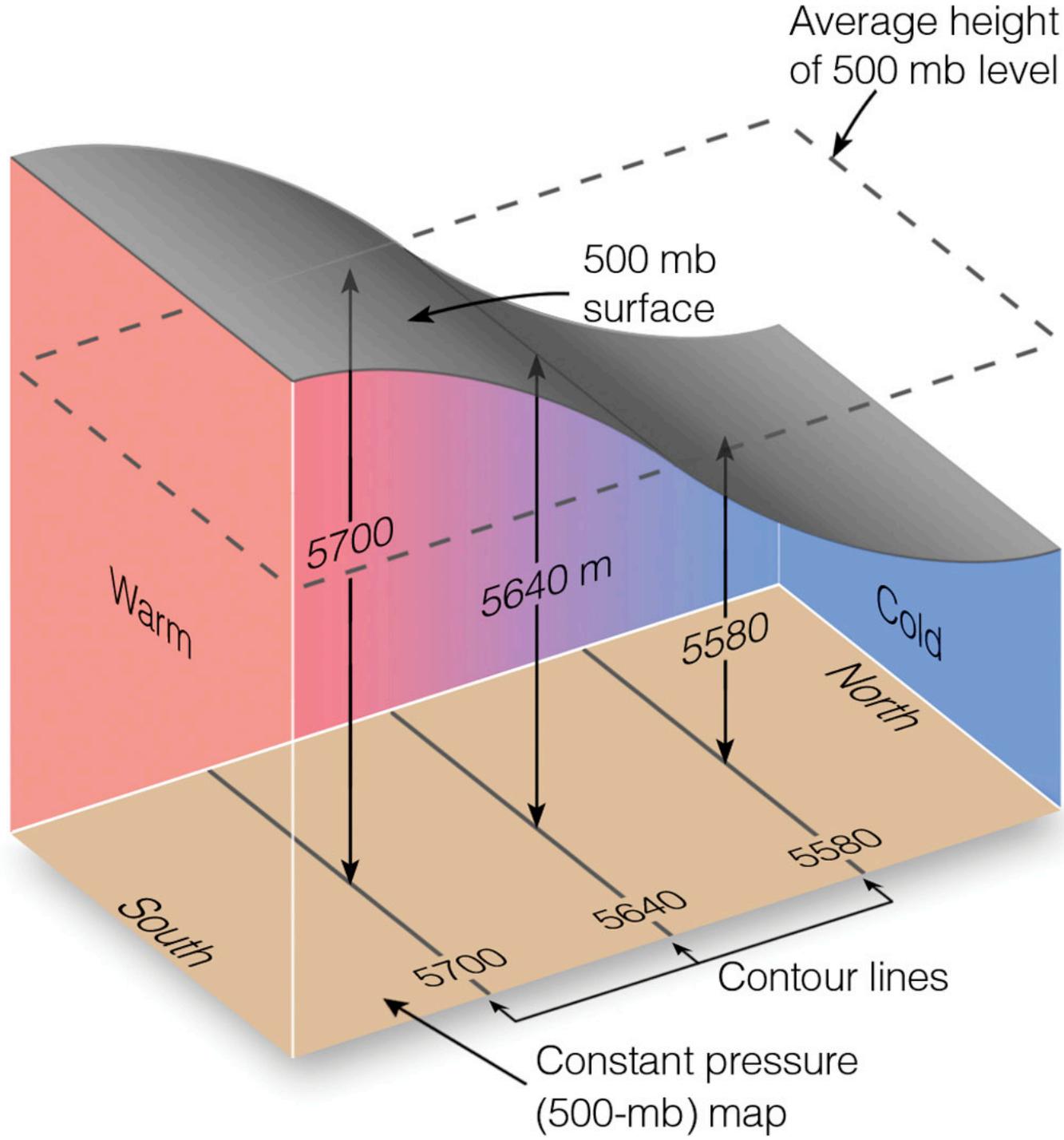


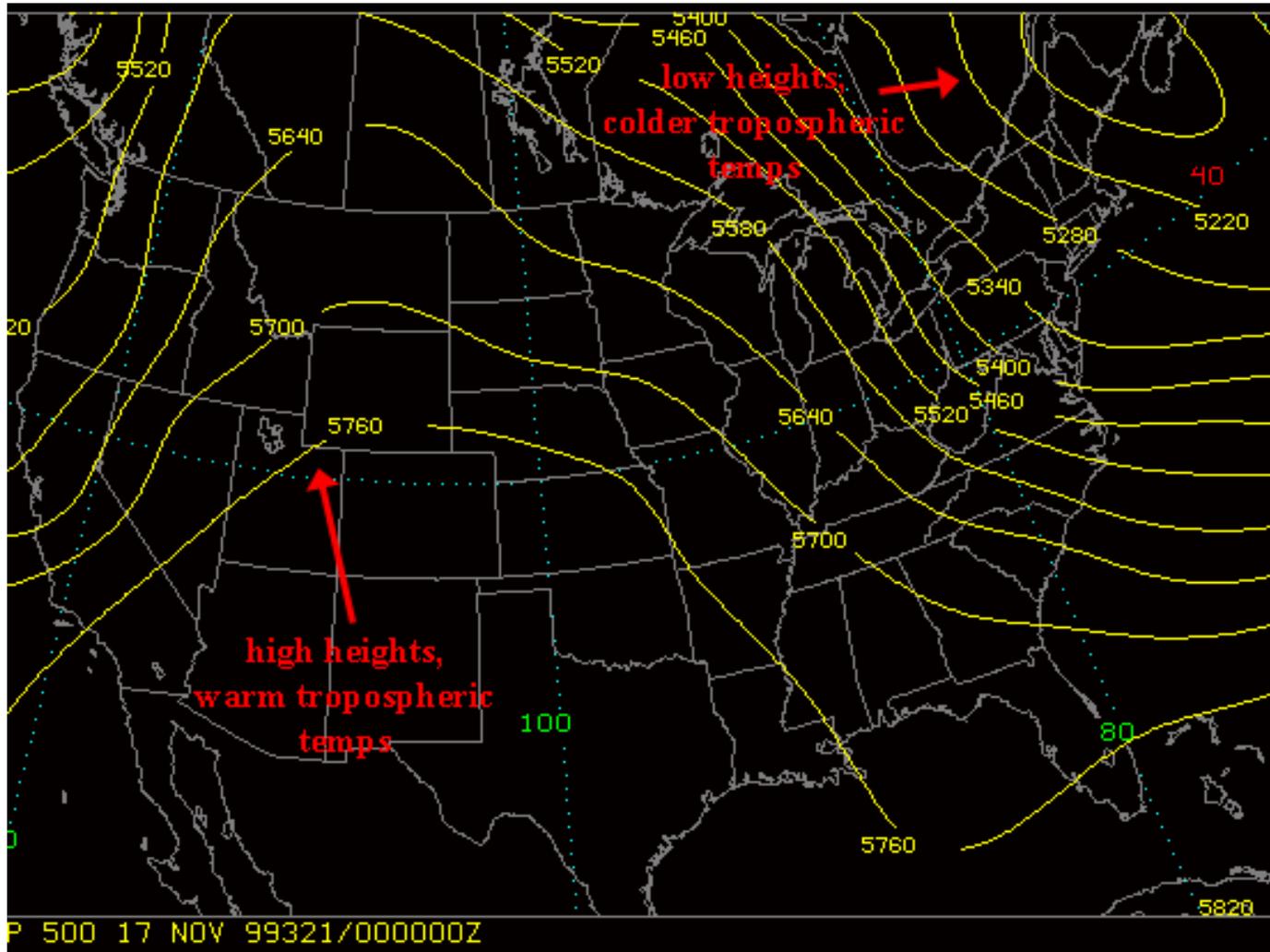
- Surface pressure stays the same, but midpoint of column rises as air column warms
- 500 mb height: 50% of atmospheric mass above and 50% below

