

# Forecasting for Gliding using

National Oceanic and Atmospheric Administration

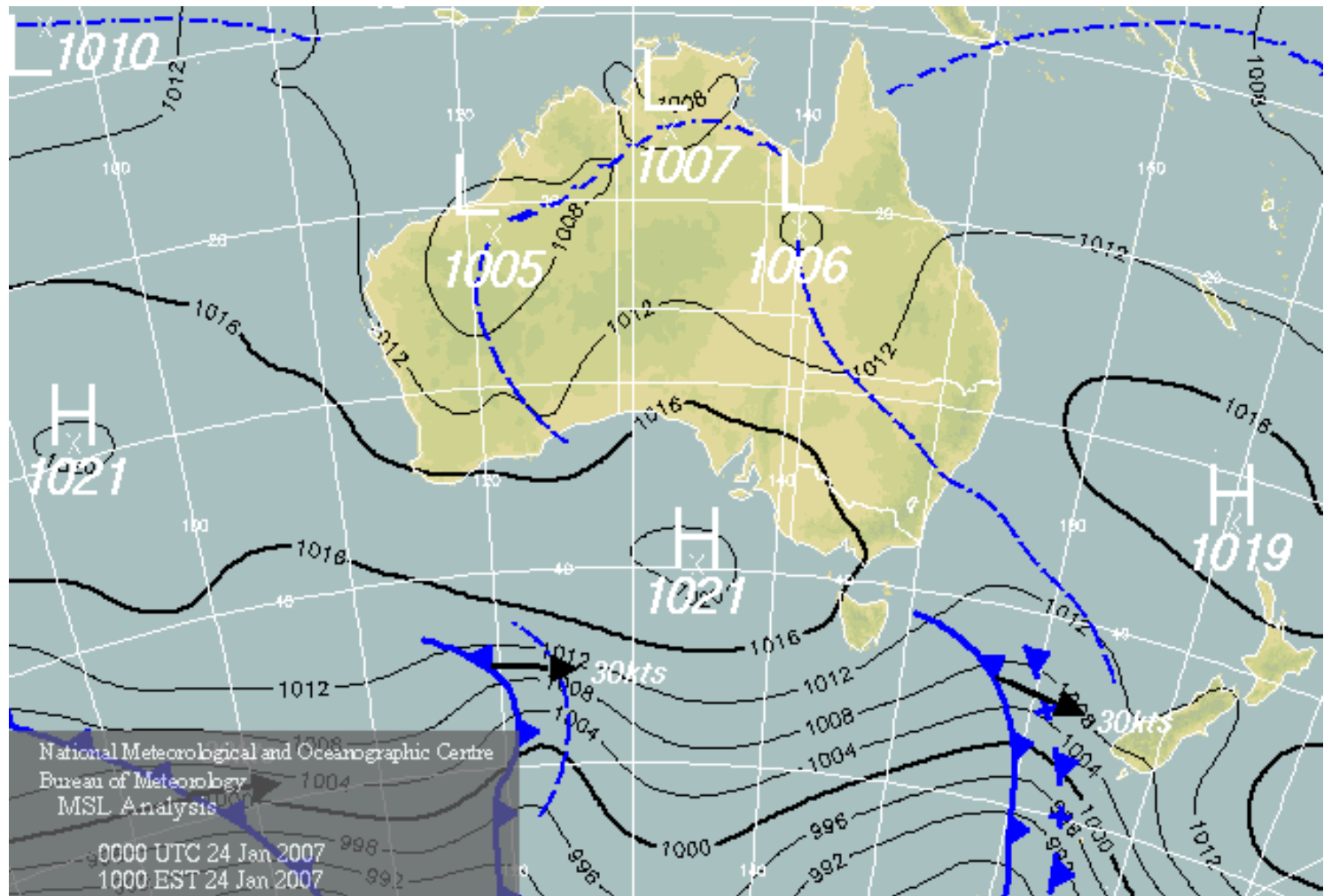
# Information Sources

<http://www.arl.noaa.gov/ready/cmet.html>

[www.bom.gov.au](http://www.bom.gov.au)

NAIPS

<http://www.ddsc.org.au/links/links.asp> -  
weather



Jenny Thompson Jan 07, rev 2



### CURRENT METEOROLOGY (WORLD)

#### Forecast Model Graphics

Choose a forecast location by entering an 4-character ICAO station identifier or a 6-digit WMO ID or a latitude/longitude pair and then click the Continue button, or by clicking on the location on the map below. The location will be taken to the model products section.

ICAO or WMO ID:  Search for Code

Or choose a city ->

OR

Latitude (degrees)

Longitude (West < 0)

Convert Degrees/Sec into Decimal Degrees

Continue

Reset

OR click a location on the map below.

North American Map

United States

Global Map



Latitude using Minus sign (South)

Longitude

# CURRENT METEOROLOGY (WORLD)

## Forecast Model Graphics

ast location by entering an 4-character ICAO station identifier or a 6-digit WMO index num  
ngitude pair and then click the Continue button, or by clicking on the location in the map.  
the model products section.

ICAO ID:  Search for Code

OR

Latitude (degrees)

WMO ID:    
y →    
▼

Longitude (West < 0)

Convert Deg/Min/Sec into Decimal Deg

Continue

Reset

OR click a location on the map below.

World Map

United States

Global





Return to: CURRENT METEOROLOGY | STATE WEATHER

### READY PRODUCTS FOR LOCATION: -32.20 148.20

DISPLAY PROGRAM What is UTC, GMT, Z time?	METEOROLOGICAL DATA Model Data Status Information on forecast datasets
AUTOGRAM	----Plot up to 6 meteorograms at a time----
METEORGRAM	-----Choose A Forecast Dataset----- <input type="button" value="Go"/>
WINDGRAM	-----Choose A Forecast Dataset----- <input type="button" value="Go"/>
WINDROSE	-----Choose A Forecast Dataset----- <input type="button" value="Go"/>
SOUNDING	-----Choose A Forecast Dataset----- <input type="button" value="Go"/>
STABILITY TIME-SERIES	-----Choose A Forecast Dataset----- <input type="button" value="Go"/>
INTERACTIVE MAP	-----Choose A Forecast Dataset----- <input type="button" value="Go"/>
INTERACTIVE MAP (JAVA-BASED)	-----Choose A Forecast Dataset----- <input type="button" value="Go"/>
DATASET HELP	-----Choose A Forecast Dataset----- <input type="button" value="Go"/>
<b>FORECAST MODEL ANIMATIONS</b>	

# 1. Stability Time Series

- 3-6 day lookahead for lat long specified
- Generally reliable for lookahead 3 days
- not used for cloud base, convection only.
- Handy for length of day

# 2. Meteorogram

- Handy lookahead for a number of parameters
  - Cloud cover
  - Storms
  - Cloudbase, dew point etc

# 3. Sounding

- Determination of cloudbase, rough time of convection and length of day

# 4. Windgram

- Handy for front changes, shear prediction etc



# Stability Time Series

READY PRODUCTS FOR LOCATION: -32.20 148.20

DISPLAY PROGRAM What is UTC, GMT, Z time?	METEOROLOGICAL DATA Model Data Status Information on forecast datasets
AUTOGRAM	-----Plot up to 6 meteorograms at a time-----
METEOROGRAM	-----Choose A Forecast Dataset----- <input type="button" value="Go"/>
WINDGRAM	-----Choose A Forecast Dataset----- <input type="button" value="Go"/>
WINDROSE	-----Choose A Forecast Dataset----- <input type="button" value="Go"/>
SOUNDING	-----Choose A Forecast Dataset----- <input type="button" value="Go"/>
<b>STABILITY TIME-SERIES</b>	-----Choose A Forecast Dataset----- <input type="button" value="Go"/>
INTERACTIVE MAP	-----Choose A Forecast Dataset----- GFS Model (0-84h, 3hrly, Global) <input type="button" value="Go"/>
INTERACTIVE MAP (JAVA-BASED)	GFS Model (0-180h, 6hrly, Global) GFS Model (192-384h, 12hrly, Global) <input type="button" value="Go"/>
DATASET HELP	-----Choose A Forecast Dataset----- <input type="button" value="Go"/>

**FORECAST MODEL ANIMATIONS**



## GFS Stability Time-series

Starting date/time:

January 23, 2007 at 18 UTC (+ 00 Hrs) ▾

Forecast duration from starting time (hours):

84 ▾

Graphic size (dpi):

72

84

96

120

Type your access code (displayed at right) into the text box. This code is an image that cannot be read by a computer. This access code prevents automated programs from requesting access to READY products, which have saturated the system denying others from obtaining products in a timely manner.