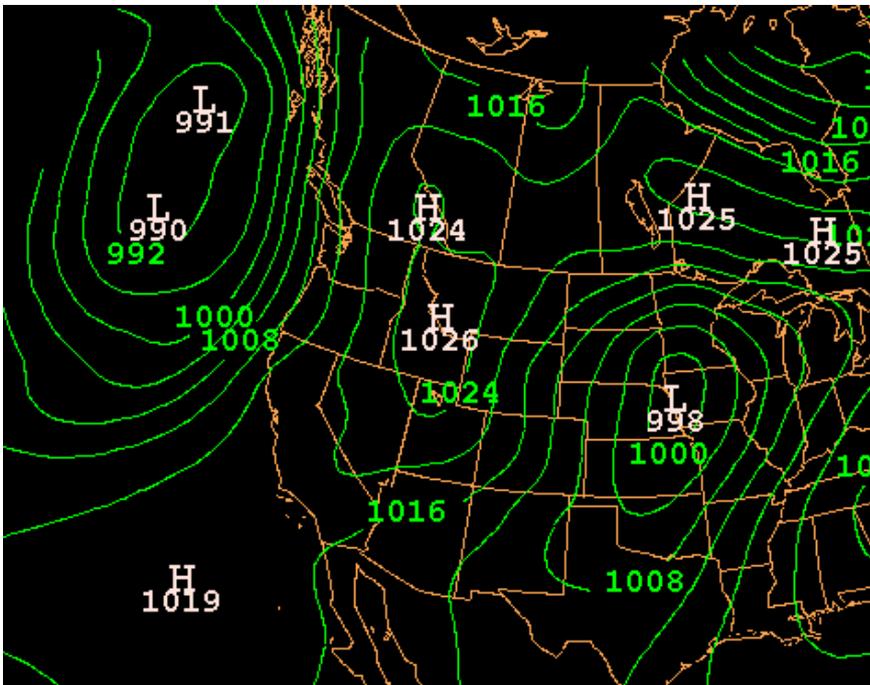
Assume temperature is constant



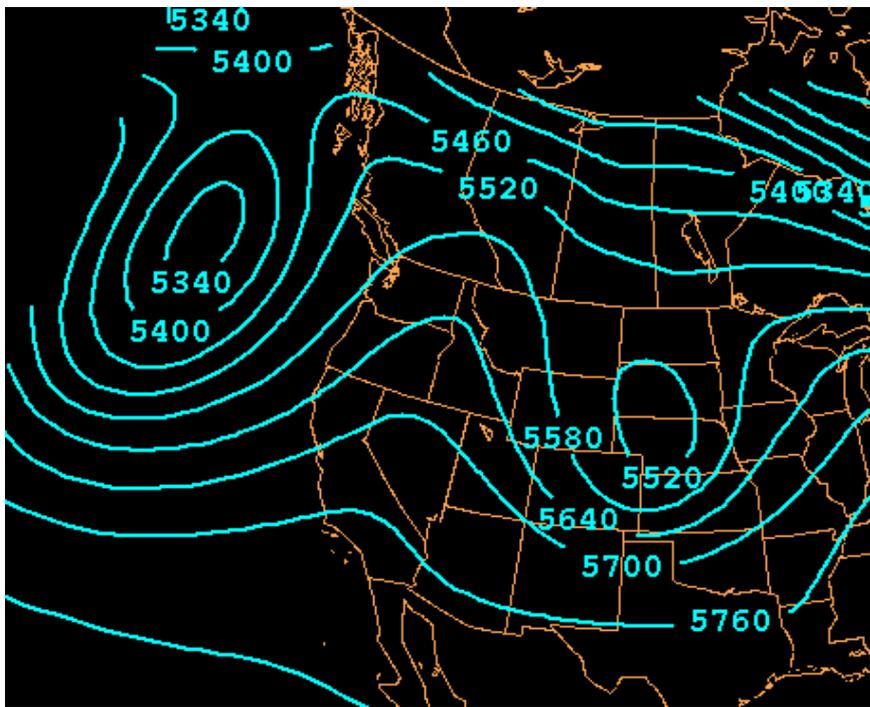




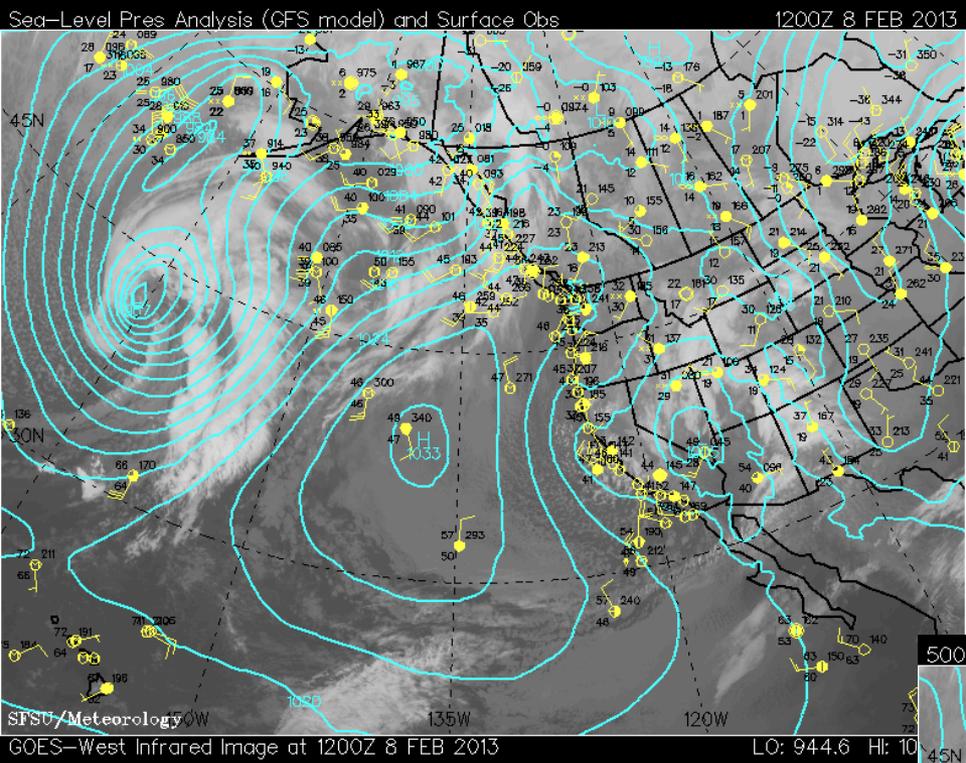




Surface Pressure Map



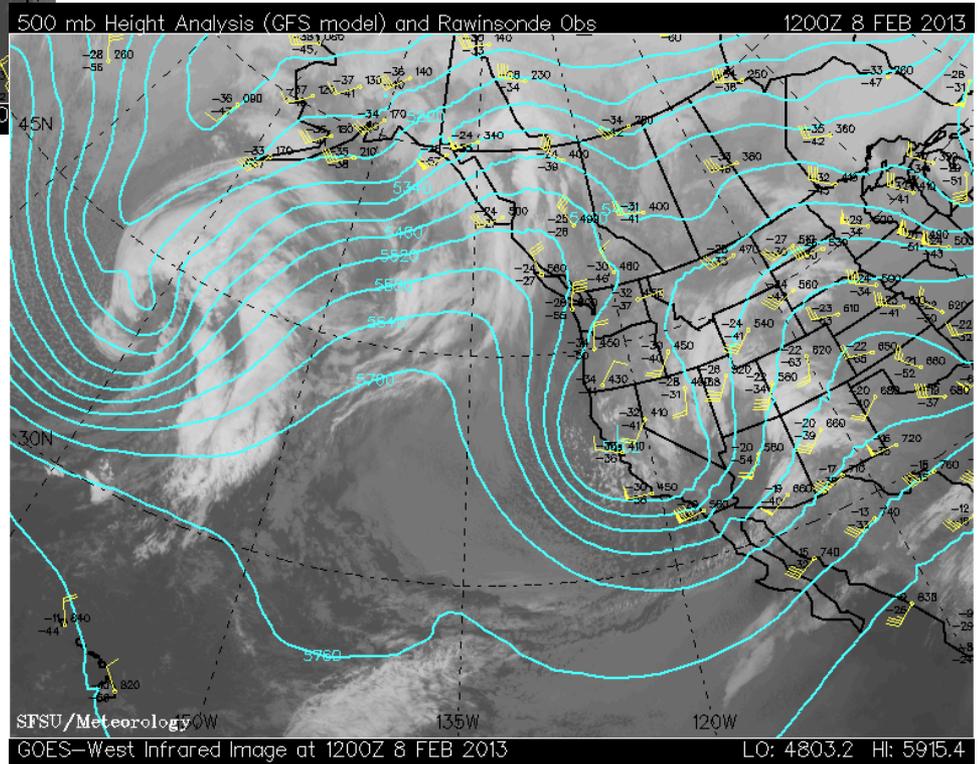