[READY Use Agreement](#)

Your access code is:

B P T D I Y B N E L B I K J I  
N O V T I X F R N M I A K M  
K E I G L Z F Z I B L A I H  
D X L B L X M B L T G D J  
G A L L U H A V E P L Y  
D F R C B Z A H Y E S D Q Y O  
P P D C E E G Z U G N C Q D P

Enter the access code from the box above to request product (case insensitive):

Get Stability

Reset

Latitude: 52.20 Longitude: 140.20

DATA INITIAL TIME: 23 Jan 2007 18Z

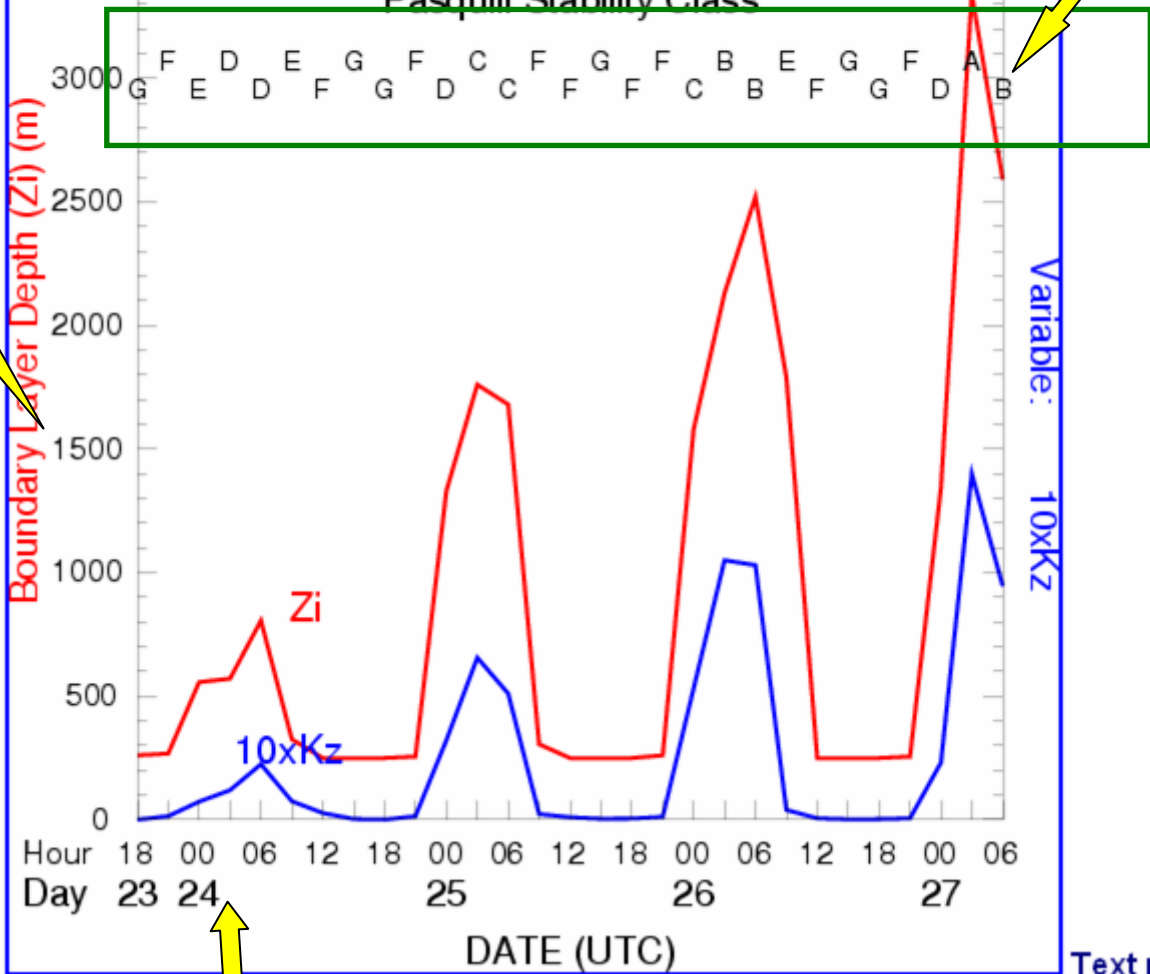
RESOURCES LABORATORY

Server

Boundary Layer in Metres

Stable or Unstable

Pasquill Stability Class



Date in UTC

## Pasquill Stability Classes

A: Extremely unstable conditions	D: Neutral conditions
B: Moderately unstable conditions	E: Slightly stable conditions
C: Slightly unstable conditions	F: Moderately stable conditions
G: Extremely Stable	

### Meteorological conditions defining Pasquill stability classes.

Surface wind speed (m/s)	Daytime insolation			Night-time conditions	
	Strong	Moderate	Slight	Thin overcast or > 4/8 low cloud	<= 4/8 cloudiness
< 2	A	A - B	B		
2 - 3	A - B	B	C	E	F
3 - 5	B	B - C	C	D	E
5 - 6	C	C - D	D	D	D
> 6	C	D	D	D	D

Source: Pasquill, 1961.

### Pasquill Stability Class

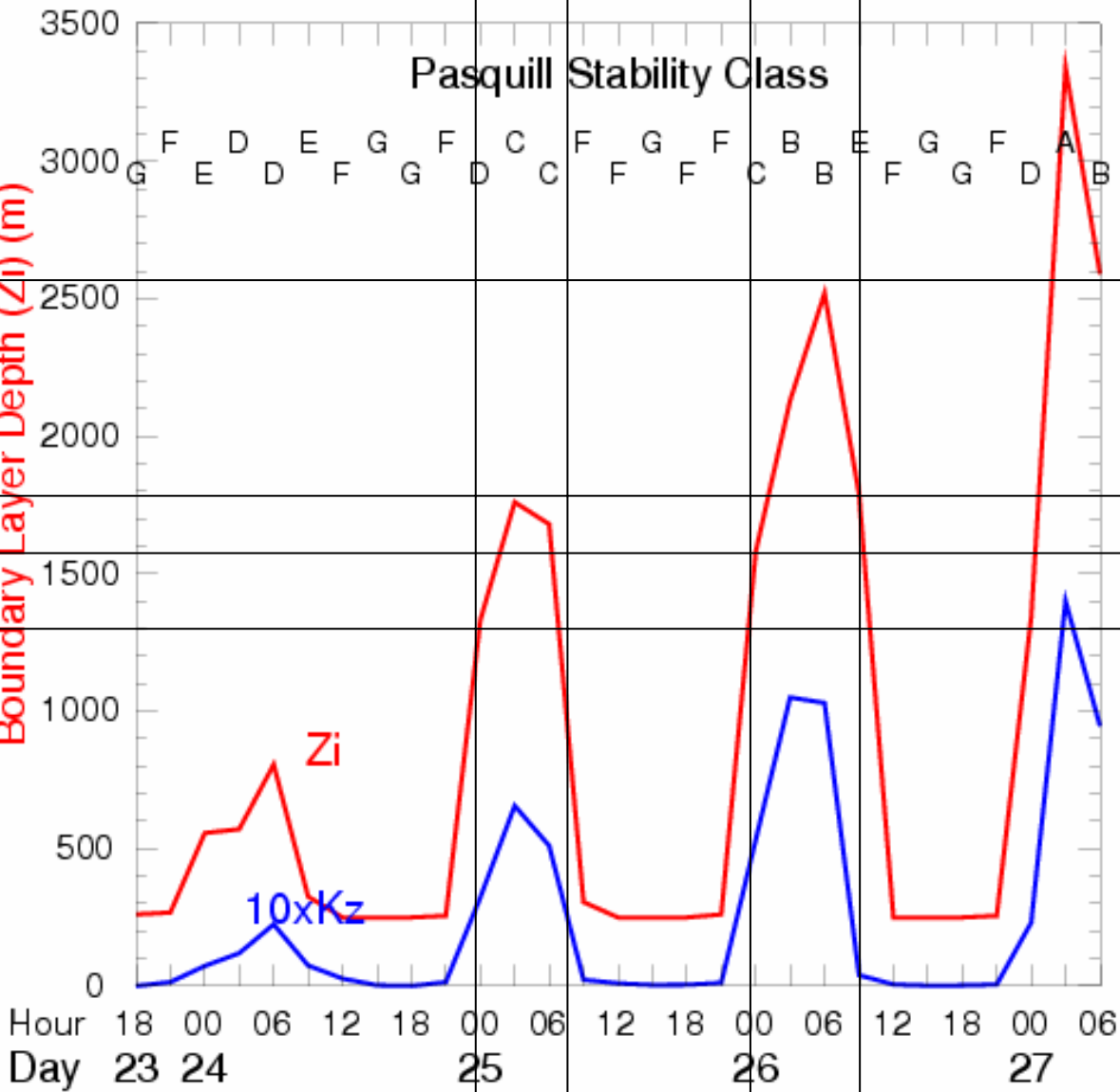
8600 ft

6000 ft  
5300 ft

4300 ft

Boundary Layer Depth (Zi) (m)

Variable: 10xKz



# GFS Meteorogram

**Starting date/time:** January 23, 2007 at 18 UTC (+ 00 Hrs)

**Forecast duration from starting time:** 84  hours

**Fields to plot:**  Default  Default with winds  Choose from below

**Plot text below wind flags:**  None  Speed only  Speed and Direction

(SFC = surface field, 3D = multi-level field)

Mean Sea Level Pressure (SFC) <input type="text"/>	SFC <input type="text"/>
Field 2 not selected <input type="text"/>	SFC <input type="text"/>
Field 3 not selected <input type="text"/>	SFC <input type="text"/>
Field 4 not selected <input type="text"/>	SFC <input type="text"/>
Field 5 not selected <input type="text"/>	SFC <input type="text"/>
Field 6 not selected <input type="text"/>	SFC <input type="text"/>
Field 7 not selected <input type="text"/>	SFC <input type="text"/>
Field 8 not selected <input type="text"/>	SFC <input type="text"/>
Field 9 not selected <input type="text"/>	SFC <input type="text"/>
Field 10 not selected <input type="text"/>	SFC <input type="text"/>

**Output Options:**  Graphic and text  Text only

**Meteorogram size (dpi):**  72  84  96  120

Field 2 not selected

Mean Sea Level Pressure (SFC)

Surface Pressure (SFC)

→ Temperature - 2 meters AGL (SFC)

Relative Humidity - 2 meters AGL (SFC)

Accumulated Precipitation (SFC)

U Momentum Flux (SFC)

V Momentum Flux (SFC)

→ Sensible Heat Net Flux (SFC)

Downward Short Wave Radiation Flux (SFC)

U-component of Wind - 10 meters AGL (SFC)

V-component of Wind - 10 meters AGL (SFC)

→ Total Cloud Cover (SFC)

Model Surface Height (SFC)

→ Convective Available Potential Energy (SFC)

→ Convective Inhibition (SFC)

Standard Lifted Index (SFC)

Best 4-layer Lifted Index (SFC)

Mixed Layer Height (SFC)

Wind Flags (SFC/3D)

Wind Speed (SFC/3D)

Thickness Between 1000 mb and Level Chosen (3D)

Geopotential Height (3D)

Temperature (3D)

Pressure Vertical Velocity (3D)

Relative Humidity (3D)

U-component of Wind wrt Grid (3D)

V-component of Wind wrt Grid (3D)

# GFS Meteorogram

Starting date/time:

January 23, 2007 at 18 UTC (+ 00 Hrs) ▾

Forecast duration from starting time:

84 ▾ hours

Fields to plot:

Default  Default with winds  Choose from below

Plot text below wind flags:

None  Speed only  Speed and Direction

(SFC = surface field, 3D = multi-level field)

Mean Sea Level Pressure (SFC) ▾	SFC ▾
Temperature - 2 meters AGL (SFC) ▾	SFC ▾
Sensible Heat Net Flux (SFC) ▾	SFC ▾
Total Cloud Cover (SFC) ▾	SFC ▾
Convective Available Potential Energy (SFC) ▾	SFC ▾
Convective Inhibition (SFC) ▾	SFC ▾
Field 7 not selected ▾	SFC ▾
Field 8 not selected ▾	SFC ▾
Field 9 not selected ▾	SFC ▾
Field 10 not selected ▾	SFC ▾

Output Options:

Graphic and text  Text only

Meteorogram size (dpi):

72  84  96  120



Fields to plot:  Default  Default with winds  Choose from below  
 Plot text below wind flags:  None  Speed only  Speed and Direction

(SFC = surface field, 3D = multi-level field)

Mean Sea Level Pressure (SFC)	▼	SFC	▼
Temperature - 2 meters AGL (SFC)	▼	SFC	▼
Sensible Heat Net Flux (SFC)	▼	SFC	▼
Total Cloud Cover (SFC)	▼	SFC	▼
Convective Available Potential Energy (SFC)	▼	SFC	▼
Convective Inhibition (SFC)	▼	SFC	▼
Field 7 not selected	▼	SFC	▼
Field 8 not selected	▼	SFC	▼
Field 9 not selected	▼	SFC	▼
Field 10 not selected	▼	SFC	▼

Output Options:  Graphic and text  Text only  
 Meteorogram size (dpi):  72  84  96  120

Type your access code (displayed at right) into the text box. This code is an image that cannot be read by a computer. This access code prevents automated programs from requesting access to READY products, which have saturated the system denying others from obtaining products in a timely manner.

[READY Use Agreement](#)

Your access code is:



Enter the access code from the box above to request product (case insensitive):