500-mb Chart



## SURFACE PRESSURE MAP

←===

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



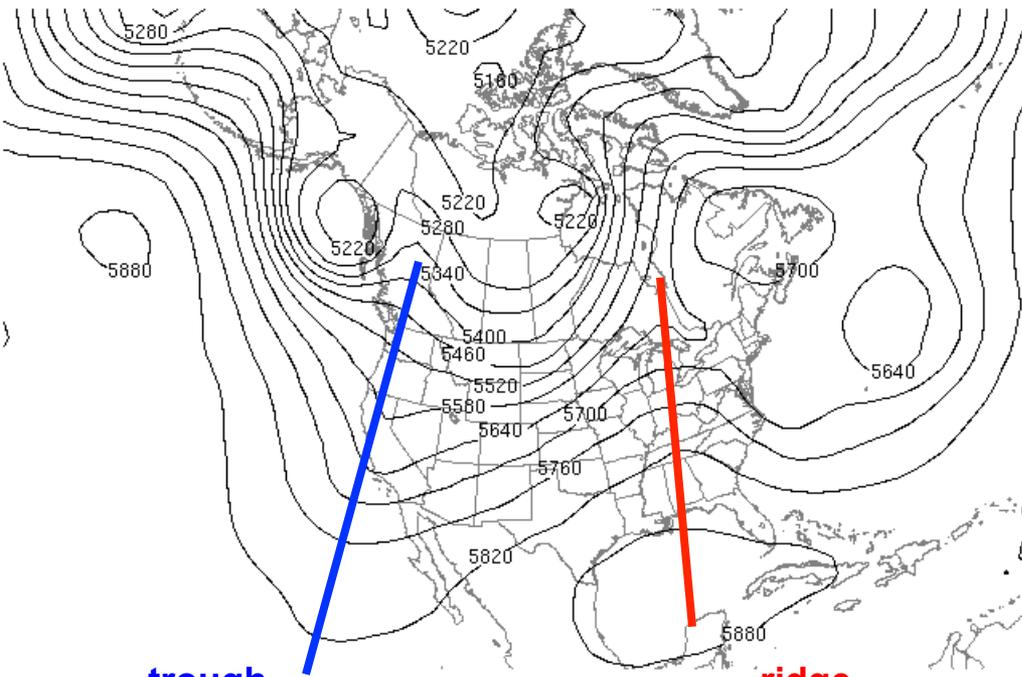
## 500 MB HEIGHT MAP

===>