QETJKX

Get Meteorogram

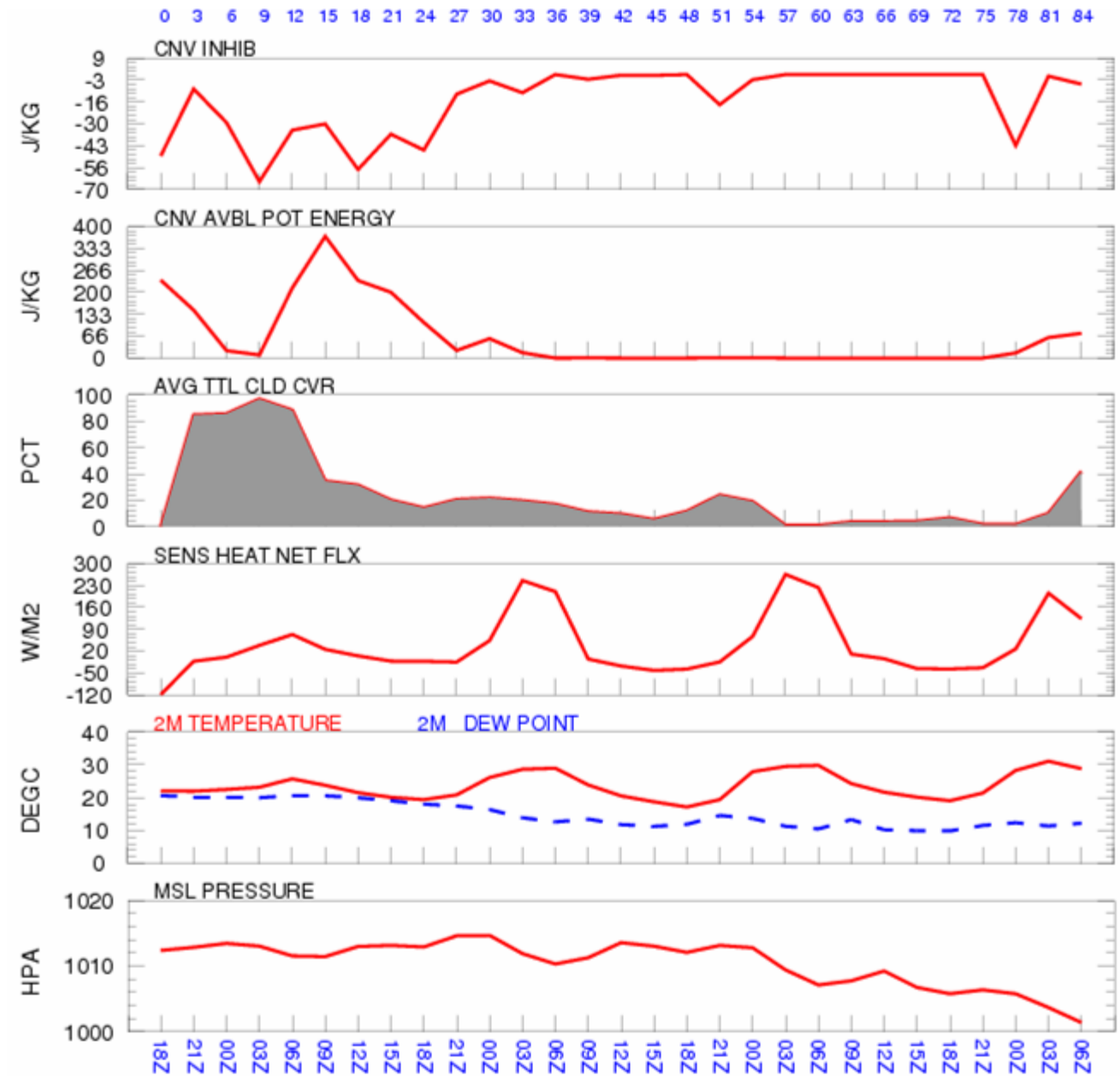
Reset

Energy suppression

Energy above the Boundary Layer

Heat flux density/ radiance

Temp and Dew Point



# GFS Sounding – Skew T

## GFS Sounding

**Time to plot (start time for animation):**

**Change location?** Latitude (degrees):  Longitude (West < 0):

**Animation:**  None  GIF  Java  Javascript Duration:  hours

**Type:**  Full Sounding  Only to 400 mb


**Output:**  Graphic  Text only

**Graphics:**  Text Listing  Skew-T Log-P  Theta  All

**Profile graphic size (dpi):**  72  84  96  120

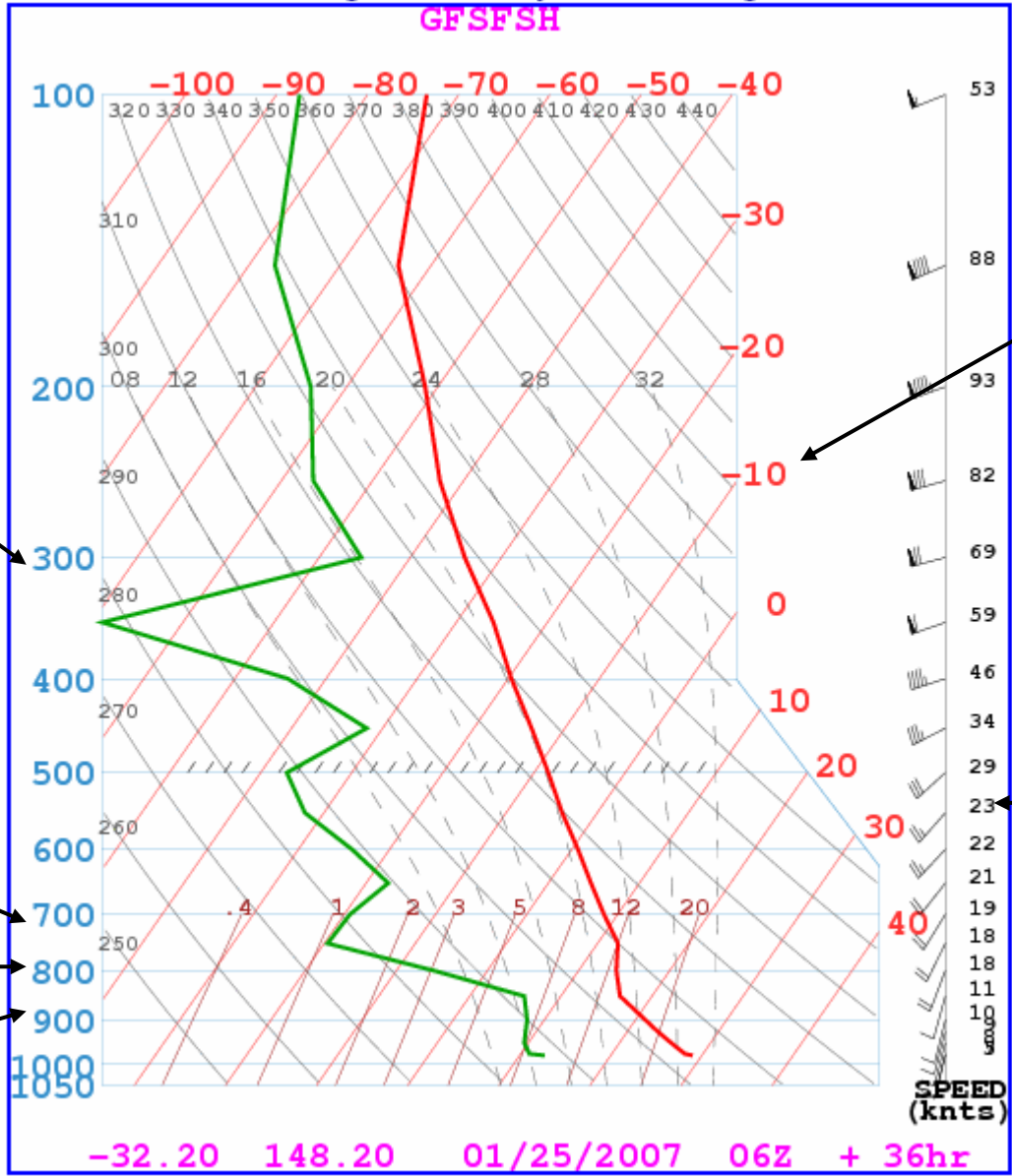
Type your access code (displayed at right) into the text box. This code is an image that cannot be read by a computer. This access code prevents automated programs from requesting access to READY products, which have saturated the system denying others from obtaining products in a timely manner.

**READY Use Agreement**

Your access code is: 

Enter the access code from the box above to request product (case insensitive):

Atmospheric Pressure (hPa)



Temperature

Wind

10000ft

6500ft

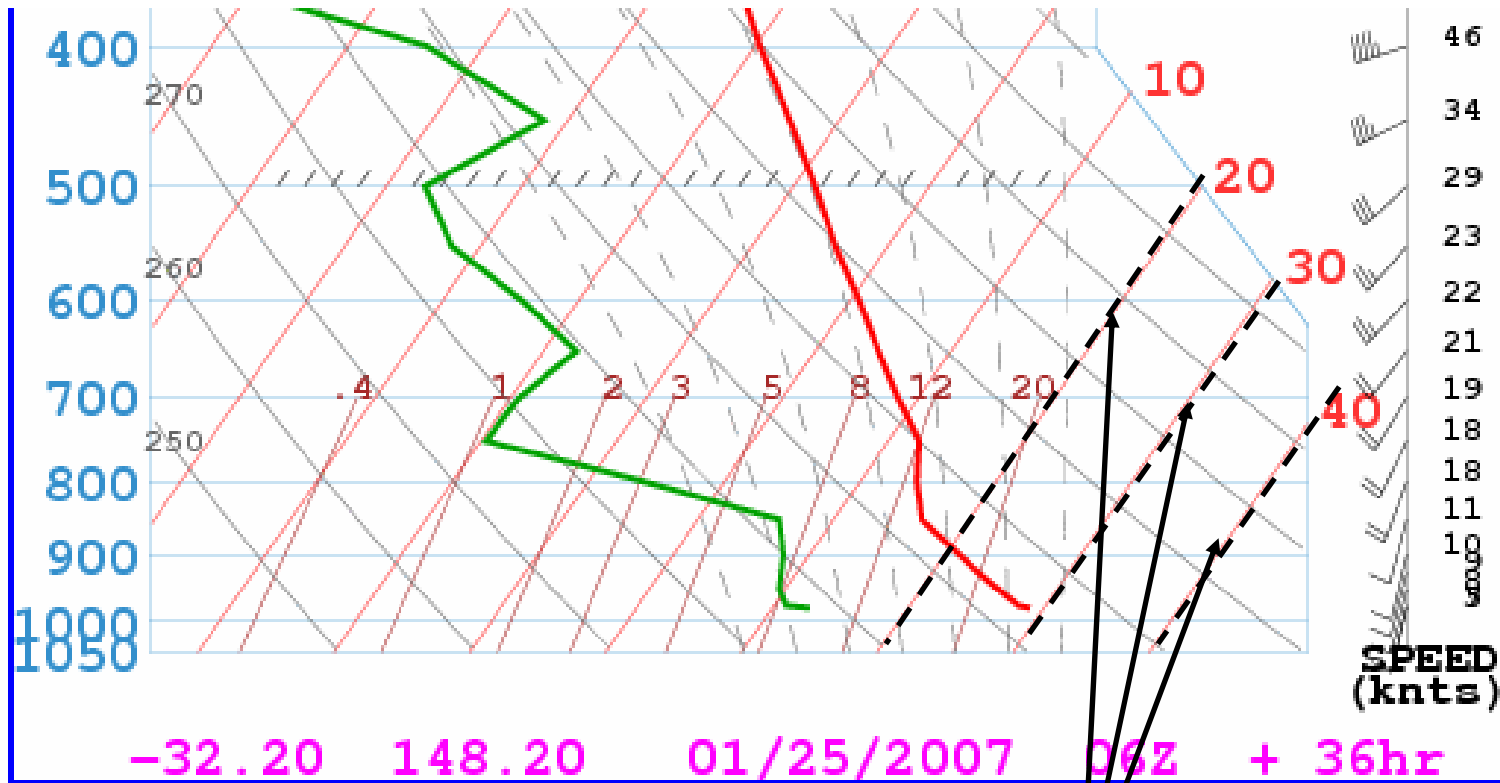
3500ft

Press (hPa)	Alt (ft)
1013	0
995	500
977	1,000
960	1,500
943	2,000
926	2,500
909	3,000
893	3,500
877	4,000
861	4,500
846	5,000
830	5,500
816	6,000
801	6,500
787	7,000
772	7,500
759	8,000
745	8,500
732	9,000
719	9,500

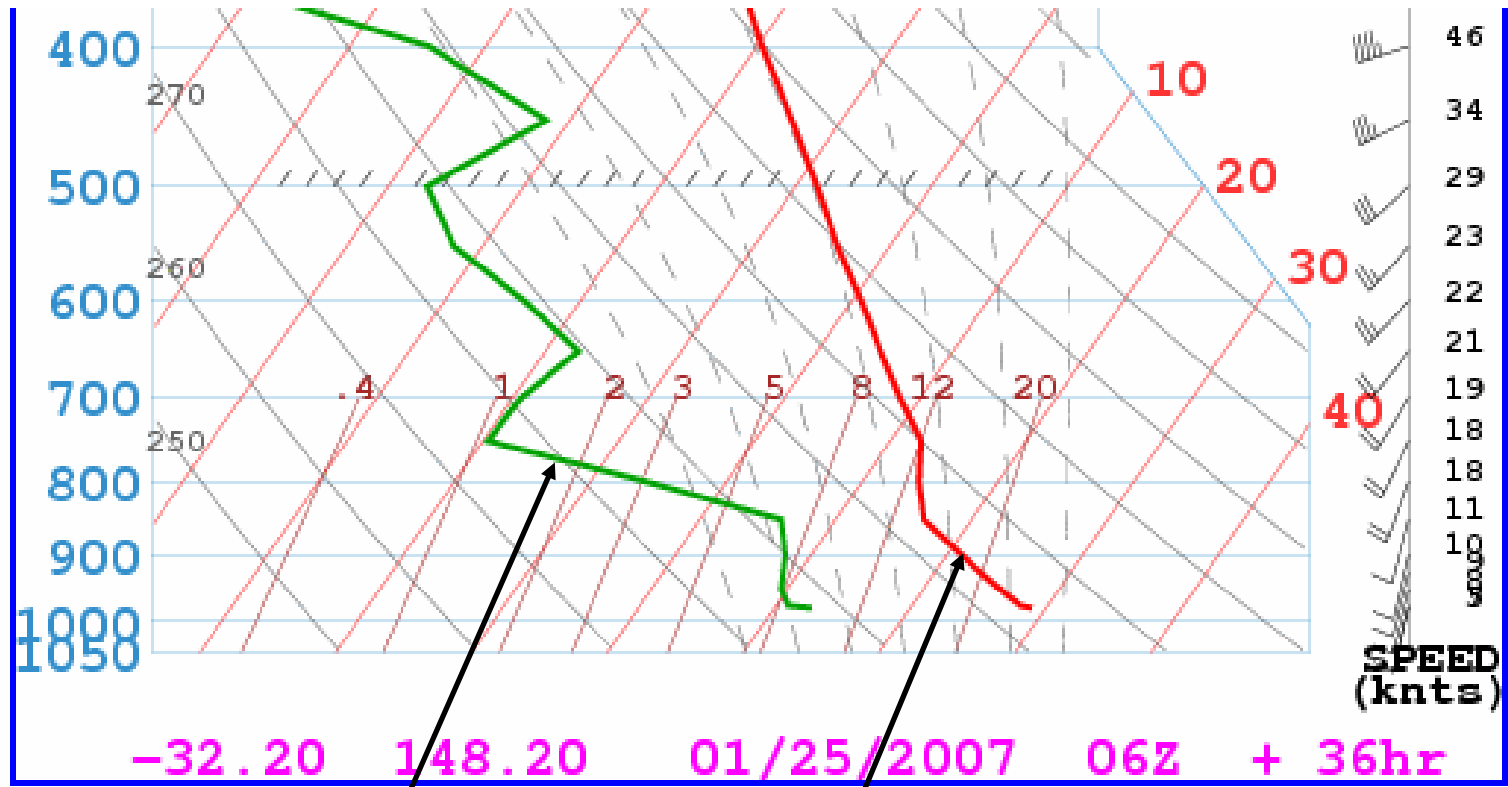
## Pressure vs Altitude Conversion

Press (hPa)	Alt (ft)
706	10,000
693	10,500
681	11,000
668	11,500
656	12,000
645	12,500
633	13,000
622	13,500
611	14,000
600	14,500
589	15,000
578	15,500
568	16,000
558	16,500
548	17,000
538	17,500
528	18,000
519	18,500
510	19,000
500	19,500
491	20,000

[Back to 24th Jan](#)