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



trough

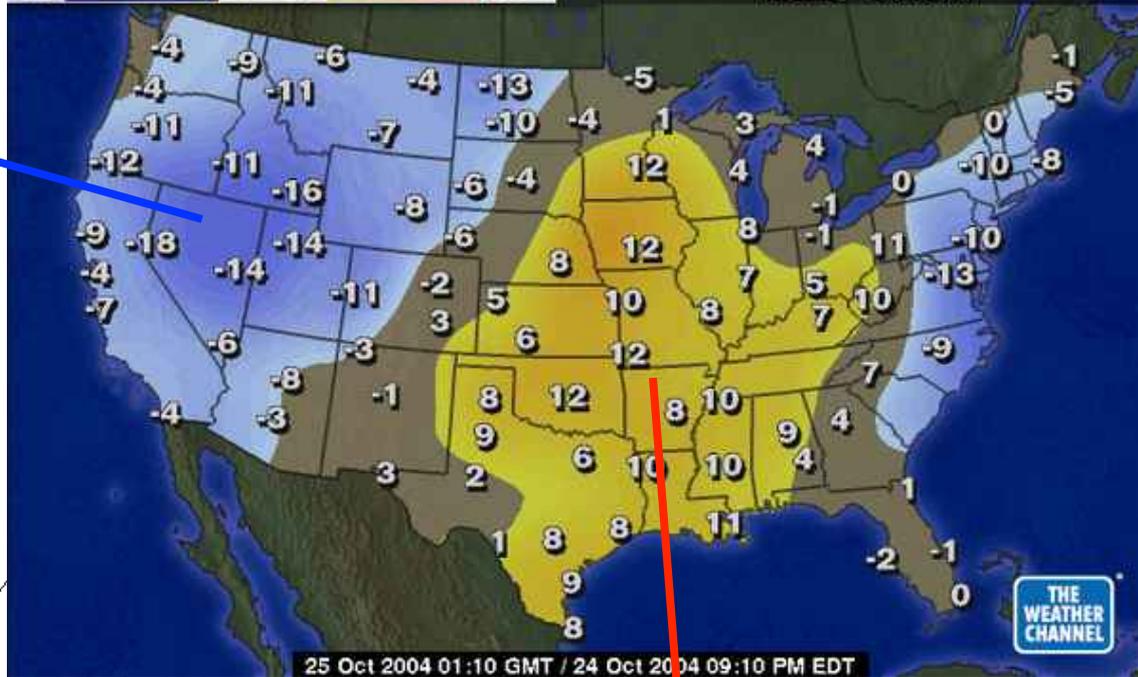
ridge

Height [m]

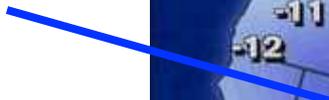
# Departure from Normal (°F)

-55 -5 5 55

HIGHS SUNDAY