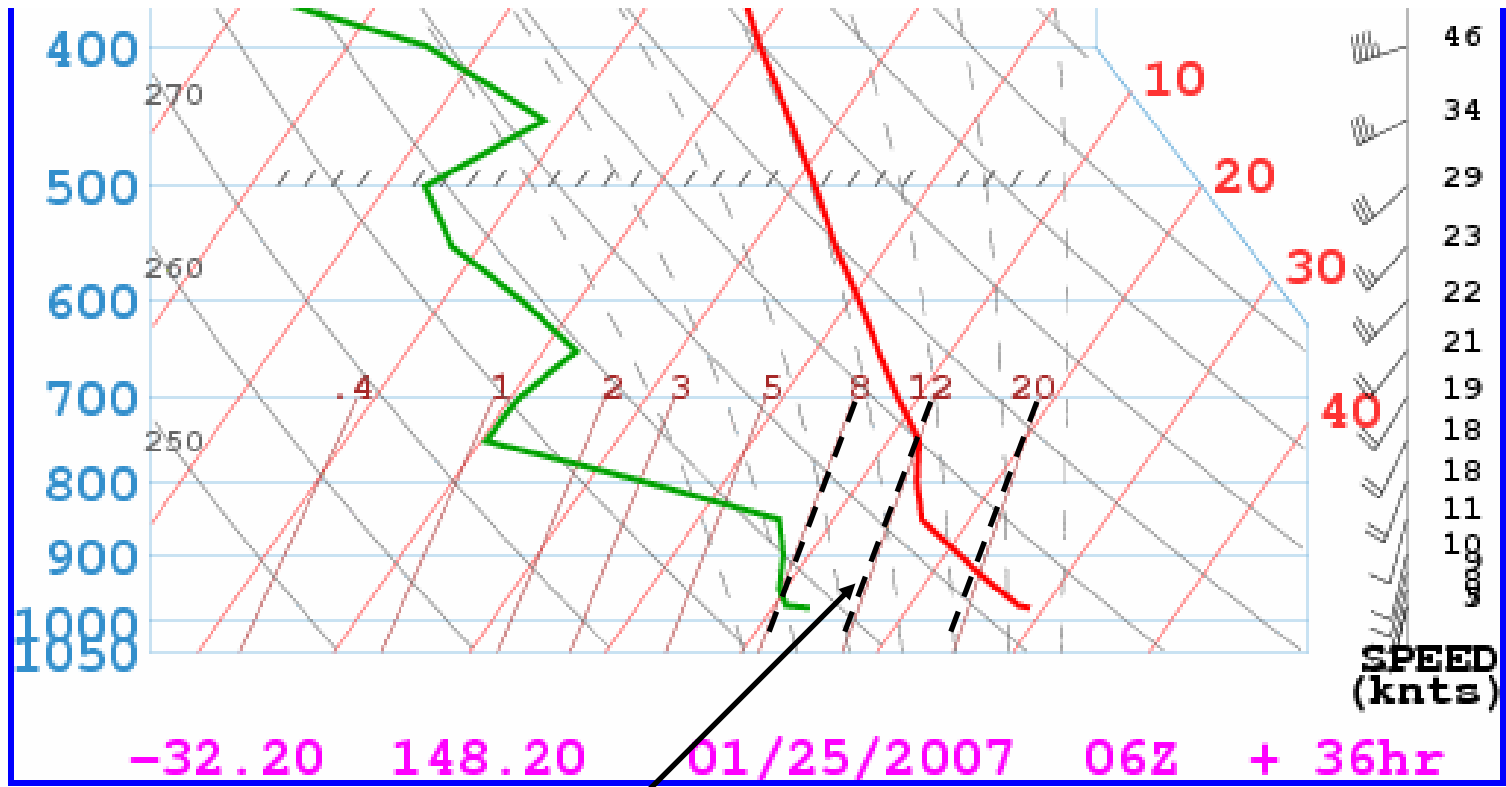
Temperature lines



Dew Point Line

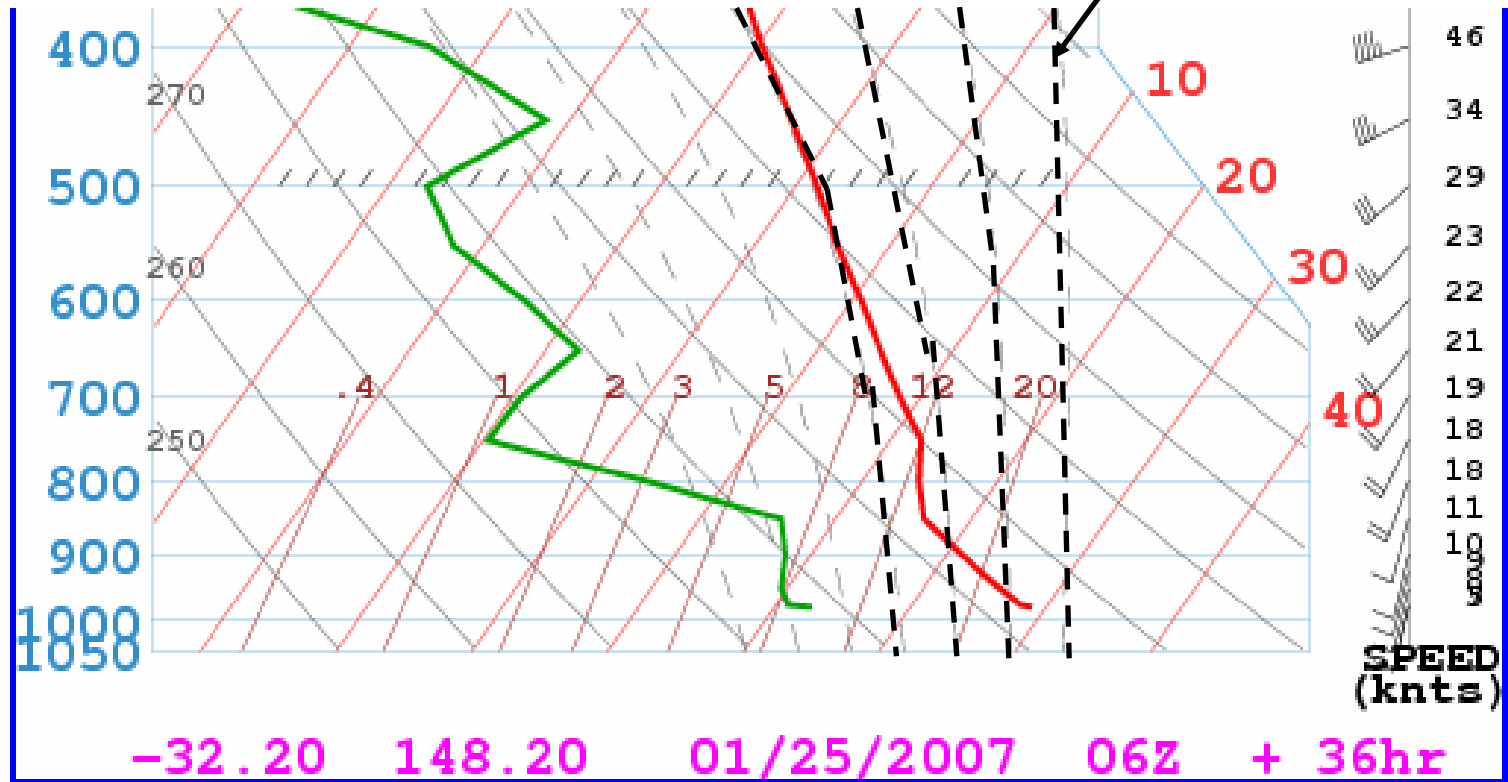
Environmental Lapse Rate



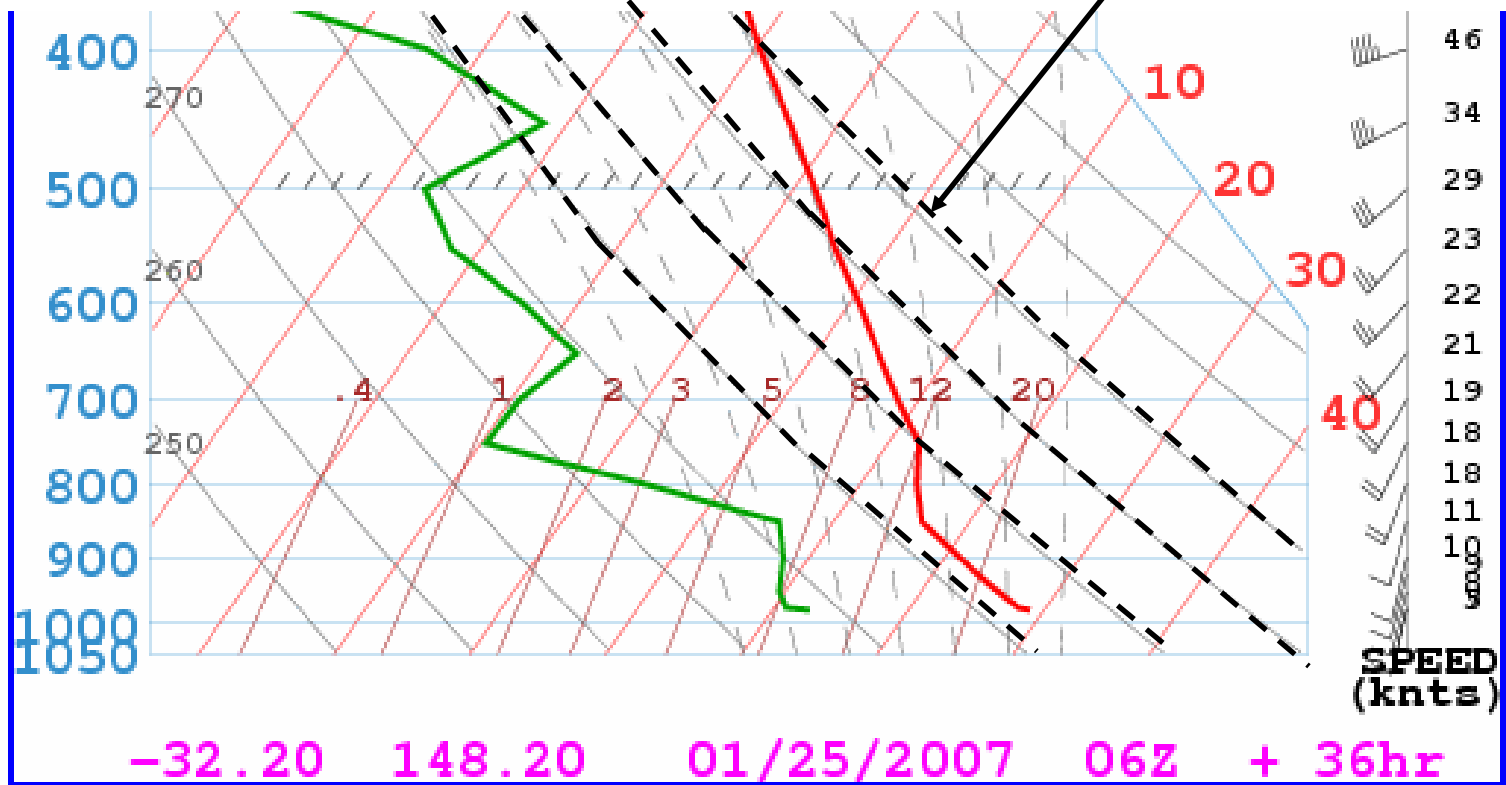


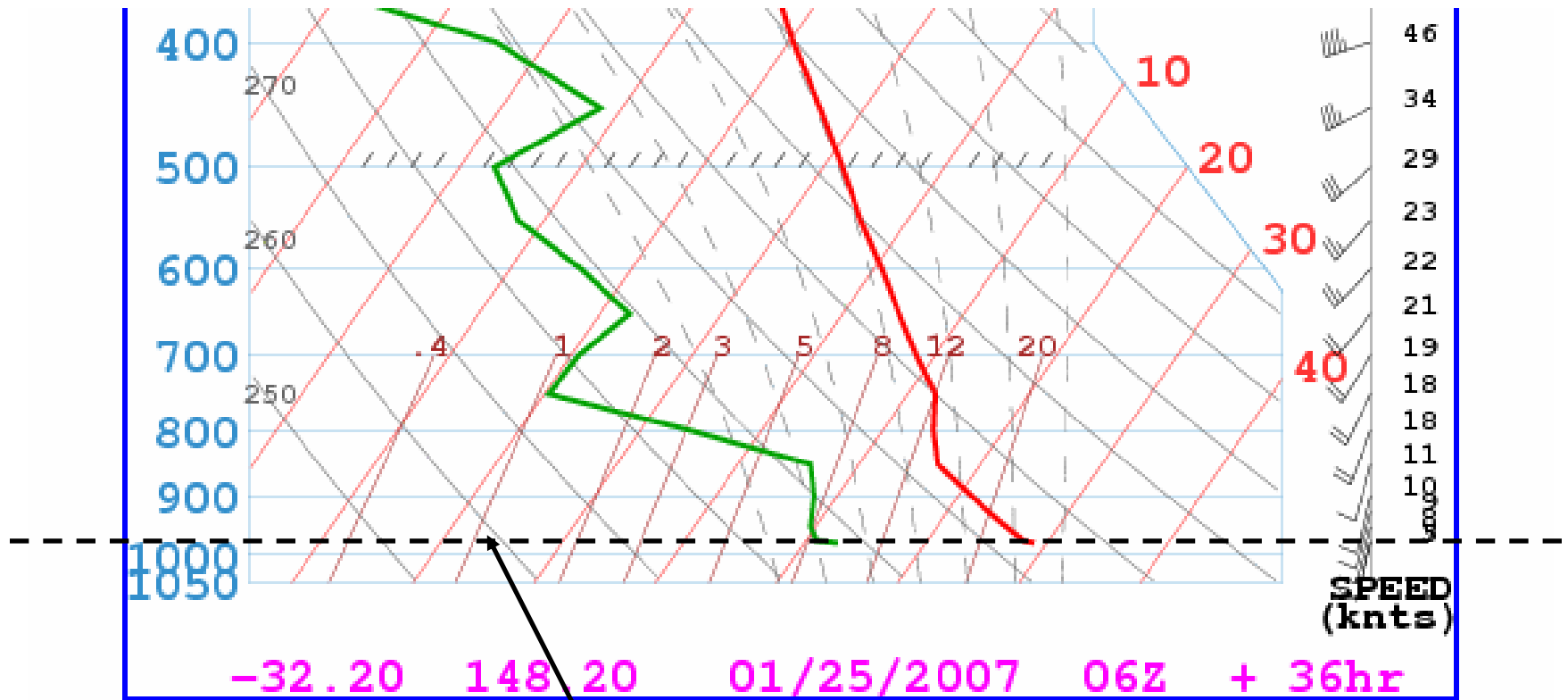
Mixing Lines

# Saturated Adiabatic Lapse Rate (SALR)



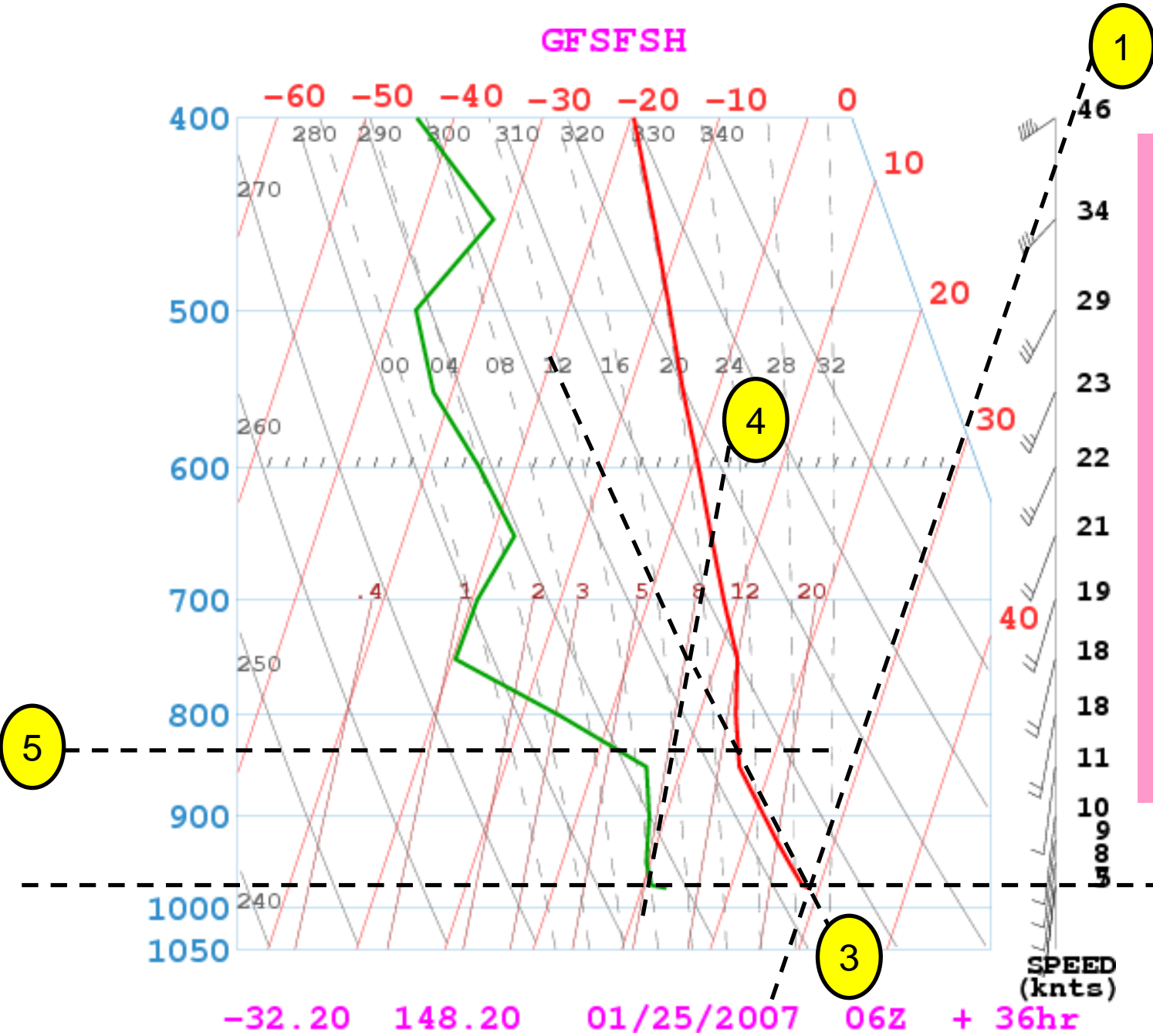
# Dry Adiabatic Lapse Rate (DALR)