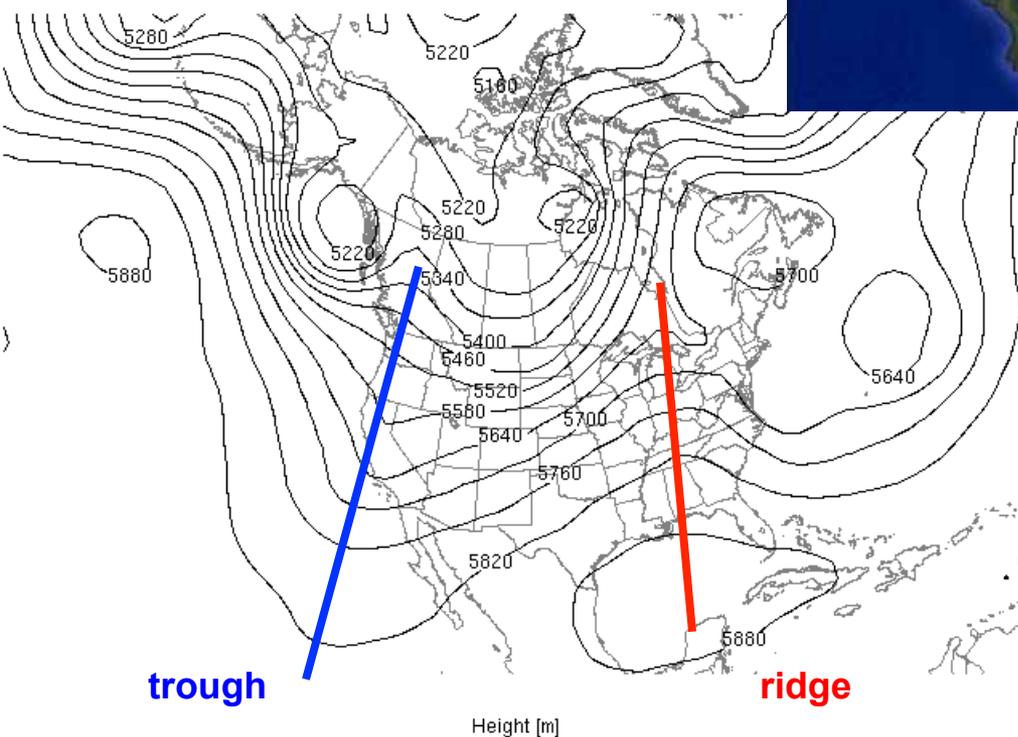
cooler than normal temps associated with trough



warmer than normal temps associated with ridge



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



trough

ridge

Height [m]