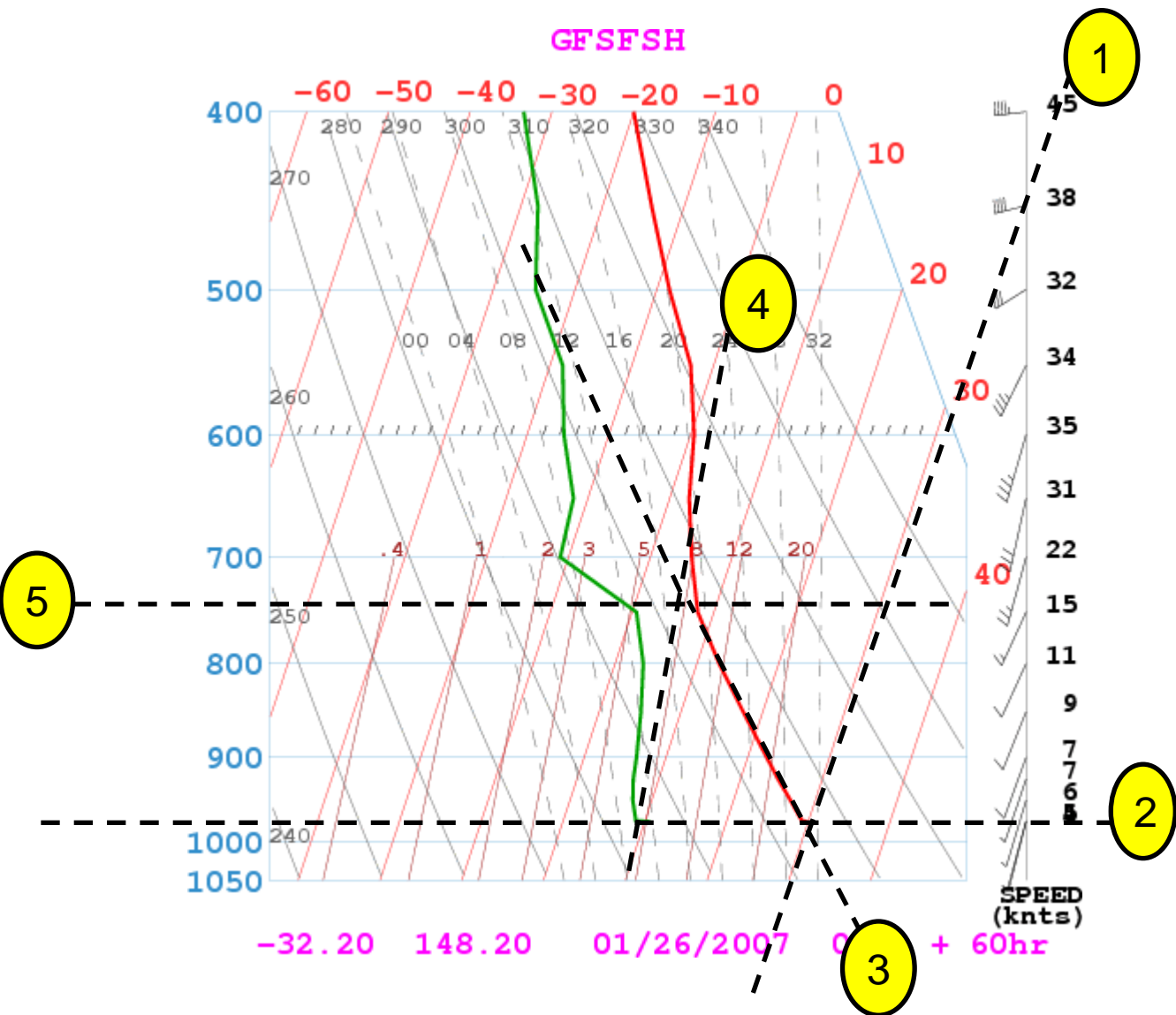
Ground Level

# GFSFSH



**25<sup>th</sup> Jan 07**

Convection height is where the environmental lapse rate (3) intersects the DALR = 830mb or 5500ft (5). Dew point is at around 750mb (4) so no there is no cloud; temperature needs to be about 29 degrees for convection



**26<sup>th</sup> Jan 07**

Convection height is where the environmental lapse rate (3) intersects/leaves the DALR = 730mb or about 9000ft (5). Dew point is at around 720mb (4) so there is possibly cloud; temperature needs to get to 31 degrees for convection.

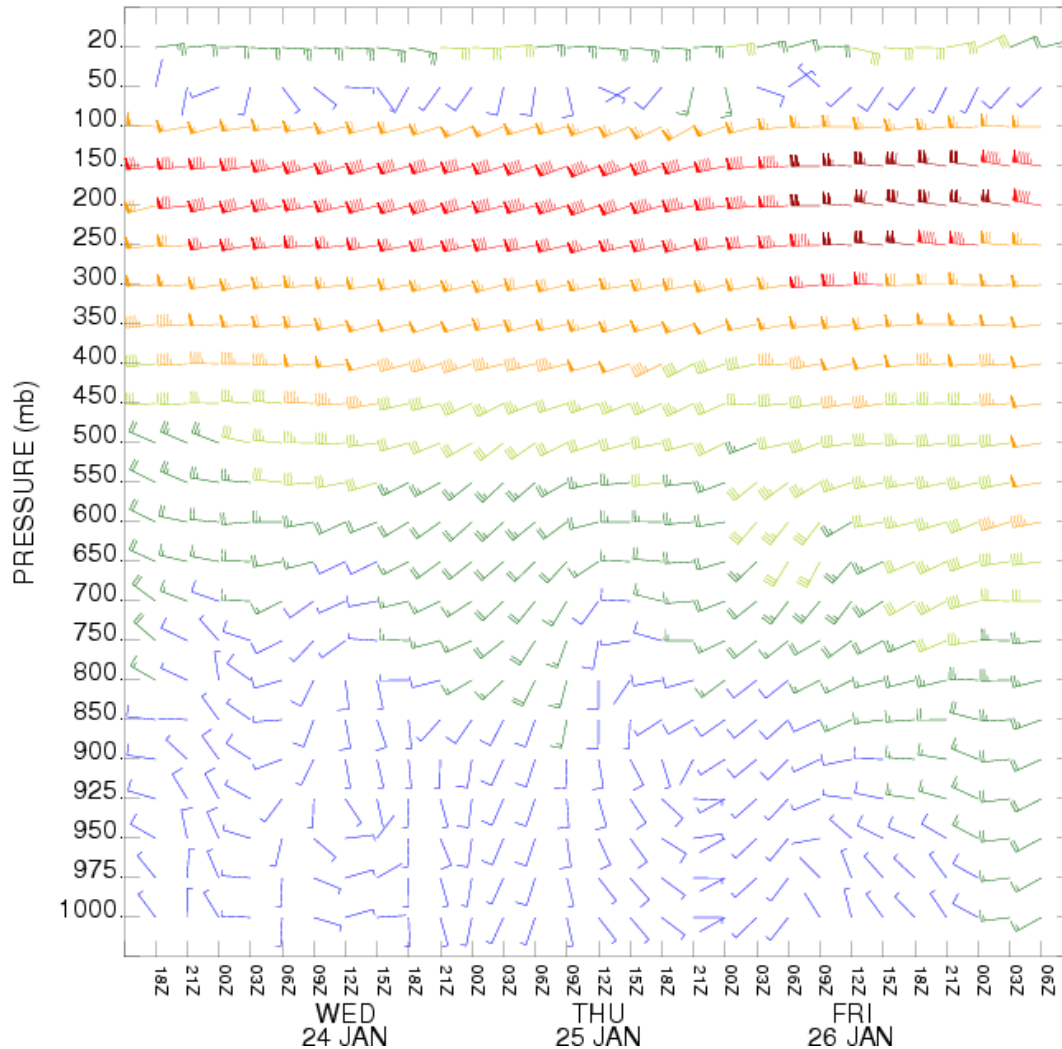
# GFSFSH WINDGRAM

Latitude:-32.20 Longitude: 148.20

DATA INITIAL TIME: 23 JAN 2007 18Z

CALCULATION STARTED AT: 23 JAN 2007 18Z  
CALCULATION ENDED AT: 27 JAN 2007 06Z

NOAA AIR RESOURCES LABORATORY  
READY Web Server



## Windgram

The windgram can be useful in seeing what the middle levels are doing, wind trends over the next few days, and possibly for predicting possibility of windshear.



# Limitations of the Model

- The further out the prediction time, the less accurate it will be for a specific day
- The model is susceptible to fast or slow moving weather systems
- Check the upper system dew point and ELR for effects in upper and middle atmosphere.
- The predicted conditions from the model will be often be worse (actual) where there are strong winds
- The model is for the local area – use more locations to get a full “picture” of the day.
- Hot spots and localised lift may give better heights than the model predicts.



END